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Determination of Smokeless Tobacco HPHC Values for Camel Snus and Other Tobacco Products

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Final Study Report



CERTIFICATION

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Prepared for R.J. Reynolds Tobacco Company

Study ID: M195-GLP

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2 USE OF LABSTAT'S¹ ANALYTICAL REPORTS

Labstat International ULC ("Labstat") is an independent recognized global centre of analytical excellence related to tobacco and tobacco products. Our clients include major international tobacco manufacturers, various Governments and Government agencies such as Health Canada, agricultural interests, university researchers and private research interests. Unless otherwise specified by contract, our contractual obligations extend **only** to the provision of data and related reports as required by Labstat's ISO 17025 accreditation. It should be noted that:

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3 STUDY PURPOSE

The purpose of this study is threefold:

- 1) To measure Harmful and Potentially Harmful Constituents (HPHC) values for commercial Swedish snus products from the U.S. market (Camel Snus Frost, Camel Snus Frost Large, Camel Snus Mellow, Camel Snus Mint, Camel Snus Robust, Camel Snus Winterchill and General Original Snus) and from the Swedish market (General Original Snus, Granit Snus, Catch Dry Eucalyptus Mini and Skruf Stark Snus). HPHC measurements will consist of smokeless tobacco analytes specified in Table 1 of the FDA Draft Guidance for Industry titled, "Reporting Harmful and Potentially Harmful Constituents in Tobacco Products and Tobacco Smoke Under Section 904(a)(3) of the Federal Food, Drug, and Cosmetic Act" issued March 2012.
- 2) To measure selected HPHC yields for the U.S. leading non-menthol and leading menthol cigarettes under ISO and HCl smoking regimens that correspond to HPHC analytes determined in study purpose #1
- 3) To conduct statistical comparisons per the statistical analysis plan (SAP) described in Appendix A of the study protocol (see Appendix I).

4 EXECUTIVE SUMMARY

This report describes the results for the study "Determination of Smokeless Tobacco HPHC Values for Camel Snus and Other Tobacco Products" carried out according to the study protocol of the same name, which commenced on January 21, 2014. The report contains the results of this study.

5 ADMINISTRATIVE INFORMATION

5.1 QUOTATION IDENTIFICATION

Quotation Number: T4008R5

Date of Quotation: December 31, 2013

Recipient's Name: Joy Bodnar

5.2 SPONSOR IDENTIFICATION

R.J. Reynolds Tobacco Company
950 Reynolds Boulevard
Winston-Salem NC 27105
USA



5.3 SPONSOR REPRESENTATIVES

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5.4 TESTING FACILITY IDENTIFICATION

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Canada

6 SAMPLE HANDLING

6.1 CHAIN OF CUSTODY

The test articles for the M195-GLP study were received on November 15, 2013 via UPS and on December 09, 2013 via World Courier.

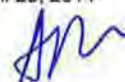
6.2 TEST ARTICLE CHARACTERIZATION AND CODING

6.2.1 STATUS OF TEST ARTICLE(S) AT TIME OF RECEIPT

The shipment received on November 15, 2013 consisted of 14 cartons of one cigarette test article, 17 cartons of one cigarette test article, 21 cartons one cigarette test article, 87 tins for each of 4 smokeless tobacco test articles, 108 tins of one smokeless tobacco test article, 136 tins of one smokeless tobacco test article and 196 tins of each of 2 smokeless tobacco test articles. The shipment received on December 09, 2013 consisted of 90 tins for each of 3 smokeless tobacco test articles and 270 tins of one smokeless tobacco test article. There was no physical damage to tins, packages or cartons. Individual cigarettes were normal in appearance.

6.2.2 STORAGE OF TEST ARTICLES

All cigarette test articles and smokeless tobacco test articles were stored in freezer(s), in a secure location and in their original packaging, at a maximum temperature of -15°C until the time of testing. Test articles were removed from the freezers and kept at ambient temperatures for at least 2 hours prior to testing.



6.2.3 TEST ARTICLE IDENTIFICATION

The following code(s) has been used to identify the test articles associated with the results in each of the tables that are part of this study report.

Table 1: Test Article Identification

Test Article ID	Test Article Type	Description
1400588	Cigarettes	Marlboro Gold King Size (KS) Box
1400589	Cigarettes	Newport King Size Menthol Box
1400590	Cigarettes	3R4F Kentucky Reference
1400891	Smokeless Tobacco	General Original Snus (US)
1400892	Smokeless Tobacco	Camel Snus Frost
1400893	Smokeless Tobacco	Camel Snus Frost Large
1400894	Smokeless Tobacco	Camel Snus Mellow
1400895	Smokeless Tobacco	Camel Snus Mint
1400896	Smokeless Tobacco	Camel Snus Robust
1400931	Smokeless Tobacco	Camel Snus Winterchill
1400932	Smokeless Tobacco	CRP1 Reference Snus
1400933	Smokeless Tobacco	General Original Snus (Sweden)
1400934	Smokeless Tobacco	Catch Dry Eucalyptus Mini Snus (Sweden)
1400935	Smokeless Tobacco	Granit Snus (Sweden)
1400936	Smokeless Tobacco	Skruf Stark Snus (Sweden)

6.2.4 TEST ARTICLE CHARACTERIZATION

Test articles were characterized by Labstat as follows, with results reported in Appendix H.

6.2.4.1 CIGARETTE TEST ARTICLES

TPM, nicotine and water in mainstream smoke was determined for two (2) smoking regimens: ISO and Health Canada Intense (refer to Table 3). In addition, the cigarette length, filter length, tipping (overwrap) length and weight of tobacco from unconditioned cigarettes was determined for each cigarette test article.

6.2.4.2 SMOKELESS TOBACCO TEST ARTICLES

Nicotine, moisture and the average weight of: smokeless tobacco pouch (both tobacco and pouch material), tobacco per pouch and the pouch material was determined for each smokeless tobacco test article.



6.2.5 STORAGE OF CONTROL ARTICLES

All cigarette control articles were stored in refrigerators ($\leq 4^{\circ}\text{C}$) and all smokeless tobacco control articles were stored in freezers ($\leq -15^{\circ}\text{C}$), both in secure locations. Control articles were removed from their refrigerators or freezers and kept at ambient temperatures for at least 2 hours prior to testing.

6.2.6 CONTROL ARTICLE IDENTIFICATION

Labstat International ULC has provided control article cigarettes and smokeless tobacco for this study. The following codes have been used to identify the control articles ("internal laboratory controls") associated with the results in each of the tables that are part of this report.

Table 2: Control Article Identification

Control Article ID	Control Article Type	Control Article Description
357	Cigarettes	Kentucky Reference 3R4F
888	Smokeless Tobacco	CRP3 Reference Snus

6.2.7 CONTROL ARTICLE CHARACTERIZATION

In accordance with the study protocol, characterization of the control articles was not required.

6.2.8 SPECIAL INSTRUCTIONS

An approved study protocol (refer to Appendix I) was followed for this study.

7 DATES OF STUDY

Study Initiation Date: January 21, 2014

Experimental Starting Date: January 21, 2014

Experimental Completion Date: February 26, 2014

Study Completion Date: April 23, 2014

8 EXPERIMENTAL DESIGN AND METHODS

8.1 SAMPLE GENERATION (CIGARETTES)

All cigarette test articles and cigarette control articles were conditioned and smoked under the smoking regimes outlined in the following sub-sections.



8.1.1 CIGARETTE BUTT MARKING

Prior to testing, all cigarette test articles and cigarette control articles were marked with the standard butt length as specified in ISO 4387 (2000) *"Cigarettes -- Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine"*.

8.1.2 CIGARETTE CONDITIONING AND SMOKING ENVIRONMENTS

Cigarette test articles and cigarette control articles were conditioned and smoked under the environmental conditions specified in ISO 3402 (1999) *"Tobacco and tobacco products – Atmosphere for conditioning and testing"*. With respect to conditioning, this document states *"The conditioning atmosphere shall be as follows: temperature $22 \pm 1^\circ\text{C}$; relative humidity $60 \pm 3\%$ "*. Smoking requires an environment in which the temperature is $22 \pm 2^\circ\text{C}$ and the relative humidity $60 \pm 5\%$.

8.1.3 STANDARD MACHINE SMOKING CONDITIONS

Smoking of cigarette test articles and cigarette control articles was carried out on either a rotary smoking machine or a linear smoking machine. The smoking parameters and smoking machine specifications which were used are set out in the International Organization for Standardization standard ISO 3308 (2012), *"Routine analytical cigarette-smoking machine - Definitions and standard conditions"* with modifications as noted in the table below.

8.1.4 MACHINE PARAMETERS

The following table is a summary of the smoking parameters that were employed in this study.

Table 3: Smoking Machine Parameters

Variable	"ISO"	"Health Canada Intense" (HCI)
Puff Volume (ml)	35	55
Interval (sec)	60	30
Duration (sec)	2	2
Vents ²	"open"	"fully blocked"

Mainstream yields (MS) were obtained under "ISO" and "Health Canada Intense" conditions (as defined above). Yields obtained using "ISO" smoking parameters are referred to as "standard" (s) and yields obtained using "Health Canada Intense" smoking parameters are referred to as "non-standard" (n).

² Health Canada 100% Vent Blocking Method

6(b)(iii) all ventilation holes must be blocked by placing over them a strip of Mylar adhesive tape, Scotch Brand product no. 600 Transparent Tape, and the tape must be cut so that it covers the circumference and is tightly secured from the end of the filter to the tipping overwrap seam, or by another method of equivalent efficiency.



8.1.5 REPLICATES

Each cigarette test article and cigarette control article was tested seven times (see Appendix I, Table 2).

8.2 PREPARATION OF LABORATORY COMPOSITE (SMOKELESS TOBACCO)

A sufficient amount of smokeless tobacco for completing all required testing was randomly selected from the total amounts available for each smokeless tobacco test article and smokeless tobacco control article. For each smokeless tobacco test/control article, the entire selected amount was composited as follows and the composite was then sampled for each individual smokeless tobacco analysis.

The tobacco packaging material (i.e. the "pouch") was separated from the tobacco by cutting the pouch open using a utility knife. The "pouch" was cut into small pieces manually using scissors. The ground "pouch" material was then sieved through a 4mm sieve to ensure a particle size of $\leq 4\text{mm}$. The ground "pouch" was then combined with the pouch contents (i.e. tobacco), thoroughly mixed and passed through the 4mm sieve. Any material left in the sieve was ground again and passed through the 4mm sieve until all pouch material and tobacco has passed through the 4mm sieve.

8.2.1 REPLICATES

Each smokeless tobacco test article and smokeless tobacco control article was tested seven times (see Appendix I, Table 3).

8.3 ANALYTICAL METHODS³

8.3.1 SMOKE ANALYSIS (CIGARETTES)

Test methods for the analysis of mainstream tobacco smoke from cigarette test articles and cigarette control articles are referenced in the tables below and were practiced as written unless otherwise indicated (see "Method Modifications" and Study Director Compliance Statement below).

³ The most current version available at the time of testing was used for all test methods listed.

Table 4: Official Methods for the Collection of Emission Data on Mainstream Smoke⁴

Item	Emission	Health Canada Official Method	Method Description
1.	(a) Formaldehyde (b) Acetaldehyde (c) Crotonaldehyde	T-104	Determination of Selected Carbonyls in Mainstream Tobacco Smoke
2.	(a) Cadmium (b) Arsenic	T-109	Determination of Ni, Pb, Cd, Cr, As and Se in Mainstream Tobacco Smoke
3.	(a) Tar (b) Nicotine (c) Carbon Monoxide	T-115	Determination of "Tar", Nicotine and Carbon Monoxide in Mainstream Tobacco Smoke

Table 5: Other Methods for the Collection of Emission Data on Mainstream Smoke

Item	Emission	Labstat Method	Method Description
1.	Benzo(a)pyrene	TMS-00120	Determination of Selected Polynuclear Aromatic Hydrocarbons in Mainstream Tobacco Smoke
2.	(a) N-nitrosornicotine (b) 4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone	TMS-00135	Determination of Tobacco Specific Nitrosamines in Mainstream Tobacco Smoke by High-Performance Liquid Chromatography-Tandem Mass Spectrometry

8.3.2 CONSTITUENT ANALYSIS (SMOKELESS TOBACCO)

Test methods for the analysis of smokeless tobacco test articles and smokeless tobacco control articles are referenced in the tables below and were practiced as written unless otherwise indicated (see "Method Modifications" and Study Director Compliance Statement below).

Table 6: Official Methods for the Collection of Data on Constituents

Item	Constituent	Health Canada Official Method	Method Description
1.	Nicotine	T-301	Determination of Alkaloids in Whole Tobacco
2.	(a) Cadmium (b) Arsenic	T-306	Determination of Ni, Pb, Cd, Cr, As, Se and Hg in Whole Tobacco
3.	pH	T-310	Determination of Whole Tobacco pH

⁴ Canadian Tobacco Reporting Regulations: 2000-01-19 *Canada Gazette Part II, Vol. 134, No. 15* Part 3: Emissions from Designated Tobacco Products. Test method numbers refer to Health Canada methodologies which have been posted by Health Canada on the internet at site http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/legislation/reg/indust/index_e.html

Table 7: Other Methods for the Collection of Data on Constituents

Item	Constituent	Official/ Labstat Method	Method Description
1.	Moisture	AOAC 966.02/ TWT-00300	<i>Loss on Drying (Moisture) in Tobacco, Gravimetric Method</i>
2.	Free Nicotine	74 FR 712/ TWT-00324	<i>Determination of Nicotine in Tobacco Products (CDC Method)</i>
3.	(a) <i>N</i> -nitrosonornicotine (b) 4-(<i>N</i> -nitrosomethylamino)-1-(3-pyridyl)-1-butanone	TWT-00333	<i>Determination of Tobacco Specific Nitrosamines in Tobacco Products by Liquid Chromatography-Tandem Mass Spectrometry</i>
4.	Benzo(a)pyrene	TWT-00335	<i>Determination of Selected Polycyclic Aromatic Hydrocarbons (PAHs) in Tobacco Products</i>
5.	(a) Formaldehyde (b) Acetaldehyde (c) Crotonaldehyde	TWT-00355	<i>Determination of Selected Carbonyls in Tobacco Products by Gas Chromatography/Mass Spectrometry</i>

8.4 ANALYTICAL METHOD REFERENCES AND SYNOPSES

8.4.1 MAINSTREAM CARBONYLS (HEALTH CANADA METHOD T-104)

8.4.1.1 REFERENCE(S)

Houlgate, P. R., Dhingra, K. S., Nash, J. S., and Evans, W. H. (1989): Determination of Formaldehyde and Acetaldehyde in Mainstream Cigarette Smoke by high-performance Liquid Chromatography; *Analyst* **114**, 355-360

Manning, D.L., Maskerinec, M.P., Jenkins, R.A., and Marshall, A.H.: High Performance Liquid Chromatographic Determinations of Selected Gas Phase Carbonyls in Tobacco Smoke; *Journal of Assoc of Anal. Chem.*, **66**, 8-12

Intorp, M., Steve Purkis, S., and Wagstaff, W. (2012): Determination of Carbonyl Compounds in Cigarette Mainstream Smoke. The CORESTA 2010 Collaborative Study and Recommended Method, Beiträge zur Tabakforschung International/Contributions to Tobacco Research, Volume 25, no. 2, 361-374.

Coresta Recommended Method No. 74. (2011): Determination of Carbonyl Compounds in Cigarette Mainstream Smoke by High Performance Liquid Chromatography (HPLC), CRM No. 74, 1-16.

8.4.1.2 METHOD SYNOPSIS

Two (2) conditioned cigarettes per replicate were smoked on 12 alternate ports of a standard 20-port linear smoking machine that had been fitted with traps with fritted impingers. The unfiltered mainstream tobacco smoke was scrubbed of volatile carbonyls by passing each puff through an impinger into a trap containing 80mL of an acidified solution of 2,4-dinitrophenylhydrazine in acetonitrile. An aliquot of the reacted DNPH-smoke extract was then syringe-filtered, diluted with 1% trizma base in aqueous acetonitrile. The extracts were subjected to reverse phase high performance liquid chromatography (HPLC) and the analytes of interest quantified using ultra-violet detection (365nm).



8.4.2 MAINSTREAM METALS (HEALTH CANADA METHOD T-109)

8.4.2.1 REFERENCE(S)

Environmental Carcinogens - Selected Methods of Analysis, Volume 8 - Some Metals: As, Be, Cd, Cr, Ni, Pb, Se, Zn. *IARC Scientific Publication No. 71*, 1986. pp 129-138

Perinelli, M.A. & Carugno, N. (1978) Determination of Trace Metals in Cigarette Smoke by Flameless Atomic Absorption Spectrometry, *Beitrage zur Tabakforschung International*, Band 9, Heft 4, Juli 1978. pp 214-217

Bell, Paul & Mulchi, Charles L. (1990) Heavy Metal Concentrations in Cigarette Blends, *Tobacco Science*, Vol. 34, 1990. pp 32-34.

NIOSH Method 7300, Elements (ICP), *NIOSH Manual of Analytical Methods*, Volume 2, Third Edition, 1984

Varian Analytical Methods for Graphite Tube Atomizers, Varian Australia Pty Ltd, Publication No. 85-100848-00 (1988).

Gawalco et al. (1997) Comparison of Closed-Vessel and Focused Open-Vessel Microwave Dissolution for Determination of Cadmium, Copper, Lead and Selenium in Wheat, Wheat Products, Corn Bran, and Rice Flour by Transverse-Heated Graphite Furnace Atomic Absorption Spectrometry, *Journal of AOAC International*, Vol. 80, No. 2, 1997. pp. 379-387.

Krivan V., Scheneider G., Baumann H., Reus U. (1994): Multi-element characterization of tobacco smoke condensate, *Fresenius J. Anal. Chem.* 348, 218-225.

Chang MJ, Naworal J, Walker K, Connell C (2003): Investigations on the direct introduction of cigarette smoke for trace elements analysis by inductively coupled plasma mass spectrometry, *Spectrochimica Acta*, B58, 1979-1996.

8.4.2.2 METHOD SYNOPSIS

Twenty (20) conditioned cigarettes were smoked per replicate for ISO smoking conditions, and ten (10) conditioned cigarettes were smoked per replicate for "HCl" smoking conditions, on a 20-port rotary smoking machine. An electrostatic precipitation generator was utilized to electrostatically precipitate the particulate matter onto a glass electrostatic precipitate (EP) tube. The total particulate matter (TPM) was extracted into 25mL methanol. The methanol extract was then evaporated using gentle heating while under a constant stream of filtered ultra high purity (UHP) nitrogen. The sample was then subjected to microwave digestion using a mixture of hydrochloric acid, nitric acid and hydrogen peroxide.

The gaseous phase metals were trapped by placing an impinger of a 10% v/v nitric acid solution between the EP tube and the puff drawing mechanism. The impinger solution was added to the same digestion vessel as the EP tube product and subjected to microwave digestion.

Aliquots of the digestates were then analyzed by inductively coupled argon plasma atomic emission spectroscopy (ICP-AES) for cadmium and inductively coupled plasma – mass spectrometry (ICP-MS) for arsenic. These methods used an ultrasonic nebulizer to enhance the sensitivity of each analyte. Quantification was achieved by interpolating the response of relevant calibration curves prepared from standard metal solutions of aqueous standards in the same acid concentration as samples to minimize matrix effects.



8.4.3 MAINSTREAM 'TAR', NICOTINE AND CARBON MONOXIDE (HEALTH CANADA METHOD T-115)

8.4.3.1 REFERENCE(S)

ISO 4387:2000 (Amendment 1:2008) Cigarettes – Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine

ISO 8454:2007 (Amendment 1:2009) Cigarettes – Determination of carbon monoxide in the vapour phase of cigarette smoke – NDIR method

ISO 10315:2013 Cigarettes – Determination of nicotine in smoke condensates – Gas-chromatographic method

ISO 10362-1:1999 Cigarettes – Determination of water in smoke condensates Part 1: Gas-chromatographic method

8.4.3.2 METHOD SYNOPSIS

Five (5) conditioned cigarettes were smoked per replicate for ISO smoking conditions and three (3) conditioned cigarettes were smoked per replicate for "HCl" smoking conditions using an automated 20-port linear smoking machine equipped with a CO analyzer, onto a conditioned, pre-weighed 44mm glass fibre filter disc (pad). The gas phase was collected in a Vapour Phase (VP) collection bag and then introduced into a Non-Dispersive Infra-Red analyzer (NDIR) and the % carbon monoxide (CO) determined. The pad was then re-weighed and the difference was the Total Particulate Matter (TPM). The pad was extracted with Isopropanol (IPA) containing the internal standards (trans-anethole for nicotine and methanol for water), and the extract analyzed for nicotine and water by gas chromatography (packed column) with flame ionization detector (FID) and thermal conductivity detector (TCD). The nicotine-free dry particulate matter (NFDPM or 'tar') value was determined by subtracting the water and nicotine from the TPM.

8.4.4 MAINSTREAM POLYNUCLEAR AROMATIC HYDROCARBONS (LABSTAT METHOD TMS-00120)

8.4.4.1 REFERENCE(S)

G. Gmeiner, G Stehlkik, H. Tausch (1997) Determination of seventeen polycyclic aromatic hydrocarbons in tobacco smoke condensate, J. of Chromatography A, 767 163-169



8.4.4.2 METHOD SYNOPSIS

Ten (10) conditioned cigarettes were smoked per replicate for ISO smoking conditions and five (5) conditioned cigarettes were smoked per replicate for "HCl" smoking conditions using a rotary smoking machine. The mainstream total particulate matter (TPM) was collected by passing the mainstream smoke through a conditioned, pre-weighed 92mm glass fiber filter disc (pad). The pad was spiked with internal standards (deuterated analogues) and extracted with 50mL (if TPM < 20 mg/cig) or 100mL (if TPM ≥ 20 mg/cig) of methanol. The methanol extract was filtered through a filter paper and a portion of filtered extract was diluted with water and passed through a C₁₈ cartridge for clean-up purposes. The PAH compounds adsorbed on the C₁₈ cartridge were eluted with cyclohexane. The cyclohexane extract was then analyzed by gas chromatography-mass spectrometry (GC/MS). The mass filter was operated under automated EI (electron impact) mode, using Selective Ion Monitoring (SIM) for quantification. The ions of interest (i.e. molecular ions and in some cases specific fragment ions) were mass-selected and used as quantifiers.

8.4.5 MAINSTREAM TOBACCO-SPECIFIC NITROSAMINES (LABSTAT METHOD TMS-00135)

8.4.5.1 REFERENCE(S)

Wu, W.; Ashley, D. L.; Watson, C. H. Anal. Chem. 2003, 75, 4827-4832.

Wagner, K. A.; Finkel, N. H.; Fossett, J. E.; Gillman, I. G. Anal. Chem. 2005, 77, 1001-1006.

Lee, J-M.; Shin, J-W.; Oh, I-H.; Lee U-C.; Rhee M-S. 2004 CORESTA Congress Kyoto. Paper SS20; full text available on CORESTA CD-ROM Vol. 22; abstract available on the Internet at http://www.coresta.org/Past_Abstracts/Kyoto2004-SmokeTech.pdf (accessed December 29, 2006).

Chwojdak, C. A.; Self, D. A.; Wheeler, H. R. A Collaborative, Harmonized LC-MS/MS Method for the Determination of Tobacco Specific Nitrosamines (TSNA) in Tobacco and Tobacco Related Materials. 61st Tobacco Science Research Conference, Charlotte, NC. USA. September 24, 2007.

NIH Guidelines for the Laboratory Use of Chemical Carcinogens; NIH Publication 81-2385, 1981.

Wu, J.; Joza, P.; Sharifi, M.; Rickert, W. S.; Lauterbach, J. H. Anal. Chem. 2008, 80, 1341-1345.

8.4.5.2 METHOD SYNOPSIS

Five (5) conditioned cigarettes were smoked per replicate for ISO smoking conditions and three (3) conditioned cigarettes were smoked per replicate for "HCl" smoking conditions using an automated 20-port linear smoking machine. The mainstream total particulate matter (TPM) was collected by passing the mainstream smoke through a conditioned, pre-weighed 44mm glass fiber filter disc (pad). The pad was spiked with deuterium labeled internal standard solution (containing NNN-d4 and NNK-d4) and then extracted in ammonium acetate solution. The extract was then filtered and subject to LC-MSMS analysis with positive electrospray ionization (ESI). Two mass transition pairs for each analyte can be used to assist analyte confirmation and quantification. The most intense pairs were used for quantification; the less intense transition pairs were used as qualifiers for further compound confirmation.



8.4.6 CONSTITUENT ALKALOIDS (HEALTH CANADA METHOD T-301)

8.4.6.1 REFERENCE(S)

Rapid Method for the Analysis of Tobacco Nicotine Alkaloids (1981) R.F. Severson, K.L., McDuffie, R.U. Arrendale, G.R. Gwynn, J.F. Chaplin, and A.W. Johnson. *J. Chromatog.* 211, 111-121.

8.4.6.2 METHOD SYNOPSIS

Two (2) grams of the laboratory composite was lyophilized for 48 hours and ground further using a bench-top grinder and sieved through a #40 mesh screen. Twenty five milligrams of the ground sample was extracted with 1.0mL of a methanolic KOH solution containing an internal standard (e.g. 4,4-dipyridyl dihydrochloride or 4,4-dipyridy hydrate) in an ultrasonic bath for 3 hours followed by 0.5 hours of shaking on a wrist action shaker. The mixture was then centrifuged at low speed to separate any tobacco solids from the solution. The supernatant was then transferred to an autosampler vial where it was analyzed by gas chromatography (GC). The alkaloids were analyzed on a CAM fused silica capillary column, which has a polyethylene glycol (PEG) stationary phase that has been specifically base deactivated for volatile amine analysis. Quantification was achieved using an internal standard calibration by comparing the thermionic specific detector (TSD) response of the analytes in the sample against a five-point calibration of alkaloids in the standards.

8.4.7 CONSTITUENT METALS (HEALTH CANADA METHOD T-306)

8.4.7.1 REFERENCE(S)

Jenkins, R.A. (1986) Occurrence of Selected Metals in Cigarette Tobaccos and Smoke. *IARC Scientific Publication* No.71, 1986. pp 129-138

Perinelli, M.A. & Carugno, N. (1978) Determination of Trace Metals in Cigarette Smoke by Flameless Atomic Absorption Spectrometry, *Beitrag zur Tabakforschung International*, Band 9, Heft 4, July 1978. pp 214-217

Westcott, D.T. & Spincer, D. (1974) The Cadmium, Nickel and Lead Content of Tobacco and Cigarette Smoke, *Beitrag zur Tabakforschung International*, Band 7, Heft 4, April 1974. pp 217-221.

Varian Instruments at Work: Rapid Determination of Mercury in Fish Tissue, a Rapid, Automated Technique for Routine Analysis, No. AA-60, May 1986.

Varian Instruments at Work: Automated Cold Vapor Determination of Mercury: EPA Stannous Chloride Methodology, No. AA-51, September 1985.

Gawalco Et Al. (1997). Comparison of Closed-Vessel and Focused Open-Vessel Microwave Dissolution for Determination of Cadmium, Copper, Lead and Selenium in Wheat, Wheat Products, Corn Bran, and Rice Flour by Transverse-Heated Graphite Furnace Atomic Absorption Spectrometry, *Journal of AOAC International*, Vol. 80, No. 2, 1997. pp. 379-387.

Pappas R.S., Stanfill S.B., Watson C.H. Asley D.L. (2008): *Analysis of Toxic Metals in Commercial Moist Snuff and Alaskan Iqmik*, *Journal of Analytical Toxicology*, 32, 281- 291.



8.4.7.2 METHOD SYNOPSIS

Four (4) grams of the laboratory composite was lyophilized for 48 hours. One gram of the ground, freeze-dried sample was placed into a microwave digestion vessel. The sample was then treated with a mixture of hydrochloric acid, nitric acid and hydrogen peroxide. The vessel was then sealed and placed into the microwave digester for dissolution. When digestion was complete, the vessel was removed from the digester, allowed to cool, and transferred to a volumetric flask where it was made to volume with Type I water.

Aliquots of the digestate were analyzed for cadmium (Cd) and arsenic (As) by inductively coupled argon plasma atomic emission spectroscopy (ICP-AES). This method used an ultrasonic nebulizer to enhance the sensitivity of each analyte. Quantification was achieved by interpolating the response of relevant calibration curves prepared from standard metal solutions of aqueous standards in the same acid concentration as samples to minimize matrix effects.

8.4.8 CONSTITUENT PH (HEALTH CANADA METHOD T-310)

8.4.8.1 REFERENCE(S)

US commercial brands of moist snuff, 1994. I. Assessment of nicotine, moisture, and pH, *Tobacco Control*, Vol. 4, 62-66, 1995

AOAC Official Methods of Analysis (1995), 943.02 pH of Flour, Potentiometric Method.

Instruction Manual, Fisher Accumet Model 915 pH Meter(b) (4), 1987

Protocol for the Analysis of Nicotine, Total Moisture, and pH in Smokeless Tobacco Products. Sections: I.F. Sample Preparation, and IV(A-E). CDC. 1997.

CRC Handbook of Chemistry & Physics 58th Edition 1977-78 CRC Press page D-133 "Buffer Solutions Operational Definitions of pH".

8.4.8.2 METHOD SYNOPSIS

Smokeless tobacco test/control article from freshly opened sources was ground to obtain a particle size $\leq 4\text{mm}$, as described in section 8.2 of this report. Two (2) grams of ground sample was extracted as soon as possible with 20mL of degassed Type I water on a mechanical shaker for 30 minutes. The sample was placed in the dark and allowed to stand an additional hour. The supernatant was decanted into a 10mL disposable polystyrene beaker, where the pH was then measured using a combination electrode and potentiometer, standardized by buffer solutions.

8.4.9 MOISTURE (AOAC 966.02/LABSTAT METHOD TWT-00300)

8.4.9.1 REFERENCE(S)

D-1193 American Society for Testing and Materials (ASTM): Standard Specifications for Reagent Water



AOAC Official Method 966.02 "Moisture in Tobacco" 16th Edition 5th Revision 1999 AOAC International, Gaithersbury, Maryland

8.4.9.2 METHOD SYNOPSIS

Smokeless tobacco test/control article from freshly opened sources was ground to obtain a particle size $\leq 4\text{mm}$, as described in section 8.2 of this report. Five (5) grams of ground sample was dried, as soon as possible, uncovered in an oven ($99 \pm 0.5^\circ\text{C}$) for 3 hours and moisture was determined gravimetrically in accordance with AOAC 966.02.

8.4.10 ESTIMATED FREE NICOTINE (74 FR 712/LABSTAT METHOD TWT-00324)

8.4.10.1 REFERENCE(S)

T-402:1999 Health Canada Test Method: Preparation of Cigarettes, Cigarette Tobacco, Cigars, Kreteks, Bidis, Packaged Leaf Tobacco, Pipe Tobacco and Smokeless Tobacco for Testing

January 7, 2009, Federal Register (74 FR 712)

15 U.S.C. 4403 of the Comprehensive Smokeless Tobacco Health Education Act of 1986 (CSTHEA).

8.4.10.2 CALCULATION SUMMARY

An estimate of free (un-ionized) nicotine was calculated based on the constituent nicotine and pH of each smokeless tobacco test/control article using the Henderson-Hasselbalch equation (1).

(1) $\text{pH} = \text{pKa} + \log\left(\frac{B}{\text{BH}^+}\right)$, where pKa is the acid dissociation constant ($\text{pKa} = 8.02$), B is the free nicotine and BH^+ is the ionized nicotine.

Isolating for the ratio $\left(\frac{B}{\text{BH}^+}\right)$, equation (1) becomes (2) $10^{(\text{pH}-\text{pKa})} = \frac{B}{\text{BH}^+}$

Equation (3) was used to calculate the free nicotine estimate from the analytically determined constituent nicotine (in units of mg/g smokeless tobacco 'dry weight' or mg/pouch 'as is').

$$(3) \% \text{ Free Nicotine} = \frac{\frac{B}{\text{BH}^+} \times 100}{\frac{B}{\text{BH}^+} + 1}$$

$$\text{thus, (4) Total Free Nicotine} = \frac{\text{Constituent Nicotine} \times \% \text{ Free Nicotine}}{100}$$



8.4.11 CONSTITUENT TOBACCO-SPECIFIC NITROSAMINES (LABSTAT METHOD TWT-00333)

8.4.11.1 REFERENCE(S)

Wu, W.; Ashley, D. L.; Watson, C. H. *Anal. Chem.* **2003**, *75*, 4827-4832.

Wagner, K. A.; Finkel, N. H.; Fossett, J. E.; Gillman, I. G. *Anal. Chem.* **2005**, *77*, 1001-1006.

Lee, J-M.; Shin, J-W.; Oh, I-H.; Lee U-C.; Rhee M-S. **2004** CORESTA Congress Kyoto. Paper SS20; full text available on CORESTA CD-ROM Vol. 22; abstract available on the Internet at http://www.coresta.org/Past_Abstacts/Kyoto2004-SmokeTech.pdf (accessed December 29, **2006**).

Chwojdak, C. A.; Self, D. A.; Wheeler, H. R. *A Collaborative, Harmonized LC-MS/MS Method for the Determination of Tobacco Specific Nitrosamines (TSNA) in Tobacco and Tobacco Related Materials*. 61st Tobacco Science Research Conference, Charlotte, NC. USA. September 24, **2007**.

NIH Guidelines for the Laboratory Use of Chemical Carcinogens; NIH Publication 81-2385, **1981**.

Wu, J.; Joza, P.; Sharifi, M.; Rickert, W. S.; Lauterbach, J. H. *Anal. Chem.* **2008**, *80*, 1341-1345.

Nicotine and Total Reducing Sugars", Technicon Industrial Systems Corp., 1025 Busch Parkway, Buffalo Grove, Illinois, USA 60090 – 4516

8.4.11.2 METHOD SYNOPSIS

A certain amount of an internal standard solution containing deuterium labeled TSNA analogues (i.e. NNN-d₄ and NNK-d₄) was spiked onto 0.75g of the laboratory composite. The TSNA compounds were extracted into an aqueous ammonium acetate solution on a wrist action shaker. The extract was then filtered and subject to LC-MSMS analysis using positive electrospray ionization (ESI). Two mass transition pairs for each analyte can be used to assist analyte confirmation and quantification. The most intensive pairs were used for quantification; the less intense transition pairs were used as qualifiers for further compound confirmation.

8.4.12 CONSTITUENT POLYNUCLEAR AROMATIC HYDROCARBONS (LABSTAT METHOD TWT-00335)

8.4.12.1 REFERENCE(S)

AOAC Method 973.30, Polycyclic Aromatic Hydrocarbons and Benzo[a]pyrene in Food - Spectrophotometric Method, AOAC 1995, Vol. II, 48.1.01. 1176-1178.

Tomkins, B.A.; Jenkins, R.A.; Griest, W.H.; Reagen, R.R. Liquid Chromatographic Determination of Benzo[a]pyrene in Total Particulate Matter of Cigarette Smoke. *J. Assoc. Off. Anal. Chem.*, Vol. 68, 5, (1985) 935-940.

Gmeiner G.; Stehlík G.; Tausch H. Determination of Seventeen Polycyclic Aromatic Hydrocarbons in Tobacco Smoke Condensate. *J. Chromatogr. A*, 767 (1997) 163-169.



8.4.12.2 METHOD SYNOPSIS

This method consists of the extraction of the loose saponified sample and the purification stages consisting of liquid/liquid partitioning and solid phase extraction (SPE) with NH_2 /silica gel two phases cartridge prior to GC/MS analysis. Sample size (and subsequent reagent volumes) was adjusted to meet the analytical requirements of the sample as well as the availability of the sample and equipment.

Selected polycyclic aromatic hydrocarbons (PAHs) were extracted from a sample of laboratory composite after a saponification with an alcoholic KOH solution and partitioning into iso-octane. The iso-octane extract was evaporated to 2 to 3mL on a rotary evaporator. The concentrated sample was then passed through a 3mL NH_2 (200mg) plus silica gel (750mg) cartridge by using the RapidTrace SPE Workstation and PAHs retained were eluted with 13mL hexane. The solvent was evaporated to 2mL in the Turbovap evaporator and transferred to an autosampler vial for GC/MS analysis. The mass detector was operated under Selected Ion Monitoring (SIM) mode.

8.4.13 CONSTITUENT CARBONYLS (LABSTAT METHOD TWT-00355)

8.4.13.1 REFERENCE(S)

J.W. Munch et al. (1998). Determination of Carbonyl Compounds in Drinking Water by Pentafluorobenzylhydroxylamine Derivatization and Capillary Gas Chromatography with Electron Capture Detection. U.S.A. EPA Method 556.

M.L. Bao, F. Pantani, O. Griffini, D. Burrini, D. Santianni, K. Barbieri (1998). Determination of Carbonyl Compounds in Water by Derivatization-Solid-Phase Microextraction and Gas Chromatographic Analysis. *J. Chromatogr. A* 809: 75-87.

8.4.13.2 METHOD SYNOPSIS

Target carbonyls were extracted from one (1) gram of the laboratory composite, spiked with a mixture of internal standard solution containing D_4 -acetaldehyde and D_5 -MEK and then diluted with 10mL of Type I water. After centrifugation to separate the aqueous extract from the solid matter, 5mL of the aqueous extract was mixed with 100 μL of PFBHA (20mg/mL) aqueous solution and placed in the dark for derivatization for 2 hours. After derivatization with PFBHA, 4 drops of concentrated H_2SO_4 was added and the PFBHA derivatives of the target carbonyls were extracted with 2mL of hexane. The hexane extract was washed with 5mL of 0.1N H_2SO_4 and then transferred to an autosampler vial for GC/MS analysis. The PFBHA derivatives of the target carbonyls were separated on a 30m x 0.25mm i.d. x 0.25 μm film thickness RTX-5ms column and quantified by a mass spectrometer using selected ion monitoring (SIM) mode.

8.5 METHOD MODIFICATIONS

Test methods were followed as written (see Section 8.4), with the following exception:



8.5.1 CONSTITUENT METALS (T-306)

The method modification consisted of replacing ICP-AES used to analyze the arsenic contents of smokeless tobacco test/control articles with inductively coupled argon plasma – mass spectrometry (ICP-MS). The instrument was equipped with the collision reaction interface (CRI) with H₂ and He as collisional/reactive gases and a(b) (4)

9 STATISTICAL ANALYSIS AND ACCEPTANCE OF ANALYTICAL RESULTS

9.1 ACCEPTANCE OF CONTROL ARTICLE RESULTS AND IDENTIFICATION OF OUTLIERS

9.1.1 OVERVIEW

In most cases, data are evaluated in two stages. The first consists of a comparison of results for control articles with certified values or Labstat's historical in-house database. If the control article results are acceptable and there are three (3) or more replicates per test/control article, then the data obtained from the analysis of test/control articles is subjected to an outlier test. Values identified as outliers are then scrutinized for an assignable cause and, if one is found, the value is removed from the data set. If none is found, the value is assumed to be a legitimate member of the data set and included in all subsequent calculations.

9.1.2 EVALUATION OF RESULTS FROM CONTROL ARTICLES

Data obtained using control article(s) are deemed acceptable if the data are in keeping with Labstat's database for the control article and the specific method of analysis⁵. This is not a simple problem since there is no "yes" or "no" answer but rather one which is phrased in terms of probabilities. In the approach taken by Labstat, the measure of random variation in the procedure is taken to be the sample standard deviation (S.D. or "s").

To evaluate control article data accuracy, a "Z score" statistic is determined as follows:

$$Z - score = \frac{\text{Sample Average} - \text{Historical Average}}{\text{Historical Standard Deviation}}$$

To evaluate control article data precision, a "Chi-square" statistic is determined as follows:

$$Chi - square = (\text{Sample Size} - 1) \times \frac{(\text{Sample Standard Deviation})^2}{(\text{Historical Standard Deviation})^2}$$

P values are generated and the cutoff point (α) chosen in such a way as to minimize the chance of rejecting data which are legitimate members of the set (i.e. type 1 error). Thus, in cases where the number of observed control article replicates is greater than 5, z-score p-values are generated from the Standard Normal distribution. When the number of observed control article replicates is less than or equal to 5, z-score p-values are generated from a t-distribution.

⁵ A minimum of 30 results is normally required for the purpose of this comparison.



The standard deviation rather than the standard error for the mean has been chosen when determining the 'Z score'. This allows for both study-to-study variation, which is inherent in the historical data, and the 'normal' run-to-run variability, which is present in the data set. The cut-off point for P values is a matter of judgment and has been set at 0.005 assuming the probability of falsely rejecting a data point is 0.5% (i.e. $\alpha=0.01$) or less for a two tailed test.

In instances where expected values are not known, a decision to accept the data is made based on observed levels of precision in comparison with that determined for similar analyses. Also, there are circumstances where the expected value may be "Below Detection Limits". In this case the decision to accept or reject the data is made upon the ability of the method to recover the analyte of interest either in the form of a laboratory fortified blank (LFB) or laboratory fortified matrix (LFM). Acceptable recoveries are close to 100%, but vary depending on the analyte.

9.1.3 IDENTIFICATION OF OUTLIERS⁶

9.1.3.1 DEFINITION

An outlying observation, or "outlier," is one that appears to deviate markedly from other members of the test article in which it occurs. In this case, there are two alternatives:

1. An outlying observation may be merely an extreme manifestation of the random variability inherent in the data. If this is true, the value is retained and processed in the same manner as the other observations in the sample.
2. The observation may be the result of gross deviation from prescribed experimental procedure or an error in calculating or recording the numerical value. In such cases, an investigation must be carried out. When the experimenter is clearly aware that a gross deviation from prescribed experimental procedure has taken place, the resultant observation is discarded (assignable cause) without recourse to a statistical test. A statistical test may always be used to support a judgment that a physical reason does actually exist for an outlier, or the statistical criterion may be used routinely as a basis to initiate action to find a physical cause.

9.1.3.2 STATISTICAL CRITERIA

There are a number of criteria for testing outliers. In all of these, the doubtful observation is included in the calculation of the numerical value of a sample criterion (or statistic) that is then compared with a critical value. The critical value is that which would be exceeded by chance with some specified (small) probability on the assumption that all the observations did indeed constitute a random sample from a single parent population, distribution or universe. The specified small probability is called the "significance level" and can be thought of as the risk of erroneously rejecting a good observation. A level of significance of 0.02 has been chosen in conjunction with the statistical test and tables described in ASTM E178-08⁷.

⁶ The term "outlier" has been defined in International Standard ISO 3534-1 (1993) entitled "Statistics - Vocabulary and symbols - Part 1: Probability and general statistical terms" section 2.64

⁷ ASTM Designation: E178-08 "Standard Practice for Dealing with Outlying Observations"

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Significant departures from the expected results (i.e. "outliers") are viewed seriously, requiring an investigation for an assignable cause. This is a documented procedure that, at a minimum, consists of the following steps:

1. Review of all associated calculations to ensure that arithmetic errors have not been made
2. Review of linearity range for any standards
3. Assessment of instrument status
4. Review of reagents, columns, standards etc. to ensure that contamination or decomposition has not occurred
5. Review of test article preparation and handling procedures as they relate to the result in question

If the outlier is present in the analyte data and an assignable cause is found, the test result is removed from the data set but recorded in the quality control section of the laboratory's record of test results for that study. The analysis must then be repeated. If the outlier is present in the ancillary⁸ data and an assignable cause is found, the test result is not removed, but rather the outlying observation is replaced by the designation "AC" (Assignable Cause). If this investigation fails to determine an assignable cause, the test result is assumed to be a legitimate member of the data set and is included in all subsequent calculations.

9.2 STATISTICAL ANALYSIS METHODOLOGY

The statistical analysis methodologies applied to the M195-GLP data was followed as described in Appendix A sections 1, 2 and 3 of the study protocol (Appendix I).

9.2.1 IDENTIFICATION AND TREATMENT OF EXCEPTIONAL VALUES

All analytical results obtained for the test articles were scrutinized for exceptional values using a Dixon-style test statistic (Barnett & Lewis, 1978) to determine the proportion of the range (e.g. 7 replicate observations) that an outlier accounts for. Calculated as the larger of: $\frac{(X_n - X_{n-1})}{(X_n - X_1)}$ and $\frac{(X_2 - X_1)}{(X_n - X_1)}$, where values are ordered smallest to largest $X_1, X_2, \dots, X_{n-1}, X_n$. A value (either X_1 or X_n) with a test statistic greater than 0.95 is identified as exceptional and further statistical analysis are conducted both with and without inclusion of exceptional values.

9.2.2 COMPARISON OF SMOKELESS TOBACCO PRODUCT MEANS

Means for each HPHC (nicotine, free nicotine, benzo[a]pyrene, formaldehyde, acetaldehyde, crotonaldehyde, NNN, NNK, cadmium and arsenic) determined in Camel snus smokeless tobacco test articles were compared to the average of those determined for the five (5) other Swedish snus smokeless tobacco test articles from the Swedish and United States markets ("General Original Snus (US)", "General Original Snus (Sweden)", "Catch Dry Eucalyptus Mini Snus (Sweden)", "Granit Snus (Sweden)", "Skruf Stark Snus (Sweden)") on the basis of the variation among their means using a mixed model.

⁸ Data, which are related, but not normally required as part of the reporting process (e.g. puff counts, TPM, cigarette weights etc.). Outliers in the analyte data that have an assignable cause are always repeated.



Using the statistical analysis software SAS, the classification variable GROUP was assigned the value zero (0) for each of the Camel snus test articles while the five other Swedish snus test articles were all assigned the value one (1). The variable TA_ID was assigned a unique value (i.e. the test article ID) for each test article and the code below was used to perform the comparison of the first Camel snus test article "Camel Snus Frost" (i.e. TA_ID = 1400892) for the constituent NIC_D (nicotine [mg/g smokeless tobacco 'dry weight']) from data set "camelswedish", with the "Type 3 Tests of Fixed Effects" p-value for GROUP providing the comparison between the means of the first Camel snus test article and the set of all other Swedish snus test articles.

```
PROC MIXED DATA=camelswedish;  
CLASS GROUP TA_ID;  
MODEL NIC_D = GROUP / DDFM=KR;  
RANDOM TA_ID(GROUP);  
WHERE GROUP =1 OR TA_ID = 1400892;  
RUN;
```

The above code was repeated for all 6 Camel snus test articles (TA_ID = {1400892, 1400893, 1400894, 1400895, 1400896, 1400931}) and all 28 HPHC constituent results expressed on a mass/g smokeless tobacco 'dry weight', mass/pouch 'as is' and mass/mg nicotine basis (see section 11.5 Table 11 of this report for the list of all 28 constituent codes used in the analysis).

In the output produced by SAS, p-values < 0.05 indicate that the mean result for the Camel snus test article is significantly different from that of the set of other Swedish snus test articles.

9.2.2.1 VALUES BELOW LIMITS OF QUANTIFICATION OR DETECTION

If the constituent results being compared include values below the limit of quantification, products with less than four (4) quantifiable values were excluded from the analysis. If the Camel snus test article itself is excluded on this basis, "No Comparison Made" was reported.

9.2.3 COMPARISON OF CAMEL SNUS MEANS WITH MARKET LEADING CIGARETTE MEANS

Means for each HPHC determined in Camel snus test articles were compared to cigarette smoke yields of each of the two market leading cigarettes "Marlboro Gold King Size (KS) Box" and "Newport King Size Menthol Box" (separately for ISO and Health Canada Intense regimens) on a mass/pouch 'as is' (for smokeless tobacco test articles) or mass/cigarette (for cigarette test articles) basis and on a mass/mg nicotine basis using a two-sided Wilcoxon rank sum test with average ranks assigned to ties.

Using the statistical analysis software SAS, the variable TA_ID was assigned a unique value (i.e. the test article ID) for each Camel snus test article and cigarette test article (with added regimen suffix "ISO" or "HCl") and the code below was used to perform the Wilcoxon rank sum test between one Camel snus test article and one leading market cigarette under a single smoking regimen for the constituent FORM_N (formaldehyde [µg/mg nicotine]) from data set "camelmarket".

```
PROC NPARIWAY WILCOXON CORRECT=no DATA=camelmarket;  
CLASS TA_ID;  
VAR FORM_N;  
EXACT WILCOXON;  
RUN ;
```


The above code was repeated comparing each of the 6 Camel snus test articles (TA_ID = {1400892, 1400893, 1400894, 1400895, 1400896, 1400931}) to each of 4 combinations of market leading cigarette and smoking regimen (TA_ID = {1400888ISO, 1400889ISO, 1400888HCL, 1400889HCL}) for each of 17 HPHC constituent results expressed on a mass/pouch 'as is' or mass/cigarette basis and a mass/mg nicotine basis (see section 11.5 Table 11 of this report for the list of all 17 constituent codes used in the analysis).

Using the output produced by SAS, the Bonferroni method for p-value adjustment was applied and p-values less than $0.05 \div 2 = 0.025$ were required for statistical significance to control the family-wise error rate for each Camel snus test article at $p=0.05$ for each cigarette smoking regimen.

9.2.3.1 VALUES BELOW LIMITS OF QUANTIFICATION OR DETECTION

This procedure allows comparisons of smokeless tobacco test articles and cigarette test articles for endpoints with values below the limit of quantification.

10 MATERIALS

Table 8: List of Materials

Method	Chemical	Supplier	Lot #	Purity (%) or Concentration (/mL)	Expiry Date
T-104	Formaldehyde-DNPH	(b) (4)	LB96665V	99.9	30-Nov-15
	Acetaldehyde-DNPH		LB88636V	99.7	01-Nov-14
	Crotonaldehyde-DNPH		LB97335V	97.8	31-Dec-15
T-109/T-306	Arsenic		F2-AS02083	1001 µg/mL	01-Dec-14
	Cadmium		G2-CD02043	1004 µg/mL	01-Sep-14
T-115	IPA		310806	99.9% & 0.1% H ₂ O	N/A
	Methanol		52195	99.9%	18-Sep-14
	Trans-anethole		BCBF9375V	99.7%	21-Oct-14
	Nicotine		BCBK5694V	99.80%	17-Feb-14
TMS-00120/ TWT-00335	Benzo(a)pyrene-d12		LB92873V	98.50%	08-May-14
	Benzo(a)pyrene		LB98282	2028 µg/mL	29-Oct-14
	Dichloromethane		53195	99.94%	N/A
	Methanol		53179	>99.99%	N/A
	Cyclohexane		52298	>99.99%	N/A
			53249	>99.99%	N/A
TMS-00135/ TWT-00333	NNN		CSL 90-289-72-20	96.0%	28-Feb-14
	NNN-d4		E222P15	96.0%	28-Feb-14
	NNK		PSU-111210	99.00%	28-Feb-14
	NNK-d4		P156P18	98.2%	28-Feb-14

N/A – not applicable

Table 8: List of Materials (Continued)

Method	Chemical	Supplier	Lot #	Purity (%) or Concentration (/mL)	Expiry Date
T-301	Nicotine (primary standard)	(b) (4)	BCBK5694V	99.8%	16-Mar-14
	4,4'-Dipyridyl Hydrate (internal standard)		MKBG8356V	99.90%	27-May-14
	Potassium Hydroxide (reagent)		UD21AZEMS	86.88%	04-Feb-14
	Methanol (solvent)		53262	>99.99%	28-Jan-15
T-310	pH=4		4303522	pH=3.99	12-Jun-14
	pH=10		2306623	pH=10.010	25-Feb-14
	pH=7		132164	pH=7.00	12-Jun-14
TWT-00355	D5-2-Butanone (MEK)		P-6257	98.60%	07-Feb-14
	D4-Acetaldehyde		X182AP2	97.81%	14-Aug-15
	Formaldehyde		SHBB0282	36.70%	28-Oct-14
	Acetaldehyde		STBD5394V	99.97%	28-Oct-14
	Crotonaldehyde		BCBC2412V	99.70%	08-Nov-13

Table 9: List of Key Equipment

Method	Key Equipment/ Instrument Used	LAB No. or Serial No. (S/N)
T-104	Pump - Varian ProStar 230	LAB 0230
	Autosampler - Dynamax Automatic Sample Injection Model AI-200	LAB 0400
	Detector - UV-Vis Variable Wave Length; Varian 9050	LAB 0398
	Gastight Syringes	ID #189, #263, #264, #265
T-109/T-306	ICP-MS 800	LAB 1004
	ICP-MS 800: Autosampler SPS-3	LAB 1614
	ICP-MS 800: Ultrasonic Nebulizer	LAB 0916
	ICP-MS 800: Membrane Desolvator	LAB 1683
	ICP-OES 720	LAB 1857
	ICP-OES 720: Autosampler ASX-520	LAB 1858
	ICP-OES 720: Ultrasonic Nebulizer	LAB 1684
	ICP-MS 820	LAB 1630
	ICP-MS 820: Autosampler SPS-3	LAB 1005
	Pipettors	S/N 2786298, 437971, 1187196



Table 9: List of Key Equipment (Continued)

Method	Key Equipment/ Instrument Used	LAB No./ Serial No.
T-115	TNC GC #4 (GC6890N) Auto Sampler Tower 7683 Series GC Auto Sampler Tray 7683 Series GC Gastight Syringes	LAB 0812 LAB 0971 LAB 1621 ID #70, #247
TMS-00120/ TWT-00335	GC7890A Injection Tower Autosampler Detector, 5975C inert XL MSD with Triple-Axis Gastight Syringes	LAB 1690 LAB 1691 LAB 1692 LAB 1693 ID #65, #188, #245, #247, #243
TMS-00135/ TWT-00333	LC/MS/MS #4 Triple Quad 5500 Binary Pump Autosampler Column Compartment Gas Generator Degasser Thermostat Gastight Syringes	LAB 1654 LAB 1655 LAB 1657 LAB 1658 LAB 1659 LAB 1660 LAB 1689 ID #45, #47, #249, #286
T-301	GC #6 (Varian CP-3800) Gastight Syringes	LAB 1312/LAB 1313 ID #069, #226, #228, #278
T-310	pH Meter: Fisher Accumet AR15 Electrode: Thermo Orion model 9103BNWP	LAB 0852 S/N RW1-15034
TWT-00355	GC CP3800 Autosampler Detector, TQ MS Gastight Syringes Pipettors	LAB 1210 LAB 1211 LAB 1212 ID #73, #78 S/N 4095164, 279116A, 4095164, 412864
TWT-00300	Oven: FREAS Mechanical Convection 654	LAB 1201

11 RESULTS

11.1 DATA CALCULATIONS

All results reported on a “per cig” or “per gram” basis have been calculated from the solution concentrations (or measured values), accounting for any dilution or concentration steps used in the analytical processes.



11.1.1 MAINSTREAM CIGARETTE SMOKE YIELDS

Mainstream smoke yields for each cigarette test article are reported for both smoking regimes (ISO and HCI) on (a) a mass/cigarette basis and (b) a mass/mg nicotine basis.

For each cigarette test article, yields expressed in units of mass/mg nicotine are calculated as mass/cigarette divided by the mean of individual nicotine yield values (mg nicotine/cigarette). Nicotine/mg nicotine was not calculated for the cigarette test articles.

11.1.2 SMOKELESS TOBACCO CONSTITUENT RESULTS

The constituent results for each smokeless tobacco test article are reported on (a) a mass/g smokeless tobacco 'dry weight'⁹ basis, (b) a mass/pouch 'as is' basis and (c) a mass/mg nicotine basis.

For constituent NNN and NNK by TWT-00333, benzo[a]pyrene by TWT-00335, formaldehyde, acetaldehyde and crotonaldehyde by TWT-00355, the smokeless tobacco test article results expressed in units of mass/g smokeless tobacco 'dry weight' are calculated as mass/g smokeless tobacco 'as is' divided by (1-moisture proportion), where "moisture proportion" is the decimal equivalent of the mean of individual moisture values expressed in percent units.

Values expressed in units of mass/pouch 'as is' are calculated as mass/g smokeless tobacco 'dry weight' x (1-moisture proportion) x mass/pouch 'as is', where "mass/pouch 'as is'" is the mean weight, in grams, of individual pouches (tobacco + pouch material) 'as is'.

Values expressed in units of mass/mg nicotine are calculated as mass/g smokeless tobacco 'dry weight' basis divided by the mean of individual constituent nicotine values (mg nicotine/g smokeless tobacco 'dry weight'). Nicotine/mg nicotine and free nicotine/mg nicotine were not calculated for smokeless tobacco test articles.

11.2 SUMMARY OF TEST ARTICLE RESULTS

Mainstream cigarette smoke yield summary statistics (mean, standard deviation, number of replicates and 95% confidence interval for the mean) for each cigarette test article except "3R4F Kentucky Reference" are included in Appendix C1. Mainstream smoke HPHC results are summarized on each reporting basis outlined in section 11.1.1 of this report. Summary statistics for measurements, on a mass/cigarette basis, of puff count, TPM, water, 'tar' (particulate matter, nicotine and water free (PMNWF)) and carbon monoxide are also included.

Constituent result summary statistics (mean, standard deviation, number of replicates and 95% confidence interval for the mean) for each smokeless tobacco test article except "CRP1 Reference Snus" are included in Appendices C2 and C3, with Appendix C2 containing summary statistics for all six (6) Camel snus test articles ("Camel Snus Frost", "Camel Snus Frost Large", "Camel Snus Mellow", "Camel Snus Mint", "Camel Snus Robust", "Camel Snus Winterchill") and Appendix C3 containing summary statistics for the five (5) other Swedish snus test articles ("General Original Snus (US)", "General Original Snus (Sweden)", "Catch Dry Eucalyptus Mini Snus (Sweden)",

⁹"Smokeless tobacco 'dry weight'" includes both pouch material and tobacco, composited as described in section 8.2 of this report.



"Granit Snus (Sweden)", "Skruf Stark Snus (Sweden)"). Constituent HPHC results are summarized on each reporting basis outlined in section 11.1.2 of this report. Summary statistics for measurements, on an 'as is' basis, of test article weight (g/pouch 'as is'), percent (%) moisture and pH are also included.

The summary data in each of appendices C1, C2 and C3 are organized as described in Appendix A sections 5.3.1 to 5.3.3 of the study protocol (see Appendix I of this report).

11.2.1 VALUES BELOW LIMITS OF QUANTIFICATION OR DETECTION

For results that were not quantifiable (e.g. arsenic yield of cigarette test articles, crotonaldehyde content of smokeless tobacco test articles), the standard deviation and 95% confidence interval for the mean were reported as "not available" (NA).

11.3 INSTRUMENT RUN SUMMARY AND REPRESENTATIVE CHROMATOGRAMS

Summary tables of analytical runs with the run identification, date and time of injection, analytical method identification, instrument identification, analyst identification and applicable notes are provided in Appendix F.

Representative chromatograms from randomly selected test articles representing five percent of the total number of test articles, control articles and calibration standards are also provided in Appendix F.

11.4 CALIBRATION CURVE SUMMARY

Calibration curve data summary with the standard identification, date and time of injection, analytical method identification, instrument identification, analyst identification, standard concentration, instrument response, coefficient of correlation, slope, intercept and applicable notes, as well as the calibration curves are provided in Appendix G.

11.5 TEST ARTICLE RESULTS (DATA LISTINGS)

Individual results for all analytical methods applied to the mainstream cigarette smoke of each cigarette test article are included in Appendix D1. Mainstream smoke HPHC results are provided for each reporting basis outlined in section 11.1.1 of this report. Measurements, on a mass/cigarette basis, of individual cigarette weights, puff counts and TPM determined for each analytical method are also included, along with water, 'tar' (particulate matter, nicotine and water free (PMNWF)) and carbon monoxide.

Individual results for all analytical methods applied to each smokeless tobacco test article are included in Appendix D2. Constituent HPHC results are provided each reporting basis outlined in section 11.1.2 of this report. Individual measurements, on an 'as is' basis of test article weight (g/pouch 'as is'), percent (%) moisture and pH are also provided.

The analytical data in each of Appendices D1 and D2 are organized as described in Appendix A section 5.4 of the study protocol (see Appendix I of this report).

The individual test article results are also presented in the form of SAS data sets (on the CD-ROM accompanying this report): "cigarette_test_articles" containing all cigarette test article results in Appendix D1 and "smokeless_tobacco_test_articles" containing all smokeless tobacco test article results in Appendix D2. The names of the variables in the SAS data sets and their corresponding descriptions can be found in Tables 10 and 11 below.



Table 10: SAS Data Set "cigarette_test_articles" Variable Names and Corresponding Descriptions

Column Number	Variable Name	Variable Description
1	TA_ID	Test Article ID
2	TA_DESC	Test Article Description
3	REP	Replicate Number
4	S_W_TNC	Tar, Nicotine and Carbon Monoxide: ISO Cigarette Weight [mg/cig]
5	S_W_PAH	Polynuclear Aromatic Hydrocarbons: ISO Cigarette Weight [mg/cig]
6	S_W_CAR	Carbonyls: ISO Cigarette Weight [mg/cig]
7	S_W_TSNA	Tobacco Specific Nitrosamines: ISO Cigarette Weight [mg/cig]
8	S_W_MET	Metals: ISO Cigarette Weight [mg/cig]
9	S_P_TNC	Tar, Nicotine and Carbon Monoxide: ISO Puff Count [per cig]
10	S_P_PAH	Polynuclear Aromatic Hydrocarbons: ISO Puff Count [per cig]
11	S_P_CAR	Carbonyls: ISO Puff Count [per cig]
12	S_P_TSNA	Tobacco Specific Nitrosamines: ISO Puff Count [per cig]
13	S_P_MET	Metals: ISO Puff Count [per cig]
14	S_T_TNC	Tar, Nicotine and Carbon Monoxide: ISO TPM [mg/cig]
15	S_T_PAH	Polynuclear Aromatic Hydrocarbons: ISO TPM [mg/cig]
16	S_T_TSNA	Tobacco Specific Nitrosamines: ISO TPM [mg/cig]
17	S_T_MET	Metals: ISO TPM [mg/cig]
18	H_W_TNC	Tar, Nicotine and Carbon Monoxide: HCl Cigarette Weight [mg/cig]
19	H_W_PAH	Polynuclear Aromatic Hydrocarbons: HCl Cigarette Weight [mg/cig]
20	H_W_CAR	Carbonyls: HCl Cigarette Weight [mg/cig]
21	H_W_TSNA	Tobacco Specific Nitrosamines: HCl Cigarette Weight [mg/cig]
22	H_W_MET	Metals: HCl Cigarette Weight [mg/cig]
23	H_P_TNC	Tar, Nicotine and Carbon Monoxide: HCl Puff Count [per cig]
24	H_P_PAH	Polynuclear Aromatic Hydrocarbons: HCl Puff Count [per cig]
25	H_P_CAR	Carbonyls: HCl Puff Count [per cig]
26	H_P_TSNA	Tobacco Specific Nitrosamines: HCl Puff Count [per cig]
27	H_P_MET	Metals: HCl Puff Count [per cig]
28	H_T_TNC	Tar, Nicotine and Carbon Monoxide: HCl TPM [mg/cig]
29	H_T_PAH	Polynuclear Aromatic Hydrocarbons: HCl TPM [mg/cig]
30	H_T_TSNA	Tobacco Specific Nitrosamines: HCl TPM [mg/cig]
31	H_T_MET	Metals: HCl TPM [mg/cig]
32	S_CO_U	ISO Carbon Monoxide [mg/cig]
33	S_H2O_U	ISO Water [mg/cig]
34	S_NIC_U	ISO Nicotine [mg/cig]
35	S_TAR_U	ISO Tar [mg/cig]
36	S_BAP_U	ISO Benzo(a)pyrene [ng/cig]
37	S_FORM_U	ISO Formaldehyde [µg/cig]

Table 10 (Continued)

Column Number	Variable Name	Variable Description
38	S_ACET_U	ISO Acetaldehyde [µg/cig]
39	S_CROT_U	ISO Crotonaldehyde [µg/cig]
40	S_NNN_U	ISO NNN [ng/cig]
41	S_NNK_U	ISO NNK [ng/cig]
42	S_CD_U	ISO Cadmium [ng/cig]
43	S_AS_U	ISO Arsenic [ng/cig]
44	H_CO_U	HCl Carbon Monoxide [mg/cig]
45	H_H2O_U	HCl Water [mg/cig]
46	H_NIC_U	HCl Nicotine [mg/cig]
47	H_TAR_U	HCl Tar [mg/cig]
48	H_BAP_U	HCl Benzo(a)pyrene [ng/cig]
49	H_FORM_U	HCl Formaldehyde [µg/cig]
50	H_ACET_U	HCl Acetaldehyde [µg/cig]
51	H_CROT_U	HCl Crotonaldehyde [µg/cig]
52	H_NNN_U	HCl NNN [ng/cig]
53	H_NNK_U	HCl NNK [ng/cig]
54	H_CD_U	HCl Cadmium [ng/cig]
55	H_AS_U	HCl Arsenic [ng/cig]
56	S_CO_N	ISO Carbon Monoxide [mg/mg nicotine]
57	S_H2O_N	ISO Water [mg/mg nicotine]
58	S_TAR_N	ISO Tar [mg/mg nicotine]
59	S_BAP_N	ISO Benzo(a)pyrene [ng/mg nicotine]
60	S_FORM_N	ISO Formaldehyde [µg/mg nicotine]
61	S_ACET_N	ISO Acetaldehyde [µg/mg nicotine]
62	S_CROT_N	ISO Crotonaldehyde [µg/mg nicotine]
63	S_NNN_N	ISO NNN [ng/mg nicotine]
64	S_NNK_N	ISO NNK [ng/mg nicotine]
65	S_CD_N	ISO Cadmium [ng/mg nicotine]
66	S_AS_N	ISO Arsenic [ng/mg nicotine]
67	H_CO_N	HCl Carbon Monoxide [mg/mg nicotine]
68	H_H2O_N	HCl Water [mg/mg nicotine]
69	H_TAR_N	HCl Tar [mg/mg nicotine]
70	H_BAP_N	HCl Benzo(a)pyrene [ng/mg nicotine]
71	H_FORM_N	HCl Formaldehyde [µg/mg nicotine]
72	H_ACET_N	HCl Acetaldehyde [µg/mg nicotine]
73	H_CROT_N	HCl Crotonaldehyde [µg/mg nicotine]
74	H_NNN_N	HCl NNN [ng/mg nicotine]

Table 10 (Continued)

Column Number	Variable Name	Variable Description
75	H_NNK_N	HCl NNK [ng/mg nicotine]
76	H_CD_N	HCl Cadmium [ng/mg nicotine]
77	H_AS_N	HCl Arsenic [ng/mg nicotine]

Table 11: SAS Data Set "smokeless_tobacco_test_articles" Variable Names and Corresponding Descriptions

Column Number	Variable Name	Variable Description
1	TA_ID	Test Article ID
2	TA_DESC	Test Article Description
3	REP	Replicate Number
4	PH	pH Result
5	MOISTURE	Moisture [%]
6	POUCH_WT	Weight of Tobacco plus Tobacco Pouch [g/pouch 'as is']
7	NIC_D	Nicotine [mg/g smokeless tobacco 'dry weight']
8	FNIC_D	Free Nicotine [mg/g smokeless tobacco 'dry weight']
9	BAP_D	Benzo(a)pyrene [ng/g smokeless tobacco 'dry weight']
10	FORM_D	Formaldehyde [µg/g smokeless tobacco 'dry weight']
11	ACET_D	Acetaldehyde [µg/g smokeless tobacco 'dry weight']
12	CROT_D	Crotonaldehyde [µg/g smokeless tobacco 'dry weight']
13	NNN_D	NNN [ng/g smokeless tobacco 'dry weight']
14	NNK_D	NNK [ng/g smokeless tobacco 'dry weight']
15	CD_D	Cadmium [ng/g smokeless tobacco 'dry weight']
16	AS_D	Arsenic [ng/g smokeless tobacco 'dry weight']
17	NIC_U	Nicotine [mg/pouch 'as is']
18	FNIC_U	Free Nicotine [mg/pouch 'as is']
19	BAP_U	Benzo(a)pyrene [ng/pouch 'as is']
20	FORM_U	Formaldehyde [µg/pouch 'as is']
21	ACET_U	Acetaldehyde [µg/pouch 'as is']
22	CROT_U	Crotonaldehyde [µg/pouch 'as is']
23	NNN_U	NNN [ng/pouch 'as is']
24	NNK_U	NNK [ng/pouch 'as is']
25	CD_U	Cadmium [ng/pouch 'as is']
26	AS_U	Arsenic [ng/pouch 'as is']
27	BAP_N	Benzo(a)pyrene [ng/mg nicotine]
28	FORM_N	Formaldehyde [µg/mg nicotine]
29	ACET_N	Acetaldehyde [µg/mg nicotine]

Table 11 (Continued)

Column Number	Variable Name	Variable Description
30	CROT_N	Crotonaldehyde [µg/mg nicotine]
31	NNN_N	NNN [ng/mg nicotine]
32	NNK_N	NNK [ng/mg nicotine]
33	CD_N	Cadmium [ng/mg nicotine]
34	AS_N	Arsenic [ng/mg nicotine]

11.5.1 VALUES BELOW LIMITS OF QUANTIFICATION OR DETECTION

Table 12: Limits of Detection (LOD)¹⁰ and Limits of Quantification (LOQ)¹¹ Determined for Selected Mainstream Constituents of Tobacco Smoke

Method Number	Analyte	Units	Mainstream ISO		Mainstream HCl	
			LOD	LOQ	LOD	LOQ
	Selected Carbonyls					
T-104	Formaldehyde	µg/cig	0.361	1.20	0.361	1.20
T-104	Acetaldehyde	µg/cig	0.973	3.24	0.973	3.24
T-104	Crotonaldehyde	µg/cig	0.988	3.29	0.988	3.29
	Toxic Trace Metals					
T-109	Cadmium	ng/cig	0.477	1.59	0.953	3.18
T-109	Arsenic	ng/cig	1.12	3.75	2.25	7.49
	Tar, Nicotine, and Carbon Monoxide					
T-115	Tar	mg/cig	0.071	0.237	0.119	0.395
T-115	Nicotine	mg/cig	0.001	0.004	0.002	0.007
T-115	CO	mg/cig	0.067	0.223	0.159	0.530
T-115	Water	mg/cig	0.038	0.128	0.064	0.213
T-115	TPM	mg/cig	0.060	0.200	0.100	0.333
	PAH					
TMS-00120	Benzo(a)pyrene	ng/cig	0.133	0.443	0.266	0.885
	Tobacco Specific Nitrosamines					
TMS-00135	Nitrosornicotine (NNN)	ng/cig	0.098	0.328	0.197	0.656
TMS-00135	4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK)	ng/cig	0.151	0.502	0.301	1.00

¹⁰ The limit of detection for a particular analyte is a statistically defined decision point that, with a specified probability, measured results falling at or above this point are interpreted to indicate an analyte concentration greater than zero within the sample.

¹¹ The limit of quantification for a particular analyte is another statistically defined decision point that results falling at or above this point can be assigned a statistically significant numerical value with an associated level of precision.

Table 13: Limits of Detection (LOD) and Limits of Quantification (LOQ) Determined for Selected Constituents of Smokeless Tobacco

Method Number	Constituent	Units ¹²	Smokeless Tobacco	
			LOD	LOQ
T-301	Alkaloids			
	Nicotine	µg/g 'dry weight'	75.0	250
T-306	Toxic Trace Metals			
	Cadmium	ng/g 'dry weight'	43.3	144
T-306	Arsenic	ng/g 'dry weight'	17.6	58.8
TWT-00333	Tobacco Specific Nitrosamines			
	Nitrosonornicotine (NNN)	ng/g 'as is'	0.985	3.28
TWT-00333	4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK)	ng/g 'as is'	1.51	5.02
TWT-00335	PAH			
	Benzo(a)pyrene	ng/g 'as is'	0.066	0.221
TWT-00355	Selected Carbonyls			
	Formaldehyde	µg/g 'as is'	0.044	0.145
	Acetaldehyde	µg/g 'as is'	0.031	0.102
TWT-00355	Crotonaldehyde	µg/g 'as is'	0.036	0.120

Analytical results determined to be below the limit of detection (LOD) or the limit of quantification (LOQ), as defined in the tables above, were replaced with values equal to half the LOQ. All individual results that were treated in this manner are identified in each of Appendices D1 and D2.

11.6 CONTROL ARTICLE RESULTS

The control article results and the results of the statistical tests referred to in section 9.1.2 of this report are included in Appendix E. Analytical results for control articles determined to be below the limit of quantification are expressed as described in section 11.5.1 of this report.

11.7 FIGURES

Figures showing the replicate smokeless tobacco test article results (exception: "CRP1 Reference Snus") for each HPHC analysis on a mass/g smokeless tobacco 'dry weight' basis, mass/pouch 'as is' basis and mass/mg nicotine basis were created for each of the six (6) Camel snus test articles, with each figure showing the results of an individual Camel snus test article along with those of the other Swedish snus test articles.

¹² The above limits referred to samples processed as required by the referenced method (i.e. either 'as is' or 'dried'). Corrections for the moisture content, determined independently, were applied where applicable in order to convert the 'as is' limits to limits expressed on a 'dry weight' basis.



Additional figures showing the replicate smokeless tobacco test article and cigarette test article results (exceptions: "CRP1 Reference Snus" and "3R4F Kentucky Reference") for each HPHC analysis on a mass/pouch 'as is' or mass/cigarette basis and mass/mg nicotine basis were created for each of the six (6) Camel snus test articles, with each figure showing the results of an individual Camel snus test article along with those of the other Swedish snus test articles and the cigarette test articles (ISO and HCI smoking regimes).

The figures are included in Appendix J of this report and are created as described in Appendix A section 5.2 of the study protocol (see Appendix I of this report).

11.8 STATISTICAL ANALYSIS

11.8.1 IDENTIFICATION AND TREATMENT OF EXCEPTIONAL VALUES

All analytical results were scrutinized for exceptional values as per section 9.2.1 of this report and no exceptional values were identified in any of the analytical data results for any of the test articles.

11.8.2 COMPARISON OF SMOKELESS TOBACCO PRODUCT MEANS

Results for the comparison of means for each HPHC determined in Camel snus test articles to that of the collection of other Swedish snus test articles are included in Appendix K1. Since the crotonaldehyde contents for all smokeless tobacco test articles were below the limit of detection, the results are reported as "No Comparison Made. Results below detection limits." P-values determined to be significant, as defined in section 9.2.2 of this report, are identified in bold red text in the appendix table.

11.8.2.1 SAS OUTPUT FILES

The SAS output for the comparison of smokeless tobacco test article means are included as supplemental pdf files on the accompanying CD-ROM, labeled *M195-GLP_camelswedish_X.pdf*, where *X* is the Camel snus test article ID.

11.8.3 COMPARISON OF CAMEL SNUS MEANS WITH MARKET LEADING CIGARETTE MEANS

Results for the comparison of means for each HPHC determined in Camel snus test articles to cigarette smoke yields from each of the two market leading cigarette test articles are included in Appendix K2. P-values determined to be significant following Bonferroni adjustment, as defined in section 9.2.3 of this report, are identified in bold red text in the appendix table.

11.8.3.1 SAS OUTPUT FILES

The SAS output for the comparison of smokeless tobacco and cigarette test article means are included as supplemental pdf files on the accompanying CD-ROM, labeled *M195-GLP_camelmarket_X.pdf*, where *X* is the Camel snus test article ID.



12 CONCLUSION

The control article results for the variables of interest were acceptable as defined in section 9.1.2. The test article results for the variables of interest were acceptable as defined in section 9.1.3. Consequently it is reasonable to assume that the values determined for the test articles are reflective of the characteristics of the products as received at Labstat International ULC and tested as described in the Experimental Design and Methods section of this report.

13 RETENTION OF RECORDS AND MATERIALS

13.1 RETENTION OF RECORDS

All study records, including the original study protocol, raw data, laboratory notebooks or certified copies thereof, the original signed final report and any final report amendments will be retained by Labstat for ten years from the date of the final study report.

13.2 RETENTION OF MATERIALS

The Sponsor has arranged for storage of test articles with (b) (4). Therefore, upon Labstat's receipt of a written acceptance of the final study report by the Sponsor, all sealed/unsealed containers of test articles will be disposed of as per Labstat International ULC's procedures.

14 LIST OF KEY PERSONNEL INVOLVED IN THE STUDY

Andrew Masters – Study Director and VP Science and Systems Development

Wendy Wagstaff – Senior Statistician

Peter Joza – Director of Science and Technology

Lucian Hirtie – Director of Operations and Regulatory Affairs

Neha Bhavsar – Laboratory Administrator / Study Administrative Assistant

Elena Hluscu – Product Preparation Supervisor

Jodi Boufford – Production and Project Coordinator, Chemistry

Victoria Baillie – GLP Archivist

15 ACCREDITATION AND RECOGNITION

15.1 ACCREDITATION SCOPE (REFER TO APPENDIX A)

Labstat International ULC has been accredited by the Standards Council of Canada to International Standard ISO/IEC 17025:2005 "General requirements for the competence of testing and calibration laboratories" with a scope¹³ that includes all of the mandated tobacco-related Health Canada methods (see Tobacco Reporting

¹³ Labstat's accreditation scope is available on Standards Council of Canada website at:
http://palcan.scc.ca/specs/pdf/180_e.pdf



Regulations dated 26 June 2000, Canada Gazette Part II, Vol. 134, No. 15 Schedules 1, 2 and 3 pages 1780 – 1785).
The testing included in this report is within the scope of this accreditation, unless otherwise noted in Section 8.3.



Accredited LAB 368
(SCC Accreditation & Design Mark is an Official Mark of the Standards Council of Canada, used under license)

15.2 GLP RECOGNITION

The Good Laboratory Practice (GLP) Monitoring Authority in Canada, the Standards Council of Canada, has recognized Labstat International ULC as having the required infrastructure and SOPs in place to enable the completion of GLP compliant studies. Full GLP recognition will be granted when Labstat International ULC has demonstrated the ability to integrate these elements into the completion of a compliant study in accordance with the OECD Principles of GLP.

15.3 INTERNATIONAL RECOGNITION OF TESTS

Labstat International ULC's accrediting organization, Standards Council of Canada, is one of a number of such member bodies participating in a global mutual recognition agreement (MRA), known as the ILAC (International Laboratory Accreditation Cooperation) Arrangement. The arrangement, effective January 31, 2001, requires acceptance of technical test data from accredited laboratories by member bodies in numerous international economies.

As Canada is a member country of the Organization for Economic Co-operation and Development (OECD), the Canadian GLP Monitoring Authority, Standards Council of Canada, uses the OECD Principles of Good Laboratory Practice as the basis for ensuring high quality and reliable test data for non-clinical health and safety studies. The Principles of GLP were formally recommended for use in member countries by the OECD Council in 1981. They were set out as an integral part of the Council Decision on Mutual Acceptance of Data (MAD), which states that *data generated in an OECD Member country in accordance with OECD Test Guidelines, and OECD Principles of Good Laboratory Practice shall be accepted in other member countries for purposes of assessment and other uses relating to the protection of man and the environment [C(81)30(Final)]*.¹⁴

¹⁴ Refer to OECD Series on Principles of Good Laboratory Practice and Compliance Monitoring Number 1: *OECD Principles on Good Laboratory Practice (as revised in 1997)*



16 QUALITY ASSURANCE STATEMENT

The M195-GLP study protocol, raw data, and study report were inspected as per Labstat's internal procedures. A study-based (in-process) vertical inspection was also performed by Labstat's Quality Systems department.

Table 14: Quality Assurance Inspection Reports

Inspection Type	Inspection ID	Summary of Phases Inspected	Dates of Inspection	Date Reported to Study Director and Test Facility Management
M195-GLP_Study Protocol	IAR-919-14	<ul style="list-style-type: none"> Study initiation Test article receipt Test article log in Test article preparation 	Jan 21, 2014	Jan 21, 2014
M195-GLP In Process	IAR-921-14	<ul style="list-style-type: none"> Sample generation Sample preparation Sample analysis Data reduction Data review Data reporting 	Jan 23-Feb 13, 2014	Feb 13, 2014
M195-GLP Final Study Report	IAR-930-14	<ul style="list-style-type: none"> Draft Study Report Final Study Report 	March 25 & April 23, 2014	March 25 & April 23, 2014

To the best of my knowledge and in accordance with the inspections findings, the study protocol, test methods and Standard Operating Procedures were followed as written except for the deviations documented in the raw data. The study report contains the required elements and is a true reflection of the raw data.

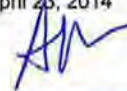
Dated: April 23, 2014



Jeffrey Proksch

Quality Systems Auditor

Labstat International ULC
262 Manitou Drive
Kitchener, ON, Canada, N2C 1L3
Phone: (519) 748-5409
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17 STUDY DIRECTOR COMPLIANCE STATEMENT

The M195-GLP study protocol (refer to Appendix I), Labstat International ULC test methods and Standard Operating Procedures were followed as written except for the deviations documented in the raw data. The applicable GLP requirements were met except for the GLP deviations listed in Appendix B. All deviations were reviewed by me and I have concluded, to the best of my abilities, that they did not affect the quality or integrity of the study results.

This study was conducted in compliance with the applicable requirements of 21 CFR Part 58 (Code of Federal Regulations, Food and Drug Administration) Good Laboratory Practices for Nonclinical Laboratory Studies, as amended on May 21st, 2002, within the context of the study protocol.

This report and accompanying study data has been reviewed by me and is certified, to the best of my knowledge, to be a true and accurate description of the procedures, study protocol and test methods used to arrive at the data that accompany this report.

Dated: April 23, 2014



Andrew Masters, Ph.D.

Study Director

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18 APPENDICES

Appendix A, Scope of Accreditation

Appendix B, GLP Deviations

Appendix C1, Summary of Cigarette Test Article Results

Appendix C2, Summary of Camel Snus Test Article Results

Appendix C3, Summary of Other Swedish Snus Test Article Results

Appendix D1, Cigarette Test Article Results (Data Listings)

Appendix D2, Smokeless Tobacco Test Article Results (Data Listings)

Appendix E, Control Article Results

Appendix F, Instrument Run Summaries and Representative Chromatograms

Appendix G, Calibration Curve Data

Appendix H, Test Article Characterization

Appendix I, Study Protocol

Appendix J, Figures

Appendix K1, Statistical Analysis Results - Camel Snus vs. Other Swedish Snus

Appendix K2, Statistical Analysis Results - Camel Snus vs. Market Leading Cigarettes

Appendix A

Scope of Accreditation

Study Identifier: M195-GLP

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Study Report – Appendix A Scope of Accreditation



Standards Council of Canada
Conseil canadien des normes

200-270, rue Albert St.
Ottawa, ON (Canada)
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Canada

Tel: +1 613 238 3222
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E-mail: Contact@scs.ca
Internet: <http://www.scs.ca>

SCOPE OF ACCREDITATION

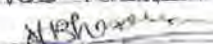
LABSTAT INTERNATIONAL ULC
262/270/280/300 Manitou Drive
Kitchener, ON
N2C 1L3

Accredited Laboratory No. 368
(Conforms with requirements of CAN-P-4E (ISO/IEC 17025:2005))

CONTACT: Mrs. Violeta Vidican
TEL: +1 519 748 5409 ext.339
FAX: +1 519 748 1654
EMAIL: vvidican@labstat.com
URL: www.labstat.com

CLIENTS SERVED: All interested parties
FIELDS OF TESTING: Biological, Chemical/Physical
ISSUED ON: 2013-08-29
VALID TO: 2016-01-22

CERTIFICATION

Name: Neha Bhavsar
Signature: 
Date: Mar 31/14

Remarque: La présente portée d'accréditation existe également en français, sous la forme d'un document distinct.

Note: This scope of accreditation is also available in French as a separately issued document.

ANIMAL AND PLANTS (AGRICULTURE)

Agricultural products: (except food and chemicals)

Tobacco

(1. Health Canada Tobacco Reporting Regulations Official Methods - Chemistry)

T-101 Determination of Ammonia in Mainstream Tobacco Smoke
T-102 Determination of 1- and 2- Aminonaphthalene and 3- and 4- Aminobiphenyl in Mainstream Tobacco Smoke

Study Identifier: M195-GLP

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**Study Report – Appendix A
Scope of Accreditation**

Standards Council of Canada Accredited Laboratory No. 368

T-103	Determination of Benzo[a]pyrene in Mainstream Tobacco Smoke
T-104	Determination of Selected Carbonyls in Mainstream Tobacco Smoke
T-105	Determination of Eugenol in Mainstream Tobacco Smoke
T-106	Determination of Filter Efficiency in Mainstream Tobacco Smoke
T-107	Determination of Hydrogen Cyanide in Mainstream Tobacco Smoke
T-108	Determination of Mercury in Mainstream Tobacco Smoke
T-109	Determination of Ni, Pb, Cd, Cr, As and Se in Mainstream Tobacco Smoke
T-110	Determination of Oxides of Nitrogen in Mainstream Tobacco Smoke
T-111	Determination of Nitrosamines in Mainstream Tobacco Smoke
T-112	Determination of Pyridine, Quinoline and Styrene in Mainstream Tobacco Smoke
T-113	Determination of Mainstream Tobacco Smoke pH
T-114	Determination of Phenolic Compounds in Mainstream Tobacco Smoke
T-115	Determination of "Tar", Nicotine and Carbon Monoxide in Mainstream Tobacco Smoke
T-116	Determination of 1,3- Butadiene, Isoprene, Acrylonitrile, Benzene and Toluene in Mainstream Tobacco Smoke
T-201	Determination of Ammonia in Sidestream Tobacco Smoke
T-202	Determination of 1- and 2- Aminonaphthalene and 3- and 4- Aminobiphenyl in Sidestream Tobacco Smoke
T-203	Determination of Benzo[a]pyrene in Sidestream Tobacco Smoke
T-203A	Determination of Benzo[a]pyrene in Sidestream Tobacco Smoke (GC/MS)
T-204	Determination of Selected Carbonyls in Sidestream Tobacco Smoke
T-205	Determination of Hydrogen Cyanide in Sidestream Tobacco Smoke
T-206	Determination of Mercury in Sidestream Tobacco Smoke
T-207	Determination of Toxic Trace Metals in Sidestream Smoke
T-208	Determination of Oxides of Nitrogen in Sidestream Tobacco Smoke
T-209	Determination of Nitrosamines in Sidestream Tobacco Smoke
T-210	Determination of Pyridine and Quinoline in Sidestream Tobacco Smoke
T-211	Determination of Phenolic Compounds in Sidestream Tobacco Smoke
T-212	Determination of Tar and Nicotine in Sidestream Tobacco Smoke
T-213	Determination of 1,3-Butadiene, Isoprene, Acrylonitrile, Benzene, Toluene and Styrene in Sidestream Tobacco Smoke
T-214	Determination of Carbon Monoxide (CO) in Sidestream Tobacco Smoke
T-301	Determination of Alkaloids in Whole Tobacco

The approved and most recent version of this document can be viewed on the SCC website at <http://palcan.scc.ca/SpecsSearch/CLSearchForm.do>

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NLS

Study Identifier: M195-GLP

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**Study Report – Appendix A
Scope of Accreditation**

Standards Council of Canada Accredited Laboratory No. 368

T-302	Determination of Ammonia in Whole Tobacco
T-304	Determination of Humectants in Whole Tobacco
T-306	Determination of Ni, Pb, Cd, Cr, As, Se and Hg in Whole Tobacco
T-307	Determination of Benzo[a]pyrene in Whole Tobacco
T-308	Determination of Nitrate from Whole Tobacco
T-309	Determination of Nitrosamines in Whole Tobacco
T-310	Determination of Whole Tobacco pH
T-311	Determination of Triacetin in Whole Tobacco
T-312	Determination of Sodium Propionate in Whole Tobacco
T-313	Determination of Sorbic Acid in Whole Tobacco
T-314	Determination of Eugenol in Whole Tobacco
T-401	Preparation of Cigarettes from Packaged Leaf Tobacco for Testing
T-402	Preparation of Cigarettes, Cigarette Tobacco, Cigars, Kreteks, Bidis, Packaged Leaf Tobacco, Pipe Tobacco and Smokeless Tobacco for Testing

(2. Health Canada Tobacco Reporting Regulations Official Methods - Toxicology)

T-501	Bacterial Reverse Mutation Assay for Mainstream Tobacco Smoke
T-502	Neutral Red Uptake Assay for Mainstream Tobacco Smoke
T-503	In Vitro Micronucleus Assay for Mainstream Tobacco Smoke

(3. Other Official Methods)

AOAC 963.05	Chlorides in Tobacco
AOAC 966.02	Moisture in Tobacco
ASTM E2187	Standard Test Method for Measuring the Ignition Strength of Cigarettes
ISO 10315	Cigarettes - Determination of nicotine in smoke condensates gas-chromatographic method
ISO 10362-1	Cigarettes - Determination of water in smoke condensates - Part 1: Gas-chromatographic method
ISO 15592-2	Fine-cut tobacco and smoking articles made from it - Methods of sampling, conditioning and analysis-Part 2: Atmosphere for conditioning and testing
ISO 15592-3	Fine-cut tobacco and smoking articles made from it - Methods of sampling, conditioning and analysis-Part 3: Determination of total particulate matter of smoking articles using a routine analytical smoking machine, preparation for the determination of water and nicotine, and calculation of nicotine-free dry particulate matter
ISO 3308	Routine analytical cigarette-smoking machine - Definitions and standard conditions
ISO 3402	Tobacco and tobacco products - Atmosphere for conditioning and testing
ISO 4387	Cigarettes - Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine
ISO 6488	

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**Study Report – Appendix A
Scope of Accreditation**

Standards Council of Canada Accredited Laboratory No. 368

	Tobacco and tobacco products - Determination of water content - Karl Fischer method
ISO 6565	Tobacco and tobacco products - Draw resistance of cigarettes and pressure drop of filter rods - Standard conditions and measurement
ISO 8454	Cigarettes - Determination of carbon monoxide in the vapour phase of cigarette smoke - NDIR method
ISO 9512	Cigarettes-Determination of ventilation-Definitions and measurement principles

(4.Other Methods: Chemistry)

TMS-00109 Appendices F and G	Determination of Copper (Cu) and Molybdenum (Mo) in Mainstream Tobacco Smoke by ICP-AES (modified T-109) and Determination of Titanium (Ti), Copper (Cu), Beryllium (Be), Cobalt (Co) and Molybdenum (Mo) in Mainstream Tobacco Smoke by ICP-MS (modified T-109)
TMS-00112 Appendices D, E and F	Determination of Vinylpyridines: 2-vinylpyridine, 3-vinylpyridine and 4-vinylpyridine in Mainstream Tobacco Smoke (modified T-112), Determination of Benzo(b)fur in Mainstream Tobacco Smoke (modified T-112) and Determination of Nitrobenzene in Mainstream Tobacco Smoke (modified T-112)
TMS-00115a Appendix D	Cigarettes - Determination of Nicotine, Water, Propylene Glycol, Menthol, Diethylene Glycol, Triacetin and Glycerol in Smoke Condensates-Gas-Chromatographic Method (modified T-115)
TMS-00118	Determination of Volatile Nitrosamines in Mainstream Tobacco Smoke
TMS-00120	Determination of Selected Polynuclear Aromatic Hydrocarbons (PAHs) in Mainstream Tobacco Smoke
TMS-00124	Determination of Vinyl Chloride, Ethylene Oxide, 1,3-butadiene, Propylene Oxide, Isoprene, Acrylonitrile, Nitromethane, Benzene, Furan, Vinyl Acetate, Toluene, Styrene, Ethylbenzene and Acetamide in Mainstream Tobacco Smoke (Expanded List)
TMS-00125	Determination of Volatile Nitrosamines in Mainstream Tobacco Smoke (Expanded List)
TMS-00126	Determination of 2-nitropropane in Mainstream Tobacco Smoke
TMS-00127	Determination of Selected Polynuclear Aromatic Hydrocarbons (PAHs) And Aza-Arenes in the Particulate Phase of Mainstream Tobacco Smoke
TMS-00128	Determination of Aromatic Amines in Mainstream Tobacco Smoke (Expanded list: Aniline, o-toluidine, m-toluidine, p-toluidine, o-anisidine, 2,6-dimethylaniline, 2,5-dimethylaniline, 1- and 2-aminonaphthalene, 3- and 4-aminobiphenyl and Benzidine)
TMS-00132	Determination of Gas Phase and Particulate Phase Free Radicals in Mainstream Tobacco Smoke
TMS-00133	Determination of Selected Heterocyclic Aromatic Amines (HAAs) in Mainstream Tobacco Smoke
TMS-00135	Determination of Tobacco Specific Nitrosamines in Mainstream Tobacco Smoke by Liquid Chromatography-Tandem Mass

Study Identifier: M195-GLP

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**Study Report – Appendix A
Scope of Accreditation**

Standards Council of Canada Accredited Laboratory No. 368

	Spectrometry
TMS-00137	Determination of Acetamide and Acrylamide in Mainstream Tobacco Smoke
TMS-00138	Determination of Free-Base Nicotine in Particulate Phase Mainstream Tobacco Smoke
TMS-00139	Determination of Phenolic Compounds in Mainstream Tobacco Smoke by a Modified High Performance Liquid Chromatography Method
TMS-00140	Determination of Yield In Use (YIU): Part Filter Analysis Methodology
TMS-00143	Determination of Caffeic Acid in Mainstream Tobacco Smoke
TMS-00144	Determination of Volatile N-nitrosoalkanolamines in Mainstream Tobacco Smoke
TMS-00145	Determination of Ethyl Carbamate (Urethane) in Mainstream Tobacco Smoke
TMS-00146	Determination of Heterocyclic Aromatic Amines (HAAs) in Mainstream Tobacco Smoke by Liquid-Chromatography-Tandem Mass Spectrometry
TMS-00147	Determination of Hydrazine in Mainstream Tobacco Smoke
TSS-00219	Determination of Selected Polynuclear Aromatic Hydrocarbons (PAHs) in Sidestream Tobacco Smoke
TSS-00222	Determination of Sidestream Tobacco Smoke pH
TSS-00223	Determination of Tobacco Specific Nitrosamines in Sidestream Tobacco Smoke by Liquid-Chromatography-Tandem Mass Spectrometry
TSS-00225	Determination of Phenolic Compounds in Sidestream Tobacco Smoke by a Modified High Performance Liquid Chromatography Method
TWT-00303	Determination of Carbonyls in Tobacco Products
TWT-00304 Appendix D	Determination of Menthol in Tobacco and Other Components from Tobacco Products (modified T-304)
TWT-00306 Appendix F	Determination of Cobalt (Co) and Beryllium (Be) in Tobacco Products (modified T-306)
TWT-00320	Determination of 1- and 2- aminonaphthalene and 3- and 4-aminobiphenyl in Tobacco Products
TWT-00321	Determination of Nicotine Alkaloids And Reducing Sugars in Tobacco Products
TWT-00324	Determination of Nicotine in Tobacco Products (CDC method)
TWT-00332	Determination of Volatile Nitrosamines in Tobacco Products
TWT-00333	Determination of Tobacco Specific Nitrosamines in Tobacco Products by Liquid Chromatography-Tandem Mass Spectrometry
TWT-00335	Determination of Selected Polycyclic Aromatic Hydrocarbons (PAHs) in Tobacco Products
TWT-00336	Determination of Acrylamide in Tobacco Products by Liquid Chromatography - Tandem Mass Spectrometry
TWT-00337	Determination of 1,3-butadiene, Isoprene, Acrylonitrile, Benzene, Toluene and Styrene in Tobacco Products
TWT-00338	

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**Study Report – Appendix A
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	Determination of Nitrite (NO ₂) in Tobacco Products by Spectrophotometry (Enhanced)
TWT-00340	Determination of Phenolic Compounds in Tobacco Products
TWT-00341	Determination of Total Sugars in Tobacco Products
TWT-00343	Determination of N-nitrosodibenzylamine (NDBzA) in Tobacco Products
TWT-00344	Determination of Ethyl Carbamate (Urethane) in Tobacco Products
TWT-00345	Determination of Volatile N-nitrosoalkanolamines in Tobacco Products
TWT-00350	Determination of Aflatoxins in Tobacco Products by Liquid Chromatography-Tandem Mass Spectrometry
TWT-00351	Determination of Coumarin in Tobacco Products by Liquid Chromatography-Tandem Mass Spectrometry
TWT-00353	Determination of Volatile N-nitrosoalkanolamines (Hydroxynitrosamines) in Tobacco Products by Liquid Chromatography-Tandem Mass Spectrometry
TWT-00355	Determination of Selected Carbonyls in Tobacco Products by Gas Chromatography - Mass Spectrometry (GC-MS)

(5. Other Methods: Measures of Exposure)

TME-00001	Determination of Nicotine, Cotinine and Caffeine in Physiological Fluid Samples
TME-00002	Determination of Creatinine in Urine
TME-00003	Determination of 3-Hydroxycotinine in Physiological Fluid Samples
TME-00005	Determination of Nicotine and its Major Metabolites in Urine by Liquid Chromatography-Tandem Mass Spectrometry
TME-00006	Determination of S-phenylmercapturic Acid (S-PMA) in Urine by Liquid Chromatography-Tandem Mass Spectrometry
TME-00007	Determination of 8-hydroxy-2'-deoxyguanosine (8-OHdG) in Urine by Liquid Chromatography - Tandem Mass Spectrometry
TME-00008	Determination of 1-hydroxypyrene (1-HOP) in Urine by Liquid Chromatography - Tandem Mass Spectrometry
TME-00009	Determination of 4 (methyl nitrosamino)-1 (3 pyridyl) 1 butanol (NNAL) and its Glucuronides in Urine by Liquid Chromatography - Tandem Mass Spectrometry
TME-00010	Determination of 1,3-butadiene Urinary Metabolites by Liquid Chromatography-Tandem Mass Spectrometry
TME-00011	Determination of 3-hydroxypropylmercapturic acid (3-HPMA) in Urine by Liquid Chromatography-Tandem Mass Spectrometry
TME-00012	Determination of Selected Arylamines in Urine by Gas Chromatography - Mass Spectrometry (GC-MS)
TME-00013	Determination of Urinary TSNA's and NNK Metabolite by Liquid Chromatography - Tandem Mass Spectrometry
TME-00014	Determination of Hydroxymethyl-propyl Mercapturic Acid (HMPMA) in Urine by Liquid Chromatography-ESI- Tandem Mass Spectrometry



Study Identifier: M195-GLP

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**Study Report – Appendix A
Scope of Accreditation**

Standards Council of Canada Accredited Laboratory No. 269

TME-00015	Determination of Monohydroxy Metabolites of Polycyclic Aromatic Hydrocarbons in Urine by Liquid Chromatography-Tandem Mass Spectrometry
TME-00016	Determination of Nicotine and Nine Major Metabolites in Urine by Ultra-Performance Liquid Chromatography (UPLC)-Tandem Mass Spectrometry

(6. Other Methods: Toxicology)

TBA-00504	<i>In vitro</i> Sister Chromatid Exchange (SCE) Assay for Mainstream Tobacco Smoke
TBA-00505	Mouse Lymphoma Thymidine Kinase Gene Mutation Assay for Mainstream Tobacco Smoke
TME-00004	<i>Salmonella Typhimurium</i> Reverse Mutation Assay: Microsuspension Method For Testing Urine Mutagenicity

Notes:

AOAC: Association of Official Analytical Chemists
ASTM: American Society for Testing and Materials
CAN-P-4E (ISO/IEC 17025): General Requirements for the Competence of Testing and Calibration Laboratories (ISO/IEC 17025-2005)
CDC: Centers for Disease Control and Prevention
ISO: International Organization for Standardization
T: Health Canada Tobacco Reporting Regulations Official Methods
TBA: Labstat In-house Test Method, Biological Activity
TME: Labstat In-house Test Method, Measures of Exposure
TMS: Labstat In-house Test Method, Mainstream Tobacco Smoke
TSS: Labstat In-house Test Method, Sidestream Tobacco Smoke
TWT: Labstat In-house Test Method, Whole Tobacco

Chantal Guay, ing., P. Eng.
Vice President, Accreditation
Services

Date: 2013-08-29

Number of Scope Listings: 127
SCC 1003-15/420
Partner File #0
Partner: None



Appendix B

GLP Deviations



Appendix B - GLP Deviations

There were no deviations over the course of this study, that may have affected the quality or integrity of the data .

Appendix C1

Summary of Cigarette Test Article Results

M195-GLP Final Study Report

RJRT Study ID: 1061

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April 23, 2014

M195-GLP Appendix C1 Summary of Cigarette Test Article Results.xlsx 3303663
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Study Identifier: M195-GLP
 Study Report - Appendix C1
 Summary of Cigarette Test Article Results

Page 1 of 4

Summary Statistics for Cigarette Test Articles

Result	Unit	Statistic	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589
			ISO	ISO	HCI	HCI
Puff Count	[/cigarette]	Mean	7.9	7.3	8.9	9.0
		Std. Dev.	0.2	0.3	0.2	0.4
		N	7	7	7	7
		L. Limit (95% C.I.)	7.7	7.1	8.7	8.6
		U. Limit (95% C.I.)	8.1	7.6	9.1	9.3
TPM	[mg/cigarette]	Mean	12.4	18.3	48.3	53.5
		Std. Dev.	1.1	0.5	3.1	1.8
		N	7	7	7	7
		L. Limit (95% C.I.)	11.3	17.8	45.4	51.8
		U. Limit (95% C.I.)	13.4	18.8	51.2	55.1
Water	[mg/cigarette]	Mean	0.865	2.83	16.1	18.6
		Std. Dev.	0.085	0.28	1.5	1.4
		N	7	7	7	7
		L. Limit (95% C.I.)	0.787	2.57	14.8	17.3
		U. Limit (95% C.I.)	0.943	3.09	17.5	19.8
Tar	[mg/cigarette]	Mean	10.7	14.6	30.3	32.9
		Std. Dev.	1.0	0.3	1.7	1.0
		N	7	7	7	7
		L. Limit (95% C.I.)	9.8	14.3	28.7	32.0
		U. Limit (95% C.I.)	11.7	14.9	31.9	33.9
Carbon Monoxide	[mg/cigarette]	Mean	11.1	16.9	29.0	30.2
		Std. Dev.	0.6	1.6	1.5	1.1
		N	7	7	7	7
		L. Limit (95% C.I.)	10.5	15.4	27.6	29.2
		U. Limit (95% C.I.)	11.6	18.4	30.3	31.2
Nicotine	[mg/cigarette]	Mean	0.756	0.872	1.88	1.94
		Std. Dev.	0.026	0.045	0.06	0.05
		N	7	7	7	7
		L. Limit (95% C.I.)	0.731	0.830	1.83	1.89
		U. Limit (95% C.I.)	0.780	0.913	1.94	1.99
Benzo(a)pyrene	[ng/cigarette]	Mean	7.71	10.5	14.1	17.6
		Std. Dev.	0.32	0.3	0.6	2.2
		N	7	7	7	7
		L. Limit (95% C.I.)	7.41	10.2	13.6	15.6
		U. Limit (95% C.I.)	8.01	10.8	14.7	19.6

Study Report prepared by Labstat International ULC

Sheet: Cigarette Summary

M195-GLP Final Study Report
RJRT Study ID: 1061

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 April 23, 2014

M195-GLP_Appendix C1_Summary of Cigarette Test Article Results.xlsx_3303663
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Study Identifier: M195-GLP
Study Report - Appendix C1
Summary of Cigarette Test Article Results

Page 2 of 4

Summary Statistics for Cigarette Test Articles

Result	Unit	Statistic	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589
			ISO	ISO	HCI	HCI
Formaldehyde	[µg/cigarette]	Mean	25.2	37.9	77.9	99.7
		Std. Dev.	3.2	3.5	8.0	7.7
		N	7	7	7	7
		L. Limit (95% C.I.)	22.3	34.7	70.5	92.5
		U. Limit (95% C.I.)	28.2	41.2	85.3	106.8
Acetaldehyde	[µg/cigarette]	Mean	532	944	1384	1686
		Std. Dev.	58	59	74	53
		N	7	7	7	7
		L. Limit (95% C.I.)	478	889	1315	1637
		U. Limit (95% C.I.)	585	999	1452	1735
Crotonaldehyde	[µg/cigarette]	Mean	9.73	22.2	44.7	55.4
		Std. Dev.	1.40	2.8	2.9	3.0
		N	7	7	7	7
		L. Limit (95% C.I.)	8.44	19.6	42.0	52.6
		U. Limit (95% C.I.)	11.03	24.8	47.4	58.2
NNN	[ng/cigarette]	Mean	112	130	241	248
		Std. Dev.	10	6	15	9
		N	7	7	7	7
		L. Limit (95% C.I.)	104	125	227	240
		U. Limit (95% C.I.)	121	136	254	255
NNK	[ng/cigarette]	Mean	72.4	84.1	160	156
		Std. Dev.	5.3	6.3	8	8
		N	7	7	7	7
		L. Limit (95% C.I.)	67.5	78.3	153	148
		U. Limit (95% C.I.)	77.3	90.0	168	163
Cadmium	[ng/cigarette]	Mean	39.5	48.7	94.4	104
		Std. Dev.	1.2	3.2	4.5	6
		N	7	7	7	7
		L. Limit (95% C.I.)	38.4	45.8	90.2	98
		U. Limit (95% C.I.)	40.6	51.7	98.6	109
Arsenic	[ng/cigarette]	Mean	2.52	1.87	8.45	5.62
		Std. Dev.	NA	NA	NA	NA
		N	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	NA
		U. Limit (95% C.I.)	NA	NA	NA	NA

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Summary of Cigarette Test Article Results

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Summary Statistics for Cigarette Test Articles

Result	Unit	Statistic	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589
			ISO	ISO	HCI	HCI
Benzo(a)pyrene	[ng/mg nicotine]	Mean	10.2	12.0	7.50	9.08
		Std. Dev.	0.4	0.3	0.30	1.13
		N	7	7	7	7
		L. Limit (95% C.I.)	9.8	11.7	7.23	8.04
		U. Limit (95% C.I.)	10.6	12.4	7.77	10.13
Formaldehyde	[µg/mg nicotine]	Mean	33.4	43.5	41.3	51.4
		Std. Dev.	4.2	4.0	4.2	4.0
		N	7	7	7	7
		L. Limit (95% C.I.)	29.5	39.8	37.4	47.7
		U. Limit (95% C.I.)	37.3	47.2	45.2	55.0
Acetaldehyde	[µg/mg nicotine]	Mean	703	1082	734	869
		Std. Dev.	77	68	39	27
		N	7	7	7	7
		L. Limit (95% C.I.)	632	1020	698	844
		U. Limit (95% C.I.)	775	1145	771	895
Crotonaldehyde	[µg/mg nicotine]	Mean	12.9	25.5	23.7	28.6
		Std. Dev.	1.9	3.2	1.6	1.5
		N	7	7	7	7
		L. Limit (95% C.I.)	11.2	22.5	22.3	27.1
		U. Limit (95% C.I.)	14.6	28.4	25.2	30.0
NNN	[ng/mg nicotine]	Mean	149	149	128	128
		Std. Dev.	13	7	8	4
		N	7	7	7	7
		L. Limit (95% C.I.)	137	143	121	124
		U. Limit (95% C.I.)	161	156	135	132
NNK	[ng/mg nicotine]	Mean	95.8	96.5	85.0	80.3
		Std. Dev.	7.0	7.2	4.4	4.1
		N	7	7	7	7
		L. Limit (95% C.I.)	89.3	89.8	81.0	76.5
		U. Limit (95% C.I.)	102.3	103.2	89.1	84.1
Cadmium	[ng/mg nicotine]	Mean	52.3	55.9	50.1	53.4
		Std. Dev.	1.6	3.7	2.4	2.9
		N	7	7	7	7
		L. Limit (95% C.I.)	50.8	52.5	47.9	50.7
		U. Limit (95% C.I.)	53.8	59.3	52.3	56.0

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Summary Statistics for Cigarette Test Articles

Result	Unit	Statistic	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589
			ISO	ISO	HCI	HCI
Arsenic	[ng/mg nicotine]	Mean	3.34	2.14	4.49	2.90
		Std. Dev.	NA	NA	NA	1.21
		N	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	1.78
		U. Limit (95% C.I.)	NA	NA	NA	4.02

Glossary of Abbreviations

Regimen:

ISO: puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, none.

HCI: puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%.

NA: Not Available (some or all observed yields are not quantifiable, non-quantifiable results replaced by half the limit of quantification)

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Appendix C2

Summary of Camel Snus Test Article Results

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 Summary of Camel Snus Test Article Results

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Summary Statistics for Camel Snus Test Articles

Result	Unit	Statistic	Camel Snus Frost	Camel Snus Frost Large	Camel Snus Mellow	Camel Snus Mint	Camel Snus Robust	Camel Snus Winterchill
			Test Article ID: 1400892	Test Article ID: 1400893	Test Article ID: 1400894	Test Article ID: 1400895	Test Article ID: 1400896	Test Article ID: 1400931
Weight	(g/pouch 'as is')	Mean	0.6308	0.9400	0.6081	0.5638	0.9901	0.9633
		Std. Dev.	0.0299	0.0512	0.0397	0.0447	0.0524	0.0886
		N	10	10	10	10	10	10
		L. Limit (95% C.I.)	0.6094	0.9034	0.5797	0.5318	0.9526	0.8999
		U. Limit (95% C.I.)	0.6521	0.9767	0.6366	0.5957	1.0276	1.0266
Moisture	(% 'as is')	Mean	30.3	31.1	30.4	30.3	31.7	30.8
		Std. Dev.	0.1	0.2	0.1	0.1	0.1	0.2
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	30.2	30.8	30.3	30.2	31.6	30.6
		U. Limit (95% C.I.)	30.4	31.3	30.5	30.4	31.8	31.0
pH Result		Mean	7.57	7.59	7.60	7.55	7.69	7.71
		Std. Dev.	0.01	0.01	0.01	0.01	0.01	0.01
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	7.56	7.58	7.59	7.55	7.68	7.70
		U. Limit (95% C.I.)	7.58	7.60	7.60	7.56	7.70	7.72
Nicotine	(mg/g smokeless tobacco 'dry weight')	Mean	12.8	12.5	13.4	13.7	12.1	14.2
		Std. Dev.	0.5	1.0	0.7	0.6	1.1	0.4
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	12.3	11.6	12.7	13.1	11.1	13.7
		U. Limit (95% C.I.)	13.2	13.4	14.1	14.3	13.2	14.6
Free Nicotine	(mg/g smokeless tobacco 'dry weight')	Mean	3.33	3.38	3.67	3.50	3.85	4.65
		Std. Dev.	0.13	0.26	0.20	0.16	0.37	0.15
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	3.21	3.14	3.49	3.35	3.51	4.51
		U. Limit (95% C.I.)	3.46	3.62	3.86	3.64	4.19	4.78
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	Mean	1.60	1.63	1.69	1.51	1.54	1.56
		Std. Dev.	0.14	0.21	0.27	0.19	0.26	0.12
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	1.46	1.43	1.45	1.34	1.30	1.45
		U. Limit (95% C.I.)	1.73	1.82	1.94	1.69	1.78	1.68
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	Mean	1.48	1.14	2.07	1.84	1.61	1.52
		Std. Dev.	0.25	0.12	0.34	0.33	0.23	0.15
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	1.25	1.03	1.75	1.53	1.39	1.38
		U. Limit (95% C.I.)	1.72	1.26	2.39	2.14	1.82	1.65
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	Mean	2.28	2.32	4.05	2.55	2.74	3.18
		Std. Dev.	0.26	0.27	0.21	0.21	0.25	0.36
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	2.04	2.07	3.85	2.35	2.51	2.84
		U. Limit (95% C.I.)	2.53	2.57	4.24	2.74	2.97	3.51

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Sheet: Camel Snus Summary

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Summary of Camel Snus Test Article Results

Summary Statistics for Camel Snus Test Articles

Result	Unit	Statistic	Camel Snus Frost	Camel Snus Frost Large	Camel Snus Mellow	Camel Snus Mint	Camel Snus Robust	Camel Snus Winterchill
			Test Article ID: 1400892	Test Article ID: 1400893	Test Article ID: 1400894	Test Article ID: 1400895	Test Article ID: 1400896	Test Article ID: 1400931
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	Mean	0.086	0.087	0.086	0.086	0.088	0.086
		Std. Dev.	NA	NA	NA	NA	NA	NA
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	NA	NA	NA
		U. Limit (95% C.I.)	NA	NA	NA	NA	NA	NA
NNN	[ng/g smokeless tobacco 'dry weight']	Mean	1249	1281	1232	1231	1270	1561
		Std. Dev.	13	23	19	21	24	30
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	1237	1260	1214	1211	1248	1534
		U. Limit (95% C.I.)	1261	1303	1249	1250	1291	1589
NNK	[ng/g smokeless tobacco 'dry weight']	Mean	454	415	372	318	393	893
		Std. Dev.	9	5	8	9	10	18
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	446	410	365	309	384	876
		U. Limit (95% C.I.)	462	420	380	326	402	910
Cadmium	[ng/g smokeless tobacco 'dry weight']	Mean	479	439	419	425	387	520
		Std. Dev.	20	39	43	33	47	12
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	461	403	379	394	344	509
		U. Limit (95% C.I.)	497	475	458	456	431	532
Arsenic	[ng/g smokeless tobacco 'dry weight']	Mean	219	208	198	209	199	173
		Std. Dev.	12	8	23	13	22	7
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	208	200	177	197	179	167
		U. Limit (95% C.I.)	229	215	219	222	219	179
Nicotine	[mg/pouch 'as is']	Mean	5.61	8.09	5.68	5.39	8.19	9.43
		Std. Dev.	0.23	0.62	0.32	0.24	0.78	0.30
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	5.41	7.52	5.39	5.17	7.47	9.16
		U. Limit (95% C.I.)	5.82	8.67	5.98	5.62	8.91	9.70
Free Nicotine	[mg/pouch 'as is']	Mean	1.46	2.19	1.55	1.37	2.60	3.10
		Std. Dev.	0.06	0.17	0.09	0.06	0.25	0.10
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	1.41	2.04	1.47	1.32	2.37	3.01
		U. Limit (95% C.I.)	1.52	2.35	1.63	1.43	2.83	3.19
Benzo(a)pyrene	[ng/pouch 'as is']	Mean	0.702	1.05	0.717	0.594	1.04	1.04
		Std. Dev.	0.063	0.13	0.113	0.074	0.18	0.08
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	0.644	0.93	0.613	0.526	0.880	0.966
		U. Limit (95% C.I.)	0.760	1.18	0.821	0.662	1.21	1.12

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 Summary of Camel Snus Test Article Results

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Summary Statistics for Camel Snus Test Articles

Result	Unit	Statistic	Camel Snus Frost	Camel Snus Frost Large	Camel Snus Mellow	Camel Snus Mint	Camel Snus Robust	Camel Snus Winterchill
			Test Article ID: 1400892	Test Article ID: 1400893	Test Article ID: 1400894	Test Article ID: 1400895	Test Article ID: 1400896	Test Article ID: 1400931
Formaldehyde	[µg/pouch 'as is']	Mean	0.653	0.740	0.877	0.721	1.09	1.01
		Std. Dev.	0.110	0.080	0.145	0.128	0.16	0.10
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	0.551	0.666	0.742	0.602	0.94	0.92
		U. Limit (95% C.I.)	0.754	0.815	1.01	0.840	1.23	1.10
Acetaldehyde	[µg/pouch 'as is']	Mean	1.00	1.50	1.71	1.00	1.85	2.12
		Std. Dev.	0.12	0.17	0.09	0.08	0.17	0.24
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	0.90	1.34	1.63	0.92	1.70	1.89
		U. Limit (95% C.I.)	1.11	1.66	1.80	1.08	2.01	2.34
Crotonaldehyde	[µg/pouch 'as is']	Mean	0.038	0.058	0.036	0.034	0.069	0.058
		Std. Dev.	NA	NA	NA	NA	NA	NA
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	NA	NA	NA
		U. Limit (95% C.I.)	NA	NA	NA	NA	NA	NA
NNN	[ng/pouch 'as is']	Mean	549	830	521	484	858	1040
		Std. Dev.	6	15	8	8	16	20
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	544	817	514	476	843	1022
		U. Limit (95% C.I.)	555	844	529	491	873	1058
NNK	[ng/pouch 'as is']	Mean	200	269	157	125	266	595
		Std. Dev.	4	3	3	4	7	12
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	196	266	154	122	259	584
		U. Limit (95% C.I.)	203	272	161	128	272	606
Cadmium	[ng/pouch 'as is']	Mean	211	285	177	167	262	347
		Std. Dev.	9	25	18	13	32	8
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	203	261	160	155	232	339
		U. Limit (95% C.I.)	219	308	194	179	291	354
Arsenic	[ng/pouch 'as is']	Mean	96.1	134	83.8	82.3	135	115
		Std. Dev.	5.1	5	9.7	5.2	15	4
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	91.3	130	74.8	77.5	121	111
		U. Limit (95% C.I.)	100.8	139	92.8	87.1	148	119
Benzo(a)pyrene	[ng/mg nicotine]	Mean	0.125	0.130	0.126	0.110	0.127	0.110
		Std. Dev.	0.011	0.016	0.020	0.014	0.021	0.009
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	0.115	0.115	0.108	0.098	0.107	0.102
		U. Limit (95% C.I.)	0.135	0.145	0.144	0.123	0.147	0.118

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 Summary of Camel Snus Test Article Results

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Summary Statistics for Camel Snus Test Articles

Result	Unit	Statistic	Camel Snus Frost	Camel Snus Frost Large	Camel Snus Mellow	Camel Snus Mint	Camel Snus Robust	Camel Snus Winterchill
			Test Article ID: 1400892	Test Article ID: 1400893	Test Article ID: 1400894	Test Article ID: 1400895	Test Article ID: 1400896	Test Article ID: 1400931
Formaldehyde	[µg/mg nicotine]	Mean	0.116	0.091	0.154	0.134	0.133	0.107
		Std. Dev.	0.020	0.010	0.026	0.024	0.019	0.010
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	0.098	0.082	0.131	0.112	0.115	0.098
		U. Limit (95% C.I.)	0.134	0.101	0.178	0.155	0.150	0.117
Acetaldehyde	[µg/mg nicotine]	Mean	0.179	0.186	0.301	0.186	0.226	0.225
		Std. Dev.	0.021	0.022	0.016	0.015	0.021	0.026
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	0.160	0.166	0.287	0.172	0.207	0.201
		U. Limit (95% C.I.)	0.198	0.206	0.316	0.200	0.245	0.248
Crotonaldehyde	[µg/mg nicotine]	Mean	0.007	0.007	0.006	0.006	0.007	0.006
		Std. Dev.	NA	NA	NA	NA	NA	NA
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	NA	NA	NA
		U. Limit (95% C.I.)	NA	NA	NA	NA	NA	NA
NNN	[ng/mg nicotine]	Mean	97.9	103	91.7	89.7	105	110
		Std. Dev.	1.0	2	1.4	1.5	2	2
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	96.9	101	90.3	88.3	103	108
		U. Limit (95% C.I.)	98.8	104	93.0	91.1	107	112
NNK	[ng/mg nicotine]	Mean	35.5	33.2	27.7	23.2	32.4	63.1
		Std. Dev.	0.7	0.4	0.6	0.7	0.8	1.3
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	34.9	32.9	27.1	22.5	31.6	61.9
		U. Limit (95% C.I.)	36.2	33.6	28.3	23.8	33.2	64.3
Cadmium	[ng/mg nicotine]	Mean	37.5	35.2	31.2	30.9	32.0	36.8
		Std. Dev.	1.5	3.1	3.2	2.4	3.8	0.9
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	36.1	32.2	28.2	28.7	28.4	35.9
		U. Limit (95% C.I.)	38.9	38.1	34.1	33.2	35.6	37.6
Arsenic	[ng/mg nicotine]	Mean	17.1	16.6	14.7	15.3	16.4	12.2
		Std. Dev.	0.9	0.7	1.7	1.0	1.8	0.5
		N	7	7	7	7	7	7
		L. Limit (95% C.I.)	16.3	16.0	13.2	14.4	14.8	11.8
		U. Limit (95% C.I.)	18.0	17.2	16.3	16.2	18.1	12.7

NA: Not Available (some or all observed constituent contents are not quantifiable, non-quantifiable results replaced by half the limit of quantification)

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Appendix C3

Summary of Other Swedish Snus Test Article Results

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Summary of Other Swedish Snus Test Article Results

Summary Statistics for Other Swedish Snus Test Articles

Result	Unit	Statistic	General Original Snus (US)	General Original Snus (Sweden)	Catch Dry Eucalyptus Mini Snus (Sweden)	Granit Snus (Sweden)	Skruf Stark Snus (Sweden)
			Test Article ID: 1400891	Test Article ID: 1400933	Test Article ID: 1400934	Test Article ID: 1400935	Test Article ID: 1400936
Weight	(g/pouch 'as is')	Mean	1.0005	0.9870	0.3467	0.9153	0.9649
		Std. Dev.	0.0219	0.0290	0.0131	0.0314	0.0218
		N	10	10	10	10	10
		L. Limit (95% C.I.)	0.9848	0.9662	0.3374	0.8928	0.9492
		U. Limit (95% C.I.)	1.0162	1.0077	0.3561	0.9378	0.9805
Moisture	(% 'as is')	Mean	49.0	49.4	23.5	46.3	45.1
		Std. Dev.	0.1	0.1	0.3	0.2	0.3
		N	7	7	7	7	7
		L. Limit (95% C.I.)	48.9	49.4	23.3	46.1	44.9
		U. Limit (95% C.I.)	49.1	49.5	23.8	46.5	45.4
pH Result		Mean	7.84	8.45	7.15	7.93	8.56
		Std. Dev.	0.01	0.01	0.01	0.01	0.03
		N	7	7	7	7	7
		L. Limit (95% C.I.)	7.82	8.43	7.13	7.92	8.53
		U. Limit (95% C.I.)	7.85	8.46	7.16	7.94	8.58
Nicotine	[mg/g smokeless tobacco 'dry weight']	Mean	15.7	16.7	22.2	19.7	25.2
		Std. Dev.	0.3	0.3	0.4	0.5	1.8
		N	7	7	7	7	7
		L. Limit (95% C.I.)	15.4	16.4	21.8	19.3	23.5
		U. Limit (95% C.I.)	16.0	17.0	22.6	20.2	26.9
Free Nicotine	[mg/g smokeless tobacco 'dry weight']	Mean	6.21	12.2	2.62	8.82	19.5
		Std. Dev.	0.12	0.2	0.05	0.22	1.4
		N	7	7	7	7	7
		L. Limit (95% C.I.)	6.10	11.9	2.57	8.62	18.2
		U. Limit (95% C.I.)	6.32	12.4	2.66	9.03	20.8
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	Mean	1.91	1.92	1.92	1.61	2.66
		Std. Dev.	0.376	0.282	0.252	0.151	0.153
		N	7	7	7	7	7
		L. Limit (95% C.I.)	1.56	1.66	1.69	1.47	2.52
		U. Limit (95% C.I.)	2.26	2.18	2.16	1.75	2.81
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	Mean	2.31	5.74	4.05	3.08	4.83
		Std. Dev.	0.303	0.895	0.580	0.307	0.590
		N	7	7	7	7	7
		L. Limit (95% C.I.)	2.03	4.91	3.52	2.79	4.28
		U. Limit (95% C.I.)	2.59	6.56	4.59	3.36	5.37

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Summary of Other Swedish Snus Test Article Results

Summary Statistics for Other Swedish Snus Test Articles

Result	Unit	Statistic	General Original Snus (US)	General Original Snus (Sweden)	Catch Dry Eucalyptus Mini Snus (Sweden)	Granit Snus (Sweden)	Skruf Stark Snus (Sweden)
			Test Article ID: 1400891	Test Article ID: 1400933	Test Article ID: 1400934	Test Article ID: 1400935	Test Article ID: 1400936
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	Mean	20.9	46.9	9.01	21.6	51.2
		Std. Dev.	1.60	5.90	0.912	1.66	5.82
		N	7	7	7	7	7
		L. Limit (95% C.I.)	19.4	41.5	8.17	20.0	45.8
		U. Limit (95% C.I.)	22.3	52.4	9.85	23.1	56.6
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	Mean	0.117	0.118	0.078	0.111	0.109
		Std. Dev.	NA	NA	NA	NA	NA
		N	7	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	NA	NA
		U. Limit (95% C.I.)	NA	NA	NA	NA	NA
NNN	[ng/g smokeless tobacco 'dry weight']	Mean	584	553	675	1012	1012
		Std. Dev.	16	11	12	23	23
		N	7	7	7	7	7
		L. Limit (95% C.I.)	570	542	664	991	991
		U. Limit (95% C.I.)	599	564	686	1034	1034
NNK	[ng/g smokeless tobacco 'dry weight']	Mean	141	161	202	476	476
		Std. Dev.	4	4	4	7	7
		N	7	7	7	7	7
		L. Limit (95% C.I.)	136	157	199	469	469
		U. Limit (95% C.I.)	145	165	206	483	483
Cadmium	[ng/g smokeless tobacco 'dry weight']	Mean	418	489	479	381	603
		Std. Dev.	49	13	14	10	8
		N	7	7	7	7	7
		L. Limit (95% C.I.)	372	477	466	371	596
		U. Limit (95% C.I.)	463	501	492	390	611
Arsenic	[ng/g smokeless tobacco 'dry weight']	Mean	223	214	177	187	219
		Std. Dev.	10	11	11	13	16
		N	7	7	7	7	7
		L. Limit (95% C.I.)	213	204	167	175	204
		U. Limit (95% C.I.)	233	223	187	199	234
Nicotine	[mg/pouch 'as is']	Mean	8.01	8.35	5.89	9.70	13.3
		Std. Dev.	0.15	0.17	0.11	0.24	1.0
		N	7	7	7	7	7
		L. Limit (95% C.I.)	7.86	8.19	5.79	9.48	12.4
		U. Limit (95% C.I.)	8.15	8.50	5.98	9.93	14.2

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Summary of Other Swedish Snus Test Article Results

Summary Statistics for Other Swedish Snus Test Articles

Result	Unit	Statistic	General Original Snus (US)	General Original Snus (Sweden)	Catch Dry Eucalyptus Mini Snus (Sweden)	Granit Snus (Sweden)	Skruf Stark Snus (Sweden)
			Test Article ID: 1400891	Test Article ID: 1400933	Test Article ID: 1400934	Test Article ID: 1400935	Test Article ID: 1400936
Free Nicotine	[mg/pouch 'as is']	Mean	3.17	6.07	0.693	4.34	10.3
		Std. Dev.	0.06	0.12	0.012	0.11	0.8
		N	7	7	7	7	7
		L. Limit (95% C.I.)	3.11	5.95	0.682	4.24	9.6
		U. Limit (95% C.I.)	3.23	6.18	0.705	4.44	11.0
Benzo(a)pyrene	[ng/pouch 'as is']	Mean	0.975	0.958	0.510	0.792	1.41
		Std. Dev.	0.182	0.141	0.067	0.074	0.081
		N	7	7	7	7	7
		L. Limit (95% C.I.)	0.797	0.827	0.448	0.724	1.34
		U. Limit (95% C.I.)	1.15	1.09	0.571	0.861	1.49
Formaldehyde	[µg/pouch 'as is']	Mean	1.18	2.86	1.07	1.51	2.56
		Std. Dev.	0.155	0.447	0.154	0.151	0.313
		N	7	7	7	7	7
		L. Limit (95% C.I.)	1.04	2.45	0.932	1.37	2.27
		U. Limit (95% C.I.)	1.32	3.28	1.22	1.65	2.85
Acetaldehyde	[µg/pouch 'as is']	Mean	10.7	23.4	2.39	10.6	27.1
		Std. Dev.	0.817	2.95	0.242	0.814	3.08
		N	7	7	7	7	7
		L. Limit (95% C.I.)	9.90	20.7	2.17	9.86	24.3
		U. Limit (95% C.I.)	11.4	26.2	2.61	11.4	30.0
Crotonaldehyde	[µg/pouch 'as is']	Mean	0.060	0.059	0.021	0.055	0.058
		Std. Dev.	NA	NA	NA	NA	NA
		N	7	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	NA	NA
		U. Limit (95% C.I.)	NA	NA	NA	NA	NA
NNN	[ng/pouch 'as is']	Mean	298	276	179	498	475
		Std. Dev.	8	6	3	11	8
		N	7	7	7	7	7
		L. Limit (95% C.I.)	291	271	176	487	468
		U. Limit (95% C.I.)	306	281	182	508	482
NNK	[ng/pouch 'as is']	Mean	71.7	80.4	53.7	234	122
		Std. Dev.	2.3	1.9	1.1	4	1
		N	7	7	7	7	7
		L. Limit (95% C.I.)	69.6	78.6	52.7	231	121
		U. Limit (95% C.I.)	73.9	82.2	54.7	237	123

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Summary of Other Swedish Snus Test Article Results

Summary Statistics for Other Swedish Snus Test Articles

Result	Unit	Statistic	General Original Snus (US)	General Original Snus (Sweden)	Catch Dry Eucalyptus Mini Snus (Sweden)	Granit Snus (Sweden)	Skruf Stark Snus (Sweden)
			Test Article ID: 1400891	Test Article ID: 1400933	Test Article ID: 1400934	Test Article ID: 1400935	Test Article ID: 1400936
Cadmium	[ng/pouch 'as is']	Mean	213	244	127	187	319
		Std. Dev.	25	6	4	5	4
		N	7	7	7	7	7
		L. Limit (95% C.I.)	190	238	123	182	315
		U. Limit (95% C.I.)	237	250	130	192	324
Arsenic	[ng/pouch 'as is']	Mean	114	107	47.0	92.1	116
		Std. Dev.	5	5	2.9	6.4	8
		N	7	7	7	7	7
		L. Limit (95% C.I.)	109	102	44.3	86.2	108
		U. Limit (95% C.I.)	119	112	49.6	98.1	124
Benzo(a)pyrene	[ng/mg nicotine]	Mean	0.122	0.115	0.087	0.082	0.106
		Std. Dev.	0.024	0.017	0.011	0.008	0.006
		N	7	7	7	7	7
		L. Limit (95% C.I.)	0.100	0.099	0.076	0.075	0.100
		U. Limit (95% C.I.)	0.144	0.130	0.097	0.089	0.111
Formaldehyde	[µg/mg nicotine]	Mean	0.147	0.343	0.183	0.156	0.192
		Std. Dev.	0.019	0.054	0.026	0.016	0.023
		N	7	7	7	7	7
		L. Limit (95% C.I.)	0.129	0.294	0.158	0.142	0.170
		U. Limit (95% C.I.)	0.165	0.393	0.207	0.170	0.213
Acetaldehyde	[µg/mg nicotine]	Mean	1.33	2.81	0.408	1.09	2.03
		Std. Dev.	0.102	0.353	0.041	0.084	0.231
		N	7	7	7	7	7
		L. Limit (95% C.I.)	1.24	2.48	0.368	1.02	1.82
		U. Limit (95% C.I.)	1.42	3.13	0.444	1.17	2.24
Crotonaldehyde	[µg/mg nicotine]	Mean	0.007	0.007	0.004	0.006	0.004
		Std. Dev.	NA	NA	NA	NA	NA
		N	7	7	7	7	7
		L. Limit (95% C.I.)	NA	NA	NA	NA	NA
		U. Limit (95% C.I.)	NA	NA	NA	NA	NA
NNN	[ng/mg nicotine]	Mean	37.3	33.1	30.4	51.3	35.6
		Std. Dev.	1.0	0.7	0.5	1.2	0.6
		N	7	7	7	7	7
		L. Limit (95% C.I.)	36.3	32.4	29.9	50.2	35.0
		U. Limit (95% C.I.)	38.2	33.7	30.9	52.4	36.1

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Summary of Other Swedish Snus Test Article Results

Summary Statistics for Other Swedish Snus Test Articles

Result	Unit	Statistic	General Original Snus (US)	General Original Snus (Sweden)	Catch Dry Eucalyptus Mini Snus (Sweden)	Granit Snus (Sweden)	Skruf Stark Snus (Sweden)
			Test Article ID: 1400891	Test Article ID: 1400933	Test Article ID: 1400934	Test Article ID: 1400935	Test Article ID: 1400936
NNK	[ng/mg nicotine]	Mean	8.96	9.63	9.12	24.1	9.11
		Std. Dev.	0.29	0.23	0.18	0.4	0.07
		N	7	7	7	7	7
		L. Limit (95% C.I.)	8.70	9.42	8.95	23.8	9.04
		U. Limit (95% C.I.)	9.23	9.85	9.29	24.5	9.18
Cadmium	[ng/mg nicotine]	Mean	26.6	29.2	21.6	19.3	23.9
		Std. Dev.	3.1	0.8	0.6	0.5	0.3
		N	7	7	7	7	7
		L. Limit (95% C.I.)	23.7	28.5	21.0	18.8	23.6
		U. Limit (95% C.I.)	29.5	29.9	22.1	19.8	24.2
Arsenic	[ng/mg nicotine]	Mean	14.2	12.8	7.98	9.50	8.69
		Std. Dev.	0.7	0.6	0.49	0.86	0.63
		N	7	7	7	7	7
		L. Limit (95% C.I.)	13.6	12.2	7.53	8.88	8.10
		U. Limit (95% C.I.)	14.8	13.4	8.44	10.11	9.27

NA: Not Available (some or all observed constituent contents are not quantifiable, non-quantifiable results replaced by half the limit of quantification)

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Appendix D1

Cigarette Test Article Results (Data Listings)

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 Cigarette Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Tar, Nicotine and Carbon Monoxide: ISO Cigarette Weight (mg/cig)	Polynuclear Aromatic Hydrocarbons: ISO Cigarette Weight (mg/cig)	Carbonyls: ISO Cigarette Weight (mg/cig)	Tobacco Specific Nitrosamines: ISO Cigarette Weight (mg/cig)	Metals: ISO Cigarette Weight (mg/cig)	Tar, Nicotine and Carbon Monoxide: ISO Puff Count (per cig)
1400588	Marlboro Gold King Size (KS) Box	1	923	910	918	910	900	7.8
1400588	Marlboro Gold King Size (KS) Box	2	931	912	909	924	913	7.8
1400588	Marlboro Gold King Size (KS) Box	3	915	908	942	920	913	7.8
1400588	Marlboro Gold King Size (KS) Box	4	925	900	910	922	908	7.7
1400588	Marlboro Gold King Size (KS) Box	5	917	902	930	923	909	8.0
1400588	Marlboro Gold King Size (KS) Box	6	935	906	926	930	917	8.3
1400588	Marlboro Gold King Size (KS) Box	7	926	908	915	930	907	7.8
1400589	Newport King Size Menthol Box	1	927	904	925	907	902	7.5
1400589	Newport King Size Menthol Box	2	905	917	922	900	913	7.1
1400589	Newport King Size Menthol Box	3	904	917	922	917	911	7.0
1400589	Newport King Size Menthol Box	4	913	905	927	919	907	7.1
1400589	Newport King Size Menthol Box	5	914	915	930	912	917	7.6
1400589	Newport King Size Menthol Box	6	907	907	937	900	913	7.4
1400589	Newport King Size Menthol Box	7	911	904	934	922	913	7.5
1400590	3R4F Kentucky Reference	1	1049	1052	1057	1036	1046	8.8
1400590	3R4F Kentucky Reference	2	1055	1033	1036	1042	1047	8.3
1400590	3R4F Kentucky Reference	3	1050	1032	1056	1043	1043	8.2
1400590	3R4F Kentucky Reference	4	1051	1046	1060	1053	1037	8.0
1400590	3R4F Kentucky Reference	5	1055	1046	1057	1047	1040	8.4
1400590	3R4F Kentucky Reference	6	1044	1037	1057	1054	1046	8.5
1400590	3R4F Kentucky Reference	7	1045	1032	1043	1052	1052	8.8

non-quantifiable result replaced by half the limit of quantification

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Test Article ID	Test Article Description	Replicate Number	Polynuclear Aromatic Hydrocarbons: ISO Puff Count [per cig]	Carbonyls: ISO Puff Count [per cig]	Tobacco Specific Nitrosamines: ISO Puff Count [per cig]	Metals: ISO Puff Count [per cig]	Tar, Nicotine and Carbon Monoxide: ISO TPM [mg/cig]
1400588	Marlboro Gold King Size (KS) Box	1	7.8	8.0	7.5	7.5	11.5
1400588	Marlboro Gold King Size (KS) Box	2	8.0	8.3	8.0	7.6	12.1
1400588	Marlboro Gold King Size (KS) Box	3	7.7	8.2	7.9	7.6	12.3
1400588	Marlboro Gold King Size (KS) Box	4	7.6	8.0	7.8	7.6	11.6
1400588	Marlboro Gold King Size (KS) Box	5	7.8	8.0	7.7	7.5	12.4
1400588	Marlboro Gold King Size (KS) Box	6	7.6	8.5	7.9	7.6	14.8
1400588	Marlboro Gold King Size (KS) Box	7	7.8	8.3	8.0	7.7	11.9
1400589	Newport King Size Menthol Box	1	7.3	7.5	7.6	7.5	18.2
1400589	Newport King Size Menthol Box	2	7.4	7.8	7.4	7.6	18.6
1400589	Newport King Size Menthol Box	3	7.5	8.2	7.4	7.1	17.3
1400589	Newport King Size Menthol Box	4	7.2	8.4	7.4	7.2	18.4
1400589	Newport King Size Menthol Box	5	7.3	8.6	7.5	7.2	19.1
1400589	Newport King Size Menthol Box	6	7.3	7.5	7.3	7.1	18.0
1400589	Newport King Size Menthol Box	7	7.3	8.7	7.2	7.1	18.5
1400590	3R4F Kentucky Reference	1	8.5	8.5	8.1	8.6	10.2
1400590	3R4F Kentucky Reference	2	8.4	9.0	8.3	8.2	9.72
1400590	3R4F Kentucky Reference	3	8.3	9.2	8.0	8.2	9.40
1400590	3R4F Kentucky Reference	4	8.3	9.0	8.2	8.1	9.00
1400590	3R4F Kentucky Reference	5	8.3	9.0	8.5	8.1	9.22
1400590	3R4F Kentucky Reference	6	8.3	9.5	8.7	8.2	9.50
1400590	3R4F Kentucky Reference	7	8.4	8.7	8.3	8.4	10.5

non-quantifiable result replaced by half the limit of quantification

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Sheet: mainstream data listings

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Test Article ID	Test Article Description	Replicate Number	Polynuclear Aromatic Hydrocarbons: ISO TPM [mg/cig]	Tobacco Specific Nitrosamines: ISO TPM [mg/cig]	Metals: ISO TPM [mg/cig]	Tar, Nicotine and Carbon Monoxide: HCl Cigarette Weight [mg/cig]	Polynuclear Aromatic Hydrocarbons: HCl Cigarette Weight [mg/cig]	Carbonyls: HCl Cigarette Weight [mg/cig]
1400588	Marlboro Gold King Size (KS) Box	1	11.8	11.8	10.5	961	964	961
1400588	Marlboro Gold King Size (KS) Box	2	11.4	11.9	10.8	972	983	991
1400588	Marlboro Gold King Size (KS) Box	3	11.0	10.1	10.4	974	962	987
1400588	Marlboro Gold King Size (KS) Box	4	12.1	12.1	10.8	972	960	1004
1400588	Marlboro Gold King Size (KS) Box	5	12.3	11.6	10.9	967	957	1005
1400588	Marlboro Gold King Size (KS) Box	6	11.9	12.7	10.3	968	965	977
1400588	Marlboro Gold King Size (KS) Box	7	12.1	12.6	10.8	981	963	995
1400589	Newport King Size Menthol Box	1	17.8	20.5	12.9	947	956	956
1400589	Newport King Size Menthol Box	2	17.2	19.0	12.8	940	955	954
1400589	Newport King Size Menthol Box	3	17.1	20.3	15.7	959	953	962
1400589	Newport King Size Menthol Box	4	17.3	17.2	15.8	958	951	946
1400589	Newport King Size Menthol Box	5	17.9	17.1	15.5	929	951	965
1400589	Newport King Size Menthol Box	6	17.6	18.3	15.7	946	950	946
1400589	Newport King Size Menthol Box	7	18.5	18.1	15.3	938	953	945
1400590	3R4F Kentucky Reference	1	9.42	9.36	8.65	1095	1116	1074
1400590	3R4F Kentucky Reference	2	9.74	8.26	8.36	1092	1103	1091
1400590	3R4F Kentucky Reference	3	9.34	9.10	8.15	1094	1099	1085
1400590	3R4F Kentucky Reference	4	9.18	9.84	8.27	1107	1109	1107
1400590	3R4F Kentucky Reference	5	9.00	10.3	8.19	1095	1104	1119
1400590	3R4F Kentucky Reference	6	9.71	9.50	8.32	1087	1097	1113
1400590	3R4F Kentucky Reference	7	9.68	9.74	7.93	1108	1114	1102

non-quantifiable result replaced by half the limit of quantification

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Sheet: mainstream data listings

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Study Identifier: M195-GLP
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Test Article ID	Test Article Description	Replicate Number	Tobacco Specific Nitrosamines: HCl Cigarette Weight (mg/cig)	Metals: HCl Cigarette Weight (mg/cig)	Tar, Nicotine and Carbon Monoxide: HCl Puff Count (per cig)	Polynuclear Aromatic Hydrocarbons: HCl Puff Count (per cig)	Carbonyls: HCl Puff Count (per cig)	Tobacco Specific Nitrosamines: HCl Puff Count (per cig)
1400588	Marlboro Gold King Size (KS) Box	1	979	966	9.0	9.7	8.8	9.4
1400588	Marlboro Gold King Size (KS) Box	2	996	974	8.9	10.1	9.0	9.4
1400588	Marlboro Gold King Size (KS) Box	3	958	982	8.9	9.3	8.5	9.2
1400588	Marlboro Gold King Size (KS) Box	4	958	970	9.1	9.5	10.9	8.7
1400588	Marlboro Gold King Size (KS) Box	5	981	978	8.5	9.5	8.5	8.9
1400588	Marlboro Gold King Size (KS) Box	6	966	974	8.8	9.4	9.0	9.3
1400588	Marlboro Gold King Size (KS) Box	7	973	974	9.1	9.4	9.5	8.7
1400589	Newport King Size Menthol Box	1	958	961	9.1	9.9	8.9	9.9
1400589	Newport King Size Menthol Box	2	951	961	9.1	9.8	9.4	9.3
1400589	Newport King Size Menthol Box	3	954	957	9.1	9.6	9.5	9.1
1400589	Newport King Size Menthol Box	4	967	954	8.9	9.5	9.4	9.3
1400589	Newport King Size Menthol Box	5	951	965	8.2	9.6	9.0	9.1
1400589	Newport King Size Menthol Box	6	950	961	9.3	9.4	9.6	9.1
1400589	Newport King Size Menthol Box	7	940	957	9.0	9.5	9.0	9.0
1400590	3R4F Kentucky Reference	1	1104	1097	10.3	10.8	9.5	10.6
1400590	3R4F Kentucky Reference	2	1116	1111	9.6	10.7	10.0	11.0
1400590	3R4F Kentucky Reference	3	1109	1105	9.8	10.4	9.9	10.1
1400590	3R4F Kentucky Reference	4	1109	1109	9.6	10.6	10.1	10.1
1400590	3R4F Kentucky Reference	5	1079	1110	10.1	10.5	10.6	9.7
1400590	3R4F Kentucky Reference	6	1120	1115	10.5	10.4	11.0	11.0
1400590	3R4F Kentucky Reference	7	1100	1110	9.9	10.8	10.0	12.0

non-quantifiable result replaced by half the limit of quantification

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 Cigarette Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Metals: HCl Puff Count [per cig]	Tar, Nicotine and Carbon Monoxide: HCl TPM [mg/cig]	Polynuclear Aromatic Hydrocarbons: HCl TPM [mg/cig]	Tobacco Specific Nitrosamines: HCl TPM [mg/cig]	Metals: HCl TPM [mg/cig]	ISO Carbon Monoxide [mg/cig]	ISO Water [mg/cig]
1400588	Marlboro Gold King Size (KS) Box	1	9.0	52.8	41.4	41.9	33.6	10.6	0.750
1400588	Marlboro Gold King Size (KS) Box	2	8.9	42.8	40.1	52.3	34.7	11.1	0.929
1400588	Marlboro Gold King Size (KS) Box	3	9.2	48.9	42.2	52.9	34.1	11.3	0.918
1400588	Marlboro Gold King Size (KS) Box	4	9.9	50.2	41.9	47.2	30.4	10.7	0.812
1400588	Marlboro Gold King Size (KS) Box	5	9.5	46.4	41.4	52.8	39.0	10.5	0.850
1400588	Marlboro Gold King Size (KS) Box	6	9.1	49.1	40.3	49.5	34.7	12.2	0.991
1400588	Marlboro Gold King Size (KS) Box	7	9.2	47.8	41.7	42.8	33.8	11.0	0.804
1400589	Newport King Size Menthol Box	1	9.4	54.3	47.1	47.8	37.1	17.0	2.84
1400589	Newport King Size Menthol Box	2	9.3	52.0	46.9	52.6	36.2	13.4	3.17
1400589	Newport King Size Menthol Box	3	9.4	50.6	45.9	54.2	38.0	17.5	2.51
1400589	Newport King Size Menthol Box	4	9.1	52.3	42.6	52.1	39.1	17.1	2.96
1400589	Newport King Size Menthol Box	5	9.6	54.4	47.9	54.9	40.3	17.5	3.03
1400589	Newport King Size Menthol Box	6	9.8	54.6	45.1	55.6	37.8	17.9	2.41
1400589	Newport King Size Menthol Box	7	9.3	56.8	47.8	54.5	40.9	18.1	2.88
1400590	3R4F Kentucky Reference	1	10.6	49.0	41.1	50.0	30.5	10.9	0.685
1400590	3R4F Kentucky Reference	2	10.0	41.4	41.6	48.7	32.4	10.7	0.644
1400590	3R4F Kentucky Reference	3	10.2	45.2	40.6	47.0	34.1	10.2	0.657
1400590	3R4F Kentucky Reference	4	10.3	48.0	41.3	44.6	32.7	9.59	0.605
1400590	3R4F Kentucky Reference	5	10.3	45.7	40.7	42.7	34.2	9.65	0.587
1400590	3R4F Kentucky Reference	6	10.4	46.7	41.4	44.8	35.6	9.11	0.526
1400590	3R4F Kentucky Reference	7	10.0	42.7	42.5	33.6	34.3	10.9	0.733

non-quantifiable result replaced by half the limit of
quantification

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Study Identifier: M195-GLP
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Test Article ID	Test Article Description	Replicate Number	ISO Nicotine [mg/cig]	ISO Tar [mg/cig]	ISO Benzo(a)pyrene [ng/cig]	ISO Formaldehyde [µg/cig]	ISO Acetaldehyde [µg/cig]	ISO Crotonaldehyde [µg/cig]	ISO NNN [ng/cig]
1400588	Marlboro Gold King Size (KS) Box	1	0.742	10.0	7.52	25.0	548	8.15	109
1400588	Marlboro Gold King Size (KS) Box	2	0.751	10.4	7.34	19.2	421	8.14	109
1400588	Marlboro Gold King Size (KS) Box	3	0.776	10.6	8.28	23.8	531	9.81	94.8
1400588	Marlboro Gold King Size (KS) Box	4	0.721	10.0	7.88	28.9	589	10.4	113
1400588	Marlboro Gold King Size (KS) Box	5	0.763	10.8	7.44	26.6	570	10.9	116
1400588	Marlboro Gold King Size (KS) Box	6	0.800	13.0	7.66	25.1	491	8.94	122
1400588	Marlboro Gold King Size (KS) Box	7	0.736	10.3	7.84	27.9	590	11.8	123
1400589	Newport King Size Menthol Box	1	0.879	14.5	10.9	36.9	888	20.8	135
1400589	Newport King Size Menthol Box	2	0.814	14.6	10.4	39.4	936	23.4	128
1400589	Newport King Size Menthol Box	3	0.824	14.0	10.3	40.9	933	23.1	134
1400589	Newport King Size Menthol Box	4	0.881	14.6	10.7	37.8	1024	25.0	119
1400589	Newport King Size Menthol Box	5	0.938	15.1	10.1	35.7	980	21.5	129
1400589	Newport King Size Menthol Box	6	0.915	14.7	10.4	32.1	855	16.9	130
1400589	Newport King Size Menthol Box	7	0.870	14.7	10.8	42.6	991	24.5	137
1400590	3R4F Kentucky Reference	1	0.700	8.79	6.82	25.1	576	9.77	117
1400590	3R4F Kentucky Reference	2	0.640	8.44	6.66	25.6	593	11.5	109
1400590	3R4F Kentucky Reference	3	0.618	8.13	6.56	28.5	668	13.3	126
1400590	3R4F Kentucky Reference	4	0.599	7.80	6.58	22.3	578	10.8	128
1400590	3R4F Kentucky Reference	5	0.635	8.00	6.34	27.7	675	13.8	128
1400590	3R4F Kentucky Reference	6	0.579	8.39	6.52	29.4	632	11.1	125
1400590	3R4F Kentucky Reference	7	0.663	9.08	6.54	24.0	627	11.4	129

non-quantifiable result replaced by half the limit of quantification

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Test Article ID	Test Article Description	Replicate Number	ISO NNK [ng/cig]	ISO Cadmium [ng/cig]	ISO Arsenic [ng/cig]	HCl Carbon Monoxide [mg/cig]	HCl Water [mg/cig]	HCl Nicotine [mg/cig]	HCl Tar [mg/cig]	HCl Benzo(a)pyrene [ng/cig]
1400588	Marlboro Gold King Size (KS) Box	1	71.6	39.3	1.87	30.9	17.8	1.91	33.2	14.0
1400588	Marlboro Gold King Size (KS) Box	2	72.8	41.3	4.24	26.5	13.6	1.79	27.4	14.6
1400588	Marlboro Gold King Size (KS) Box	3	62.0	38.0	1.87	28.5	16.3	1.98	30.7	14.2
1400588	Marlboro Gold King Size (KS) Box	4	70.8	38.1	1.87	29.1	17.1	1.90	31.2	14.1
1400588	Marlboro Gold King Size (KS) Box	5	74.8	40.5	4.06	29.1	14.6	1.81	29.8	14.9
1400588	Marlboro Gold King Size (KS) Box	6	77.2	40.3	1.87	29.2	17.1	1.91	30.2	13.1
1400588	Marlboro Gold King Size (KS) Box	7	77.6	39.1	1.87	30.4	16.3	1.89	29.5	14.1
1400589	Newport King Size Menthol Box	1	96.8	45.5	1.87	31.7	17.7	2.03	34.6	18.4
1400589	Newport King Size Menthol Box	2	78.8	44.2	1.87	28.5	18.0	1.89	32.2	19.2
1400589	Newport King Size Menthol Box	3	85.6	52.6	1.87	30.6	17.1	1.94	31.6	18.7
1400589	Newport King Size Menthol Box	4	78.4	47.0	1.87	30.5	17.9	1.89	32.5	12.8
1400589	Newport King Size Menthol Box	5	80.8	51.6	1.87	29.6	18.8	1.90	33.6	17.8
1400589	Newport King Size Menthol Box	6	85.6	50.7	1.87	29.6	19.4	1.96	33.5	18.6
1400589	Newport King Size Menthol Box	7	82.8	49.5	1.87	31.0	21.2	1.99	32.6	17.8
1400590	3R4F Kentucky Reference	1	96.8	35.0	1.87	31.5	15.8	1.93	31.2	15.6
1400590	3R4F Kentucky Reference	2	90.4	32.2	1.87	30.6	13.2	1.75	26.4	16.9
1400590	3R4F Kentucky Reference	3	104	33.3	1.87	30.1	15.7	1.77	27.8	14.9
1400590	3R4F Kentucky Reference	4	105	33.5	1.87	31.1	17.0	1.84	29.2	17.0
1400590	3R4F Kentucky Reference	5	110	32.1	1.87	31.6	16.6	1.78	27.2	16.6
1400590	3R4F Kentucky Reference	6	105	34.2	1.87	31.1	15.4	1.88	29.3	16.2
1400590	3R4F Kentucky Reference	7	113	31.7	1.87	30.4	14.4	1.75	26.5	16.3

non-quantifiable result replaced by half the limit of quantification

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Cigarette Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	HCl Formaldehyde [µg/cig]	HCl Acetaldehyde [µg/cig]	HCl Crotonaldehyde [µg/cig]	HCl NNN [ng/cig]	HCl NNK [ng/cig]	HCl Cadmium [ng/cig]	HCl Arsenic [ng/cig]
1400588	Marlboro Gold King Size (KS) Box	1	89.8	1444	47.2	235	161	86.3	8.99
1400588	Marlboro Gold King Size (KS) Box	2	81.1	1459	48.8	243	163	95.1	10.3
1400588	Marlboro Gold King Size (KS) Box	3	78.6	1382	44.7	254	169	101	3.75
1400588	Marlboro Gold King Size (KS) Box	4	63.6	1230	39.5	218	146	86.6	8.79
1400588	Marlboro Gold King Size (KS) Box	5	76.9	1385	43.4	261	168	94.7	10.5
1400588	Marlboro Gold King Size (KS) Box	6	81.1	1396	44.6	245	163	95.2	7.92
1400588	Marlboro Gold King Size (KS) Box	7	74.1	1389	44.7	229	153	91.5	6.94
1400589	Newport King Size Menthol Box	1	91.8	1683	54.7	243	151	110	8.01
1400589	Newport King Size Menthol Box	2	101	1774	61.1	257	147	95.2	3.75
1400589	Newport King Size Menthol Box	3	89.7	1600	54.4	244	161	107	3.75
1400589	Newport King Size Menthol Box	4	97.5	1661	54.2	253	159	98.8	3.75
1400589	Newport King Size Menthol Box	5	101	1719	57.7	233	151	109	8.44
1400589	Newport King Size Menthol Box	6	104	1677	52.2	257	170	101	7.92
1400589	Newport King Size Menthol Box	7	113	1690	53.7	246	151	103	3.75
1400590	3R4F Kentucky Reference	1	87.7	1564	47.3	326	274	97.8	10.9
1400590	3R4F Kentucky Reference	2	102	1746	59.3	315	266	110	8.56
1400590	3R4F Kentucky Reference	3	97.5	1658	53.5	357	275	114	11.3
1400590	3R4F Kentucky Reference	4	98.1	1688	53.2	311	272	110	9.91
1400590	3R4F Kentucky Reference	5	91.3	1622	51.4	287	253	115	11.3
1400590	3R4F Kentucky Reference	6	95.5	1679	53.0	313	263	119	10.1
1400590	3R4F Kentucky Reference	7	103	1705	67.9	291	247	111	10.0

non-quantifiable result replaced by half the limit of quantification

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Test Article ID	Test Article Description	Replicate Number	ISO Carbon Monoxide [mg/mg nicotine]	ISO Water (mg/mg nicotine)	ISO Tar (mg/mg nicotine)	ISO Benzo(a)pyrene [ng/mg nicotine]	ISO Formaldehyde [µg/mg nicotine]
1400588	Marlboro Gold King Size (KS) Box	1	14.0	0.992	13.2	10.0	33.1
1400588	Marlboro Gold King Size (KS) Box	2	14.6	1.23	13.8	9.71	25.4
1400588	Marlboro Gold King Size (KS) Box	3	15.0	1.22	14.0	11.0	31.5
1400588	Marlboro Gold King Size (KS) Box	4	14.2	1.07	13.3	10.4	38.2
1400588	Marlboro Gold King Size (KS) Box	5	13.9	1.12	14.3	9.85	35.2
1400588	Marlboro Gold King Size (KS) Box	6	15.1	1.31	17.2	10.1	33.3
1400588	Marlboro Gold King Size (KS) Box	7	14.6	1.06	13.7	10.4	36.9
1400589	Newport King Size Menthol Box	1	19.5	3.26	16.6	12.5	42.4
1400589	Newport King Size Menthol Box	2	15.4	3.64	16.7	11.9	45.2
1400589	Newport King Size Menthol Box	3	20.1	2.88	16.1	11.9	46.9
1400589	Newport King Size Menthol Box	4	19.6	3.40	16.7	12.2	43.3
1400589	Newport King Size Menthol Box	5	20.1	3.48	17.3	11.6	40.9
1400589	Newport King Size Menthol Box	6	20.5	2.76	16.9	11.9	36.8
1400589	Newport King Size Menthol Box	7	20.7	3.30	16.9	12.4	48.9
1400590	3R4F Kentucky Reference	1	17.1	1.08	13.8	10.7	39.4
1400590	3R4F Kentucky Reference	2	16.8	1.01	13.3	10.5	40.3
1400590	3R4F Kentucky Reference	3	16.0	1.03	12.8	10.3	44.8
1400590	3R4F Kentucky Reference	4	15.1	0.950	12.2	10.3	35.1
1400590	3R4F Kentucky Reference	5	15.2	0.922	12.6	10.0	43.5
1400590	3R4F Kentucky Reference	6	14.3	0.827	13.2	10.2	41.4
1400590	3R4F Kentucky Reference	7	17.1	1.15	14.3	10.3	37.6

non-quantifiable result replaced by half the limit of quantification

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Test Article ID	Test Article Description	Replicate Number	ISO Acetaldehyde [µg/mg nicotine]	ISO Crotonaldehyde [µg/mg nicotine]	ISO NNN [ng/mg nicotine]	ISO NNK [ng/mg nicotine]	ISO Cadmium [ng/mg nicotine]	ISO Arsenic [ng/mg nicotine]
1400588	Marlboro Gold King Size (KS) Box	1	725	10.8	145	94.8	52.0	2.47
1400588	Marlboro Gold King Size (KS) Box	2	558	10.8	145	96.3	54.6	5.61
1400588	Marlboro Gold King Size (KS) Box	3	703	13.0	125	82.0	50.3	2.47
1400588	Marlboro Gold King Size (KS) Box	4	754	13.8	149	93.7	50.5	2.47
1400588	Marlboro Gold King Size (KS) Box	5	754	14.4	153	99.0	53.6	5.37
1400588	Marlboro Gold King Size (KS) Box	6	650	11.8	162	102	53.3	2.47
1400588	Marlboro Gold King Size (KS) Box	7	781	15.6	163	103	51.7	2.47
1400589	Newport King Size Menthol Box	1	1018	23.9	155	111	52.2	2.14
1400589	Newport King Size Menthol Box	2	1074	26.9	146	90.4	50.7	2.14
1400589	Newport King Size Menthol Box	3	1070	26.5	153	98.2	60.4	2.14
1400589	Newport King Size Menthol Box	4	1174	28.6	137	89.9	53.9	2.14
1400589	Newport King Size Menthol Box	5	1124	24.7	148	92.7	59.1	2.14
1400589	Newport King Size Menthol Box	6	981	19.4	149	98.2	58.1	2.14
1400589	Newport King Size Menthol Box	7	1137	28.2	157	95.0	56.9	2.14
1400590	3R4F Kentucky Reference	1	905	15.3	184	152	54.9	2.94
1400590	3R4F Kentucky Reference	2	932	18.3	171	142	50.5	2.94
1400590	3R4F Kentucky Reference	3	1050	20.9	199	164	52.3	2.94
1400590	3R4F Kentucky Reference	4	909	17.0	202	165	52.7	2.94
1400590	3R4F Kentucky Reference	5	1061	21.7	201	172	50.4	2.94
1400590	3R4F Kentucky Reference	6	993	17.4	196	165	53.7	2.94
1400590	3R4F Kentucky Reference	7	984	18.0	202	177	49.9	2.94

non-quantifiable result replaced by half the limit of quantification

Study Report prepared by Labstat International ULC

Sheet: mainstream data listings

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M195-GLP Appendix D1_Cigarette Test Article Results (Data Listings).xlsx_3303718
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Study Identifier: M195-GLP
Study Report - Appendix D1
Cigarette Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	HCl Carbon Monoxide [mg/mg nicotine]	HCl Water [mg/mg nicotine]	HCl Tar [mg/mg nicotine]	HCl Benzo(a)pyrene [ng/mg nicotine]	HCl Formaldehyde [µg/mg nicotine]
1400588	Marlboro Gold King Size (KS) Box	1	16.4	9.43	17.6	7.43	47.6
1400588	Marlboro Gold King Size (KS) Box	2	14.0	7.20	14.5	7.77	43.1
1400588	Marlboro Gold King Size (KS) Box	3	15.1	8.63	16.3	7.51	41.7
1400588	Marlboro Gold King Size (KS) Box	4	15.4	9.08	16.6	7.47	33.7
1400588	Marlboro Gold King Size (KS) Box	5	14.9	7.86	15.8	7.89	40.8
1400588	Marlboro Gold King Size (KS) Box	6	15.5	9.05	16.0	6.96	43.0
1400588	Marlboro Gold King Size (KS) Box	7	16.1	8.67	15.7	7.47	39.3
1400589	Newport King Size Menthol Box	1	16.3	9.11	17.8	9.48	47.3
1400589	Newport King Size Menthol Box	2	14.7	9.27	16.6	9.90	52.2
1400589	Newport King Size Menthol Box	3	15.7	8.83	16.3	9.65	46.3
1400589	Newport King Size Menthol Box	4	15.7	9.25	16.7	6.60	50.3
1400589	Newport King Size Menthol Box	5	15.2	9.71	17.3	9.18	51.8
1400589	Newport King Size Menthol Box	6	15.2	10.0	17.2	9.61	53.7
1400589	Newport King Size Menthol Box	7	16.0	10.9	16.8	9.18	58.1
1400590	3R4F Kentucky Reference	1	17.3	8.73	17.2	8.60	48.3
1400590	3R4F Kentucky Reference	2	16.9	7.29	14.6	9.31	56.2
1400590	3R4F Kentucky Reference	3	16.6	8.66	15.3	8.20	53.7
1400590	3R4F Kentucky Reference	4	17.2	9.36	15.1	9.39	54.1
1400590	3R4F Kentucky Reference	5	17.4	9.27	15.0	9.13	50.3
1400590	3R4F Kentucky Reference	6	17.1	8.51	16.2	8.95	52.6
1400590	3R4F Kentucky Reference	7	16.8	7.96	14.6	9.00	57.1

non-quantifiable result replaced by half the limit of quantification

Study Report prepared by Labstat International ULC

Sheet: mainstream data listings

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M195-GLP Appendix D1 Cigarette Test Article Results (Data Listings).xlsx 3303718
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 Electronically Signed By: Wendy Wagstaff On: 3/13/2014 2:52:03 PM Audit ID: 3303718



Study Identifier: M195-GLP
 Study Report - Appendix D1
 Cigarette Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	HCl Acetaldehyde [µg/mg nicotine]	HCl Crotonaldehyde [µg/mg nicotine]	HCl NNN [ng/mg nicotine]	HCl NNK [ng/mg nicotine]	HCl Cadmium [ng/mg nicotine]	HCl Arsenic [ng/mg nicotine]
1400588	Marlboro Gold King Size (KS) Box	1	766	25.0	125	85.2	51.1	4.77
1400588	Marlboro Gold King Size (KS) Box	2	774	26.9	129	86.3	50.5	5.48
1400588	Marlboro Gold King Size (KS) Box	3	733	23.7	135	89.8	53.8	1.99
1400588	Marlboro Gold King Size (KS) Box	4	653	21.0	116	77.5	46.0	4.66
1400588	Marlboro Gold King Size (KS) Box	5	735	23.1	138	89.1	50.3	5.56
1400588	Marlboro Gold King Size (KS) Box	6	741	23.6	130	86.3	50.5	4.20
1400588	Marlboro Gold King Size (KS) Box	7	737	23.7	122	81.0	48.5	4.74
1400589	Newport King Size Menthol Box	1	868	28.2	125	78.0	56.6	4.13
1400589	Newport King Size Menthol Box	2	914	31.5	132	75.9	49.1	1.93
1400589	Newport King Size Menthol Box	3	825	28.0	126	82.8	55.3	1.93
1400589	Newport King Size Menthol Box	4	856	27.9	131	82.1	50.9	1.93
1400589	Newport King Size Menthol Box	5	886	29.8	120	77.7	56.3	4.35
1400589	Newport King Size Menthol Box	6	864	26.9	132	87.6	52.0	4.08
1400589	Newport King Size Menthol Box	7	871	27.7	127	77.7	53.3	1.93
1400590	3R4F Kentucky Reference	1	862	25.1	180	151	53.9	6.02
1400590	3R4F Kentucky Reference	2	963	32.7	174	147	60.8	4.72
1400590	3R4F Kentucky Reference	3	914	29.5	197	151	63.0	6.25
1400590	3R4F Kentucky Reference	4	930	29.3	171	150	60.5	5.46
1400590	3R4F Kentucky Reference	5	894	28.4	158	139	63.4	6.22
1400590	3R4F Kentucky Reference	6	926	29.2	173	145	65.6	5.66
1400590	3R4F Kentucky Reference	7	940	37.4	151	136	61.5	5.54

non-quantifiable result replaced by half the limit of quantification

Study Report prepared by Labstat International ULC

Sheet: mainstream data listings

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Appendix D2

Smokeless Tobacco Test Article Results (Data Listings)

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Study Identifier: M195-GLP
 Study Report - Appendix D2
 Smokeless Tobacco Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	pH Result	Moisture [%]	Weight of Tobacco plus Tobacco Pouch [g/pouch 'as is']	Nicotine [mg/g smokeless tobacco 'dry weight']	Free Nicotine [mg/g smokeless tobacco 'dry weight']	Benz[a]pyrene [ng/g smokeless tobacco 'dry weight']	Formaldehyde [µg/g smokeless tobacco 'dry weight']	Acetaldehyde [µg/g smokeless tobacco 'dry weight']
1400891	General Original Snus (US)	1	7.85	48.1	0.9559	15.3	6.04	1.94	2.08	18.7
1400891	General Original Snus (US)	2	7.82	48.9	0.9680	15.6	6.24	1.59	1.77	18.7
1400891	General Original Snus (US)	3	7.64	48.9	0.9885	15.4	6.06	1.76	2.49	22.1
1400891	General Original Snus (US)	4	7.82	48.9	1.0191	15.7	6.23	2.57	2.39	20.7
1400891	General Original Snus (US)	5	7.85	48.9	1.0074	15.6	6.18	1.67	2.24	21.1
1400891	General Original Snus (US)	6	7.85	49.1	0.9797	15.9	6.31	2.27	2.53	22.5
1400891	General Original Snus (US)	7	7.84	48.9	1.0343	15.1	6.38	1.58	2.66	22.2
1400891	General Original Snus (US)	8			0.9964					
1400891	General Original Snus (US)	9			0.9870					
1400891	General Original Snus (US)	10			1.0237					
1400892	Camel Snus Frost	1	7.56	30.3	0.8484	12.0	3.13	1.55	1.65	2.40
1400892	Camel Snus Frost	2	7.56	30.4	0.8962	12.6	3.29	1.59	1.77	2.46
1400892	Camel Snus Frost	3	7.58	30.4	0.9385	12.9	3.36	1.65	1.54	2.32
1400892	Camel Snus Frost	4	7.57	30.4	0.8265	12.9	3.37	1.53	1.13	1.93
1400892	Camel Snus Frost	5	7.57	30.3	0.6035	12.4	3.25	1.66	1.16	1.92
1400892	Camel Snus Frost	6	7.58	30.0	0.9960	12.6	3.35	1.39	1.65	2.61
1400892	Camel Snus Frost	7	7.55	30.2	0.6237	13.7	3.57	1.61	1.50	2.34
1400892	Camel Snus Frost	8			0.6427					
1400892	Camel Snus Frost	9			0.6284					
1400892	Camel Snus Frost	10			0.6457					
1400893	Camel Snus Frost Large	1	7.57	31.4	1.0204	10.8	2.92	2.03	1.33	2.47
1400893	Camel Snus Frost Large	2	7.58	31.3	0.9362	11.9	3.24	1.51	1.13	2.36
1400893	Camel Snus Frost Large	3	7.60	31.0	0.9051	12.0	3.25	1.65	0.916	1.86
1400893	Camel Snus Frost Large	4	7.60	31.0	0.8581	13.2	3.57	1.52	1.10	2.07
1400893	Camel Snus Frost Large	5	7.59	30.8	0.9722	12.8	3.48	1.74	1.16	2.33
1400893	Camel Snus Frost Large	6	7.61	31.0	0.8771	13.2	3.56	1.49	1.19	2.66
1400893	Camel Snus Frost Large	7	7.59	30.8	0.9893	13.5	3.66	1.43	1.17	2.47
1400893	Camel Snus Frost Large	8			0.9378					
1400893	Camel Snus Frost Large	9			0.9658					
1400893	Camel Snus Frost Large	10			0.9251					
1400894	Camel Snus Mellow	1	7.59	30.4	0.6471	13.3	3.65	1.65	1.83	3.84
1400894	Camel Snus Mellow	2	7.60	30.6	0.6290	13.3	3.64	1.58	1.97	4.15
1400894	Camel Snus Mellow	3	7.60	30.3	0.5037	12.6	3.44	1.46	1.80	3.82
1400894	Camel Snus Mellow	4	7.60	30.5	0.8088	14.6	3.99	1.98	2.38	3.88
1400894	Camel Snus Mellow	5	7.60	30.4	0.6385	13.8	3.77	1.32	2.50	4.35
1400894	Camel Snus Mellow	6	7.60	30.5	0.5710	12.5	3.42	2.04	2.29	4.26
1400894	Camel Snus Mellow	7	7.60	30.3	0.6342	13.9	3.90	1.83	1.64	3.92
1400894	Camel Snus Mellow	8			0.6338					
1400894	Camel Snus Mellow	9			0.5164					
1400894	Camel Snus Mellow	10			0.8078					
1400895	Camel Snus Mint	1	7.55	30.3	0.5631	12.6	3.22	1.81	1.77	2.71
1400895	Camel Snus Mint	2	7.56	30.4	0.6100	14.1	3.58	1.55	1.96	2.57
1400895	Camel Snus Mint	3	7.55	30.3	0.5085	13.7	3.46	1.35	1.63	2.27
1400895	Camel Snus Mint	4	7.56	30.4	0.5749	13.5	3.44	1.45	2.07	2.85
1400895	Camel Snus Mint	5	7.55	30.3	0.5379	14.5	3.71	1.27	1.61	2.40
1400895	Camel Snus Mint	6	7.58	30.3	0.5358	14.1	3.61	1.47	2.38	2.86
1400895	Camel Snus Mint	7	7.57	30.1	0.6619	13.5	2.45	1.69	1.42	2.37
1400895	Camel Snus Mint	8			0.5356					
1400895	Camel Snus Mint	9			0.5728					
1400895	Camel Snus Mint	10			0.5973					
1400896	Camel Snus Robust	1	7.65	31.8	1.0651	11.6	3.70	1.51	1.31	2.29
1400896	Camel Snus Robust	2	7.70	31.8	0.9121	12.7	4.03	1.65	1.44	2.84
1400896	Camel Snus Robust	3	7.71	31.8	0.9492	12.5	3.98	1.38	1.34	2.60
1400896	Camel Snus Robust	4	7.66	31.7	0.9730	10.3	3.28	1.45	1.74	2.64
1400896	Camel Snus Robust	5	7.68	31.8	1.0348	13.0	4.14	1.86	1.79	3.05
1400896	Camel Snus Robust	6	7.69	31.5	1.0357	11.2	3.54	1.42	1.77	2.87
1400896	Camel Snus Robust	7	7.68	31.6	0.8806	13.5	4.29	1.24	1.86	2.89
1400896	Camel Snus Robust	8			1.0461					
1400896	Camel Snus Robust	9			0.9732					
1400896	Camel Snus Robust	10			0.9311					

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Sheet: smokeless tobacco data listings

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M195-GLP Appendix D2 Smokeless Tobacco Test Article Results (Data Listings).xlsx_3303738
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Study Identifier: M195-GLP Study Report - Appendix D2 Smokeless Tobacco Test Article Results (Data Listings)										
Test Article ID	Test Article Description	Replicate Number	pH Result	Moisture [%]	Weight of Tobacco plus Tobacco Pouch [g/pouch 'as is']	Nicotine (mg/g) smokeless tobacco 'dry weight'	Free Nicotine (mg/g) smokeless tobacco 'dry weight'	Benzo(a)pyrene (ng/g) smokeless tobacco 'dry weight'	Formaldehyde (µg/g) smokeless tobacco 'dry weight'	Acetaldehyde (µg/g) smokeless tobacco 'dry weight'
1400931	Camel Snus Winterschill	1	7.71	30.9	1.0013	14.0	4.61	1.73	1.60	3.46
1400931	Camel Snus Winterschill	2	7.70	31.0	1.0075	14.5	4.76	1.44	1.74	3.76
1400931	Camel Snus Winterschill	3	7.72	30.9	0.9145	13.3	4.37	1.59	1.39	3.11
1400931	Camel Snus Winterschill	4	7.72	30.5	1.0074	14.6	4.80	1.63	1.52	3.29
1400931	Camel Snus Winterschill	5	7.71	31.1	1.0169	14.0	4.61	1.37	1.54	3.13
1400931	Camel Snus Winterschill	6	7.71	30.9	0.9982	14.2	4.65	1.63	1.34	2.71
1400931	Camel Snus Winterschill	7	7.71	30.5	1.0053	14.5	4.75	1.54	1.42	2.60
1400931	Camel Snus Winterschill	8			0.9234					
1400931	Camel Snus Winterschill	9			1.0597					
1400931	Camel Snus Winterschill	10			0.9025					
1400932	CRP1 Reference Snus	1	7.82	49.3	1.0494	18.8	7.06	1.85	2.28	22.1
1400932	CRP1 Reference Snus	2	7.80	49.4	1.0854	19.0	7.15	2.10	2.39	23.1
1400932	CRP1 Reference Snus	3	7.80	49.2	1.0542	16.9	7.11	1.41	2.11	21.0
1400932	CRP1 Reference Snus	4	7.79	49.3	1.1264	16.3	7.25	1.63	1.90	19.7
1400932	CRP1 Reference Snus	5	7.80	49.2	1.0796	20.0	7.46	1.43	1.83	20.4
1400932	CRP1 Reference Snus	6	7.81	46.0	1.0170	16.1	6.79	1.38	2.07	20.8
1400932	CRP1 Reference Snus	7	7.79	48.9	1.0149	16.6	6.98	1.93	2.02	20.0
1400932	CRP1 Reference Snus	8			1.0283					
1400932	CRP1 Reference Snus	9			1.0734					
1400932	CRP1 Reference Snus	10			1.0376					
1400933	General Original Snus (Sweden)	1	8.43	49.3	0.9767	16.2	11.7	1.64	6.41	49.5
1400933	General Original Snus (Sweden)	2	8.44	49.5	0.9747	16.5	12.0	2.07	6.80	52.3
1400933	General Original Snus (Sweden)	3	8.45	49.4	1.0117	16.7	12.1	1.56	4.92	41.9
1400933	General Original Snus (Sweden)	4	8.45	49.4	0.9544	16.7	12.2	2.33	4.77	41.0
1400933	General Original Snus (Sweden)	5	8.46	49.4	0.9726	16.6	12.1	1.76	4.97	40.6
1400933	General Original Snus (Sweden)	6	8.45	49.5	1.0554	17.1	12.4	1.91	6.60	55.4
1400933	General Original Snus (Sweden)	7	8.45	49.3	0.9851	17.1	12.5	2.15	5.73	47.8
1400933	General Original Snus (Sweden)	8			0.9833					
1400933	General Original Snus (Sweden)	9			0.9756					
1400933	General Original Snus (Sweden)	10			0.9602					
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	1	7.14	23.8	0.3502	22.2	2.62	1.88	4.29	9.46
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	2	7.16	23.3	0.3371	21.5	2.54	1.67	3.61	8.37
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	3	7.16	23.4	0.3301	22.2	2.62	1.97	3.74	8.16
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	4	7.15	23.9	0.3689	22.0	2.59	1.92	3.78	8.76
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	5	7.16	23.5	0.3811	22.8	2.69	2.46	3.41	8.28
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	6	7.13	23.6	0.3560	22.2	2.62	1.89	4.17	9.31
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	7	7.13	23.2	0.3402	22.3	2.63	1.76	5.19	10.7
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	8			0.3411					
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	9			0.3310					
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	10			0.3497					
1400935	Granit Snus (Sweden)	1	7.94	46.5	0.9282	19.8	8.96	1.86	3.54	24.0
1400935	Granit Snus (Sweden)	2	7.94	46.5	0.8701	20.3	9.07	1.69	3.25	22.5
1400935	Granit Snus (Sweden)	3	7.94	46.0	0.9149	20.0	9.93	1.48	2.89	21.2
1400935	Granit Snus (Sweden)	4	7.92	46.3	0.9161	19.4	8.68	1.60	2.69	19.5
1400935	Granit Snus (Sweden)	5	7.92	46.4	0.9389	18.8	8.40	1.52	3.24	22.8
1400935	Granit Snus (Sweden)	6	7.93	46.3	0.9132	20.0	8.95	1.45	3.17	21.6
1400935	Granit Snus (Sweden)	7	7.93	46.1	0.8594	19.9	8.98	1.71	2.83	19.6
1400935	Granit Snus (Sweden)	8			0.9287					
1400935	Granit Snus (Sweden)	9			0.9682					
1400935	Granit Snus (Sweden)	10			0.9152					
1400936	Skruf Stark Snus (Sweden)	1	8.54	45.5	0.9467	23.0	17.8	2.62	5.39	54.0
1400936	Skruf Stark Snus (Sweden)	2	8.53	45.3	0.9769	26.0	2.66	2.66	5.33	57.5
1400936	Skruf Stark Snus (Sweden)	3	8.52	45.3	0.9737	23.0	18.3	2.97	4.42	47.3
1400936	Skruf Stark Snus (Sweden)	4	8.57	46.2	0.9510	27.6	21.3	2.68	3.96	42.6
1400936	Skruf Stark Snus (Sweden)	5	8.58	45.1	0.9657	22.5	17.4	2.68	4.93	53.5
1400936	Skruf Stark Snus (Sweden)	6	8.57	44.8	0.9222	26.1	20.2	2.57	4.32	45.9
1400936	Skruf Stark Snus (Sweden)	7	8.59	44.7	0.9547	26.3	20.3	2.47	5.43	57.2
1400936	Skruf Stark Snus (Sweden)	8			0.9986					
1400936	Skruf Stark Snus (Sweden)	9			0.9834					
1400936	Skruf Stark Snus (Sweden)	10			0.9733					

non-quantifiable result replaced by half the limit of quantification

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Sheet: smokeless tobacco data listings

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Study Identifier: M195-GLP
 Study Report - Appendix D2
 Smokeless Tobacco Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Crotonaldehyde (µg/g smokeless tobacco 'dry weight')	NNN (ng/g smokeless tobacco 'dry weight')	NNK (ng/g smokeless tobacco 'dry weight')	Cadmium (ng/g smokeless tobacco 'dry weight')	Arsenic (ng/g smokeless tobacco 'dry weight')	Nicotine (mg/pouch 'as is')	Free Nicotine (mg/pouch 'as is')	Benzo(a)pyrene (ng/pouch 'as is')
1400891	General Original Snus (US)	1	0.117	606	147	448	235	7.79	3.08	0.989
1400891	General Original Snus (US)	2	0.117	575	144	434	230	8.05	3.19	0.809
1400891	General Original Snus (US)	3	0.117	574	137	447	228	7.84	3.11	0.900
1400891	General Original Snus (US)	4	0.117	588	138	426	210	8.03	3.18	1.31
1400891	General Original Snus (US)	5	0.117	606	143	440	222	7.86	3.15	0.850
1400891	General Original Snus (US)	6	0.117	566	141	422	228	8.13	3.22	1.16
1400891	General Original Snus (US)	7	0.117	577	134	308	208	8.23	3.26	0.810
1400891	General Original Snus (US)	8								
1400891	General Original Snus (US)	9								
1400891	General Original Snus (US)	10								
1400892	Camel Snus Frost	1	0.086	1266	451	477	196	5.28	1.38	0.880
1400892	Camel Snus Frost	2	0.086	1240	467	474	224	5.54	1.45	0.688
1400892	Camel Snus Frost	3	0.086	1260	461	464	211	5.67	1.48	0.725
1400892	Camel Snus Frost	4	0.086	1243	449	463	218	5.68	1.48	0.674
1400892	Camel Snus Frost	5	0.086	1230	454	500	229	5.47	1.43	0.819
1400892	Camel Snus Frost	6	0.086	1255	440	486	224	5.84	1.47	0.612
1400892	Camel Snus Frost	7	0.086	1248	452	440	227	6.02	1.57	0.706
1400892	Camel Snus Frost	8								
1400892	Camel Snus Frost	9								
1400892	Camel Snus Frost	10								
1400893	Camel Snus Frost Large	1	0.087	1258	408	447	221	6.98	1.89	1.31
1400893	Camel Snus Frost Large	2	0.087	1263	414	453	203	7.74	2.10	0.977
1400893	Camel Snus Frost Large	3	0.087	1308	413	439	204	7.77	2.10	1.07
1400893	Camel Snus Frost Large	4	0.087	1300	424	451	217	8.54	2.31	0.987
1400893	Camel Snus Frost Large	5	0.087	1268	414	456	206	8.33	2.26	1.13
1400893	Camel Snus Frost Large	6	0.087	1275	413	475	201	8.52	2.31	0.967
1400893	Camel Snus Frost Large	7	0.087	1305	420	353	199	8.75	2.37	0.929
1400893	Camel Snus Frost Large	8								
1400893	Camel Snus Frost Large	9								
1400893	Camel Snus Frost Large	10								
1400894	Camel Snus Mellow	1	0.086	1217	373	456	215	5.64	1.54	0.599
1400894	Camel Snus Mellow	2	0.086	1244	377	454	211	5.64	1.54	0.669
1400894	Camel Snus Mellow	3	0.086	1225	366	479	218	5.32	1.46	0.619
1400894	Camel Snus Mellow	4	0.086	1240	368	369	156	6.18	1.69	0.839
1400894	Camel Snus Mellow	5	0.086	1224	368	393	213	5.84	1.60	0.559
1400894	Camel Snus Mellow	6	0.086	1206	366	395	194	5.29	1.45	0.853
1400894	Camel Snus Mellow	7	0.086	1204	368	384	180	5.88	1.61	0.772
1400894	Camel Snus Mellow	8								
1400894	Camel Snus Mellow	9								
1400894	Camel Snus Mellow	10								
1400895	Camel Snus Mint	1	0.086	1218	314	412	188	4.98	1.26	0.710
1400895	Camel Snus Mint	2	0.086	1261	325	417	207	5.52	1.41	0.609
1400895	Camel Snus Mint	3	0.086	1236	326	452	218	5.38	1.37	0.528
1400895	Camel Snus Mint	4	0.086	1214	317	472	221	5.30	1.35	0.568
1400895	Camel Snus Mint	5	0.086	1220	302	428	212	5.71	1.46	0.501
1400895	Camel Snus Mint	6	0.086	1256	327	425	223	5.66	1.42	0.579
1400895	Camel Snus Mint	7	0.086	1206	313	365	197	5.31	1.35	0.665
1400895	Camel Snus Mint	8								
1400895	Camel Snus Mint	9								
1400895	Camel Snus Mint	10								
1400896	Camel Snus Robust	1	0.088	1270	395	412	200	7.87	2.50	1.02
1400896	Camel Snus Robust	2	0.088	1275	396	427	194	8.58	2.72	1.32
1400896	Camel Snus Robust	3	0.088	1259	375	422	197	8.48	2.89	0.930
1400896	Camel Snus Robust	4	0.088	1258	395	409	180	6.94	2.20	0.980
1400896	Camel Snus Robust	5	0.088	1268	404	377	189	8.82	2.80	1.26
1400896	Camel Snus Robust	6	0.088	1317	401	372	246	7.54	2.39	0.959
1400896	Camel Snus Robust	7	0.088	1241	385	292	181	9.14	2.80	0.840
1400896	Camel Snus Robust	8								
1400896	Camel Snus Robust	9								
1400896	Camel Snus Robust	10								

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Sheet: smokeless tobacco data listings

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 Electronically Signed By: Wendy Wagstaff On: 3/13/2014 2:52:25 PM Audit ID: 3303738



Study Identifier: M195-GLP
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 Smokeless Tobacco Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Crotonaldehyde [µg/g smokeless tobacco 'dry weight']	NNN [ng/g smokeless tobacco 'dry weight']	NNK [ng/g smokeless tobacco 'dry weight']	Cadmium [ng/g smokeless tobacco 'dry weight']	Arsenic [ng/g smokeless tobacco 'dry weight']	Nicotine [mg/pouch 'as is']	Free Nicotine [mg/pouch 'as is']	Benzo(a)pyrene [ng/pouch 'as is']
1400931	Camel Snus Winterchill	1	0.085	1600	913	519	167	9.36	3.07	1.16
1400931	Camel Snus Winterchill	2	0.085	1538	893	521	173	9.65	3.17	0.962
1400931	Camel Snus Winterchill	3	0.085	1560	898	503	176	8.86	2.91	1.06
1400931	Camel Snus Winterchill	4	0.085	1558	896	507	178	9.74	3.20	1.08
1400931	Camel Snus Winterchill	5	0.085	1526	870	538	161	9.34	3.07	0.815
1400931	Camel Snus Winterchill	6	0.085	1543	873	522	177	9.44	3.10	1.09
1400931	Camel Snus Winterchill	7	0.085	1602	916	530	177	9.83	3.16	1.03
1400931	Camel Snus Winterchill	8								
1400931	Camel Snus Winterchill	9								
1400931	Camel Snus Winterchill	10								
1400932	CRP1 Reference Snus	1	0.118	1193	372	453	212	10.1	3.79	0.993
1400932	CRP1 Reference Snus	2	0.118	1200	390	457	199	10.2	3.84	1.13
1400932	CRP1 Reference Snus	3	0.118	1178	385	474	196	10.2	3.82	0.759
1400932	CRP1 Reference Snus	4	0.118	1169	385	455	198	10.4	3.89	0.876
1400932	CRP1 Reference Snus	5	0.118	1189	392	449	195	10.7	4.02	0.770
1400932	CRP1 Reference Snus	6	0.118	1198	378	454	209	9.71	3.64	0.739
1400932	CRP1 Reference Snus	7	0.118	1195	398	448	212	9.97	3.74	1.03
1400932	CRP1 Reference Snus	8								
1400932	CRP1 Reference Snus	9								
1400932	CRP1 Reference Snus	10								
1400933	General Original Snus (Sweden)	1	0.118	564	106	505	201	8.06	5.86	0.819
1400933	General Original Snus (Sweden)	2	0.118	572	158	468	211	8.26	6.01	1.03
1400933	General Original Snus (Sweden)	3	0.118	552	166	467	217	8.34	6.06	0.779
1400933	General Original Snus (Sweden)	4	0.118	542	163	482	214	8.36	6.08	1.16
1400933	General Original Snus (Sweden)	5	0.118	543	155	501	212	8.31	6.04	0.877
1400933	General Original Snus (Sweden)	6	0.118	543	160	491	206	8.54	6.21	0.956
1400933	General Original Snus (Sweden)	7	0.118	555	169	489	234	8.55	6.22	1.07
1400933	General Original Snus (Sweden)	8								
1400933	General Original Snus (Sweden)	9								
1400933	General Original Snus (Sweden)	10								
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	1	0.078	685	199	474	191	5.89	0.89	0.498
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	2	0.078	658	196	478	186	5.71	0.87	0.443
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	3	0.078	696	208	480	173	5.89	0.89	0.496
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	4	0.078	676	205	504	161	5.84	0.89	0.599
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	5	0.078	671	202	484	181	6.06	0.71	0.652
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	6	0.078	683	205	459	189	5.90	0.89	0.502
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	7	0.078	655	201	470	159	5.91	0.70	0.488
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	8								
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	9								
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	10								
1400935	Granit Snus (Sweden)	1	0.111	1022	459	379	192	9.74	4.36	0.814
1400935	Granit Snus (Sweden)	2	0.111	1018	486	372	161	9.87	4.46	0.631
1400935	Granit Snus (Sweden)	3	0.111	1002	479	368	215	9.82	4.38	0.713
1400935	Granit Snus (Sweden)	4	0.111	996	457	396	192	8.54	4.27	0.786
1400935	Granit Snus (Sweden)	5	0.111	1057	475	390	183	8.23	4.13	0.749
1400935	Granit Snus (Sweden)	6	0.111	1001	484	374	176	8.84	4.40	0.713
1400935	Granit Snus (Sweden)	7	0.111	998	474	385	183	8.77	4.37	0.841
1400935	Granit Snus (Sweden)	8								
1400935	Granit Snus (Sweden)	9								
1400935	Granit Snus (Sweden)	10								
1400936	Skruf Stark Snus (Sweden)	1	0.109	916	231	590	219	12.2	9.45	1.39
1400936	Skruf Stark Snus (Sweden)	2	0.109	907	231	606	204	13.8	10.7	1.41
1400936	Skruf Stark Snus (Sweden)	3	0.109	906	232	602	185	13.2	10.2	1.57
1400936	Skruf Stark Snus (Sweden)	4	0.109	894	228	595	230	14.6	11.3	1.43
1400936	Skruf Stark Snus (Sweden)	5	0.109	878	232	604	224	11.9	9.22	1.41
1400936	Skruf Stark Snus (Sweden)	6	0.109	885	227	615	218	13.8	10.7	1.36
1400936	Skruf Stark Snus (Sweden)	7	0.109	899	228	608	242	13.9	10.8	1.31
1400936	Skruf Stark Snus (Sweden)	8								
1400936	Skruf Stark Snus (Sweden)	9								
1400936	Skruf Stark Snus (Sweden)	10								

non-quantifiable result replaced by half the limit of quantification

Study Report prepared by Labstat International ULC

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Study Identifier: M195-GLP
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Smokeless Tobacco Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Formaldehyde [µg/pouch 'as is']	Acetaldehyde [µg/pouch 'as is']	Crotonaldehyde [µg/pouch 'as is']	NNN [ng/pouch 'as is']	NNK [ng/pouch 'as is']	Cadmium [ng/pouch 'as is']	Arsenic [ng/pouch 'as is']	Benzo(a)pyrene [ng/mg nicotine]	Formaldehyde [µg/mg nicotine]
1400891	General Original Snus (US)	1	1.67	9.55	0.060	309	75.0	229	126	0.124	0.133
1400891	General Original Snus (US)	2	0.904	9.56	0.060	293	73.3	221	117	0.101	0.113
1400891	General Original Snus (US)	3	1.27	11.3	0.060	233	70.0	228	116	0.112	0.159
1400891	General Original Snus (US)	4	1.22	10.6	0.060	300	70.7	217	107	0.164	0.152
1400891	General Original Snus (US)	5	1.14	10.6	0.060	309	73.1	224	113	0.106	0.143
1400891	General Original Snus (US)	6	1.29	11.5	0.060	289	71.9	215	117	0.145	0.161
1400891	General Original Snus (US)	7	1.36	11.3	0.060	294	68.2	157	106	0.101	0.169
1400891	General Original Snus (US)	8									
1400891	General Original Snus (US)	9									
1400891	General Original Snus (US)	10									
1400892	Camel Snus Frost	1	0.724	1.06	0.036	536	198	210	86.1	0.121	0.129
1400892	Camel Snus Frost	2	0.779	1.06	0.036	545	206	209	85.5	0.125	0.139
1400892	Camel Snus Frost	3	0.678	1.02	0.036	554	203	213	92.9	0.129	0.121
1400892	Camel Snus Frost	4	0.496	0.843	0.036	547	196	217	95.9	0.120	0.069
1400892	Camel Snus Frost	5	0.508	0.843	0.036	541	200	220	101	0.146	0.091
1400892	Camel Snus Frost	6	0.725	1.15	0.036	552	194	214	98.5	0.109	0.129
1400892	Camel Snus Frost	7	0.659	1.03	0.036	549	189	193	100	0.126	0.117
1400892	Camel Snus Frost	8									
1400892	Camel Snus Frost	9									
1400892	Camel Snus Frost	10									
1400893	Camel Snus Frost Large	1	0.861	1.60	0.056	816	264	290	143	0.162	0.106
1400893	Camel Snus Frost Large	2	0.732	1.53	0.056	812	268	294	131	0.121	0.090
1400893	Camel Snus Frost Large	3	0.593	1.21	0.056	846	267	285	122	0.132	0.073
1400893	Camel Snus Frost Large	4	0.710	1.34	0.056	843	275	283	141	0.122	0.088
1400893	Camel Snus Frost Large	5	0.751	1.51	0.056	822	269	286	135	0.139	0.063
1400893	Camel Snus Frost Large	6	0.774	1.73	0.056	826	267	307	130	0.120	0.096
1400893	Camel Snus Frost Large	7	0.761	1.60	0.056	846	272	229	123	0.115	0.084
1400893	Camel Snus Frost Large	8									
1400893	Camel Snus Frost Large	9									
1400893	Camel Snus Frost Large	10									
1400894	Camel Snus Mellow	1	0.776	1.32	0.036	515	158	193	91.0	0.123	0.136
1400894	Camel Snus Mellow	2	0.932	1.78	0.036	526	159	192	89.1	0.118	0.146
1400894	Camel Snus Mellow	3	0.761	1.62	0.036	518	155	203	92.2	0.109	0.134
1400894	Camel Snus Mellow	4	1.01	1.69	0.036	525	156	156	66.0	0.148	0.177
1400894	Camel Snus Mellow	5	1.06	1.84	0.036	518	155	186	90.1	0.096	0.186
1400894	Camel Snus Mellow	6	1.01	1.80	0.036	510	155	167	82.1	0.152	0.178
1400894	Camel Snus Mellow	7	0.693	1.06	0.036	535	164	163	76.3	0.136	0.122
1400894	Camel Snus Mellow	8									
1400894	Camel Snus Mellow	9									
1400894	Camel Snus Mellow	10									
1400895	Camel Snus Mint	1	0.697	1.06	0.034	479	123	162	73.7	0.132	0.129
1400895	Camel Snus Mint	2	0.771	1.01	0.034	496	128	164	81.3	0.113	0.143
1400895	Camel Snus Mint	3	0.639	0.893	0.034	486	128	178	85.8	0.068	0.116
1400895	Camel Snus Mint	4	0.813	1.12	0.034	477	125	165	68.7	0.105	0.151
1400895	Camel Snus Mint	5	0.634	0.943	0.034	478	118	168	83.5	0.093	0.116
1400895	Camel Snus Mint	6	0.937	1.04	0.034	493	128	167	87.8	0.107	0.174
1400895	Camel Snus Mint	7	0.558	0.930	0.034	475	123	146	77.2	0.123	0.104
1400895	Camel Snus Mint	8									
1400895	Camel Snus Mint	9									
1400895	Camel Snus Mint	10									
1400896	Camel Snus Robust	1	0.887	1.55	0.059	858	267	278	135	0.124	0.108
1400896	Camel Snus Robust	2	0.874	1.82	0.059	862	268	288	131	0.119	0.119
1400896	Camel Snus Robust	3	0.803	1.75	0.059	851	253	285	133	0.114	0.110
1400896	Camel Snus Robust	4	1.16	1.78	0.059	850	267	277	128	0.120	0.144
1400896	Camel Snus Robust	5	1.21	2.06	0.059	857	273	255	127	0.153	0.147
1400896	Camel Snus Robust	6	1.20	1.94	0.059	890	271	251	166	0.117	0.146
1400896	Camel Snus Robust	7	1.25	1.95	0.059	839	260	197	122	0.103	0.153
1400896	Camel Snus Robust	8									
1400896	Camel Snus Robust	9									
1400896	Camel Snus Robust	10									

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Sheet: smokeless tobacco data listings

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Study Identifier: M195-GLP
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Smokeless Tobacco Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Formaldehyde [µg/pouch 'as is']	Acetaldehyde [µg/pouch 'as is']	Crotonaldehyde [µg/pouch 'as is']	NNN [ng/pouch 'as is']	NNK [ng/pouch 'as is']	Cadmium [ng/pouch 'as is']	Arsenic [ng/pouch 'as is']	Benzo(a)pyrene [ng/mg nicotine]	Formaldehyde [µg/mg nicotine]
1400931	Camel Snus Winterchill	1	1.10	2.30	0.058	1065	608	346	111	0.123	0.117
1400931	Camel Snus Winterchill	2	1.10	2.30	0.058	1025	595	347	115	0.102	0.123
1400931	Camel Snus Winterchill	3	0.925	2.07	0.058	1038	599	335	117	0.112	0.098
1400931	Camel Snus Winterchill	4	1.01	2.18	0.058	1038	592	338	119	0.115	0.108
1400931	Camel Snus Winterchill	5	1.03	2.08	0.058	1017	579	359	107	0.097	0.109
1400931	Camel Snus Winterchill	6	0.894	1.81	0.058	1028	581	347	118	0.115	0.095
1400931	Camel Snus Winterchill	7	0.947	1.87	0.058	1067	610	353	118	0.109	0.100
1400931	Camel Snus Winterchill	8									
1400931	Camel Snus Winterchill	9									
1400931	Camel Snus Winterchill	10									
1400932	CRP1 Reference Snus	1	1.23	11.9	0.063	641	200	243	114	0.097	0.121
1400932	CRP1 Reference Snus	2	1.28	12.5	0.063	644	210	246	102	0.111	0.125
1400932	CRP1 Reference Snus	3	1.13	11.3	0.063	533	207	255	105	0.075	0.111
1400932	CRP1 Reference Snus	4	1.02	10.8	0.063	628	207	244	106	0.086	0.100
1400932	CRP1 Reference Snus	5	1.04	11.0	0.063	638	205	241	105	0.078	0.102
1400932	CRP1 Reference Snus	6	1.11	11.2	0.063	644	203	244	112	0.073	0.109
1400932	CRP1 Reference Snus	7	1.08	10.7	0.063	642	206	241	114	0.102	0.105
1400932	CRP1 Reference Snus	8									
1400932	CRP1 Reference Snus	9									
1400932	CRP1 Reference Snus	10									
1400933	General Original Snus (Sweden)	1	3.20	24.7	0.059	261	82.8	252	101	0.098	0.363
1400933	General Original Snus (Sweden)	2	3.40	26.1	0.059	286	79.1	233	105	0.124	0.407
1400933	General Original Snus (Sweden)	3	2.40	20.9	0.059	276	82.8	243	108	0.093	0.288
1400933	General Original Snus (Sweden)	4	2.36	20.5	0.059	271	81.2	240	107	0.139	0.286
1400933	General Original Snus (Sweden)	5	2.48	20.3	0.059	271	77.6	250	106	0.105	0.297
1400933	General Original Snus (Sweden)	6	3.32	27.7	0.059	271	79.6	245	103	0.115	0.399
1400933	General Original Snus (Sweden)	7	2.85	23.9	0.059	277	80.0	244	117	0.129	0.343
1400933	General Original Snus (Sweden)	8									
1400933	General Original Snus (Sweden)	9									
1400933	General Original Snus (Sweden)	10									
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	1	1.14	2.51	0.021	178	52.8	126	50.6	0.085	0.193
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	2	1.01	2.22	0.021	177	52.0	127	49.4	0.075	0.172
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	3	0.992	2.16	0.021	185	56.1	127	45.8	0.084	0.186
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	4	1.00	2.32	0.021	180	54.5	134	46.0	0.086	0.169
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	5	0.903	2.20	0.021	178	53.5	128	48.0	0.111	0.153
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	6	1.10	2.47	0.021	181	54.5	122	44.7	0.085	0.168
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	7	1.38	2.85	0.021	179	53.3	125	42.2	0.079	0.234
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	8									
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	9									
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	10									
1400935	Granit Snus (Sweden)	1	1.74	11.8	0.055	502	230	196	89.6	0.094	0.179
1400935	Granit Snus (Sweden)	2	1.50	11.0	0.055	520	239	193	89.0	0.088	0.165
1400935	Granit Snus (Sweden)	3	1.42	10.4	0.055	493	235	191	106	0.074	0.145
1400935	Granit Snus (Sweden)	4	1.29	9.56	0.055	465	230	195	94.4	0.081	0.133
1400935	Granit Snus (Sweden)	5	1.59	11.2	0.055	520	233	192	89.8	0.077	0.164
1400935	Granit Snus (Sweden)	6	1.58	10.6	0.055	482	238	184	89.5	0.073	0.151
1400935	Granit Snus (Sweden)	7	1.39	9.65	0.055	490	233	189	89.8	0.087	0.143
1400935	Granit Snus (Sweden)	8									
1400935	Granit Snus (Sweden)	9									
1400935	Granit Snus (Sweden)	10									
1400936	Skruf Stark Snus (Sweden)	1	2.85	26.6	0.059	485	122	313	116	0.104	0.214
1400936	Skruf Stark Snus (Sweden)	2	2.82	30.5	0.059	480	122	322	108	0.105	0.211
1400936	Skruf Stark Snus (Sweden)	3	2.34	23.0	0.059	480	123	318	103	0.119	0.175
1400936	Skruf Stark Snus (Sweden)	4	2.11	22.7	0.059	468	121	315	107	0.107	0.158
1400936	Skruf Stark Snus (Sweden)	5	2.51	28.3	0.059	465	123	320	119	0.105	0.185
1400936	Skruf Stark Snus (Sweden)	6	2.29	24.3	0.059	469	120	326	115	0.102	0.171
1400936	Skruf Stark Snus (Sweden)	7	2.88	30.3	0.059	476	121	322	128	0.089	0.216
1400936	Skruf Stark Snus (Sweden)	8									
1400936	Skruf Stark Snus (Sweden)	9									
1400936	Skruf Stark Snus (Sweden)	10									

non-quantifiable result replaced by half the limit of quantification

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Sheet: smokeless tobacco data listings

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M195-GLP Final Study Report
RJRT Study ID: 1061

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M195-GLP Appendix D2: Smokeless Tobacco Test Article Results (Data Listings).xlsx_3303738
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Study Identifier: M195-GLP
Study Report - Appendix D2
Smokeless Tobacco Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Acetaldehyde [µg/mg nicotine]	Crotonaldehyde [µg/mg nicotine]	NNN [ng/mg nicotine]	MNK [ng/mg nicotine]	Cadmium [ng/mg nicotine]	Arsenic [ng/mg nicotine]
1400891	General Original Snus (US)	1	1.19	0.007	39.6	9.37	28.6	15.0
1400891	General Original Snus (US)	2	1.19	0.007	36.5	8.16	27.6	14.9
1400891	General Original Snus (US)	3	1.41	0.007	26.6	8.75	28.5	14.5
1400891	General Original Snus (US)	4	1.32	0.007	37.5	8.83	27.2	13.4
1400891	General Original Snus (US)	5	1.34	0.007	38.7	9.13	28.0	14.2
1400891	General Original Snus (US)	6	1.44	0.007	36.1	8.98	26.8	14.8
1400891	General Original Snus (US)	7	1.41	0.007	36.8	8.52	19.6	13.2
1400891	General Original Snus (US)	8						
1400891	General Original Snus (US)	9						
1400891	General Original Snus (US)	10						
1400892	Camel Snus Frost	1	0.188	0.007	99.3	35.4	37.3	15.3
1400892	Camel Snus Frost	2	0.193	0.007	87.1	35.6	37.2	17.6
1400892	Camel Snus Frost	3	0.181	0.007	98.7	36.1	37.9	16.6
1400892	Camel Snus Frost	4	0.151	0.007	97.4	35.2	36.6	17.1
1400892	Camel Snus Frost	5	0.150	0.007	96.3	35.6	39.2	18.0
1400892	Camel Snus Frost	6	0.204	0.007	98.3	34.5	38.1	17.5
1400892	Camel Snus Frost	7	0.194	0.007	97.8	35.4	34.4	17.8
1400892	Camel Snus Frost	8						
1400892	Camel Snus Frost	9						
1400892	Camel Snus Frost	10						
1400893	Camel Snus Frost Large	1	0.187	0.007	101	32.7	35.8	17.7
1400893	Camel Snus Frost Large	2	0.189	0.007	100	33.2	36.3	16.2
1400893	Camel Snus Frost Large	3	0.149	0.007	105	33.1	35.2	16.3
1400893	Camel Snus Frost Large	4	0.188	0.007	104	33.9	36.2	17.4
1400893	Camel Snus Frost Large	5	0.167	0.007	102	33.2	36.5	16.7
1400893	Camel Snus Frost Large	6	0.213	0.007	102	33.0	37.9	16.1
1400893	Camel Snus Frost Large	7	0.198	0.007	105	33.6	28.3	16.0
1400893	Camel Snus Frost Large	8						
1400893	Camel Snus Frost Large	9						
1400893	Camel Snus Frost Large	10						
1400894	Camel Snus Mellow	1	0.286	0.006	90.6	27.7	33.9	16.0
1400894	Camel Snus Mellow	2	0.309	0.006	92.6	28.0	33.8	15.7
1400894	Camel Snus Mellow	3	0.284	0.006	81.2	27.2	35.6	16.2
1400894	Camel Snus Mellow	4	0.297	0.006	82.3	27.4	27.5	11.8
1400894	Camel Snus Mellow	5	0.324	0.006	91.1	27.4	29.2	15.8
1400894	Camel Snus Mellow	6	0.317	0.006	89.8	27.2	29.4	14.4
1400894	Camel Snus Mellow	7	0.292	0.006	94.1	28.9	28.6	13.4
1400894	Camel Snus Mellow	8						
1400894	Camel Snus Mellow	9						
1400894	Camel Snus Mellow	10						
1400895	Camel Snus Mint	1	0.197	0.006	88.8	22.8	30.1	13.7
1400895	Camel Snus Mint	2	0.187	0.006	91.9	23.7	30.4	15.1
1400895	Camel Snus Mint	3	0.186	0.006	90.2	23.8	33.0	15.9
1400895	Camel Snus Mint	4	0.208	0.006	88.5	23.1	34.4	16.1
1400895	Camel Snus Mint	5	0.175	0.006	89.9	22.0	31.2	15.5
1400895	Camel Snus Mint	6	0.194	0.006	91.5	23.8	31.0	16.3
1400895	Camel Snus Mint	7	0.173	0.006	88.0	22.8	26.7	14.3
1400895	Camel Snus Mint	8						
1400895	Camel Snus Mint	9						
1400895	Camel Snus Mint	10						
1400896	Camel Snus Robust	1	0.189	0.007	105	32.6	34.0	16.5
1400896	Camel Snus Robust	2	0.234	0.007	105	32.7	35.3	16.0
1400896	Camel Snus Robust	3	0.214	0.007	104	30.8	34.6	16.2
1400896	Camel Snus Robust	4	0.217	0.007	104	32.6	33.6	15.7
1400896	Camel Snus Robust	5	0.252	0.007	105	33.3	31.1	15.6
1400896	Camel Snus Robust	6	0.237	0.007	109	33.1	30.7	20.3
1400896	Camel Snus Robust	7	0.239	0.007	102	31.7	24.1	14.9
1400896	Camel Snus Robust	8						
1400896	Camel Snus Robust	9						
1400896	Camel Snus Robust	10						

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Sheet: smokeless tobacco data listings

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M195-GLP Final Study Report

RJRT Study ID: 1061

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April 23, 2014

M195-GLP Appendix D2 Smokeless Tobacco Test Article Results (Data Listings).xlsx_3303738
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Study Identifier: M195-GLP
 Study Report - Appendix D2
 Smokeless Tobacco Test Article Results (Data Listings)

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Test Article ID	Test Article Description	Replicate Number	Acetaldehyde [µg/mg nicotine]	Crotonaldehyde [µg/mg nicotine]	NNN [ng/mg nicotine]	NNK [ng/mg nicotine]	Cadmium [ng/mg nicotine]	Arsenic [ng/mg nicotine]
1400931	Camel Snus Winterhill	1	0.244	0.006	113	64.5	36.7	11.8
1400931	Camel Snus Winterhill	2	0.265	0.006	109	63.1	36.6	12.2
1400931	Camel Snus Winterhill	3	0.219	0.006	110	63.4	35.5	12.5
1400931	Camel Snus Winterhill	4	0.232	0.006	110	62.8	35.8	12.7
1400931	Camel Snus Winterhill	5	0.221	0.006	108	61.4	35.1	11.4
1400931	Camel Snus Winterhill	6	0.182	0.006	109	61.8	36.6	12.5
1400931	Camel Snus Winterhill	7	0.198	0.006	113	64.7	37.4	12.5
1400931	Camel Snus Winterhill	8						
1400931	Camel Snus Winterhill	9						
1400931	Camel Snus Winterhill	10						
1400932	CRP1 Reference Snus	1	1.16	0.006	62.9	19.6	23.9	11.2
1400932	CRP1 Reference Snus	2	1.23	0.006	63.3	20.5	24.1	10.9
1400932	CRP1 Reference Snus	3	1.11	0.006	62.1	20.3	25.0	10.4
1400932	CRP1 Reference Snus	4	1.04	0.006	61.6	20.3	24.0	10.4
1400932	CRP1 Reference Snus	5	1.08	0.006	62.7	20.1	23.7	10.3
1400932	CRP1 Reference Snus	6	1.10	0.006	63.2	19.9	23.9	11.0
1400932	CRP1 Reference Snus	7	1.05	0.006	63.0	20.5	23.6	11.2
1400932	CRP1 Reference Snus	8						
1400932	CRP1 Reference Snus	9						
1400932	CRP1 Reference Snus	10						
1400933	General Original Snus (Sweden)	1	2.96	0.007	33.7	9.91	30.2	12.0
1400933	General Original Snus (Sweden)	2	3.13	0.007	34.2	9.47	27.9	12.6
1400933	General Original Snus (Sweden)	3	2.51	0.007	33.0	9.91	29.1	13.0
1400933	General Original Snus (Sweden)	4	2.45	0.007	32.4	9.73	28.6	12.8
1400933	General Original Snus (Sweden)	5	2.43	0.007	32.5	9.29	30.0	12.7
1400933	General Original Snus (Sweden)	6	3.32	0.007	32.4	9.54	28.3	12.3
1400933	General Original Snus (Sweden)	7	2.86	0.007	33.2	9.59	29.3	14.0
1400933	General Original Snus (Sweden)	8						
1400933	General Original Snus (Sweden)	9						
1400933	General Original Snus (Sweden)	10						
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	1	0.426	0.004	30.0	9.97	21.3	8.59
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	2	0.377	0.004	30.1	8.83	21.5	8.40
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	3	0.368	0.004	31.4	9.36	21.6	7.79
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	4	0.395	0.004	30.5	8.26	22.7	8.16
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	5	0.373	0.004	30.2	9.10	21.8	8.18
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	6	0.419	0.004	30.8	9.26	20.7	7.59
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	7	0.484	0.004	30.0	9.06	21.2	7.17
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	8						
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	9						
1400934	Catch Dry Eucalyptus Mini Snus (Sweden)	10						
1400935	Granit Snus (Sweden)	1	1.21	0.006	51.8	23.7	19.2	9.23
1400935	Granit Snus (Sweden)	2	1.14	0.006	51.6	24.6	18.6	9.17
1400935	Granit Snus (Sweden)	3	1.07	0.006	50.8	24.3	18.6	10.4
1400935	Granit Snus (Sweden)	4	0.985	0.006	50.0	23.7	20.1	9.73
1400935	Granit Snus (Sweden)	5	1.16	0.006	53.6	24.1	18.8	9.28
1400935	Granit Snus (Sweden)	6	1.09	0.006	50.7	24.5	18.8	9.52
1400935	Granit Snus (Sweden)	7	0.99	0.006	50.5	24.0	19.5	9.26
1400935	Granit Snus (Sweden)	8						
1400935	Granit Snus (Sweden)	9						
1400935	Granit Snus (Sweden)	10						
1400936	Skruf Stark Snus (Sweden)	1	2.14	0.004	38.3	9.14	23.4	8.67
1400936	Skruf Stark Snus (Sweden)	2	2.28	0.004	36.0	8.15	24.1	8.11
1400936	Skruf Stark Snus (Sweden)	3	1.88	0.004	35.3	9.20	23.9	7.73
1400936	Skruf Stark Snus (Sweden)	4	1.70	0.004	35.1	9.65	23.6	9.14
1400936	Skruf Stark Snus (Sweden)	5	2.12	0.004	34.8	9.19	24.0	8.90
1400936	Skruf Stark Snus (Sweden)	6	1.82	0.004	35.1	9.00	24.4	8.64
1400936	Skruf Stark Snus (Sweden)	7	2.27	0.004	35.7	9.06	24.1	9.61
1400936	Skruf Stark Snus (Sweden)	8						
1400936	Skruf Stark Snus (Sweden)	9						
1400936	Skruf Stark Snus (Sweden)	10						

non-quantifiable result replaced by half the limit of
quantification

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Sheet: smokeless tobacco data listings

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Appendix E

Control Article Results

M195-GLP Final Study Report
RJRT Study ID: 1061

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M195-GLP Appendix E Control Article Results.xlsx 3303764
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Study Identifier: M195-GLP
Study Report - Appendix E
Control Article Results

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LABSTAT INTERNATIONAL ULC

262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3
Phone (519) 748-5409 FAX (519) 748-1654

Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of 'Tar', Nicotine and CO by Replicate
(Mainstream Tobacco Smoke 'ISO' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	CO [mg/cig]	Water [mg/cig]	Nicotine [mg/cig]	Tar [mg/cig]
1	357	1037	8.5	10.0	11.3	0.750	0.686	8.58
1	357	1041	8.1	9.54	10.4	0.695	0.634	8.21
1	357	1039	8.5	9.74	10.6	0.621	0.656	8.46
Average		1039	8.4	9.77	10.8	0.689	0.659	8.42
Std. Dev.		2	0.3	0.24	0.5	0.065	0.026	0.19
Coeff. Var.		0.2	3.1	2.5	4.3	9.4	4.0	2.3

* puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, 0%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
CO	[mg/cig]	10.1	0.7	10.8	0.5	-0.904	0.377
Nicotine	[mg/cig]	0.665	0.039	0.659	0.026	0.155	0.879
Tar	[mg/cig]	8.00	0.45	8.42	0.19	-0.919	0.369

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
CO	[mg/cig]	3	0.875	0.646
Nicotine	[mg/cig]	3	0.893	0.640
Tar	[mg/cig]	3	0.349	0.840

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RJRT Study ID: 1061

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Study Identifier: M195-GLP
 Study Report - Appendix E
 Control Article Results

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LABSTAT INTERNATIONAL ULC

262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3
 Phone (519) 748-5409 FAX (519) 748-1654

Study Identifier: M195-GLP

Period: December 09, 2013 - March 07, 2014

Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of 'Tar', Nicotine and CO by Replicate
 (Mainstream Tobacco Smoke 'HCl' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	CO [mg/cig]	Water [mg/cig]	Nicotine [mg/cig]	Tar [mg/cig]
†	357	1096	9.8	42.6	28.8	14.3	1.81	26.5
†	357	1073	10.5	47.9	32.2	17.3	1.92	28.7
†	357	1089	10.2	41.9	29.3	13.8	1.79	26.2
Average		1086	10.1	44.1	30.1	15.2	1.84	27.1
Std. Dev.		12	0.4	3.3	1.8	1.9	0.07	1.3
Coeff. Var.		1.1	3.5	7.5	6.1	12.5	3.8	4.9

* puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
CO	[mg/cig]	30.5	1.4	30.1	1.8	0.333	0.743
Nicotine	[mg/cig]	1.87	0.10	1.84	0.07	0.304	0.764
Tar	[mg/cig]	27.6	1.7	27.1	1.3	0.260	0.797

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
CO	[mg/cig]	3	3.42	0.181
Nicotine	[mg/cig]	3	0.999	0.607
Tar	[mg/cig]	3	1.22	0.542

Study Report prepared by Labstat International ULC

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RJRT Study ID: 1061

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M195-GLP Appendix E Control Article Results.xlsx 3303764
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Study Identifier: M195-GLP
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Control Article Results

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LABSTAT INTERNATIONAL ULC

262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3
Phone (519) 748-5409 FAX (519) 748-1654

Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of Selected Polynuclear Aromatic Hydrocarbons in Particulate Phase by Replicate (Mainstream Tobacco Smoke 'ISO' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	Benzo(a) pyrene [ng/cig]
1	357	1034	8.5	10.0	6.86
1	357	1027	8.5	10.3	7.28
1	357	1034	8.4	10.4	6.82
	Average	1032	8.5	10.2	6.99
	Std. Dev.	4	0.0	0.2	0.25
	Coeff. Var.	0.4	0.5	1.8	3.6

* puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, 0%. See text for additional details

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Benzo(a)pyrene	[ng/cig]	6.52	0.47	6.99	0.25	-0.978	0.340

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Benzo(a)pyrene	[ng/cig]	3	0.579	0.749

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RJRT Study ID: 1061

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of Selected Polynuclear Aromatic Hydrocarbons in Particulate Phase by Replicate (Mainstream Tobacco Smoke 'HCl' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	Benzo(a)pyrene [ng/cig]
1	357	1095	10.8	43.4	15.6
1	357	1099	10.7	42.0	15.1
1	357	1100	10.8	40.8	14.1
Average		1098	10.8	42.0	14.9
Std. Dev.		3	0.1	1.3	0.8
Coeff. Var.		0.2	0.5	3.1	5.2

* puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Benzo(a)pyrene	[ng/cig]	15.0	1.1	14.9	0.8	0.092	0.928

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Benzo(a)pyrene	[ng/cig]	3	1.00	0.606

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of Selected 'Carbonyls' by Replicate
(Mainstream Tobacco Smoke 'ISO' Conditions*)

Block ID	Control Article ID	Weight (mg/cig)	Puff Count (per cig)	Formaldehyde (µg/cig)	Z-Acetaldehyde (µg/cig)	E-Acetaldehyde (µg/cig)	Acetaldehyde (µg/cig)	Crotonaldehyde (µg/cig)
1	357	1054	9.0	25.3	131	502	633	12.1
1	357	1039	9.4	23.2	123	474	597	11.2
	Average	1046	9.2	24.2	127	488	615	11.8
	Std. Dev.	11	0.2	1.5	6	20	25	0.6
	Coeff. Var.	1.0	2.7	6.2	4.8	4.0	4.1	5.5

* puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, 0%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Formaldehyde	[µg/cig]	25.3	3.0	24.2	1.5	0.345	0.733
Z-Acetaldehyde	[µg/cig]	127	8	127	6	-0.01	0.994
E-Acetaldehyde	[µg/cig]	470	35	488	20	-0.53	0.601
Acetaldehyde	[µg/cig]	596	44	615	25	-0.420	0.679
Crotonaldehyde	[µg/cig]	11.8	1.6	11.8	0.6	0.139	0.891

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Formaldehyde	[µg/cig]	2	0.258	0.611
Z-Acetaldehyde	[µg/cig]	2	0.38	0.535
E-Acetaldehyde	[µg/cig]	2	0.31	0.576
Acetaldehyde	[µg/cig]	2	0.328	0.567
Crotonaldehyde	[µg/cig]	2	0.161	0.688

Note Regarding EZ Isomerism of Acetaldehyde:

Recent studies have demonstrated a previously unidentified peak to be an isomer of the acetaldehyde hydrazone. Consistent with current practice and the Coresta recommended method (CRM 74), results for acetaldehyde will be increased to reflect the inclusion of this isomer. For comparison to historical data, results from previous projects should be adjusted by 1.27 which takes into account the typical average contribution of the isomer.

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Study Identifier: M195-GLP
Period: December 05, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of Selected 'Carbonyls' by Replicate
(Mainstream Tobacco Smoke 'HCP' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	Formaldehyde [µg/cig]	Z-Acetaldehyde [µg/cig]	E-Acetaldehyde [µg/cig]	Acetaldehyde [µg/cig]	Crotonaldehyde [µg/cig]
1	357	1094	9.8	103	354	1346	1700	53.6
1	357	1098	10.3	93.3	316	1235	1551	47.7
	Average	1096	10.1	98.0	335	1291	1626	50.6
	Std. Dev.	3	0.4	6.6	27	78	105	4.1
	Coeff. Var.	0.3	3.5	6.7	8.2	6.0	6.5	8.2

* puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Formaldehyde	[µg/cig]	92.2	9.4	98.0	6.6	-0.018	0.544
Z-Acetaldehyde	[µg/cig]	363	18	335	27	1.56	0.134
E-Acetaldehyde	[µg/cig]	1346	67	1291	78	0.82	0.420
Acetaldehyde	[µg/cig]	1709	86	1626	105	0.980	0.339
Crotonaldehyde	[µg/cig]	56.3	3.6	50.6	4.1	1.60	0.126

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Formaldehyde	[µg/cig]	2	0.491	0.484
Z-Acetaldehyde	[µg/cig]	2	2.28	0.131
E-Acetaldehyde	[µg/cig]	2	1.34	0.246
Acetaldehyde	[µg/cig]	2	1.52	0.217
Crotonaldehyde	[µg/cig]	2	1.35	0.246

Note Regarding EZ Isomerism of Acetaldehyde:

Recent studies have demonstrated a previously unidentified peak to be an isomer of the acetaldehyde hydrazone. Consistent with current practice and the Coresta recommended method (CRM 74), results for acetaldehyde will be increased to reflect the inclusion of this isomer. For comparison to historical data, results from previous projects should be adjusted by 1.27 which takes into account the typical average contribution of the isomer.

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

**Cigarette Control Article Yields of Tobacco Specific Nitrosamines by Replicate (LC-MS/MS Method)
(Mainstream Tobacco Smoke 'ISO' Conditions*)**

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	NNN [ng/cig]	NNK [ng/cig]
1	357	1036	8.6	10.2	116	100
1	357	1028	8.4	10.6	133	104
1	357	1037	8.0	9.74	119	102
	Average	1034	8.3	10.2	123	102
	Std. Dev.	5	0.3	0.4	9	2
	Coeff. Var.	0.5	3.7	4.3	7.2	2.2

* puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, 0%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
NNN	[ng/cig]	124	9	123	9	0.152	0.881
NNK	[ng/cig]	89.0	8.1	102	2	-1.62	0.120

Comparison of Estimate of Precision (see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
NNN	[ng/cig]	3	2.08	0.354
NNK	[ng/cig]	3	0.147	0.929

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of Tobacco Specific Nitrosamines by Replicate(LC-MS/MS Method)
(Mainstream Tobacco Smoke 'HCl' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	NNN [ng/cig]	NNK [ng/cig]
1	357	1090	10.0	45.6	305	252
1	357	1100	10.1	45.2	285	241
1	357	1102	10.2	42.7	295	252
Average		1097	10.1	44.5	295	248
Std. Dev.		7	0.1	1.6	10	6
Coeff. Var.		0.6	1.3	3.6	3.3	2.6

* puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
NNN	[ng/cig]	330	22	295	10	1.60	0.125
NNK	[ng/cig]	244	21	248	6	-0.228	0.822

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
NNN	[ng/cig]	3	0.388	0.824
NNK	[ng/cig]	3	0.182	0.913

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of Toxic Trace Metals by Replicate (Mainstream Tobacco Smoke 'ISO' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	Cd [ng/cig]	As [ng/cig]
1	357	1037	8.1	9.16	34.4	1.87
1	357	1049	8.2	8.32	35.6	1.87
1	357	1044	8.3	8.31	33.9	1.87
Average		1043	8.2	8.60	34.7	1.87
Std. Dev.		6	0.1	0.49	0.8	N/A
Coeff. Var.		0.6	1.4	5.7	2.4	N/A

* puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, 0%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Cadmium	[ng/cig]	30.1	5.1	34.7	0.8	-0.903	0.377
Arsenic	[ng/cig]	N/A	N/A	1.87	N/A	N/A	N/A

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Cadmium	[ng/cig]	3	0.056	0.972
Arsenic	[ng/cig]	3	N/A	N/A


non-quantifiable result replaced by half the limit of quantification
N/A: not applicable

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Cigarette Control Article: Kentucky Reference 3R4F

Cigarette Control Article Yields of Toxic Trace Metals by Replicate (Mainstream Tobacco Smoke 'HCl' Conditions*)

Block ID	Control Article ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	Cd [ng/cig]	As [ng/cig]
1	357	1111	10.9	30.5	110	10.9
1	357	1098	10.6	35.6	113	10.8
1	357	1104	10.9	38.9	106	9.49
Average		1105	10.8	35.0	110	10.4
Std. Dev.		6	0.2	4.3	4	0.8
Coeff. Var.		0.6	1.5	12.2	3.4	7.5

* puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%. See text for additional details.

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Cadmium	[ng/cig]	104	16	110	4	-0.392	0.699
Arsenic	[ng/cig]	9.31	1.06	10.4	0.8	-1.03	0.317

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

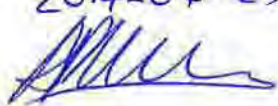
Analyte	Unit	Sample Size	Chi Square	P Value
Cadmium	[ng/cig]	3	0.109	0.947
Arsenic	[ng/cig]	3	1.09	0.580

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Smokeless Tobacco Control Article: CRP3 Reference Snus

pH of Smokeless Tobacco Control Articles by Replicate
(per gram 'As Received' Basis)

Block ID	Control Article ID	pH Result
2	888	6.80
2	888	6.80
2	888	6.79
2	888	6.78
2	888	6.79
3	888	6.81
3	888	6.79
3	888	6.81
3	888	6.82
3	888	6.81
Average		6.80
Std. Dev.		0.01
Coeff. Var.		0.2

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
pH	[pH unit]	6.79	0.02	6.80	0.01	-0.270	0.787

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
pH	[pH unit]	10	2.84	0.970

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Smokeless Tobacco Control Article: CRP3 Reference Snus

**Moisture Contents of Smokeless Tobacco Control
Articles by Replicate**

Block ID	Control Article ID	Dry Matter (%)	Moisture (%)
2	888	90.6	9.37
2	888	90.6	9.35
2	888	90.7	9.35
2	888	90.8	9.16
2	888	90.8	9.19
3	888	90.5	9.53
3	888	90.5	9.51
3	888	90.6	9.40
3	888	90.6	9.40
3	888	90.7	9.33
Average		90.6	9.36
Std. Dev.		0.1	0.12
Coeff. Var.		0.1	1.2

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Moisture	[%]	9.00	0.16	9.36	0.12	-2.16	0.031

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Moisture	[%]	10	4.44	0.880

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Smokeless Tobacco Control Article: CRP3 Reference Snus

Contents of Nicotine in Smokeless Tobacco Control Articles by Replicate
(per gram 'Dry Weight' Basis)

Block ID	Control Article ID	Nicotine [µg/g]
2	888	19322
2	888	21313
2	888	22920
2	888	21350
2	888	21818
3	888	20974
3	888	20555
3	888	21603
3	888	20853
3	888	22250
Average		21296
Std. Dev.		981
Coeff. Var.		4.6

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Nicotine	[µg/g]	21123	930	21296	981	-0.185	0.853

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Nicotine	[µg/g]	10	10.01	0.350

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Smokeless Tobacco Control Article: CRP3 Reference Snus

Contents of Selected Polycyclic Aromatic Hydrocarbons (PAHs) in Smokeless Tobacco Control
Articles by Replicate (per gram 'As Received' Basis)

Block ID	Control Article ID	Benzo(a) pyrene [ng/g]
2	888	47.9
2	888	44.2
2	888	46.0
2	888	43.3
2	888	41.8
2	888	42.7
3	888	44.4
3	888	38.5
3	888	44.4
3	888	44.1
3	888	43.0
Average		43.7
Std. Dev.		2.4
Coeff. Var.		5.5

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values*		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Benzo(a)pyrene	[ng/g]	46.0	4.3	43.7	2.4	0.56	0.579

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Benzo(a)pyrene	[ng/g]	11	3.10	0.979

* Target values based on all available historical observations

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Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Smokeless Tobacco Control Article: CRP3 Reference Snus

Contents of Selected Carbonyls in Smokeless Tobacco Control Articles by Replicate
(per gram 'As Received' Basis)

Block ID	Control Article ID	Formaldehyde [µg/g]	Acetaldehyde [µg/g]	Crotonaldehyde [µg/g]
2	888	4.83	2.32	0.060
2	888	4.09	1.94	0.060
2	888	5.42	2.53	0.060
2	888	5.41	2.46	0.060
2	888	5.40	2.49	0.060
2	888	5.53	2.51	0.060
3	888	7.19	3.29	0.060
3	888	6.07	2.90	0.060
3	888	7.38	3.83	0.060
3	888	7.33	3.79	0.060
3	888	6.99	3.37	0.060
3	888	5.33	2.36	0.060
Average		5.92	2.81	0.060
Std. Dev.		1.07	0.61	N/A
Coeff. Var.		18.0	21.8	N/A

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values*		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Formaldehyde	[µg/g]	5.92	0.76	5.92	1.07	-0.01	0.995
Acetaldehyde	[µg/g]	2.70	0.43	2.81	0.61	-0.27	0.790
Crotonaldehyde	[µg/g]	N/A	N/A	0.060	N/A	N/A	N/A

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Formaldehyde	[µg/g]	12	21.5	0.028
Acetaldehyde	[µg/g]	12	22.6	0.020
Crotonaldehyde	[µg/g]	12	N/A	N/A


* Target values based on all available historical observations
non-quantifiable result replaced by half the limit of quantification
N/A: not applicable

Study Report prepared by Labstat International ULC

M195-GLP Final Study Report
RJRT Study ID: 1061

108 of 827
April 23, 2014

M195-GLP Appendix E Control Article Results.xlsx 3303764
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Electronically Signed By: Wendy Wagstaff On: 3/13/2014 2:52:53 PM Audit ID: 3303764

2014-04-23




Study Identifier: M195-GLP
Study Report - Appendix E
Control Article Results

Page 16 of 17

LABSTAT INTERNATIONAL ULC

262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3
Phone (519) 748-5409 FAX (519) 748-1654

Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Smokeless Tobacco Control Article: CRP3 Reference Snus

Contents of TSNA in Smokeless Tobacco Control Articles by Replicate- LC-MS/MS Method
(per gram 'As Received' Basis)

Block ID	Control Article ID	NNN [ng/g]	NNK [ng/g]
2	888	8105	4192
2	888	8216	4148
2	888	8110	4195
2	888	8028	4054
2	888	7876	4078
3	888	7808	4023
3	888	7697	3952
3	888	7610	3904
3	888	7691	3985
3	888	7443	3853
Average		7858	4038
Std. Dev.		252	118
Coeff. Var.		3.2	2.9

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values*		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
NNN	[ng/g]	8544	574	7858	252	1.19	0.232
NNK	[ng/g]	4398	349	4038	118	1.03	0.304

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
NNN	[ng/g]	10	1.73	0.995
NNK	[ng/g]	10	1.02	0.999

* Target values based on all available historical observations

Study Report prepared by Labstat International ULC

M195-GLP Final Study Report
RJRT Study ID: 1061

109 of 827
April 23, 2014

M195-GLP Appendix E Control Article Results.xlsx_3303764
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2014-04-23




Study Identifier: M195-GLP
Study Report - Appendix E
Control Article Results

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LABSTAT INTERNATIONAL ULC

262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3
Phone (519) 748-5409 FAX (519) 748-1654

Study Identifier: M195-GLP
Period: December 09, 2013 - March 07, 2014
Smokeless Tobacco Control Article: CRP3 Reference Snus

Contents of Toxic Trace Metals in Smokeless Tobacco Control Articles by Replicate
(per gram 'Dry Weight' Basis)

Block ID	Control Article ID	Cd [ng/g]	As [ng/g]
2	888	1245	421
2	888	1235	402
2	888	1144	342
2	888	1210	400
2	888	1172	411
2	888	945	337
3	888	1292	378
3	888	1248	325
3	888	1294	391
3	888	1311	357
3	888	1370	368
3	888	1365	402
Average		1236	378
Std. Dev.		115	32
Coeff. Var.		9.3	8.4

Comparison of Average Yields (see above) with Expected (Historical) Values

Analyte	Unit	Target Values		This Study		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Cadmium	[ng/g]	1218	120	1236	115	-0.146	0.884
Arsenic	[ng/g]	306	44	378	32	-1.66	0.098

Comparison of Estimate of Precision(see above) with Expected (Historical) Values

Analyte	Unit	Sample Size	Chi Square	P Value
Cadmium	[ng/g]	12	9.99	0.532
Arsenic	[ng/g]	12	5.87	0.882

Study Report prepared by Labstat International ULC

Appendix F

Instrument Run Summary and Representative Chromatograms

'Tar', Nicotine and Carbon Monoxide

APR

Study Identifier: M195-GLP Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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Study M195-GLP.MS_Inc_n01

Private and Confidential

Page 1 of 1

Instrument Run Summary for Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
STD 4 140128	STD 4 140128	30-Jan-14	7:47 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400588	1400588-1-1	30-Jan-14	7:58 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400590	1400590-1-2	30-Jan-14	8:10 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400589	1400589-1-3	30-Jan-14	8:21 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400589	1400589-1-4	30-Jan-14	8:32 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400590	1400590-1-5	30-Jan-14	8:43 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400589	1400589-1-6	30-Jan-14	8:55 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400589	1400589-1-7	30-Jan-14	9:06 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400588	1400588-1-8	30-Jan-14	9:17 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400588	1400588-1-9	30-Jan-14	9:28 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
357	357-1-10	30-Jan-14	9:40 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400590	1400590-1-11	30-Jan-14	9:51 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400589	1400589-1-12	30-Jan-14	10:02 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400588	1400588-1-13	30-Jan-14	10:14 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400590	1400590-1-14	30-Jan-14	10:25 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400588	1400588-1-15	30-Jan-14	10:36 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400588	1400588-1-16	30-Jan-14	10:47 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400589	1400589-1-17	30-Jan-14	10:58 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400590	1400590-1-18	30-Jan-14	11:10 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400589	1400589-1-19	30-Jan-14	11:21 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
357	357-1-20	30-Jan-14	11:32 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
BLK1	BLK1-1	30-Jan-14	11:44 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
BLK2	BLK2-1	30-Jan-14	11:55 PM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
BLK3	BLK3-1	31-Jan-14	12:06 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
STD 5 140128	STD 5 140128	31-Jan-14	12:17 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
357	357-2-1	31-Jan-14	12:29 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400590	1400590-2-2	31-Jan-14	12:40 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400588	1400588-2-3	31-Jan-14	12:51 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
1400590	1400590-2-4	31-Jan-14	1:02 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
BLK1	BLK1-2	31-Jan-14	1:14 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
BLK2	BLK2-2	31-Jan-14	1:25 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
BLK3	BLK3-2	31-Jan-14	1:36 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
STD 5 140128	STD 5 140128	31-Jan-14	1:48 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
357	357-2-5	31-Jan-14	1:55 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	
BLK1	BLK1-2-1	31-Jan-14	1:57 AM	140128T4.M	GC TNC04 (Lab0612.0971.1621)	S. Pasca	

Re-injection done 10:10:00 (min) original injection (10:01:00)

Date 31-Jan-2014

QSF-01106-1/2

Labstat (Rev. 04/2013)



AM

Study Identifier: M195-GLP

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Study Report – Appendix F

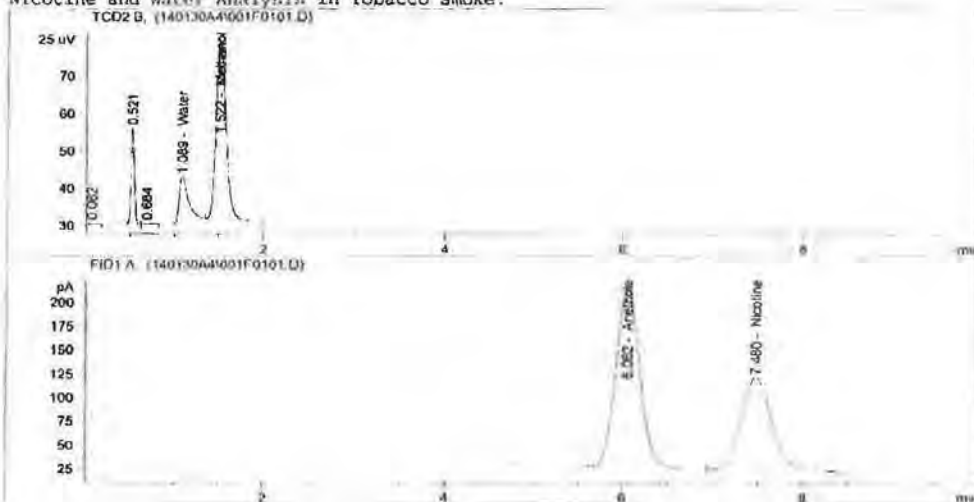
Instrument Run Summary and Representative Chromatograms

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Sample Name: STD 4 140128

Injection Date : 1/30/2014 7:47:38 PM Seq. Line : 1
Sample Name : STD 4 140128 Location : Vial 1
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
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Nicotine and Water Analysis in Tobacco Smoke.



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area (25 uV*s)	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.089	PV	106.05449	6.56987e-1	1.71344e-1		Water
1.522	VB	406.64703	1.00000	1.00000		Methanol

Totals without ISTD(s) : 1.71344e-1

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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Sample Name: STD 4 140128

Signal 2: PID1 A,

RetTime [min]	Type	Area (pA*s)	Amt/Area ratio	Amount (mg/mL)	Grp	Name
6.062	VP	3471.82373	1.00000	1.00000		Anethole
7.480	VBA	2299.62378	2.00473e-1	1.32787e-1		Nicotine

Totals without ISTD(s) : 1.32787e-1

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***



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Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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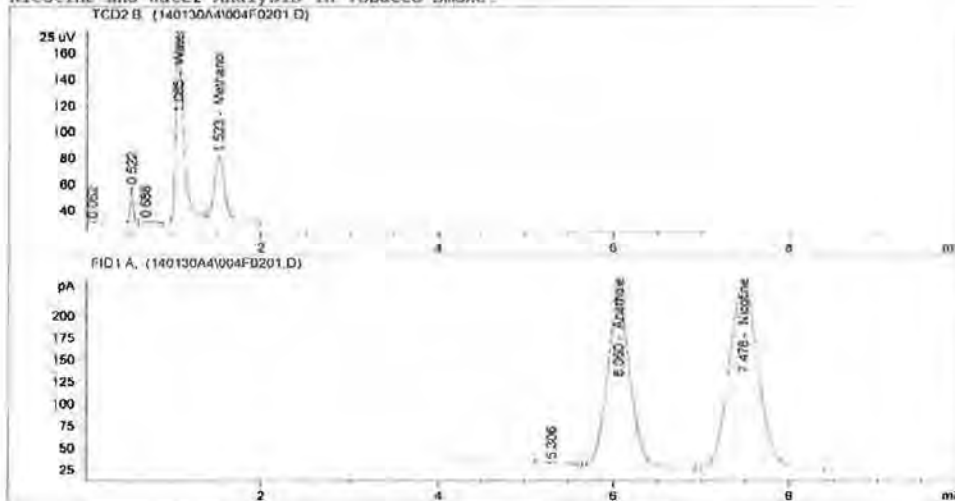
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Sample Name: 1400588-1-1

M195-GLP TNC MSN B1

Injection Date : 1/30/2014 7:58:48 PM Seq. Line : 2
Sample Name : 1400588-1-1 Location : Vial 4
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
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Nicotine And Water Analysis in Tobacco Smoke



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.3330
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount (mg/ml)	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B.

RetTime (min)	Type	Area (25 uV*s)	Amt/Area ratio	Amount (mg/ml)	Grp	Name
1.065	BV	930.79803	1.41501	19.03882		Water
1.523	VBA	460.73425	1.00000	6.66000		Methanol

Totals without ISTD(s) : 19.03882

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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Data File C:\HPCHEM\4\DATA\140130A4\004F0201.D

Sample Name: 1400588-1-1

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.060	VP	3.175.93530	1.00000	6.66000		Anethole
7.478	VBA	4815.58691	2.00617e-1	1.90589		Nicotine

Totals without ISTD(s) : 1.90589

Results obtained with enhanced integrator!

! Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***



AM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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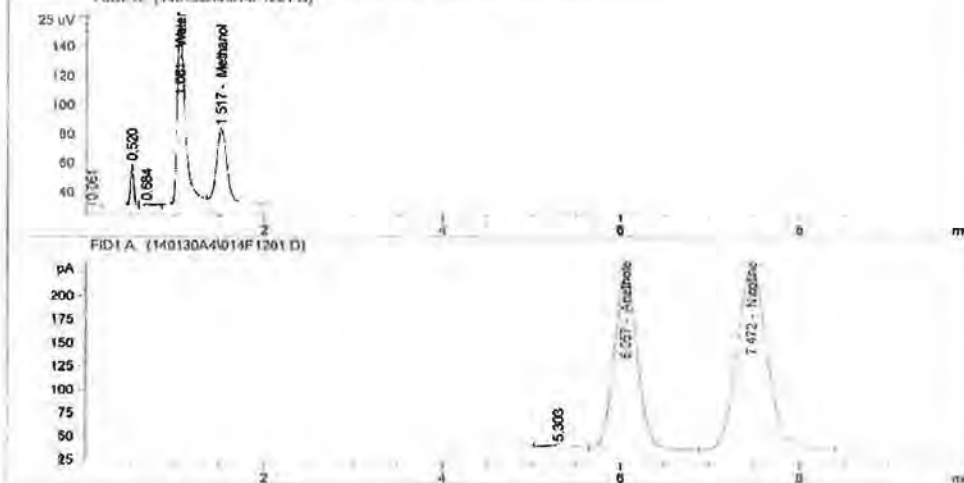
Sample Name: 1400590-1-11

M195-GLP TNC MSN B1

Injection Date : 1/30/2014 9:51:25 PM Seq. Line : 12
Sample Name : 1400590-1-11 Location : Vial 14
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
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Nicotine and Water Analysis in Tobacco Smoke

TCD2 B, (140130A4\\014F1201.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.3330
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount (mg/ml)	Name
--------	---------------------	------

2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.061	BV	822.52979	1.40241	16.96539		Water
1.517	VBA I	452.83060	1.00000	6.66000		Methanol

Totals without ISTD(s) : 16.96539

Results obtained with enhanced integrator:



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Sample Name: 1400590-1-11

Signal 2: FID1 A.

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.051	VP	1	3370.40552	1.00000	6.66000	Anethole
7.412	VBA	4475.65137	2.00608e-1	1.77418		Nicotine

Totals without ISTD(s) : 1.77418

Results obtained with enhanced integrator!

! Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***



APR

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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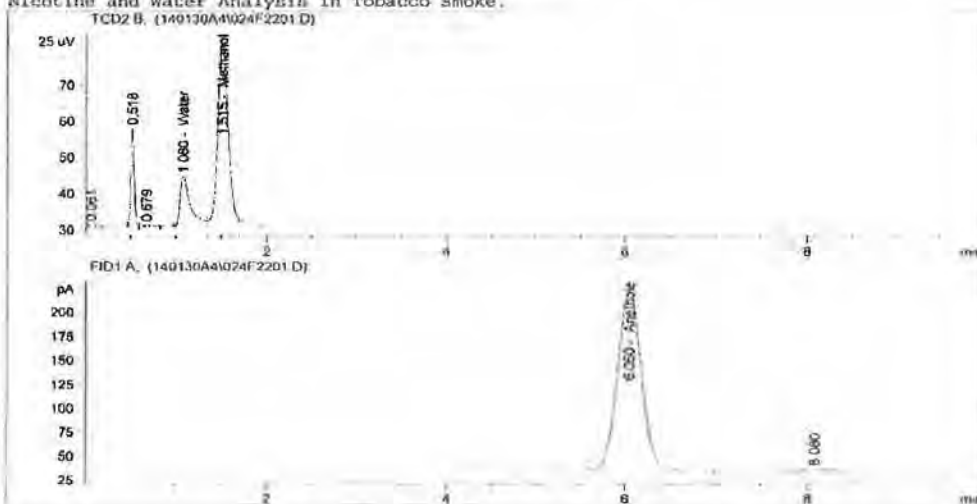
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Sample Name: BLK1-1

M195 GLP TNC MSN B1

Injection Date : 1/30/2014 11:44:03 PM Seq. Line : 22
Sample Name : BLK1-1 Location : Vial 24
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
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Nicotine and Water Analysis in Tobacco Smoke.



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.3330
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount (mg/ml)	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime (min)	Type	Area (25 uV*s)	Amt/Area ratio	Amount (mg/ml)	Grp	Name
1.080	PV	108.43968	6.82793e-1	1.22221		Water
1.515	VB	403.46475	1.00000	6.66000		Methanol

Totals without ISTD(s) 1.22221

Results obtained with enhanced integrator



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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Sample Name: BLK1-1

Signal 2: FID1 A₁

RetTime (min)	Type	Area (pA*s)	Amt/Area ratio	Amount (mg/ml)	Grp	Name
6.050	VP	3409.49219	1.00000	6.66000		Anethole
7.530		-	-	-		Nicotine

Totals without ISTD(s) : 0.00000

Results obtained with enhanced integrator!

2 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

Warning : Calibrated compound(s) not found

*** End of Report ***



Signature

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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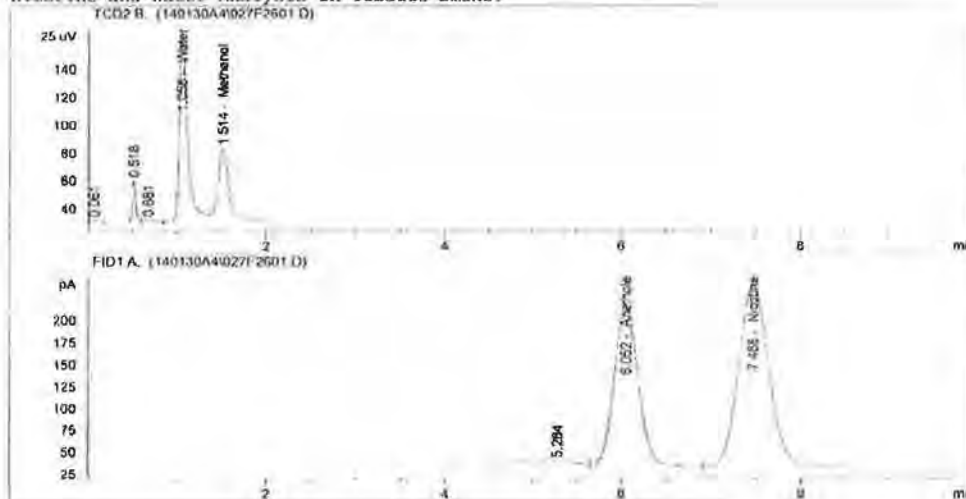
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Sample Name: 357-2-1

M195 GLP TNC MSN B1

Injection Date : 1/31/2014 12:29:10 AM Seq. Line : 26
Sample Name : 357-2-1 Location : Vial 27
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/31/2014 10:21:11 AM by ANALYST
(modified after loading)

Nicotine and Water Analysis in Tobacco Smoke.



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.3330
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.058	PV	848.10150	1.41184	18.47375		Water
1.514	VIA	431.66998	1.00000	6.66000		Methanol

Totals without ISTD(s) : 18.47375

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

run182_m195-glps-inc_nb1_chromatograms.pdf_3058713
Electronically Signed By: Sanda Pasca
Path: \\fs2repository\repository\30587131
Created: 1/31/14 10:27 Audit ID: 3058713

Data File C:\HPCHEM\4\DATA\140130A4\027F2601.D

Sample Name: 357-2-1

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.052	VP	3339.59668	1.00000	6.66000		Anethole
7.468	VBA	4801.62061	2.00618e-1	1.92105		Nicotine

Totals without ISTD(s) : 1.92105

Results obtained with enhanced integrator:

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***



Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195-GLPMS_Inc_ab1 Calibration & Instrument Run Summary.pdf 3060A1a1
Electronically Signed By: Sandra Pasca
Path: \\82\\repository\\repository\\3060A091
Created: 7/31/14 12:49 Audit ID: 3060A99

Study:M195-GLPMS_inc_ab1

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Page 1 of 1

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name: (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
STD 4 140128	STD 4 140128	29-Jan-14	7:55 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
357	357-1-1	29-Jan-14	8:06 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400590	1400590-1-2	29-Jan-14	8:17 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400588	1400588-1-3	29-Jan-14	8:26 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400590	1400590-1-4	29-Jan-14	8:36 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400589	1400589-1-5	29-Jan-14	8:51 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400588	1400588-1-6	29-Jan-14	9:02 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400589	1400589-1-7	29-Jan-14	9:13 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400590	1400590-1-8	29-Jan-14	9:25 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400589	1400589-1-9	29-Jan-14	9:36 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400588	1400588-1-10	29-Jan-14	9:47 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400589	1400589-1-11	29-Jan-14	9:58 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400590	1400590-1-12	29-Jan-14	10:10 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
357	357-1-13	29-Jan-14	10:21 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400588	1400588-1-14	29-Jan-14	10:32 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400590	1400590-1-15	29-Jan-14	10:43 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400588	1400588-1-16	29-Jan-14	10:55 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400589	1400589-1-17	29-Jan-14	11:06 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400590	1400590-1-18	29-Jan-14	11:17 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400590	1400590-1-19	29-Jan-14	11:29 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400588	1400588-1-20	29-Jan-14	11:40 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
BLK1	BLK1-1	29-Jan-14	11:51 PM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
BLK2	BLK2-1	30-Jan-14	12:02 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
BLK3	BLK3-1	30-Jan-14	12:14 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
STD 5 140128	STD 5 140128	30-Jan-14	12:25 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
357	357-2-1	30-Jan-14	12:36 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400589	1400589-2-2	30-Jan-14	12:47 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400589	1400589-2-3	30-Jan-14	12:59 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
1400588	1400588-2-4	30-Jan-14	1:10 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
BLK1	BLK1-2	30-Jan-14	1:21 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
BLK2	BLK2-2	30-Jan-14	1:32 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
BLK3	BLK3-2	30-Jan-14	1:44 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	
STD 6 140128	STD 6 140128	30-Jan-14	1:55 AM	140128T4.M	GC TNC#4 (Lab#0812,0971,1621)	S.Pasca	

Date:31-Jan-2014

QSF-01106-V2

Labstat International LLC



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

run182_m195-glpm5_inc_sb1_chromatograms.pdf_3054810
Electronically Signed By: Sandra Pasca
Path: Ws2repository\repository\3054810\
Created: 1/30/14 15:59 Audit ID: 3054810

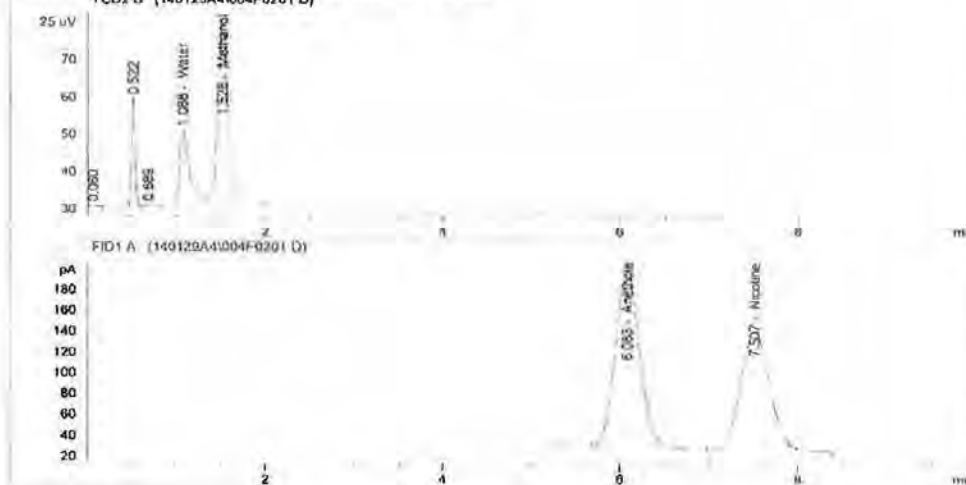
Data File C:\HPCHEM\4\DATA\140129A4\004F0201.D

Sample Name: 357 1 1

M195-GLPMS_INC_SB1

Injection Date : 1/29/2014 8:06:20 PM Seq Line : 2
Sample Name : 357 1-1 Location : Vial 4
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method C:\HPCHEM\4\METHODS\140128T4.M
Last changed 1/28/2014 12:42:23 PM by ANALYST
Analysis Method C:\HPCHEM\4\METHODS\140128T4.M
Last changed 1/30/2014 3:17:23 PM by ANALYST
(modified after loading)

Nicotine and Water Analysis in Tobacco Smoke
TCD2 B (140129A4\004F0201.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.2000
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Ant/Area ratio	Amount [mg/ml]	Grp	Name
1.088	PV	163.26471	9.77426e-1	1.58657	Water	
1.528	VBA	399.85568	1.00000	4.00000	Methanol	

Totals without ISTD(s) : 1.58657

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

run182_m195-glps-inc_sb1_chromatograms.pdf_3054810
Electronically Signed By: Sandra Pasca
Path: \\fs2repository\repository\3054810\
Created: 1/30/14 15:59 Audit ID: 3054810

Data File C:\HPCHEM\4\DATA\140129A4\004F0201.D

Sample Name: 357-1-1

Signal 2: FID1 A,

RetTime (min)	Type	Area (pA*s)	Amt/Area ratio	Amount (mg/ml)	Grp	Name
6.083	PP	1	3112.76050	1.00000	4.00000	Anethole
7.507	VBA	2663.23999	2.00534e-1	6.86298e-1		Nicotine

Totals without ISTD(s) : 6.86298e-1

Results obtained with enhanced integrator!

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

run182_m195-glpsm_inc_sb1_chromatograms.pdf_3054810
Electronically Signed By: Sandra Pasca
Path: \\fs2repository\repository\3054810\
Created: 1/30/14 15:59 Audit ID: 3054810

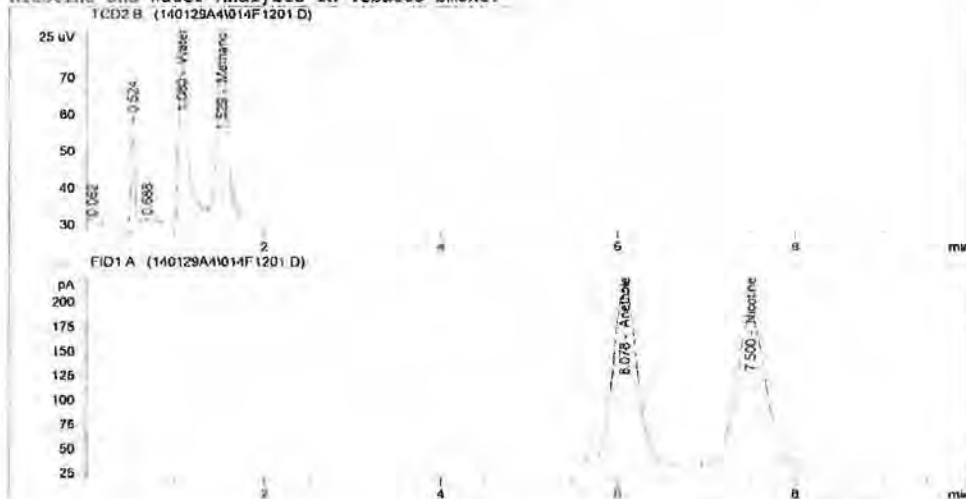
Data File C:\HPCHEM\4\DATA\140129A1\014F1201.D

Sample Name: 1400589-1-11

M195-GLPMS_INC_SB1

Injection Date : 1/29/2014 9:58:50 PM Seq Line : 12
Sample Name : 1400589 1 11 Location : Vial 14
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/30/2014 3:20:08 PM by ANALYST
(modified after loading)

Nicotine and Water Analysis in Tobacco Smoke.



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.2000
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount (mg/ml)	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B.

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.040	PV	328.40631	1.23275	3.79913		Water
1.529	VIA	426.24750	1.00000	4.00000		Methanol

Totals without ISTD(s) : 3.79913

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

run1&2_m195-glps_tmg_sbi_chromatograms.pdf_3054810
Electronically Signed by: Sandra Pasca
Path: Wfs2vepository\repository\3054810\
Created: 1/30/14 15:59 Audit ID: 3054810

Data File C:\HPCHEM\4\DATA\140129A4\014F1201.D

Sample Name: 1400589-1-11

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.078	VP	13297.71265	1.00000	4.00000		Anethole
7.500	VBA	3540.71167	2.00576e-1	8.61425e-1		Nicotine

Totals without ISTD(s) : 8.61425e-1

Results obtained with enhanced integrator!

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

run1&2_m195-glps tnc sb1 chromatograms.pdf_3054810
Electronically Signed By: Sandra Pasca
Path: \\s2repository\repository\3054810\
Created: 1/30/14 15:59 Audit ID: 3054810

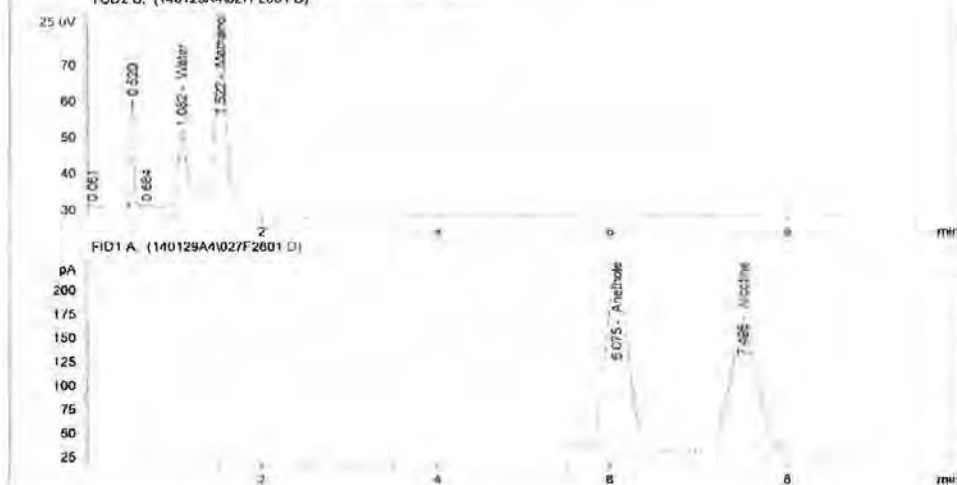
Data File C:\HPCHEM\4\DATA\140129A4\027F2601.D

Sample Name: 357-2-1

M195 GLPMS TNC SB1

Injection Date : 1/30/2014 12:36:41 AM Seq. Line : 26
Sample Name : 357-2-1 Location : Vial 27
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/30/2014 3:55:06 PM by ANALYST
(modified after loading)

Nicotine and Water Analysis in Tobacco Smoke
TCD2 B, (140129A4\027F2601.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.2000
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount (mg/ml)	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal is: TCD2 B.

RetTime (min)	Type	Area [25 uV*s]	Amt/Area ratio	Amount (mg/ml)	Grp	Name
1.082	PV	163.75833	9.43028e-1	1.46534		Water
1.522	VB	421.55109	1.00000	4.00000		Methanol

Totals without ISTD(s) : 1.46534

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

run1&2_m195-glps_inc_abi_chromatograms.pdf_3054810
Electronically Signed By: Sande Pasca
Path: \\fs2\repository\repository\3054810
Created: 1/30/14 15:59 Audit ID: 3054810

Data File C:\HPCHEM\4\DATA\140129A4\027F2601.D

Sample Name: 357-2-1

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.075	VP	3405.96924	1.00000	4.00000		Anethole
7.496	VBA	2784.50195	2.00524e-1	6.55744e-1		Nicotine

Totals without ISTD(s) : 6.55744e-1

Results obtained with enhanced integrator:

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

run182_m195-glpsm_tnc_sb1_chromatograms.pdf_3054810
Electronically Signed By: Sandra Pasca
Path: \\fs2\repository\repository\3054810\
Created: 1/30/14 15:59 Audit ID: 3054810

Data File C:\HPCHEM\4\DATA\140129A4\033F3201.D

Sample Name: BLK3-2

M195 GLPMS_TNC_SB1

Injection Date : 1/30/2014 1:44:09 AM Seq. Line : 32
Sample Name : BLK3-2 Location : Vial 33
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/30/2014 3:56:41 PM by ANALYST
(modified after loading)

Nicotine and Water Analysis in Tobacco Smoke.
TCD2 B, (140129A4\033F3201.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 0.2000
Dilution : 20.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	AmI/Area ratio	Amount [mg/ml]	Grp	Name
1.087	PV	116.29169	1.38895e-1	8.50896e-1		Water
1.523	VB	403.93832	1.00000	4.00000		Methanol

Totals without ISTD(s) : 8.50896e-1

Results obtained with enhanced integrator



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

run182_m195-glps-inc_sb1_chromatograms.pdf_3054810
Electronically Signed By: Sandra Pasca
Path: Wfs2repository\repository\3054810\
Created: 1/30/14 15:59 Audit ID: 3054810

Data File C:\HPCHEM\4\DATA\140129A4\033F3201.D

Sample Name: BLK3-2

Signal 2: PID1 A.

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.078	VP	3364.12939	1.00000	4.00000		Anethole
7.530						Nicotine

Totals without ISTD(s) : 0.00000

Results obtained with enhanced integrator!

2 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)
Warning : Calibrated compound(s) not found

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

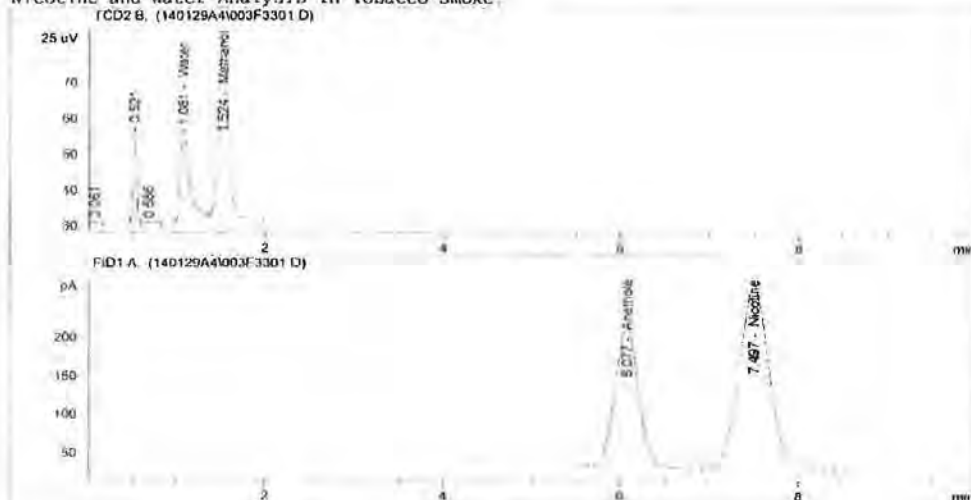
run1&2_m195-glps Inc sb1_chromatograms.pdf_3054810
Electronically Signed By: Sando Pasca
Path: \\fs2repository\repository\3054810
Created: 1/30/14 15:59 Audit ID: 3054810

Data File C:\HPCHEM\4\DATA\140129A\003F3301.D

Sample Name: STD 6 140128

Injection Date : 1/30/2014 1:55:25 AM Seq. Line : 33
Sample Name : STD 6 140128 Location : Vial 3
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/30/2014 3:56:58 PM by ANALYST
(modified after loading)

Nicotine and Water Analysis in Tobacco Smoke
(TCD2 B, (140129A\003F3301.D))



Internal Standard Report

Sorted by : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount (ng/ml)	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount (mg/ml)	Grp	Name
1.081	PV	195.75002	1.04955	4.98602e-1		Water
1.524	VB	412.05145	1.00000	1.00000		Methanol

Totals without ISTD(s) : 4.98602e-1

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

run1&2_m195-glps-inc_sb1_chromatograms.pdf_3054810
Electronically Signed By: Sandra Pasca
Path: \\fs2repository\repository\3054810\
Created: 1/30/14 15:58 Audit ID: 3054810

Data File C:\HPCHEM\4\DATA\140129A4\003F3301.D

Sample Name: STD 6 140129

Signal 2: FID1 A,

RetTime (min)	Type	Area (pA*s)	Amt/Area ratio	Amount (mg/ml)	Grp	Name
6.077	VP	1	3369.22949	1.00000	1.00000	Anethole
7.497	VBA	5500.36670	2.00633e-1	3.27540e-1		Nicotine

Totals without ISTD(s) : 3.27540e-1

Results obtained with enhanced integrator!

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

*** End of Report ***

Polynuclear Aromatic Hydrocarbons



[Signature]

Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH1_MSN_B1 Instrument run summary.pdf 3207860
Electronically Signed By: Bartosz Jasiak
Path: Ms2vpropository\propository\3207860
Created: 2/26/14 13:52 Audit ID: 3207860

Study: M195GLP PAH1_MSN_B1

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Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
1400588	STD 4 140128	31/01/2014	12:17:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-1-1	31/01/2014	1:00:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400589	1400589-1-2	31/01/2014	2:04:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400590	1400590-1-3	31/01/2014	2:57:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400589	1400589-1-4	31/01/2014	3:50:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-1-5	31/01/2014	4:43:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400589	1400589-1-6	31/01/2014	5:36:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400589	1400589-1-7	31/01/2014	6:29:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
357	357-1-8	31/01/2014	7:23:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400590	1400590-1-9	31/01/2014	8:17:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-1-10	31/01/2014	9:10:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-1-11	31/01/2014	10:04:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400590	1400590-1-12	31/01/2014	10:57:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400590	1400590-1-13	31/01/2014	11:50:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
357	357-1-14	31/01/2014	12:44:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400590	1400590-1-15	31/01/2014	1:37:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400589	1400589-1-16	31/01/2014	2:31:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-1-17	31/01/2014	3:25:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400589	1400589-1-18	31/01/2014	4:18:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400590	1400590-1-19	31/01/2014	5:12:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-1-20	31/01/2014	6:05:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400589	STD 4 140128	31/01/2014	6:59:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-2-1	31/01/2014	7:52:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	1400588-2-2	02/02/2014	11:12:00 AM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
357	357-2-3	02/02/2014	12:59:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400590	1400590-2-4	02/02/2014	1:52:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
5MB-1-21	5MB-1-21	02/02/2014	2:45:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
URB-1	URB-1	02/02/2014	3:38:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
URB-1	URB-1	02/02/2014	4:31:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
LFM-2-3	LFM-2-3	02/02/2014	5:24:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	
1400588	STD 4 140128	02/02/2014	6:17:00 PM	PAH14_ACO_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS014 (LAB1693)	B. Jasiak	

Date: February 26, 2014
Revision: 1

QSF-01106-V3

Labstat International, LLC



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3094804\\
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\Projects\\M195-GLP\\Block_1\\MSN\\
Data File : pah14_140130001.D
Acq On : 31 Jan 2014 1:10
Operator : Analyst
Sample : 1400588-1-1
Misc : M195-GLP PAH MSN B1
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Feb 06 10:05:18 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	264	61223m	25.12	ng/mL	0.00
Target Compounds						
2) B(a)P	34.949	252	6648m	1.75	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

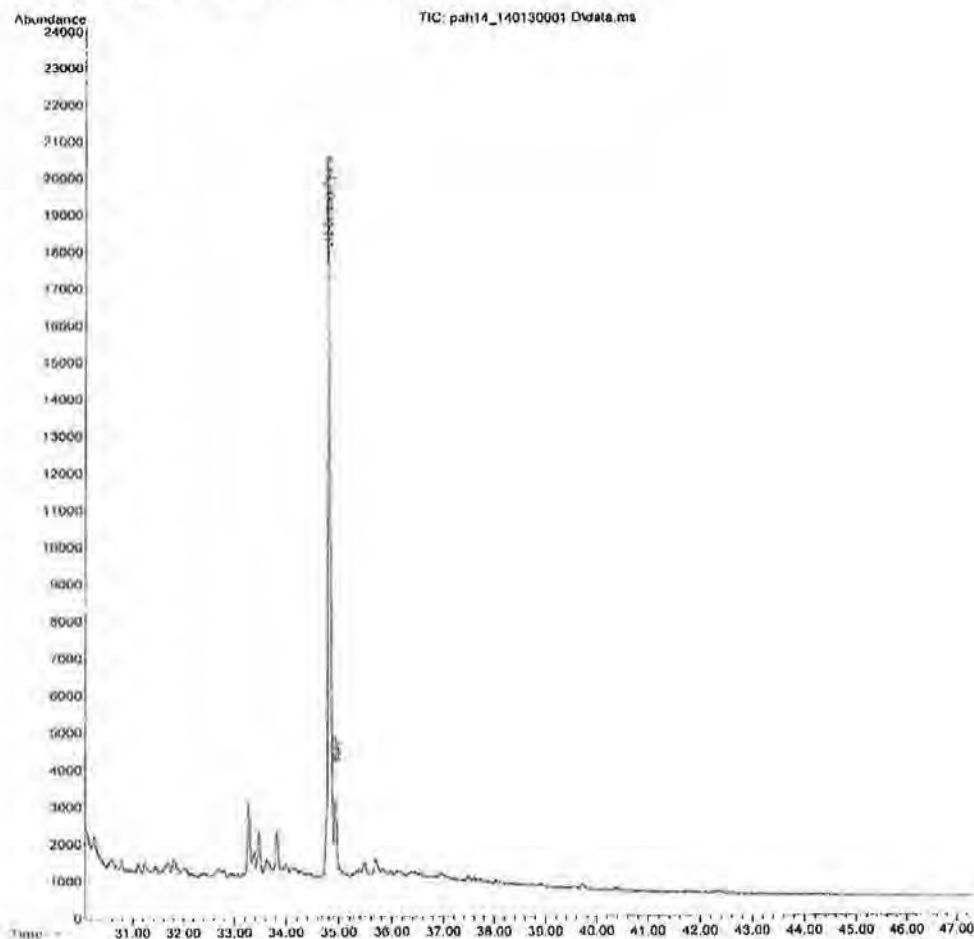
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3094804\\
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_1\MSN\
Data File : pah14_140130001.D
Acq On : 31 Jan 2014 1:10
Operator : Analyst
Sample : 1400588-1-1
Misc : M195-GLP PAH MSN B1
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Feb 06 10:05:18 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration





Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiak
Path: Ws2\repository\repository\3094804\
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block 1\MSN\
Data File : pah14_140130008.D
Acq On : 31 Jan 2014 7:23
Operator : Analyst
Sample : 357-1-B
Misc : M195-GLP PAH MSN B1
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Feb 06 10:06:57 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T, QIon	Response	Conc Units	Dev(Min)
Internal Standards				
1) d12-Benzof(a)Pyrene	34.838	264 64677m	25.12 ng/mL	0.00
Target Compounds				
2) B(a)P	34.941	252 6666m	1.95 ng/mL	Qvalue

(#) - qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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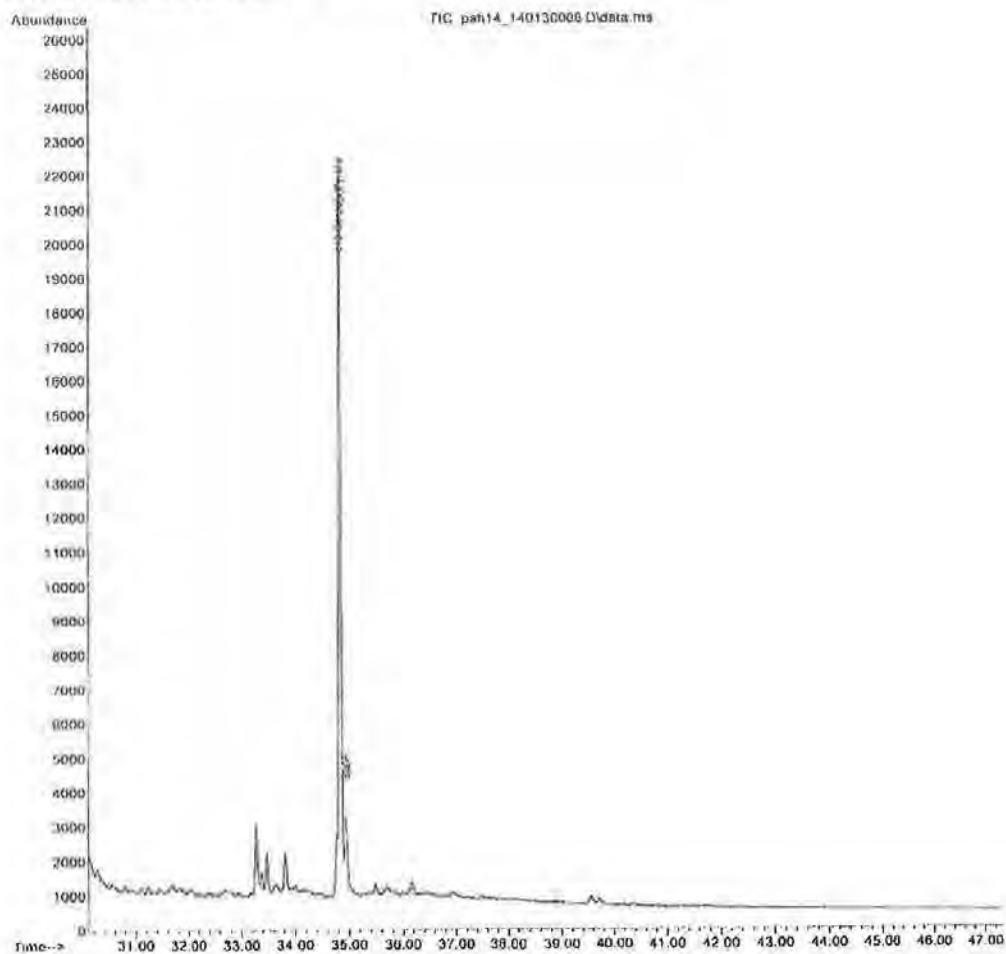
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3094804\\
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\Projects\\M195-GLP\\Block_1\\MSN\\
Data File : pah14_140130008.D
Acq On : 31 Jan 2014 7:23
Operator : Analyst
Sample : 357-1-8
Misc : M195-GLP PAH MSN B1
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Feb 06 10:06:57 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129Q_M195GLP.M Thu Feb 06 12:55:06 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jaslak
Path: Wfs2\repository\repository\3094804
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_1\MSN\
Data File : pah14_140130015.D
Acq On : 31 Jan 2014 13:37
Operator : Analyst
Sample : 1400580-1-15
Misc : M195-GLP PAH MSN B1
ALS Vial : 44 Sample Multiplier: 1

Quant Time: Feb 06 10:08:34 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_1401290_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 -BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benz(a)Pyrene	34.834	264	61153m	25.12	ng/mL	-0.01
Target Compounds						
2) B(a)P	34.945	252	6683m	2.07	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

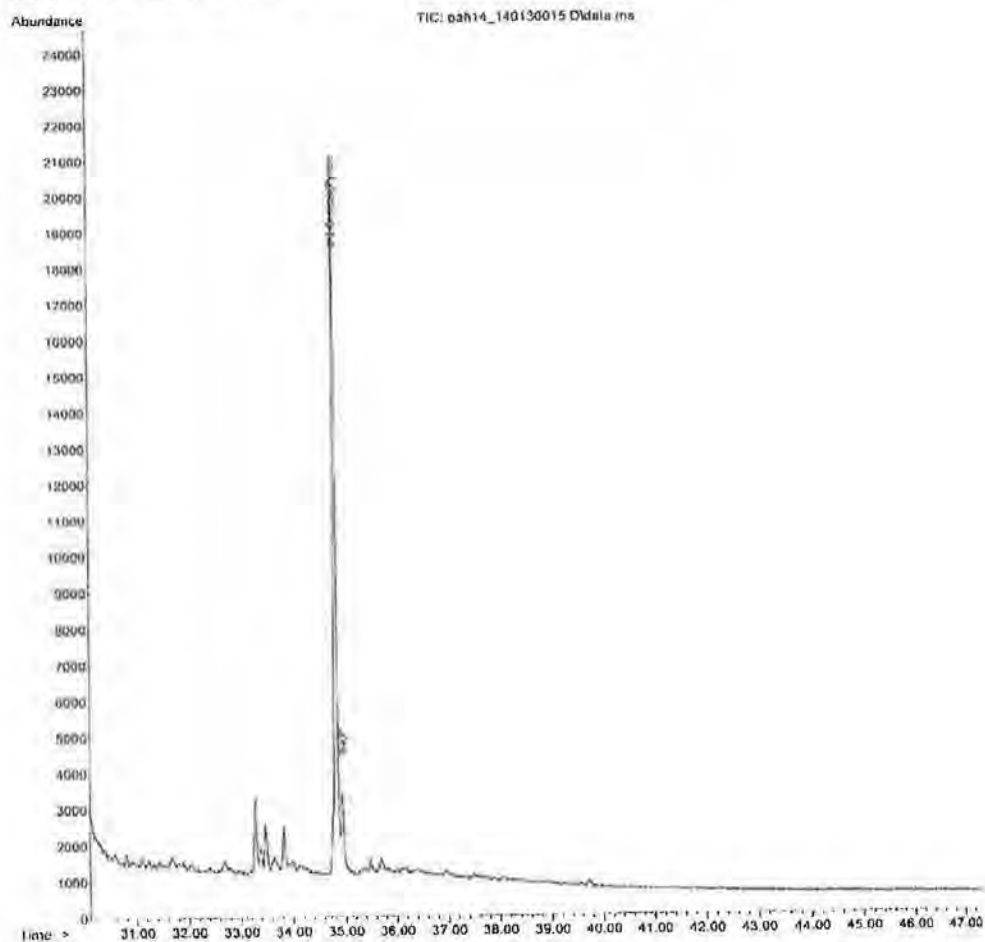
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3094804\
Created: 2/8/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_1\MSN\
Data File : pah14_140130015.D
Acq On : 31 Jan 2014 13:37
Operator : Analyst
Sample : 1400590-1-15
Misc : M195-GLP PAH MSN B1
ALS Vial : 44 Sample Multiplier: 1

Quant Time: Feb 08 10:08:34 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:16:01 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Thu Feb 08 12:55:44 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3094804\\
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_1\MSN\
Data File : pah14_140130021.D
Acq On : 31 Jan 2014 18:59
Operator : Analyst
Sample : STD 4 140128
Misc : M195-GLP PAH MSN B1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 06 10:09:59 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_1401290_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Clon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	47632m	25.12	ng/mL	0.00
Target Compounds						
2) B(a)P	34.952	252	11766m	4.68	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

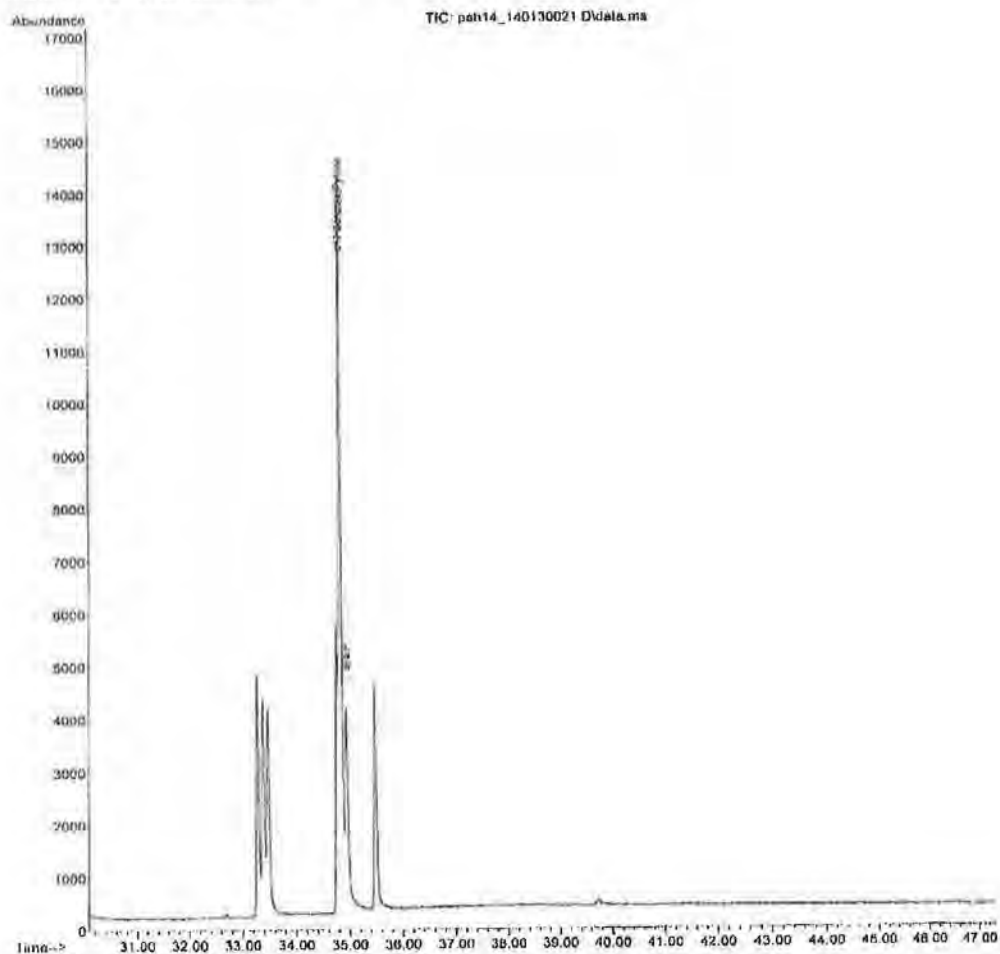
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3094804\
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_1\MSN\
Data File : pah14_140130021.D
Acq On : 31 Jan 2014 18:59
Operator : Analyst
Sample : STD 4 140128
Misc : M195-GLP PAH MSN B1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 06 10:09:59 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Thu Feb 06 12:56:18 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3094804\\
Created: 2/6/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\Projects\\M195-GLP\\Block_1\\MSN\\
Data File : pah14_140130022.D
Acq On : 31 Jan 2014 19:52
Operator : Analyst
Sample : 1400589-2-1
Misc : M195-GLP PAH MSN B1
ALS Vial : 50 Sample Multiplier: 1

Quant Time: Feb 06 10:10:08 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Qion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	264	65857m	25.12	ng/mL	0.00
Target Compounds						
2) B(a)P	34.941	252	6561	2.23	ng/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

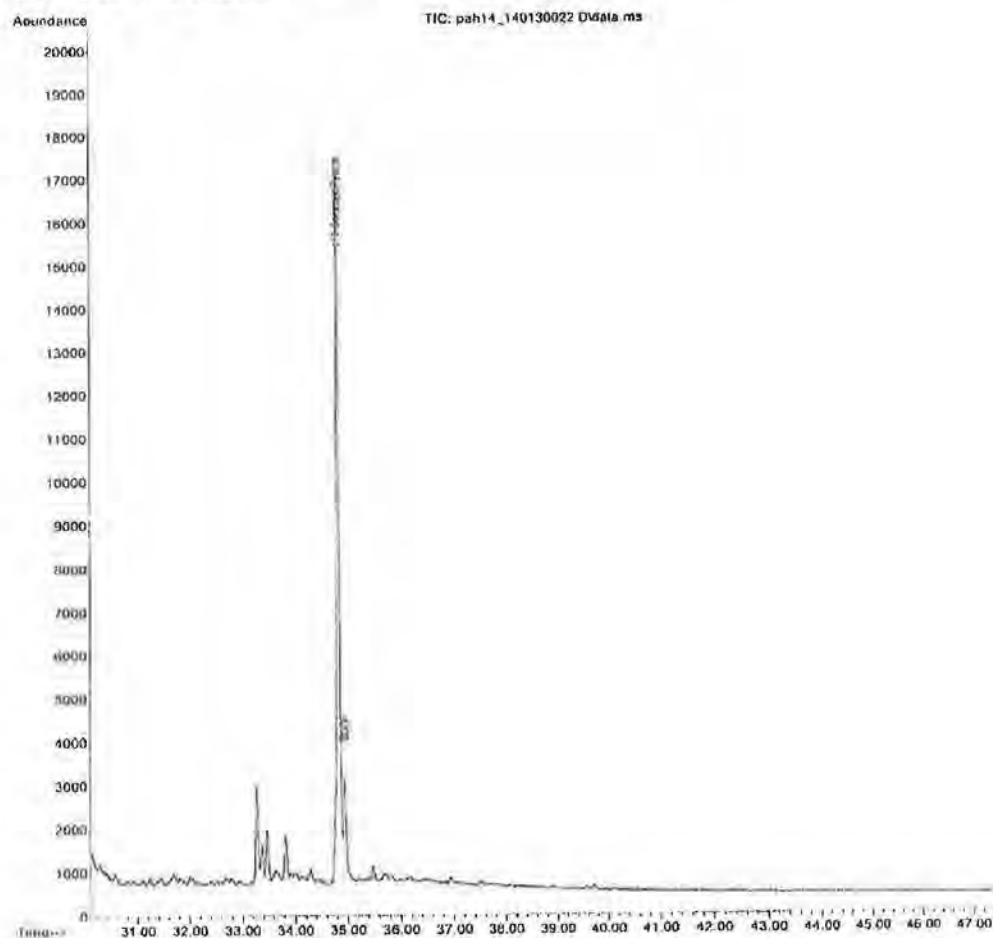
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_GCMS14_MSN_B1_Chromatograms.pdf_3094804
Electronically Signed By: Bartosz Jasiak
Path: W:\s2\repository\repository\3094804\
Created: 2/8/14 13:30 Audit ID: 3094804

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_1(MSN)
Data File : pah14_140130022.D
Acq On : 31 Jan 2014 19:52
Operator : Analyst
Sample : 1400589-2-1
Misc : M195-GLP PAH MSN B1
ALS Vial : 50 Sample Multiplier: 1

Quant Time: Feb 06 10:10:08 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Thu Feb 06 12:56:25 2014

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Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_instrument_run_summary.pdf_3207710
Electronically Signed By Bartosz Jasiek
Path: \\labstat\repository\reports\3207710
Created: 2/26/14 13:43 Audit ID: 3207716

Study: M195GLP PAH MSS B1

Review and Confirm

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Instrument Run Summary for:
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
1400588	STD 4 140128	29/01/2014	9:48:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400589-1-1	29/01/2014	10:39:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400590	1400590-1-2	29/01/2014	11:32:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400590	1400590-1-3	30/01/2014	12:25:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400588-1-4	30/01/2014	1:07:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400590	1400590-1-5	30/01/2014	2:10:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400589	1400589-1-6	30/01/2014	3:03:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400588-1-7	30/01/2014	3:56:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400589	1400589-1-8	30/01/2014	4:48:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400590	1400590-1-9	30/01/2014	5:41:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
357	357-1-10	30/01/2014	6:34:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400590	1400590-1-11	30/01/2014	7:27:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400588-1-12	30/01/2014	8:20:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400590	1400590-1-13	30/01/2014	9:12:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400590	1400590-1-14	30/01/2014	10:05:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400589	1400589-1-15	30/01/2014	10:38:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400588-1-16	30/01/2014	11:51:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400589	1400589-1-17	30/01/2014	12:44:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
357	357-1-18	30/01/2014	1:37:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400588-1-19	30/01/2014	2:31:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400589	1400589-1-20	30/01/2014	3:26:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
STD 4 140128	STD 4 140128	30/01/2014	4:19:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400589	1400589-2-1	30/01/2014	5:12:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400588-2-2	30/01/2014	6:05:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
357	357-2-3	30/01/2014	6:58:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
1400588	1400588-2-4	30/01/2014	7:52:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
SMB-1-21	SMB-1-21	30/01/2014	8:45:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
LAB-1	LAB-1	30/01/2014	9:38:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
LPB-1	LPB-1	30/01/2014	10:31:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
LFM-2-3	LFM-2-3	30/01/2014	11:24:00 PM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	
STD 4 140128	STD 4 140128	31/01/2014	12:17:00 AM	PAH14_ACQ_M195GLP.M / PAH14_140129Q_M195GLP.M	GCMS414 (LAB1693)	B.Jasiek	

Date: February 26, 2014
Revision: 1

QSF-01106-V2

Labstat International ULC



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jasiek
Path: \\s2repository\repository\3067503\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_1\MSS\
Data File : pah14_140129006.D
Acq On : 30 Jan 2014 2:10
Operator : Analyst
Sample : 1400590-1-5
Misc : M195-GLP PAH MSS B1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 31 14:04:18 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Qion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.842	264	66123m	25.12	ng/mL	0.00
Target Compounds						
2) B(a)P	34.948	262	11450m	3.28	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

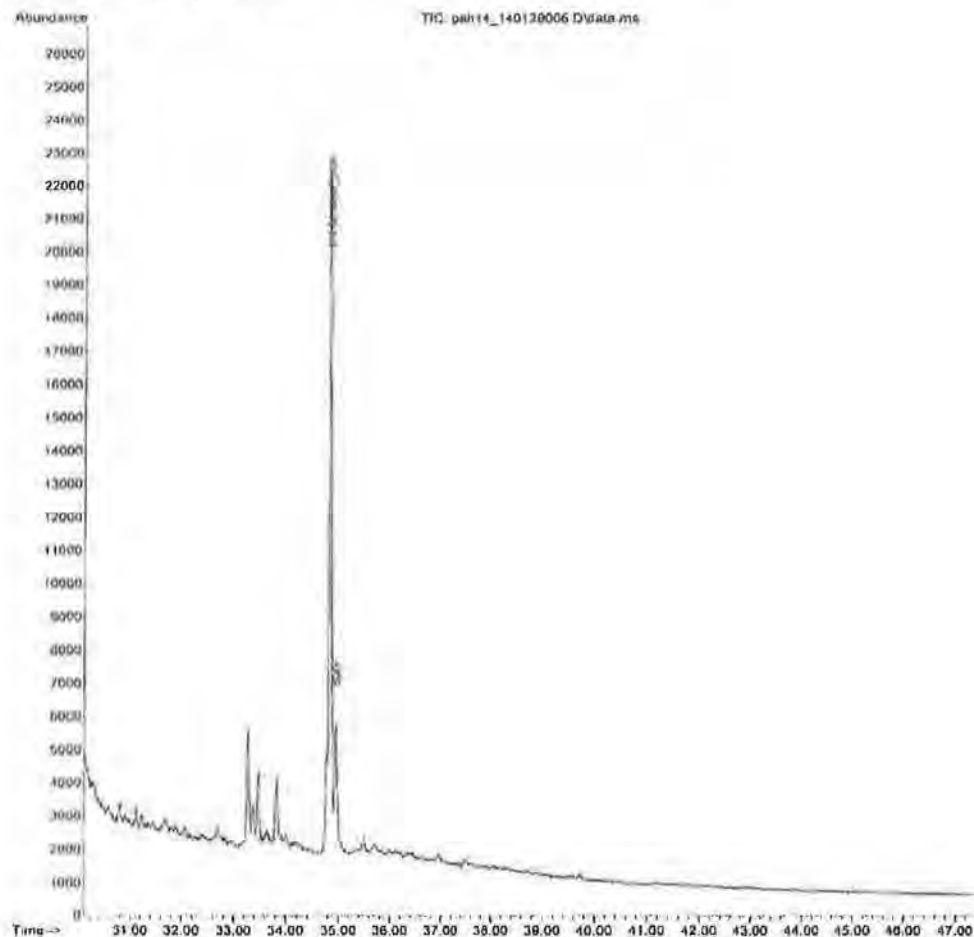
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jaslak
Path: Wfs2\repository\repository\3067503\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (OT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK 1\MSS\
Data File : pah14_140129006.D
Acq On : 30 Jan 2014 2:10
Operator : Analyst
Sample : 1400590-1-5
MISC : M195-GLP PAH MSS B1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 31 14:04:18 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QList Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129Q_M195GLP.M Mon Feb 03 11:02:25 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jaslok
Path: \\fs2\\repository\\repository\\3067503\\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK 1\MSS\
Data File : pah14_140129013.D
Acq On : 30 Jan 2014 8:20
Operator : Analyst
Sample : 1400588-1-12
Misc : M195-GLP PAH MSS B1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jan 31 14:05:51 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_1401290.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via Initial Calibration

Compound	R.T.	Qlan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	284	70936m	25.12	ng/mL	0.00
Target Compounds						
2) B(a)P	34.945	252	15493m	4.14	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

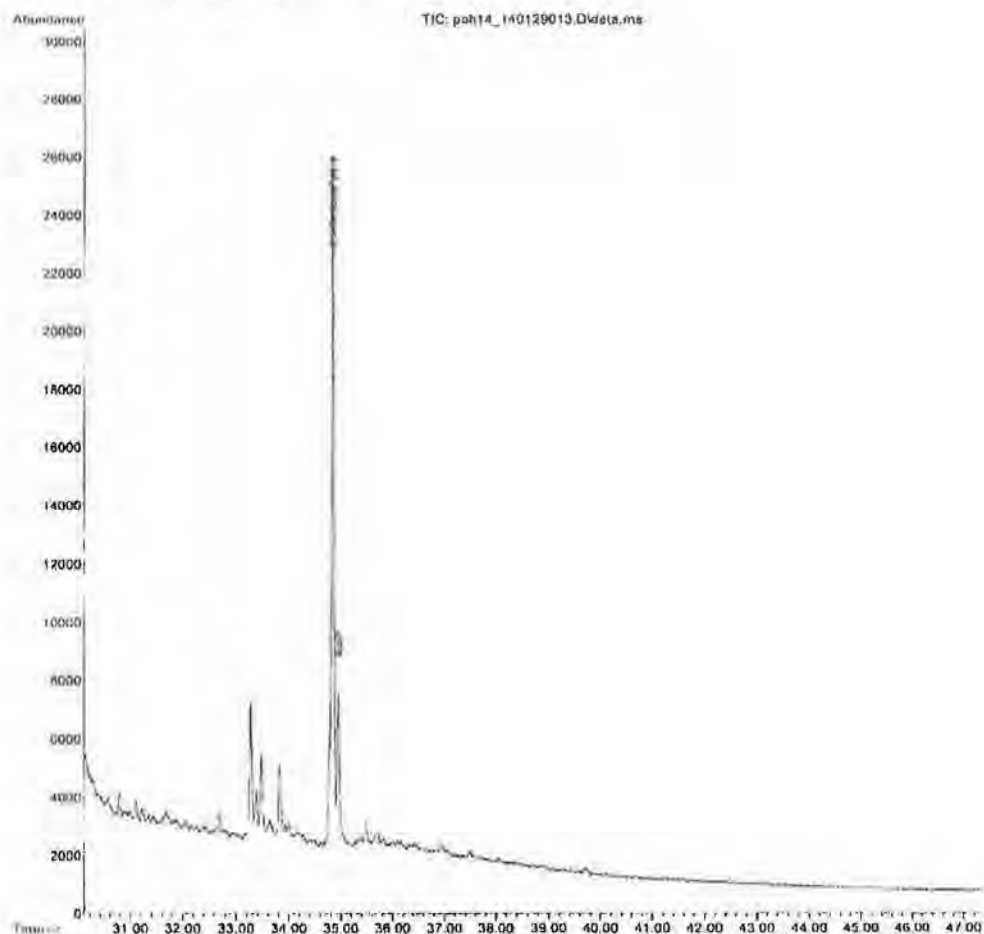
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3067503\\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_1\MSS\
Data File : pah14_140129013.D
Acq On : 30 Jan 2014 8:20
Operator : Analyst
Sample : 1400588-1-12
Misc : M195-GLP PAH MSS B1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jan 31 14:05:51 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_1401290_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_1401290_M195GLP.M Mon Feb 03 11:03:52 2014

Page: 2



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3067503\\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_1\MSS\
Data File : pah14_140129021.D
Acq On : 30 Jan 2014 15:26
Operator : Analyst
Sample : 1400589-1-20
Misc : M195-GLP PAH MSS B1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Jan 31 14:07:42 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Q Ion	Response	Conc Units	Dev(Min)
Internal Standards					
1) d12-Benzo(a)Pyrene	34.838	264	79958m	25.12 ng/mL	0.00
Target Compounds					
2) B(a)P	34.945	252	21828m	5.18 ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

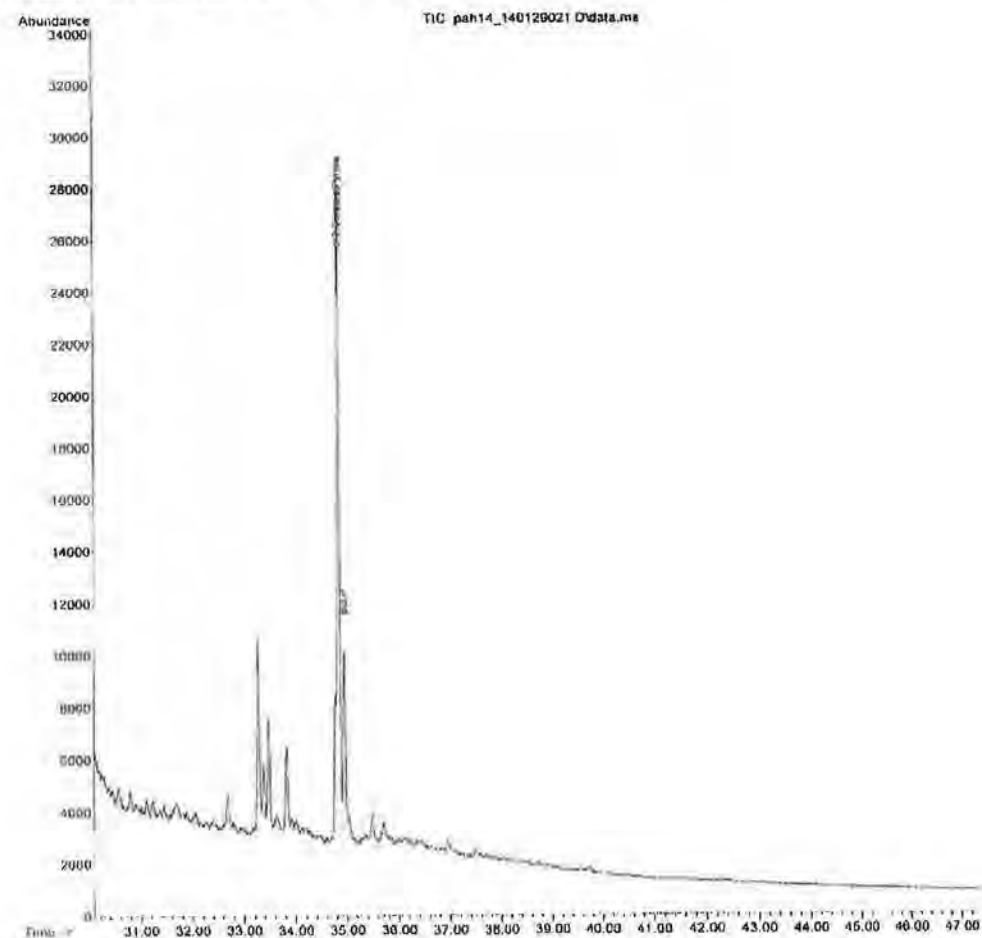
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3067503\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_1\MSS\
Data File : pah14_140129021.D
Acq On : 30 Jan 2014 15:26
Operator : Analyst
Sample : 1400589-1-20
Misc : M195-GLP PAH MSS B1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Jan 31 14:07:42 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129Q_M195GLP.M Mon Feb 03 11:04:41 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jaslek
Path: Wfs2\repository\repository\3067503\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK 1\MSS\
Data File : pah14_140129023.D
Acq On : 30 Jan 2014 17:12
Operator : Analyst
Sample : 1400589-2-1
Misc : M195-GLP PAH MSS B1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Jan 31 14:08:07 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	264	68747m	25.12	ng/mL	0.00
Target Compounds						
2) B(a)P	34.952	262	19647m	5.42	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

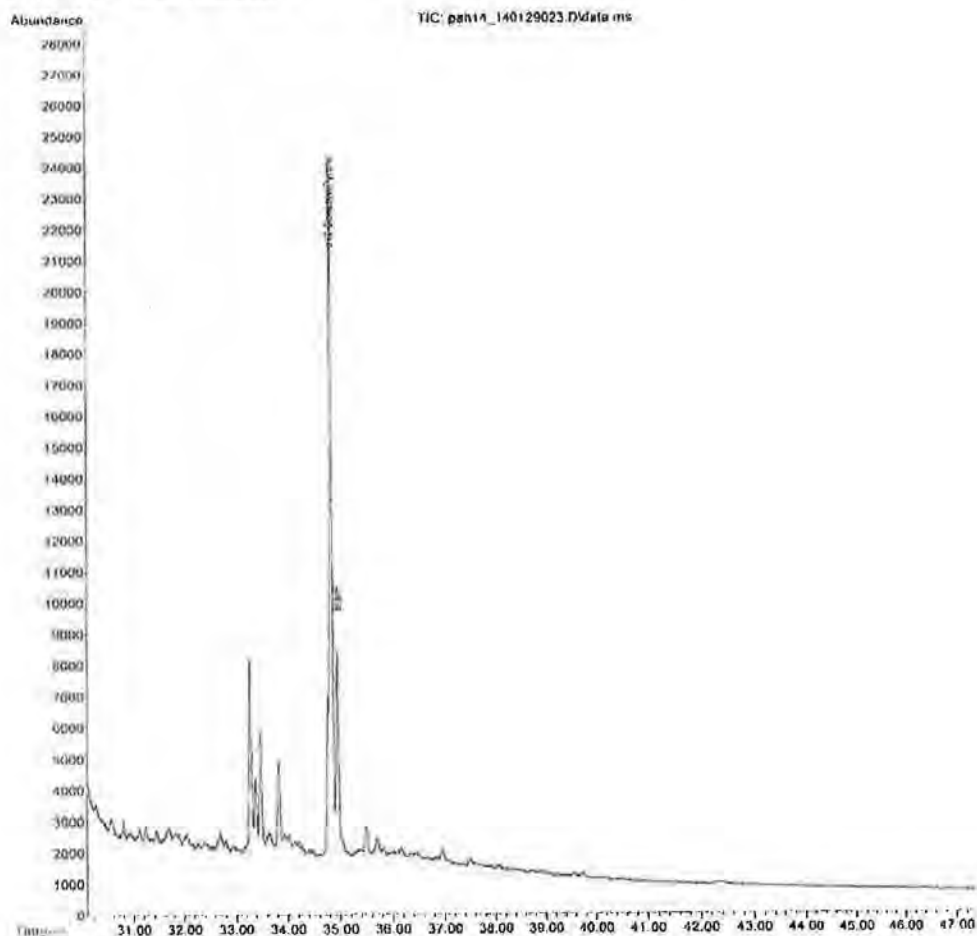
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jasiak
Path: W62\repository\repository\3067503\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_1\MSS\
Data File : pah14_140129023.D
Acq On : 30 Jan 2014 17:12
Operator : Analyst
Sample : 1400689-2-1
Misc : M195-GLP PAH MSS B1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Jan 31 14:08:07 2014
Quant Method : C:\msdchem\1\method\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:18:01 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Mon Feb 03 11:04:56 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jasiak
Path: \\fs2repository\repository\3067503\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK 1\MSS\
Data File : pah14_140129030.D
Acq On : 30 Jan 2014 23:24
Operator : Analyst
Sample : LFM-2-3
Misc : M195-GLP PAH MSS B1
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Jan 31 14:09:37 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:18:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) d12-Benzo(a)Pyrene	34.846	264	47433m	25.12 ng/mL	0.00
Target Compounds					
2) B(a)P	34.948	262	52232m	20.88 ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

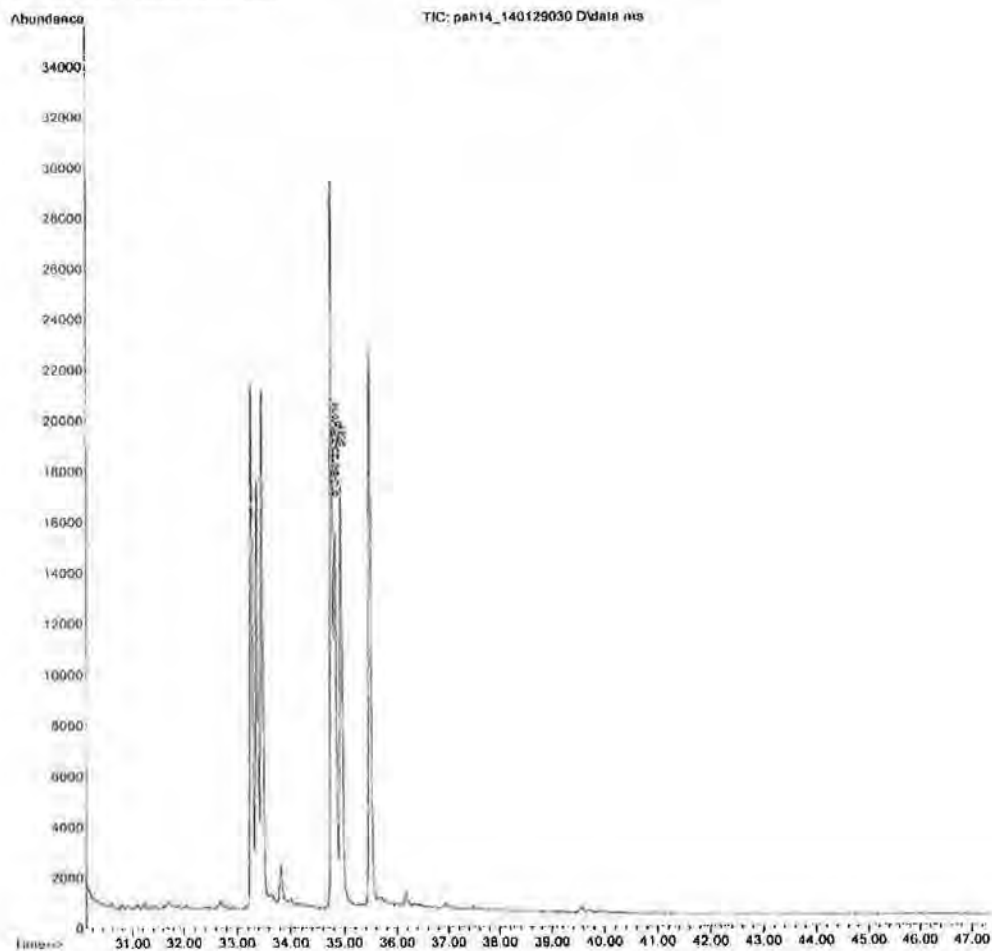
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_MSS_B1_Chromatograms.pdf_3067503
Electronically Signed By: Bartosz Jasiak
Path: \\ls2\\repository\\repository\\3067503\\
Created: 2/3/14 11:18 Audit ID: 3067503

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_1\\MSS\\
Data File : pah14_140129030.D
Acq On : 30 Jan 2014 23:24
Operator : Analyst
Sample : LFM-2-3
Misc : M195-GLP PAH MSS B1
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Jan 31 14:09:37 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Mon Feb 03 11:05:45 2014

Page: 2

Carbonyls



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Instrument Run Summary 140130.pdf 3054819
Electronically Signed By: Afsana Khanom
Path: \\fs2\repository\repository\3054819\
Created: 1/30/14 18:02 Audit ID: 3054819

Page 1 of 1

Printed on 4/23/2014

Instrument Run Summary for
Compound: Dinitrobenz

Study: M195-GLP M195-GLP

Sample ID	Sample Name	Injection Date	Injection Time	Injection Volume	Injection Rate	Injection Pressure	Injection Temperature	Injection Notes
1400960	1400960-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400961	1400961-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400962	1400962-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400963	1400963-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400964	1400964-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400965	1400965-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400966	1400966-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400967	1400967-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400968	1400968-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400969	1400969-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400970	1400970-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400971	1400971-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400972	1400972-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400973	1400973-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400974	1400974-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400975	1400975-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400976	1400976-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400977	1400977-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400978	1400978-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400979	1400979-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400980	1400980-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400981	1400981-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400982	1400982-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400983	1400983-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400984	1400984-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400985	1400985-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400986	1400986-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400987	1400987-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400988	1400988-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400989	1400989-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400990	1400990-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400991	1400991-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400992	1400992-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400993	1400993-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400994	1400994-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400995	1400995-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400996	1400996-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400997	1400997-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400998	1400998-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1400999	1400999-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	
1401000	1401000-1	4/23/2014	12:00:00	10.00	10.00	10.00	10.00	

Printed on 4/23/2014

Printed on 4/23/2014

Printed on 4/23/2014



Study Identifier: M195-GLP


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_Car_MSN.pdf_3053493
Electronically Signed By: Afsana Khanom
Path: \\fa2repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

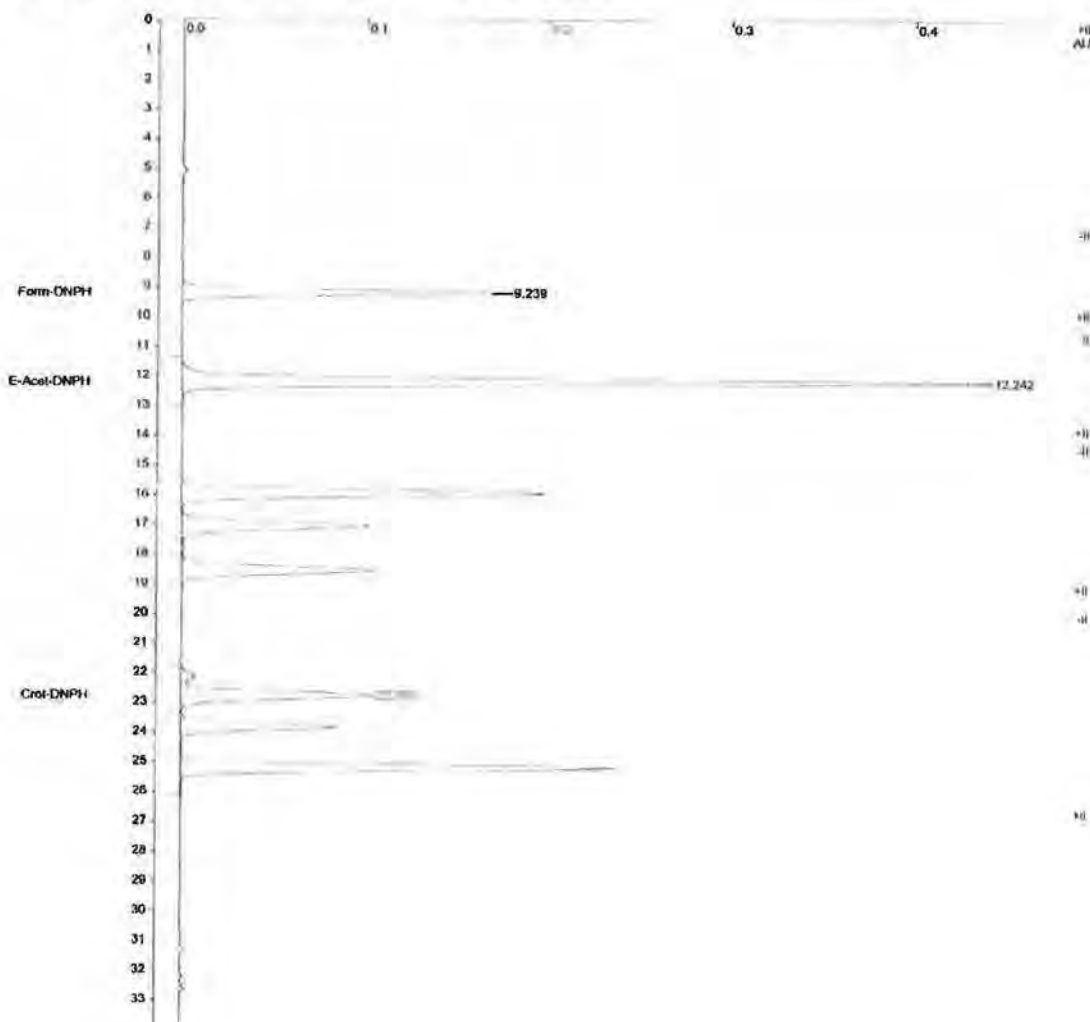
Title :
Run File : c:\star\carbonyls\m195-glp\bl-1\msn\m195-glp-bl_msn_car_29-01-2014_9:56:33_am_std_8_140122_5.run
Method File : c:\star\carbonyls\m195-glp\bl-1\msn\calib_ms_140124_5a.mh
Sample ID : STD 8 140122

Injection Date: 29/01/2014 9:56 AM Calculation Date: 30/01/2014 8:13 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star HS Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.982 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-BA8-21B0 **

Chart Speed = 0.61 cm/min Attenuation = 523 Zero Offset = 24
Start Time = 0.000 min End Time = 33.982 min Min / Tick = 1.00



Study Identifier: M195-GLP

Instrument Run Summary and Representative Chromatograms

Chromatograms_Car_MSH.pdf_3063483
Electronically Signed By: Aislinn Kinnam
Print: Wiscapostory\report\MS032483
Created: 1/30/14 14:24 Audit ID: 3063483

Print Date: Thu Jan 30 14:14:30 2014

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Verification Report

Title :
Run File : c:\star\carbonyl\m195-qlp\bl-1\mon\m195-qlp-bl-mon-car-29-01-2014_9:56:33-am-std-6-140122-5.run
Method File : c:\star\carbonyl\m195-qlp\bl-1\mon\calib_ms_140124_5a.mch
Sample ID : STD 6 140122

Injection Date: 29/01/2014 9:56 AM Calculation Date: 30/01/2014 9:33 AM

Operator : ANALYST Detector Type: 9050
Workstation: DS Bus Address : 1
Instrument : Varian Star 45 Sample Rate : 10.00 Hz
Channel : 1 = 265 um Run Time : 33.902 min

** IC Workstation Multi: Instrument Version 6.41 ** 00152-3188-EAM-2150 **

Run Mode : Verification
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 0
Tolerance : 100.0%

Peak No.	Peak Name	Expected Result (ug/mL)	Calculated Result (ug/mL)	Dev. %	Ret. Time (min)	Time Offset (min)	Area (counts)	Status Codes
1	Form-DNPH	5.9900	6.0521	1.0	9.239	0.119	1205449	
2	E-Acet-DNPH	19.9666	20.2973	1.7	12.242	0.298	1568756	
3	Citot-DNPH	7.7906	7.8857	1.3	22.796	-0.069	1044417	
Totals:			34.2351			0.348	5898622	

Total Unidentified Counts : 6484928 counts

Detected Peaks: 10 Rejected Peaks: 0 Identified Peaks: 3

Multipliers: 1 Dividers: 1 Unidentified Peak Factor: 0

Baseline Offset: 36 microAU LSB: 1.907 microAU

Noise (used): 413 microAU - monitored before this run

Val: 1 Injection Numbers: 1 Full Loop Volume: 2R ul



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_Car_MSN.pdf_3053493
Electronically Signed By: Afsana Khanom
Path: \\fs2\repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

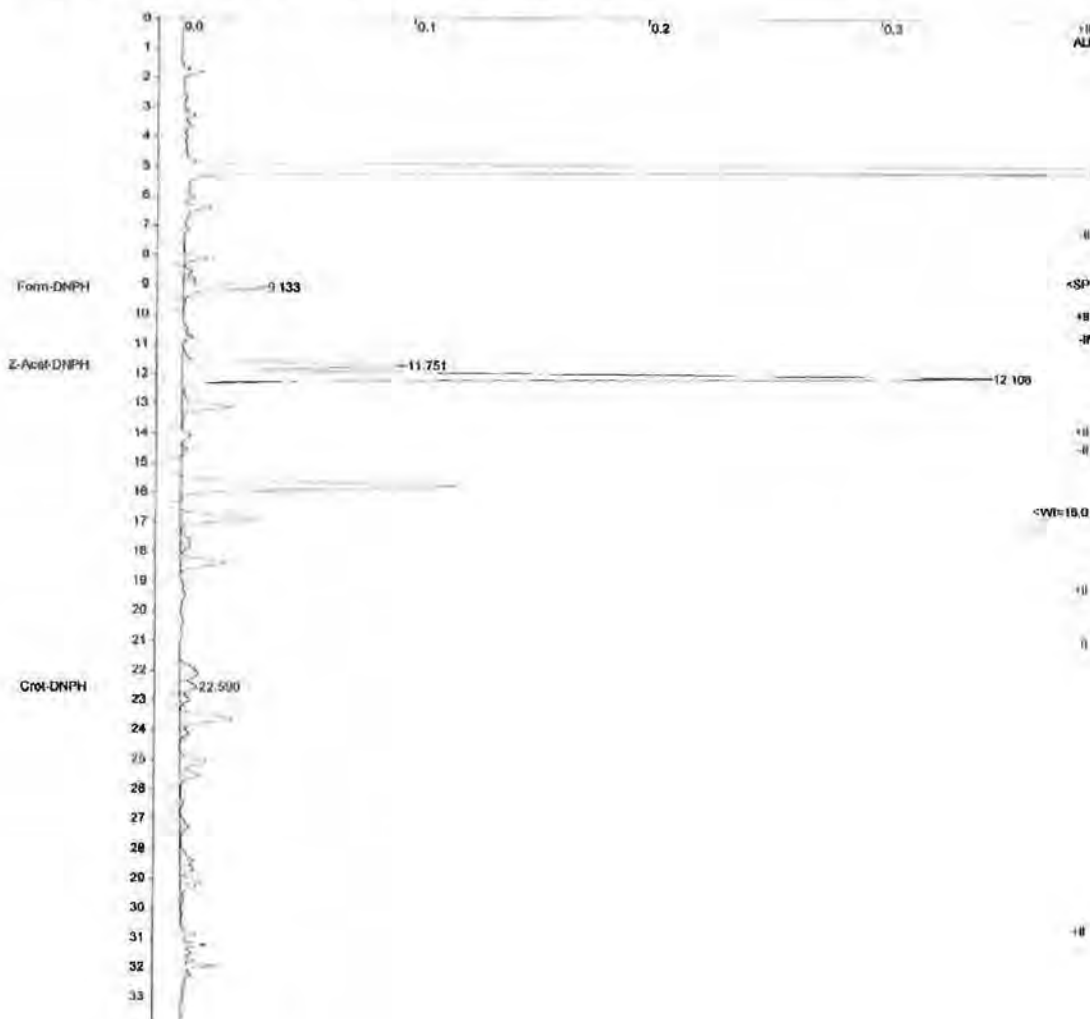
Title :
Run File : c:\star\carbonyls\m195-glp\bl-1\msn\m195-glp-bl_msn_car_29-01-2014_10:41:43_am_357-1-1_5.run
Method File : c:\star\carbonyls\m195-glp\bl-1\msn\calib.ms 140124_5a.mth
Sample ID : 357-1-1

Injection Date: 29/01/2014 10:41 AM Calculation Date: 30/01/2014 9:02 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.987 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3198-BA9-2180 **

Chart Speed = 0.61 cm/min Attenuation = 412 Zero Offset = 2%
Start Time = 0.000 min End Time = 33.987 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Chromatograms_Car_MSN.pdf 3053493
Electronically Signed By: Afana Khanom
Path: \\fs2\repository\repository\3053493
Created: 1/30/14 14:24 Audit ID: 3053493

Print Date: Thu Jan 23 14:15:11 2014 Page 1 of 1

Title : c:\starview\run\m195-glpl-1\m195-glpl-1.mn 20: 29-01-2014 10:41:43 30_357-1-1_S run
Method File : c:\starview\run\m195-glpl-1\m195-glpl-1.mn 160124_B3.mn
Sample ID : 357-1-1

Injection Date: 28/01/2014 10:41:43 Calculation Date: 30/01/2014 9:02:45

Operator : ANALYST Detector Type: 9050
Workstation: QS Bus Address : 1
Instrument : Varian Star 45 Sample Rate : 10.00 Hz
Channel : 1 + 365 nm Run Time : 35.987 min

-- IC Workstation Multi-Instrument Version 6.0: ** 30132-3189-248-2120 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/ml)	Ret. Time (min)	Area (a.u.)	Width (min)	Status Code
1	Form-DNH	1.0269	5.132	218010	VV 10.2	
2	2-Acet-DNH	3.9464	12.751	623184	BV 11.9	
3	3-Acet-DNH	13.4580	12.108	238243	VV 11.9	
4	4-Cro-DNH	0.5357	22.590	70516	VV 19.6	
Totals:		18.5645	0.343	327833		

Total: Unidentified Counts : 2553754 counts

Detected Peaks: 30 Rejected Peaks: 0 Identified Peaks: 4

Multiplier: 1 Division: 1 Unidentified Peak Factor: 0

Baseline Offset: 23 microAU ISS: 1.9E7 microAU

Noise (used): 173 microAU - monitored before this run

Vial: 25 Injection Number: 1 Full Loop Volume: 20 uL



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Chromatograms_Car_MSN.pdf_3053493
Electronically Signed By: Afsana Khanom
Path: \\fs2\repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

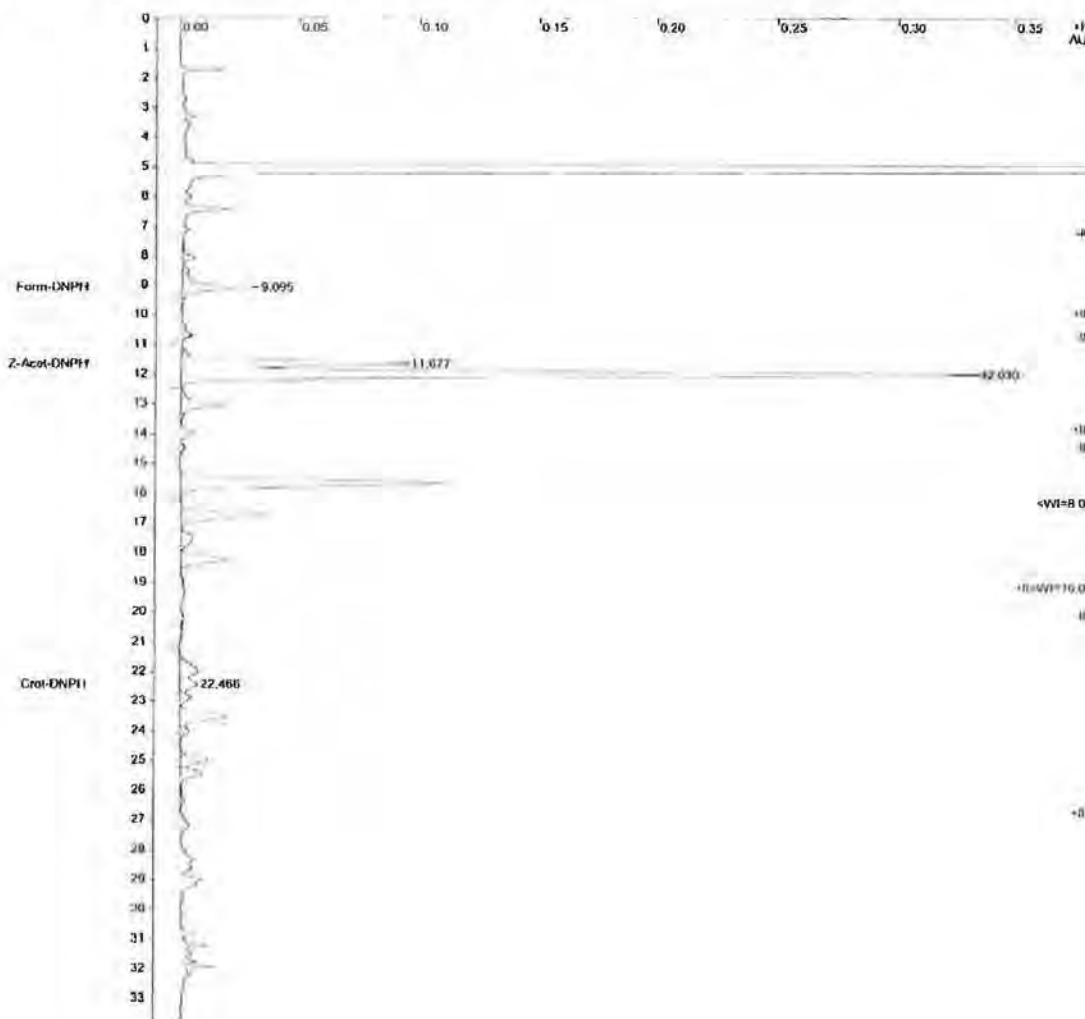
Title :
Run File : c:\star\carbonyls\m195-glp\hl-1\msn\m195-glp_bl_msn_car_29-01-2014_5:26:51 pm_1400589-1-10_5_run
Method File : c:\star\carbonyls\m195-glp\hl-1\msn\calib_ms_140124_5a.mth
Sample ID : 1400589-1-10

Injection Date: 29/01/2014 5:26 PM Calculation Date: 30/01/2014 8:12 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.985 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EA8-2180 **

Chart Speed : 0.61 cm/min Attenuation : 400 Zero Offset : 2%
Start Time : 0.000 min End Time : 33.985 min Min / Tick : 1.00



Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Chromatograms Car_MSN.pdf 3053493
Electronically Signed By: Aseana Khannom
Path: \\ls2vps00109\YRepository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

Print Date: Thu Jan 30 14:11:46 2014

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Title :
Run File : c:\start\carbonyls\m195-qlp\bi-1\msn\m195-qlp bi mon car 29-01-2014_5;26;51 pm_1400589-1-10_5.run
Method File : c:\start\carbonyls\m195-qlp\bi-1\msn\calib.ms_140124_5a.mth
Sample ID : 1400589-1-10

Injection Date: 29/01/2014 5:26 PM Calculation Date: 30/01/2014 0:12 AM

Operator : ANALYST Detector Type: 9090
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 - 365 nm Run Time : 33.985 min

-- LC Workstation Multi Instrument Version 6.41 -- 00102-3189-EAB-2130 --

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/mL)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status
1	Form-DNPH	0.9751	9.095	-0.025	207109	VV	10.3	
2	2-Acet-DNPH	3.5245	11.677	0.065	619675	BV	12.0	
3	3-E-Acet-DNPH	13.0541	12.030	0.086	2300497	VV	11.9	
4	4-Croton-DNPH	0.5422	22.466	-0.188	71760	VV	20.3	
Totals:		18.1259		-0.062	3199061			

Total Unidentified Counts : 2194368 counts

Detected Peaks: 29 Rejected Peaks: 0 Identified Peaks: 4

Multiplicator: 1 Divisor: 1 Unidentified Peak Factors: 0

Baseline Offset: -10 microAU LSB: 1.90 / microAU

Noise (used): 59 microAU - monitored before this run

Vial: 34 Injection Number: 1 Full Loop Volume: 20 ul



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_Car_MSN.pdf_3053493
Electronically Signed By: Afsana Khanom
Path: Ws2repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

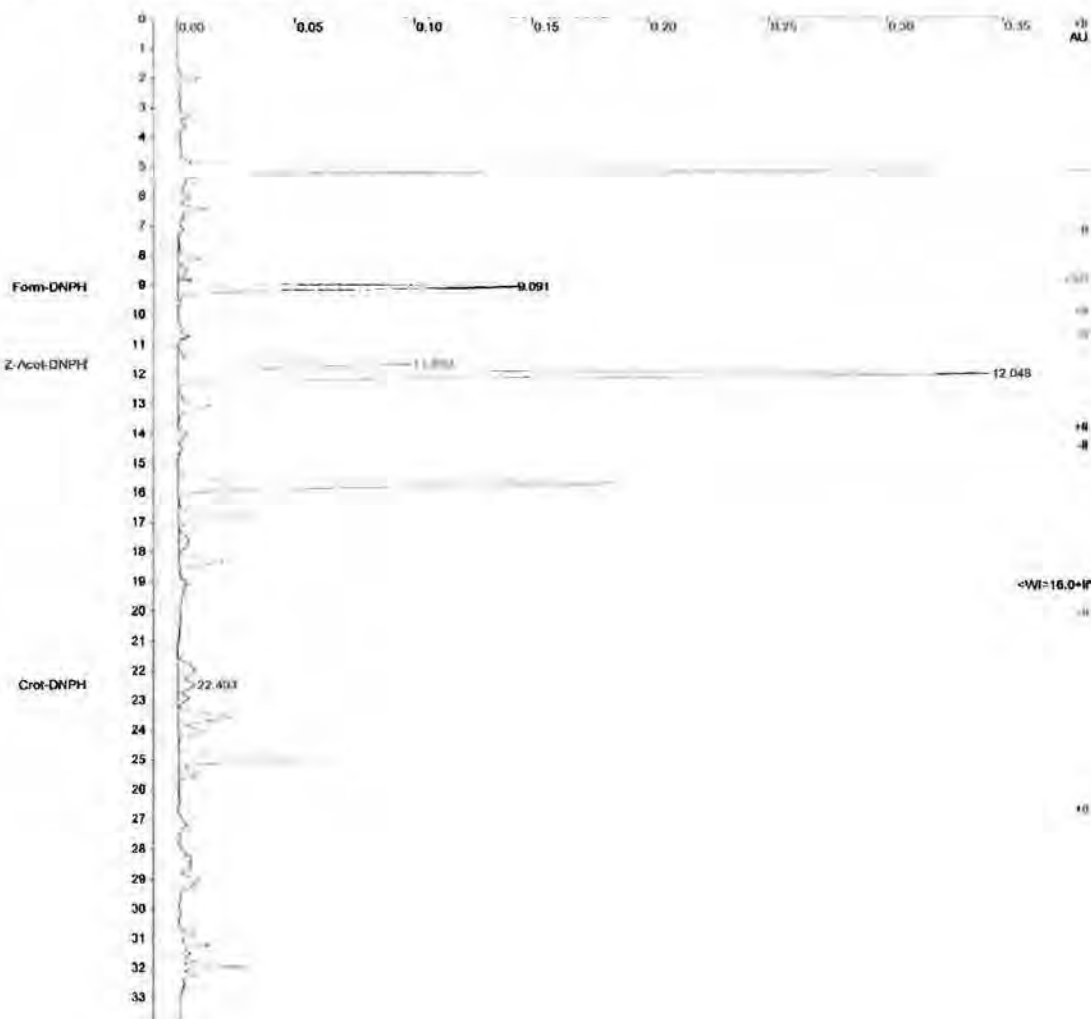
Title :
Run File : c:\star\carbonyls\m195-glp\b1-1\msn\m195-glp_b1_msn_car_29-01-2014_9:56:56 pm_lfm-1-1_5.run
Method File : c:\star\carbonyls\m195-glp\b1-1\msn\calib.ms 140124 5a.mth
Sample ID : LPM-1-1

Injection Date: 29/01/2014 9:56 PM Calculation Date: 10/01/2014 8:10 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.985 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-BA8-2180 **

Chart Speed = 0.61 cm/min Attenuation = 406 Zero Offset = 21
Start Time = 0.000 min End Time = 33.985 min Min / Tick = 1.00



Study Identifier: M195-GLP

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms Car: MSN.pdf_3053493
Electronically Signed By: Asana Khairon
Path: \\ls2vepo0101\vepo0101\3053493
Created: 1/30/14 14:24 Audit ID: 3053493

Print Date: Thu Jan 30 14:14:50 2014

Page 1 of 1

Title :
Run File : c:\star\carbonyls\m195-gl\bl-1\mon\m195-gl\bl mon car 29-01-2014_9:56:56 pm_lfm-1-1_b.run
Method File : c:\star\carbonyls\m195-gl\bl-1\mon\calib.ms_140124_5a.mth
Sample ID : LFM-1-1

Injection Date: 29/01/2014 9:56 PM Calculation Date: 30/01/2014 8:30 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.985 min

-- LG Workstation Multi Instrument Version 6.41 -- 00152-3188-BA9-2180 --

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/mL)	Ret. Time (min)	Time Of Flow (min)	Area (counts)	Sep. Code (dec)	Width 1/2 (dec)	Status Codes
1	Form-DNPH	3.6979	9.091	-0.029	627899	VV	9.9	
2	Z-Acet-DNPH	3.6154	11.690	0.078	635668	VV	12.0	
3	E-Acet-DNPH	13.3807	12.048	0.106	2352642	VV	12.0	
4	Crot-DNPH	0.5324	22.493	-0.071	70484	VV	16.2	
Totals:		21.4264		0.062	3896693			

Total Unidentified Counts : 3229189 counts

Detected Peaks: 30 Rejected Peaks: 0 Identified Peaks: 4

Multipoint: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -37 microAU LBD: 1.907 microAU

Noise (used): 51 microAU - monitored before this run

Vial: 39 Injection Number: 1 Full Loop Volume: 20 ul



AM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms Car MSN.pdf 3053493
Electronically Signed By: Afiana Khanom
Path: \\fs2\repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

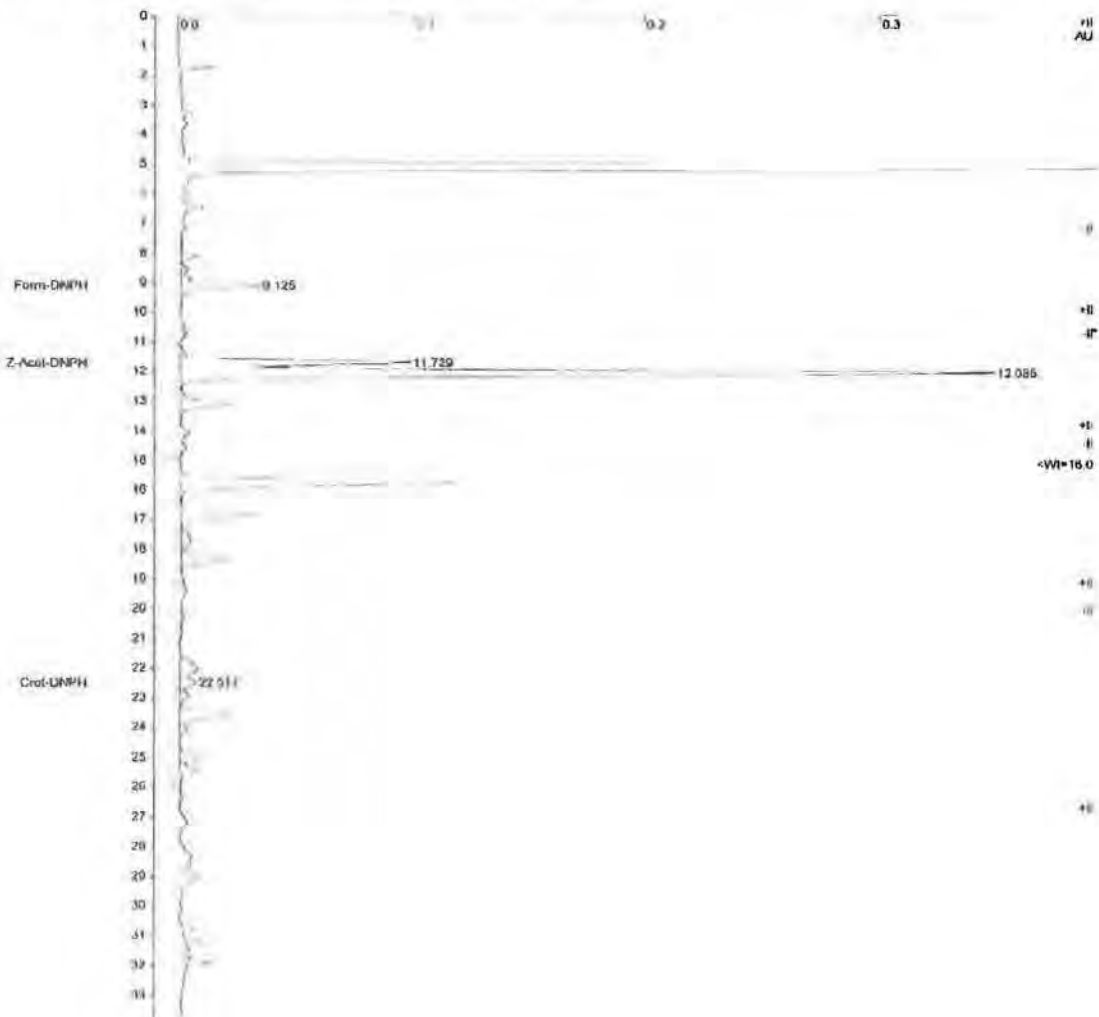
Title :
Run File : c:\star\carbonyls\m195-glp\bl-1\msn\m195-glp-bl_msn_car_29-01-2014_10:41:58 pm_1400590-2-1_5 run
Method File : c:\star\carbonyls\m195-glp\bl-1\msn\callb_ms_140124_5a.mth
Sample ID : 1400590-2-1

Injection Date: 29/01/2014 10:41 PM Calculation Date: 29/01/2014 11:15 PM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.978 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EAS-2180 **

Chart Speed = 0.61 cm/min Attenuation = 413 Zero Offset = 24
Start Time = 0.000 min End Time = 33.978 min Min / Tick = 1.00





Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Chromatogram: Car_MSN.pdf_3053493
Electronically Signed By: Afeen Khanom
Path: W:\2\repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

Print Date: Thu Jan 30 14:15:31 2014

Title :
Run File : c:\star\carbonyls\m195-glplbl-1\mon\m195-glplbl-mon-car-29-01-2014_10:41:58_pm_1400590-2-1_5-run
Method File : c:\star\carbonyls\m195-glplbl-1\mon\calib_ms_140124_sa.mth
Sample ID : 1400590-2-1

Injection Date: 29/01/2014 10:41 PM Calculation Date: 29/01/2014 11:15 PM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 - 365 nm Run Time : 33.978 min

-- LC Workstation Multi Instrument Version 6.41 -- 00152-3180-EA8-2180 --

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/mL)	Ret. Time (min)	Time Offset (min)	Area (Counts)	Sup. Code	Width 1/2 (sec)	Status Codes
1	Form-DNPH	0.9815	9.125	0.05	208465	VV	10.1	
2	Z-Acet-DNPH	3.5771	11.729	0.117	628933	BV	11.9	
3	E-Acet-DNPH	13.2995	12.085	0.141	2338368	VV	11.8	
4	Groc-DNPH	0.5319	22.517	0.137	70415	VV	16.9	
Totals:		16.3900		0.126	3246181			

Total Unidentified Counts : 2274892 counts

Detected Peaks: 29 Rejected Peaks: 0 Identified Peaks: 4

Multiplicity: 1 Division: 1 Identification Peak Factor: 0

Baseline Offset: -73 microAU LSD: 1.967 microAU

Noise (used): 43 microAU - monitored before this run

Vials: 90 Injection Number: 1 Full Loop Volume: 20 01



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_Gar_MSN.pdf_3053493
Electronically Signed By: Afsana Khanom
Path: W:\2\repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

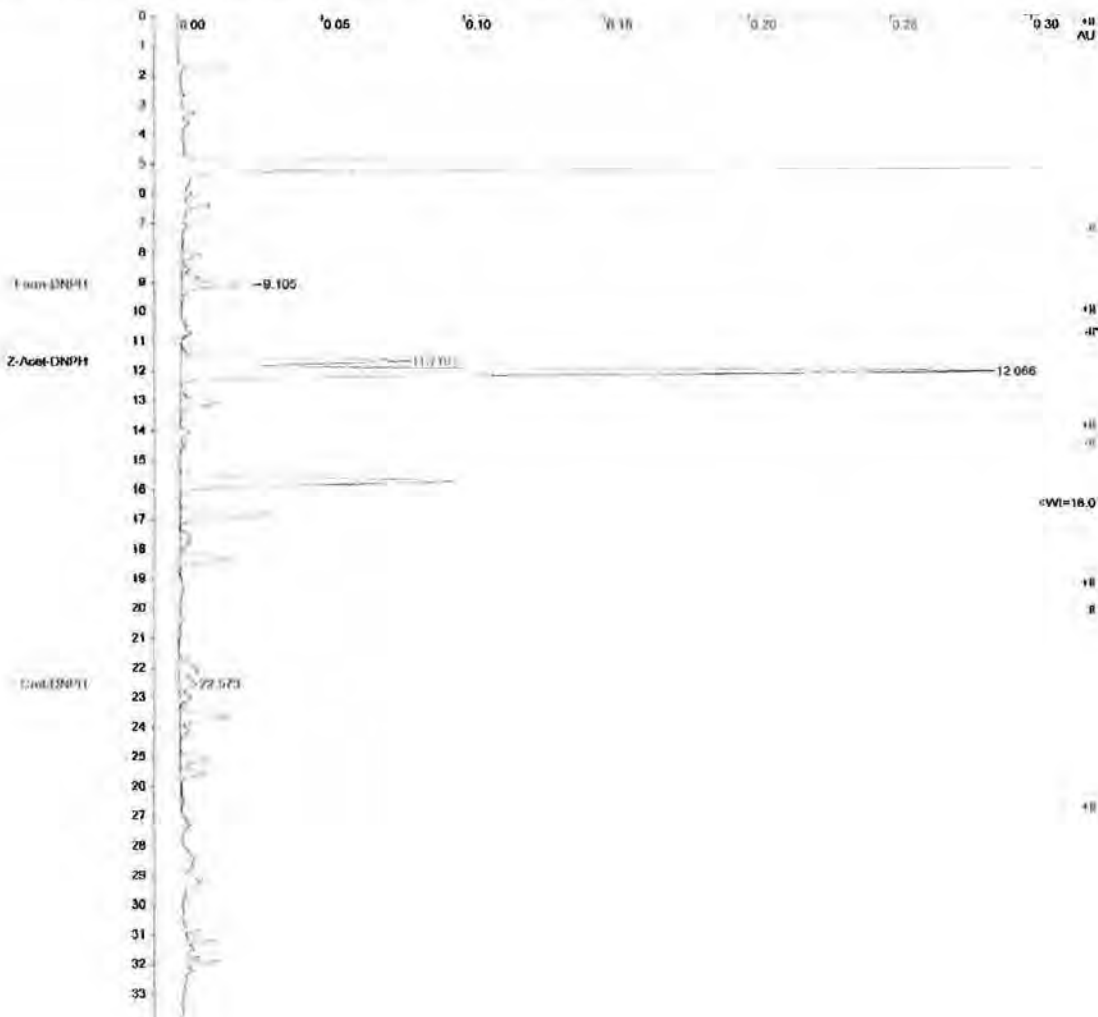
Title :
Run File : c:\star\carbonyls\m195-glp\bl-1\msn\m195-glp-bl_msn_car_30-01-2014_6:12:20 am 1400588-2-10_5.run
Method File : c:\star\carbonyls\m195-glp\bl-1\msn\calib_ms_140124_5a.mch
Sample ID : 1400588-2-10

Injection Date: 30/01/2014 6:12 AM Calculation Date: 30/01/2014 8:18 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.987 min

** I/C Workstation Multi Instrument Version 6.41 ** 00152-3188-BA8-2180 **

Chart Speed * 0.61 cm/min Attenuation * 339 Zero Offset * 2%
Start Time * 0.000 min End Time * 33.987 min Min / Tick * 1.00





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms: Car_MSN.pdf 3053493
Electronically Signed By: Msana Khairon
Path: W:\2repository\repository\3053493\
Created: 1/30/14 14:24 Audit ID: 3053493

Print Date: Thu Apr 10 09:54:00 AM
Run File: c:\data\chromatograms\m195-glplb1-1\m195-glplb1-1.mn
Method File: c:\data\chromatograms\m195-glplb1-1\m195-glplb1-1.mn
Sample ID: 1400588-2-0
Injection Date: 30/01/2014 6:12 AM Calculation Date: 30/01/2014 6:18 AM
Operator: ANS-VST
Detector Type: 904C
Data Address: 1
Sample Name: 10-02-2014
Run Time: 33:38 min
-- IC Workstation: Multi-Instrument Version 6.01 -- C0152-1160-2AD-2150 --
Run Mode: ANALYSIS
Peak Measurements: Peak Area
Calculation Type: External Standard
Peak Name Peak Ret. Time (min) Ret. Time (min) Width (sec) Status
1 Fom-DMP 8.812 9.108 -3.015 17246 W
2 E-Acet-3NH 2.925 11.710 3.038 54614 W
3 E-Acet-3NH 11.060 12.066 3.122 190214 W
4 E-Acet-3NH 22.573 22.573 3.009 58960 W
Total: 15.2210 3.214 2686459
Total Unidentified Counts: 180173 counts
Detected Peaks: 25 Rejected Peaks: 1 Identified Peaks: 2
Multi-Step: 1 Divided: 1 Unidentified Peak Percent: 11
Baseline Offset: 44 microAU LSB: 1.90 microAU
Noise Level: 116 microAU - monitored before this run
Vial: 39 Injection Number: 1 Full Loop Volume: 20 uL

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Instrument Run Summary: 140131.pdf_3059761
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3059761\\
Created: 1/31/14 11:37 Audit ID: 3059761

Sample	Sample Name	Depth	Injection	Method	Position	Phase	Project
		Start	Time				
00000	170.8.00020	30-Jan-11	9:37:54 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00001	102008-1.1	30-Jan-11	9:43:05 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00002	102008-2.1	30-Jan-11	10:15:14 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00003	102008-3.1	30-Jan-11	12:16:18 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00004	102008-4.1	30-Jan-11	12:11:29 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00005	102008-5.1	30-Jan-11	12:56:33 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00006	102008-6.1	30-Jan-11	1:33:41 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00007	102008-7.1	30-Jan-11	2:28:11 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00008	102008-8.1	30-Jan-11	3:18:22 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00009	102008-9.1	30-Jan-11	4:58:31 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00010	102008-10.1	30-Jan-11	5:28:32 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00011	102008-11.1	30-Jan-11	7:14:18 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00012	102008-12.1	30-Jan-11	7:48:18 PM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00013	102008-13.1	30-Jan-11	8:52:23 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00014	102008-14.1	30-Jan-11	9:28:26 PM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00015	102008-15.1	30-Jan-11	10:54:27 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00016	102008-16.1	30-Jan-11	12:56:33 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00017	102008-17.1	30-Jan-11	1:33:41 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00018	102008-18.1	30-Jan-11	2:28:11 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00019	102008-19.1	30-Jan-11	3:18:22 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00020	102008-20.1	30-Jan-11	4:58:31 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00021	102008-21.1	30-Jan-11	5:28:32 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00022	102008-22.1	30-Jan-11	7:14:18 PM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00023	102008-23.1	30-Jan-11	7:48:18 PM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00024	102008-24.1	30-Jan-11	8:52:23 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00025	102008-25.1	30-Jan-11	9:28:26 PM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00026	102008-26.1	30-Jan-11	10:54:27 AM	CRS, m, 102121, 5x, w/1	19-25.5 Pump, 100 0200 Det, 100 0200 Auslander per, 100 0200	A Pump	Project 10004
00027	102008-27.1	30-Jan-11	1				



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
Electronically Signed By: Afsana Khanom
Path: Ws2\repository\repository\3060036\
Created: 1/31/14 12:00 Audit ID: 3060036

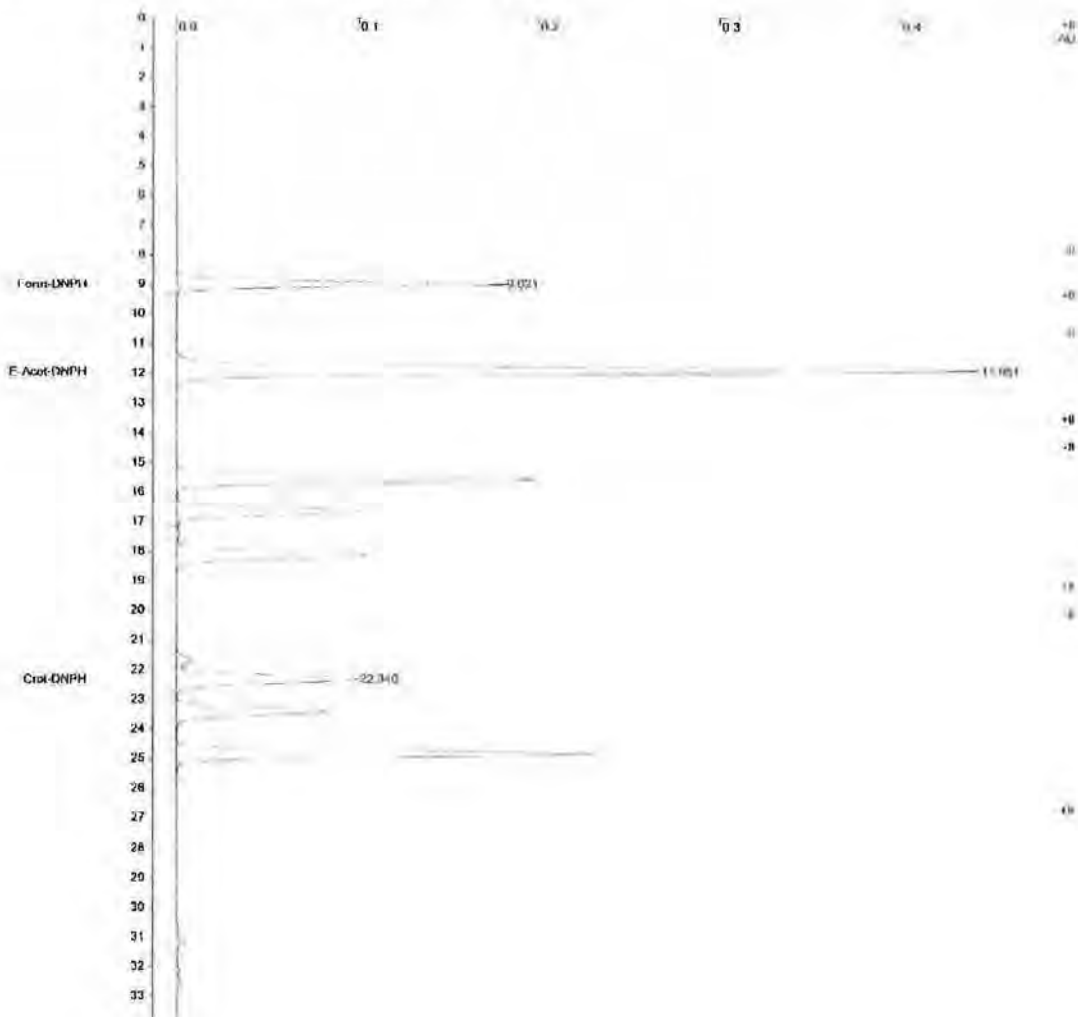
Title :
Run File : c:\star\carbonyls\m195-glp\b1-1\mss\m195-glp_b1_mss_car_30-01-2014_0:27:56_am_std_8_140122_5.run
Method File : c:\star\carbonyls\calibration curve\hplc_5\140124\mss\calib_ms_140124_5a.mth
Sample ID : STD 8 140122

Injection Date: 30/01/2014 0:27 AM Calculation Date: 31/01/2014 8:18 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star H5 Sample Rate : 10.00 Hz
Channel : 1 = 165 nm Run Time : 33.985 min

** LC Workstation Multi Instrument Version 6.41 ** 00152 3188-EA8-21R0 **

Chart Speed = 0.61 cm/min Attenuation = 524 Zero Offset = 23
Start Time = 0.000 min End Time = 33.985 min Min / Tick = 1.00





AM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3060036\\
Created: 1/31/14 12:00 Audit ID: 3060036

Print Date: 04/23/2014 11:48:11 AM Page: 04 of 11
View: Full Report

Title: 1 c:\star\carboxyl\m195-gl\p\bi-lym\m195-gl\p\bi men ear 30-01-2014 8:27:56 on std 8 140122_5.run
Method File: 1 c:\star\carboxyl\m195-gl\p\bi-lym\m195-gl\p\bi men ear 30-01-2014 8:27:56 on std 8 140122_5.run
Sample ID: 1 STD 8 140122

Injection Date: 30/01/2014 8:27 AM Calculation Date: 31/01/2014 8:28 AM

Operator: 1 abelyst
Workstation: OS
Instrument: 1 Nation Star 15
Channel: 1 1 165 MHz

Detector Type: 9050
Det Address: 1 1
Sample Rate: 10.00 Hz
Run Time: 32.965 min

-- LC Workstation Multi Instrument Version 6.41 -- U0152-3198-2A8-21BD --

Run Mode: 1 Verification
Peak Measurement: Peak Area
Calculation Type: External Standard
Level: 1 8
Tolerance: 1 100.0%

Peak No.	Peak Name	Expected Result (ug/ml)	Calculated Result (ug/ml)	Dev. %	Ret. Time (min)	Time Offset (min)	Area (counts)	Status Codes
1	Form-DNH	5.9500	6.0074	0.3	9.021	0.120	1275968	
2	8-Acet-DNH	19.9586	20.1921	1.2	11.951	0.114	3551489	
3	8-Cro-DNH	7.7506	7.8700	1.0	22.320	0.084	1071811	
Totals:			34.0765			0.326	5969288	

Total Unidentified Counts: 6462619 counts

Detected Peaks: 19 Rejected Peaks: 0 Identified Peaks: 3

Multipplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -26 microAU LSB: 1.907 microAU

Noise (used): 123 microAU - monitored before this run

Vial: 1 Injection Number: 1 Full Loop Volume: 20 0



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
Electronically Signed By: Afsana Khanom
Path: W:\s2repository\repository\3060036\
Created: 1/31/14 12:00 Audit ID: 3060036

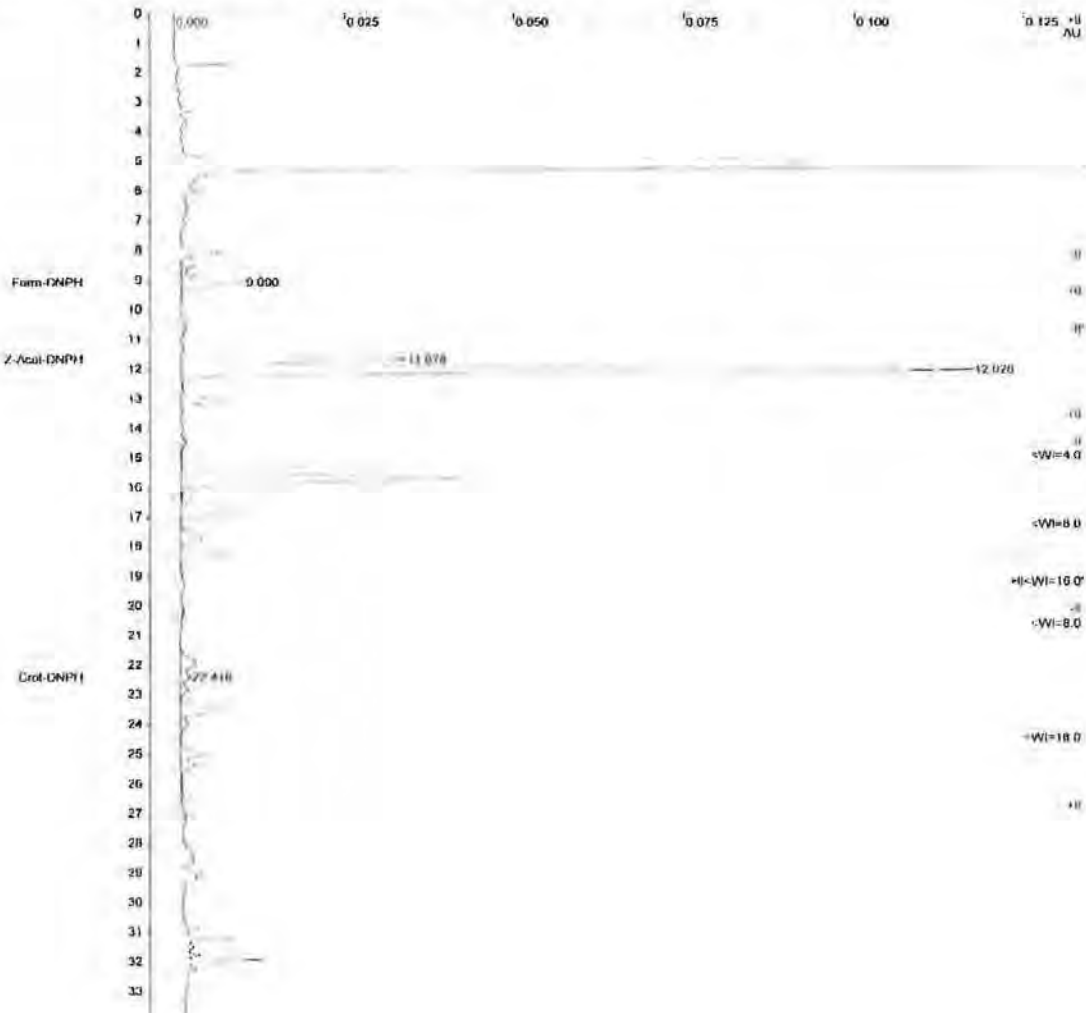
Title :
Run File : c:\scar\carbonyls\m195-glp\b1\1\mss\m195-glp_b1.mse_car_30-01-2014_9:13:05.am\1400590-1-1_5.run
Method File : c:\scar\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms_140124_5a.mch
Sample ID : 1400590-1-1

Injection Date: 10/01/2014 9:12 AM Calculation Date: 11/01/2014 8:27 AM

Operator : ANALYST Detector Type: 9950
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.980 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EA8-2180 **

Chart Speed = 0.61 cm/min Attenuation = 140 Zero Offset = 25
Start Time = 0.000 min End Time = 33.980 min Min / Tick = 1.00



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3060036\\
Created: 1/31/14 12:00 Audit ID: 3060036

```

Run Date: 30/01/2014 8:12 PM
Sample ID: 1406590-1-1
Calculation Date: 31/01/2014 6:27 AM
Detector Type: 9050
Bus Address: 1
Workstation: 05
Instrument: Varian Star: #5
Channel: 1 - 365 nm
Run Time: 33.980 min
Calculation Version: 6.41
*** IC Workstation Multi Instrument Version 6.41 *** 00162-5160-250-230 ***

Run Mode: Analysis
Peak Measurement: Peak Area
Calibration Type: External Standard

Peak No. Peak Name Result (Area) Set Time (min) Time Offset (min) Area (Counts) Supp. Code Status
1 1-Form-DNPH 0.2509 9.090 0.077 53280 W 0
2 2-Acet-DNPH 1.1952 11.678 0.073 209716 W 0
3 3-Acet-DNPH 7.5076 22.028 0.062 903098 W 0
4 4-Cro-DNPH 0.0977 24.118 0.152 22931 W 1.8
Total: 6.1090 0.354 1078023

Total Identified Counts: 1078023
Detected Peaks: 28 Rejected Peaks: 2 Identified Peaks: 4
Multiplier: 1 Divisor: 1 Incident Rate Peak Factor: 1
Baseline Offset: 34 microAU
Noise (used): 93 microAU - monitored before this run
Vial: 51 Injection Number: 1 Full Loop Volume: 20 uL
  
```



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
Electronically Signed By: Maana Khanom
Path: Ms2repositoryrepository\3060036
Created: 1/31/14 12:00 Audit ID: 3060036

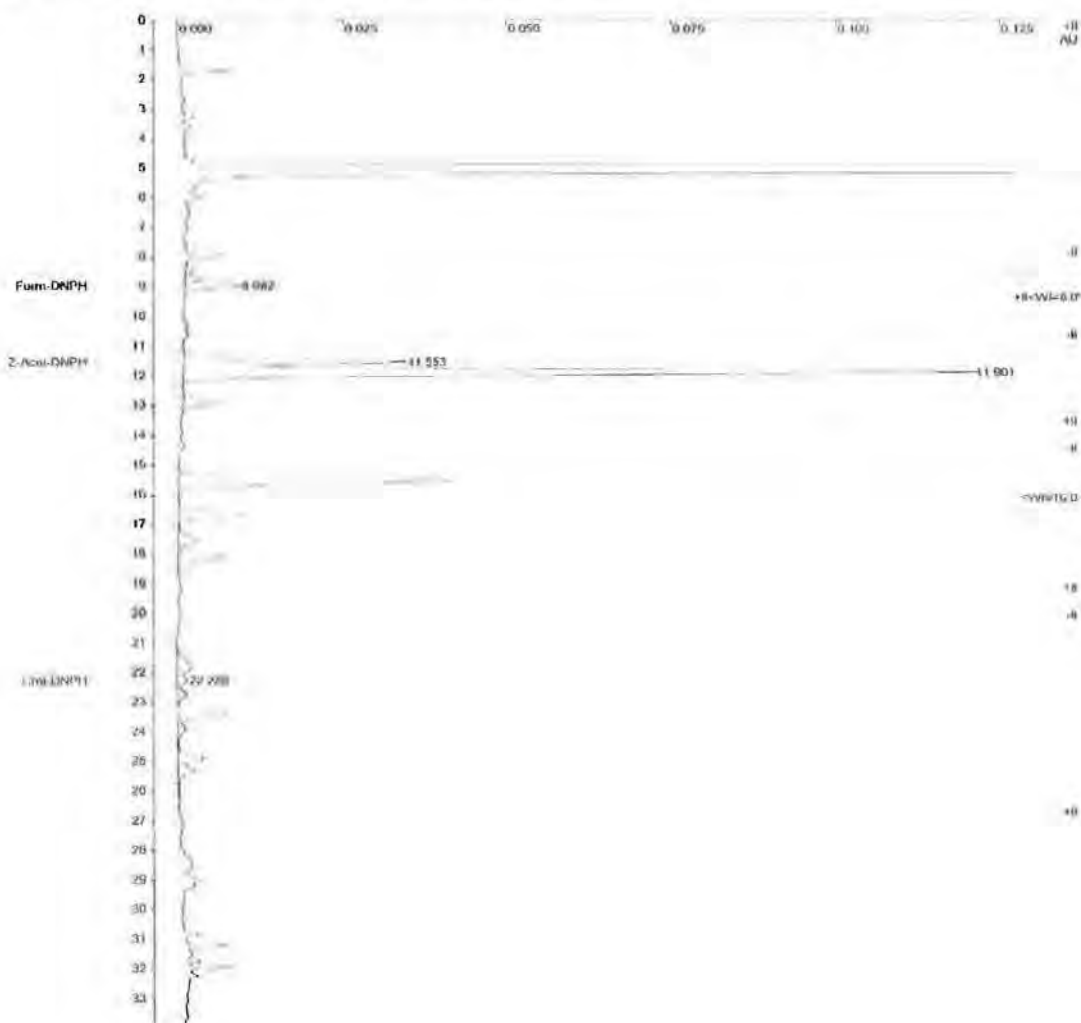
Title :
Run File : c:\star\carbonyls\m195-glp\bl-1\mss\m195-glp-bl-mss-car_30-01-2014_4:43:33 pm 1400590 1-10_5.run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms 140124_5a.mh
Sample ID : 1400590-1-10

Injection Date: 30/01/2014 4:41 PM Calculation Date: 31/01/2014 8:16 AM

Operator : ANALYST Detection Type: 7050
Workstation: OS Host Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 165 nm Run Time : 13.982 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-BA8-2100 **

Chart Speed = 0.51 cm/min Attenuation = 114 Zero Offset = 21
Start Time = 0.000 min End Time = 13.982 min Min / Tick = 1.00





M195-GLP Final Study Report
RJRT Study ID: 1061

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April 23, 2014

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf, 3066036
Electronically Signed By: Ariana Khannon
Path: \\629cncs001\reports\13066036\1
Created: 1/31/14 12:00 Audit ID: 3066036

Print Date: Fri Jan 31 11:46:21 2014

Page 1 of 1

Title

Run File : c:\data\carboxylic\m195-glp\bl-1\mss\m195-glp bl mss ecf 30-01-2014 4:43:33 pm_1400590-1-10_5.rpt
Method File : c:\data\carboxylic\calibration curve\hplc 3\140124\mss\calib_mss_140124_5a.mth
Sample ID : 1400590-1-10

Injection Date: 30/01/2014 4:43 PM Calculation Date: 31/01/2014 8:16 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star 65 Sample Rate : 10.00 Hz
Channel : 1 - 385 nm Run Time : 33.982 min

-- LC Workstation Multi Instrument Version 6.41 -- 00152-3198-EAB-21BD --

Run Mode : Analysis

Peak Measurement: Peak Area

Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/mL)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sup. Code	Width 1/2 (sec)	Status Codes
1	Form-DNPH	0.2232	9.382	0.085	47406	VB	8.0	
2	2-Acet-DNPH	1.1353	11.353	0.127	208403	VB	11.7	
3	3-Acet-DNPH	6.5968	11.901	0.064	808237	VB	11.7	
4	Croton-DNPH	0.1080	22.268	0.032	14295	VV	23.2	
Totals:		6.1133		0.312	1078341			

Total Unidentified Counts : 770091 counts

Detected Peaks: 21 Rejected Peaks: 0 Identified Peaks: 4

Multiplier: 1 Division: 1 Unidentification Peak Factors: 0

Baseline Offset: 15 microAU LSB: 1.907 microAU

Noise (used): 101 microAU - monitored before this run

Vial: 60 Injection Number: 1 Full Loop Volume: 20 uL



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
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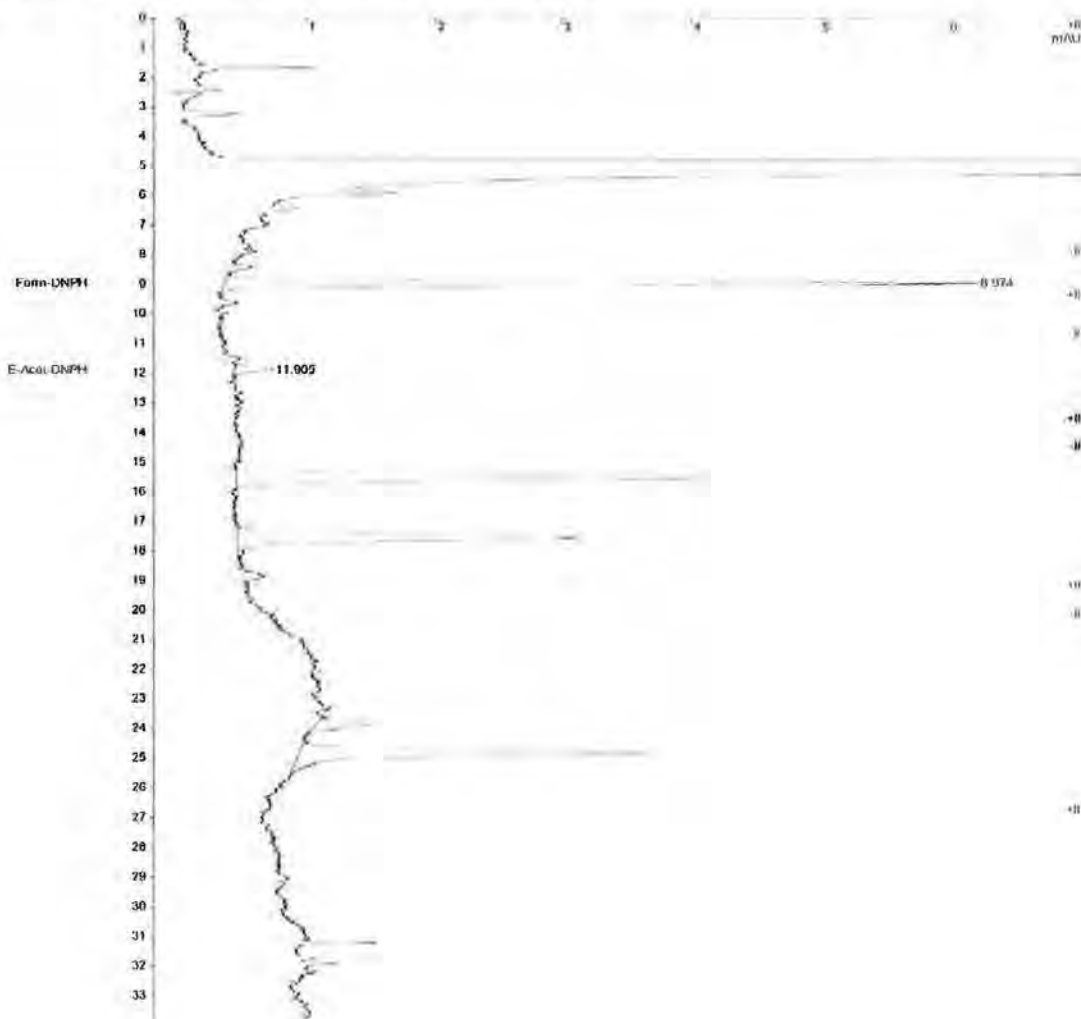
Title :
Run File : c:\\star\\carbonyls\\m195-glp\\bi-1\\mss\\m195-glp_bi_mss_car_30-01-2014_8:43:23 pm_lfb-1_5.run
Method File : c:\\star\\carbonyls\\calibration curve\\hpic 5\\140124\\mss\\calib.ms 140124_5a.mth
Sample ID : LFB-1

Injection Date: 30/01/2014 8:43 PM Calculation Date: 31/01/2014 8:18 AM

Operator : ANALYST Detector Type: 9950
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.982 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EA8-21B0 **

Chart Speed = 0.61 cm/min Attenuation = 7 Zero Offset = 2t
Start Time = 0.000 min End Time = 33.982 min Min / Tick = 1.00





Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
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Print Date: Fri Jan 31 11:49:13 2014

Page: 10

Title :
Run File : c:\star\carbonyls\m195-glp\bl-1\mss\m195-glp bl mss car 30-01-2014 8:43:23 pm_lfb-1_5.run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mes\calib_ms_140124_5a.mch
Sample ID : LFS-1

Injection Date: 30/01/2014 8:43 PM Calculation Date: 31/01/2014 8:18 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Kz
Channel : 1 - 365 nm Run Time : 33.982 min

** LC Workstation Multi Instrument Version 6.41 ** DP152-3108-EAU-2130 **

Run Mode : Analysis
Peak Measurements: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/mL)	Ret Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Form-DNPH	0.1626	8.974	0.081	32427	BB	9.7	
2	E-Acet-DNPH	0.0103	11.905	0.068	1803	BB	11.0	
Totals:		0.1629		0.149	34210			

Total Unidentified Counts : 11527 counts

Detected Peaks: 10 Rejected Peaks: 0 Identified Peaks: 2

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: 2 microAU LSB: 1.907 microAU

Noise (used): 101 microAU - monitored before this run

Val: 64 Injection Number: 1 Full Loop Volume: 20 ul



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3080036
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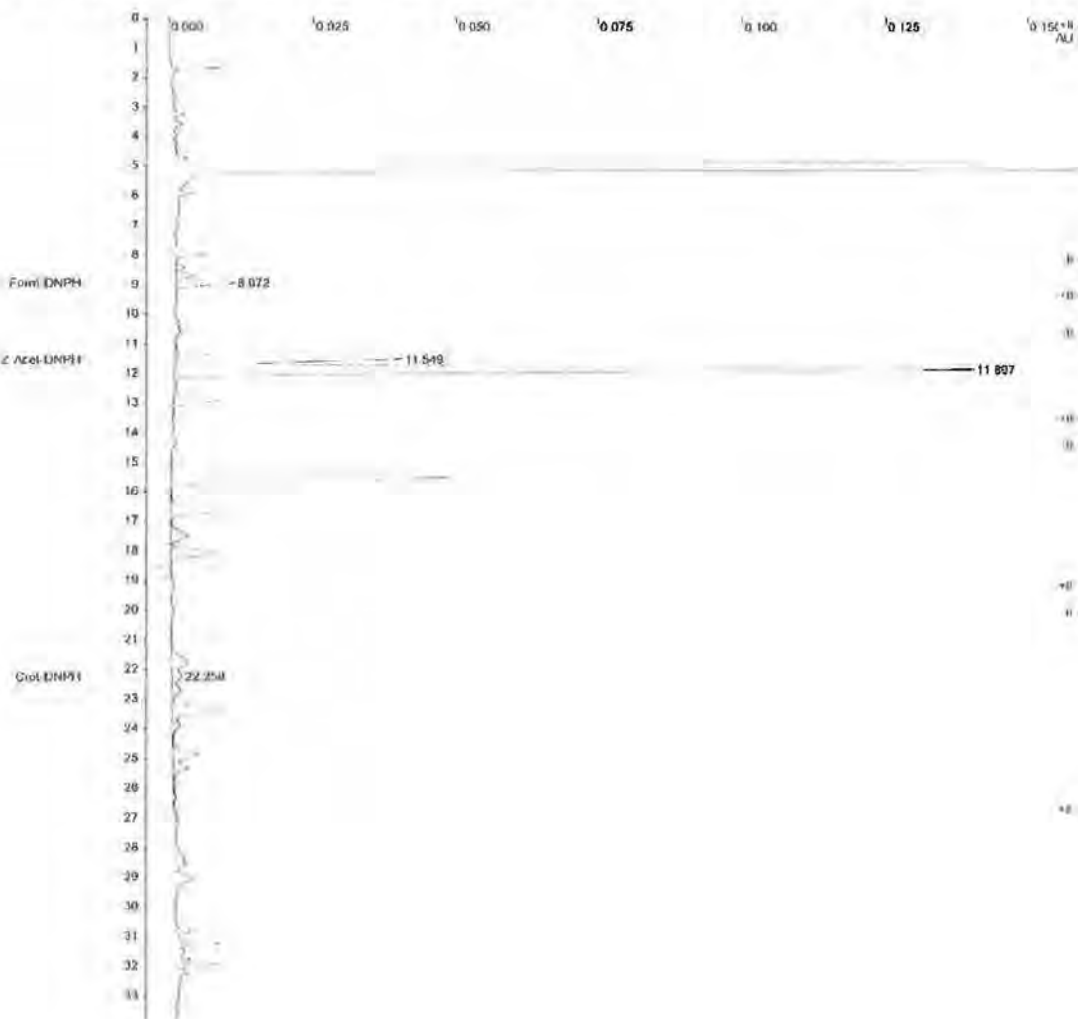
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Method File : c:\\star\\carbonyls\\calibration curve\\hplc 5\\140124\\mss\\calib.ms 140124_5a.mth
Sample ID : 1400590-2-1

Injection Date: 10/01/2014 10:11 PM Calculation Date: 11/01/2014 8:19 AM

Operator : ANA/YST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 - 365 nm Run Time : 33.982 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-1188-BA8-2180 **

Chart Speed = 0.61 cm/min Attenuation = 166 Zero Offset = 2k
Start Time = 0.000 min End Time = 33.982 min Min / Tick = 1.00





Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf, 3060036
Electronically Signed By: Aigana Kharimov
Path: \\US2Repository\\Repository\\3060036\\
Created: 11/31/14 12:00 Audit ID: 3060036

Print Date: Fri Jan 31 11:50:24 2014

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Title :
Run File : c:\star\carbonyls\m195-gluth1-1\mss\m195-gluth1.mss
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib_m0_140124_5a.mss
Sample ID : 1400590-2-1

Injection Date: 30/01/2014 10:13 PM Calculation Date: 31/01/2014 8:19 AM

Operator : ANALYST Detector Type: 9090
Workstation: OS Bus Address :
Instrument : Varian Star #5 Sample Rate : 50.00 Hz
Channel : 1 - 365 nm Run Time : 33.542 min

-- LC Workstation Multi Instrument Version 6.41 -- 00152-3190-EAO-2180 --

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/mL)	Ret. Time (min)	Time Offset (min)	Area (microAU)	Sup. Code	Width (sec)	Source Code
1	Form-DNPH	0.2769	8.972	-0.041	58811	VU	10.0	
2	2-Acet-DNPH	1.1951	11.049	0.123	245291	BV	11.8	
3	2-Acet-DNPH	5.3547	11.897	-0.089	362487	VV	11.8	
4	2-Ort-DNPH	0.1383	22.258	0.002	18311	VV	23.7	
Totals:		7.1650		-0.005	1263902			

Total Unidentified Counts : 880585 counts

Detected Peaks: 22 Rejected Peaks: 0 Identified Peaks: 4

Multiplicities: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: 57 microAU LSD: 1.907 microAU

Noise (used): 55 microAU - monitored before this run

Vial: 66 Injection Number: 1 Full Loop Volume: 20 uL



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
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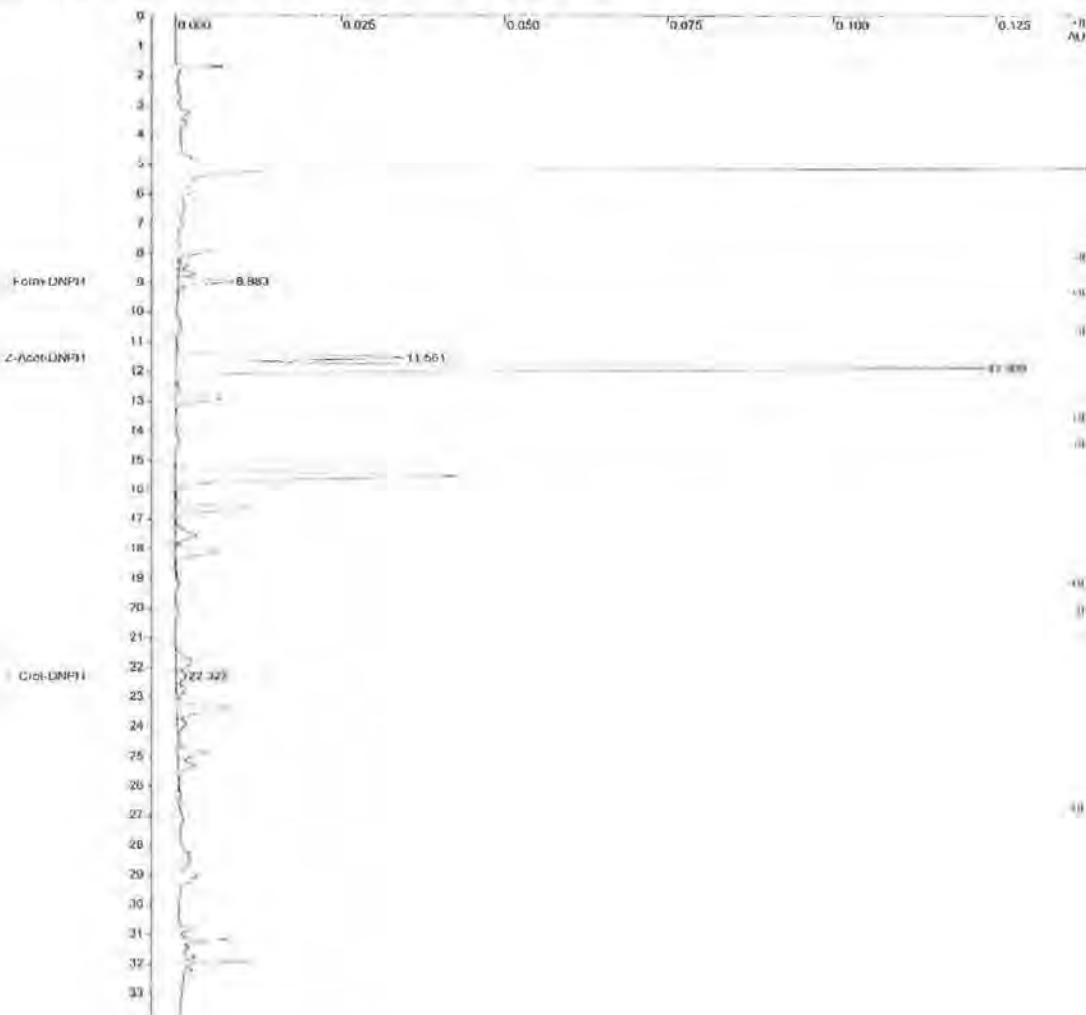
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Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms_140124_5a.mth
Sample ID : 357-2-2

Injection Date: 30/01/2014 10:58 PM Calculation Date: 31/01/2014 8:20 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.978 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EA8-2180 **

Chart Speed = 0.61 cm/min Attenuation = 146 Zero Offset = 24
Start Time = 0.000 min End Time = 33.978 min Min / Tick = 1.00





AM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
Electronically Signed By: Afeana Khanom
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Print Date: Fri Jan 30 10:58:23 2014
Title :
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Method File : c:\data\carbonyl\calibration curve\hplc 5\140124\mss\calib.ms_140124_5a.mth
Sample ID : 357-2-2
Injection Date: 30/01/2014 10:58 PM Calculation Date: 31/01/2014 0:20 AM
Operator : ANALYST Detector Type: 9050
Workstation: 05 Bus Address: 1
Instrument : Varian Star #5 Sample Rate: 10.00 Hz
Channel : 1 - 365 nm Run Time : 34.978 min
** LC Workstation Multi-Instrument Version 6.41 ** 00152-3188-BA6-2180 **
Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/mL)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code (sec)	Blatch Sep. 1/2	Sample
1	Norm-DNPH	0.2318	8.583	-0.046	18840	UV 11.8	MA	10.0
2	2-Acet-DNPH	1.5215	11.265	-0.340	21860	UV 11.8	UV	11.8
3	3-Acet-DNPH	7.7439	11.505	-0.277	23100	UV 11.8	UV	11.8
4	4-Croci-DNPH	0.1117	22.122	0.066	8768	UV 23.8	UV	23.8
Total:		9.3149		-0.085	71368			

Total Unidentified Counts : 19013 counts
Detected Peaks: 20 Rejected Peaks: 6 Identified Peaks: 4
Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0
Baseline Offset: -56 microAU LSS: 1.907 microAU
Noise (used): 62 microAU - monitored before this run
Vial: 6V Injection Number: 1 Full Loop Volume: 20 uL



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Chromatograms_MSS.pdf_3060036
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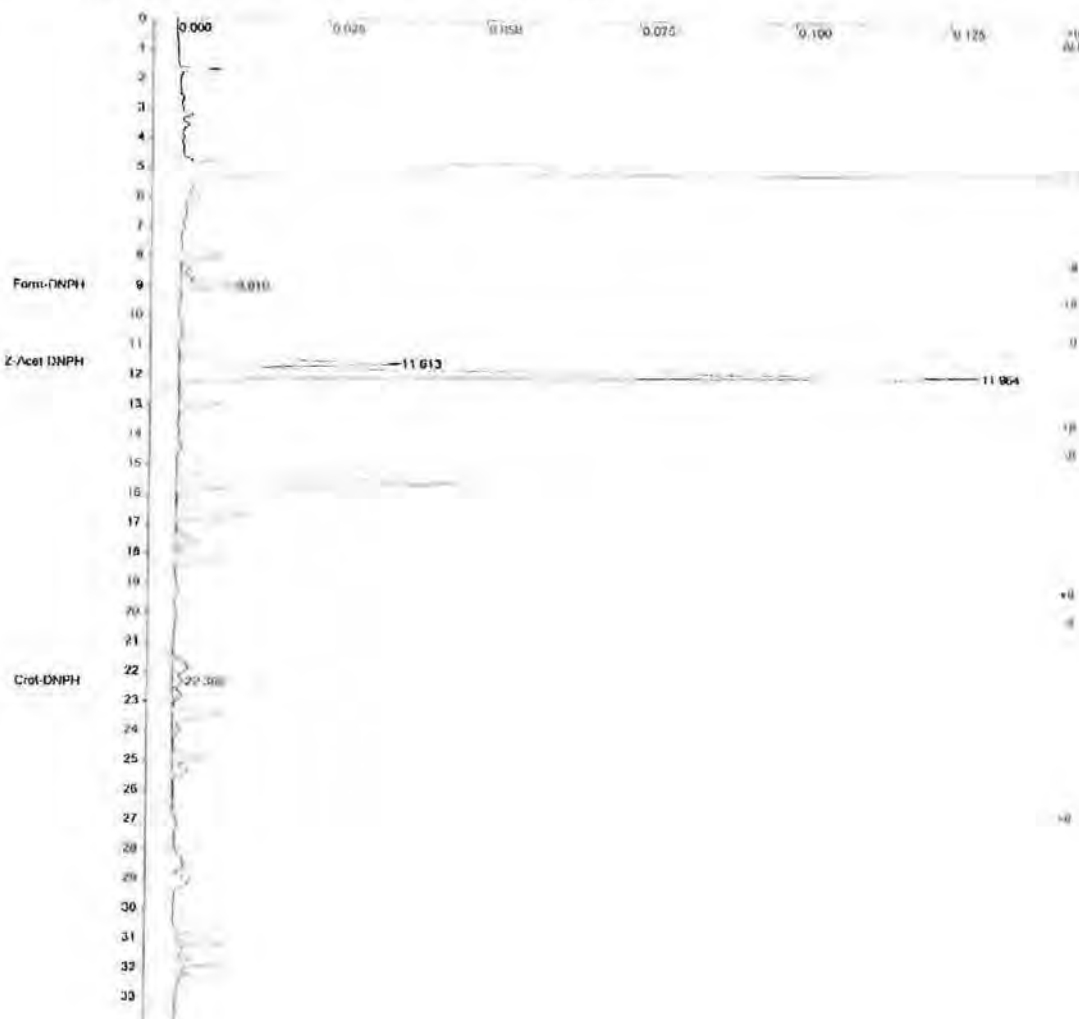
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Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib_ms_140124_5a.mth
Sample ID : 1400590-2-10

Injection Date: 31/01/2014 5:43 AM Calculation Date: 31/01/2014 8:21 AM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 22.980 min

** I/C Workstation Multi Instrument Version 6.41 ** 00152-1188-EAA-2180 **

Chart Speed : 0.61 cm/min Attenuation : 154 Zero Offset : 24
Start Time : 0.000 min End Time : 22.980 min Min / Tick : 1.00



Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Chromatograms: MSS.pdf, 3000036
Electronically Signed By: Afsana Khanom
Path: M:\zRepository\repository\3000036\1
Created: 3/31/14 12:00
Audit ID: 3000036

Print Date: Fri Jan 31 11:06:49 2014

Page 1 of 1

Title :
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Method File : c:\star\carbonyls\calibration curve\mple 5\140124\mss\calib_m_140124_5a.mth
Sample ID : 1400590-2-10

Injection Date: 31/01/2014 5:43 AM Calculation Date: 31/01/2014 6:21 AM

Operator : ANALYST Detector Type: 6050
Workstation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 - 365 nm Run Time : 33.980 min

-- LC Workstation Mult. Instrument Version 5.41 -- DB152-3100-EAS-2150 --

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ug/ml)	Ret. Time (min)	Time Offset (min)	Area (counts)	Width Sep. 1/2 Code (sec)	Status Codes
1	Form-DNPH	0.2395	9.019	0.006	50871	V5 10.0	
2	2-Acet-DNPH	1.2768	11.613	0.008	224838	VV 11.8	
3	2-Acet-DNPH	4.9869	11.964	-0.622	876798	VV 11.5	
4	2-Et-DNPH	0.1145	22.362	0.106	15194	VV 21.3	
Totals:		6.6196		0.098	1167661		

Total Unidentified Counts : 803055 counts

Detected Peaks: 19 Rejected Peaks: 0 Identified Peaks: 4

Multipplier: 1 Divider: 1 Unidentified Peak Factor: 0

Baseline Offset: 42 microAU LSE: 1.907 microAU

Noise (used): 137 microAU - monitored before this run

Vials: 25 Injection Number: 1 Full Loop Volume: 20 uL

Tobacco Specific Nitrosamines



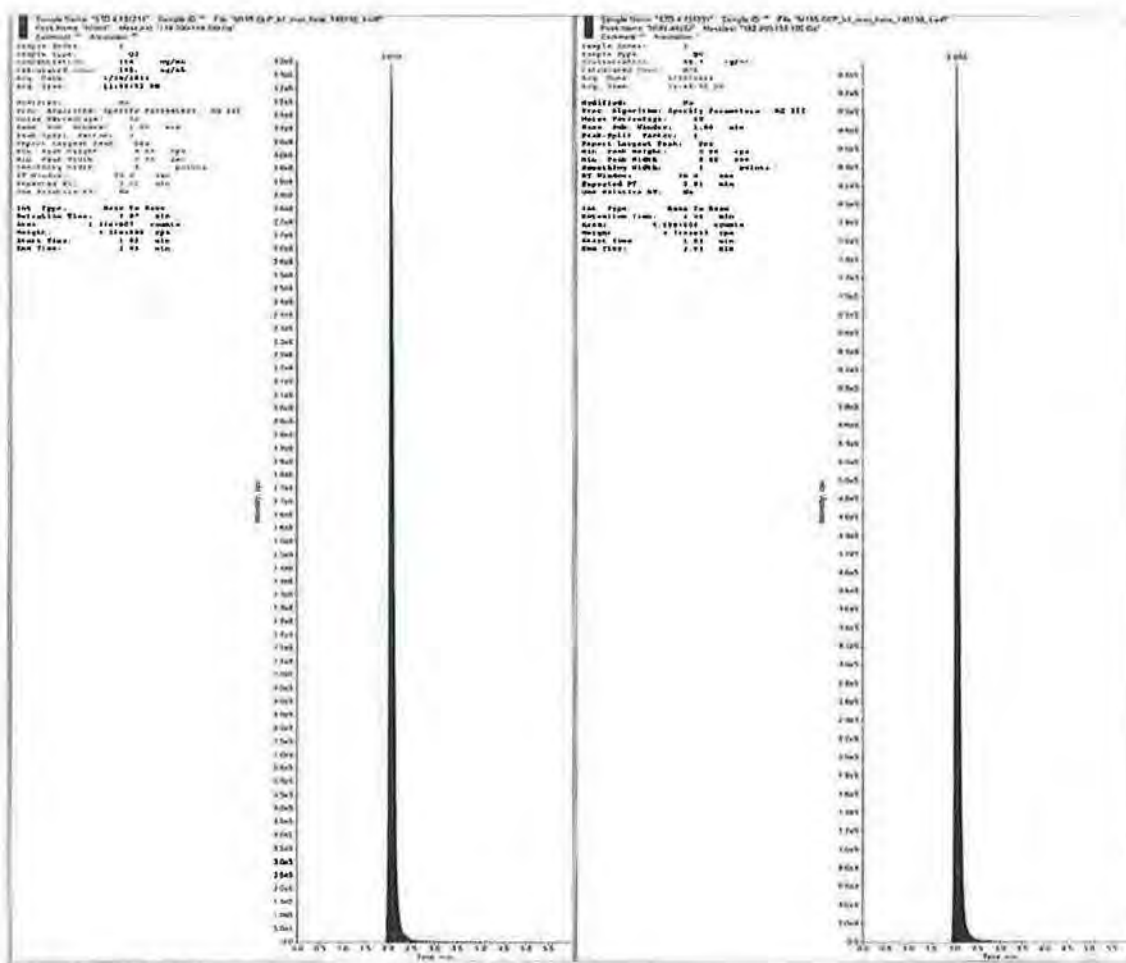
Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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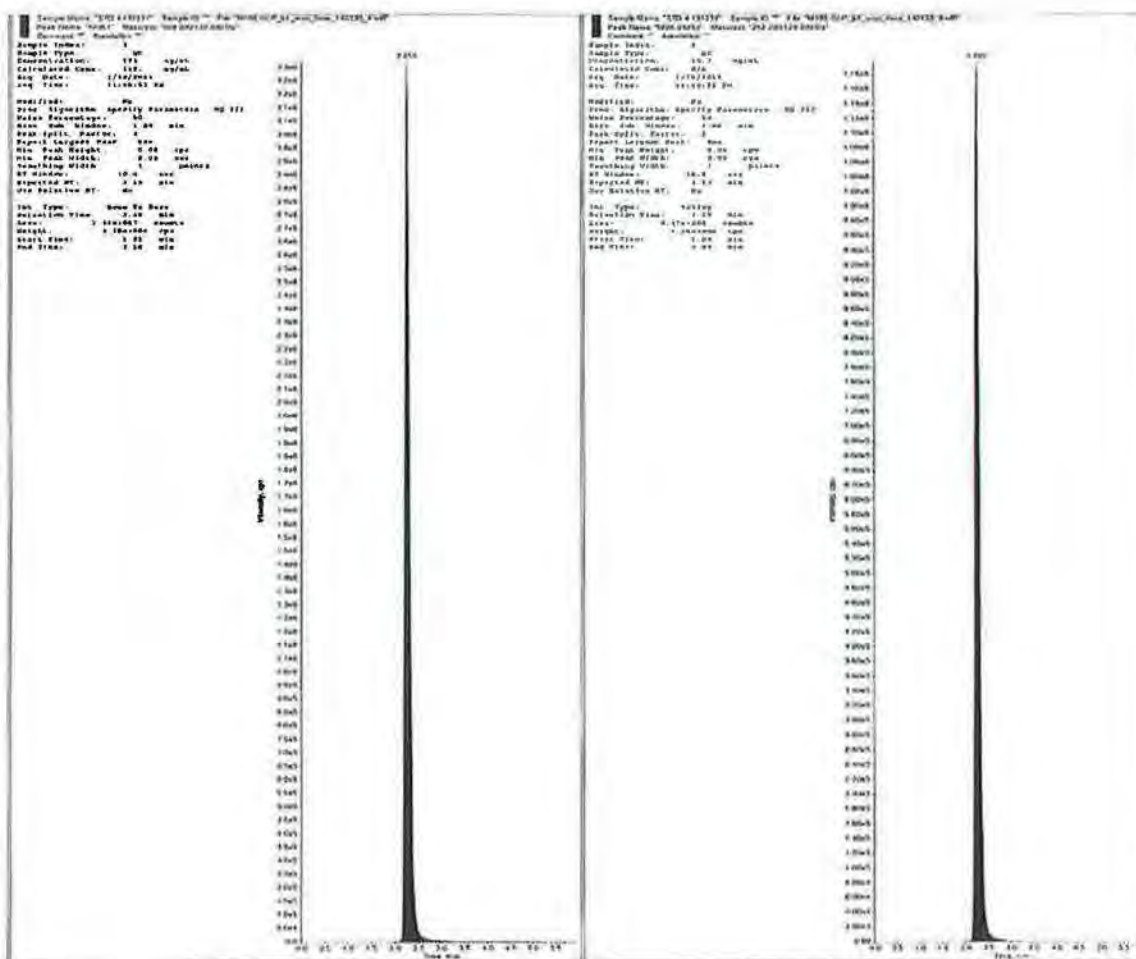
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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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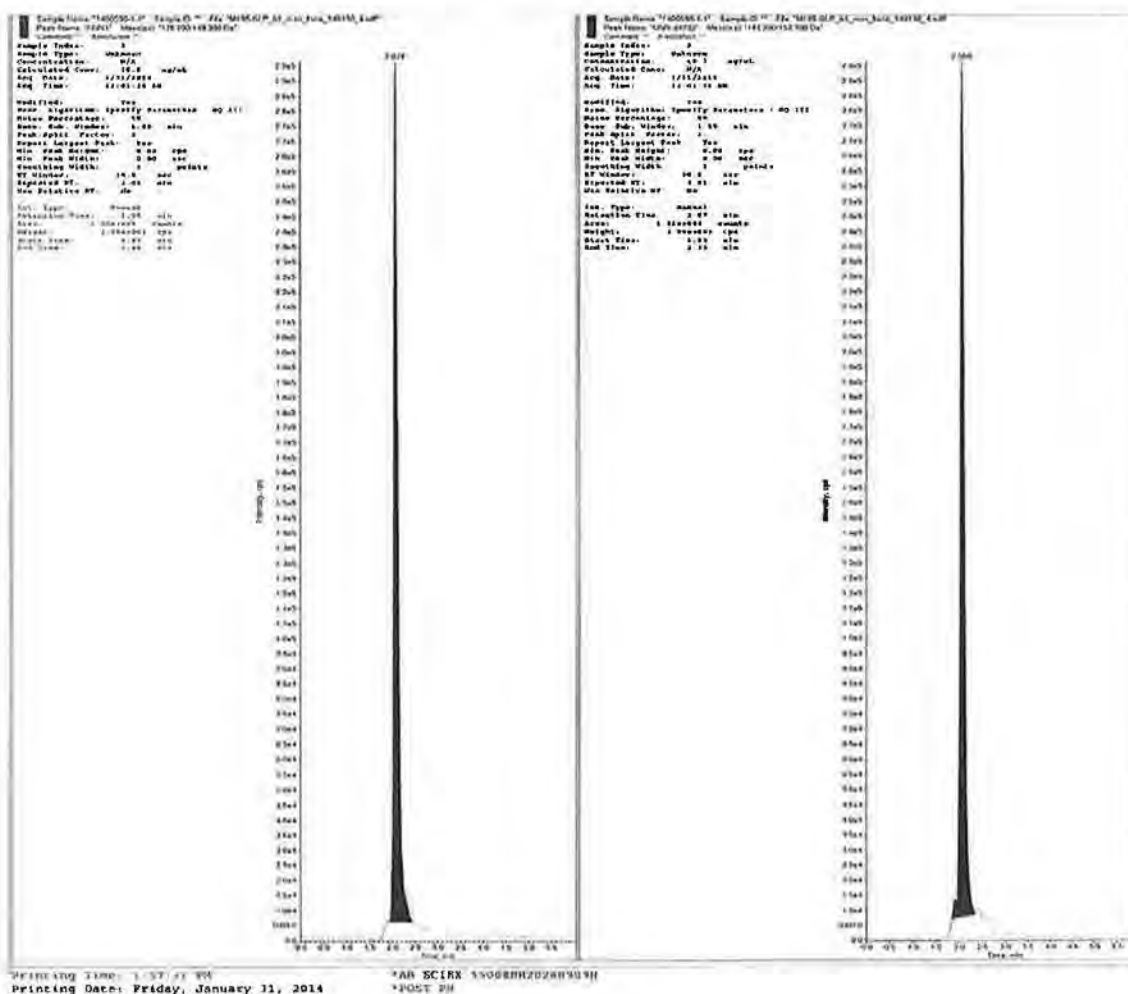


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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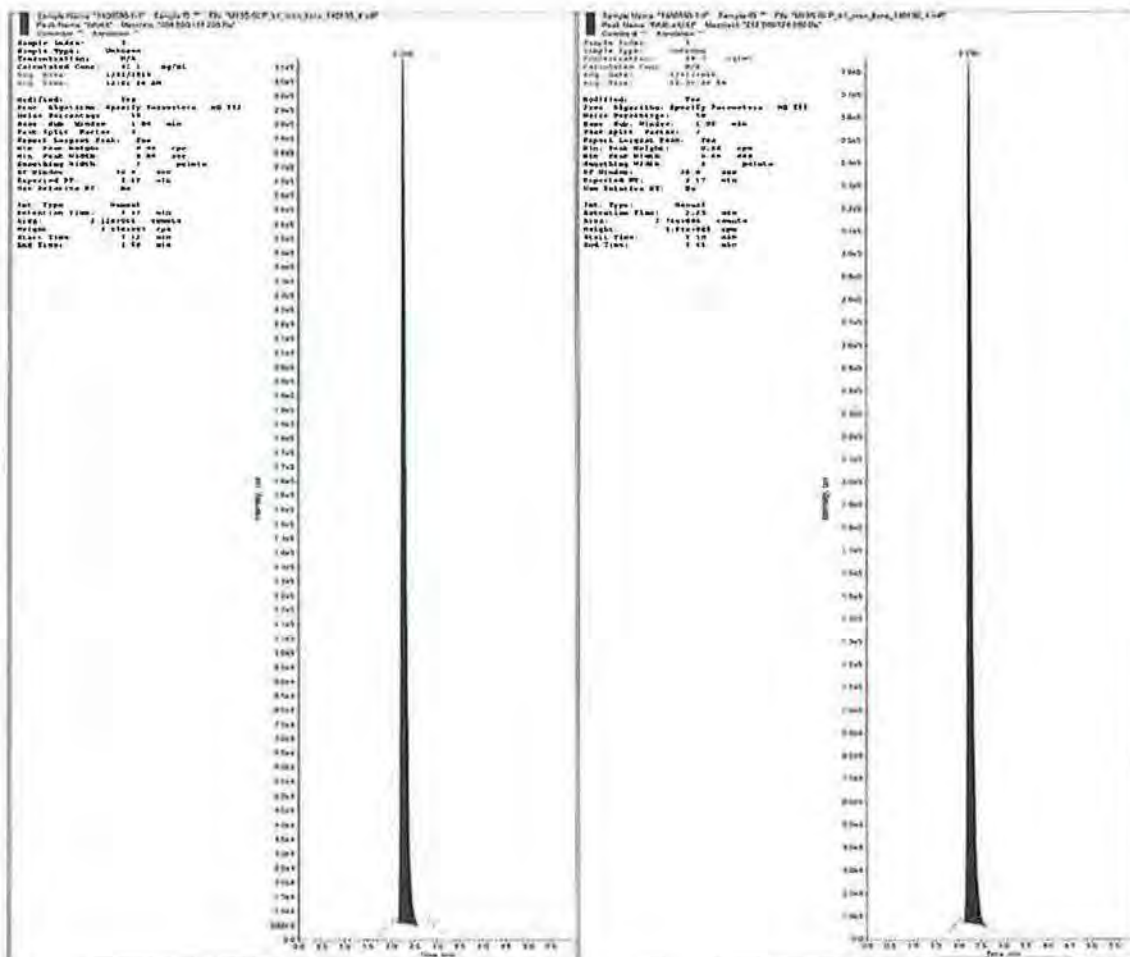
Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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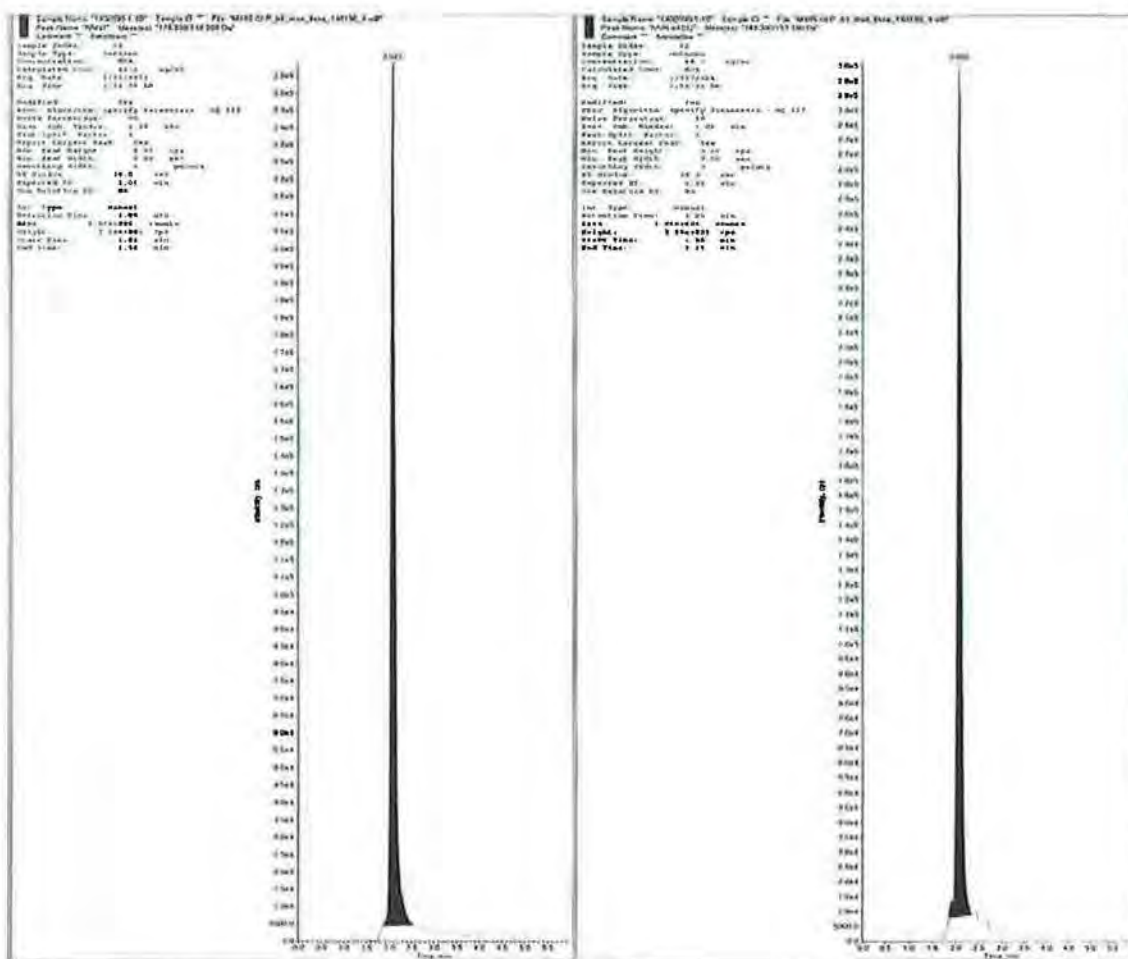
Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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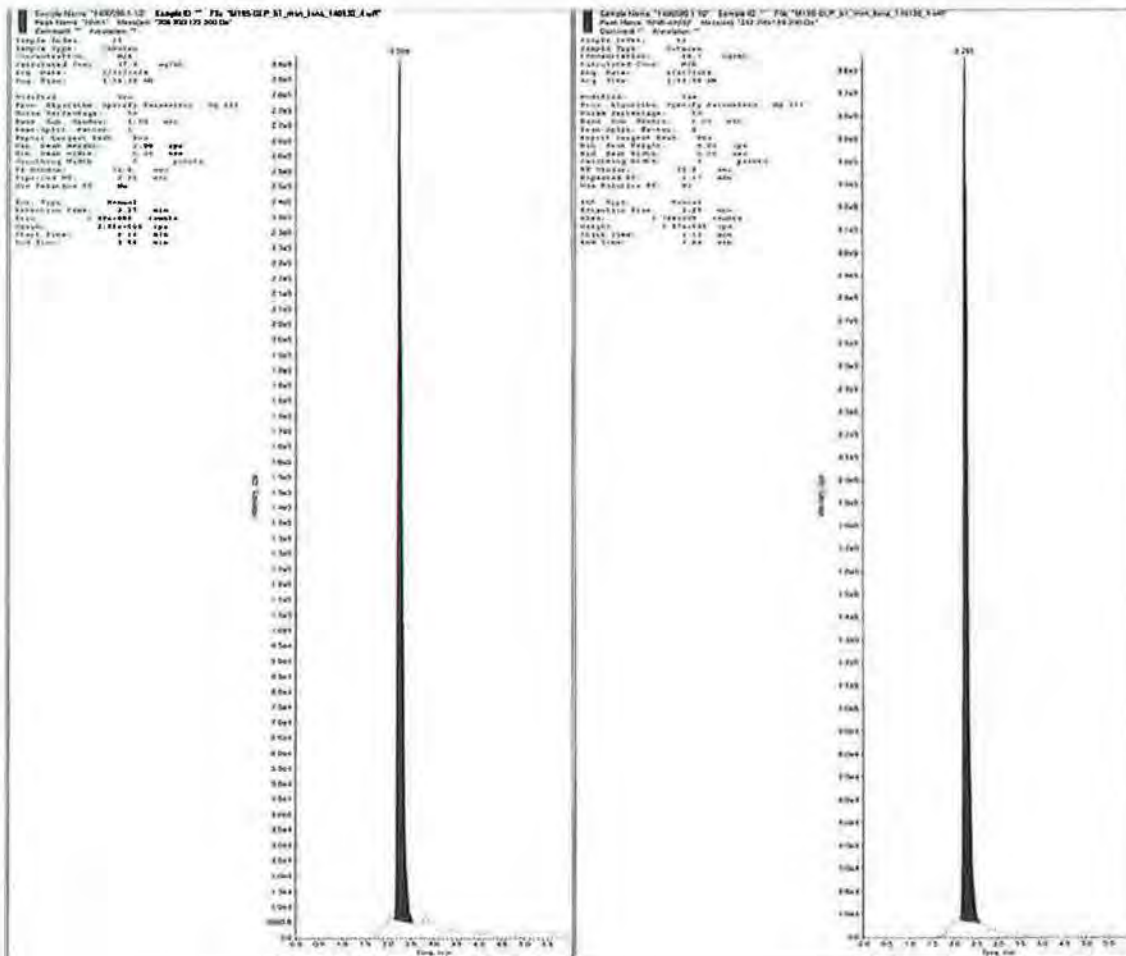


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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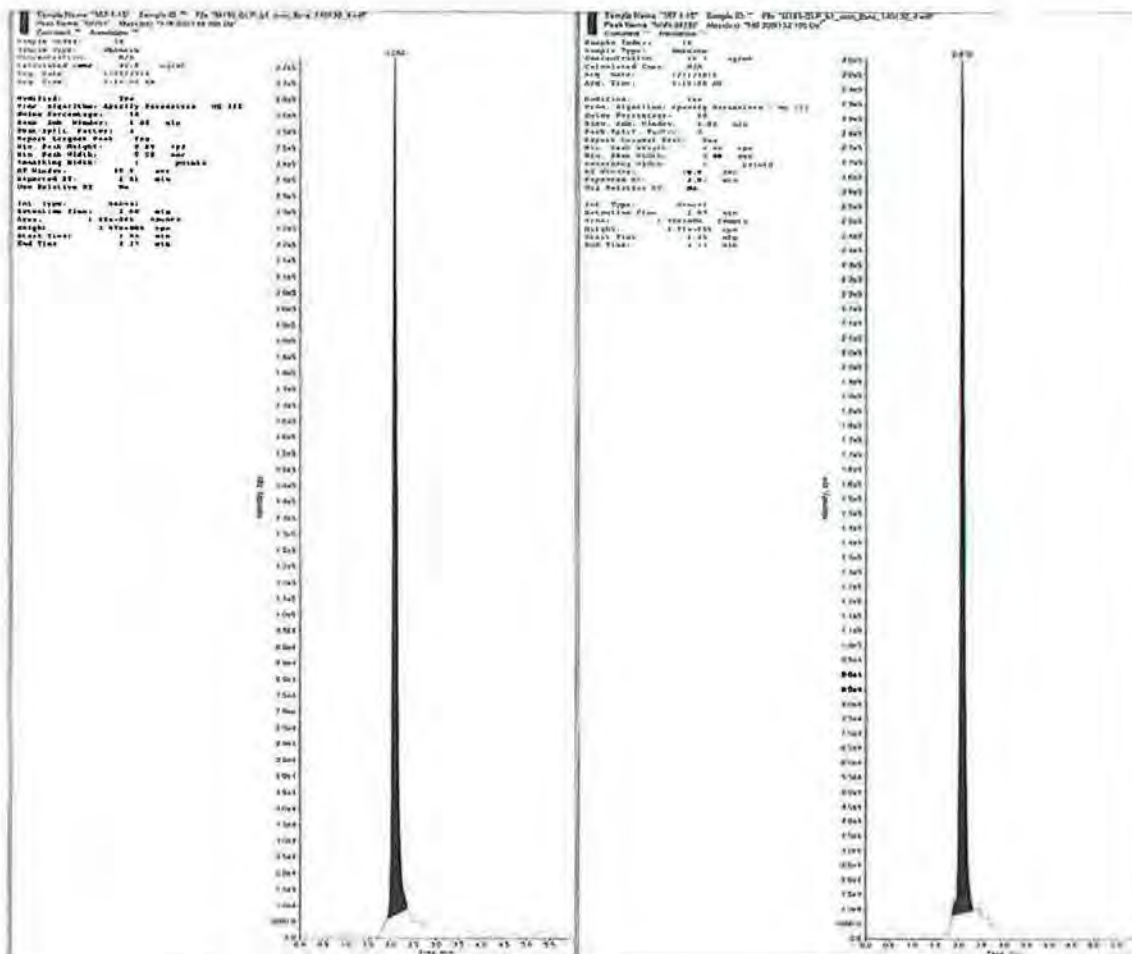


Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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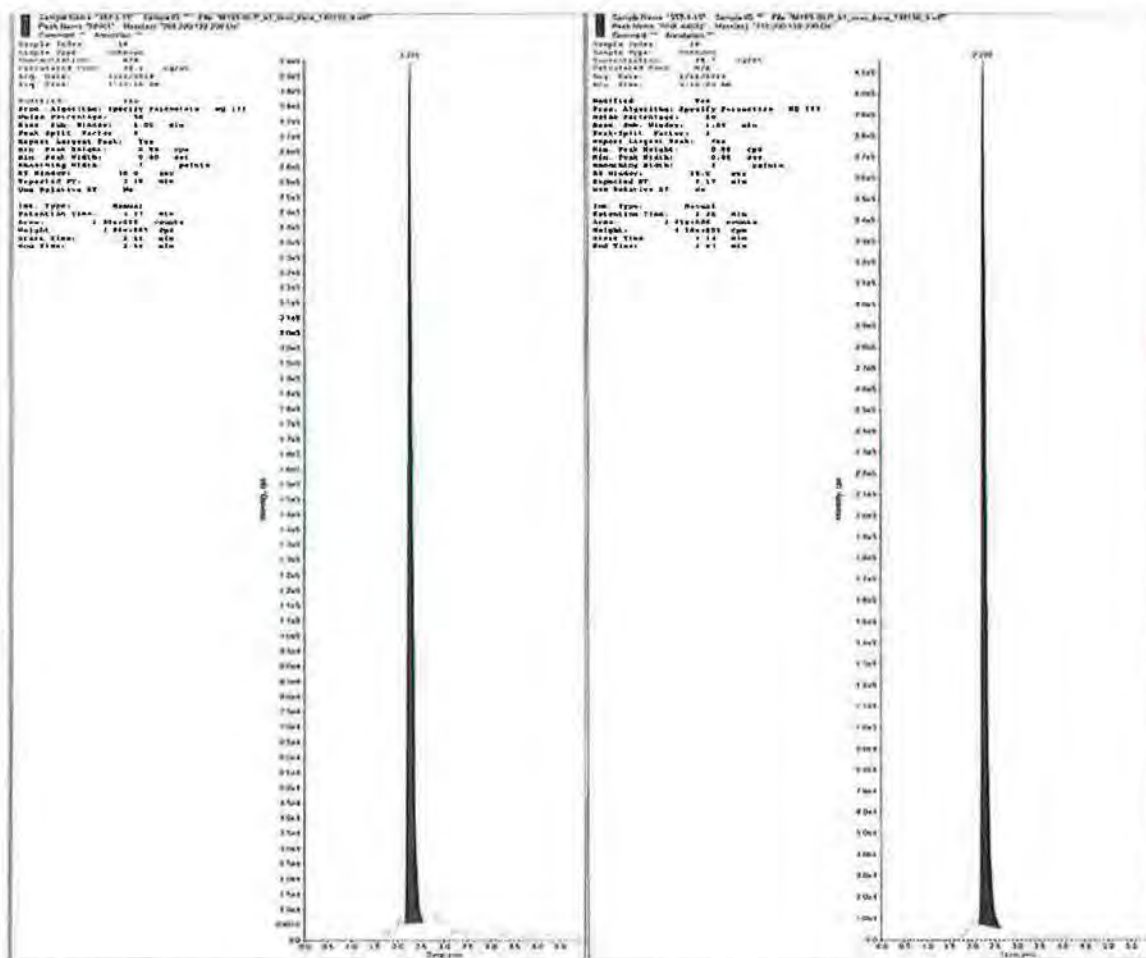
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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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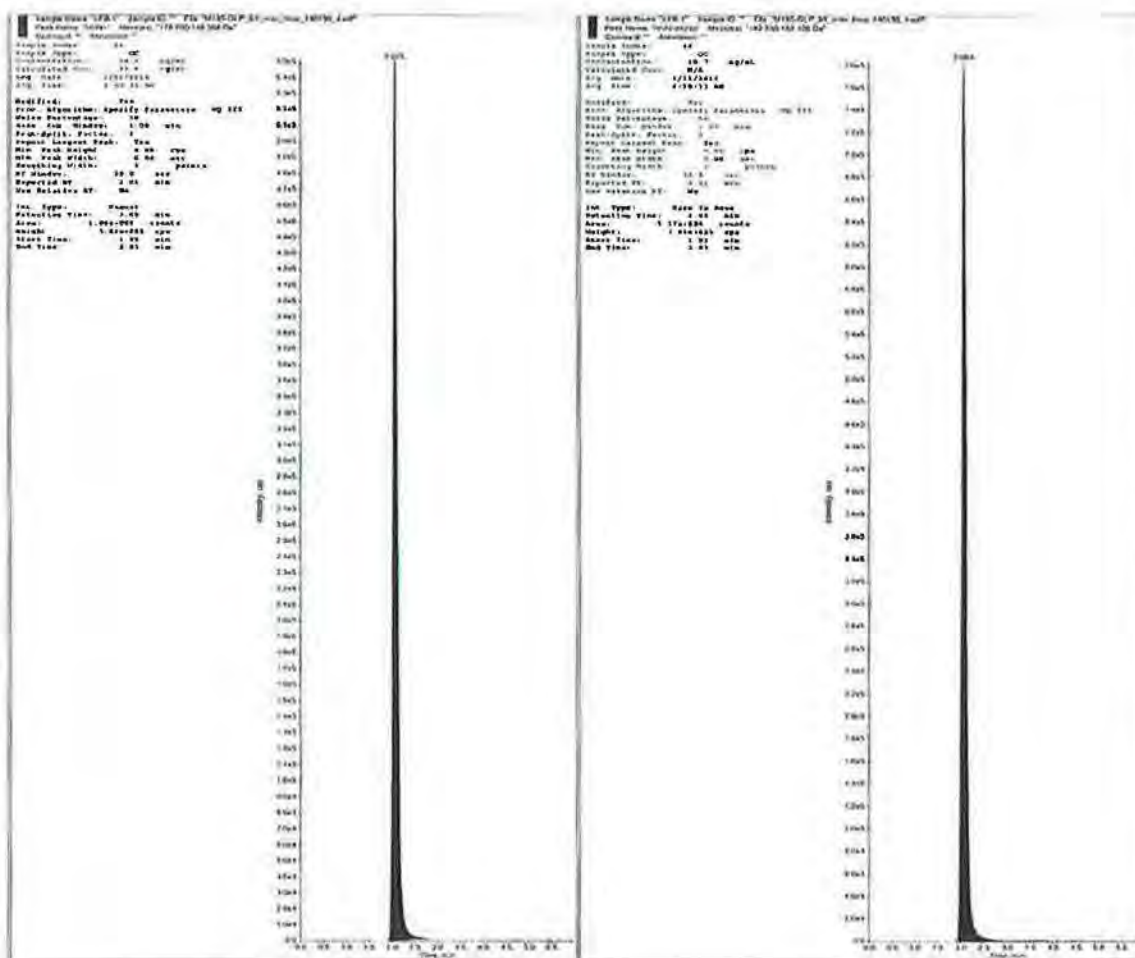
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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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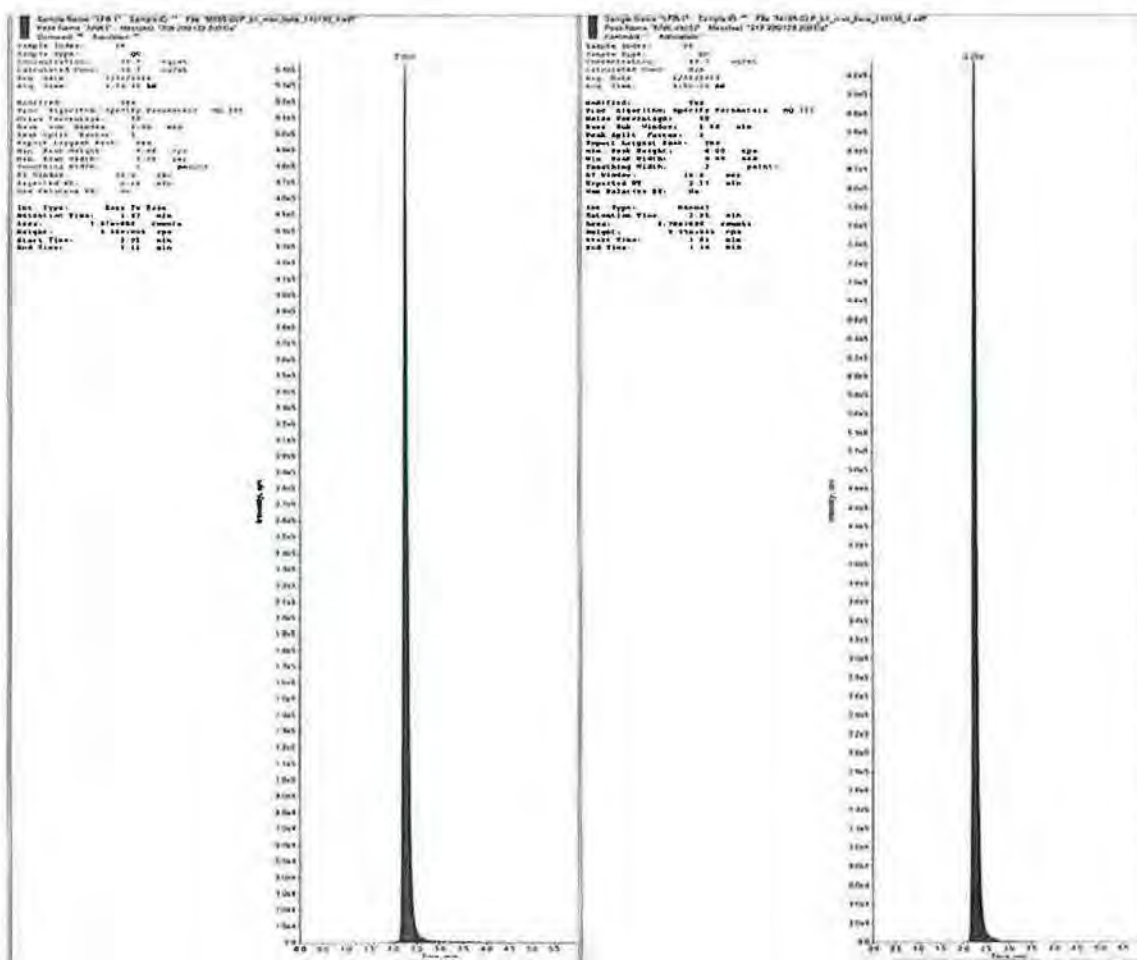
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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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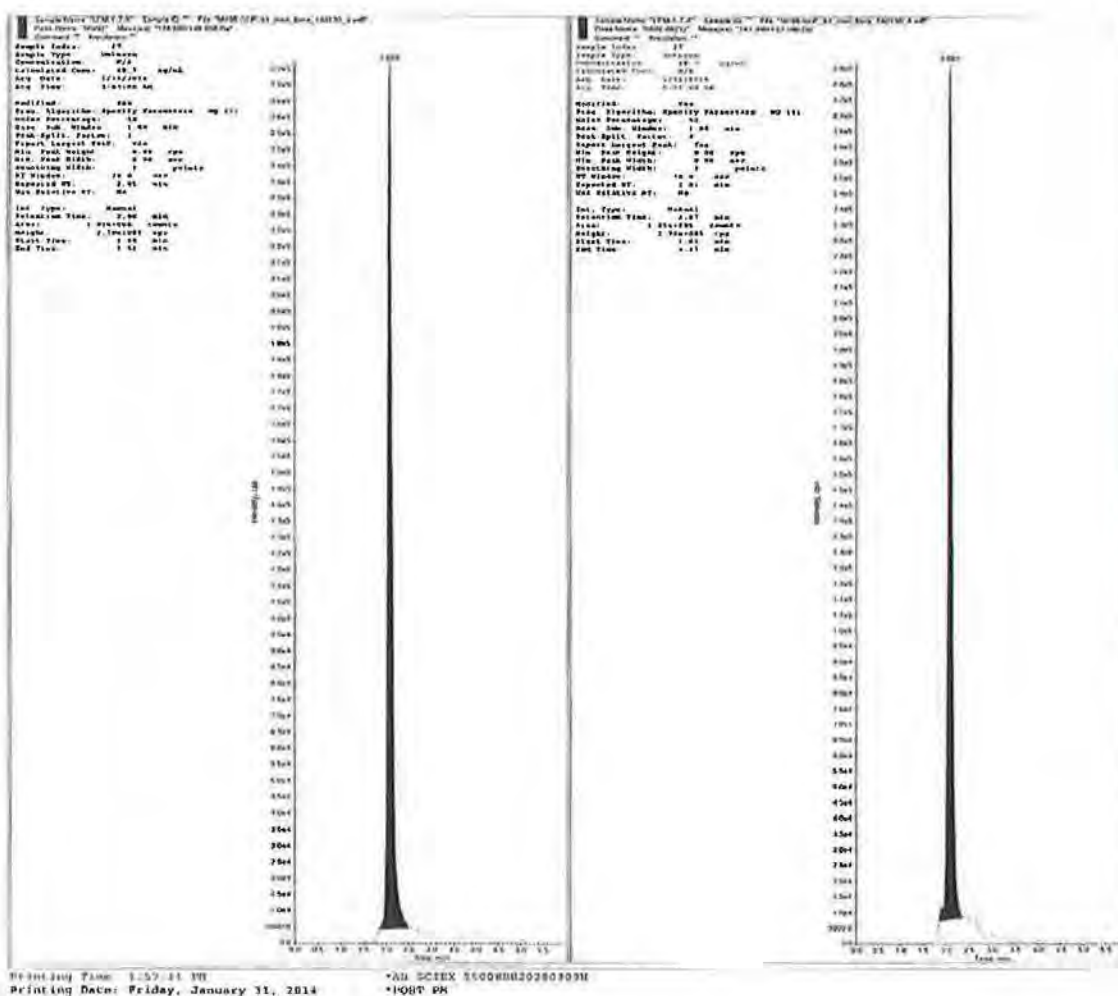


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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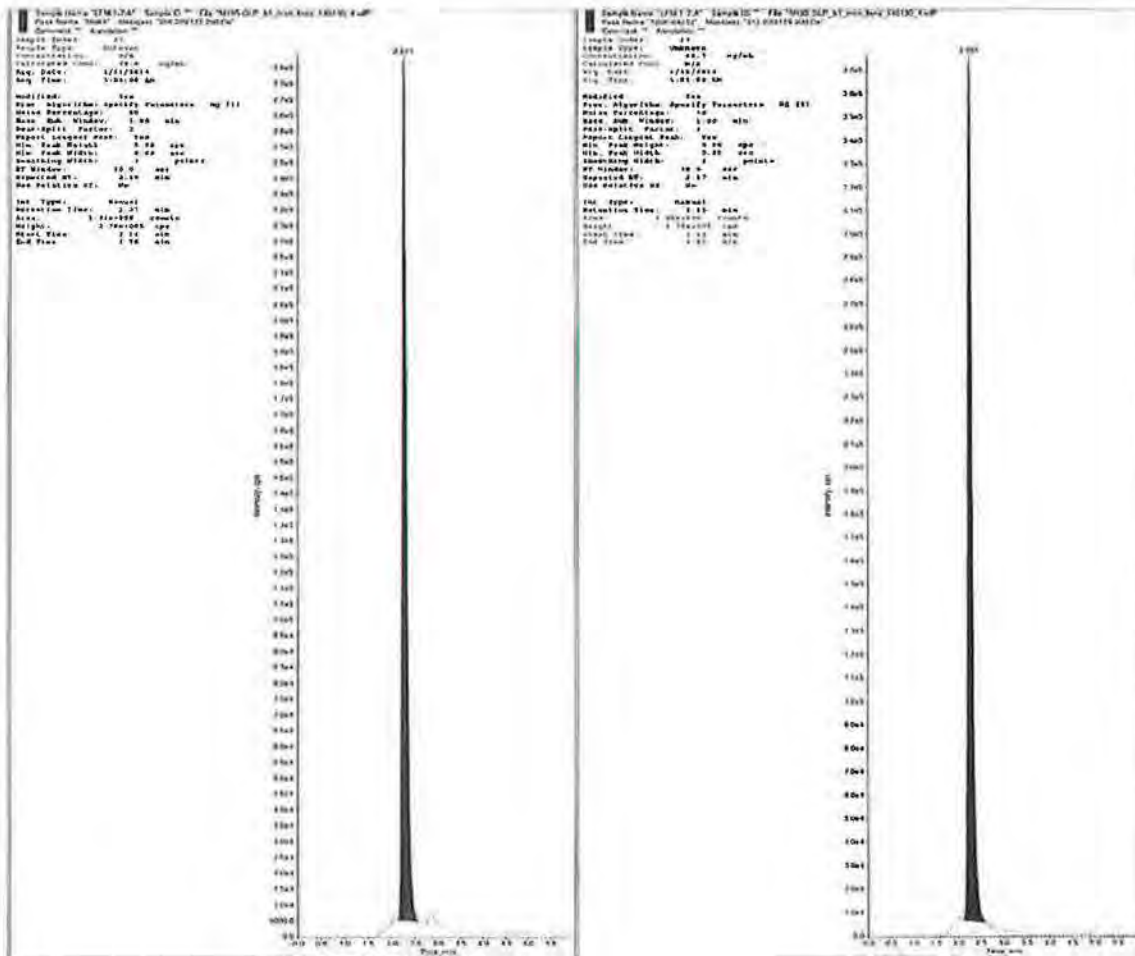


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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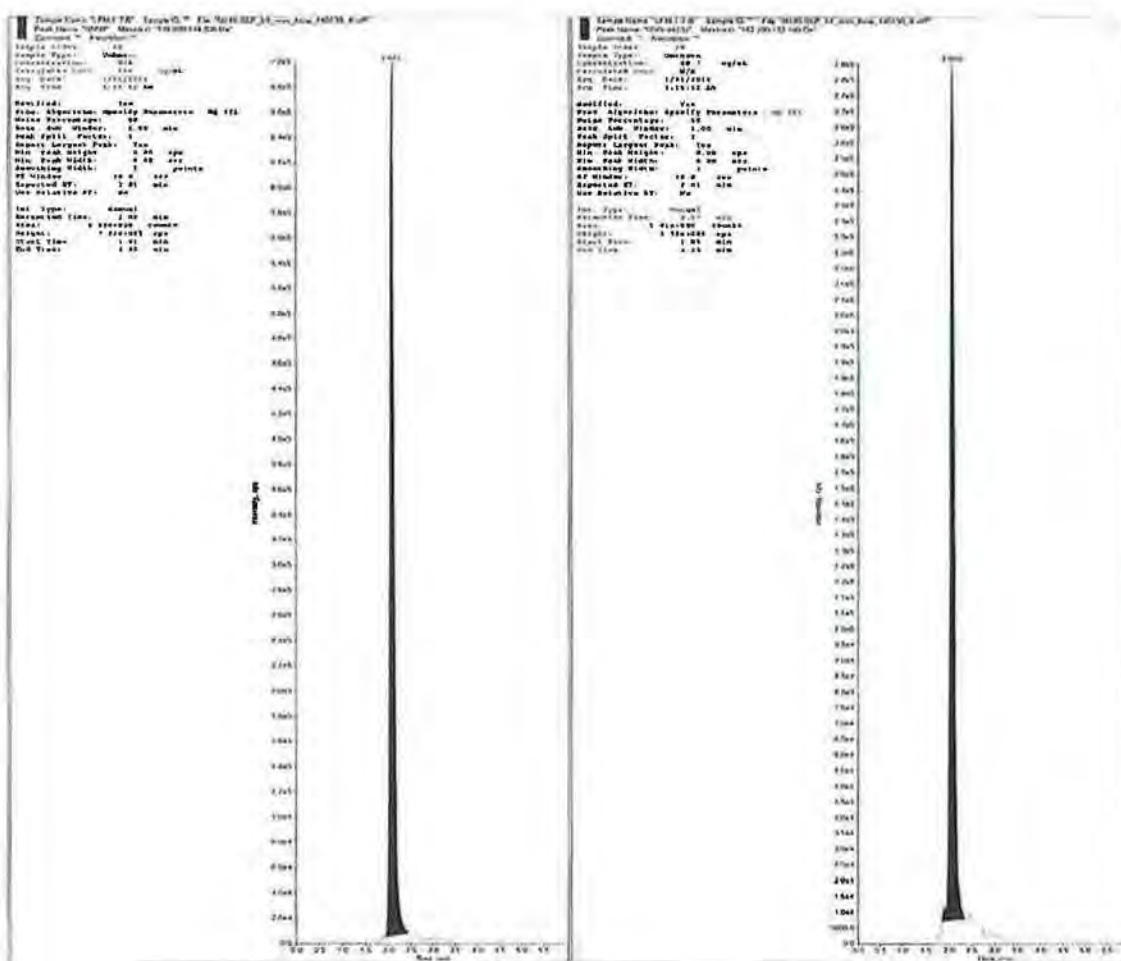


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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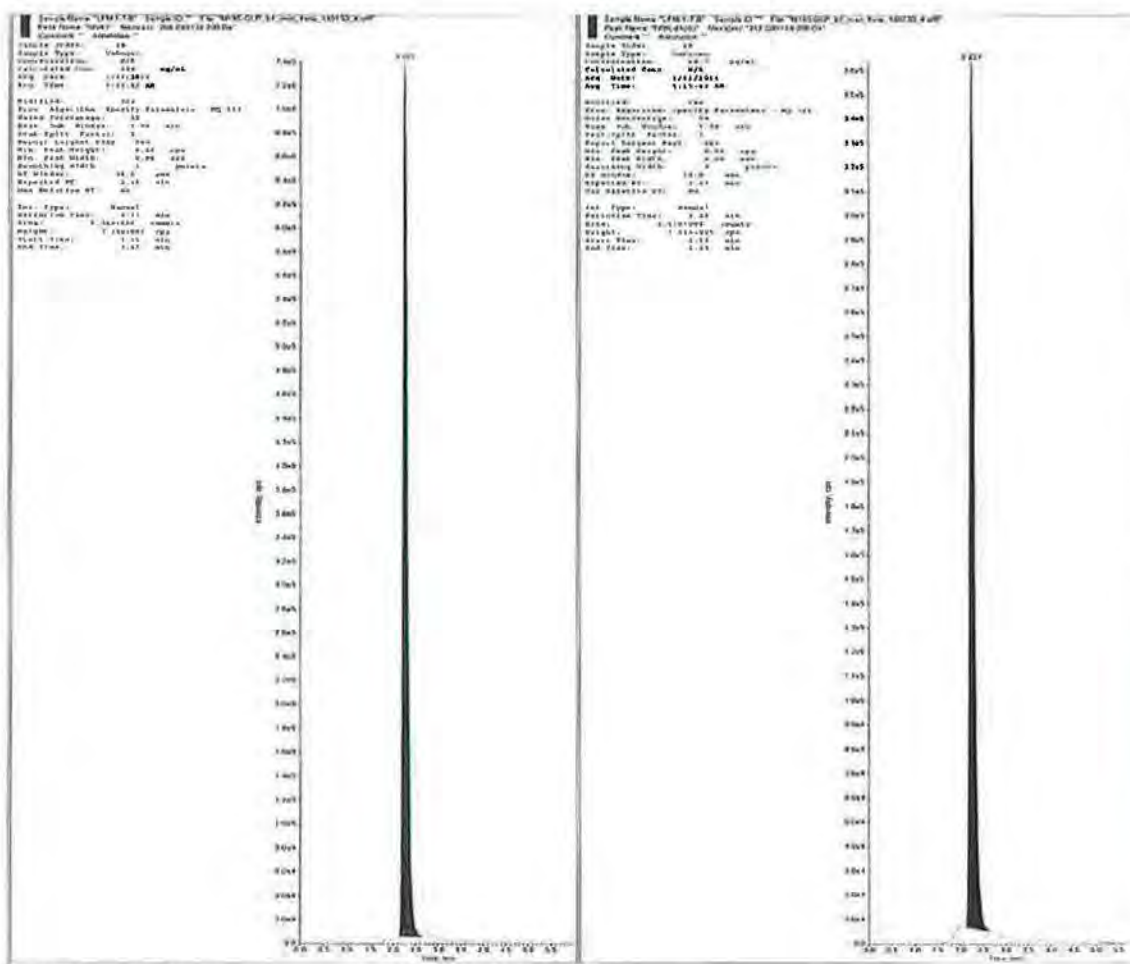


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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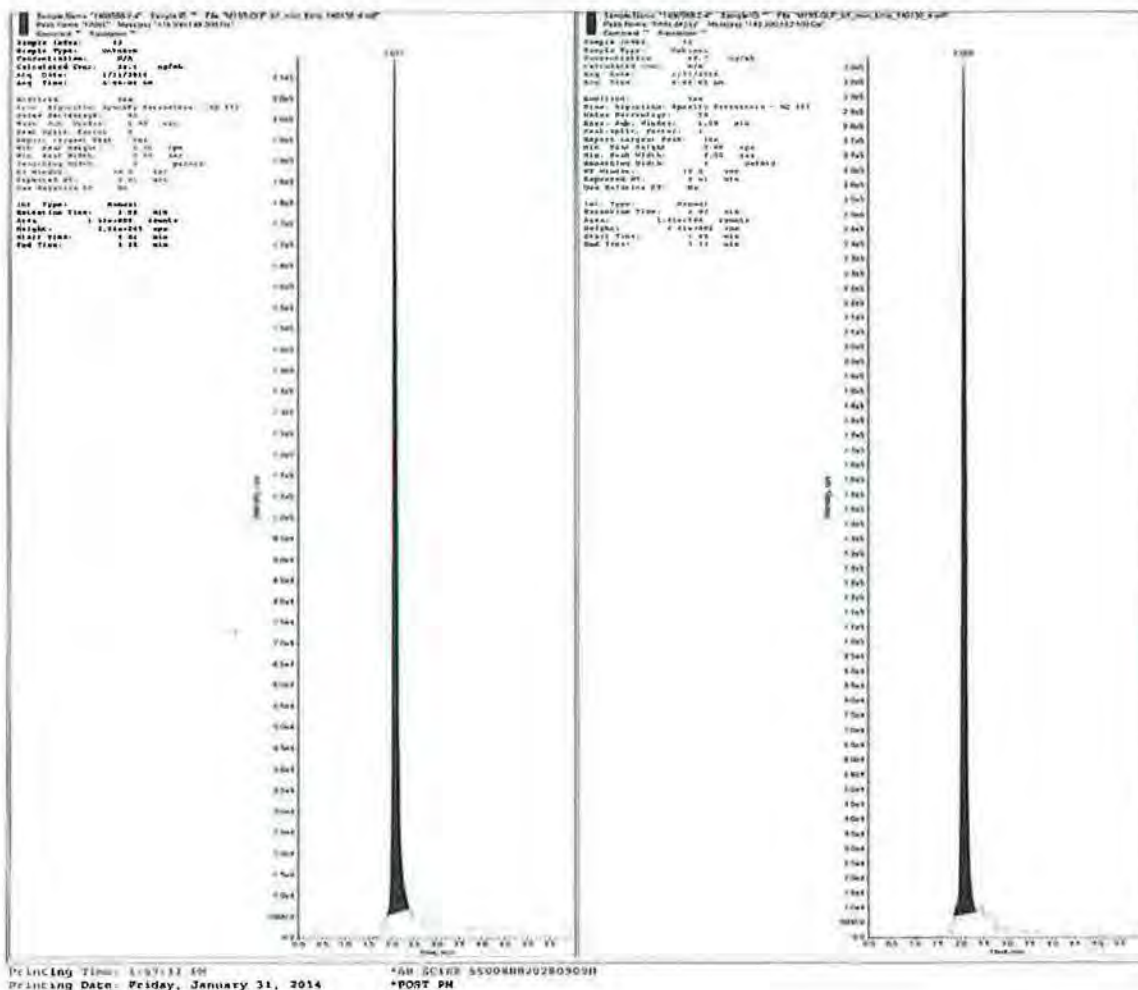


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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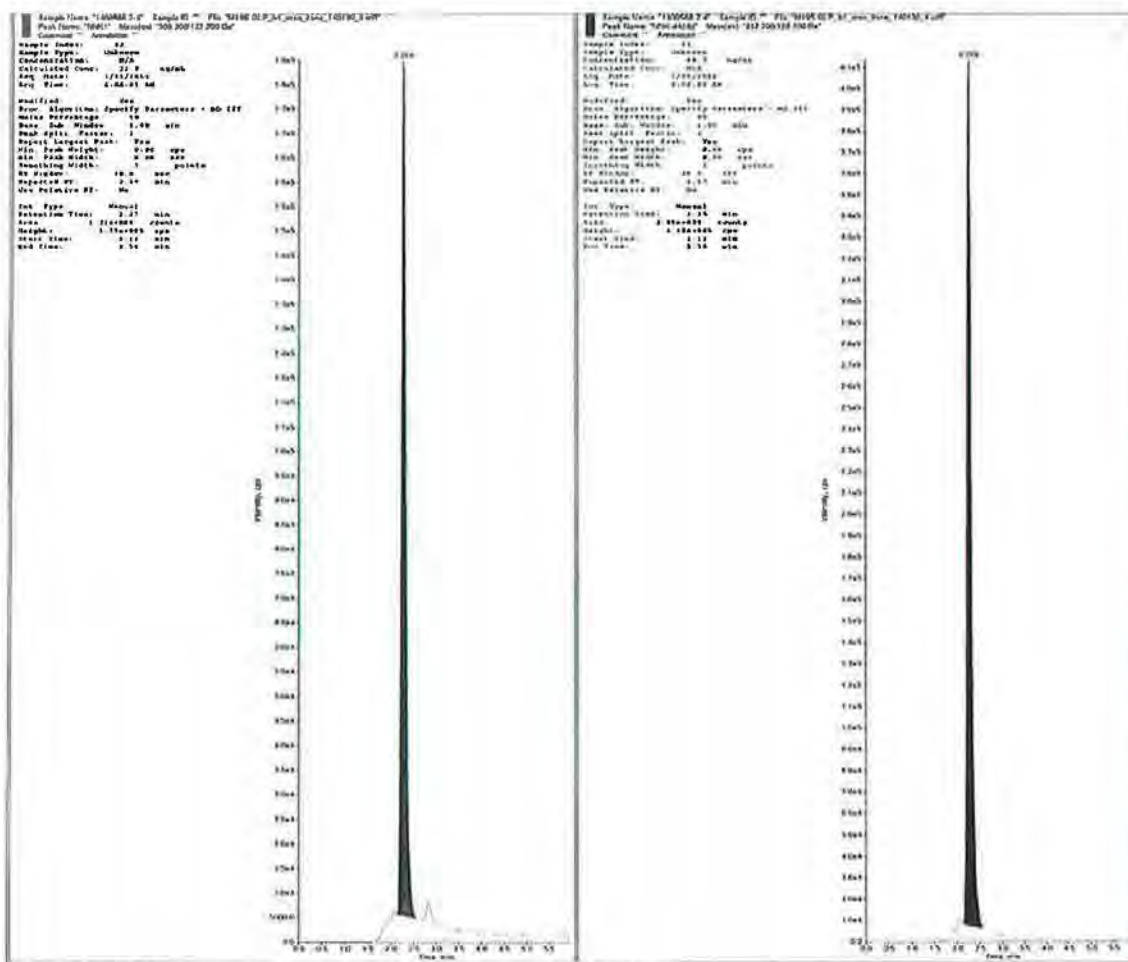
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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Instrument Run Summary for Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
STD 4 131231	STD 4 131231	30-Jan-14	2:42:15 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400589	1400589-1-1	30-Jan-14	2:54:49 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
357	357-1-2	30-Jan-14	3:07:23 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400589	1400589-1-3	30-Jan-14	3:19:58 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400588	1400588-1-4	30-Jan-14	3:32:32 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400588	1400588-1-5	30-Jan-14	3:45:07 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400590	1400590-1-6	30-Jan-14	3:57:42 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400589	1400589-1-7	30-Jan-14	4:10:17 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
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1400588	1400588-1-9	30-Jan-14	4:35:27 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400590	1400590-1-10	30-Jan-14	4:48:01 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
STD 5 131231	STD 5 131231	30-Jan-14	5:00:36 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400590	1400590-1-11	30-Jan-14	5:13:09 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400588	1400588-1-12	30-Jan-14	5:25:44 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400590	1400590-1-13	30-Jan-14	5:38:19 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
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1400590	1400590-1-17	30-Jan-14	6:28:36 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400589	1400589-1-18	30-Jan-14	6:41:11 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400589	1400589-1-19	30-Jan-14	6:53:46 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
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STD 4 131231	STD 4 131231	30-Jan-14	7:28:55 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
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LFM-1-2-A	LFM-1-2-A	30-Jan-14	7:56:39 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
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1400589	1400589-2-2	30-Jan-14	8:34:24 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
357	357-2-3	30-Jan-14	8:46:59 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
1400590	1400590-2-4	30-Jan-14	8:59:35 AM	LTSNA4_Cal 140113_Std 131231	LCMS#4 (LAB1654)	BCHA	
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Revision:

QSF-01106-V2

Labstat International LLC

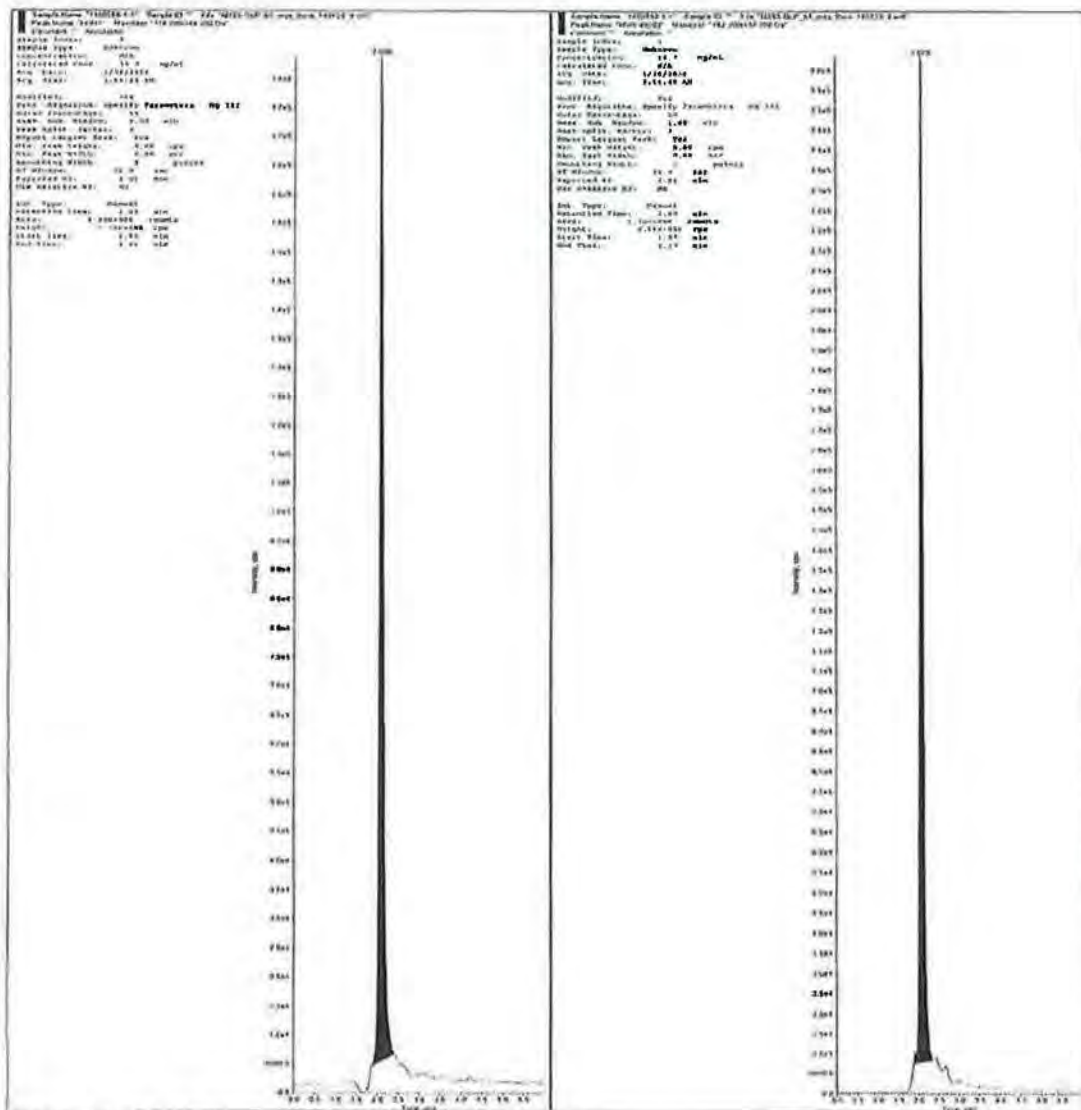


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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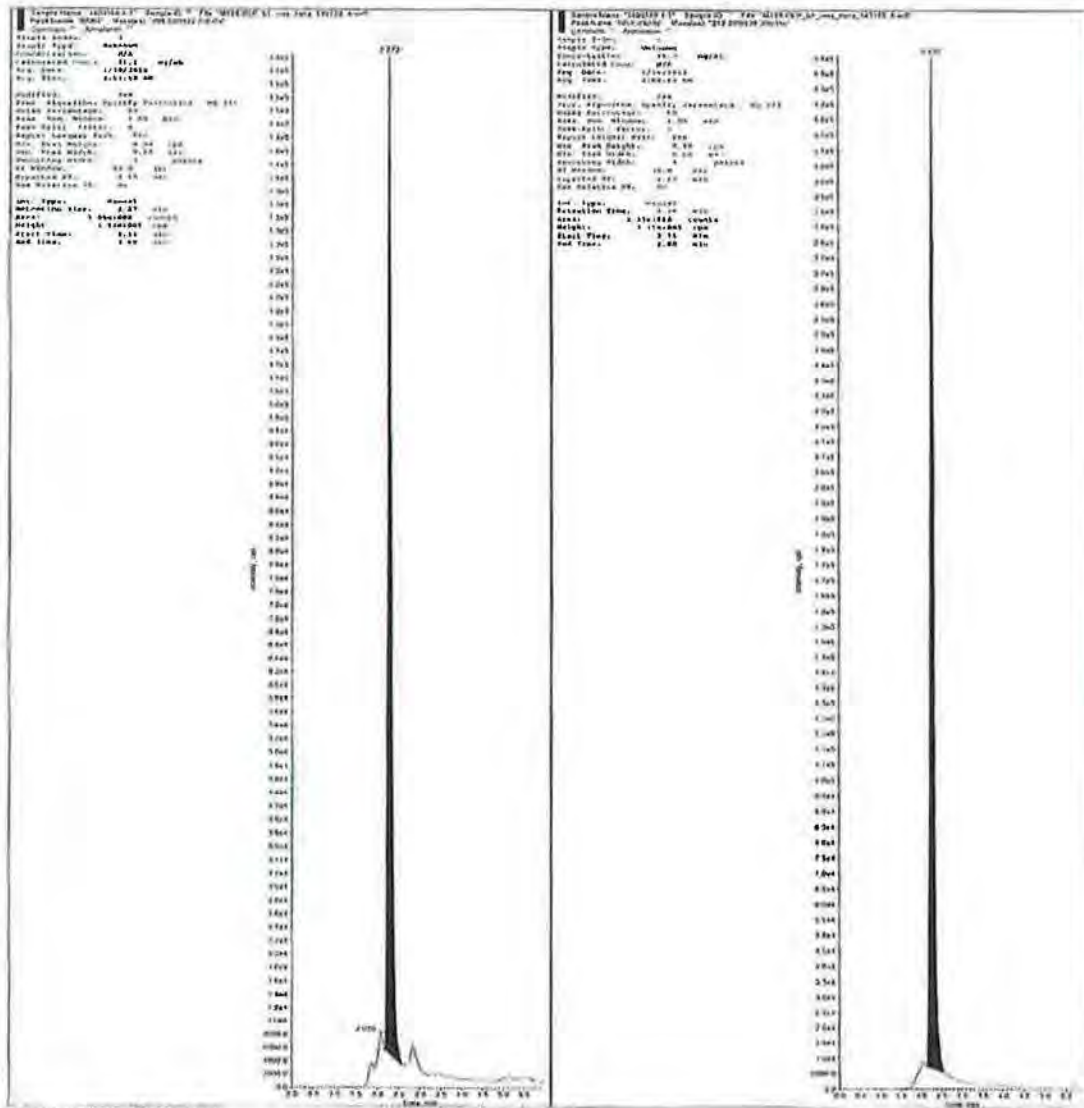
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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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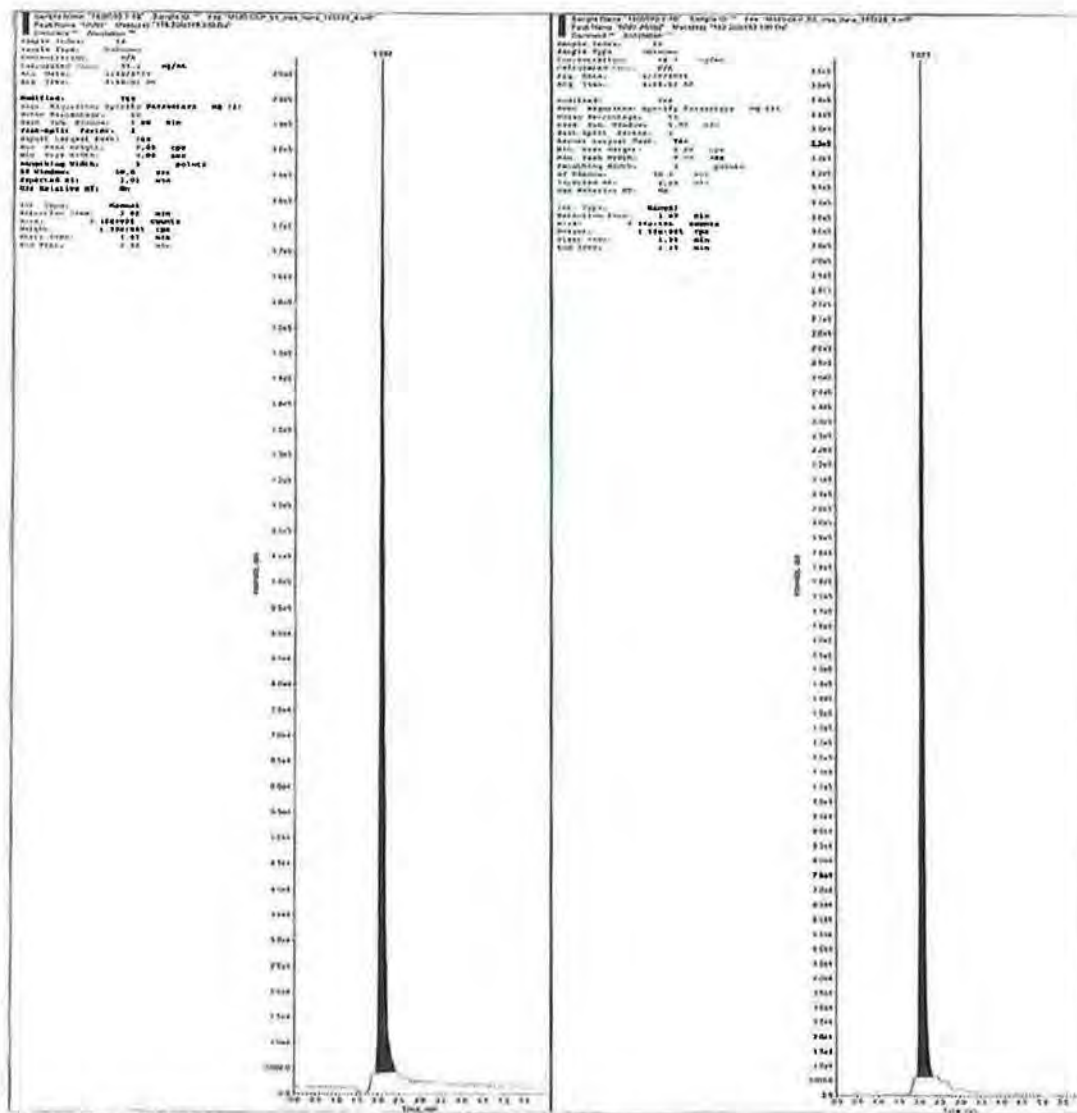
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Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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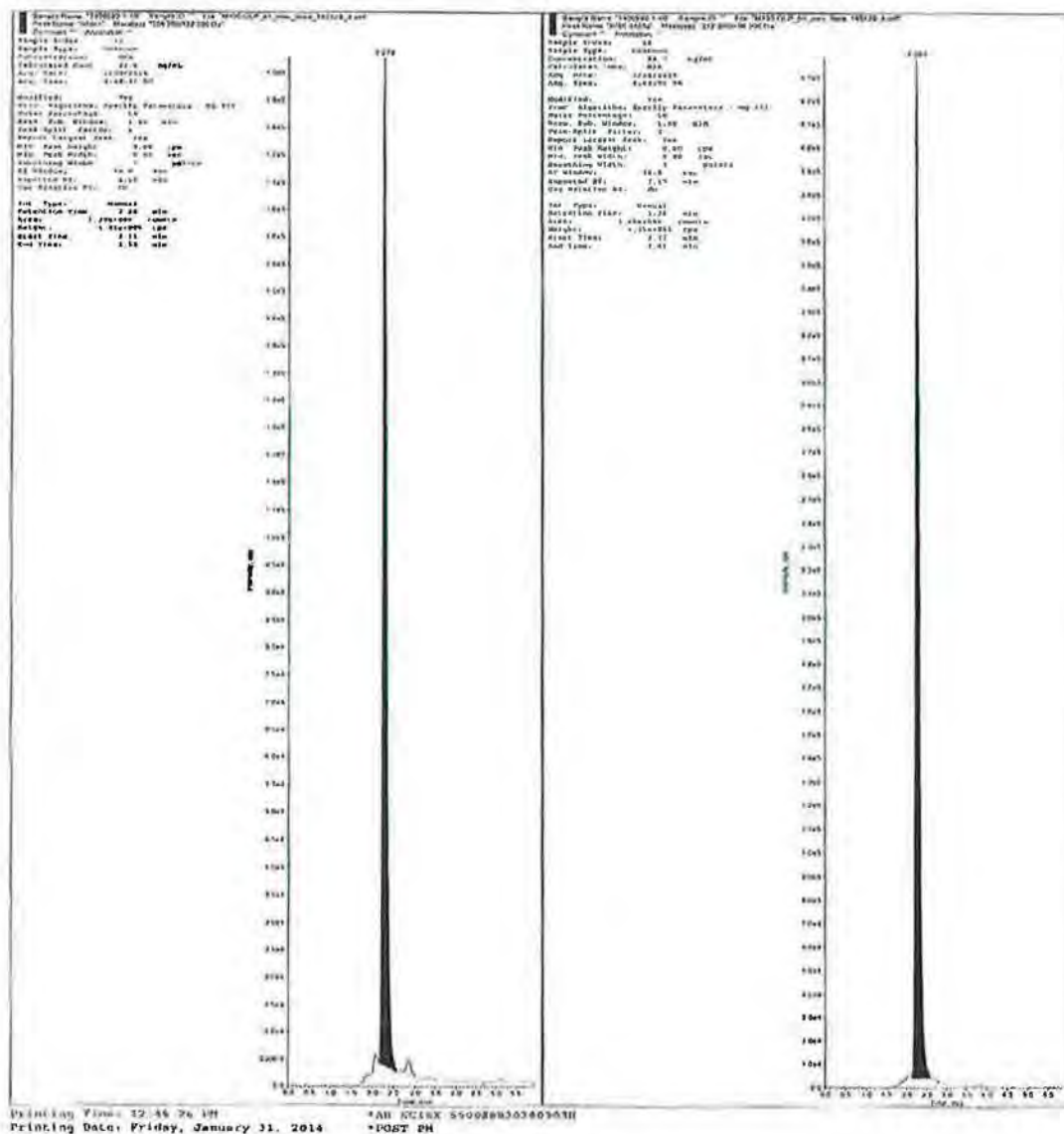
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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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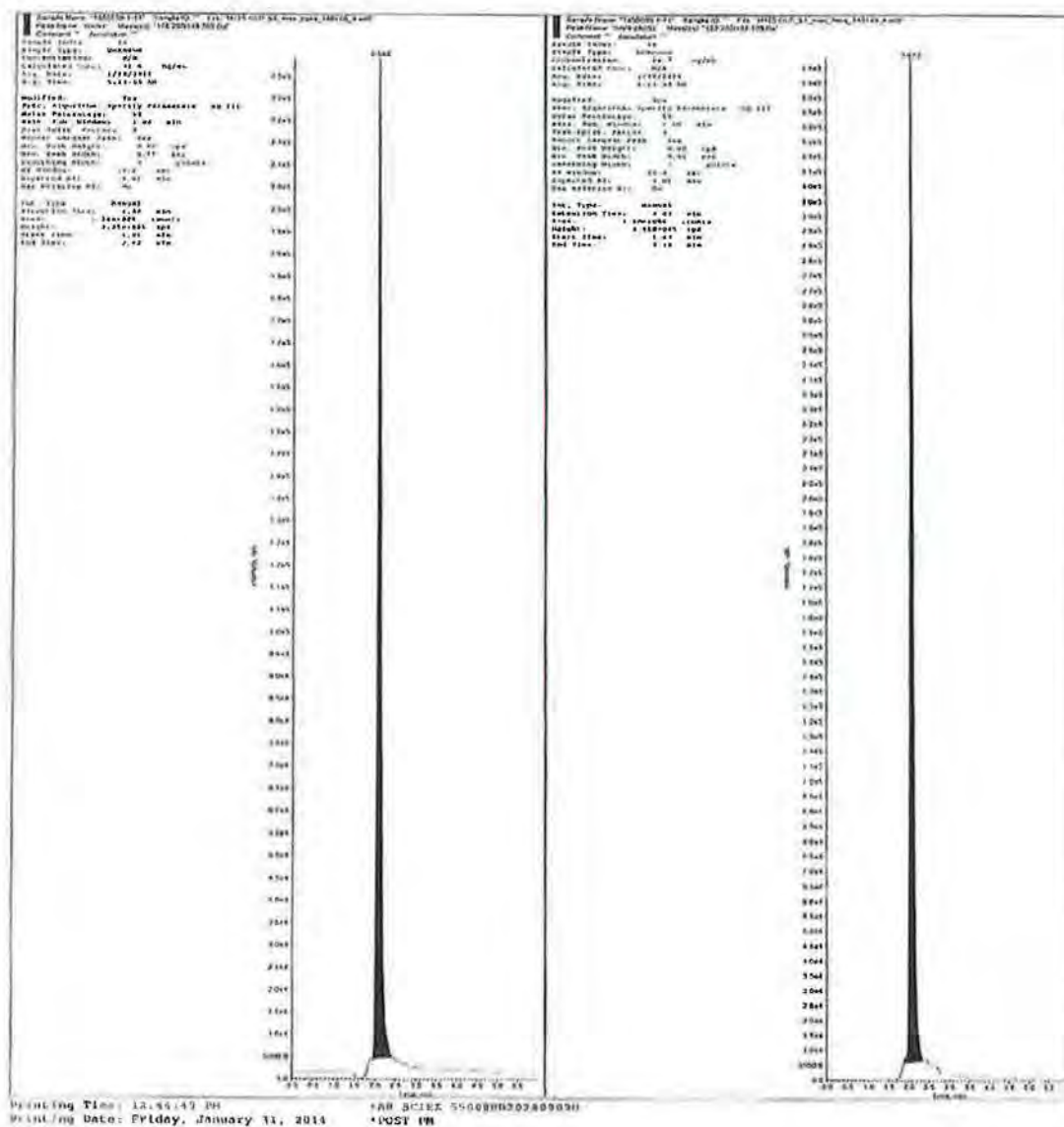
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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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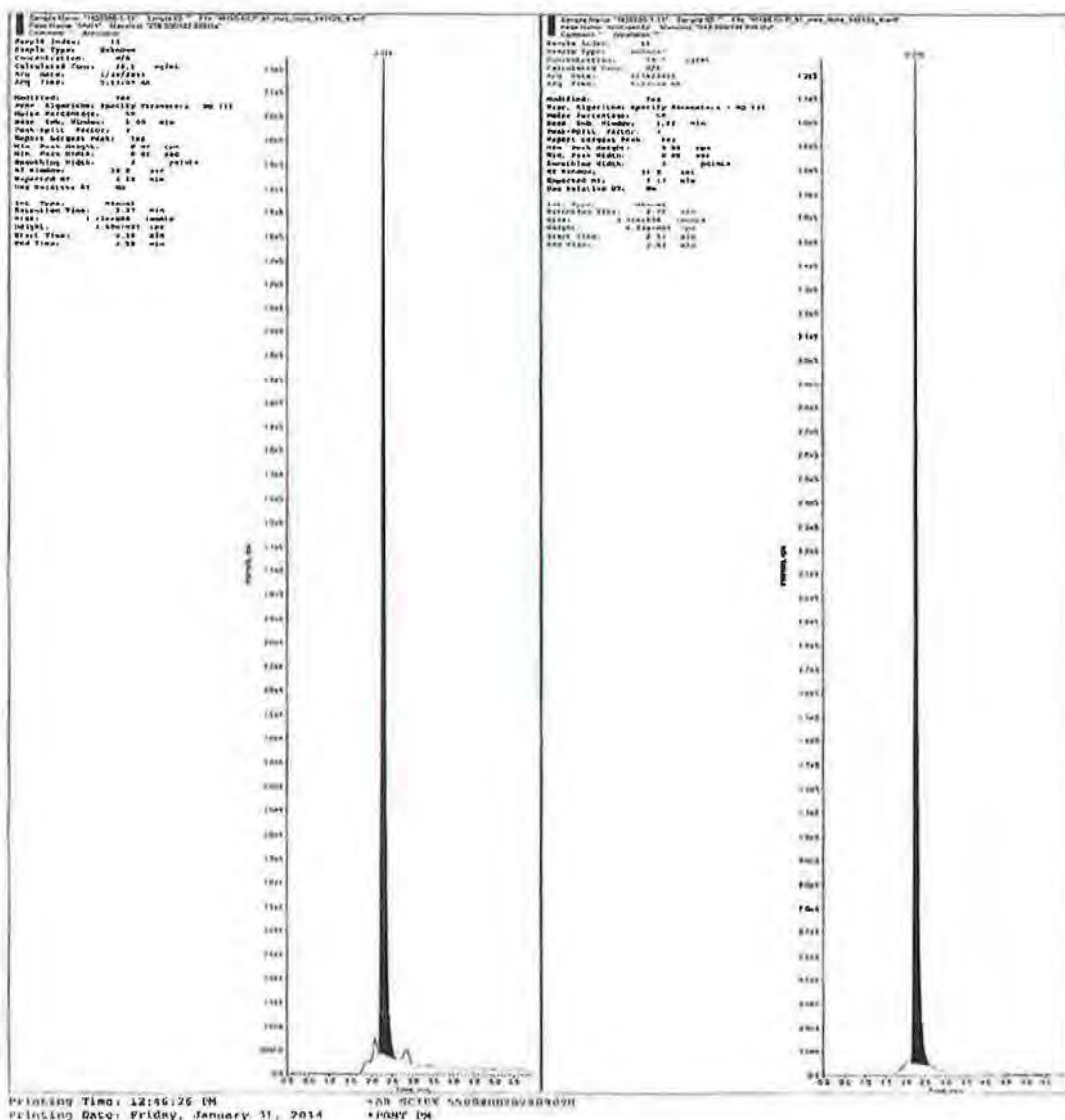


Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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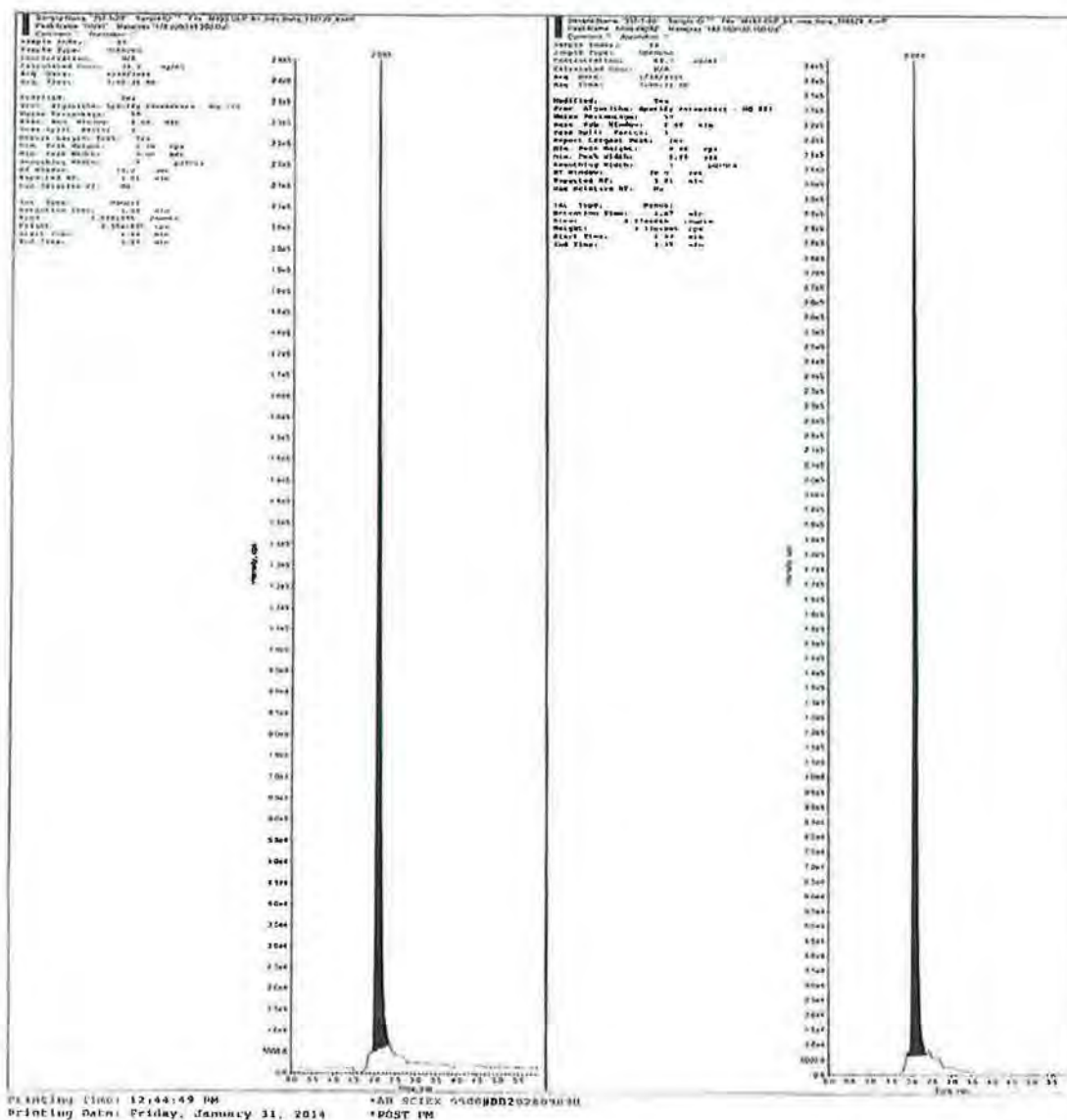
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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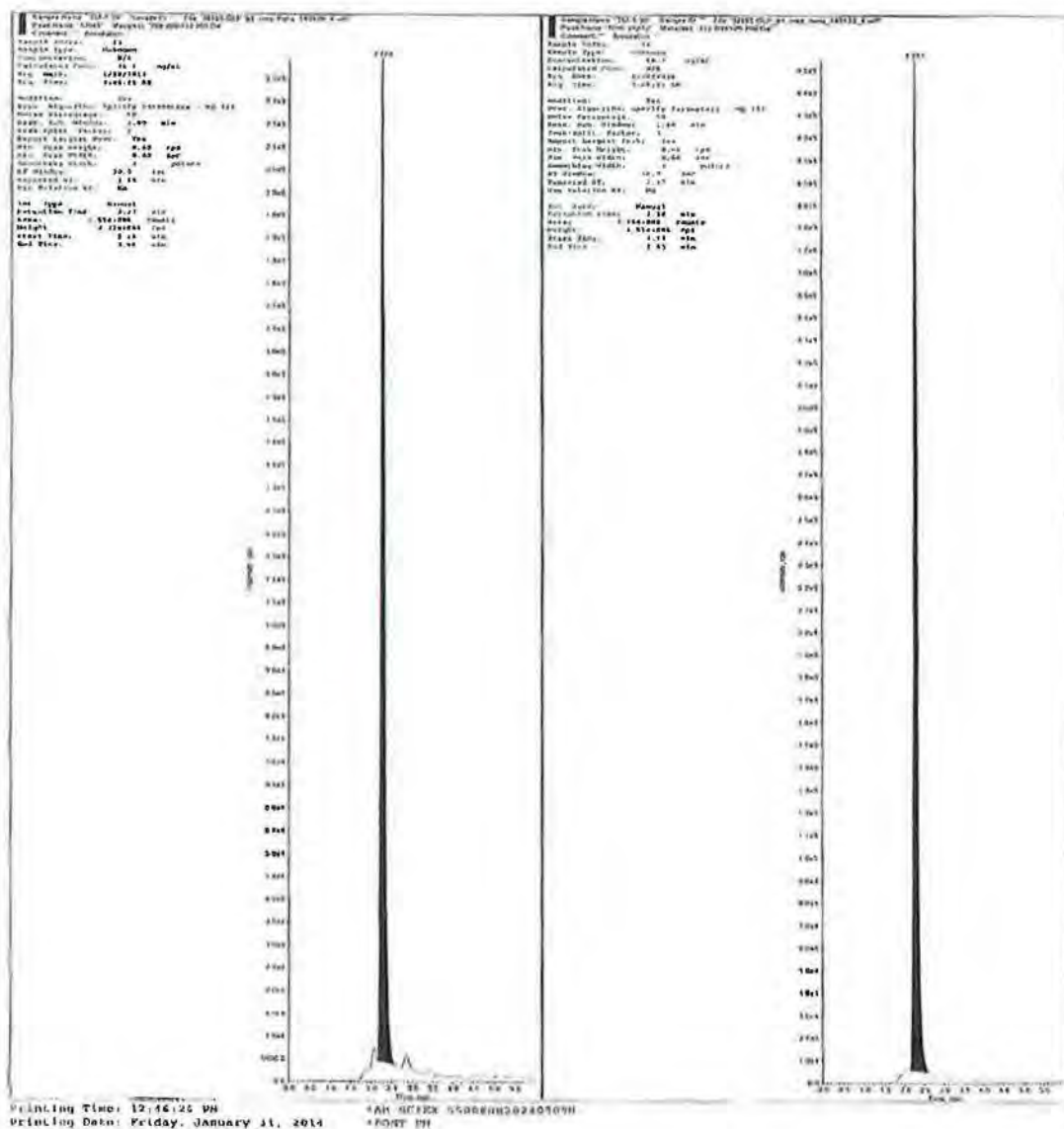


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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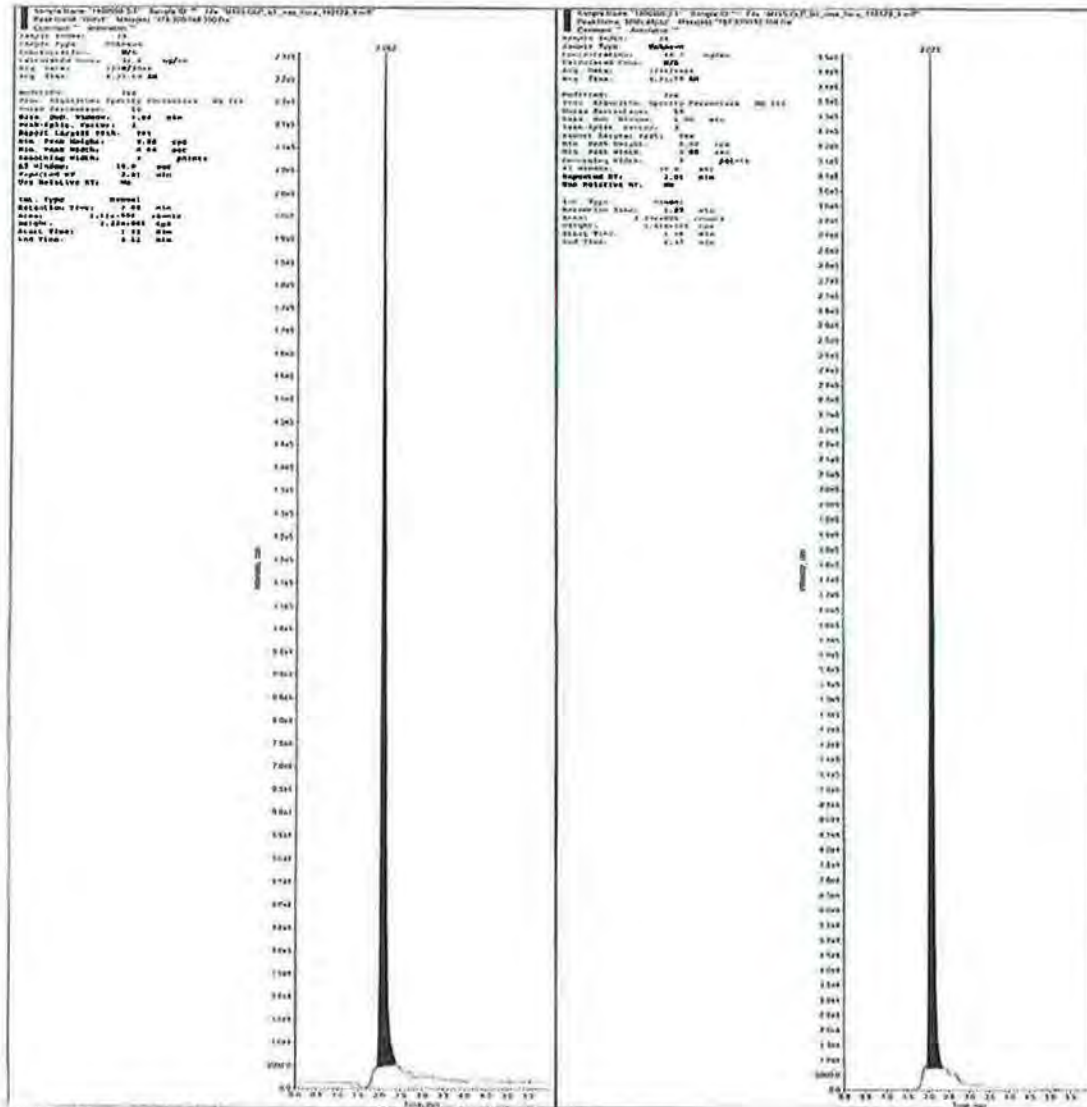


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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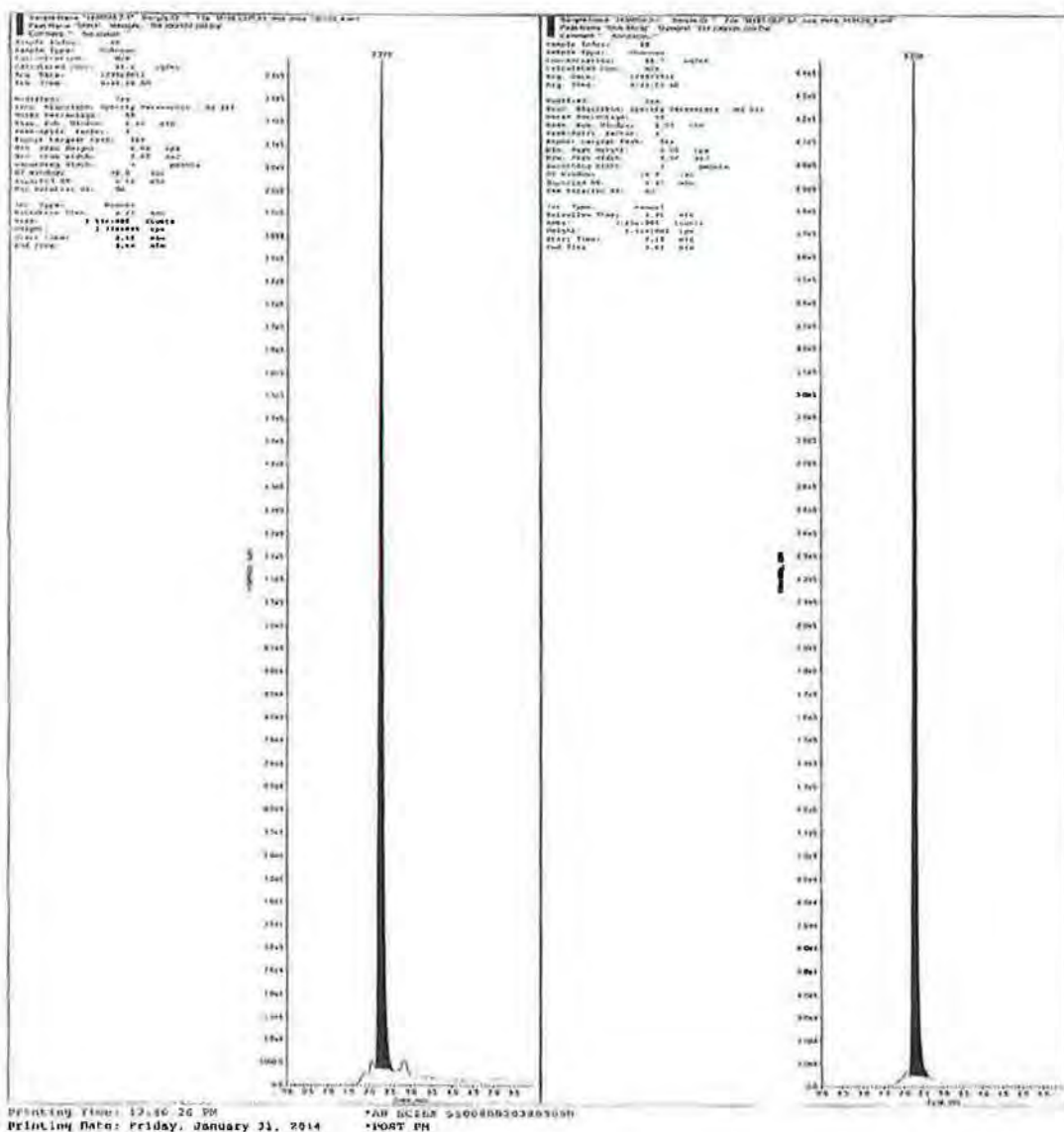


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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Toxic Trace Metals

Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Study: M195-GLP Block1 metals MS/MS

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Page: 1 of 2

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
Blank	Blank	1/29/2014	9:08:57 AM	140129	ICP-AES 720 LAB001857	S. Fong	
Standard 1	Standard 1	1/29/2014	9:11:38 AM	140129	ICP-AES 720 LAB001857	S. Fong	
Standard 2	Standard 2	1/29/2014	9:14:19 AM	140129	ICP-AES 720 LAB001857	S. Fong	
Standard 3	Standard 3	1/29/2014	9:17:01 AM	140129	ICP-AES 720 LAB001857	S. Fong	
Standard 4	Standard 4	1/29/2014	9:19:44 AM	140129	ICP-AES 720 LAB001857	S. Fong	
Standard 5	Standard 5	1/29/2014	9:22:27 AM	140129	ICP-AES 720 LAB001857	S. Fong	
5% HNO3	5% HNO3	1/29/2014	9:25:09 AM	140129	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-1 M195 GLP	1/29/2014	9:27:50 AM	140129	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-2 91 145M5	1/29/2014	9:30:11 AM	140129	ICP-AES 720 LAB001857	S. Fong	
357	357-2-3	1/29/2014	9:33:12 AM	140129	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-1-4	1/29/2014	9:35:54 AM	140129	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-1-5	1/29/2014	9:38:36 AM	140129	ICP-AES 720 LAB001857	S. Fong	
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1400589	1400589-1-8	1/29/2014	9:46:43 AM	140129	ICP-AES 720 LAB001857	S. Fong	
URB-1	URB-1	1/29/2014	9:49:27 AM	140129	ICP-AES 720 LAB001857	S. Fong	
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URB-1C	URB-1C	1/29/2014	10:48:46 AM	140129	ICP-AES 720 LAB001857	S. Fong	
URB-1C	URB-1C	1/29/2014	10:51:28 AM	140129	ICP-AES 720 LAB001857	S. Fong	
STD 3 140128	STD 3 140128	1/29/2014	10:54:11 AM	140129	ICP-AES 720 LAB001857	S. Fong	

Date: Feb 5/14
Revision: 2

QSF-01108-V2

Labstat International LLC

Study Identifier: M195-GLP

Instrument Run Summary and Representative Chromatograms

QSF-01106-V2_Instrument Run Summary_Metals_M195-GLP_block1_msl_msns.pdf_3095669
Electronically Signed By: Sarah Fong
Path: \\nasrepositary\repository\3095669
Created: 2/6/14 14:31 Audit ID: 3095669

Page 2 of 2

Private and Confidential

Study: M195-GLP Block 1 metals MSNS

Instrument Run Summary for Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
Blank	Blank	1/29/2014	10:23:19 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
Standard 1	Standard 1	1/29/2014	10:26:28 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
Standard 2	Standard 2	1/29/2014	10:29:36 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
Standard 3	Standard 3	1/29/2014	10:32:48 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
Standard 4	Standard 4	1/29/2014	10:35:59 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
Standard 5	Standard 5	1/29/2014	10:39:10 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
5% HNO3	5% HNO3	1/29/2014	10:42:21 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400589	1400589-1-M195-GLP B1	1/29/2014	10:45:32 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400588	1400588-1-2 MSMS	1/29/2014	10:48:42 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
357	357-1-3	1/29/2014	10:51:52 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400588	1400588-1-4	1/29/2014	10:55:02 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400590	1400590-1-5	1/29/2014	10:58:12 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400590	1400590-1-6	1/29/2014	11:01:21 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400589	1400589-1-7	1/29/2014	11:04:31 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400589	1400589-1-8	1/29/2014	11:07:41 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
LRB-1	LRB-1	1/29/2014	11:10:51 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
LRB-1	LRB-1	1/29/2014	11:14:01 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
STD 3 140128	STD 3 140128	1/29/2014	11:17:10 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400588	1400588-1-9	1/29/2014	11:20:20 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400590	1400590-1-10	1/29/2014	11:23:30 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400588	1400588-1-11	1/29/2014	11:26:40 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400588	1400588-1-12	1/29/2014	11:29:51 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400589	1400589-1-13	1/29/2014	11:33:01 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400589	1400589-1-14	1/29/2014	11:36:11 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400588	1400588-1-15	1/29/2014	11:39:21 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
357	357-1-16	1/29/2014	11:42:31 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
LRB-1B	LRB-1B	1/29/2014	11:45:41 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
LRB-1B	LRB-1B	1/29/2014	11:48:50 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
STD 3 140128	STD 3 140128	1/29/2014	11:52:01 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400589	1400589-1-17	1/29/2014	11:55:10 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400590	1400590-1-18	1/29/2014	11:58:20 AM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400590	1400590-1-19	1/29/2014	12:01:29 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400590	1400590-1-20	1/29/2014	12:04:39 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400590	1400590-2-1	1/29/2014	12:07:49 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400588	1400588-2-2	1/29/2014	12:11:00 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
357	357-2-3	1/29/2014	12:14:11 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
1400589	1400589-2-4	1/29/2014	12:17:21 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
LRB-1C	LRB-1C	1/29/2014	12:20:31 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
LRB-1C	LRB-1C	1/29/2014	12:23:41 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	
STD 3 140128	STD 3 140128	1/29/2014	12:26:51 PM	ICP-Exp-810MS-140129-As_only	ICP-MS 800/810 LAB001004	S. Fong	

Date: Feb 6/14
Revision: 2

QSF-01106-V2

Labstat International LLC



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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Created: 1/30/14 10:40 Audit ID: 3050326



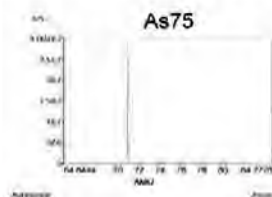
Quantum Worksheet Report

Report Date 10:39:09am 30/Jan/2014

Worksheet ICP-Exp-810MS-140129-As_only.mswn

Analyst

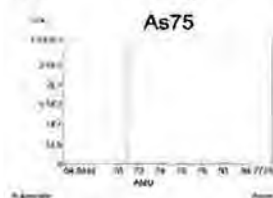
Page 5 of 15



1400588-1-2 MSNS [Sample]

Tube: 2.1, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:48:42am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

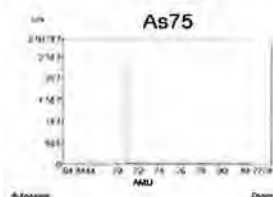
Analyte	Corr Conc/Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.90 ppb	0.89896	ppb	-	78524.21	8.34	0.0750	78645 77445 79483



1400588-1-3 [Sample]

Tube: 2.4, Replicates: 7, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:51:52am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.09 ppb	1.0893	ppb	-	83991.45	4.71	0.0513	87646 90488 88840



1400588-1-4 [Sample]

Tube: 2.5, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:55:02am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.03 ppb	1.0322	ppb	-	78021.62	8.87	0.0915	78102 75412 80551



AM

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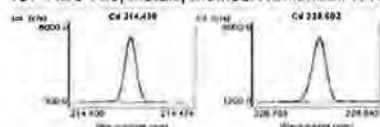
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Path: \\fs2\repository\repository\3050301\
Created: 1/30/14 10:37 Audit ID: 3050301

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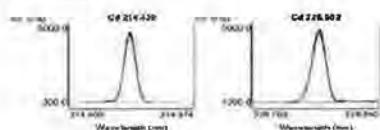
ICP-AES 720, Metals, Method/Worksheet: i140129.wvq, All Data Report 1/30/2014, 10:36:36 AM, Analyst



1400588-1-2 B1 MSNS (Samp) 1/29/2014, 9:30:31 AM Rack 1, Tube 3
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	9.41222	9.54348	9.48233	9.93082	9.77232
Cd 228.802	8.28463	8.48974	8.46030	8.81054	8.74383

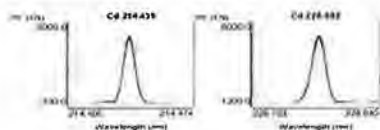
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	9.62823	ppb	0.216478	2.2	3174.85	9.62823 ppb	1.00000
Cd 228.802	8.55781	ppb	0.216358	2.5	2808.54	8.55781 ppb	1.00000



357-1-3 (Samp) 1/29/2014, 9:33:12 AM Rack 1, Tube 4
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	10.7657	10.8753	11.0477	11.3055	11.1419
Cd 228.802	9.72088	9.76088	9.97521	10.1911	10.0630

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	11.0272	ppb	0.213565	1.9	3637.88	11.0272 ppb	1.00000
Cd 228.802	9.94221	ppb	0.199682	2.0	3263.13	9.94221 ppb	1.00000



1400588-1-4 (Samp) 1/29/2014, 9:35:54 AM Rack 1, Tube 5
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	9.54173	9.55336	9.45206	9.49914	9.50445
Cd 228.802	9.01452	9.07928	8.96284	8.90953	8.93483

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	9.51015	ppb	0.039975	0.4	3135.76	9.51015 ppb	1.00000
Cd 228.802	8.98020	ppb	0.067728	0.8	2947.24	8.98020 ppb	1.00000

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Created: 1/30/14 10:40 Audit ID: 3050326



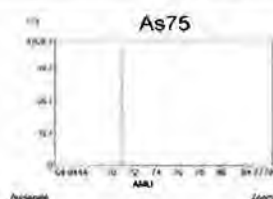
Quantum Worksheet Report

Report Date 10:39:09am 30/Jan/2014

Worksheet ICP-Exp-810MS-140129-As_only.mswn

Analyst

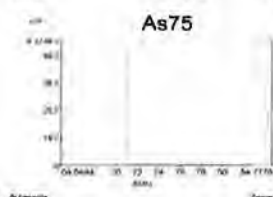
Page 8 of 15



SFD 3 140128 [Sample]

Tube: 1-4, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:17:10am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

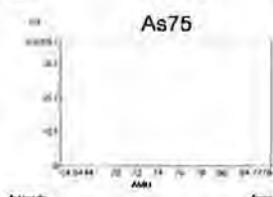
Analyte	Corr Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.39 ppb	2.5940	ppb	-	319512.1	5.73	0.1487	312747 312220 333569



400588-1-9 [Sample]

Tube: 2-12, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:20:20am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.66 ppb	0.65988	ppb	-	67509.09	6.76	0.0419	69311 66364 66835



400590-1-10 [Sample]

Tube: 2-13, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:23:30am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.13 ppb	1.1338	ppb	-	87982.63	8.05	0.0013	87951 87273 88723



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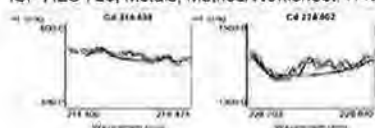
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Created: 1/30/14 10:37 Audit ID: 3050301

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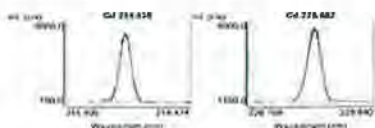
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STD 3 140128 (Samp) 1/29/2014, 9:54:54 AM Rack 1, Tube 12
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	16.0093	15.8776	15.8652	15.8057	15.6104
Cd 228.802	16.0113	16.0239	15.8638	15.8562	15.5639

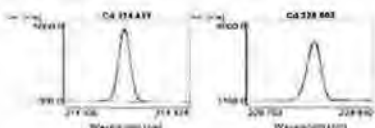
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	15.8337	ppb	0.145265	0.9	5228.70	15.8337 ppb	1.00000
Cd 228.802	15.8638	ppb	0.185308	1.2	5207.57	15.8638 ppb	1.00000



1400588-1-9 (Samp) 1/29/2014, 9:57:35 AM Rack 1, Tube 13
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	10.0761	10.0877	10.1051	10.2159	10.2272
Cd 228.802	9.23244	9.19084	9.16072	9.28786	9.29066

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	10.1424	ppb	0.073075	0.7	3345.02	10.1424 ppb	1.00000
Cd 228.802	9.23251	ppb	0.057737	0.6	3030.09	9.23251 ppb	1.00000



1400590-1-10 (Samp) 1/29/2014, 10:00:15 AM Rack 1, Tube 14
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	11.3714	11.4642	11.4520	11.4203	11.4526
Cd 228.802	11.1469	11.2009	11.0288	11.1225	11.2397

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	11.4321	ppb	0.037654	0.3	3771.89	11.4321 ppb	1.00000
Cd 228.802	11.1478	ppb	0.080726	0.7	3658.99	11.1478 ppb	1.00000

Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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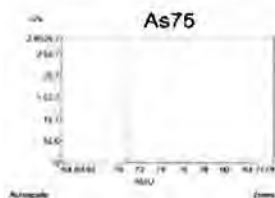
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Report Date 10:39:09am 30/Jan/2014

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Analyst

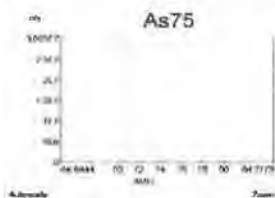
Page 9 of 15



140129-1-11 [Sample]

Tube: 2.14, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:26:40am 29/Jan/2014
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Position Horizontal: -1.00 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

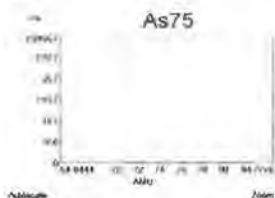
Analyte	Corr Conc/Unit	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	0.891 ppb	0.87866	ppb	-	75634.70	9.23	0.0811	72474 74444 79995



140129-1-12 [Sample]

Tube: 2.15, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:29:51am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -1.00 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	1.115 ppb	1.0478	ppb	-	82419.70	9.29	0.0975	83729 80201 83329



140129-1-13 [Sample]

Tube: 2.16, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:33:01am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -1.00 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	0.69 ppb	0.68936	ppb	-	59387.53	7.79	0.0537	59213 57693 61257

Study Identifier: M195-GLP

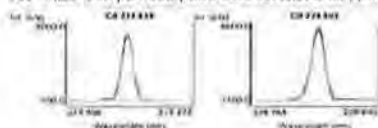
Page 8 of 24

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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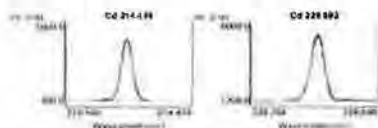
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1400588-1-11 (Samp) 1/29/2014, 10:02:56 AM Rack 1, Tube 15
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	8.68825	8.71880	8.54462	8.63874	8.72064
Cd 228.802	7.98482	7.91651	7.73350	7.83118	7.94052

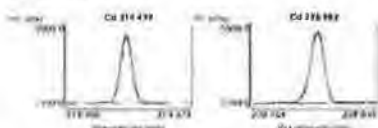
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	8.66221	ppb	0.073610	0.8	2855.11	8.66221 ppb	1.00000
Cd 228.802	7.88131	ppb	0.099773	1.3	2586.41	7.88131 ppb	1.00000



1400588-1-12 (Samp) 1/29/2014, 10:05:37 AM Rack 1, Tube 16
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	9.33903	9.38438	9.50604	9.59570	9.54164
Cd 228.802	8.36744	8.42802	8.51452	8.59761	8.59432

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	9.47336	ppb	0.108003	1.1	3123.59	9.47336 ppb	1.00000
Cd 228.802	8.50038	ppb	0.101721	1.2	2789.69	8.50038 ppb	1.00000



1400589-1-13 (Samp) 1/29/2014, 10:08:18 AM Rack 1, Tube 17
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	9.80811	9.84305	9.77597	10.0081	9.95207
Cd 228.802	8.94392	9.00674	8.90581	9.11187	9.09197

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	9.87746	ppb	0.098655	1.0	3257.34	9.87746 ppb	1.00000
Cd 228.802	9.01206	ppb	0.089873	1.0	2957.71	9.01206 ppb	1.00000

Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Quantum ICP-Exp-810MS-140128-As_only_RESULTS_M195-GLP_block1_metals_MSNS.pdf_3050326
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3050326
Created: 1/30/14 10:40 Audit ID: 3050326



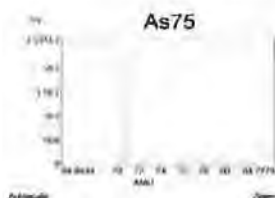
Quantum Worksheet Report

Report Date 10:39:09am 30/Jan/2014

Worksheet ICP-Exp-810MS-140129-As_only.msws

Analyst

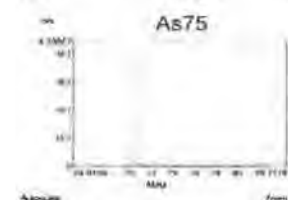
Page 11 of 15



FB-1B [Sample]

Tube: 2.20, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 11:45:11am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

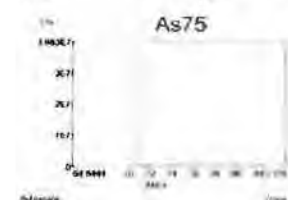
Analyte	Corr Conc/Unit	Salt Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.01 ppb	3.0124	ppb	-	354154.5	6.33	0.1907	350945 351373 360146



FB-1B [Sample]

Tube: 2.21, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 11:48:50am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Salt Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.01 ppb	0.03336	ppb	-	9430.58	4.79	0.0016	9561 9561 9268



STD 3 140128 [Sample]

Tube: 1.4, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 11:52:01am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Salt Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.75 ppb	2.7468	ppb	-	331941.4	4.28	0.1176	337733 324700 333391

Study Identifier: M195-GLP

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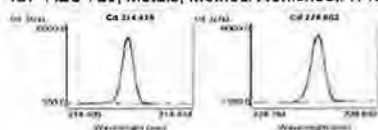
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

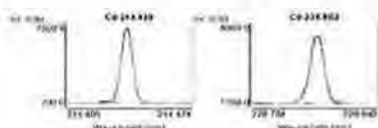
ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_metals_MSNS.pdf_3050301
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3050301
Created: 1/30/14 10:37 Audit ID: 3050301

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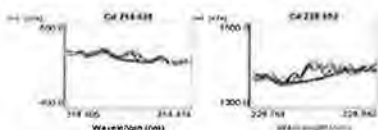
ICP-AES 720, Metals, Method/Worksheet: i140129.vwq. All Data Report 1/30/2014, 10:36:36 AM, Analyst



LFB-1B (Samp)		1/29/2014, 10:19:06 AM		Rack 1, Tube 21		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates Concentration					
Cd 214.439	15.1982	15.3041	15.2823	15.4002	15.3646	
Cd 228.802	14.8208	14.9116	14.8787	14.9252	14.8623	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	15.3099	ppb	0.078130	0.5	5055.35	15.3099 ppb 1.00000
Cd 228.802	14.8797	ppb	0.041414	0.3	4884.43	14.8797 ppb 1.00000



LRB-1B (Samp)		1/29/2014, 10:21:49 AM			Rack 1, Tube 22	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates Concentration					
Cd 214.439	0.062683	0.086036	0.086756	0.084441	0.088996	
Cd 228.802	0.087163	0.114466	0.073876	0.123663	0.083216	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	0.081782	ppb	0.010802	13.2	15.1866	0.081782 ppb
Cd 228.802	0.096477	ppb	0.021425	22.2	30.1478	0.096477 ppb
						DF
						1.00000
						1.00000



STD 3 140128 (Samp)		1/29/2014, 10:24:32 AM		Rack 1, Tube 23		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates Concentration					
Cd 214.439	15.7088	15.8158	15.6321	15.6408	15.5603	
Cd 228.802	15.7964	15.9158	15.7077	15.6960	15.6410	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	15.6716	ppb	0.096264	0.6	5175.06	15.6716 ppb 1.00000
Cd 228.802	15.7514	ppb	0.107501	0.7	5170.65	15.7514 ppb 1.00000

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Quantum ICP-Exp-810MS-140129-As_only_RESULTS_M195-GLP_block1_metals_MSNS.pdf_3050326
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3050326\
Created: 1/30/14 10:40 Audit ID: 3050326



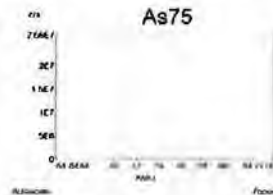
Quantum Worksheet Report

Report Date 10:39:09am 30/Jan/2014

Worksheet ICP-Exp-810MS-140129-As_only.msws

Analyst

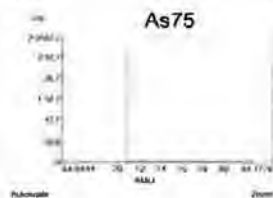
Page 13 of 15



1400590-1-20 [Sample]

Tube: 2.23, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 12:04:39pm 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

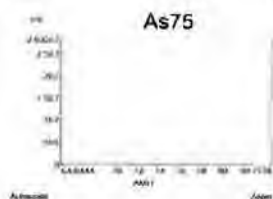
Analyte	Corr Conc/Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.01 ppb	1.0086	ppb	-	85256.80	5.49	0.0554	86828 81343 87599



1400590-2-1 [Sample]

Tube: 2.26, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 12:07:49pm 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.00 ppb	1.0041	ppb	-	79026.93	6.07	0.0610	79658 79630 77793



1400590-3-1 [Sample]

Tube: 2.27, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 12:11:00pm 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.89 ppb	0.8939b	ppb	-	71966.87	11.10	0.0992	71602 69036 75203

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_metals_MSNS.pdf_3050301
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3050301\
Created: 1/30/14 10:37 Audit ID: 3050301

Page 13 of 15

ICP-AES 720, Metals, Method/Worksheet: i140129.vwq, All Data Report 1/30/2014, 10:36:36 AM, Analyst

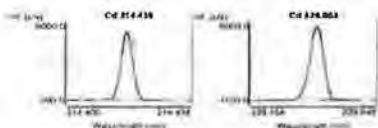


1400590-1-20 (Samp) 1/29/2014, 10:35:18 AM Rack 1, Tube 27

Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	11.8225	11.9842
Cd 228.802	11.2415	11.3655

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	11.9019	ppb	0.104071	0.9	3927.36	11.9019 ppb	1.00000
Cd 228.802	11.3253	ppb	0.099364	0.9	3717.30	11.3253 ppb	1.00000

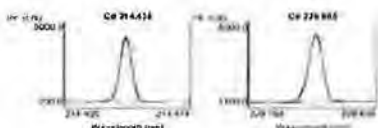


1400590-2-1 (Samp) 1/29/2014, 10:37:59 AM Rack 1, Tube 28

Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	11.0873	11.1818
Cd 228.802	10.3634	10.4365

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	11.1471	ppb	0.080778	0.7	3677.55	11.1471 ppb	1.00000
Cd 228.802	10.3462	ppb	0.073692	0.7	3395.78	10.3462 ppb	1.00000



1400588-2-2 (Samp) 1/29/2014, 10:40:40 AM Rack 1, Tube 29

Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	9.15068	9.15008
Cd 228.802	8.61718	8.60063

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	9.14982	ppb	0.066240	0.7	3016.50	9.14982 ppb	1.00000
Cd 228.802	8.64822	ppb	0.066899	0.8	2838.23	8.64822 ppb	1.00000

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

QSP-01106-V2_Instrument Run Summary Metals_M195-GLP_Block1_metal_nss.pdf_3095633
Electronically Signed By: Sarah Fong
Print: M195GLP\repository\0095633
Created: 2/6/14 14:28 Audit ID: 5095633

Study: M195-GLP Block 1 metals.MBS

Private and Confidential

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Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
Blank	Blank	1/28/2014	5:17:32 AM	140128	ICP-AES 720 LAB001857	S. Fong	
Standard 1	Standard 1	1/28/2014	5:20:13 AM	140128	ICP-AES 720 LAB001857	S. Fong	
Standard 2	Standard 2	1/28/2014	5:22:55 AM	140128	ICP-AES 720 LAB001857	S. Fong	
Standard 3	Standard 3	1/28/2014	5:25:36 AM	140128	ICP-AES 720 LAB001857	S. Fong	
Standard 4	Standard 4	1/28/2014	5:28:19 AM	140128	ICP-AES 720 LAB001857	S. Fong	
Standard 5	Standard 5	1/28/2014	5:31:02 AM	140128	ICP-AES 720 LAB001857	S. Fong	
5% HNO3	5% HNO3	1/28/2014	5:33:44 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-1-1 M195-GLP	1/28/2014	5:36:25 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-1-1 BL NISS	1/28/2014	5:39:06 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-1	1/28/2014	5:41:47 AM	140128	ICP-AES 720 LAB001857	S. Fong	
357	357-1-14	1/28/2014	5:44:29 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-1-2	1/28/2014	5:47:11 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-1-3	1/28/2014	5:49:53 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-1-7	1/28/2014	5:52:35 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-1-8	1/28/2014	5:55:18 AM	140128	ICP-AES 720 LAB001857	S. Fong	
LFB-1	LFB-1	1/28/2014	5:58:01 AM	140128	ICP-AES 720 LAB001857	S. Fong	
LRS-1	LRS-1	1/28/2014	10:00:44 AM	140128	ICP-AES 720 LAB001857	S. Fong	
STD 3 140127	STD 3 140127	1/28/2014	10:03:26 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-1-9	1/28/2014	10:06:10 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-1-10	1/28/2014	10:08:52 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-11	1/28/2014	10:11:31 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-1-12	1/28/2014	10:14:13 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-13	1/28/2014	10:16:54 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-14	1/28/2014	10:19:35 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-1-15	1/28/2014	10:22:17 AM	140128	ICP-AES 720 LAB001857	S. Fong	
357	357-1-15	1/28/2014	10:24:59 AM	140128	ICP-AES 720 LAB001857	S. Fong	
LFB-1B	LFB-1B	1/28/2014	10:27:42 AM	140128	ICP-AES 720 LAB001857	S. Fong	
LRS-1B	LRS-1B	1/28/2014	10:30:24 AM	140128	ICP-AES 720 LAB001857	S. Fong	
STD 3 140127	STD 3 140127	1/28/2014	10:33:07 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-17	1/28/2014	10:35:51 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-1-18	1/28/2014	10:38:33 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-1-19	1/28/2014	10:41:13 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-1-20	1/28/2014	10:43:54 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400590	1400590-2-1	1/28/2014	10:46:35 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400589	1400589-2-2	1/28/2014	10:49:17 AM	140128	ICP-AES 720 LAB001857	S. Fong	
1400588	1400588-2-3	1/28/2014	10:51:58 AM	140128	ICP-AES 720 LAB001857	S. Fong	
357	357-2-4	1/28/2014	10:54:40 AM	140128	ICP-AES 720 LAB001857	S. Fong	
LFB-1C	LFB-1C	1/28/2014	10:57:21 AM	140128	ICP-AES 720 LAB001857	S. Fong	
LRS-1C	LRS-1C	1/28/2014	11:00:04 AM	140128	ICP-AES 720 LAB001857	S. Fong	
STD 3 140127	STD 3 140127	1/28/2014	11:02:47 AM	140128	ICP-AES 720 LAB001857	S. Fong	

Date: Feb 4/14
Revision: 1

QSP-01106-V2

Labstat International LLC

Study Identifier: M195-GLP

Instrument Run Summary and Representative Chromatograms

Study Report – Appendix F

QSF-01106-V2 Instrument Run Summary Metals M195-GLP block 1_mnet_rms.pdf 3095633
Electronically Signed By: Sarah C. Gong
Path: \\is2repository\repository\3095633
Created: 2/6/14 14:28 Audit ID: 3095633

Instrument Run Summary for Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
Blank	Blank	1/28/2014	10:23:11 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
Standard 1	Standard 1	1/28/2014	10:26:20 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
Standard 2	Standard 2	1/28/2014	10:29:30 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
Standard 3	Standard 3	1/28/2014	10:32:40 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
Standard 4	Standard 4	1/28/2014	10:35:51 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
Standard 5	Standard 5	1/28/2014	10:39:02 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
5% HNO3	5% HNO3	1/28/2014	10:42:13 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400590	1400590-1-1 M195-GLP B1	1/28/2014	10:45:23 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-1-2 M195	1/28/2014	10:48:33 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400589	1400589-1-3	1/28/2014	10:51:43 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
357	357-1-4	1/28/2014	10:54:53 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400590	1400590-1-5	1/28/2014	10:58:03 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400590	1400590-1-6	1/28/2014	11:01:13 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-1-7	1/28/2014	11:04:23 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-1-8	1/28/2014	11:07:32 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
URB-1	URB-1	1/28/2014	11:10:41 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
URB-1	URB-1	1/28/2014	11:13:51 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
STD 3 140127	STD 3 140127	1/28/2014	11:17:01 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400590	1400590-1-9	1/28/2014	11:20:10 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400590	1400590-1-10	1/28/2014	11:23:19 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-1-11	1/28/2014	11:26:30 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-1-12	1/28/2014	11:29:40 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400589	1400589-1-13	1/28/2014	11:32:50 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400589	1400589-1-14	1/28/2014	11:36:00 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-1-15	1/28/2014	11:39:09 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
357	357-1-16	1/28/2014	11:42:19 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
URB-1B	URB-1B	1/28/2014	11:45:28 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
URB-1B	URB-1B	1/28/2014	11:48:38 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
STD 3 140127	STD 3 140127	1/28/2014	11:51:48 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400589	1400589-1-17	1/28/2014	11:54:58 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-1-18	1/28/2014	11:58:07 AM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400590	1400590-1-19	1/28/2014	12:01:16 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400589	1400589-1-20	1/28/2014	12:04:26 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400590	1400590-2-1	1/28/2014	12:07:37 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400589	1400589-2-2	1/28/2014	12:10:47 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
1400588	1400588-2-3	1/28/2014	12:13:57 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
357	357-2-4	1/28/2014	12:17:08 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
URB-1C	URB-1C	1/28/2014	12:20:18 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
URB-1C	URB-1C	1/28/2014	12:23:28 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	
STD 3 140127	STD 3 140127	1/28/2014	12:26:38 PM	ICP-Exp-B10V5-140128-As_only	ICP-VS 800/810 LAB001004	S. Fong	



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Quantum ICP-Exp-810MS-140128-As_only_M195-GLP_Block1_Metals_MSS.pdf_3037527
Electronically Signed By: Sarah Fong
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Created: 1/28/14 12:50 Audit ID: 3037527



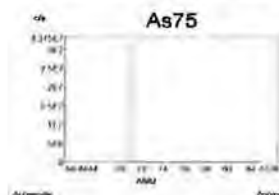
Quantum Worksheet Report

Report Date 12:49:06pm 28/Jan/2014

Worksheet ICP-Exp-810MS-140128-As_only.msww

Analyst

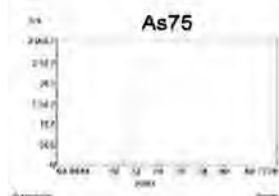
Page 5 of 15



100588-1-2 [Sample]

Tube: 2:3, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:48:33am 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml., Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

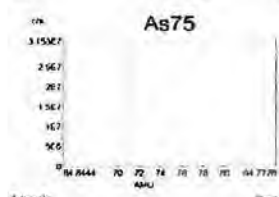
Analyte	Corr ConcUnit	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.72 ppb	0.7232b	ppb	-	82422.80	2.87	0.0208	82658 83389 81222



100589-1-3 [Sample]

Tube: 2:4, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:51:43am 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml., Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr ConcUnit	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.55 ppb	0.5521b	ppb	-	66995.70	11.26	0.0622	64940 67629 68409



337-1-4 [Sample]

Tube: 2:5, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:54:51am 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml., Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

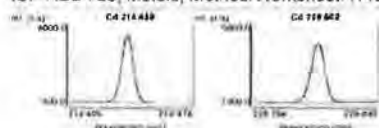
Analyte	Corr ConcUnit	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.53 ppb	0.5497b	ppb	-	75476.18	4.25	0.0234	76078 72307 78044

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report: I140128_M195-GLP_block1_met_MSS.pdf_3035957
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3035957
Created: 1/28/14 11:07 Audit ID: 3035957

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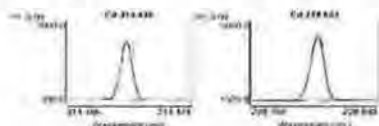
ICP-AES 720, Metals, Method/Worksheet: I140128.wvq, All Data Report 1/28/2014, 11:05:33 AM, Analyst



I400588-1-2 B1 MSS (Samp) 1/28/2014, 9:39:06 AM Rack 1, Tube 3
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	7.91051	7.84007	7.84356	7.84875	7.82639
Cd 228.802	7.36974	7.31883	7.32506	7.29624	7.27794

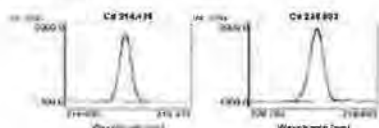
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	7.85385	ppb	0.032735	0.4	2692.07	7.85385 ppb	1.00000
Cd 228.802	7.31756	ppb	0.034659	0.5	2501.85	7.31756 ppb	1.00000



I400589-1-3 (Samp) 1/28/2014, 9:41:47 AM Rack 1, Tube 4
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	9.16118	9.01681	9.12670	9.02882	9.14182
Cd 228.802	8.41636	8.27744	8.31651	8.26822	8.38252

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	9.09507	ppb	0.067213	0.7	3116.09	9.09507 ppb	1.00000
Cd 228.802	8.33221	ppb	0.065102	0.8	2848.25	8.33221 ppb	1.00000



357-1-4 (Samp) 1/28/2014, 9:44:29 AM Rack 1, Tube 5
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	6.89779	6.87502	6.87074	6.90642	6.89678
Cd 228.802	6.52681	6.46700	6.43749	6.57328	6.52513

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	6.88935	ppb	0.015570	0.2	2362.58	6.88935 ppb	1.00000
Cd 228.802	6.50594	ppb	0.053714	0.8	2224.76	6.50594 ppb	1.00000

Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Quantum ICP-Exp-810MS-140128-As_only_M195-GLP_Block1_Metals_MSS.pdf_3037527
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Created: 1/28/14 12:50 Audit ID: 3037527



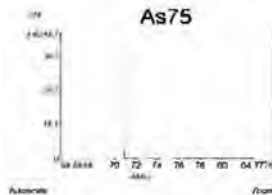
Quantum Worksheet Report

Report Date 12:49:06pm 28/Jan/2014

Worksheet ICP-Exp-810MS-140128-As_only.msws

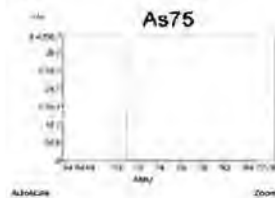
Analyst

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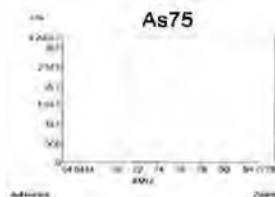
400589-1-11 [Sample]
Tube: 2.14, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:26:30am 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.31 ppb	0.3025b	ppb	-	56975.55	1.34	0.0051	57510 57172 56245



400588-1-12 [Sample]
Tube: 2.15, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:29:40am 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.35 ppb	0.3476b	ppb	-	70755.81	3.23	0.0177	70105 72345 69818



400589-1-13 [Sample]
Tube: 2.16, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:32:50am 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Corr Conc/Unit	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.61 ppb	0.6329b	ppb	-	70086.85	5.87	0.0372	70591 68265 71402

Study Identifier: M195-GLP

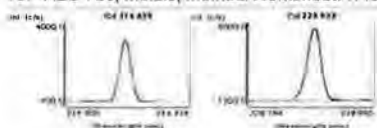
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report: i140128_M195-GLP_block1_mel_MSS.pdf_3035957
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3035957\
Created: 1/28/14 11:07 Audit ID: 3035957

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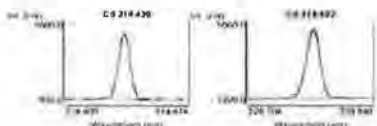
ICP-AES 720, Metals, Method/Worksheet: i140128.vwq All Data Report 1/28/2014, 11:05:33 AM, Analyst



1400589-1-11 (Samp) 1/28/2014, 10:11:31 AM Rack 1, Tube 15
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration					
Cd 214.439	8.85552	8.87518	8.74966	8.85927	8.86095	
Cd 228.802	8.04136	8.04955	7.94165	8.01313	8.04050	

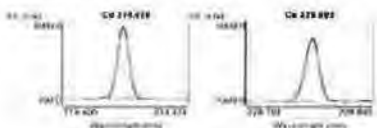
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	8.84012	ppb	0.051113	0.6	3029.00	8.84012 ppb	1.00000
Cd 228.802	8.01724	ppb	0.044434	0.6	2740.72	8.01724 ppb	1.00000



1400588-1-12 (Samp) 1/28/2014, 10:14:13 AM Rack 1, Tube 16
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration					
Cd 214.439	7.63998	7.65811	7.55710	7.65054	7.62245	
Cd 228.802	7.10372	6.98954	6.99645	7.03277	7.02151	

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	7.62563	ppb	0.040583	0.5	2614.11	7.62563 ppb	1.00000
Cd 228.802	7.02880	ppb	0.045470	0.6	2403.26	7.02880 ppb	1.00000



1400589-1-13 (Samp) 1/28/2014, 10:16:54 AM Rack 1, Tube 17
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration					
Cd 214.439	10.4765	10.6629	10.4415	10.4504	10.5976	
Cd 228.802	9.46449	9.56638	9.48682	9.51415	9.64428	

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	10.5258	ppb	0.098962	0.9	3604.85	10.5258 ppb	1.00000
Cd 228.802	9.53523	ppb	0.071858	0.8	3258.96	9.53523 ppb	1.00000

Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Quantum ICP-Exp-810MS-140128-As_only_M195-GLP_Block1_Metals_MSS.pdf_3037527

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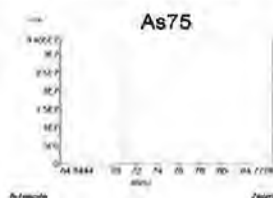
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Report Date 12:49:06pm 28/Jan/2014

Worksheet ICP-Exp-810MS-140128-As_only.msws

Analyst

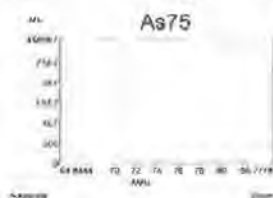
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400589-1-20 [Sample]

Tube: 2-25, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:04:26pm 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

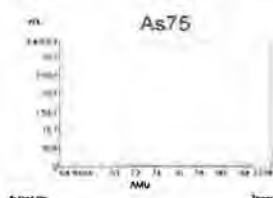
Analyte	Corr Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.11 ppb	0.4843b	ppb	-	48787.82	6.80	0.0329	59174 58743 58446



400590-2-1 [Sample]

Tube: 2-26, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:07:37pm 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Corr Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.11 ppb	0.3268b	ppb	-	60987.66	8.17	0.0349	64698 58873 59392



400589-2-2 [Sample]

Tube: 2-27, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:10:47pm 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Corr Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.60 ppb	0.6049b	ppb	-	65012.02	0.66	0.0040	66525 64807 63704

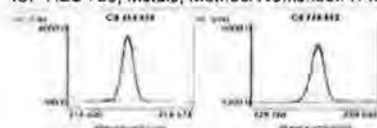
Study Identifier: M195-GLP

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report: i140128_M195-GLP_block1_met_MSS.pdf_3035957
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Path: \\fs2\\repository\\repository\\3035957\\
Created: 1/28/14 11:07 Audit ID: 3035957

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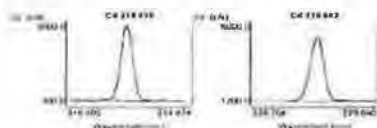
ICP-AES 720, Metals, Method/Worksheet: i140128.wvq, All Data Report 1/28/2014, 11:05:33 AM, Analyst



1400589-1-20 (Samp) 1/28/2014, 10:43:54 AM Rack 1, Tube 27
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	10.1150 10.1576 10.1437 10.1267 10.1206	
Cd 228.802	9.23976 9.30175 9.33395 9.33688 9.27547	

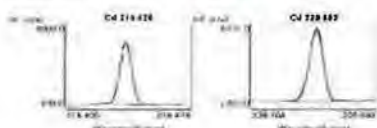
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	10.1327	ppb	0.017590	0.2	3470.57	10.1327 ppb	1.00000
Cd 228.802	9.29756	ppb	0.040976	0.4	3177.83	9.29756 ppb	1.00000



1400590-2-1 (Samp) 1/28/2014, 10:46:35 AM Rack 1, Tube 28
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	6.39188 6.30293 6.35477 6.38620 6.29904	
Cd 228.802	6.12986 6.04773 6.14934 6.13521 6.06468	

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	6.34696	ppb	0.044310	0.7	2177.29	6.34696 ppb	1.00000
Cd 228.802	6.10536	ppb	0.045830	0.8	2088.00	6.10536 ppb	1.00000



1400589-2-2 (Samp) 1/28/2014, 10:49:17 AM Rack 1, Tube 29
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	9.69613 10.0143 9.94075 9.91281 10.0809	
Cd 228.802	8.91992 9.15688 9.10345 9.13492 9.24597	

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	9.92897	ppb	0.145753	1.5	3400.97	9.92897 ppb	1.00000
Cd 228.802	9.11223	ppb	0.119850	1.3	3114.55	9.11223 ppb	1.00000

Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Quantum ICP-Exp-810MS-140128-As_only_M195-GLP_Block1_Metals_MSS.pdf_3037527
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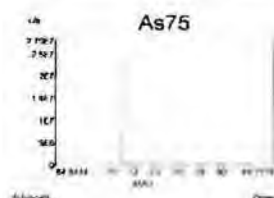
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Report Date 12:49:06pm 28/Jan/2014

Worksheet ICP-Exp-810MS-140128-As_only.mswn

Analyst

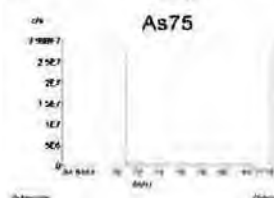
Page 14 of 15



100550-2-3 (Sample)

Tube: 2.28, Replicates: 3, Auto Dilution factor: ~, Cal Set 1, Time measured: 12:13.37pm 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

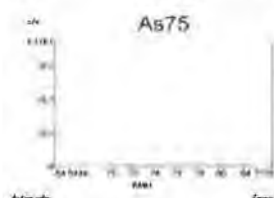
Analyte	Conc Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.64 ppb	0.64266	ppb		72907.67	9.08	0.0383	70669 72998 73055



157-2-4 (Sample)

Tube: 2.29, Replicates: 3, Auto Dilution factor: ~, Cal Set 1, Time measured: 12:17.08pm 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Conc Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.41 ppb	0.42526	ppb		63171.31	11.21	0.0477	63102 62538 63875



1-FB-1C (Sample)

Tube: 2.30, Replicates: 3, Auto Dilution factor: ~, Cal Set 1, Time measured: 12:20.18pm 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Conc Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.60 ppb	2.5951	ppb		370587.6	4.56	0.1184	376039 364421

[Signature]

Study Identifier: M195-GLP

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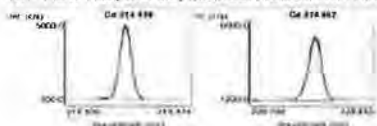
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report: i140128_M195-GLP_block1_met_MSS.pdf_3035957
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3035957
Created: 1/28/14 11:07 Audit ID: 3035957

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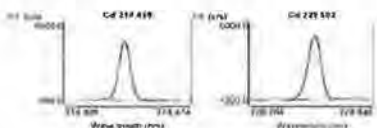
ICP-AES 720, Metals, Method/Worksheet: i140128.vwq All Data Report 1/28/2014, 11:05:33 AM, Analyst



1400588-2-3 (Samp) 1/28/2014, 10:51:58 AM Rack 1, Tube 30
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	7.73880	7.79367	7.79226	7.97992	7.75596
Cd 228.802	7.31137	7.31748	7.33207	7.42138	7.28601

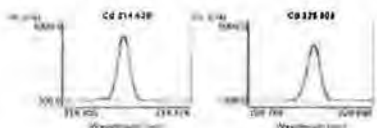
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	7.81212	ppb	0.096724	1.2	2677.82	7.81212 ppb	1.00000
Cd 228.802	7.33366	ppb	0.051784	0.7	2507.34	7.33366 ppb	1.00000



357-2-4 (Samp) 1/28/2014, 10:54:40 AM Rack 1, Tube 31
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	6.75879	6.80012	6.79066	6.74787	6.84466
Cd 228.802	6.38654	6.44023	6.43642	6.35909	6.46801

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	6.78842	ppb	0.038165	0.6	2328.10	6.78842 ppb	1.00000
Cd 228.802	6.41806	ppb	0.044143	0.7	2194.75	6.41806 ppb	1.00000



LFB-1C (Samp) 1/28/2014, 10:57:22 AM Rack 1, Tube 32
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration			
Cd 214.439	15.0683	14.9834	15.0565	15.0944	15.0218
Cd 228.802	14.8867	14.8619	14.9134	14.9206	14.8302

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	15.0449	ppb	0.043158	0.3	5148.64	15.0449 ppb	1.00000
Cd 228.802	14.8826	ppb	0.037383	0.3	5084.56	14.8826 ppb	1.00000



Study Identifier: M195-GLP

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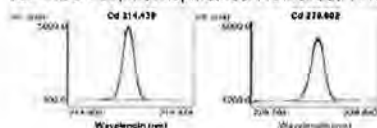
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report: i140128_M195-GLP_block1_mel_MSS.pdf_3035957
Electronically Signed By: Sarah Fong
Path: W:\s2\repository\repository\3035957
Created: 1/28/14 11:07 Audit ID: 3035957

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ICP-AES 720, Metals, Method/Worksheet: i140128.wvq All Data Report 1/28/2014, 11:05:33 AM, Analyst



1400588-2-3 (Samp)

1/28/2014, 10:51:58 AM

Rack 1, Tube 30

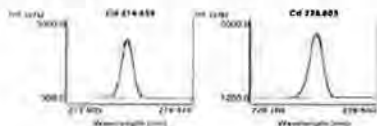
Weight: 1

Volume: 1

Dilution: 1

Label	Replicates Concentration				
Cd 214.439	7.73880	7.79367	7.79226	7.97992	7.75596
Cd 228.802	7.31137	7.31748	7.33207	7.42138	7.28601

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	7.81212	ppb	0.096724	1.2	2677.82	7.81212 ppb	1.00000
Cd 228.802	7.33366	ppb	0.051784	0.7	2507.34	7.33366 ppb	1.00000



357-2-4 (Samp)

1/28/2014, 10:54:40 AM

Rack 1, Tube 31

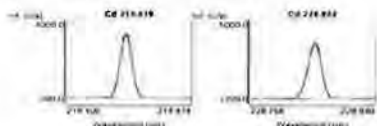
Weight: 1

Volume: 1

Dilution: 1

Label	Replicates Concentration				
Cd 214.439	6.75879	6.80012	6.79066	6.74787	6.84466
Cd 228.802	6.38654	6.44023	6.43642	6.35909	6.46801

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	6.78842	ppb	0.038165	0.6	2328.10	6.78842 ppb	1.00000
Cd 228.802	6.41806	ppb	0.044143	0.7	2194.75	6.41806 ppb	1.00000



LFB-1C (Samp)

1/28/2014, 10:57:22 AM

Rack 1, Tube 32

Weight: 1

Volume: 1

Dilution: 1

Label	Replicates Concentration				
Cd 214.439	15.0683	14.9834	15.0565	15.0944	15.0218
Cd 228.802	14.8867	14.8619	14.9134	14.9206	14.8302

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	15.0449	ppb	0.043158	0.3	5148.64	15.0449 ppb	1.00000
Cd 228.802	14.8826	ppb	0.037383	0.3	5084.56	14.8826 ppb	1.00000



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report_i140128_M195-GLP_block1_mel_MSS.pdf_3035957
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\30359571
Created: 1/28/14 11:07 Audit ID: 3035957

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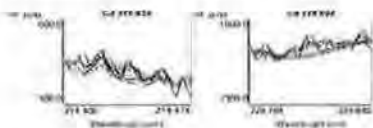
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LRB-IC (Samp) 1/28/2014, 11:00:04 AM Rack I, Tube 33
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	0.005386	0.006775u	0.024725	0.002040	0.025878
Cd 228.802	0.060694	0.102515	0.065848	0.038827	0.067439

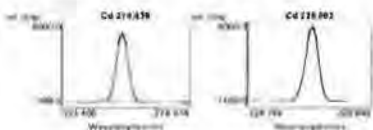
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	0.010251uv	ppb	0.014446	140.9	12.5646	0.010251	ppb 1.00000
Cd 228.802	0.067065	ppb	0.022893	34.1	26.4989	0.067065	ppb 1.00000



STD 3 140127 (Samp) 1/28/2014, 11:02:47 AM Rack I, Tube 34
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	15.5515	15.4869	15.3648	15.3145	15.1544
Cd 228.802	15.7571	15.6464	15.4806	15.4252	15.3358

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	15.3744	ppb	0.155013	1.0	5261.22	15.3744	ppb 1.00000
Cd 228.802	15.5290	ppb	0.170498	1.1	5305.27	15.5290	ppb 1.00000



pH of Smokeless Tobacco

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
	Buffer 7	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400894	1400894-1-1	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400895	1400895-1-2	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400891	1400891-1-3	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400892	1400892-1-4	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400895	1400895-1-5	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400896	1400896-1-6	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400891	1400891-1-7	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
888	888-1-8	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400894	1400894-1-9	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400896	1400896-1-10	27-Jan-14	7:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
	Buffer 7	27-Jan-14	8:04 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
	Buffer 7	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400892	1400892-2-2	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
888	888-2-3	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400893	1400893-2-4	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400893	1400893-2-5	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400891	1400891-2-6	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400895	1400895-2-7	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400894	1400894-2-8	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400896	1400896-2-9	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400896	1400896-2-10	27-Jan-14	8:05 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
	Buffer 7	27-Jan-14	8:25 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
	Buffer 7	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400892	1400892-3-1	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400895	1400895-3-2	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400894	1400894-3-3	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400892	1400892-3-4	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400894	1400894-3-5	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400891	1400891-3-6	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400895	1400895-3-7	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400893	1400893-3-8	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
1400891	1400891-3-9	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	
888	888-3-10	27-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Kpa.poma	

Date: 29-Jan-14
Revision

QSF-01106-V2

Labstat International ULC

M195-GLP Final Study Report
RJRT Study ID: 1061

Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary

M195-GLPwt_PH_B2 Instrument Run Summary.pdf_3041728
Electronically Signed By: Karamen Palamanian
Path: \\n22\apps\lrc\app\3041728
Created: 1/29/14 08:53 Audit ID: 3041728

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
	Buffer 7	27-Jan-14	9:23 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
	Buffer 7	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400891	1400891-4-1	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400892	1400892-4-2	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400895	1400895-4-3	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400896	1400896-4-4	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400893	1400893-4-5	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400891	1400891-4-6	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400893	1400893-4-7	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400896	1400896-4-8	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
888	888-4-9	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400896	1400896-4-10	27-Jan-14	9:24 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
	Buffer 7	27-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
	Buffer 7	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400895	1400895-5-1	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400892	1400892-5-2	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400893	1400893-5-3	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400892	1400892-5-4	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
888	888-5-5	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400894	1400894-5-6	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
1400894	1400894-5-7	27-Jan-14	9:50 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	
	Buffer 7	27-Jan-14	10:10 PM	TWT-00310	isher Accumet AR15 (LAB0652)	cpa/poma	

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Electronically Signed By: Kaitaneh Pejman
Path: \\fs2\repository\repository\3041728
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M195-GLP Final Study Report
RUR Study ID: 1061

Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary

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April 23, 2014

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Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
	Buffer 7	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400934	1400934-1-1	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400934	1400934-1-2	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400935	1400935-1-3	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400935	1400935-1-4	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400934	1400934-1-5	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400935	1400935-1-6	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
888	888-1-7	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400934	1400934-1-8	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400934	1400934-1-9	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400932	1400932-1-10	28-Jan-14	5:42 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
	Buffer 7	28-Jan-14	6:06 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
	Buffer 7	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400934	1400934-2-1	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400936	1400936-2-2	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400933	1400933-2-3	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
888	888-2-4	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400935	1400935-2-5	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400931	1400931-2-6	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400936	1400936-2-7	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400932	1400932-2-8	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400932	1400932-2-9	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400936	1400936-2-10	28-Jan-14	8:20 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
	Buffer 7	28-Jan-14	8:46 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
	Buffer 7	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400932	1400932-3-1	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400935	1400935-3-2	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400931	1400931-3-3	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400933	1400933-3-4	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400932	1400932-3-5	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400935	1400935-3-6	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
888	888-3-7	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400936	1400936-3-8	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400932	1400932-3-9	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
1400933	1400933-3-10	28-Jan-14	8:47 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	
	Buffer 7	28-Jan-14	9:10 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krijanma	

Date: 29-Jan-14
Revision:

QSF-01106-V2

Labstat International ULC

M195-GLP Final Study Report
RuRT Study ID: 1061

Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary

M195-GLP-PH_B3 Instrument Run Summary.pdf: 3044377
Electronically Signed By: Kathleen Palomian
Path: \\is2\repository\repository\3044377
Created: 1/29/14 12:07 April ID: 3044377

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
	Buffer 7	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400932	1400932-4-1	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400935	1400935-4-2	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400935	1400935-4-3	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400931	1400931-4-4	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
888	888-4-5	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400934	1400934-4-6	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400933	1400933-4-7	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400933	1400933-4-8	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400935	1400935-4-9	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400931	1400931-4-10	28-Jan-14	9:12 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
	Buffer 7	28-Jan-14	9:32 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
	Buffer 7	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
888	888-5-1	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400933	1400933-5-2	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400936	1400936-5-3	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400933	1400933-5-4	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400931	1400931-5-5	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400931	1400931-5-6	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
1400931	1400931-5-7	28-Jan-14	9:45 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	
	Buffer 7	28-Jan-14	10:06:00 PM	TWT-00310	isher Accumet AR15 (LAB0852)	Krajooma	

M195-GLP-Final PH_B3 Instrument Run Summary.pdf_3044377
Electronically Signed By: Kalaneh Paljooran
Path: \\is2reposit\reposit\3044377
Created: 1/29/14 12:07 Audit ID: 3044377

M195-GLP Final Study Report

RURT Study ID: 1061

Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary

Date: 28-Jan-14
Revision:

QSF-01106-V2

Labstat International ULC

Moisture of Smokeless Tobacco

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
888	888-1-1	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400894	1400894-1-2	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400892	1400892-1-3	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400892	1400892-1-4	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400894	1400894-1-5	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400891	1400891-1-6	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400894	1400894-1-7	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400893	1400893-1-8	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400893	1400893-1-9	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400891	1400891-1-10	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400891	1400891-1-11	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400894	1400894-1-12	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400893	1400893-1-13	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-1-14	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-1-15	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-1-16	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-1-17	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-1-18	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400891	1400891-1-19	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
888	888-1-20	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400893	1400893-2-1	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400894	1400894-2-2	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400893	1400893-2-3	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400892	1400892-2-4	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400894	1400894-2-5	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400891	1400891-2-6	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400893	1400893-2-7	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-2-8	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
888	888-2-9	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-2-10	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400895	1400895-2-11	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400893	1400893-2-12	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400891	1400891-2-13	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	
1400892	1400892-2-14	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,joema	

Date: 28-Jan-14
Revision:

QSF-01105-V2

Labstat International ULC

Study Identifier: M195-GLP
Study Report – Appendix F
Instrument Run Summary

M195-GLPWT_h2o_B2_Instrument Run Summary.pdf_3041398
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Created: 1/29/14 08:20 Audit ID: 3041398

M195-GLP Final Study Report
RJRT Study ID: 1061

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April 23, 2014

Page 1 of 4



Instrument Run Summary for Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
1400892	1400892-2-15	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400891	1400891-2-16	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400895	1400895-2-17	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400892	1400892-2-18	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
888	888-2-19	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400895	1400895-2-20	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400895	1400895-3-1	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400895	1400895-3-2	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400894	1400894-3-3	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
888	888-3-4	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400896	1400896-3-5	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400896	1400896-3-6	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	
1400892	1400892-3-7	27-Jan-14	8:10 PM	TWT-00300	Oven:LAB1201	Kpa,ooma	

M195-GLP Final Study Report RUR Study ID: 1061 Study Identifier: M195-GLP Study Report – Appendix F Instrument Run Summary

M195-GLPwt_h2o_82_instrument Run Summary.pdf, 3041398
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Created: 1/29/14 08:28 Audit ID: 3041398

Date: 289-Jan-14
Revision:

QSF-01106-V2

Labstat International U.S.C.

Instrument Run Summary for
Compound(s) Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
1400936	1400936-1-1	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400933	1400933-1-2	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
888	888-1-3	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400935	1400935-1-4	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400933	1400933-1-5	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400931	1400931-1-6	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400935	1400935-1-7	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400932	1400932-1-8	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400934	1400934-1-9	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400934	1400934-1-10	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400935	1400935-1-11	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400931	1400931-1-12	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
888	888-1-13	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400936	1400936-1-14	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400934	1400934-1-15	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400932	1400932-1-16	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400933	1400933-1-17	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400936	1400936-1-18	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400935	1400935-1-19	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400932	1400932-1-20	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
	Blank	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400934	1400934-2-1	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400933	1400933-2-2	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400936	1400936-2-3	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400932	1400932-2-4	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
888	888-2-5	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400935	1400935-2-6	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400931	1400931-2-7	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400931	1400931-2-8	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400935	1400935-2-9	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400936	1400936-2-10	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400931	1400931-2-11	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400933	1400933-2-12	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	
1400935	1400935-2-13	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	Kpa,coma	

Date: 29-Jan-14
Revision:

QSF-01106-V2

Labstat International, LLC

M195-GLP, Ppt, H2O, B3, Instrument Run Summary.pdf, 3045633
Electronically Signed By: Karamah Palomari
Path: \\labstat\reports\instrument\3045633
Created: 1/29/14 14:13 Audit ID: 3045633

Study Identifier: M195-GLP
Study Report – Appendix F
Instrument Run Summary

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Repeats)
1400934	1400934-2-14	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400936	1400936-2-15	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400932	1400932-2-16	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400932	1400932-2-17	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
888	888-2-18	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400932	1400932-2-19	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400931	1400931-2-20	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
	Blank	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400934	1400934-3-1	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400933	1400933-3-2	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400934	1400934-3-3	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400933	1400933-3-4	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
888	888-3-5	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400936	1400936-3-6	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
1400931	1400931-3-7	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	
	Blank	28-Jan-14	9:35 PM	TWT-00300	Oven:LAB1201	cpj,aoma	

M195-GLP B3 H2O B3 Instrument Run Summary.pdf_3045533
Electronically Signed By: Katerah Pujawan
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Study Identifier: M195-GLP
Study Report – Appendix F
Instrument Run Summary

M195-GLP Final Study Report
RUR Study ID: 1061



Nicotine in Smokeless Tobacco



AM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPw_alk_b2_instrument Run Summary.xls_3086507
Electronically Signed by: Peter Olbach
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Created: 2/5/2014 11:37:58 AM Audit ID: 3085507

Study: M195-GLPw_alk_b2_instrument

Instrument: HPLC

Page: 1 of 1

Instrument Run Summary for
Component: Deuterated

Sample ID	Sample Name (Sample ID) - Run - (Peak)	Injection Date	Injection Time	Method ID	Injection Volume (µL)	Injection Rate (µL/min)	Injection Temperature (°C)	Injection Volume (µL)
S10 2 140129	S10 2 140129	10 Jan 14	22.15	0.0001-100.0000	10.00 (1.00) (1.0)	1.00 (1.00) (1.0)	10.00 (1.00) (1.0)	10.00 (1.00) (1.0)
1400001	1400001 1.1	10 Jan 14	22.15					
1400002	1400002 1.2	11 Jan 14	0.14					
1400003	1400003 1.3	11 Jan 14	0.53					
1400004	1400004 1.4	11 Jan 14	1.33					
1400005	1400005 1.5	11 Jan 14	2.15					
1400006	1400006 1.6	11 Jan 14	2.52					
1400007	1400007 1.7	11 Jan 14	3.17					
1400008	1400008 1.8	11 Jan 14	4.17					
1400009	1400009 1.9	11 Jan 14	5.17					
1400010	1400010 1.10	11 Jan 14	6.17					
S10 2 140129	S10 2 140129	11 Jan 14	6.17					
1400011	1400011 1.11	11 Jan 14	7.17					
1400012	1400012 1.12	11 Jan 14	8.01					
1400013	1400013 1.13	11 Jan 14	8.89					
1400014	1400014 1.14	11 Jan 14	9.73					
1400015	1400015 1.15	11 Jan 14	10.58					
1400016	1400016 1.16	11 Jan 14	11.47					
1400017	1400017 1.17	11 Jan 14	12.37					
1400018	1400018 1.18	11 Jan 14	13.26					
1400019	1400019 1.19	11 Jan 14	14.16					
1400020	1400020 1.20	11 Jan 14	15.26					
S10 2 140129	S10 2 140129	11 Jan 14	16.06					
1400021	1400021 1.21	11 Jan 14	16.45					
1400022	1400022 1.22	11 Jan 14	16.95					
1400023	1400023 1.23	11 Jan 14	17.54					
1400024	1400024 1.24	11 Jan 14	18.14					
1400025	1400025 1.25	11 Jan 14	18.74					
1400026	1400026 1.26	11 Jan 14	19.33					
1400027	1400027 1.27	11 Jan 14	20.02					
1400028	1400028 1.28	11 Jan 14	20.72					
1400029	1400029 1.29	11 Jan 14	21.42					
1400030	1400030 1.30	11 Jan 14	22.12					
S10 2 140129	S10 2 140129	11 Jan 14	22.12					
1400031	1400031 1.31	11 Jan 14	22.81					
1400032	1400032 1.32	11 Jan 14	23.51					
1400033	1400033 1.33	11 Jan 14	24.21					
1400034	1400034 1.34	11 Jan 14	24.91					
1400035	1400035 1.35	11 Jan 14	25.61					
1400036	1400036 1.36	11 Jan 14	26.31					
1400037	1400037 1.37	11 Jan 14	27.01					
1400038	1400038 1.38	11 Jan 14	27.71					
1400039	1400039 1.39	11 Jan 14	28.41					
1400040	1400040 1.40	11 Jan 14	29.11					
S10 2 140129	S10 2 140129	11 Jan 14	29.11					
1400041	1400041 1.41	11 Jan 14	29.81					
1400042	1400042 1.42	11 Jan 14	30.51					
1400043	1400043 1.43	11 Jan 14	31.21					
1400044	1400044 1.44	11 Jan 14	31.91					
1400045	1400045 1.45	11 Jan 14	32.61					
1400046	1400046 1.46	11 Jan 14	33.31					
S10 2 140129	S10 2 140129	11 Jan 14	33.31					
1400047	1400047 1.47	11 Jan 14	34.01					
1400048	1400048 1.48	11 Jan 14	34.71					
1400049	1400049 1.49	11 Jan 14	35.41					
1400050	1400050 1.50	11 Jan 14	36.11					
S10 2 140129	S10 2 140129	11 Jan 14	36.11					
1400051	1400051 1.51	11 Jan 14	36.81					
1400052	1400052 1.52	11 Jan 14	37.51					
1400053	1400053 1.53	11 Jan 14	38.21					
1400054	1400054 1.54	11 Jan 14	38.91					
1400055	1400055 1.55	11 Jan 14	39.61					
1400056	1400056 1.56	11 Jan 14	40.31					
1400057	1400057 1.57	11 Jan 14	41.01					
1400058	1400058 1.58	11 Jan 14	41.71					
1400059	1400059 1.59	11 Jan 14	42.41					
1400060	1400060 1.60	11 Jan 14	43.11					
S10 2 140129	S10 2 140129	11 Jan 14	43.11					
1400061	1400061 1.61	11 Jan 14	43.81					
1400062	1400062 1.62	11 Jan 14	44.51					
1400063	1400063 1.63	11 Jan 14	45.21					
1400064	1400064 1.64	11 Jan 14	45.91					
1400065	1400065 1.65	11 Jan 14	46.61					
1400066	1400066 1.66	11 Jan 14	47.31					
1400067	1400067 1.67	11 Jan 14	48.01					
1400068	1400068 1.68	11 Jan 14	48.71					
1400069	1400069 1.69	11 Jan 14	49.41					
1400070	1400070 1.70	11 Jan 14	50.11					
S10 2 140129	S10 2 140129	11 Jan 14	50.11					
1400071	1400071 1.71	11 Jan 14	50.81					
1400072	1400072 1.72	11 Jan 14	51.51					
1400073	1400073 1.73	11 Jan 14	52.21					
1400074	1400074 1.74	11 Jan 14	52.91					
1400075	1400075 1.75	11 Jan 14	53.61					
1400076	1400076 1.76	11 Jan 14	54.31					
1400077	1400077 1.77	11 Jan 14	55.01					
1400078	1400078 1.78	11 Jan 14	55.71					
1400079	1400079 1.79	11 Jan 14	56.41					
1400080	1400080 1.80	11 Jan 14	57.11					
S10 2 140129	S10 2 140129	11 Jan 14	57.11					
1400081	1400081 1.81	11 Jan 14	57.81					
1400082	1400082 1.82	11 Jan 14	58.51					
1400083	1400083 1.83	11 Jan 14	59.21					
1400084	1400084 1.84	11 Jan 14	59.91					
1400085	1400085 1.85	11 Jan 14	60.61					
1400086	1400086 1.86	11 Jan 14	61.31					
1400087	1400087 1.87	11 Jan 14	62.01					
1400088	1400088 1.88	11 Jan 14	62.71					
1400089	1400089 1.89	11 Jan 14	63.41					
1400090	1400090 1.90	11 Jan 14	64.11					
S10 2 140129	S10 2 140129	11 Jan 14	64.11					
1400091	1400091 1.91	11 Jan 14	64.81					
1400092	1400092 1.92	11 Jan 14	65.51					
1400093	1400093 1.93	11 Jan 14	66.21					
1400094	1400094 1.94	11 Jan 14	66.91					
1400095	1400095 1.95	11 Jan 14	67.61					
1400096	1400096 1.96	11 Jan 14	68.31					
1400097	1400097 1.97	11 Jan 14	69.01					
1400098	1400098 1.98	11 Jan 14	69.71					
1400099	1400099 1.99	11 Jan 14	70.41					
1400100	1400100 2.00	11 Jan 14	71.11					
S10 2 140129	S10 2 140129	11 Jan 14	71.11					
1400101	1400101 2.01	11 Jan 14	71.81					
1400102	1400102 2.02	11 Jan 14	72.51					
1400103	1400103 2.03	11 Jan 14	73.21					
1400104	1400104 2.04	11 Jan 14	73.91					
1400105	1400105 2.05	11 Jan 14	74.61					
1400106	1400106 2.06	11 Jan 14	75.31					
1400107	1400107 2.07	11 Jan 14	76.01					
1400108	1400108 2.08	11 Jan 14	76.71					
1400109	1400109 2.09	11 Jan 14	77.41					
1400110	1400110 2.10	11 Jan 14	78.11					
S10 2 140129	S10 2 140129	11 Jan 14	78.11					
1400111	1400111 2.11	11 Jan 14	78.81					
1400112	1400112 2.12	11 Jan 14	79.51					
1400113	1400113 2.13	11 Jan 14	80.21					
1400114	1400114 2.14	11 Jan 14	80.91					
1400115	1400115 2.15	11 Jan 14	81.61					
1400116	1400116 2.16	11 Jan 14	82.31					
1400117	1400117 2.17	11 Jan 14	83.01					
1400118	1400118 2.18	11 Jan 14	83.71					
1400119	1400119 2.19	11 Jan 14	84.41					
1400120	1400120 2.20	11 Jan 14	85.11					
S10 2 140129	S10 2 140129	11 Jan 14	85.11					
1400121	1400121 2.21	11 Jan 14	85.81					
1400122	1400122 2.22	11 Jan 14	86.51					
1400123	1400123 2.23	11 Jan 14	87.21					
1400124	1400124 2.24	11 Jan 14	87.91					
1400125	1400125 2.25	11 Jan 14	88.61					
1400126	1400126 2.26	11 Jan 14	89.31					
1400127	1400127 2.27	11 Jan 14	90.01					
1400128	1400128 2.28	11 Jan 14	90.71					
1400129	1400129 2.29	11 Jan 14	91.41					
1400130	1400130 2.30	11 Jan 14	92.11					
S10 2 140129	S10 2 140129	11 Jan 14	92.11					
1400131	1400131 2.31	11 Jan 14	92.81					
1400132	1400132 2.32	11 Jan 14	93.51					
1400133	1400133 2.33	11 Jan 14	94.21					
1400134	1400134 2.34	11 Jan 14	94.91					
1400135	1400135 2.35	11 Jan 14	95.61					
1400136	1400136 2.36	11 Jan 14	96.31					
1400137	1400137 2.37	11 Jan 14	97.01					
1400138	1400138 2.38	11 Jan 14	97.71					
1400139	1400139 2.39	11 Jan 14	98.41					
1400140	1400140 2.40	11 Jan 14	99.11					
S10 2 140129	S10 2 140129	11 Jan 14	99.11					
14001								

Documents were recertified on a later date due to the quality of printouts in the original certification.



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195-GLP.wt alk_b2_SampleChrom.pdf: 3381800
Path: Ws2Repository\repository\3381800
Electronically Signed By: Peter Olbach On 3/26/14 21:07 Audit ID: 3381800

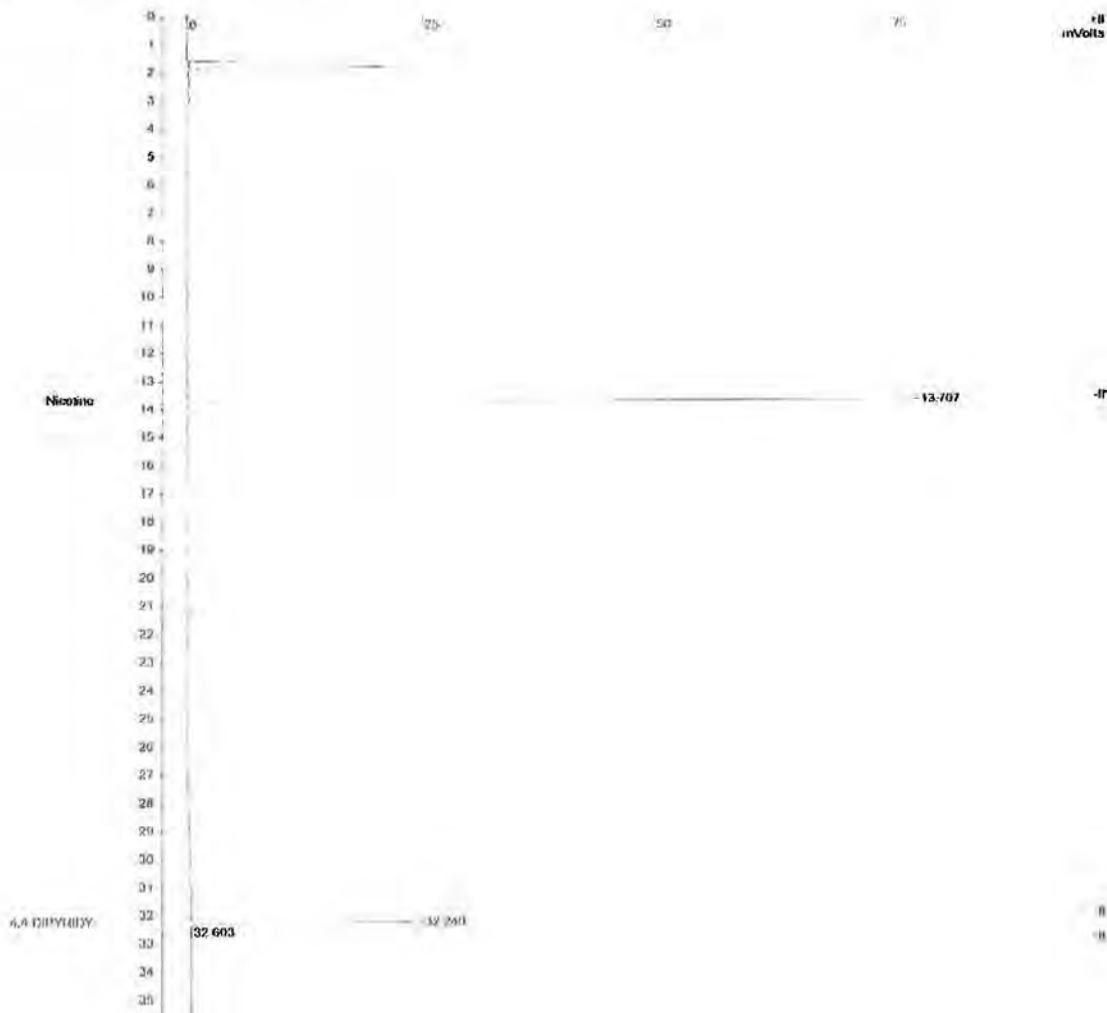
File: Alkaloids
Run File: c:\star\data\alkaloids\project\m195-glp\samples\block 2\alkg06 140130\m195 glp.wt alk_b2 140209\% 1 1 1 15-2014_11\1415h on_00.mz
Method File: c:\star\data\alkaloids\project\m195-glp\protocols\alkg06 140130.mz
Sample ID: 1402091:1

Injection Date: 1/15/2014 11:18 PM Calculation Date: 1/23/2014 7:51 PM

Operator: Analyst Detector Type: 3000 (1 Volt)
Workstation: J7010 Bus Address: 44
Instrument: AG GC 46 Sample Rate: 5.00 Hz
Channel: Rear = TSP Run Time: 35.197 min

** GC Workstation Mait: Instrument Version 6.41 ** 00184 1466 c65-20fc **

Chart Speed: 5.00 Volts Attenuation: 111 Zero Offset: 23
Start Time: 3.000 min End Time: 35.197 min Min: 13.707





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLP, alk, b2, SampleChrom.pdf, 3381800
Print: US2a2c3b3e3d3f3g3h3i3j3k3l3m3n3o3p3q3r3s3t3u3v3w3x3y3z3aa3ab3ac3ad3ae3af3ag3ah3ai3aj3ak3al3am3an3ao3ap3aq3ar3as3at3au3av3aw3ax3ay3az3ba3bb3bc3bd3be3bf3bg3bh3bi3bj3bk3bl3bm3bn3bo3bp3bq3br3bs3bt3bu3bv3bw3bx3by3bz3ca3cb3cc3cd3ce3cf3cg3ch3ci3cj3ck3cl3cm3cn3co3cp3cq3cr3cs3ct3cu3cv3cw3cx3cy3cz3da3db3dc3dd3de3df3dg3dh3di3dj3dk3dl3dm3dn3do3dp3dq3dr3ds3dt3du3dv3dw3dx3dy3dz3ea3eb3ec3ed3ee3ef3eg3eh3ei3ej3ek3el3em3en3eo3ep3eq3er3es3et3eu3ev3ew3ex3ey3ez3fa3fb3fc3fd3fe3ff3fg3fh3fi3fj3fk3fl3fm3fn3fo3fp3fq3fr3fs3ft3fu3fv3fw3fx3fy3fz3ga3gb3gc3gd3ge3gf3gg3gh3gi3gj3gk3gl3gm3gn3go3gp3gq3gr3gs3gt3gu3gv3gw3gx3gy3gz3ha3hb3hc3hd3he3hf3hg3hh3hi3hj3hk3hl3hm3hn3ho3hp3hq3hr3hs3ht3hu3hv3hw3hx3hy3hz3ia3ib3ic3id3ie3if3ig3ih3ii3ij3ik3il3im3in3io3ip3iq3ir3is3it3iu3iv3iw3ix3iy3iz3ja3jb3jc3jd3je3jf3jg3jh3ji3jj3jk3jl3jm3jn3jo3jp3jq3jr3js3jt3ju3jv3jw3jx3jy3jz3ka3kb3kc3kd3ke3kf3kg3kh3ki3kj3kk3kl3km3kn3ko3kp3kq3kr3ks3kt3ku3kv3kw3kx3ky3kz3la3lb3lc3ld3le3lf3lg3lh3li3lj3lk3ll3lm3ln3lo3lp3lq3lr3ls3lt3lu3lv3lw3lx3ly3lz3ma3mb3mc3md3me3mf3mg3mh3mi3mj3mk3ml3mm3mn3mo3mp3mq3mr3ms3mt3mu3mv3mw3mx3my3mz3na3nb3nc3nd3ne3nf3ng3nh3ni3nj3nk3nl3nm3nn3no3np3nq3nr3ns3nt3nu3nv3nw3nx3ny3nz3oa3ob3oc3od3oe3of3og3oh3oi3oj3ok3ol3om3on3oo3op3oq3or3os3ot3ou3ov3ow3ox3oy3oz3pa3pb3pc3pd3pe3pf3pg3ph3pi3pj3pk3pl3pm3pn3po3pp3pq3pr3ps3pt3pu3pv3pw3px3py3pz3ra3rb3rc3rd3re3rf3rg3rh3ri3rj3rk3rl3rm3rn3ro3rp3rq3rr3rs3rt3ru3rv3rw3rx3ry3rz3sa3sb3sc3sd3se3sf3sg3sh3si3sj3sk3sl3sm3sn3so3sp3sq3sr3ss3st3su3sv3sw3sx3sy3sz3ta3tb3tc3td3te3tf3tg3th3ti3tj3tk3tl3tm3tn3to3tp3tq3tr3ts3tt3tu3tv3tw3tx3ty3tz3ua3ub3uc3ud3ue3uf3ug3uh3ui3uj3uk3ul3um3un3uo3up3uq3ur3us3ut3uu3uv3uw3ux3uy3uz3va3vb3vc3vd3ve3vf3vg3vh3vi3vj3vk3vl3vm3vn3vo3vp3vq3vr3vs3vt3vu3vv3vw3vx3vy3vz3wa3wb3wc3wd3we3wf3wg3wh3wi3wj3wk3wl3wm3wn3wo3wp3wq3wr3ws3wt3wu3wv3ww3wx3wy3wz3xa3xb3xc3xd3xe3xf3xg3xh3xi3xj3xk3xl3xm3xn3xo3xp3xq3xr3xs3xt3xu3xv3xw3xx3xy3xz3ya3yb3yc3yd3ye3yf3yg3yh3yi3yj3yk3yl3ym3yn3yo3yp3yq3yr3ys3yt3yu3yv3yw3yx3yy3yz3za3zb3zc3zd3ze3zf3zg3zh3zi3zj3zk3zl3zm3zn3zo3zp3zq3zr3zs3zt3zu3zv3zw3zx3zy3zz

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Print Date: Wed Mar 26 20:30:40 2014

Title : M195-GLP
Run File : C:\Users\Labstat\Documents\M195-GLP\SampleChrom.pdf
Method File : C:\Users\Labstat\Documents\M195-GLP\SampleChrom.pdf
Sample ID : 3381800

Injection Date: 1/30/2014 11:34 PM Calculation Date: 1/31/2014 2:53 PM

Detector : FID
Injection Volume : 10 µL
Sample Name : M195-GLP
Run Time : 15.797 min

-- GC Acquisition File: Instrument Version 6.41 -- 0014-3448-400-2010 --

Run Mode : Analyze

Peak Measurement: Peak Area

Calculation Type: Internal Standard

Peak No.	Peak Name	Ret. Time (min)	Area (counts)	Area (µg)	Area (mg)	Area (g)	Area (kg)	Area (t)	Area (M)	Area (B)	Area (Y)	Area (Z)	Area (A)	Area (S)	Area (D)	Area (F)	Area (G)	Area (H)	Area (I)	Area (J)	Area (K)	Area (L)	Area (M)	Area (N)	Area (O)	Area (P)	Area (Q)	Area (R)	Area (S)	Area (T)	Area (U)	Area (V)	Area (W)	Area (X)	Area (Y)	Area (Z)
1	M195-GLP	15.797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797	15,797

Search Criteria: 15.797 min

1 - Internal Standard Peak

Total Identified Peaks: 1

Detected Peaks: 1

Standard Peak Amount: 1.0 µg

Sample Peak Amount: 1.0 µg

Multiplier: 1

Baseline Offset: 15.797 min

Baseline Offset: 15.797 min

Peak Name: M195-GLP

Peak Position: 1



DM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLP-Wt alk_b2_SampleChrom.pdf 3381800
Path: \\fs2\\repository\\repository\\3381800\\
Electronically Signed By: Peter Olbach On: 3/26/14 21:07 Audit ID: 3381800

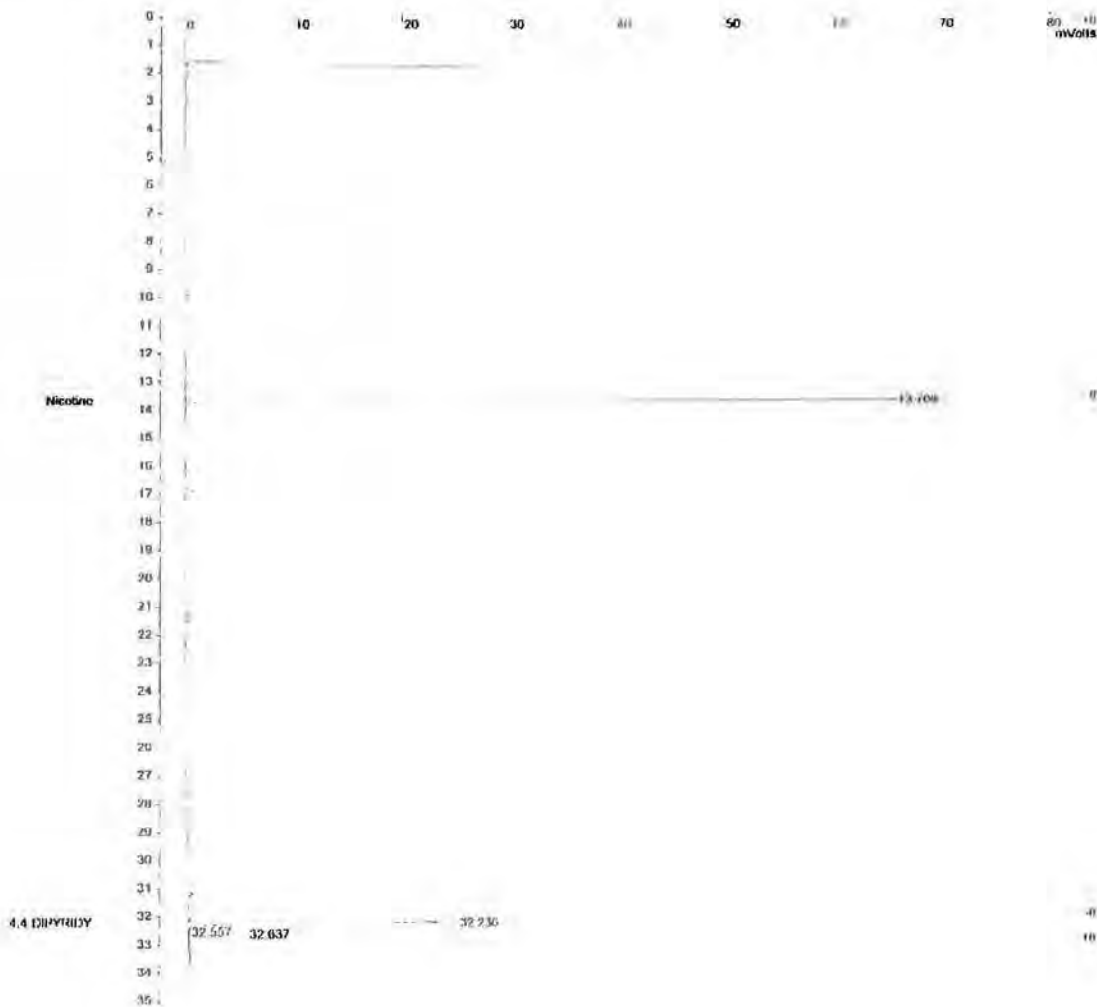
Title: Alpha.mxd
Run File: c:\star\data\alkaloids\project\m195-glp\samples\block 2\data\glc_b2_1495395_10_1_1_11_2014_0_01_0_00.mxd
Method File: c:\star\data\alkaloids\project\m195-glp\records\data\glc_b2_149136.mxd
Sample ID: M195-1 10

Injection Date: 1/11/2014 5:11 AM Calculation Date: 1/11/2014 3:17 PM

Operator: Analyst Detector Type: 6801 Multi
Configuration: STD00 Run Address: 44
Instrument: WT GC-MS Sample Rate: 5.00 Hz
Channel: Scan - TSI Run Time: 46.759 min

** GC Workstation Multi-fragment Version 6.11 ** 09186-8186-04-2010 **

Start: 00:00:00 06:17:11 Attenuation: 100 Zero Offset: 0
Start Time: 0:00:00 min End Time: 15:59:00 min GC / Tick: 0.01





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GLP-Vol alk b2 SampleChrom.pdf 3381800
Path: \\hsa\repository\repository\3381800
Electronically Signed By: Peter Obach On: 3/26/14 21:07 Audit ID: 3381800

Print Date: Wed Mar 20 20:35:26 2014 Page: 1 of 1

File: 3381800
Run Date: 3/26/2014 11:17:00
Run Time: 11:17:00
Sample ID: 119044-1-12

Injection Date: 3/26/2014 11:17:00
Injection Volume: 10 µL
Injection Rate: 10 µL/min
Injection Pressure: 10.00 MPa
Injection Temperature: 10.00 °C
Injection Humidity: 10.00 %

Operator: Analyst
Sample Name: 3381800
Sample ID: 119044-1-12
Sample Weight: 10.00 mg
Sample Volume: 10.00 µL
Sample Concentration: 1.00 mg/mL

GC Method: M195-GLP
GC Version: 1.0
GC Parameters: 10.00 MPa, 10.00 °C, 10.00 %

GC Results: 10.00 MPa, 10.00 °C, 10.00 %

GC Status: 10.00 MPa, 10.00 °C, 10.00 %

GC Error: 10.00 MPa, 10.00 °C, 10.00 %

GC Message: 10.00 MPa, 10.00 °C, 10.00 %

GC Note: 10.00 MPa, 10.00 °C, 10.00 %

GC Comment: 10.00 MPa, 10.00 °C, 10.00 %

GC Footer: 10.00 MPa, 10.00 °C, 10.00 %



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GL174 alk b2 SampleChrom.pdf 3381800
Path: Ms2repository\repository\3381800\
Electronically Signed By: Peter Olbach On: 3/26/14 21:07 Audit ID: 3381800

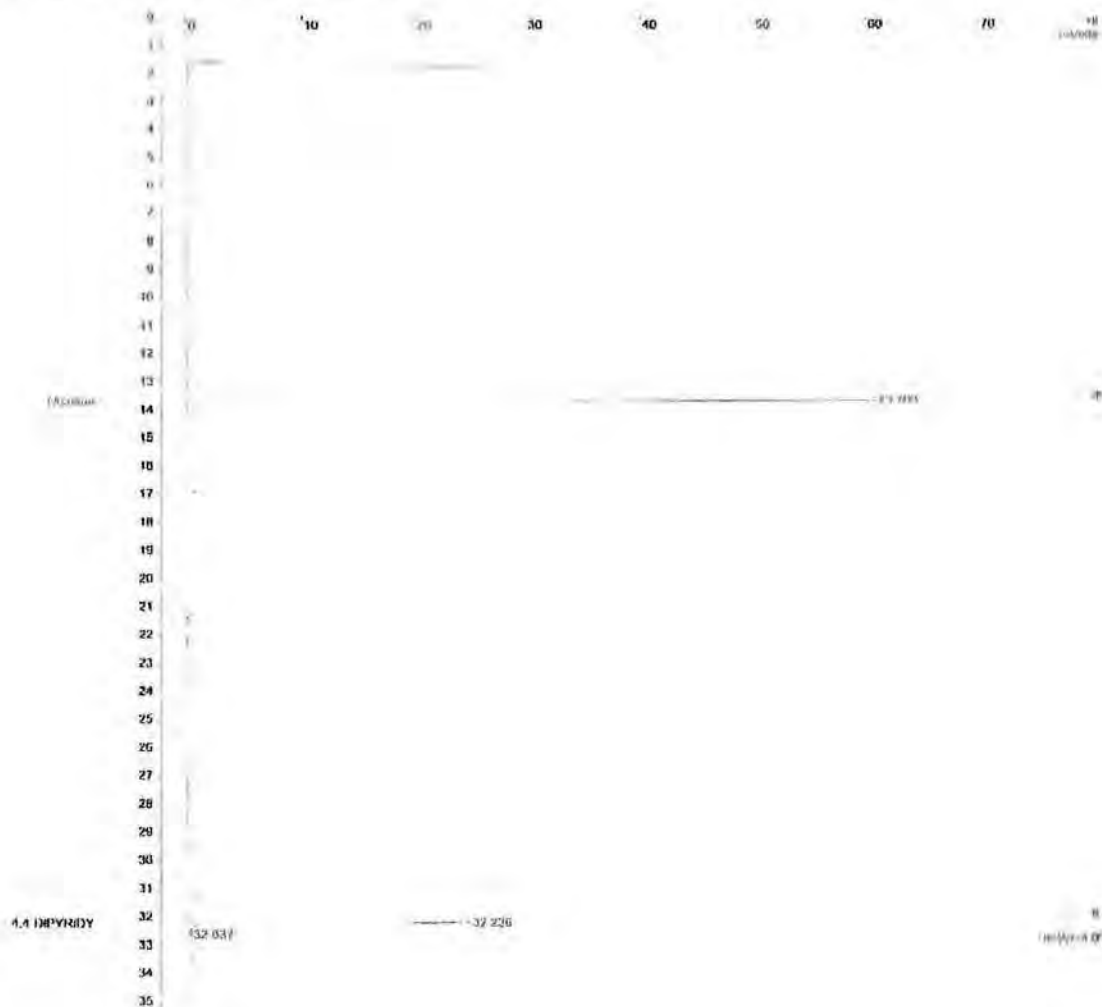
File	data
Run File	~/data/algaloids/projects/194-gls/samples/bioeq_2142gef_140191-195-gls/alk_b2_1400089_1_15_1_1_11_2015_10-07-13_wk_10.run
Method File	~/data/algaloids/projects/194-gls/methods/2qes_140191.rn
Sample ID	1400476_1_15

Injection Date: 1/11/2014 10:08 AM Calculation Date: 1/11/2014 4:19 PM

Operator	Analyst	Detectors Type	1820 (1 Volt)
Amplification	Type	Box Address	41
Interlocks	W/O 4	Sample Size	2.50 ml
Alarm	Bar 75	Run Time	15.14 min

** GC Workstation: Full Instrument Version 4.41 ** 00101-1608-065/2016 **

Start Speed	0.38 cm/min	Attenuation	111	Zero Offset	21
Start Time	0.000 min	End Time	35.707 min	Min / Tick	1.0





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GLP, alk 12, SampleChrom.pdf, 3381800
Path: \\fs2\repository\reports\3381800
Electronically Signed By: Peter Obach On: 3/26/14 2:10:07 Audit ID: 3381800

Print Date: Wed Mar 26 20:45:14 2014 Page: 1 of 1

Title : M195-GLP
Run File : C:\Instruments\Labstat\Software\SampleChrom\SampleChrom.pdf
Method File : C:\Instruments\Labstat\Software\SampleChrom\SampleChrom.pdf
Sample ID : 3381800

Injection Date: 1/15/2014 10:10 AM Calculation Date: 1/15/2014 10:10 AM

Operator : Analyst
Injection Time: 10:10 AM
Injection Volume: 10 µL
Injection Rate: 10.00 µL/min
Sample Rate: 10.00 µL/min
Channel : MS - TSD

** GC Method: M195-GLP, alk 12, SampleChrom.pdf, 3381800 **

Run Mode : Normal
Run Parameters : Run Mode: Normal
Injection Type: Normal, Standard

Peak	Ret. Time	Area	Height	Width	Ratio
1	1.167	15750	10.00	0.10	1.00
2	1.167	15750	10.00	0.10	1.00
3	1.167	15750	10.00	0.10	1.00
4	1.167	15750	10.00	0.10	1.00
5	1.167	15750	10.00	0.10	1.00
6	1.167	15750	10.00	0.10	1.00
7	1.167	15750	10.00	0.10	1.00
8	1.167	15750	10.00	0.10	1.00
9	1.167	15750	10.00	0.10	1.00
10	1.167	15750	10.00	0.10	1.00
11	1.167	15750	10.00	0.10	1.00
12	1.167	15750	10.00	0.10	1.00
13	1.167	15750	10.00	0.10	1.00
14	1.167	15750	10.00	0.10	1.00
15	1.167	15750	10.00	0.10	1.00
16	1.167	15750	10.00	0.10	1.00
17	1.167	15750	10.00	0.10	1.00
18	1.167	15750	10.00	0.10	1.00
19	1.167	15750	10.00	0.10	1.00
20	1.167	15750	10.00	0.10	1.00
21	1.167	15750	10.00	0.10	1.00
22	1.167	15750	10.00	0.10	1.00
23	1.167	15750	10.00	0.10	1.00
24	1.167	15750	10.00	0.10	1.00
25	1.167	15750	10.00	0.10	1.00
26	1.167	15750	10.00	0.10	1.00
27	1.167	15750	10.00	0.10	1.00
28	1.167	15750	10.00	0.10	1.00
29	1.167	15750	10.00	0.10	1.00
30	1.167	15750	10.00	0.10	1.00
31	1.167	15750	10.00	0.10	1.00
32	1.167	15750	10.00	0.10	1.00
33	1.167	15750	10.00	0.10	1.00
34	1.167	15750	10.00	0.10	1.00
35	1.167	15750	10.00	0.10	1.00
36	1.167	15750	10.00	0.10	1.00
37	1.167	15750	10.00	0.10	1.00
38	1.167	15750	10.00	0.10	1.00
39	1.167	15750	10.00	0.10	1.00
40	1.167	15750	10.00	0.10	1.00
41	1.167	15750	10.00	0.10	1.00
42	1.167	15750	10.00	0.10	1.00
43	1.167	15750	10.00	0.10	1.00
44	1.167	15750	10.00	0.10	1.00
45	1.167	15750	10.00	0.10	1.00
46	1.167	15750	10.00	0.10	1.00
47	1.167	15750	10.00	0.10	1.00
48	1.167	15750	10.00	0.10	1.00
49	1.167	15750	10.00	0.10	1.00
50	1.167	15750	10.00	0.10	1.00
51	1.167	15750	10.00	0.10	1.00
52	1.167	15750	10.00	0.10	1.00
53	1.167	15750	10.00	0.10	1.00
54	1.167	15750	10.00	0.10	1.00
55	1.167	15750	10.00	0.10	1.00
56	1.167	15750	10.00	0.10	1.00
57	1.167	15750	10.00	0.10	1.00
58	1.167	15750	10.00	0.10	1.00
59	1.167	15750	10.00	0.10	1.00
60	1.167	15750	10.00	0.10	1.00
61	1.167	15750	10.00	0.10	1.00
62	1.167	15750	10.00	0.10	1.00
63	1.167	15750	10.00	0.10	1.00
64	1.167	15750	10.00	0.10	1.00
65	1.167	15750	10.00	0.10	1.00
66	1.167	15750	10.00	0.10	1.00
67	1.167	15750	10.00	0.10	1.00
68	1.167	15750	10.00	0.10	1.00
69	1.167	15750	10.00	0.10	1.00
70	1.167	15750	10.00	0.10	1.00
71	1.167	15750	10.00	0.10	1.00
72	1.167	15750	10.00	0.10	1.00
73	1.167	15750	10.00	0.10	1.00
74	1.167	15750	10.00	0.10	1.00
75	1.167	15750	10.00	0.10	1.00
76	1.167	15750	10.00	0.10	1.00
77	1.167	15750	10.00	0.10	1.00
78	1.167	15750	10.00	0.10	1.00
79	1.167	15750	10.00	0.10	1.00
80	1.167	15750	10.00	0.10	1.00
81	1.167	15750	10.00	0.10	1.00
82	1.167	15750	10.00	0.10	1.00
83	1.167	15750	10.00	0.10	1.00
84	1.167	15750	10.00	0.10	1.00
85	1.167	15750	10.00	0.10	1.00
86	1.167	15750	10.00	0.10	1.00
87	1.167	15750	10.00	0.10	1.00
88	1.167	15750	10.00	0.10	1.00
89	1.167	15750	10.00	0.10	1.00
90	1.167	15750	10.00	0.10	1.00
91	1.167	15750	10.00	0.10	1.00
92	1.167	15750	10.00	0.10	1.00
93	1.167	15750	10.00	0.10	1.00
94	1.167	15750	10.00	0.10	1.00
95	1.167	15750	10.00	0.10	1.00
96	1.167	15750	10.00	0.10	1.00
97	1.167	15750	10.00	0.10	1.00
98	1.167	15750	10.00	0.10	1.00
99	1.167	15750	10.00	0.10	1.00
100	1.167	15750	10.00	0.10	1.00

System Code: M195-GLP
System Name: M195-GLP
System Path: C:\Instruments\Labstat\Software\SampleChrom\SampleChrom.pdf
System Version: 1.0.0.0
System Date: 1/15/2014 10:10 AM
System Time: 10:10 AM
System User: Analyst

Total Ionization Count: 1.00e+06
Total Ionization Rate: 1.00e+06
Total Ionization Time: 1.00e+06
Total Ionization Volume: 1.00e+06
Total Ionization Area: 1.00e+06
Total Ionization Height: 1.00e+06
Total Ionization Width: 1.00e+06
Total Ionization Ratio: 1.00e+06

Standard Peak Amount: 1.00e+06
Standard Peak Volume: 1.00e+06
Standard Peak Area: 1.00e+06
Standard Peak Height: 1.00e+06
Standard Peak Width: 1.00e+06
Standard Peak Ratio: 1.00e+06

Baseline Offset: 1.00e+06
Baseline Volume: 1.00e+06
Baseline Area: 1.00e+06
Baseline Height: 1.00e+06
Baseline Width: 1.00e+06
Baseline Ratio: 1.00e+06

Noise Level: 1.00e+06
Noise Volume: 1.00e+06
Noise Area: 1.00e+06
Noise Height: 1.00e+06
Noise Width: 1.00e+06
Noise Ratio: 1.00e+06

Unit: 1.00e+06
Injection Volume: 1.00e+06
Injection Rate: 1.00e+06
Injection Time: 1.00e+06
Injection Area: 1.00e+06
Injection Height: 1.00e+06
Injection Width: 1.00e+06
Injection Ratio: 1.00e+06



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GL12at alk b2 SampleChrom.pdf 3381800
Path: \\fs2\repository\repository\3381800\1
Electronically Signed By: Peter Olbach On: 3/26/14 21:07 Audit ID: 3381800

Title	Alkaloids
Run File	c:\star\data\alkaloids\project\m09_glsampler\bldch_d\algex_1((1))\03_glsr_vib_b0_00658 - 25_5 - 11\2017_K\4\47_KR_RLX.m
Acqrd File	c:\star\data\alkaloids\project\m09_glsampler\bldch_d\algex_1((1))\03_glsr_vib_b0_00658 - 25_5 - 11\2017_K\4\47_KR_RLX.m
Sample ID	1402022-1-X

Integration Date: 1/11/2014 8:05 AM Calculation Date: 1/11/2014 8:05 AM

Version:	4.4.10	Release Type:	RC0 (1 Nov 2011)
Architecture:	32bit	win installer:	11
Installation:	OK	Sample rate:	11.025 kHz
Language:	lang = EN	Run time:	11:47:55

** GC Workstation Data Instrument Version 6.11 ** 00:24-1498-663-2010 **

Chart Speed = 0.50 cm/min Attenuation = 310 Zero Offset = 0.0
Start Time = 1.000 min End Time = 15.777 min Wt. Time = 0.0



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLP v4.0 b2 SampleChrom.pdf 3381800
Printed: 4/23/2014 11:03:49 AM
Electronically Signed By: Peter Olsch On: 3/23/2014 2:07 Audit ID: 3381800

Page 1 of 1

Print Date: Wed Mar 26 15:48:14 2014

Title : Alkaloids
Run File : C:\Users\polsch\Documents\Labstat\Reports\M195-GLP\SampleChrom.pdf
Report File : C:\Users\polsch\Documents\Labstat\Reports\M195-GLP\SampleChrom.pdf
Report ID : 3381800

Injection Date: 1/21/2014 6:03 PM Calculation Date: 1/21/2014 6:08 PM

Operator : Analyst
Sample Name : 1061-01

Injection Volume : 10 µL
Injection Port : 10 µL

Injection Port : 10 µL

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APL

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPwt alk_b2_SampleChrom.pdf 3381800
Path: W:\2\repository\repository\3381800
Electronically Signed By: Peter Obach On: 3/26/14 21:07 Audit ID: 3381800

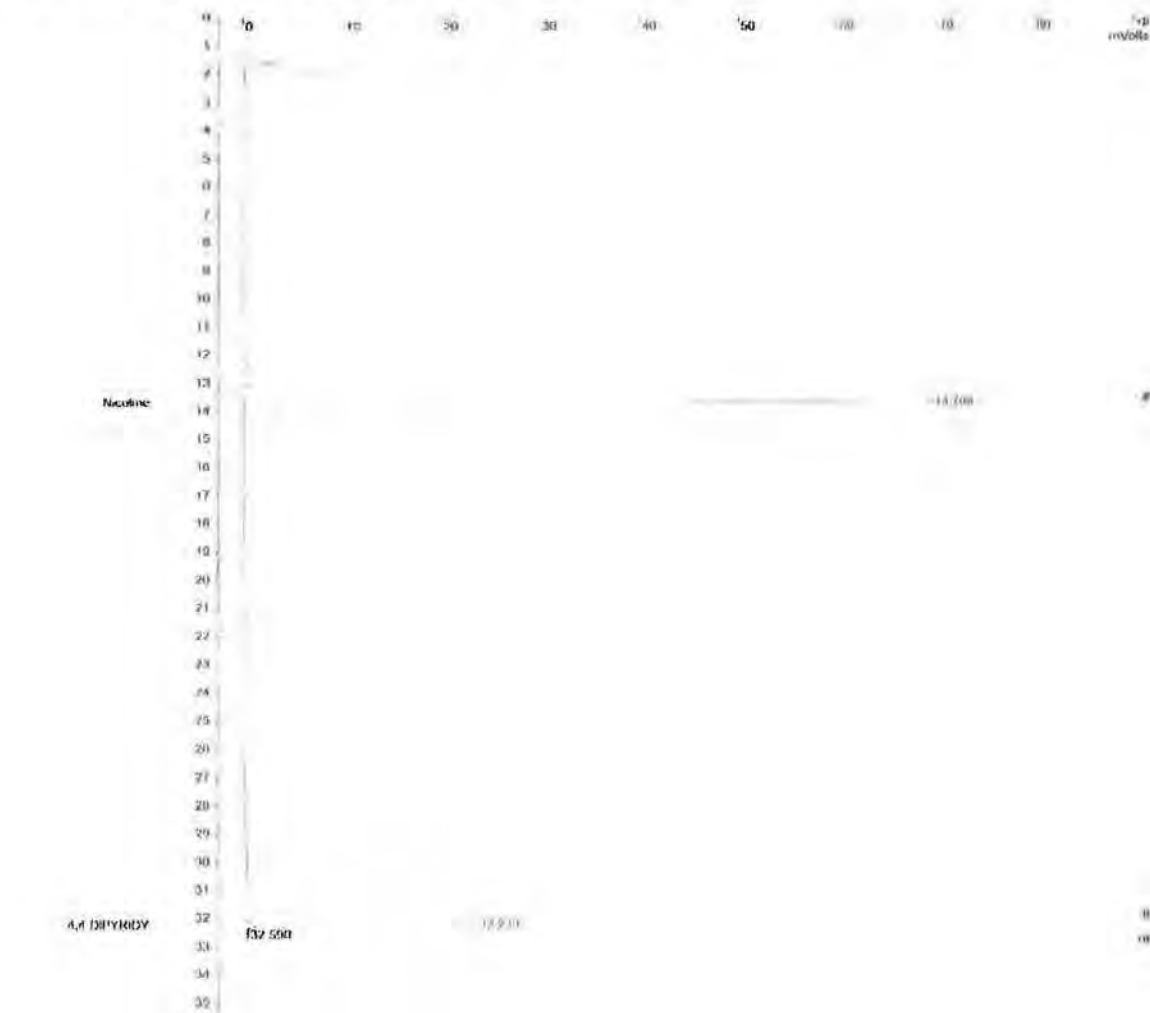
Title: Alkaloids
Run File: c:\data\data\alkaloids\projects\m195-glps\sampleblock\Plausiges_150119\m195-glps_alk_b2_150119_11:20:41_15_06_2014
Method File: c:\data\data\alkaloids\projects\m195-glps\method\algos6_150119.mh
Sample ID: 150119-1

Injection Date: 15/01/14 11:20:41 Injection Date: 15/01/14 11:20:41

Operator: administ	Detector Type: MS - 7610
Workstation: QM6	Bus Address: 15
Injection: 15/01/14	Sample Rate: 1.00 Hz
Channel: 15 - TSE	Run Time: 15.00 min

** GC Workstation Multi Instrument Version 6.41 ** 90134 1458 665 2010 **

Start Speed: 6.00 cm/min Alkalization: 70% Zero Offset: 0.0
Start Time: 15.000 min End Time: 15.757 min Run / Tick: 1.00





APM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLP.mt alk b2 SampleChrom.pdf 3381800
Path: M:\2\repository\repository\3381800
Electronically Signed By: Peter Gilman On: 3/26/14 21:07 Audit ID: 3381800

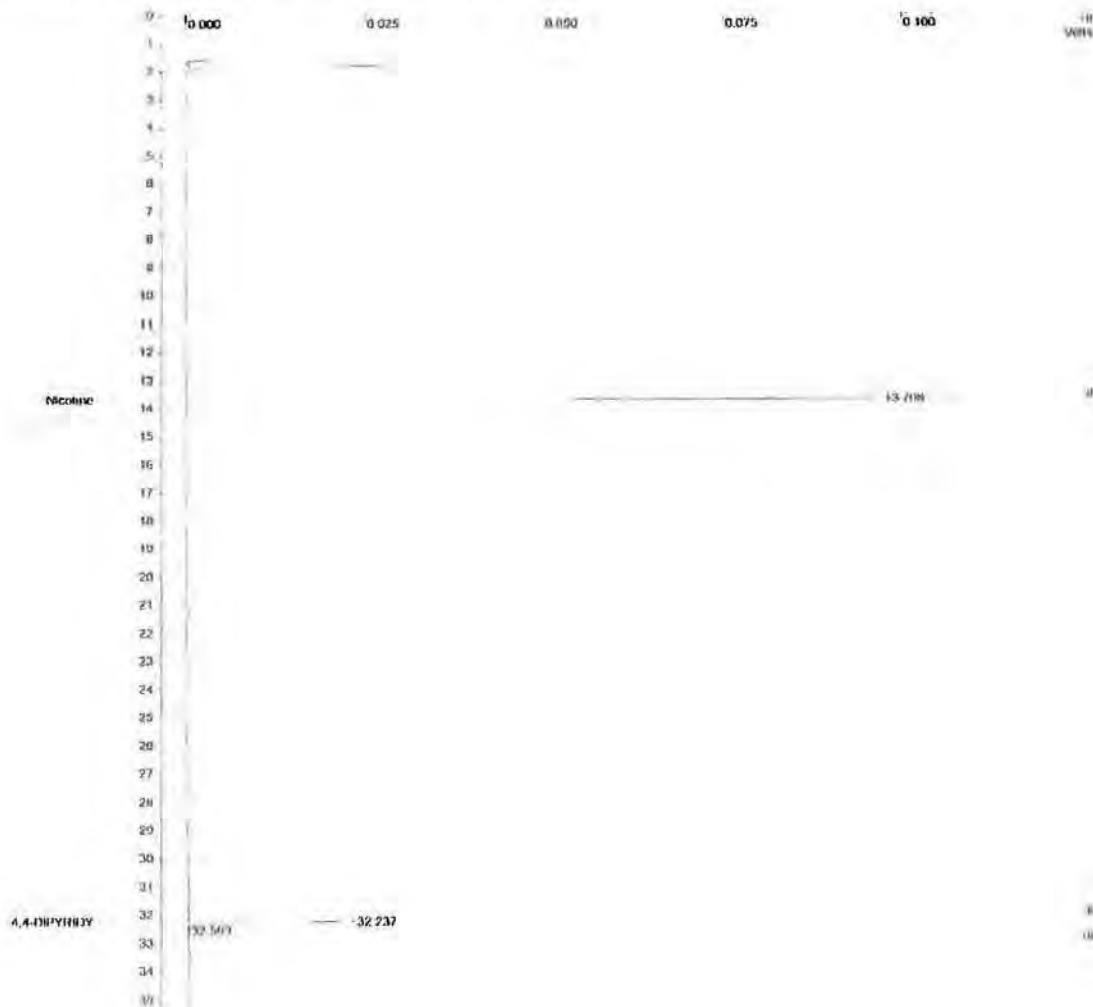
Title: Alkaloids
File Path: c:\star\data\alkaloids\projects\m195-glpsamples\block 2\alkgck_140116\m195-glpm1_alk_b2_001-2-3_1-1-2014_1-001-001.mt
Method File: c:\star\data\alkaloids\projects\m195-glpsamples\alkgck_140116.mt
Sample ID: 488-4-5

Injection Date: 2/12/14 11:59 AM Calibration Date: 2/12/2014 12:00 PM

Operator: Amljss Detector Type: 3820 (1 Volt)
Configuration: 10A8 Bus Address: 44
Instrument: XT GC-MS Sample Rate: 5.00 Hz
Channel: Rear TSD Run Time: 25.797 min

** GC Workstation Multi Instrument Version 6.41 ** 00194-3181-c61-2012 **

Start Speed: 1500 rpm Attenuation: 575 Zero Offset: 24
Start Time: 00:00 End Time: 1:15:00 min Min Peak: 0.10





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GLP_Pvt_alk_b2_SampleChrom.pdf 3381800
Path: \\us2repository\reports\3381800
Electronically Signed By: Peter Olbacht On: 3/26/14 21:07 Audit ID: 3381800

Page 1 of 1

Print Date: Wed Mar 26 20:33:23 2014

Title : Alkaloids
Run File : C:\Users\pobacht\Documents\M195-GLP\SampleChrom.pdf
Run Date : 3/26/2014 15:55:43
Sample ID : 3381800

Injection Date: 2/1/2014 15:55:43
Calculation Date: 2/3/2014 12:00:00

Operator : Analyst
Injection Volume: 10 µL
Injection Rate: 5.00 µL/min

Sample Name : 3381800
Sample Rate : 35.757 min

Run Mode : GC
Run Time : 35.757 min
Run Date : 3/26/2014 15:55:43

GC Model : GC
GC Version : 6.11
GC Serial : 00184-3485-069-2010

GC Configuration : GC
GC Method : GC

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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPwt alk b2_SampleChrom.pdf 3381800
Path: \\is2repository\repository\3381800
Electronically Signed By: Peter Olbach On: 3/26/14 21:07 Audit ID: 3381800

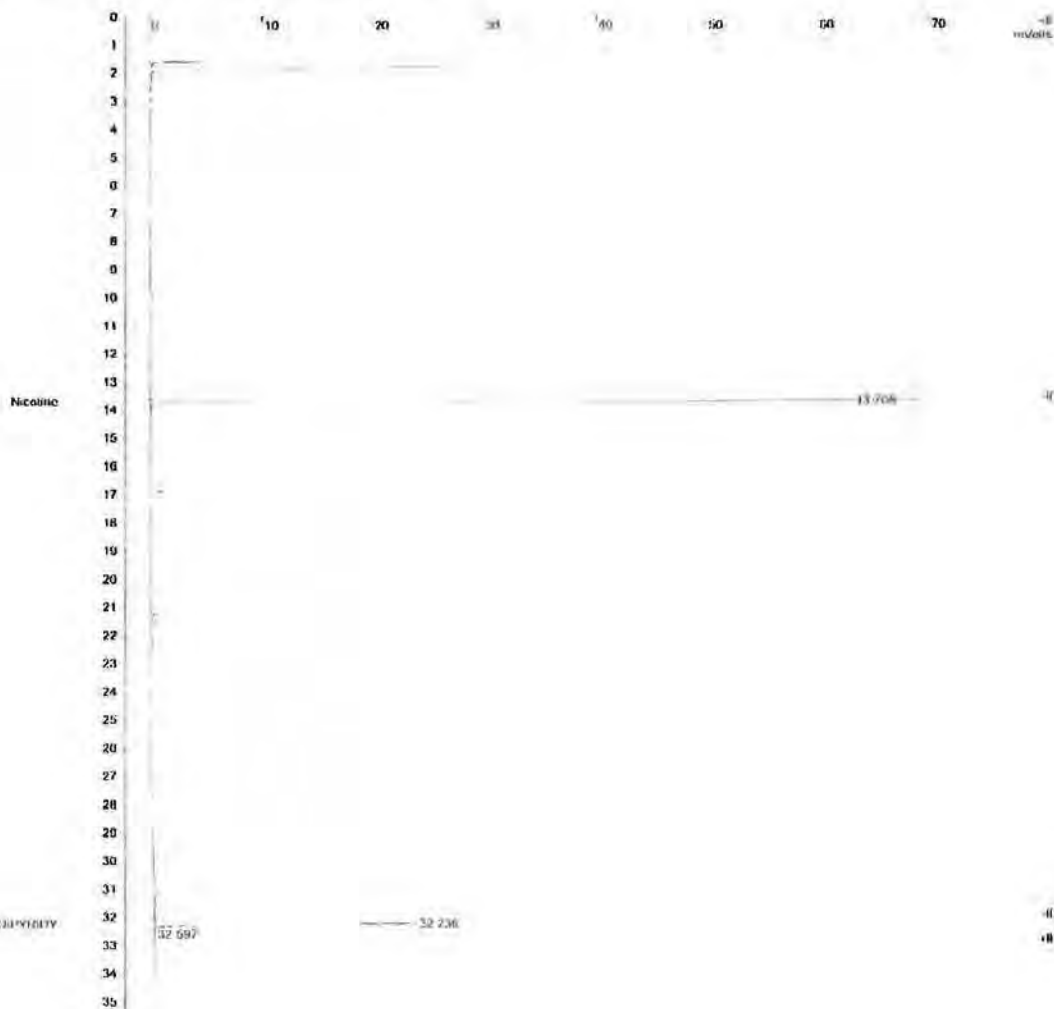
Title : ALKALIDS
Run File : c:\star\data\alkaloids\projects\m195-glp\acq\ms\block 2\alkgce_130130_195_exp01_01_130130_195_01_01_2014_7:14:00_00_00_00
Method File : c:\star\data\alkaloids\projects\m195-glp\methods\alkgce_130130.mn
Sample ID : 1400331-2-1

Injection Date: 3/1/2014 1:16 AM Calculation Date: 3/1/2014 12:01 PM

Operator: Analyst Detector Type: 1800 (1 Volt)
Amplifier: WAT 946 Amplifier: 94
Instruments: ST GC #4 Sample Rate: 1.00 Hz
Channel: Rear: TSD Run Time: 18.703 min

** GC Workstation 2011 Instrument Version 3.41 ** 00184-1485-cs3-1012 **

Start Speed: 15.0000 min Resolution: 0.42 Zero Offset: 0.1
Start Time: 6.109 min End Time: 18.703 min %S (TIC) 1.00



Study Identifier: M195-GLP

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Instrument Run Summary.pdf: 3094951
Electronically Signed By: Bor Cha
Path: Ws2\repository\repository\3094951\
Created: 2/9/14 13:35 Audit ID: 3094951

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Private and Confidential

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Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Instrument) / Matrix / Volume	Injection Date	Injection Time	Method / ID	Instrument / Lab / Analyst	Result / Status	Injection Status (Retention) / Report Date
1001129	STD 1 140129	4 Feb 14	11:42:08 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400932	1400932 1.1	4 Feb 14	12:56:23 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.2	4 Feb 14	1:35:57 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.3	4 Feb 14	2:15:24 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.4	4 Feb 14	2:55:12 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400935	1400935 1.5	4 Feb 14	3:35:54 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.6	4 Feb 14	4:15:22 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.7	4 Feb 14	4:54:55 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.8	4 Feb 14	5:34:23 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.9	4 Feb 14	6:13:19 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.10	4 Feb 14	6:52:46 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1001129	STD 2 140129	4 Feb 14	7:32:18 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400932	1400932 1.11	4 Feb 14	8:11:48 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400932	1400932 1.12	4 Feb 14	8:51:21 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.13	4 Feb 14	9:30:54 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400935	1400935 1.14	4 Feb 14	10:10:14 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400935	1400935 1.15	4 Feb 14	10:49:44 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.16	4 Feb 14	11:29:16 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400932	1400932 1.17	4 Feb 14	12:08:50 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.18	4 Feb 14	12:48:24 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.19	4 Feb 14	1:27:58 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.20	4 Feb 14	2:07:31 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1001129	STD 3 140129	4 Feb 14	2:47:10 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400932	1400932 1.21	4 Feb 14	3:26:43 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400935	1400935 1.22	4 Feb 14	4:06:16 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.23	4 Feb 14	4:45:50 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.24	4 Feb 14	5:25:23 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.25	4 Feb 14	6:04:56 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400934	1400934 1.26	4 Feb 14	6:44:29 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.27	4 Feb 14	7:24:02 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.28	4 Feb 14	8:03:35 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.29	4 Feb 14	8:43:08 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.30	4 Feb 14	9:22:41 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.31	4 Feb 14	10:02:14 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.32	4 Feb 14	10:41:47 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.33	4 Feb 14	11:21:20 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.34	4 Feb 14	12:00:53 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.35	4 Feb 14	12:40:26 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.36	4 Feb 14	1:19:59 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.37	4 Feb 14	1:59:32 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.38	4 Feb 14	2:39:05 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.39	4 Feb 14	3:18:38 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.40	4 Feb 14	3:58:11 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.41	4 Feb 14	4:37:44 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.42	4 Feb 14	5:17:17 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.43	4 Feb 14	5:56:50 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.44	4 Feb 14	6:36:23 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.45	4 Feb 14	7:15:56 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.46	4 Feb 14	7:55:29 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.47	4 Feb 14	8:35:02 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.48	4 Feb 14	9:14:35 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.49	4 Feb 14	9:54:08 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.50	4 Feb 14	10:33:41 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.51	4 Feb 14	11:13:14 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.52	4 Feb 14	11:52:47 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.53	4 Feb 14	12:32:20 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.54	4 Feb 14	1:11:53 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.55	4 Feb 14	1:51:26 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.56	4 Feb 14	2:30:59 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.57	4 Feb 14	3:10:32 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.58	4 Feb 14	3:50:05 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.59	4 Feb 14	4:29:38 am	AL006 140201 M10	GCMS (LAB1112)	OK	
1400931	1400931 1.60	4 Feb 14	5:09:11 am	AL006 140201 M10	GCMS (LAB1112)	OK	



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GLPwt_alk_b3_rev1_chrom & result.pdf_3249011

Electronically Signed By: Bor Cha

Path: \\s2\\repository\\repository\\3249011\\

Created: 3/5/14 09:22 Audit ID: 3249011

Title Alkaloids

Run File : c:\\star\\data\\alkaloids\\projects\\m195-glp block 3\\alkgc6_140203\\m195-glpwt_alk_b3_std 3 140129_2-1-2014_11:37:04 pr_rd.run

Method File : c:\\star\\data\\alkaloids\\method\\alkgc6_140203.mth

Sample ID : STD 3 140129

Injection Date: 2/3/2014 11:37 PM Calculation Date: 3/5/2014 7:27 AM

Operator : Analyst

Detector Type: 3800 (1 Volt)

Workstation: 17030

Bus Address : 99

Instrument : WT GC 46

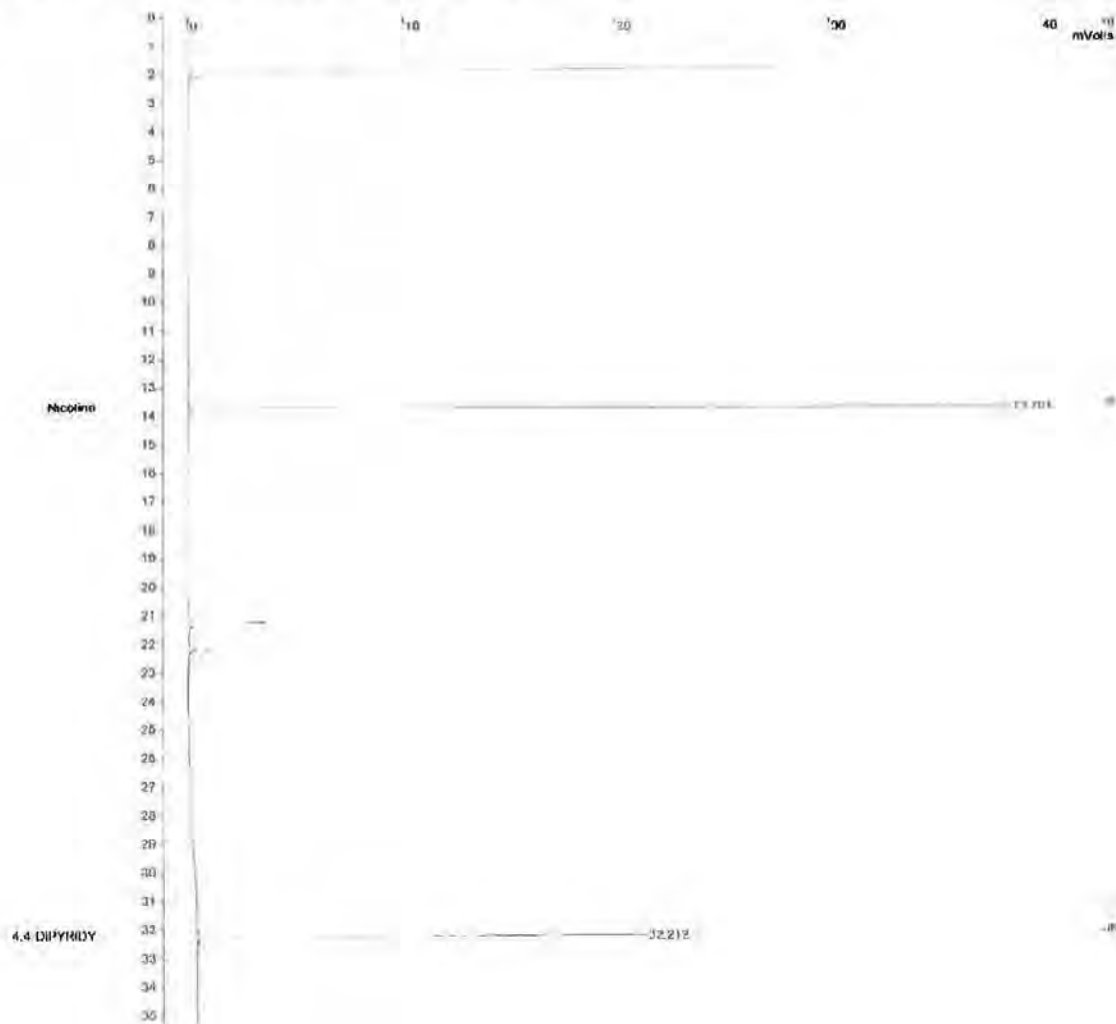
Sample Size : 5.00 Hz

Channel : Reax - TSD

Run Time : 15.737 min

** GC WorkStation Multi Instrument Version 6.11 ** 00134-1422-c69-2010 **

Chart Speed = 0.58 cm/min Attenuation = 183 Zero Offset = 25
Start Time = 0.000 min End Time = 35.797 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

[illegible]



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPwt_alk_b3_rev1_chrom & result.pdf, 3249011

Electronically Signed by: Hor Cha

Path: \\fs2\\repository\\repository\\3249011\\

Created: 3/5/14 09:22 Audit ID: 3249011

Title : Alkaloids

Run File : c:\\star\\data\\alkaloids\\projects\\m195-glp block J\\alkgcs_140203\\m195-glpwt_alk_b3_1409032-1_1_2-1-2014 17:56:23 am_jd run

Method File : c:\\star\\data\\alkaloids\\method\\alkgcs_140203.mch

Sample ID : 1409032-1-1

Injection Date: 3/5/2014 12:00 AM Calibration Date: 3/5/2014 11:18 AM

Operator : R44397

Injection Type: 1500 (2.7 min)

Resolution: 17710

Bus Address : 11

Injection Vol: 50.00 µL

Sample Rate : 5.00 Hz

Channel : 2500 = TSC

Run Time : 135.797 min

** GC Workstation Multi (Instrument Version 6.41 ** 00:04:1486 c6d 20f0 **

Chart Speed = 0.50 cm/min Attenuation = 133 Zero Offset = 79
Start Time = 0.000 min End Time = 135.797 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GLP-ak-03_rev1_result_for_chrom.pdf_3250607
Electronically Signed By: Bor Cha
Path: \\is2urepository\repository\3250607
Created: 3/5/14 11:08 Audit ID: 3250607

Print Date: Wed Mar 05 10:39:22 2014 Page 1 of 1

File: C:\Program Files\Labstat\bin\Labstat.exe
Method File: C:\Program Files\Labstat\bin\Labstat.exe
Sample ID: 140935-1-1

Injection Date: 2/4/2014 10:36 AM Calculation Date: 3/5/2014 7:19 AM

Operator: K. M. Lyle
Injection: 1710
Instrument: WT GC 16
Channel: 16
Run Time: 35.797 min

GC Configuration Multi-Instrument Version 0.41 ** 00184-KM8-019-2010 **

Run Mode: Analysis
Peak Measurement: Peak Area
Calculation Type: Internal Standard

Peak No.	Peak Name	Ret. Time (min)	Offset (min)	Area (count)	Height (count)	Width (1/2)	Status
1	Nicotin	478.0343	11.704	257235	35	2.7	S
2	4,4-DIPYRIDYL INT STD	32.219	-0.003	11247	33	4.0	S
Total:		478.0343		37283			

Status Legend:
S = Standard Standard Peak
Total Unidentified Count: 1
Unidentified Peak: 2

Detected Peak: 2
Rejected Peak: 0
Identified Peak: 2

Standard Peak Amount: 250.5
All Standard Amount: 250.5

Multiplicity: 1
Divisor: 1
Unidentified Peak Factor: 2

Sample Name: 4 Nicotinic
Name (used): 5 Nicotinic - Nicotinic before this run
Vial: 10
Injection Number: 1
Position: 1



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPw_alk_b3_rev1_chrom & result_pdf_3249011

Electronically Signed By: Bor Cha

Path: \\fa2vopository\repository\3249011\

Created: 3/5/14 08:22 Audit ID: 3249011

Title : Alkaloids

Run File : c:\star\data\alkaloids\projects\m195_glp_block_1\alkgc6_140203\m195-glpw_alk_b3_140932-1-11_2_1:2014_6:51:48 am rd run

Method File : c:\star\data\alkaloids\method\alkgc6_140203.mth

Sample ID : 140932-1-11

Injection Date: 2/4/2014 8:51 AM Calculation Date: 3/5/2014 7:13 AM

Operator : Analyst

Detector Type: 3800 I.L. Volt;

Workstation: IT010

Bus Address : 44

Instrument : WT GC #6

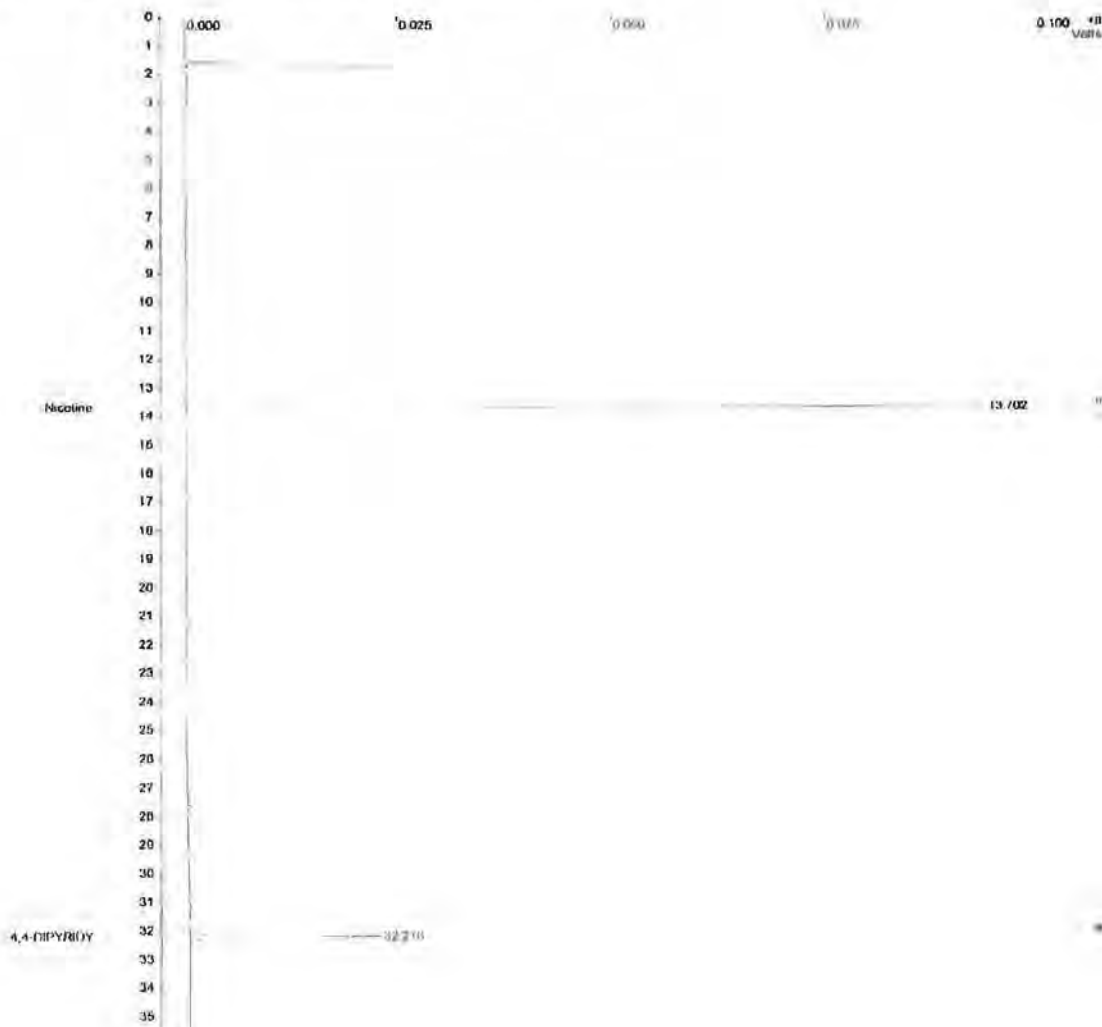
Sample Rate : 5.00 Hz

Channel : Rear + TSD

Run Time : 13.797 min

** GC Workstation Multi Instrument Version 6.41 ** 00184-3485-c63-201c **

Chast Speed: 0.58 cm/min Attenuation = 154 Zero Offset = 71
Start Time = 0.200 min End Time = 13.797 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-SLPM alk h3 mw1 result for chrom pol 3250607
 Electronically Signed By: Bor Cline
 Path: W:\2\possession\possession\3250607
 Created: 3/5/14 11:08 Audit ID: 3250607



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPwt_alk_b3_rev1_chrom & result.pdf_3249011

Electronically Signed by: Ror Cha

Path: Ws2repository\repository\32490111

Created: 3/5/14 09:22 Audit ID: 3249011

Title: Alkaloids

Run File: c:\star\data\alkaloids\projects\m195_gip_block\alkgc6_140293\m195-glswt_alk_b3_1400935-1_05_1_1_2014_12_05_44.pr#8.run

Method File: c:\star\data\alkaloids\method\alkgc6_140293.mtk

Sample ID: 1400935-1-15

Injection Date: 2/4/2014 12:09 PM Calculation Date: 1/5/2014 1:20 AM

Operator: Analyst

Detector Type: 3800 (1 Volt)

Workstation: 17030

Bus Address: 44

Instrument: MT GC #6

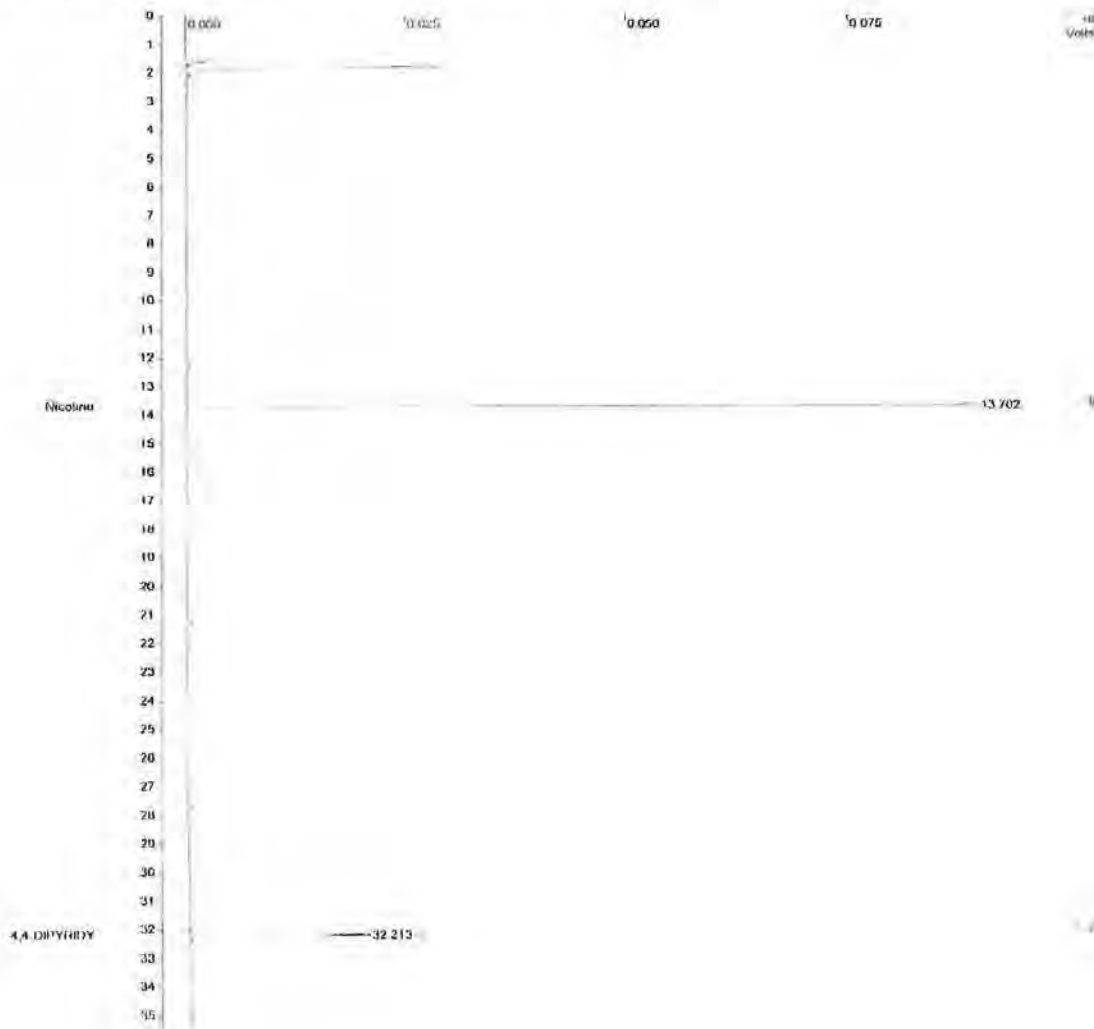
Sample Rate: 5.00 Hz

Channel: Near: TSD

Run Time: 35.797 min

** GC Workstation Multi Instrument Version 6.41 ** 00184-3448-069 2010 **

Chart Speed: 0.58 cm/min Accumulation: 1.00 Deriv Filter: 24
Scale Tick: 0.000 min Run Time: 35.797 min Wt Tick: 0.00





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

[illegible]



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-G1 Pwt_alk_b3_rev1_chrom & result.pdf_3249011

Electronically Signed By: Ror Chh

Path: \\fs2\repository\repository\3249011\

Created: 3/5/14 09:22 Audit ID: 3249011

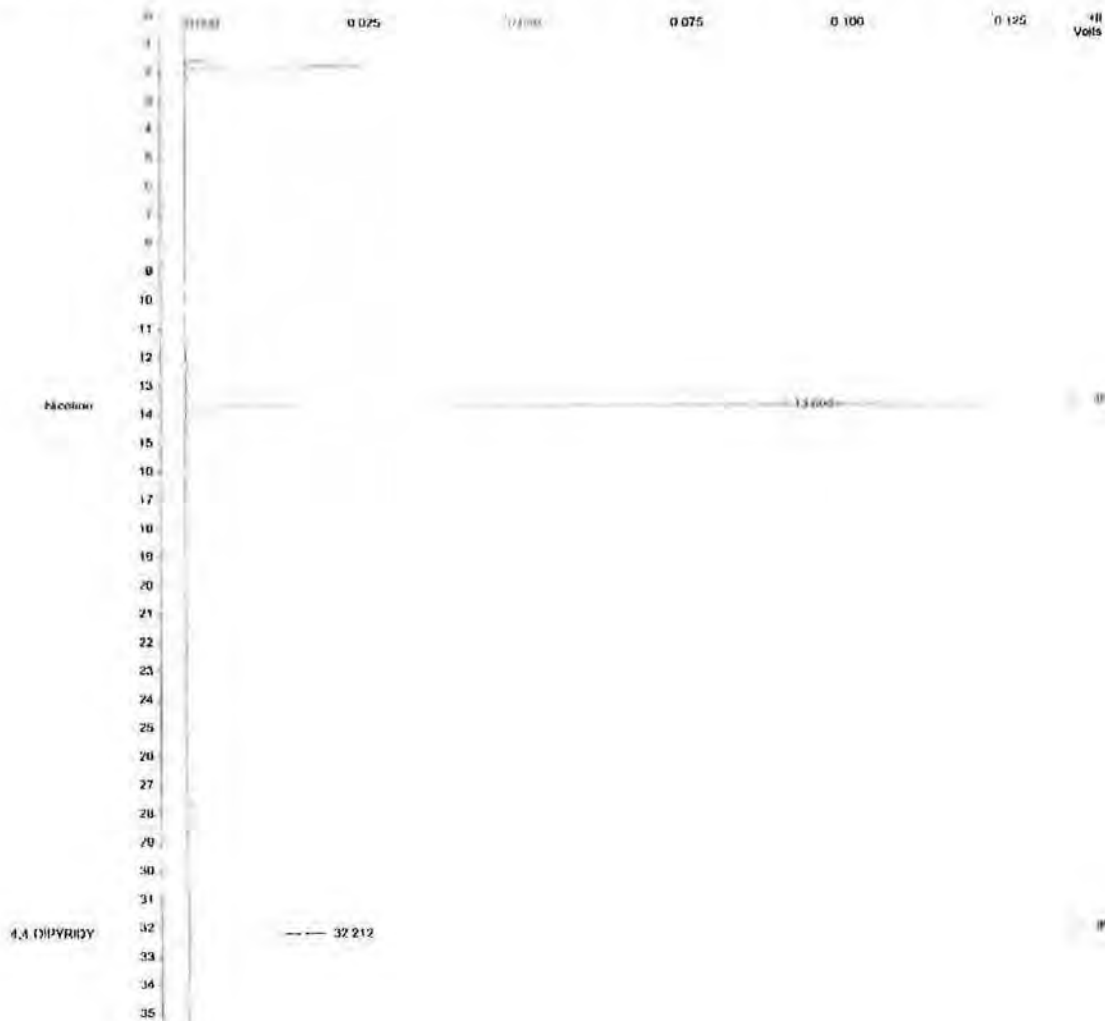
Title: Alkaloid 20
Run File: I:\star\data\alkaloid\projects\m195 glp block 3\data\66 130703\m195 glpwt_alk_b3 140936-1-25 2-1-2014_3.05.10 pr_re ren
Method File: I:\star\data\alkaloid\method\algex 140201.mh
Sample ID: 140936-1-25

Injection Date: 2/4/2014 3:05 PM Calculation Date: 3/5/2014 1:27 AM

Operator: Analyst
Workstation: T570
Injection: BT GC 06
Channel: 20ag + TSD
Detector Type: 3806 (1 Volt)
Bus Address: 1 44
Sample Rate: 1 5.00 Hz
Run Time: 15.797 min

** GC Workstation Mnit: Instrument Version 6.41 ** 0012: 3688 c55 2012 **

Chart Speed: 0.38 cm/min Attenuation: 100 Zero Offset: 19
Start Time: 3.318 min End Time: 15.797 min Min: 2104 Max: 1.27





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: Wed Mar 25 10:51:54 2014 Page 1 of 1

M195-GLP: alk_h3_rev1_result_for_crom.pdf_3250607
Electronically Signed by: Bor Cht
Path: \\is2repository\repository\3250607
Created: 3/27/14 11:08 Audit ID: 3250607

Run File : C:\ProgramData\Labstat\Projects\M195-GLP\Blank_1\alk_h3_1400316-1-25_2-4-2014_3.05:56 PM.rtf
Method File : C:\ProgramData\Labstat\Projects\M195-GLP\Blank_1\alk_h3_1400316-1-25_2-4-2014_3.05:56 PM.rtf
Sample ID : 1400316-1-25

Injection Date: 2/4/2014 1:05 PM Calculation Date: 3/5/2014 7:21 AM

Operator : Analyst Detector Type: 380C (1 Volt)
Modulation: 17025 Run Address: 144
Instrument : HP GC MS Sample Size: 5.00 µL
Channel : 1 Real - TSD Run Time: 135.797 min

** GC Workstation Multi Instrument Version 6.41 ** 00194-3468-000-2012 **

Run Mode : Analyze
Peak Measurements: Peak Area
Calculation Type: Internal Standard

Peak	Peak	Height	Ret. Time	Area	Height	Width	Height
1	Nitroline	634.2491	13.638	-0.002	349309	2.7	
2	4,4-DIETHYLDI INT STD	32.212	-0.010	117821	10	5.0	
Total		616.2491	-0.012	467130			

Status Codes:
S - Internal Standard Peak

Total Identified Count: 1 Count

Reference Peak: 2 Reference Peak: 0 Identified Peak: 2

Standard Peak Method:
All Standards Amount: 249.4

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -9 microvolts ISN: 1 microvolts

MS/MS (m/z): 9 microvolts monitored before this run

Visit 34 Injection Number: 1 Position: 1



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195-GLPwl_nlk_b3_rev1_chrom & result.pdf 3249011

Electronically Signed By: Bor Chua
Path: Ufs2repositoryrepository\3249011\
Created: 3/5/14 09:22 Audit ID: 3249011

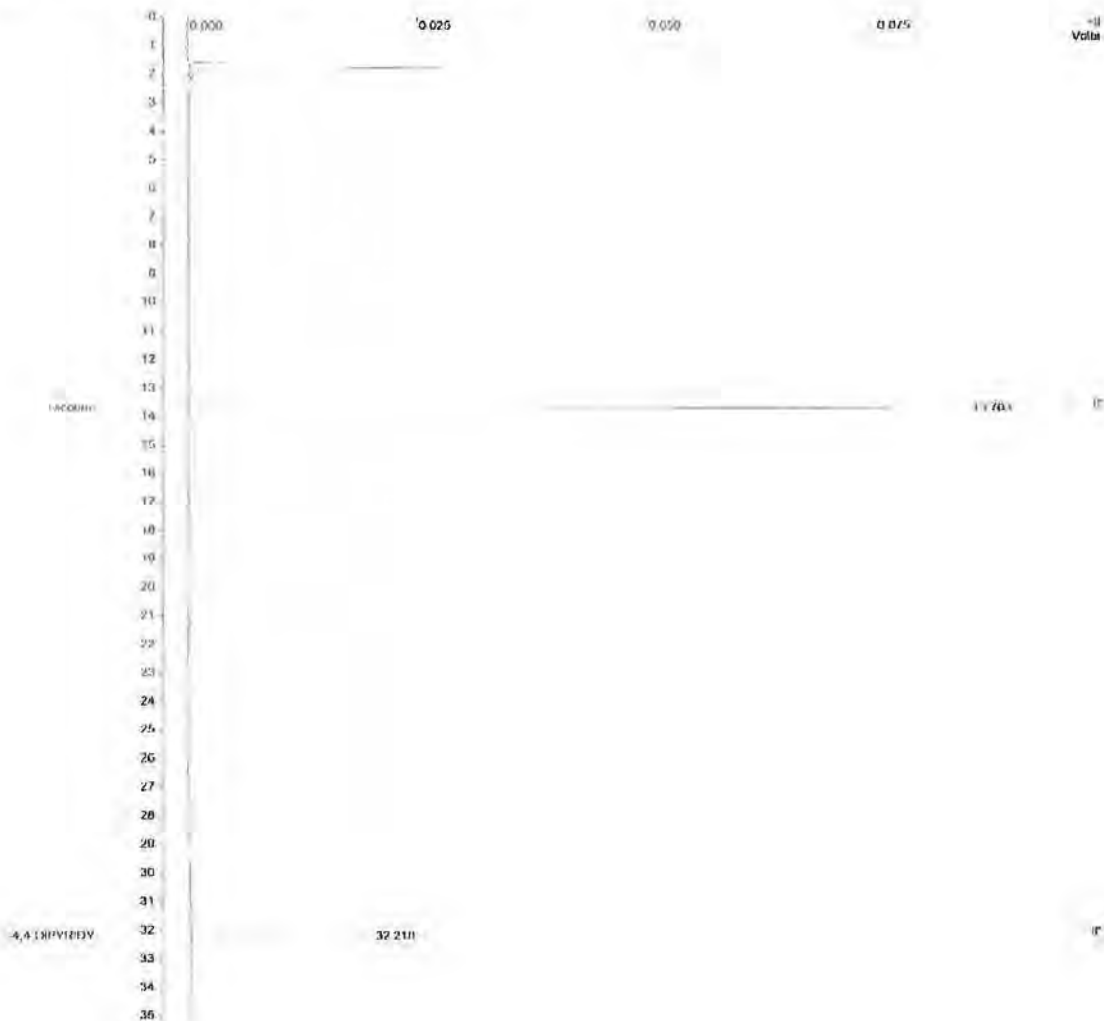
Title : Aikaloids
Run File : c:\star\data\alkaloids\projects\m195-glp_block 3\alkgce_140201\m195-glpwl_nlk_b3_1400932-2-1_2-5-2014_111717.pd_ran
Method File : c:\star\data\alkaloids\method\alkgce_140201.mh
Sample ID : 1400932-2-1

Injection Date: 2/5/2014 11:17 AM Calculation Date: 2/5/2014 9:21 AM

Operator Analyst Detector Type 9800 II Volt
Workstation 11110 Run Address 44
Injection 11 20 # Sample Name 1 0000
Channel 1 5000 100 Run Time 14.111 min

** GC Workstation Volt: Instrument Version 6.41 ** 00164 1456 01 0014 **

Chart Speed : 0.55 cm/min Attenuation : 121 Zero Offset : 74
Start Time : 5.000 min End Time : 6.15193 min Min Peak : 1.00





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: Wed Mar 05 10:57:31 2014 Page: 1 of 1

M195-GLP: alk_03_rev1_result_for_chrom.pdf_3250607
Electronically Signed By: Ben Che
Path: \\szreposit01\reposit01\X3250607
Created: 3/5/14 11:08 Audit ID: 3250607

File: M195-GLP
Folder Path: \\szreposit01\reposit01\X3250607
Sample ID: 1400912-2-1

Injection Date: 2/5/2014 1:17 PM Calibration Date: 3/5/2014 7:23 AM

Detector: FID
Modulation: 100%
Instrument: GC 86
Channel: TSD

Detector Type: 3200 (1 Volt)
Int. Address: 44
Sample Rate: 5.00 Hz
Run Time: 35.735 min

** GC Method: M195-GLP-01-01 ** GC: 1400912-2-1 ** GC: 1400912-2-1 **

Run Mode: Analytic
Peak Measurement: Peak Area
Calculation Type: Internal Standard

Peak No.	Peak Name	Ret. Time (min)	Area (Counts)	Sub. L/S	Width	Structure
1	Nicotinic acid	11.723	21563	0.5	2.7	S
2	4,4'-DITHIOBIS(2-METHYL-6-TERT-BUTYL-2-PHENOL)	16.218	11133	0.5	5.0	S
TOTALS		459.5453	32706			

Standard Curve:
S - Internal Standard peak
Total Identified Curve:
Detection Peak: 2
Reference Peak: 2
Identified Peak: 2

Standard Peak Name:
At Standard Name: 240.5
Multiplier: 1
Divisor: 1
Unidentified Peak Factor: 0

Reference Offset: -32 microvolts
Name (Unit): 5 microvolts monitored before this run
Unit: 1 microvolts

Vials: 43
Injection Number: 1
Injection: 1



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPwl_alk_b3_rev1_chrom & result.pdf_3249011

Electronically Signed By: Ben Chiu

Path: Wfs2\repository\repository\3249011\

Created: 3/5/14 09:22 Audit ID: 3249011

File: 3249011

Run File: c:\star\data\alkaloids\project\m195-glp_block_3\alkylc6_140294\m195-glpwl_alk_b3_1490334-2-5_2_1_2014_3_5_0_01 pm\rdc.htm

Method File: c:\star\data\alkaloids\method\alkylc6_140293.mtd

Sample ID: 1490334-2-5

Injection Date: 3/5/2014 3:50 PM Calculation Date: 7/5/2015 7:21 AM

Operator: Analyst

Detector Type: MS/MS

Workstation: 11716

Bus Address: 24

Instrument: AC GC #8

Sample Weight: 0.5000 g

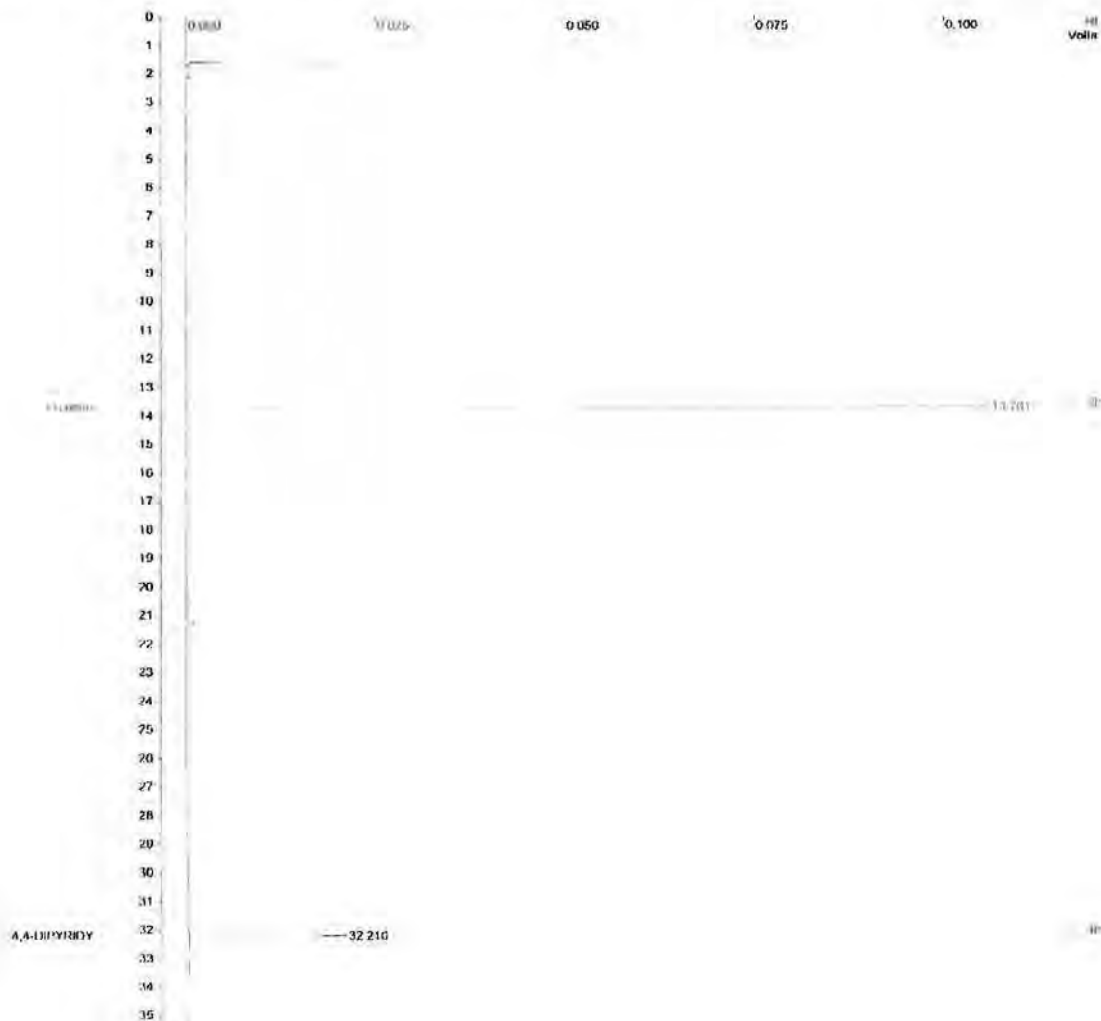
Channel: 2esi TSD

Run Time: 35.757 min

** GC Workstation Multi Instrument Version 6.41 ** 2014-11-05 2015 **

Flow Speed: 1.33 cm/min Activation: 10% Air: 5500.0 mL

Start Time: 0.00 min End Time: 35.757 min Wt: 0.5000 g





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: Wed May 05 11:05:16 2014 Page 1 of 1

M195-GLP-ak_b5_test result for chrom.pdf_3250607
Electronically Signed By: Bob Cha
Path: \\ns21repository\repository\3250607
Created: 3/5/14 11:08 Audit ID: 3250607

Title : Alkaloids
Run File : c:\data\glp\m195-01\reports\m195-01_black_1\alkaloids_140204-2-5_2_1-2014_1155:01_nm.pdf-run
Method File : c:\data\glp\m195-01\reports\m195-01_black_1\alkaloids_140204-2-5_2_1-2014_1155:01_nm.pdf-run
Sample ID : 140204-2-5

Injection Date: 2/5/2014 1:56 PM Collection Date: 1/6/2014 7:24 AM

Operator : Analyst
Injection : 1200
Sample : 1200
Channel : MS - TSM
Run Time : 35.797 min

** GC Method: M195-01-1 (Instrument Version 6.42) ** GC: 601.84, 344.8, 350, 2010 **

Run Mode : Analytic
Peak Measurement : Peak Area
Calculation Type: Internal Standard

Peak No.	Peak Name	Result (ug/mL)	Ret. Time (min)	Time Offset (min)	Area (count)	Rep. 1/2 (count)	Width	Status
1	ALCOHOL	11.015	11.015	0.012	211294	211294	2.7	S
2	ALCOHOL	11.015	11.015	0.012	211294	211294	2.7	S
Totals: 576.0512 11.015 11.015 0.012 412643								

Status Codes:
S - Internal Standard Peak
Total Unidentified Counts : 0 counts
Detected Peaks: 2 Rejected Peaks: 0 Identified Peaks: 2

Standard Peak Amount:
All Standards Amount : 247.8
Multiplier : 1
Unidentified Peak Factor: 0

Baseline Offset: 18 microvolts
Note: (user) 7 microvolts - monitored before this run
Vial: 47 Injection Number: 1



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195-GLPwl_alk_b3_rev1_chrom & result.pdf_3249011

Electronically Signed By: Bor Chen

Path: Ms2repository\repository\3249011\

Created: 3/5/14 09:22 Audit ID: 3249011

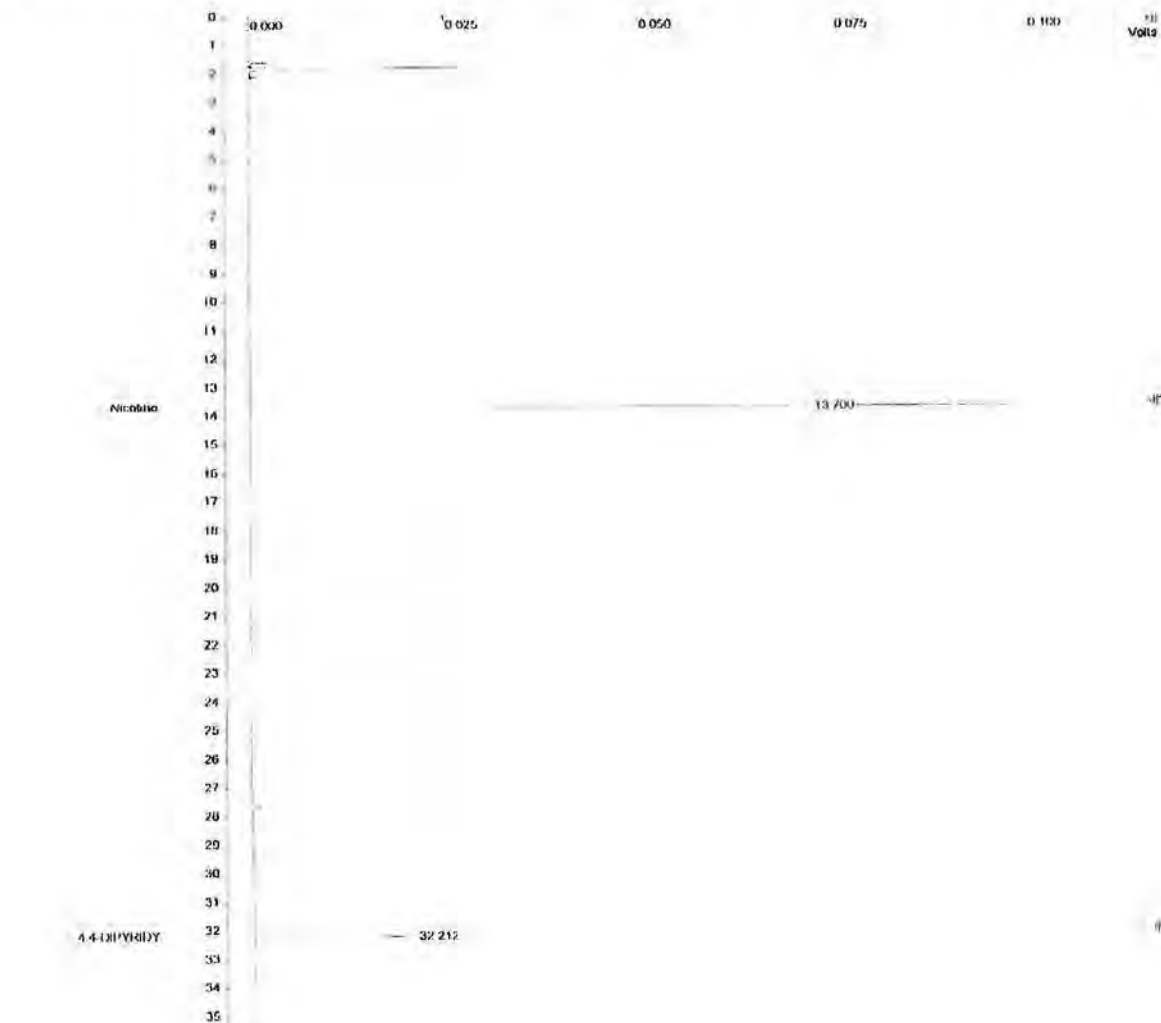
Title: Alkaloids
Run File: C:\statdata\alkaloids\projects\m195-glp_black\alkaloids_140204\m195-glpwl_alk_b3_140204_3_14_2-5-2014_11:51:24_chrom.pdf
Method File: C:\statdata\alkaloids\method\alkaloid_140203.mth
Sample ID: 140204-2-14

Injection Date: 2/5/2014 11:51 PM Calculation Date: 3/5/2014 1:24 AM

Operator: Analyst Injection Type: 1800 (1. Volt)
Workstation: 12515 Bus Address: 55
Instruments: 4M 65 66 Sample Rate: 4.00 Hz
Channel: 404F TSD Scan Time: 0.192 min

** GC Workstation Suite Instrument Version 5.41 ** 05134-3488-c63-2010 **

Chart Speed: 0.52 cm/min Attenuation: 100 Auto Offset: -25
Start Time: 1:03:01.000 End Time: 1:17:27.000 Min Tick: 1.00





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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195-GLPw_alk_b3_rev1_result for chrom.pdf_3250607
Electronically Signed By: Bor Cha
Path: \\fs2\\repository\\repository\\3250607
Created: 3/5/14 11:08 Audit ID: 3250607

Printed Date: Wed Mar 25 11:06:07 2014 Page: 2 of 2

Client: AllenVande
Run File: c:\data\data\alk_b3\rev1\m195-alk_b3_block_1\3250607_135_alk_b3_1000004_0_35_2_125_10_35_000_00_00_000
Vendor File: c:\data\data\alk_b3\rev1\m195-alk_b3_block_1\3250607_135_alk_b3_1000004_0_35_2_125_10_35_000_00_00_000
Sample ID: 1250607-2-14

Injection Date: 2/19/2014 11:00 PM Collection Date: 2/19/2014 11:24 AM

Operator: ngolyer Detector Type: 340C (1 Volt)
Workstation: 7773C Gas Address: 44
Instrument: 40 DC 11 Sample Rate: 3.00 Hz
Channel: Rear - TSD Scan Time: 35.707 min

-- GC Workstation Mult: Instrument Version 4.41 -- 02188 3438-679 2010 --

Run Mode: Analytical
Peak Measurement: Peak Area
Calculation Type: Internal Standard

Peak No	Peak Name	Result (ug/g)	Sec Time (min)	Time Offset (min)	Area (counts)	Std. Code	Std. Code	Std. Code
1	Nonane	941.7145	21.000	0.000	946503	88	0.4	
2	8,8-Diethyl-2,2,4,4-tetrahydronaphthalene	100.8700	22.000	0.000	100830	88	0.9	
Totals		562.7145	0.000	0.000	946503			

Injection Codes:
8 - Internal Standard peak

Total Unidentified Counts: 0 counts

Selected Peaks: 2 Rejected Peaks: 0 Identified Peaks: 2

Acquired Peak Areas:
ALL Standards Amount: 0.13 g

Multiplicator: 1 Dividers: 1 Identified Peak Factor: 1

Baseline Offset: 44 microVolts 1500 1 microVolts

Refer: 10000 0 microVolts monitored output peak run

Flow: 0.0 Injection Number: 1 Position: 1



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195-GLPwl_alk_h3_rev1_chrom & result.pdf_3240011
Electronically Signed By: Hor Cha
Path: W:\s2\repository\repository\3240011\
Created: 3/5/14 09:22 Audit ID: 3240011

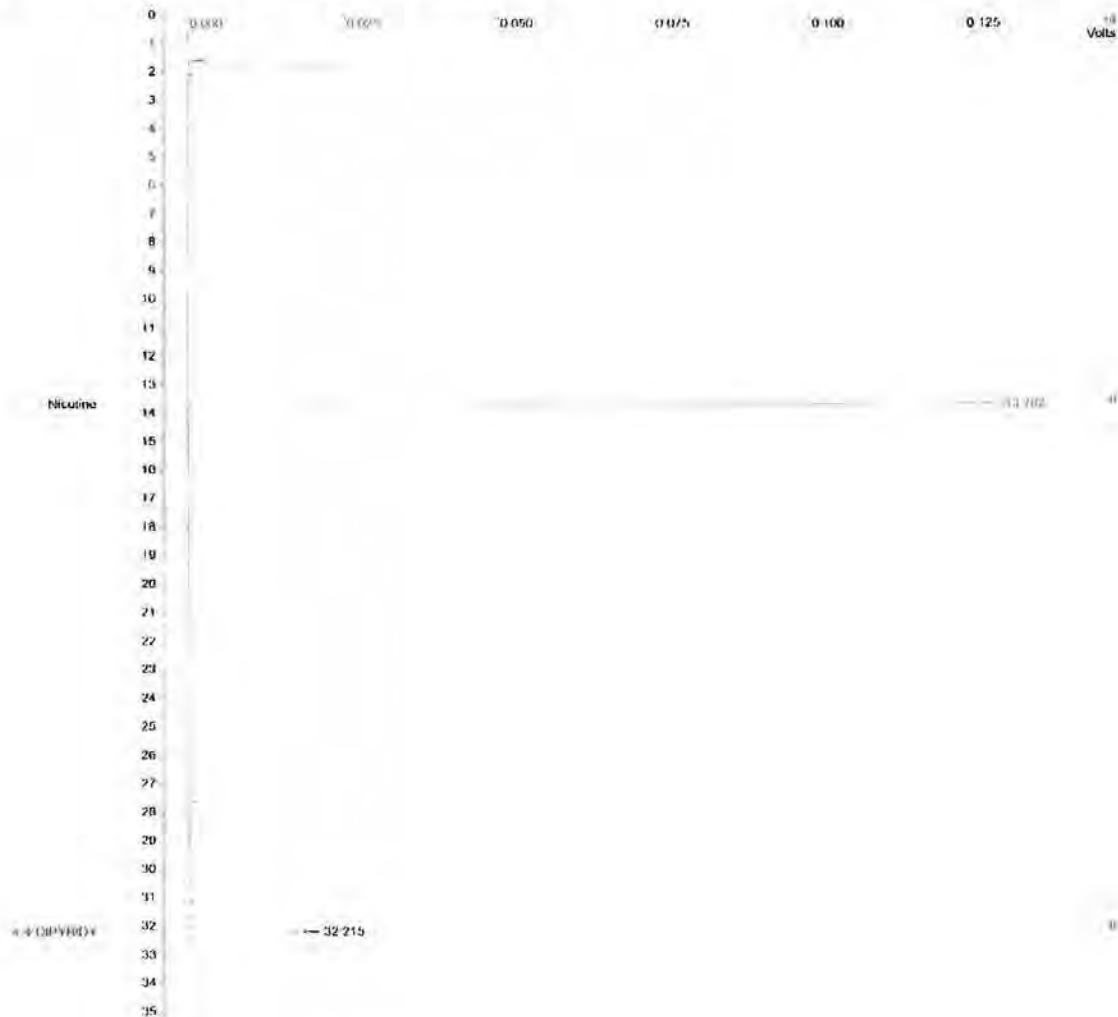
Title: Alkaloids
Run File: c:\star\data\alkaloids\projects\m195 glp block 3\alkgc6 140201\m195 glpwl_alk_b3_1(m-7_2-6-2014_3:00:37_wm_r0100
Method File: c:\star\data\alkaloids\method\alkgc6 140201.m1
Sample ID: LKX 2

Injection Date: 2/6/2011 1:09 AM Calculation Date: 3/5/2014 7:24 AM

Operator: Analyst Detector Type: 1800 (1 Volt)
Workstation: T030 Bus Address: 41
Instrument: 41 GC #6 Sample Rate: 5.00 Hz
Channel: Read - TSD Run Time: 35.797 min

** GC Workstation Multi Instrument Version 6.11 ** 00184 3488-c65 70f0 **

Chart Speed = 0.58 cm/min Attenuation = 630 Zero Offset = 73
Start Time = 0.000 min End Time = 35.797 min Min / Tick = 1.00





Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195-GLP-alk_b3_rev1_result_for_chrom.pdf 3250507
Electronically Signed By: Bor Chta
Path: \\file2\repository\3250507
Created: 3/5/14 11:08 Audit ID: 3250507

Print Date: Wed Mar 05 11:07:22 2014 Page 1 of 1

File Name: M195-GLP-alk_b3_rev1_result_for_chrom.pdf
Method File: C:\Program Files\Agilent\ChemStation\MSDCHEM\MSDCHEM.METHOD
Sample ID: 1
Sample Name: 1
Injection Date: 3/5/2014 3:03 AM
Injection Time: 3/5/2014 7:24 AM
Injection Volume: 10 µL
Injection Concentration: 100 µg/mL
Injection Port: 1
Injection Temperature: 150 °C
Injection Pressure: 10.00 MPa
Injection Flow: 1.00 mL/min
Injection Time: 1.00 min
Injection Volume: 10 µL
Injection Concentration: 100 µg/mL
Injection Port: 1
Injection Temperature: 150 °C
Injection Pressure: 10.00 MPa
Injection Flow: 1.00 mL/min
Injection Time: 1.00 min

Run Mode: Full Scan
Run Name: M195-GLP-alk_b3_rev1_result_for_chrom.pdf
Run Number: 1
Run Date: 3/5/2014
Run Time: 7:24 AM
Run Volume: 10 µL
Run Concentration: 100 µg/mL
Run Port: 1
Run Temperature: 150 °C
Run Pressure: 10.00 MPa
Run Flow: 1.00 mL/min
Run Time: 1.00 min
Run Volume: 10 µL
Run Concentration: 100 µg/mL
Run Port: 1
Run Temperature: 150 °C
Run Pressure: 10.00 MPa
Run Flow: 1.00 mL/min
Run Time: 1.00 min

Calculation Type: Internal Standard

Peak No.	Peak Name	Result (µg/mL)	Time (min)	Area (counts)	Sec. 1/2 (sec)	Sec. 2/2 (sec)
1	1,2-DICHLOROETHANE	100.00	1.00	1000000	1.00	1.00
2	1,1-DICHLOROETHANE	100.00	1.00	1000000	1.00	1.00
3	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
4	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
5	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
6	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
7	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
8	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
9	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
10	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
11	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
12	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
13	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
14	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
15	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
16	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
17	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
18	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
19	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
20	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
21	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
22	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
23	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
24	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
25	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
26	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
27	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
28	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
29	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
30	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
31	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
32	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
33	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
34	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
35	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
36	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
37	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
38	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
39	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
40	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
41	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
42	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
43	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
44	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
45	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
46	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
47	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
48	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
49	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
50	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
51	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
52	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
53	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
54	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
55	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
56	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
57	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
58	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
59	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
60	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
61	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
62	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
63	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
64	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
65	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
66	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
67	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
68	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
69	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
70	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
71	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
72	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
73	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
74	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
75	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
76	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
77	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
78	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
79	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
80	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
81	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
82	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
83	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
84	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
85	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
86	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
87	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
88	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
89	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
90	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
91	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
92	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
93	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
94	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
95	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
96	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
97	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
98	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
99	1,1,2,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00
100	1,1,1,2-TETRACHLOROETHANE	100.00	1.00	1000000	1.00	1.00

Standard Peak Amount: 100.00
All Standard Amounts: 100.00
Injection: 1
Divisor: 1
Baseline Offset: 23 microvolts
ISB: 1 microvolts
Wave (mV): 1 microvolts - monitored before this run
Vial: 62
Injection Number: 1
Position: 1

Polycyclic Aromatic Hydrocarbons in Smokeless Tobacco

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLI³_PAH_WI_H2_instrument_run_summary.pdf_3208301
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3208301\\
Created: 2/26/14 14:27 Audit ID: 3208301

[illegible]



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_U2_Wf_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140130030.D
Acq On : 2 Feb 2014 18:17
Operator : Analyst
Sample : STD 4 140128
Misc : M195-GLP PAH MSN B1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 11 08:26:50 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d1 2-Benzo(a)Pyrene	34.845	254	27795m	60.23	ng/mL	0.00
Target Compounds						
2) B(a)P	34.959	252	6756	9.22	ng/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

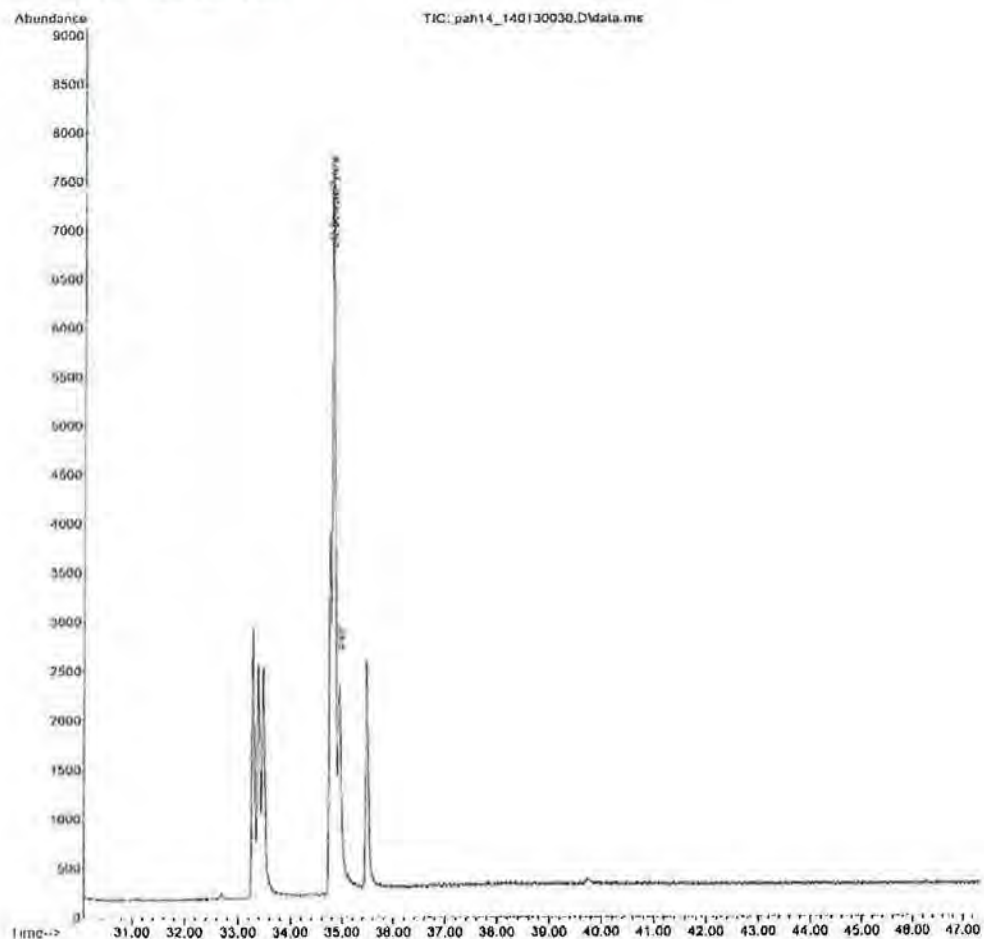
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140130030.D
Acq On : 2 Feb 2014 18:17
Operator : Analyst
Sample : STD 4 140128
Misc : M195-GLP PAH MSN B1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 11 08:26:50 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_14012...M195GLP_WT.M Tue Feb 11 09:26:44 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiak
Path: \\ls2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_2\\WT\\
Data File : pah14_140131005.D
Acq On : 2 Feb 2014 22:43
Operator : Analyst
Sample : 888-1-5
Misc : M195-GLP PAH WT B2
ALS Vial : 62 Sample Multiplier: 1

Quant Time: Feb 11 08:27:36 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	264	78664m	50.23	ng/mL	0.00
Target Compounds						
2) B(a)P	34.945	252	99445	47.93	ng/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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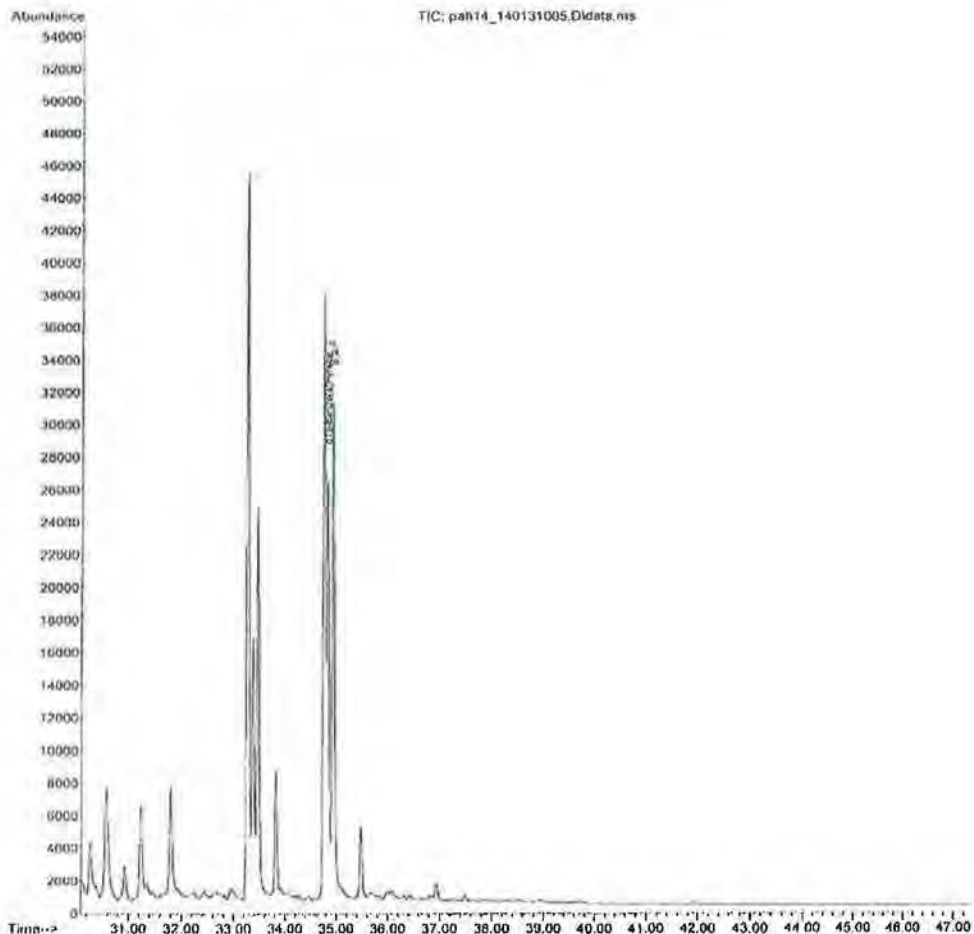
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3117407\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131005.D
Acq On : 2 Feb 2014 22:43
Operator : Analyst
Sample : 888-1-5
Misc : M195-GLP PAH WT B2
ALS Vial : 62 Sample Multiplier: 1

Quant Time: Feb 11 08:27:36 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
Quant Update : Wed Jan 29 15:15:01 2014
Response via : Initial Calibration



PAH14_14012...M195GLP WT.M Tue Feb 11 09:27:22 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_112_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bertosz Jasiek
Path: \\fs2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131007.D
Acq On : 3 Feb 2014 00:29
Operator : Analyst
Sample : 1400892-1-7
Misc : M195-GLP PAH WT B2
ALS Vial : 64 Sample Multiplier: 1

Quant Time: Feb 11 08:26:03 2014
Quant Method : C:\msdchem\1\methoda\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.842	264	82936m	50.23	ng/mL	0.00
Target Compounds						
2) B(a)P	34.952	252	1789	1.08	ng/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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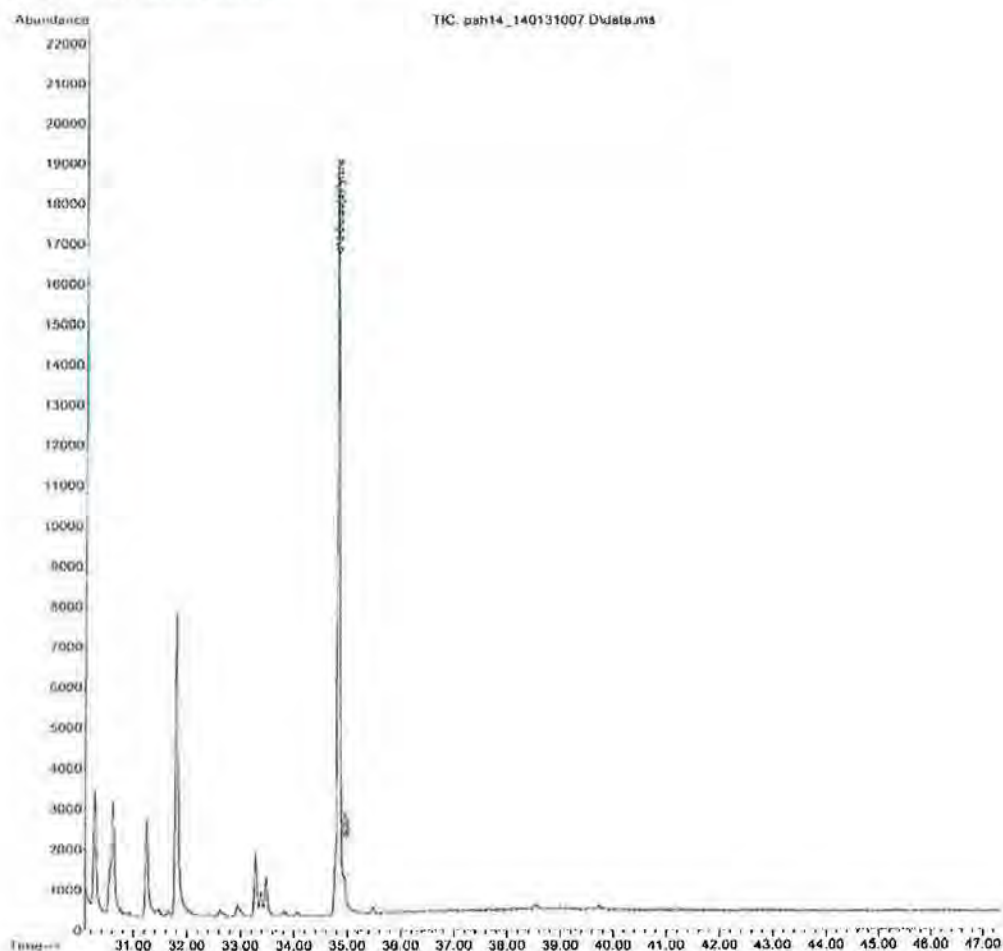
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
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Path: Wfs2\repository\repository\3117407\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131007.D
Acq On : 3 Feb 2014 00:29
Operator : Analyst
Sample : 1400892-1-7
Misc : M195-GLP PAH WT B2
ALS Vial : 64 Sample Multiplier: 1

Quant Time: Feb 11 08:28:03 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration





Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131009.D
Acq On : 3 Feb 2014 2:14
Operator : Analyst
Sample : 1400894-1-9
Misc : M195-GLP PAH WT B2
ALS Vial : 66 Sample Multiplier: 1

Quant Time: Feb 11 08:28:30 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Q Ion	Response	Conc Units	Dev(Min)
Internal Standards					
1) d12-Benzo(a)Pyrene	34.838	264	58012m	50.23 ng/mL	0.00
Target Compounds					
2) B(a)P	34.941	252	1987m	1.30 ng/mL	

(#) = quantifier out of range (m) = manual integration (+) = signals summed



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Study Identifier: M195-GLP

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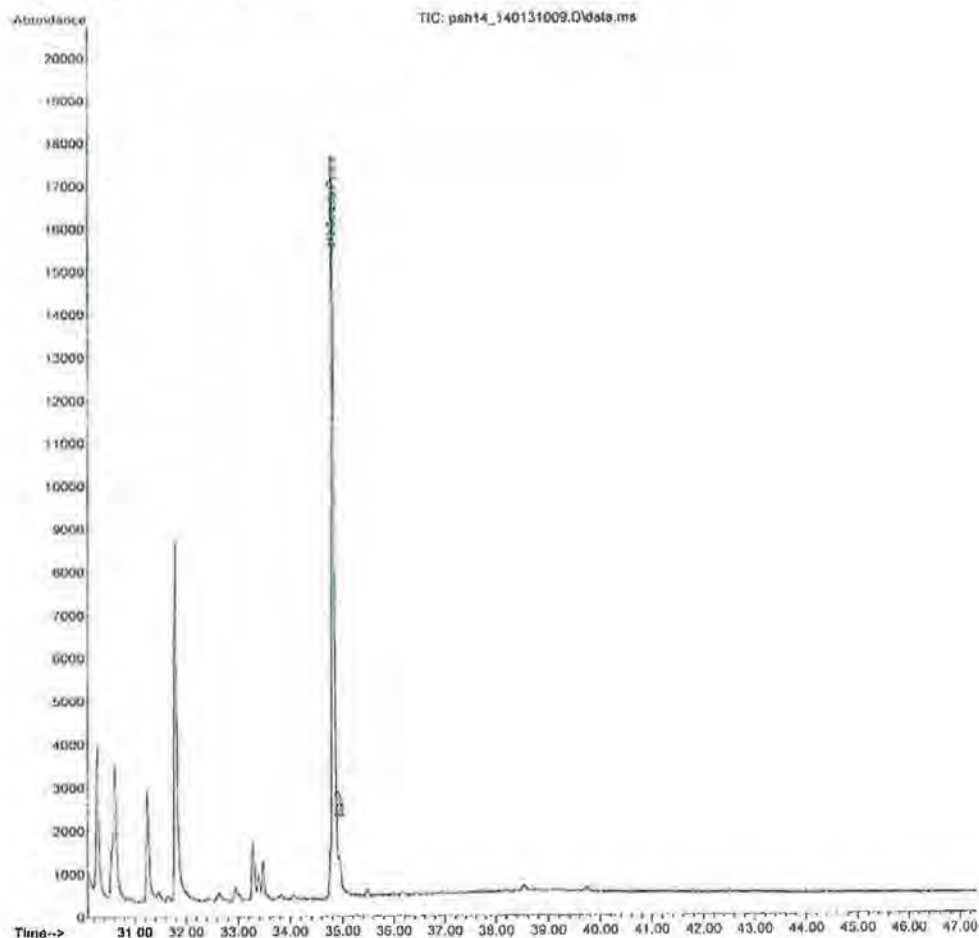
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiak
Path: \\fa2\repository\repository\3117407\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131009.D
Acq On : 3 Feb 2014 2:14
Operator : Analyst
Sample : 1400894-1-9
Misc : M195-GLP PAH WT B2
ALS Vial : 66 Sample Multiplier: 1

Quant Time: Feb 11 08:28:30 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_14012 .M195GLP.WT.M Tue Feb 11 09:27:41 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH14_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiak
Path: \\s2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_2\\WT\\
Data File : pah14_140131013.D
Acq On : 3 Feb 2014 5:46
Operator : Analyst
Sample : 140089T-2-4
Misc : M195-GLP PAH WT B2
ALS Vial : 70 Sample Multiplier: 1

Quant Time: Feb 11 08:29:23 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Qion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.842	264	66884m	50.23	ng/mL	0.00
Target Compounds						
2) B(a)P	34.941	252	1426m	0.81	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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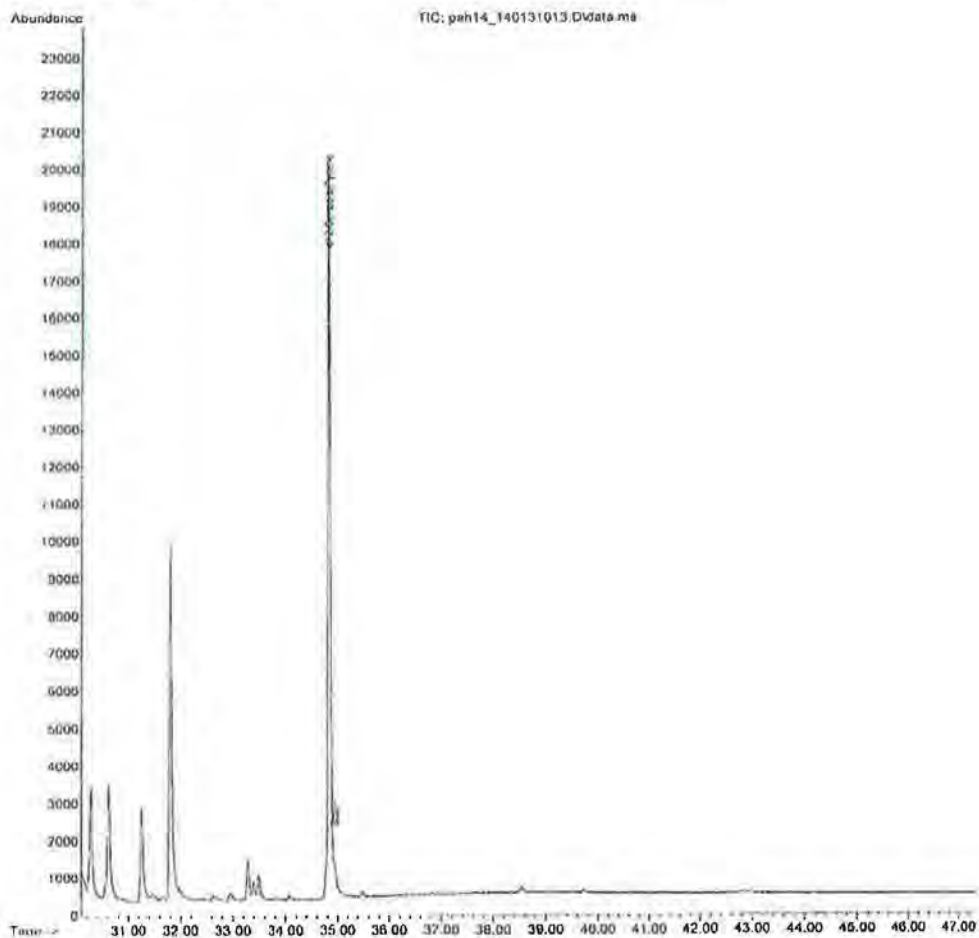
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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Electronically Signed By: Bartosz Jasiak
Path: \\s2repositoryrepository\3117407\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131013.D
Acq On : 3 Feb 2014 5:46
Operator : Analyst
Sample : 1400891-2-4
Misc : M195-GLP PAH WT B2
ALS Vial : 70 Sample Multiplier: 1

Quant Time: Feb 11 08:29:23 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
Last Update : Wed Jan 29 16:16:01 2014
Response via : Initial Calibration



PAH14_14012...M195GLP.WT.M Tue Feb 11 09:28:04 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Date Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131023.D
Acq On : 3 Feb 2014 15:36
Operator : Analyst
Sample : 1400893-3-4
Misc : M195-GLP PAH WT B2
ALS Vial : 79 Sample Multiplier: 1

Quant Time: Feb 11 08:31:37 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Qlen	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	264	64100m	50.23	ng/mL	0.00
Target Compounds						
2) B(a)P	34.949	252	1763m	1.04	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

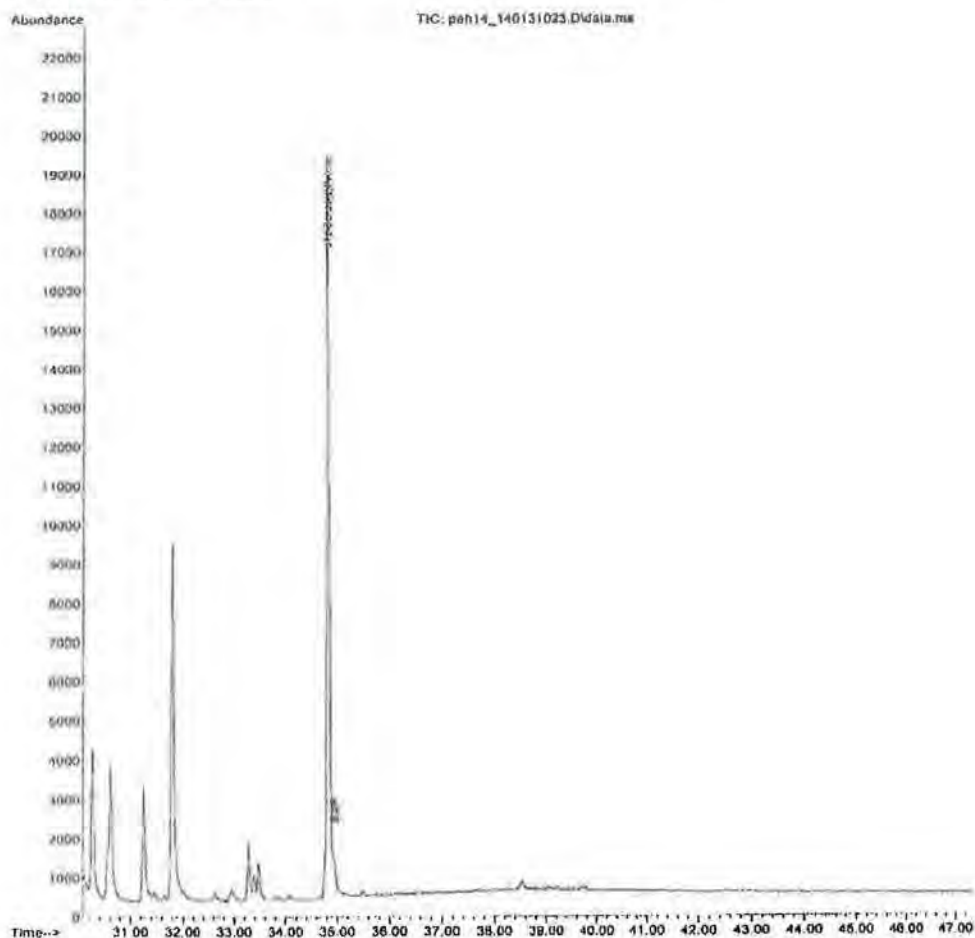
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Electronically Signed By: BañosZ Jasiak
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Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140131023.D
Acq On : 3 Feb 2014 15:36
Operator : Analyst
Sample : 1400893-3-4
Misc : M195-GLP PAH WT B2
ALS Vial : 79 Sample Multiplier: 1

Quant Time: Feb 11 08:31:37 2014
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Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - B.JAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_14012...M195GLP_WT.M Tue Feb 11 09:31:21 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3117407\\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_2\\WT\\
Data File : pah14_140205003.D
Acq On : 5 Feb 2014 18:30
Operator : Analyst
Sample : 1400895-3-10
Misc : M195-GLP PAH WT B2
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 11 08:33:55 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q_M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	284	76440m	50.23	ng/mL	0.00
Target Compounds						
2) B(a)P	34.956	252	2037m	1.01	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



APM

Study Identifier: M195-GLP

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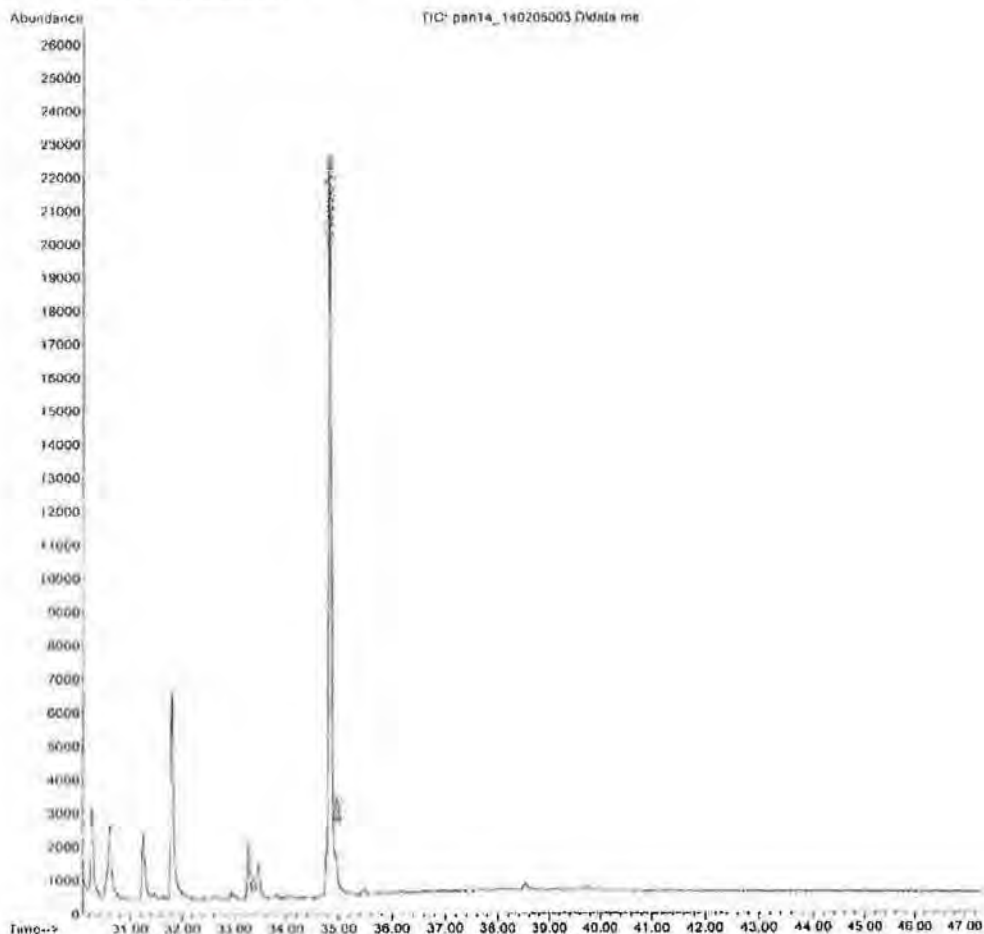
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH1_B2_WT_Chromatograms_1-1_to_3-10.pdf_3117407
Electronically Signed By: Bartosz Jasiek
Path: \\a2repository\repository\3117407\
Created: 2/11/14 10:31 Audit ID: 3117407

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140205003.D
Acq On : 5 Feb 2014 18:30
Operator : Analyst
Sample : 1400895-3-10
Misc : M195-GLP PAH WT B2
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 11 08:33:55 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129.M195GLP.WT.M Tue Feb 11 09:35:38 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_4-1_to_5-7.pdf_3117413
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\repository\repository\3117413\
Created: 2/11/14 10:33 Audit ID: 3117413

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140205006.D
Acq On : 5 Feb 2014 21:10
Operator : Analyst
Sample : 1400896-4-3
Misc : M195-GLP PAH WT B2
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 11 09:34:39 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Qlen	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.838	264	75203m	50.23	ng/mL	0.00
Target Compounds						
2) B(a)P	34.948	252	1919m	0.97	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

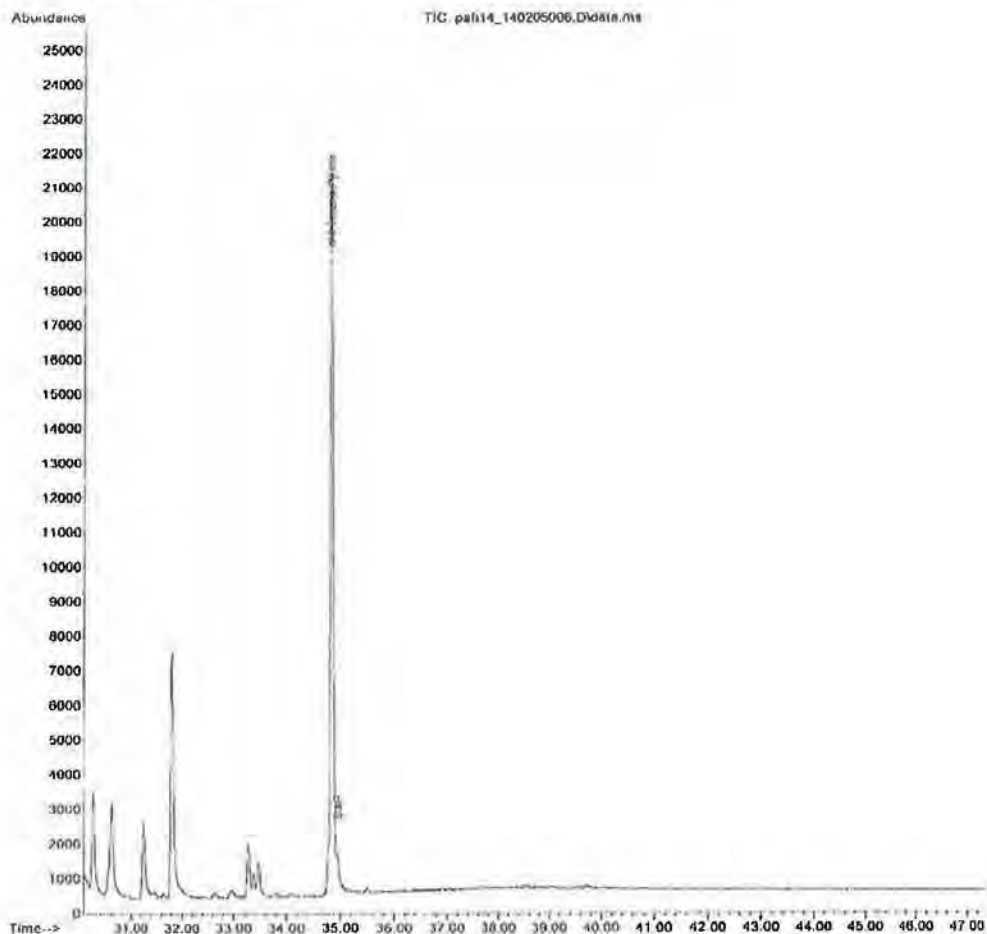
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_4-1_to_5-7.pdf_3117413
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3117413\\
Created: 2/11/14 10:33 Audit ID: 3117413

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140205006.D
Acq On : 5 Feb 2014 21:10
Operator : Analyst
Sample : 1400896-4-3
Misc : M185-GLP PAH WT B2
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 11 08:34:39 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129...M195GLP.WT.M Tue Feb 11 09:35:56 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_4-1_to_5-7.pdf_3117413
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3117413\\
Created: 2/11/14 10:33 Audit ID: 3117413

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140205016.D
Acq On : 6 Feb 2014 8:00
Operator : Analyst
Sample : 1400893-5-3
Misc : M195-GLP PAH WT B2
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Feb 11 08:38:59 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzof[a]Pyrene	34.834	264	89219m	50.23	ng/mL	-0.01
Target Compounds						
2) B[a]P	34.945	252	2322m	0.99	ng/mL	

(#) :: qualifier out of range (m) = manual integration (+) = signals summed



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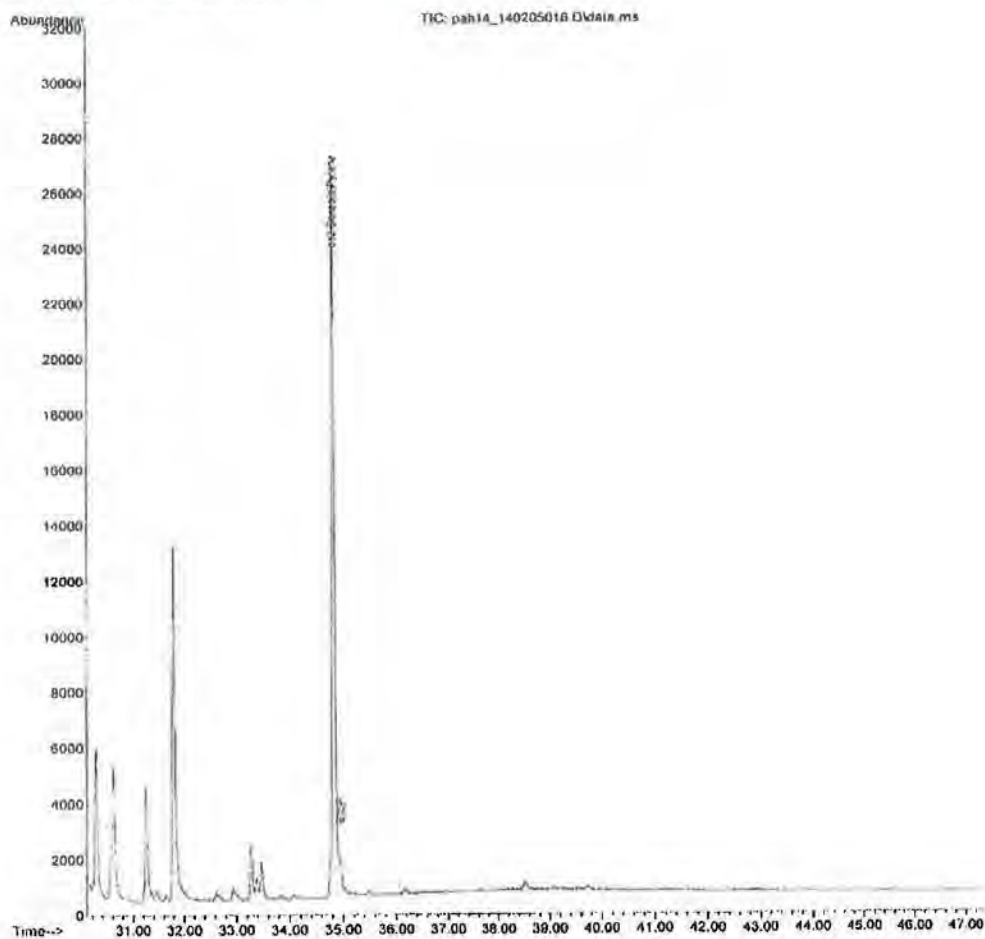
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B2_WT_Chromatograms_4-1_to_5-7.pdf_3117413
Electronically Signed By: Bartosz Jasik
Path: \\fs2\repository\repository\3117413\
Created: 2/11/14 10:33 Audl ID: 3117413

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_2\WT\
Data File : pah14_140205016.D
Acq On : 8 Feb 2014 6:00
Operator : Analyst
Sample : 1400893-5-3
Misc : M195-GLP PAH WT B2
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Feb 11 08:36:59 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wnd Jan 29 15:18:01 2014
Response via : Initial Calibration





Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B2_Repeats_chromatograms.pdf_3181443
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\repository\repository\3181443\
Created: 2/21/14 14:25 Audit ID: 3181443

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_2\WT\Repeats\
Data File : pah14_140212009.D
Acq On : 15 Feb 2014 3:04
Operator : Analyst
Sample : 1400896-1R3-3
Misc : M195-GLP PAH WT B2 Repeats
ALS Vial : 63 Sample Multiplier: 1

Quant Time: Feb 21 09:00:54 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Qion	Response	Conc Units	Dev(Min)
Internal Standards					
1) d12-Benzo(a)Pyrene	34.823	284	73278m	50.23 ng/mL	-0.02
Target Compounds					
2) B(a)P	34.934	252	1524m	0.79 ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



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Study Identifier: M195-GLP

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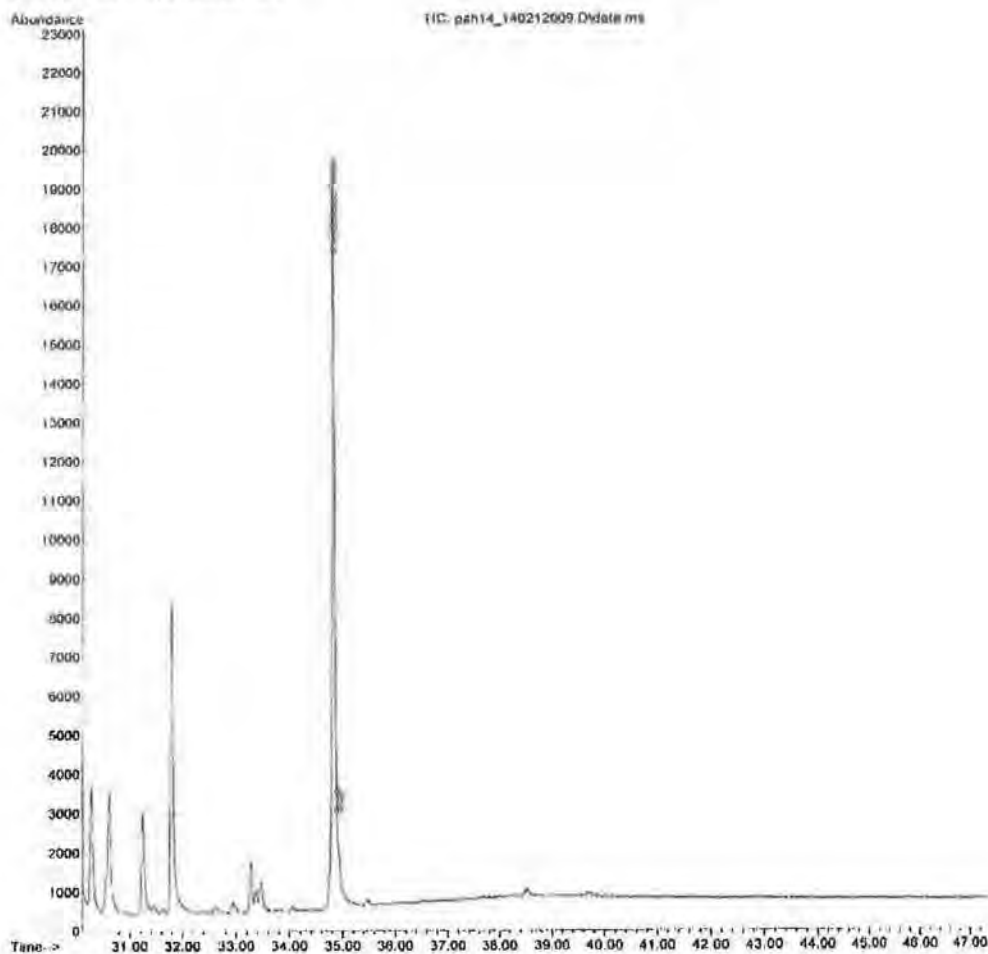
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B2_Repeats_chromatograms.pdf_3181443
Electronically Signed By: Bartosz Jaslak
Path: \\sa2repository\\repository\\3181443\\
Created: 2/21/14 14:25 Audit ID: 3181443

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\Projects\\M195-GLP\\Block_2\\WT\\Repeats\\
Data File : pah14_140212009.D
Acq On : 15 Feb 2014 3:04
Operator : Analyst
Sample : 1400896-1R3-3
Misc : M195-GLP PAH WT B2 Repeats
ALS Vial : 63 Sample Multiplier: 1

Quant Time: Feb 21 09:00:54 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
Last Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129.M195GLP_WT.M Fri Feb 21 14:03:08 2014

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B2_Repeats_chromatograms.pdf_3181443
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3181443\\
Created: 2/21/14 14:25 Audit ID: 3181443

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Black_2\WT\Repeats\
Data File : pah14_140214005.D
Acq On : 14 Feb 2014 19:04
Operator : Analyst
Sample : 1400894-1R2-7
Misc : M195-GLP PAH WT B2 Repeats
ALS Vial : 59 Sample Multiplier: 1

Quant Time: Feb 21 09:02:15 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R T	Q Ion	Response	Conc Units	Dev(Min)
Internal Standards					
1) d12-Benzo(a)Pyrene	34.823	264	77931m	50.23 ng/mL	-0.02
Target Compounds					
2) B(a)P	34.934	252	2614m	1.27 ng/mL	

[#] = qualifier out of range [m] = manual integration [+] = signals summed



Study Identifier: M195-GLP

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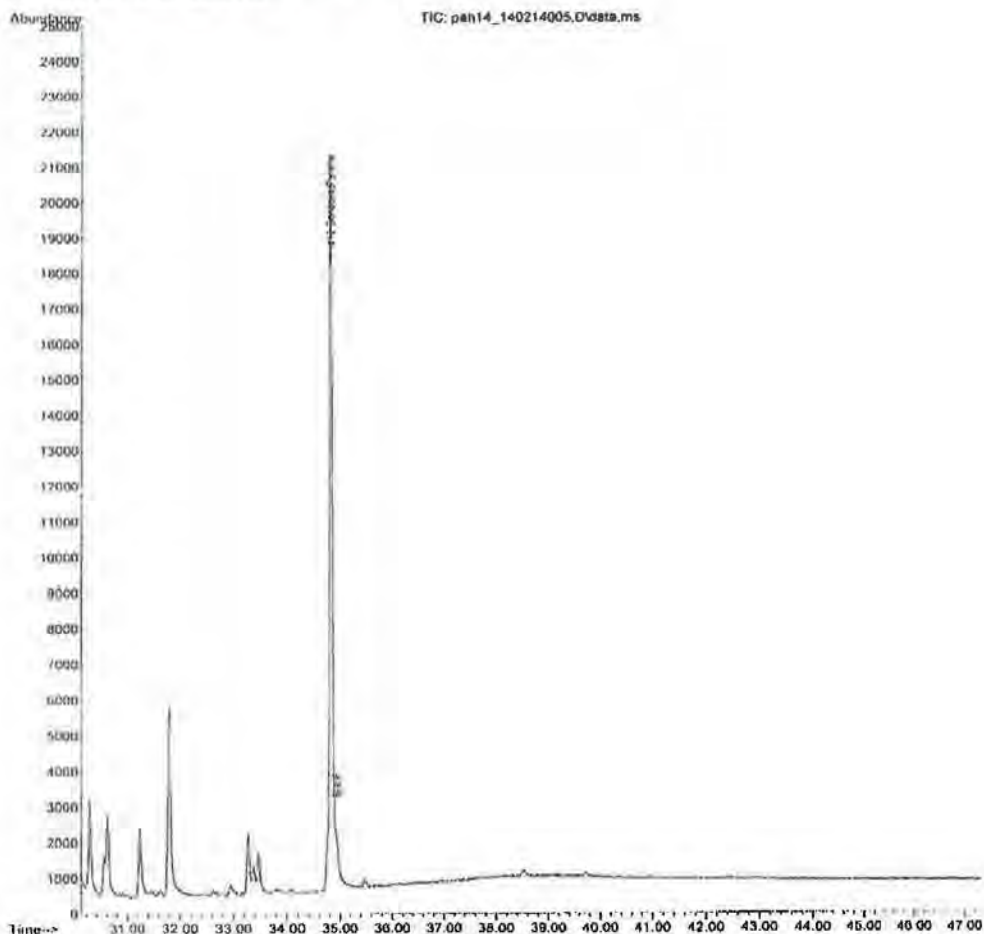
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B2_Repeats_chromatograms.pdf_3181443
Electronically Signed By: Bartosz Jaslak
Path: \\a2repository\repository\3181443\
Created: 2/21/14 14:26 Audit ID: 3181443

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Projects\M195-GLP\Block_2\WT\Repeats\
Data File : pah14_140214005.D
Acq On : 14 Feb 2014 19:04
Operator : Analyst
Sample : 1400894-1R2-7
Misc : M195-GLP PAH WT B2 Repeats
ALS Vial : 69 Sample Multiplier: 1

Quant Time: Feb 21 09:02:15 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:18:01 2014
Response via : Initial Calibration



PAH14_14012...M195GLP_WT.M Fri Feb 21 14:03:39 2014

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Study Identifier: M195-GLP

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

M195GLP_PAII_WT_B3_instrument_run_summary.pdf_3208635
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3208635\\
Created: 2/26/14 14:47 Audit ID: 3208635

Instrument Run Summary List									
Components Referenced									
Sample ID	Sample Name	Injection Date	Injection Time	Method ID	Injection Volume	Injection Rate	Injection Pressure	Injection Temperature	Injection Notes
150001	150001-1	15/02/2014	11:00:00	150001	10.00	1.00	1.00	1.00	150001-1
150002	150002-1	15/02/2014	11:00:00	150002	10.00	1.00	1.00	1.00	150002-1
150003	150003-1	15/02/2014	11:00:00	150003	10.00	1.00	1.00	1.00	150003-1
150004	150004-1	15/02/2014	11:00:00	150004	10.00	1.00	1.00	1.00	150004-1
150005	150005-1	15/02/2014	11:00:00	150005	10.00	1.00	1.00	1.00	150005-1
150006	150006-1	15/02/2014	11:00:00	150006	10.00	1.00	1.00	1.00	150006-1
150007	150007-1	15/02/2014	11:00:00	150007	10.00	1.00	1.00	1.00	150007-1
150008	150008-1	15/02/2014	11:00:00	150008	10.00	1.00	1.00	1.00	150008-1
150009	150009-1	15/02/2014	11:00:00	150009	10.00	1.00	1.00	1.00	150009-1
150010	150010-1	15/02/2014	11:00:00	150010	10.00	1.00	1.00	1.00	150010-1
150011	150011-1	15/02/2014	11:00:00	150011	10.00	1.00	1.00	1.00	150011-1
150012	150012-1	15/02/2014	11:00:00	150012	10.00	1.00	1.00	1.00	150012-1
150013	150013-1	15/02/2014	11:00:00	150013	10.00	1.00	1.00	1.00	150013-1
150014	150014-1	15/02/2014	11:00:00	150014	10.00	1.00	1.00	1.00	150014-1
150015	150015-1	15/02/2014	11:00:00	150015	10.00	1.00	1.00	1.00	150015-1
150016	150016-1	15/02/2014	11:00:00	150016	10.00	1.00	1.00	1.00	150016-1
150017	150017-1	15/02/2014	11:00:00	150017	10.00	1.00	1.00	1.00	150017-1
150018	150018-1	15/02/2014	11:00:00	150018	10.00	1.00	1.00	1.00	150018-1
150019	150019-1	15/02/2014	11:00:00	150019	10.00	1.00	1.00	1.00	150019-1
150020	150020-1	15/02/2014	11:00:00	150020	10.00	1.00	1.00	1.00	150020-1
150021	150021-1	15/02/2014	11:00:00	150021	10.00	1.00	1.00	1.00	150021-1
150022	150022-1	15/02/2014	11:00:00	150022	10.00	1.00	1.00	1.00	150022-1
150023	150023-1	15/02/2014	11:00:00	150023	10.00	1.00	1.00	1.00	150023-1
150024	150024-1	15/02/2014	11:00:00	150024	10.00	1.00	1.00	1.00	150024-1
150025	150025-1	15/02/2014	11:00:00	150025	10.00	1.00	1.00	1.00	150025-1
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150030	150030-1	15/02/2014	11:00:00	150030	10.00	1.00	1.00	1.00	150030-1
150031	150031-1	15/02/2014	11:00:00	150031	10.00	1.00	1.00	1.00	150031-1
150032	150032-1	15/02/2014	11:00:00	150032	10.00	1.00	1.00	1.00	150032-1
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150034	150034-1	15/02/2014	11:00:00	150034	10.00	1.00	1.00	1.00	150034-1
150035	150035-1	15/02/2014	11:00:00	150035	10.00	1.00	1.00	1.00	150035-1
150036	150036-1	15/02/2014	11:00:00	150036	10.00	1.00	1.00	1.00	150036-1
150037	150037-1	15/02/2014	11:00:00	150037	10.00	1.00	1.00	1.00	150037-1
150038	150038-1	15/02/2014	11:00:00	150038	10.00	1.00	1.00	1.00	150038-1
150039	150039-1	15/02/2014	11:00:00	150039	10.00	1.00	1.00	1.00	150039-1
150040	150040-1	15/02/2014	11:00:00	150040	10.00	1.00	1.00	1.00	150040-1
150041	150041-1	15/02/2014	11:00:00	150041	10.00	1.00	1.00	1.00	150041-1
150042	150042-1	15/02/2014	11:00:00	150042	10.00	1.00	1.00	1.00	150042-1
150043	150043-1	15/02/2014	11:00:00	150043	10.00	1.00	1.00	1.00	150043-1
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150047	150047-1	15/02/2014	11:00:00	150047	10.00	1.00	1.00	1.00	150047-1
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150051	150051-1	15/02/2014	11:00:00	150051	10.00	1.00	1.00	1.00	150051-1
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150053	150053-1	15/02/2014	11:00:00	150053	10.00	1.00	1.00	1.00	150053-1
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150055	150055-1	15/02/2014	11:00:00	150055	10.00	1.00	1.00	1.00	150055-1
150056	150056-1	15/02/2014	11:00:00	150056	10.00	1.00	1.00	1.00	150056-1
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150059	150059-1	15/02/2014	11:00:00	150059	10.00	1.00	1.00	1.00	150059-1
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150062	150062-1	15/02/2014	11:00:00	150062	10.00	1.00	1.00	1.00	150062-1
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150067	150067-1	15/02/2014	11:00:00	150067	10.00	1.00	1.00	1.00	150067-1
150068	150068-1	15/02/2014	11:00:00	150068	10.00	1.00	1.00	1.00	150068-1
150069	150069-1	15/02/2014	11:00:00	150069	10.00	1.00	1.00	1.00	150069-1
150070	150070-1	15/02/2014	11:00:00	150070	10.00	1.00	1.00	1.00	150070-1
150071	150071-1	15/02/2014	11:00:00	150071	10.00	1.00	1.00	1.00	150071-1
150072	150072-1	15/02/2014	11:00:00	150072	10.00	1.00	1.00	1.00	150072-1
150073	150073-1	15/02/2014	11:00:00	150073	10.00	1.00	1.00	1.00	150073-1
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150079	150079-1	15/02/2014	11:00:00	150079	10.00	1.00	1.00	1.00	150079-1
150080	150080-1	15/02/2014	11:00:00	150080	10.00	1.00	1.00	1.00	150080-1
150081	150081-1	15/02/2014	11:00:00	150081	10.00	1.00	1.00	1.00	150081-1
150082	150082-1	15/02/2014	11:00:00	150082	10.00	1.00	1.00	1.00	150082-1
150083	150083-1	15/02/2014	11:00:00	150083	10.00	1.00	1.00	1.00	150083-1
150084	150084-1	15/02/2014	11:00:00	150084	10.00	1.00	1.00	1.00	150084-1
150085	150085-1	15/02/2014	11:00:00	150085	10.00	1.00	1.00	1.00	150085-1
150086	150086-1	15/02/2014	11:00:00	150086	10.00	1.00	1.00	1.00	150086-1
150087	150087-1	15/02/2014	11:00:00	150087	10.00	1.00	1.00	1.00	150087-1
150088	150088-1	15/02/2014	11:00:00	150088	10.00	1.00	1.00	1.00	150088-1
150089	150089-1	15/02/2014	11:00:00	150089	10.00	1.00	1.00	1.00	150089-1
150090	150090-1	15/02/2014	11:00:00	150090	10.00	1.00	1.00	1.00	150090-1
150091	150091-1	15/02/2014	11:00:00	150091	10.00	1.00	1.00	1.00	150091-1
150092	150092-1	15/02/2014	11:00:00	150092	10.00	1.00	1.00	1.00	150092-1
150093	150093-1	15/02/2014	11:00:00	150093	10.00	1.00	1.00	1.00	150093-1
150094	150094-1	15/02/2014	11:00:00	150094	10.00	1.00	1.00	1.00	150094-1
150095	150095-1	15/02/2014	11:00:00	150095	10.00	1.00	1.00	1.00	150095-1
150096	150096-1	15/02/2014	11:00:00	150096	10.00	1.00	1.00	1.00	150096-1
150097	150097-1	15/02/2014	11:00:00	150097	10.00	1.00	1.00	1.00	150097-1
150098	150098-1	15/02/2014	11:00:00	150098	10.00	1.00			



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_3\\WT\\
Data File : pah14_140212001.D
Acq On : 12 Feb 2014 12:00
Operator : Analyst
Sample : STD 4 140128
Misc : M195-GLP PAH WT B3
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 19 09:57:20 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q_M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:16:01 2014
Response via : Initial Calibration

Compound	R.T	Qlon	Response	Conc Units	Dev(Min)
Internal Standards					
1) d12-Benzo(a)Pyrene	34.857	264	22488m	50.23 ng/mL	0.01
Target Compounds					
2) B(a)P	34.960	252	5472m	9.23 ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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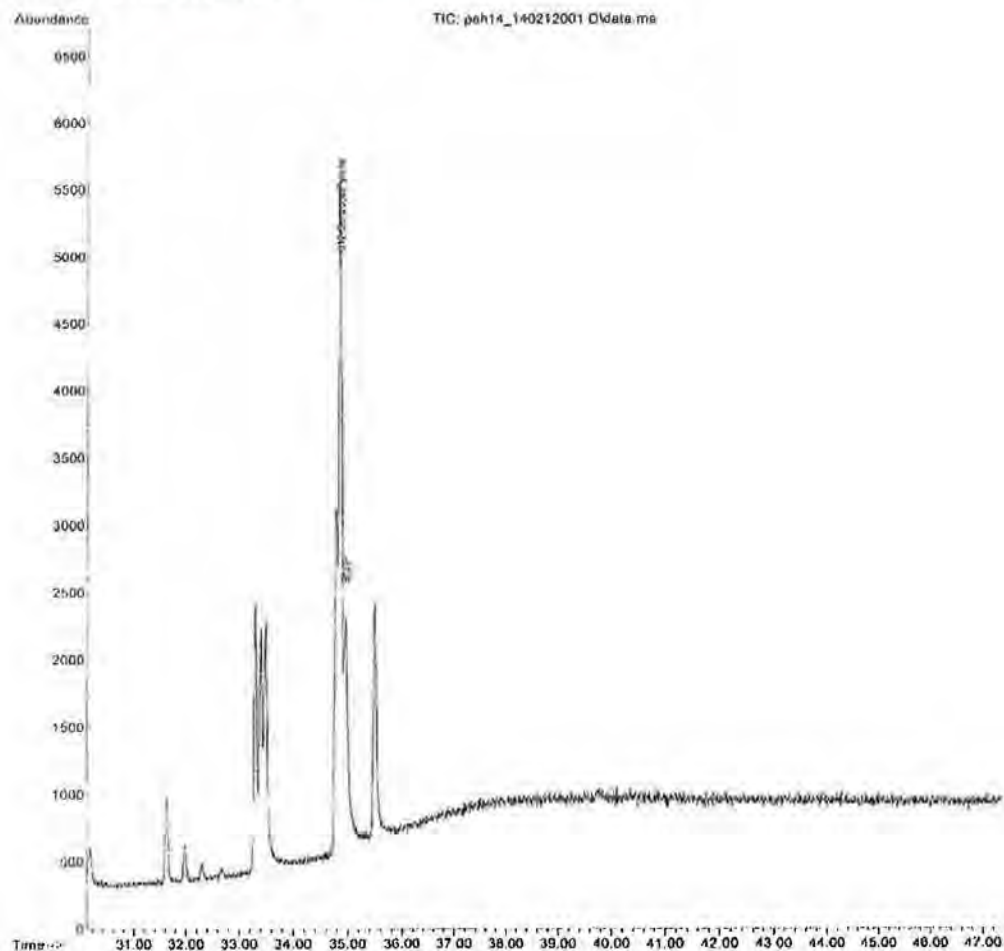
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:48 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140212001.D
Acq On : 12 Feb 2014 12:00
Operator : Analyst
Sample : STD 4 140128
Misc : M195-GLP PAH WT B3
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 19 09:57:20 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:16:01 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.WT.M Wed Feb 19 14:31:30 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jasick
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_14012002.D
Acq On : 12 Feb 2014 12:53
Operator : Analyst
Sample : 1400931-1-1
Misc : M195-GLP PAH WT B3
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 19 09:57:31 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	RT	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.827	284	50213m	50.23	ng/mL	-0.02
Target Compounds						
2) B(a)P	34.934	252	1585m	1.20	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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Study Report – Appendix F

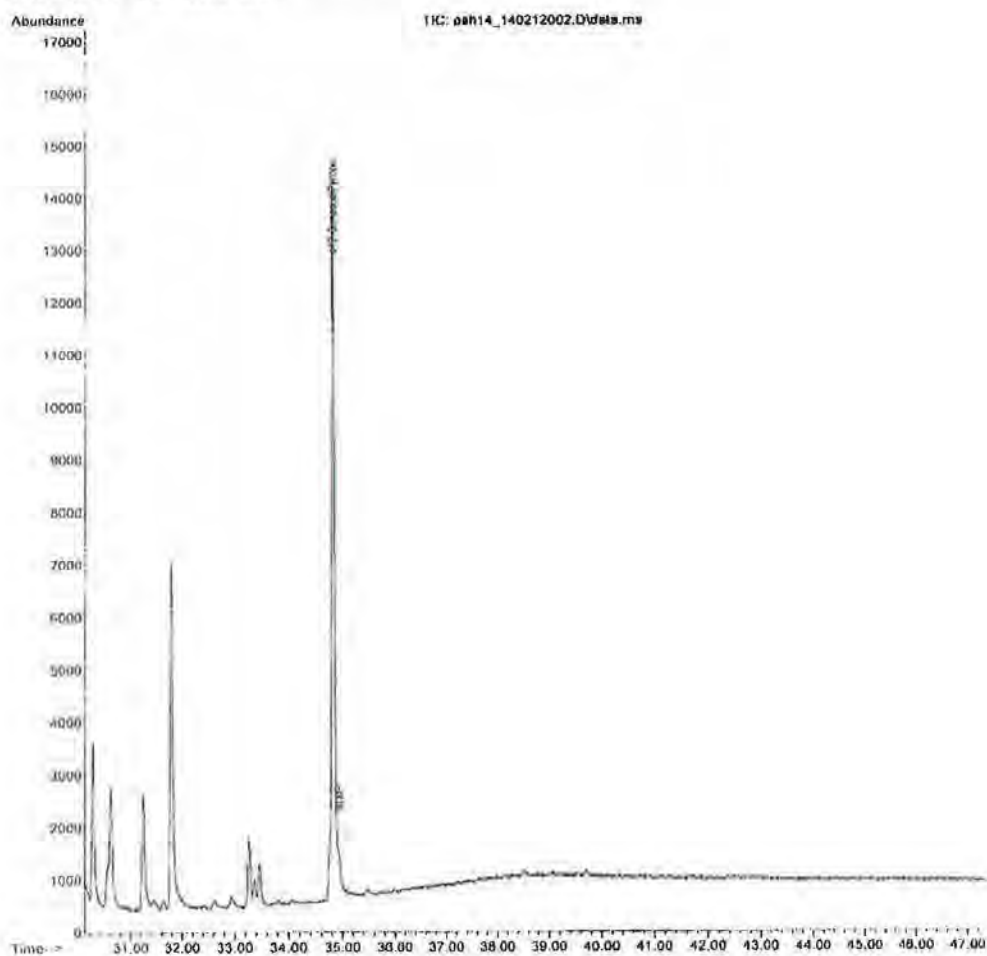
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140212002.D
Acq On : 12 Feb 2014 12:53
Operator : Analyst
Sample : 1400931-T-1
Misc : M195-GLP PAH WT B3
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 19 09:57:31 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:16:01 2014
Response via : Initial Calibration





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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818

Electronically Signed By: Bartosz Jasik
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_3\\WT\\
Data File : pah14_14012004.D
Acq On : 12 Feb 2014 14:39
Operator : Analyst
Sample : 888-1-3
Misc : M195-GLP PAH WT B3
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 19 09:57:57 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:18:01 2014
Response via : Initial Calibration

Compound	R.T.	Qion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.820	264	88485m	50.23	ng/mL	-0.03
Target Compounds						
2) B(a)P	34.919	252	103781m	44.47	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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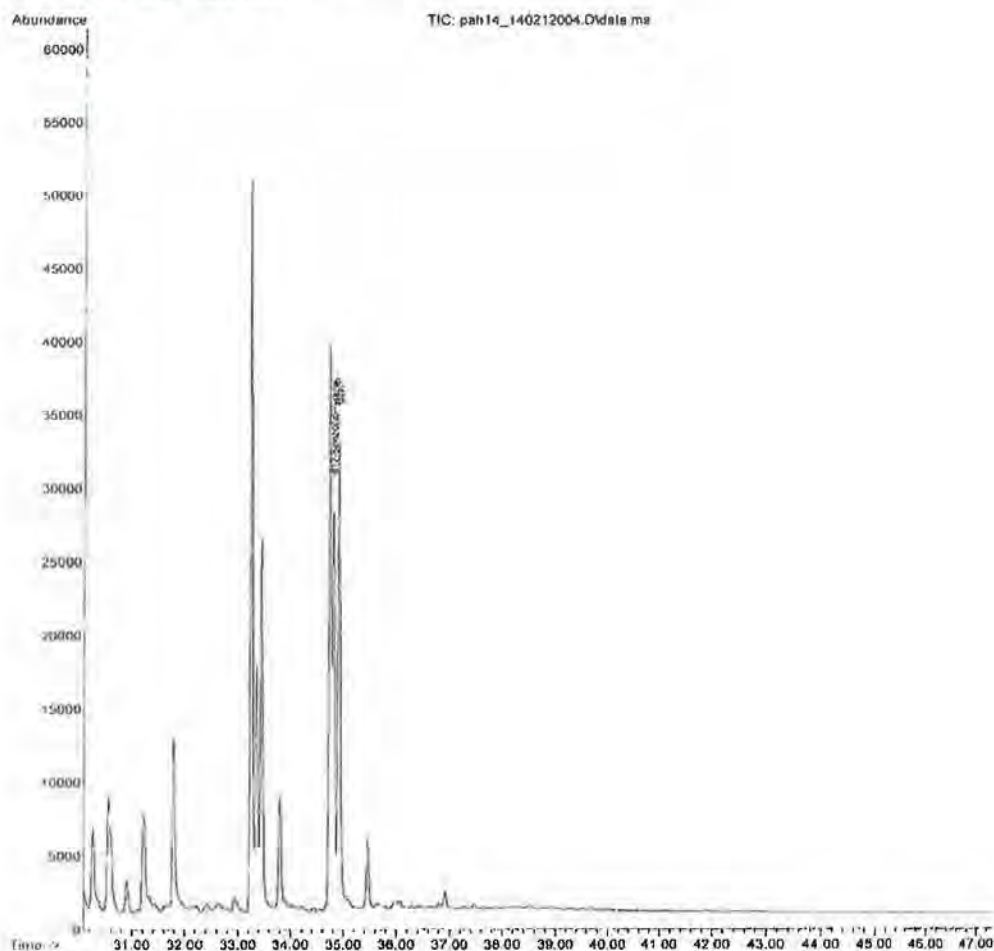
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140212004.D
Acq On : 12 Feb 2014 14:39
Operator : Analyst
Sample : 888-1-3
Misc : M195-GLP PAH WT B3
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 19 09:57:57 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:18:01 2014
Response via : Initial Calibration



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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3163818\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140212006.D
Acq On : 12 Feb 2014 16:26
Operator : Analyst
Sample : 1400932-1-5
Misc : M195-GLP PAH WT B3
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 19 09:58:27 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T, QIon	Response	Conc Units	Dev(Min)
Internal Standards				
1) d12-Benzo(a)Pyrene	34.823	284 51581m	50.23 ng/mL	-0.02
Target Compounds				
2) B(a)P	34.934	262 1279m	0.94 ng/mL	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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Study Report – Appendix F

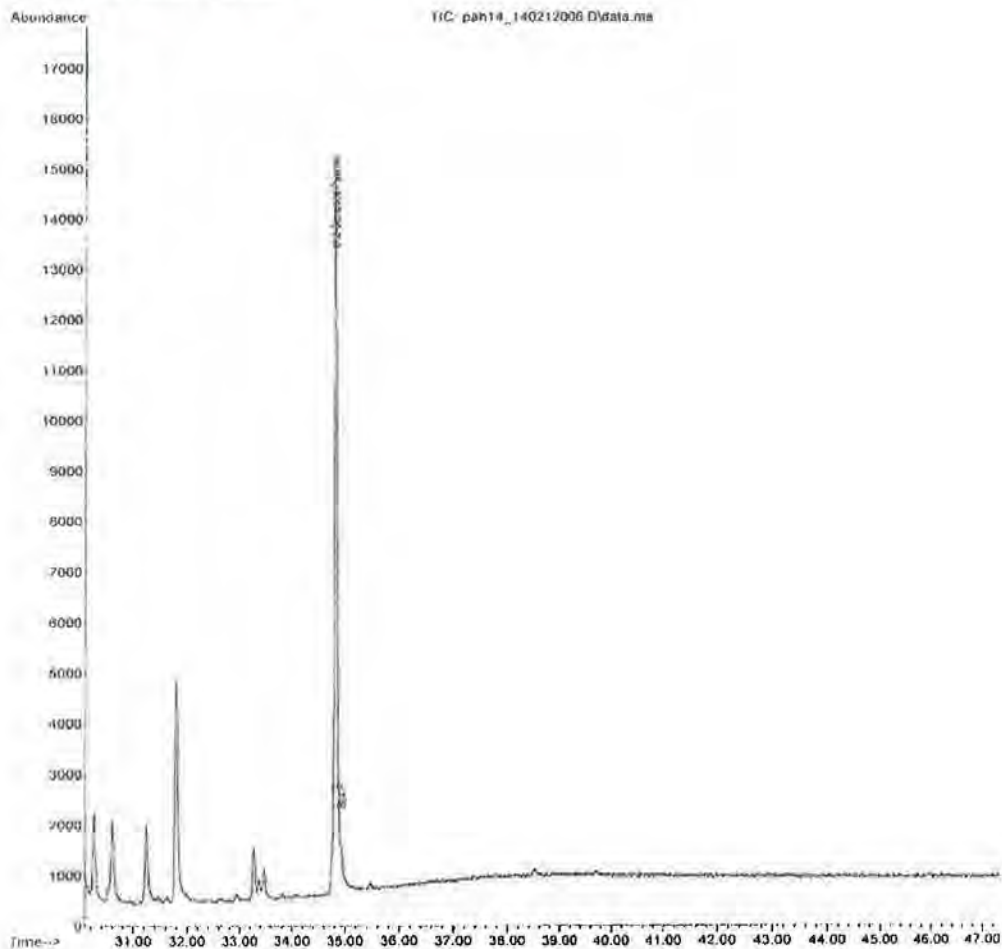
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3163818\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140212006.D
Acq On : 12 Feb 2014 16:26
Operator : Analyst
Sample : 1400932-1-5
Misc : M195-GLP PAH WT B3
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 19 09:58:27 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration





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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jasiak
Path: \\fe2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path: D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File: pah14_14012017.D
Acq On: 13 Feb 2014 2:10
Operator: Analyst
Sample: 1400933-2-8
Misc: M195-GLP PAH WT B3
ALS Vial: 17 Sample Multiplier: 1

Quant Time: Feb 19 10:00:58 2014
Quant Method: C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title: M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update: Wed Jan 29 15:16:01 2014
Response via: Initial Calibration

Compound	R.T	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.827	264	46007m	50.23	ng/mL	-0.02
Target Compounds						
2) B(a)P	34.930	252	1268m	1.05	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



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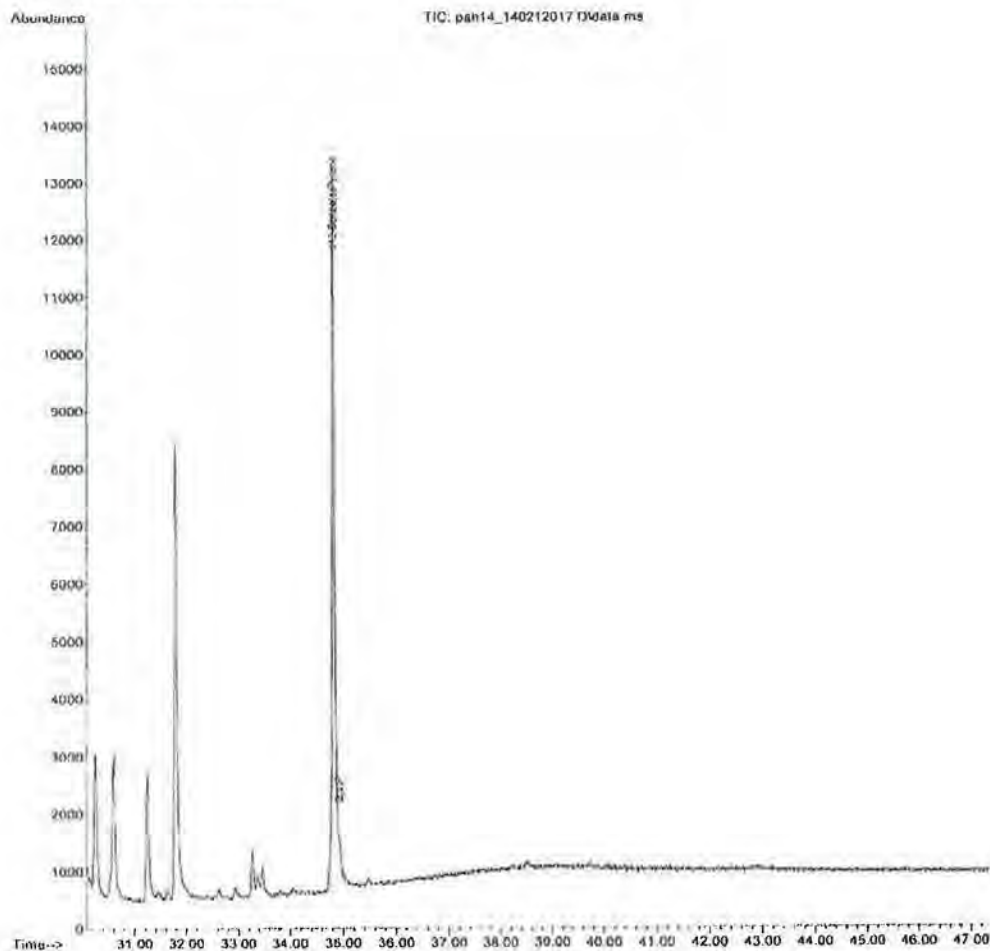
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_3\\WT\\
Data File : pah14_140212017.D
Acq On : 13 Feb 2014 2:10
Operator : Analyst
Sample : 1400933-2-8
Misc : M195-GLP PAH WT B3
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Feb 19 10:00:58 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-9.pdf_3163818
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\repository\repository\3163818\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140212023.D
Acq On : 13 Feb 2014 7:27
Operator : Analyst
Sample : 1400933-3-3
Misc : M195-GLP PAH WT B3
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Feb 19 10:02:26 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.827	264	67726m	50.23	ng/mL	-0.02
Target Compounds						
2) B(a)P	34.930	252	1208m	0.79	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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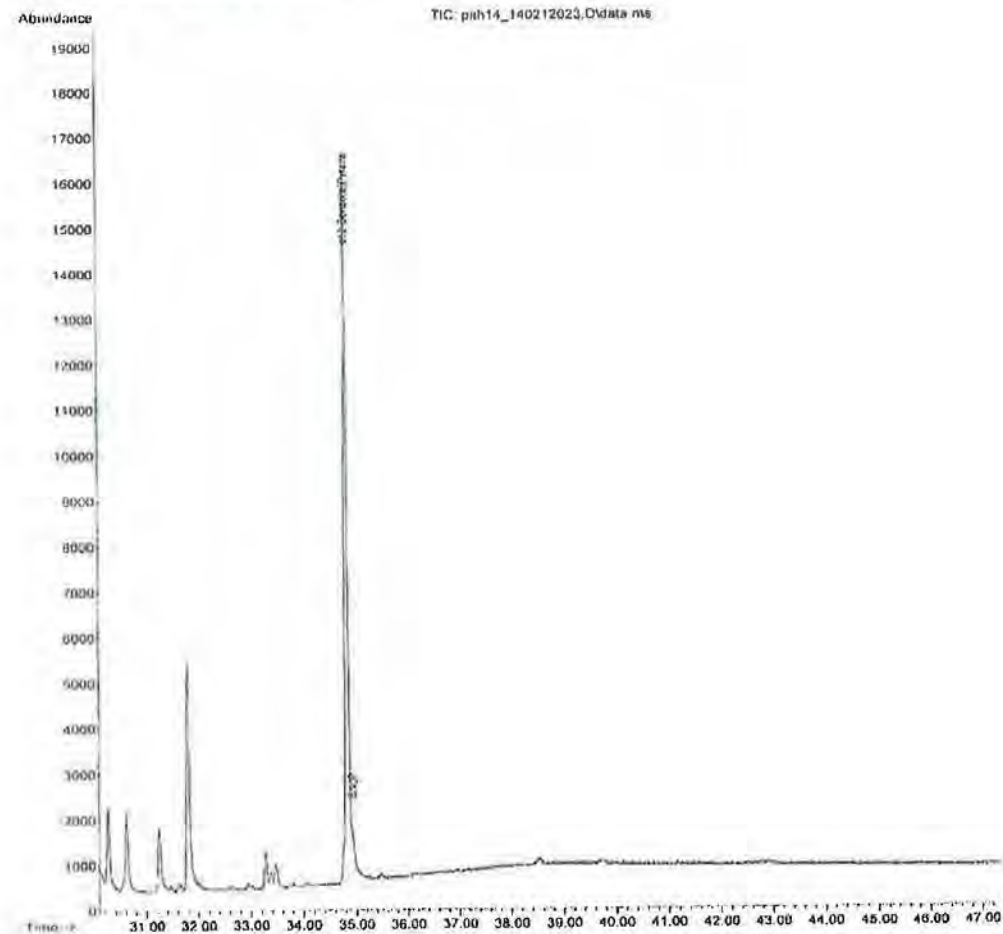
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_WT_B3_GCMS14_Chromatograms_1-1_to_3-6.pdf_3163818
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3163818\\
Created: 2/19/14 14:49 Audit ID: 3163818

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\PROJECTS\\M195-GLP\\BLOCK_3\\WT\\
Data File : pah14_140212023.D
Acq On : 13 Feb 2014 7:27
Operator : Analyst
Sample : 1400933 3-3
Misc : M195-GLP PAH WT B3
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Feb 19 10:02:26 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
Last Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129.M195GLP.WT.M Wed Feb 19 14:33:13 2014

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Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B3_WT_GCMS14_Chromatograms_3-10_to_end.pdf_3163840

Electronically Signed By: Bartosz Jasiak
Path: \\Ms2repository\repository\3163840\
Created: 2/19/14 14:51 Audit ID: 3163840

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT1
Data File : pah14_140213011.D
Acq On : 14 Feb 2014 1:15
Operator : Analyst
Sample : 1400934-4-9
Misc : M195-GLP PAH WT B3
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Feb 19 10:06:50 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	Qion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.831	284	57983m	50.23	ng/mL	-0.01
Target Compounds						
2) B(a)P	34.934	252	2213m	1.45	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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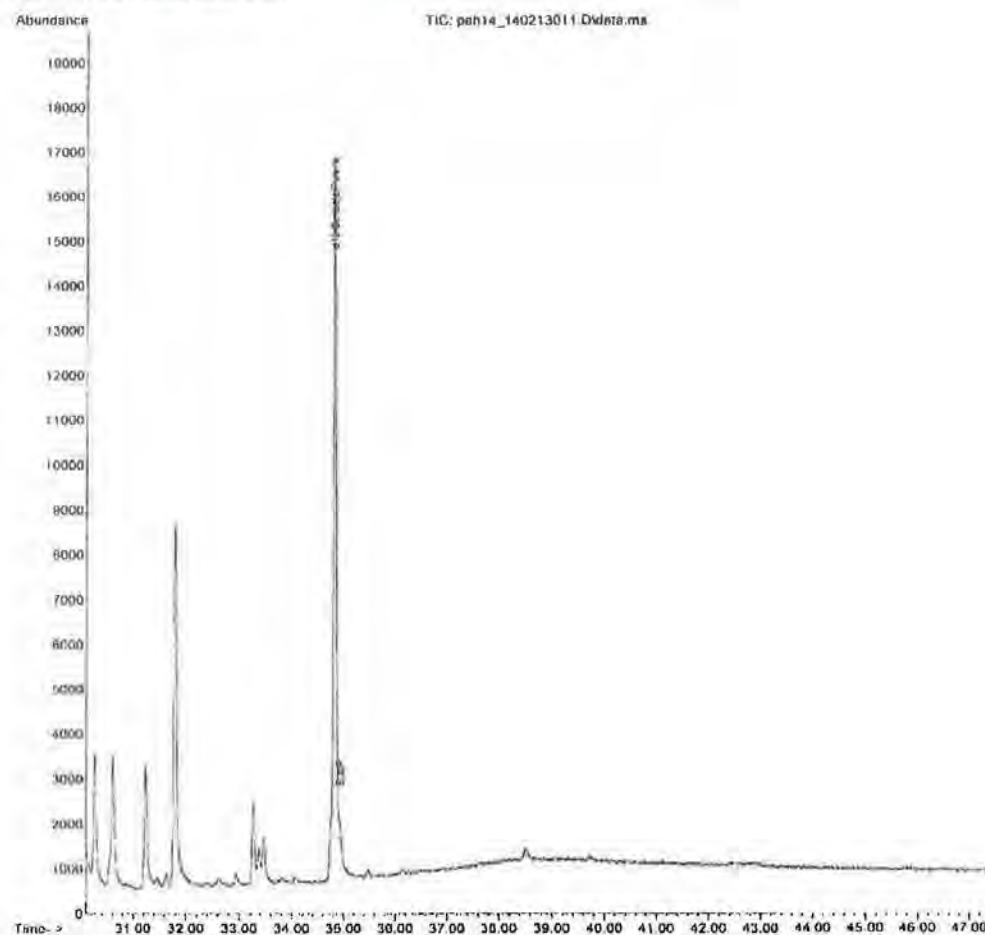
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B3_WT_GCMS14_Chromatograms_3-10_to_end.pdf_3163840
Electronically Signed By: Bartosz Jasiak
Path: Ms2repository\repository\3163840\
Created: 2/19/14 14:51 Audit ID: 3163840

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140213011.D
Acq On : 14 Feb 2014 1:15
Operator : Analyst
Sample : 1400934-4-9
Misc : M195-GLP PAH WT B3
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Feb 19 10:06:50 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_140129.M195GLP_WT.M Wed Feb 19 14:35:20 2014

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B3_WT_GCMS14_Chromatograms_3-10_to_end.pdf_3163840
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3163840
Created: 2/19/14 14:51 Audit ID: 3163840

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140213013.D
Acq On : 14 Feb 2014 3:01
Operator : Analyst
Sample : 1400935-5-1
Misc : M195-GLP PAH WT B3
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Feb 19 10:07:20 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.834	264	77116m	50.23	ng/mL	-0.01
Target Compounds						
2) B(a)P	34.949	252	1867m	0.92	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



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Study Report – Appendix F

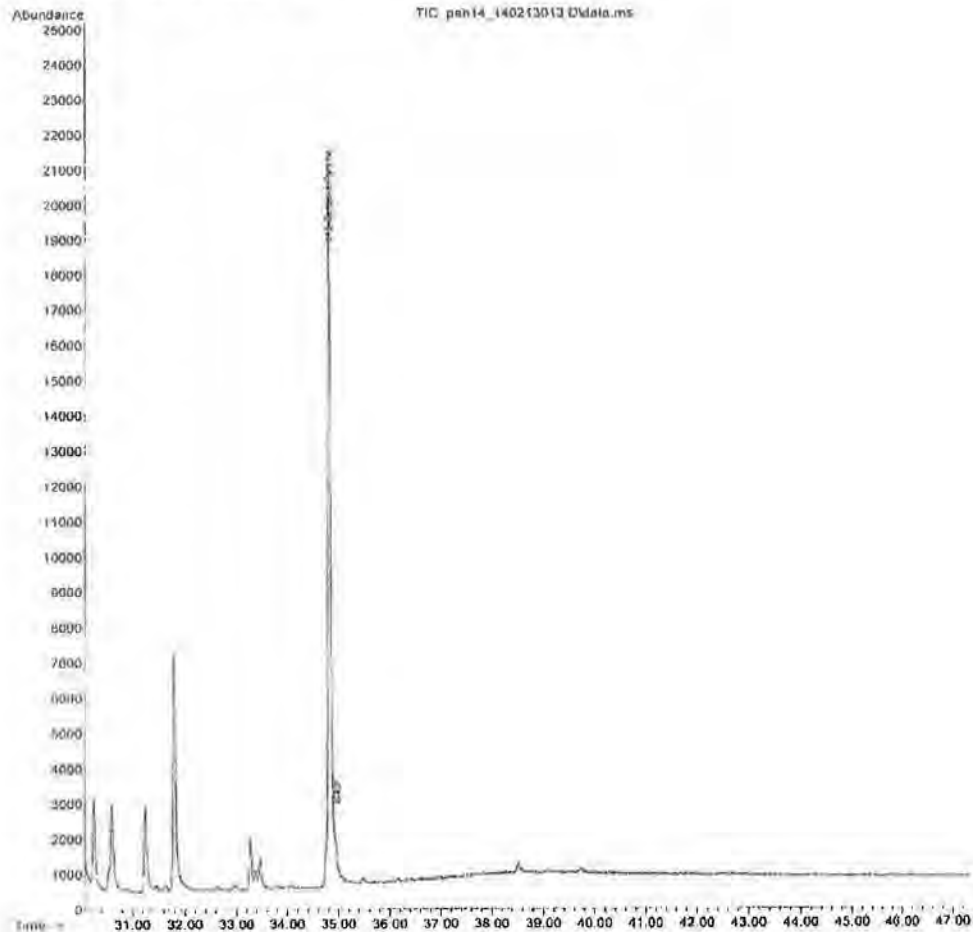
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B3_WT_GCMS14_Chromatograms_3-10_to_end.pdf_3163840
Electronically Signed By: Bartosz Jasiak
Path: \\s2\\repository\\repository\\3163840
Created: 2/19/14 14:51 Audit ID: 3163840

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195 GLP\BLOCK 3\WT\
Data File : pah14_140213013.D
Acq On : 14 Feb 2014 3:01
Operator : Analyst
Sample : 1400935-5-1
Misc : M195-GLP PAH WT B3
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Feb 19 10:07:20 2014
Quant Method : C:\msdchem\1\method\PAH\PAH14_140129Q.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 16:16:01 2014
Response via : Initial Calibration



PAH14_140129.M195GLP.WT.M Wed Feb 19 14:35:33 2014

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B3_WT_GCMS14_Chromatograms_3-10_to_end.pdf_3163840
Electronically Signed By: Bartosz Jaslak
Path: \\ls2repository\repository\3163840
Created: 2/19/14 14:51 Audit ID: 3163840

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140213019.D
Acq On : 14 Feb 2014 8:21
Operator : Analyst
Sample : 1400936-6-6
Misc : M195-GLP PAH WT B3
ALS Vial : 48 Sample Multiplier: 1

Quant Time: Feb 19 10:08:50 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP_WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - B.JAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration

Compound	R.T, QIon	Response	Conc Units	Dev(Min)
Internal Standards				
1) d12-Benzo(a)Pyrene	34.823 264	78685m	50.23 ng/mL	-0.02
Target Compounds				
2) B(a)P	34.934 252	2819m	1.36 ng/mL	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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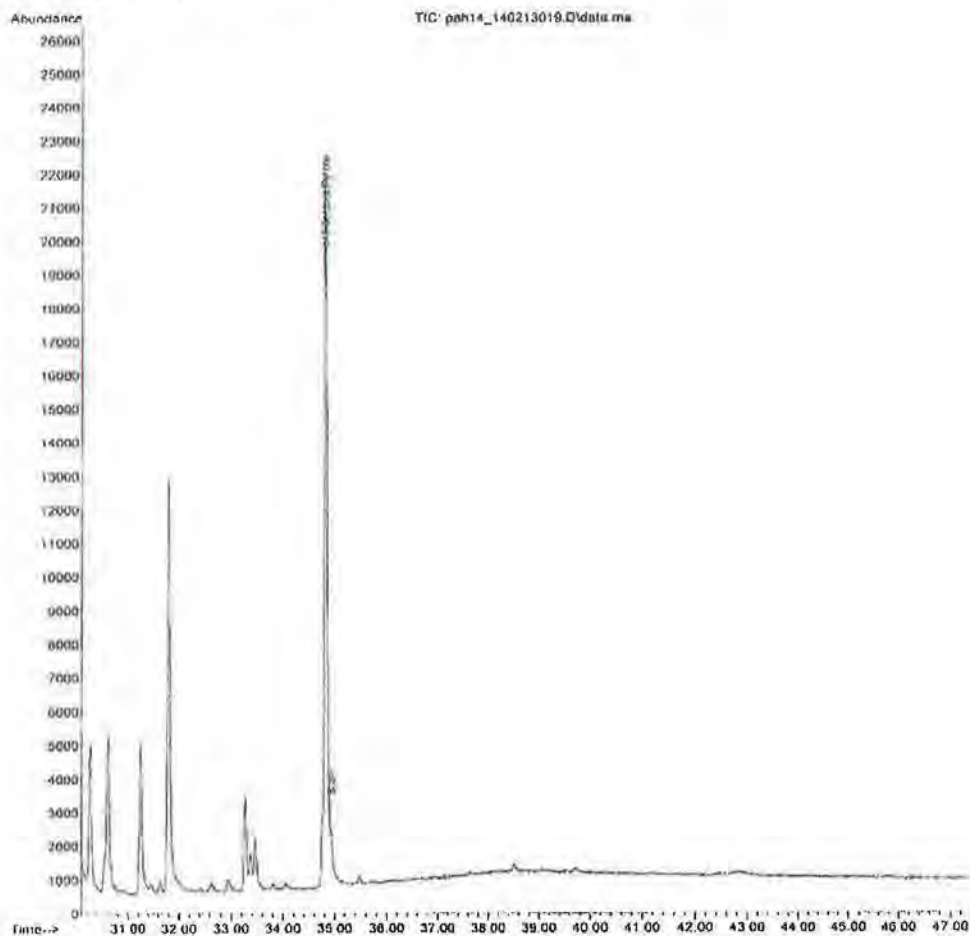
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

M195GLP_PAH_B3_WT_GCMS14_Chromatograms_3-10_to_end.pdf_3163840
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3163840\\
Created: 2/19/14 14:51 Audit ID: 3163840

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\PROJECTS\M195-GLP\BLOCK_3\WT\
Data File : pah14_140213019.D
Acq On : 14 Feb 2014 8:21
Operator : Analyst
Sample : 1400930-5-6
Mlec : M195-GLP PAH WT B3
ALS Vial : 48 Sample Multiplier: 1

Quant Time: Feb 19 10:08:50 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_1401290.M195GLP.WT.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:16:01 2014
Response via : Initial Calibration



PAH14_14012...M195GLP_WT.M Wed Feb 19 14:36:11 2014

Page: 2

Carbonyls in Smokeless Tobacco



[Handwritten signature]

Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Calibration Curve Data Summary GCMS9.pdf_3139261
Electronically Signed By: Mingzhong Cui
Path: \\is2\\repository\\repository\\3139261\\
Created: 2/13/14 15:04 Audit ID: 3139261

Page 1 of 2

Private and Confidential

Instrument Run Summary for
Compounds Determined

Sample M195-GLP-NT_001

Sample ID	Sample Name (Sample ID, Run, Version)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Duplicates / Retention)
888-2-9	888-2-9	1-28-2014	8:28:44 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-3-7	888-3-7	1-28-2014	8:32:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-4-6	888-4-6	1-28-2014	8:35:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-5-5	888-5-5	1-28-2014	8:38:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-6-4	888-6-4	1-28-2014	8:42:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-7-3	888-7-3	1-28-2014	8:45:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-8-2	888-8-2	1-28-2014	8:48:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-9-1	888-9-1	1-28-2014	8:52:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-10-0	888-10-0	1-28-2014	8:55:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-11-9	888-11-9	1-28-2014	8:58:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-12-8	888-12-8	1-28-2014	9:02:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-13-7	888-13-7	1-28-2014	9:05:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-14-6	888-14-6	1-28-2014	9:08:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-15-5	888-15-5	1-28-2014	9:12:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-16-4	888-16-4	1-28-2014	9:15:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-17-3	888-17-3	1-28-2014	9:18:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-18-2	888-18-2	1-28-2014	9:22:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-19-1	888-19-1	1-28-2014	9:25:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-20-0	888-20-0	1-28-2014	9:28:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-21-9	888-21-9	1-28-2014	9:32:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-22-8	888-22-8	1-28-2014	9:35:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-23-7	888-23-7	1-28-2014	9:38:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-24-6	888-24-6	1-28-2014	9:42:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-25-5	888-25-5	1-28-2014	9:45:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-26-4	888-26-4	1-28-2014	9:48:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-27-3	888-27-3	1-28-2014	9:52:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-28-2	888-28-2	1-28-2014	9:55:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-29-1	888-29-1	1-28-2014	9:58:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-30-0	888-30-0	1-28-2014	10:02:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-31-9	888-31-9	1-28-2014	10:05:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-32-8	888-32-8	1-28-2014	10:08:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-33-7	888-33-7	1-28-2014	10:12:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-34-6	888-34-6	1-28-2014	10:15:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-35-5	888-35-5	1-28-2014	10:18:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-36-4	888-36-4	1-28-2014	10:22:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-37-3	888-37-3	1-28-2014	10:25:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-38-2	888-38-2	1-28-2014	10:28:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-39-1	888-39-1	1-28-2014	10:32:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-40-0	888-40-0	1-28-2014	10:35:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-41-9	888-41-9	1-28-2014	10:38:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-42-8	888-42-8	1-28-2014	10:42:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-43-7	888-43-7	1-28-2014	10:45:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-44-6	888-44-6	1-28-2014	10:48:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-45-5	888-45-5	1-28-2014	10:52:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-46-4	888-46-4	1-28-2014	10:55:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-47-3	888-47-3	1-28-2014	10:58:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-48-2	888-48-2	1-28-2014	11:02:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-49-1	888-49-1	1-28-2014	11:05:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-50-0	888-50-0	1-28-2014	11:08:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-51-9	888-51-9	1-28-2014	11:12:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-52-8	888-52-8	1-28-2014	11:15:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-53-7	888-53-7	1-28-2014	11:18:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-54-6	888-54-6	1-28-2014	11:22:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-55-5	888-55-5	1-28-2014	11:25:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-56-4	888-56-4	1-28-2014	11:28:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-57-3	888-57-3	1-28-2014	11:32:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-58-2	888-58-2	1-28-2014	11:35:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-59-1	888-59-1	1-28-2014	11:38:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-60-0	888-60-0	1-28-2014	11:42:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-61-9	888-61-9	1-28-2014	11:45:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-62-8	888-62-8	1-28-2014	11:48:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-63-7	888-63-7	1-28-2014	11:52:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-64-6	888-64-6	1-28-2014	11:55:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-65-5	888-65-5	1-28-2014	11:58:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-66-4	888-66-4	1-28-2014	12:02:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-67-3	888-67-3	1-28-2014	12:05:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-68-2	888-68-2	1-28-2014	12:08:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-69-1	888-69-1	1-28-2014	12:12:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-70-0	888-70-0	1-28-2014	12:15:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-71-9	888-71-9	1-28-2014	12:18:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-72-8	888-72-8	1-28-2014	12:22:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-73-7	888-73-7	1-28-2014	12:25:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-74-6	888-74-6	1-28-2014	12:28:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-75-5	888-75-5	1-28-2014	12:32:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-76-4	888-76-4	1-28-2014	12:35:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-77-3	888-77-3	1-28-2014	12:38:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-78-2	888-78-2	1-28-2014	12:42:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-79-1	888-79-1	1-28-2014	12:45:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-80-0	888-80-0	1-28-2014	12:48:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-81-9	888-81-9	1-28-2014	12:52:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-82-8	888-82-8	1-28-2014	12:55:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-83-7	888-83-7	1-28-2014	12:58:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-84-6	888-84-6	1-28-2014	1:02:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-85-5	888-85-5	1-28-2014	1:05:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-86-4	888-86-4	1-28-2014	1:08:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-87-3	888-87-3	1-28-2014	1:12:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-88-2	888-88-2	1-28-2014	1:15:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-89-1	888-89-1	1-28-2014	1:18:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-90-0	888-90-0	1-28-2014	1:22:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-91-9	888-91-9	1-28-2014	1:25:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-92-8	888-92-8	1-28-2014	1:28:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-93-7	888-93-7	1-28-2014	1:32:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-94-6	888-94-6	1-28-2014	1:35:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-95-5	888-95-5	1-28-2014	1:38:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-96-4	888-96-4	1-28-2014	1:42:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-97-3	888-97-3	1-28-2014	1:45:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-98-2	888-98-2	1-28-2014	1:48:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-99-1	888-99-1	1-28-2014	1:52:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-100-0	888-100-0	1-28-2014	1:55:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-101-9	888-101-9	1-28-2014	1:58:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-102-8	888-102-8	1-28-2014	2:02:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-103-7	888-103-7	1-28-2014	2:05:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-104-6	888-104-6	1-28-2014	2:08:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-105-5	888-105-5	1-28-2014	2:12:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-106-4	888-106-4	1-28-2014	2:15:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-107-3	888-107-3	1-28-2014	2:18:53 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-108-2	888-108-2	1-28-2014	2:22:13 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
888-109-1	888-109-1	1-28-2014	2:25:33 PM	888_140124	GCMS99_14000110/A000112	N. Cui	
8							

Calibration Curve Data Summary GCMS9.pdf 3139261
Electronically Signed By: Mingzhong Cui
Path: \\fs2\repository\repository\3139261\
Created: 2/13/14 15:04 Audit ID: 3139261

Page 2 of 2

Spice International LLC

Instrument Run Summary for
Compounds Determined

5207.M195.G19.V7_501

Rev: 14, 2014

Sample ID	Sample Name	Hypoxia Date	Hypoxia Time	Method ID	Instrument Identification	Analysis	Signature Notes (Please Repeat)
127.1	127.1	2/26/2014	16:15:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.2	127.2	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.3	127.3	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	Rejection to confirm result.
127.4	127.4	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	Rejection to confirm result.
127.5	127.5	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.6	127.6	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.7	127.7	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.8	127.8	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.9	127.9	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.10	127.10	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.11	127.11	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.12	127.12	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.13	127.13	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.14	127.14	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.15	127.15	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.16	127.16	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.17	127.17	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.18	127.18	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.19	127.19	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.20	127.20	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.21	127.21	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.22	127.22	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.23	127.23	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.24	127.24	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.25	127.25	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.26	127.26	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.27	127.27	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.28	127.28	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.29	127.29	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.30	127.30	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.31	127.31	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.32	127.32	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.33	127.33	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.34	127.34	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.35	127.35	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.36	127.36	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.37	127.37	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.38	127.38	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.39	127.39	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.40	127.40	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.41	127.41	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.42	127.42	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.43	127.43	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.44	127.44	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.45	127.45	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.46	127.46	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.47	127.47	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.48	127.48	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.49	127.49	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.50	127.50	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.51	127.51	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.52	127.52	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.53	127.53	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.54	127.54	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.55	127.55	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.56	127.56	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.57	127.57	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.58	127.58	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.59	127.59	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.60	127.60	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.61	127.61	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.62	127.62	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.63	127.63	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.64	127.64	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.65	127.65	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.66	127.66	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.67	127.67	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.68	127.68	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.69	127.69	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.70	127.70	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.71	127.71	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.72	127.72	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.73	127.73	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.74	127.74	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.75	127.75	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.76	127.76	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.77	127.77	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.78	127.78	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.79	127.79	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.80	127.80	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.81	127.81	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.82	127.82	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.83	127.83	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.84	127.84	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.85	127.85	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.86	127.86	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.87	127.87	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.88	127.88	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.89	127.89	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.90	127.90	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.91	127.91	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.92	127.92	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.93	127.93	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.94	127.94	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.95	127.95	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.96	127.96	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.97	127.97	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.98	127.98	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
127.99	127.99	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	
128.00	128.00	2/26/2014	17:16:11 AM	FWP3_140124	GCMS99_14012310_14012312	Nr. Cu	



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 15:17:26

Chromatogram Plot

File: ...195-glplwt_b2\gcar9_140128\std 4 140124 _ 1-28-2014 _ 3-01-58 pm.xms

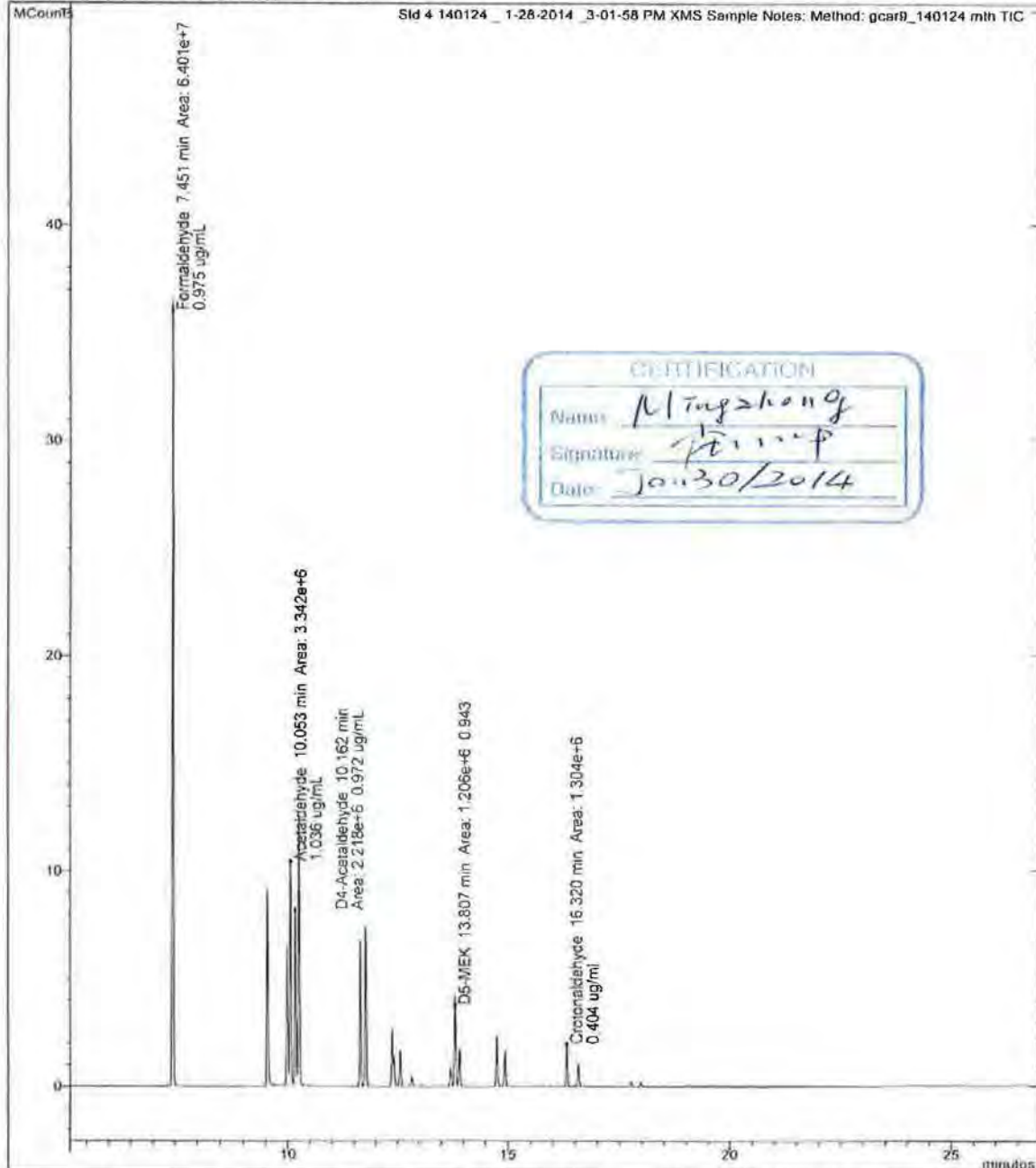
Sample: Std 4 140124

Operator: VARIAN

Scan Range: 1 - 12896 Time Range: 5.12 - 27.00 min.

Date: 1/28/2014 3:01 PM

Sample Notes: Method: gcar9_140124.mh



CERTIFICATION	
Name:	Mingzhong
Signature:	[Signature]
Date:	Jan 30/2014

Study Identifier: M195-GLP

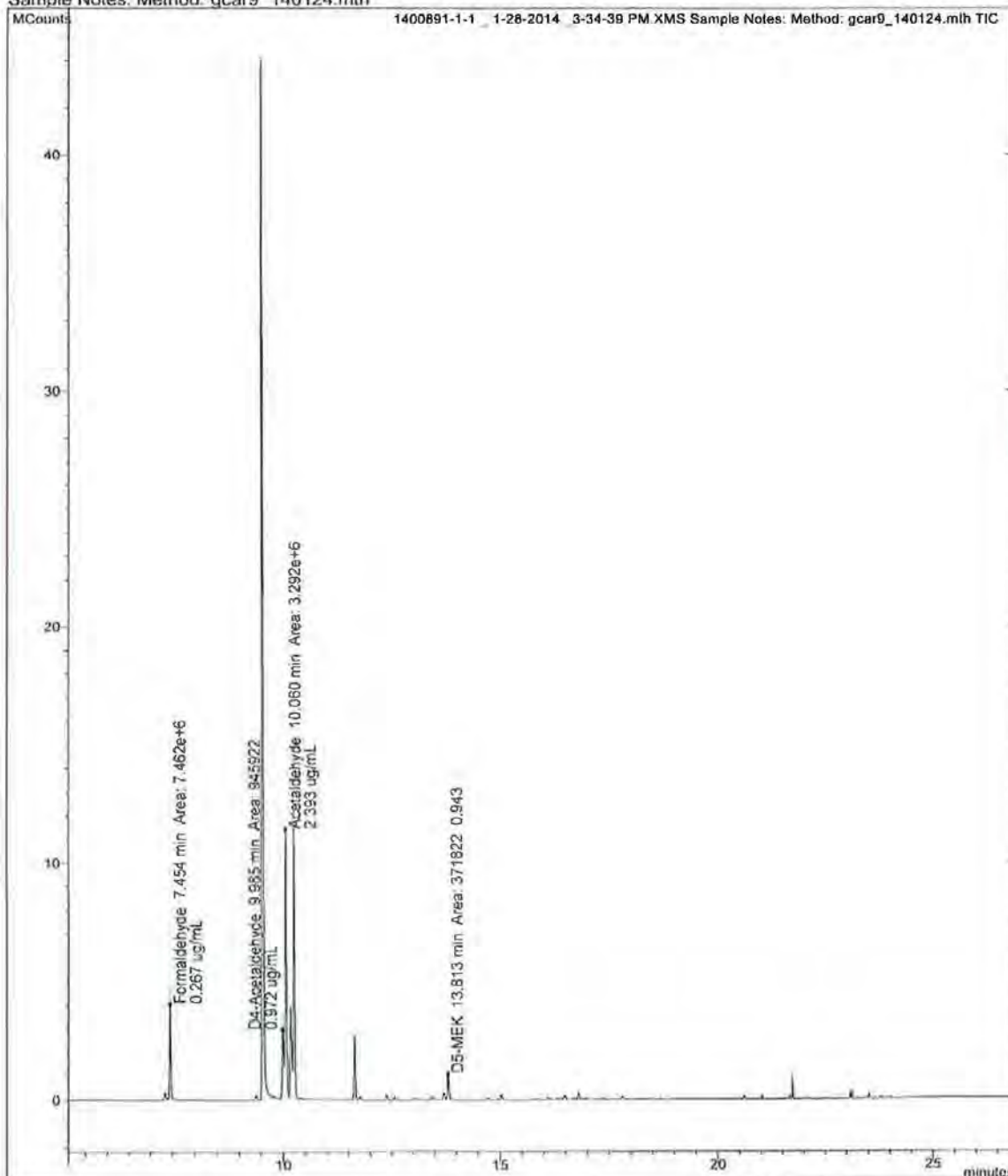
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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 15:05:55

Chromatogram Plot 1 - 1/30/2014 3:05 PM

File: .m195-glpwt_b2\gcar9_140128\1400891-1-1_1-28-2014_3-34-39 pm.xms
Sample: 1400891-1-1 Operator: VARIAN
Scan Range: 1 - 12916 Time Range: 5.12 - 27.01 min. Date: 1/28/2014 3:34 PM
Sample Notes: Method: gcar9_140124.mth



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Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 15:17:02

Chromatogram Plot

File: ...c:\m195-glplwt_b2\gcar9_140128\888-1-10_1-28-2014_8-28-44 pm.xms

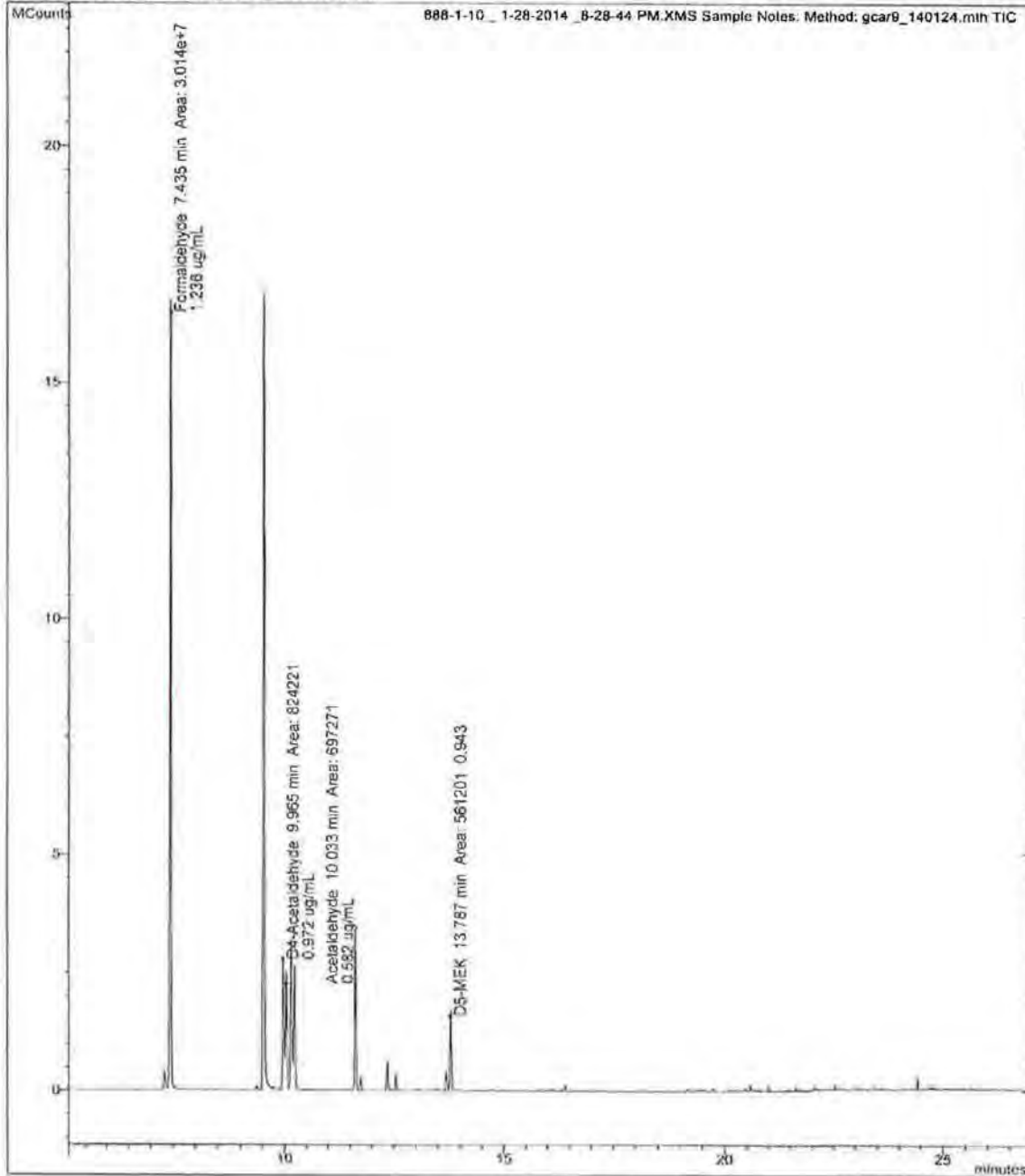
Sample: 888-1-10

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.01 min

Date: 1/28/2014 8:28 PM

Sample Notes: Method: gcar9_140124.mth



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APR

Study Identifier: M195-GLP

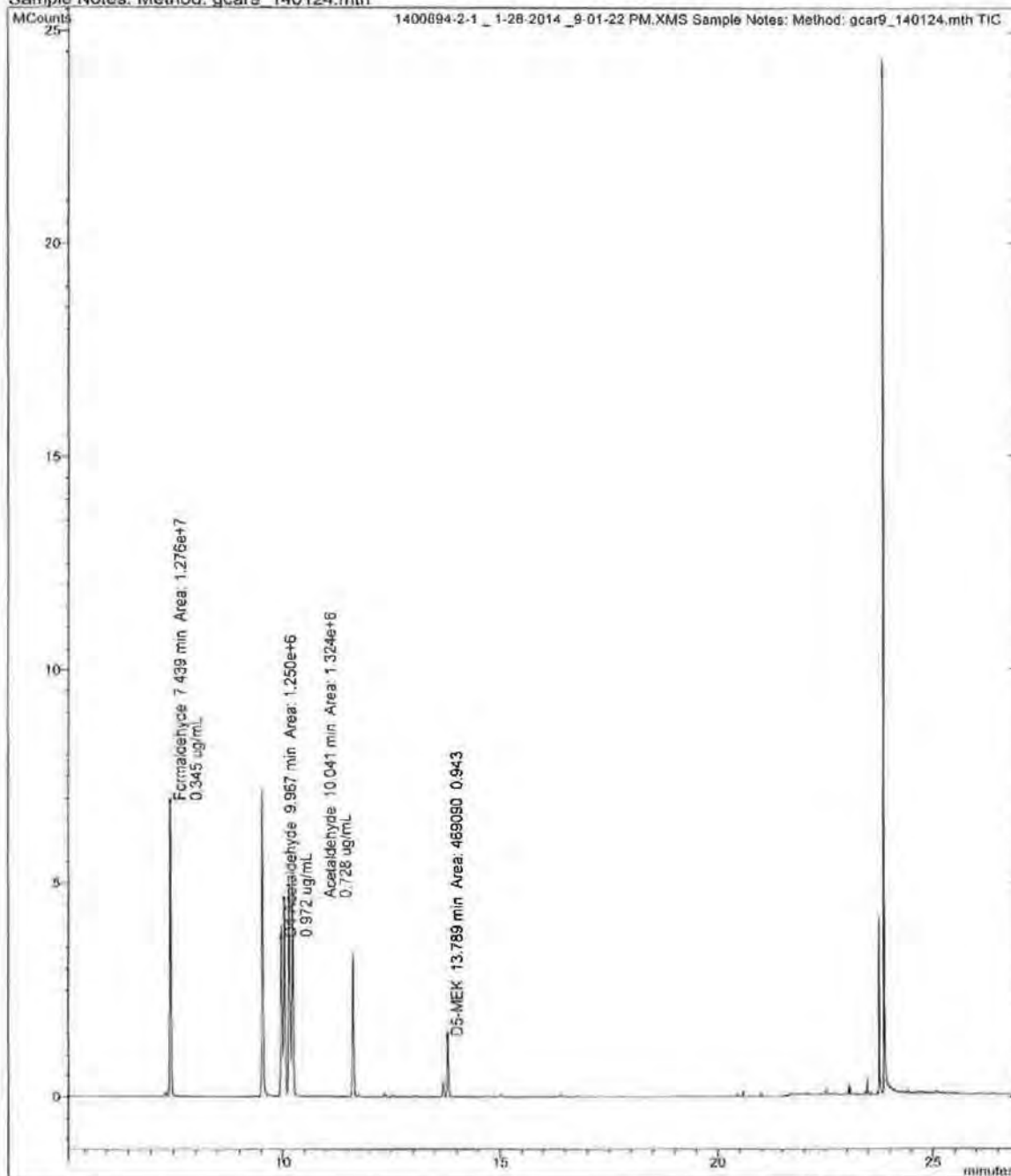
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 15:16:13

Chromatogram Plot 4 - 1/30/2014 3:16 PM

File: ...m195-glpwt_b2\gcar9_140128\1400894-2-1_1-28-2014_9-01-22 pm.xms
Sample: 1400894-2-1
Scan Range: 1 - 12928 Time Range: 5.12 - 27.01 min.
Sample Notes: Method: gcar9_140124.mth
Operator: VARIAN
Date: 1/28/2014 9:01 PM



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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 15:25:41

Chromatogram Plot 6 - 1/30/2014 3:25 PM

File: ...195-glp\wt_b2\gcar9_140128\1400892-2-10_1-29-2014_1-55-02 am.xms

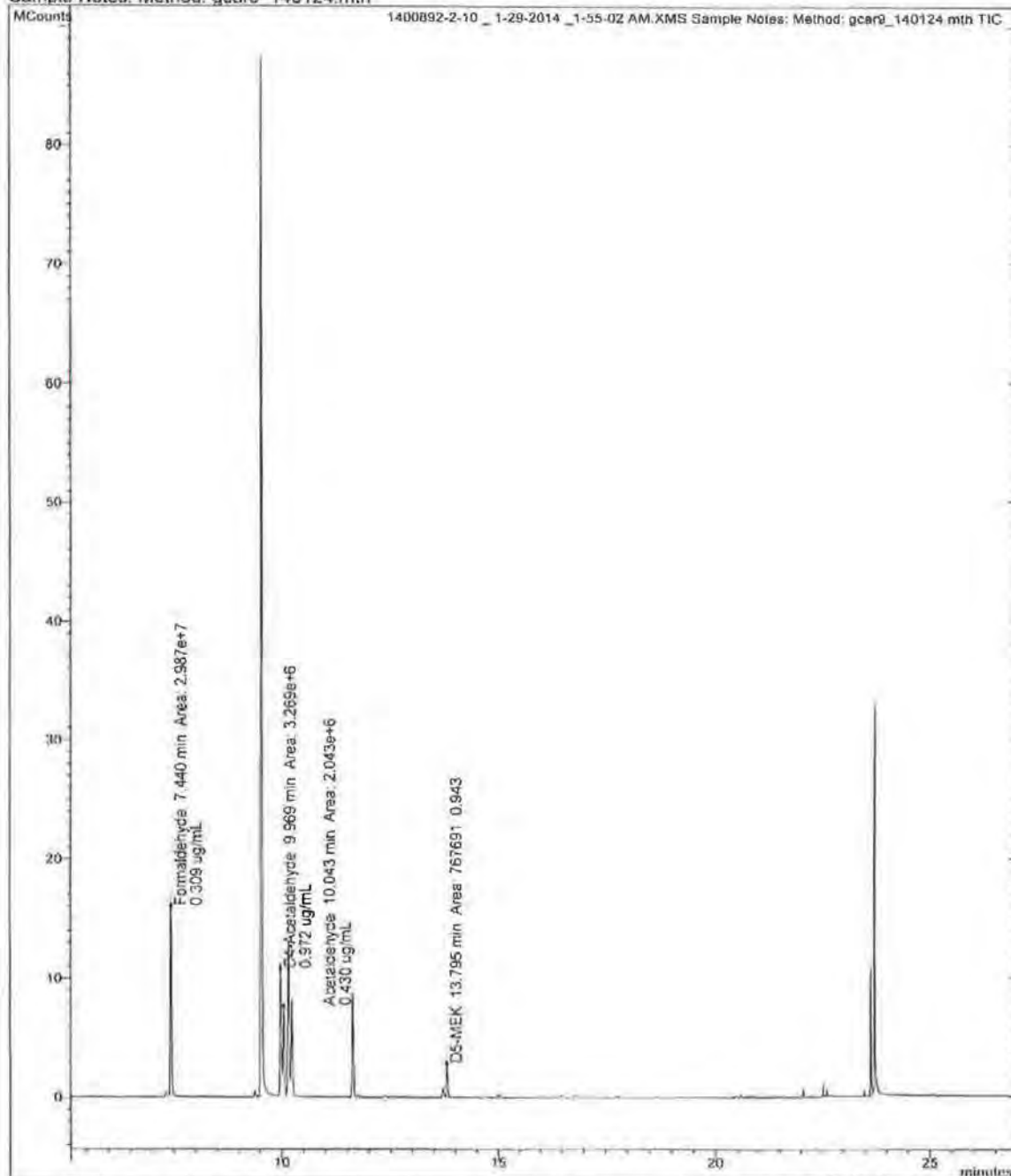
Sample: 1400892-2-10

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.01 min.

Date: 1/29/2014 1:55 AM

Sample Notes: Method: gcar9_140124.mth



210/4211102



APM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 15:26:45

Chromatogram Plot 1 - 1/30/2014 3:26 PM

File: ...m195-glpwt_b2\gcar9_140128\1400895-3-1_1-29-2014_3-00-20 am.xms

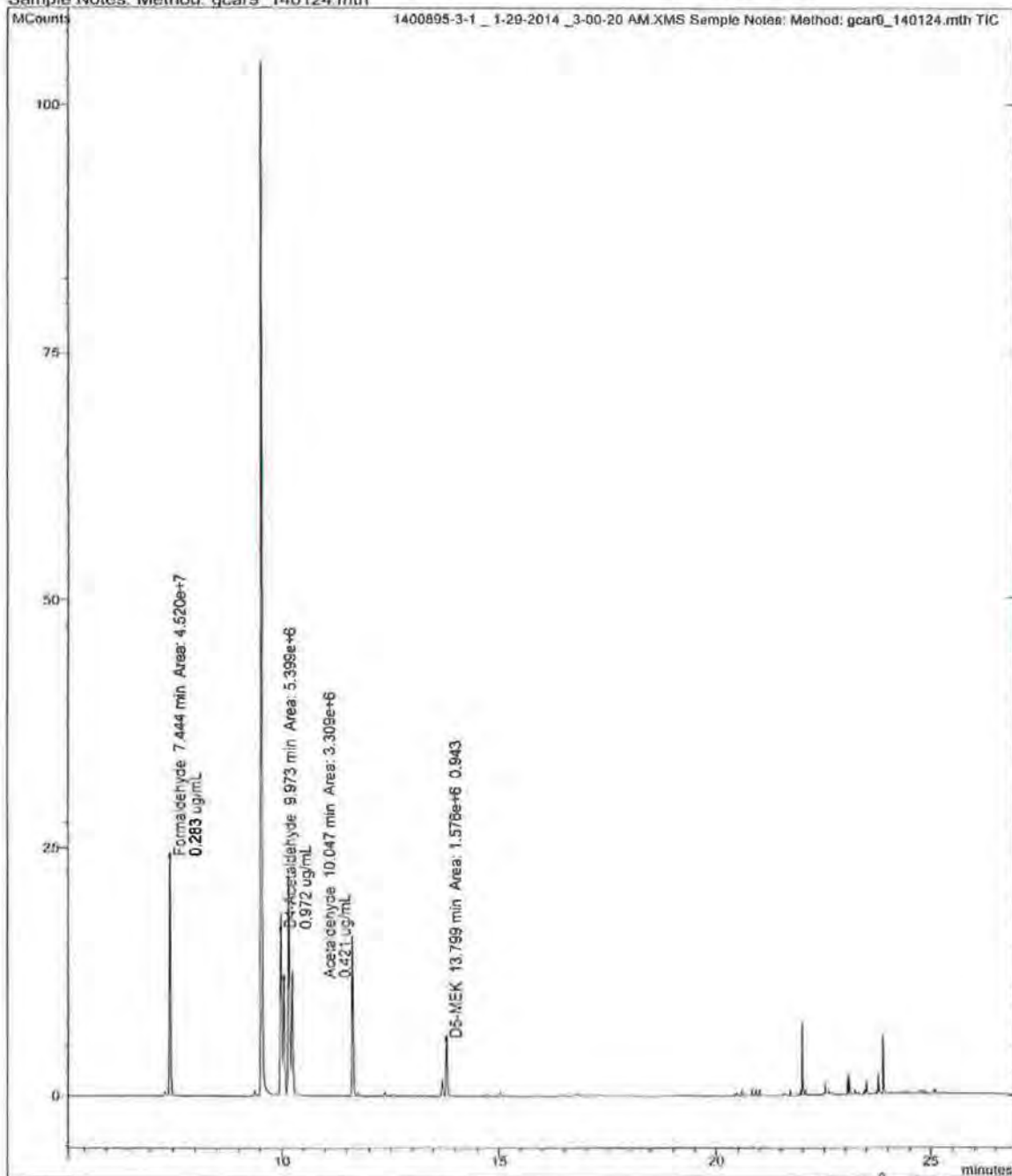
Sample: 1400895-3-1

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.01 min.

Date: 1/29/2014 3:00 AM

Sample Notes: Method: gcar9_140124.mth



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Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 15:28:23

Chromatogram Plot

File: ...jectm195-glplwt_b2\gcar9_140128\lfm-1_1-29-2014_6-48-50 am.xms

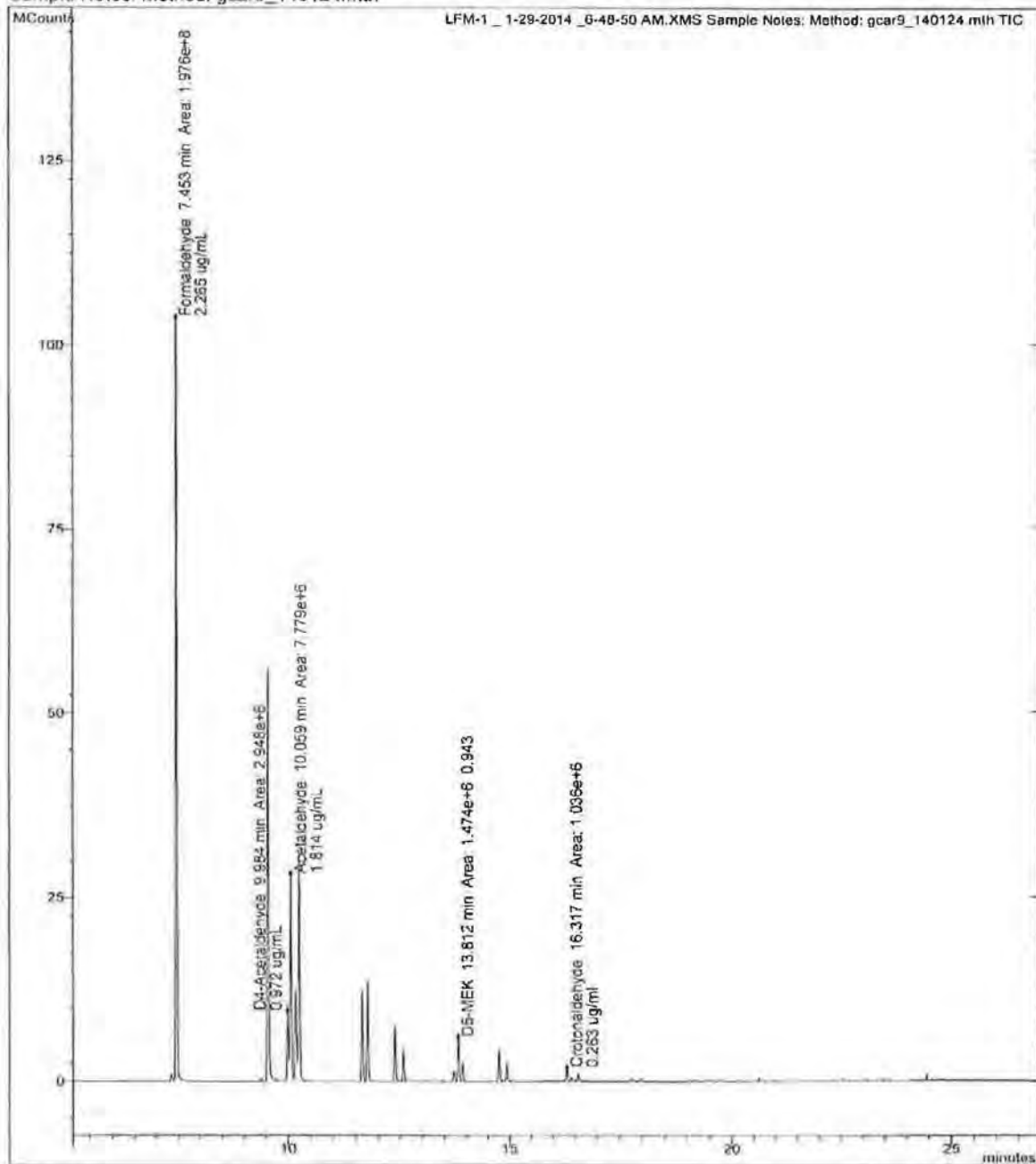
Sample: LFM-1

Operator: VARIAN

Scan Range: 1 - 12914 Time Range: 5.12 - 27.01 min.

Date: 1/29/2014 6:48 AM

Sample Notes: Method: gcar9_140124.mth



30 of 42 min.

Study Identifier: M195-GLP

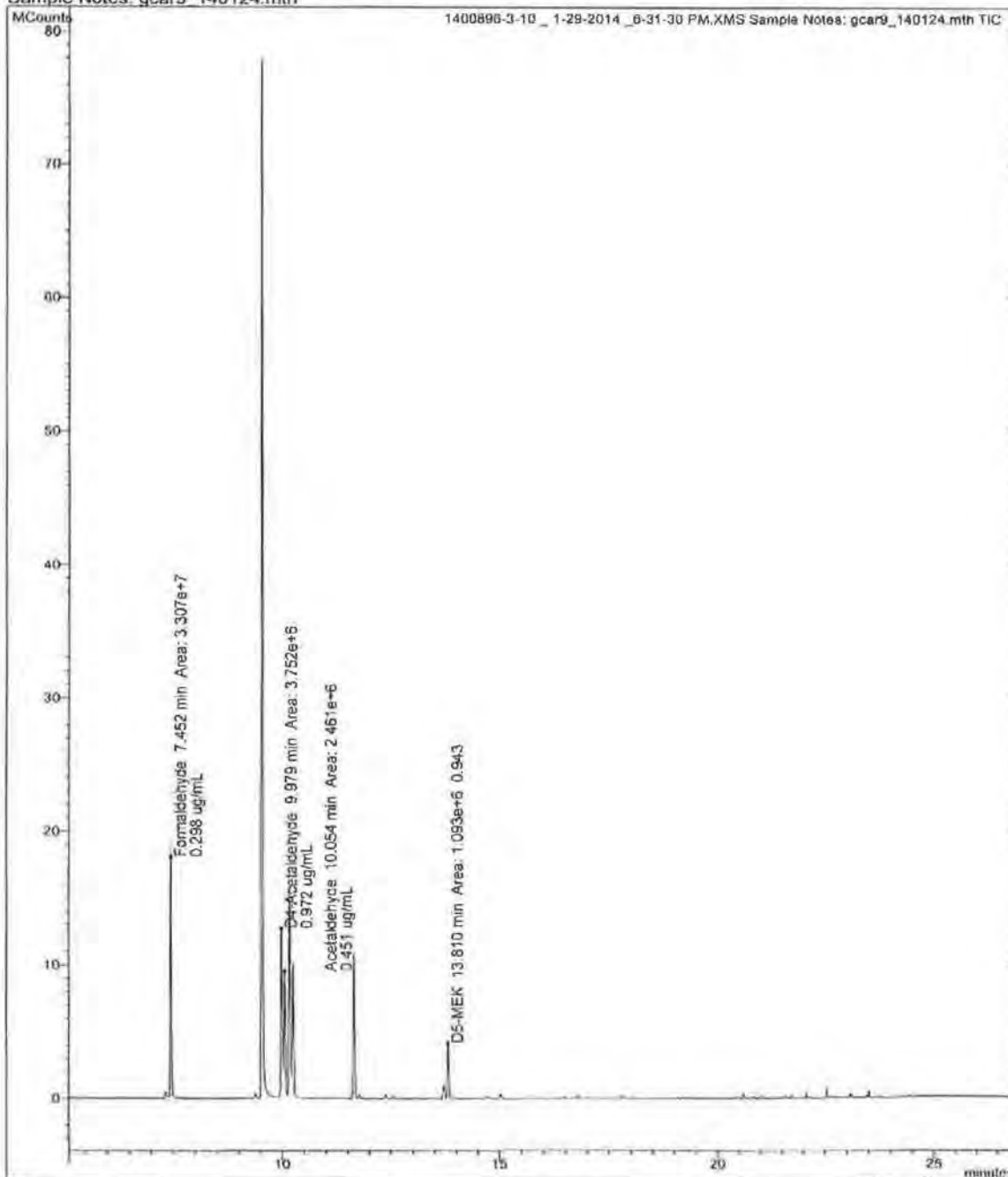
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 16:16:28

Chromatogram Plot 5 - 1/30/2014 4:16 PM

File: ..195-glp\wt_b2\gcar9_140129\1400896-3-10_1-29-2014_6-31-30 pm.xms
Sample: 1400896-3-10
Scan Range: 1 - 12916 Time Range: 5.12 - 27.02 min.
Sample Notes: gcar9_140124.mth
Operator: VARIAN
Date: 1/29/2014 6:31 PM



37.0 / 4.2 min

Study Identifier: M195-GLP

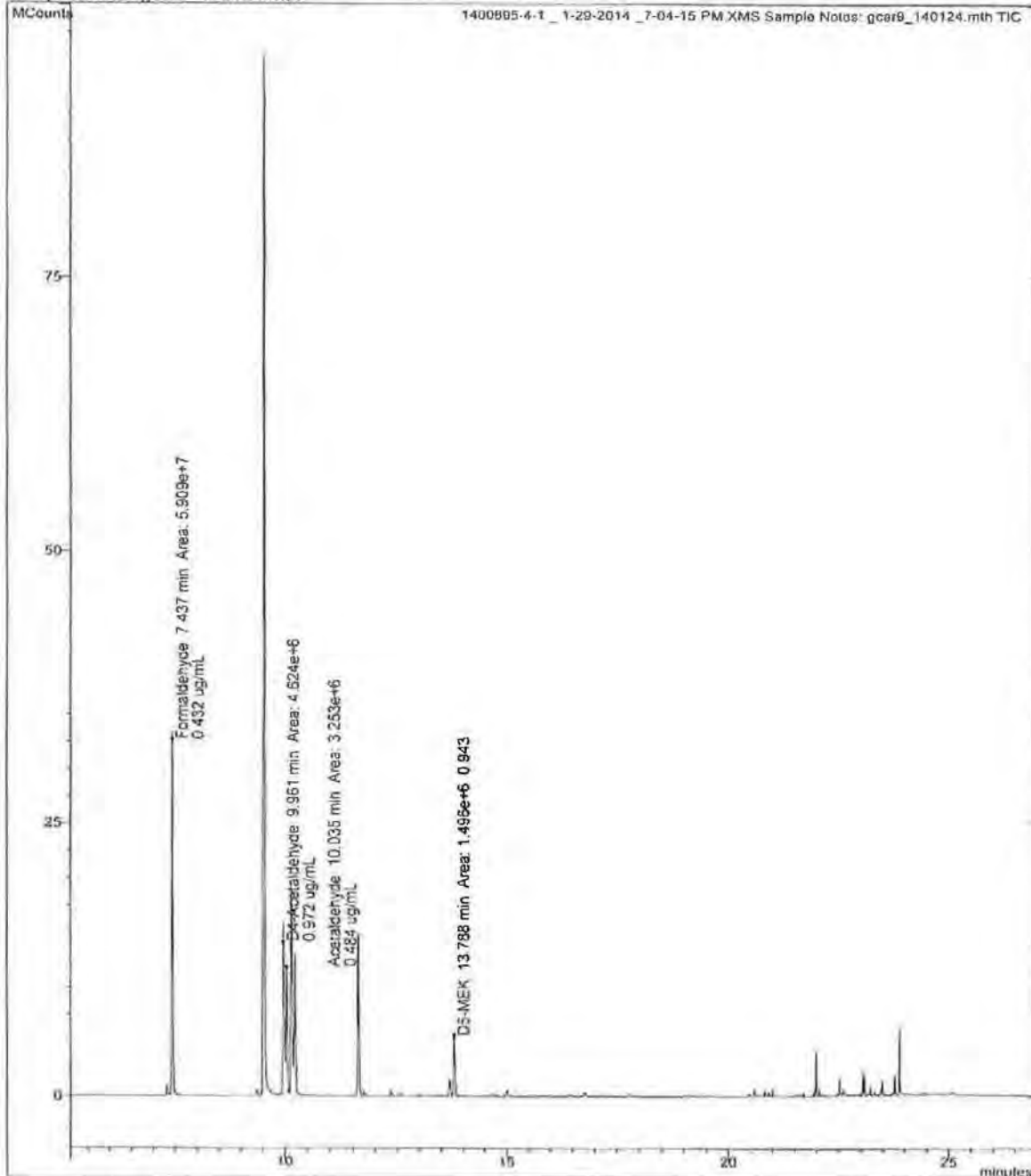
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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Print Date: 30 Jan 2014 16:16:44

Chromatogram Plot 6 - 1/30/2014 4:16 PM

File: ...m195-glp\wt_b2\gcar9_140129\1400895-4-1_1-29-2014_7-04-15 pm.xms
Sample: 1400895-4-1 Operator: VARIAN
Scan Range: 1 - 12926 Time Range: 5.12 - 27.01 min Date: 1/29/2014 7:04 PM
Sample Notes: gcar9_140124.mth



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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 31 Jan 2014 10:44:01

Chromatogram Plot

File: ...95-glplwt_b2\gcar9_140129\1400891-4-10_1-29-2014_11-58-20 pm.xms

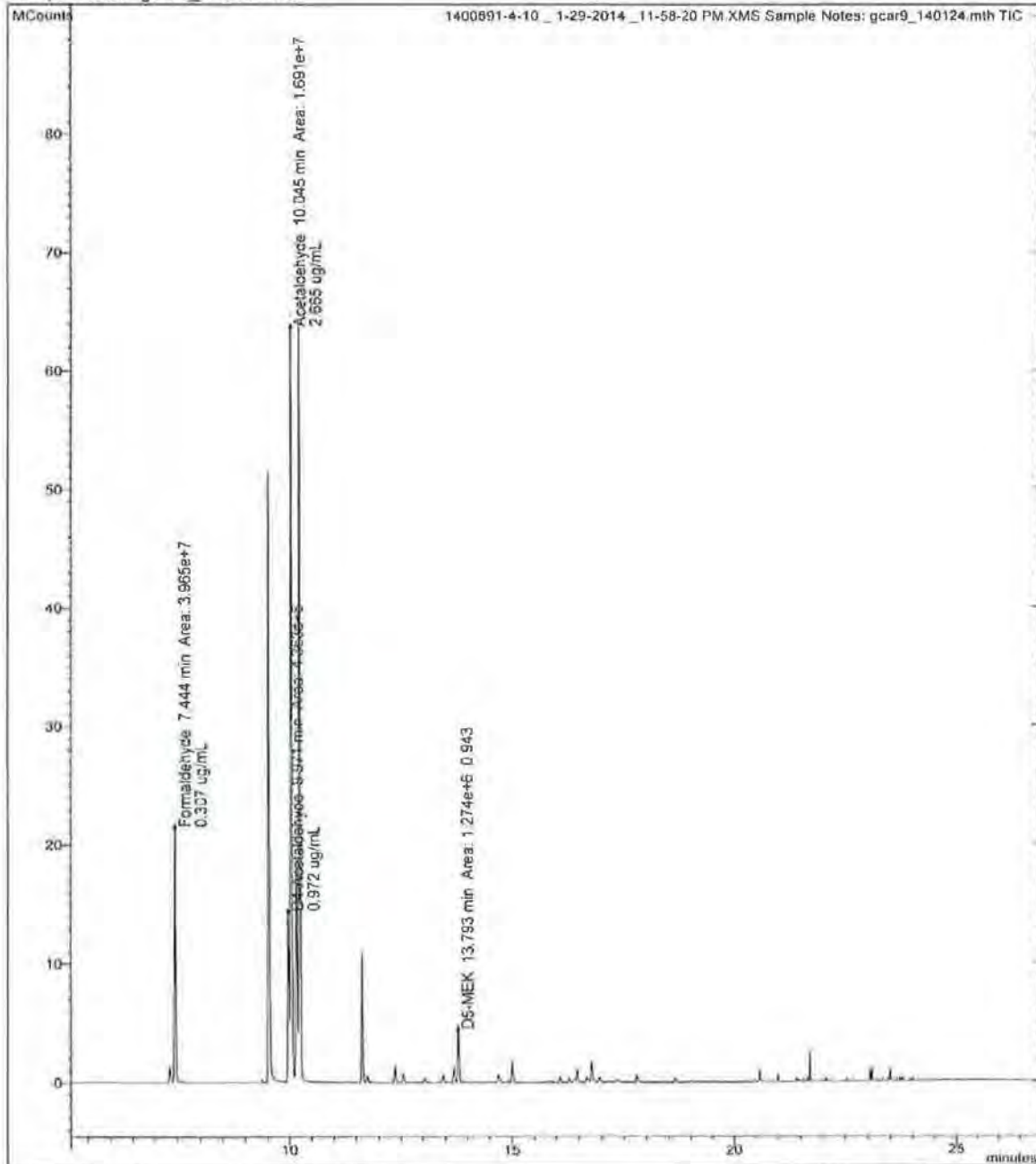
Sample: 1400891-4-10

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.02 min.

Date: 1/29/2014 11:58 PM

Sample Notes: gcar9_140124.mth



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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 31 Jan 2014 10:45:01

Chromatogram Plot 1 - 1/31/2014 10:44 AM

File: ...m195-glplwt_b2\gcar9_140129\1400892-5-1_1-30-2014_1-03-39 am.xms

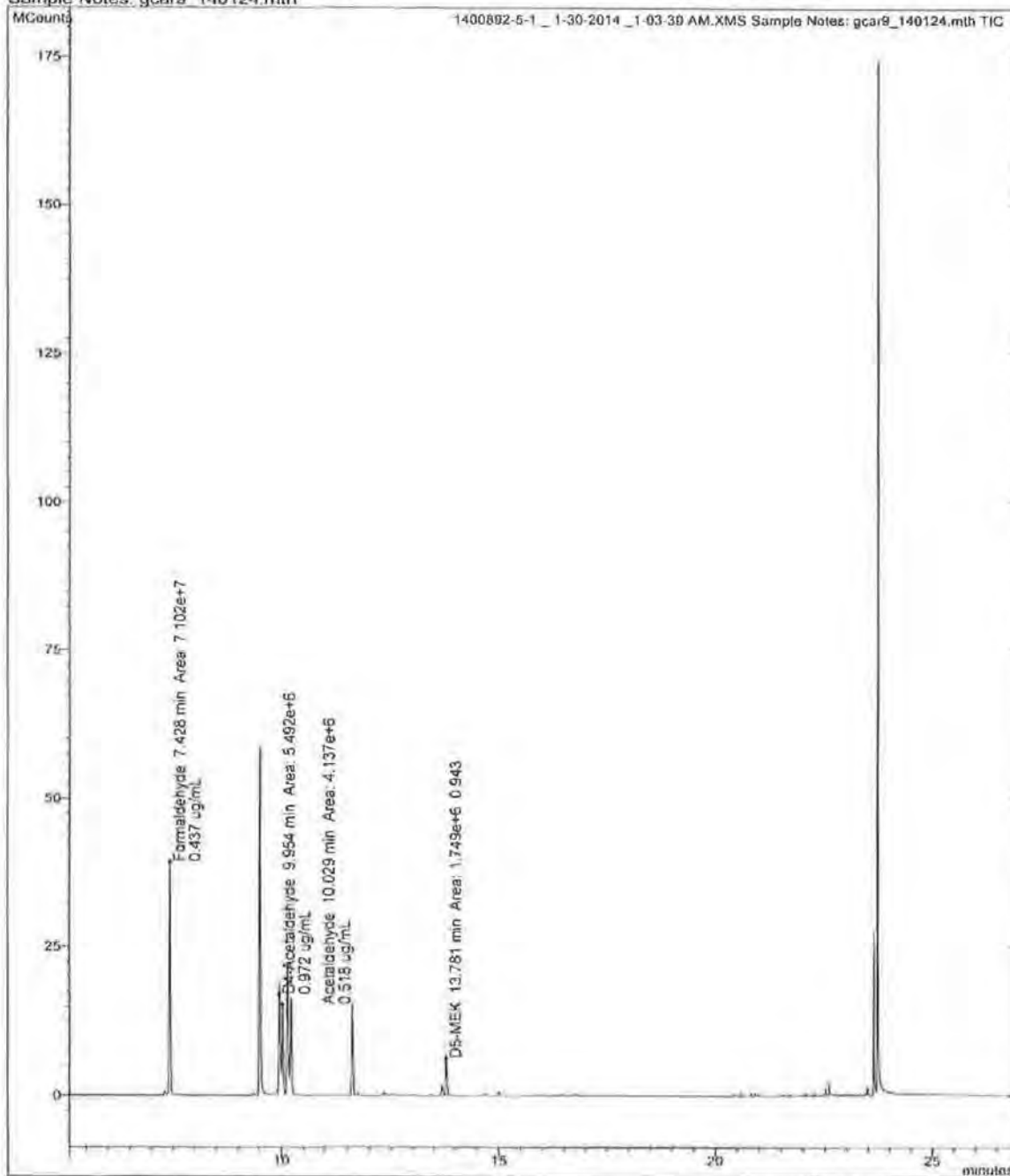
Sample: 1400892-5-1

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.02 min.

Date: 1/30/2014 1:03 AM

Sample Notes: gcar9_140124.mth





APM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 31 Jan 2014 10:49:26

Chromatogram Plot

File: ...ject\m195-glp\wt_b2\gcar9_140129\lrb-3_1-30-2014_4-52-22 am.xmls

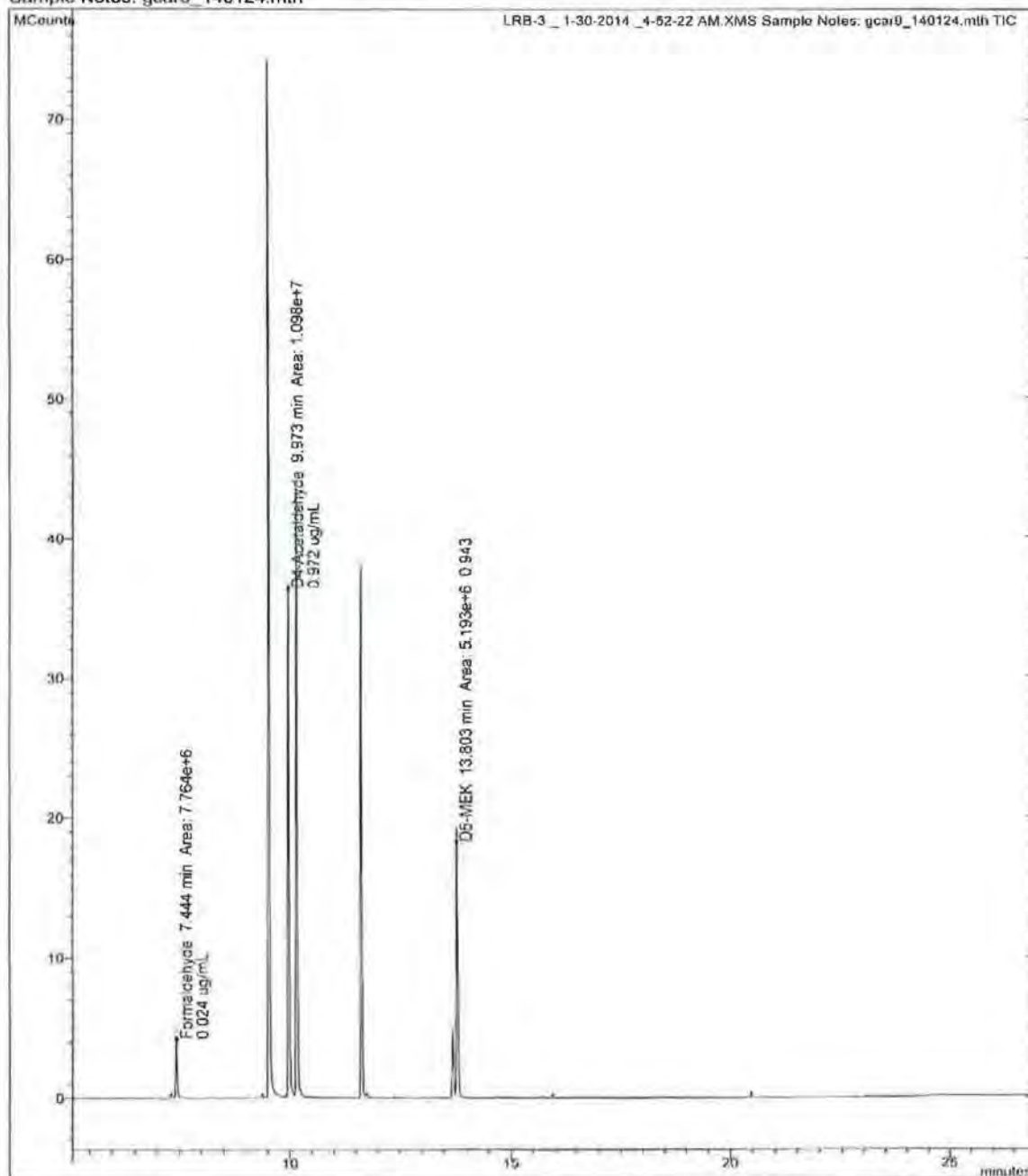
Sample: LRB-3

Operator: VARIAN

Scan Range: 1 - 12916 Time Range: 5.12 - 27.02 min

Date: 1/30/2014 4:52 AM

Sample Notes: gcar9_140124.mth



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Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

Instrument Run Summary_GCMS9_B3.pdf_3139149
Electronically Signed By: Mingzhong Cui
Path: \\fs2\\repository\\repository\\3139149\\
Created: 2/13/14 14:58 Audit ID: 3139149

Page: 1 of 2

Private and Confidential

Instrument Run Summary for
Component Determination

Study: M195-GLP_VT_001

Sample ID	Sample Name (Sample ID - Run Prefix)	Injection Date	Injection Time	Method	Instrument Identification	Analyst
822	822-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
823	823-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
824	824-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
825	825-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
826	826-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
827	827-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
828	828-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
829	829-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
830	830-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
831	831-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
832	832-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
833	833-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
834	834-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
835	835-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
836	836-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
837	837-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
838	838-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
839	839-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
840	840-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
841	841-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
842	842-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
843	843-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
844	844-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
845	845-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
846	846-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
847	847-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
848	848-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
849	849-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
850	850-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
851	851-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
852	852-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
853	853-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
854	854-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
855	855-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
856	856-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
857	857-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
858	858-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
859	859-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
860	860-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
861	861-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
862	862-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
863	863-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
864	864-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
865	865-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
866	866-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
867	867-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
868	868-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
869	869-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
870	870-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
871	871-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
872	872-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
873	873-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
874	874-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
875	875-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
876	876-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
877	877-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
878	878-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
879	879-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
880	880-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
881	881-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
882	882-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
883	883-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
884	884-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
885	885-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
886	886-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
887	887-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
888	888-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
889	889-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
890	890-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
891	891-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
892	892-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
893	893-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
894	894-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
895	895-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
896	896-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
897	897-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
898	898-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
899	899-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui
900	900-1	1/1/2014	7:39:41 PM	GC/MS	GC/MS9_14002110_14002112	N. Cui

Labstat International LLC

QSF-47150-02

Date: Feb 14, 2014
Revised: Y



Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Instrument Run Summary_GCMS9_B3.pdf_3139149
Electronically Signed By: Mingzhong Cui
Path: W:\s2repository\repository\3139149\
Created: 2/13/14 14:58 Audit ID: 3139149

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Printed and Compared

Summary M195-GLP_V17_Star

Instrument Run Summary for
Compound Determined

Sample ID	Sample Name	Injection Date	Injection Time	Method	Instrument Identification	Analysis	Injection Notes
	(Sample ID - Run - Reason)	Date	Time				(In Minutes / Repeat)
Std 3140224	Std 3140224	2/13/2014	2:40:05 PM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	
Std 4140224	Std 4140224	1/31/2014	2:32:55 PM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	
Std 4140224	Std 4140224	2/3/2014	8:49:20 AM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	
Std 4140224	Std 4140224	2/13/2014	9:48:42 PM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	
Std 4140224	Std 4140224	2/7/2014	5:45:17 PM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	
Std 4140224	Std 4140224	2/7/2014	6:38:12 PM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	
Std 4140224	Std 4140224	2/7/2014	6:51:03 PM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	
Std 4140224	Std 4140224	2/7/2014	7:24:02 PM	GCMS9_140224	GCMS9_14022210/A000112	M. Cui	

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QSP-4110-12

Date: Feb 14, 2014
Revision: 1

Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: 03 Feb 2014 16:17:26

Chromatogram Plot

File: ...95-glplwt_b3\gcar9_140131\std 4 140124 _ 1-31-2014 _ 2-32-56 pm.xms

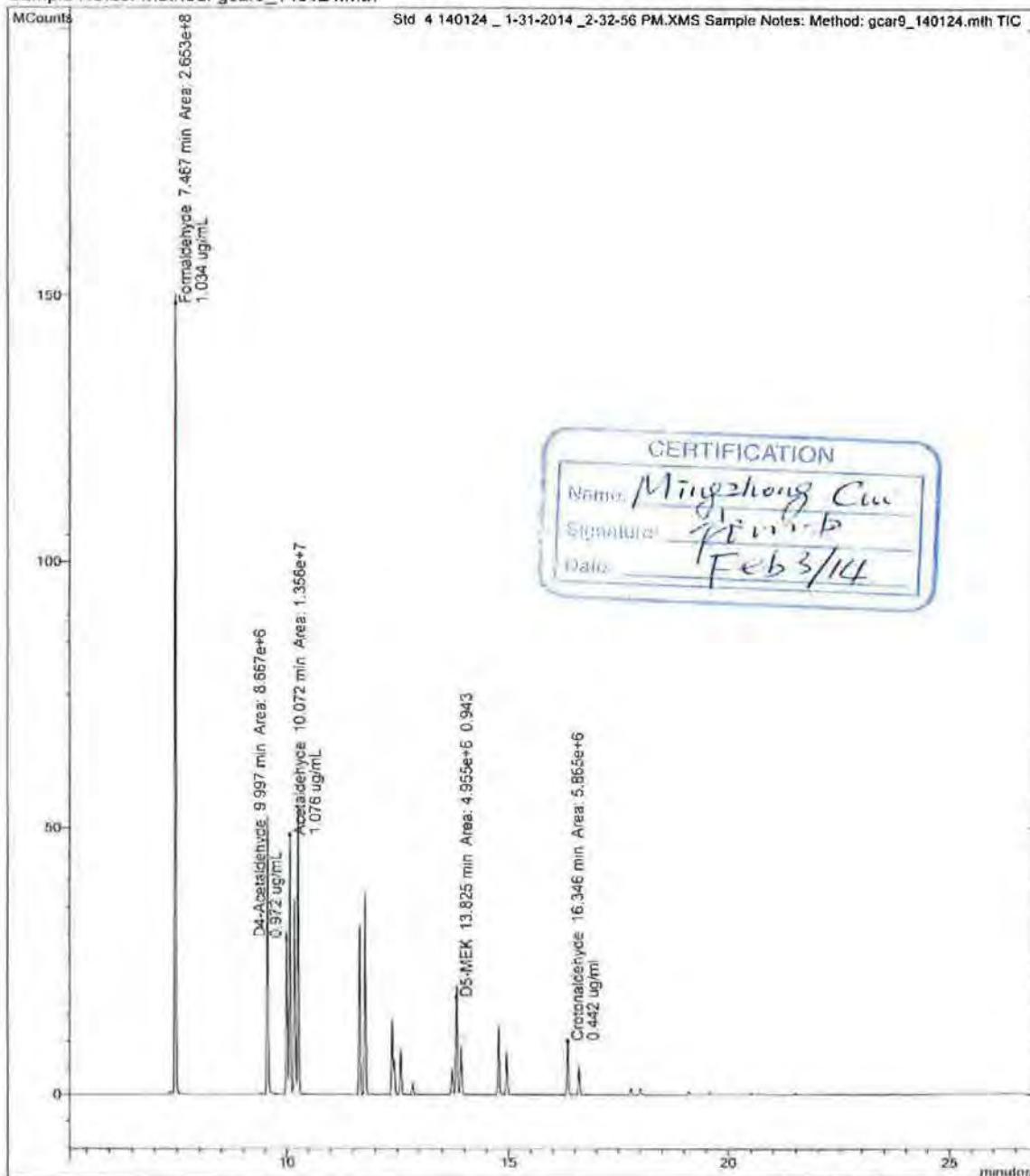
Sample: Std 4 140124

Operator: VARIAN

Scan Range: 1 - 12880 Time Range: 5.12 - 27.00 min.

Date: 1/31/2014 2:32 PM

Sample Notes: Method: gcar9_140124.mth





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: 03 Feb 2014 16:18:33

Chromatogram Plot

File: ...m195-glplwt_b3\gcar9_140131\1400936-1-1_1-31-2014_3-05-58 pm.xmls

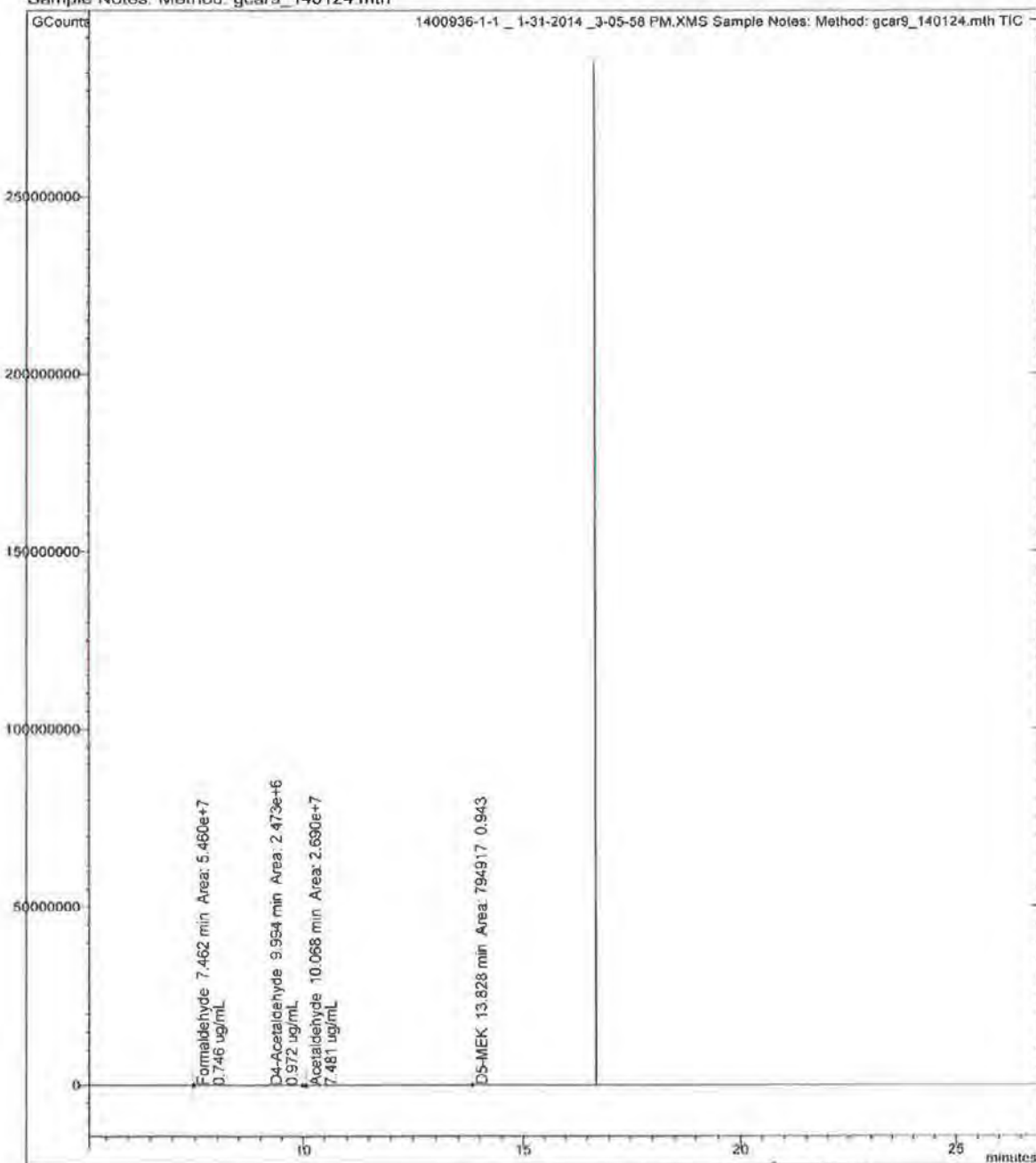
Sample: 1400936-1-1

Operator: VARIAN

Scan Range: 1 - 12894 Time Range: 5.12 - 27.00 min.

Date: 1/31/2014 3:05 PM

Sample Notes: Method: gcar9_140124.mth



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: 03 Feb 2014 16:20:49

Chromatogram Plot

File: ...195-glp\wt_b3\gcar9_140131\1400931-1-10_1-31-2014_8-02-38 pm.xms

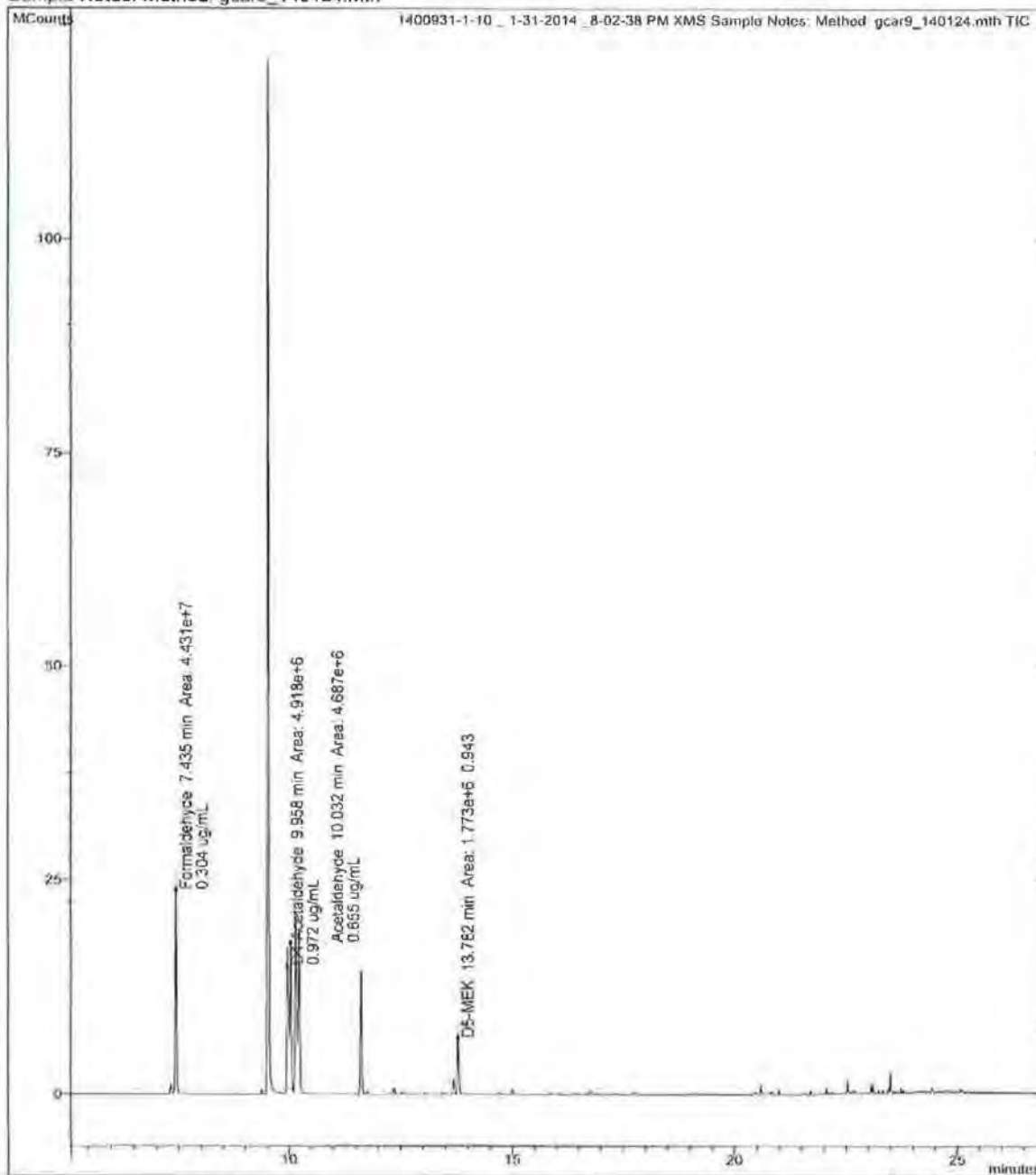
Sample: 1400931-1-10

Operator: VARIAN

Scan Range: 1 - 12928 Time Range: 5.12 - 27.01 min.

Date: 1/31/2014 8:02 PM

Sample Notes: Method: gcar9_140124.mth



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APM

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 03 Feb 2014 16:23:25

Chromatogram Plot

File: ...m195-glp\wt_b3\gcar9_140131\1400934-2-1_1-31-2014_8-35-34 pm.xms

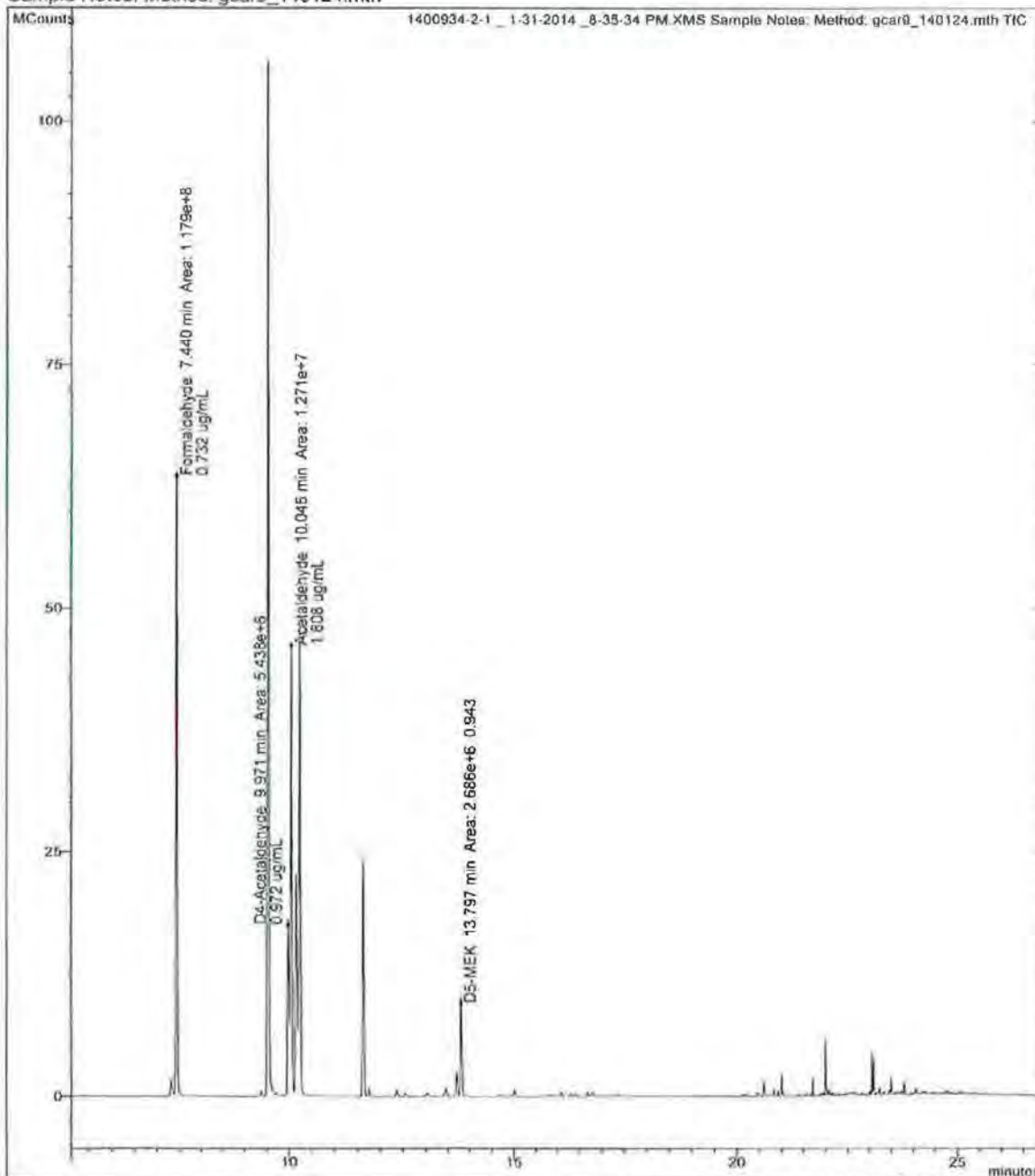
Sample: 1400934-2-1

Operator: VARIAN

Scan Range: 1 - 12914 Time Range: 5.12 - 27.00 min.

Date: 1/31/2014 8:35 PM

Sample Notes: Method: gcar9_140124.mth





Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: 03 Feb 2014 16:25:27

Chromatogram Plot

File: ...m195-glp\wt_b3\gcar9_140131\1400935-2-10_2-1-2014_1-31-45 am.xms

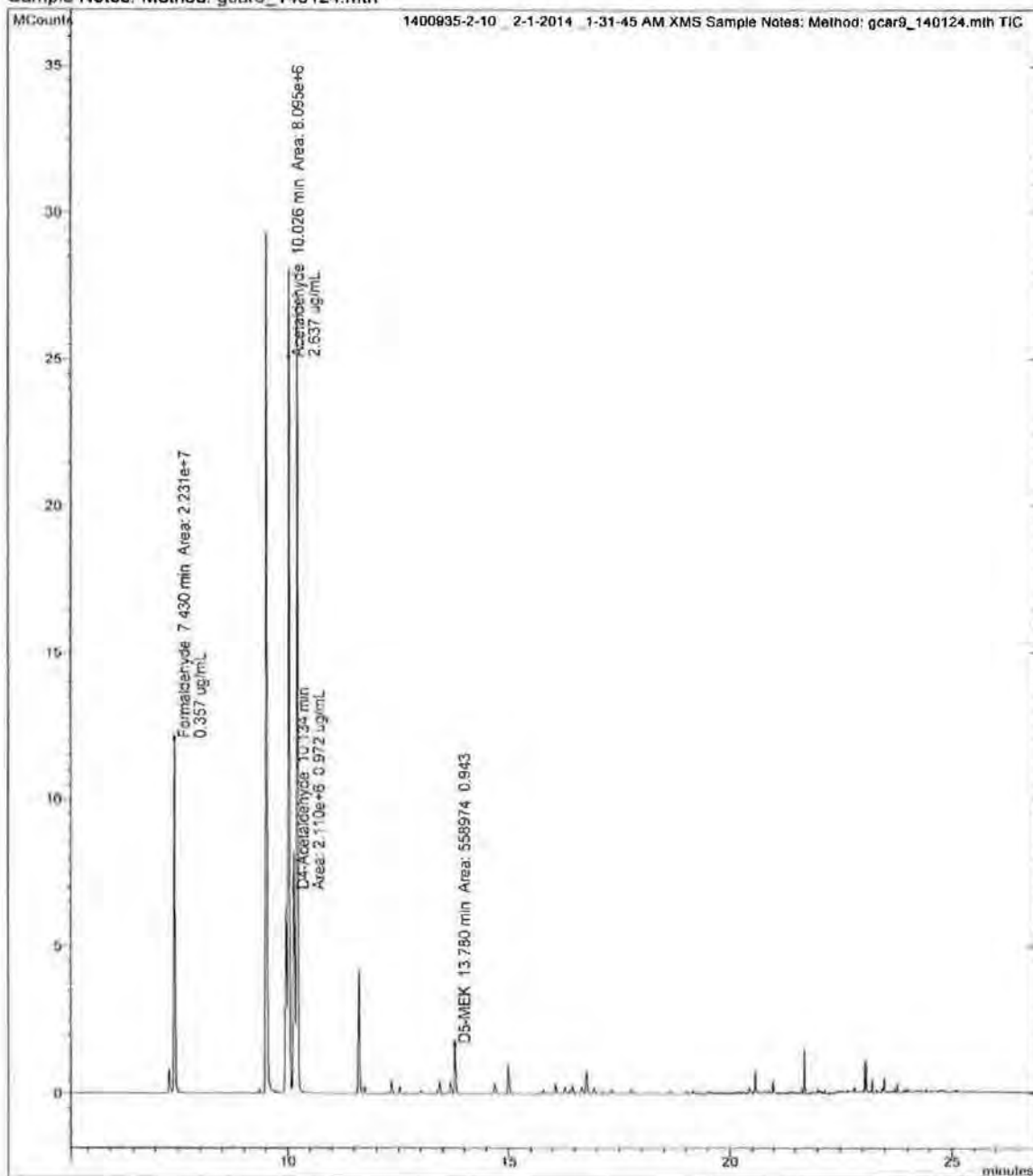
Sample: 1400935-2-10

Operator: VARIAN

Scan Range: 1 - 12928 Time Range: 5.12 - 27.01 min.

Date: 2/1/2014 1:31 AM

Sample Notes: Method: gcar9_140124.mth





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Print Date: 03 Feb 2014 16:25:45

Chromatogram Plot

File: ...195-giplwt_b3\gcar9_140131\std 3 140124_2-1-2014_2-04-43 am.xms

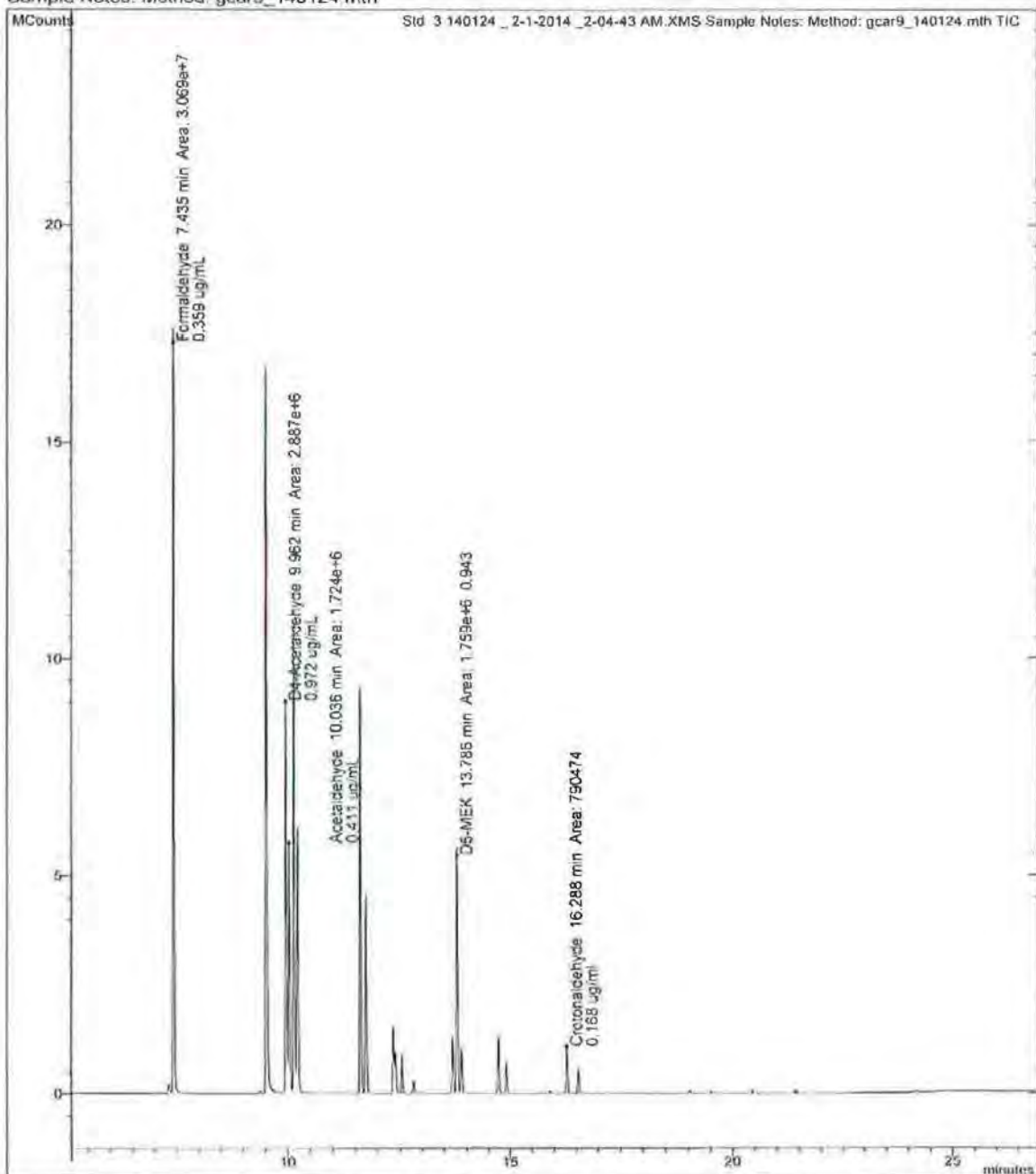
Sample: Std 3 140124

Operator: VARIAN

Scan Range: 1 - 12914 Time Range: 5.12 - 27.00 min

Date: 2/1/2014 2:04 AM

Sample Notes: Method: gcar9_140124.mth



2/3/2014

Study Identifier: M195-GLP

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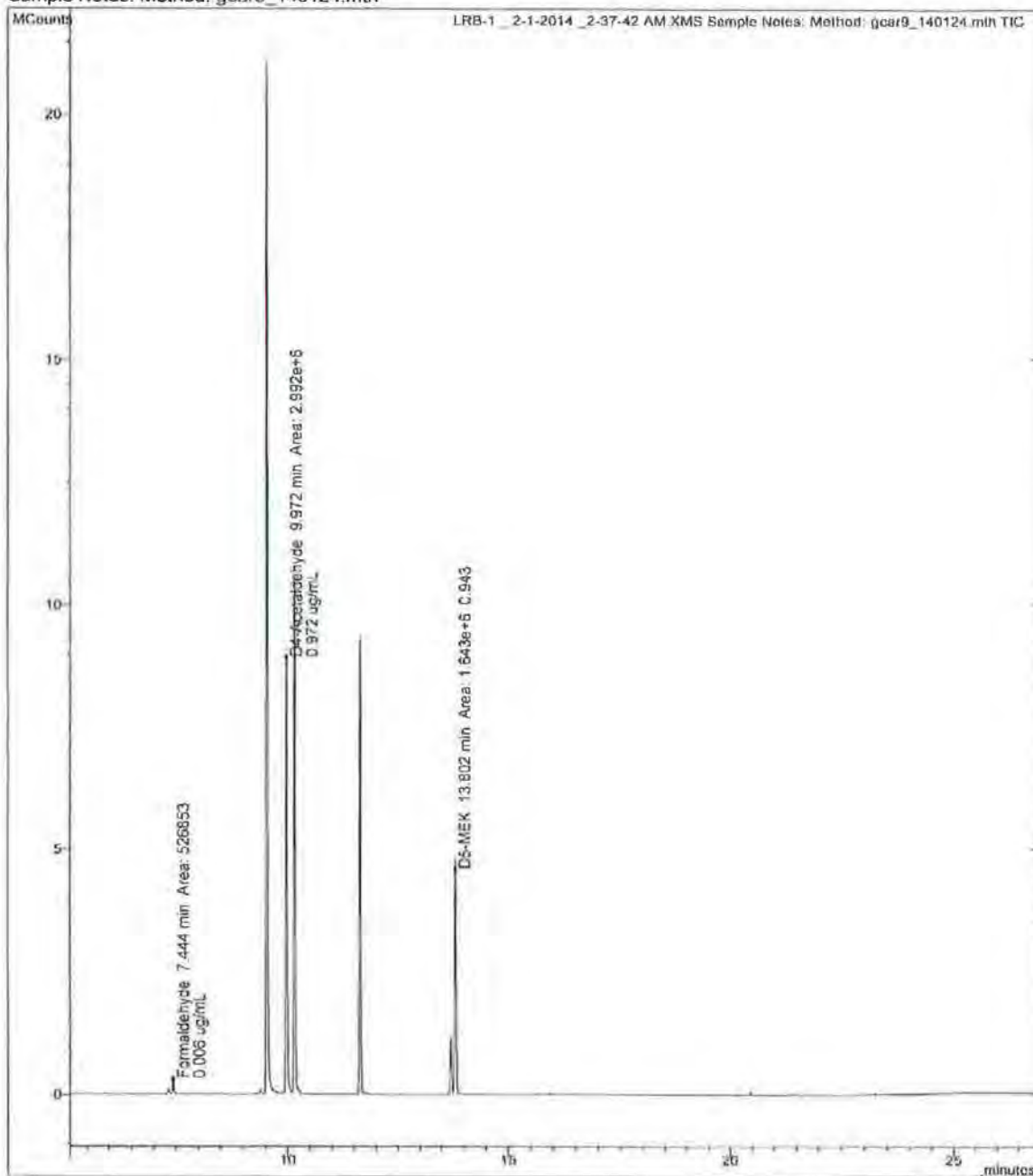
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

Print Date: 03 Feb 2014 16:25:55

Chromatogram Plot

File: ..roject\m195-glplwt_b3\gcar9_140131\lrb-1_2-1-2014_2-37-42 am.xms
Sample: LRB-1 Operator: VARIAN
Scan Range: 1 - 12916 Time Range: 5.12 - 27.01 min. Date: 2/1/2014 2:37 AM
Sample Notes: Method: gcar9_140124.mth



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page



APR

Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

1400931-3-1.pdf_3074796
Electronically Signed By: Mingzhong Cui
Path: \\fs2\\repository\\repository\\3074796\\
Created: 2/4/14 09:26 Audit ID: 3074796

Print Date: 04 Feb 2014 09:25:32

Chromatogram Plot

File: ...\\m195-glp\\wr_b3\\gcar9_140131\\1400931-3-1_2-1-2014_4-15-29 am.xms

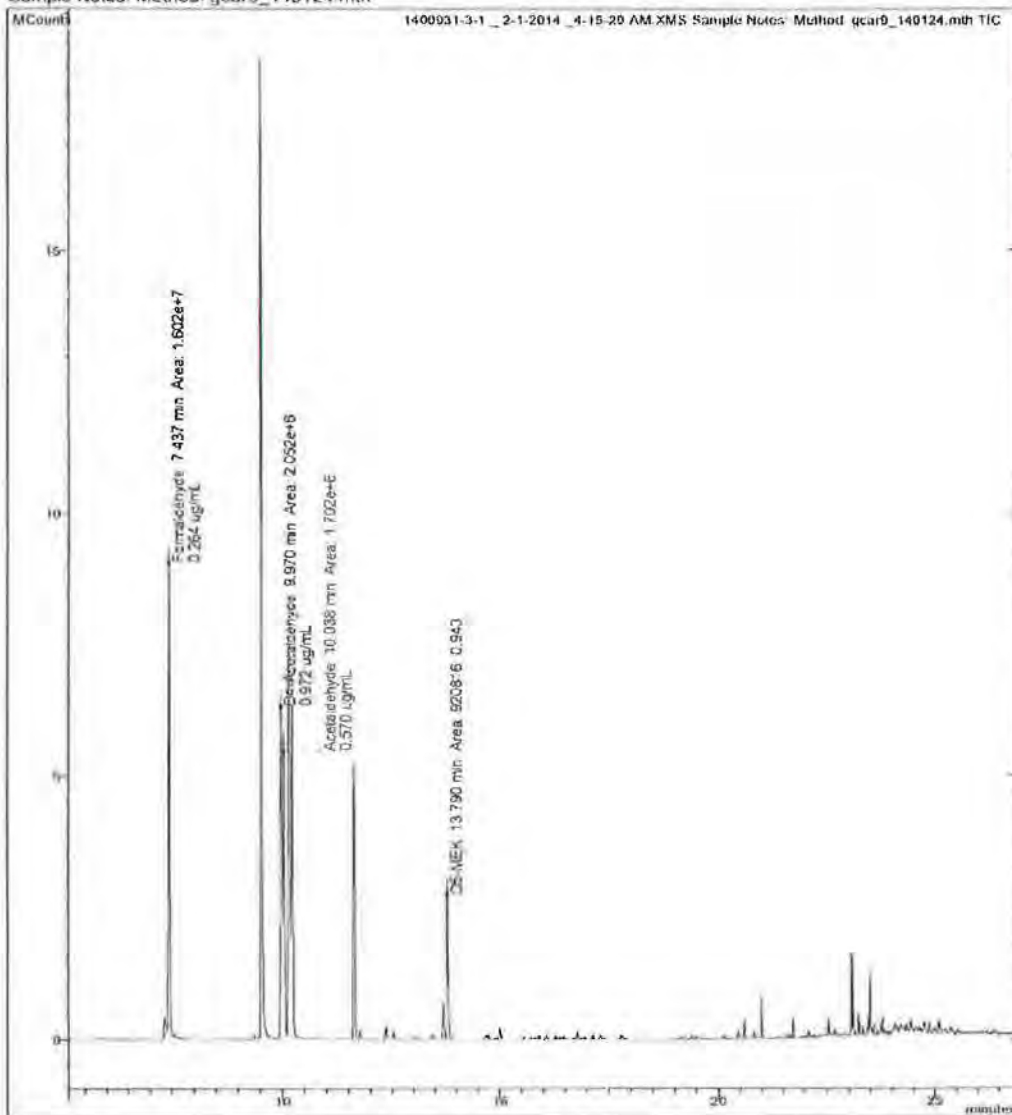
Sample: 1400931-3-1

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.02 min

Date: 2/1/2014 4:15 AM

Sample Notes: Method: gcar9_140124.mth



Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

888-3-7.pdf: 3077738
Electronically Signed By: Mingzhong Cui
Path: \\fs2\repository\repository\3077738\
Created: 2/4/14 12:24 Audit ID: 3077738

Print Date: 04 Feb 2014 12:23:25

Chromatogram Plot

File: ...ject\m195-glplwt_b3\gcar9_140131\888-3-7_2-1-2014_7-32-27 am.xms

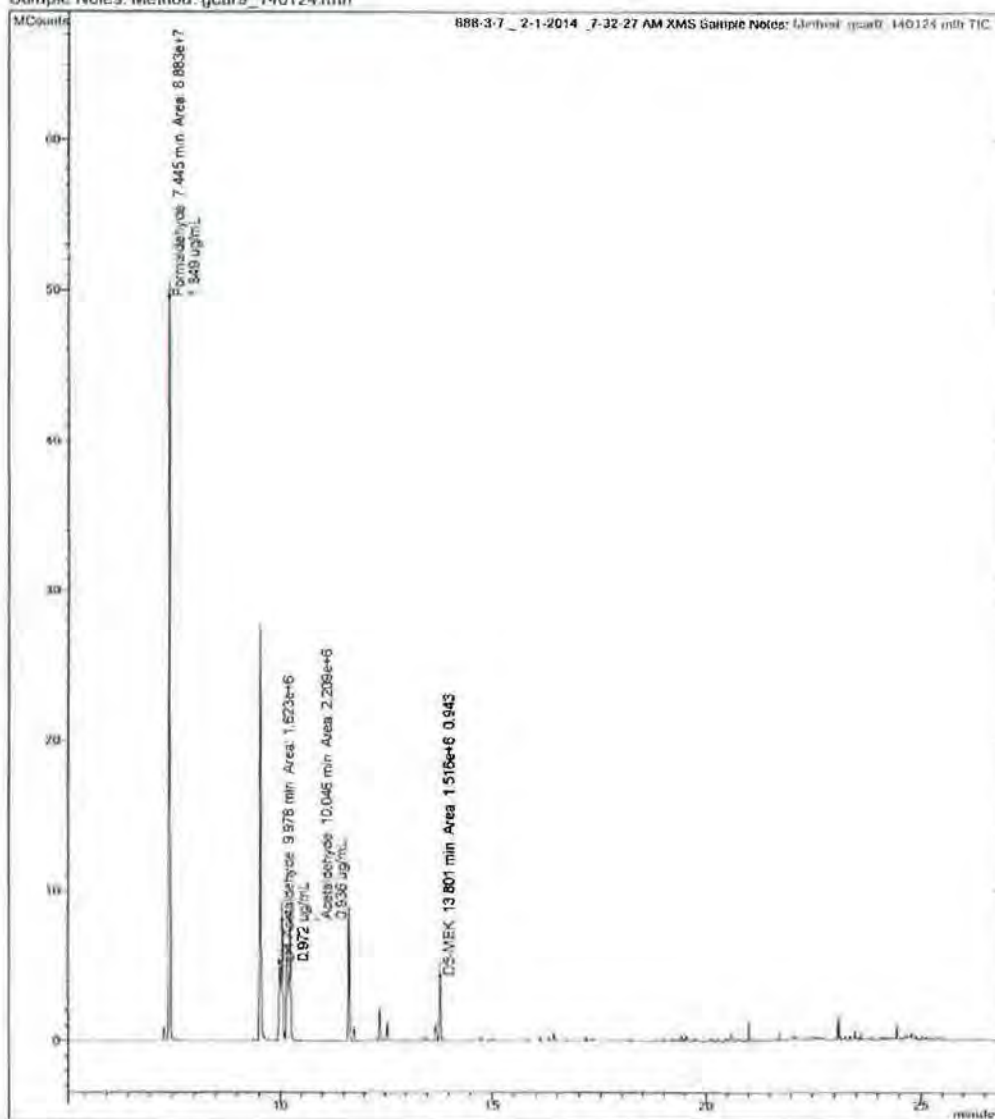
Sample: 888-3-7

Operator: VARIAN

Scan Range: 1 - 12914 Time Range: 5.12 - 27.01 min.

Date: 2/1/2014 7:32 AM

Sample Notes: Method: gcar9_140124.mh





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

1400934-3-10.pdf_3077903
Electronically Signed By: Mingzhong Cui
Path: Wfs2\repository\repository\3077903\1
Created: 2/4/14 12:41 Audit ID: 3077903

Print Date: 04 Feb 2014 12:40:43

Chromatogram Plot

File: ...m195-glplwt_b3\gcar9_140131\1400934-3-10_2-1-2014_9-43-50 am.xms

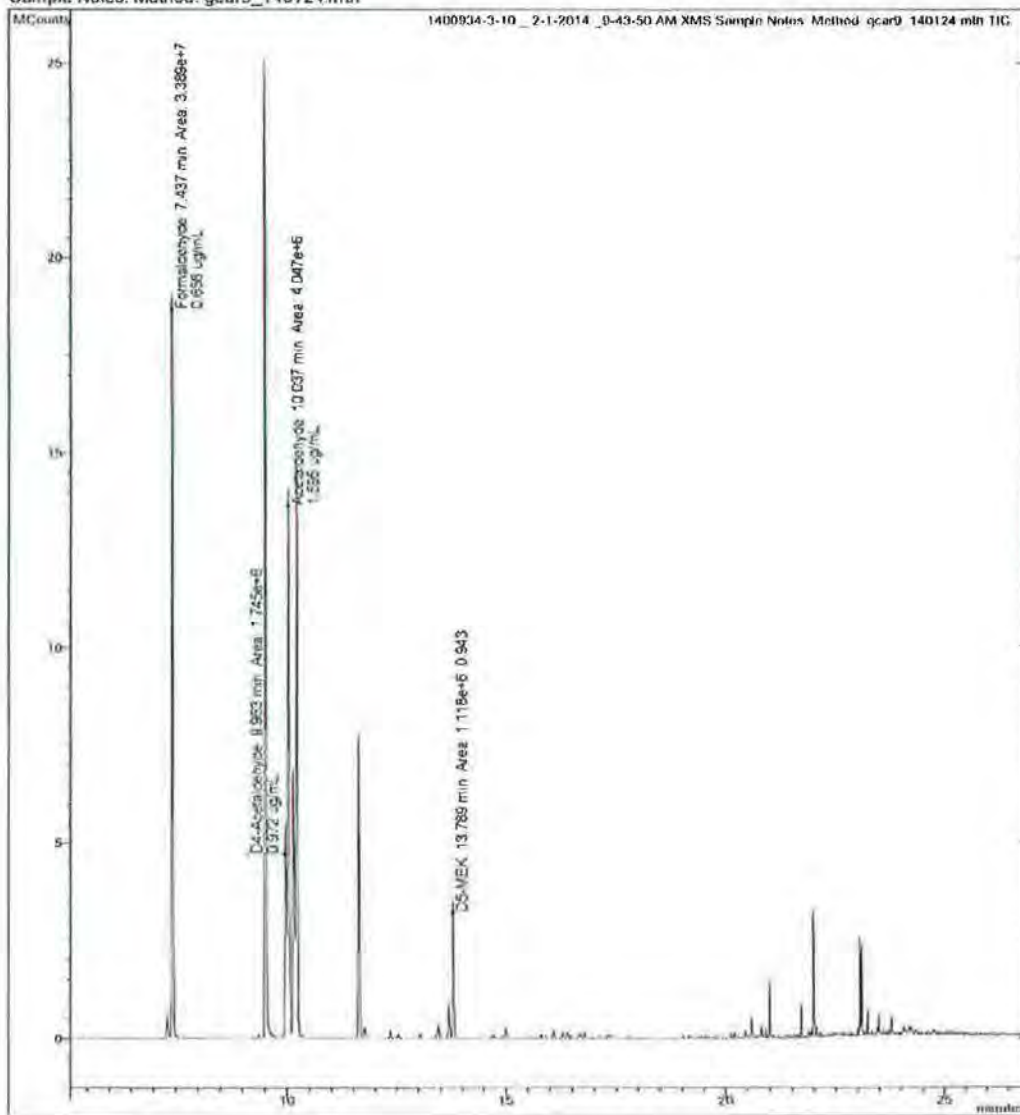
Sample: 1400934-3-10

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.00 min.

Date: 2/1/2014 9:43 AM

Sample Notes: Method: gcar9_140124.mth





Study Identifier: M195-GLP

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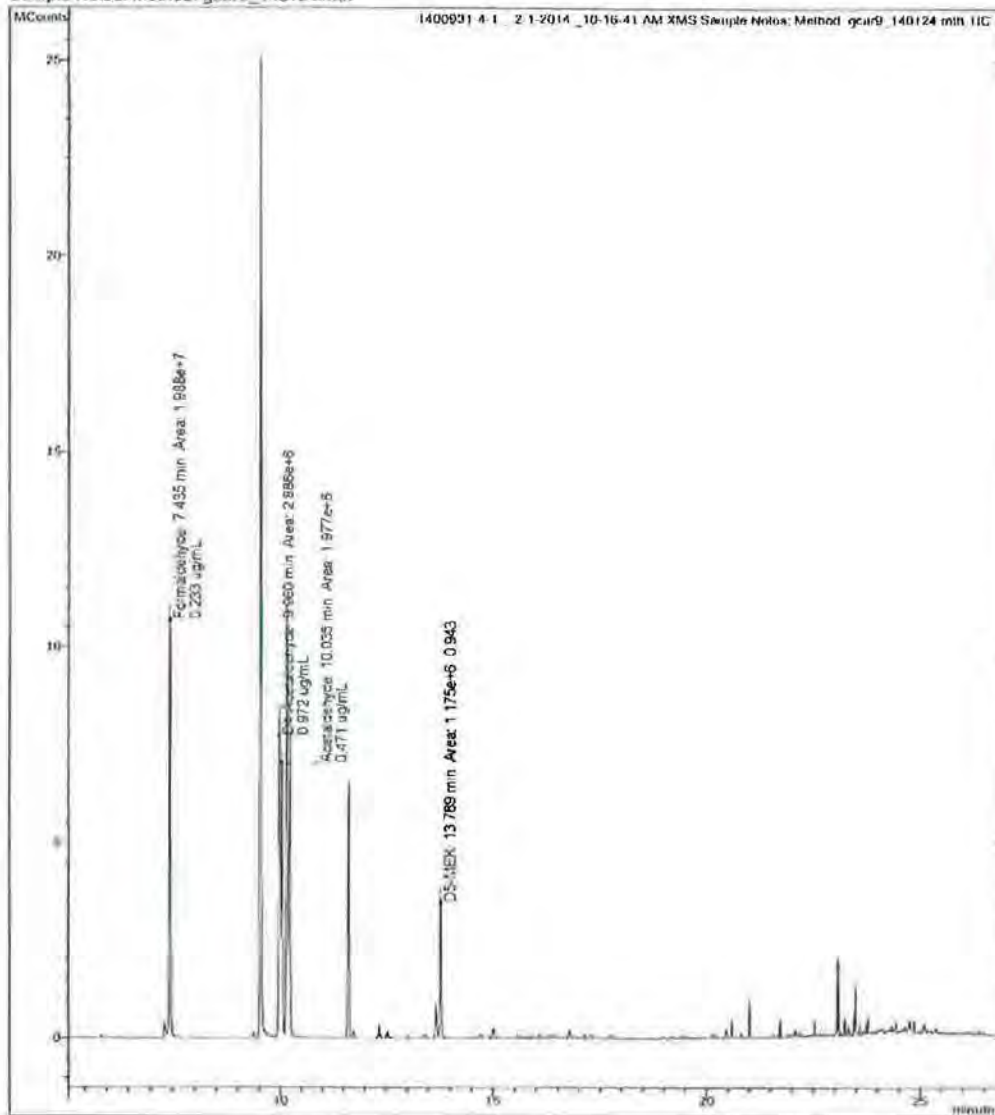
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

1400931-4-1.pdf_3077919
Electronically Signed By: Mingzhong Cui
Path: \\fs2\\repository\\repository\\3077919\\
Created: 2/4/14 12:43 Audit ID: 3077919

Print Date: 04 Feb 2014 12:42:53

Chromatogram Plot

File: ...m195-glpwt_b3\\gcar9_140131\\1400931-4-1_2-1-2014_10-16-41 am.xml
Sample: 1400931-4-1 Operator: VARIAN
Scan Range: 1 - 12926 Time Range: 5.12 - 27.02 min. Date: 2/1/2014 10:16 AM
Sample Notes: Method: gcar9_140124.mh





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

1400935-4-10.pdf_3078799
Electronically Signed By: Mingzhong Cui
Path: \\fs2\\repository\\repository\\3078799\\
Created: 2/4/14 13:54 Audit ID: 3078799

Print Date: 04 Feb 2014 13:53:41

Chromatogram Plot

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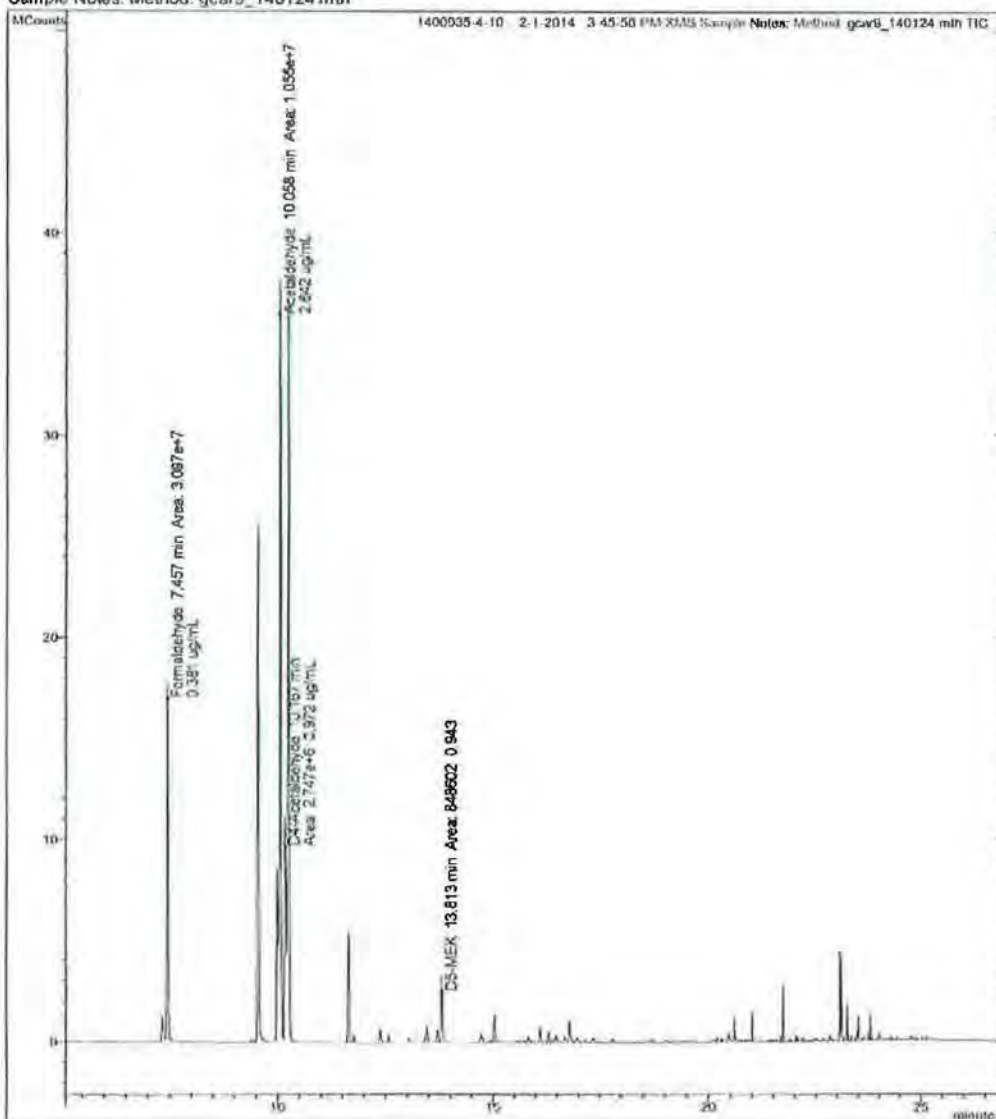
Sample: 1400935-4-10

Operator: VARIAN

Scan Range: 1 - 12914 Time Range: 5.12 - 27.00 min.

Date: 2/1/2014 3:45 PM

Sample Notes: Method: gcar8_140124.mth





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

1400933-5-1.pdf_3078852
Electronically Signed By: Mingzhong Cui
Path: \\fs2\\repository\\repository\\3078852\\
Created: 2/4/14 13:57 Audit ID: 3078852

Print Date: 04 Feb 2014 13:56:17

Chromatogram Plot

File: _\\m195-glp\\wt_b3\\gcar9_140131\\1400933-5-1_2-1-2014_4-18-46 pm.xms

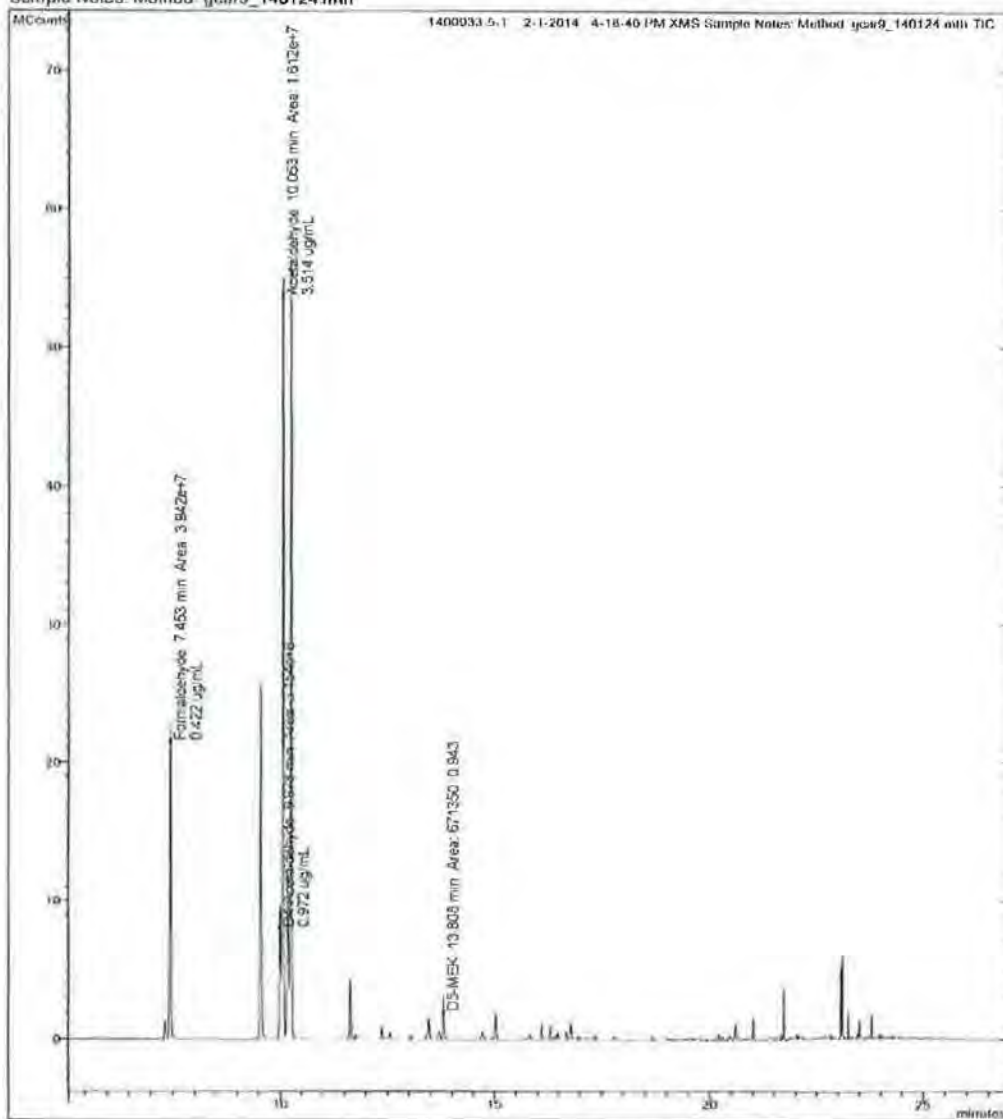
Sample: 1400933-5-1

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.01 min

Date: 2/1/2014 4:18 PM

Sample Notes: Method: gcar9_140124.mh





Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

Chromatograms_b3.rpt.pdf_3113376
Electronically Signed By: Mingzhong Cui
Path: \\fs2\\repository\\repository\\3113376\\
Created: 2/10/14 15:51 Audit ID: 3113376

Print Date: 10 Feb 2014 15:49:44

Chromatogram Plot

File: ...ect\\m195-glp\\wt_b3\\gcar9_140207\\888-1r-1_2-7-2014_5-45-17 pm.xms

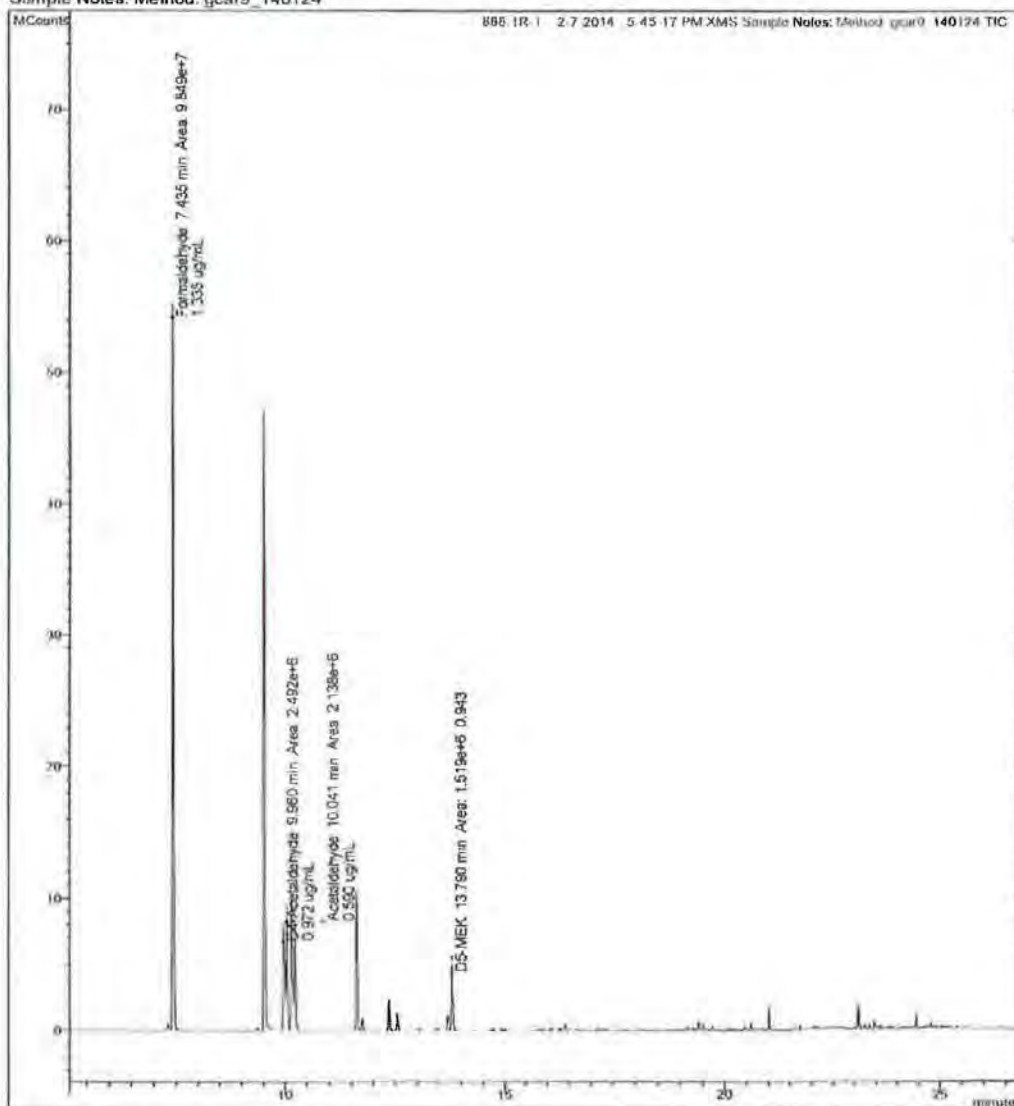
Sample: 888-1R-1

Operator: VARIAN

Scan Range: 1 - 12904 Time Range: 5.12 - 27.00 min.

Date: 2/7/2014 5:45 PM

Sample Notes: Method: gcar9_140124



Tobacco Specific Nitrosamines in Smokeless Tobacco



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

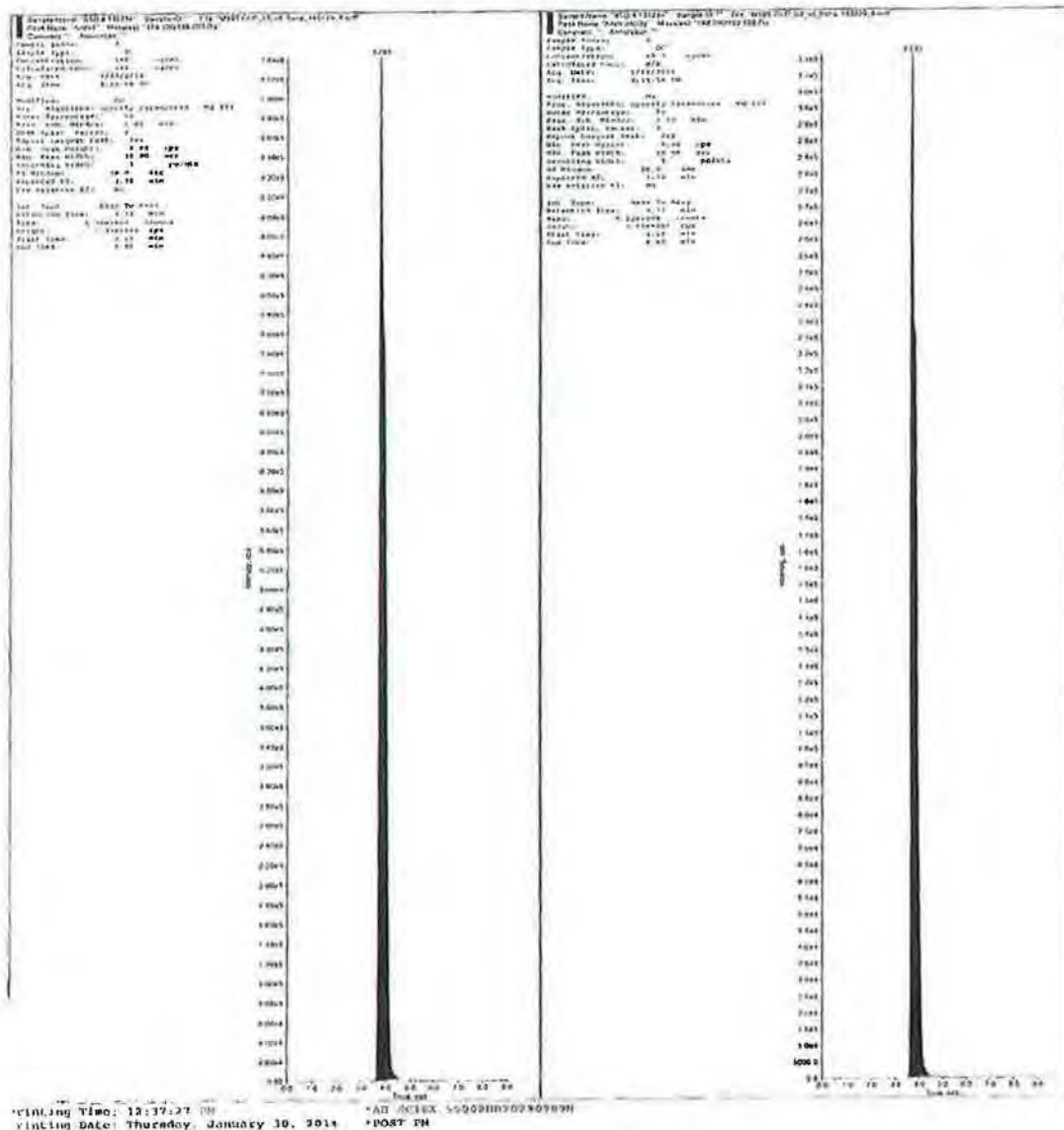
Instrument Run Summary.pdf 3047986
Electronically Signed By: Bor Cha
Path: \\fs2\repository\repository\3047986\
Created: 1/30/14 07:46 Audit ID: 3047986

1997, 1998, 1999

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Sample ID	Control Name (Sample ID, Run, Process)	Injection Date	Operation Time	Method ID	Instrument Configuration	Sample Name	Retention Time (minutes / Peaks)
STD 4-12321	STD 4-12321-1	20-06-16	13:02:09 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400885-3-3	20-06-16	13:02:24 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400896-3-3	20-06-16	13:03:59 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400898-3-3	20-06-16	13:04:35 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400901-3-4	20-06-16	13:15:12 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	888-1-5	20-06-16	13:15:05 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400892	20-06-16	13:16:22 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400893	20-06-16	13:16:35 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400894	20-06-16	13:16:52 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400895	20-06-16	13:17:02 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
STD 1-12321	STD 1-12321-1	20-06-16	13:08:22 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	888-3-3	20-06-16	13:08:52 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400896	20-06-16	13:09:14 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400897	20-06-16	13:09:31 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400898	20-06-16	13:09:45 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400899	20-06-16	13:09:58 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400900	20-06-16	13:10:12 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400901	20-06-16	13:10:25 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400902	20-06-16	13:10:38 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400903	20-06-16	13:10:51 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
STD 3-12321	STD 3-12321-1	20-06-16	13:11:21 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-1-5	20-06-16	13:11:34 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-2-5	20-06-16	13:11:47 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-3-5	20-06-16	13:12:00 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-4-5	20-06-16	13:12:13 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-5-5	20-06-16	13:12:26 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-6-5	20-06-16	13:12:39 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-7-5	20-06-16	13:12:52 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-8-5	20-06-16	13:13:05 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1302-9-5	20-06-16	13:13:18 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
STD 5-12321	STD 5-12321-1	20-06-16	13:13:51 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400894	20-06-16	13:14:04 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400895	20-06-16	13:14:17 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400896	20-06-16	13:14:30 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A
	1400897	20-06-16	13:14:43 PM	173504	Co 1402115_Seq 123211	LOMS4 (A01654)	800A

LTSNA4 Sample NNN Chromatograms & Results.pdf_3052446
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Created: 1/30/14 12:49 Audit ID: 3052446



[Signature]

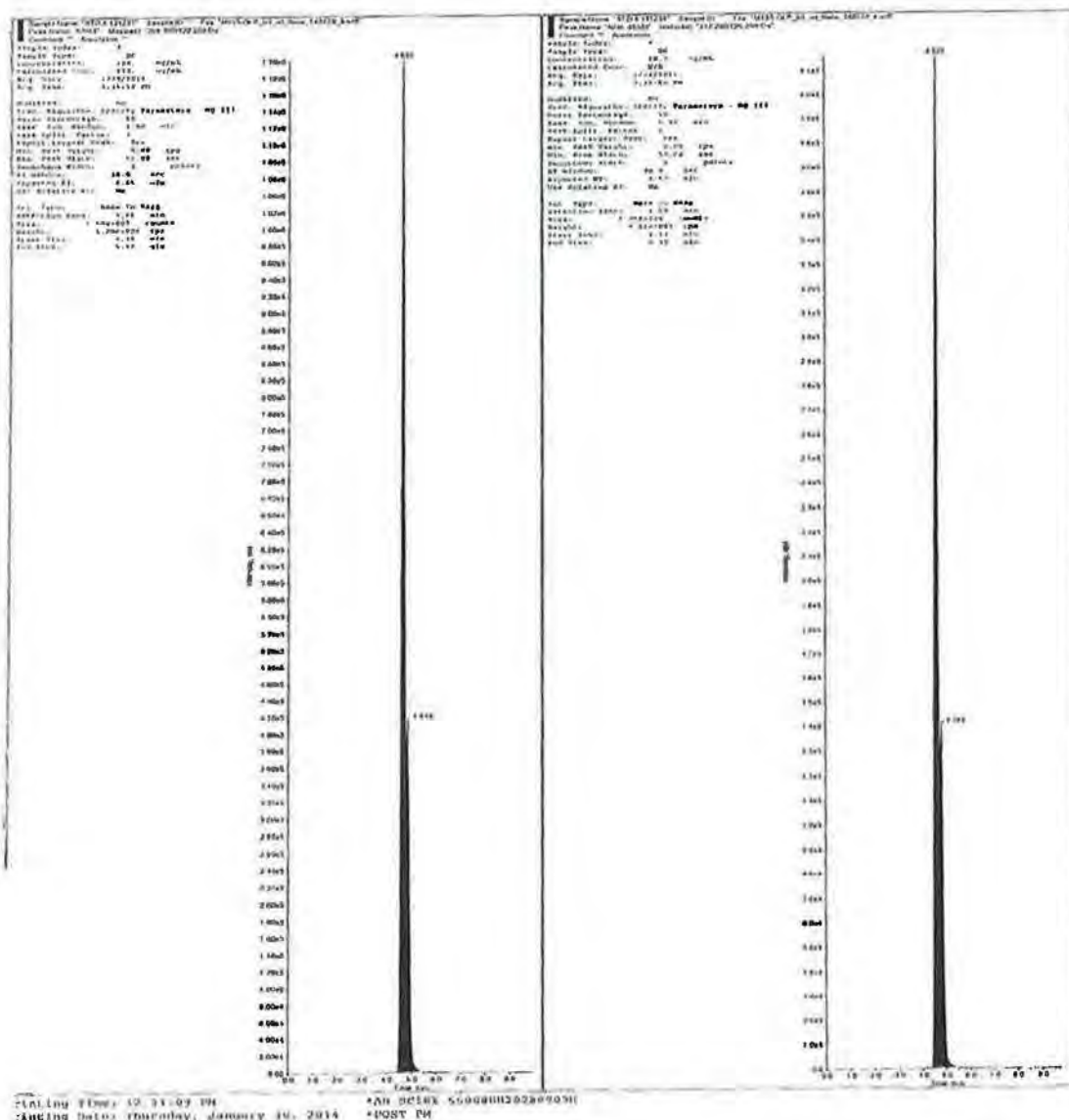


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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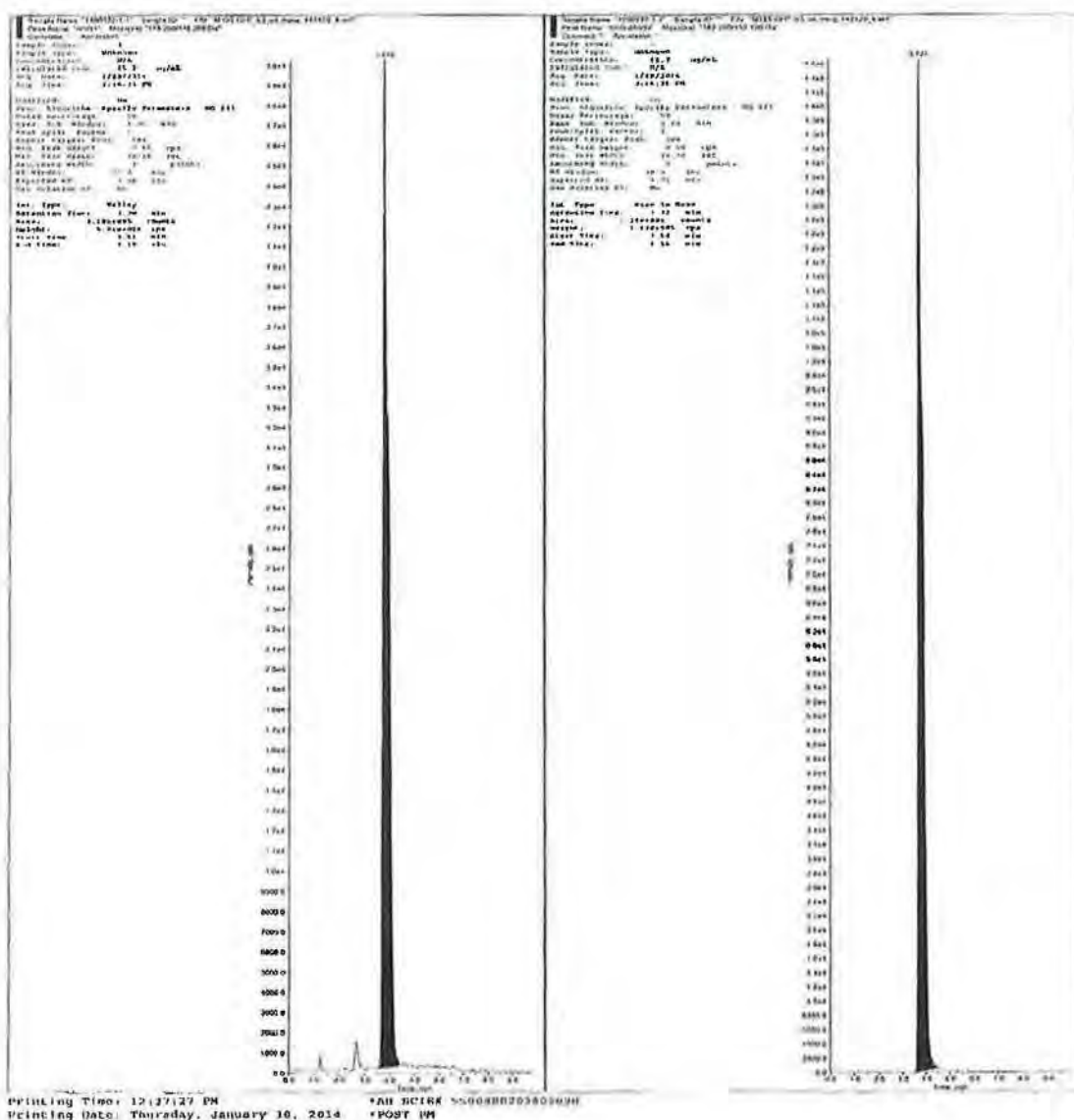


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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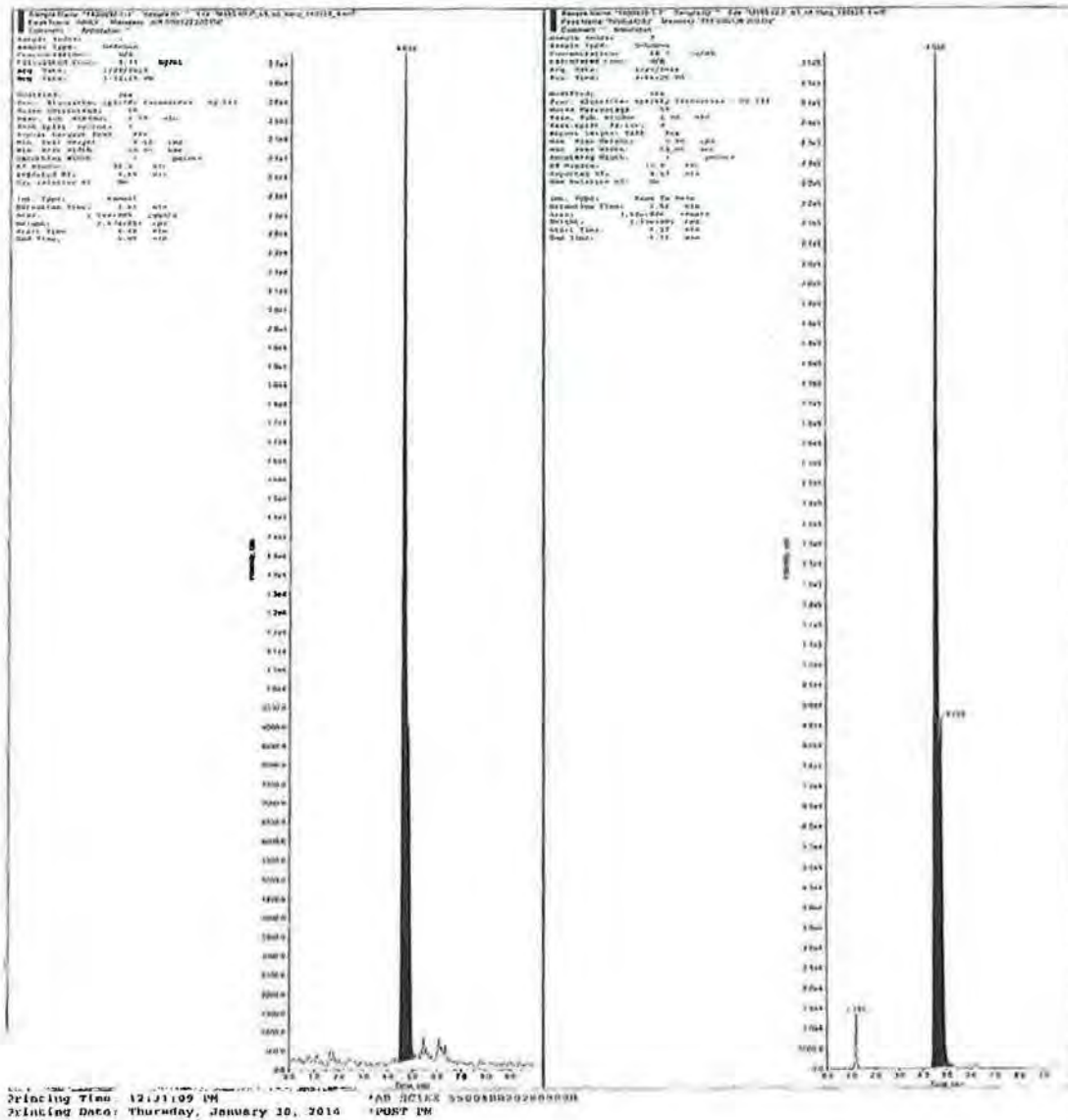


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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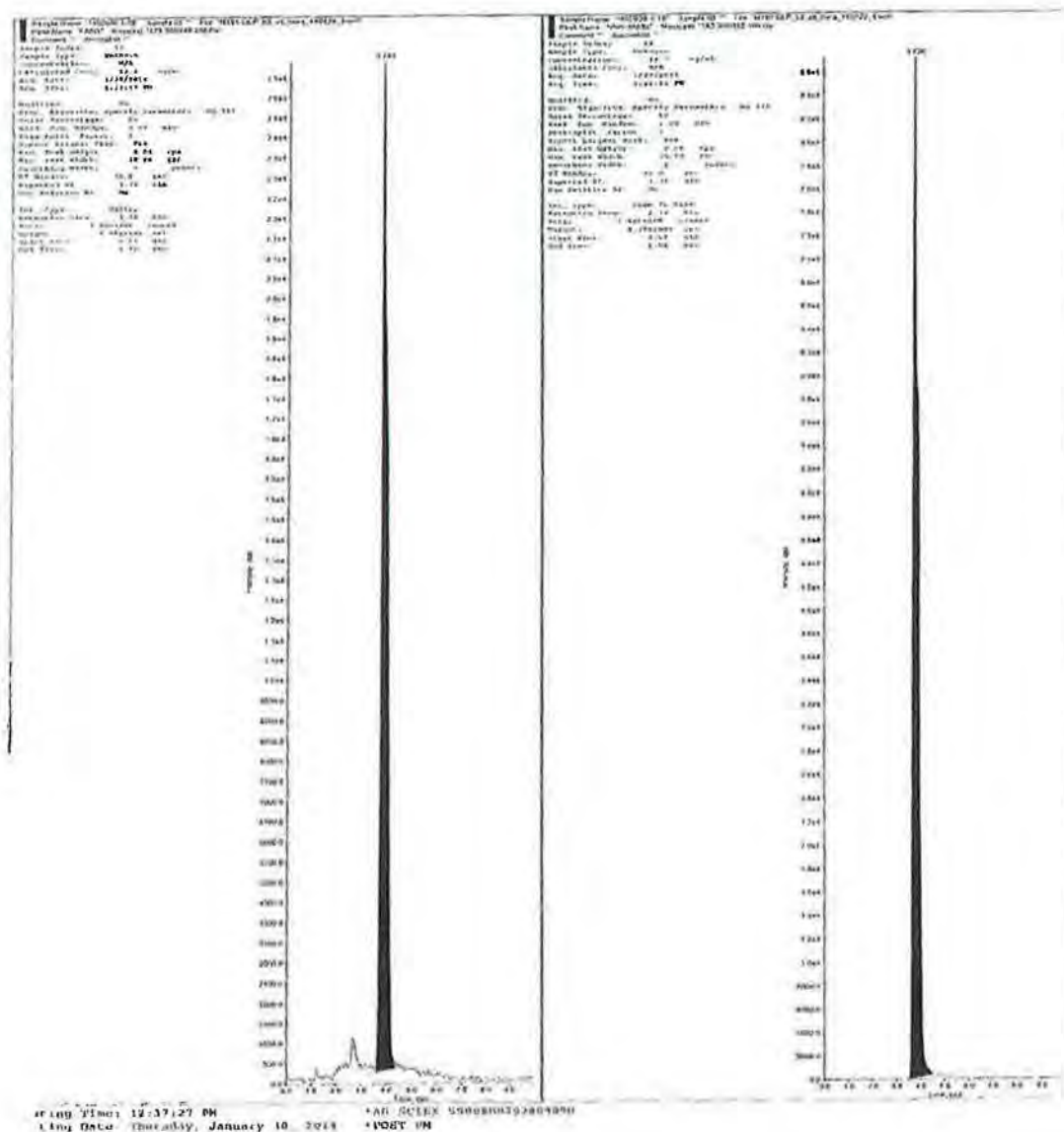


Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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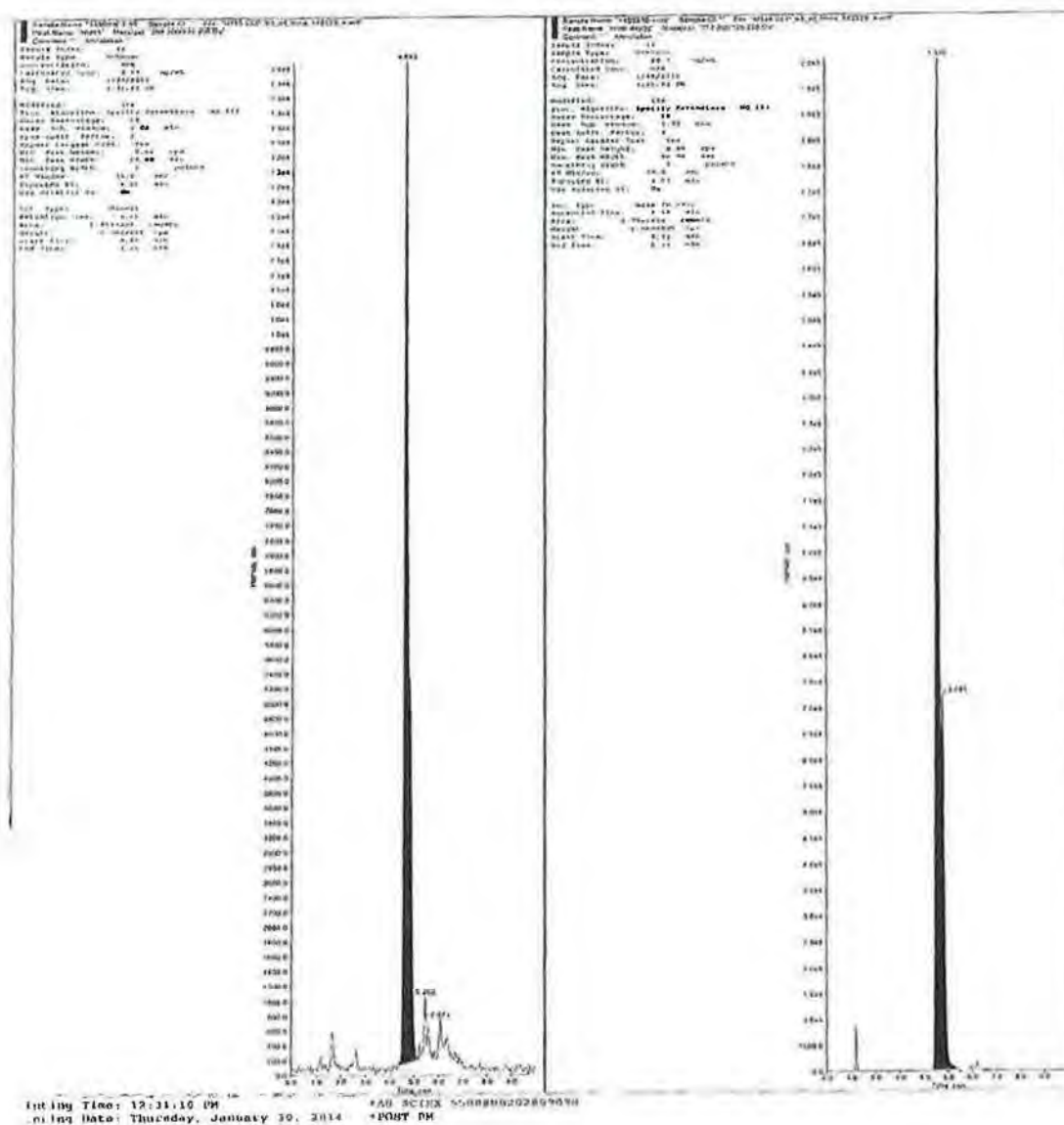
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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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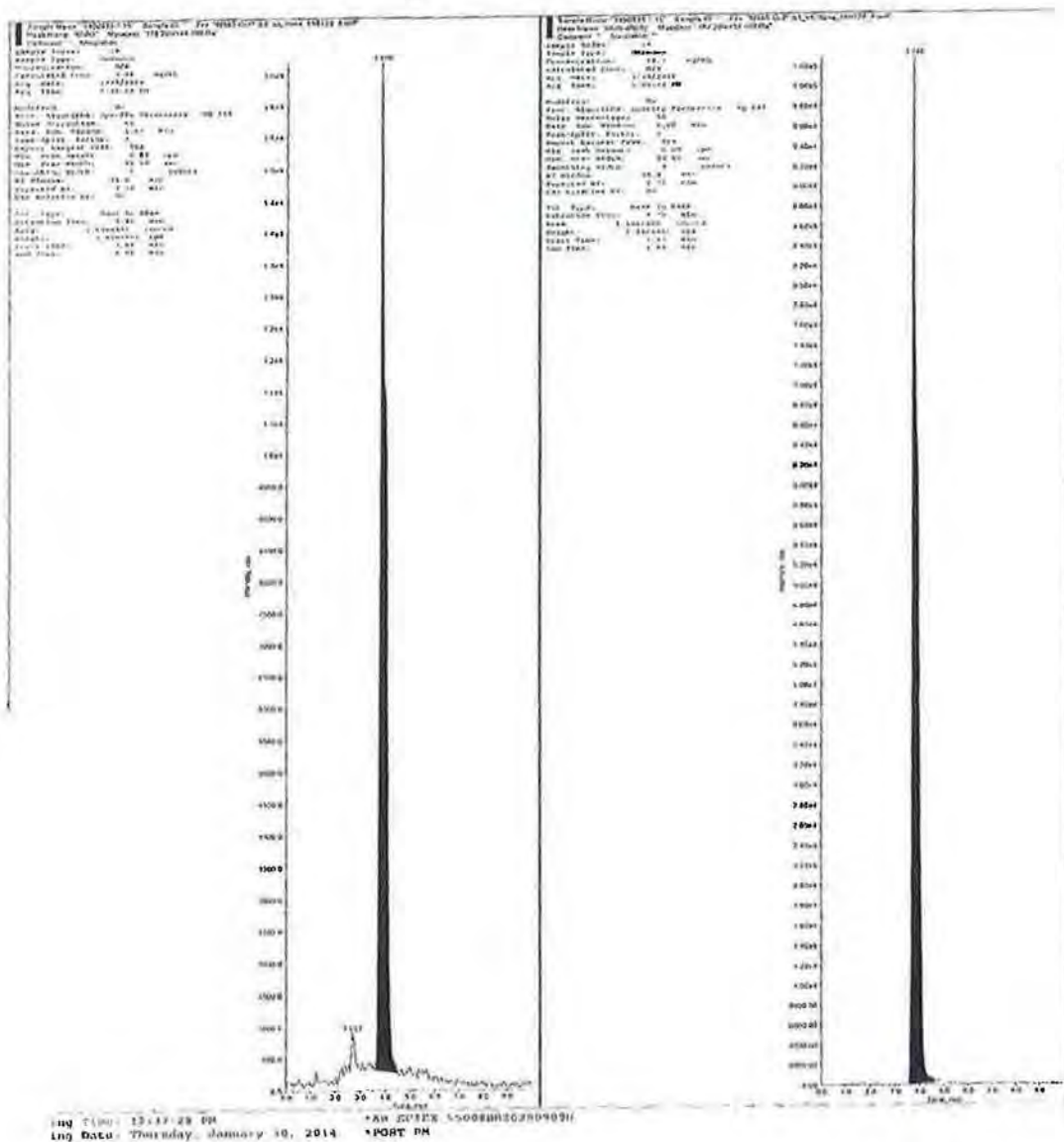
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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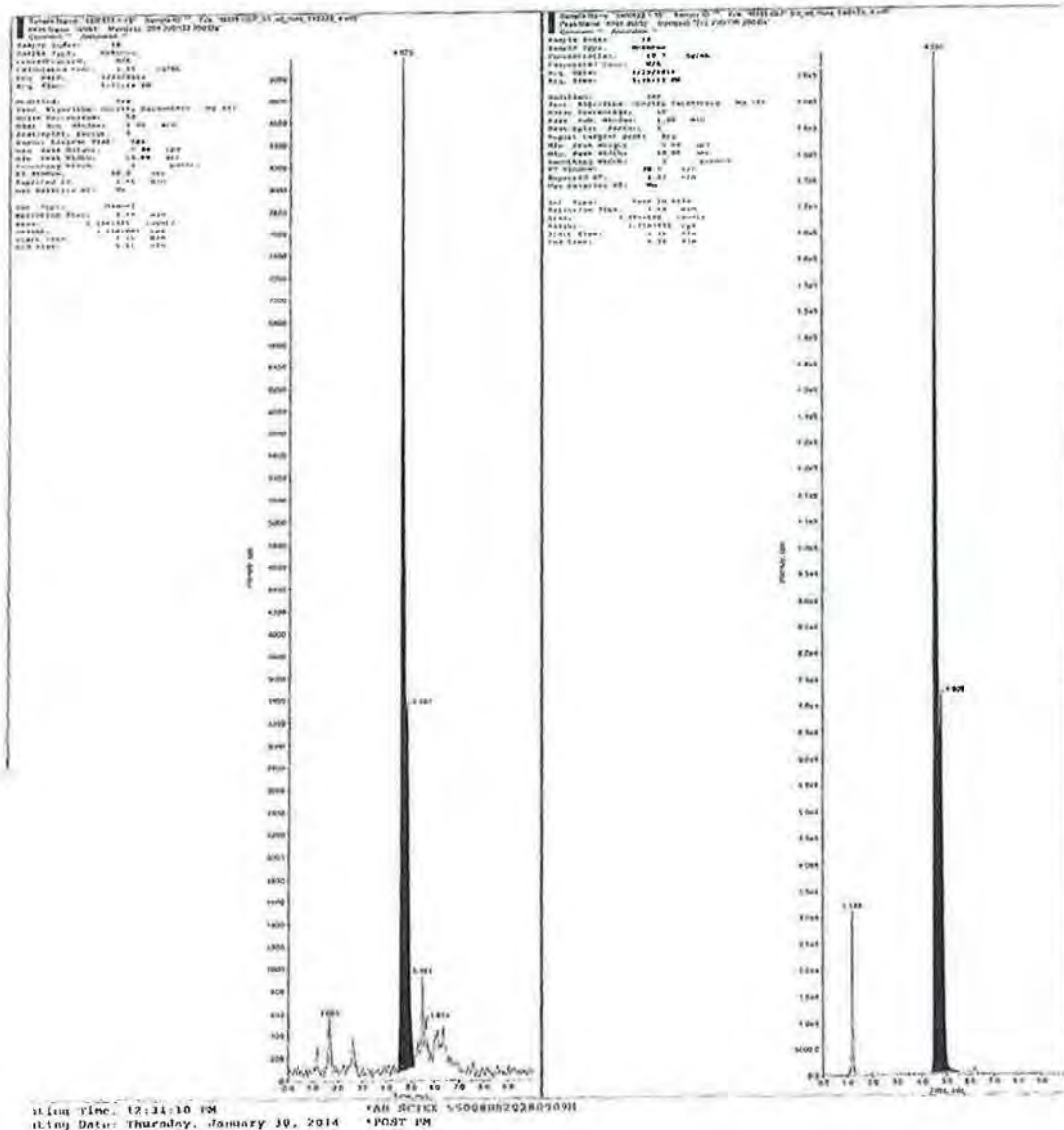


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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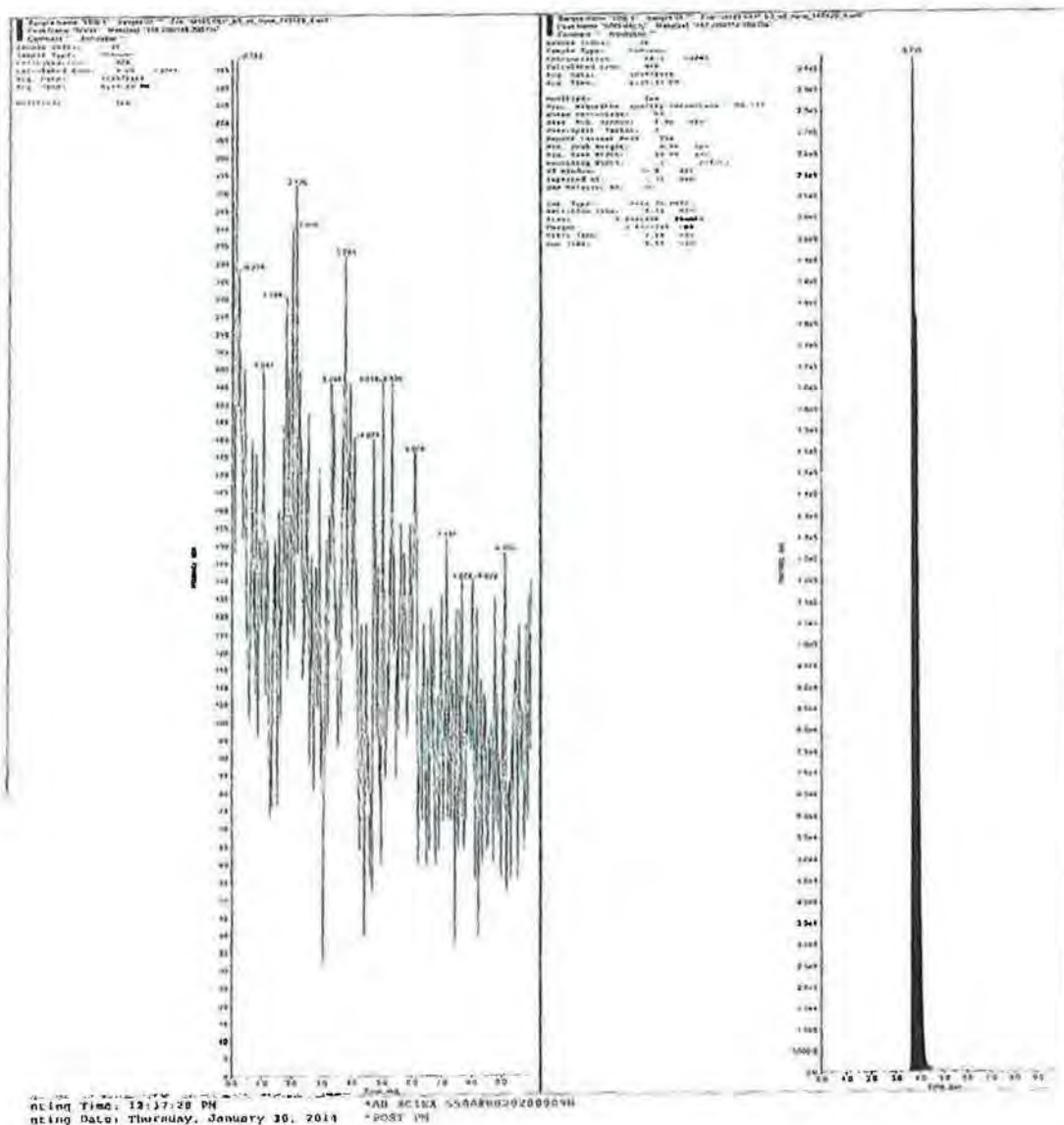
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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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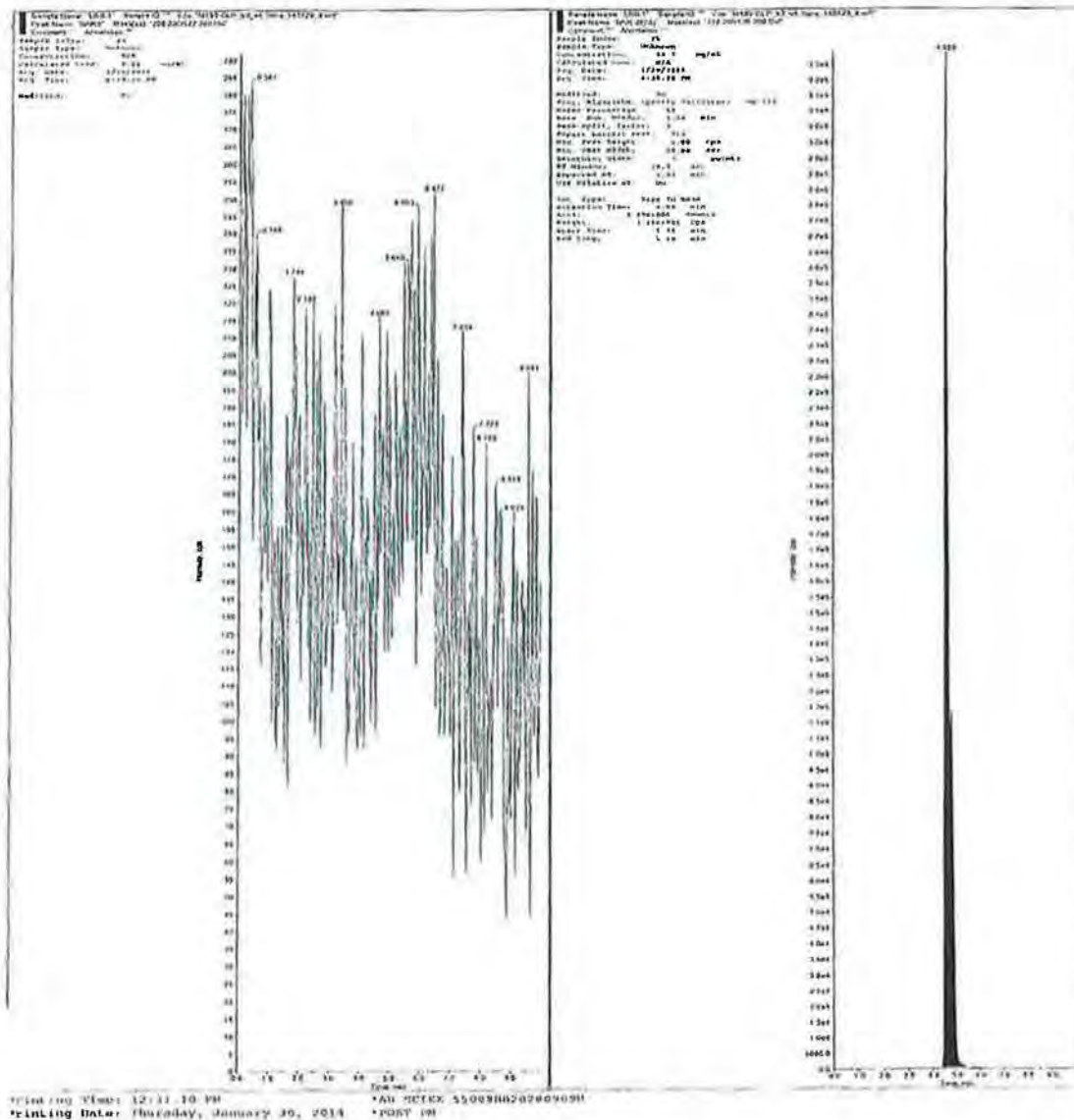


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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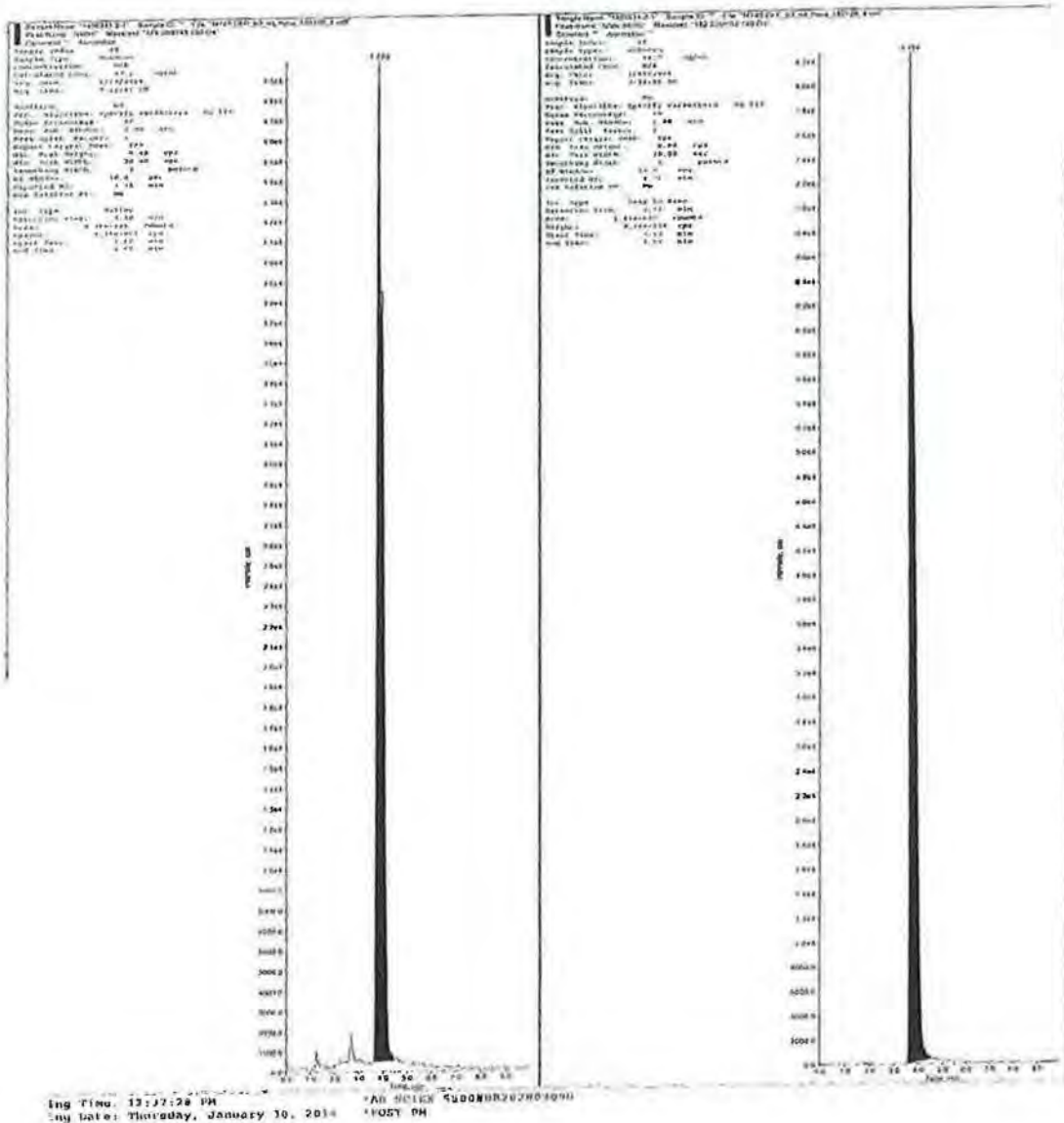


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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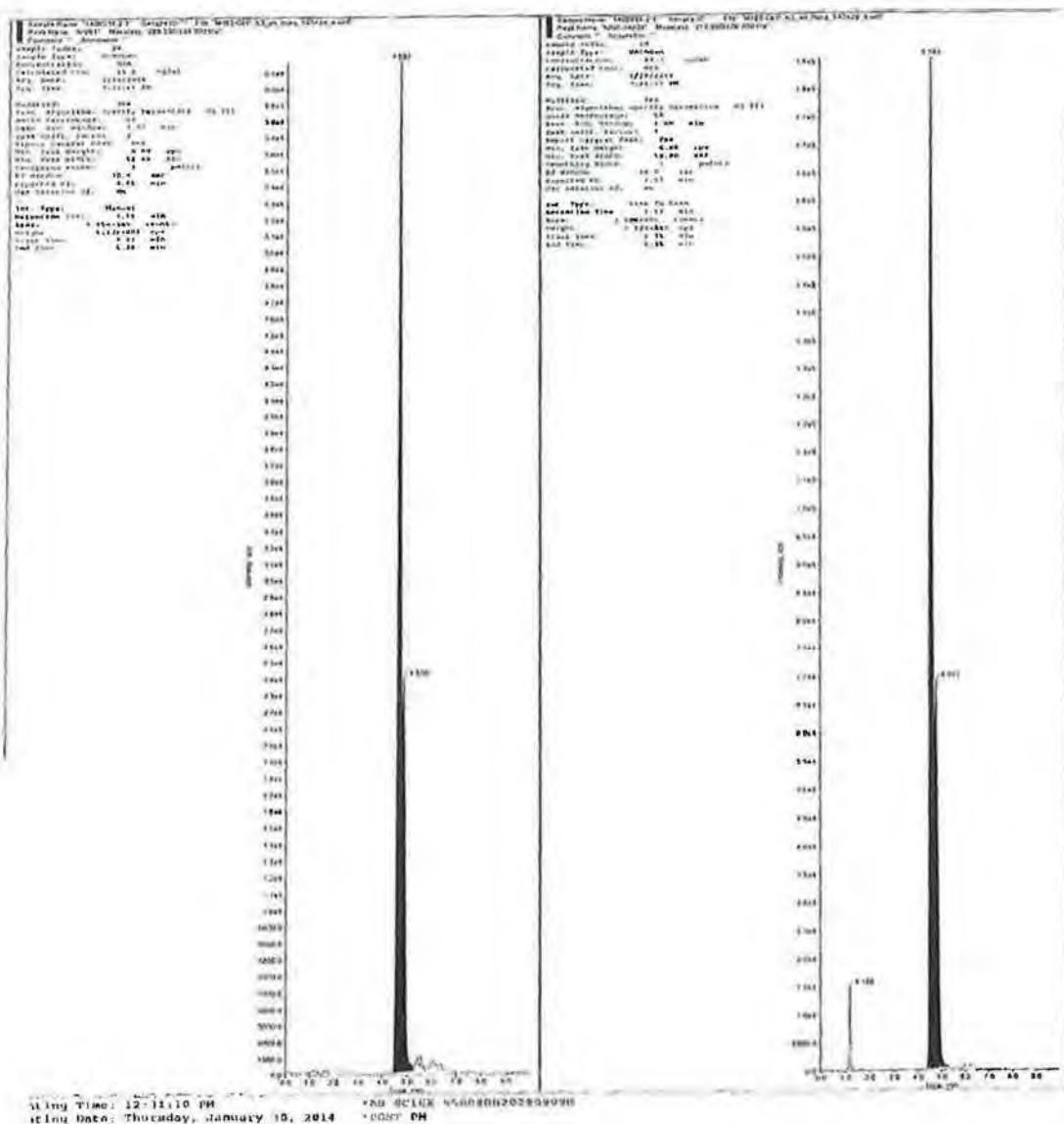
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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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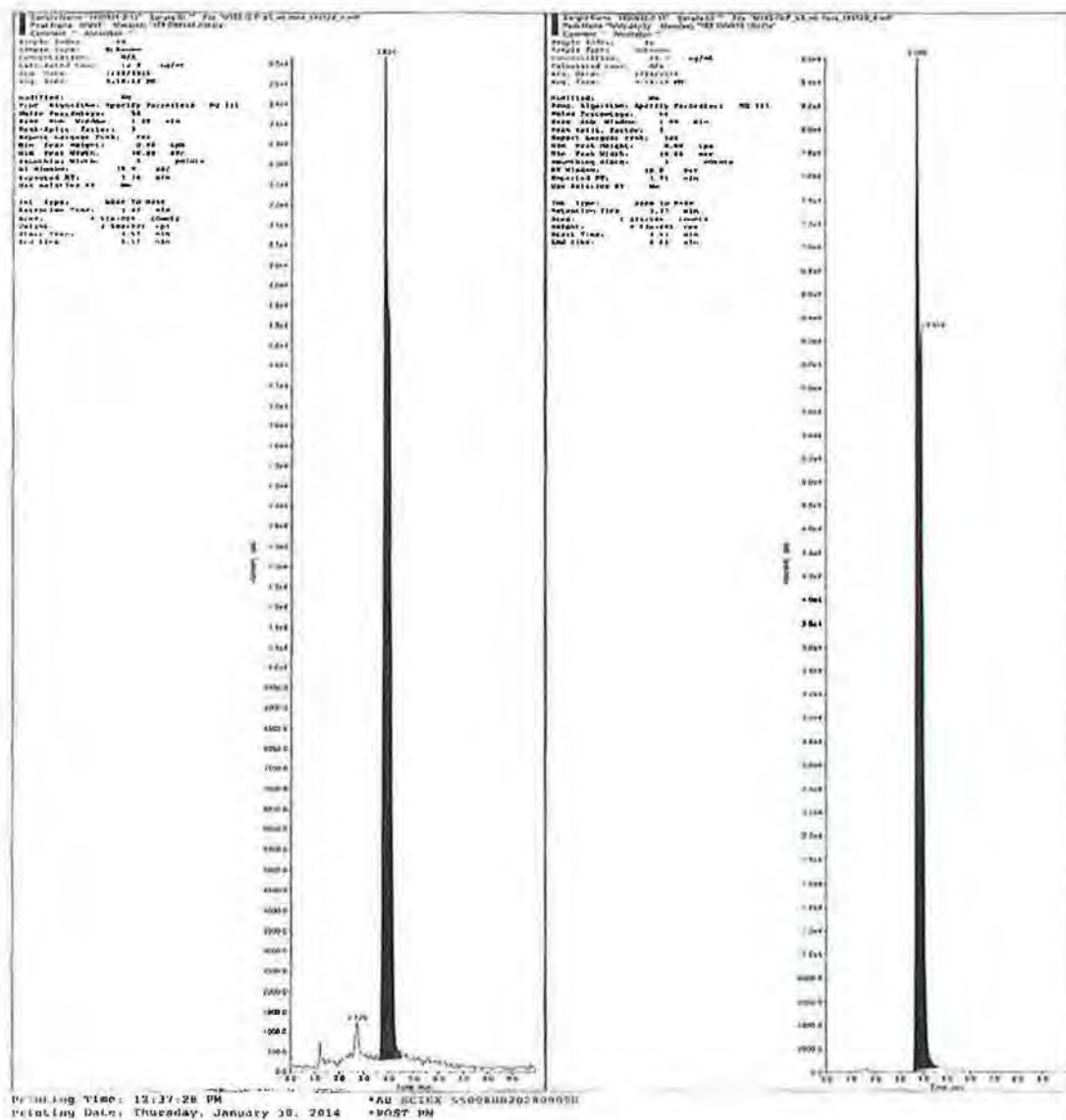
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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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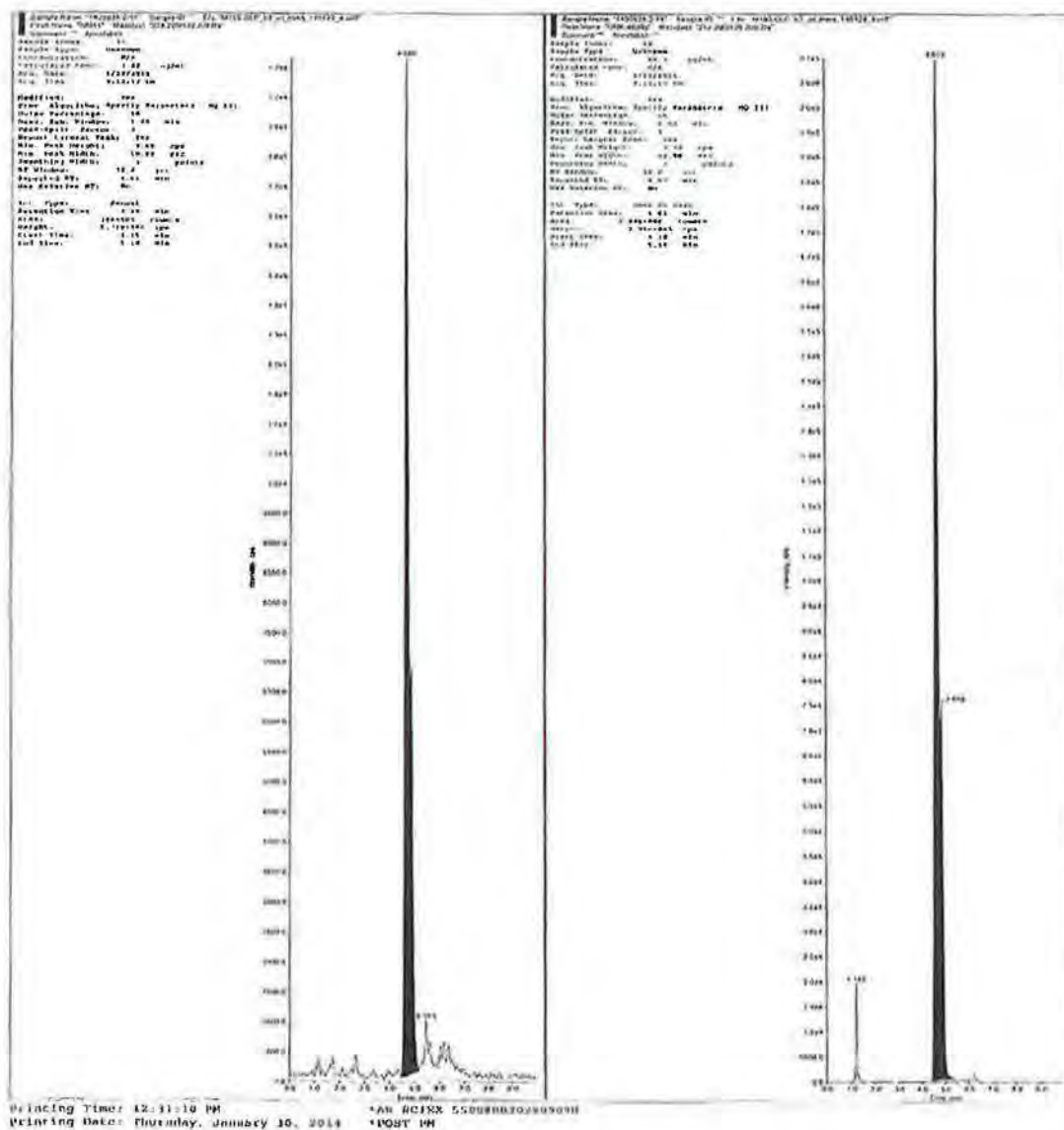


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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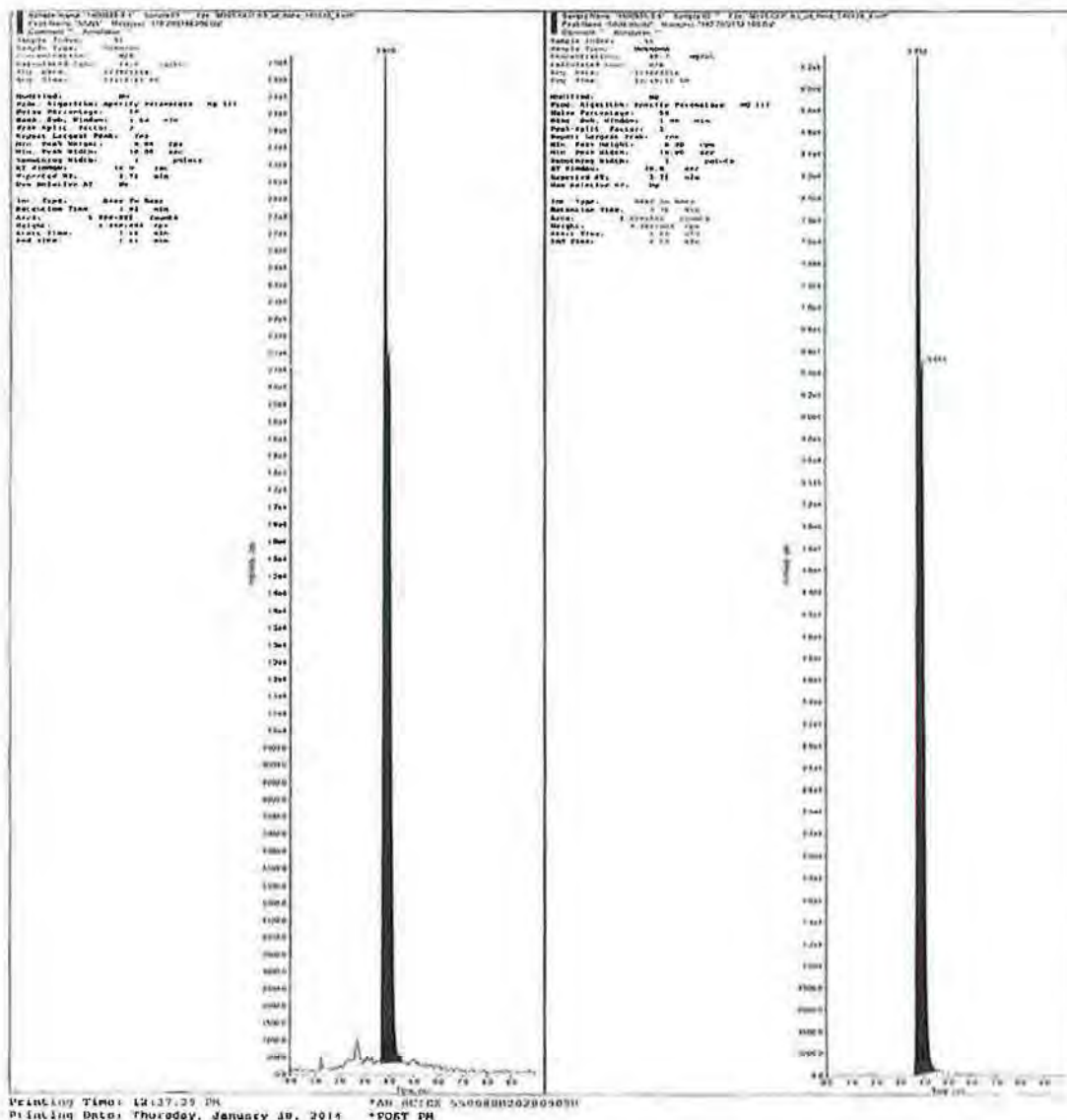




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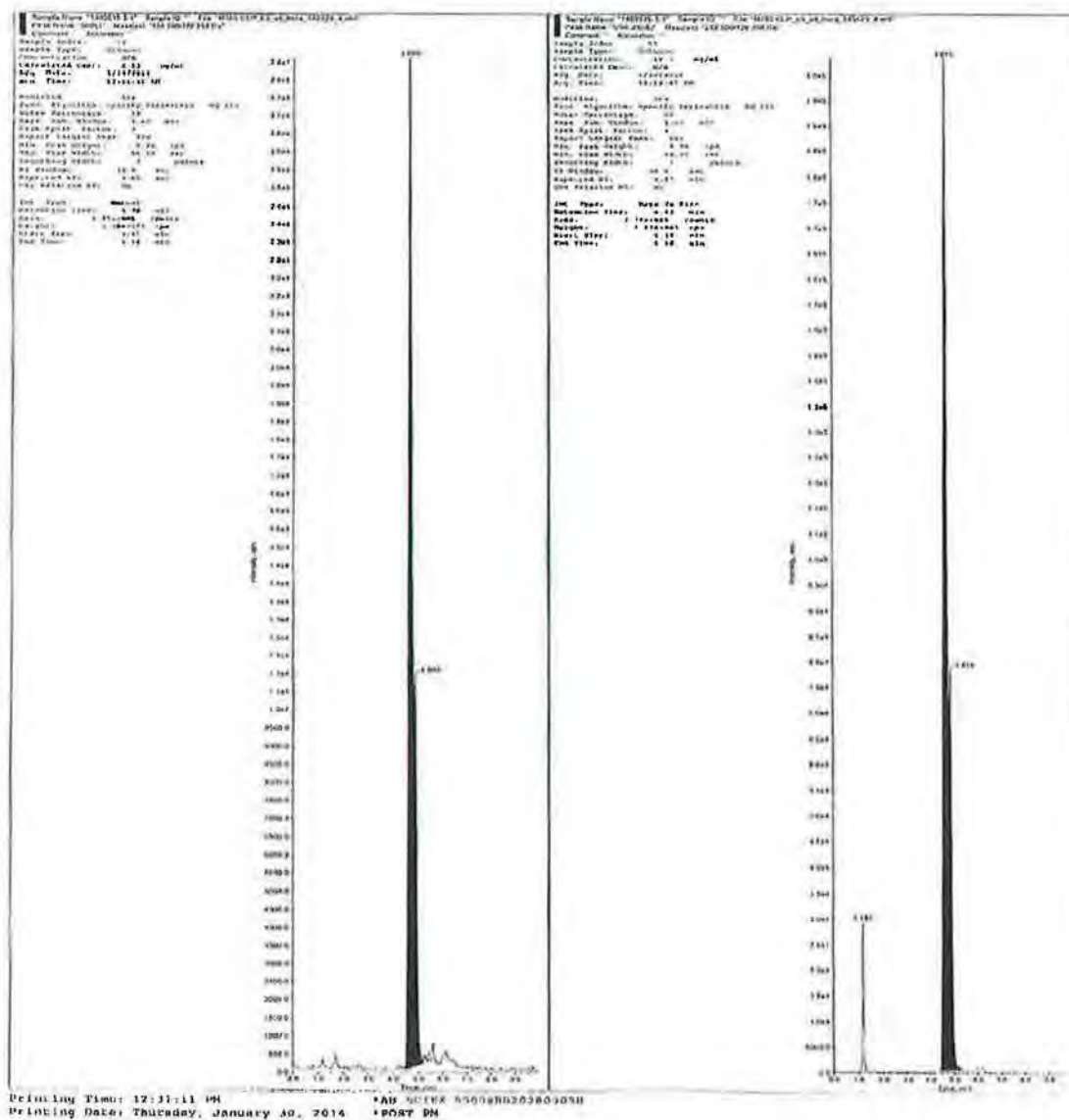
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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Study M195-GLPw_Itens_b3

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Instrument Run Summary for
Compound Determined

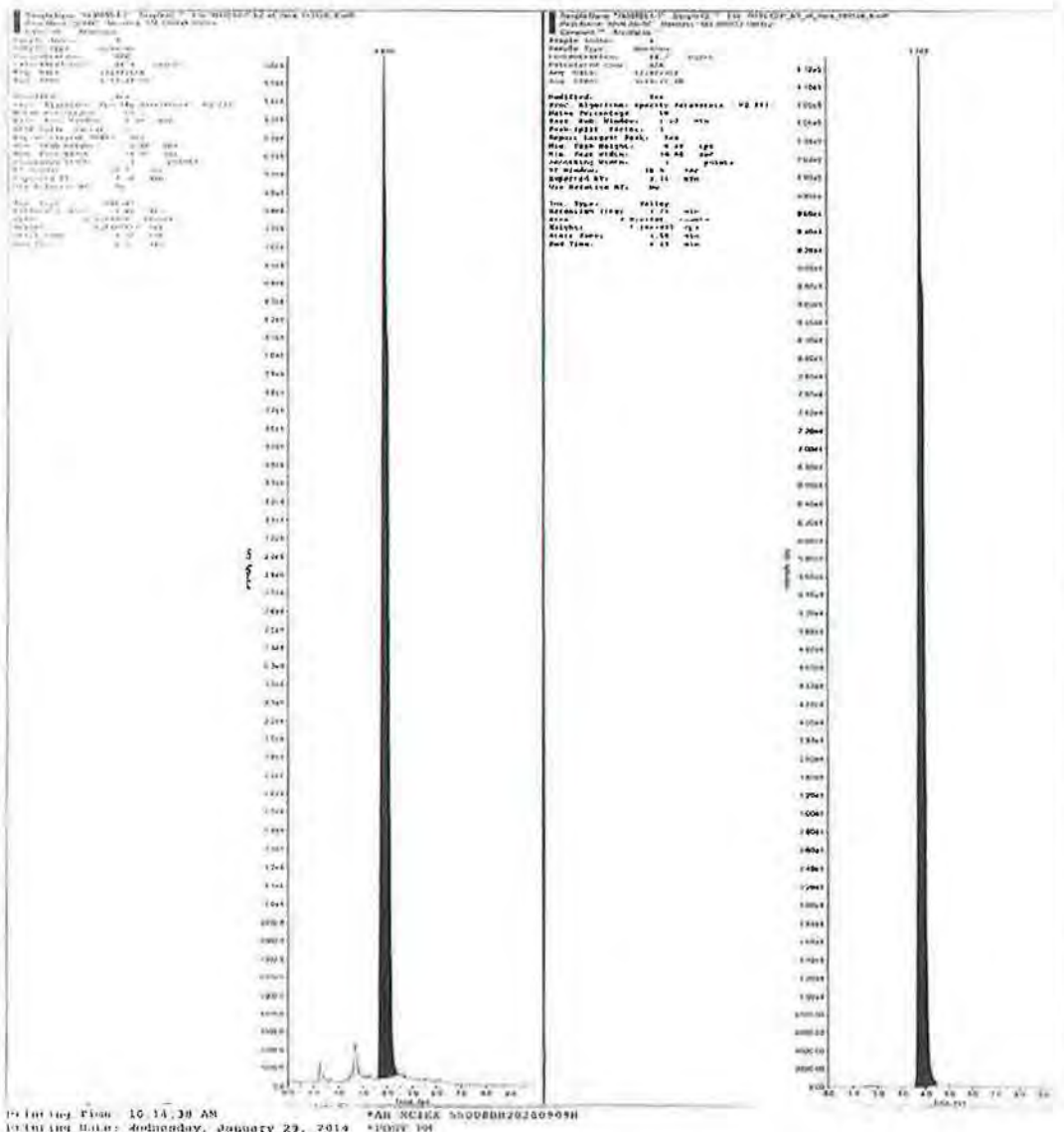
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888	888-1-4	29 Jan 14	3:18:11 PM	LSNMA_Cal 140114_Std 131231	LCMS80 (AB1854)	BCIA	
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STD 3 131231	STD 3 131231	29 Jan 14	4:32:17 PM	LSNMA_Cal 140114_Std 131231	LCMS80 (AB1854)	BCIA	
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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

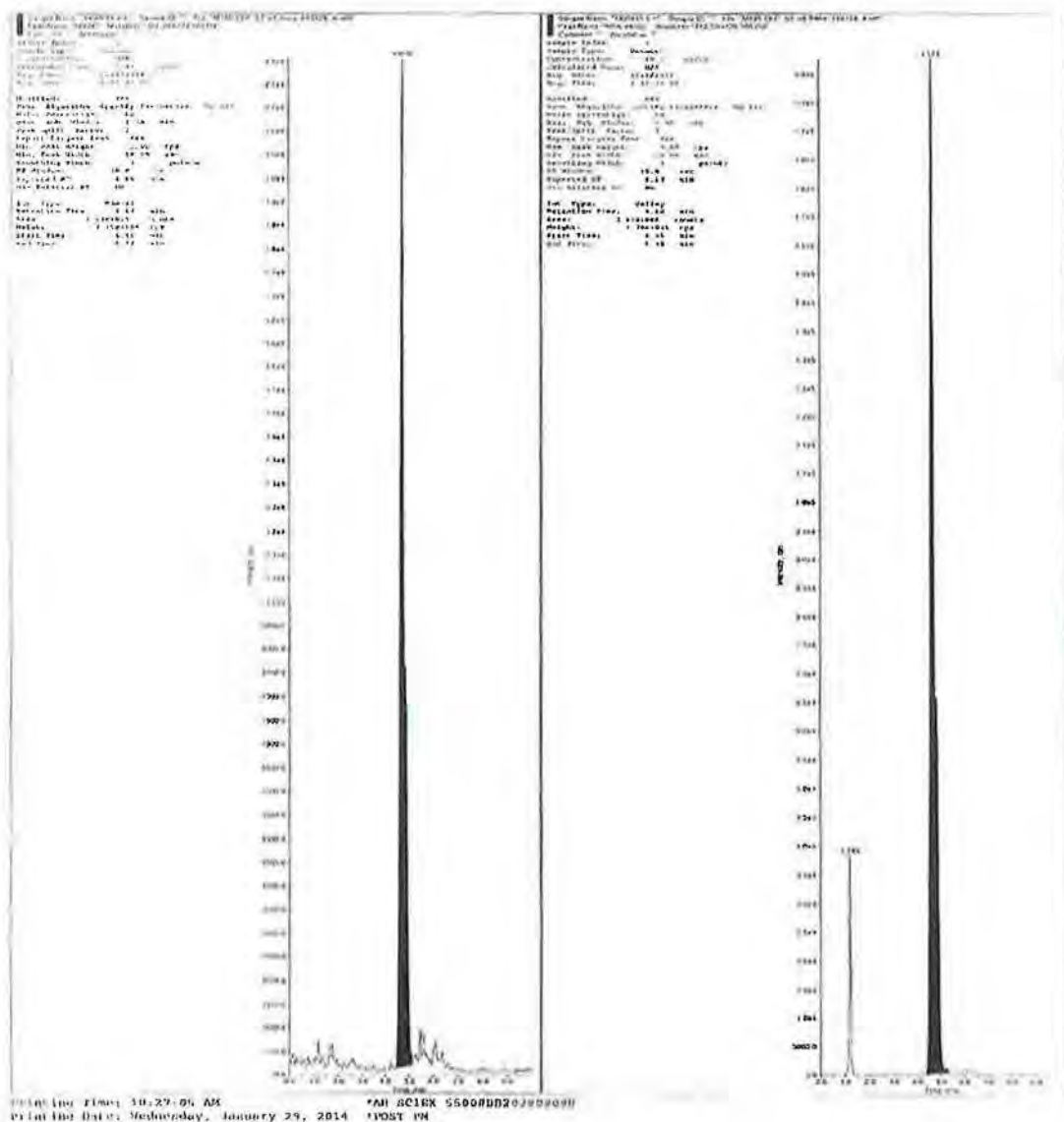
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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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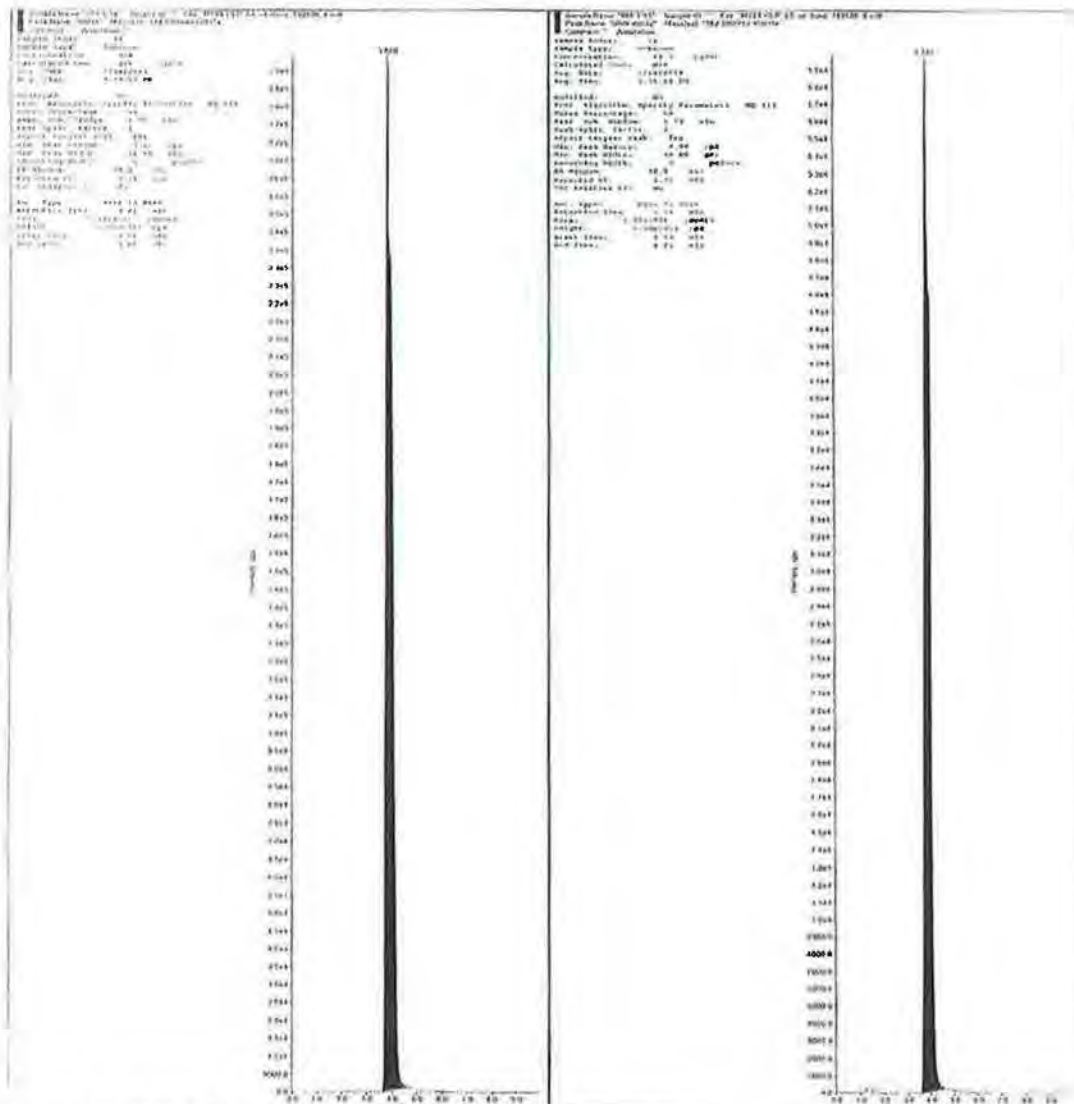


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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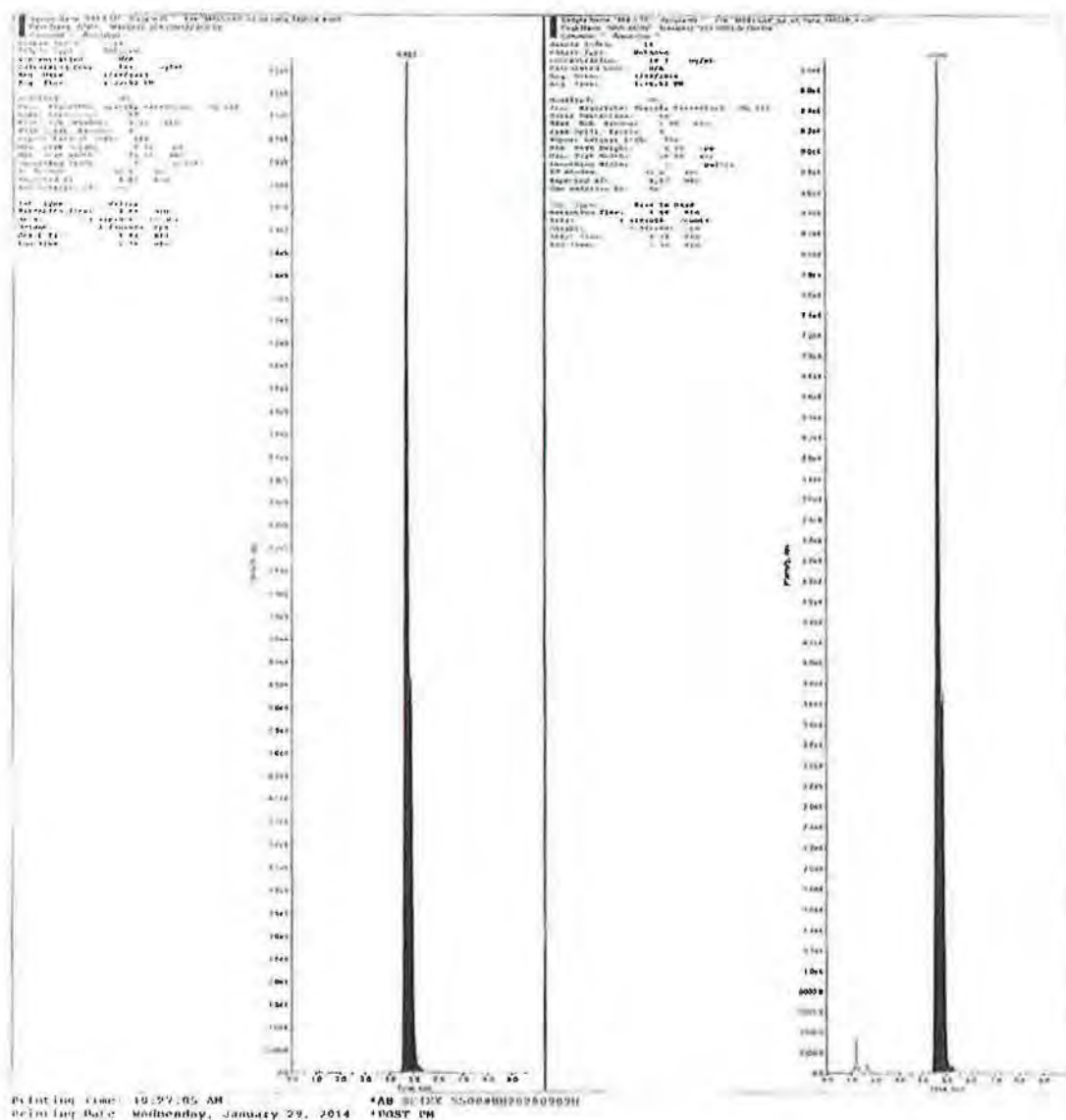
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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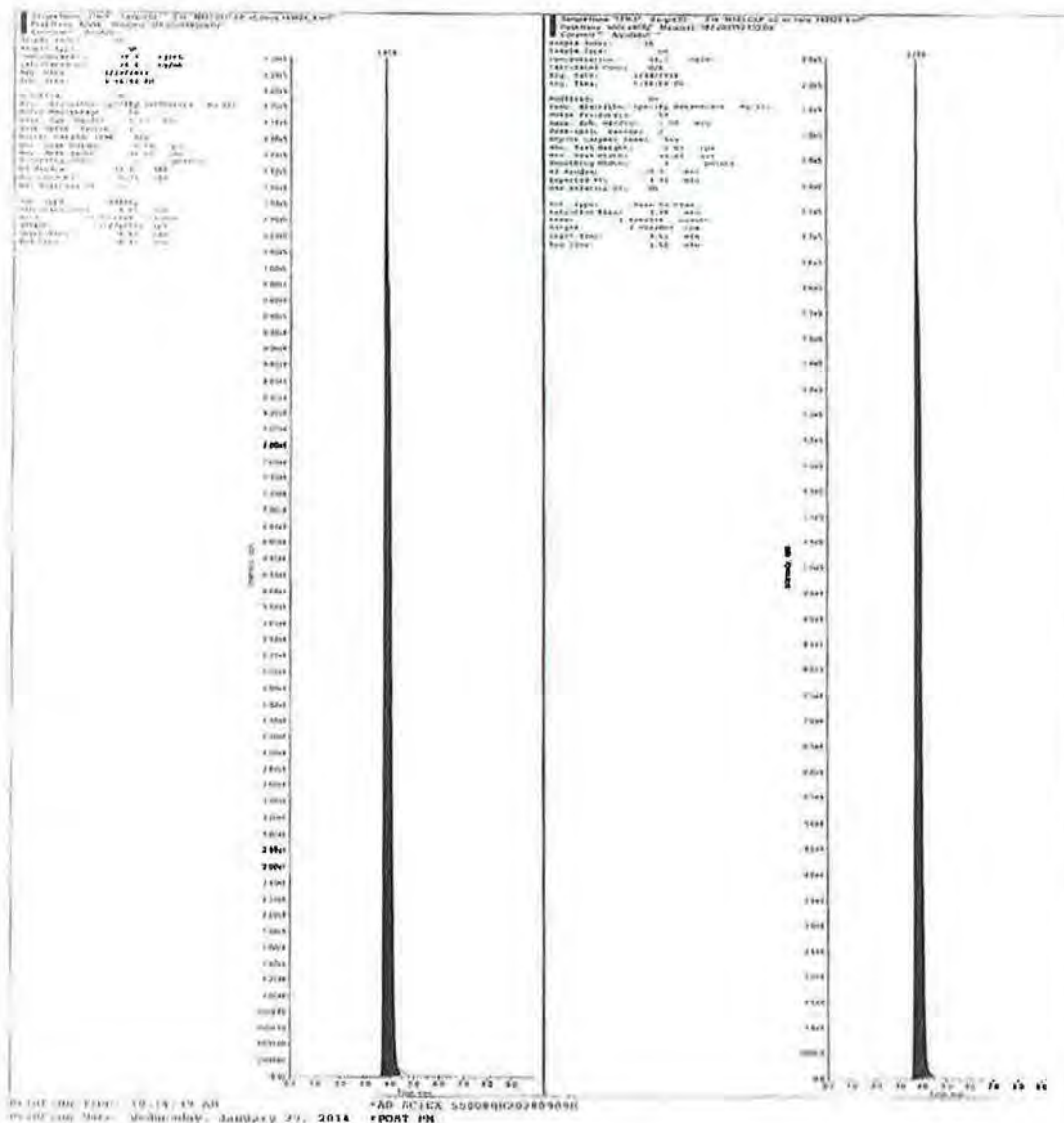


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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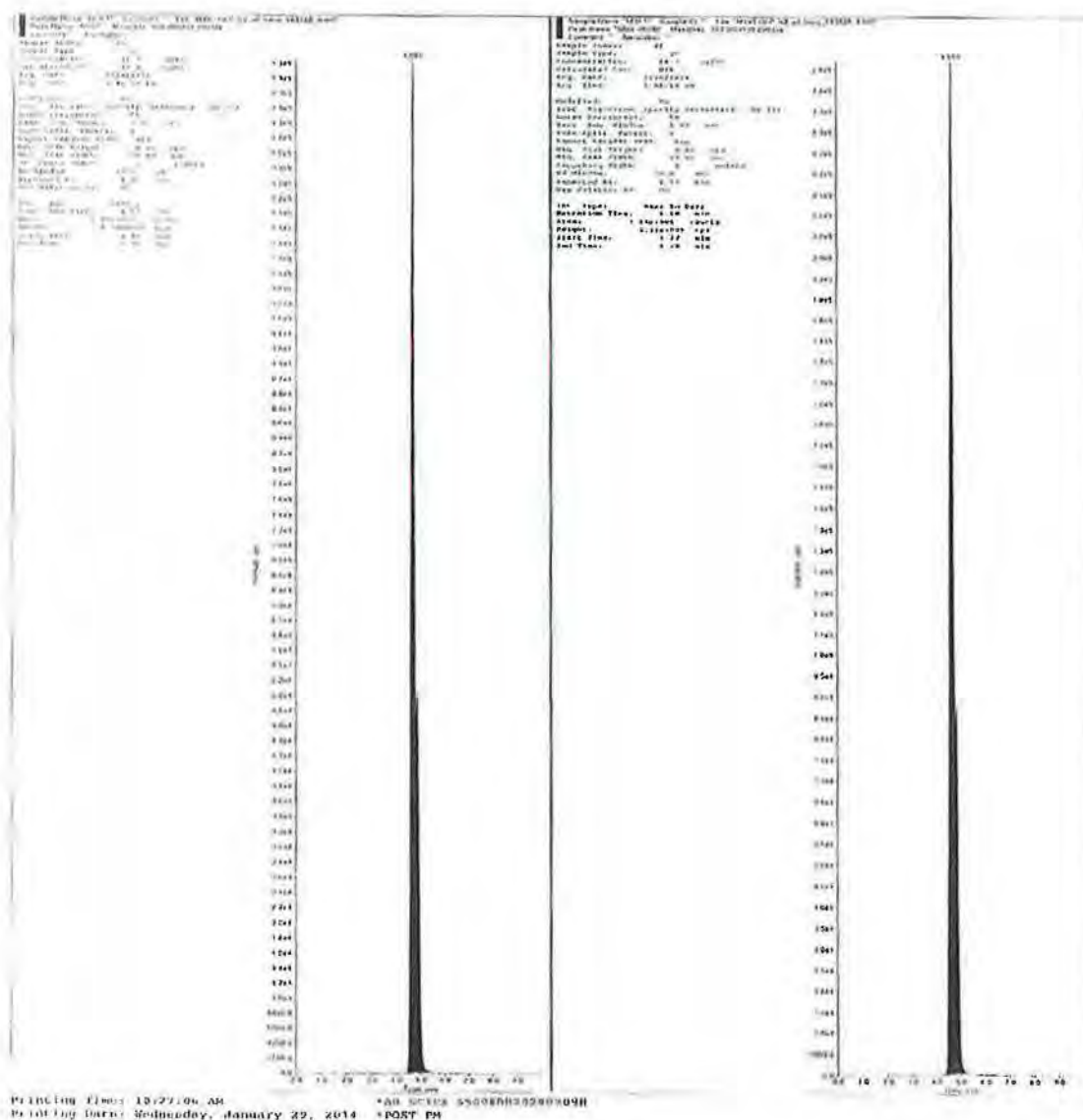


Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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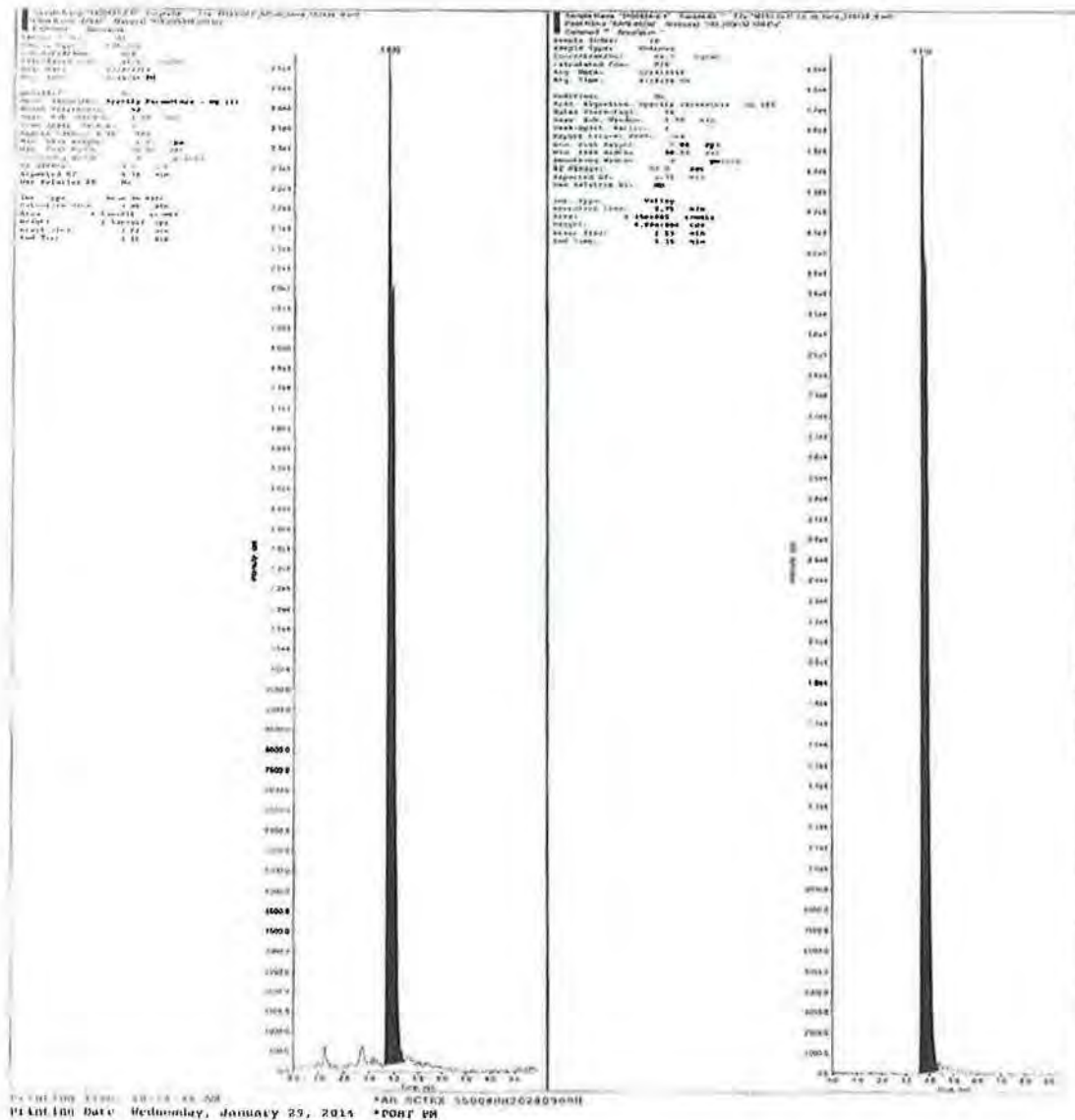
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Study Identifier: M195-GLP

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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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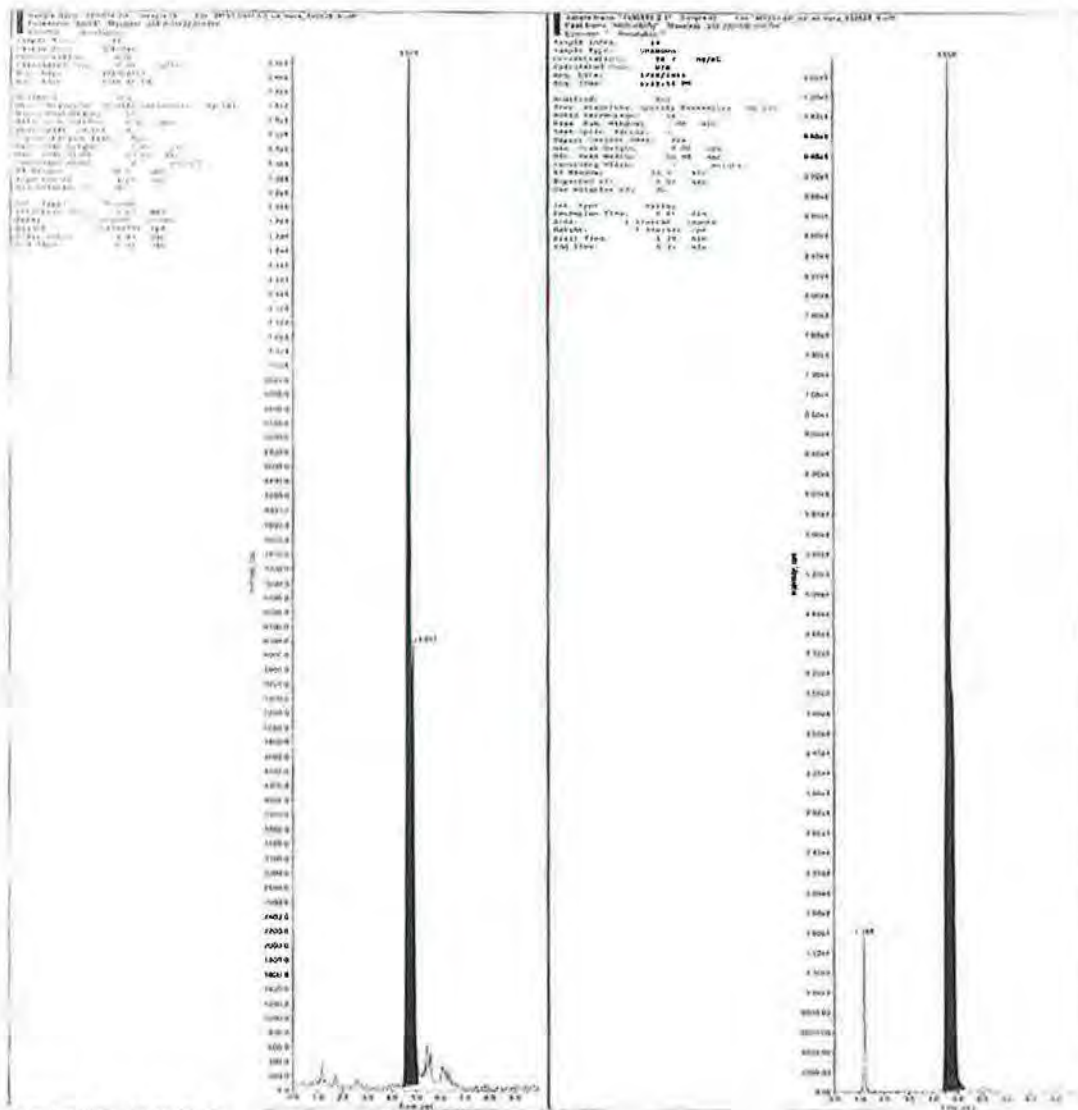


Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

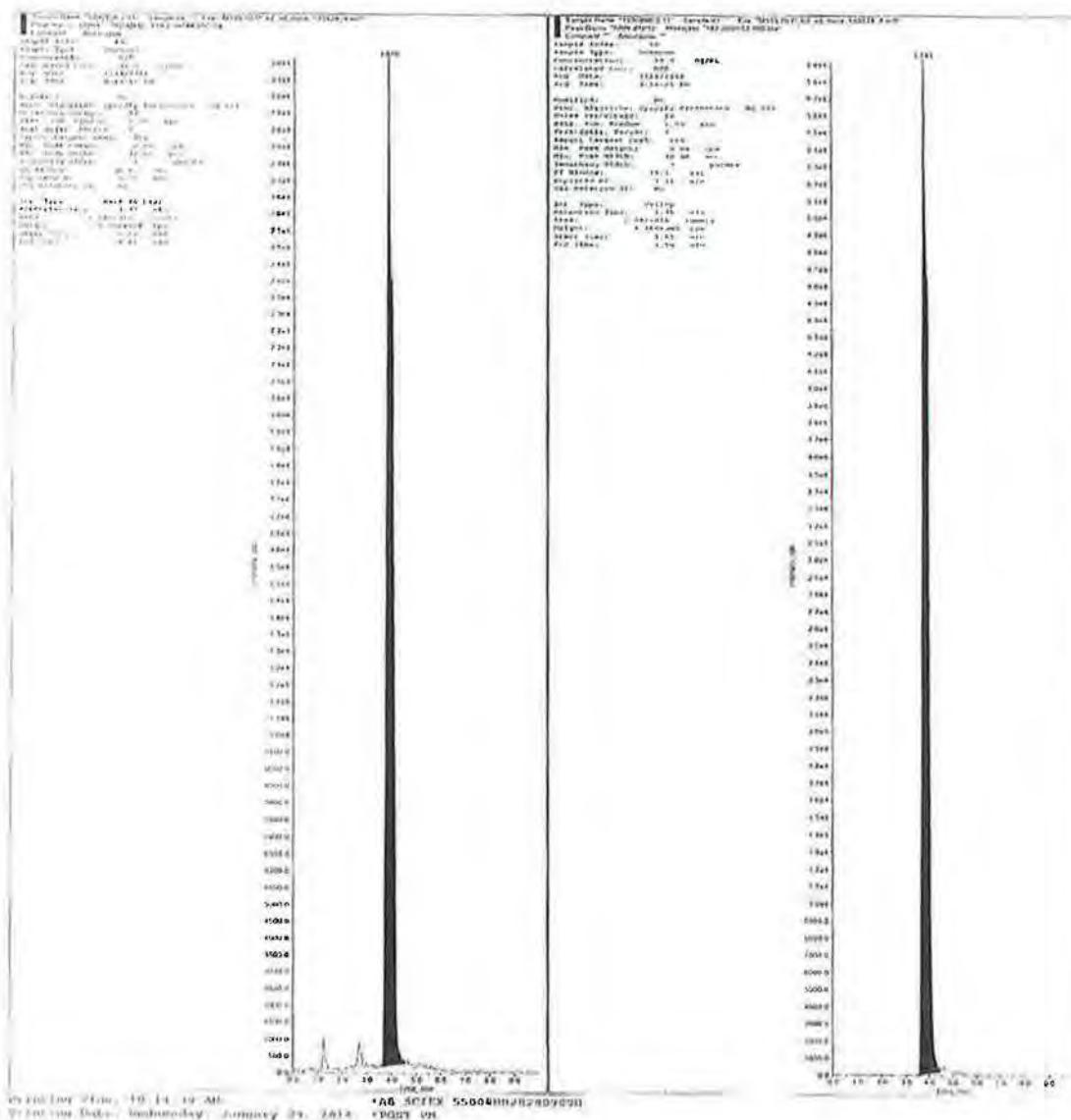
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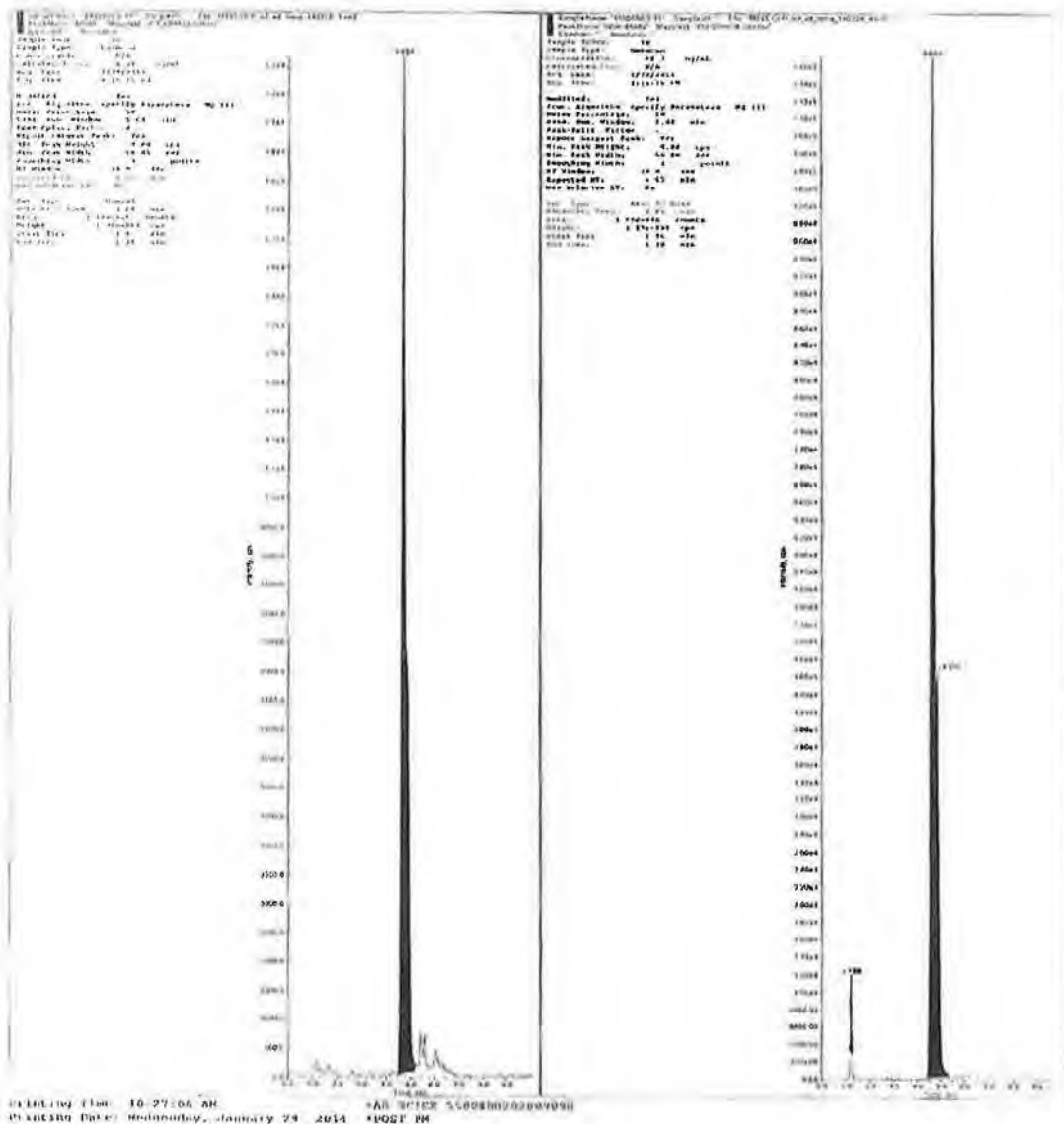


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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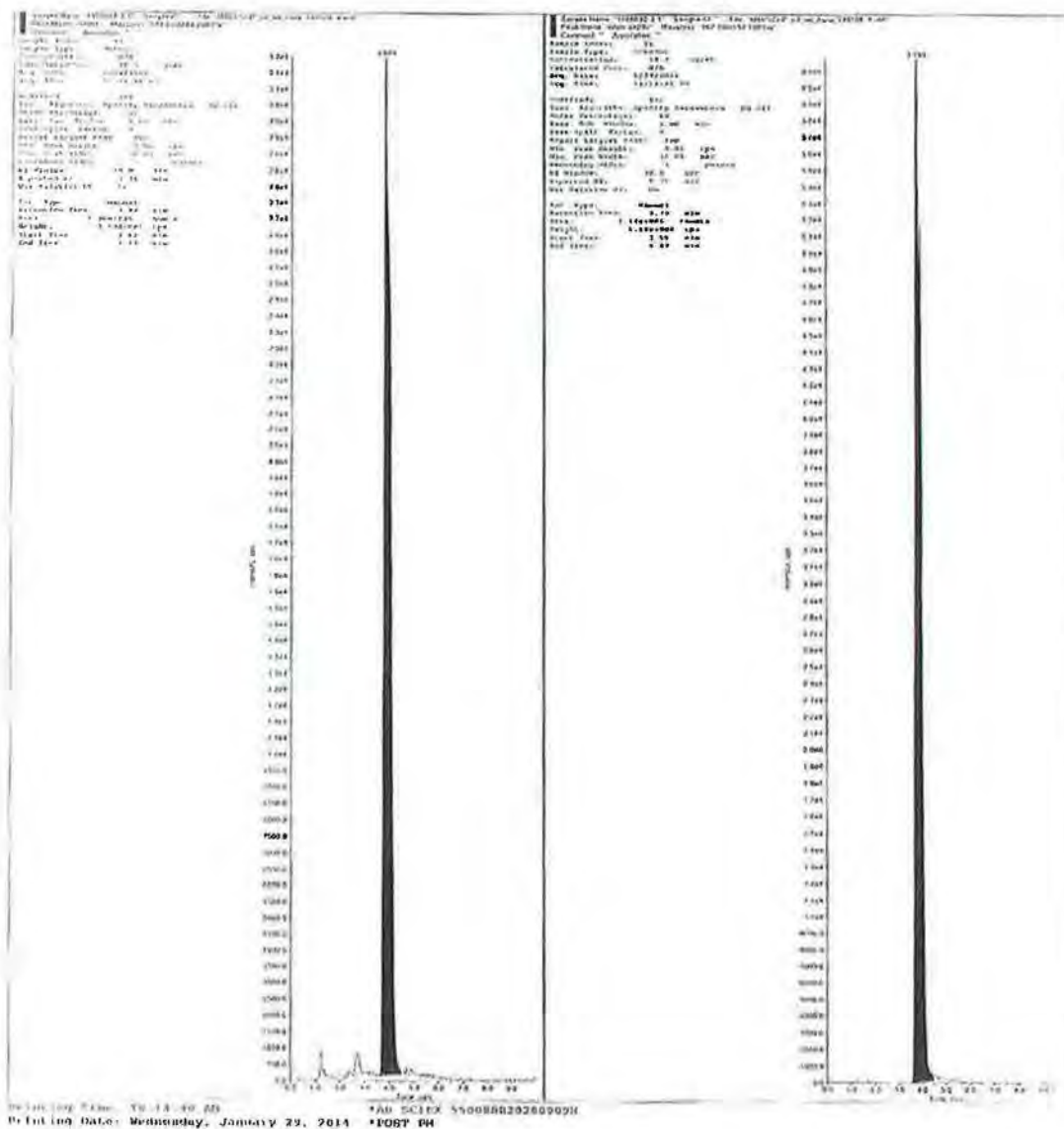
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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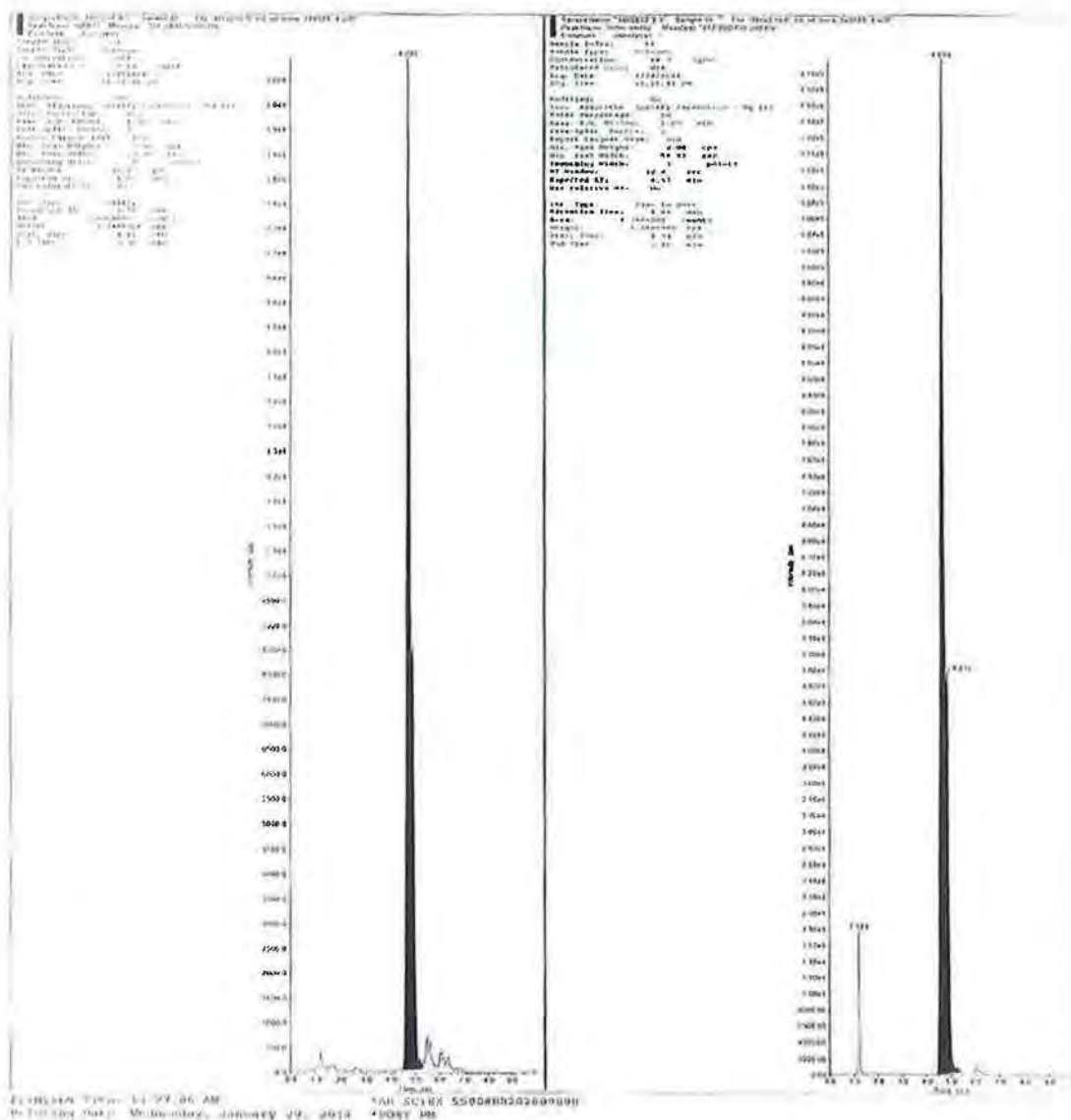


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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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Toxic Trace Metals in Smokeless Tobacco



Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

QSF-01106-V2_Instrument Run Summary Metals_M195-GLP_block2_metal_WT.pdf_3086532
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Created: 2/9/14 15:06 Audit ID: 3086532

Study: M195-GLP Block 2 metals WT

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Page 1 of 4

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID, Run, Fraction)	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Solutions, Repetitions)
Blank	Blank	1/31/2014	9:38:10 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 1	Standard 1	1/31/2014	9:41:31 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 2	Standard 2	1/31/2014	9:46:57 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 3	Standard 3	1/31/2014	9:48:14 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 4	Standard 4	1/31/2014	9:51:37 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 5	Standard 5	1/31/2014	9:55:00 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
5% HNO3	5% HNO3	1/31/2014	9:56:22 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400895	1400895-1-1 M195-GLP	1/31/2014	10:01:42 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400895-1-2	1400895-1-2 B2 WT	1/31/2014	10:05:03 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400891	1400891-1-3	1/31/2014	10:08:25 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400895	1400895-1-4	1/31/2014	10:11:46 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400893	1400893-1-5	1/31/2014	10:15:08 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400894	1400894-1-6	1/31/2014	10:18:30 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
888	888-1-7	1/31/2014	10:21:53 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400891	1400891-1-8	1/31/2014	10:25:15 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
JFS-1	JFS-1	1/31/2014	10:28:36 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
JRS-1	JRS-1	1/31/2014	10:32:02 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
STD 1 140111	STD 1 140111	1/31/2014	10:35:25 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400892	1400892-2-1	1/31/2014	10:38:47 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400893	1400893-2-2	1/31/2014	10:42:07 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400893	1400893-2-3	1/31/2014	10:45:28 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400894	1400894-2-4	1/31/2014	10:48:49 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
888	888-2-5	1/31/2014	10:52:10 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400893	1400893-2-6	1/31/2014	10:55:21 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400891	1400891-2-7	1/31/2014	10:58:53 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
1400892	1400892-2-8	1/31/2014	11:02:15 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
JFS-2	JFS-2	1/31/2014	11:15:53 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
JRS-2	JRS-2	1/31/2014	11:09:00 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
STD 1 140111	STD 1 140111	1/31/2014	11:12:33 AM	1140231-WT	CP-AES 720 (A8001857)	S. Fong	
Blank	Blank	2/3/2014	9:13:01 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 1	Standard 1	2/3/2014	9:22:22 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 2	Standard 2	2/3/2014	9:35:04 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 3	Standard 3	2/3/2014	9:39:06 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 4	Standard 4	2/3/2014	9:42:26 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
Standard 5	Standard 5	2/3/2014	9:45:51 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
5% HNO3	5% HNO3	2/3/2014	9:50:13 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
1400891	1400891-3-1 M195-GLP	2/3/2014	9:52:34 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
1400892	1400892-3-2 B2 WT	2/3/2014	9:55:55 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
888	888-3-3	2/3/2014	9:59:16 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
1400895	1400895-3-4	2/3/2014	10:02:36 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
1400894	1400894-3-5	2/3/2014	10:05:00 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
1400892	1400892-3-6	2/3/2014	10:08:27 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
1400892	1400892-3-7	2/3/2014	10:12:44 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	
1400892	1400892-3-8	2/3/2014	10:16:07 AM	1140203-WT	CP-AES 720 (A8001857)	S. Fong	

Date: Feb 5/14
Rev: 1.0

QSF-01106-V2

Labstat International LLC

AM

Study Identifier: M195-GLP

Instrument Run Summary and Representative Chromatograms

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Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Sample ID - Run - Position)	Injection Date	Injection Time	Method ID	Instrument Identification	Analysis	Injection Notes (Dilutions / Remarks)
LF3-3	LF3-3	2/3/2014	10:09:30 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
LF3-3	LF3-3	2/3/2014	10:11:53 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
STD 3 140131	STD 3 140131	2/3/2014	10:15:37 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400895	1400895-4-1	2/3/2014	10:19:39 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400891	1400891-4-2	2/3/2014	10:22:59 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400891	1400891-4-3	2/3/2014	10:25:20 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400896	1400896-4-4	2/3/2014	10:29:41 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400893	1400893-4-5	2/3/2014	10:33:02 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400896	1400896-4-6	2/3/2014	10:39:23 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400895	1400895-4-7	2/3/2014	10:39:45 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
888	888-4-8	2/3/2014	10:43:07 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
LF3-4	LF3-4	2/3/2014	10:45:30 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
LF3-4	LF3-4	2/3/2014	10:49:52 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
STD 3 140131	STD 3 140131	2/3/2014	10:53:15 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400895	1400895-5-1	2/3/2014	10:55:39 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400894	1400894-5-2	2/3/2014	11:00:00 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400895	1400895-5-3	2/3/2014	11:03:21 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400891	1400891-5-4	2/3/2014	11:06:42 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400892	1400892-5-5	2/3/2014	11:10:03 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400896	1400896-5-6	2/3/2014	11:13:24 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400896	1400896-5-7	2/3/2014	11:16:45 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
888	888-5-5	2/3/2014	11:20:27 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
LF3-5	LF3-5	2/3/2014	11:24:49 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
LF3-5	LF3-5	2/3/2014	11:27:11 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
STD 3 140131	STD 3 140131	2/3/2014	11:30:34 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400894	1400894-6-1	2/3/2014	11:33:57 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400894	1400894-6-2	2/3/2014	11:37:20 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400895	1400895-6-3	2/3/2014	11:40:43 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400894	1400894-6-4	2/3/2014	11:44:03 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400893	1400893-6-5	2/3/2014	11:47:24 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
888	888-6-5	2/3/2014	11:50:44 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400895	1400895-6-7	2/3/2014	11:54:06 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
1400891	1400891-6-8	2/3/2014	11:57:27 AM	140203WT	KP-A15 720 LA8001857	S. Fong	
LF3-6	LF3-6	2/3/2014	12:00:49 PM	140203WT	KP-A15 720 LA8001857	S. Fong	
LF3-6	LF3-6	2/3/2014	12:04:11 PM	140203WT	KP-A15 720 LA8001857	S. Fong	
STD 3 140131	STD 3 140131	2/3/2014	12:07:33 PM	140203WT	KP-A15 720 LA8001857	S. Fong	

Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Study: M195-GLP Block 2 metals WT

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Instrument Run Summary for
Compounds Delisted

Sample ID	Sample Name (Sample ID - Run - Peak(s))	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Remarks)
Blank	Blank	1/31/2014	12:57:05 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 1	Standard 1	1/31/2014	1:00:10 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 2	Standard 2	1/31/2014	1:03:05 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 3	Standard 3	1/31/2014	1:08:00 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 4	Standard 4	1/31/2014	1:08:55 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 5	Standard 5	1/31/2014	1:11:51 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
5% nHCl	5% nHCl	1/31/2014	1:14:47 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400895	1400895-1-1 M195-G.P.B.2	1/31/2014	1:17:42 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400896	1400896-1-2 WT	1/31/2014	1:20:31 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400891	1400891-1-3	1/31/2014	1:23:12 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400893	1400893-1-4	1/31/2014	1:25:26 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400891	1400891-1-5	1/31/2014	1:29:30 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400894	1400894-1-6	1/31/2014	1:32:15 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
888	888-3-7	1/31/2014	1:35:09 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400891	1400891-1-8	1/31/2014	1:38:05 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
178-1	178-1	1/31/2014	1:40:58 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
178-2	178-1	1/31/2014	1:43:52 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
STD 3 140131	STD 3 140131	1/31/2014	1:46:41 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400892	1400892-2-1	1/31/2014	1:49:41 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400891	1400891-2-2	1/31/2014	1:52:34 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400891	1400891-2-3	1/31/2014	1:55:29 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400894	1400894-2-4	1/31/2014	1:58:24 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
888	888-2-5	1/31/2014	2:01:18 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400893	1400893-2-6	1/31/2014	2:04:13 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400893	1400893-2-7	1/31/2014	2:07:08 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400892	1400892-2-8	1/31/2014	2:10:02 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
178-3	178-2	1/31/2014	2:12:57 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
178-2	178-2	1/31/2014	2:15:51 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
STD 3 140131	STD 3 140131	1/31/2014	2:18:46 PM	CP-Exp-140131-Au-CR	CP-M5 820 (A8001630)	S Fong	
Blank	Blank	2/3/2014	10:19:41 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 1	Standard 1	2/3/2014	10:22:35 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 2	Standard 2	2/3/2014	10:25:30 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 3	Standard 3	2/3/2014	10:28:25 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 4	Standard 4	2/3/2014	10:31:20 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
Standard 5	Standard 5	2/3/2014	10:34:15 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
5% nHCl	5% nHCl	2/3/2014	10:37:11 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400891-1	1400891-3-1 M195-G.P.B.2	2/3/2014	10:40:07 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400892	1400892-3-2 WT	2/3/2014	10:43:02 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
888	888-3-3	2/3/2014	10:45:57 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400896	1400896-3-4	2/3/2014	10:48:52 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400894	1400894-3-5	2/3/2014	10:51:47 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400892	1400892-3-6	2/3/2014	10:54:41 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400893	1400893-3-7	2/3/2014	10:57:35 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	
1400892	1400892-3-8	2/3/2014	11:00:31 AM	CP-Exp-140203-Au-CR	CP-M5 820 (A8001630)	S Fong	

Date: Feb 5/14
Revised: 1

QSF-01106-V2

Labstat Internal Draft - L/C



Study Identifier: M195-GLP Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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Private and Confidential

Study M195-GLP Block 2 metals VWT

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name Sample ID - Run - Position	Injection Date	Injection Time	Method ID	Instrument Identification	Analyst	Injection Notes (Dilutions / Requests)
LF8-3	LF8-3	2/3/2014	11:03:25 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
UR8-3	UR8-3	2/3/2014	11:06:20 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
STD 3 140203	STD 3 140203	2/3/2014	11:09:34 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400895	1400895-4-1	2/3/2014	11:17:08 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400891	1400891-4-2	2/3/2014	11:15:02 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400891	1400891-4-3	2/3/2014	11:17:58 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400895	1400895-4-4	2/3/2014	11:20:53 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400893	1400893-4-5	2/3/2014	11:27:21 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400896	1400896-4-6	2/3/2014	11:30:16 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400895	1400895-4-7	2/3/2014	11:33:11 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
888	888-4-8	2/3/2014	11:40:58 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
LF8-4	LF8-4	2/3/2014	11:43:29 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
UR8-4	UR8-4	2/3/2014	11:46:24 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
STD 3 140203	STD 3 140203	2/3/2014	11:49:19 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400895	1400895-5-1	2/3/2014	11:52:11 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400894	1400894-5-2	2/3/2014	11:55:07 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400895	1400895-5-3	2/3/2014	11:58:00 AM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400891	1400891-5-4	2/3/2014	12:00:54 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400892	1400892-5-5	2/3/2014	12:03:49 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400896	1400896-5-6	2/3/2014	12:07:34 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400896	1400896-5-7	2/3/2014	12:10:14 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	Autosampler error; immediate re-injection
1400896	1400896-5-7	2/3/2014	12:49:29 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
888	888-5-8	2/3/2014	12:52:24 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
LF8-5	LF8-5	2/3/2014	12:55:04 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
UR8-5	UR8-5	2/3/2014	12:58:29 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
STD 3 140203	STD 3 140203	2/3/2014	1:01:54 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400894	1400894-6-1	2/3/2014	1:04:49 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400894	1400894-6-2	2/3/2014	1:07:44 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400895	1400895-6-3	2/3/2014	1:10:38 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400894	1400894-6-4	2/3/2014	1:14:18 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400893	1400893-6-5	2/3/2014	1:17:13 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
888	888-6-6	2/3/2014	1:21:02 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400896	1400896-6-7	2/3/2014	1:23:40 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	Autosampler error; immediate re-injection
1400896	1400896-6-7	2/3/2014	1:27:05 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
1400891	1400891-6-8	2/3/2014	1:29:59 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
LF8-6	LF8-6	2/3/2014	1:32:54 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
UR8-6	UR8-6	2/3/2014	1:35:49 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	
STD 3 140203	STD 3 140203	2/3/2014	1:38:45 PM	ICP-Exp-140203-Au-CR1	CP-M5-820-AB001530	S. Fong	

QSP-01108-V2

Labstat International LLC

Date: Feb 5/14
Revision: 1

Study Identifier: M195-GLP

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Study Report – Appendix F

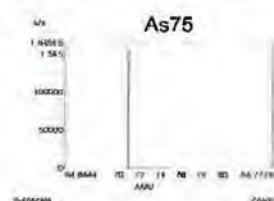
Instrument Run Summary and Representative Chromatograms

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Created: 1/31/14 15:03 Audit ID: 3061991



Quantum Worksheet Report
Report Date 03:02:52pm 31/Jan/2014
Worksheet ICP-Exp-140131-As-CRI.msws
Analyst

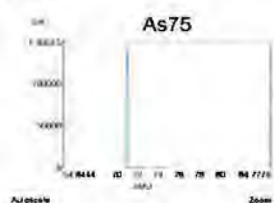
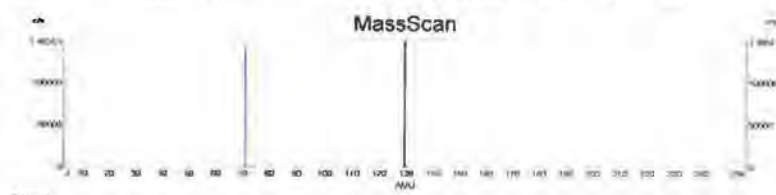
Page 6 of 18



1400895-1-1 M195-GLP B.2 [Sample]

Tube 2.2, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 01:17:42pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.8761	ppb	-	179.6000	0.76	0.0143	179 178 180



1400896-1-2 WT [Sample]

Tube 2.3, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 01:20:37pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solo Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.9985	ppb	-	192.3333	4.35	0.0869	186 188 203



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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_Block2_mel_WT.pdf_3059448
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Path: \\fs2\repository\repository\3059448\
Created: 1/31/14 11:19 Audit ID: 3059448

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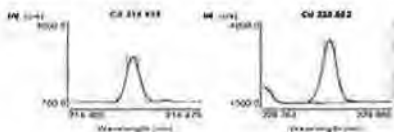
ICP-AES 720, Metals, Method/Worksheet: i140131-WT.vwq, All Data Report 1/31/2014, 11:18:57 AM, Analys

1400895-1-1 M195-GLP (Samp) 1/31/2014, 10:01:42 AM Rack 1, Tube 2

Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	3.27673	3.33415	3.34880	3.35427	3.34467
Cd 228.802	4.10233	4.12918	4.16609	4.05147	4.17813

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.33172	ppb	0.031614	0.9	1033.27	3.33172 ppb	1.00000
Cd 228.802	4.12544	ppb	0.051109	1.2	1575.58	4.12544 ppb	1.00000

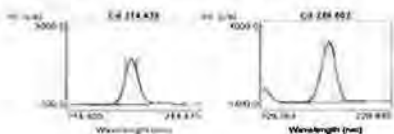


1400896-1-2 B.2 WT (Samp) 1/31/2014, 10:05:03 AM Rack 1, Tube 3

Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	3.26971	3.32635	3.27958	3.27452	3.29134
Cd 228.802	4.13588	4.14311	4.10571	4.12557	4.09253

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.28830	ppb	0.022742	0.7	1019.66	3.28830 ppb	1.00000
Cd 228.802	4.12056	ppb	0.021063	0.5	1573.70	4.12056 ppb	1.00000

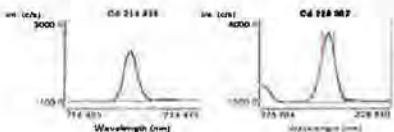


1400891-1-3 (Samp) 1/31/2014, 10:08:25 AM Rack 1, Tube 4

Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	3.57339	3.56639	3.61520	3.57824	3.59215
Cd 228.802	4.46671	4.49939	4.46713	4.47274	4.49003

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.58507	ppb	0.019300	0.5	1112.67	3.58507 ppb	1.00000
Cd 228.802	4.47920	ppb	0.014730	0.3	1712.61	4.47920 ppb	1.00000



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Study Report – Appendix F

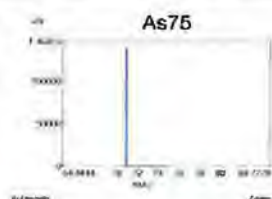
Instrument Run Summary and Representative Chromatograms

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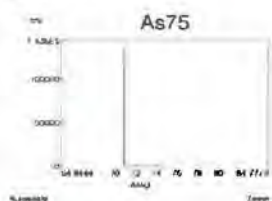
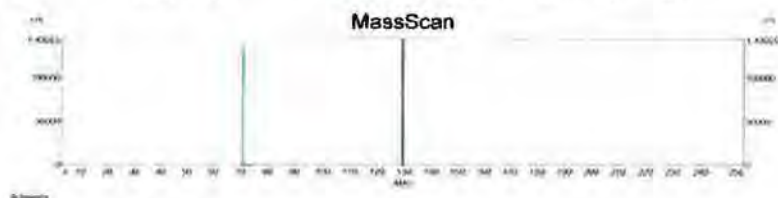
Quantum Worksheet Report
Report Date 03:02:52pm 31/Jan/2014
Worksheet ICP-Exp-140131-As-CRI.msws
Analyst

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1480894-2-4 [Sample]
Tube: 2.15, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 91.38:24pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.1063	ppb		189.0000	3.80	0.1222	181 186 200



1888-2-5 [Sample]
Tube: 2.16, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 92.01:18pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	4.0205	ppb		345.6667	2.06	0.0810	351 340 346

Study Identifier: M195-GLP

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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

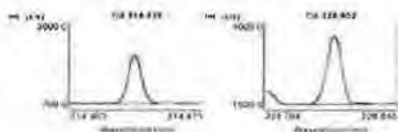
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ICP-AES 720, Metals, Method/Worksheet: i140131-WT.vwq. All Data Report 1/31/2014, 11:18:57 AM, Analys

1400893-2-2 (Samp) 1/31/2014, 10:42:07 AM Rack 1, Tube 14
Weight: 1 Volume: 1 Dilution: 1
Label Replicates Concentration
Cd 214.439 3.56443 3.52765 3.55416 3.52992 3.52553
Cd 228.802 4.53541 4.56061 4.54625 4.55054 4.46682

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.54034	ppb	0.017751	0.5	1098.65	3.54034 ppb	1.00000
Cd 228.802	4.53193	ppb	0.037503	0.8	1733.04	4.53193 ppb	1.00000



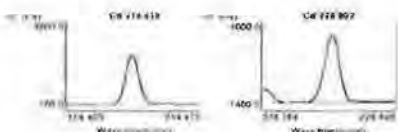
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Weight: 1 Volume: 1 Dilution: 1
Label Replicates Concentration
Cd 214.439 3.40351 3.41953 3.44334 3.44028 3.44513
Cd 228.802 4.39883 4.38920 4.37755 4.40850 4.39187

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.43036	ppb	0.018189	0.5	1064.18	3.43036 ppb	1.00000
Cd 228.802	4.39319	ppb	0.011491	0.3	1679.30	4.39319 ppb	1.00000



1400894-2-4 (Samp) 1/31/2014, 10:48:49 AM Rack 1, Tube 16
Weight: 1 Volume: 1 Dilution: 1
Label Replicates Concentration
Cd 214.439 3.53827 3.53113 3.53556 3.56403 3.56191
Cd 228.802 4.56365 4.53340 4.51196 4.52690 4.54859

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.54618	ppb	0.015557	0.4	1100.48	3.54618 ppb	1.00000
Cd 228.802	4.53690	ppb	0.019914	0.4	1734.97	4.53690 ppb	1.00000



Study Identifier: M195-GLP

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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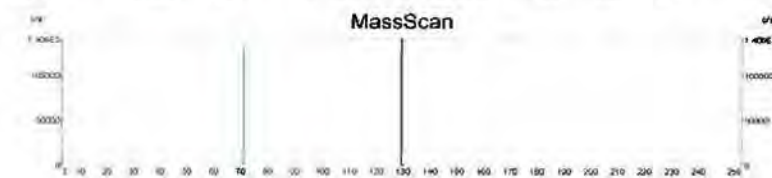
Quantum Worksheet Report
Report Date 03:02:52pm 31/Jan/2014
Worksheet ICP-Exp-140131-As-CRI.msws
Analyst

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LIB-2 [Sample]

Tube: 2.20, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:12:57pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

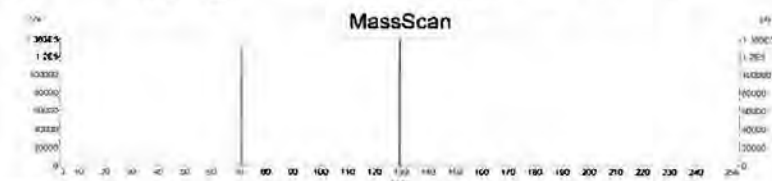
Analyte	Solu Conc	Unit	QC: Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.8620	ppb	248.0000	3.85	0.1102	242 254 248



LIB-2 [Sample]

Tube: 2.21, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:13:31pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC: Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.4342b	ppb	52.6667	17.35	0.0754	52 50 47



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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_Block2_met_WT.pdf_3059448
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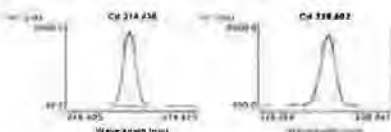
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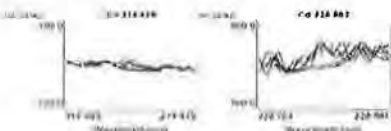
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Weight: 1		Volume: 1		Dilution: 1			
Label	Replicates Concentration						
Cd 214.439	3.63214	3.64284	3.64303	3.75250	3.68813		
Cd 228.802	4.74281	4.71695	4.80723	4.78061	4.66750		
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF	
Cd 214.439	3.67173	ppb	0.050047	1.4	1139.83	3.67173 ppb	1.00000
Cd 228.802	4.74302	ppb	0.054587	1.2	1814.81	4.74302 ppb	1.00000



LFB-2 (Samp)		1/31/2014, 11:15:53 AM		Rack 1, Tube 21			
Weight: 1		Volume: 1		Dilution: 1			
Label	Replicates Concentration						
Cd 214.439	13.6598	13.7303	13.6750	13.8504	13.7697		
Cd 228.802	13.8678	13.8339	13.8436	13.9446	13.9689		
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF	
Cd 214.439	13.7371	ppb	0.077098	0.6	4294.53	13.7371 ppb	1.00000
Cd 228.802	13.8918	ppb	0.061213	0.4	5358.59	13.8918 ppb	1.00000



LRB-2 (Samp)		1/31/2014, 11:09:00 AM			Rack 1, Tube 22	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates Concentration					
Cd 214.439	0.073610	0.083580	0.073458	0.077927	0.058350	
Cd 228.802	0.115773	0.110227	0.106366	0.108273	0.110881	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	0.073385	ppb	0.009363	12.8	12.0347	0.073385 ppb
Cd 228.802	0.110304	ppb	0.003531	3.2	20.3152	0.110304 ppb
						DF
						1.00000
						1.00000



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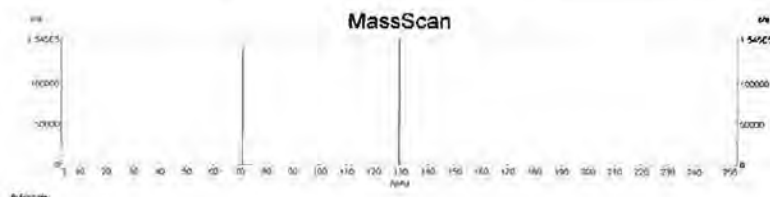
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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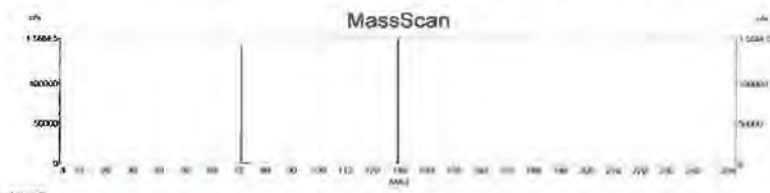
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Report Date 01:49:40pm 03/Feb/2014
Worksheet ICP-Exp-140203-As-CRI.mswn
Analyst

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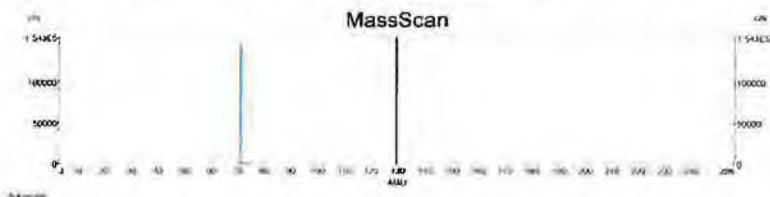
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Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution factor: 1.00
Position Horizontal: 0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	1.171	ppb	-	330.0000	2.68	0.0916	121 334 111



1400895-3-4 [Sample]
Tube: 2-4, Replicates: 1, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:48:52am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution factor: 1.00
Position Horizontal: 0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	2.1848	ppb	-	217.3333	5.01	0.1094	207 222 223



1400894-3-5 [Sample]
Tube: 2-6, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:51:47am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution factor: 1.00
Position Horizontal: 0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	2.1789	ppb	-	219.0000	3.70	0.0806	211 223 223

Study Identifier: M195-GLP

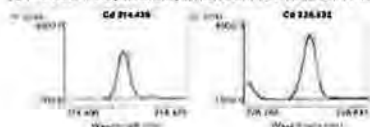
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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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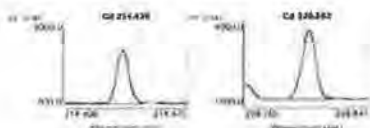
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1400892-3-2 B2 WT (Samp) 2/3/2014, 9:45:55 AM Rack 1, Tube 3
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	3.83850	3.86283
Cd 228.802	4.88364	4.82138

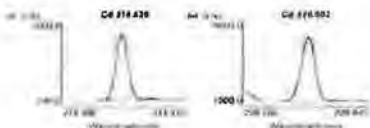
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.85244	ppb	0.017639	0.5	1192.51	3.85244 ppb	1.00000
Cd 228.802	4.84080	ppb	0.028377	0.6	1785.06	4.84080 ppb	1.00000



888-3-3 (Samp) 2/3/2014, 9:49:16 AM Rack 1, Tube 4
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	8.92334	9.05843
Cd 228.802	11.3471	11.4491

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	8.99996	ppb	0.052370	0.6	2824.75	8.99996 ppb	1.00000
Cd 228.802	11.4408	ppb	0.084320	0.7	4280.72	11.4408 ppb	1.00000



1400895-3-4 (Samp) 2/3/2014, 9:52:38 AM Rack 1, Tube 5
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Concentration
Cd 214.439	3.54696	3.50775
Cd 228.802	4.52092	4.49124

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.56002	ppb	0.033403	0.9	1099.79	3.56002 ppb	1.00000
Cd 228.802	4.52272	ppb	0.019813	0.4	1664.79	4.52272 ppb	1.00000

Study Identifier: M195-GLP

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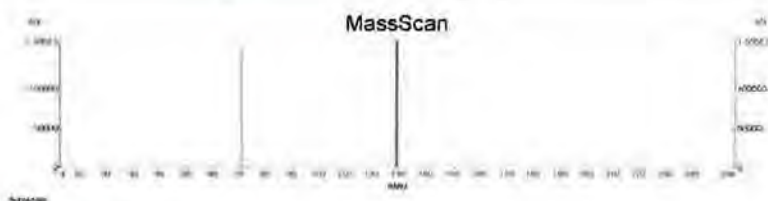
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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Path: \\fs2\\repository\\repository\\3069274\\
Created: 2/3/14 13:50 Audit ID: 3069274



Quantum Worksheet Report
Report Date 01:49:40pm 03/Feb/2014
Worksheet ICP-Exp-140203-As-CRI.msws
Analyst

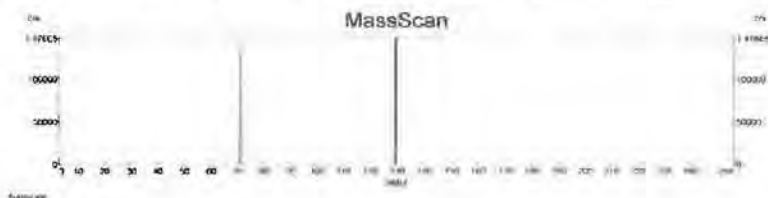
Page 8 of 19



1400895-4-1 [Sample]

Tube: 2.12, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:12:08am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

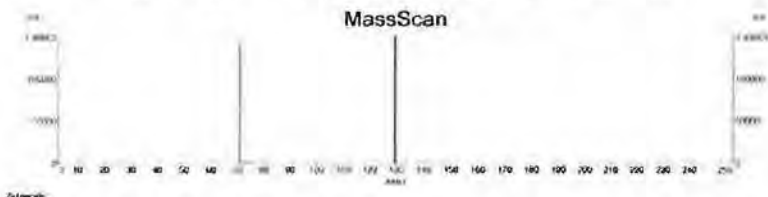
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.2078	ppb	-	209.3333	1.10	0.0363	205 209 214



1400895-4-2 [Sample]

Tube: 2.13, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:13:02am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.0971	ppb	-	203.6667	2.71	0.0568	203 197 211



1400895-4-3 [Sample]

Tube: 2.14, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:17:58am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.2236	ppb	-	213.0000	5.42	0.1205	202 226 214



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_block2_mel_WT.pdf_3068841
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Created: 2/3/14 13:01 Audit ID: 3068841

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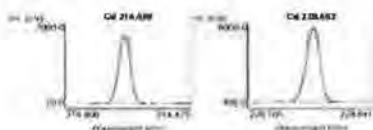
ICP-AES 720, Metals, Method/Worksheet: i140203WT.wvq, All Data Report 2/3/2014, 1:00:12 PM, Analyst



STD 3 140131 (Samp) 2/3/2014, 10:16:17 AM Rack 1, Tube 12
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	15.1742	15.2328	15.2313	15.2228	15.2047
Cd 228.802	15.6135	15.6057	15.5895	15.6314	15.5533

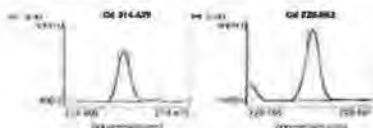
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	15.2132	ppb	0.024477	0.2	4794.90	15.2132 ppb	1.00000
Cd 228.802	15.5987	ppb	0.029508	0.2	5852.94	15.5987 ppb	1.00000



1400895-4-1 (Samp) 2/3/2014, 10:19:39 AM Rack 1, Tube 13
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	3.67381	3.62026	3.62456	3.66664	3.69253
Cd 228.802	4.76594	4.70773	4.69801	4.73161	4.69866

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.65556	ppb	0.031741	0.9	1130.08	3.65556 ppb	1.00000
Cd 228.802	4.72039	ppb	0.028869	0.6	1739.53	4.72039 ppb	1.00000



1400891-4-2 (Samp) 2/3/2014, 10:22:59 AM Rack 1, Tube 14
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	3.34754	3.30880	3.33116	3.37641	3.33433
Cd 228.802	4.26200	4.26453	4.21359	4.30467	4.25912

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.33965	ppb	0.024828	0.7	1029.91	3.33965 ppb	1.00000
Cd 228.802	4.26078	ppb	0.032291	0.8	1565.74	4.26078 ppb	1.00000

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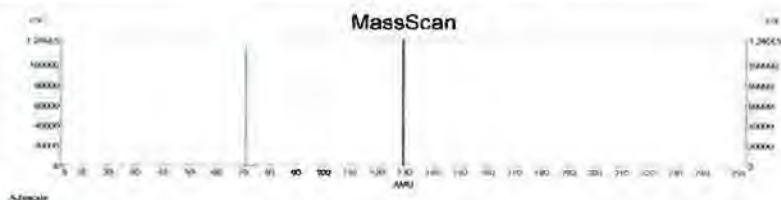
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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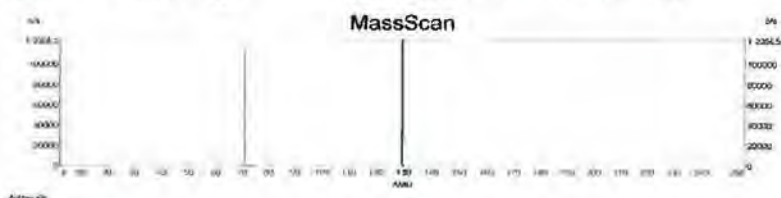
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Report Date 01:49:40pm 03/Feb/2014
Worksheet ICP-Exp-140203-As-CRI.msww
Analyst

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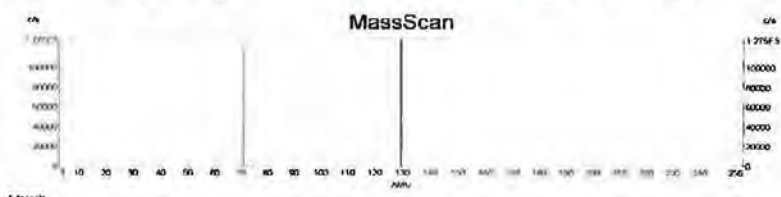
400892-5-5 [Sample]
Tube: 2-26, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:03:49pm 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.2695	ppb	-	180.3333	2.12	0.0480	179 178 184



400896-5-6 [Sample]
Tube: 2-27, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:07:34pm 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.8856	ppb	-	157.0000	5.09	0.0961	153 154 164



400896-5-7 [Sample]
Tube: 2-28, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:09:29pm 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.4579	ppb	-	191.6667	3.71	0.0911	192 183 200

Study Identifier: M195-GLP

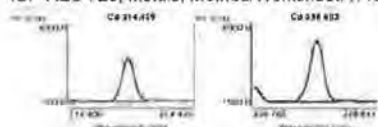
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Instrument Run Summary and Representative Chromatograms

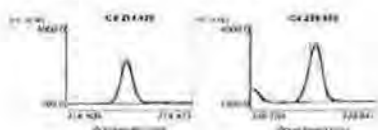
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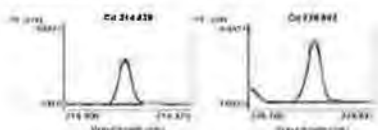
ICP-AES 720, Metals, Method/Worksheet: i140203WT.wvq, All Data Report 2/3/2014, 1:00:12 PM, Analyst



1400891-5-4 (Samp)		2/3/2014, 11:06:42 AM		Rack 1, Tube 27		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates Concentration					
Cd 214.439	3.14009	3.25724	3.22881	3.29542	3.24559	
Cd 228.802	4.13008	4.24766	4.24272	4.25869	4.21783	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	3.23343	ppb	0.057643	1.8	996.231	3.23343 ppb 1.00000
Cd 228.802	4.21940	ppb	0.052121	1.2	1550.09	4.21940 ppb 1.00000



1400892-5-5 (Samp)		2/3/2014, 11:10:03 AM		Rack 1, Tube 28		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates Concentration					
Cd 214.439	3.30745	3.27980	3.34818	1.46225	3.42269	
Cd 228.802	4.30402	4.29795	4.33846	4.54683	4.49003	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	3.36407	ppb	0.076866	2.3	1037.66	3.36407 ppb 1.00000
Cd 228.802	4.39546	ppb	0.115081	2.6	1616.67	4.39546 ppb 1.00000



1400896-5-6 (Samp)		2/3/2014, 11:13:24 AM			Rack 1, Tube 29	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates Concentration					
Cd 214.439	2.75944	2.88247	2.93843	2.97217	2.91607	
Cd 228.802	3.55814	3.75523	3.86714	3.85752	3.83117	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	2.89371	ppb	0.081869	2.8	888.510	2.89371 ppb
Cd 228.802	3.77384	ppb	0.128322	3.4	1381.62	3.77384 ppb
						DF
						1.00000
						1.00000



Study Identifier: M195-GLP

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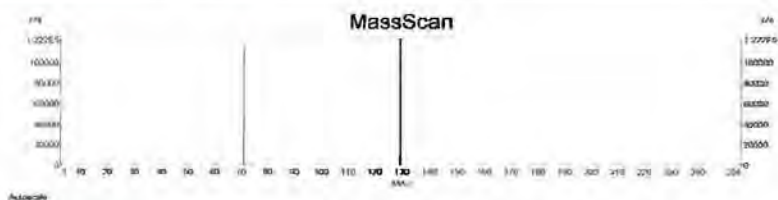
Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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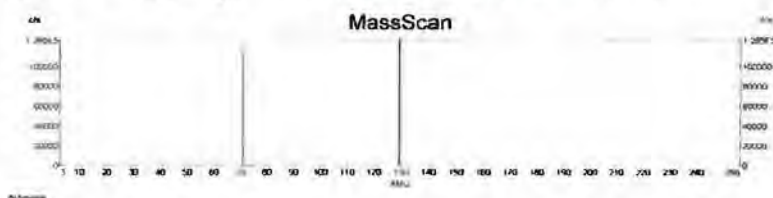
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Report Date 01:49:40pm 03/Feb/2014
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Analyst

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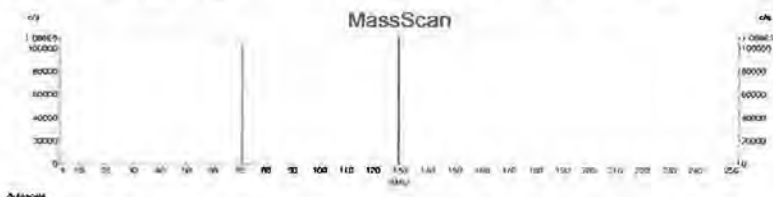
STD 3 140203 [Sample]
Tube: 1-4, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 01:01:34pm 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	% RSD	SD	Replicates (c/s)
As75	2.8386	ppb	-	224.0000	2.87	0.0811	218 213 221



1400894-0-1 [Sample]
Tube: 2-32, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 01:04:49pm 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	% RSD	SD	Replicates (c/s)
As75	2.1302	ppb	-	149.6667	3.63	0.0774	146 134 149



1400894-0-2 [Sample]
Tube: 2-33, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 01:07:44pm 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	% RSD	SD	Replicates (c/s)
As75	1.9413	ppb	-	148.0000	0.44	0.0085	149 146 149

Study Identifier: M195-GLP

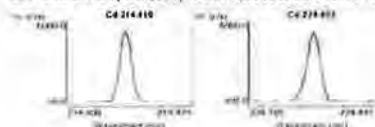
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Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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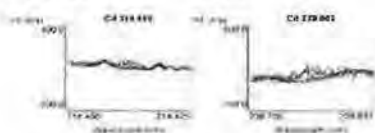
ICP-AES 720, Metals, Method/Worksheet: i140203WT.wvq All Data Report 2/3/2014, 1:00:12 PM, Analyst



LRR-5 (Samp) 2/3/2014, 11:27:11 AM Rack 1, Tube 33
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	0.126486	0.132417	0.112596	0.132808	0.118673
Cd 228.802	0.149095	0.174947	0.152841	0.188268	0.177183

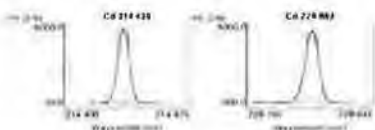
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	0.124596	ppb	0.008821	7.1	10.4467	0.124596 ppb	1.00000
Cd 228.802	0.168467	ppb	0.016804	10.0	18.3145	0.168467 ppb	1.00000



STD3 140131 (Samp) 2/3/2014, 11:30:34 AM Rack 1, Tube 34
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	14.3685	14.3001	14.3015	14.2585	14.3597
Cd 228.802	15.0510	14.9380	15.0235	15.0342	15.0585

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	14.3177	ppb	0.045876	0.3	4510.94	14.3177 ppb	1.00000
Cd 228.802	15.0211	ppb	0.048433	0.3	5634.53	15.0211 ppb	1.00000



1400894-6-1 (Samp) 2/3/2014, 11:33:57 AM Rack 1, Tube 35
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates Concentration				
Cd 214.439	3.13467	3.08958	3.14523	3.04199	2.97687
Cd 228.802	4.03075	3.96889	3.98960	3.85506	3.80135

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.07767	ppb	0.069622	2.3	946.840	3.07767 ppb	1.00000
Cd 228.802	3.92913	ppb	0.096669	2.5	1440.33	3.92913 ppb	1.00000

Study Identifier: M195-GLP

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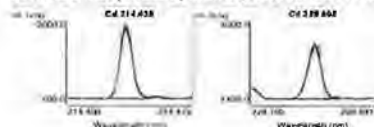
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

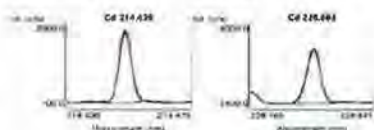
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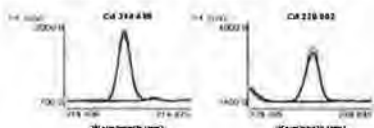
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1400894-6-2 (Samp)		2/3/2014, 11:37:20 AM		Rack 1, Tube 36		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates Concentration					
Cd 214.439	3.10068	2.95584	3.08838	3.04026	3.02391	
Cd 228.802	4.02340	3.91754	3.94981	3.88840	3.99897	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	3.04302	ppb	0.059337	1.9	935.852	3.04302 ppb 1.00000
Cd 228.802	3.95562	ppb	0.055848	1.4	1450.35	3.95562 ppb 1.00000



1400895-6-3 (Samp)		2/3/2014, 11:40:42 AM		Rack 1, Tube 37		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates Concentration					
Cd 214.439	3.01952	2.83975	2.91824	2.85188	2.78207	
Cd 228.802	3.91783	3.64489	3.66556	3.58101	3.48459	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	2.88229	ppb	0.090696	3.1	884.888	2.88229 ppb 1.00000
Cd 228.802	3.65878	ppb	0.161042	4.4	1338.11	3.65878 ppb 1.00000



1400894-6-4 (Samp)		2/3/2014, 11:44:03 AM		Rack 1, Tube 38		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates Concentration					
Cd 214.439	2.88855	2.80744	2.93959	3.15991	3.06623	
Cd 228.802	3.80388	3.55216	3.82914	4.06267	3.96009	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	2.97235	ppb	0.140784	4.7	913.443	2.97235 ppb 1.00000
Cd 228.802	3.84159	ppb	0.192527	5.0	1407.23	3.84159 ppb 1.00000



Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

QSF-01106-V2_Instrument Run Summary Metals_M195-GLP_block3_mol_WT.pdf_3101926
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3101926\
Created: 2/7/14 11:29 Audit ID: 3101926

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L2951 (Instrument) 1.0

Private and Confidential

Study: M195-GLP Block 3 metals VT

Instrument Run Summary for
Compounds Determined

Sample ID	Sample Name (Source ID, Run, Portion)	Injection Date	Injection Time	Method	IC	Instrument Identification	Analyst	Injection Note (Chromatograms / Reports)
Blank	Blank	2/6/2014	12:34	143205-VT		KP-AES 720 JAR01187	S. Fong	
Standard 1	Standard 1	2/6/2014	9:30:03	143205-VT		KP-AES 720 JAR01187	S. Fong	
Standard 2	Standard 2	2/6/2014	9:30:24	143205-VT		KP-AES 720 JAR01187	S. Fong	
Standard 3	Standard 3	2/6/2014	9:30:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
Standard 4	Standard 4	2/6/2014	9:30:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
Standard 5	Standard 5	2/6/2014	9:30:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
2x HVO3	2x HVO3	2/6/2014	9:42:53	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-1 M195-GLP	140031-1-1 M195-GLP	2/6/2014	9:42:53	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-2	140031-1-2	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-3	140031-1-3	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-4	140031-1-4	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-5	140031-1-5	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-6	140031-1-6	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-7	140031-1-7	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-8	140031-1-8	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-9	140031-1-9	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-10	140031-1-10	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-11	140031-1-11	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-12	140031-1-12	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-13	140031-1-13	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-14	140031-1-14	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-15	140031-1-15	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-16	140031-1-16	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-17	140031-1-17	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-18	140031-1-18	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-19	140031-1-19	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-20	140031-1-20	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
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140031-1-22	140031-1-22	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
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140031-1-26	140031-1-26	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-27	140031-1-27	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
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140031-1-35	140031-1-35	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-36	140031-1-36	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-37	140031-1-37	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-38	140031-1-38	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-39	140031-1-39	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-40	140031-1-40	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-41	140031-1-41	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-42	140031-1-42	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-43	140031-1-43	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-44	140031-1-44	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-45	140031-1-45	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-46	140031-1-46	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-47	140031-1-47	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-48	140031-1-48	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-49	140031-1-49	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
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140031-1-52	140031-1-52	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-53	140031-1-53	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-54	140031-1-54	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
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140031-1-56	140031-1-56	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-57	140031-1-57	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-58	140031-1-58	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-59	140031-1-59	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	
140031-1-60	140031-1-60	2/6/2014	9:42:56	143205-VT		KP-AES 720 JAR01187	S. Fong	

QSF-01106-V2

Date: Feb 7/14
Revision: 1

Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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Created: 2/7/14 11:29 Audit ID: 3101926

7. 6. 2. 5. 2

11/11/2011 11:11:11

[illegible]

02-98-107-250

Date: 2023.07.2

Study Identifier: M195-GLP

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Study Report – Appendix F

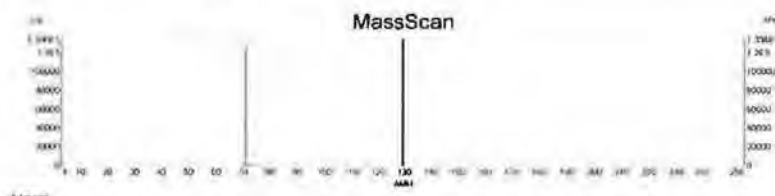
Instrument Run Summary and Representative Chromatograms

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Created: 2/6/14 15:43 Audit ID: 3096634



Quantum Worksheet Report
Report Date 03:42:45pm 06/Feb/2014
Worksheet ICP-Exp-140206-As-CRI.msws
Analyst

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1400934-1-3 [Sample]

Tube 2-3, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:21:14am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

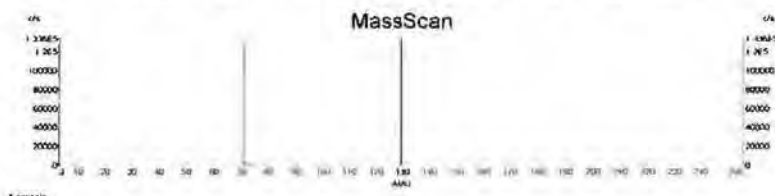
Analyte	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	1.7330	ppb	-	156.0000	8.14	0.1410	146 164 158



1400934-1-4 [Sample]

Tube 2-5, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:24:09am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	1.9078	ppb	-	168.3333	3.83	0.0731	168 160 177



1400934-1-5 [Sample]

Tube 2-6, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:27:03am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean cps	%RSD	SD	Replicates (cps)
As75	1.8637	ppb	-	166.3333	1.95	0.0364	163 170 166

Study Identifier: M195-GLP

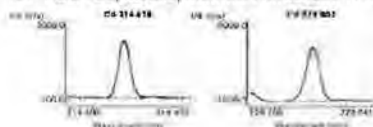
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Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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Created: 2/6/14 13:02 Audit ID: 3094495

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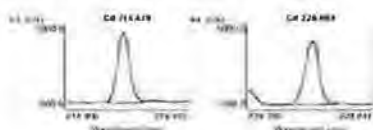
ICP-AES 720, Metals, Method/Worksheet: i140206-WT.wvq, All Data Report 2/6/2014, 1:01:50 PM, Analyst



1400936-1-2 Bl. 3 WT (Samp) 2/6/2014, 9:49:35 AM Rack 1, Tube 3
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Intensity (c/s)			
Cd 214.439	1541.06	1533.50	1538.02	1543.34	1555.32
Cd 228.802	2132.56	2129.04	2118.32	2146.48	2144.15

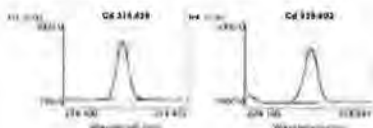
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	4.91180	ppb	0.024863	0.5	1542.25	4.91180 ppb	1.00000
Cd 228.802	5.90442	ppb	0.030690	0.5	2134.11	5.90442 ppb	1.00000



1400931-1-3 (Samp) 2/6/2014, 9:52:56 AM Rack 1, Tube 4
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Intensity (c/s)			
Cd 214.439	1333.77	1351.50	1360.50	1347.75	1340.20
Cd 228.802	1867.00	1884.84	1888.34	1879.62	1852.45

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	4.31797	ppb	0.031269	0.7	1346.74	4.31797 ppb	1.00000
Cd 228.802	5.21300	ppb	0.039205	0.8	1874.45	5.21300 ppb	1.00000



1400934-1-4 (Samp) 2/6/2014, 9:56:18 AM Rack 1, Tube 5
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Intensity (c/s)			
Cd 214.439	1214.15	1216.01	1217.83	1228.12	1225.87
Cd 228.802	1698.31	1699.86	1689.76	1704.50	1684.05

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.93419	ppb	0.018879	0.5	1220.40	3.93419 ppb	1.00000
Cd 228.802	4.73595	ppb	0.021939	0.5	1695.30	4.73595 ppb	1.00000

Study Identifier: M195-GLP

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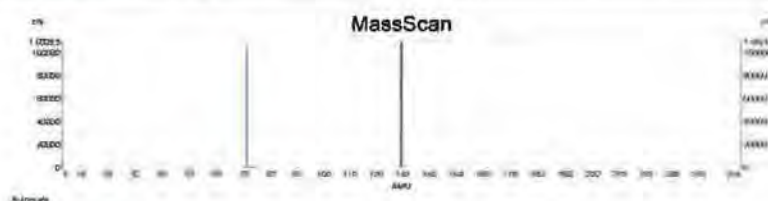
Instrument Run Summary and Representative Chromatograms

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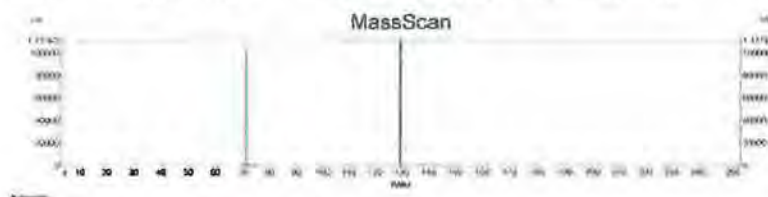
Quantum Worksheet Report
Report Date 03:42:45pm 06/Feb/2014
Worksheet ICP-Exp-140206-As-CRI.msws
Analyst

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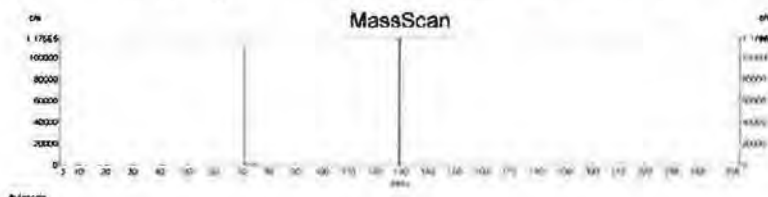
1400935-3-3 [Sample]
Tube: 2.23, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:51:36pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.15151	ppb	-	154.6667	6.91	0.1487	160 155 149



1400936-3-3 [Sample]
Tube: 2.24, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:54:30pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	3.9072	ppb	-	280.0000	4.18	0.1633	286 282 272



1400936-3-4 [Sample]
Tube: 2.25, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 12:57:23pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	3.3041	ppb	-	167.3333	2.32	0.0534	169 173 160

Study Identifier: M195-GLP

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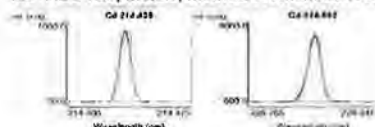
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

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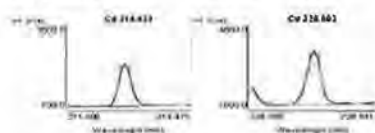
ICP-AES 720, Metals, Method/Worksheet: i140206-WT.wvq. All Data Report 2/6/2014, 1:01:50 PM, Analyst



1400935-3-1 (Samp) **2/6/2014, 11:00:18 AM** **Rack 1, Tube 24**
Weight: 1 **Volume: 1** **Dilution: 1**

Label	Replicates	Intensity (c/s)			
Cd 214.439	933.144	933.029	927.720	932.814	938.050
Cd 228.802	1327.79	1296.95	1312.48	1301.17	1329.95

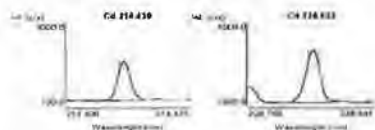
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.06108	ppb	0.011101	0.4	932.951	3.06108 ppb	1.00000
Cd 228.802	3.71976	ppb	0.039982	1.1	1313.67	3.71976 ppb	1.00000



1400935-3-2 (Samp) **2/6/2014, 11:05:47 AM** **Rack 1, Tube 25**
Weight: 1 **Volume: 1** **Dilution: 1**

Label	Replicates	Intensity (c/s)			
Cd 214.439	912.998	914.875	919.232	916.168	908.858
Cd 228.802	1284.62	1307.75	1292.65	1304.23	1302.44

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.00481	ppb	0.011703	0.4	914.426	3.00481 ppb	1.00000
Cd 228.802	3.67894	ppb	0.025284	0.7	1298.34	3.67894 ppb	1.00000



888-3-3 (Samp) **2/6/2014, 11:09:08 AM** **Rack 1, Tube 26**
Weight: 1 **Volume: 1** **Dilution: 1**

Label	Replicates	Intensity (c/s)			
Cd 214.439	3342.25	3348.43	3353.51	3319.14	3391.47
Cd 228.802	4787.82	4769.36	4749.96	4741.91	4829.25

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	10.4057	ppb	0.079532	0.8	3350.96	10.4057 ppb	1.00000
Cd 228.802	12.9383	ppb	0.092809	0.7	4775.66	12.9383 ppb	1.00000



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Study Report – Appendix F

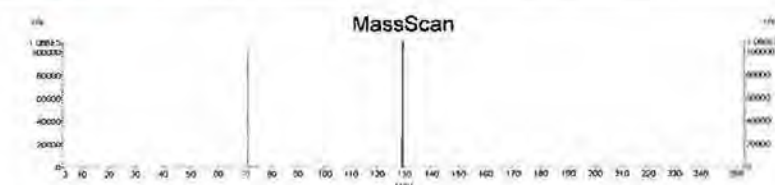
Instrument Run Summary and Representative Chromatograms

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Created: 2/6/14 15:43 Audit ID: 3098634



Quantum Worksheet Report
Report Date 03:42:45pm 06/Feb/2014
Worksheet ICP-Exp-140206-As-CRI.msws
Analyst

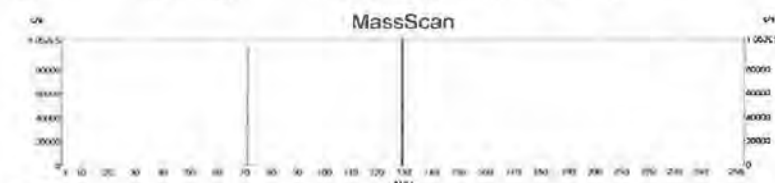
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1400935-4-4 [Sample]

Tube 2.35, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured 01:29:57pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

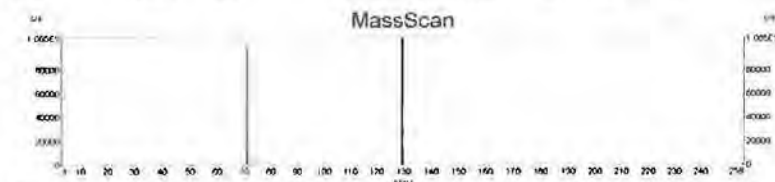
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.8278	ppb	-	127.3333	4.82	0.0981	128 130 124



1400932-4-5 [Sample]

Tube 2.36, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured 01:33:36pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.9814	ppb	-	136.3333	2.09	0.0414	133 136 140



1400933-4-6 [Sample]

Tube 2.37, Replicates 3, Auto Dilutions factor: -, Cal Set 1, Time measured 01:36:30pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.1704	ppb	-	150.3333	3.94	0.0856	148 155 148

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_block3_met_WT.pdf_3094495
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Created: 2/6/14 13:02 Audit ID: 3094495

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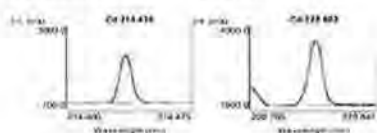
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1400932-4-5 (Samp) **2/6/2014, 11:52:51 AM** **Rack 1, Tube 39**
Weight: 1 **Volume: 1** **Dilution: 1**

Label	Replicates	Intensity (c/s)
Cd 214.439	1122.95	1136.12
Cd 228.802	1622.02	1627.00

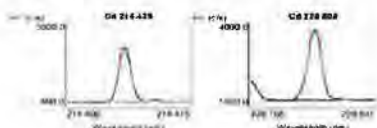
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.65972	ppb	0.020821	0.6	1130.04	3.65972 ppb	1.00000
Cd 228.802	4.54771	ppb	0.010548	0.2	1624.60	4.54771 ppb	1.00000



1400933-4-6 (Samp) **2/6/2014, 11:56:11 AM** **Rack 1, Tube 40**
Weight: 1 **Volume: 1** **Dilution: 1**

Label	Replicates	Intensity (c/s)
Cd 214.439	1207.36	1200.26
Cd 228.802	1758.29	1737.65

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.91255	ppb	0.029634	0.8	1213.27	3.91255 ppb	1.00000
Cd 228.802	4.87019	ppb	0.022676	0.5	1745.71	4.87019 ppb	1.00000



1400933-4-7 (Samp) **2/6/2014, 11:59:32 AM** **Rack 1, Tube 41**
Weight: 1 **Volume: 1** **Dilution: 1**

Label	Replicates	Intensity (c/s)
Cd 214.439	1193.11	1190.04
Cd 228.802	1719.15	1724.09

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.85338	ppb	0.016960	0.4	1193.79	3.85338 ppb	1.00000
Cd 228.802	4.81719	ppb	0.031642	0.7	1725.80	4.81719 ppb	1.00000

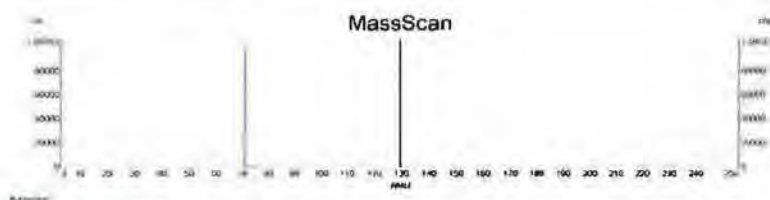
Study Identifier: M195-GLP

Study Report – Appendix F
Instrument Run Summary and Representative Chromatograms

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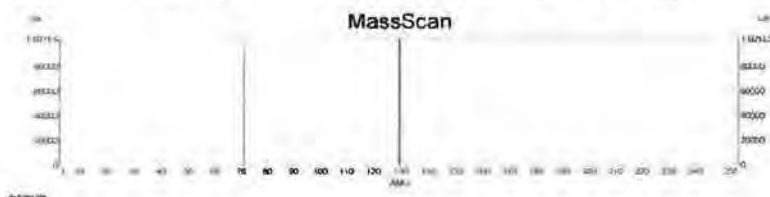


Quantum Worksheet Report
Report Date 03:42:45pm 06/Feb/2014
Worksheet ICP-Exp-140206-As-CRI.mswn
Analyst



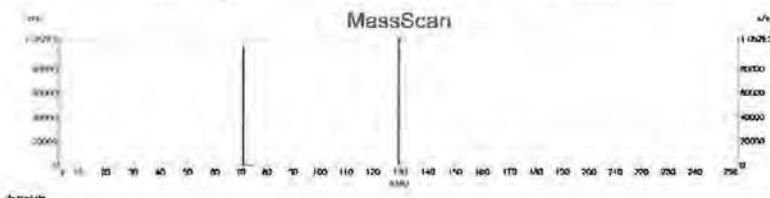
1400931-5-1 [Sample]
Tube: 2-43, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:03:32pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.60911	ppb	-	110.6667	6.46	0.1040	105 109 111



1400936-5-3 [Sample]
Tube: 2-41, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:06:17pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.2449	ppb	-	149.6667	4.59	0.1030	143 149 157



1400933-5-4 [Sample]
Tube: 2-45, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:10:33pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.05771	ppb	-	139.0000	3.44	0.0708	142 135 140

Study Identifier: M195-GLP

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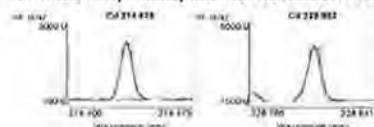
Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

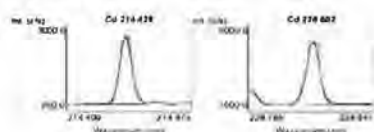
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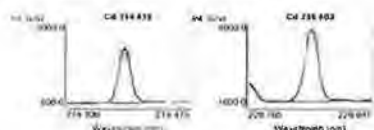
ICP-AES 720, Metals, Method/Worksheet: i140206-WT.wvq, All Data Report 2/6/2014, 1:01:50 PM, Analyst



1400936-5-3 (Samp)		2/6/2014, 12:23:27 PM			Rack 1, Tube 48		
Weight: 1		Volume: 1			Dilution: 1		
Label	Replicates Intensity (c/s)						
Cd 214.439	1491.55	1491.19	1503.85	1514.35	1519.85		
Cd 228.802	2173.41	2181.17	2194.29	2189.42	2182.71		
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	4.79611	ppb	0.039529	0.8	1504.16	4.79611 ppb	1.00000
Cd 228.802	6.03779	ppb	0.021338	0.4	2184.20	6.03779 ppb	1.00000



1400933-5-4 (Samp)		2/6/2014, 12:26:49 PM			Rack 1, Tube 49	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates Intensity (c/s)					
Cd 214.439	1197.68	1214.35	1213.59	1212.27	1224.13	
Cd 228.802	1762.28	1760.38	1742.07	1770.09	1763.50	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	3.90991	ppb	0.028800	0.7	1212.40	3.90991 ppb
Cd 228.802	4.90735	ppb	0.027935	0.6	1759.66	4.90735 ppb
						DF
						1.00000
						1.00000



1400932-5-5 (Samp)		2/6/2014, 12:30:11 PM			Rack 1, Tube 50	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates Intensity (c/s)					
Cd 214.439	1120.80	1109.11	1109.95	1105.17	1102.86	
Cd 228.802	1626.73	1586.27	1601.54	1608.45	1587.20	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	3.59758	ppb	0.020981	0.6	1109.58	3.59758 ppb
Cd 228.802	4.48762	ppb	0.044553	1.0	1602.04	4.48762 ppb
						DF
						1.00000
						1.00000

Study Identifier: M195-GLP

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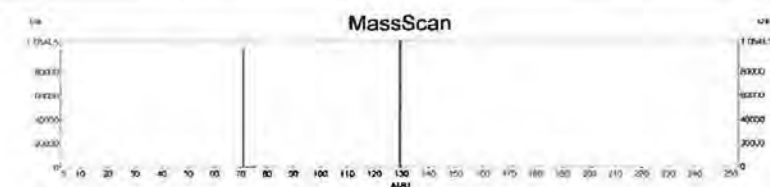
Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

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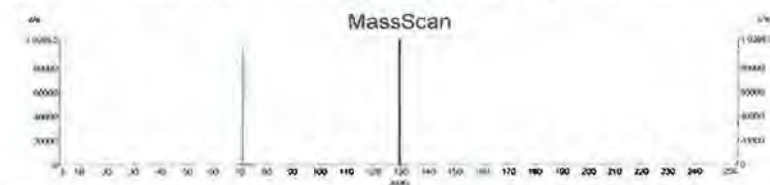
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Report Date 03:42:45pm 06/11/2014
Worksheet ICP-Exp-140206-As-CRI.msws
Analyst

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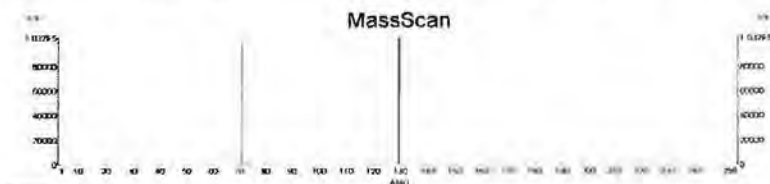
1400935-S-8 [Sample]
Tube: 2.19, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:26:46pm 06/11/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.7604	ppb	-	121.3333	7.12	0.1254	129 119 116



1400935-S-8 [Sample]
Tube: 2.50, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:29:11pm 06/11/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.2080	ppb	-	205.6667	5.36	0.1719	205 213 199



1400935-S-8 [Sample]
Tube: 2.51, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:32:36pm 06/11/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.4408b	ppb	-	42.3333	21.28	0.0938	17 43 37

Study Identifier: M195-GLP

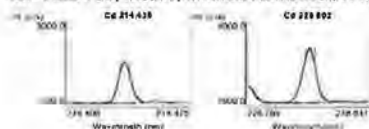
Page 33 of 37

Study Report – Appendix F Instrument Run Summary and Representative Chromatograms

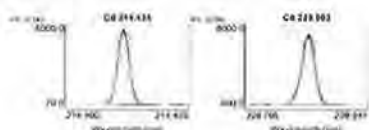
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ICP-AES 720, Metals, Method/Worksheet: i140206-WT.wvq All Data Report 2/6/2014, 1:01:50 PM, Analyst



LFB-5 (Samp)		2/6/2014, 12:43:35 PM			Rack 1, Tube 54	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates Intensity (c/s)					
Cd 214.439	4362.18	4328.35	4370.10	4381.19	4443.65	
Cd 228.802	5163.13	5147.59	5160.63	5235.31	5280.28	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	13.5226	ppb	0.127907	0.9	4377.09	13.5226 ppb
Cd 228.802	14.0613	ppb	0.153624	1.1	5197.39	14.0613 ppb
						DF
						1.00000
						1.00000



LRB-5 (Samp)	2/6/2014, 12:46:57 PM				Rack 1, Tube 55	
Weight: 1	Volume: 1				Dilution: 1	
Label	Replicates Intensity (c/s)					
Cd 214.439	19.3824	9.40439	11.0346	9.24530	13.5320	
Cd 228.802	24.2128	27.7188	24.1293	24.5345	22.1850	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	0.265290	ppb	0.012775	4.8	12.5197	0.265290 ppb
Cd 228.802	0.287131	ppb	0.005313	1.9	24.5561	0.287131 ppb
						1.00000



STD 3 140206 (Samp)		2/6/2014, 12:50:19 PM			Rack 1, Tube 56	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates Intensity (c/s)					
Cd 214.439	4682.79	4668.89	4651.03	4638.70	4636.91	
Cd 228.802	5558.43	5503.61	5487.15	5501.09	5506.95	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	14.3687	ppb	0.060206	0.4	4655.67	14.3687 ppb
Cd 228.802	14.8975	ppb	0.072761	0.5	5511.45	14.8975 ppb
						1.00000



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Study Report – Appendix F

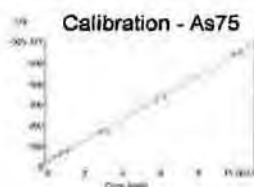
Instrument Run Summary and Representative Chromatograms

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Quantum Worksheet Report
Report Date 03:46:44pm 06/Feb/2014
Worksheet ICP-Exp-140206-b-As-CRI.msws
Analyst

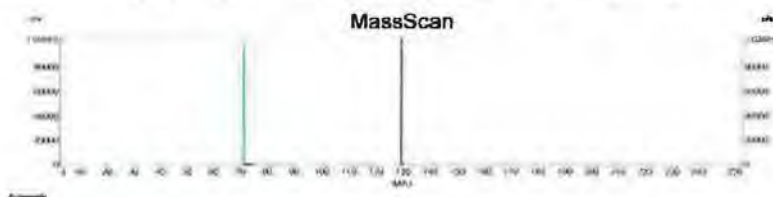
Page 4 of 8



5% HNO3 [Sample]

Tube: 2.1, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:39:39pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

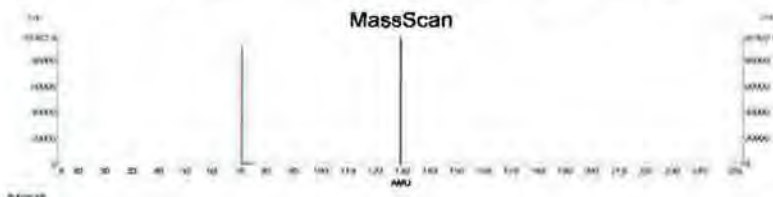
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	-0.0130b	ppb	-	18.3333	198.5	0.0259	17 19 19



1400934-6-1 M195-GLP [Sample]

Tube: 2.2, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 03:05:01pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.5930f	ppb	-	99.3333	7.41	0.0543	101 100 97



1400935-6-2 BL3 WT [Sample]

Tube: 2.3, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 03:08:36pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.8276f	ppb	-	112.3333	9.69	0.1772	121 106 110

Study Identifier: M195-GLP

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Study Report – Appendix F

Instrument Run Summary and Representative Chromatograms

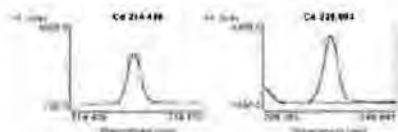
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ICP-AES 720, Metals, Method/Worksheet: i140206-WT-b.vwq, All Data Report 2/6/2014, 1:57:14 PM, Analysis

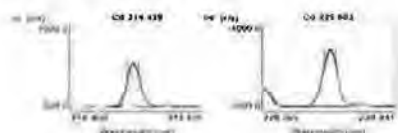
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Weight: 1		Volume: 1		Dilution: 1	
Label	Replicates	Intensity (c/s)			
Cd 214.439	1144.67	1135.93	1145.15	1147.74	1142.09
Cd 228.802	1678.01	1690.80	1689.17	1670.21	1674.63

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.82852	ppb	0.014554	0.4	1143.11	3.82852 ppb	1.00000
Cd 228.802	4.69958	ppb	0.024836	0.5	1680.56	4.69958 ppb	1.00000



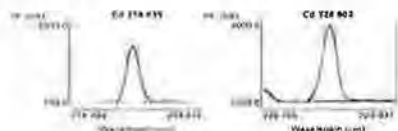
1400935-6-2 Bl. 3 WT (Samp)		2/6/2014, 1:20:37 PM		Rack 1, Tube 3	
Weight: 1		Volume: 1		Dilution: 1	
Label	Replicates	Intensity (c/s)			
Cd 214.439	940.362	941.992	959.536	948.340	951.285
Cd 228.802	1388.08	1344.52	1374.38	1370.49	1378.74

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	3.19700	ppb	0.025003	0.8	948.303	3.19700 ppb	1.00000
Cd 228.802	3.85080	ppb	0.044757	1.2	1371.24	3.85080 ppb	1.00000



1400931-6-3 (Samp)		2/6/2014, 1:23:58 PM		Rack 1, Tube 4	
Weight: 1		Volume: 1		Dilution: 1	
Label	Replicates	Intensity (c/s)			
Cd 214.439	1250.62	1261.09	1265.91	1265.22	1266.06
Cd 228.802	1876.07	1878.23	1868.29	1870.27	1852.99

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	4.21320	ppb	0.021276	0.5	1261.78	4.21320 ppb	1.00000
Cd 228.802	5.21712	ppb	0.027224	0.5	1869.17	5.21712 ppb	1.00000



Study Identifier: M195-GLP

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Study Report – Appendix F

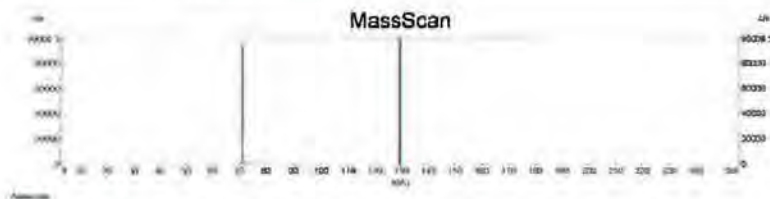
Instrument Run Summary and Representative Chromatograms

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Quantum Worksheet Report
Report Date 03:46:44pm 06/Feb/2014
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Analyst

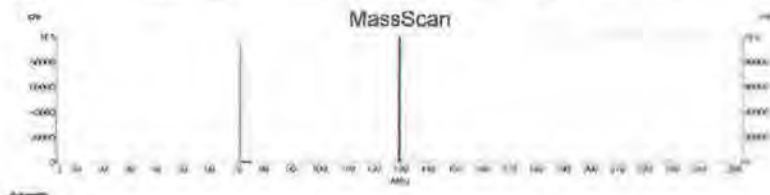
Page 5 of 8



1400931-6-3 [Sample]

Tube: 2-4, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 03:14:38pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

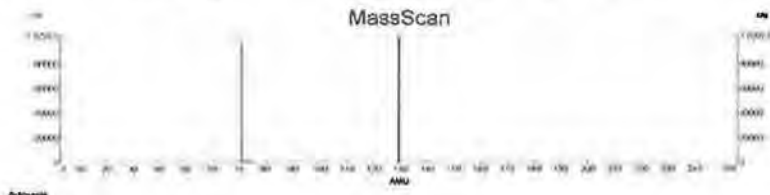
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.77151	ppb	-	112.3333	8.95	0.1586	120 103 114



988-6-4 [Sample]

Tube: 2-5, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 03:17:33pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	4.0208	ppb	-	231.3333	3.19	0.1282	230 237 227



1400931-6-5 [Sample]

Tube: 2-6, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 03:21:12pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.7724	ppb	-	114.0000	4.65	0.0823	109 115 111

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Study Report – Appendix F

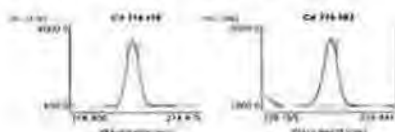
Instrument Run Summary and Representative Chromatograms

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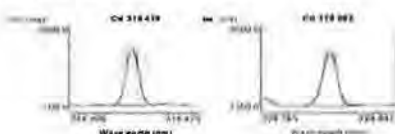
Page 6 of 8

ICP-AES 720, Metals, Method/Worksheet: i140206-WT-b wvq All Data Report 2/6/2014, 1:57:14 PM, Analyst

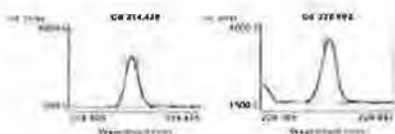
888-6-4 (Samp)		2/6/2014, 1:27:20 PM			Rack 1, Tube 5	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates	Intensity (c/s)				
Cd 214.439	3308.11	3323.62	3343.65	3342.85	3355.74	
Cd 228.802	4917.21	4935.48	4961.62	4953.72	4948.26	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	10.9333	ppb	0.061052	0.6	3334.80	10.9333 ppb
Cd 228.802	13.6525	ppb	0.047738	0.3	4943.26	13.6525 ppb
						DF
						1.00000
						1.00000



1400931-6-5 (Samp)		2/6/2014, 1:30:42 PM		Rack 1, Tube 6		
Weight: 1		Volume: 1		Dilution: 1		
Label	Replicates	Intensity (c/s)				
Cd 214.439	1266.53	1270.48	1275.78	1268.90	1283.63	
Cd 228.802	1899.18	1912.80	1908.49	1885.26	1893.08	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s) Calc Conc.	DF
Cd 214.439	4.24978	ppb	0.022091	0.5	1273.07	4.24978 ppb 1.00000
Cd 228.802	5.30107	ppb	0.030725	0.6	1899.76	5.30107 ppb 1.00000



1400932-6-6 (Samp)		2/6/2014, 1:34:04 PM			Rack 1, Tube 7	
Weight: 1		Volume: 1			Dilution: 1	
Label	Replicates	Intensity (c/s)				
Cd 214.439	1080.54	1074.95	1082.37	1086.89	1092.92	
Cd 228.802	1603.45	1595.47	1594.36	1609.88	1606.26	
Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.
Cd 214.439	3.63538	ppb	0.021948	0.6	1083.53	3.63538 ppb
Cd 228.802	4.48368	ppb	0.018571	0.4	1601.88	4.48368 ppb
						DF
						1.00000
						1.00000



Appendix G

Calibration Curve Data Summary

'Tar', Nicotine and Carbon Monoxide



Handwritten signature

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195-GLP.MS_Inc_nbl_Calibration & Instrument Run Summary.pdf_2060A.rpt
Electronically Signed By: Sandra Pasca
Path: \\file2\repository\repository\300006001
Created: 1/31/14 13:06 Audit ID: 2060668

Page 1 of 1

Notes and Comments:
Calibration Curve Data Summary for
Compound: Desmethoxy

Run: M195-GLP.MS_Inc_nbl

Sample	Concentration (ng/mL)	Retention Time (min)	Area	Height	Area Error	Height Error	Concentration Error	Height Error	Concentration Error
Vibron	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
Nicotine	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000
	5701-14128	28.480-14	142737.24	142737.24	0.0000	0.0000	0.0000	0.0000	0.0000

Page 1 of 1

Calibration

Run: M195-GLP.MS_Inc_nbl



Study Identifier: M195-GLP

Page 2 of 29

Study Report – Appendix G

Calibration Curve Data Summary

M105-GLPMS_Inc_sb1_Calibration & Instrument Run Summary.pdf_3030Aria1
Electronically Signed By: Sonda Pasca
Path: \\fs2\repository\repository\308049081
Created: 1/31/14 12:49 Audit ID: 3050499

[illegible]



Handwritten signature

Study Identifier: M195-GLP

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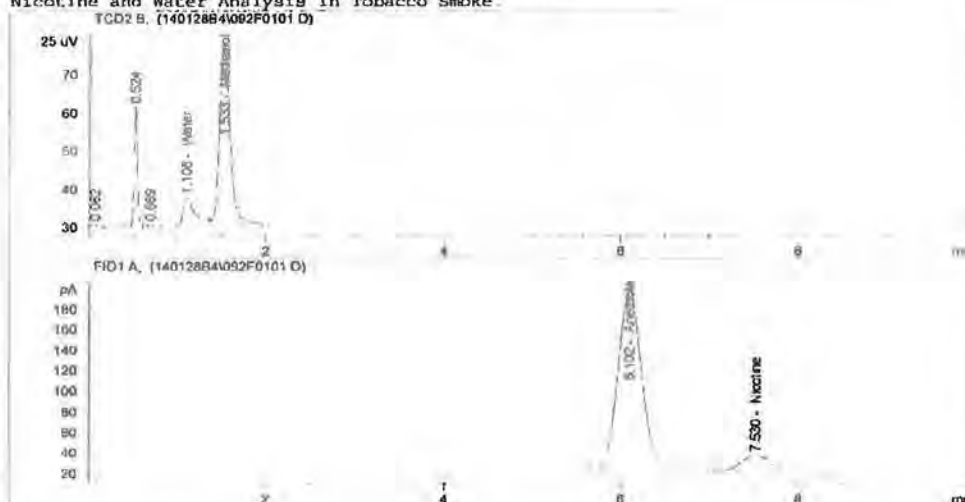
Study Report – Appendix G
Calibration Curve Data Summary

runstd_m195-glpsm_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\fs2\\repository\\repository\\3044456\\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\\HPCHEM\\4\\DATA\\140128B4\\092F0101.D

Sample Name: STD 1 140128

Injection Date : 1/28/2014 10:50:16 AM Seq. Line : 1
Sample Name : STD 1 140128 Location : Vial 92
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\\HPCHEM\\4\\METHODS\\140128T4.M
Last changed : 1/28/2014 10:47:41 AM by ANALYST
Analysis Method : C:\\HPCHEM\\4\\METHODS\\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	0.00000	Anethole
1	0.00000	Methanol

Signal 1: TCD2 B.

RetTime (min)	Type	Area (25 uV*s)	Amt/Area ratio	Amount (mg/ml)	Grp	Name
1.106	PV	67.57368	2.29219e-1	4.00818e-2		Water
1.533	VB	386.43808	1.00000	1.00000		Methanol

Totals without ISTD(s) : 4.00818e-2

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

runstd_m195-glps_fnc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: Ws2repository\repository\30444561
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\14012804\092F0101.D

Sample Name: STD 1 140128

Signal 2: FID1 A,

RetTime (min)	Type	Area (pA*s)	Amt/Area ratio	Amount (mg/ml)	Grp	Name
6.102	VP	3224.00244	1.00000	1.00000		Anethole
7.510	VBA	380.09509	1.99231e-1	2.34885e-2		Nicotine

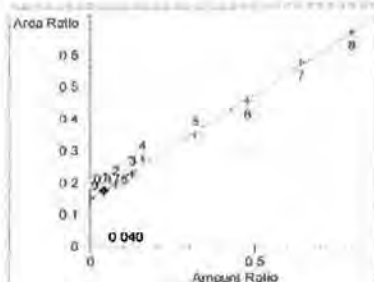
Totals without ISTD(a) = 2.34885e-2

Results obtained with enhanced integrator!

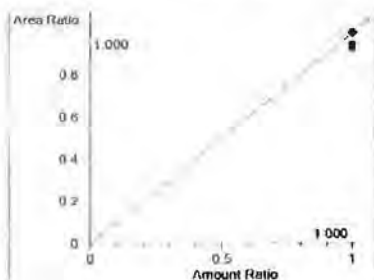
! Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

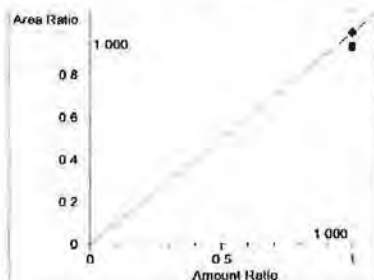
Calibration Curves



Water at exp. RT: 1.106
TCD2 B,
Correlation: 0.99872
Residual Std. Dev.: 0.01011
Formula: $y = mx + b$
m: 6.54717e-1
b: 1.48621e-1
x: Amount Ratio
y: Area Ratio



Methanol at exp. RT: 1.530
TCD2 B,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Anethole at exp. RT: 6.102
FID1 A,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



AS

Study Identifier: M195-GLP

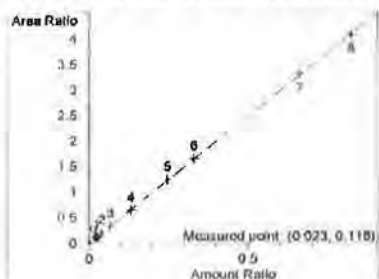
Page 5 of 29

Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\fs2\repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\092F0101.D

Sample Name: STD 1 140128



Microline at exp. RT: 7.530
FID1 A,
Correlation: 0.99995
Residual Std. Dev.: 0.01570
Formula: $y = mx + b$
m: 4.98151
b: 0.07143e-4
x: Amount Ratio
y: Area Ratio

*** End of Report ***



Study Identifier: M195-GLP

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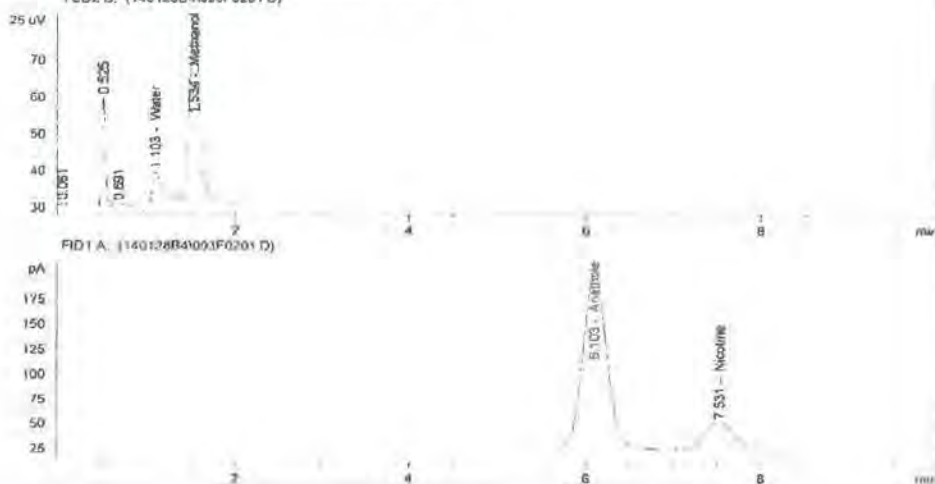
Study Report – Appendix G
Calibration Curve Data Summary

runald_m195-glps_inc_sb1_chromatograms.pdf_3044458
Electronically Signed By: Sandra Pasca
Path: \\fs2\repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\093F0201.D

Sample Name: STD 2 140128

Injection Date : 1/28/2014 11:01:26 AM Seq. Line : 2
Sample Name : STD 2 140128 Location : Vial 93
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 10:47:41 AM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke
TCD2 B, (140128B4\093F0201.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.103	PV	81.07469	3.61590e-1	7.04080e-2		Water
1.514	VB	416.16993	1.00000	1.00000		Methanol

Totals without ISTD(s) : 7.04080e-2

Results obtained with enhanced integrator!



AM

Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

runstd_m195-glps_inc_ab1_chromatograms.pdf_3044456
Electronically Signed By: Sanda Pasca
Path: \\fs2\repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128BA\093F0201.D

Sample Name: STD 2 140128

Signal 2: PID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.103	BP	3317.71704	1.00000	1.00000		Anethole
7.531	VHA	662.88373	1.99851e-1	3.99304e-2		Nicotine

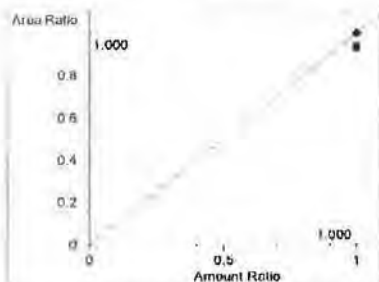
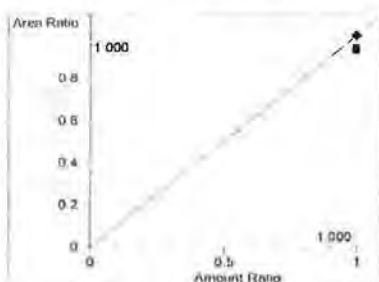
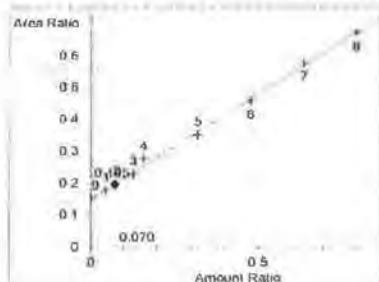
Totals without ISTD(s) : 3.99304e-2

Results obtained with enhanced integrator!

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

Calibration Curves





Study Identifier: M195-GLP

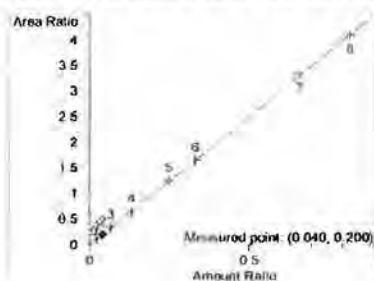
Page 8 of 29

Study Report – Appendix G Calibration Curve Data Summary

runsid_m195-glpmis_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: Ws2repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\093P0201.D

Sample Name: STD 2 140128



Nicotine at exp. RT: 7.530
FID1 A,
Correlation: 0.99995
Residual Std. Dev.: 0.01570
Formula: $y = mx + b$
m: 4.98151
b: $8.67343e-4$
x: Amount Ratio
y: Area Ratio

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

runstd_m195-glps Inc. sb1_chromatograms.pdf_3044456
Electronically Signed By: Senda Pasco
Path: W:\2repository\repository\3044456\1
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128R4\094F0301.D

Sample Name: STD 3 140128

Injection Date : 1/28/2014 11:12:45 AM Seq. Line : 3
Sample Name : STD 3 140128 Location : Vial 94
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 10:47:41 AM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Wednesday, January 29, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:
ISTD ISTD Amount Name
(mg/ml)
2 1.00000 Anethole
1 1.00000 Methanol

Signal 1: TC02 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.099	PV	94.41813	5.25390e-1	1.19027e-1		Water
1.532	VBA	416.76587	1.00000	1.00000		Methanol

Total: without ISTD(s) : 1.19027e-1

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

runslid_m195-glps_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: Ws2RepositoryRepository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\094F0301.D

Sample Name: STD 3 140128

Signal 2: FID1 A₁

RetTime [min]	Type	Area [pA*s]	Ant/Area ratio	Amount [mg/ml]	Grp	Name
6.102	VR	3259.25024	1.00000	1.00000	1	Anethole
7.530	VUA	1080.68738	2.00205e-1	6.63831e-2	2	Nicotine

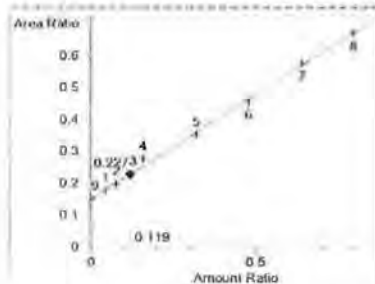
Totals without ISTD(s) : 6.63831e-2

Results obtained with enhanced integrator!

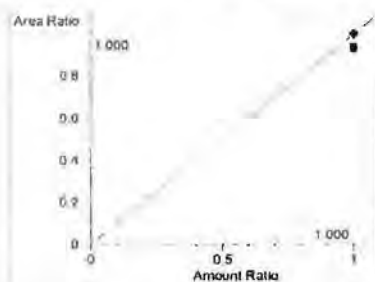
1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

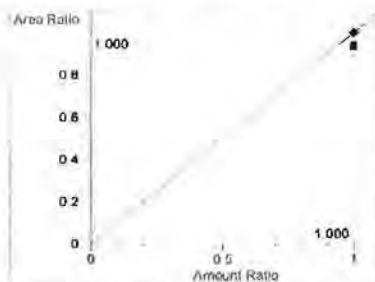
Calibration Curves



Water at exp. RT: 1.106
TCD2 B₁
Correlation: 0.99872
Residual Std. Dev.: 0.01011
Formula: $y = mx + b$
m: 6.54717e-1
b: 1.48621e-1
x: Amount Ratio
y: Area Ratio



Methanol at exp. RT: 1.530
TCD2 B₁
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Anethole at exp. RT: 6.102
FID1 A₁
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



ASh

Study Identifier: M195-GLP

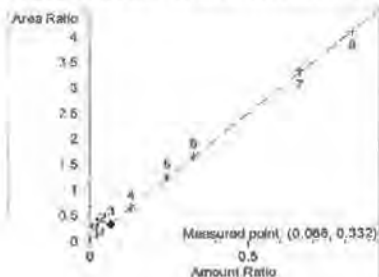
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Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\sa2repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\094P0301.D

Sample Name: STD 3 140128



Nicotine at exp. RT: 7.530
FID1 A,
Correlation: 0.99995
Residual Std. Dev.: 0.01570
Formula: $y = mx + b$
m: 4.98151
b: 8.67343e-6
X: Amount Ratio
Y: Area Ratio

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

runstd_m195-glps_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: W:\2repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B1\095F0401.D

Sample Name: STD 4 140128

Injection Date : 1/28/2014 11:24:00 AM Seq. Line : 4
Sample Name : STD 4 140128 Location : Vial 95
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 10:47:41 AM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke

TCD2 B, (140128B1\095F0401.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B.

RetTime [min]	Type	Area [25 uV*s]	Ant/Area ratio	Amount [mg/ml]	Grp	Name
1.098	PV	101.45536	6.03213e-1	1.48166e-1		Water
1.532	VIA I	413.04623	1.00000	1.00000		Methanol

Totals without ISTD(s) : 1.48166e-1

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\fs2repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\IPCHEM\4\DATA\140128R4\095F0401.D

Sample Name: STD 4 140128

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	AmI/Area ratio	Amount [mg/ml]	Grp	Name
6.103	VP	13251.97461	1.00000	1.00000		Anethole
7.532	VIA	2165.06104	2.00475e-1	1.33470e-1		Nicotine

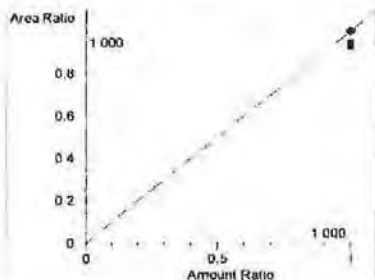
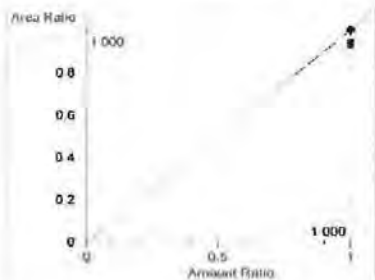
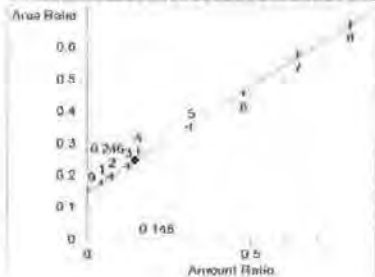
Total without ISTD(s) : 1.33470e-1

Results obtained with enhanced integrator:

1 Warning or Errors :

Warning : Calibration warnings (see calibration table listing)

Calibration Curves





Study Identifier: M195-GLP

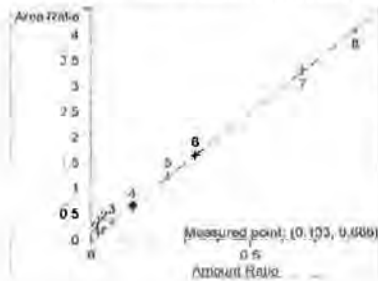
Page 14 of 29

Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_inc_ab1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\sa2repository\repository\30444561
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\RPCHEM\4\DATA\140128B1\095F0401.D

Sample Name: STD 4 140128



Nicotine at exp. RT: 7.530
FID1 A,
Correlation: 0.99995
Residual Std. Dev.: 0.01570
Formula: $y = mx + b$
m: 4.98151
b: 8.87343e-4
x: Amount Ratio
y: Area Ratio

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glpm6_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: Ws2repository\repository\3044456
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\096F0501.D

Sample Name: STD 5 140128

Injection Date: 1/28/2014 11:35:20 AM Seq. Line: 5
Sample Name: STD 5 140128 Location: Vial 96
Acq. Operator: ANALYST Inj: 1
Inj Volume: 2 µl
Acq. Method: C:\HPCHEM\4\METHODS\140128T4.M
Last changed: 1/28/2014 10:47:41 AM by ANALYST
Analysis Method: C:\HPCHEM\4\METHODS\140128T4.M
Last changed: 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke
TCD2 B, (140128B4\096F0501.D)



Internal Standard Report

Sorted By: Signal
Calib. Data Modified: Tuesday, January 28, 2014 12:41:59 PM
Multiplier: 1.0000
Dilution: 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Amethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	AmL/Area ratio	Amount [mg/ml]	Grp	Name
1.091	PV	144.37126	8.77997e-1	3.06916e-1		Water
1.510	VB	413.00385	1.00000	1.00000		Methanol

Totals without ISTD(s): 3.06916e-1

Results obtained with enhanced integrator



Study Identifier: M195-GLP

Page 16 of 29

Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glpmc_inc_gb1_chromatograms.pdf_3044456

Electronically Signed By: Sandra Pasca

Path: \\fs2\repository\repository\3044456\

Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\096F0501.D

Sample Name: STD 5 140128

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.102	VP	3300.70728	1.00000	1.00000		Anethole
7.429	VBA	4094.94043	2.00599e-1	2.48868e-1		Nicotine

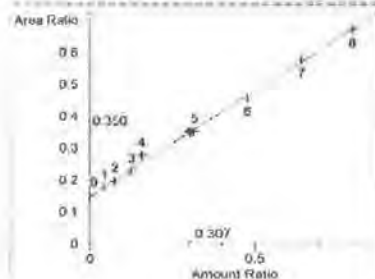
Totals without ISTD(s) : 2.48868e-1

Results obtained with enhanced integrator!

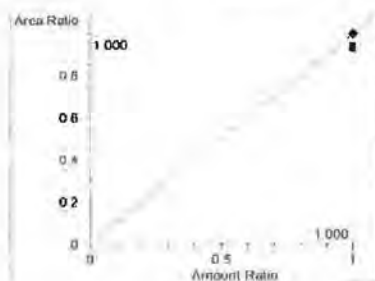
1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

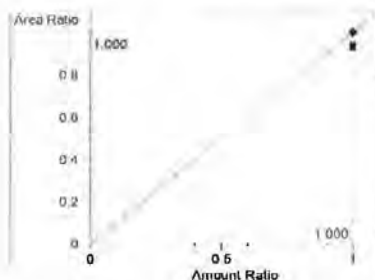
Calibration Curves



Water at exp. RT: 1.106
TCD2 B,
Correlation: 0.99672
Residual Std. Dev.: 0.01011
Formula: $y = mx + b$
m: 6.54717e-1
b: 1.48621e-1
x: Amount Ratio
y: Area Ratio



Methanol at exp. RT: 1.530
TCD2 B,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Anethole at exp. RT: 6.102
FID1 A,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



APR

Study Identifier: M195-GLP

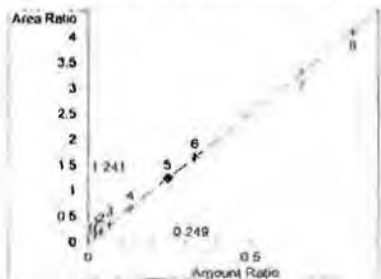
Page 17 of 29

Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps-inc_sb1_chromatograms.pdf_3044458
Electronically Signed By: Sandra Pasca
Path: Ws2vopositoryvopository\30444581
Created: 1/29/14 12:31 Audit ID: 3044458

Data File C:\HPCHEM\4\DATA\140128B4\096F0501.D

Sample Name: STD 5 140128



Nicotine at exp. RT: 7.510
FID1 A,
Correlation: 0.99995
Residual Std. Dev.: 0.01570
Formula: $y = ax + b$
a: 4.98151
b: 8.87343e-4
x: Amount Ratio
y: Area Ratio

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

runstd_m195-glps-inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\fs2\repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\097F0601.D

Sample Name: STD 6 140128

Injection Date : 1/28/2014 11:46:30 AM Seq. Line : 6
Sample Name : STD 6 140128 Location : Vial 97
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 10:47:41 AM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke.
TCD2 B (140128B4\097F0601.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:
ISTD ISTD Amount Name
(mg/ml)
2 1.00000 Anethole
1 1.00000 Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.086	PV	190.58551	1.02910	4.68823e-1	1	Water
1.540	VH	418.14766	1.00000	1.00000	1	Methanol

Totals without ISTD(s) : 4.68823e-1

Results obtained with enhanced integrator!



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_inc_ab1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: Ws2repositoryrepository\3044456\
Created: 1/29/14 12:31 AuditID: 3044456

Data File C:\HPCHEM\1\DATA\140128B4\097P0601.D

Sample Name: STD 6 140128

Signal 2: FID1 A.

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.102	VP	13259.56665	1.00000	1.00000		Anethole
7.529	VBA	5361.73926	2.00634e-1	3.30028e-1		Nicotine

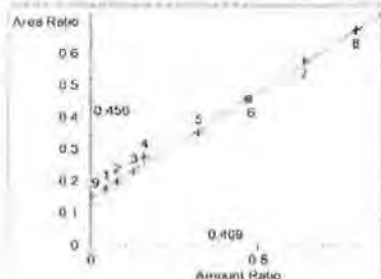
Total without ISD(s) : 3.30028e-1

Results obtained with enhanced integrator

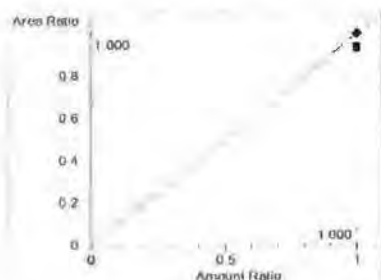
Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

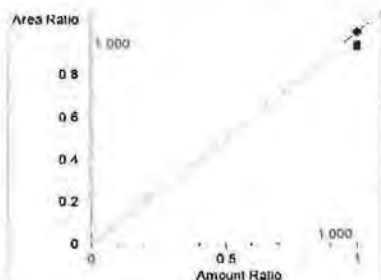
Calibration Curves



Water at exp. RT: 1.106
TCD2 B,
Correlation: 0.99872
Residual Std. Dev.: 0.01011
Formula: $y = mx + b$
m: 6.54717e-1
b: 1.48621e-1
x: Amount Ratio
y: Area Ratio



Methanol at exp. RT: 1.510
TCD2 B,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Anethole at exp. RT: 6.102
FID1 A,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Study Identifier: M195-GLP

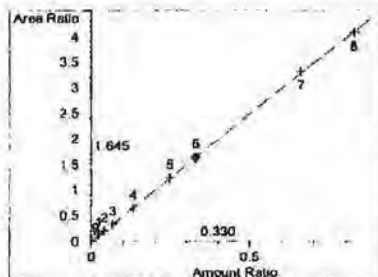
Page 20 of 29

Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_tnc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Senda Pasca
Path: \\fs2repository\repository\3044456\
Created: 1/29/14 12:31 Audli ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B1\097F0601.D

Sample Name: STD 6 140128



Nicotine at exp. RT: 7.530
FID1 A,
Correlation: 0.99995
Residual Std. Dev.: 0.01570
Formula: $y = mx + b$
m: 4.98151
b: 8.87343e-4
x: Amount Ratio
y: Area Ratio

*** End of Report ***



Study Identifier: M195-GLP

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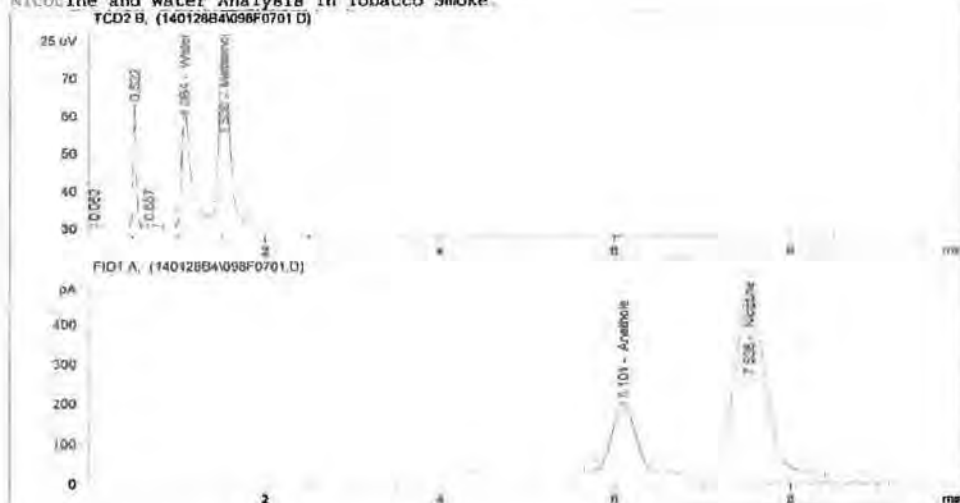
Study Report – Appendix G Calibration Curve Data Summary

runid_m195-glpms_inc_ab1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: W:\2\repository\repository\3044456\
Created: 1/29/14 12:31 AudtID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\098F0701.D

Sample Name: STD 7 140128

Injection Date : 1/28/2014 11:57:55 AM Seq. Line : 7
Sample Name : STD 7 140128 Location : Vial 98
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 10:47:41 AM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Name
1.084	PV	229.80592	1.13349	6.53241e-1	Water
1.530	VBA	398.75491	1.00000	1.00000	Methanol

Totals without ISTD(s) 6.53241e-1

Results obtained with enhanced integrator



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: Wfs2repositoryrepository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\098P0701.D

Sample Name: STD 7 140128

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	Ant/Area ratio	Amount [ng/ml]	Grp	Name
6.101	VP	3269.47070	1.00000	1.00000		Anethole
7.528	VBA	1.08447e4	2.00689e-1	6.65646e-1		Nicotine

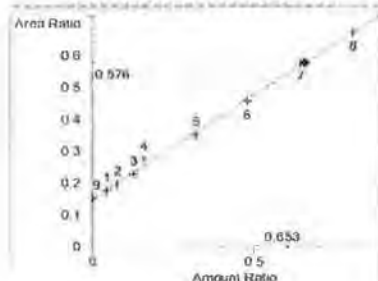
Totals without INTD(8) 6.65646e-1

Results obtained with enhanced integrator:

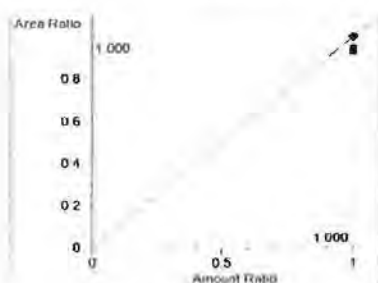
1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

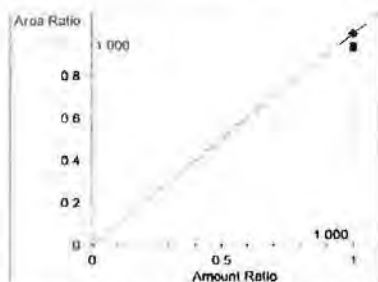
Calibration Curves



Water at exp. RT: 1.106
TCD2 B,
Correlation: 0.99872
Residual Std. Dev.: 0.01011
Formula: $y = mx + b$
m: 6.54717e-1
b: 1.48621e-1
x: Amount Ratio
y: Area Ratio



Methanol at exp. RT: 1.530
TCD2 B,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Anethole at exp. RT: 6.102
FID1 A,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Study Identifier: M195-GLP

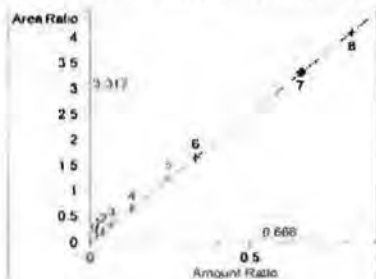
Page 23 of 29

Study Report – Appendix G Calibration Curve Data Summary

runstd_m195-glps_inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\is2repository\repository\30444561
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\098F0701.D

Sample Name: STD 7 140128



Nicotine at exp. RT: 7.530
FID1 A,
Correlation: 0.99995
Residual Std. Dev: 0.01570
Formula: $y = mx + b$
m: 4.90151
b: 8.87343e-4
x: Amount Ratio
y: Area Ratio

*** End of Report ***



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

runstd_m195-glpmis_inc_sb1_chromatograms.pdf_3044456

Electronically Signed By: Sandra Pasca

Path: Ws2repository\repository\3044456\

Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\099F0801.D

Sample Name: STD B 140128

Injection Date : 1/28/2014 12:09:10 PM Seq. Line : 8
Sample Name : STD B 140128 Location : vial 99
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/20/2014 10:47:41 AM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke
(CD2B, (140128B4\099F0801.D))



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:
ISTD ISTD Amount Name
[mg/ml]
2 1.00000 Anethole
1 1.00000 Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.081	PV	288.42633	1.18887	7.97252e-1		Water
1.529	VBA	430.10474	1.00000	1.00000		Methanol

Totals without ISTD(s) 7.97252e 1

Results obtained with enhanced integrator!



APR

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

runid_m195-glps_inic_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasco
Path: \\fs2\repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\099F0801.D

Sample Name: STD # 140128

Signal 2: FID1 A.

RetTime [min]	Type	Area [pA*s]	AmI/Area ratio	Amount [mg/ml]	Grp	Name
6.100	VP	1.330574976	1.00000	1.00000		Anethole
7.527	VDA	1.35138e4	2.00699e-1	8.20450e-1		Nicotine

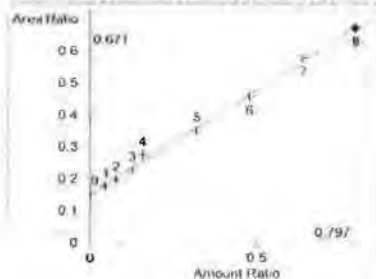
Totals without ISTD(s) : 8.20450e-1

Results obtained with enhanced integrator:

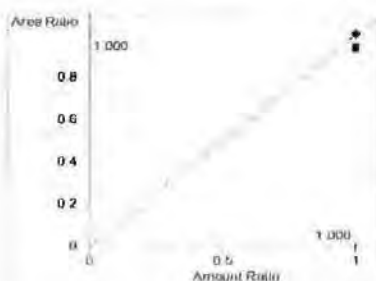
1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

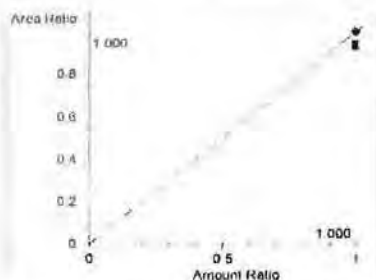
Calibration Curves



Water at exp. RT: 1.106
TCD2 B.
Correlation: 0.99872
Residual Std. Dev.: 0.01011
Formula: $y = mx + b$
m: 6.54717e-1
b: 1.48621e-1
x: Amount Ratio
y: Area Ratio



Methanol at exp. RT: 1.530
TCD2 B.
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



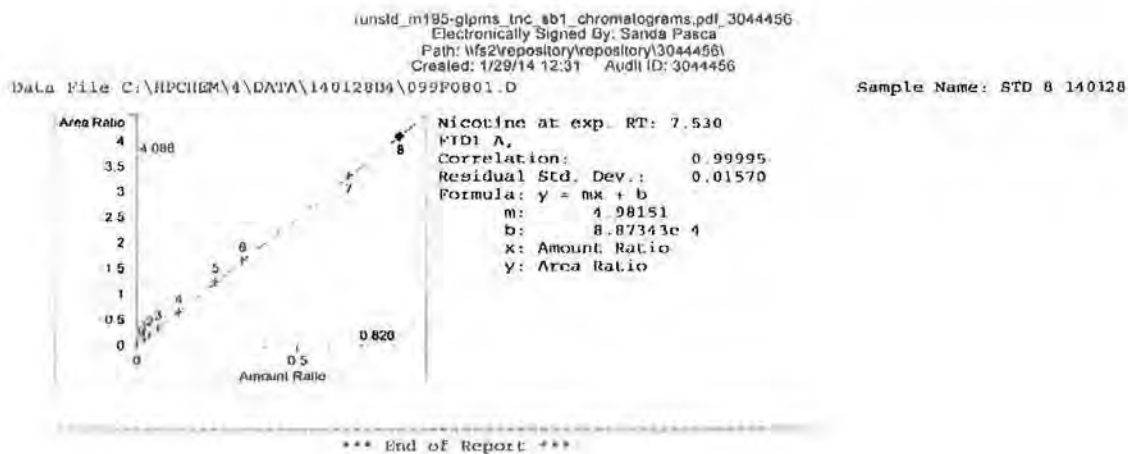
Anethole at exp. RT: 6.102
FID1 A.
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary





APR

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

auditd_m195-glpmg_tnc_801_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\fs2repository\repository\3044456\
Created: 1/28/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\100F0901.D

Sample Name: STD 9 140128

Injection Date : 1/28/2014 12:20:29 PM Seq. Line : 9
Sample Name : STD 9 140128 Location : Vial 100
Acq. Operator : ANALYST Inj : 1
Inj Volume : 2 µl
Acq. Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 10:47:41 AM by ANALYST
Analysis Method : C:\HPCHEM\4\METHODS\140128T4.M
Last changed : 1/28/2014 12:42:23 PM by ANALYST
Nicotine and Water Analysis in Tobacco Smoke.
TCD2 B, (140128B4\100F0901.D)



Internal Standard Report

Sorted By : Signal
Calib. Data Modified : Tuesday, January 28, 2014 12:41:59 PM
Multiplier : 1.0000
Dilution : 1.0000

Sample ISTD Information:

ISTD #	ISTD Amount [mg/ml]	Name
2	1.00000	Anethole
1	1.00000	Methanol

Signal 1: TCD2 B,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
1.106	PV	58.93654	1.36316e-2	2.04419e-3		Water
1.530	VB	393.01776	1.00000	1.00000		Methanol

Totals without ISTD(s) : 2.04419e-3

Results obtained with enhanced integrator



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

(unstd_m195-glps-inc_sb1_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\fs2\repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\14012884\100F0901.D

Sample Name: STD 9 140128

Signal 2: FID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area ratio	Amount [mg/ml]	Grp	Name
6.102	VP	I 3254.24194	1.00000	1.00000		Anethole
7.530						Micotine

Totals without ISTD(s) : 0.00000

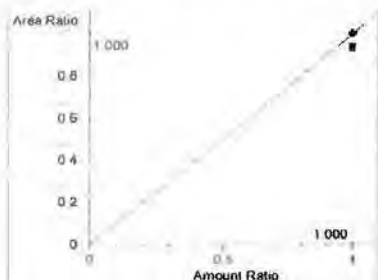
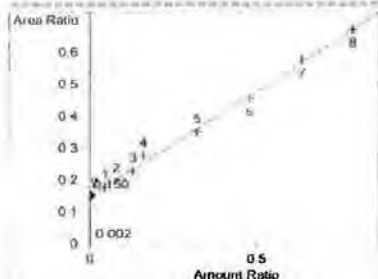
Results obtained with enhanced integrator

2 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

Warning : Calibrated compound(s) not found

Calibration Curves





APL

Study Identifier: M195-GLP

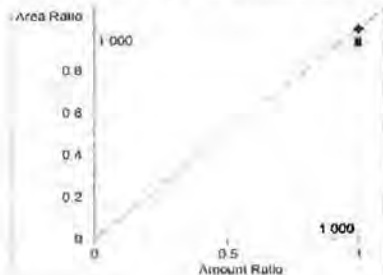
Page 29 of 29

Study Report – Appendix G Calibration Curve Data Summary

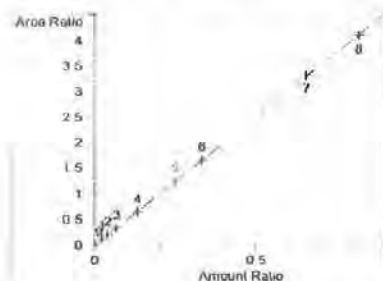
runstd_m195-glps_inc_351_chromatograms.pdf_3044456
Electronically Signed By: Sandra Pasca
Path: \\fs2\repository\repository\3044456\
Created: 1/29/14 12:31 Audit ID: 3044456

Data File C:\HPCHEM\4\DATA\140128B4\100F0901.D

Sample Name: STD 9 140128



Anethole at exp. RT: 6.102
FTD1 A,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio



Nicotine at exp. RT: 7.530
FTD1 A,
Correlation: 0.99995
Residual Std. Dev.: 0.01570
Formula: $y = mx + b$
m: 4.98151
b: 8.87343e-4
x: Amount Ratio
y: Area Ratio

*** End of Report ***

Polycyclic Aromatic Hydrocarbons

[Handwritten signature]

Study Identifier: M195-GLP

Page 1 of 24

Study Report – Appendix G

Calibration Curve Data Summary

M195GLP_PAH_MSN_B1_calibration_curve_data_summary.pdf_3203906
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\\repository\\repository\\3203906\\
Created: 2/28/14 08:29 Audit ID: 3203906

[illegible]



Page 2 of 24

Study Report – Appendix G

Calibration Curve Data Summary

M105GLP_PAH_MSS_B1_calibration_curve_data_summary.pdf_3203837
Electronically Signed By: Bartosz Jasink
Path: \\fs2\\repository\\repository\\3203837\\
Created: 2/28/14 09:13 Audit ID: 3203637

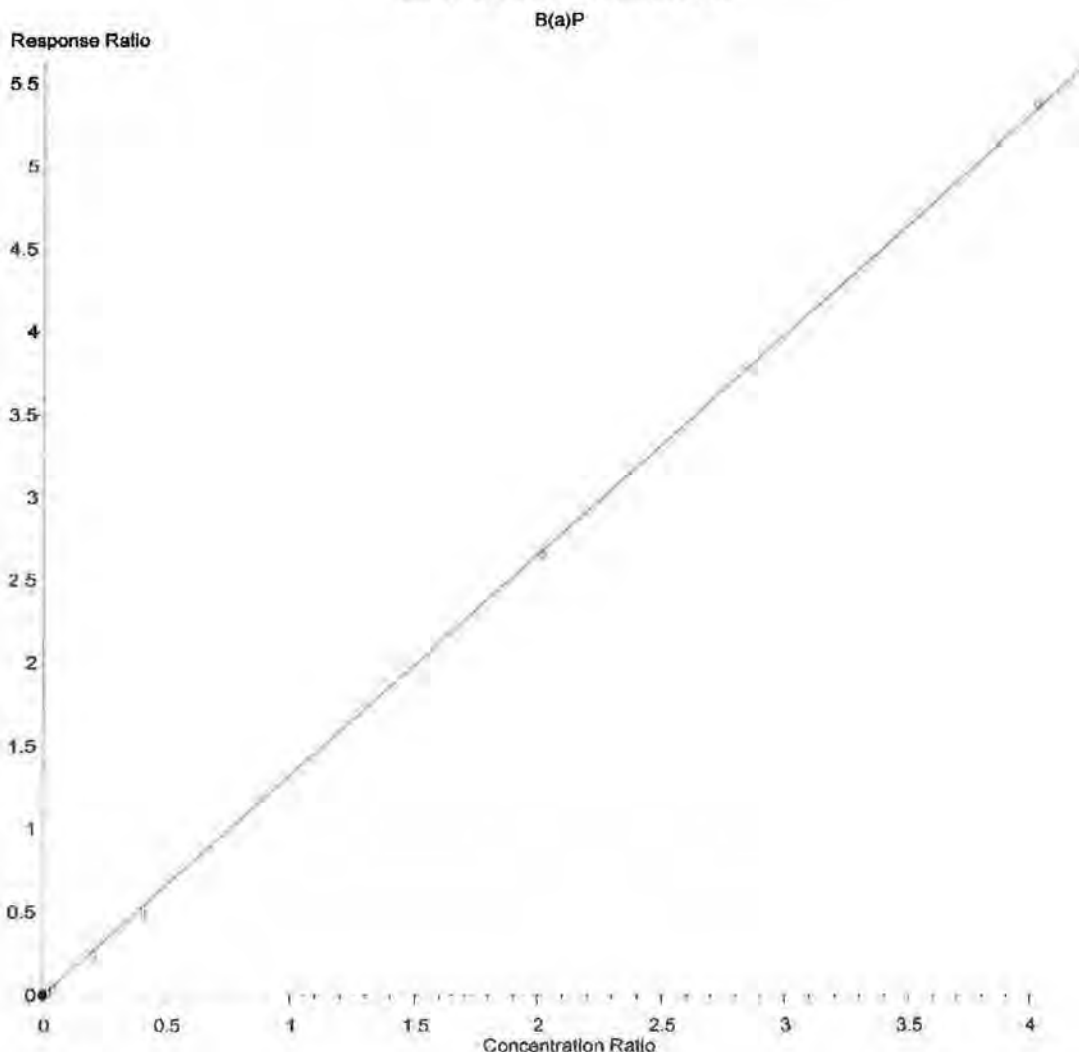
Category	Sub-category	Item	Quantity	Unit Price	Total Price	Remarks
Construction	General	Excavation	100	1.00	100.00	Excavation 100 m³
		Foundation	50	2.00	100.00	Foundation 50 m³
		Concrete	200	0.50	100.00	Concrete 200 m³
		Reinforcement	100	1.00	100.00	Reinforcement 100 m³
		Formwork	50	2.00	100.00	Formwork 50 m²
		Brickwork	100	1.00	100.00	Brickwork 100 m³
		Masonry	50	2.00	100.00	Masonry 50 m³
		Plastering	100	1.00	100.00	Plastering 100 m²
		Painting	50	2.00	100.00	Painting 50 m²
		Roofing	100	1.00	100.00	Roofing 100 m²
Electrical	General	Wiring	100	1.00	100.00	Wiring 100 m
		Switchgear	50	2.00	100.00	Switchgear 50 m
		Control Panel	20	5.00	100.00	Control Panel 20 m
		Motor	10	10.00	100.00	Motor 10 m
		Transformer	5	20.00	100.00	Transformer 5 m
		Cable	100	1.00	100.00	Cable 100 m
		Conduit	50	2.00	100.00	Conduit 50 m
		Termination	100	1.00	100.00	Termination 100 m
		Testing	50	2.00	100.00	Testing 50 m
		Commissioning	100	1.00	100.00	Commissioning 100 m
Mechanical	General	Piping	100	1.00	100.00	Piping 100 m
		Valves	50	2.00	100.00	Valves 50 m
		Pumps	20	5.00	100.00	Pumps 20 m
		Compressors	10	10.00	100.00	Compressors 10 m
		Boilers	5	20.00	100.00	Boilers 5 m
		Heat Exchangers	100	1.00	100.00	Heat Exchangers 100 m
		Condensers	50	2.00	100.00	Condensers 50 m
		Evaporators	100	1.00	100.00	Evaporators 100 m
		Refrigerators	50	2.00	100.00	Refrigerators 50 m
		Dehumidifiers	100	1.00	100.00	Dehumidifiers 100 m
Civil	General	Grading	100	1.00	100.00	Grading 100 m
		Drainage	50	2.00	100.00	Drainage 50 m
		Retaining Walls	20	5.00	100.00	Retaining Walls 20 m
		Foundations	10	10.00	100.00	Foundations 10 m
		Structural Steel	5	20.00	100.00	Structural Steel 5 m
		Concrete	100	1.00	100.00	Concrete 100 m
		Reinforcement	50	2.00	100.00	Reinforcement 50 m
		Formwork	100	1.00	100.00	Formwork 100 m
		Brickwork	50	2.00	100.00	Brickwork 50 m
		Masonry	100	1.00	100.00	Masonry 100 m

Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_BaP_Calibration_Curve.pdf_3049109
Electronically Signed By: Bartosz Jaslak
Path: \\fs2\repository\repository\3049109
Created: 1/30/14 09:35 Audit ID: 3049109



Response = 1.32e+000 * Amt
Coef of Det (r^2) = 1.000 Curve Fit: Linear/(0,0)
Method Name: C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP.M
Calibration Table Last Updated: Wed Jan 29 15:16:01 2014



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128001.D
Acq On : 28 Jan 2014 17:48
Operator : Analyst
Sample : STD_1_140128
Misc : PAH Calibration Stds 140128
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jan 29 15:15:18 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.849	264	94684m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.960	252	421m	0.08	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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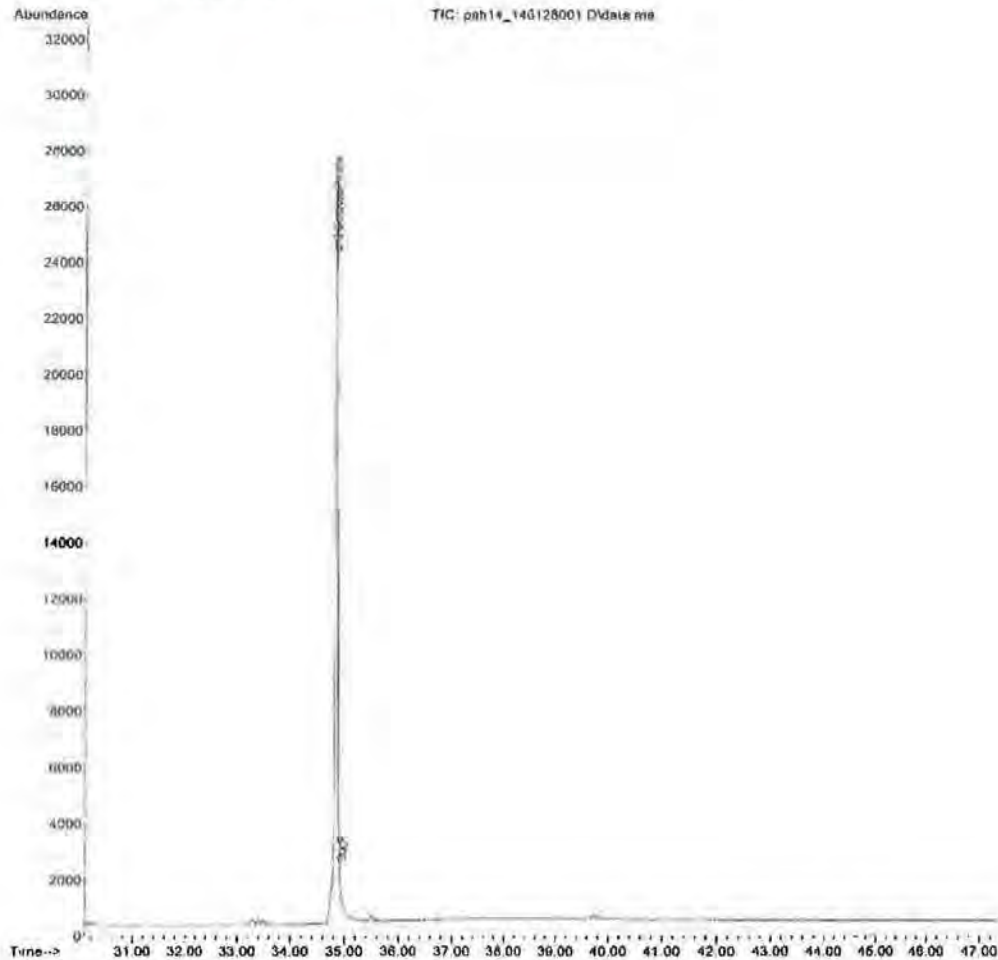
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\Cal Stds\\PAH14_140128 std\\
Data File : pah14_140128001.D
Acq On : 28 Jan 2014 17:48
Operator : Analyst
Sample : STD 1 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jan 29 15:15:18 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_1401280 M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140128
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration





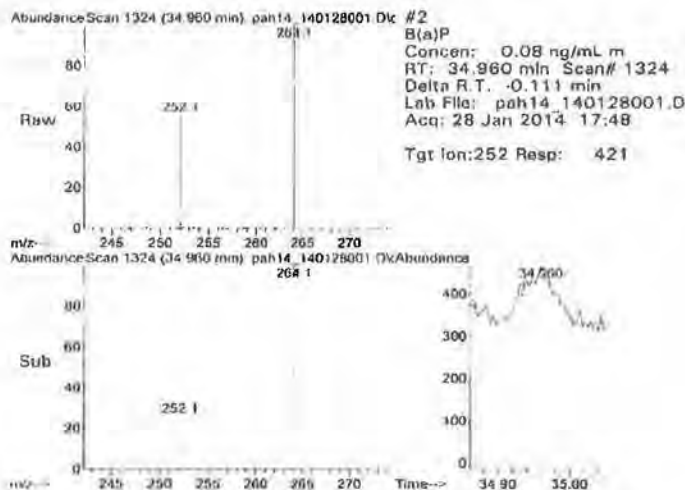
Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053

Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3049053
Created: 1/30/14 09:29 Audit ID: 3049053





Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiek
Path: W:\s2\repository\repository\3049053\
Created: 1/30/14 09:20 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128002.D
Acq On : 28 Jan 2014 19:34
Operator : Analyst
Sample : STD 2_140128
Misc : PAH Calibration Stds_140128
ALS Val : 2 Sample Multiplier: 1

Quant Time: Jan 29 15:15:34 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	Q Ion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	89960m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.956	252	1971m	0.40	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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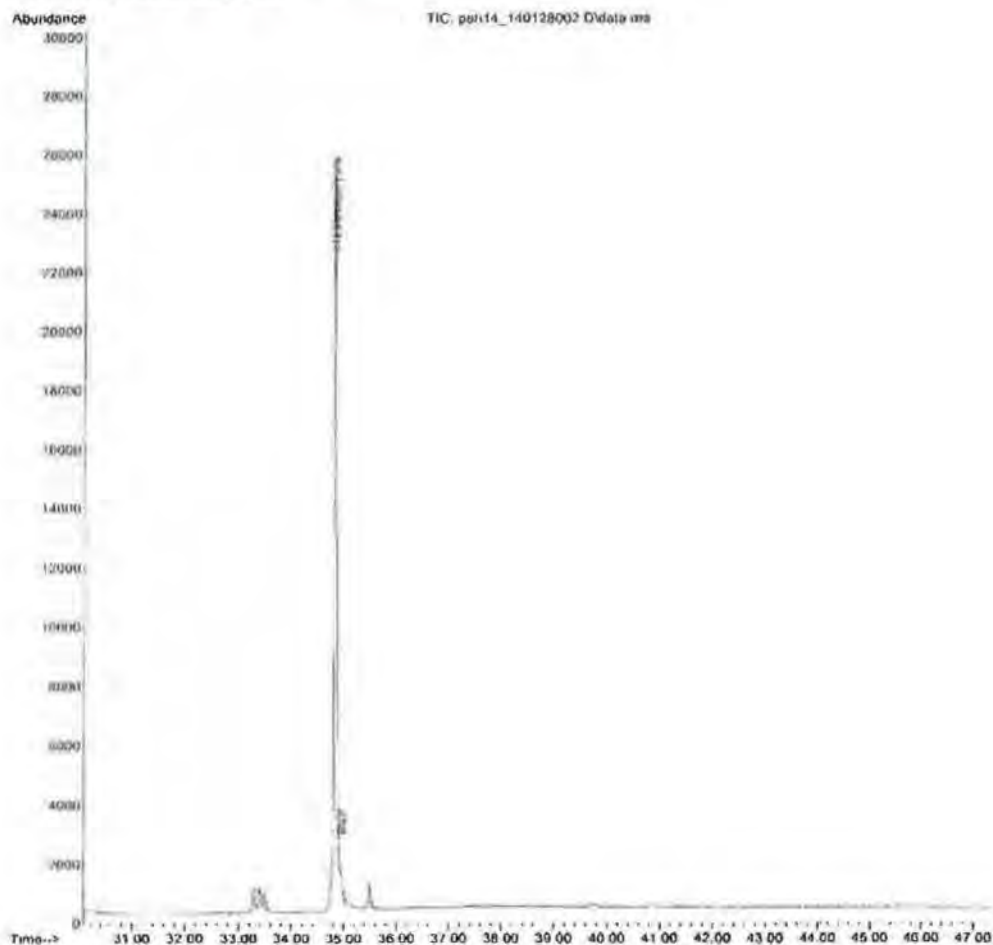
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
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Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128002.D
Acq On : 28 Jun 2014 19:34
Operator : Analyst
Sample : STD 2 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jan 29 15:15:34 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

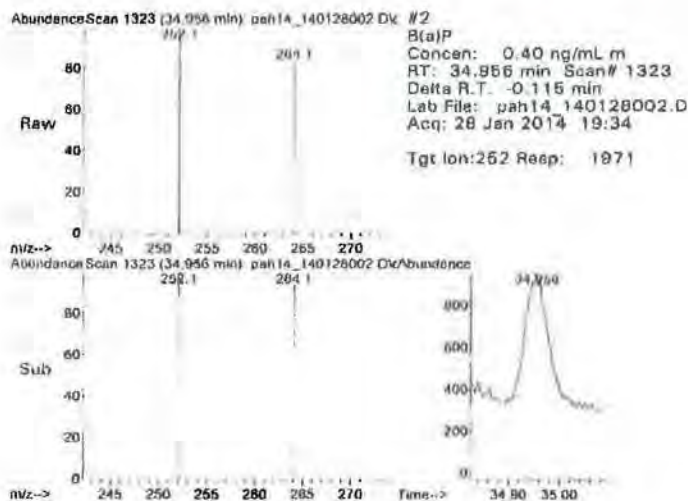


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053





Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053

Electronically Signed By: Bartosz Jasiak

Path: W62repositoryrepository\3049053\

Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (Q.T. Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\

Data File : pah14_140128003.D

Acq On : 28 Jan 2014 21:19

Operator : Analyst

Sample : STD 3 140128

Misc : PAH Calibration Stds 140128

ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 29 15:13:13 2014

Quant Method : C:\msdchem\1\methods\PAH\PAH14_140128Q.M195GLP.M

Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140128

QLast Update : Wed Jan 29 15:08:37 2014

Response via : Initial Calibration

Compound	R.T. QIon	Response	Conc Units	Dev(Min)
Internal Standards				
1) d12-Benzof(a)Pyrene	34.845	264 82252m	25.12 ng/mL	-0.12
Target Compounds				
2) B(a)P	34.952	252 3865m	Qvalue 0.86 ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals assumed



Study Identifier: M195-GLP

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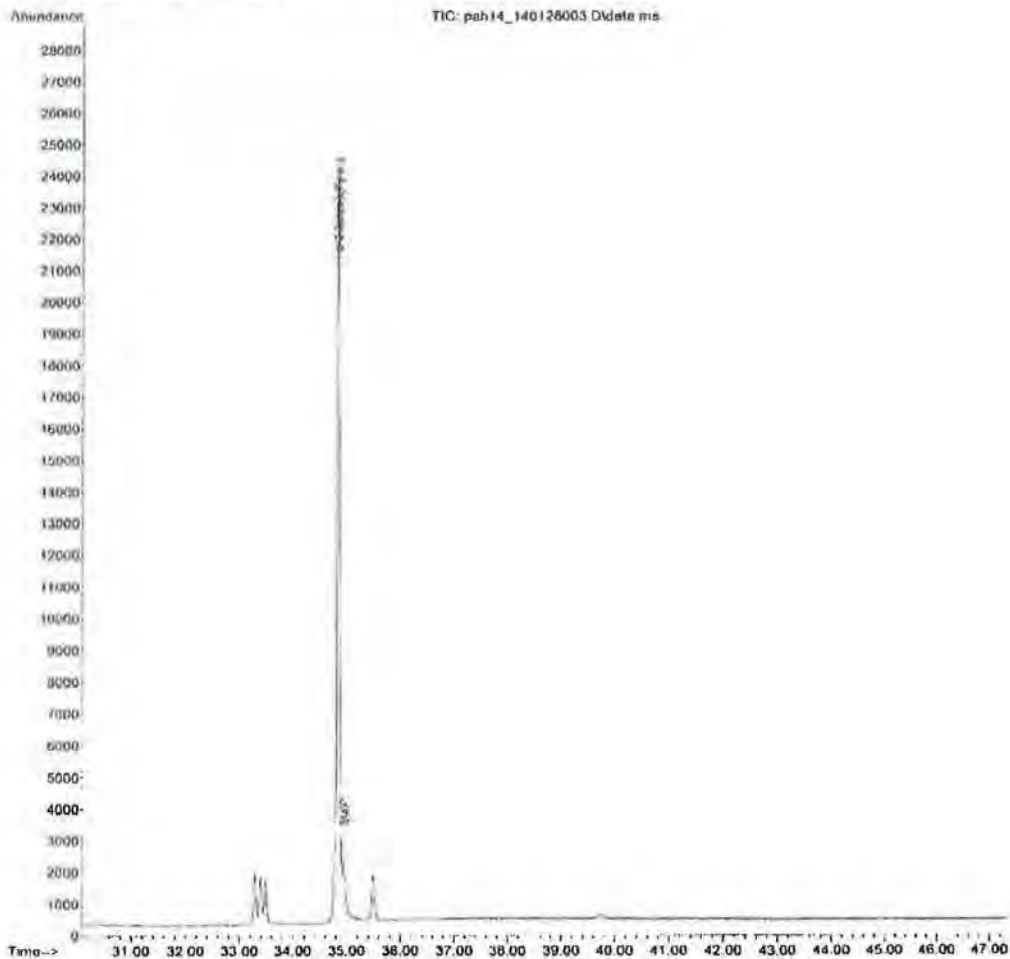
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
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Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128003.D
Acq On : 28 Jan 2014 21:19
Operator : Analyst
Sample : STD 3 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 29 15:13:13 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
Last Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



Study Identifier: M195-GLP

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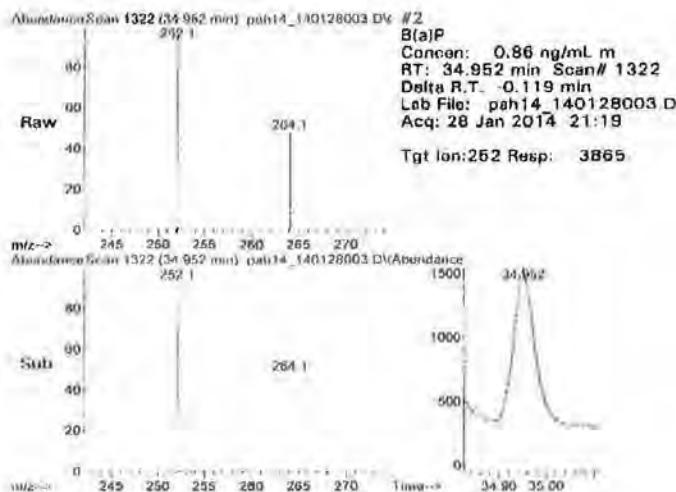
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053

Electronically Signed By: Bartosz Jasiak

Path: \\fs2\repository\repository\3049053\

Created: 1/30/14 09:29 Audit ID: 3049053





Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195-GLP_PAH_GCMS#14_Calib_Stds_Chromatograms_STD4_Correction.pdf_3267935
Electronically Signed By: Bartosz Jawlak
Path: \\file2\repository\repository\3267935\
Created: 3/7/14 09:55 Audit ID: 3267935

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128004.D
Acq On : 28 Jan 2014 23:05
Operator : Analyst
Sample : STD 4 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 29 15:13:33 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195 GLP PAH Quantitation method on GCMS#14 - B.IAS, 140129
Last Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T	Qion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	40421m	26.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.952	252	9807m	4.33	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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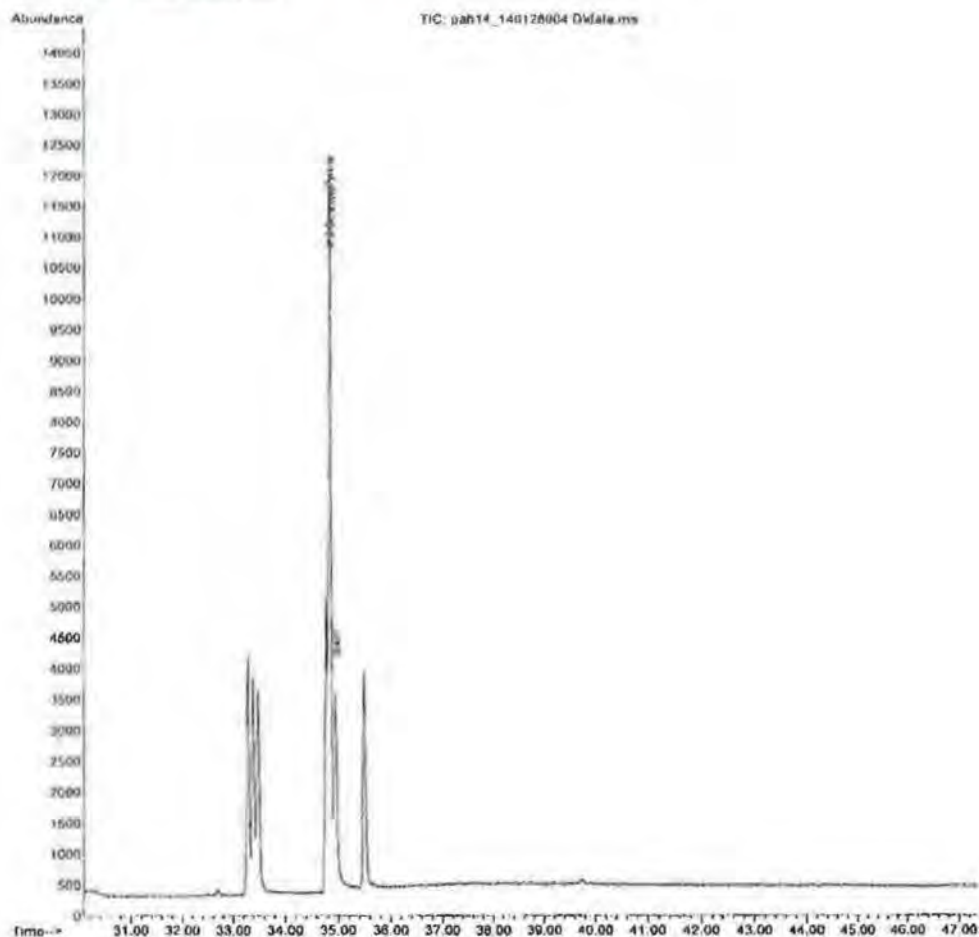
Study Report – Appendix G Calibration Curve Data Summary

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Path: \\fe2\repository\repository\3287935\
Created: 3/7/14 09:55 Audit ID: 3287935

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal_Stds\PAH14_140128_std\
Data File : pah14_140128004.D
Acq On : 28 Jan 2014 23:05
Operator : Analyst
Sample : STD 4 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 29 15:13:33 2014
Quant Method : C:\msdchem1\methods\PAH\PAH14_140128Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 : BJAS, 140128
Quant Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



PAH14_140128Q.M195GLP.M Fri Mar 07 09:49:50 2014

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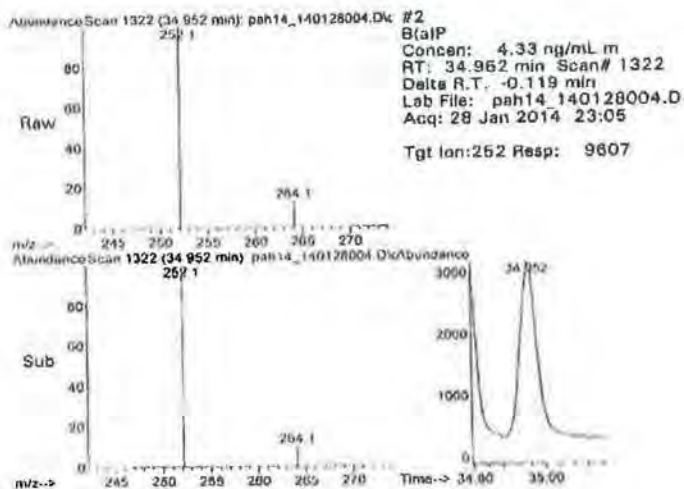
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Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195-GLP_PAH_GCMS#14_Calib_Std_Chromatograms_STD4_Correction.pdf_3267935
Electronically Signed By: Bartosz Jasiak
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Created: 3/7/14 09:55 Audit ID: 3267935





Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: Wfs2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128 std\
Data File : pah14_140128005.D
Acq On : 28 Jan 2014 23:58
Operator : Analyst
Sample : STD 5 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jan 29 15:13:48 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	Q Ion	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	33144m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.952	262	16108m	8.85	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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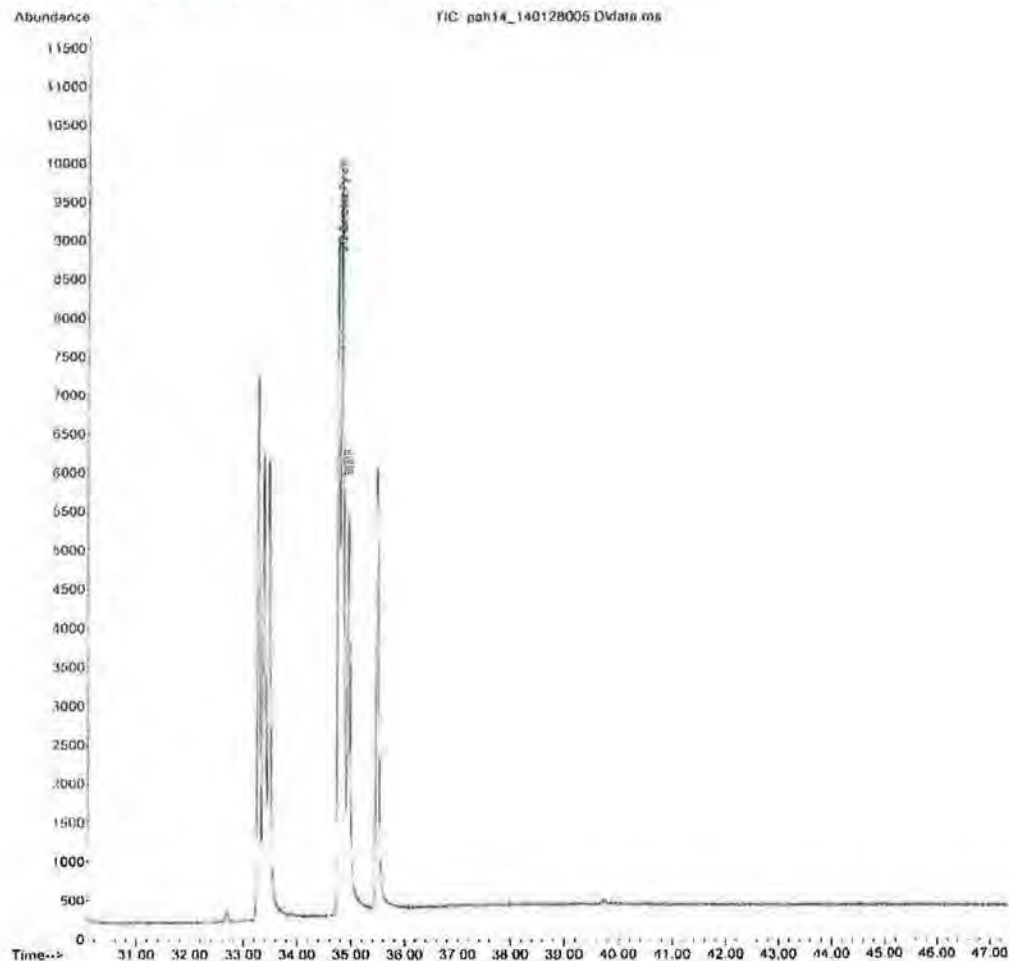
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasniak
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

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Data File : pah14_140128005.D
Acq On : 28 Jan 2014 23:58
Operator : Analyst
Sample : STD 5 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jan 29 15:13:48 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



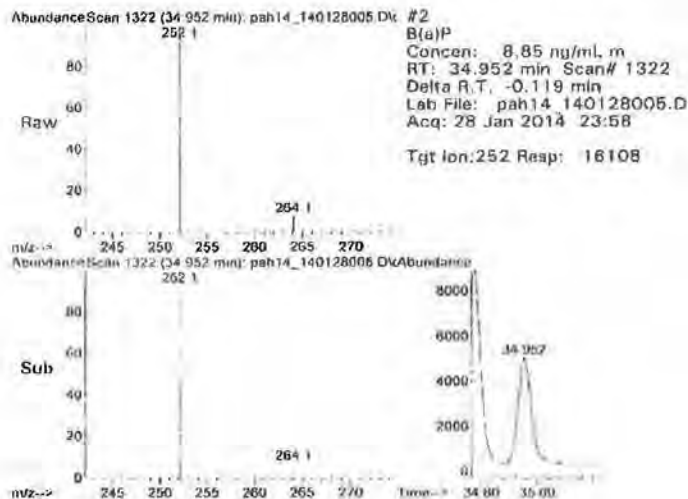


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jaslak
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Created: 1/30/14 08:29 Audit ID: 3049053





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Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
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Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

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Data File : pah14_140128006.D
Acq On : 29 Jun 2014 00:50
Operator : Analyst
Sample : STD B 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 29 15:14:02 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.846	254	36874m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.952	252	97454m	48.14	ng/ml	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



Study Identifier: M195-GLP

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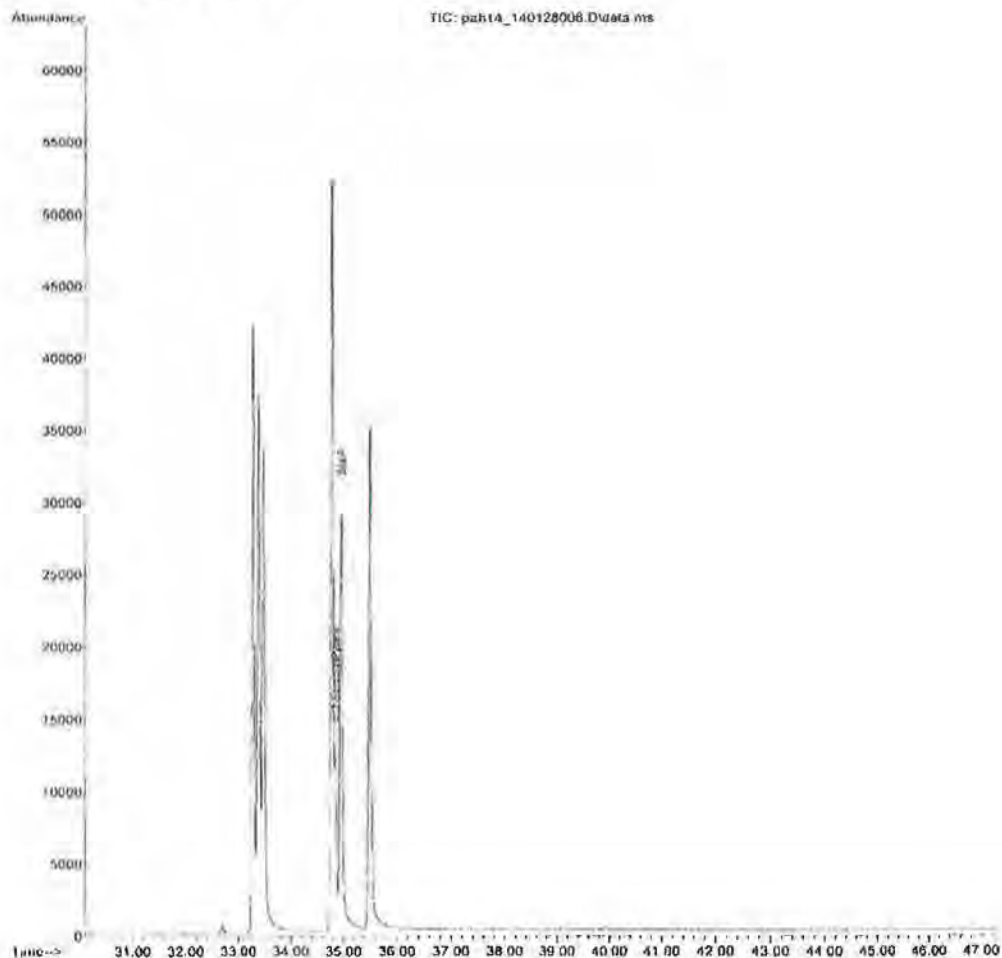
Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
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Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\\PAH\\Cal Stds\\PAH14_140128_std\\
Data File : pah14_140128006.D
Acq On : 29 Jan 2014 00:50
Operator : Analyst
Sample : STD 6 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 29 15:14:02 2014
Quant Method : C:\\msdchem\\1\\methods\\PAH\\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QList Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Thu Jan 30 09:12:49 2014

Page: 2

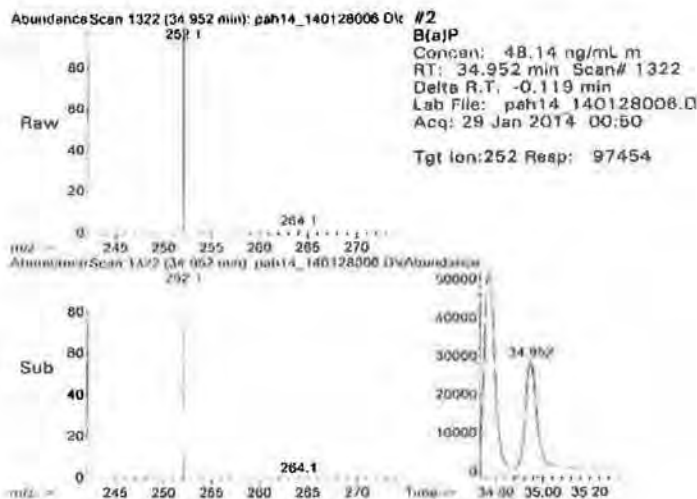


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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Created: 1/30/14 09:29 Audit ID: 3049053





Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128007.D
Acq On : 29 Jan 2014 1:43
Operator : Analyst
Sample : STD 7 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jan 29 15:14:19 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	39307m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.952	252	211107m	97.82	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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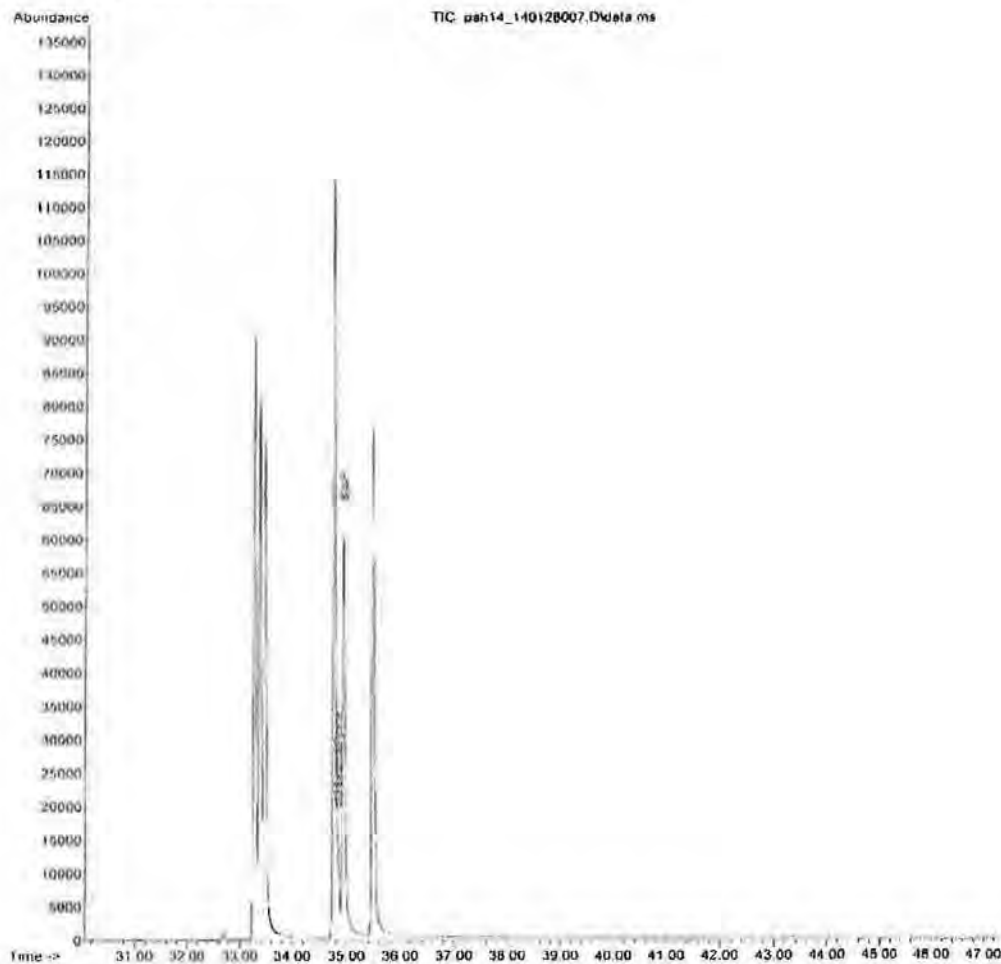
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
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Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128 std\
Data File : pah14_140128007.D
Acq On : 29 Jan 2014 1:43
Operator : Analyst
Sample : STD 7 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jan 29 15:14:19 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



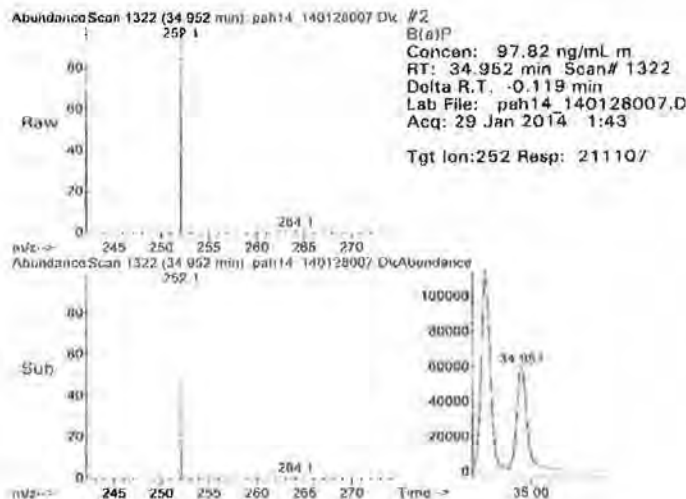


Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiek
Path: Ws2repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053



Carbonyls

Calibration Curve Data Summary_corrected.pdf_3053253
Electronically Signed By: Afsana Khanom
Path: \\fa2repository\repository\3053253\
Created: 1/30/14 14:03 Audit ID: 3053253

[illegible]



AM

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

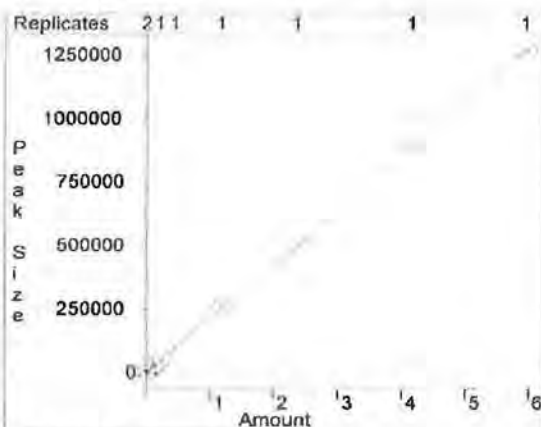
Calibration Curve-HPLC5.pdf_3031887
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3031887\\
Created: 1/27/14 16:45 Audit ID: 3031887

Print Date: 27 Jan 2014 15:45:20
Calibration Curves Report
File: c:\...\\calibration curve\\hplc 5\\140124\\mss\\calib_ms_140124_5a.mth
Detector: 9050 UV-Vis Detector, Address: 1, Channel ID: 1

Form-DNPH
External Standard Analysis
Resp. Fact. RSD: 3.252%
Curve Type: Linear
Origin: Force
Coeff. Det.(r^2): 0.999983
 $y = +2.1240e+005x$

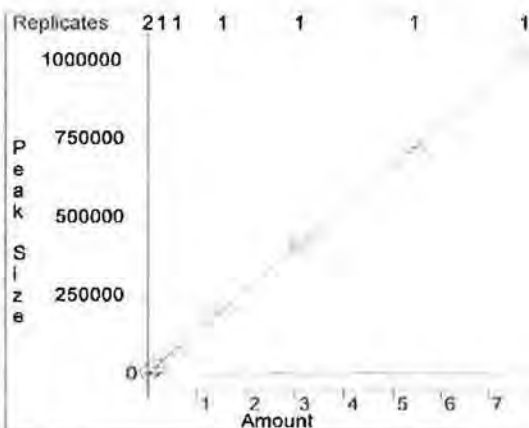
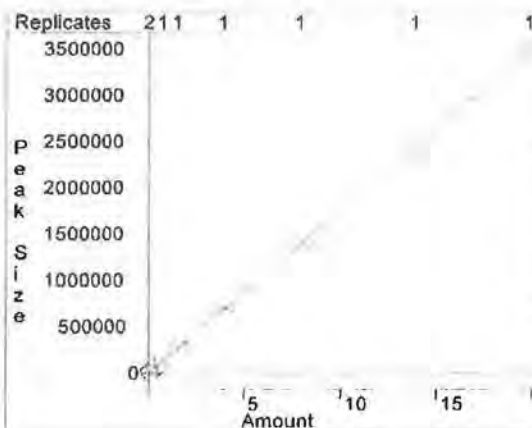
Z-Acet-DNPH
Unknown Calculation Type - Locked

$$y = +1.7582e+005x + 0.0000e+000 \text{ (Edited)}$$



E-Acet-DNPH
External Standard Analysis
Resp. Fact. RSD: 0.6923%
Curve Type: Linear
Origin: Force
Coeff. Det.(r^2): 0.999971
 $y = +1.7582e+005x$

Crot-DNPH
External Standard Analysis
Resp. Fact. RSD: 2.615%
Curve Type: Linear
Origin: Force
Coeff. Det.(r^2): 0.999993
 $y = +1.3238e+005x$





Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

Calib_graphs_STD 1 140122.pdf_3031659
Electronically Signed By: Afsana Khanom
Path: \\fs2repository\repository\3031659\
Created: 1/27/14 15:27 Audit ID: 3031659

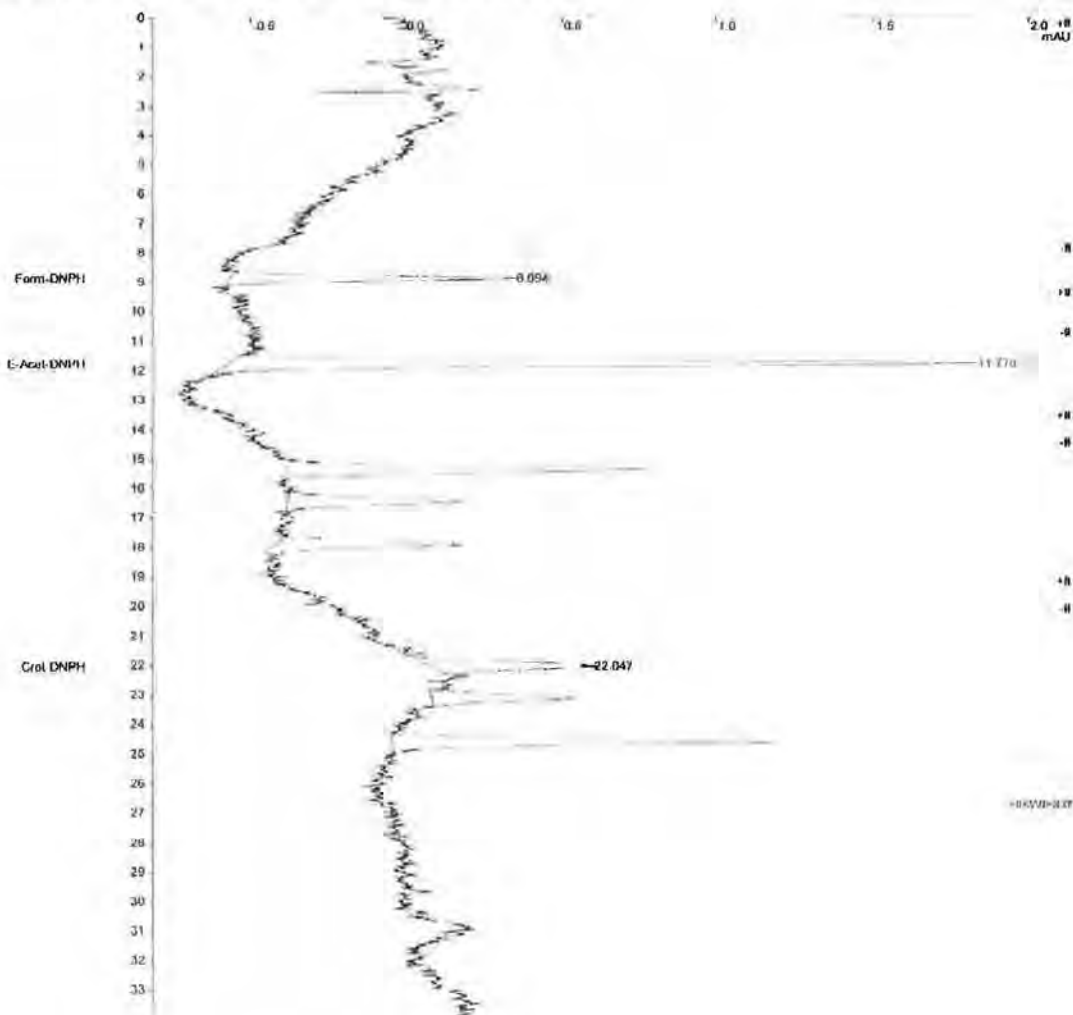
Title :
Run File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms car 27-01-2014 10:10:44 am std 1 140122 5.run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms 140124 5a.mth
Sample ID : STD 1 140122

Injection Date: 27/01/2014 10:10 AM Calculation Date: 27/01/2014 2:16 PM

Operator : ANALYST Detector Type: 9050
Workstation: 05 Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.985 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-RA8-2180 **

Chart Speed = 0.61 cm/min Attenuation = 1 Zero Offset = 274
Start Time = 0.000 min End Time = 33.985 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calib_graphs_STD 2 140122.pdf 3031600
Electronically Signed By: Afsana Khanom
Path: \\fs2\repository\repository\3031600\
Created: 1/27/14 15:25 Audit ID: 3031600

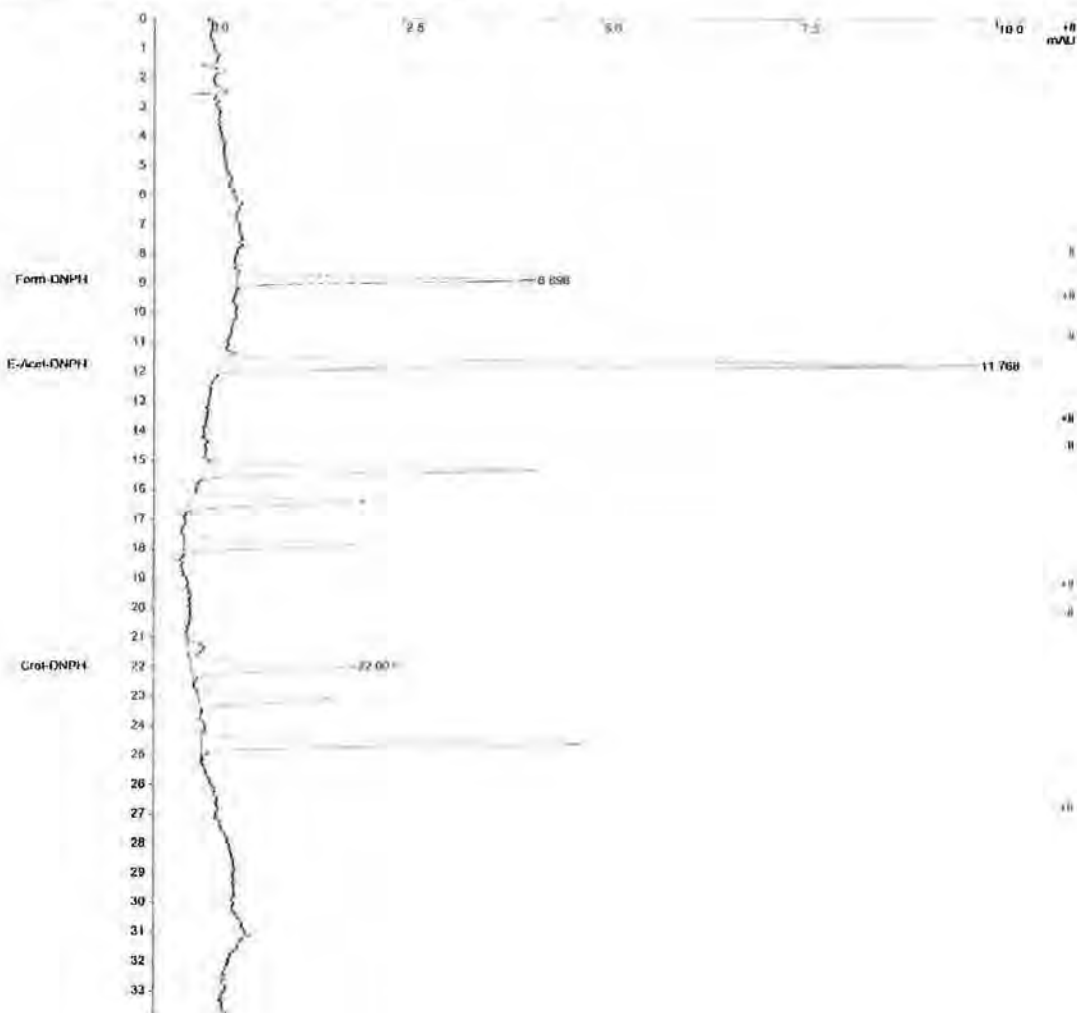
Title :
Run File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms_car 27-01-2014 9:25:40 am_std 2 140122_5.run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms 140124_5a.mth
Sample ID : STD 2 140122

Injection Date: 27/01/2014 9:25 AM Calculation Date: 27/01/2014 2:16 PM

Operator : ANALYST Detector type: 9050
Norkotation: OS Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.980 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EA8-2180 **

Chart Speed = 0.61 cm/min Attenuation = 12 Zero Offset = 51
Start Time = 0.000 min End Time = 33.980 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Report - callb_ms_aar_27-01-2014_8;26:40 am_sld 2 140122_5.pdf_3Aria
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3031623\\
Created: 1/27/14 15:26 Audit ID: 3031623

一、總論
 二、支那の歴史
 三、支那の地理
 四、支那の政治
 五、支那の經濟
 六、支那の社會
 七、支那の文化
 八、支那の宗教
 九、支那の藝術
 十、支那の科學
 十一、支那の文學
 十二、支那の音樂
 十三、支那の戲曲
 十四、支那の美術
 十五、支那の建築
 十六、支那の園林
 十七、支那の服飾
 十八、支那の食料
 十九、支那の醫藥
 二十、支那の法律
 二十一、支那の教育
 二十二、支那の交通
 二十三、支那の貿易
 二十四、支那の産業
 二十五、支那の農業
 二十六、支那の工業
 二十七、支那の商業
 二十八、支那の金融
 二十九、支那の銀行
 三十、支那の保險
 三十一、支那の運輸
 三十二、支那の通信
 三十三、支那の郵便
 三十四、支那の電話
 三十五、支那の電報
 三十六、支那の無線電
 三十七、支那の航空
 三十八、支那の航海
 三十九、支那の船舶
 四十、支那の汽船
 四十一、支那の火車
 四十二、支那の汽車
 四十三、支那の馬車
 四十四、支那の人力車
 四十五、支那の自転車
 四十六、支那の自動車
 四十七、支那の飛行機
 四十八、支那の宇宙船
 四十九、支那の原子力
 五十、支那の電子
 五十一、支那のコンピューター
 五十二、支那のインターネット
 五十三、支那の携帯電話
 五十四、支那のデジタルカメラ
 五十五、支那のデジタルテレビ
 五十六、支那のデジタルオーディオ
 五十七、支那のデジタルビデオ
 五十八、支那のデジタルゲーム
 五十九、支那のデジタル音楽
 六十、支那のデジタル映画
 六十一、支那のデジタル新聞
 六十二、支那のデジタル雑誌
 六十三、支那のデジタル書籍
 六十四、支那のデジタルデータベース
 六十五、支那のデジタルライブラリ
 六十六、支那のデジタル博物館
 六十七、支那のデジタル美術館
 六十八、支那のデジタル公園
 六十九、支那のデジタル動物園
 七十、支那のデジタル水族館
 七十一、支那のデジタル科学館
 七十二、支那のデジタル天文台
 七十三、支那のデジタル観測所
 七十四、支那のデジタル実験室
 七十五、支那のデジタル研究所
 七十六、支那のデジタル開発センター
 七十七、支那のデジタル設計局
 七十八、支那のデジタル製造工場
 七十九、支那のデジタル販売店
 八十、支那のデジタルサービスセンター
 八十一、支那のデジタルサポートデスク
 八十二、支那のデジタルヘルプデスク
 八十三、支那のデジタルトレーニングセンター
 八十四、支那のデジタルセミナー
 八十五、支那のデジタルカンファレンス
 八十六、支那のデジタルウェビナー
 八十七、支那のデジタルポッドキャスト
 八十八、支那のデジタルブログ
 八十九、支那のデジタルニュース
 九十、支那のデジタル天気予報
 九十一、支那のデジタル交通情報
 九十二、支那のデジタル株価
 九十三、支那のデジタル為替レート
 九十四、支那のデジタル金利
 九十五、支那のデジタルインフレーション
 九十六、支那のデジタル失業率
 九十七、支那のデジタルGDP
 九十八、支那のデジタル人口統計
 九十九、支那のデジタル出生率
 一百、支那のデジタル死亡率



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Study Report – Appendix G
Calibration Curve Data Summary

Callb_graphs_STD 3 140122.pdf_3031573
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3031573\\
Created: 1/27/14 15:23 Audit ID: 3031573

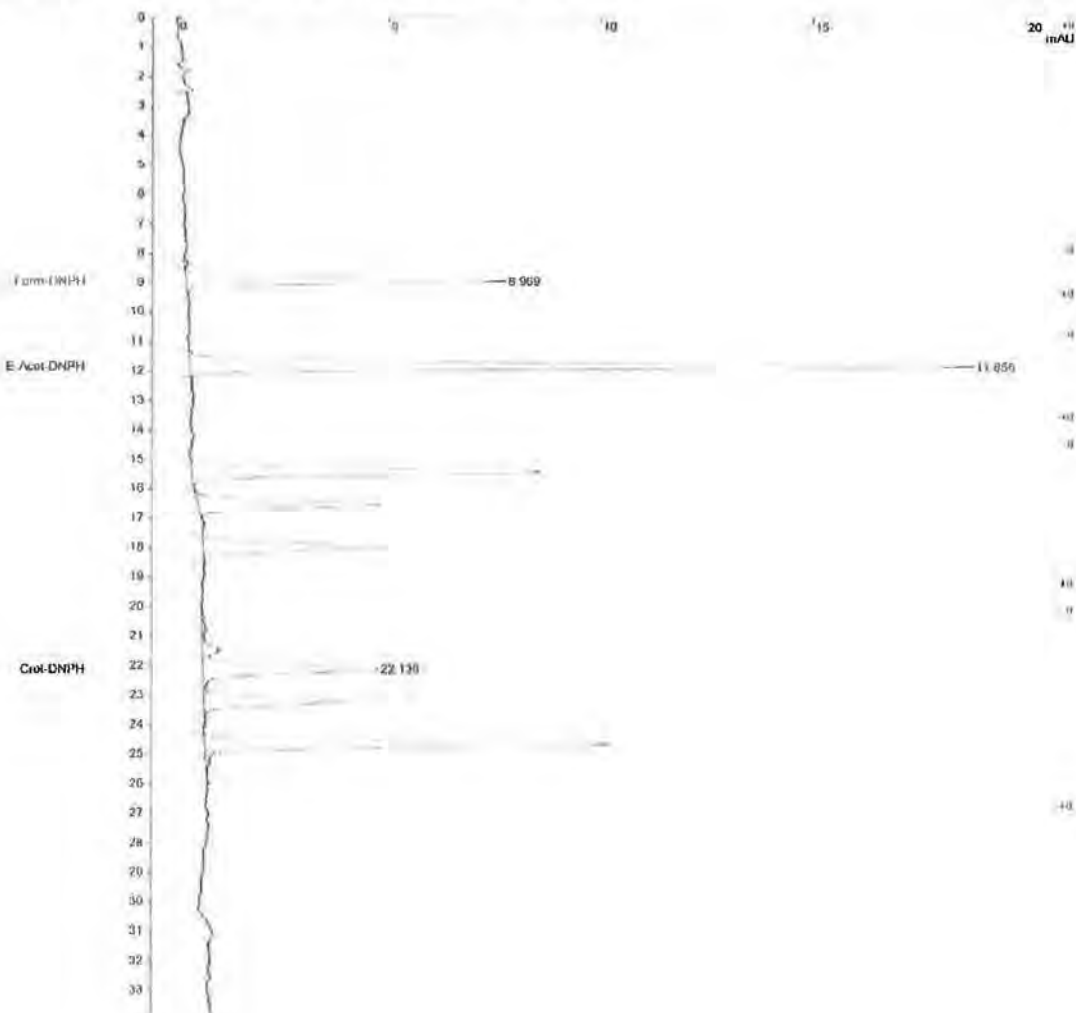
Title
Run File : c:\star\carbonyls\calibration curve\hpic 5\140124\mss\calib.ms car 24-01-2014 9:16:13 pm_std 3 140122_5.run
Method File : c:\star\carbonyls\calibration curve\hpic 5\140124\mss\calib.ms_140124_5a.mth
Sample ID : STD 3 140122

Injection Date: 24/01/2014 9:16 PM Calculation Date: 27/01/2014 2:16 PM

Operator : ANALYST Detector Type: 9050
Workstation: 05 Bus Address : 1
Instrument : Varian Star HS Sample Rate : 10.00 Hz
Channel : 1 = 165 nm Run Time : 33.980 min

** LC Workstation Multi Instrument Version 5.41 ** 00152-3189 EA8 2180 **

Chart Speed = 0.61 cm/min Attenuation = 2X Zero Offset = 24
Start Time = 0.000 min End Time = 33.980 min Min / Tick = 1.00



Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Report - calib_ms_car_24-01-2014_9:18:43 pm_sld 3 140122_5.pdf_3Aria1
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3031496\\
Created: 1/27/14 15:19 Audit ID: 3031496

[illegible]



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calib_graphs_STD 4 140122.pdf_3031418
Electronically Signed By: Afsana Khanom
Path: Ws2repository\repository\3031418\
Created: 1/27/14 15:12 Audit ID: 3031418

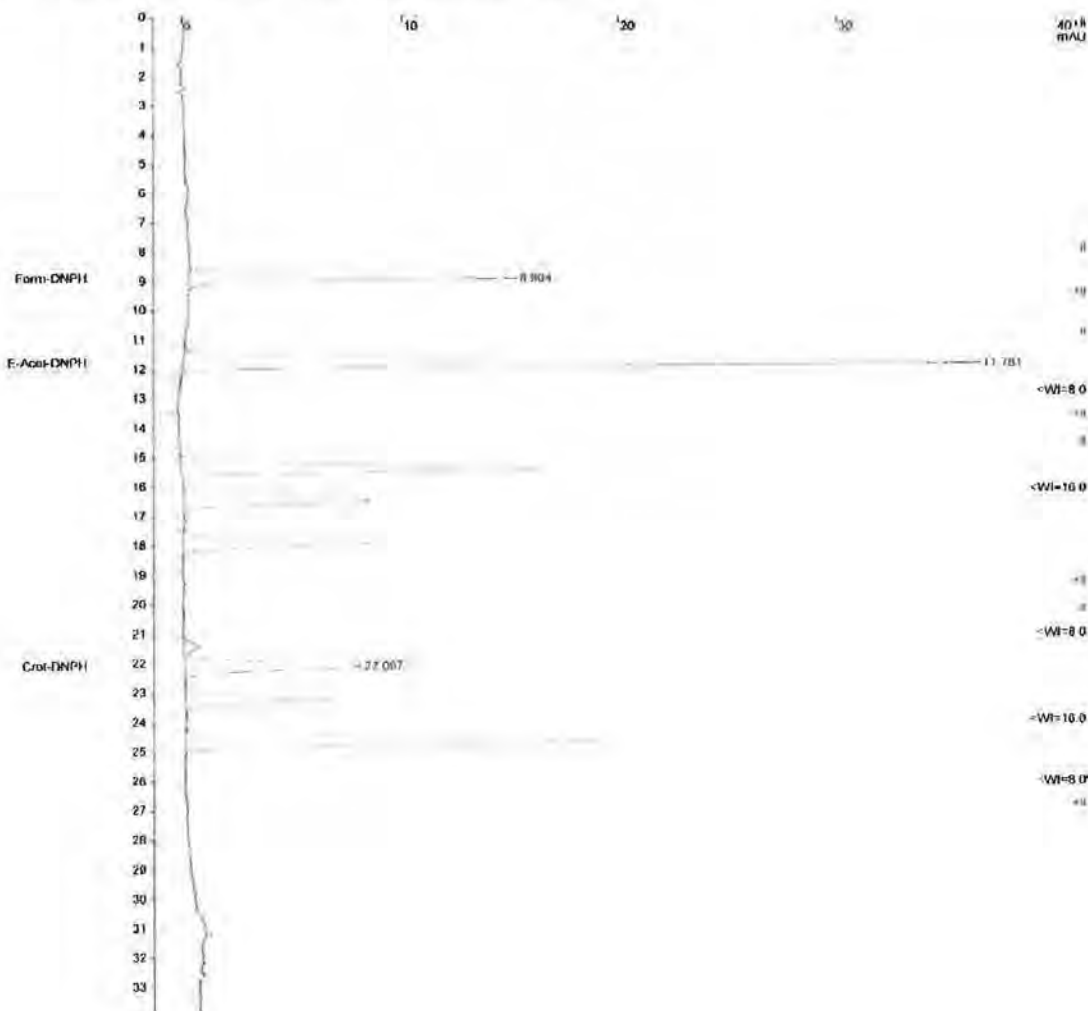
Title :
Run File : c:\star\carbonyls\calibration curve\hplc 5\140124\ms\calib_ms_car 24-01-2014 8:31:40 pa_std 4 140122_5.run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\ms\calib_ms 140121_5a.mth
Sample ID : STD 4 140122

Injection Date: 24/01/2014 8:31 PM Calculation Date: 27/01/2014 2:16 PM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address : 1
Instrument : Varian Star 45 Sample Rate : 10.00 Hz
Channel : 1 = 365 nm Run Time : 33.985 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-1188-EAS-2180 **

Chart Speed = 0.61 cm/min Attenuation = 43 Zero Offset = 31
Start Time = 0.000 min End Time = 33.985 min Min / Tick = 1.00





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Study Report – Appendix G

Calibration Curve Data Summary

Report - catib_ms_car_24-01-2014_8:31:40 pm_sid 4 140122_5.pdf_3Aria
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3031403\\
Created: 1/27/14 15:11 Audit ID: 3031403

一、總論
 二、支那の歴史
 三、支那の地理
 四、支那の政治
 五、支那の經濟
 六、支那の社會
 七、支那の文化
 八、支那の宗教
 九、支那の藝術
 十、支那の科學
 十一、支那の文學
 十二、支那の音樂
 十三、支那の戲曲
 十四、支那の美術
 十五、支那の建築
 十六、支那の園林
 十七、支那の服飾
 十八、支那の食料
 十九、支那の醫藥
 二十、支那の交通
 二十一、支那の對外關係
 二十二、支那の未來



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Study Report – Appendix G Calibration Curve Data Summary

Calib_graphs_STD 5 140122.pdf_3031377
Electronically Signed By: Afsana Khanom
Path: \\fs2\\repository\\repository\\3031377\\
Created: 1/27/14 15:08 Audit ID: 3031377

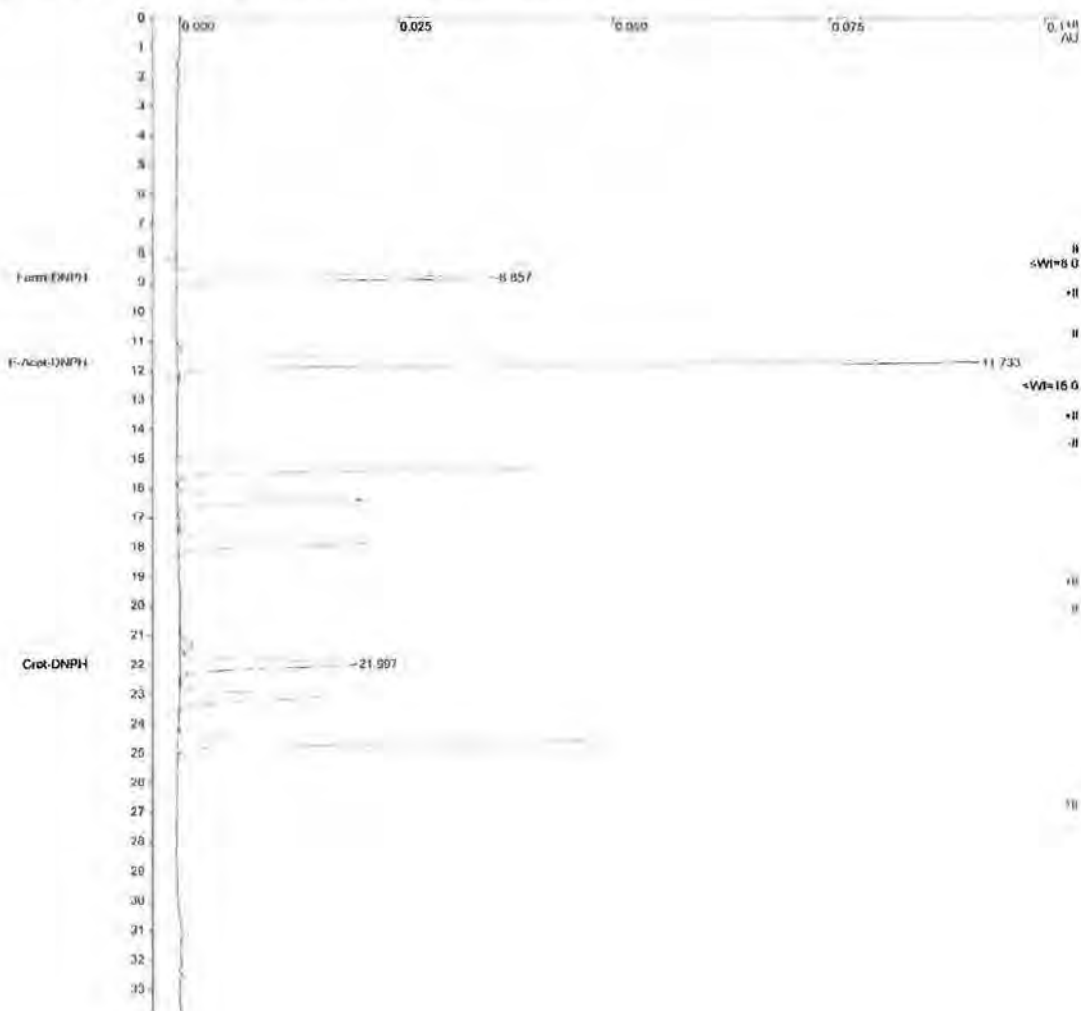
Title
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Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms_140124_5a.mth
Sample ID : STD 5 140122

Injection Date: 24/01/2014 7:46 PM Calculation Date: 27/01/2014 2:16 PM

Operator : ANALYST Detector Type: 9050
Workstation: QS Bus Address: 1
Instrument : Varian Star #5 Sample Rate: 10.00 Hz
Channel : 1 = 365 nm Run Time: 33.988 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-PAR-2180 **

Chart Speed = 0.61 cm/min Attenuation = 110 Zero Offset = 21
Start Time = 0.000 min End Time = 33.988 min Min / Tick = 1.00



APM

Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Report - calib_m...
Electronically Signed By: Afsana Khanom
Path: lfs2\repository\repository\3031350
Created: 1/27/14 16:05 Audit ID: 3031350

[illegible]



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calib_graphs_STO 6 140122.pdf_3031328
Electronically Signed By: Afsana Khanom
Path: Ws2repositoryrepository\3031328\
Created: 1/27/14 16:02 Audit ID: 3031328

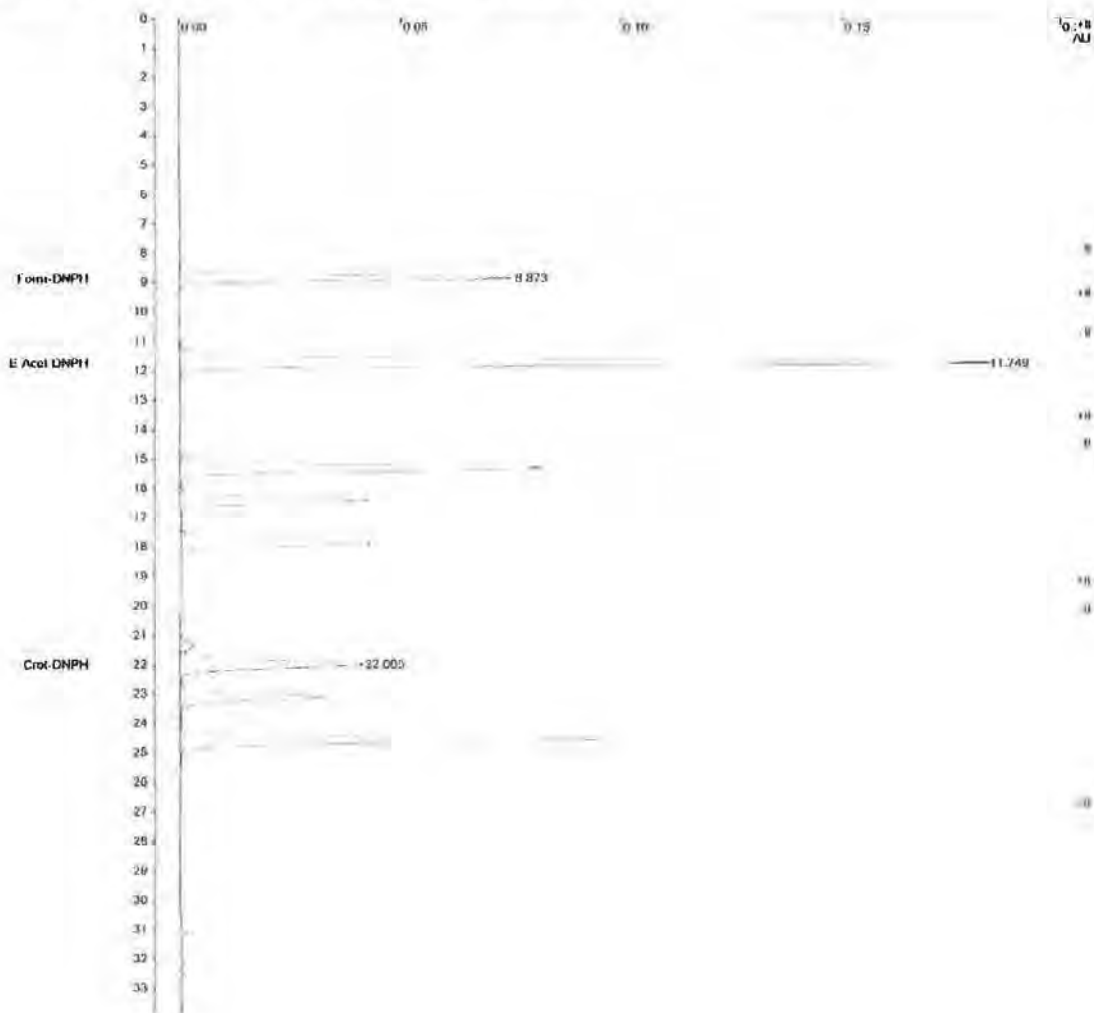
Title
Run File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib_ms_car_24-01-2014_7:01:37 pm_std 6 140122_5 run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib_ms 140124_5a.mn
Sample ID : STO 6 140122

Injection Date: 24/01/2014 7:01 PM Calculation Date: 27/01/2014 2:16 PM

Operator : ARA/ST
Workstation: OS
Instrument : Varian Star 45
Channel : 1 = 165 nm
Detector Type: 9050
Bus Address : 1
Sample Rate : 10.00 Hz
Run Time : 33.983 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EAS-2180 **

Chart Speed = 0.61 cm/min Attenuation = 218 Zero Offset = 21
Start Time = 0.000 min End Time = 33.983 min Min / Tick = 1.00



Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Report - callb_ins_car_24-01-2014_7:01:37 pm_sld 6 140122_6.pdf_3Ariol
Electronically Signed By: Aisara Khanom
Path: Wfs2Repository\Repository\30313361
Created: 1/27/14 15:02 Audit ID: 3031336

一、總論
 二、支那の歴史
 三、支那の地理
 四、支那の政治
 五、支那の經濟
 六、支那の社會
 七、支那の文化
 八、支那の宗教
 九、支那の藝術
 十、支那の科學
 十一、支那の文學
 十二、支那の音樂
 十三、支那の戲曲
 十四、支那の美術
 十五、支那の建築
 十六、支那の園林
 十七、支那の服飾
 十八、支那の食料
 十九、支那の醫藥
 二十、支那の法律
 二十一、支那の教育
 二十二、支那の交通
 二十三、支那の貿易
 二十四、支那の産業
 二十五、支那の農業
 二十六、支那の工業
 二十七、支那の商業
 二十八、支那の金融
 二十九、支那の銀行
 三十、支那の保險
 三十一、支那の運輸
 三十二、支那の通信
 三十三、支那の郵便
 三十四、支那の電話
 三十五、支那の電報
 三十六、支那の無線電
 三十七、支那の航空
 三十八、支那の航海
 三十九、支那の船舶
 四十、支那の汽船
 四十一、支那の火車
 四十二、支那の汽車
 四十三、支那の馬車
 四十四、支那の人力車
 四十五、支那の自転車
 四十六、支那の自動車
 四十七、支那の飛行機
 四十八、支那の宇宙船
 四十九、支那の原子力
 五十、支那の電子學
 五十一、支那の機械學
 五十二、支那の化學
 五十三、支那の物理學
 五十四、支那の生物學
 五十五、支那の地質學
 五十六、支那の天文學
 五十七、支那の氣象學
 五十八、支那の海洋學
 五十九、支那の動物學
 六十、支那の植物學
 六十一、支那の農學
 六十二、支那の林學
 六十三、支那の漁業
 六十四、支那の畜産
 六十五、支那の養蠶
 六十六、支那の製茶
 六十七、支那の製紙
 六十八、支那の製糖
 六十九、支那の製鹽
 七十、支那の製油
 七十一、支那の製酒
 七十二、支那の製藥
 七十三、支那の製糖
 七十四、支那の製鹽
 七十五、支那の製油
 七十六、支那の製酒
 七十七、支那の製藥
 七十八、支那の製糖
 七十九、支那の製鹽
 八十、支那の製油
 八十一、支那の製酒
 八十二、支那の製藥
 八十三、支那の製糖
 八十四、支那の製鹽
 八十五、支那の製油
 八十六、支那の製酒
 八十七、支那の製藥
 八十八、支那の製糖
 八十九、支那の製鹽
 九十、支那の製油
 九十一、支那の製酒
 九十二、支那の製藥
 九十三、支那の製糖
 九十四、支那の製鹽
 九十五、支那の製油
 九十六、支那の製酒
 九十七、支那の製藥
 九十八、支那の製糖
 九十九、支那の製鹽
 一百、支那の製油



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calib_graphs_STD 7 140122.pdf_3031276
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Path: Ws2\repository\repository\3031276\
Created: 1/27/14 14:58 Audit ID: 3031276

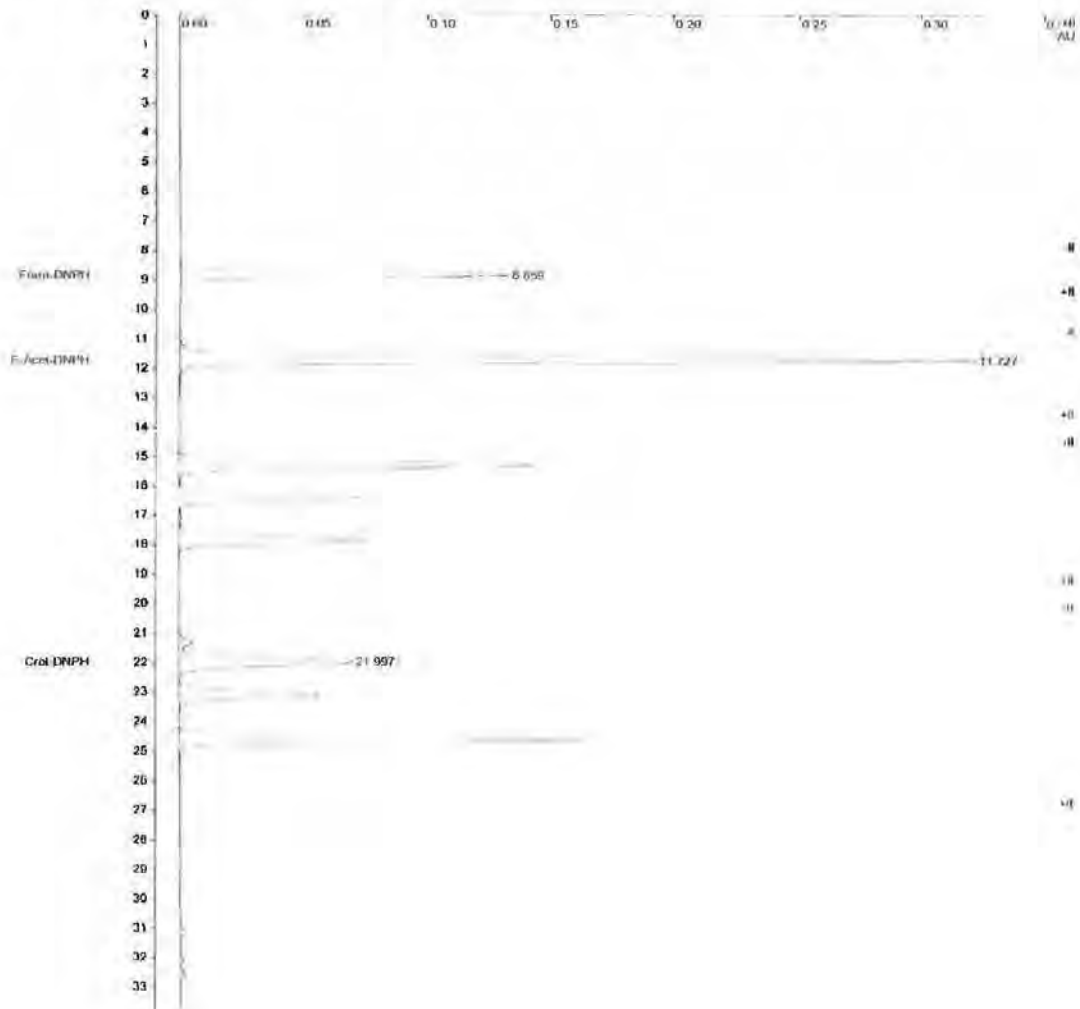
Title :
Run File : c:\star\carbonyls\calibration curve\hplc 5\140124\ess\calib ms car_24-01-2014_6:16:39 pm_std 7 140122_5 run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\ess\calib ms 140124_5a.mth
Sample ID : STD 7 140122

Injection Date: 24/01/2014 6:16 PM Calculation Date: 27/01/2014 2:16 PM

Operator : ANALYST Detector Type: 9050
Workstation: OS Bus Address: 1
Instrument : Varian Star #5 Sample Rate: 10.00 Hz
Channel : 1 = 365 nm Run Time: 33.987 min

** LC Workstation Multi Instrument Version 6.41 ** 00152-3188-EA0-2180 **

Chart Speed = 0.61 cm/min Attenuation = 381 Zero Offset = 23
Start Time = 0.000 min End Time = 33.987 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Report - calib_ms_car_24-01-2014_6:10:39 pm_std 7 140122_5.pdf_3Aria
Electronically Signed By: Aisana Khanom
Path: Wfs2\repository\repository\3031296\
Created: 1/27/14 14:59 Audit Id: 3031208

一、本會の宗旨は、日本及び海外の同族を聯絡し、其の福利を謀るに在り。其の爲め、同族の子弟を教育し、其の生活に補助し、其の事業に協力し、其の健康を維持し、其の幸福を期す。

二、本會の組織は、本部、支部、分支部、及び同族會館に在り。本部は、東京にあり、支部は、各地方にあり、分支部は、各地方の同族にあり、同族會館は、各地方の同族にあり。

三、本會の活動は、教育、生活、事業、健康、幸福に在り。教育は、子弟の教育にあり、生活は、同族の生活にあり、事業は、同族の事業にあり、健康は、同族の健康にあり、幸福は、同族の幸福にあり。

四、本會の活動は、日本及び海外の同族にあり。日本及び海外の同族は、本會の活動に参加し、其の福利を享受す。

五、本會の活動は、同族の福利を謀るに在り。同族の福利は、本會の活動の結果にあり。

六、本會の活動は、同族の幸福を期す。同族の幸福は、本會の活動の結果にあり。

七、本會の活動は、同族の健康を維持し、其の幸福を期す。同族の健康は、本會の活動の結果にあり。

八、本會の活動は、同族の事業に協力し、其の幸福を期す。同族の事業は、本會の活動の結果にあり。

九、本會の活動は、同族の生活に補助し、其の幸福を期す。同族の生活は、本會の活動の結果にあり。

十、本會の活動は、同族の子弟を教育し、其の幸福を期す。同族の子弟は、本會の活動の結果にあり。

以上、本會の宗旨、組織、活動、及び同族の福利、生活、事業、健康、幸福に在り。



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calib_graphs_STD 8 140122.pdf_3031180
Electronically Signed By: Afsana Khanom
Path: Ws2repository\repository\3031180\
Created: 1/27/14 14:53 Audit ID: 3031180

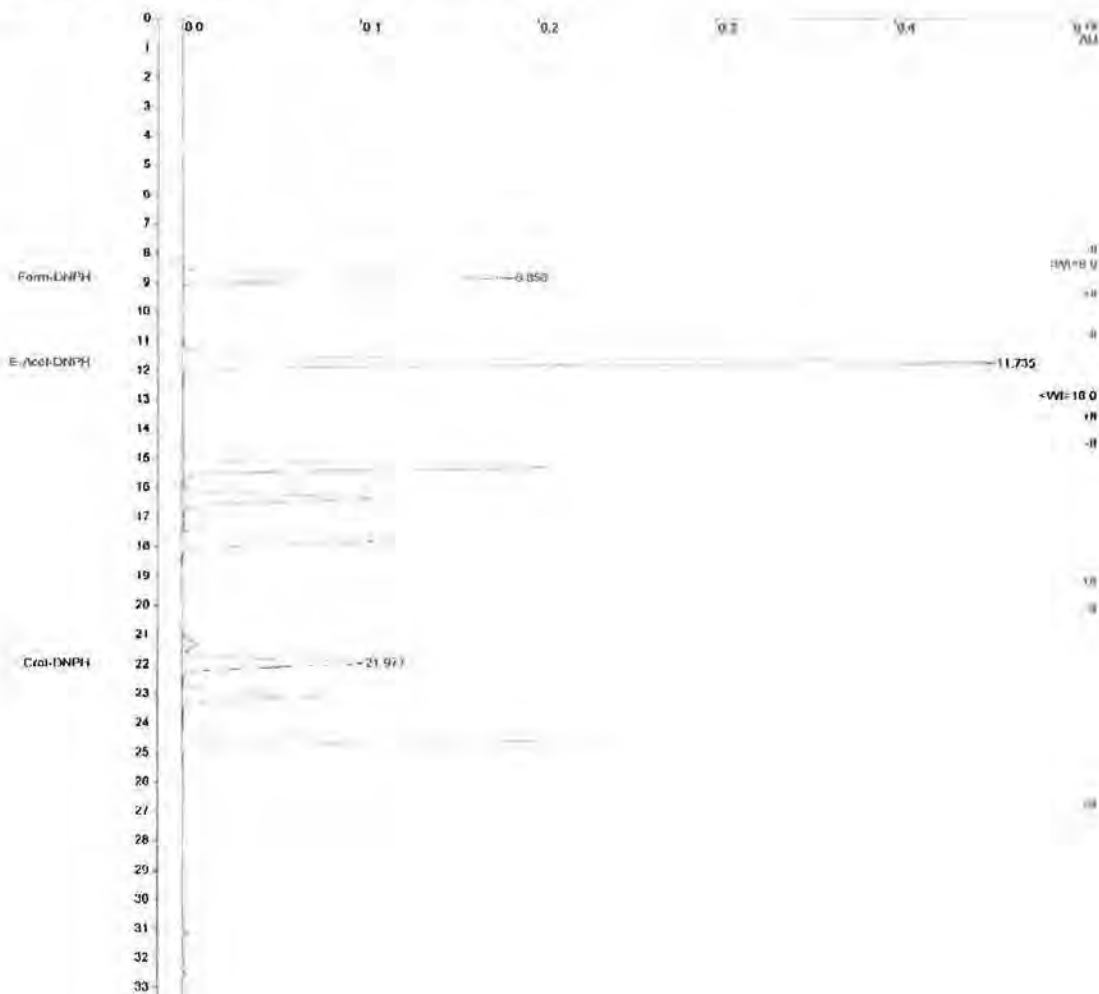
Title
Run File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms_rsr 24-01-2014 5:31:42 pm_std 8 140122_5.run
Method File : c:\star\carbonyls\calibration curve\hplc 5\140124\mss\calib.ms_140124_5a.mth
Sample ID : STD 8 140122

Injection Date: 24/01/2014 5:31 PM Calculation Date: 27/01/2014 2:16 PM

Operator : ANALYST Detector Type: 9050
Workstation: 05 Bus Address : 1
Instrument : Varian Star #5 Sample Rate : 10.00 Hz
Channel : 1 : 365 nm Run Time : 33.988 min

** IC Workstation Multi Instrument Version 6.41 ** 00152-3188-8A8-2180 **

Chart Speed = 0.61 cm/min Attenuation = 542 Zero Offset = 2t
Start Time = 0.000 min End Time = 33.988 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Report - callb_ms_car_24-01-2014_5:31:42 pm_sld 8 140122_5.pdf_3Aria
Electronically Signed By: Aisana Khanom
Path: \\fs2\\repository\\repository\\3031151
Created: 1/27/14 14:52 Audit ID: 3031151

[The page contains extremely faint, illegible vertical text columns.]

Tobacco Specific Nitrosamines



Study Identifier: M195-GLP

Page 1 of 15

Study Report – Appendix G Calibration Curve Data Summary

Calibration Curve Data Summary.pdf 3292394
Electronically Signed By: Bor Cha
Path: W:\Repository\Reports\3292394
Created: 3/12/14 10:11 Audit ID: 3292394

Calibration Curve Data Summary for Compound: Dabigatran									
Sample	Injection Time	Injection Date	Retention Time	Concentration	Concentration Unit	Concentration Unit	Concentration Unit	Concentration Unit	Concentration Unit
1	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
2	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00
	17.04	3/12/14	17.04	1.00	1.00	1.00	1.00	1.00	1.00

05/07/15/14

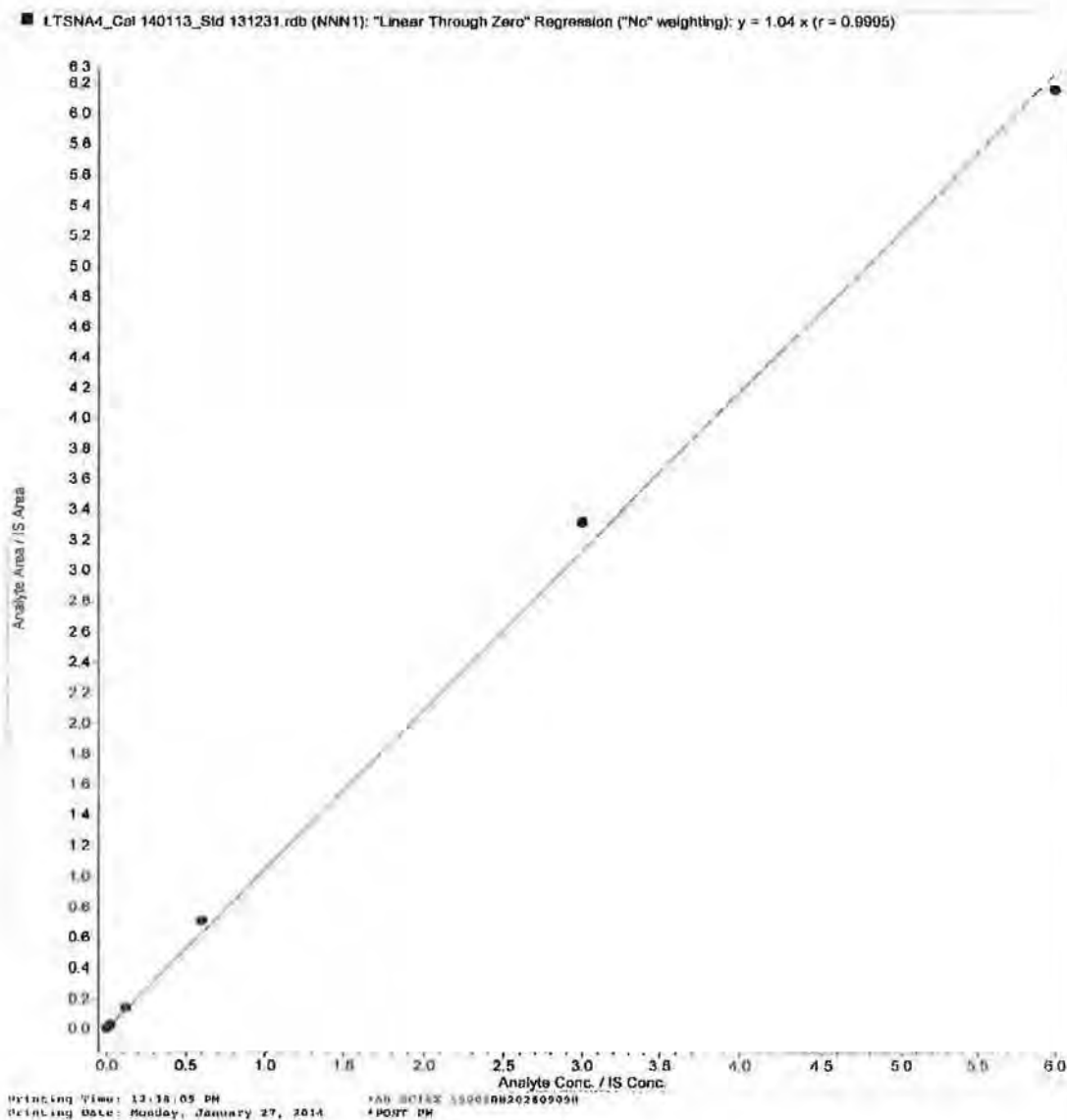
05/07/15/14

Study Identifier: M195-GLP

Study Report – Appendix G

Calibration Curve Data Summary

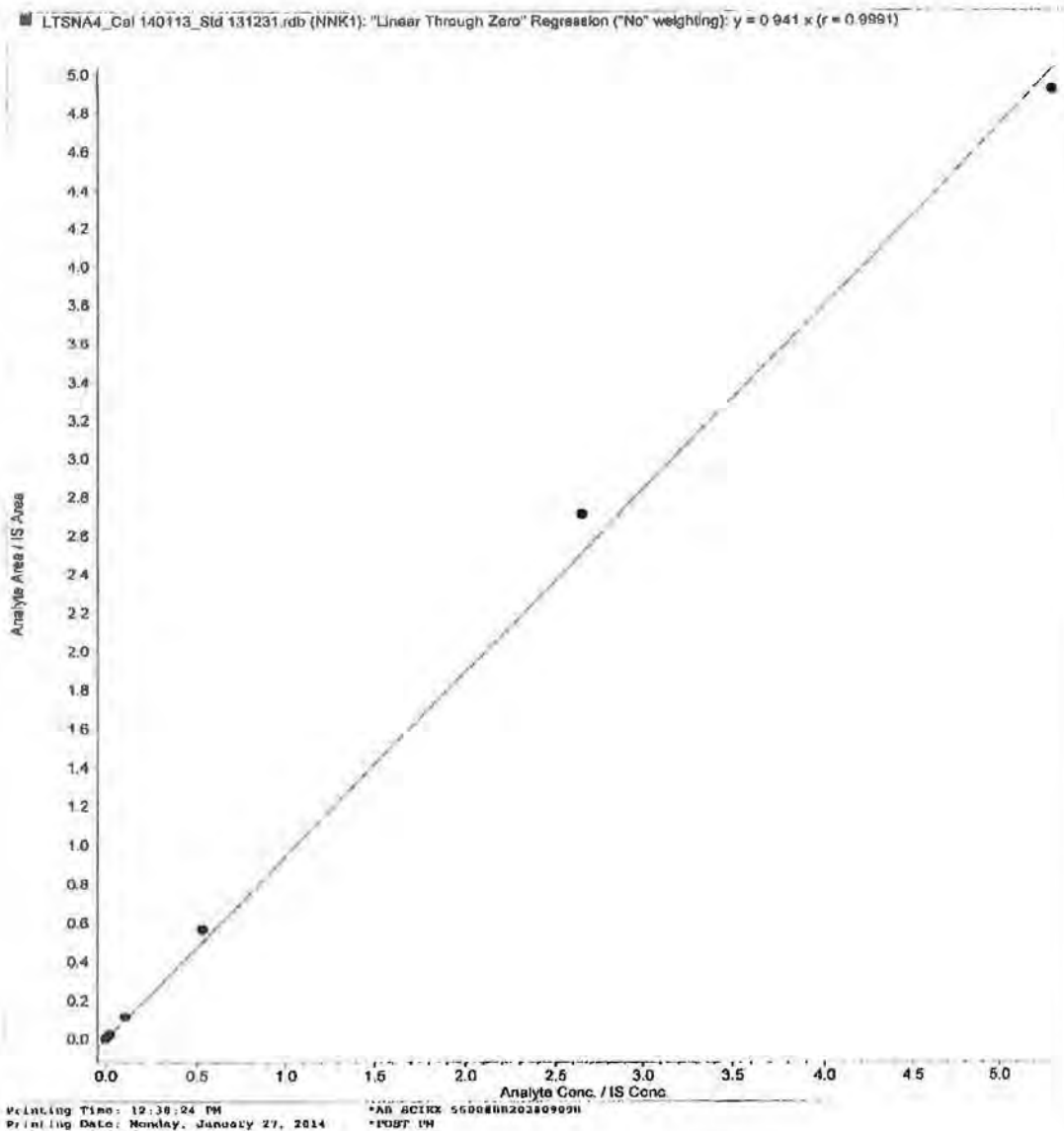
LTSNA4_Calibration curves.pdf_3060658
Electronically Signed By: Bør Cha
Path: \\fs2\repository\repository\3060658\
Created: 1/31/14 13:04 Audit ID: 3060658



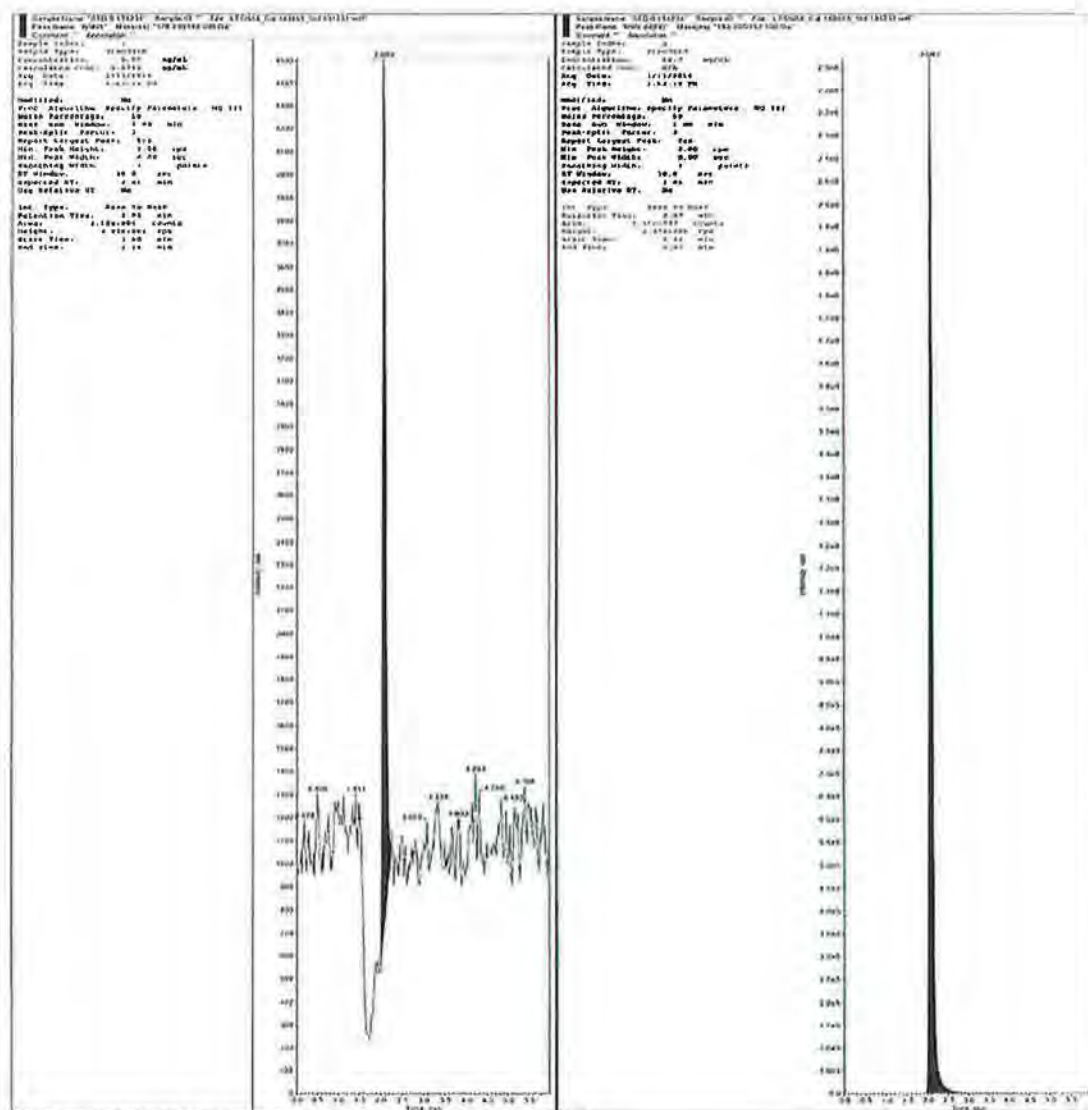
Study Identifier: M195-GLP

Study Report – Appendix G
Calibration Curve Data Summary

LTSNA4_Calibration curves.pdf_3060668
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Created: 1/31/14 13:04 Audit ID: 3060668



LTSNA4_Calibration Chromatograms.pdf_3060849
Electronically Signed By: Bor Cha
Path: \\fs2\\repository\\repository\\3060849\\
Created: 1/31/14 13:31 Audit ID: 3060849



Printing Time: 12:44:40 PM
Printing Date: Friday, January 31, 2014

*AR SCIXX SH00XRU20280907H
*POST VN



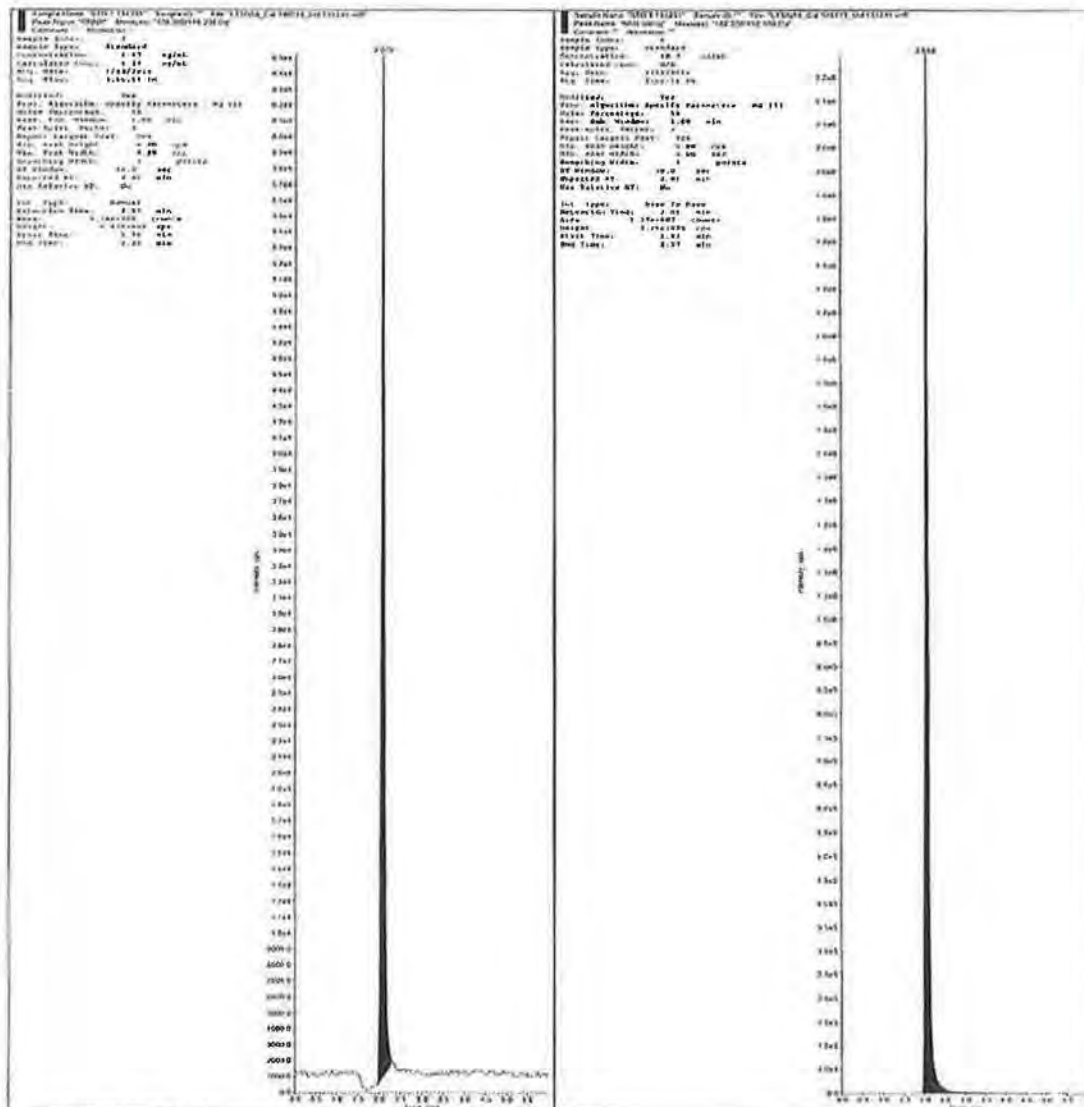
APM

Study Identifier: M195-GLP

Page 5 of 15

Study Report – Appendix G Calibration Curve Data Summary

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Created: 1/31/14 13:31 Audit ID: 3080849



Printing Time: 12:44:48 PM
Printing Date: Friday, January 11, 2014

*AD SCFEX 550888050805000
*POST PM

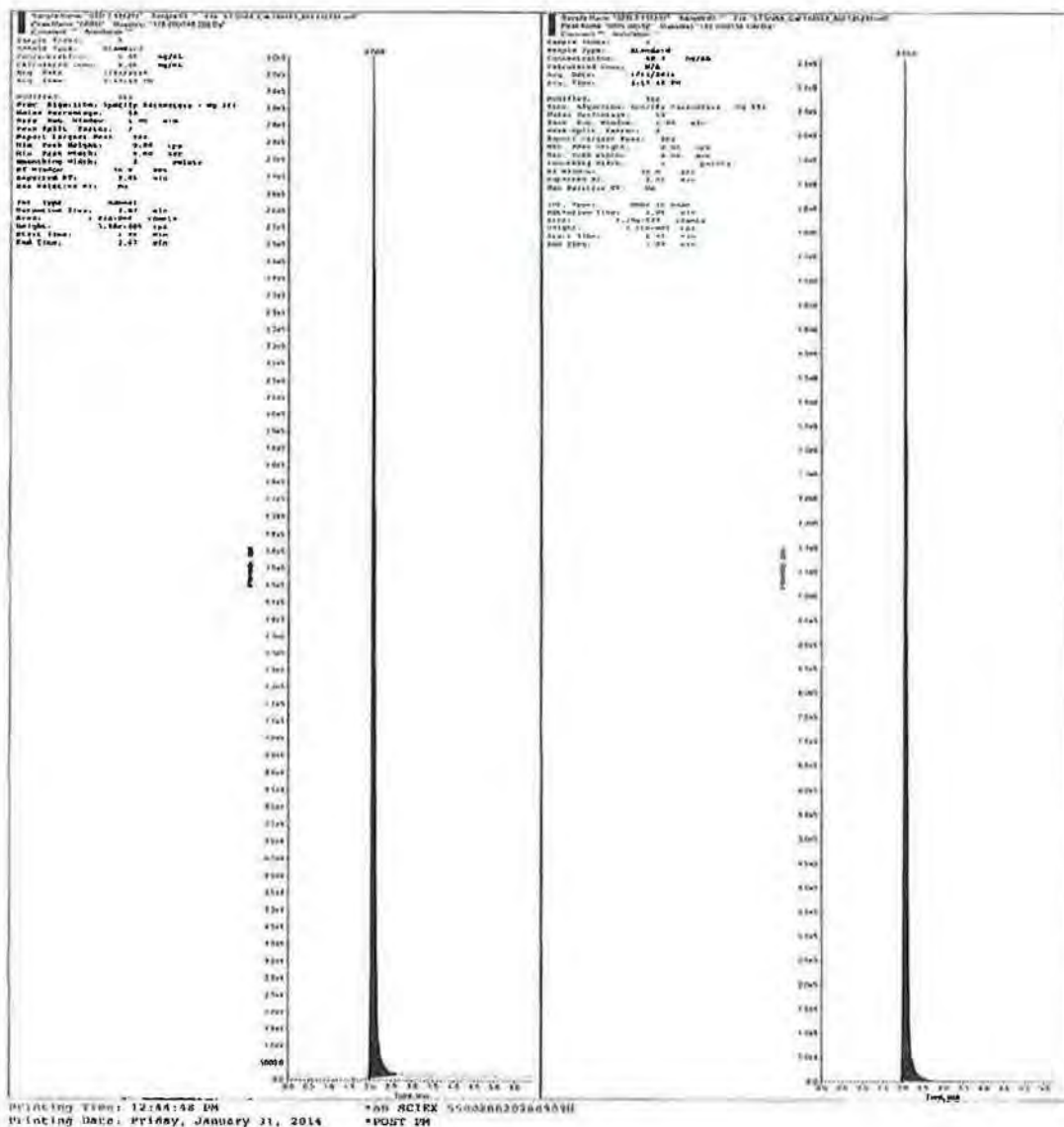


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

LTSNA4_Calibration Chromatograms.pdf_3060849
Electronically Signed By: Bor Cha
Path: Ws2repository\repository\3060849
Created: 1/31/14 13:31 Audit ID: 3060849



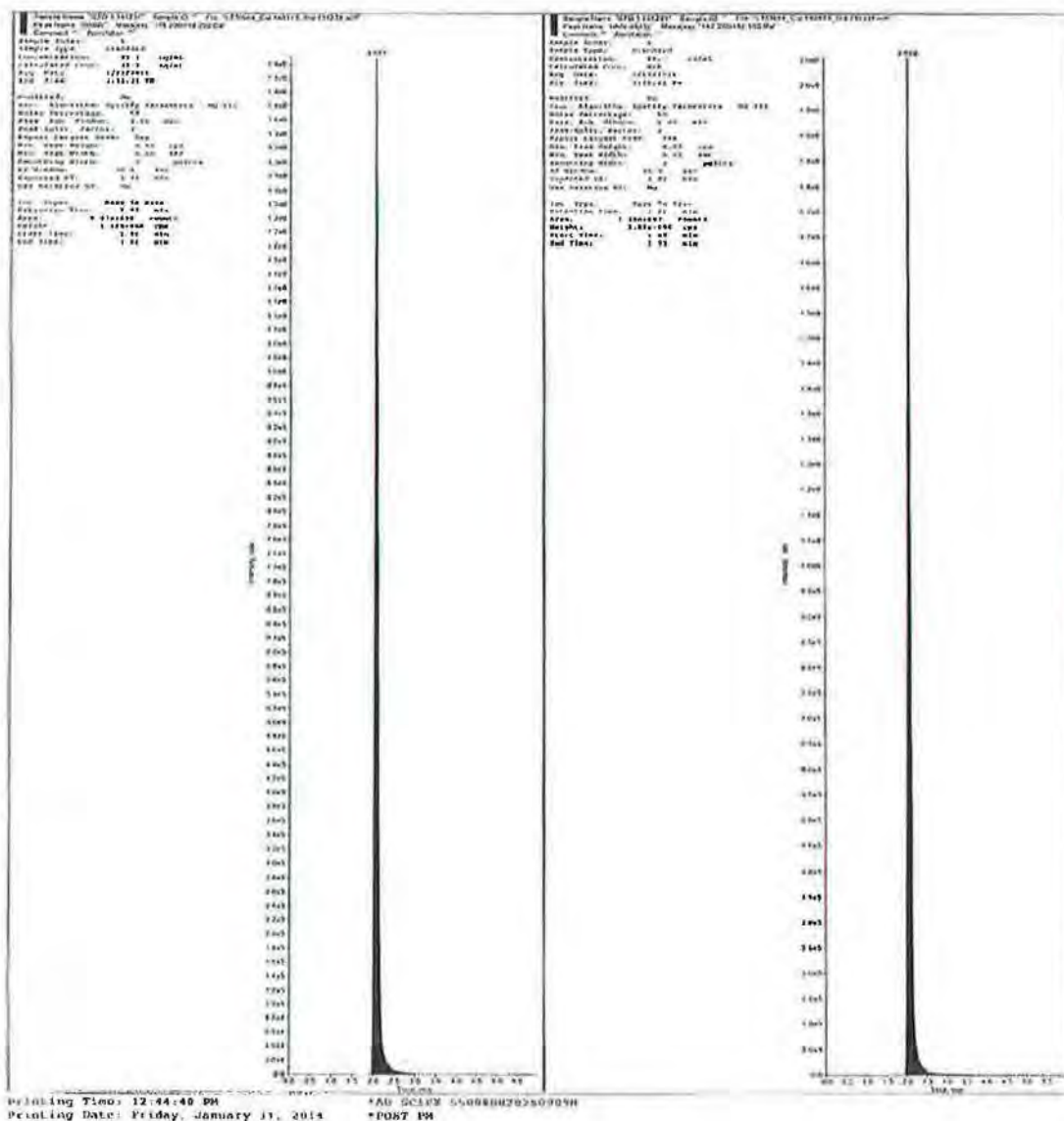
Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

LTSNA4 Calibration Chromatograms.pdf_3060849
Electronically Signed By: Bor Chā
Path: \\fs2\\repository\\repository\\3060849\\
Created: 1/31/14 13:31 Audit ID: 3060849



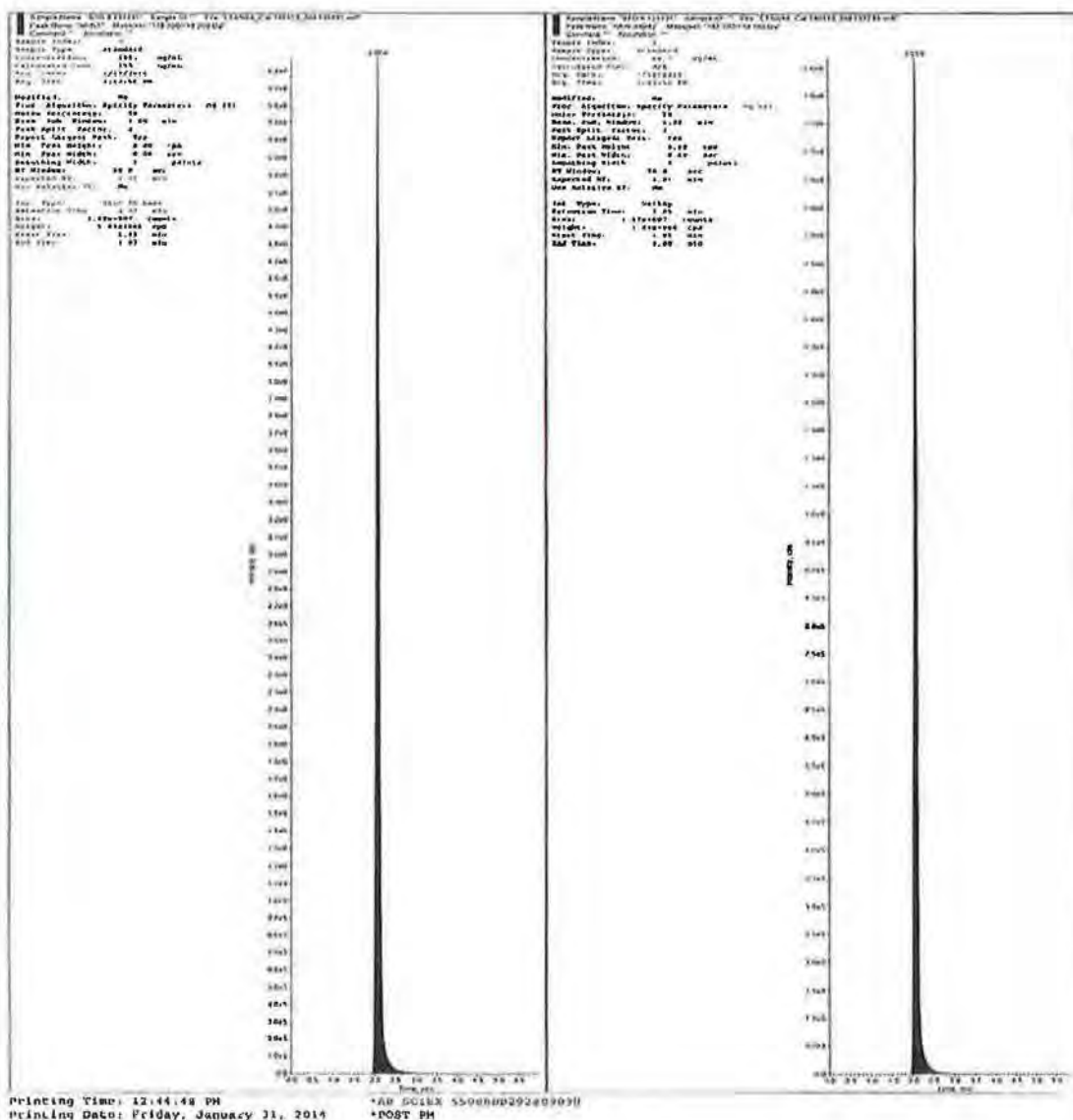


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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Path: \\fs2\repository\repository\3060849\
Created: 1/31/14 13:31 Audit ID: 3060849





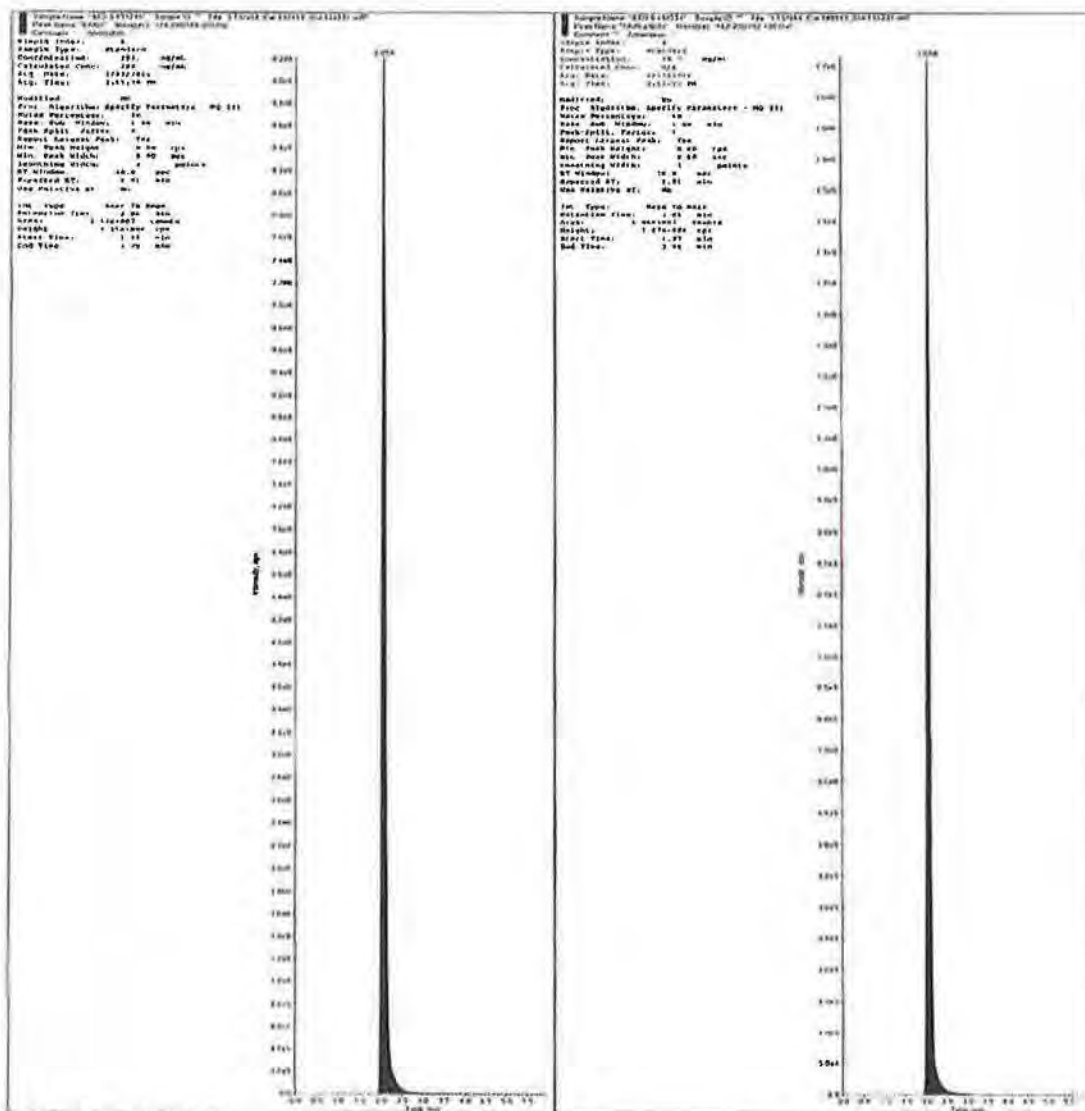
APM

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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Printing Date: Friday, January 31, 2014

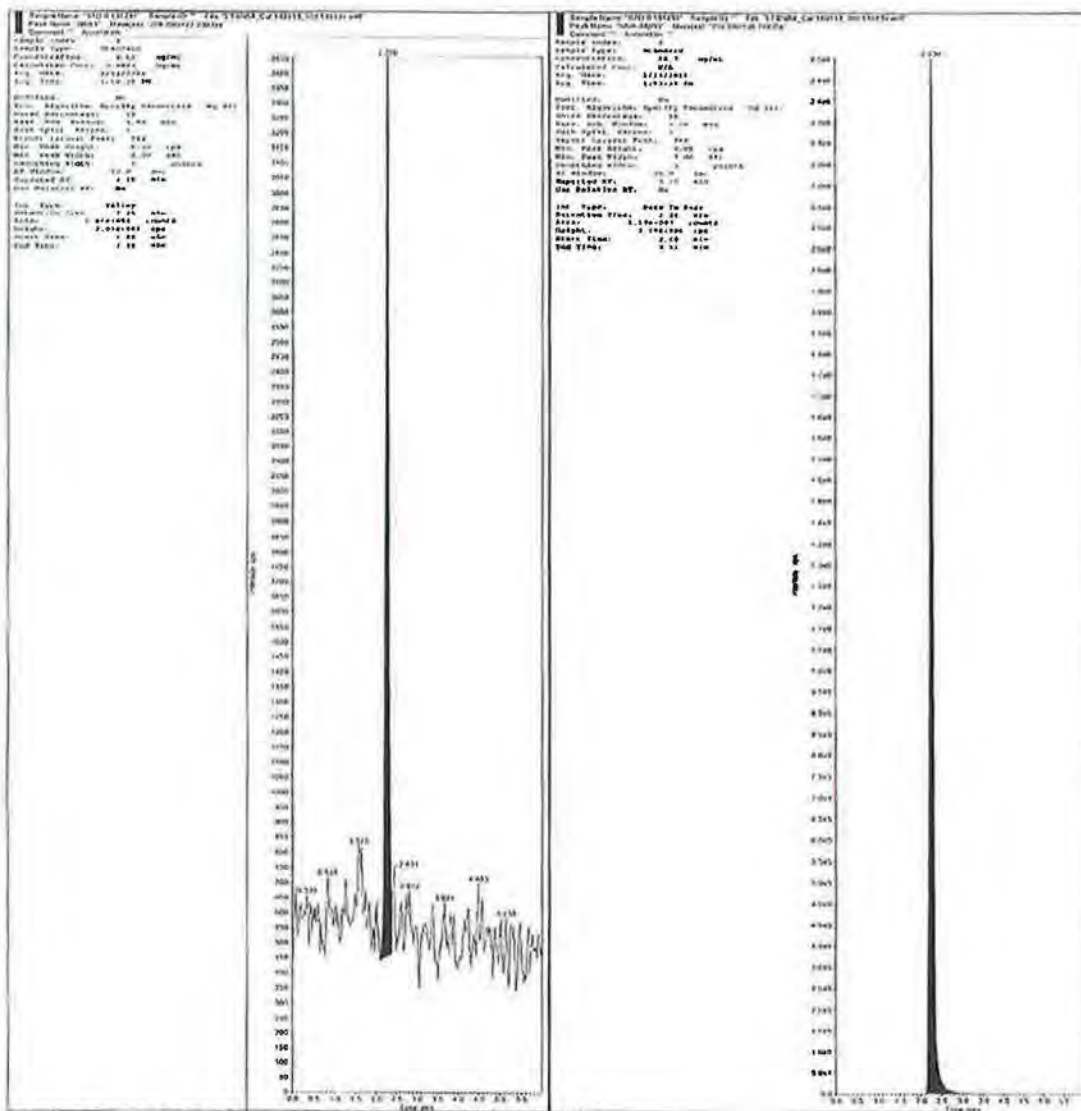
*AN CLACK 5508268.20X609098
*PORT VM

Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

LTSNA4 Calibration Chromatograms.pdf_3060849
Electronically Signed By: Bor Cha
Path: Wfs2\repository\repository\3060849\
Created: 1/31/14 13:31 Audit ID: 3060849





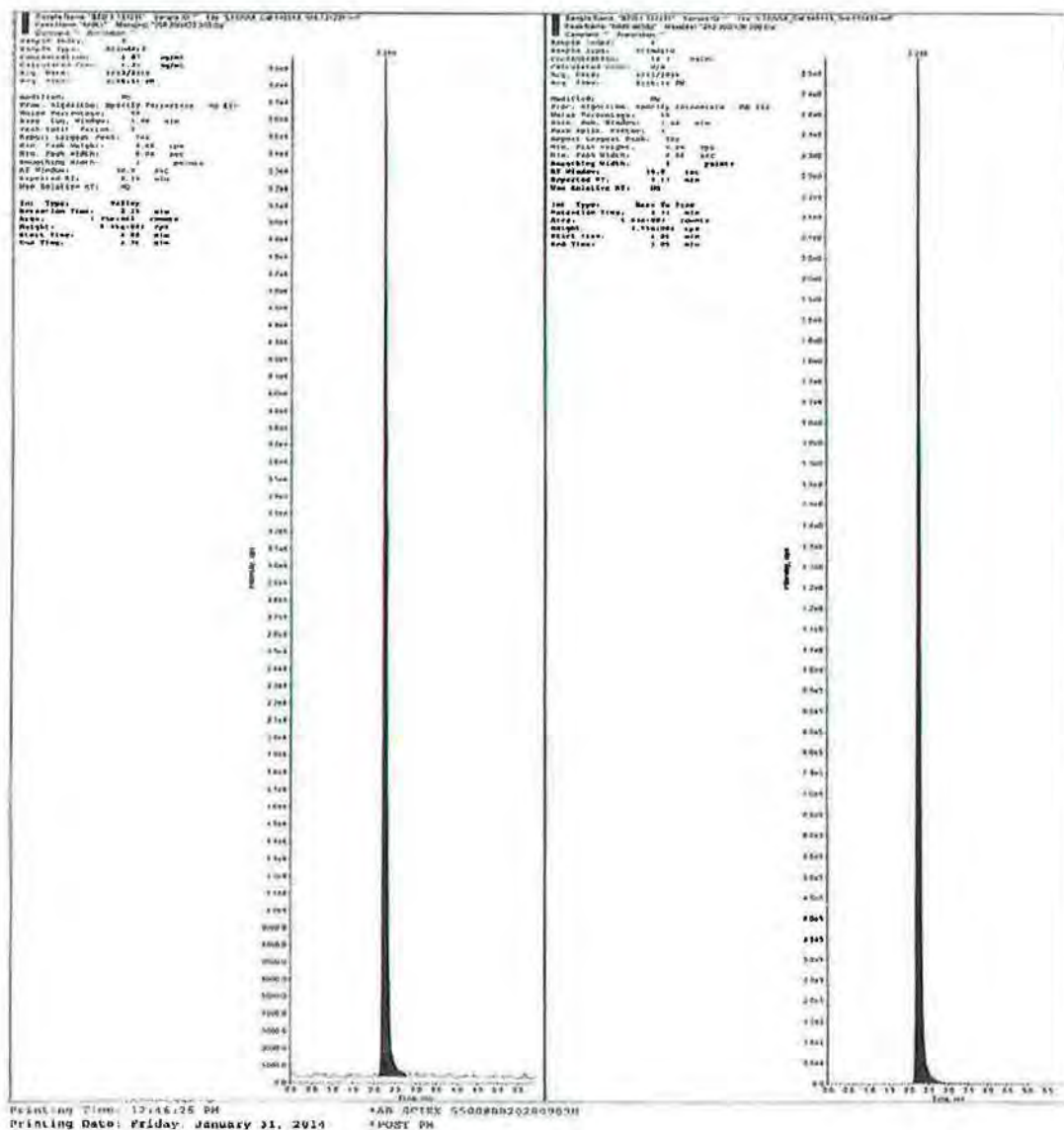
APR

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

LTSNAA Calibration Chromatograms.pdf 3060849
Electronically Signed By: Bor Cha
Path: \\fs2\repository\repository\3060849
Created: 1/31/14 13:31 Audit ID: 3060849



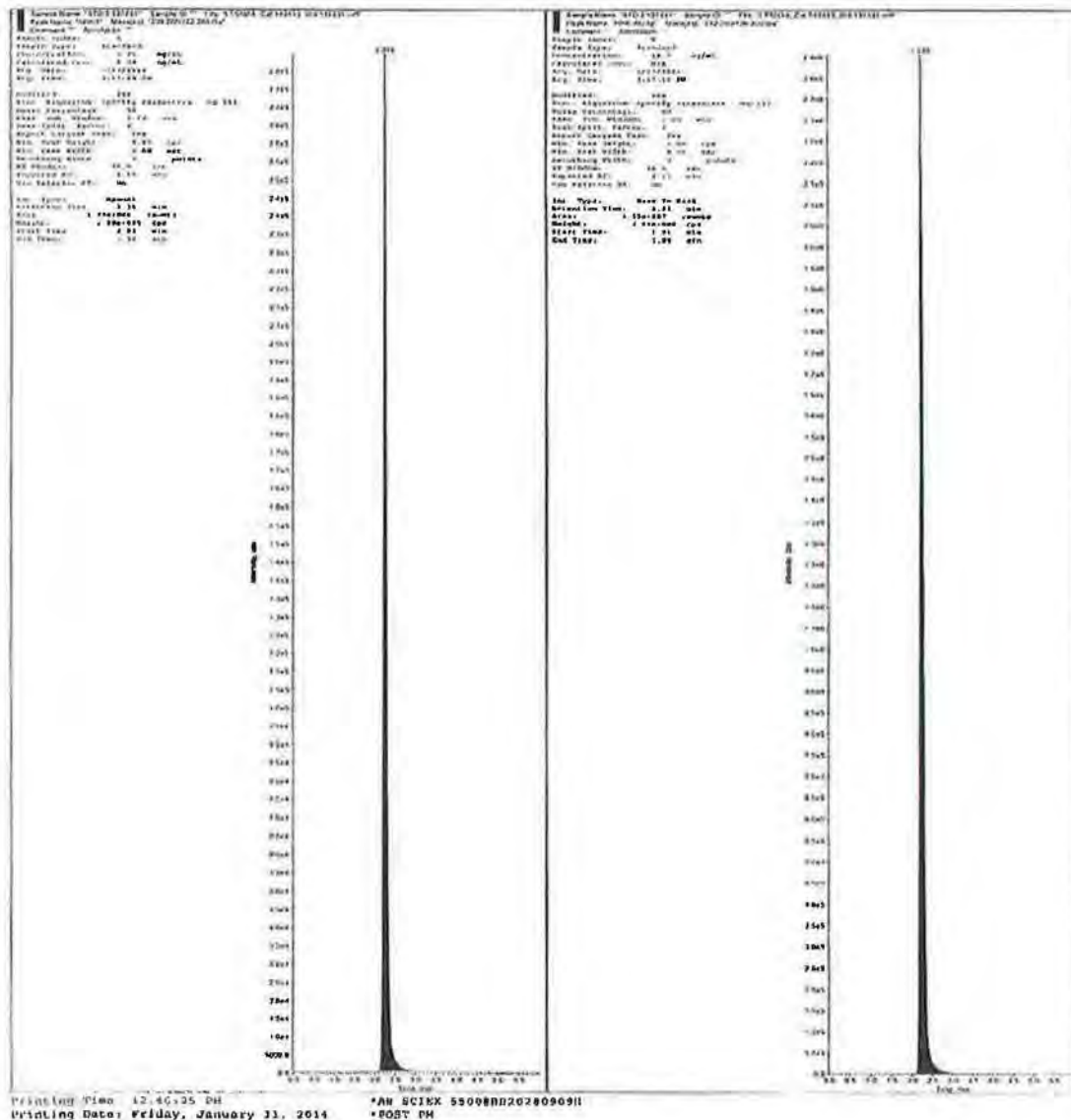


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

LTSNAA_Calibration Chromatograms.pdf_3060849
Electronically Signed By: Bor Cha
Path: \\fs2\repository\repository\3060849\1
Created: 1/31/14 13:31 Audit ID: 3060849

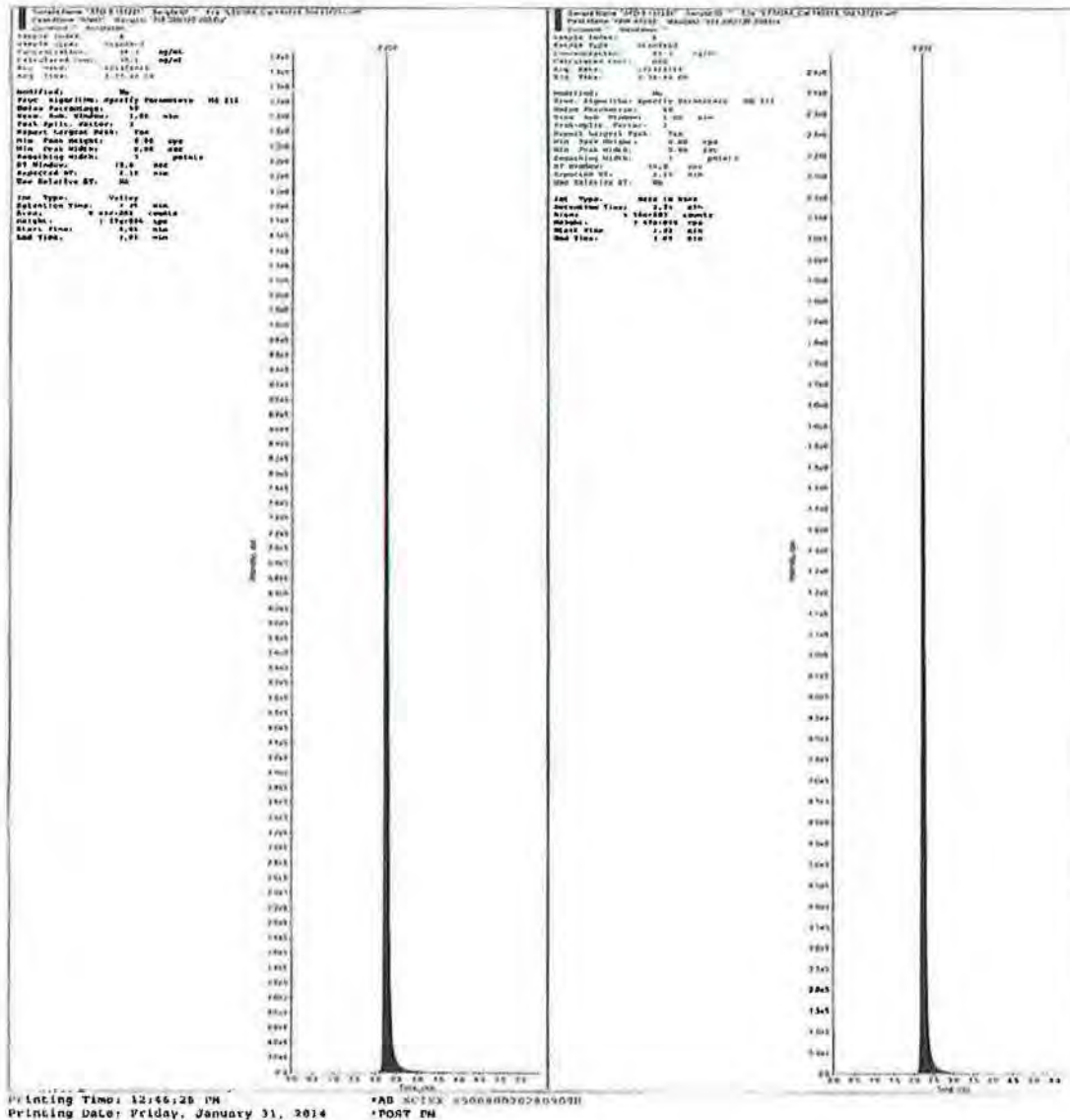


Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

LTSNAA Calibration Chromatograms.pdf_3060849
Electronically Signed By: Bor Cha
Path: \\fs2\\repository\\repository\\3060849\\
Created: 1/31/14 13:31 Audit ID: 3060849



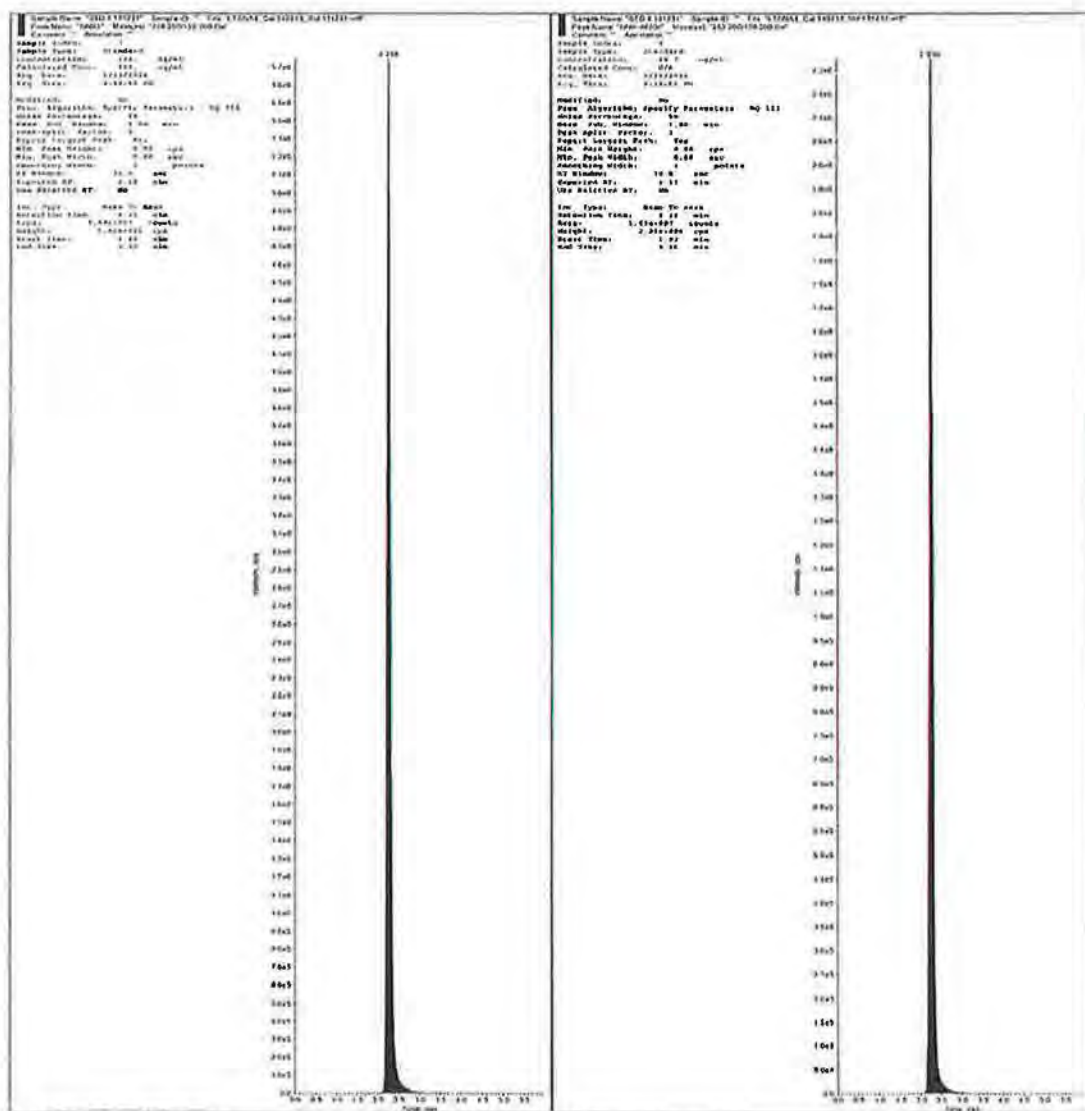


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

LTSNA4 Calibration Chromatograms.pdf_3060849
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Created: 1/31/14 13:31 Audit ID: 3060849



Printing Time: 12:46:25 PM
Printing Date: Friday, January 31, 2014

*AB SCIEX 5500B02000000
*POST PM

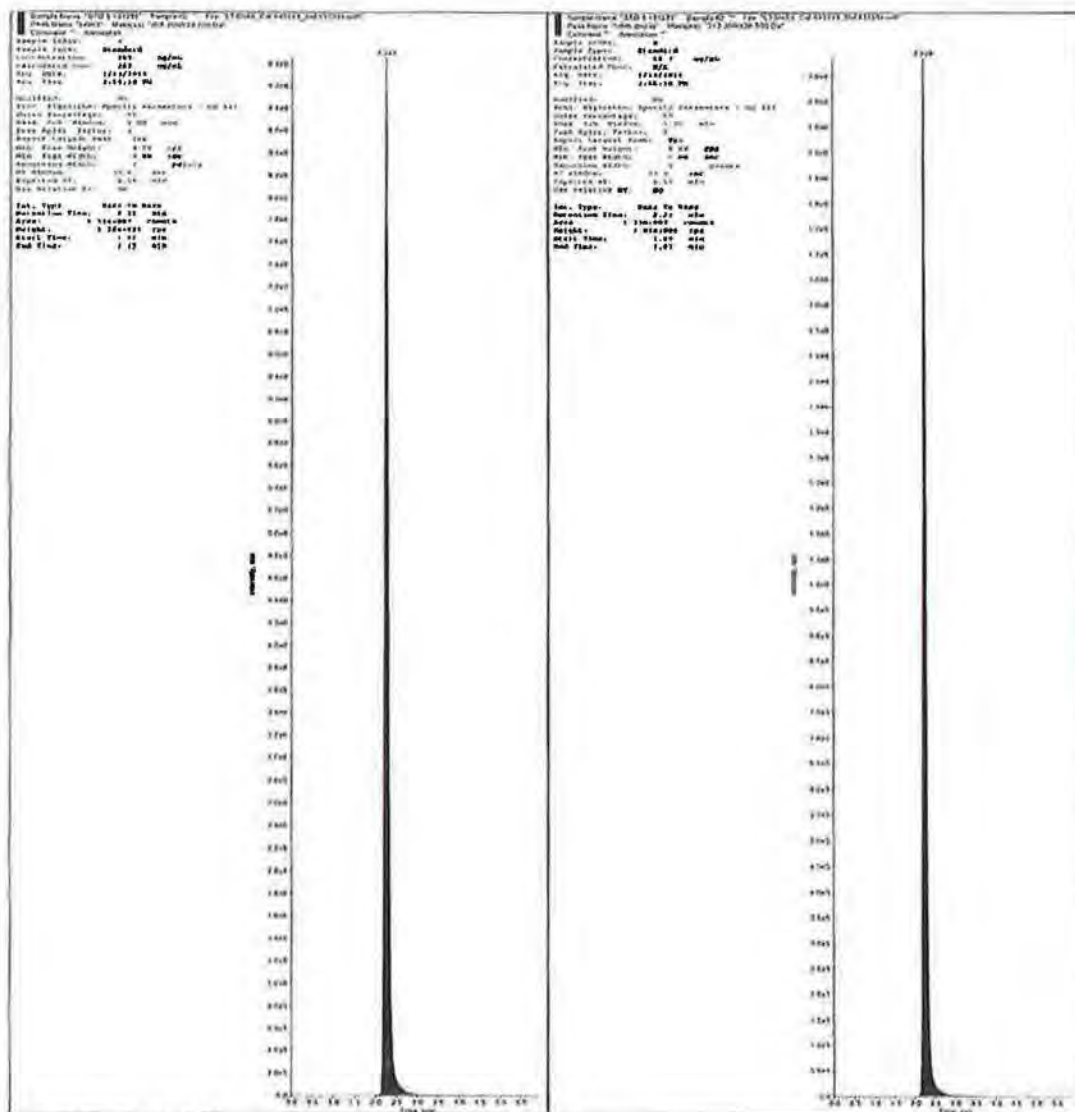


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

LTSNA4_Calibration Chromatograms.pdf_3060849
Electronically Signed By: Bor Cha
Path: \\fs2\repository\repository\3060849\
Created: 1/31/14 13:31 Audit ID: 3060849



Toxic Trace Metals



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

QSF-01105-V4_Calibration Curve Data Summary_M195-GLP_block1_mel.msns.pdf_3103640
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3103640\1
Created: 2/7/14 13:21 Audit ID: 3103640

Page 1 of 1

Printed: 2/10/2014
Calibration Curve Data Summary for
Component Descriptions

Study: M195-GLP size 1 (meas.msns)

Assay	Standard ID	Injection	Injection	Method	Concentration	Peak	Area	Height	Width	Injection
(Sample & Date of Prep)		Time	Time	ID	Concentration	Area	Height	Width	Area	Time
Calum	RMW-140128	1/25/2014	9:08:57	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:11:58	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:14:01	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:16:04	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:18:07	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:20:10	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:22:13	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:24:16	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:26:19	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:28:22	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:30:25	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:32:28	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:34:31	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:36:34	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:38:37	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:40:40	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:42:43	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:44:46	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:46:49	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:48:52	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:50:55	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:52:58	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	9:57:04	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	9:59:07	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	10:01:10	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	10:03:13	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	10:05:16	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	10:09:22	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	10:11:25	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	10:19:37	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	10:21:40	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	10:23:43	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	10:29:52	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	10:31:55	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	11:02:40	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:04:43	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:06:46	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:08:49	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:10:52	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:12:55	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:14:58	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:17:01	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:19:04	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	11:21:07	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	11:29:19	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	11:43:40	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	11:58:01	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	12:00:04	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	12:02:07	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	12:04:10	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	12:06:13	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	12:08:16	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	12:10:19	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	12:26:43	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	12:28:46	140128	0.100	15.3				
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Calum	RMW-140128	1/25/2014	13:15:55	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	13:17:58	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	13:20:01	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	13:22:04	140128	0.100	15.3				
Calum	RMW-140128	1/25/2014	13:24:07	140128	0.100	15.3				
Calum										

Study Identifier: M195-GLP

Study Report – Appendix G

Calibration Curve Data Summary

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Electronically Signed By: Sarah Fong
Path: \\fs2\\repository\\repository\\3050326\\
Created: 1/30/14 10:40 Audit ID: 3050326



Quantum Worksheet Report
Report Date 10:39:09am 30/Jan/2014
Worksheet ICP-Exp-810MS-140129-As_only.msws
Analyst

Page 2 of 15

Start (n/s)	Stop (n/s)	Dwell (nsec)	Attenuation mode	Neon-Med	Med-High
77	77	10000	Auto	53.531	90.961
82	82	10000	Auto	72.291	80.431
83	83	10000	Auto	53.028	89.363

Isotope Equations

Analyses

As75 As75 = 1.127 * (777 - 0.815 * 782)

Internal Standards

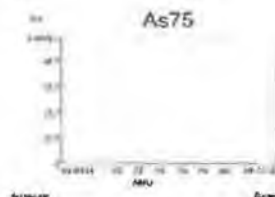
Semi Quant Analyses

Isotope Ratios

Blank [Blank]

Tube 1:1, Replicates 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 10:33:19am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

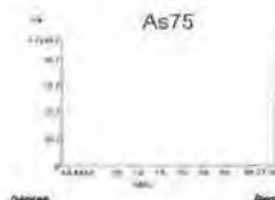
Analyte	Core Conc/Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.0000 ppb	0.0000	ppb	-	10917.14	7.44	266.9	111.86 106.53 109.08



Standard 1 (Standard 1)

Tube 1:2, Replicates 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 10:26:28am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Core Conc/Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.6010 ppb	0.6010	ppb	-	79025.91	4.98	3933.8	76602 76816 83579



Standard 2 (Standard 2)

Tube 1:3, Replicates 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 10:29:38am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Core Conc/Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.0010 ppb	1.0010	ppb	-	133339.0	5.19	6933.1	129061 130028 141523

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Study Report – Appendix G
Calibration Curve Data Summary

Quantum ICP-Exp-810MS-140129-As_only_RESULTS_M195-GLP_block1_metals_MSNS.pdf_3050326
Electronically Signed By: Sarah Fong
Path: Ws2\repository\repository\3050326
Created: 1/30/14 10:40 Audit ID: 3050326



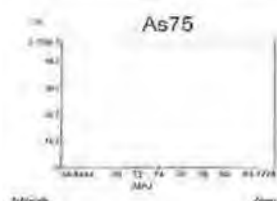
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Report Date 10:39:09am 30/Jan/2014

Worksheet ICP-Exp-810MS-140129-As_only.msws

Analyst

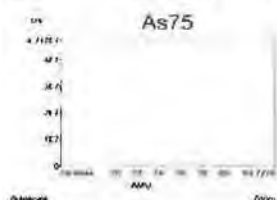
Page 3 of 15



Standard 3 [Standard 3]

Tube: 1.4, Replicates: 3, Auto Dilutions factor: ~ Cal Set 1, Time measured: 10:12:48am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

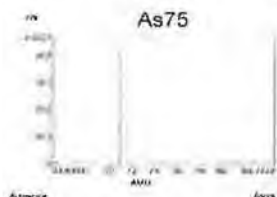
Analyte	Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.0030 ppb	1.0030	ppb	-	381750.4	1.83	6975.1	378119 777155 387777



Standard 4 [Standard 4]

Tube: 1.5, Replicates: 3, Auto Dilutions factor: ~ Cal Set 1, Time measured: 10:15:59am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	6.0060 ppb	6.0060	ppb	-	755689.5	2.28	17242.6	746283 745196 775590



Standard 5 [Standard 5]

Tube: 1.6, Replicates: 3, Auto Dilutions factor: ~ Cal Set 1, Time measured: 10:19:10am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -1.00 mm Position Vertical: -0.40 mm Detector Voltage: 3280.00 volt

Analyte	Conc Unit	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	10.0100 ppb	10.0100	ppb	-	126146.1	1.02	12903.1	1271591 1216937 1265860

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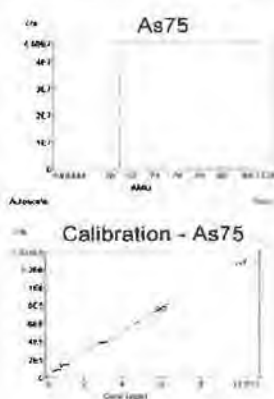
Study Report – Appendix G Calibration Curve Data Summary

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Quantum Worksheet Report
Report Date 10:39:09am 30/Jan/2014
Worksheet ICP-Exp-810MS-140129-As_only.mswn
Analyst

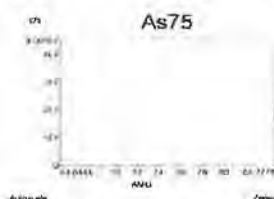
Page 4 of 15



8% HNO3 [Sample]

Tube: 2/1, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:42:21am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm, Position Vertical: 0.00 mm, Detector Voltage: 3280.00 volt

Analyte	Conc Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.01 ppb	0.03786	ppb	-	10978.76	22.33	0.0084	11091 10425 11420



400589-1-1 M195-GLP II [Sample]

Tube: 2/2, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:45:32am 29/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -1.00 mm, Position Vertical: 0.00 mm, Detector Voltage: 3280.00 volt

Analyte	Conc Unit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.00 ppb	0.80066	ppb	-	69129.34	3.20	0.0256	68999 69000 70289



APN

Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

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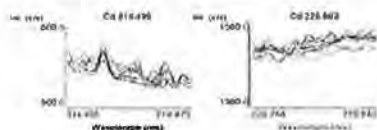
Page 2 of 15

ICP-AES 720, Metals, Method/Worksheet: i140129.wvq. All Data Report 1/30/2014, 10:36:36 AM, Analyst

Blank (Blk) 1/29/2014, 9:08:57 AM Rack S, Tube 1

Label	Replicates Concentration				
Cd 214.439	0.050569	0.068242	0.052731	0.069044	0.076960
Cd 228.802	0.074804	0.061215	0.078218	0.055278	0.072490

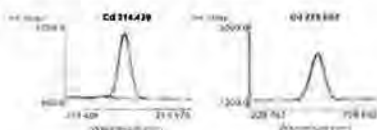
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	0.000000	ppb	3.765	41.2	9.13853
Cd 228.802	0.000000	ppb	3.192	15.3	20.9287



Standard 1 (Std) 1/29/2014, 9:11:38 AM Rack S, Tube 2

Label	Replicates Concentration				
Cd 214.439	2.56190	2.52144	2.52669	2.47548	2.43257
Cd 228.802	2.53660	2.51698	2.50647	2.44631	2.38922

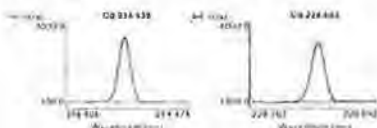
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	2.51000	ppb	16.619	2.0	816.759
Cd 228.802	2.51000	ppb	19.868	2.4	812.522



Standard 2 (Std) 1/29/2014, 9:14:19 AM Rack S, Tube 3

Label	Replicates Concentration				
Cd 214.439	5.00713	4.92758	4.98384	4.92511	4.88255
Cd 228.802	5.00391	4.96697	4.94455	4.89534	4.89836

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	5.02000	ppb	16.522	1.0	1624.88
Cd 228.802	5.02000	ppb	15.176	0.9	1621.19



Standard 3 (Std) 1/29/2014, 9:17:01 AM Rack S, Tube 4

Label	Replicates Concentration				
Cd 214.439	15.4395	15.3229	15.1863	15.0227	14.7389
Cd 228.802	15.3965	15.3074	15.1391	15.0089	14.7839



Study Identifier: M195-GLP

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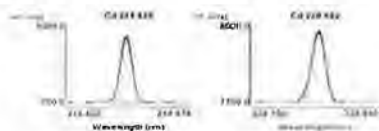
Study Report – Appendix G
Calibration Curve Data Summary

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ICP-AES 720, Metals, Method/Worksheet: i140129.wvq, All Data Report 1/30/2014, 10:36:36 AM, Analyst

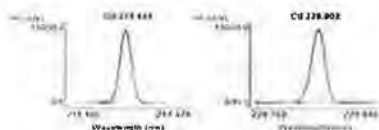
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	15.0600	ppb	90.625	1.8	4999.80
Cd 228.802	15.0600	ppb	79.922	1.6	4965.68



Standard 4 (Std) 1/29/2014, 9:19:44 AM Rack S, Tube 5

Label	Replicates	Concentration			
Cd 214.439	30.3260	30.2703	29.8672	29.7361	29.8053
Cd 228.802	30.5390	30.3862	29.9048	29.7806	29.7929

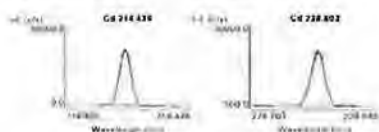
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	30.1200	ppb	91.327	0.9	9917.77
Cd 228.802	30.1200	ppb	116.930	1.2	9875.89



Standard 5 (Std) 1/29/2014, 9:22:27 AM Rack S, Tube 6

Label	Replicates	Concentration			
Cd 214.439	51.4703	50.3440	50.2493	49.9071	49.3022
Cd 228.802	51.5161	50.4608	50.1936	49.7030	49.1905

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	50.2000	ppb	262.382	1.6	16621.3
Cd 228.802	50.2000	ppb	287.464	1.7	16486.5



Cd 214.439 Calibration (ppb)		1/29/2014, 9:22:27 AM		Correlation Coefficient: 0.999991		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		9.13853	0.000000	0.063509	-	-
Standard 1		816.759	2.51000	2.50362	-0.006383	-0.3
Standard 2		1624.88	5.02000	4.94524	-0.074756	-1.5
Standard 3		4999.80	15.0600	15.1421	0.082058	0.5
Standard 4		9917.77	30.1200	30.0010	-0.119013	-0.4
Standard 5		16621.3	50.2000	50.2546	0.054585	0.1

Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_metals_MSNS.pdf_3050301
Electronically Signed By: Sarah Fong
Path: Wfs2\repository\repository\3050301\
Created: 1/30/14 10:37 Audit ID: 3050301

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ICP-AES 720, Metals, Method/Worksheet: 1140129.wvq, All Data Report 1/30/2014, 10:36:36 AM, Analyst

Curve Type: Linear Equation: $y = 331.0x + -11.9$

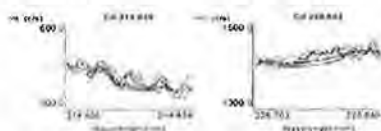
Cd 228.802 Calibration (ppb)		1/29/2014, 9:22:27 AM		Correlation Coefficient: 0.999995		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		20.9287	0.000000	0.068401		
Standard 1		812.522	2.51000	2.47912	-0.030881	-1.2
Standard 2		1621.19	5.02000	4.94183	-0.078173	-1.6
Standard 3		4965.68	15.0600	15.1272	0.067163	0.4
Standard 4		9875.89	30.1200	30.0807	-0.039307	-0.1
Standard 5		16486.5	50.2000	50.2128	0.012791	0.0

Curve Type: Linear Equation: $y = 328.4x + -1.5$



5% HNO3 (Samp)		1/29/2014, 9:25:09 AM				Rack 1, Tube 1
Weight: 1		Volume: 1				Dilution: 1
Label	Replicates Concentration					
Cd 214.439	0.073721	0.072635	0.071619	0.067703	0.062987	
Cd 228.802	0.076786	0.064490	0.085345	0.059399	0.041809	

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	0.069733	ppb	0.004402	6.3	11.1985	0.069733 ppb	1.00000
Cd 228.802	0.065566	ppb	0.016738	25.5	19.9977	0.065566 ppb	1.00000



1400589-1-1 M195-GLP (Samp)		1/29/2014, 9:27:50 AM		Rack 1, Tube 2	
Weight: 1		Volume: 1		Dilution: 1	
Label	Replicates Concentration				
Cd 214.439	10.8815	10.8619	11.1486	11.0859	10.9064
Cd 228.802	9.53911	9.66557	9.77568	9.84155	9.73558

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	10.9769	ppb	0.131032	1.2	3621.21	10.9769 ppb	1.00000
Cd 228.802	9.71150	ppb	0.115584	1.2	3187.38	9.71150 ppb	1.00000

Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

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Private and Confidential

5511 ROAD 1, POB 675-5611, PMS

Agency	Contract ID	Incident Date	Incident Time	Police ID	Interviews Conducted	Analyst	Summary Completed	ELT	EC	Intelligence	Stage	Project Status	Contract ID
Agency A	Contract A-001	2023-01-15	14:30:00	101234	3	John D.	100%	15 min	1	High	Completed	Active	Contract A-001
	Contract A-002	2023-01-16	15:45:00	101235	2	Jane S.	80%	20 min	2	Medium	In Progress	Active	Contract A-002
	Contract A-003	2023-01-17	09:15:00	101236	4	Mike T.	100%	10 min	1	Low	Completed	Active	Contract A-003
	Contract A-004	2023-01-18	11:30:00	101237	1	Emily R.	50%	30 min	3	High	Pending	Active	Contract A-004
	Contract A-005	2023-01-19	16:00:00	101238	2	David L.	90%	15 min	1	Medium	In Progress	Active	Contract A-005
Agency B	Contract B-001	2023-02-01	10:00:00	201234	2	John D.	100%	15 min	1	High	Completed	Active	Contract B-001
	Contract B-002	2023-02-02	12:30:00	201235	3	Jane S.	90%	20 min	2	Medium	In Progress	Active	Contract B-002
	Contract B-003	2023-02-03	08:45:00	201236	1	Mike T.	60%	25 min	3	High	Pending	Active	Contract B-003
	Contract B-004	2023-02-04	14:15:00	201237	4	Emily R.	100%	10 min	1	Low	Completed	Active	Contract B-004
	Contract B-005	2023-02-05	17:00:00	201238	2	David L.	85%	18 min	2	Medium	In Progress	Active	Contract B-005
Agency C	Contract C-001	2023-02-10	09:30:00	301234	1	John D.	70%	30 min	4	High	Pending	Active	Contract C-001
	Contract C-002	2023-02-11	11:00:00	301235	3	Jane S.	95%	15 min	1	Medium	In Progress	Active	Contract C-002
	Contract C-003	2023-02-12	13:45:00	301236	2	Mike T.	80%	20 min	2	Medium	In Progress	Active	Contract C-003
	Contract C-004	2023-02-13	15:15:00	301237	4	Emily R.	100%	10 min	1	Low	Completed	Active	Contract C-004
	Contract C-005	2023-02-14	16:45:00	301238	1	David L.	65%	25 min	3	High	Pending	Active	Contract C-005

Journal of Interpersonal Violence

776-997-1400



AS

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Quantum ICP-Exp-810MS-140128-As_only_M195-GLP_Block1_Metals_MSS.pdf_3037527
Electronically Signed By: Sarah Fong
Path: Ws2\repository\repository\3037527\
Created: 1/28/14 12:52 Audit ID: 3037527



Quantum Worksheet Report

Report Date: 12:49:06pm 28/Jun/2014

Worksheet: ICP-Exp-810MS-140128-As_only.mswn

Analyst

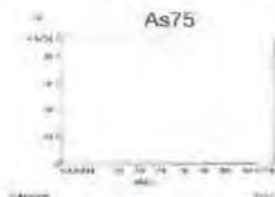
Page 2 of 15

Start (m/z)	Stop (m/z)	Dwell (µsec)	Attenuation mode	Norm-Med	Med-High
77	77	10000	Auto	53.531	90.061
82	82	10000	Auto	72.291	80.131
83	83	10000	Auto	53.028	89.365

Blank (Blank)

Tube: F.1, Replicates: 3, Auto Dilution factor: 1, Cal Set: 1, Time measured: 10.33 (1 sec 10 sec 10 sec)
Actual weight: 1.0000 µg, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: 0.70 mm, Position Vertical: 0.40 mm, Detector Voltage: 3280.00 volt

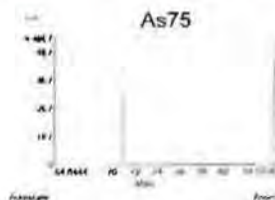
Analyte	Conc Conc/Unit	Soft Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.0000 ppb	0.0000	ppb	-	11785.15	0.60	71.3	11775 11720 11868



Standard 1 (Standard 1)

Tube: F.1, Replicates: 3, Auto Dilution factor: 1, Cal Set: 1, Time measured: 10.36 (1 sec 10 sec 10 sec)
Actual weight: 1.0000 µg, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: 0.70 mm, Position Vertical: 0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Conc Conc/Unit	Soft Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.6010 ppb	0.6010	ppb	-	96770.98	1.08	1978.5	93968 90898 96447



Standard 2 (Standard 2)

Tube: F.1, Replicates: 3, Auto Dilution factor: 1, Cal Set: 1, Time measured: 10.29 (1 sec 10 sec 10 sec)
Actual weight: 1.0000 µg, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: 0.70 mm, Position Vertical: 0.40 mm, Detector Voltage: 3280.00 volt

Analyte	Conc Conc/Unit	Soft Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.0010 ppb	1.0010	ppb	-	157146.6	2.96	1658.1	151760 159682 159962

Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Quantum ICP-Exp-810MS-140128-As_only_M195-GLP_Block1_Metals_MSS.pdf_3037527
Electronically Signed By: Sarah Fong
Path: Wfs2\repository\repository\3037527\
Created: 1/28/14 12:50 Audit ID: 3037527



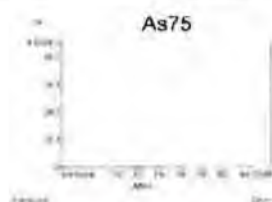
Quantum Worksheet Report

Report Date 12:49:06pm 28/Jan/2014

Worksheet ICP-Exp-810MS-140128-As_only.mswn

Analyst

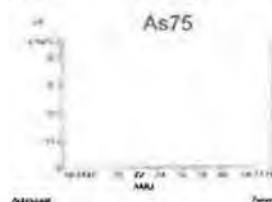
Page 3 of 15



Standard 4 [Standard 3]

Tube: 1.4, Replicates: 3, Auto Dilution Factor: -1.0 (Set 1), Time measured: 10.51 min 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.50 mm, Detector Voltage: 3280.00 V

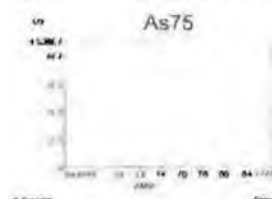
Analyte	Conc ConcUnit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	3.0030 ppb	3.0030	ppb	-	448807.3	1.30	15711.7	641829 337791 466790



Standard 4 [Standard 4]

Tube: 1.5, Replicates: 3, Auto Dilution Factor: -1.0 (Set 1), Time measured: 10.35 min 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 V

Analyte	Conc ConcUnit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	6.0060 ppb	6.0060	ppb	-	882362.1	2.64	23308.5	859861 906102 830821



Standard 5 [Standard 5]

Tube: 1.6, Replicates: 3, Auto Dilution Factor: -1.0 (Set 1), Time measured: 10.39 min 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.70 mm, Position Vertical: -0.40 mm, Detector Voltage: 3280.00 V

Analyte	Conc ConcUnit	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	10.0100 ppb	10.0100	ppb	-	1458839	1.92	28013.9	1448846 1437160 1490311

Study Identifier: M195-GLP

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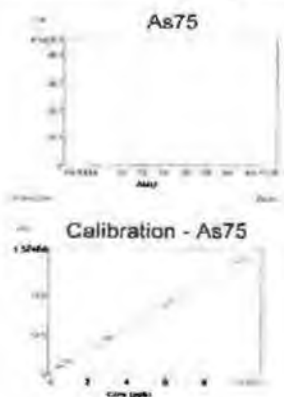
Study Report – Appendix G
Calibration Curve Data Summary

Quantum ICP-Exp-810MS-140128-As_only_M195-GLP_Block1_Metals_MSS.pdf_3037527
Electronically Signed By: Sarah Fong
Path: Wfs2\repository\repository\3037527
Created: 1/28/14 12:50 Audit ID: 3037527



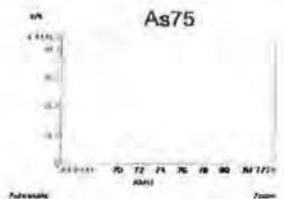
Quantum Worksheet Report
Report Date 12:49:06pm 28/Jan/2014
Worksheet ICP-Exp-810MS-140128-As_only.msws
Analyst

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5% HNO3 [Sample]
Tube: 2.1, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 10.4213min 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.10 mm Detector Voltage: 3280.00 volt

Analyte	Core ConcUnit	Solu Conc	Unit	QC	Mean cfs	%RSD	SD	Replicates (ch)	
As75	0.00 ppb	0.9182b	ppb	-	4.384634	9.73	0.0015	1018	12315 12897



1400590-1-1 M195-GLP H1 [Sample]
Tube: 2.2, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 10.1523min 28/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.70 mm Position Vertical: -0.10 mm Detector Voltage: 3280.00 volt

Analyte	Core ConcUnit	Solu Conc	Unit	QC	Mean cfs	%RSD	SD	Replicates (ch)	
As75	0.00 ppb	0.5942b	ppb	-	76710.57	2.94	0.0173	77243	74111 78778

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

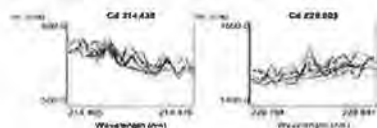
ICP Expert II for Agilent 720-ES ICP-OES Report: i140128_M195-GLP_block1_met_MSS.pdf_3035957
Electronically Signed By: Sarah Fong
Path: W:\s2\repository\repository\3035957
Created: 1/28/14 11:07 Audit ID: 3035957

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ICP-AES 720, Metals, Method/Worksheet: i140128.wvq. All Data Report 1/28/2014, 11:05:33 AM, Analyst

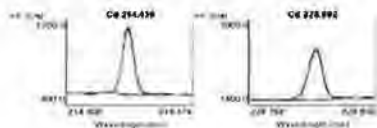
Blank (Blk)		1/28/2014, 9:17:32 AM				Rack S, Tube 1	
Label	Replicates	Concentration					
Cd 214.439	0.001860	0.002876	-0.004944	0.031869	0.000768		
Cd 228.802	0.064342	0.076158	0.031827	0.095889	0.040971		

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	0.000000	ppb	4.957	43.9	11.2784
Cd 228.802	0.000000	ppb	8.881	35.9	24.7143



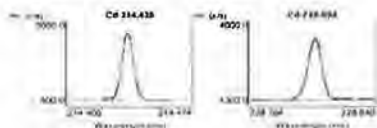
Standard 1 (Std)		1/28/2014, 9:20:13 AM				Rack S, Tube 2	
Label	Replicates	Concentration					
Cd 214.439	2.46032	2.48252	2.41189	2.41931	2.35915		
Cd 228.802	2.48760	2.49104	2.39232	2.39542	2.38837		

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	2.51000	ppb	16.278	1.9	838.044
Cd 228.802	2.51000	ppb	18.216	2.2	833.538



Standard 2 (Std)		1/28/2014, 9:22:55 AM				Rack S, Tube 3	
Label	Replicates	Concentration					
Cd 214.439	5.00483	4.99059	5.00662	4.93968	4.94154		
Cd 228.802	5.00270	4.96493	4.98085	4.89884	4.94860		

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	5.02000	ppb	11.441	0.7	1709.17
Cd 228.802	5.02000	ppb	13.387	0.8	1696.69



Standard 3 (Std)		1/28/2014, 9:25:36 AM				Rack S, Tube 4	
Label	Replicates	Concentration					
Cd 214.439	15.4804	15.4849	15.4445	15.4098	15.4455		
Cd 228.802	15.5052	15.4356	15.3158	15.4251	15.4042		

Study Identifier: M195-GLP

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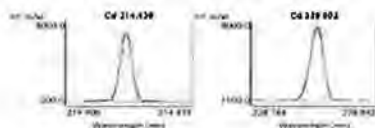
Study Report – Appendix G
Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report: i140128_M195-GLP_block1_mst_MSS.pdf_3035957
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3035957
Created: 1/28/14 11:07 Audit ID: 3035957

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ICP-AES 720, Metals, Method/Worksheet: i140128.wvq. All Data Report 1/28/2014, 11:05:33 AM, Analyst

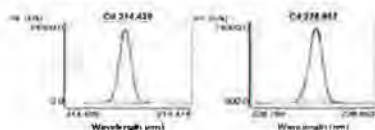
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	15.0600	ppb	10.468	0.2	5288.08
Cd 228.802	15.0600	ppb	23.282	0.4	5267.08



Standard 4 (Std) 1/28/2014, 9:28:19 AM Rack S, Tube 5

Label	Replicates	Concentration
Cd 214.439	29.8375	29.7737 29.7107 29.4649
Cd 228.802	29.8442	29.8213 29.6658 29.5806 29.4128

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	30.1200	ppb	49.527	0.5	10159.0
Cd 228.802	30.1200	ppb	60.900	0.6	10131.3



Standard 5 (Std) 1/28/2014, 9:31:02 AM Rack S, Tube 6

Label	Replicates	Concentration
Cd 214.439	51.2814	50.1133 50.3884 50.3267 49.5686
Cd 228.802	51.2160	50.1898 50.5222 50.4272 49.5244

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	50.2000	ppb	211.628	1.2	17204.6
Cd 228.802	50.2000	ppb	208.331	1.2	17202.1



Cd 214.439 Calibration (ppb)		1/28/2014, 9:31:02 AM		Correlation Coefficient: 0.999909		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		11.2784	0.000000	0.006486	-	-
Standard 1		838.044	2.51000	2.42664	-0.083361	-3.3
Standard 2		1709.17	5.02000	4.97665	-0.043350	-0.9
Standard 3		5288.08	15.0600	15.4530	0.393023	2.6
Standard 4		10159.0	30.1200	29.7115	-0.408480	-1.4
Standard 5		17204.6	50.2000	50.3357	0.135685	0.3

pH of Smokeless Tobacco



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195-GLP_LPH_B2_Calibration Run summary.pdf_3107180
Electronically Signed By: Kalaneh Paljooman
Path: \\fa2repository\repository\3107180
Created: 2/10/14 07:39 Audit ID: 3107180

Page 1 of 1

Private and Confidential
Calibration Curve Data Summary for
Compound(s) Declined

Study M195-GLP B2 PH14

Analysis	Standard ID	Injection Date	Injection Time	Method ID	Injection Location	Analysis Compound(s)	Standard Concentration	MSD	R2	Intercept	Slope	High Side Value (Declined Results)
PH14B2 Declined	PH14B2 Buffer	2/10/14	NA	NA	PH14B2 (L00000)	Elapogene	NA	1/11m	NA	NA	NA	NA
PH14B2 Declined	PH14B2 Buffer	2/10/14	NA	NA	PH14B2 (L00000)	Elapogene	NA	182.7m	NA	NA	NA	NA

Printed on 2/10/14
Revision:

CSF 09/18/2014

10/23/2014 11:12



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195-GLP-Fwd_Ph_RJ calibration Run Summary.pdf_3107169
Electronically Signed By: Katarah Pajoomen
Path: \\fs2\\repository\\repository\\3107169
Created: 2/10/14 07:41 Audit ID: 3107169

Page: 2 of 1

Printed and Configured

Calibration Curve Data Summary for
Compound: Desmethoxy

Study: M195-GLP-Fwd_Ph_RJ

Analyte	Injection ID	Injection Date	Injection Time	Sample ID	Instrument	Analysis	Standard	Concentration	RSD	R2	Intercept	Slope	Injection Name
Desmethoxy	PH 4.00 Buffer	28 Feb 14	NA	NA	PH 4.00 Buffer	NA	NA	NA	170.7%	NA	NA	NA	NA
Desmethoxy	PH 4.00 Buffer	28 Feb 14	00	NA	PH 4.00 Buffer	NA	NA	NA	100%	NA	NA	NA	NA

Labstat International, LLC

000-01100-04

Date: 10 Feb 14
Report:

Nicotine in Smokeless Tobacco



M195-GLPwt_alk_b2_Calibration ~ Inve Data Summary.xls_3085486
Electronically Signed by: Peter Olbach
Path: c:\M195-GLP\3-Instrument Analysis\Alkaloids\WT\Block 2
Created: 2/5/2014 11:36:18 AM Audit ID: 3085486

Study: M195-GLP Block 2 SA Block W

Private and Confidential

Calibration Curve Data Summary for
Compounds Determined

Analyte	Standard # (Standard #, Date of Preparation)	Injection Date	Injection Time	Method	Instrument Identification	Analyst	Standard Concentration	RSD	R ²	Intercept	Slope	Injection Sum (Concentration * Response)
alk	1001	10/21/14	10:42	1.440000_140010_140010	GC 801 (AN) 812	P. Olbach	100	0.00	0.9999	0.0000	0.0000	0.0000
	370.0 140010	10/21/14	17:20				370	0.00	0.9999	0.0000	0.0000	0.0000
	370.0 140010	10/21/14	17:30				370	0.00	0.9999	0.0000	0.0000	0.0000
	370.0 140010	10/21/14	18:50				370	0.00	0.9999	0.0000	0.0000	0.0000
	370.0 140010	10/21/14	19:30				370	0.00	0.9999	0.0000	0.0000	0.0000
	370.0 140010	10/21/14	20:10				370	0.00	0.9999	0.0000	0.0000	0.0000
alk		10/21/14	20:33				100	0.00	0.9999	0.0000	0.0000	0.0000
alk		10/21/14	21:35				100	0.00	0.9999	0.0000	0.0000	0.0000

Blank (P. Olbach Feb 11/14)
Blank (P. Olbach Feb 5/12)

M195-GLP Final Study Report
RJRT Study ID: 1061

Study Identifier: M195-GLP

Study Report – Appendix G

Calibration Curve Data Summary

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April 23, 2014

PO

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Labstat Software, 2014
Labstat 3.0.0.0

OSI-01101-V4

Labstat International LLC

Sheet: Calibration Summary Table



Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

Calibration Curve Report, alkge6_140130.pdf_3072706
Electronically Signed By: Polar Othach
Path: \\fs2\repository\repository\3072706\
Created: 2/3/14 17:25 Audit ID: 3072706

Print Date: 03 Feb 2014 17:25:28

Calibration Curves Report

File: c:\star\data\alkaloids\projects\m195-glp\methods\alkgc8_140130.mth

Detector: 3800 GC, Address: 44, Channel ID: Rear

Verification File: c:\docume~1\collect\locals~1\temp\run~e08.run

Nicotine

Internal Standard Analysis

Resp. Fact. RSD: 1.998%

Curve Type: Linear

Origin: Force

Coeff. Det. (r^2): 0.999985

$$y = +1.2068e+000x$$

4,4-DIPYRIDYL

Standard for Internal Standard Analysis

[illegible]

Documents were recertified on a later date due to the quality of printouts in the original certification.



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195-GLP B1 CalChrom.pdf 3379401
Path: \\fs2\repository\repository\3379401\
Electronically Signed By: Peter Olbach On: 3/26/14 14:16 Audit ID: 3379401

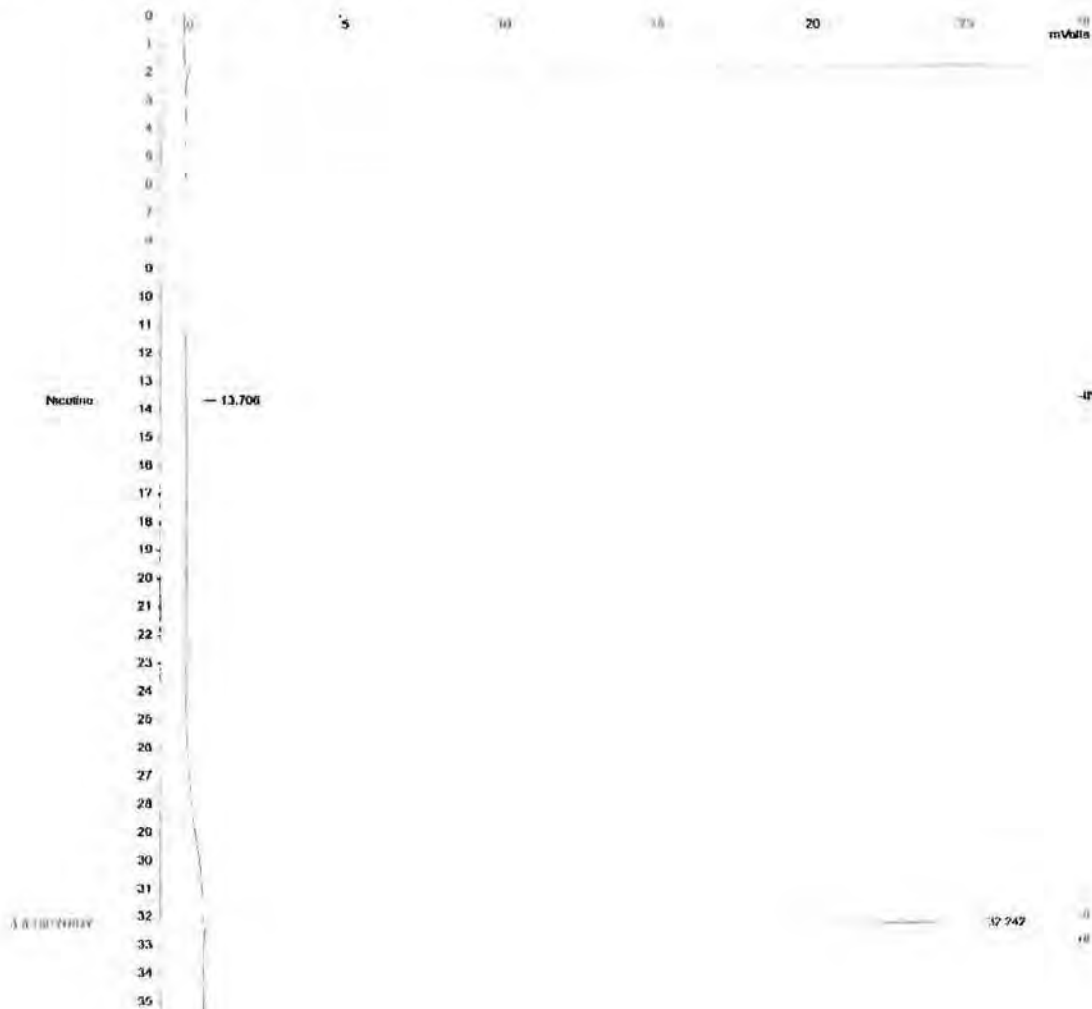
Title : Alkaloids
Run File : c:\data\data\alkaloids\projects\m195-glp\calibrations\alkyc6_140129_1_1_30_7014_5:20:05.pr\no.run
Method File : c:\data\data\alkaloids\projects\m195-glp\methods\alkyc6_140130.mh
Sample ID : STD 5 140129

Injection Date: 3/30/2014 5:20 PM Calculation Date: 3/31/2014 1:18 PM

Operator : Analyst
Workstation: LT010
Instrument : AT GC #6
Channel : Rear - TSD
Detector Type: 3800 (1 Volt)
Bus Address : 44
Sample Rate : 5.00 Hz
Run Time : 15.757 min

GC Workstation Multi Instrument Version 4.91 ** 00184-3488-c69-2010 **

Chart Speed : 2.54 cm/min Attenuation : 171 Zero Offset : 21
Start Time : 2:00 min End Time : 15:42 min Run Time : 1:00





Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

1195-G-3-E- Calculator Ref: 3379401
 22H "Schlegel" Weyers 3379401
 Electronically Signed By: 22H Q 3379401 Audi ID: 3379401

[illegible]



AM

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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Path: W:\2\repository\repository\3379401
Electronically Signed By: Peter Olbach On: 3/26/14 14:16 Audit ID: 3379401

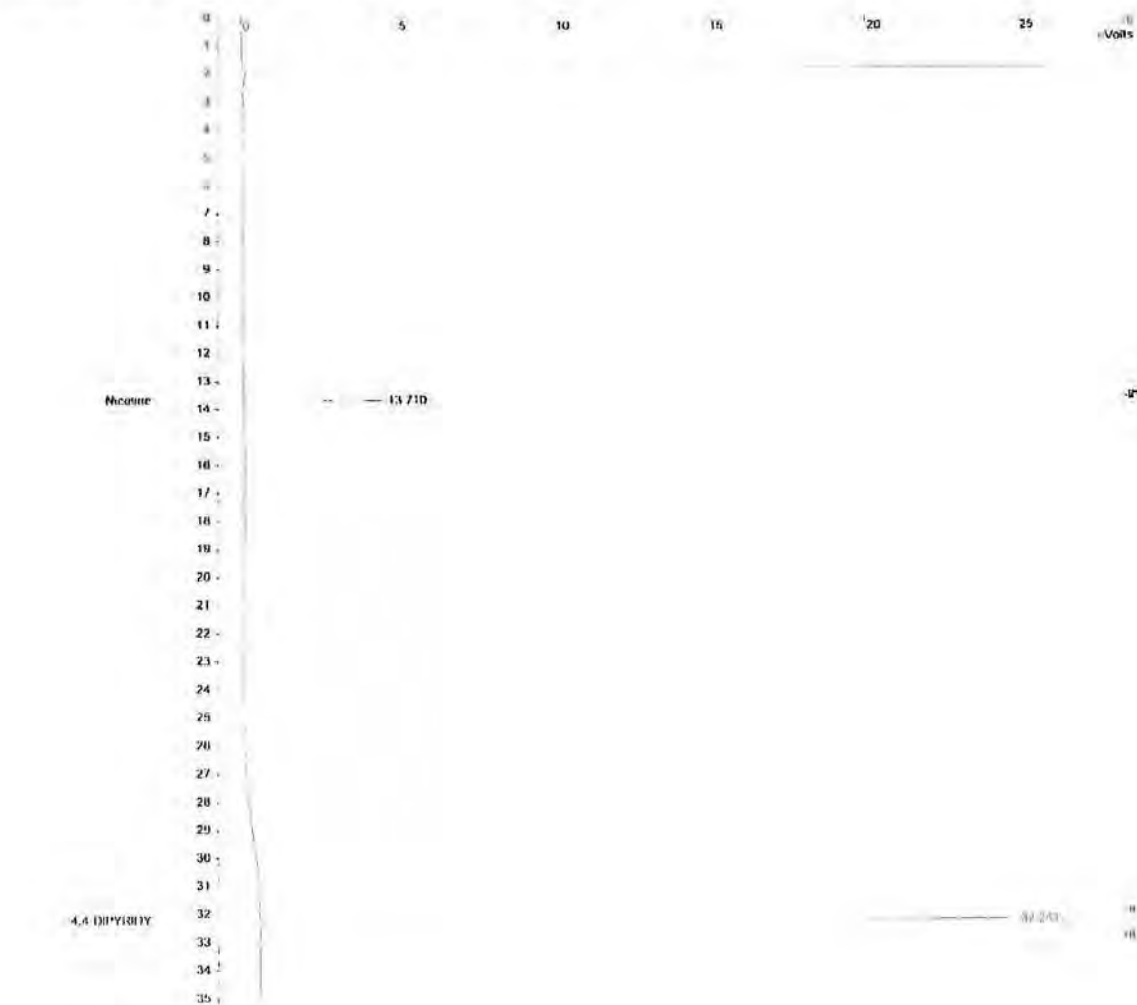
File: Alkaloids
Run File: c:\star\data\alkaloids\projects\m195-glp\calibrations\alkgc6_140110_1_1_10_2014_5_30_17.prj.d.run
Method File: c:\star\data\alkaloids\projects\m195-glp\methods\alkgc6_140110.m
Sample ID: SY04_140129

Injection Date: 1/30/2014 5:59 PM Calculation Date: 1/31/2014 1:10 PM

Operator: Analyst
Workstation: 17910
Instrument: 67 GC MS
Channel: Peak PSD
Detection Type: 1800 (1 Volts)
Bus Address: 1A
Sample Rate: 1.00 Hz
Run Time: 35.197 min

** GC Workstation Multi Instrument Version 6.11 ** 20134-3128-c69-7010 **

Chart Speed: 0.58 cm/min Attenuation: 121 Zero Offset: 21
Start Time: 0.000 min End Time: 35.197 min Scan Rate: 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

WHS-GL-51 Contract.pdf 3379401
Part 12/26/2013 10:10:10 AM
Electronically Signed By FAX Contact On 3/26/14 14:16 AUG 10 3379401

Page 10

10



APR

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195-GLP-B1 Calibration.pdf 3379401
Path: M:\2014\04\03\laboratory\3379401\1
Electronically Signed By: Peter Ollrich On: 3/26/14 14:16 Audit ID: 3379401

Title: Alkaloids
Run File: C:\star\data\alkaloids\projects\M195-glpcalibrations\alkgpc_140110_alard_1_140125_1_10-2011_6_57_05_pm_r0.m
Zimod File: C:\star\data\alkaloids\projects\M195-glpcalibrations\alkgpc_140110.m
Sample ID: STD 110129

Injection Date: 3/20/2011 6:57 PM Calculation Date: 4/11/2014 3:18 PM

Operator: Analyst Detector Type: 3800 (1 Volt)
Workstation: IT010 Bus Address: 11
Instrument: 4T GC 46 Sample Rate: 5.00 Hz
Tunnel: Near - TSD Run Time: 35.797 min

** GC Workstation Built: Instrument Version 6.41 ** 001843185 c69-2010 **

Chart Speed: 0.58 cm/min Attenuation: 225 Zero Offset: 25
Start Time: 0.000 min End Time: 35.797 min Sig. Tick: 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

M195-GLP-B1-CaChrom.pdf: 3379401
 Path: M195-GLP-B1-CaChrom.pdf: 3379401
 Electronically Signed By: Peter Olschak On: 3/25/14 7:15 Audit ID: 3379401

1. 研究の目的と意義
 本研究は、日本の経済成長と社会変革の背景にある要因を明らかにすることを目的とする。特に、戦後復興期における産業構造の変化と労働力の移動に焦点を当て、その長期的な影響を分析する意義を考察する。

2. 研究の範囲と対象
 本研究の範囲は、戦後（1945年）から平成時代（1989年）までの日本経済の発展と社会変革の過程に限定される。対象とするのは、製造業、サービス業、および農業の主要産業と、それらを支える労働力の移動と教育制度の発展である。

3. 研究の方法
 本研究は、定量的分析と定性的分析の両方を用いる。定量的分析として、GDP、産業別GDP、労働力人口、失業率などの統計データを分析し、時系列変化を把握する。定性的分析として、当時の政策文書、学術論文、およびインタビューを通じて、社会変革の背景とメカニズムを明らかにする。

4. 研究の成果と結論
 本研究の結果、戦後復興期には、製造業の急激な成長と労働力の大量移動が観察された。この成長は、高度経済成長期（1955-1973年）にピークを迎え、その後、サービス業への移行と労働力の高齢化が進んだ。結論として、日本の経済成長と社会変革は、産業構造の変化と労働力の移動の相互作用によって実現されたことが明らかになった。

5. 今後の研究の展望
 今後の研究では、グローバル化の影響と労働力の移動の新たなパターン、特に高齢化社会における労働力の活用と教育制度の改革について、さらなる調査と分析が必要である。



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195-GLP-B1 CalCurve.pdf 3379401
Path: W:\2\repository\repository\3379401\
Electronically Signed By: Peter Olbuck On 3/26/14 14:16 Audit ID: 3379401

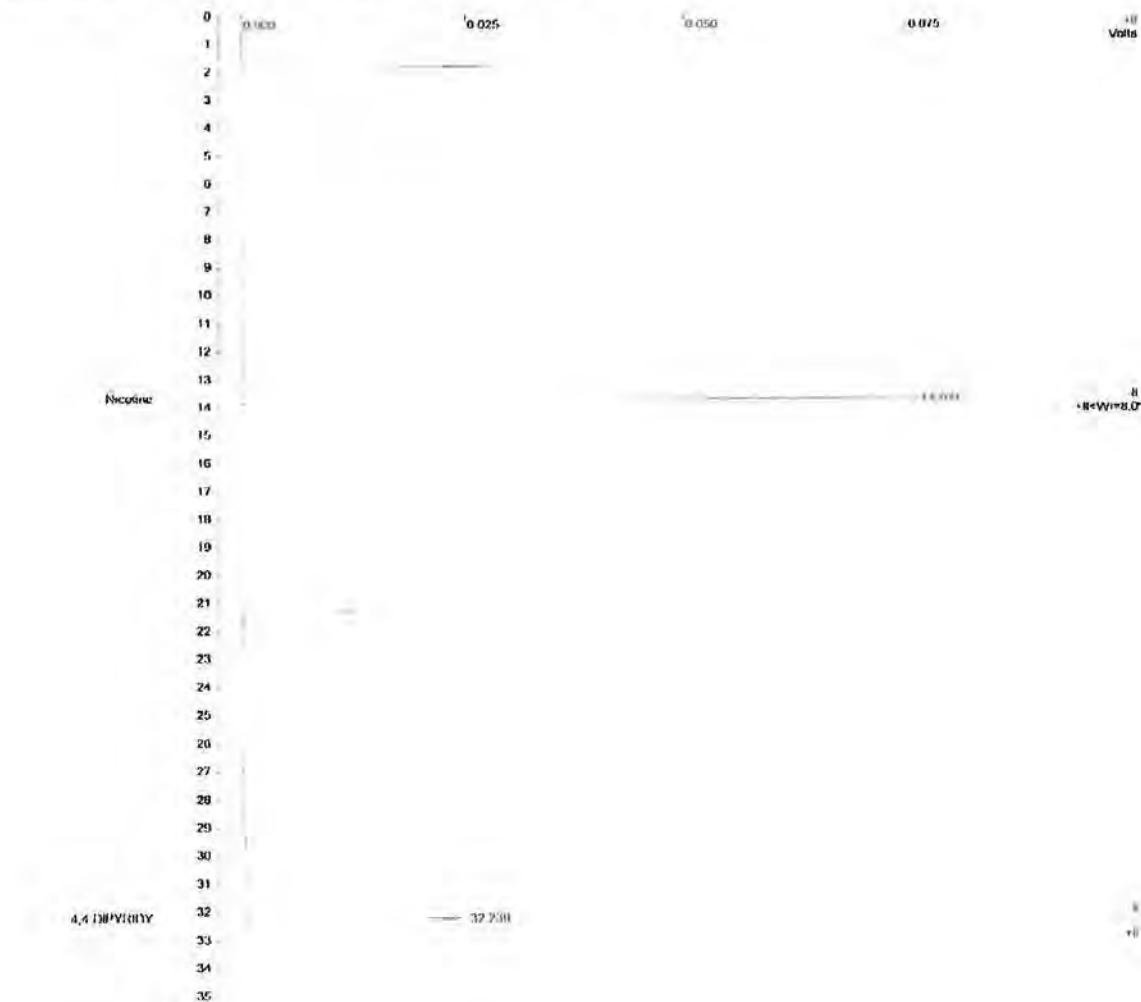
Title = Alkaloids
Run File = c:\star\data\alkaloids\projects\m195-glp\calibrations\alkgc6 110130_s\std 2 110129_1_1 30-7011 7:16:17 pm rd run
Method File = c:\star\data\alkaloids\projects\m195-glp\methods\alkgc6 110130.mh
Sample ID = STD 2 110129

Injection Date 4/10/2014 7:38 PM Calculation Date 1/11/2015 11:18 PM

Operator = Analyst Detector Type 1800 (1 Unit)
Workstation T010 Bus Address = 11
Instrument 71 92 24 Sample Rate 5.20 Hz
Channel 204: (30) Scan Time 15.124 sec

GC Workstation Full: Instrument Version 5.41 ** 90184 3488-c69-2010 **

Chart Speed = 0.50 cm/min Attenuation = 12.7 Zero Offset = 21
Start Time = 3.000 min End Time = 35.797 min Min / Tick = 1.00



Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

0055-5076 E: Call number 3375401
 Call 182 Accession number 3379401
 Electronically Signed By Peter Ober On 2/28/2014 14:15 Audit ID: 3379401

[illegible]



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195-GLP-B1-CalChrom.pdf 3379401
Path: W:\2\repository\repository\3379401
Electronically Signed By: Peter Olbach On: 3/26/14 14:16 Audit ID: 3379401

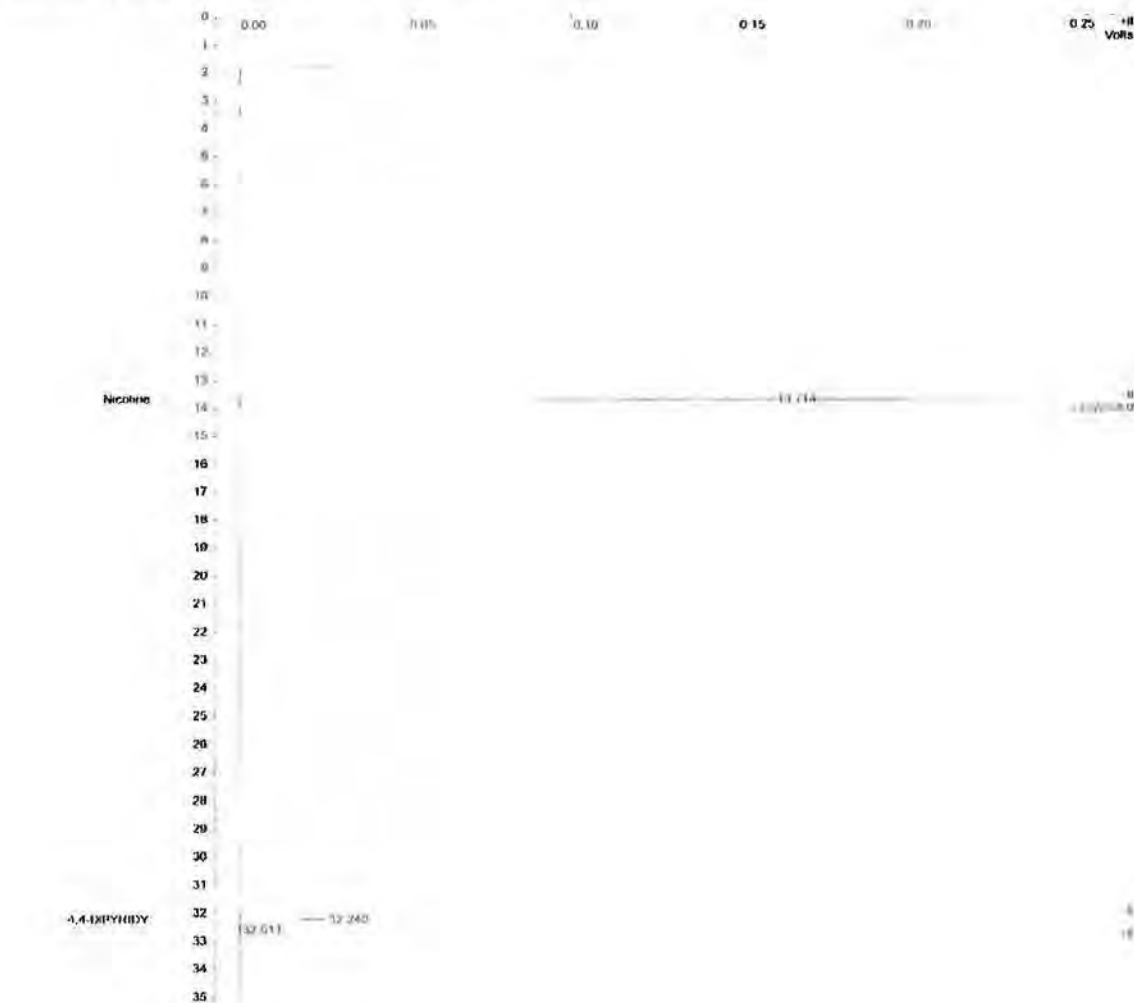
Title Alkaloids
Run File c:\star\data\alkaloids\projects\m195-qlp\calibrations\alkaloids_140130_alcald 1-140129 1 30-2011_0_16_25 pm_rd run
Method File c:\star\data\alkaloids\projects\m195-qlp\methods\alog6 140130.mth
Sample ID STD 110529

Injection Date 03/15/2011 8:10 AM Calibration Date 1/31/2011 1:19 PM

Operator Analyst Detector Type 1800 (1 Volt)
Workstation 10100 Bus Address 14
Instrument WT GC 86 Sample Rate 5.00 Hz
Channel Rear + TSH Run Time 35.797 min

** GC Workstation Multi Instrument Version 6.41 ** 00184-3488-c63 2010 **

Chart Speed = 0.58 cm/min Attenuation = 1118 Zero Offset = 25
Start Time = 0.000 min End Time = 35.797 min Min / Tick = 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

M195-GLP By: CalCrest Job: 3379401
Path: \\s21repo\calcrest\jobs\3379401\1
Electronically Signed By: Peter Olcott On: 3/26/14 14:16 Audit ID: 3379401

1. General Information
 a. Name of the person: [Name]
 b. Date of birth: [Date]
 c. Place of birth: [Place]
 d. Current address: [Address]
 e. Telephone number: [Number]
 f. Occupation: [Occupation]
 g. Marital status: [Status]
 h. Number of children: [Number]
 i. Date of entry into the country: [Date]
 j. Reason for entry: [Reason]

2. Education
 a. School attended: [School]
 b. Degree obtained: [Degree]
 c. Year of graduation: [Year]

3. Employment History
 a. Employer: [Employer]
 b. Position: [Position]
 c. Dates of employment: [Dates]

4. Financial Information
 a. Annual income: [Income]
 b. Source of income: [Source]
 c. Assets: [Assets]
 d. Liabilities: [Liabilities]

5. Health and Medical History
 a. Current health status: [Status]
 b. Past medical conditions: [Conditions]
 c. Date of last medical examination: [Date]

6. Travel History
 a. Countries visited: [Countries]
 b. Dates of travel: [Dates]

7. References
 a. Name of reference: [Name]
 b. Address: [Address]
 c. Telephone number: [Number]

8. Signature and Date
 a. Signature: [Signature]
 b. Date: [Date]

9. Remarks
 a. [Remarks]
 b. [Remarks]
 c. [Remarks]

10. Conclusion
 a. Summary of findings: [Summary]
 b. Recommendations: [Recommendations]



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calibration Curve_alkgc0_140203.pdf_3074209
Electronically Signed By: Bor Cha
Path: W:\s2\repository\repository\3074209\
Created: 2/4/14 08:40 Audit ID: 3074209

Print Date: 04 Feb 2014 08:38:52

Calibration Curve Report

File: c:\star\data\alkaloids\method\alkgc6_140203.mth

Detector: 3800 GC. Address: 44. Channel ID: Rear

Nicotine

Internal Standard Analysis

Curve Type: Linear

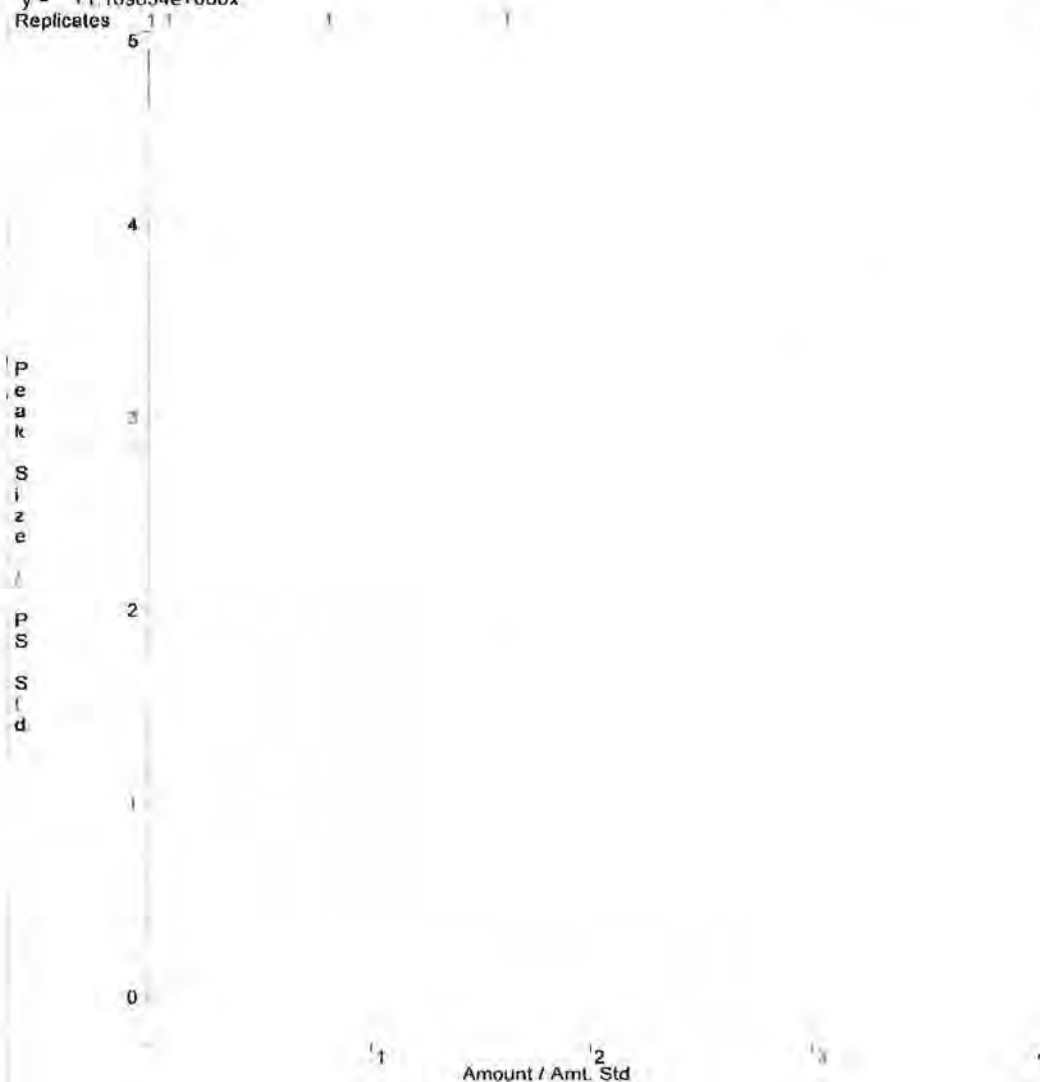
Origin: Force

y = +1.169654e+000x

Replicates

Resp. Fact. RSD: 1.553%

Coeff. Det.(r²): 0.999951





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Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

alkgc6_cal chrom & results_140203b.pdf_3259100
Electronically Signed By: Bor Cha
Path: W:\s2\repository\repository\3259100\
Created: 3/6/14 10:32 Audit ID: 3259100

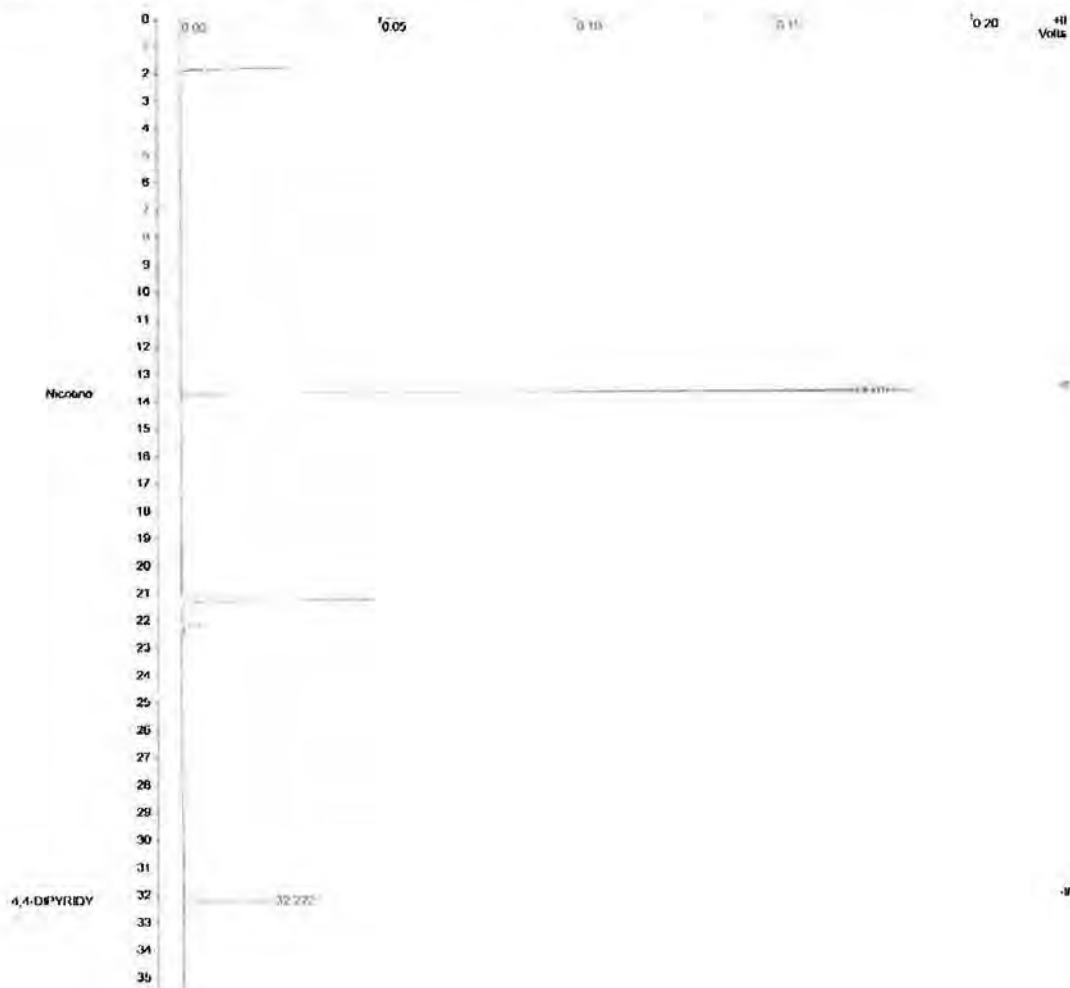
Title : Alkaloids
Run File : c:\star\data\alkaloids\calibrations\alkgc6_140203_s\std 1 140129_2-3-2014_10:56:45 pm. run
Method File : c:\star\data\alkaloids\method\alkgc6_140203.mth
Sample ID : STD 1 140129

Injection Date: 2/3/2014 10:56 PM Calculation Date: 3/6/2014 9:53 AM

Operator : Analyst Detector Type: J800 (1 Volt)
Workstation : 4703C Bus Address : 34
Instrument : WT GC 40 Sample Rate : 5.00 Hz
Channel : Ref = MSB Run Time : 35.79 min

GC Workstation Multi Instrument Version 6.11 ** 00161-1166-c69-2010 **

Chart Speed 0.59 cm/min Attenuation 946 Inlet Offset = 28
Start Time 0.150 min End Time = 35.79 min Inlet / FID = 1.00



Study Identifier: M195-GLP

Study Report – Appendix G Calibration Curve Data Summary

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alkgc6_cal chrom & results_140203b.pdf_3259100
Electronically Signed By: Bor Cha
Path: Mfs2\repository\repository\3259100
Created: 3/6/14 10:32 Audit ID: 3259100

Print Date: Thu Mar 16 10:59:34 2014 Page: 16 of 1

File : AlkCalChrom
Run File : c:\Nstrut\ddc\alk\alkgc6_cal chrom & results_140203b.pdf_3259100
Method File : c:\Nstrut\ddc\alk\alkgc6_cal chrom & results_140203b.pdf_3259100
Sample ID : STD 140124

Injection Date: 3/6/2014 1:18 PM Calculation Date: 3/6/2014 1:18 PM

Operator : Analyst Detector Type: 3800 (1 Volt)
Workstation: IT030 Bus Address : 44
Instrument : WT GC #8 Sample Rate : 5.00 Hz
Channel : Ret = TSS Run Time : 35.797 min

** GC Workstation Multi Instrument Version: 6.41 ** 00194-2488-c69-2010 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: Internal Standard
Level : 1

Peak No.	Peak Name	Ret Time (min)	Time Offset (min)	Area (counts)	Sup. Code	1/2 (sec)	Status Code
1	Nicotine	13.207	0.007	544560	IS	0.7	
2	4,4-DIPYRIDY	20.222	0.000	174224	IS	4.8	S
Totals:				0.007	658804		

Status Codes:
S = Internal Standard peak

Total Unidentified Peaks: 0 counts

Detected Peaks: 2 Rejected Peaks: 0 Identified Peaks:

Standard Peak Amount:
All Standards Amount: 749.5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor:

Baseline Offset: -37 microVolts LSB: 1 microVolts

Noise (used): 1.1 microVolts - monitored before this run

Vials: 0 Injects: Success: 0 Rejections: 0



APM

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

nlkgc8_cal chrom & results_140203b.pdf_3259100
Electronically Signed By: Bor Cha
Path: Ws2repository\repository\3259100\
Created: 3/6/14 10:32 Audit ID: 3259100

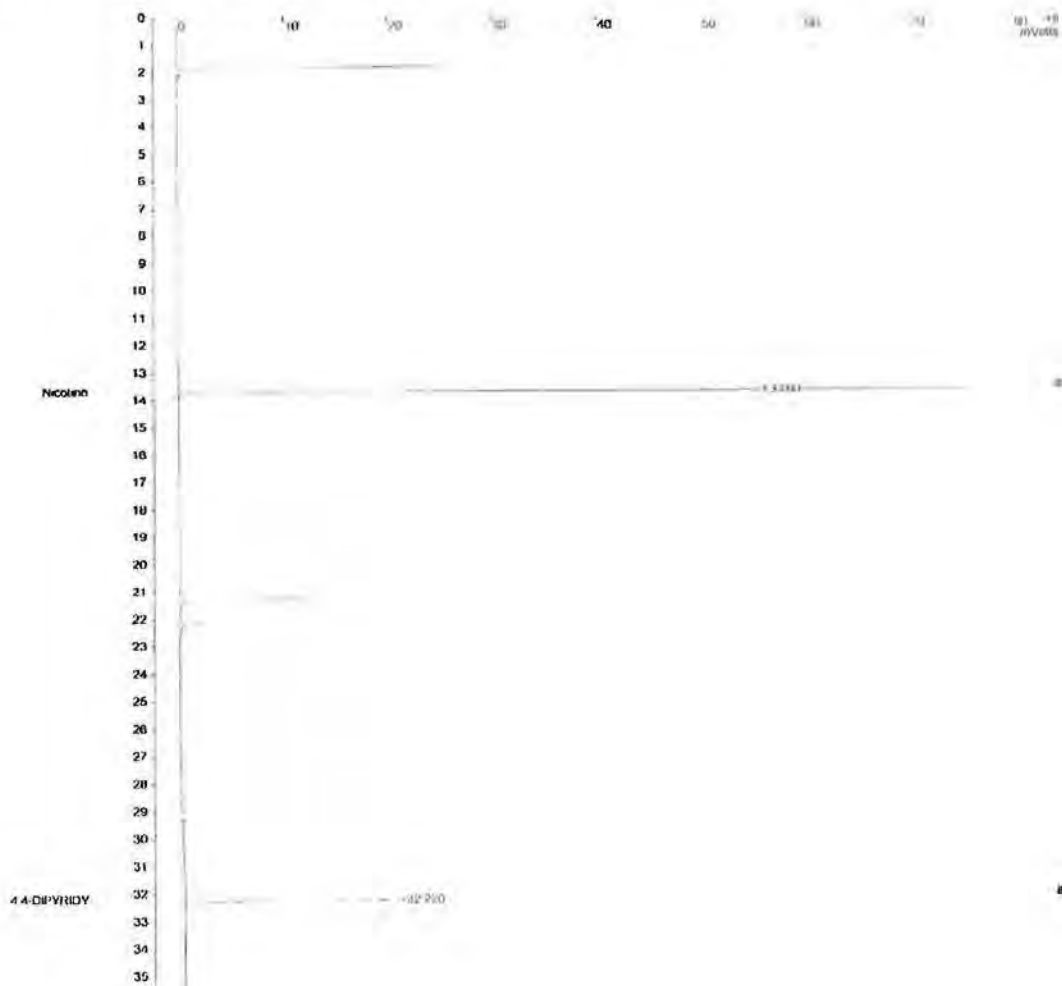
Title : Alkaloids
Run File : c:\stat\data\alkaloids\calibrations\align6_140203b.pdf_3259100
Method File : c:\stat\data\alkaloids\method\align6_140203b.mth
Sample ID : STD 2 110129

Injection Date: 2/3/2014 10:17 PM Calculation Date: 3/6/2014 9:49 AM

Operator : Analyst
Workstation : IT030
Instrument : 87 GC #6
Channel : Rear = TSD
Injection Type: 1000 µl Split
Bus Address : 11
Sample Rate : 5.00 Hz
Run Time : 145.797 min

GC Workstation Multi Instrument Version 6.41 - 00184-3443-269-7010

Chart Speed : 5.50 cm/min Attenuation : 358 Zero Offset : 21
Start Time : 0.700 min End Time : 32.950 min Run # 1 of 1 1.00





Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

81kg06_calibration & results_140203b.pdf_3259100
Electronically Signed by: BO CHA
Path: \\MS2\repository\repository\3259100
Created: 3/6/14 10:32 Audit ID: 3259100

Print Date: Thu Mar 26 11:20:02 2014 Page: 1 of 1

File: 140203b
Run File: 140203b
Method File: 140203b
Sample ID: 1 STD 140149

Injection Date: 3/5/2014 10:17 PM Calibration Date: 3/5/2014 9:43 AM

Operator: 1 RUCYPT
Injection: 1 STD
Injection: 1 STD
Channel: 1 STD
Run Time: 13.97 min

-- GC Workstation Null Instrument Version 6.41 -- 00164348-009-2070 --

RUN MODE: 1 Calibration
Peak Measurement: Peak Area
Calibration Type: External Standard

Peak No.	Peak Name	Time (min)	Area (count)	Std. 1/2 (count)	Std. 2/2 (count)
1	4-CHLOROPHENOL	1.720	21543	92	5
2	4-CHLOROPHENOL	1.720	11532	92	5
Total:		1.720	33075		

Inject Codes:
S - Standard, Standard Peak
T - External Standard, Standard Peak

Peak: 1
Reference Peak: 1
Reference Peak: 1

Standard Peak Amount: 245.8
Std. Standard Amount: 245.8

Multiplier: N/A Division: N/A Calibration Peak Factor: 1.000000

Sample Name: 140203b - MONITORED BEFORE THIS RUN
Name: 140203b - MONITORED BEFORE THIS RUN

File: 140203b - MONITORED BEFORE THIS RUN



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Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

nlkgc6_cal chrom & results_140203b.pdf_3259100
Electronically Signed By: Bor Cha
Path: \\fs2\\repository\\repository\\3259100\\
Created: 3/6/14 10:32 Audit ID: 3259100

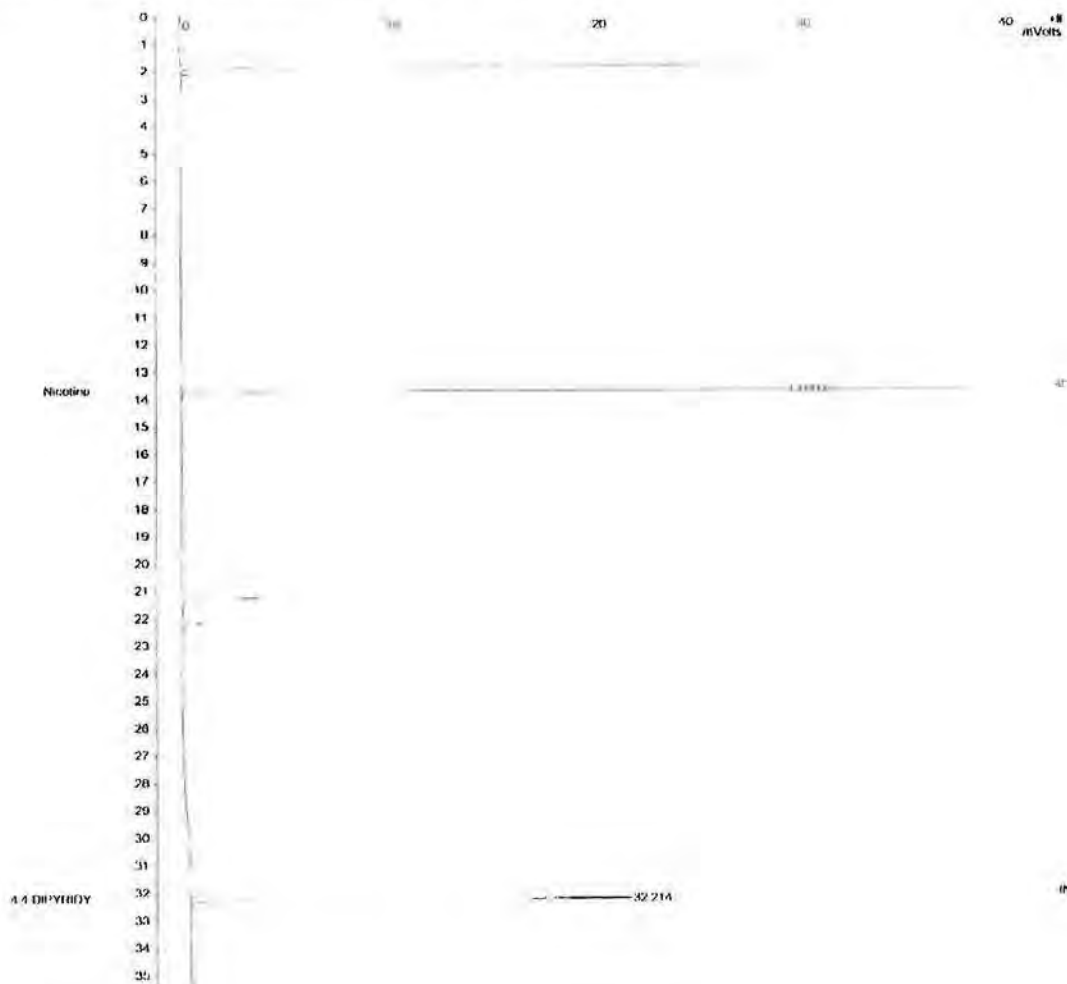
Title : NJR012108
Run File : c:\star\data\al\kalis\calibrations\al\kgc6_140203b.pdf_3259100_3-3-2014_9c4744.mz
Method File : c:\star\data\al\kalis\method\al\kgc6_140203b.mz
Sample ID : S10114129

Injection Date: 2/3/2014 8:17 PM Calibration Date: 3/6/2014 9:51 AM

Operator : Analyst Detector Type: 3800 FI Vial
Workstation: 17530 Bus Address: 14
Instrument : AT GC #6 Sample Rate: 5.00 Hz
Channel : Rear TSD Run Time: 35.79 min

GC Workstation Mult: Instrument Version 8.11.0 30134-1488-049-2010

Chart Speed: 0.58 cm/min Attenuation: 183 Zero Offset: 24
Start Time: 0.000 min End Time: 35.79 min Run Time: 35.79 min





Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: Thu Mar 06 10:04:42 2014 Page 1 of 1

File: 1 Atolite
Run File: 1 C:\Users\Labstat\Documents\140203s\140203s\data\140203s\data\140203s.m
Method File: 1 C:\Users\Labstat\Documents\140203s\140203s.m
Sample ID: 1 STD 1 140203

Injection Date: 1/2/2014 9:17 PM Calibration Date: 2/6/2014 11:07 AM

Operator: 1 Analyst
Vial Location: 1 T030
Injection: 1 WJ SC #6
Channel: 1 Res: 1 TSD
Run Time: 1 10:07 min

-- GC Method: 1 GC Instrument: 1 Version: 6.41 -- Data: 140203s --

Run Mode: 1 Calibration
Peak Number: 1 Peak Name: 1
Acquisition Type: 1 Internal Standard
Level: 1 2

Peak No.	Peak Name	Ret. Time (min)	Offset (min)	Area (counts)	Std. 1/2 (counts)	Std. 1/2 (counts)
1	140203s	3.2435	-0.001	10438	58	58
2	140203s	3.2434	-0.001	11820	58	58
Total:			-0.001	22458		

Spec Conc: 1
S - Internal Standard 2000

Total Injection Count: 1
Detected Peaks: 2 Rejected Peaks: 0 Identified Peaks: 2

Standard Peak Amount: 140.0
All Standards: 140.0

Multiplicity: N/A Division: N/A Unidentified Peak: 11.0

Sample Weight: 44.0 micrograms
Sample: 1 micrograms

Note: Peaks 1 & 2 are both - remaining before split out

Unit: 1 Injection Number: 1 Run Count: 1

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Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

alkqc6_cal chrom & results_140203b.pdf_3259100
Electronically Signed By: Bor Cha
Path: M:\s2\repository\repository\3259100\
Created: 3/6/14 10:32 Audit ID: 3259100

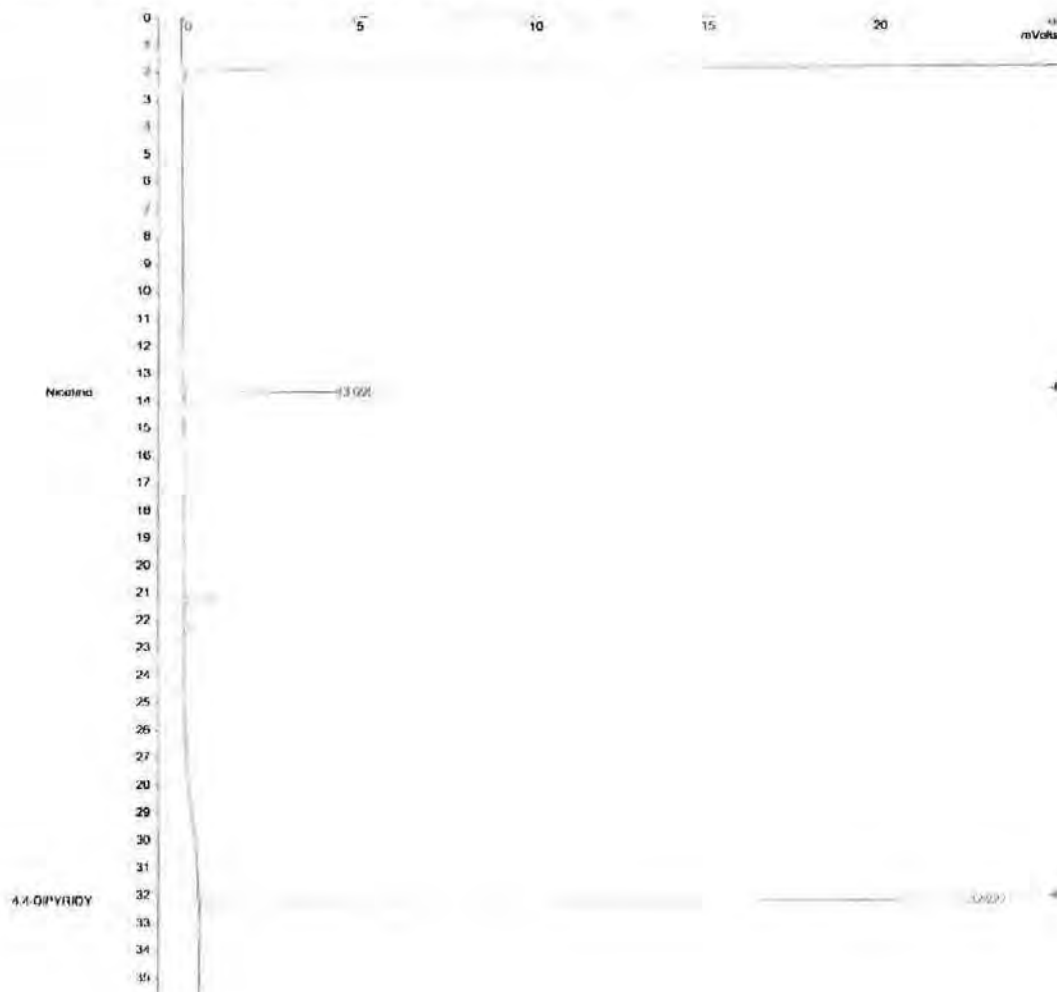
Title : Alkaloids
Run File : c:\star\data\alkaloids\calibrations\alkqc6_140203\star_140129_2-3-2014_8:56:06 pm.fun
Method File : c:\star\data\alkaloids\method\alkqc6_140203.mth
Sample ID : STD 1 140129

Injection Date: 2/3/2014 8:58 PM Calculation Date: 3/6/2014 3:53 AM

Operator : Analyst
Workstation: T7910
Instrument : RI 01 #6
Channel : Reas - TSC
Detector Type: RI06 T7910
Bus Address : 11
Sample Name : Y-35-02
Run Time : 35.78 min

* GC Workstation Build Instrument Version 6.11 * 00181-1402-07-2010

Chart Speed - 0.56 cm/min Attenuation - 10⁷ Zero Offset 71
Start Time - 0.000 min End Time - 35.757 min Run / Vial 1 / 00





APM

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

alkqc0_cal chrom & results_140203b.pdf_3259100
Electronically Signed By: Bor Cha
Path: W:\s2\repository\repository\3259100\
Created: 3/6/14 10:32 Audit ID: 3259100

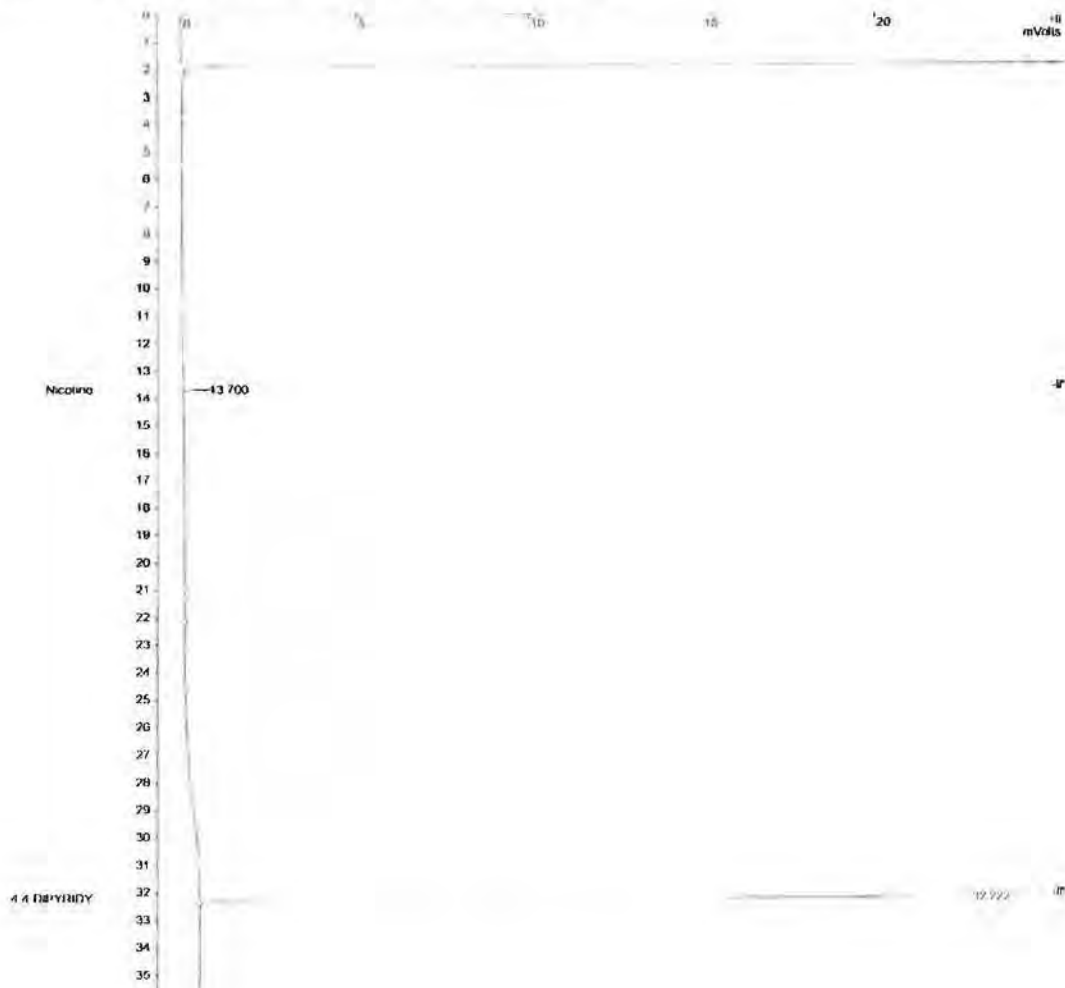
Title : Alkaloids
Run File : c:\star\data\alkaloids\calibrations\alkqc6_140203_4\atd_5_140129_7-7-2014_6:15:36 pm.run
Method File : c:\star\data\alkaloids\method\alkqc6_140203.mth
Sample ID : STD 5 140129

Injection Dates: 2/7/2014 4:16 PM Calculation Date: 3/6/2014 9:51 AM

Operator : Analyst
Workstation: JT030
Instrument: WT GC-18
Channel : Rear : TSC
Detector Type: 3020 (1 Volt)
Bus Address : 14
Sample Rate : 2.00 Hz
Run Time : 15.20 min

GC Workstation (v11) Instrument Version 6.11 (06181-4189-c67-2110)

Chart Speed : 0.58 cm/min Attenuation : 10 Zero Offset : 25
Start Time : 0.000 min End Time : 35.35 min Bin / Tick : 1.00





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Study Report – Appendix G

Calibration Curve Data Summary

[illegible]

Polycyclic Aromatic Hydrocarbons in Smokeless Tobacco



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_WT_B2_calibration_curve_data_summary.pdf_3203702
Electronically Signed By: Banoz Jaslek
Path: \\s2vaporatory\repository\3203702\
Created: 2/26/14 09:18 Audit ID: 3203702

Page 1 of 1									
Printed and Calculated									
Calibration Curve Data Summary for									
Compound: Benzo[a]pyrene									
Sample	Concentration (ng/mL)	Retention Time (min)	Peak Area	Peak Width (min)	Peak Height (AU)	Peak Width (min)	Peak Height (AU)	Peak Width (min)	Peak Height (AU)
Benzo[a]pyrene	100	14.020	14020	0.020	14020	0.020	14020	0.020	14020
Benzo[a]pyrene	200	14.020	28040	0.020	28040	0.020	28040	0.020	28040
Benzo[a]pyrene	300	14.020	42060	0.020	42060	0.020	42060	0.020	42060
Benzo[a]pyrene	400	14.020	56080	0.020	56080	0.020	56080	0.020	56080
Benzo[a]pyrene	500	14.020	70100	0.020	70100	0.020	70100	0.020	70100
Benzo[a]pyrene	600	14.020	84120	0.020	84120	0.020	84120	0.020	84120
Benzo[a]pyrene	700	14.020	98140	0.020	98140	0.020	98140	0.020	98140
Benzo[a]pyrene	800	14.020	112160	0.020	112160	0.020	112160	0.020	112160
Benzo[a]pyrene	900	14.020	126180	0.020	126180	0.020	126180	0.020	126180
Benzo[a]pyrene	1000	14.020	140200	0.020	140200	0.020	140200	0.020	140200
Benzo[a]pyrene	1100	14.020	154220	0.020	154220	0.020	154220	0.020	154220
Benzo[a]pyrene	1200	14.020	168240	0.020	168240	0.020	168240	0.020	168240
Benzo[a]pyrene	1300	14.020	182260	0.020	182260	0.020	182260	0.020	182260
Benzo[a]pyrene	1400	14.020	196280	0.020	196280	0.020	196280	0.020	196280
Benzo[a]pyrene	1500	14.020	210300	0.020	210300	0.020	210300	0.020	210300
Benzo[a]pyrene	1600	14.020	224320	0.020	224320	0.020	224320	0.020	224320
Benzo[a]pyrene	1700	14.020	238340	0.020	238340	0.020	238340	0.020	238340
Benzo[a]pyrene	1800	14.020	252360	0.020	252360	0.020	252360	0.020	252360
Benzo[a]pyrene	1900	14.020	266380	0.020	266380	0.020	266380	0.020	266380
Benzo[a]pyrene	2000	14.020	280400	0.020	280400	0.020	280400	0.020	280400
Benzo[a]pyrene	2100	14.020	294420	0.020	294420	0.020	294420	0.020	294420
Benzo[a]pyrene	2200	14.020	308440	0.020	308440	0.020	308440	0.020	308440
Benzo[a]pyrene	2300	14.020	322460	0.020	322460	0.020	322460	0.020	322460
Benzo[a]pyrene	2400	14.020	336480	0.020	336480	0.020	336480	0.020	336480
Benzo[a]pyrene	2500	14.020	350500	0.020	350500	0.020	350500	0.020	350500
Benzo[a]pyrene	2600	14.020	364520	0.020	364520	0.020	364520	0.020	364520
Benzo[a]pyrene	2700	14.020	378540	0.020	378540	0.020	378540	0.020	378540
Benzo[a]pyrene	2800	14.020	392560	0.020	392560	0.020	392560	0.020	392560
Benzo[a]pyrene	2900	14.020	406580	0.020	406580	0.020	406580	0.020	406580
Benzo[a]pyrene	3000	14.020	420600	0.020	420600	0.020	420600	0.020	420600
Benzo[a]pyrene	3100	14.020	434620	0.020	434620	0.020	434620	0.020	434620
Benzo[a]pyrene	3200	14.020	448640	0.020	448640	0.020	448640	0.020	448640
Benzo[a]pyrene	3300	14.020	462660	0.020	462660	0.020	462660	0.020	462660
Benzo[a]pyrene	3400	14.020	476680	0.020	476680	0.020	476680	0.020	476680
Benzo[a]pyrene	3500	14.020	490700	0.020	490700	0.020	490700	0.020	490700
Benzo[a]pyrene	3600	14.020	504720	0.020	504720	0.020	504720	0.020	504720
Benzo[a]pyrene	3700	14.020	518740	0.020	518740	0.020	518740	0.020	518740
Benzo[a]pyrene	3800	14.020	532760	0.020	532760	0.020	532760	0.020	532760
Benzo[a]pyrene	3900	14.020	546780	0.020	546780	0.020	546780	0.020	546780
Benzo[a]pyrene	4000	14.020	560800	0.020	560800	0.020	560800	0.020	560800
Benzo[a]pyrene	4100	14.020	574820	0.020	574820	0.020	574820	0.020	574820
Benzo[a]pyrene	4200	14.020	588840	0.020	588840	0.020	588840	0.020	588840
Benzo[a]pyrene	4300	14.020	602860	0.020	602860	0.020	602860	0.020	602860
Benzo[a]pyrene	4400	14.020	616880	0.020	616880	0.020	616880	0.020	616880
Benzo[a]pyrene	4500	14.020	630900	0.020	630900	0.020	630900	0.020	630900
Benzo[a]pyrene	4600	14.020	644920	0.020	644920	0.020	644920	0.020	644920
Benzo[a]pyrene	4700	14.020	658940	0.020	658940	0.020	658940	0.020	658940
Benzo[a]pyrene	4800	14.020	672960	0.020	672960	0.020	672960	0.020	672960
Benzo[a]pyrene	4900	14.020	686980	0.020	686980	0.020	686980	0.020	686980
Benzo[a]pyrene	5000	14.020	701000	0.020	701000	0.020	701000	0.020	701000
Benzo[a]pyrene	5100	14.020	715020	0.020	715020	0.020	715020	0.020	715020
Benzo[a]pyrene	5200	14.020	729040	0.020	729040	0.020	729040	0.020	729040
Benzo[a]pyrene	5300	14.020	743060	0.020	743060	0.020	743060	0.020	743060
Benzo[a]pyrene	5400	14.020	757080	0.020	757080	0.020	757080	0.020	757080
Benzo[a]pyrene	5500	14.020	771100	0.020	771100	0.020	771100	0.020	771100
Benzo[a]pyrene	5600	14.020	785120	0.020	785120	0.020	785120	0.020	785120
Benzo[a]pyrene	5700	14.020	799140	0.020	799140	0.020	799140	0.020	799140
Benzo[a]pyrene	5800	14.020	813160	0.020	813160	0.020	813160	0.020	813160
Benzo[a]pyrene	5900	14.020	827180	0.020	827180	0.020	827180	0.020	827180
Benzo[a]pyrene	6000	14.020	841200	0.020	841200	0.020	841200	0.020	841200
Benzo[a]pyrene	6100	14.020	855220	0.020	855220	0.020	855220	0.020	855220
Benzo[a]pyrene	6200	14.020	869240	0.020	869240	0.020	869240	0.020	869240
Benzo[a]pyrene	6300	14.020	883260	0.020	883260	0.020	883260	0.020	883260
Benzo[a]pyrene	6400	14.020	897280	0.020	897280	0.020	897280	0.020	897280
Benzo[a]pyrene	6500	14.020	911300	0.020	911300	0.020	911300	0.020	911300
Benzo[a]pyrene	6600	14.020	925320	0.020	925320	0.020	925320	0.020	925320
Benzo[a]pyrene	6700	14.020	939340	0.020	939340	0.020	939340	0.020	939340
Benzo[a]pyrene	6800	14.020	953360	0.020	953360	0.020	953360	0.020	953360
Benzo[a]pyrene	6900	14.020	967380	0.020	967380	0.020	967380	0.020	967380
Benzo[a]pyrene	7000	14.020	981400	0.020	981400	0.020	981400	0.020	981400
Benzo[a]pyrene	7100	14.020	995420	0.020	995420	0.020	995420	0.020	995420
Benzo[a]pyrene	7200	14.020	1009440	0.020	1009440	0.020	1009440	0.020	1009440
Benzo[a]pyrene	7300	14.020	1023460	0.020	1023460	0.020	1023460	0.020	1023460
Benzo[a]pyrene	7400	14.020	1037480	0.020	1037480	0.020	1037480	0.020	1037480
Benzo[a]pyrene	7500	14.020	1051500	0.020	1051500	0.020	1051500	0.020	1051500
Benzo[a]pyrene	7600	14.020	1065520	0.020	1065520	0.020	1065520	0.020	1065520
Benzo[a]pyrene	7700	14.020	1079540	0.020	1079540	0.020	1079540	0.020	1079540
Benzo[a]pyrene	7800	14.020	1093560	0.020	1093560	0.020	1093560	0.020	1093560
Benzo[a]pyrene	7900	14.020	1107580	0.020	1107580	0.020	1107580	0.020	1107580
Benzo[a]pyrene	8000	14.020	1121600	0.020	1121600	0.020	1121600	0.020	1121600
Benzo[a]pyrene	8100	14.020	1135620	0.020	1135620	0.020	1135620	0.020	1135620
Benzo[a]pyrene	8200	14.020	1149640	0.020	1149640	0.020	1149640	0.020	1149640
Benzo[a]pyrene	8300	14.020	1163660	0.020	1163660	0.020	1163660	0.020	1163660
Benzo[a]pyrene	8400	14.020	1177680	0.020	1177680	0.020	1177680	0.020	1177680
Benzo[a]pyrene	8500	14.020	1191700	0.020	1191700	0.020	1191700	0.020	1191700
Benzo[a]pyrene	8600	14.020	1205720	0.020	1205720	0.020	1205720	0.020	1205720
Benzo[a]pyrene	8700	14.020	1219740	0.020	1219740	0.020	1219740	0.020	1219740
Benzo[a]pyrene	8800	14.020	1233760	0.020	1233760	0.020	1233760	0.020	1233760
Benzo[a]pyrene	8900	14.020	1247780	0.020	1247780	0.020	1247780	0.020	1247780
Benzo[a]pyrene	9000	14.020	1261800	0.020	1261800	0.020	1261800	0.020	1261800
Benzo[a]pyrene	9100	14.020	1275820	0.020	1275820	0.020	1275820	0.020	1275820
Benzo[a]pyrene	9200	14.020	1289840	0.020	1289840	0.020	1289840	0.020	1289840
Benzo[a]pyrene	9300	14.020	1303860	0.020	1303860	0.020	1303860	0.020	1303860
Benzo[a]pyrene	9400	14.020	1317880	0.020	1317880	0.020	1317880	0.020	1317880
Benzo[a]pyrene	9500	14.020	1331900	0.020	1331900	0.020	1331900	0.020	1331900
Benzo[a]pyrene	9600	14.020	1345920	0.020	1345920	0.020	1345920	0.020	1345920
Benzo[a]pyrene	9700	14.020	1359940	0.020	1359940	0.020	1359940	0.020	1359940
Benzo[a]pyrene	9800	14.020	1373960	0.020	1373960	0.020	1373960	0.020	1373960
Benzo[a]pyrene	9900	14.020	1387980	0.020	1387980	0.020	1387980	0.020	1387980
Benzo[a]pyrene	10000	14.020	1402000	0.020	1402000	0.020	1402000	0.020	1402000

M195GLP_PAH_WT_B3_calibration_curve_data_summary.pdf_3203783
 Electronically Signed By: Bartosz Jasiek
 Path: \\fs2\\repository\\repository\\3203783\\
 Created 2/26/14 08:20 Audit ID: 3203783

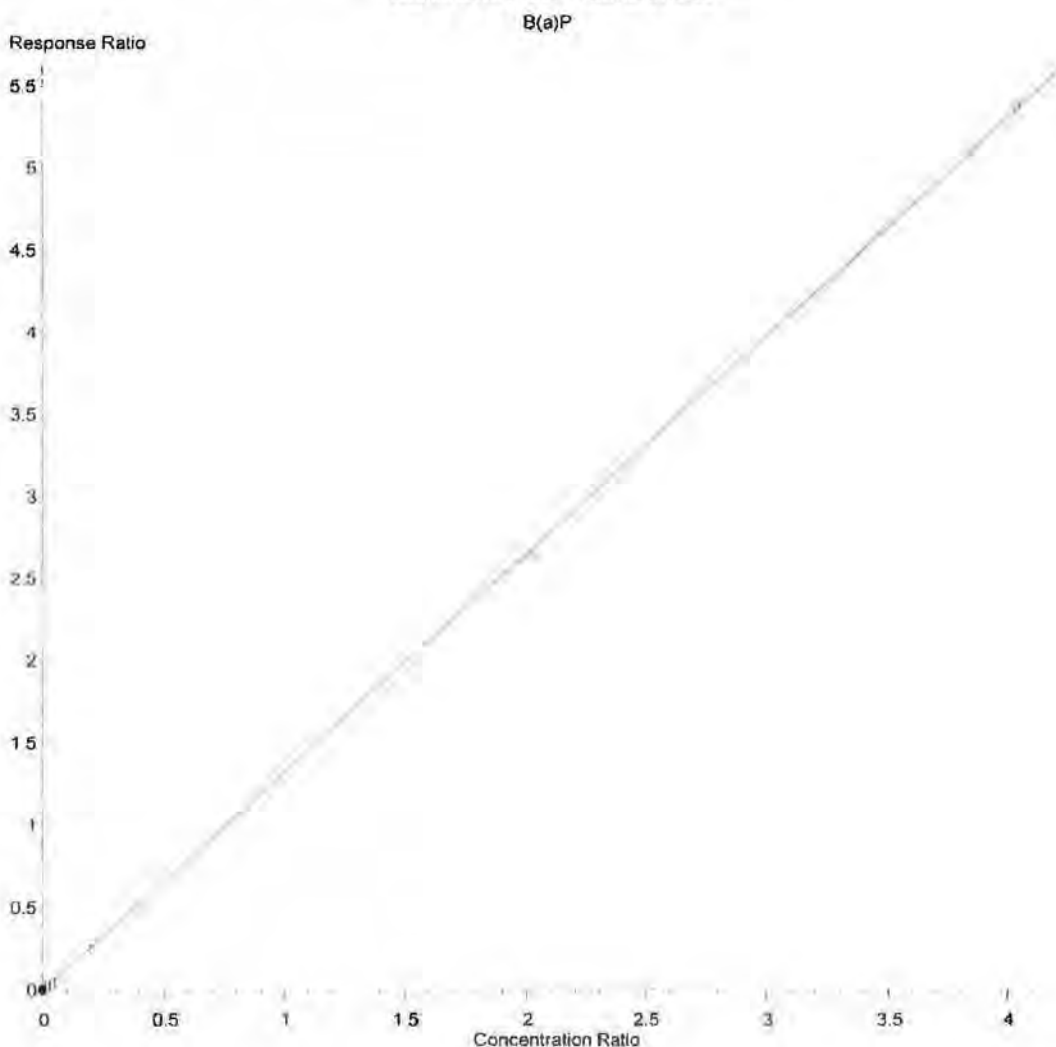
Project	Estimated 1970-71 Expenditure		Project Period	Project Description	Estimated 1970-71 Expenditure		Project Period	Project Description	Estimated 1970-71 Expenditure		Project Period	Project Description
	Estimated 1970-71 Expenditure	Estimated 1970-71 Expenditure			Estimated 1970-71 Expenditure	Estimated 1970-71 Expenditure			Estimated 1970-71 Expenditure	Estimated 1970-71 Expenditure		
1. Road and Bridge Construction	100.00	100.00	1970-71	Construction of a road from the town of ... to the town of ...	100.00	100.00	1970-71	Construction of a bridge over the river ...	100.00	100.00	1970-71	Construction of a road from the town of ... to the town of ...
2. Water Supply	50.00	50.00	1970-71	Construction of a water supply system for the town of ...	50.00	50.00	1970-71	Construction of a water supply system for the town of ...	50.00	50.00	1970-71	Construction of a water supply system for the town of ...
3. Education	20.00	20.00	1970-71	Construction of a school building for the town of ...	20.00	20.00	1970-71	Construction of a school building for the town of ...	20.00	20.00	1970-71	Construction of a school building for the town of ...
4. Health	10.00	10.00	1970-71	Construction of a health center for the town of ...	10.00	10.00	1970-71	Construction of a health center for the town of ...	10.00	10.00	1970-71	Construction of a health center for the town of ...
5. Agriculture	30.00	30.00	1970-71	Construction of a farm building for the town of ...	30.00	30.00	1970-71	Construction of a farm building for the town of ...	30.00	30.00	1970-71	Construction of a farm building for the town of ...
6. Social Services	15.00	15.00	1970-71	Construction of a social service center for the town of ...	15.00	15.00	1970-71	Construction of a social service center for the town of ...	15.00	15.00	1970-71	Construction of a social service center for the town of ...
7. Recreation	5.00	5.00	1970-71	Construction of a recreation center for the town of ...	5.00	5.00	1970-71	Construction of a recreation center for the town of ...	5.00	5.00	1970-71	Construction of a recreation center for the town of ...
8. Miscellaneous	10.00	10.00	1970-71	Construction of a miscellaneous building for the town of ...	10.00	10.00	1970-71	Construction of a miscellaneous building for the town of ...	10.00	10.00	1970-71	Construction of a miscellaneous building for the town of ...
Total	240.00	240.00			240.00	240.00			240.00	240.00		

Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_WT_BaP_Calibration_Curve.pdf_3110993
Electronically Signed By: Bartosz Jasiak
Path: Ws2repository\repository\3110993\
Created: 2/10/14 13:24 Audit ID: 3110993



Response = 1.32e+000 * Amt
Coef of Det (r^2) = 1.000 Curve Fit: Linear/(0,0)
Method Name: C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP_WT M
Calibration Table Last Updated: Wed Jan 29 15:16:01 2014



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiek
Path: \\fs2repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128001.D
Acq On : 28 Jan 2014 17:48
Operator : Analyst
Sample : STD 1 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jan 29 15:16:18 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.848	264	94684m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.860	252	421m	0.08	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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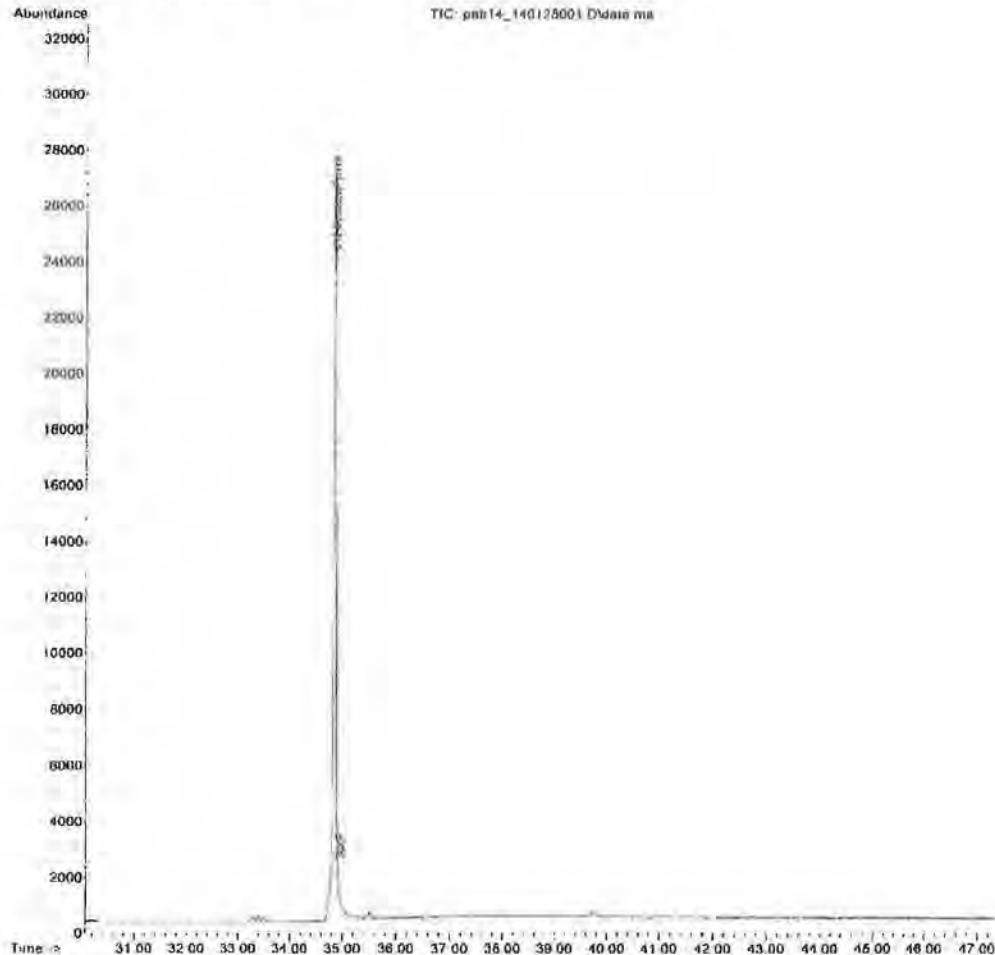
Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128 std\
Data File : pah14_140128001.D
Acq On : 29 Jan 2014 17:48
Operator : Analyst
Sample : STD 1 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jan 29 15:15:18 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration





APR

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calibration Curve Data Summary_GCMS9.pdf_3139261
Electronically Signed By: Mingzhong Cui
Path: W:\s2\repository\repository\3139261\1
Created: 2/13/14 16:04 Audit ID: 3139261

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Appendix G
Calibration Curve Data Summary for
Component 9 (m/z 43)

Appendix G
Calibration Curve Data Summary for
Component 9 (m/z 43)

Sample	Concentration (ng/mL)	Retention Time (min)	Peak Area	Peak ID	Calculated Concentration (ng/mL)	Recovery (%)	Standard Deviation (ng/mL)	Relative Error (%)	Sample ID
Injection 1	1.0	1.24	1.00	1.00	1.00	100.0	0.00	0.00	1.00
	2.0	1.24	2.00	2.00	2.00	100.0	0.00	0.00	2.00
	5.0	1.24	5.00	5.00	5.00	100.0	0.00	0.00	5.00
	10.0	1.24	10.00	10.00	10.00	100.0	0.00	0.00	10.00
	20.0	1.24	20.00	20.00	20.00	100.0	0.00	0.00	20.00
Injection 2	1.0	1.24	1.00	1.00	1.00	100.0	0.00	0.00	1.00
	2.0	1.24	2.00	2.00	2.00	100.0	0.00	0.00	2.00
	5.0	1.24	5.00	5.00	5.00	100.0	0.00	0.00	5.00
	10.0	1.24	10.00	10.00	10.00	100.0	0.00	0.00	10.00
	20.0	1.24	20.00	20.00	20.00	100.0	0.00	0.00	20.00
Injection 3	1.0	1.24	1.00	1.00	1.00	100.0	0.00	0.00	1.00
	2.0	1.24	2.00	2.00	2.00	100.0	0.00	0.00	2.00
	5.0	1.24	5.00	5.00	5.00	100.0	0.00	0.00	5.00
	10.0	1.24	10.00	10.00	10.00	100.0	0.00	0.00	10.00
	20.0	1.24	20.00	20.00	20.00	100.0	0.00	0.00	20.00

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Sld_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128002.D
Acq On : 28 Jan 2014 19:34
Operator : Analyst
Sample : STD 2_140128
Misc : PAH Calibration Stds 140128
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jan 29 15:15:34 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140128Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	89960m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.956	252	1971m	0.40	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



APM

Study Identifier: M195-GLP

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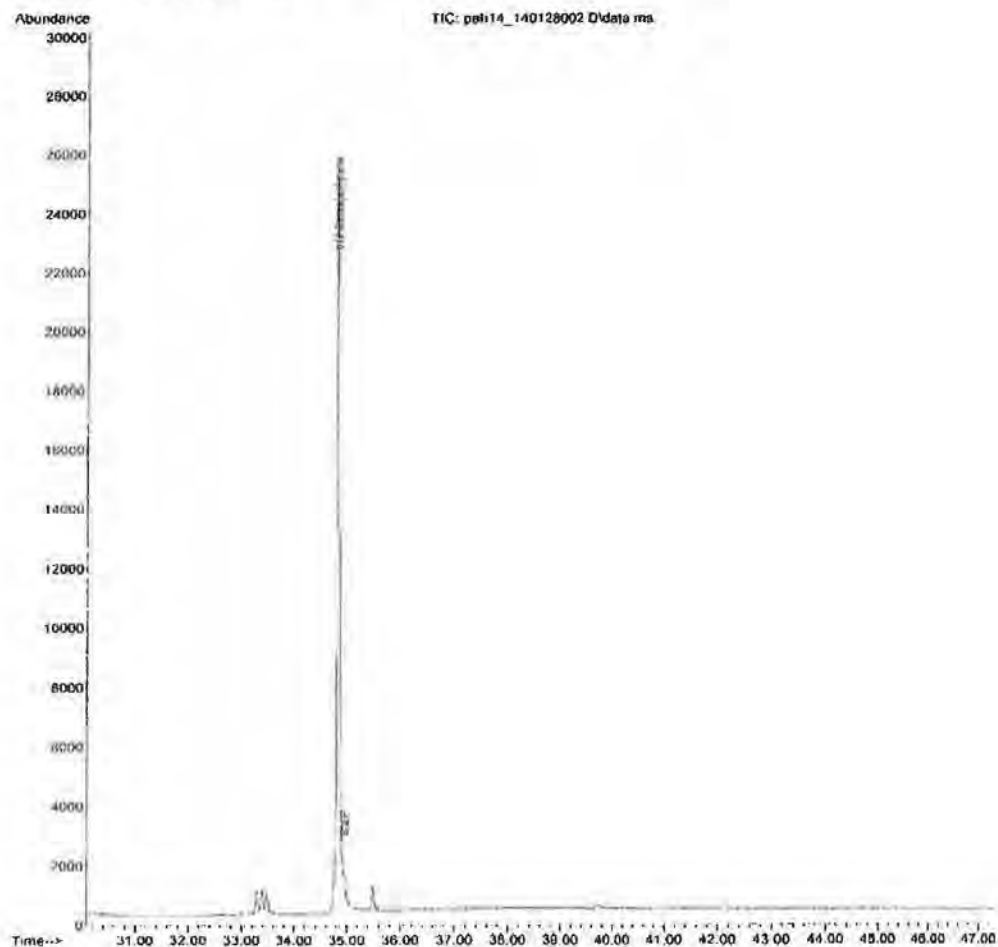
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
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Path: \\fs2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal_Std\PAH14_140128_std\
Data File : pah14_140128002.D
Acq On : 28 Jan 2014 19:34
Operator : Analyst
Sample : STD 2 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jan 29 15:15:34 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



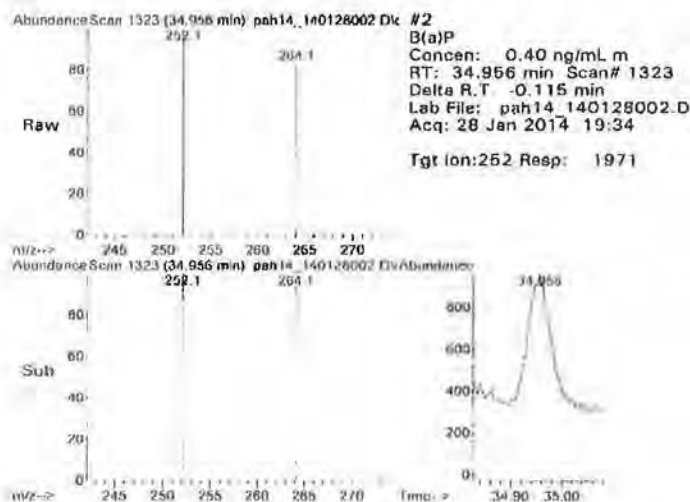


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053





Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewer)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128003.D
Acq On : 28 Jan 2014 21:19
Operator : Analyst
Sample : STD 3 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 29 16:13:13 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140128Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140128
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) d12-Benz(a)Pyrene	34.845	264	82252m	25.12 ng/ml	-0.12
Target Compounds					
2) B(a)P	34.952	252	3865m	0.86 ng/mL	

(#) – qualifier out of range (m) = manual integration (+) = signals summed



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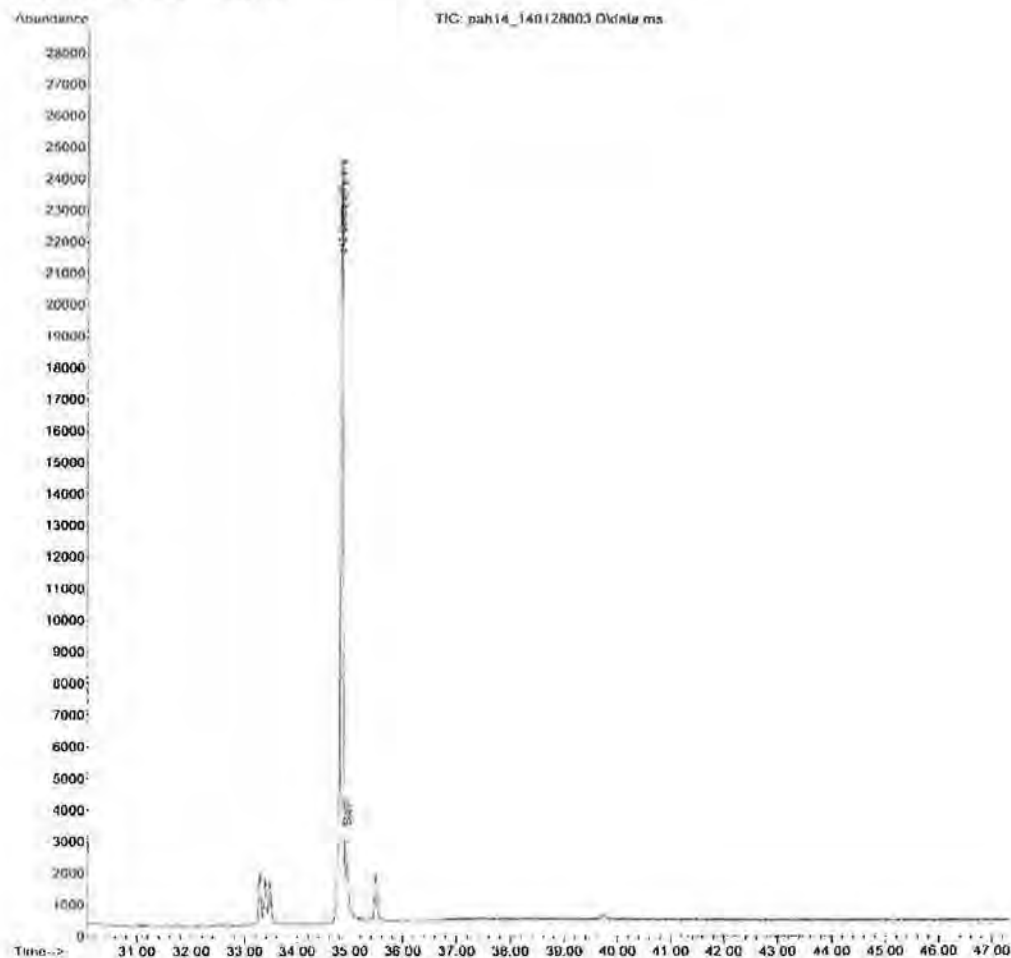
Study Report – Appendix G Calibration Curve Data Summary

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Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

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Data File : pah14_140128003.D
Acq On : 28 Jan 2014 21:19
Operator : Analyst
Sample : STD 3 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 29 15:13:13 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Thu Jan 30 09:12:30 2014

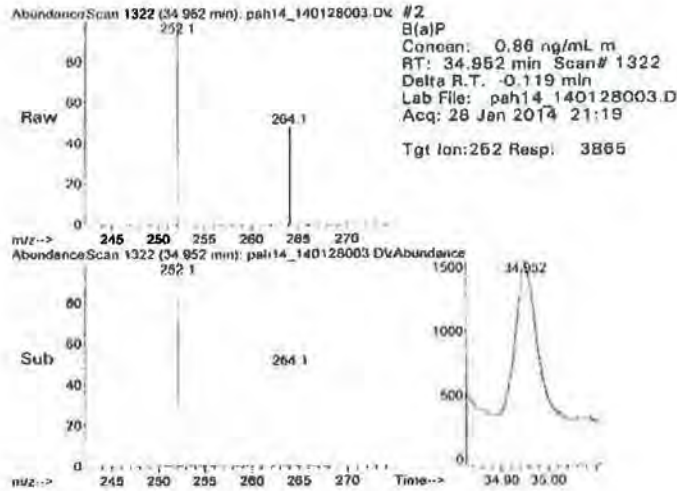
Page: 2

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiek
Path: Wfs2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053



Study Identifier: M195-GLP

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**Study Report – Appendix G
Calibration Curve Data Summary**

M195-GLP_PAH_GCMS#14_Calib_Stds_Chromatograms_STD4_Correction.pdf_3287935
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Path: \\s2repository\repository\3287935\
Created: 3/7/14 09:55 Audit ID: 3287935

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal_Stds\PAH14_140128_std\
Data File : pah14_140128004.D
Acq On : 28 Jan 2014 23:05
Operator : Analyst
Sample : STD 4 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 29 15:13:33 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - B.IAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	Qlen	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	40421m	26.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.962	252	9807m	4.33	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



APM

Study Identifier: M195-GLP

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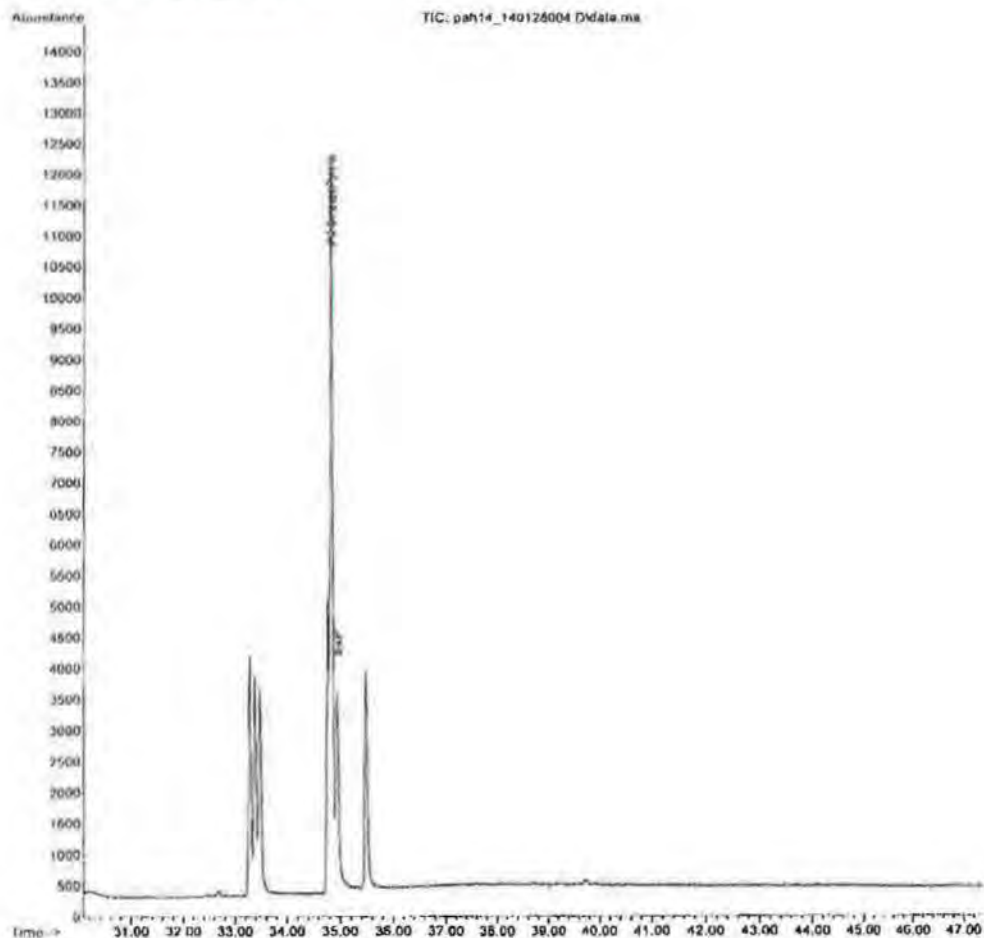
Study Report – Appendix G Calibration Curve Data Summary

M195-GLP_PAH_GCMS#14_Calib_Stds_Chromatograms_STD4_Correction.pdf_3267936
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Path: \\fs2repository\repository\3267935\
Created: 3/7/14 09:55 Audit ID: 3267936

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal_Stds\PAH14_140128_std\
Data File : pah14_140128004.D
Acq On : 28 Jun 2014 23:05
Operator : Analyst
Sample : STD 4 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 29 15:13:33 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140128Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140128
Last Update : Wed Jun 26 15:08:37 2014
Response via : Initial Calibration

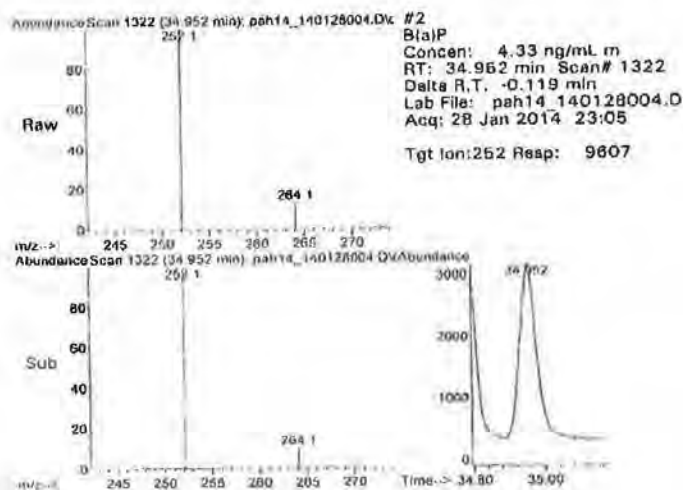


Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195-GLP_PAH_GCMS#14_Calib_Slts_Chromatograms_STD4_Correction.pdf_3267935
Electronically Signed By: Bartosz Jaslak
Path: W:\2\repository\repository\3267935\
Created: 3/7/14 09:55 Audit ID: 3267935





Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Rikosz Jasnik
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128 std\
Data File : pah14_140128005.D
Acq On : 28 Jan 2014 23:58
Operator : Analyst
Sample : STD 5 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 29 15:13:48 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q_M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	264	33144m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.862	262	16108m	8.85	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Study Identifier: M195-GLP

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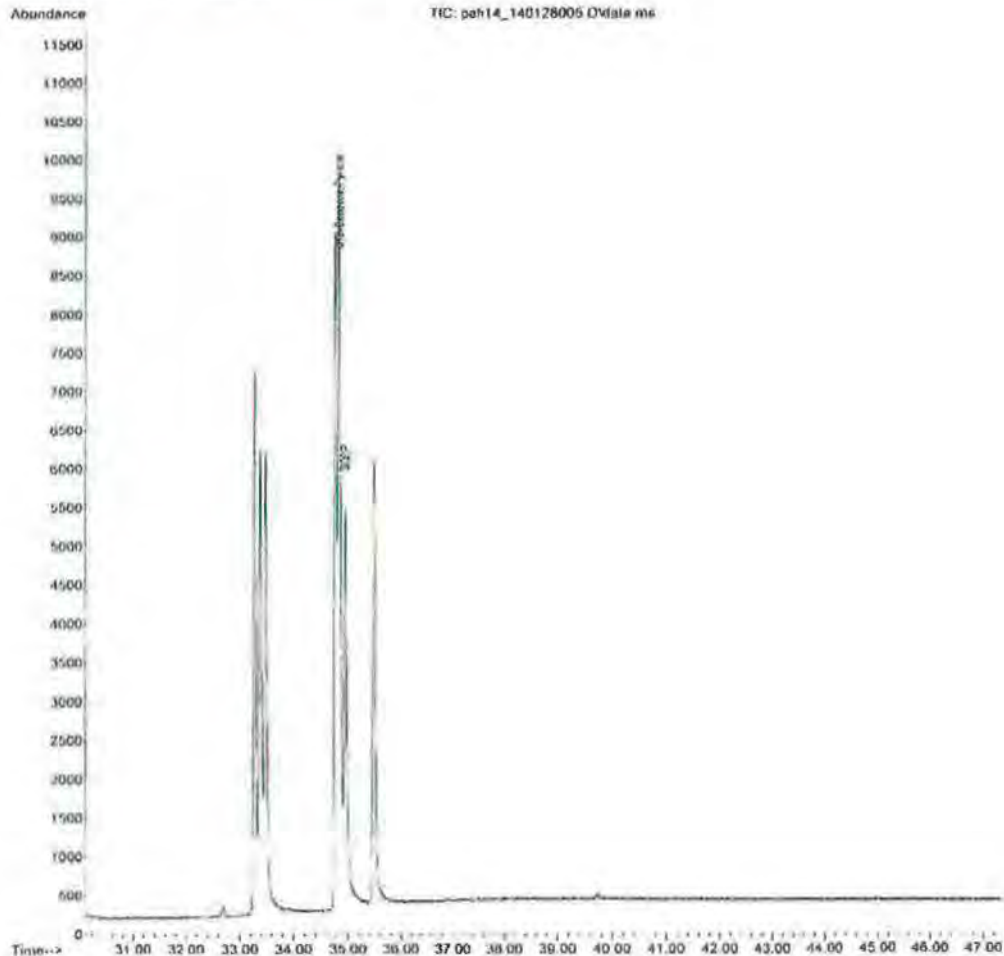
Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jaslak
Path: Ws2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128005.D
Acq On : 28 Jan 2014 23:58
Operator : Analyst
Sample : STD 5 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jan 28 15:13:48 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140128Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - B.JAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



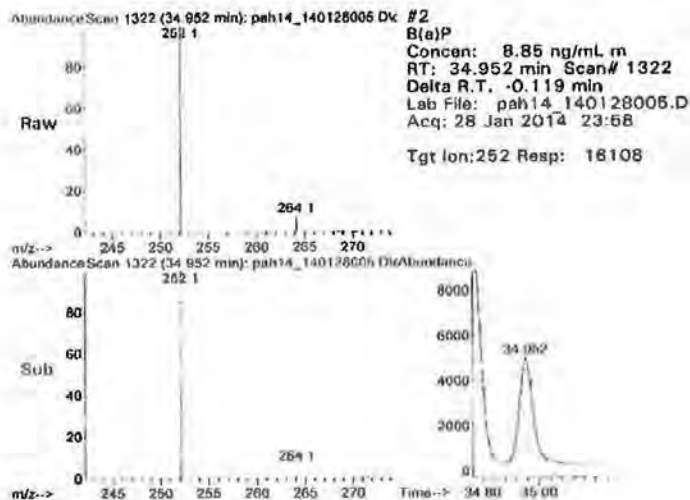


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiek
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053





Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128006.D
Acq On : 29 Jun 2014 00:50
Operator : Analyst
Sample : STD 6 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 29 15:14:02 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	Qlen	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.846	264	36874m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.952	252	97454m	48.14	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



APM

Study Identifier: M195-GLP

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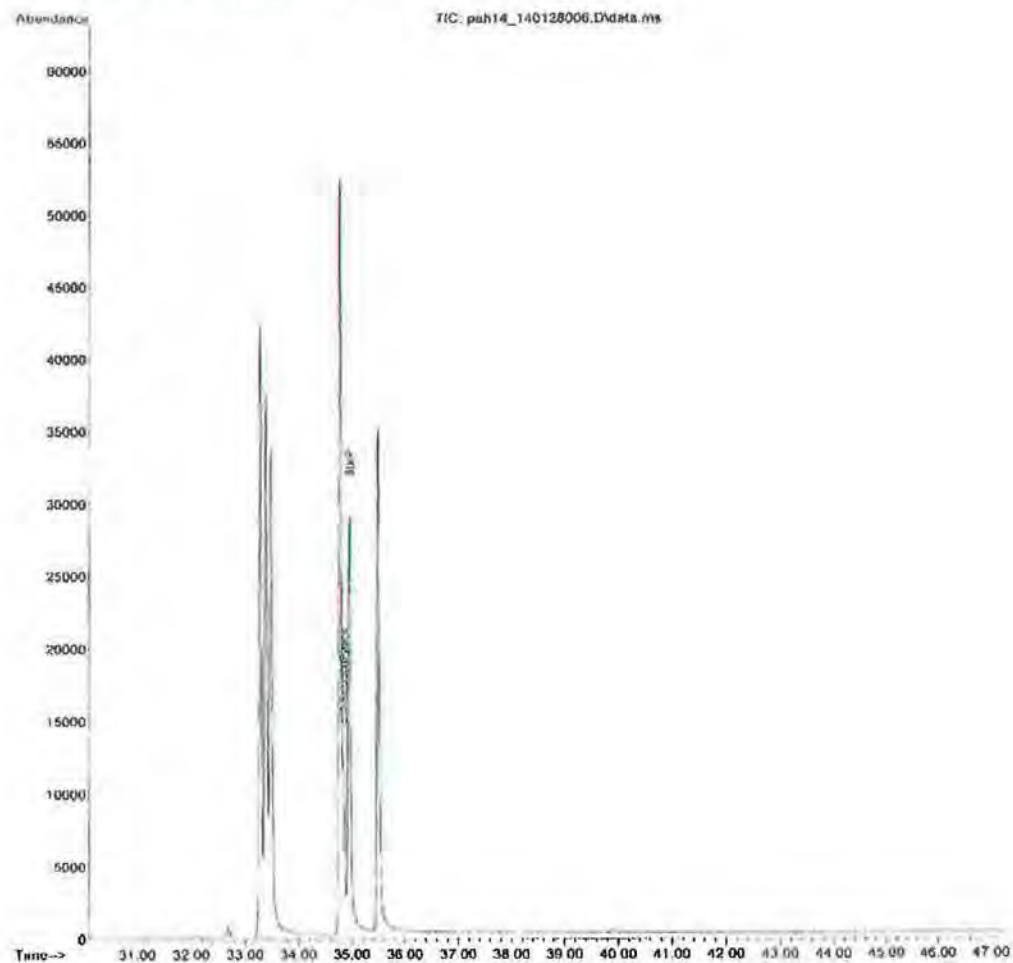
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: Ws2repositoryrepository\3049053
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Stds\PAH14_140128_std\
Data File : pah14_140128006.D
Acq On : 29 Jan 2014 00:50
Operator : Analyst
Sample : STD 6 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 29 15:14:02 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Thu Jan 30 09:12:49 2014

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Study Identifier: M195-GLP

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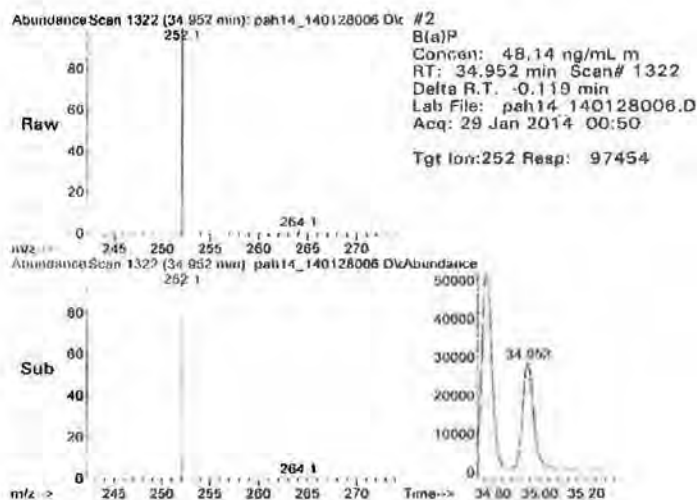
Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053

Electronically Signed By: Bartosz Jasiak

Path: \\fs2\repository\repository\3049053\

Created: 1/30/14 09:29 Audit ID: 3049053





Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: W:\2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal_Std\PAH14_140128_std\
Data File : pah14_140128007.D
Acq On : 29 Jan 2014 1:43
Operator : Analyst
Sample : STD 7 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jan 29 15:14:19 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:08:37 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d12-Benzo(a)Pyrene	34.845	284	39307m	25.12	ng/mL	-0.12
Target Compounds						
2) B(a)P	34.952	252	211107m	97.82	ng/mL	

(#) = qualifier out of range (m) = manual integration (-) = signals summed



Study Identifier: M195-GLP

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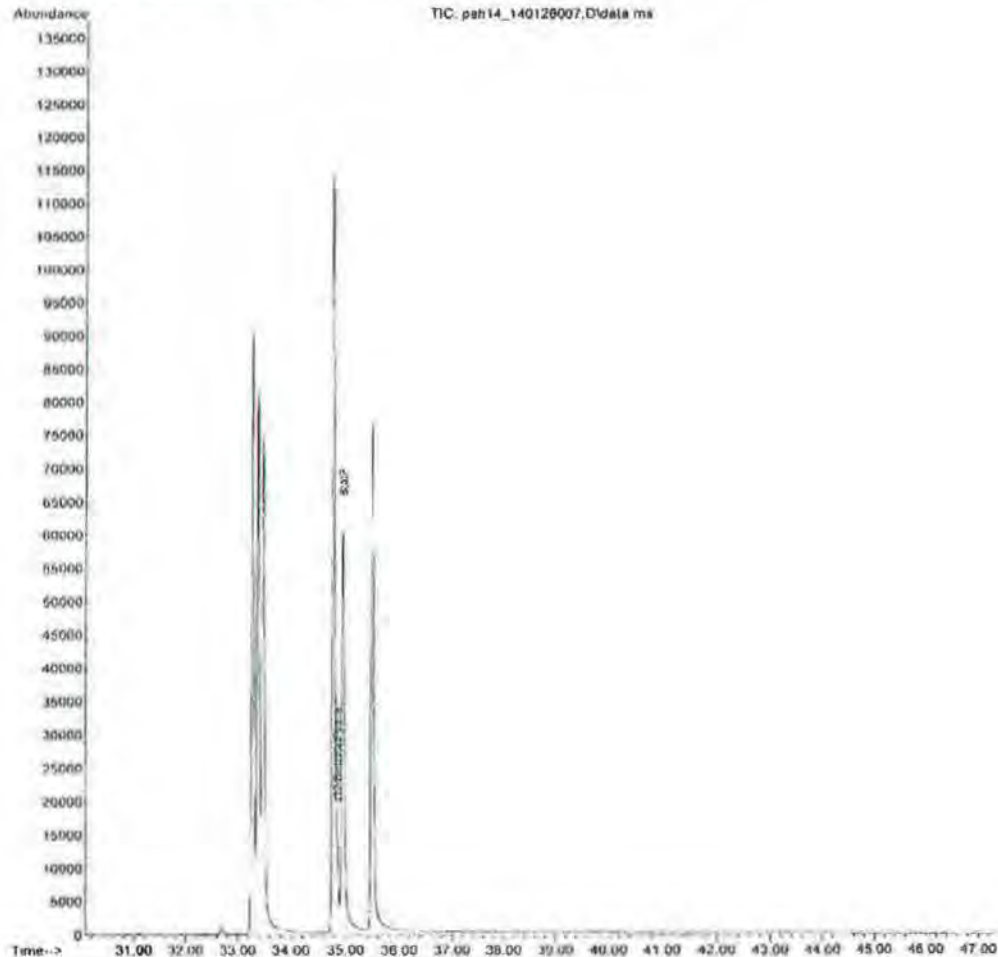
Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: \\fs2\\repository\\repository\\3049053\\
Created: 1/30/14 09:29 Audit ID: 3049053

Quantitation Report (QT Reviewed)

Data Path : D:\PAH\Cal Sids\PAH14_140128_std\
Data File : pah14_140128007.D
Acq On : 29 Jan 2014 1:43
Operator : Analyst
Sample : STD 7 140128
Misc : PAH Calibration Stds 140128
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jan 29 15:14:19 2014
Quant Method : C:\msdchem\1\methods\PAH\PAH14_140129Q.M195GLP.M
Quant Title : M195-GLP PAH Quantitation method on GCMS#14 - BJAS, 140129
QLast Update : Wed Jan 29 15:09:37 2014
Response via : Initial Calibration



PAH14_140129Q.M195GLP.M Thu Jan 30 09:12:57 2014

Page: 2

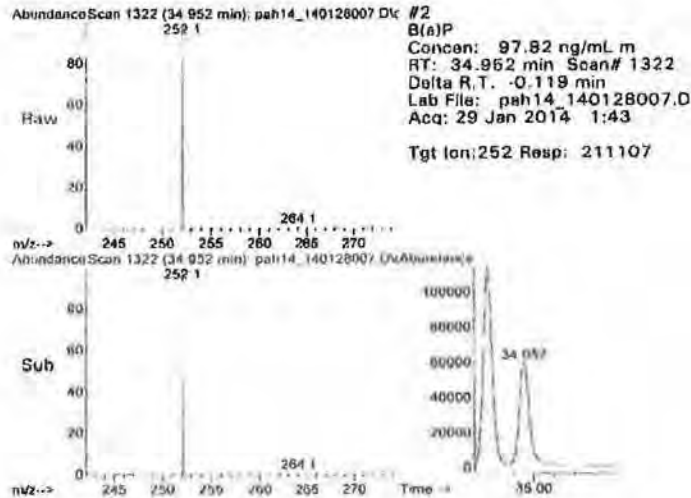


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

M195GLP_PAH_GCMS14_Calibration_Std_Chromatograms.pdf_3049053
Electronically Signed By: Bartosz Jasiak
Path: W:\s2\repository\repository\3049053\
Created: 1/30/14 09:29 Audit ID: 3049053



Carbonyls in Smokeless Tobacco

Calibration Curve Data Summary GCMS9.pdf 3139261
Electronically Signed By: Mingzhong Cui
Path: \\fs2\repository\repository\3139261\
Created: 2/13/14 15:04 Audit ID: 3139261

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 27 Jan 2014 12:21:04

Calibration Curve Report

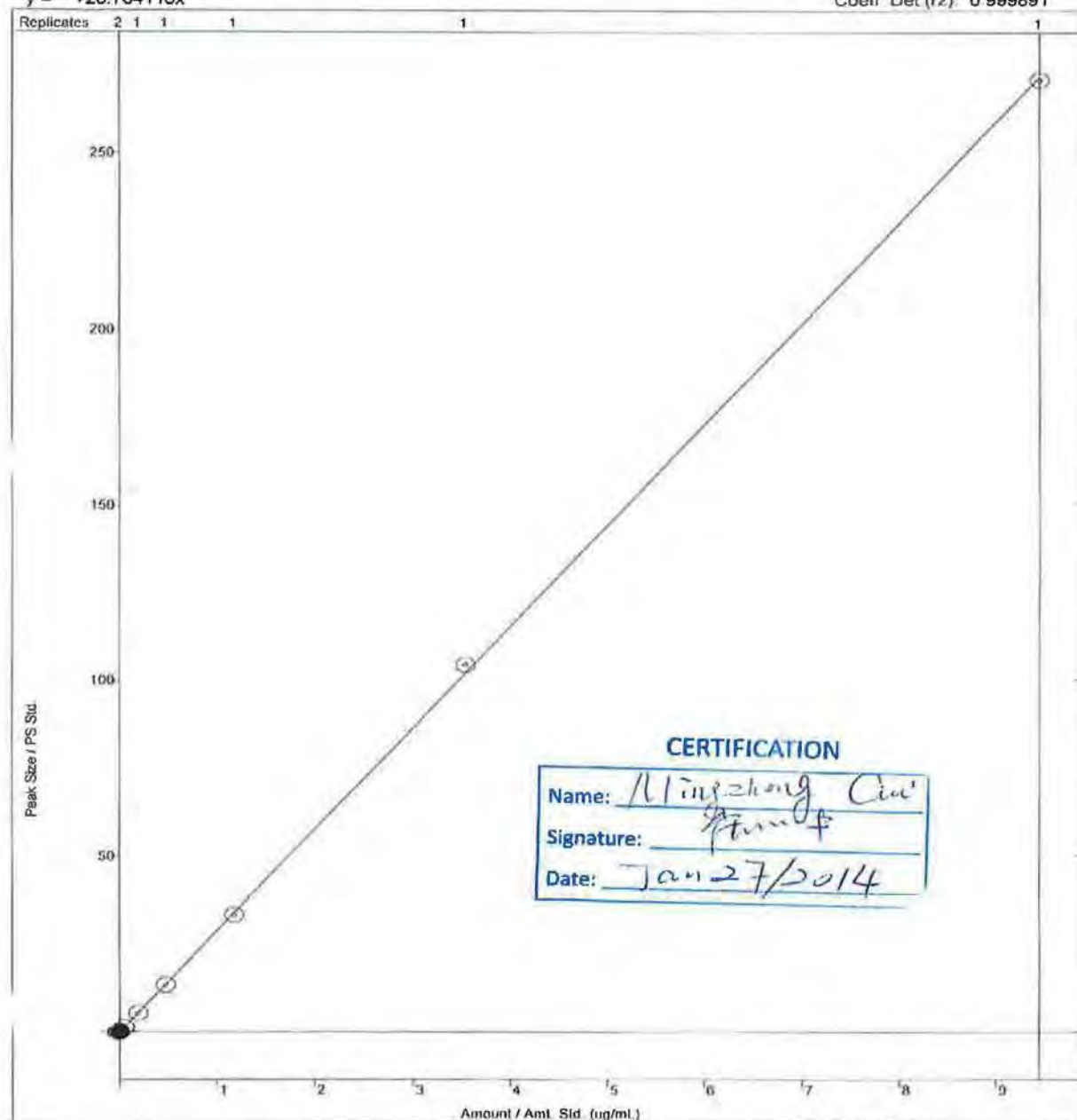
File: c:\varianws\data\gcar\method\gcar9_140124.mth

Detector: Quad Mass Spec, Address: 42

Formaldehyde

Curve Fit: Linear, Origin: Force, Weight: None
 $y = +28.764116x$

Resp. Fact. RSD: 98.80%
Coeff Det (r²): 0.999891



1 of 3 mean

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 27 Jan 2014 12:21:09

Calibration Curve Report

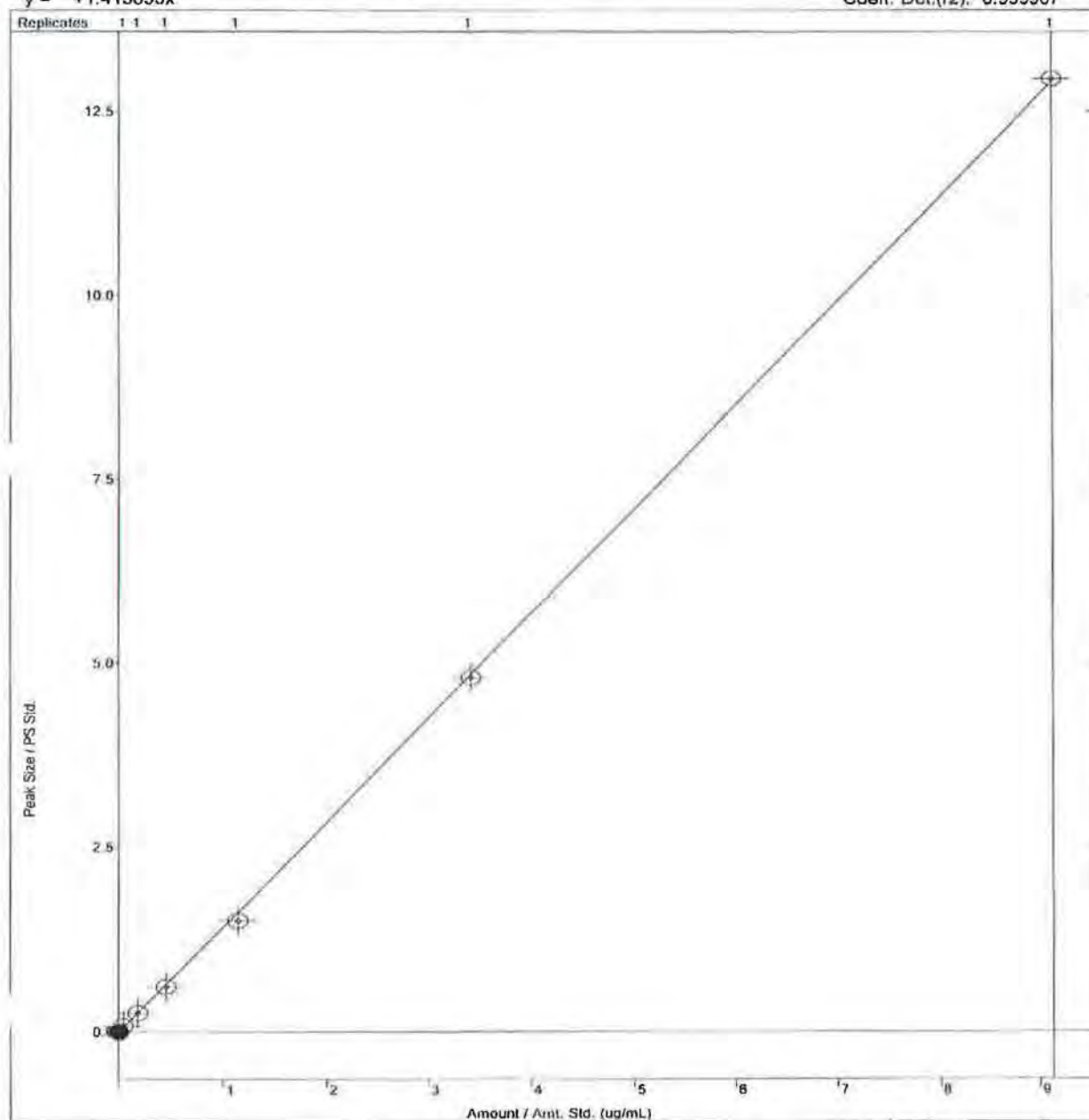
File: c:\varian\sw\data\gcar\method\gcar9_140124.mth

Detector: Quad Mass Spec, Address: 42

Acetaldehyde

Curve Fit: Linear, Origin: Force, Weight: None
 $y = +1.413695x$

Resp. Fact. RSD: 12.60%
Coeff. Det.(r²): 0.999907



2 of 3 mem

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 27 Jan 2014 12:21:19

Calibration Curve Report

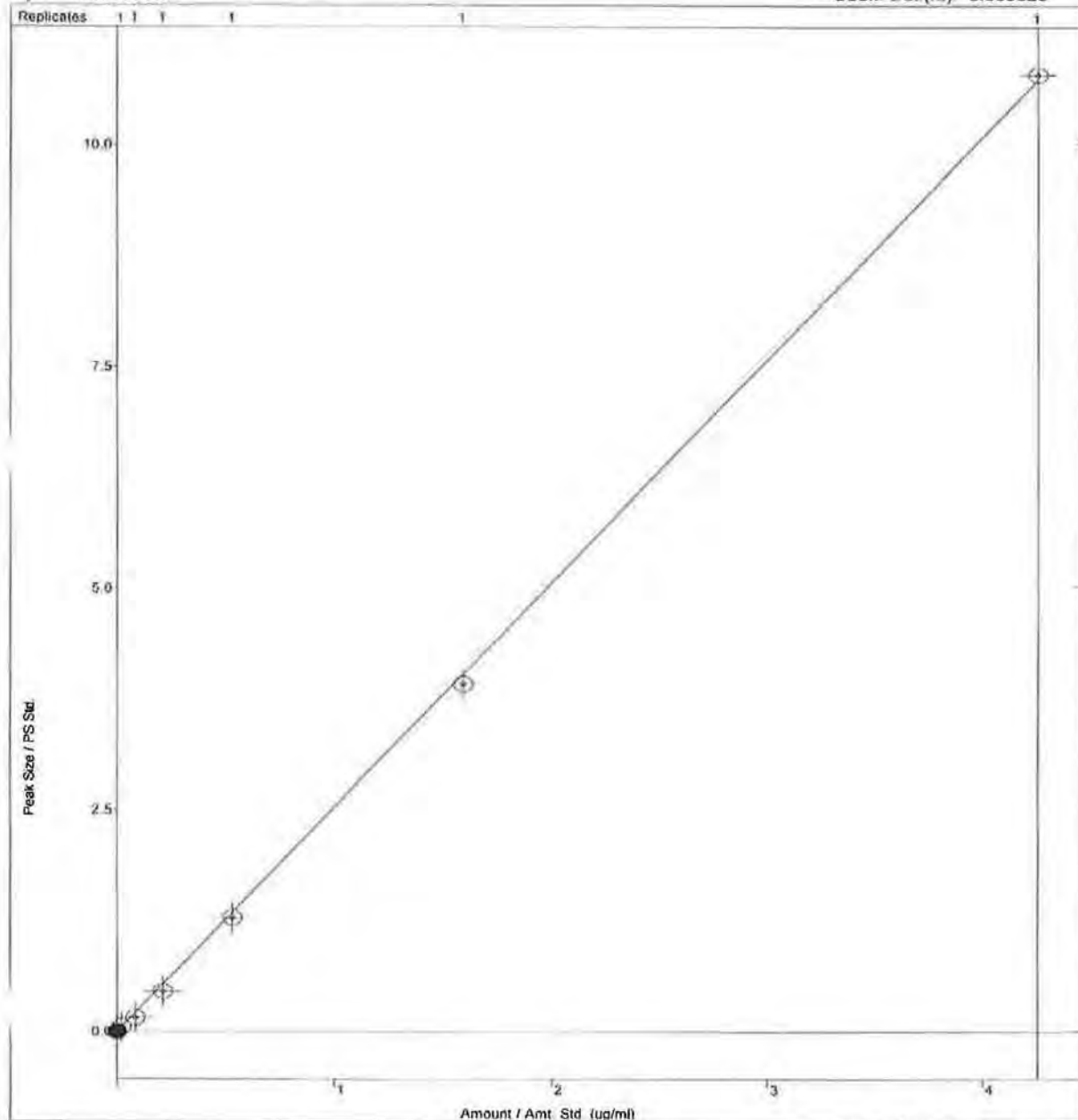
File: c:\varianwsl\data\gcar\method\gcar9_140124.mth

Detector: Quad Mass Spec, Address: 42

Crotonaldehyde

Curve Fit: Linear, Origin: Force, Weight: None
 $y = +2.523968x$

Resp. Fact. RSD: 11.80%
Coeff. Det. (r²): 0.999826





APR

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 28 Jan 2014 12:56:55

Chromatogram Plot

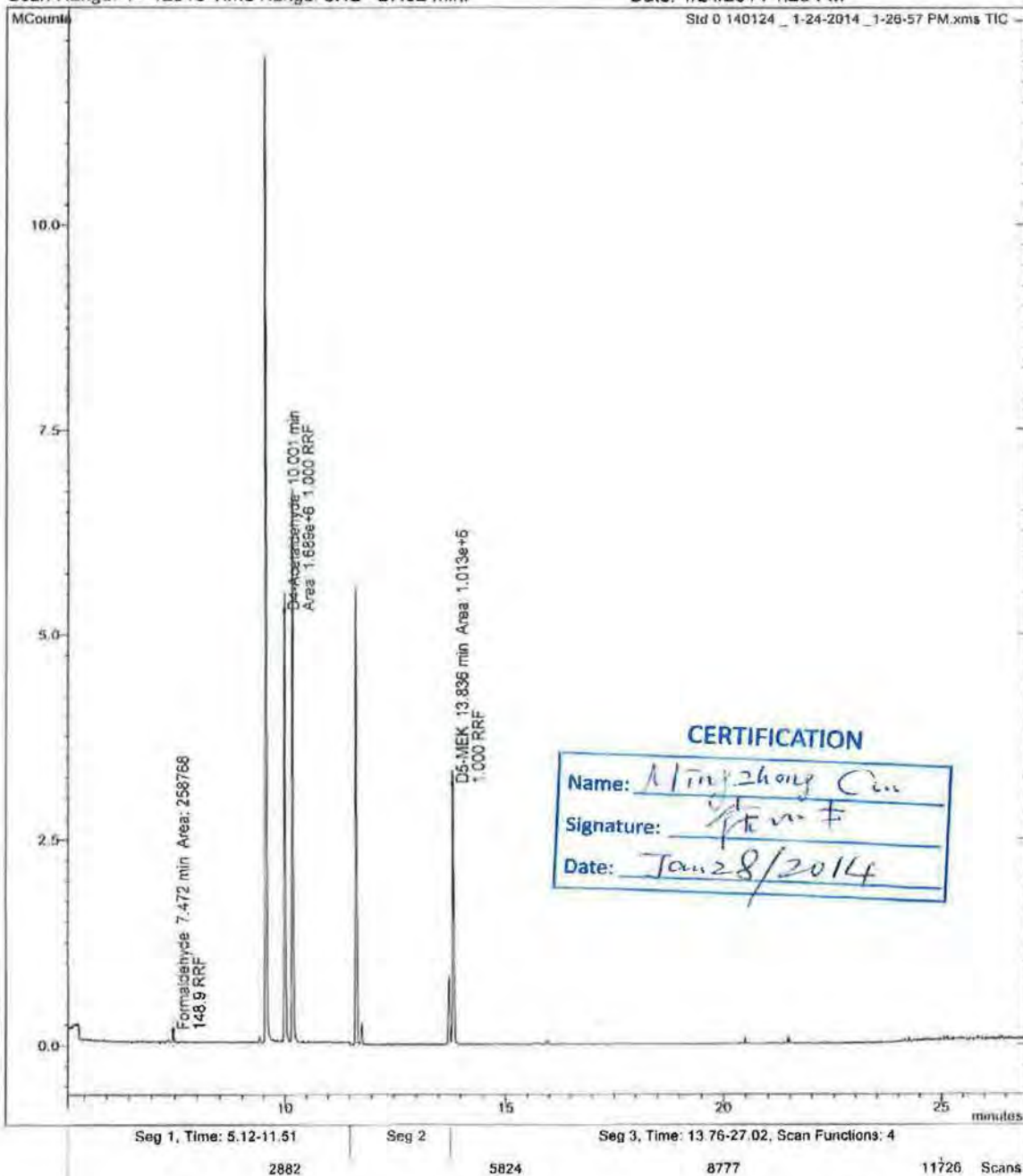
File: ...libration\gcar9_140124_std\std 0 140124 _ 1-24-2014 _ 1-26-57 pm.xms

Sample: Std 0 140124

Operator: VARIAN

Scan Range: 1 - 12916 Time Range: 5.12 - 27.02 min.

Date: 1/24/2014 1:26 PM



1 of 7 MCount

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 28 Jan 2014 12:57:18

Chromatogram Plot

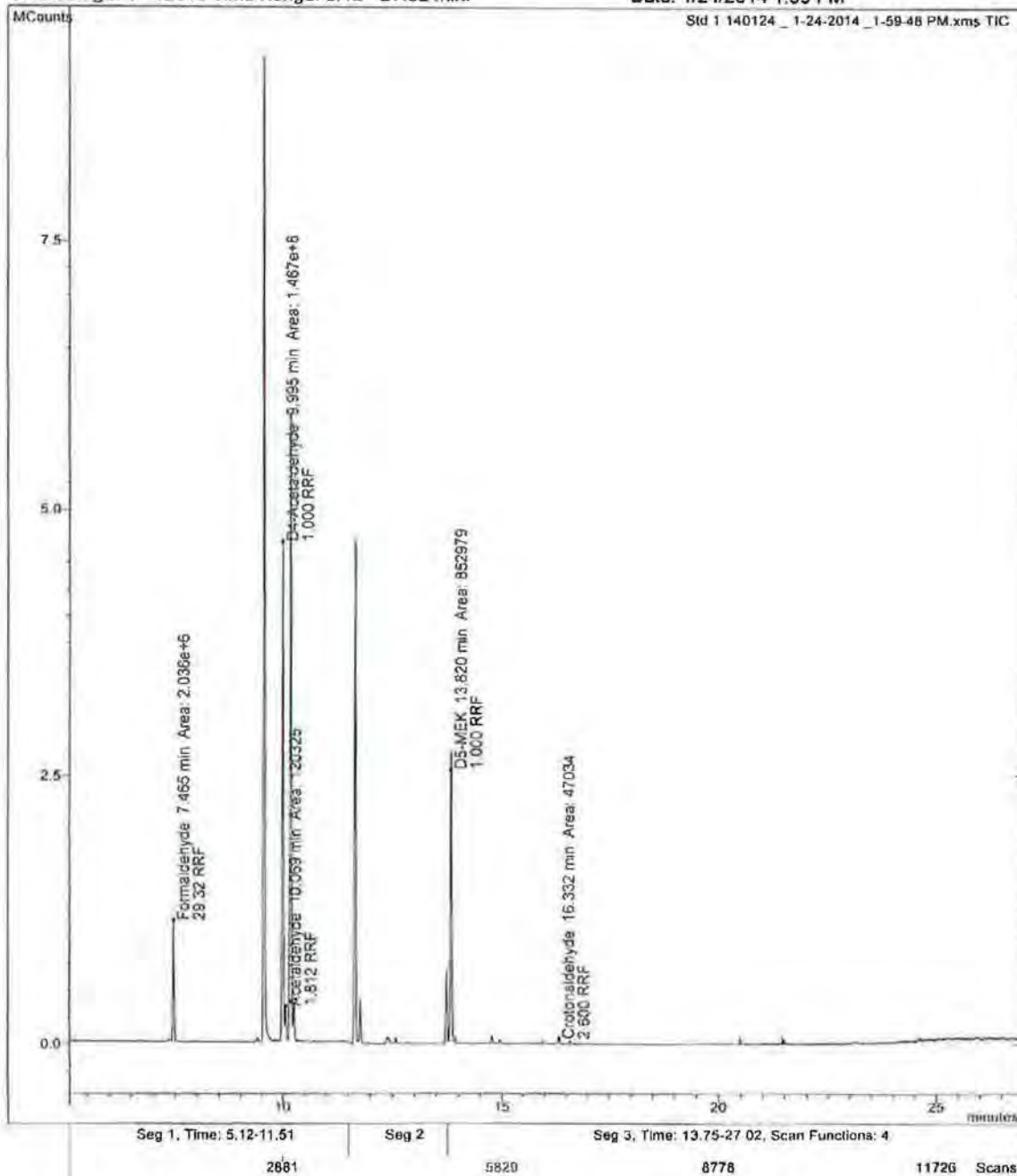
File: ...libration\gcar9_140124_std\std 1 140124 _ 1-24-2014 _ 1-59-48 pm.xmls

Sample: Std 1 140124

Operator: VARIAN

Scan Range: 1 - 12916 Time Range: 5.12 - 27.02 min.

Date: 1/24/2014 1:59 PM





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Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 28 Jan 2014 12:58:24

Chromatogram Plot

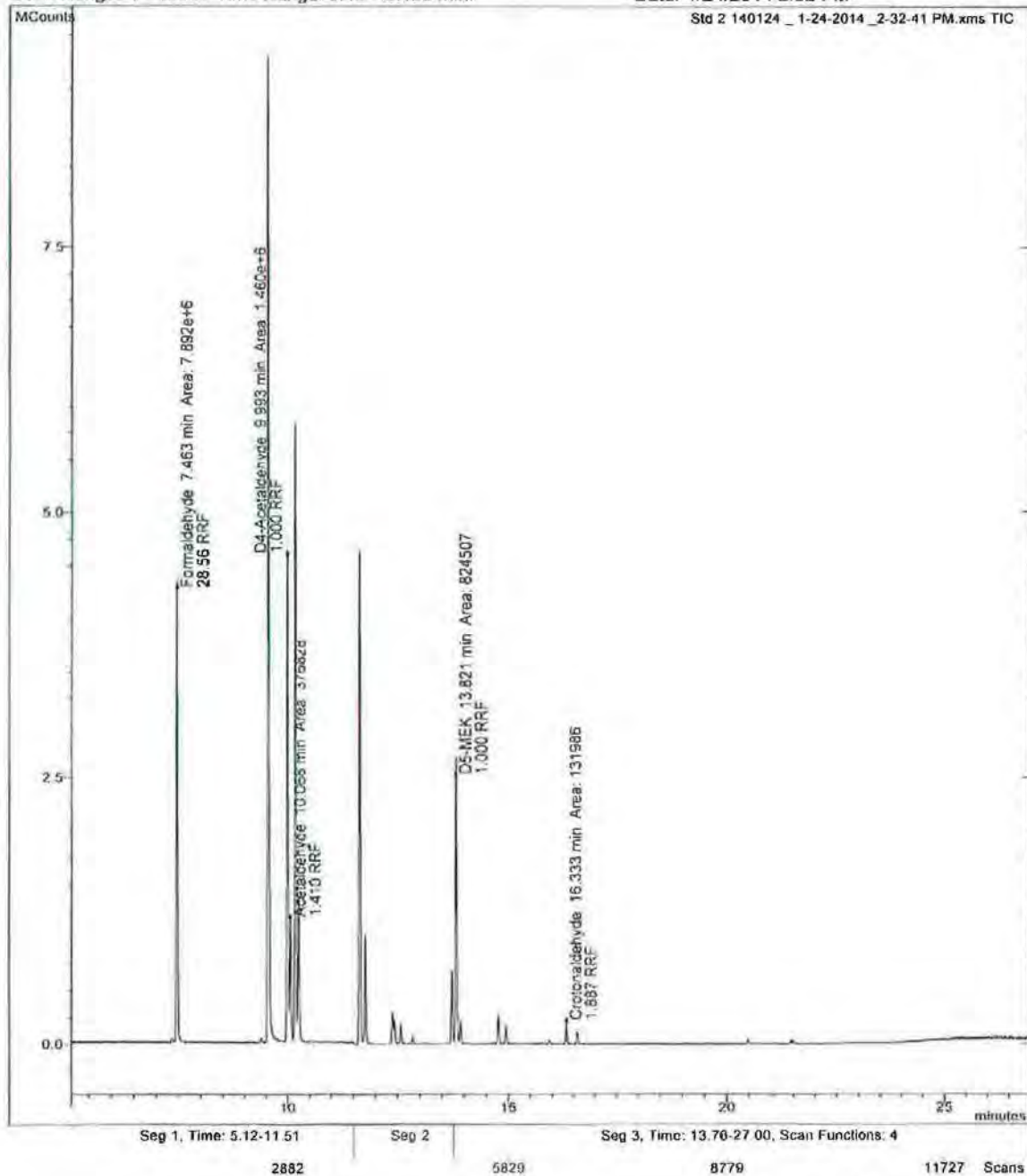
File: ...libration\gcar9_140124_std\std 2 140124 _ 1-24-2014 _2-32-41 pm.xms

Sample: Std 2 140124

Operator: VARIAN

Scan Range: 1 - 12909 Time Range: 5.12 - 27.00 min.

Date: 1/24/2014 2:32 PM



3 of 7 mins



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 28 Jan 2014 12:58:42

Chromatogram Plot

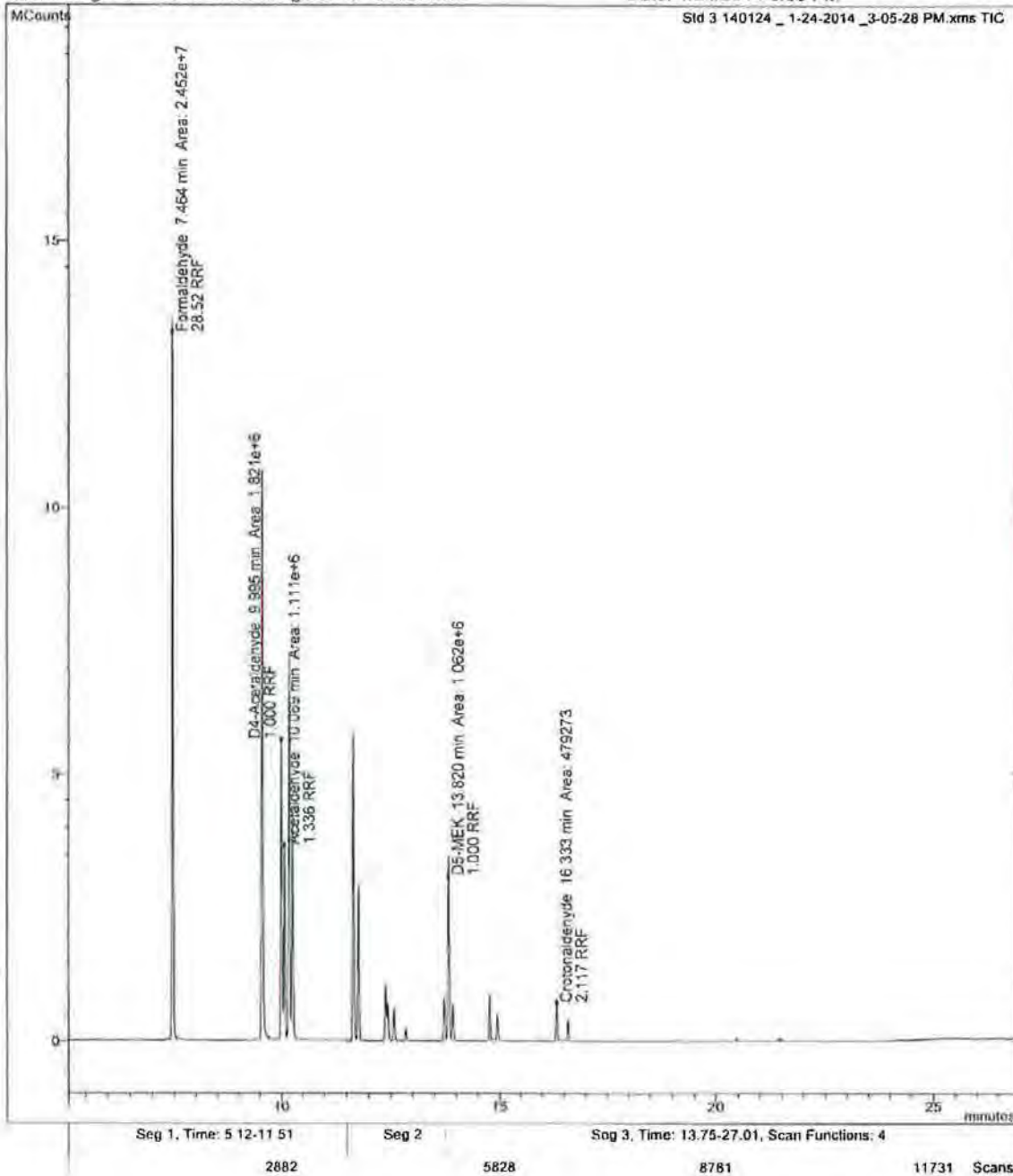
File: ...libration\gcar9_140124_std\std 3 140124 _ 1-24-2014 _3-05-28 pm.xmls

Sample: Std 3 140124

Operator: VARIAN

Scan Range: 1 - 12916 Time Range: 5.12 - 27.01 min.

Date: 1/24/2014 3:05 PM



4 of 7 min

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 28 Jan 2014 12:58:59

Chromatogram Plot

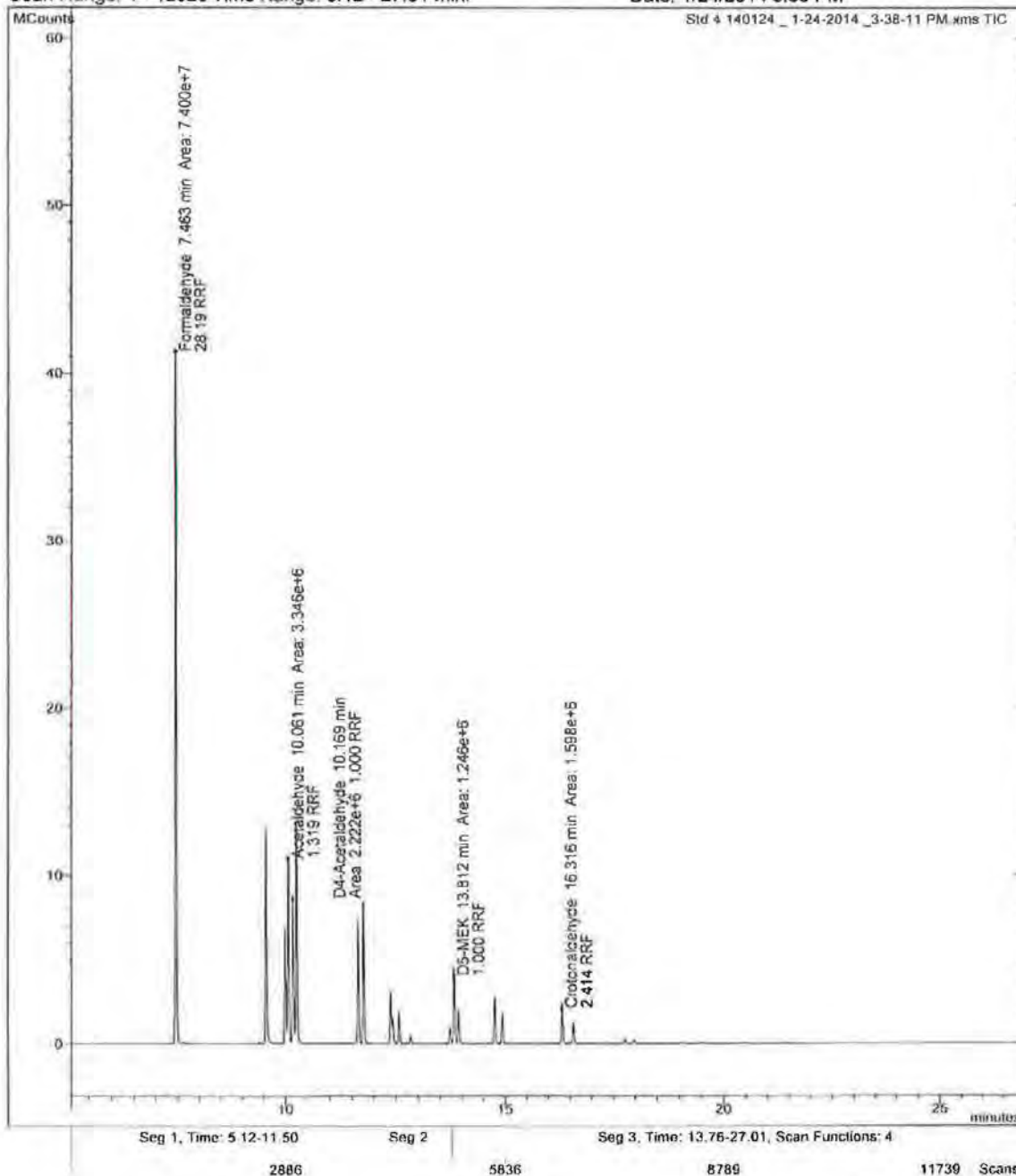
File: ...libration\gcar9_140124_std\std 4 140124 _ 1-24-2014 _3-38-11 pm.xms

Sample: Std 4 140124

Operator: VARIAN

Scan Range: 1 - 12926 Time Range: 5.12 - 27.01 min.

Date: 1/24/2014 3:38 PM



5 of 7 scans



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 28 Jan 2014 12:59:19

Chromatogram Plot

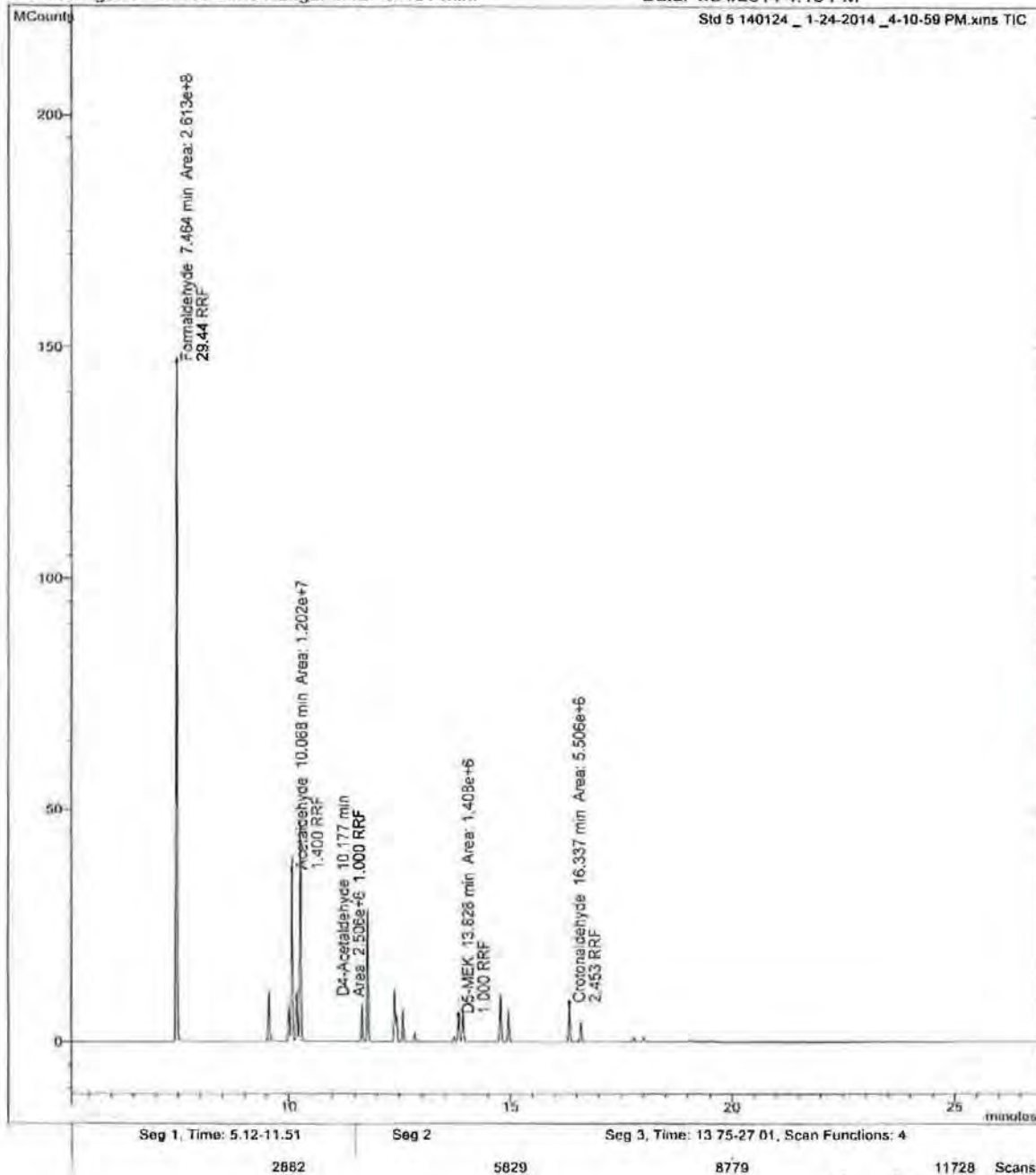
File: ...liberation\gcar9_140124_std\std 5 140124 _ 1-24-2014 _4-10-59 pm.xms

Sample: Std 5 140124

Operator: VARIAN

Scan Range: 1 - 12916 Time Range: 5.12 - 27.01 min.

Date: 1/24/2014 4:10 PM



6 of 7 mins



AM

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Print Date: 28 Jan 2014 12:59:37

Chromatogram Plot

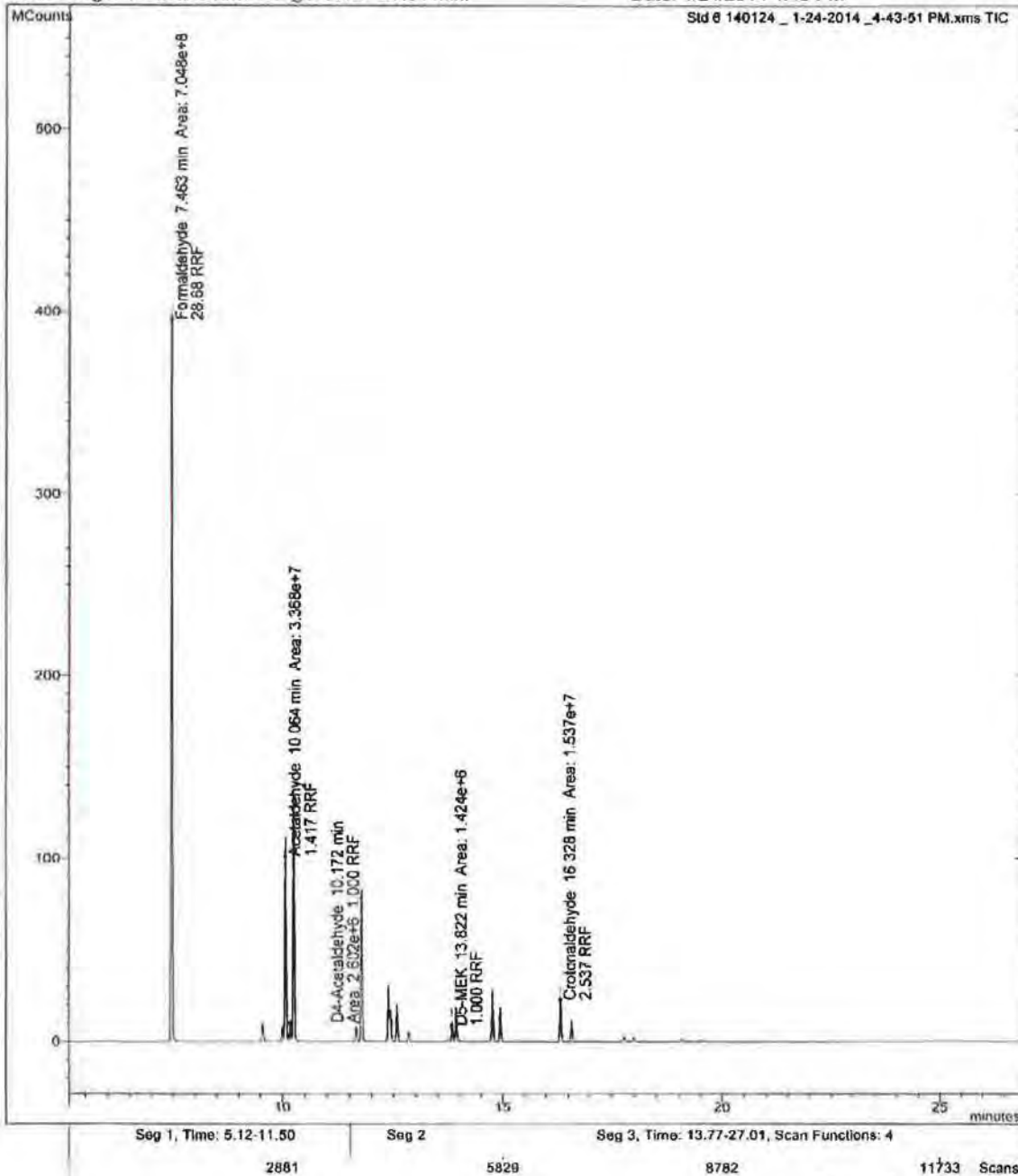
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Sample: Std 6 140124

Operator: VARIAN

Scan Range: 1 - 12922 Time Range: 5.12 - 27.01 min.

Date: 1/24/2014 4:43 PM



7 of 7 runs

Tobacco Specific Nitrosamines in Smokeless Tobacco

AR

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Study Report – Appendix G

Calibration Curve Data Summary

Calibration Curve Data Summary.pdf 3252956
Electronically Signed By: Bor Cha
Path: \\fs2\\repository\\repository\\3252956\\
Created: 3/5/14 13:43 Audit ID: 3252956

[illegible]



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Calibration Curve Data Summary.pdf 3252880
Electronically Signed By: Bor Cha
Path: \\162rep01\reports\position\3252880
Created: 3/5/14 13:45 Audit ID: 3252880

Calibration Curve Data Summary for Component: Deltamethrin									
Sample	Standard ID	Injection Date	Injection Time	Retention Time	Peak Area	Peak Height	Peak Width	Peak Shape	Injection Volume
NAC	STD-1-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-2-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-3-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-4-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-5-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
NAC	STD-6-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-7-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-8-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-9-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
	STD-10-1231	24-Apr-14	13:00:15	13.121	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05

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3252880

AR



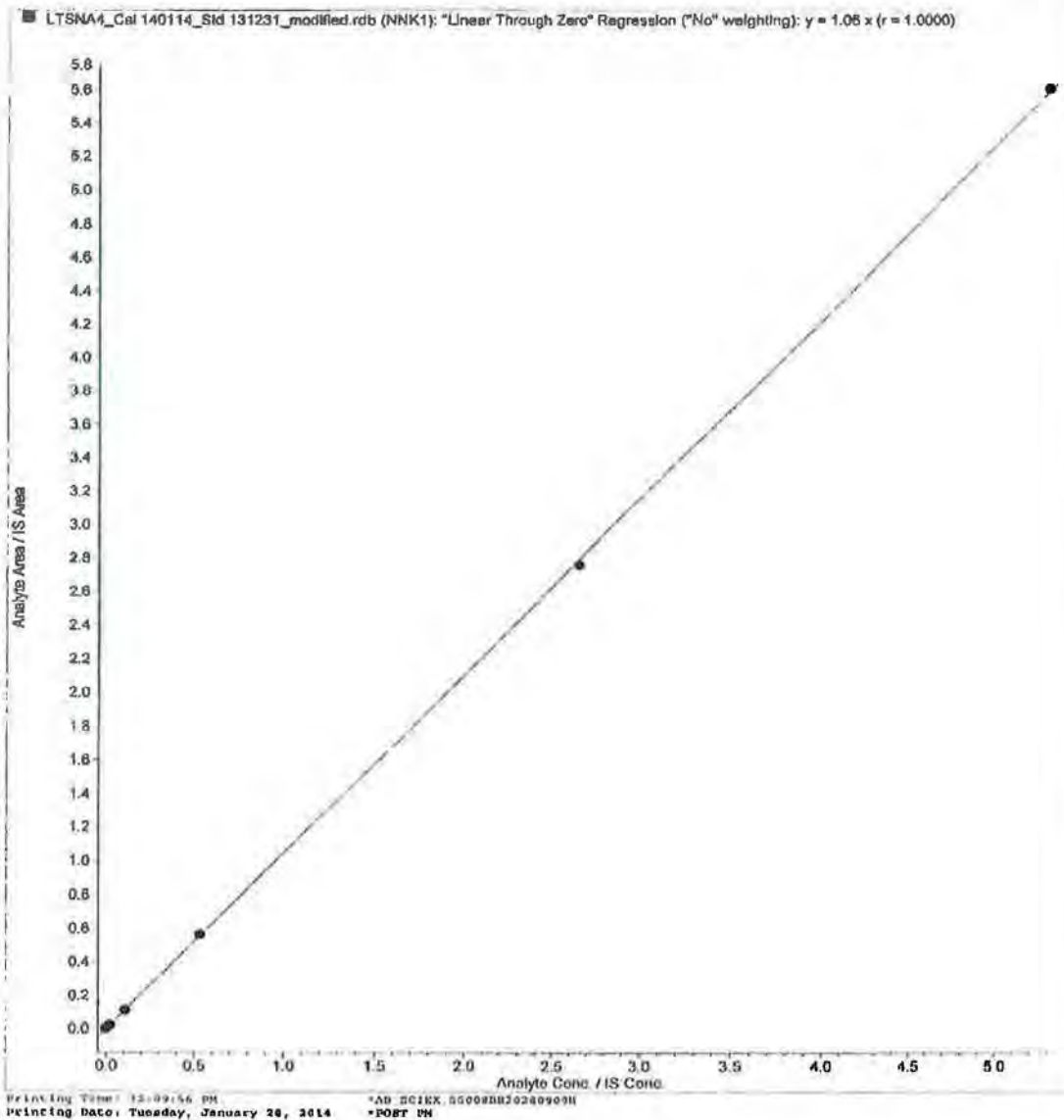
Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

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Created: 1/28/14 12:15 Audit ID: 3036955

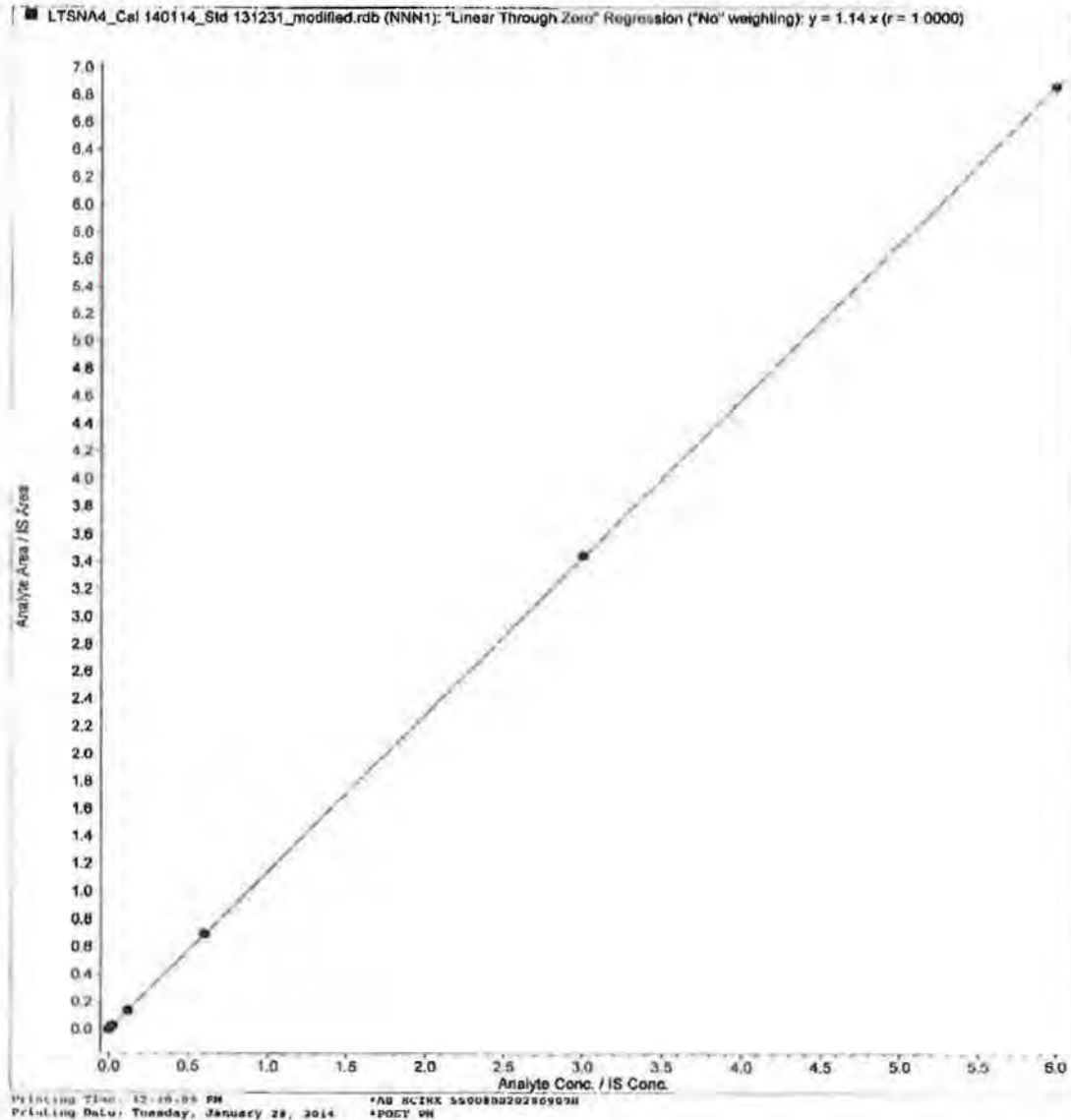


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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Created: 1/28/14 12:15 Audit ID: 3036955





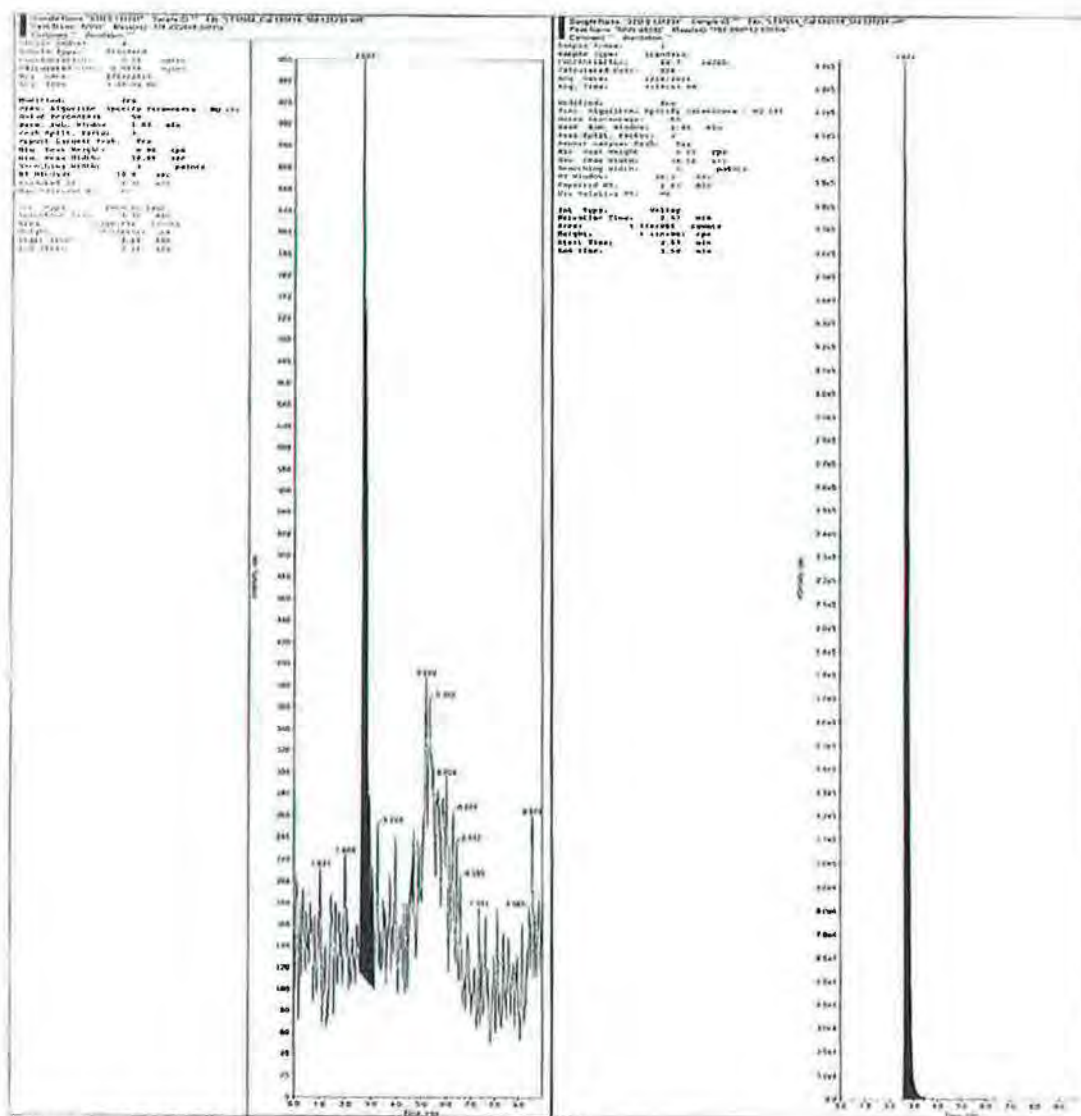
APR

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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Created: 1/29/14 10:45 Audit ID: 3043320



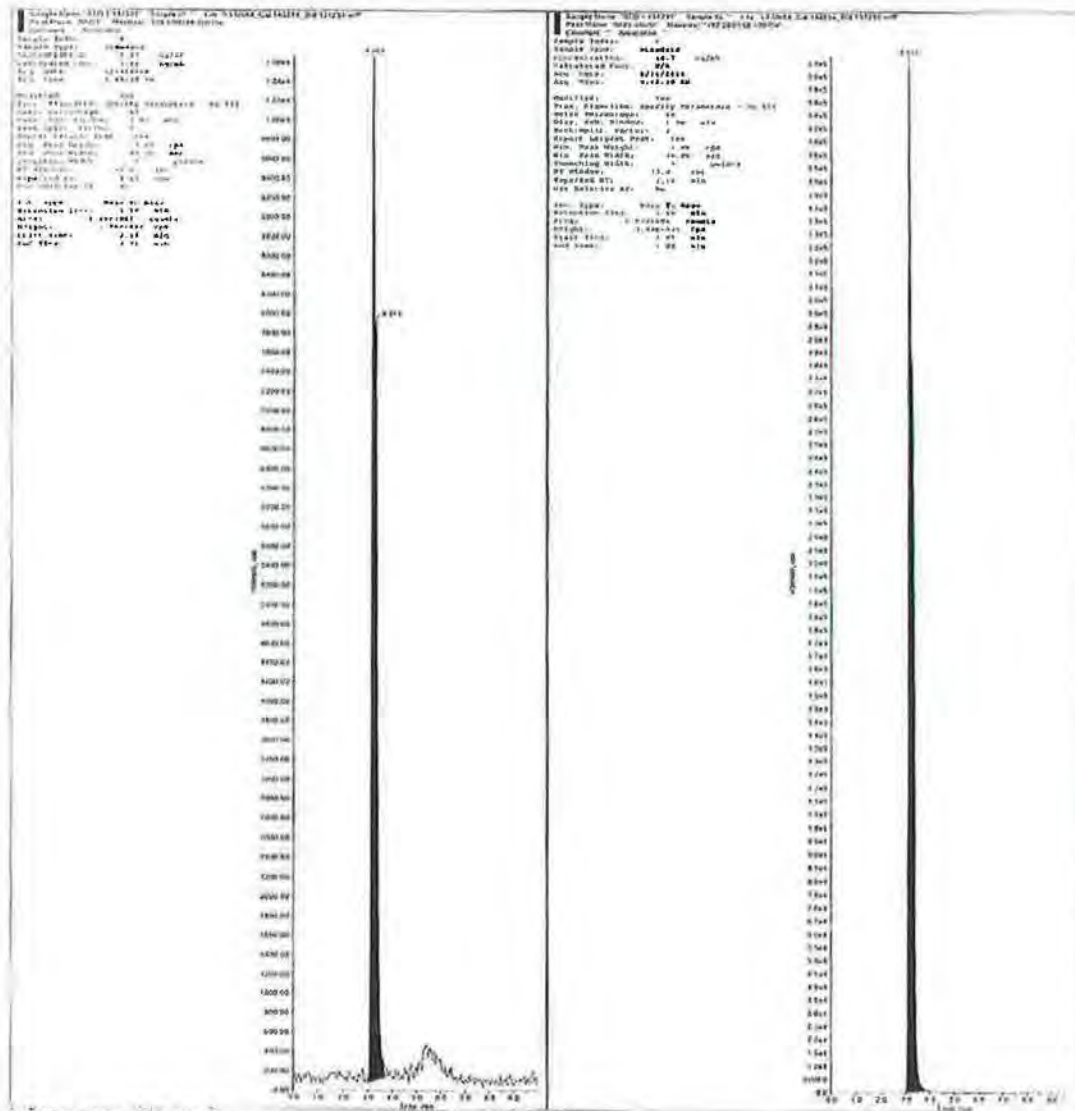
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Printing Date: Wednesday, January 29, 2014
FAB: RETEN 5509900020400000
*PORT IN

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

LTSNA4_Cal Stds Chromatograms & Results.pdf_3043320
Electronically Signed By: Bor Cha
Path: W:\2repository\repository\3043320\1
Created: 1/29/14 10:45 Audit ID: 3043320



Printing Time: 10:14:39 AM
Printing Date: Wednesday, January 29, 2014
*20 DATES 550088A3028510311
*PORT PH



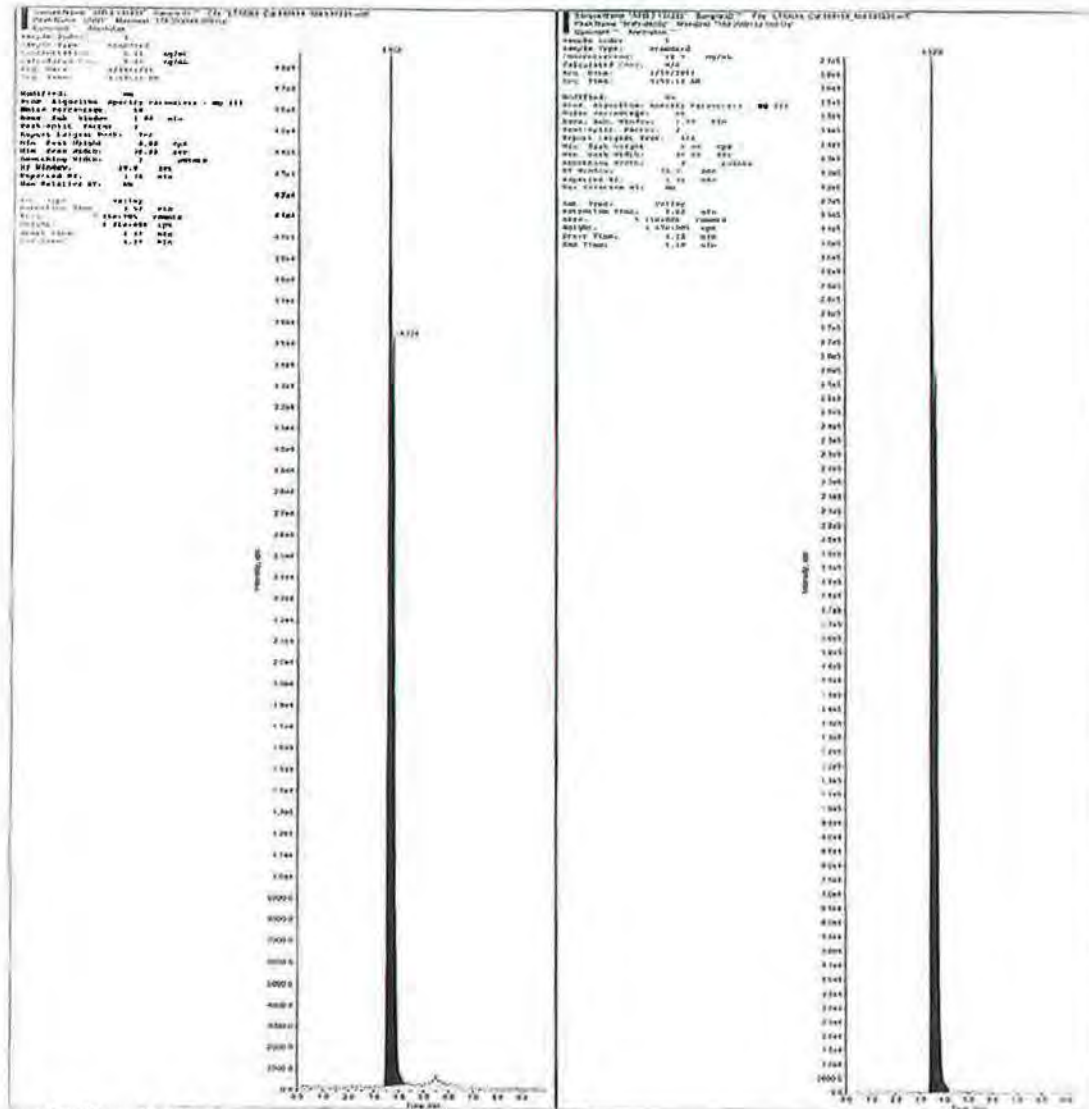
APM

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

LTSNAA_Cal Stds Chromatograms & Results.pdf_3043320
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Created: 1/29/14 10:45 Audit ID: 3043320



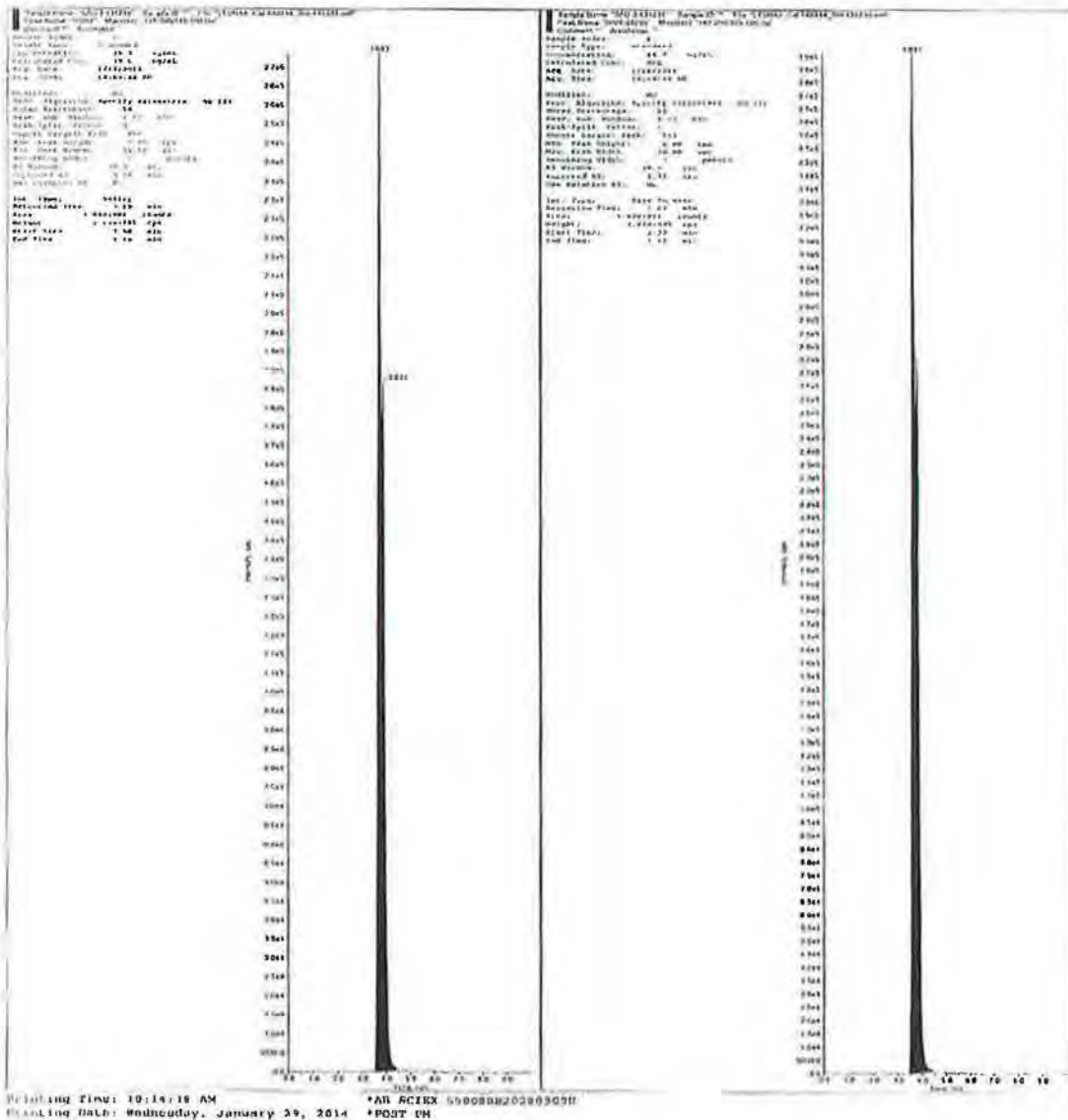
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Printing Date: Wednesday, January 29, 2014
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*PO9T 00

Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

LTSNA4_Cal Sids Chromatograms & Results.pdf_3043320
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Created: 1/29/14 10:45 Audit ID: 3043320





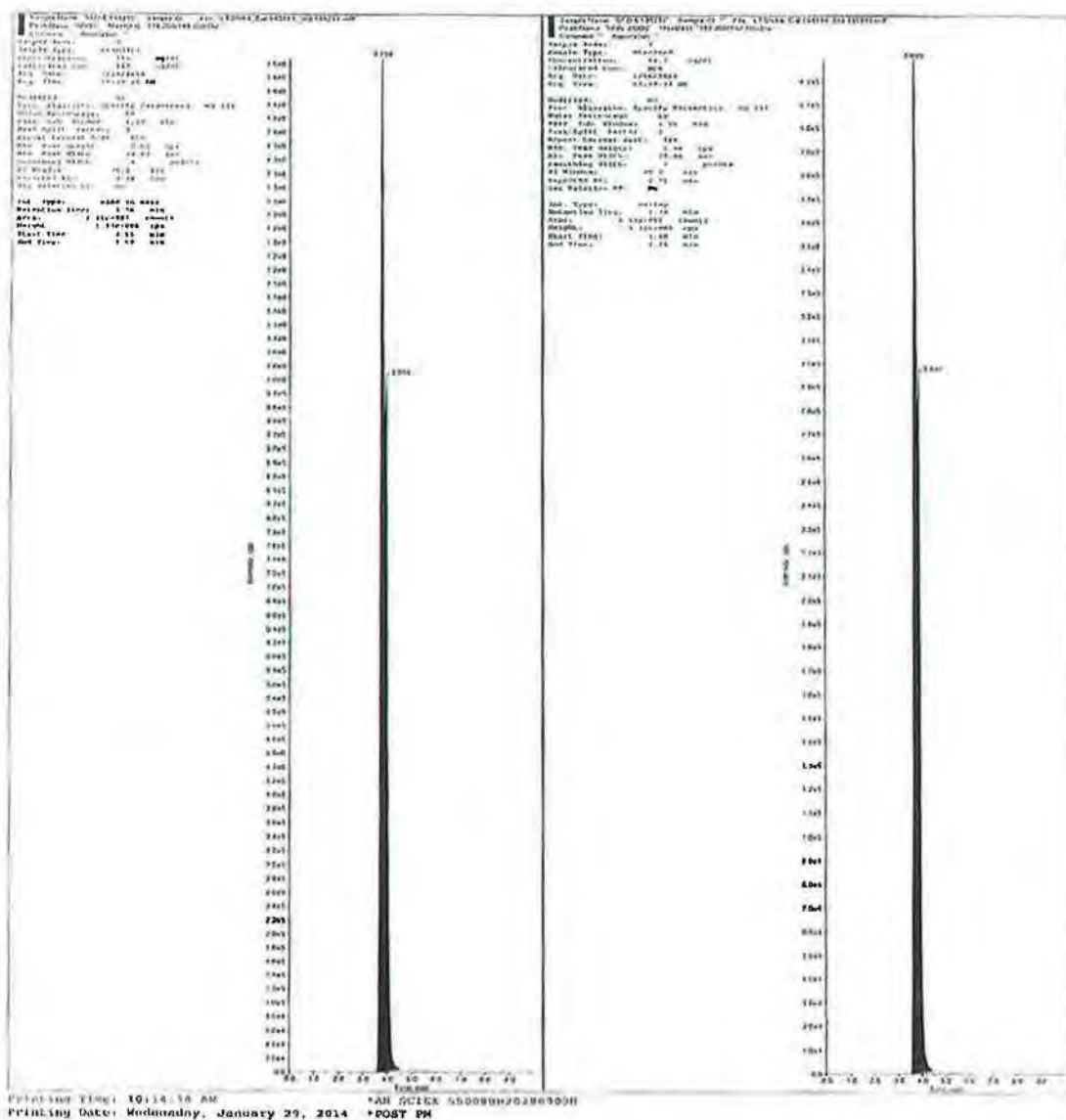
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Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

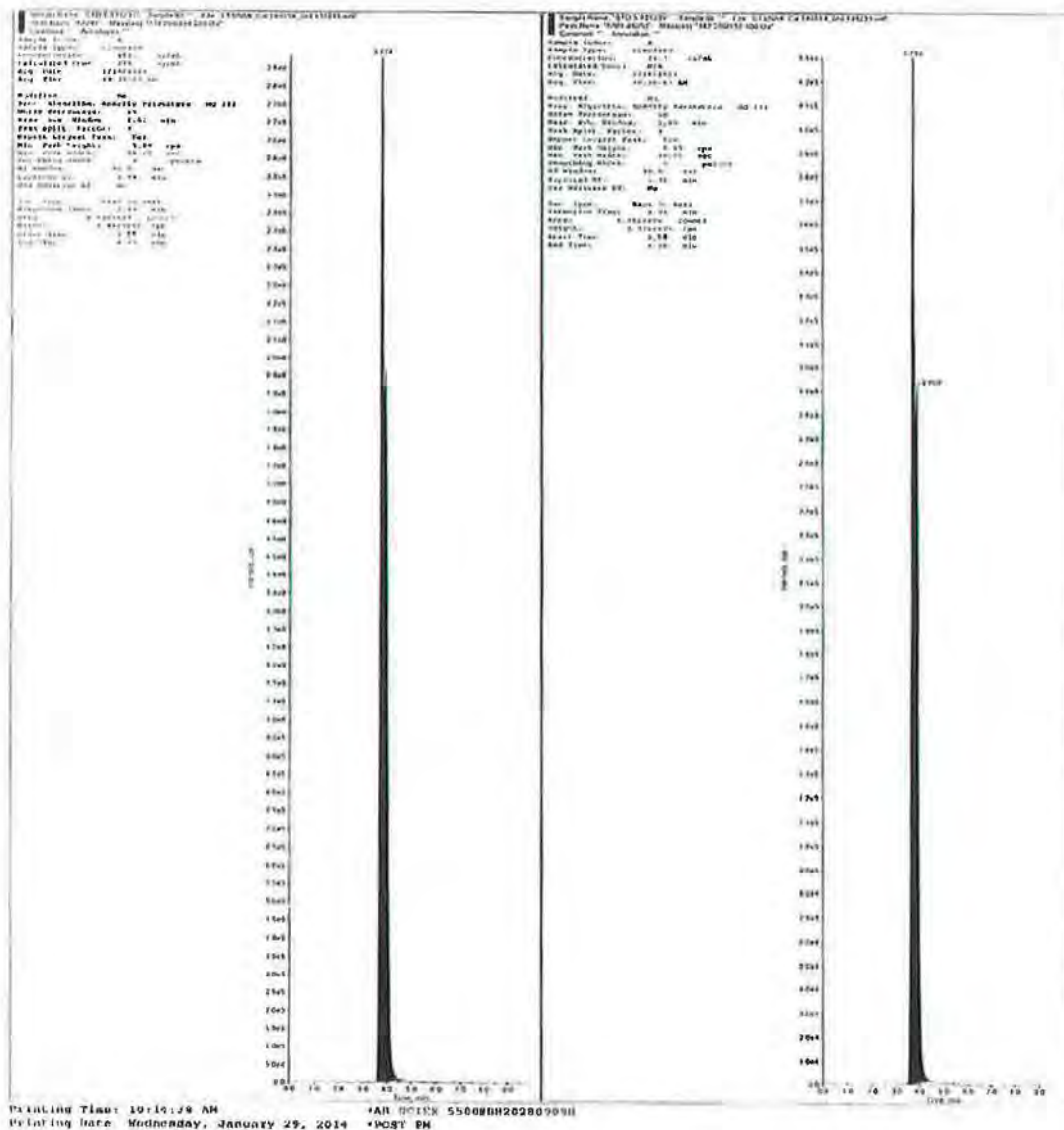
LTSN4_Cal Stds Chromatograms & Results.pdf_3043320
Electronically Signed By: Bor Cha
Path: \\fs2\repository\repository\3043320\
Created: 1/29/14 10:45 Audit ID: 3043320



Study Identifier: M195-GLP

Study Report – Appendix G
Calibration Curve Data Summary

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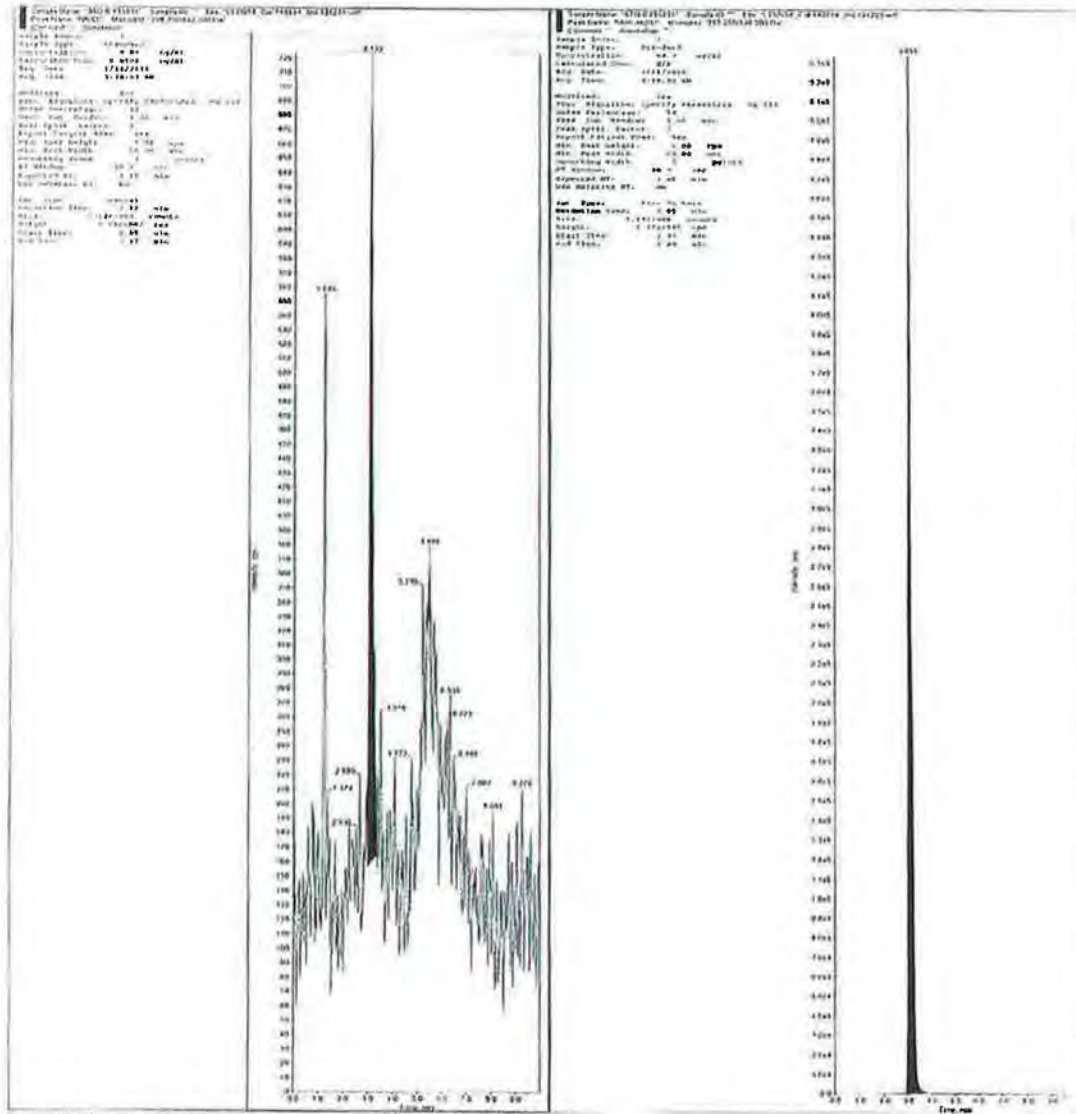


Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

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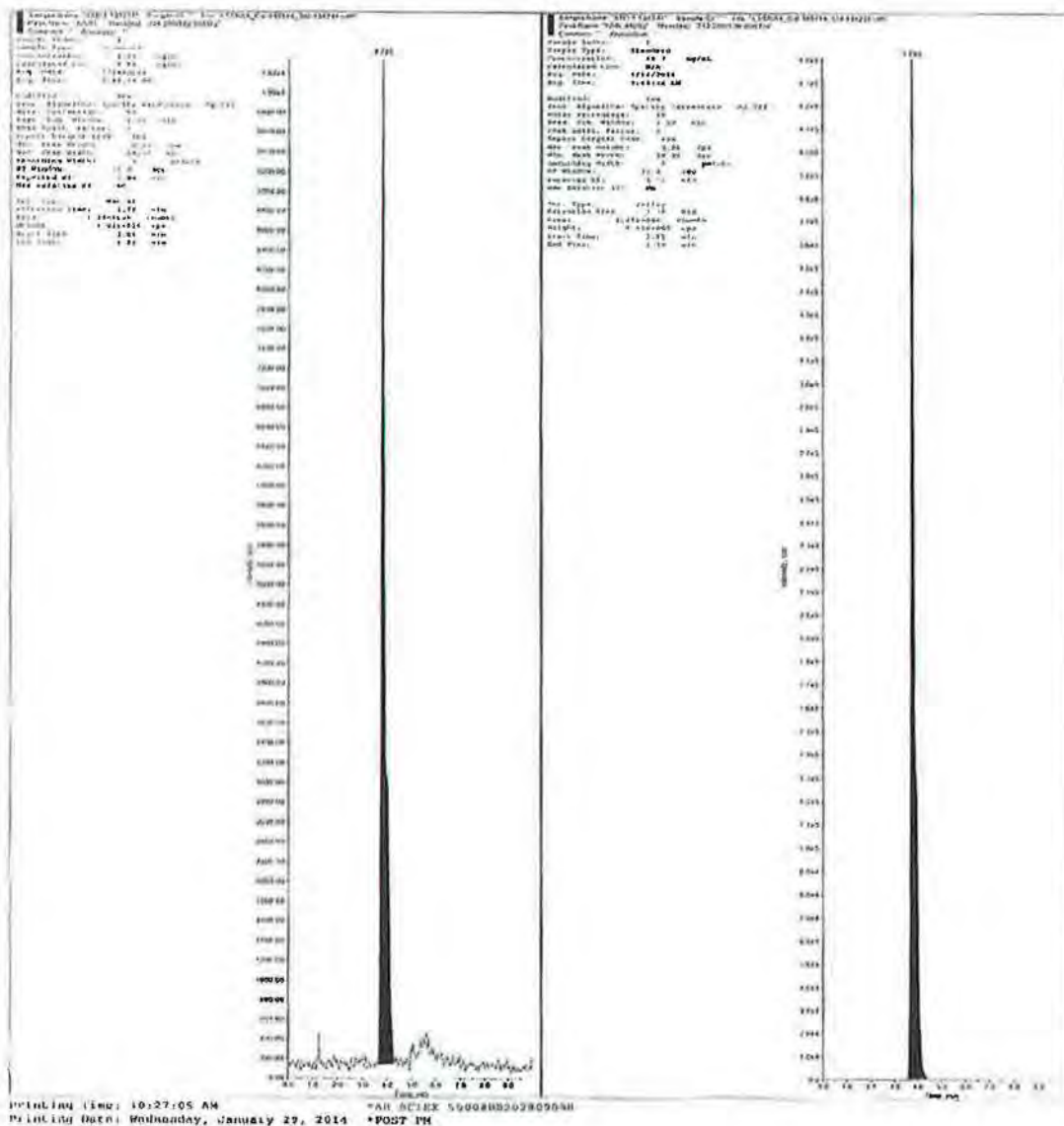


Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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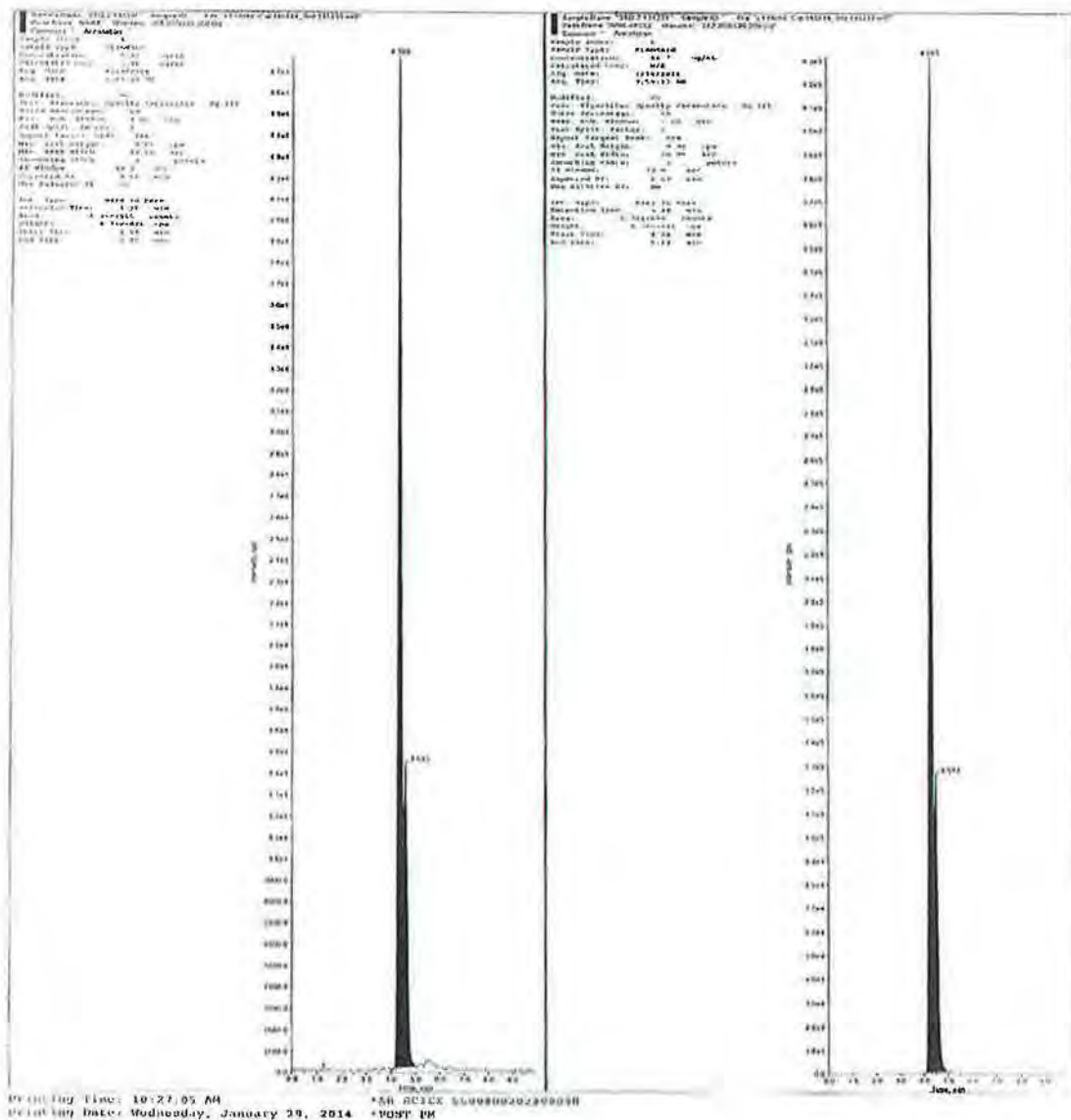


Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

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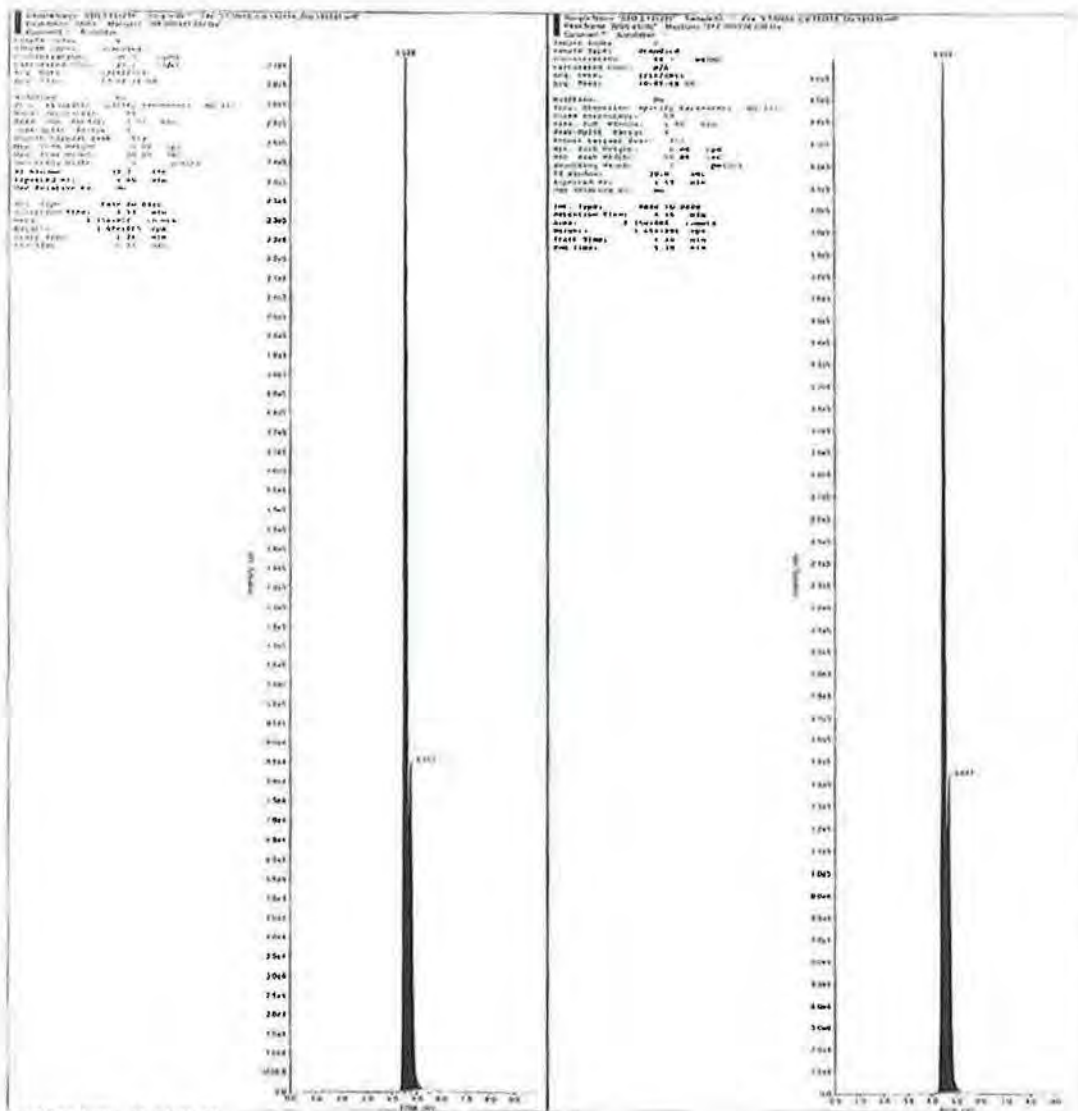


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Study Report – Appendix G Calibration Curve Data Summary

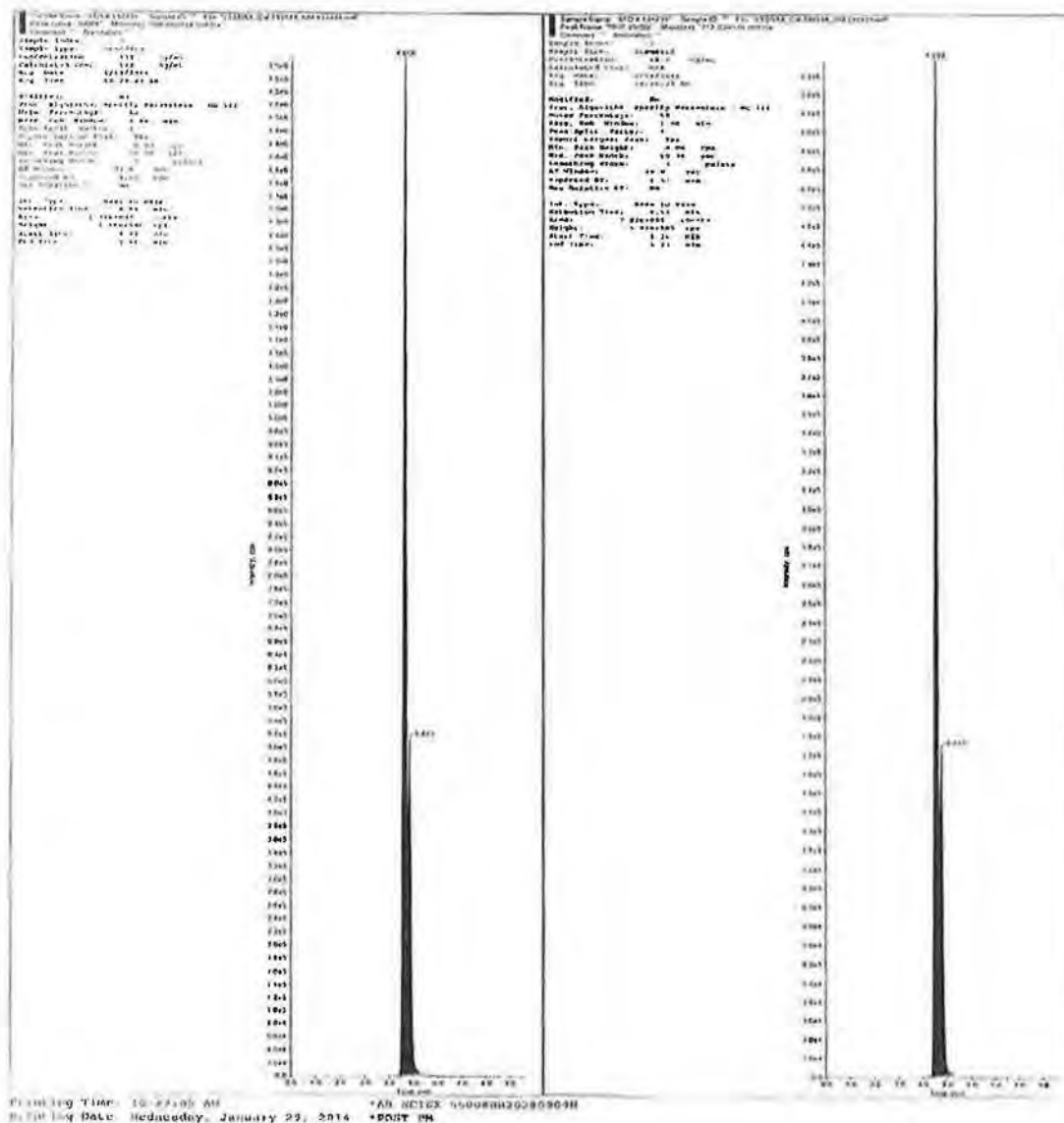
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*POST PM

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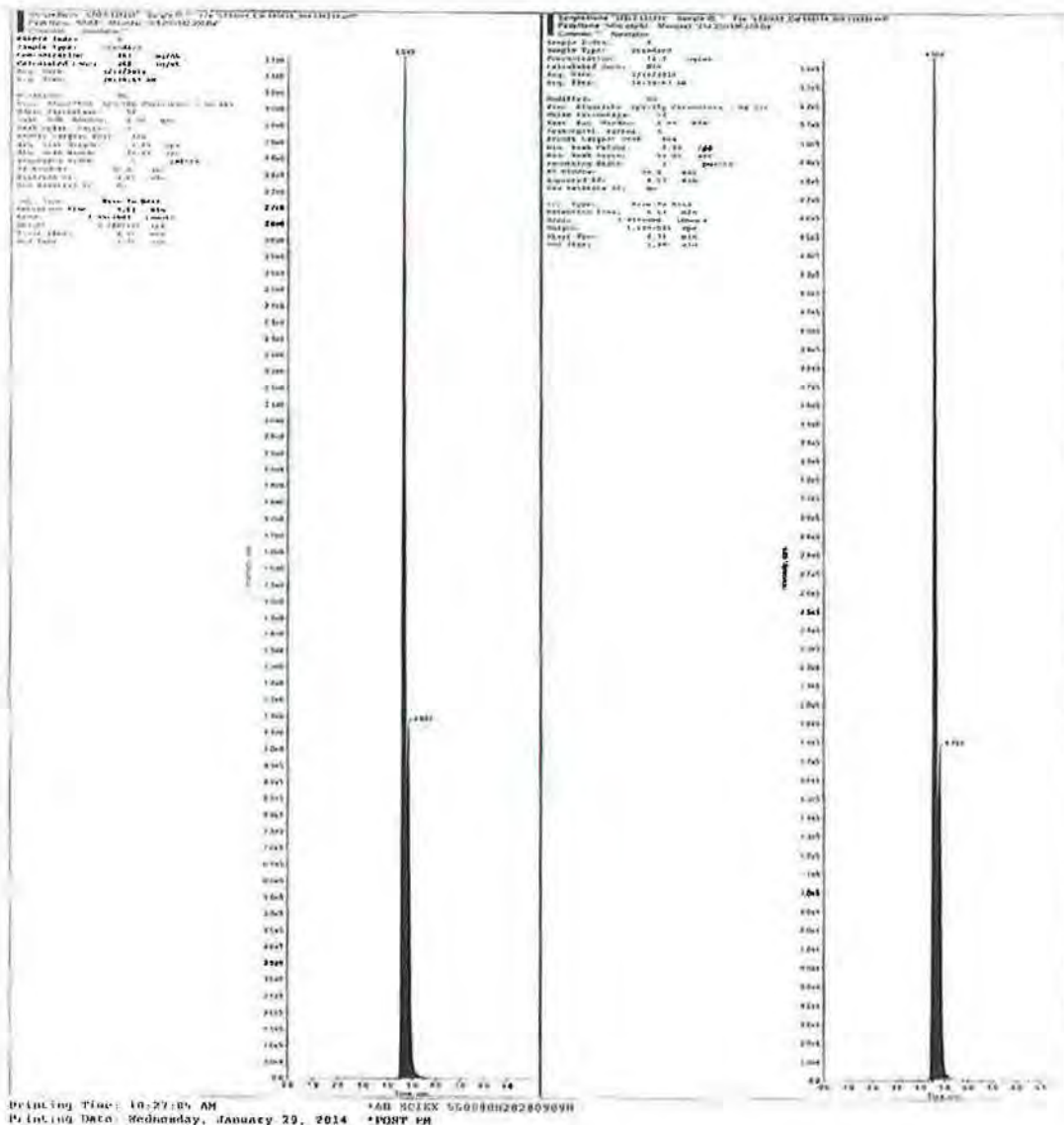
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Study Identifier: M195-GLP

Study Report – Appendix G
Calibration Curve Data Summary

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Toxic Trace Metals in Smokeless Tobacco

24

Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

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Page 1 of 1

McGraw-Hill

4.11.1960 : 1960-1961 A

State	County ID	County Name	Population	Area (sq. mi.)	Population Density	Median Income	Unemployment Rate	Major Industry	State Rank	Year
Alabama	001	Adams County	10,000	1,000	10	\$10,000	10%	Agriculture	100	2000
	002	Barbour County	15,000	1,500	10	\$15,000	10%	Agriculture	100	2000
	003	Bibb County	20,000	2,000	10	\$20,000	10%	Agriculture	100	2000
	004	Blount County	25,000	2,500	10	\$25,000	10%	Agriculture	100	2000
	005	Bolivar County	30,000	3,000	10	\$30,000	10%	Agriculture	100	2000
	006	Breuninger County	35,000	3,500	10	\$35,000	10%	Agriculture	100	2000
	007	Bullock County	40,000	4,000	10	\$40,000	10%	Agriculture	100	2000
	008	Butler County	45,000	4,500	10	\$45,000	10%	Agriculture	100	2000
	009	Calhoun County	50,000	5,000	10	\$50,000	10%	Agriculture	100	2000
	010	Chilton County	55,000	5,500	10	\$55,000	10%	Agriculture	100	2000
Alabama	011	Chocoma County	60,000	6,000	10	\$60,000	10%	Agriculture	100	2000
	012	Chocoma County	65,000	6,500	10	\$65,000	10%	Agriculture	100	2000
	013	Chocoma County	70,000	7,000	10	\$70,000	10%	Agriculture	100	2000
	014	Chocoma County	75,000	7,500	10	\$75,000	10%	Agriculture	100	2000
	015	Chocoma County	80,000	8,000	10	\$80,000	10%	Agriculture	100	2000
	016	Chocoma County	85,000	8,500	10	\$85,000	10%	Agriculture	100	2000
	017	Chocoma County	90,000	9,000	10	\$90,000	10%	Agriculture	100	2000
	018	Chocoma County	95,000	9,500	10	\$95,000	10%	Agriculture	100	2000
	019	Chocoma County	100,000	10,000	10	\$100,000	10%	Agriculture	100	2000
	020	Chocoma County	105,000	10,500	10	\$105,000	10%	Agriculture	100	2000
Alabama	021	Chocoma County	110,000	11,000	10	\$110,000	10%	Agriculture	100	2000
	022	Chocoma County	115,000	11,500	10	\$115,000	10%	Agriculture	100	2000
	023	Chocoma County	120,000	12,000	10	\$120,000	10%	Agriculture	100	2000
	024	Chocoma County	125,000	12,500	10	\$125,000	10%	Agriculture	100	2000
	025	Chocoma County	130,000	13,000	10	\$130,000	10%	Agriculture	100	2000
	026	Chocoma County	135,000	13,500	10	\$135,000	10%	Agriculture	100	2000
	027	Chocoma County	140,000	14,000	10	\$140,000	10%	Agriculture	100	2000
	028	Chocoma County	145,000	14,500	10	\$145,000	10%	Agriculture	100	2000
	029	Chocoma County	150,000	15,000	10	\$150,000	10%	Agriculture	100	2000
	030	Chocoma County	155,000	15,500	10	\$155,000	10%	Agriculture	100	2000
Alabama	031	Chocoma County	160,000	16,000	10	\$160,000	10%	Agriculture	100	2000
	032	Chocoma County	165,000	16,500	10	\$165,000	10%	Agriculture	100	2000
	033	Chocoma County	170,000	17,000	10	\$170,000	10%	Agriculture	100	2000
	034	Chocoma County	175,000	17,500	10	\$175,000	10%	Agriculture	100	2000
	035	Chocoma County	180,000	18,000	10	\$180,000	10%	Agriculture	100	2000
	036	Chocoma County	185,000	18,500	10	\$185,000	10%	Agriculture	100	2000
	037	Chocoma County	190,000	19,000	10	\$190,000	10%	Agriculture	100	2000
	038	Chocoma County	195,000	19,500	10	\$195,000	10%	Agriculture	100	2000
	039	Chocoma County	200,000	20,000	10	\$200,000	10%	Agriculture	100	2000
	040	Chocoma County	205,000	20,500	10	\$205,000	10%	Agriculture	100	2000
Alabama	041	Chocoma County	210,000	21,000	10	\$210,000	10%	Agriculture	100	2000
	042	Chocoma County	215,000	21,500	10	\$215,000	10%	Agriculture	100	2000
	043	Chocoma County	220,000	22,000	10	\$220,000	10%	Agriculture	100	2000
	044	Chocoma County	225,000	22,500	10	\$225,000	10%	Agriculture	100	2000
	045	Chocoma County	230,000	23,000	10	\$230,000	10%	Agriculture	100	2000
	046	Chocoma County	235,000	23,500	10	\$235,000	10%	Agriculture	100	2000
	047	Chocoma County	240,000	24,000	10	\$240,000	10%	Agriculture	100	2000
	048	Chocoma County	245,000	24,500	10	\$245,000	10%	Agriculture	100	2000
	049	Chocoma County	250,000	25,000	10	\$250,000	10%	Agriculture	100	2000
	050	Chocoma County	255,000	25,500	10	\$255,000	10%	Agriculture	100	2000
Alabama	051	Chocoma County	260,000	26,000	10	\$260,000	10%	Agriculture	100	2000
	052	Chocoma County	265,000	26,500	10	\$265,000	10%	Agriculture	100	2000
	053	Chocoma County	270,000	27,000	10	\$270,000	10%	Agriculture	100	2000
	054	Chocoma County	275,000	27,500	10	\$275,000	10%	Agriculture	100	2000
	055	Chocoma County	280,000	28,000	10	\$280,000	10%	Agriculture	100	2000
	056	Chocoma County	285,000	28,500	10	\$285,000	10%	Agriculture	100	2000
	057	Chocoma County	290,000	29,000	10	\$290,000	10%	Agriculture	100	2000
	058	Chocoma County	295,000	29,500	10	\$295,000	10%	Agriculture	100	2000
	059	Chocoma County	300,000	30,000	10	\$300,000	10%	Agriculture	100	2000
	060	Chocoma County	305,000	30,500	10	\$305,000	10%	Agriculture	100	2000
Alabama	061	Chocoma County	310,000	31,000	10	\$310,000	10%	Agriculture	100	2000
	062	Chocoma County	315,000	31,500	10	\$315,000	10%	Agriculture	100	2000
	063	Chocoma County	320,000	32,000	10	\$320,000	10%	Agriculture	100	2000
	064	Chocoma County	325,000	32,500	10	\$325,000	10%	Agriculture	100	2000
	065	Chocoma County	330,000	33,000	10	\$330,000	10%	Agriculture	100	2000
	066	Chocoma County	335,000	33,500	10	\$335,000	10%	Agriculture	100	2000
	067	Chocoma County	340,000	34,000	10	\$340,000	10%	Agriculture	100	2000
	068	Chocoma County	345,000	34,500	10	\$345,000	10%	Agriculture	100	2000
	069	Chocoma County	350,000	35,000	10	\$350,000	10%	Agriculture	100	2000
	070	Chocoma County	355,000	35,500	10	\$355,000	10%	Agriculture	100	2000
Alabama	071	Chocoma County	360,000	36,000	10	\$360,000	10%	Agriculture	100	2000
	072	Chocoma County	365,000	36,500	10	\$365,000	10%	Agriculture	100	2000
	073	Chocoma County	370,000	37,000	10	\$370,000	10%	Agriculture	100	2000
	074	Chocoma County	375,000	37,500	10	\$375,000	10%	Agriculture	100	2000
	075	Chocoma County	380,000	38,000	10	\$380,000	10%	Agriculture	100	2000
	076	Chocoma County	385,000	38,500	10	\$385,000	10%	Agriculture	100	2000
	077	Chocoma County	390,000	39,000	10	\$390,000	10%	Agriculture	100	2000
	078	Chocoma County	395,000	39,500	10	\$395,000	10%	Agriculture	100	2000
	079	Chocoma County	400,000	40,000	10	\$400,000	10%	Agriculture	100	2000
	080	Chocoma County	405,000	40,500	10	\$405,000	10%	Agriculture	100	2000
Alabama	081	Chocoma County	410,000	41,000	10	\$410,000	10%	Agriculture	100	2000
	082	Chocoma County	415,000	41,500	10	\$415,000	10%	Agriculture	100	2000
	083	Chocoma County	420,000	42,000	10	\$420,000	10%	Agriculture	100	2000
	084	Chocoma County	425,000	42,500	10	\$425,000	10%	Agriculture	100	2000
	085	Chocoma County	430,000	43,000	10	\$430,000	10%	Agriculture	100	2000
	086	Chocoma County	435,000	43,500	10	\$435,000	10%	Agriculture	100	2000
	087	Chocoma County	440,000	44,000	10	\$440,000	10%	Agriculture	100	2000
	088	Chocoma County	445,000	44,500	10	\$445,000	10%	Agriculture	100	2000
	089	Chocoma County	450,000	45,000	10	\$450,000	10%	Agriculture	100	2000
	090	Chocoma County	455,000	45,500	10	\$455,000	10%	Agriculture	100	2000
Alabama	091	Chocoma County	460,000	46,000	10	\$460,000	10%	Agriculture	100	2000
	092	Chocoma County	465,000	46,500	10	\$465,000	10%	Agriculture	100	2000
	093	Chocoma County	470,000	47,000	10	\$470,000	10%	Agriculture	100	2000
	094	Chocoma County	475,000	47,500	10	\$475,000	10%	Agriculture	100	2000
	095	Chocoma County	480,000	48,000	10	\$480,000	10%	Agriculture	100	2000
	096	Chocoma County	485,000	48,500	10	\$485,000	10%	Agriculture	100	2000
	097	Chocoma County	490,000	49,000	10	\$490,000	10%	Agriculture	100	2000
	098	Chocoma County	495,000	49,500	10	\$495,000	10%	Agriculture	100	2000
	099	Chocoma County	500,000	50,000	10	\$500,000	10%	Agriculture	100	2000
	100	Chocoma County	505,000	50,500	10	\$505,000	10%	Agriculture	100	2000

Abstract

958-9110



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

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Quantum Worksheet Report
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Worksheet: ICP-Exp-140131-As-CRI.mswn
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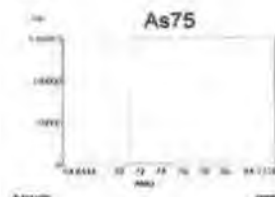
Page 2 of 18

Internal Standards
Semi Quant Analytes
Isotope Ratios

Blank (Blank)

Tube: 1-1, Replicates: 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 12:37:16pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.0000	ppb	-	20.6667	3.39	1.2	27 70



Standard 1 (Standard 1)

Tube: 1-2, Replicates: 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 01:00:10pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.6010	ppb	-	70.3333	9.14	6.4	73 75 63



As75

Study Identifier: M195-GLP

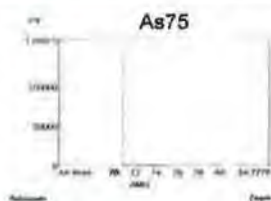
Study Report – Appendix G Calibration Curve Data Summary

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Analyst

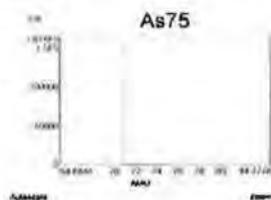
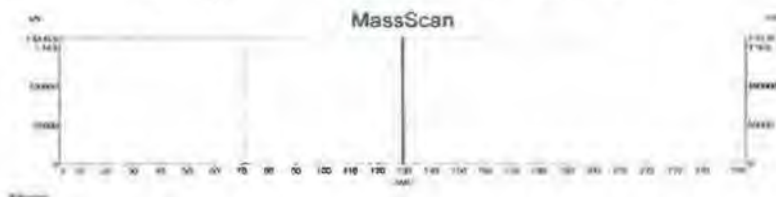
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Standard 2 [Standard 2]

Tube: 13, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 01:03:00pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: 0.50 mm, Position Vertical: 0.50 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.0010	ppb	-	110.0000	2.41	2.6	109 108 111



Standard 3 [Standard 3]

Tube: 14, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 01:06:00pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: 0.50 mm, Position Vertical: 0.50 mm, Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	3.0039	ppb	-	300.6667	2.52	7.6	292 306 304



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Study Identifier: M195-GLP

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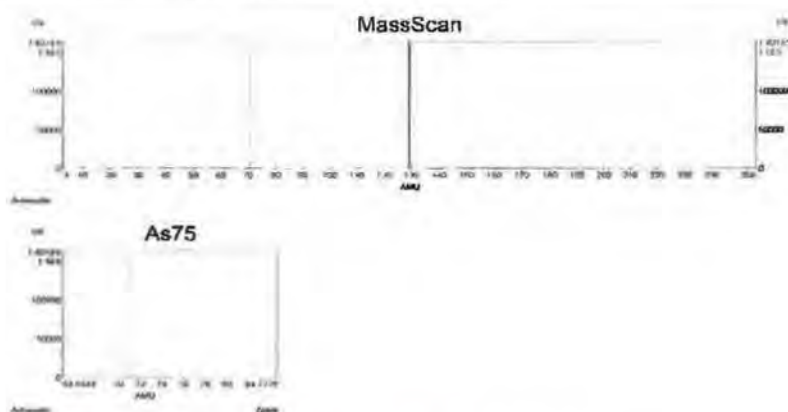
Study Report – Appendix G Calibration Curve Data Summary

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Quantum Worksheet Report
Report Date 03:02:52pm 31/Jan/2014
Worksheet ICP-Exp-140131-As-CRI.msws
Analyst

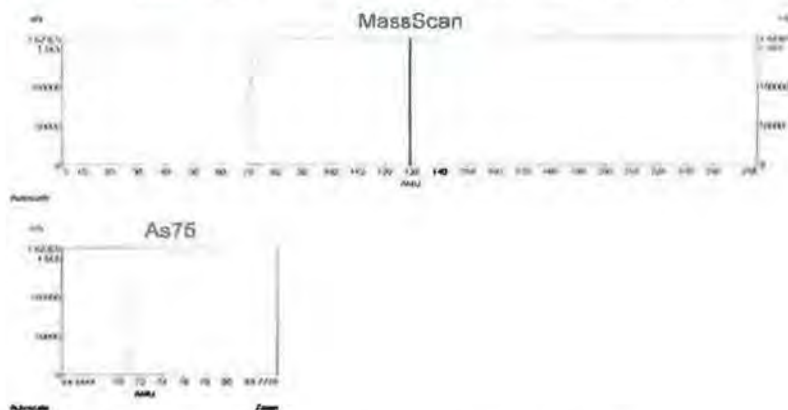
Page 4 of 18



Standard 4 [Standard 4]

Tube: 1.5, Replicates: 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 01:08:33pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)	
As75	6.0000	ppb	573.6667	1.63	9.4	56.3	577	581



Standard 5 [Standard 5]

Tube: 1.6, Replicates: 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 01:11:51pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt



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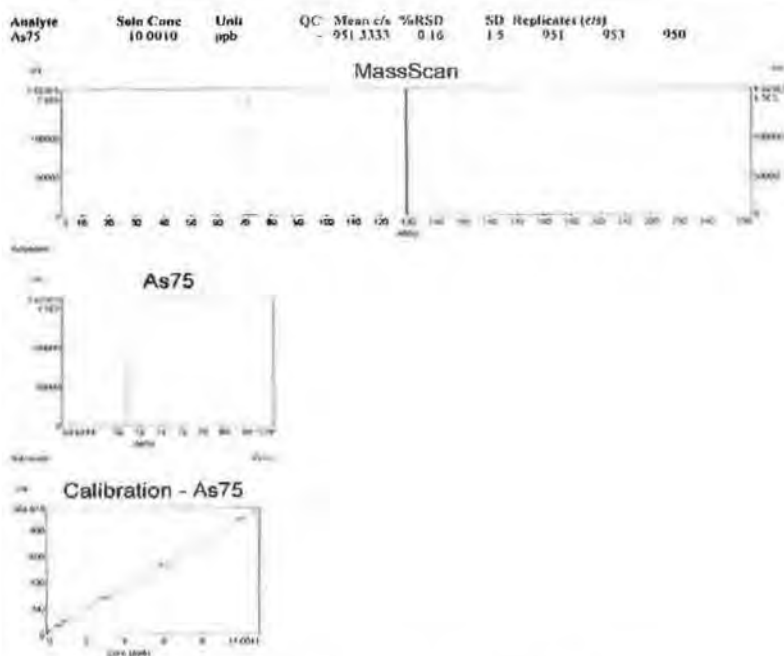
Study Report – Appendix G Calibration Curve Data Summary

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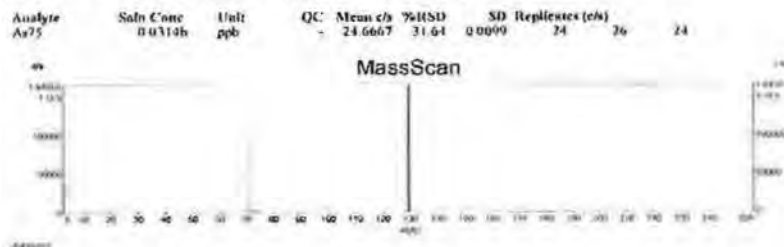
Quantum Worksheet Report
Report Date 03:02:52pm 31/Jan/2014
Worksheet ICP-Exp-140131-As-CRI.msws
Analyst

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5% HNO₃ [Sample]

Tube: 2.1, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 01:14:43pm 31/Jan/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: 0.39 mm Position Vertical: 0.00 mm Detector Voltage: 33.00 V



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Study Report – Appendix G
Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_Block2_inet_WT.pdf_3059446
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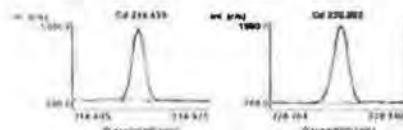
Blank (Blk)	1/31/2014, 9:38:10 AM					Rack S, Tube 1
Label	Replicates Concentration					
Cd 214.439	0.054702	0.059967	0.059798	0.049454	0.056919	
Cd 228.802	0.110006	0.087083	0.096984	0.125806	0.124906	

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	0.000000	ppb	1.361	20.5	6.63851
Cd 228.802	0.000000	ppb	6.600	33.3	19.7935



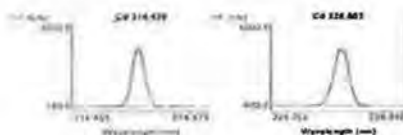
Standard 1 (Std)	1/31/2014, 9:41:31 AM					Rack S, Tube 2
Label	Replicates Concentration					
Cd 214.439	2.50282	2.48290	2.48653	2.44738	2.42326	
Cd 228.802	2.48630	2.48643	2.48703	2.45154	2.43603	

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	2.51000	ppb	10.160	1.3	762.740
Cd 228.802	2.51000	ppb	9.327	1.0	934.141



Standard 2 (Std)	1/31/2014, 9:44:52 AM					Rack S, Tube J
Label	Replicates Concentration					
Cd 214.439	5.12972	5.08205	5.08113	5.02654	5.01483	
Cd 228.802	5.10090	5.07049	5.07892	5.00006	5.01311	

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	5.02000	ppb	14.632	0.9	1577.10
Cd 228.802	5.02000	ppb	16.957	0.9	1934.76



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Study Report – Appendix G Calibration Curve Data Summary

ICP Export II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_Block2_mat_VWT.pdf_3059448
Electronically Signed By: Sarah Fong
Path: Wfs2\repository\repository\3059448\
Created: 1/31/14 11:19 Audit ID: 3059448

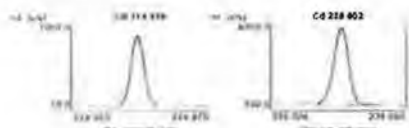
Page 3 of 12

ICP-AES 720, Metals, Method/Worksheet: i140131-WT.wvq. All Data Report 1/31/2014, 11:18:57 AM, Analys

Standard 3 (Std) 1/31/2014, 9:48:14 AM Rack S, Tube 4

Label	Replicates Concentration				
Cd 214.439	15.2162	15.2366	15.0539	15.1900	14.9335
Cd 228.802	15.2034	15.1982	15.0611	15.0816	14.9369

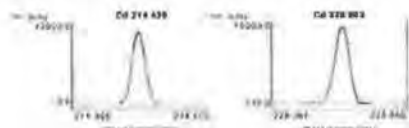
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	15.0600	ppb	40.481	0.9	4729.85
Cd 228.802	15.0600	ppb	42.749	0.7	5825.14



Standard 4 (Std) 1/31/2014, 9:51:37 AM Rack S, Tube 5

Label	Replicates Concentration				
Cd 214.439	29.8575	30.2492	29.9433	29.5666	29.6984
Cd 228.802	29.7773	30.1862	29.9133	29.6043	29.5535

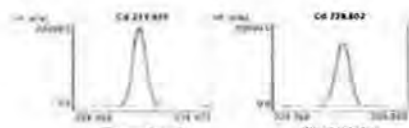
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	30.1200	ppb	78.062	0.8	9346.86
Cd 228.802	30.1200	ppb	99.009	0.9	11523.3



Standard 5 (Std) 1/31/2014, 9:55:00 AM Rack S, Tube 6

Label	Replicates Concentration				
Cd 214.439	50.4473	50.3519	50.6308	49.9501	50.2968
Cd 228.802	50.4339	50.4162	50.5355	50.2034	50.2897

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	50.2000	ppb	78.362	0.5	15765.2
Cd 228.802	50.2000	ppb	50.365	0.3	19490.7



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_Block2_met_WT.pdf_3059448
Electronically Signed By: Sarah Fong
Path: \\s2repository\repository\3059448
Created: 1/31/14 11:19 Audit ID: 3059448

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ICP-AES 720, Metals, Method/Worksheet: i140131-WT.vwq, All Data Report 1/31/2014, 11:18:57 AM, Analys

Cd 214.439 Calibration (ppb)		1/31/2014, 9:55:00 AM		Correlation Coefficient: 0.999974		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		6.63851	0.00000	0.056168	-	-
Standard 1		762.740	2.51000	2.46858	-0.041422	-1.7
Standard 2		1577.10	5.02000	5.06685	0.046855	0.9
Standard 3		4729.85	15.0600	15.1260	0.066015	0.4
Standard 4		9346.86	30.1200	29.8570	-0.262991	-0.9
Standard 5		15765.2	50.2000	50.3354	0.135376	0.3

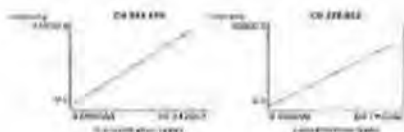
Curve Type: Linear

Equation: $y = 313.4 x + -11.0$

Cd 228.802 Calibration (ppb)		1/31/2014, 9:55:00 AM		Correlation Coefficient: 0.999962		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		19.7935	0.00000	0.108957	-	-
Standard 1		934.141	2.51000	2.46947	-0.040533	-1.6
Standard 2		1934.76	5.02000	5.05270	0.032696	0.7
Standard 3		5825.14	15.0600	15.0962	0.036237	0.2
Standard 4		11523.3	30.1200	29.8069	-0.313105	-1.0
Standard 5		19490.7	50.2000	50.3758	0.175751	0.4

Curve Type: Linear

Equation: $y = 387.4 x + -22.4$



5% HNO3 (Samp)		1/31/2014, 9:58:22 AM			Rack 1, Tube 1
Weight: 1		Volume: 1			Dilution: 1
Label	Replicates Concentration				
Cd 214.439	0.060083	0.066725	0.065923	0.042245	0.067438
Cd 228.802	0.101301	0.107930	0.140210	0.124172	0.130204

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	0.060483	ppb	0.010603	17.5	7.99094	0.060483 ppb	1.00000
Cd 228.802	0.120764	ppb	0.015987	13.2	24.3668	0.120764 ppb	1.00000



Study Identifier: M195-GLP

Study Report – Appendix G Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_block2_met_WT.pdf_3068841
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Created: 2/3/14 13:01 Audit ID: 3068841

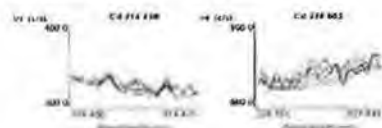
Page 2 of 19

ICP-AES 720, Metals, Method/Worksheet: i140203WT.wvq, All Data Report 2/3/2014, 1:00:12 PM, Analyst

Blank (Blank) 2/3/2014, 9:19:01 AM Rack S, Tube 1

Label	Replicates	Concentration			
Cd 214.439	0.131485	0.118761	0.105518	0.107882	0.113340
Cd 228.802	0.155545	0.152115	0.158083	0.146616	0.179800

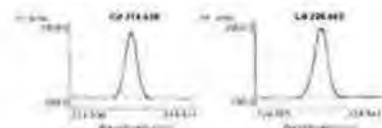
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	0.000000	ppb	3.282	43.6	7.52982
Cd 228.802	0.000000	ppb	4.800	33.1	14.5199



Standard 1 (Std) 2/3/2014, 9:22:22 AM Rack S, Tube 2

Label	Replicates	Concentration			
Cd 214.439	2.57127	2.60460	2.61129	2.59373	2.61646
Cd 228.802	2.57572	2.61571	2.59905	2.58993	2.59745

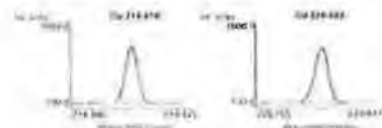
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	2.51000	ppb	5.679	0.7	795.207
Cd 228.802	2.51000	ppb	5.502	0.6	936.076



Standard 2 (Std) 2/3/2014, 9:25:44 AM Rack S, Tube 3

Label	Replicates	Concentration			
Cd 214.439	5.11973	5.02392	5.11280	5.14115	5.09081
Cd 228.802	5.10075	5.03131	5.15788	5.10576	5.12696

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	5.02000	ppb	14.262	0.9	1587.37
Cd 228.802	5.02000	ppb	17.661	0.9	1884.79



Standard 3 (Std) 2/3/2014, 9:29:06 AM Rack S, Tube 4

Label	Replicates	Concentration			
Cd 214.439	14.9803	14.9578	14.8779	14.8843	15.0126
Cd 228.802	14.9454	14.9097	14.7994	14.8302	14.9887

Study Identifier: M195-GLP

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Study Report – Appendix G

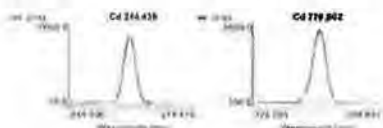
Calibration Curve Data Summary

ICP Export II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_block2_met_WT.pdf_3068841
Electronically Signed By: Sarah Fong
Path: \\fs2\\repository\\repository\\3068841\\
Created: 2/3/14 13:01 Audit ID: 3068841

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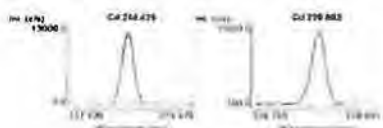
ICP-AES 720, Metals, Method/Worksheet: j140203WT.wvq, All Data Report 2/3/2014, 1:00:12 PM, Analyst

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	15.0600	ppb	18.851	0.4	4709.10
Cd 228.802	15.0600	ppb	29.820	0.5	5586.74



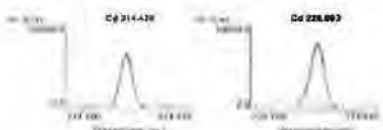
Standard 4 (Std)		2/3/2014, 9:32:28 AM				Rack S, Tube 5
Label	Replicates	Concentration				
Cd 214.439	29.5638	29.4820	29.4172	29.9213	29.8644	
Cd 228.802	29.6239	29.4948	29.4927	29.7250	29.7626	

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	30.1200	ppb	72.545	0.8	9372.61
Cd 228.802	30.1200	ppb	47.551	0.4	11154.8



Standard 5 (Std)		2/3/2014, 9:35:51 AM				Rack S, Tube 6
Label	Replicates	Concentration				
Cd 214.439	49.8580	50.5439	50.4627	50.8411	50.8200	
Cd 228.802	49.9203	50.7476	50.4931	50.8763	50.6475	

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	50.2000	ppb	126.249	0.8	15985.7
Cd 228.802	50.2000	ppb	140.709	0.7	19064.2



Cd 214.439 Calibration (ppb)		2/3/2014, 9:35:51 AM			Correlation Coefficient: 0.999907		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error	
Blank		7.52982	0.000000	0.115397	-	-	
Standard 1		795.207	2.51000	2.59947	0.089470	3.6	
Standard 2		1587.37	5.02000	5.09768	0.077682	1.5	
Standard 3		4709.10	15.0600	14.9426	-0.117425	-0.8	
Standard 4		9372.61	30.1200	29.6497	-0.470270	-1.6	
Standard 5		15985.7	50.2000	50.5051	0.305149	0.6	

Study Identifier: M195-GLP

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Study Report – Appendix G

Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_block2_met_WT.pdf_3068841
Electronically Signed By: Sarah Fong
Path: W:\s2\repository\repository\3068841\
Created: 2/3/14 13:01 Audit ID: 3068841

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ICP-AES 720, Metals, Method/Worksheet: i140203WT.wvq. All Data Report 2/3/2014, 1:00:12 PM, Analyst

Curve Type: Linear Equation: $y = 317.1x + -29.1$

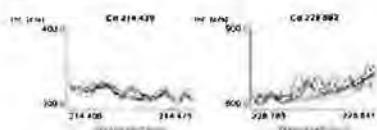
Cd 228.802 Calibration (ppb)		2/3/2014, 9:35:51 AM		Correlation Coefficient: 0.999888		
Label	Flags	Int. (c/s)	Std. Conc.	Calc. Conc.	Error	%Error
Blank		14.5199	0.000000	0.158432	-	-
Standard 1		976.076	2.51000	2.59557	0.085572	3.4
Standard 2		1884.79	5.02000	5.10453	0.084534	1.7
Standard 3		3586.74	15.0600	14.8947	-0.165328	-1.1
Standard 4		11154.8	30.1200	29.6198	-0.500193	-1.7
Standard 5		19064.2	50.2000	50.5370	0.336979	0.7

Curve Type: Linear Equation: $y = 378.1x + 45.4$



5% HNO3 (Samp)		2/3/2014, 9:39:13 AM		Rack 1, Tube 1	
Weight: 1		Volume: 1		Dilution: 1	
Label	Replicates Concentration				
Cd 214.439	0.122461	0.112925	0.108829	0.121762	0.104903
Cd 228.802	0.144474	0.156415	0.165878	0.149943	0.150992

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc. Conc.	DF
Cd 214.439	0.114176	ppb	0.007783	6.8	7.14255	0.114176 ppb	1.00000
Cd 228.802	0.153540	ppb	0.008095	5.3	12.6703	0.153540 ppb	1.00000



1400891-J-1 M195-GLP (Samp)		2/3/2014, 9:42:34 AM		Rack 1, Tube 2	
Weight: 1		Volume: 1		Dilution: 1	
Label	Replicates Concentration				
Cd 214.439	3.53058	3.53193	3.56239	3.54946	3.57251
Cd 228.802	4.53131	4.40574	4.51372	4.48677	4.42108

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc. Conc.	DF
Cd 214.439	3.54937	ppb	0.018456	0.5	1096.41	3.54937 ppb	1.00000
Cd 228.802	4.47172	ppb	0.055810	1.2	1645.51	4.47172 ppb	1.00000

Study Identifier: M195-GLP

Study Report – Appendix G

Calibration Curve Data Summary

Quantum ICP-Exp-140203-As-CRI_RESULTS_M195-GLP_block2_met_WT.pdf_3069274
Electronically Signed By: Sarah Fong
Path: \\fs2\repository\repository\3069274\
Created: 2/3/14 13:50 Audit ID: 3069274



Quantum Worksheet Report
Report Date 01:49:40pm 03/17/2014
Worksheet ICP-Exp-140203-As-CRI.mswn
Analyst

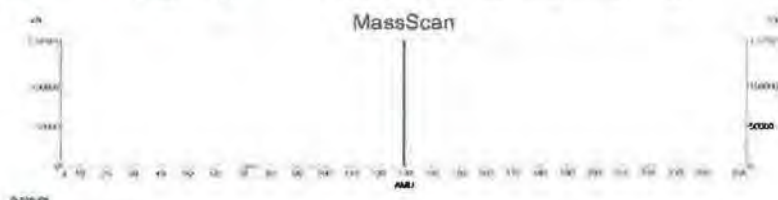
Page 2 of 19

Internal Standards
Semi Quant Analysis
Isotope Ratios

Blank (Blank)

Tube 1.1, Replicates 3, Auto Dilution Factor --, Cal Set 1, Time measured: 10:19:41am 03/17/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

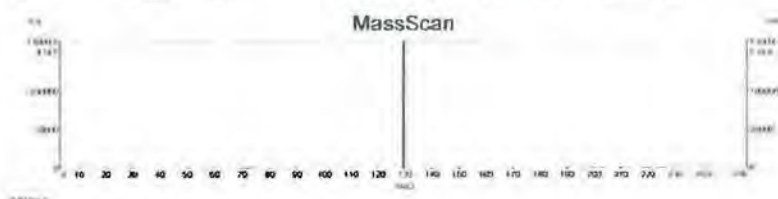
Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)	
As75	0.0000	ppb		28.3333	17.41	4.9	34	25



Standard 1 (Standard 1)

Tube 1.2, Replicates 3, Auto Dilution Factor --, Cal Set 1, Time measured: 10:22:36am 03/17/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

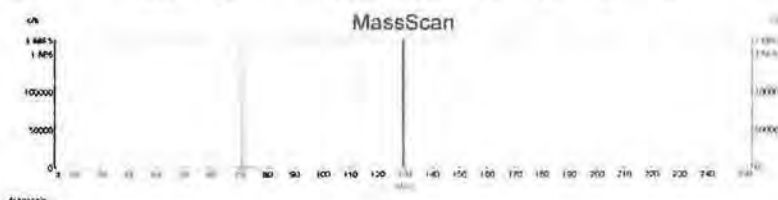
Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)	
As75	0.0010	ppb		81.6667	10.27	8.4	72	86



Standard 2 (Standard 2)

Tube 1.3, Replicates 3, Auto Dilution Factor --, Cal Set 1, Time measured: 10:23:50am 03/17/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm, Position Vertical: 0.00 mm, Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)	
As75	1.0010	ppb		117.0000	6.16	7.2	119	123



Study Identifier: M195-GLP

Study Report – Appendix G
Calibration Curve Data Summary

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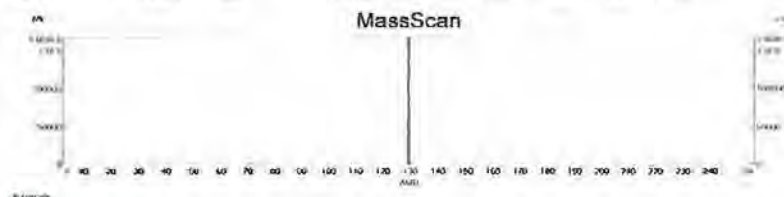
Quantum Worksheet Report
Report Date: 01:49:40pm 03/Feb/2014
Worksheet: ICP-Exp-140203-As-CRI.msws
Analyst:

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Standard 3 [Standard 3]

Tube: 1-4, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 10:28:25am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

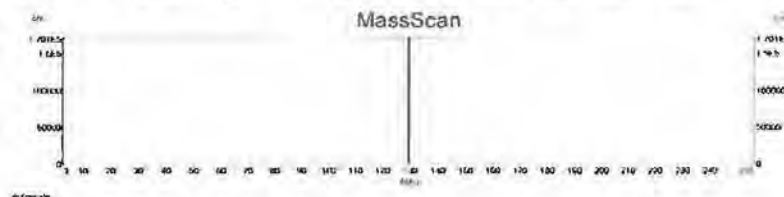
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	3.0030	ppb	-	308.6667	1.66	5.1	310 303 313



Standard 4 [Standard 4]

Tube: 1-5, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 10:31:20am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

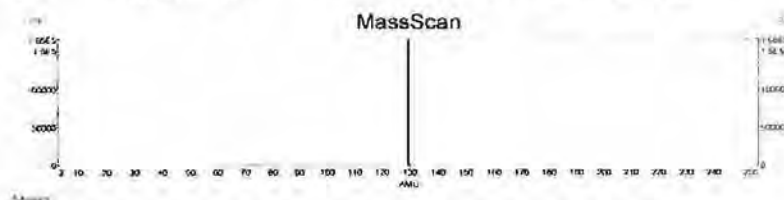
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.0060	ppb	-	608.3333	1.85	11.2	618 611 590



Standard 5 [Standard 5]

Tube: 1-6, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 10:34:16am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	10.0010	ppb	-	980.3333	1.66	16.3	973 969 999



Study Identifier: M195-GLP

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Study Report – Appendix G
Calibration Curve Data Summary

Quantum ICP-Exp-140203-As-CRI_RESULTS_M195-GLP_block2_mol_WT_pdf_3089274
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Path: \\fs2repository\repository\3089274\
Created: 2/3/14 13:50 Audit ID: 3089274



Quantum Worksheet Report
Report Date 01:49:40pm 03/Feb/2014
Worksheet ICP-Exp-140203-As-CRI.msws
Analyst

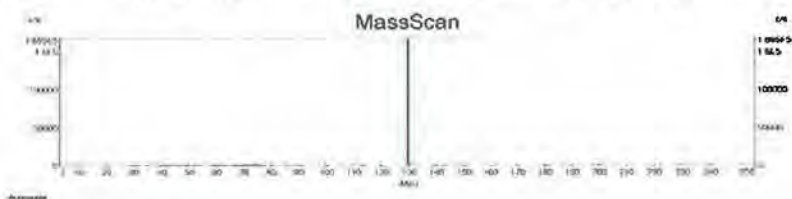
Page 4 of 19

Calibration - As75



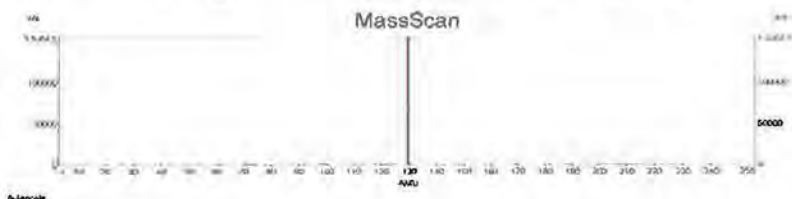
1400891-3-1 M195-GLP B.1 [Sample]
Tube: 2.1, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:37:12am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.00176	ppb	-	20,666.7	802.3	0.0139	26 28 26



1400891-3-1 M195-GLP B.1 [Sample]
Tube: 2.2, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:40:07am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.2765	ppb	-	274,666.7	0.79	0.0180	220 225 229



1400891-3-2 WT [Sample]
Tube: 2.3, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:43:02am 03/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.1136	ppb	-	211,000.0	1.72	0.0098	221 209 203



Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

QSF-01105-V4_Calibration Curve Data Summary_M195-GLP_block0_mel_WT.pdf_3105388
Electronically Signed By: Sarah Fong
Path: \\sa2repository\repository\3105388
Created: 2/7/14 14:58 Audit ID: 3105388

Page 1 of 1

Private and Confidential
Calibration Curve Data Summary for
Component Determined

Study: M195-GLP.docx.3.mel.WT

Analyte	Standard ID (Chemical & Date of Preparation)	Injection Date	Injection Time	Method	Instrument Identification	Area (µg)	Standard Concentration	RSD	QC	QC Result (µg)	Range	Injection Name (Preparation / Reagent)
Cadmium	Blank 140206	2/6/2014	5:21:42	140206-WT	IQ-MS-820 LAB051180	5.000	0.000	33.3				
Cadmium	Standard 1 140206	2/6/2014	5:21:43	140206-WT	IQ-MS-820 LAB051180	5.000	253.000	1.1				
Cadmium	Standard 2 140206	2/6/2014	5:21:46	140206-WT	IQ-MS-820 LAB051180	5.000	503.000	1.1				
Cadmium	Standard 3 140206	2/6/2014	5:21:46	140206-WT	IQ-MS-820 LAB051180	5.000	1003.000	0.8	0.999799	-33.225	1003.50	
Cadmium	Standard 4 140206	2/6/2014	5:21:48	140206-WT	IQ-MS-820 LAB051180	5.000	2003.000	0.9				
Cadmium	Standard 5 140206	2/6/2014	5:21:50	140206-WT	IQ-MS-820 LAB051180	5.000	5003.000	1.1				
Cadmium	Blank 140206	2/6/2014	13:53:44	140206-WT-b	IQ-MS-820 LAB051180	5.000	0.000	11.2				
Cadmium	Standard 1 140206	2/6/2014	13:53:45	140206-WT-b	IQ-MS-820 LAB051180	5.000	253.000	0.6				
Cadmium	Standard 2 140206	2/6/2014	13:53:46	140206-WT-b	IQ-MS-820 LAB051180	5.000	503.000	1.1				
Cadmium	Standard 3 140206	2/6/2014	13:53:46	140206-WT-b	IQ-MS-820 LAB051180	5.000	1003.000	1.5	0.99994	-32.07	1003.00	
Cadmium	Standard 4 140206	2/6/2014	13:53:47	140206-WT-b	IQ-MS-820 LAB051180	5.000	2003.000	1.5				
Cadmium	Standard 5 140206	2/6/2014	13:53:48	140206-WT-b	IQ-MS-820 LAB051180	5.000	5003.000	0.4				
Arsenic	Blank 140206	2/6/2014	13:54:58	140206-WT-c	IQ-MS-820 LAB051180	5.000	0.000	8.7				
Arsenic	Standard 1 140206	2/6/2014	13:55:02	140206-WT-c	IQ-MS-820 LAB051180	5.000	200.000	0.5				
Arsenic	Standard 2 140206	2/6/2014	13:55:07	140206-WT-c	IQ-MS-820 LAB051180	5.000	400.000	0.6				
Arsenic	Standard 3 140206	2/6/2014	13:55:11	140206-WT-c	IQ-MS-820 LAB051180	5.000	800.000	2.8	0.999433	1.3	800	
Arsenic	Standard 4 140206	2/6/2014	13:55:17	140206-WT-c	IQ-MS-820 LAB051180	5.000	1600.000	1.3				
Arsenic	Standard 5 140206	2/6/2014	13:55:17	140206-WT-c	IQ-MS-820 LAB051180	5.000	3200.000	0.4				
Arsenic	Blank 140206	2/6/2014	13:57:44	140206-WT-d	IQ-MS-820 LAB051180	5.000	0.000	7.5				
Arsenic	Standard 1 140206	2/6/2014	13:58:18	140206-WT-d	IQ-MS-820 LAB051180	5.000	200.000	2.0				
Arsenic	Standard 2 140206	2/6/2014	13:58:18	140206-WT-d	IQ-MS-820 LAB051180	5.000	400.000	2.0				
Arsenic	Standard 3 140206	2/6/2014	13:58:17	140206-WT-d	IQ-MS-820 LAB051180	5.000	800.000	4.6	0.999836	28.1	800	
Arsenic	Standard 4 140206	2/6/2014	13:58:20	140206-WT-d	IQ-MS-820 LAB051180	5.000	1600.000	5.0				
Arsenic	Standard 5 140206	2/6/2014	13:58:47	140206-WT-d	IQ-MS-820 LAB051180	5.000	3200.000	5.8				
Arsenic	Standard 6 140206	2/6/2014	13:58:43	140206-WT-d	IQ-MS-820 LAB051180	5.000	6400.000	1.7				

QSF-01105-V4

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Study Report – Appendix G
Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_block3_met_WT.pdf_3094495
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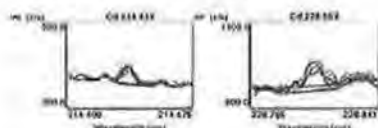
Page 2 of 23

ICP-AES 720, Metals, Method/Worksheet: i140206-WT.wvq. All Data Report 2/6/2014, 1:01:50 PM, Analyst

Blank (Blk) 2/6/2014, 9:22:42 AM Rack S, Tube 1

Label	Replicates	Intensity (c/s)			
Cd 214.439	36.7938	34.9326	33.4469	23.3734	32.2006
Cd 228.802	46.8238	56.8428	39.2942	48.9925	46.5880

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	0.000000	ppb	5.197	16.2	32.1495
Cd 228.802	0.000000	ppb	6.283	13.2	47.7083



Standard 1 (Std) 2/6/2014, 9:26:03 AM Rack S, Tube 2

Label	Replicates	Intensity (c/s)			
Cd 214.439	800.112	791.783	806.442	783.389	786.195
Cd 228.802	910.350	925.370	909.481	894.535	902.959

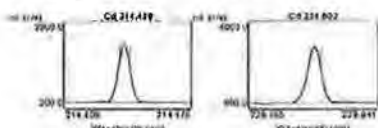
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	2.51000	ppb	9.614	1.2	793.584
Cd 228.802	2.51000	ppb	11.343	1.2	908.539



Standard 2 (Std) 2/6/2014, 9:29:24 AM Rack S, Tube 3

Label	Replicates	Intensity (c/s)			
Cd 214.439	1626.93	1608.86	1593.60	1601.64	1591.51
Cd 228.802	1857.84	1843.61	1832.66	1823.14	1803.24

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	5.02000	ppb	14.300	0.9	1604.51
Cd 228.802	5.02000	ppb	20.667	1.1	1832.10



Standard 3 (Std) 2/6/2014, 9:32:46 AM Rack S, Tube 4

Label	Replicates	Intensity (c/s)			
Cd 214.439	4773.81	4735.20	4727.33	4734.02	4680.37
Cd 228.802	5437.86	5412.25	5385.59	5401.53	5324.90

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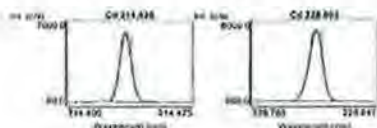
Study Report – Appendix G
Calibration Curve Data Summary

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ICP-AES 720, Metals, Method/Worksheet: i140208-WT.wvg, All Data Report 2/6/2014, 1:01:50 PM, Analyst

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	15.0600	ppb	33.290	0.7	4730.15
Cd 228.802	15.0600	ppb	42.271	0.8	5392.42



Standard 4 (Std) 2/6/2014, 9:36:08 AM Rack S, Tube 5

Label	Replicates Intensity (c/s)				
Cd 214.439	9818.28	9742.08	9711.37	9576.82	9561.19
Cd 228.802	11165.2	11117.9	10989.8	10946.4	10936.6

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	30.1200	ppb	110.342	1.1	9681.95
Cd 228.802	30.1200	ppb	104.092	0.9	11031.2



Standard 5 (Std) 2/6/2014, 9:39:32 AM Rack S, Tube 6

Label	Replicates Intensity (c/s)				
Cd 214.439	16821.8	16581.9	16666.8	16590.6	16283.1
Cd 228.802	19177.2	18944.6	19017.9	18951.9	18587.9

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	50.2000	ppb	196.148	1.2	16588.8
Cd 228.802	50.2000	ppb	215.873	1.1	18935.9



Cd 214.439 Calibration (ppb) 2/6/2014, 9:39:32 AM Correlation Coefficient: 0.999804

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		32.1495	0.000000	0.324915	-	-
Standard 1		793.584	2.51000	2.63776	0.127757	5.1
Standard 2		1604.51	5.02000	5.10093	0.080928	1.6
Standard 3		4730.15	15.0600	14.5950	-0.465016	-3.1
Standard 4		9681.95	30.1200	29.6360	-0.484020	-1.6
Standard 5		16588.8	50.2000	50.6154	0.415432	0.8

[Signature]

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Study Report – Appendix G
Calibration Curve Data Summary

ICP Expert II for Agilent 720-ES ICP-OES Report_RESULTS_M195-GLP_block3_met_WT.pdf_3094495
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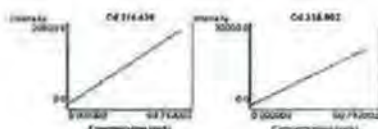
ICP-AES 720, Metals, Method/Worksheet: i140208-WT.wvq, All Data Report 2/6/2014, 1:01:50 PM, Analyst

Curve Type: Linear Equation: $y = 329.2x + -74.8$

Cd 228.802 Calibration (ppb) 2/6/2014, 9:39:32 AM Correlation Coefficient: 0.999779

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		47.7083	0.000000	0.348781	-	-
Standard 1		908.539	2.51000	2.64099	0.130986	5.2
Standard 2		1832.10	5.02000	5.10022	0.080220	1.6
Standard 3		5392.42	15.0600	14.5806	-0.479399	-3.2
Standard 4		11031.2	30.1200	29.5954	-0.524591	-1.7
Standard 5		18935.9	50.2000	50.6440	0.444000	0.9

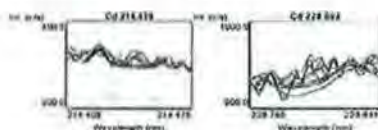
Curve Type: Linear Equation: $y = 375.5x + -83.3$



5% HNO3 (Samp) 2/6/2014, 9:42:53 AM Rack 1, Tube 1
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Intensity (c/s)
Cd 214.439	5.63538	4.05972
Cd 228.802	11.8482	16.1446

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	0.245476	ppb	0.007927	3.2	5.99676	0.245476 ppb	1.00000
Cd 228.802	0.270785	ppb	0.014114	5.2	18.4173	0.270785 ppb	1.00000



1400931-1-1 M195-GLP (Samp) 2/6/2014, 9:46:14 AM Rack 1, Tube 2
Weight: 1 Volume: 1 Dilution: 1

Label	Replicates	Intensity (c/s)
Cd 214.439	1325.21	1314.53
Cd 228.802	1867.30	1849.19

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	4.27590	ppb	0.053821	1.3	1332.89	4.27590 ppb	1.00000
Cd 228.802	5.19209	ppb	0.028125	0.5	1866.60	5.19209 ppb	1.00000

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Study Report – Appendix G Calibration Curve Data Summary

Quantum ICP-Exp-140206-As-CRI_RESULTS_M195-GLP_block3_met_WT.pdf_3096634
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Quantum Worksheet Report
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Worksheet ICP-Exp-140206-As-CRI.msws
Analyst

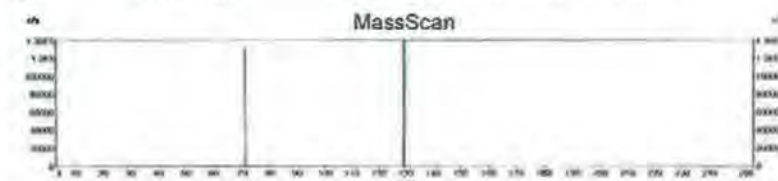
Page 2 of 22

Internal Standards
Semi Quant Analysis
Isotope Ratios

Blank [Blank]

Tube: 1.1, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:54:58am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.0000	ppb	-	23.0000	8.70	2.0	25 21 23

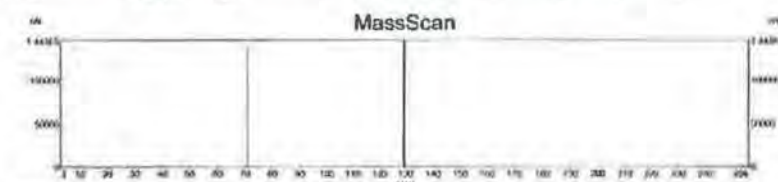


Assemble

Standard 1 [Standard 1]

Tube: 1.2, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 10:57:52am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.6010	ppb	-	71.0000	6.45	4.6	66 72 75

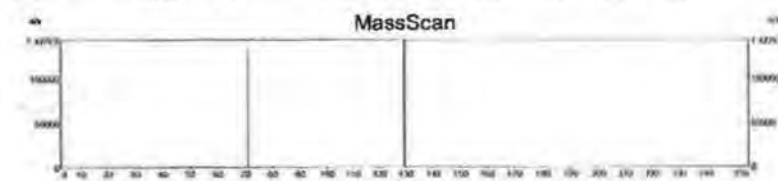


Assemble

Standard 2 [Standard 2]

Tube: 1.3, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:00:47am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.0010	ppb	-	110.0000	9.62	10.6	106 122 102



Assemble

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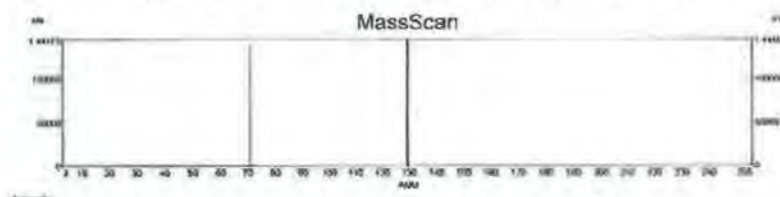
Quantum Worksheet Report
Report Date 03:42:45pm 06/Feb/2014
Worksheet ICP-Exp-140206-As-CRI.msws
Analyst

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Standard 3 [Standard 3]

Tube: 1/4, Replicates: 3, Auto Dilutions Factor: -, Cal Set 1, Time measured: 11:03:41am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

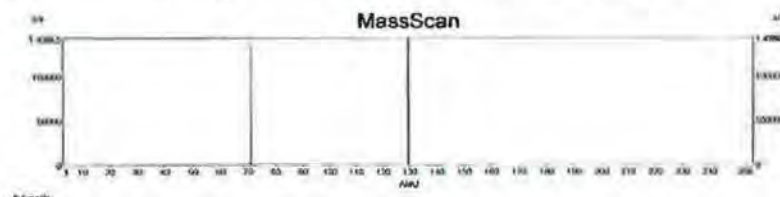
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	3.0030	ppb	-	259.0000	2.78	7.2	263 251 261



Standard 4 [Standard 4]

Tube: 1/5, Replicates: 3, Auto Dilutions Factor: -, Cal Set 1, Time measured: 11:06:37am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

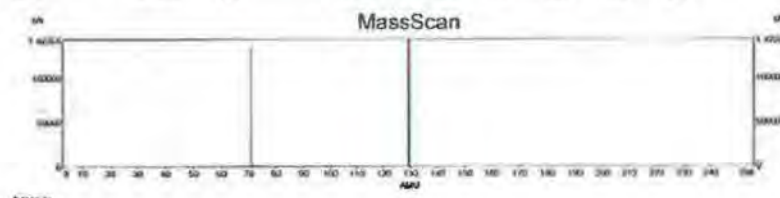
Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	6.0060	ppb	-	501.6667	1.27	6.4	498 509 498



Standard 5 [Standard 5]

Tube: 1/6, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 11:09:33am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	10.0010	ppb	-	828.0000	0.64	3.3	822 830 832



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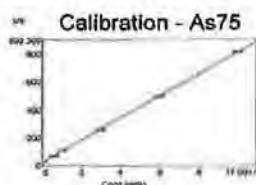
Study Report – Appendix G Calibration Curve Data Summary

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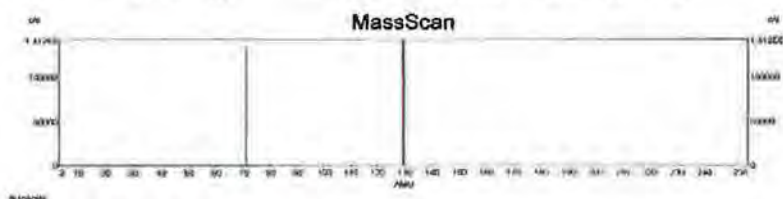
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Worksheet ICP-Exp-140206-As-CRI.mswn
Analyst

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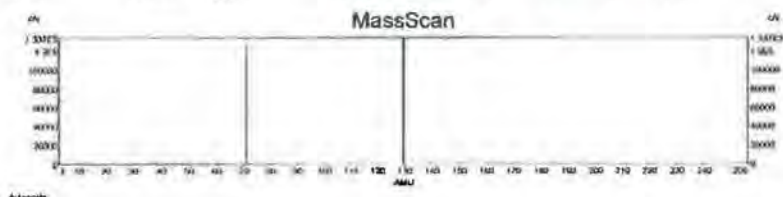
5% HNO₃ [Sample]
Tube 2.1, Replicates: 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 11:12:29am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.00456	ppb	-	22.3333	485.2	0.0218	22 24 21



1400931-1-1 M195-GLP [Sample]
Tube 2.1, Replicates: 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 11:15:24am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.6573	ppb	-	147.6657	2.88	0.0481	144 153 146



1400936-1-2 HL3 WT [Sample]
Tube 2.1, Replicates: 3, Auto Dilution Factor: -, Cal Set 1, Time measured: 11:18:19am 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 ml, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Soln Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	2.1861	ppb	-	188.6667	2.85	0.0622	191 191 184

Study Identifier: M195-GLP

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Study Report – Appendix G Calibration Curve Data Summary

Quantum ICP-Exp-140206-b-As-CRI_RESULTS_M195-GLP_block3_mel_WT.pdf_3098884
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Quantum Worksheet Report
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Worksheet ICP-Exp-140206-b-As-CRI.msws
Analyst

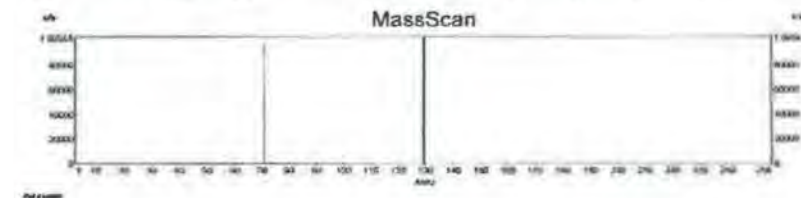
Page 2 of 8

Internal Standards Semi Quant Analytes Isotope Ratios

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Tube: 1.1, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 02:49:41pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

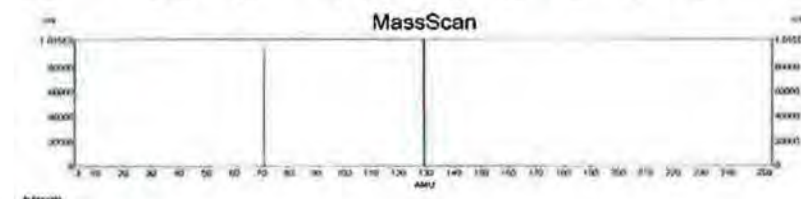
Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)		
As75	0.0000	ppb	-	19.3333	7.90	1.5	19	18	21



Standard 1 (Standard 1)

Tube: 1.2, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 02:43:38pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

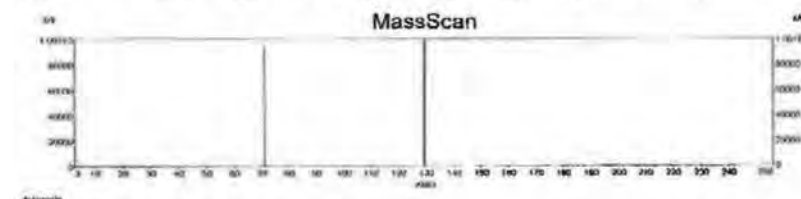
Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)		
As75	0.0010	ppb	-	51.0000	1.96	1.0	51	52	50



Standard 2 (Standard 2)

Tube: 1.3, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 02:46:33pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)		
As75	1.0010	ppb	-	69.3333	4.41	3.1	70	72	66



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Study Report – Appendix G

Calibration Curve Data Summary

Quantum ICP-Exp-140206-b-As-CRI_RESULTS_M195-GLP_block3_met_WT.pdf_3098684

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Created: 2/6/14 15:47 Audit ID: 3098684



Quantum Worksheet Report

Report Date 03:46:44pm 06/Feb/2014

Worksheet ICP-Exp-140206-b-As-CRI.mswn

Analyst

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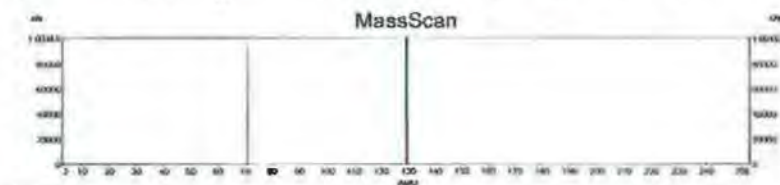
Standard 3 [Standard 3]

Tube: 1.4, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 02:49:37pm 06/Feb/2014

Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00

Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	3.0630	ppb	-	171.0090	4.64	7.9	165 180 168



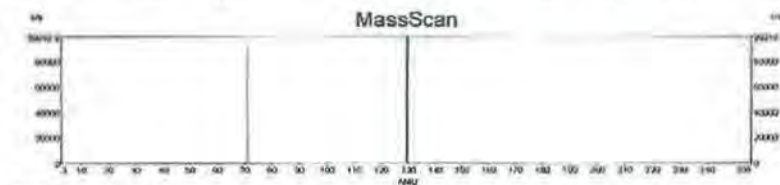
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Tube: 1.5, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 02:58:47pm 06/Feb/2014

Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00

Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	0.0060	ppb	-	323.3333	5.31	18.8	313 312 345



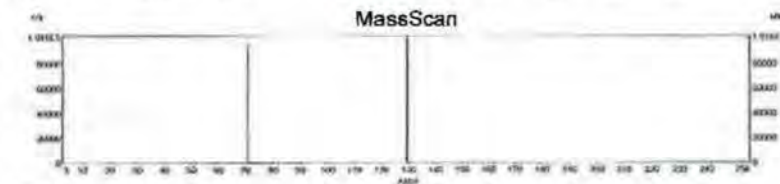
Standard 5 [Standard 5]

Tube: 1.6, Replicates: 3, Auto Dilution factor: -, Cal Set 1, Time measured: 02:56:43pm 06/Feb/2014

Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00

Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Solu Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	10.0010	ppb	-	546.6667	1.66	9.1	540 543 557



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Study Report – Appendix G
Calibration Curve Data Summary

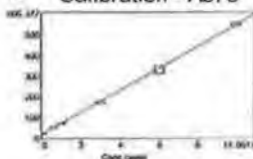
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Quantum Worksheet Report
Report Date 03:46:44pm 06/Feb/2014
Worksheet ICP-Exp-140206-b-As-CRI.msws
Analyst

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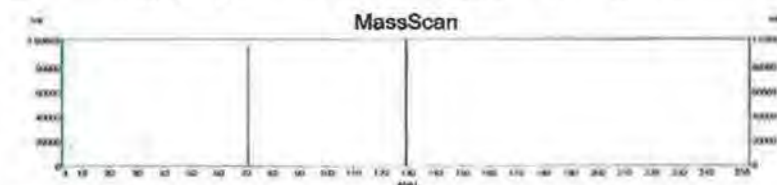
Calibration - As75



5% HNO3 [Sample]

Tube: 2.1, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 02:59:39pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

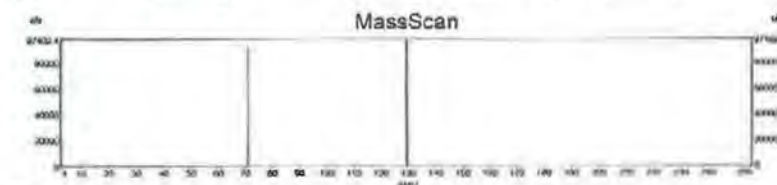
Analyte	Salt Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	-0.0130b	ppb	-	18.3333	198.5	0.0259	17 19 19



1400934-6-1 M195-GLP [Sample]

Tube: 2-2, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 03:05:01pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Salt Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.5930f	ppb	-	99.3333	3.41	0.0543	101 100 97



1400935-6-1 ILJ WT [Sample]

Tube: 2-3, Replicates: 3, Auto Dilutions factor: -, Cal Set 1, Time measured: 03:08:56pm 06/Feb/2014
Actual weight: 1.0000 g, Actual volume: 1.00 mL, Dilution Factor: 1.00
Position Horizontal: -0.50 mm Position Vertical: 0.00 mm Detector Voltage: 3380.00 volt

Analyte	Salt Conc	Unit	QC	Mean c/s	%RSD	SD	Replicates (c/s)
As75	1.8276f	ppb	-	112.3333	9.69	0.1772	121 106 110

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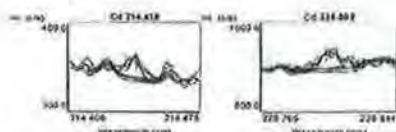
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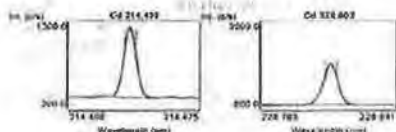
Blank (Blk)		2/6/2014, 12:53:44 PM				Rack S, Tube 1	
Label	Replicates	Intensity (c/s)					
Cd 214.439	21.9936	14.0732	18.3456	18.8071	22.9046		
Cd 228.802	33.2542	39.1909	30.9674	41.3981	36.3030		

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	0.000000	ppb	3.489	18.1	19.2248
Cd 228.802	0.000000	ppb	4.244	11.7	36.2227



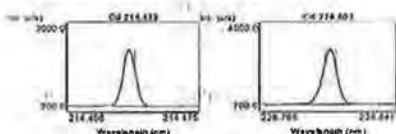
Standard 1 (Std)		2/6/2014, 12:57:05 PM				Rack S, Tube 2	
Label	Replicates	Intensity (c/s)					
Cd 214.439	750.565	748.966	747.263	735.860	743.526		
Cd 228.802	890.865	896.314	898.029	885.636	888.923		

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	2.51000	ppb	5.858	0.8	745.236
Cd 228.802	2.51000	ppb	5.153	0.6	891.953



Standard 2 (Std)		2/6/2014, 1:00:26 PM				Rack S, Tube 3	
Label	Replicates	Intensity (c/s)					
Cd 214.439	1543.83	1523.75	1529.89	1510.52	1485.09		
Cd 228.802	1824.81	1823.65	1830.59	1803.36	1780.12		

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	5.02000	ppb	22.240	1.5	1518.61
Cd 228.802	5.02000	ppb	20.825	1.1	1812.51



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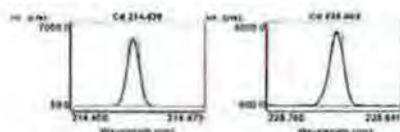
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Standard 3 (Std) 2/6/2014, 1:03:48 PM Rack S, Tube 4

Label	Replicates Intensity (c/s)				
Cd 214.439	4634.03	4574.94	4546.55	4549.33	4453.64
Cd 228.802	5490.38	5449.74	5391.32	5356.80	5282.99

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	15.0600	ppb	65.128	1.4	4551.70
Cd 228.802	15.0600	ppb	80.792	1.5	5394.25



Standard 4 (Std) 2/6/2014, 1:07:11 PM Rack S, Tube 5

Label	Replicates Intensity (c/s)				
Cd 214.439	9312.68	9259.13	9168.37	9045.44	9064.04
Cd 228.802	11051.9	10918.0	10775.9	10709.3	10673.9

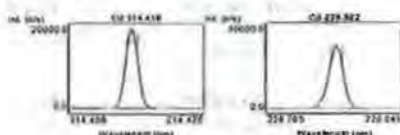
Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	30.1200	ppb	117.310	1.3	9169.93
Cd 228.802	30.1200	ppb	157.116	1.5	10825.8



Standard 5 (Std) 2/6/2014, 1:10:34 PM Rack S, Tube 6

Label	Replicates Intensity (c/s)				
Cd 214.439	15645.2	15507.7	15496.3	15418.5	15499.9
Cd 228.802	18458.0	18353.8	18386.4	18289.4	18262.6

Label	Sol'n Conc.	Units	SD(Int)	%RSD(Int)	Int. (c/s)
Cd 214.439	50.2000	ppb	82.001	0.5	15513.5
Cd 228.802	50.2000	ppb	77.957	0.4	18350.0



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Cd 214.439 Calibration (ppb)		2/6/2014, 1:10:34 PM		Correlation Coefficient: 0.999951		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		19.2248	0.000000	0.185203	-	-
Standard 1		745.236	2.51000	2.53871	0.028715	1.1
Standard 2		1518.61	5.02000	5.04578	0.025778	0.5
Standard 3		4551.70	15.0600	14.8781	-0.181873	-1.2
Standard 4		9169.93	30.1200	29.8491	-0.270931	-0.9
Standard 5		15513.5	50.2000	50.4131	0.213100	0.4

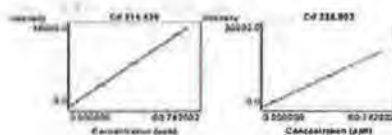
Curve Type: Linear

$$\text{Equation: } y = 308.5x + -37.9$$

Cd 228.802 Calibration (ppb)		2/6/2014, 1:10:34 PM		Correlation Coefficient: 0.999940		
Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		36.2227	0.000000	0.187471	-	-
Standard 1		891.953	2.51000	2.53562	0.025615	1.0
Standard 2		1812.51	5.02000	5.06163	0.041634	0.8
Standard 3		5394.25	15.0600	14.8900	-0.169990	-1.1
Standard 4		10825.8	30.1200	29.7943	-0.325708	-1.1
Standard 5		18350.0	50.2000	50.4410	0.240982	0.5

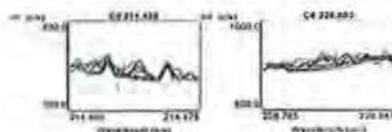
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$$\text{Equation: } y = 364.4x + -32.1$$



5% HNO3 (Samp)		2/6/2014, 1:13:55 PM		Rack 1, Tube 1	
Weight: 1		Volume: 1		Dilution: 1	
Label	Replicates	Intensity (c/s)			
Cd 214.439	4.40176	4.78757	10.9687	6.77719	6.76514
Cd 228.802	18.5015	21.8818	12.6892	20.2414	12.6034

Label	Sol'n Conc.	Units	SD	%RSD	Int. (c/s)	Calc Conc.	DF
Cd 214.439	0.144732	ppb	0.008448	5.8	6.74007	0.144732 ppb	1.00000
Cd 228.802	0.135227	ppb	0.011829	8.7	17.1835	0.135227 ppb	1.00000



Appendix H

Test Article Characterization

M195-GLP Final Study Report

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 Study Report - Appendix H
 Test Article Characterization

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Characterization of Cigarette Test Articles

Regimen	Result	Unit	Statistic	Marlboro Gold King Size (KS) Box Test Article ID: 1400588	Newport King Size Menthol Box Test Article ID: 1400589	3R4F Kentucky Reference Test Article ID: 1400590
				ISO	ISO	ISO
ISO	TPM	[mg/cigarette]	Mean	12.4	18.3	9.65
			Std. Dev.	1.1	0.5	0.53
			N	7	7	7
			L. Limit (95% C.I.)	11.3	17.8	9.15
			U. Limit (95% C.I.)	13.4	18.8	10.14
ISO	Nicotine	[mg/cigarette]	Mean	0.756	0.872	0.636
			Std. Dev.	0.026	0.045	0.043
			N	7	7	7
			L. Limit (95% C.I.)	0.731	0.830	0.596
			U. Limit (95% C.I.)	0.780	0.913	0.676
ISO	Water	[mg/cigarette]	Mean	0.865	2.83	0.634
			Std. Dev.	0.085	0.28	0.068
			N	7	7	7
			L. Limit (95% C.I.)	0.787	2.57	0.571
			U. Limit (95% C.I.)	0.943	3.09	0.697
HCI	TPM	[mg/cigarette]	Mean	48.3	53.5	45.5
			Std. Dev.	3.1	1.8	2.7
			N	7	7	7
			L. Limit (95% C.I.)	45.4	51.8	43.0
			U. Limit (95% C.I.)	51.2	55.1	48.0
HCI	Nicotine	[mg/cigarette]	Mean	1.88	1.94	1.81
			Std. Dev.	0.06	0.05	0.07
			N	7	7	7
			L. Limit (95% C.I.)	1.83	1.89	1.75
			U. Limit (95% C.I.)	1.94	1.99	1.88

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Sheet: Cigarette Characterization

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Characterization of Cigarette Test Articles

Regimen	Result	Unit	Statistic	Marlboro Gold King Size (KS) Box	Newport King Size Menthol Box	3R4F Kentucky Reference
				Test Article ID: 1400588	Test Article ID: 1400589	Test Article ID: 1400590
HCl	Water	[mg/cigarette]	Mean	16.1	18.6	15.5
			Std. Dev.	1.5	1.4	1.3
			N	7	7	7
			L. Limit (95% C.I.)	14.8	17.3	14.3
			U. Limit (95% C.I.)	17.5	19.8	16.7
Total Cigarette Length	[mm]		Mean	82.6	79.7	83.5
			Std. Dev.	0.2	0.2	0.0
			N	10	10	10
			L. Limit (95% C.I.)	82.4	79.5	83.5
			U. Limit (95% C.I.)	82.8	79.8	83.5
Filter Length	[mm]		Mean	26.9	20.9	26.9
			Std. Dev.	0.2	0.3	0.2
			N	10	10	10
			L. Limit (95% C.I.)	26.7	20.6	26.7
			U. Limit (95% C.I.)	27.0	21.1	27.0
Overwrap Length	[mm]		Mean	31.8	25.4	31.8
			Std. Dev.	0.3	0.3	0.3
			N	10	10	10
			L. Limit (95% C.I.)	31.6	25.2	31.6
			U. Limit (95% C.I.)	32.0	25.6	32.0
Weight of Tobacco (unconditioned)	[g/cigarette]		Mean	0.6229	0.6632	0.7511
			Std. Dev.	0.0267	0.0219	0.0180
			N	10	10	10
			L. Limit (95% C.I.)	0.6038	0.6475	0.7382
			U. Limit (95% C.I.)	0.6420	0.6789	0.7640

Glossary of Abbreviations

Smoking Regimen:

ISO: puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, none.

HCl: puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%.

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Characterization of Smokeless Tobacco Test Articles

Result	Unit	Statistic	General Original Snus (US) Test Article ID: 1400891	Camel Snus Frost Test Article ID: 1400892	Camel Snus Frost Large Test Article ID: 1400893	Camel Snus Mellow Test Article ID: 1400894
Nicotine	[mg/pouch 'as is']	Mean	8.01	5.61	8.09	5.68
		Std. Dev.	0.15	0.23	0.62	0.32
		N	7	7	7	7
		L. Limit (95% C.I.)	7.86	5.41	7.52	5.39
		U. Limit (95% C.I.)	8.15	5.82	8.67	5.98
Moisture	(% 'as is')	Mean	49.0	30.3	31.1	30.4
		Std. Dev.	0.1	0.1	0.2	0.1
		N	7	7	7	7
		L. Limit (95% C.I.)	48.9	30.2	30.8	30.3
		U. Limit (95% C.I.)	49.1	30.4	31.3	30.5
Weight of Tobacco + Pouch	(g/pouch 'as is')	Mean	1.0005	0.6308	0.9400	0.6081
		Std. Dev.	0.0219	0.0299	0.0512	0.0397
		N	10	10	10	10
		L. Limit (95% C.I.)	0.9848	0.6094	0.9034	0.5797
		U. Limit (95% C.I.)	1.0162	0.6521	0.9767	0.6366

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Characterization of Smokeless Tobacco Test Articles

Result	Unit	Statistic	Camel Snus Mint	Camel Snus Robust	Camel Snus Winterchill	CRP1 Reference Snus
			Test Article ID: 1400895	Test Article ID: 1400896	Test Article ID: 1400931	Test Article ID: 1400932
Nicotine	[mg/pouch 'as is']	Mean	5.39	8.19	9.43	10.2
		Std. Dev.	0.24	0.78	0.30	0.3
		N	7	7	7	7
		L. Limit (95% C.I.)	5.17	7.47	9.16	9.9
		U. Limit (95% C.I.)	5.62	8.91	9.70	10.5
Moisture	(% 'as is')	Mean	30.3	31.7	30.8	49.2
		Std. Dev.	0.1	0.1	0.2	0.2
		N	7	7	7	7
		L. Limit (95% C.I.)	30.2	31.6	30.6	49.0
		U. Limit (95% C.I.)	30.4	31.8	31.0	49.3
Weight of Tobacco + Pouch	(g/pouch 'as is')	Mean	0.5638	0.9901	0.9633	1.0566
		Std. Dev.	0.0447	0.0524	0.0886	0.0350
		N	10	10	10	10
		L. Limit (95% C.I.)	0.5318	0.9526	0.8999	1.0316
		U. Limit (95% C.I.)	0.5957	1.0276	1.0266	1.0817

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Characterization of Smokeless Tobacco Test Articles

Result	Unit	Statistic	General Original Snus (Sweden)	Catch Dry Eucalyptus Mini Snus (Sweden)	Granit Snus (Sweden)	Skruf Stark Snus (Sweden)
			Test Article ID: 1400933	Test Article ID: 1400934	Test Article ID: 1400935	Test Article ID: 1400936
Nicotine	[mg/pouch 'as is']	Mean	8.35	5.89	9.70	13.3
		Std. Dev.	0.17	0.11	0.24	1.0
		N	7	7	7	7
		L. Limit (95% C.I.)	8.19	5.79	9.48	12.4
		U. Limit (95% C.I.)	8.50	5.98	9.93	14.2
Moisture	(% 'as is')	Mean	49.4	23.5	46.3	45.1
		Std. Dev.	0.1	0.3	0.2	0.3
		N	7	7	7	7
		L. Limit (95% C.I.)	49.4	23.3	46.1	44.9
		U. Limit (95% C.I.)	49.5	23.8	46.5	45.4
Weight of Tobacco + Pouch	(g/pouch 'as is')	Mean	0.9870	0.3467	0.9153	0.9649
		Std. Dev.	0.0290	0.0131	0.0314	0.0218
		N	10	10	10	10
		L. Limit (95% C.I.)	0.9662	0.3374	0.8928	0.9492
		U. Limit (95% C.I.)	1.0077	0.3561	0.9378	0.9805

Study Report prepared by Labstat International ULC

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STUDY PROTOCOL

Study Title	Determination of Smokeless Tobacco HPHC Values for Camel Snus and Other Tobacco Products
Sponsor Study ID	1061
Labstat International ULC Study ID:	M195-GLP
Study Sponsor:	R.J. Reynolds Tobacco Company 950 Reynolds Boulevard Winston-Salem, NC, 27105 USA
Sponsor Representative:	Joy Bodnar Master Scientist R.J. Reynolds Tobacco Company Telephone: (336) 741-2210 Fax: (336) 728-4558 Email: Bodnarj@rjrt.com
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1 Glossary

FDA ¹ Terms	OECD ² Terms
Control Article	Reference Item
Quality Assurance Unit	Quality Assurance Program
Study Protocol	Study Plan
Test Article	Test Item

2 Projected Schedule of Events

Study Initiation Date	January 20, 2014
Experimental Starting Date	January 20, 2014
Experimental Completion Date	February 17, 2014
Study Completion Date	March 10, 2014
Delivery of Final Study Report to Sponsor	March 17, 2014
Study-related records archived by Labstat	March 17, 2014

3 Study Purpose

The purpose of this study is threefold:

- (1) To measure Harmful and Potentially Harmful Constituents (HPHC) values for commercial Swedish snus products from the U.S. market (Camel Snus Frost, Camel Snus Frost Large, Camel Snus Mellow, Camel Snus Mint, Camel Snus Robust, Camel Snus Winterchill and General Original Snus) and from the Swedish market (General Original Snus, Granit Snus, Catch Dry Eucalyptus Mini and Skruf Stark Snus). HPHC measurements will consist of smokeless tobacco analytes specified in *Table 1* of the FDA Draft Guidance for Industry titled, "Reporting Harmful and Potentially Harmful Constituents in Tobacco Products and Tobacco Smoke Under Section 904(a)(3) of the Federal Food, Drug, and Cosmetic Act" issued March 2012.
- (2) To measure selected HPHC yields for the U.S. leading non-menthol and leading menthol cigarettes under ISO and HCl smoking regimens that correspond to HPHC analytes determined in Objective #1.
- (3) To conduct statistical comparisons per the statistical analysis plan (SAP) described in Appendix A of this study protocol.

4 Test Articles

Cigarettes used to generate mainstream smoke and smokeless tobacco products will be considered the test articles (see *Table 1* below). The Sponsor will supply all test articles.

¹ Food and Drug Administration (United States of America)

² Organisation for Economic Cooperation and Development

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Labstat will document in the raw data the lot or batch number, if available, for all test and control articles used for testing.

Labstat will assign a unique seven-digit identification number to each test article.

Table 1. Test Articles (Cigarettes and Smokeless Tobacco)

Test Article Type	Description
Cigarette	Marlboro Gold King Size (KS) Box
Cigarette	Newport King Size Menthol Box
Cigarette	3R4F Kentucky Reference
Smokeless Tobacco	Camel Snus Frost
Smokeless Tobacco	Camel Snus Frost Large
Smokeless Tobacco	Camel Snus Mellow
Smokeless Tobacco	Camel Snus Mint
Smokeless Tobacco	Camel Snus Robust
Smokeless Tobacco	Camel Snus Winterchill
Smokeless Tobacco	CRP1 Reference Snus
Smokeless Tobacco	General Original Snus (US)
Smokeless Tobacco	General Original Snus (Sweden)
Smokeless Tobacco	Catch Dry Eucalyptus Mini Snus (Sweden)
Smokeless Tobacco	Skruf Stark Snus (Sweden)
Smokeless Tobacco	Granit Snus (Sweden)

5 Test Article Receipt and Storage

The Sponsor will ship all test articles to Labstat. Upon receipt and login, Labstat will store the cigarette test articles and the smokeless tobacco test articles in freezer(s) (upper temperature limit -15°C) in a secure location in their original packaging until testing begins. The test articles will be removed from freezer(s) and allowed to equilibrate at ambient temperature for a minimum of 2 hours prior to testing.

6 Test Article Characterization

The test articles (cigarettes and smokeless tobacco) will be characterized by Labstat as follows:

Cigarette Test Articles: TPM, nicotine and water in mainstream smoke will be determined for two smoking regimens. In addition, the following physical



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properties will be determined: cigarette length, filter length, tipping (overwrap) length and weight of tobacco (unconditioned).

Smokeless Tobacco Test Articles: Nicotine, moisture and average weight of tobacco product per unit will be determined.

7 Control Article

Control article ("internal laboratory control") means any article used to assess the overall performance of the analysis.

Labstat will provide the control articles for this study:

Cigarette test articles: 3R4F Kentucky Reference - purchased from the University of Kentucky;

Smokeless Tobacco Test Articles: CRP3 Smokeless Tobacco Reference Product - purchased from the North Carolina State University.

The control articles will be assigned a unique identification code(s).

8 Control Article Storage

Labstat will store the 3R4F control article in a secure location at a temperature of 4°C or below and the CRP3 control article in freezer(s) with an upper temperature limit of -15°C, until testing begins.

The control articles will be allowed to equilibrate at ambient temperature for a minimum of 2 hours prior to testing.

9 Control Article Characterization

The 3R4F and CRP3 control articles are a purchased material and will not be characterized by the Sponsor or by the testing facility beyond the analytical results obtained during this study.

10 Test System

The test system is the analytical equipments/instruments used during the study.

11 Experimental Design

11.1 Preparation and Conditioning of Cigarette Test and Control Articles

All test and control article cigarettes used in testing will have the standard butt length marked as described in ISO 4387:2000 "Cigarettes – Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine". The cigarettes will be conditioned prior to testing in an enclosure for at least 48 hours but not more than 10 days and smoked under the environmental conditions specified in ISO 3402:1999 "Tobacco and tobacco products – Atmosphere for conditioning and testing". With respect to conditioning, this document states "The conditioning atmosphere shall be as follows: temperature $22 \pm 1^\circ\text{C}$; relative humidity $60 \pm 3\%$ ".



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The testing facility (Labstat) will document the environmental conditions during storage and conditioning as per its internal standard operating procedures.

11.2 Smoking Environment and Smoking Machine Parameters

The environmental parameters during smoking will be set as specified by ISO 3402:1999: $22 \pm 2^{\circ}\text{C}$ and $60 \pm 5\%$ relative humidity.

The mainstream smoke from each cigarette test article (see *Table 1*) and the 3R4F control article will be generated using either a rotary or a linear analytical smoking machine, depending on the test.

The cigarette test articles will be smoked under the ISO smoking regimen³ as set out in ISO 3308:2012 "Routine analytical cigarette-smoking machine - Definitions and standard conditions", as well as under the "Health Canada Intense (HCI)⁴" smoking regimen.

11.3 Preparation of Smokeless Tobacco Test and Control Articles

Labstat will randomly select a sufficient amount of smokeless tobacco (e.g. pouches containing tobacco) in order to complete all required testing for each of the smokeless tobacco test articles and the CRP3 control article.

For the pH and moisture determination, only freshly opened tins will be used to prepare a composite for each replicate.

The selected amount of test article will then be composited based on the required amount for each replicate extraction, as follows.

The tobacco packaging material (the "pouch") will be separated from the tobacco by cutting open the pouch using a utility knife. The "pouch" will then be ground using a Robot Coupe batch processor or equivalent to obtain a particle size of approximately 4mm. If the "pouch" does not grind properly in the Robot Coupe, the "pouch" will be cut into small pieces manually using scissors. The ground "pouch" material will then be sieved through a 4mm sieve to ensure a particle size of $\leq 4\text{mm}$. This will be repeated until all the "pouch" material passes through the 4mm sieve. The ground "pouch" will then be combined with the pouch contents and thoroughly mixed and passed through the 4mm sieve. Any material left in the sieve will be ground and passed through the 4mm sieve. This will be repeated until all the pouch material and tobacco passes through the 4mm sieve.

11.4 Tests to be Conducted

Seven replicates of mainstream smoke will be collected from each of the cigarette test articles. Additionally, seven replicates of each smokeless

³ (35.0 \pm 0.3)ml puff volume, (60 \pm 0.5)s puff frequency, (2.00 \pm 0.02)s puff duration, no vent blocking, ISO 3308:2012

⁴ (55.0 \pm 0.5)ml puff volume, (30 \pm 1.0)s puff frequency, (2.00 \pm 0.02)s puff duration, 100% vent blocking; Canadian Tobacco Reporting Regulations: 21 June, 2000, Part 3(6)(b)(iii) - *Canada Gazette Part II, Vol. 134, No. 15*

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tobacco test article will be conducted. Testing will be conducted for the analytes and according to the test methods listed in *Tables 2 and 3*. The test methods to be employed during this study are fully validated in accordance with ISO/IEC 17025:2005 and are listed on Labstat International ULC's current ISO 17025 Scope of Accreditation. The control article will be included in the analyses at the frequency described in *Tables 2 and 3* to assess the overall performance of each test method.

Table 2: Test Article Analysis (Cigarettes)

Analytes	Health Canada Analytical Method	Labstat Analytical Method	Number of Cigarettes Smoked/ ISO (HCl) Replicate	Number of Replicates/ Test Article	Minimum Number of Control Article Replicates/Test Article Replicates
TNC (TPM, Puff Count, CO, Nicotine, Tar, Water)	T-115	-	5 (3)	7	1 in 10
PAH Benzo(a)pyrene	-	TMS-00120	10 (5)	7	1 in 10
Carbonyls (Formaldehyde, Acetaldehyde, Crotonaldehyde)	T-104	-	2 (2)	7	1 in 12
TSNA (NNN, N-nitrosornicotine; NNK, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone)	-	TMS-00135	5 (3)	7	1 in 10
Metals (Cd, As)	T-109	-	20 (10)	7	1 in 10



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Table 3: Test Article Analysis (Smokeless Tobacco)

Analytes	Health Canada Analytical Method	Labstat Analytical Method	Number of Replicates/ Test Article	Minimum Number of Control Article Replicates/ Test Article Replicates
PAH Benzo(a)pyrene	-	TWT-00335	7	1 in 10
Carbonyls (Formaldehyde, Acetaldehyde, Crotonaldehyde)	-	TWT-00355	7	1 in 10
TSNA (NNN, N-nitrosoornicotine; NNK, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone)	-	TWT-00333	7	1 in 10
Alkaloids (Nicotine)	T-301	-	7	1 in 10
Metals (Cd, As)	T-306	-	7	1 in 10
pH	T-310	-	7	1 in 10
Moisture	-	TWT-00300	7	1 in 10
Total Free Nicotine Calculation	74 FR 712	-	N/A	N/A

11.5 Test Method Summaries

11.5.1 T-115: Determination of Tar, Nicotine, and Carbon Monoxide (TNC) in Mainstream Tobacco Smoke

Five (5) conditioned cigarettes are smoked per replicate for ISO standard smoking conditions and three (3) conditioned cigarettes are smoked per replicate for Canadian intense conditions, using an automated 20-port linear smoking machine equipped with a CO analyzer, onto a conditioned, pre-weighed 44mm glass fiber filter disc (pad). The gas phase is collected in a Vapour Phase (VP) collection bag and then introduced into a Non-Dispersive Infra-Red analyzer (NDIR) and the %CO determined. The pad is then re-weighed and the difference is the Total Particulate Matter (TPM). The pad is extracted with Isopropanol (IPA) containing the internal standards (trans-anethole for nicotine and methanol for water), and the extract analyzed for nicotine and water by gas chromatography (packed column) with flame ionization detector (FID) and thermal conductivity detector (TCD). The nicotine-free dry particulate matter (NFDPM; "tar") value is determined by subtracting the water and nicotine amounts from the TPM result.

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11.5.2 TMS-00120: Determination of Selected Polynuclear Aromatic Hydrocarbons (PAHs) in Mainstream Tobacco Smoke

Ten (10) conditioned cigarettes are smoked per replicate for ISO standard smoking conditions and five (5) conditioned cigarettes are smoked per replicate for Canadian intense conditions, using a rotary smoking machine. The mainstream total particulate matter (TPM) is collected by passing the mainstream (MS) smoke through a conditioned, pre-weighed 92mm glass fiber filter disc (pad). The pad is spiked with internal standards (deuterated analogues) and extracted with 50 ml of methanol (if MS TPM < 20 mg/cig) or with 100 ml of methanol (if MS TPM ≥ 20 mg/cig). The methanol extract is filtered through a filter paper and a portion of filtered extract is diluted with water and passed through a C₁₈ cartridge for clean-up purposes. The PAH compounds adsorbed on C₁₈ cartridge are eluted with cyclohexane. The cyclohexane extract is then analyzed by gas chromatography-mass spectrometry (GC/MS) for quantification. The mass filter is operated under Selected Ion Monitoring (SIM) scan mode. The ions of interest (i.e. molecular ions and in some cases specific fragment ions) are mass-selected and used as quantifiers.

11.5.3 T-104: Determination of Selected Carbonyls in Mainstream Tobacco Smoke

Two (2) conditioned cigarettes per replicate, both for ISO standard smoking conditions and for Canadian intense conditions, are smoked on alternate ports of a standard 20-port linear smoking machine that has been fitted with Drechsel-type traps with fritted impingers. The unfiltered mainstream tobacco smoke is scrubbed of volatile carbonyls by passing each puff through an impinger into a trap containing 80 ml of an acidified solution of 2,4-dinitrophenylhydrazine in acetonitrile. An aliquot of the reacted DNPH-smoke extract is then syringe-filtered, diluted with 1% trizma base in aqueous acetonitrile. The extracts are then subjected to reverse phase high performance liquid chromatography (HPLC) and the analytes of interest quantified via ultra-violet detection (365nm).

11.5.4 TMS-00135: Determination of Tobacco Specific Nitrosamines (TSNAs) in Mainstream Tobacco Smoke by Liquid Chromatography – Tandem Mass Spectrometry

Five (5) conditioned cigarettes are smoked per replicate for ISO standard smoking conditions and three (3) conditioned cigarettes are smoked per replicate for Canadian intense conditions, using a linear smoking machine. The mainstream total particulate matter (TPM) is collected by passing the mainstream (MS)



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smoke through a conditioned, pre-weighed 44mm glass fiber filter disc (pad). The pad is spiked with internal standards (NNN-d4, NNK-d4) and then extracted in ammonium acetate solution. The extract is then filtered and subject to LC-MSMS analysis with positive electrospray ionization (ESI). Two mass transition pairs for each analyte can be used to assist analyte confirmation and quantification. The most intense pairs are used for quantification; the less intense transition pairs are used as qualifiers for further compound confirmation.

11.5.5 T-109: Determination of Metals in Mainstream Tobacco Smoke

Twenty (20) conditioned cigarettes are smoked per replicate for standard smoking conditions and three (10) conditioned cigarettes are smoked per replicate for Canadian intense conditions, using a rotary smoking machine. An electrostatic precipitation generator is utilized to electrostatically precipitate the particulate matter onto a glass electrostatic precipitate (EP) tube. The total particulate matter (TPM) is extracted into 25 mL methanol. The methanol extract is then evaporated using gentle heating while under a constant stream of filtered ultra high purity (UHP) nitrogen. The sample is then subjected to microwave digestion using a mixture of hydrochloric acid, nitric acid and hydrogen peroxide. The gaseous phase metals are trapped by placing an impinger of a 10% v/v nitric acid solution between the EP tube and the puff drawing mechanism. The impinger solution is added to the same digestion vessel as the EP tube product and subjected to microwave digestion.

The digestates are then analysed by Inductively Coupled Plasma - Mass Spectrometer (ICP-MS) or Inductively Coupled Argon Plasma - Atomic Emission Spectrometer (ICP-AES).

11.5.6 TWT-00335: Determination of Selected PAH in Tobacco Products

This method consists of the extraction of the loose saponified sample and the purification stages consisting of liquid/liquid partitioning and solid phase extraction (SPE) with NH₂/silica gel two phases cartridge prior to GC/MS analysis. Sample size (and subsequent reagent volumes) is adjusted to meet the analytical requirements of the sample as well as the availability of the sample and equipment. Selected PAHs are extracted from a sample of tobacco after a saponification with an alcoholic KOH solution and partitioning into iso-octane. The iso-octane extract is evaporated to 2 to 3 mL on a rotary evaporator. The concentrated sample is then passed through a 3 mL NH₂ (200 mg) plus silica gel (750 mg) cartridge by using the RapidTrace

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SPE Workstation and PAHs retained are eluted with 13 mL hexane. The solvent is evaporated to 2 mL in the Turbovap evaporator and transferred to an autosampler vial for GCMS analysis. The mass detector is operated under Selected Ion Monitoring (SIM) mode.

11.5.7 TWT-00355: Determination of Selected Carbonyls in Tobacco Products by GC-MS

Target carbonyls are extracted from one (1) gram of tobacco sample spiked with D₄-acetaldehyde and D₅-MEK as internal standards with 10mL of Type I water. After centrifuging to separate the aqueous extract from tobacco, 5mL of aqueous extract is transferred into a 10mL glass tube and mixed with 100µL of PFBHA (20mg/mL) aqueous solution. The glass tube is capped and placed in the dark for derivatization for 2 hours. After derivatization with PFBHA, 4 drops of concentrated H₂SO₄ is added and the PFBHA derivatives are extracted with 2mL of hexane. The hexane extract is washed with 5mL of 0.1N H₂SO₄ and then transferred to an autosampler vial for GC/MS analysis. The PFBHA derivatives of the target carbonyls are separated on a 30m x 0.25mm i.d. x 0.25µm film thickness RTX-5ms column and quantified by a mass spectrometer using selected ion monitoring (SIM) mode.

11.5.8 TWT-00333: Determination of TSNA in Tobacco Products by LC-MS/MS

A certain amount of an internal standard solution containing four deuterium labeled TSNA analogues (i.e. NNN-d₄ and NNK-d₄) is spiked onto a homogenized sample of tobacco product (0.75g). The TSNA compounds are extracted into an aqueous ammonium acetate solution on a wrist action shaker. The extract is then filtered and subject to LC-MS/MS analysis using positive electrospray ionization (ESI). Two mass transition pairs for each analyte can be used to assist analyte confirmation and quantification. The most intensive pairs are used for quantification; the less intense transition pairs are used as qualifiers for further compound confirmation.

11.5.9 T-301: Determination of Alkaloids in Tobacco Products

Two (2) grams of ground tobacco product is lyophilized for 48 hours and then ground further using a bench-top grinder and a #40 screen (40 sections / square inch). Twenty five milligrams of ground tobacco product is extracted with 1.0 mL of a methanolic KOH solution containing an internal standard (e.g. 4,4-dipyridyl dihydrochloride or 4,4-dipyridyl hydrate) in an ultrasonic bath for 3 hours followed by 0.5 hours of shaking on a wrist-action



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shaker. The mixture is then centrifuged at low speed to separate any tobacco solids from the solution. The supernatant is then transferred to an autosampler vial and analyzed by gas chromatography (GC) using a CAM fused silica capillary column with a polyethylene glycol (PEG) stationary phase that has been specifically base-deactivated for volatile amines analysis. Quantification is achieved using an internal standard calibration by comparing the Thermionic Specific Detector (TSD) response of the analytes in the samples against a five-point calibration of alkaloids in the standards.

11.5.10 T-306: Determination of Metals in Tobacco Products

Four (4) grams of tobacco product is lyophilized for 48 hours and then macerated using a pestle to grind the sample to a particle size smaller than 4 mm. One gram of the ground freeze-dried tobacco is placed into a microwave digestion vessel. The sample is then treated with a mixture of hydrochloric acid, nitric acid and hydrogen peroxide. The vessel is then sealed and placed into a microwave digester for dissolution. When digestion is complete, the vessel is removed from the digester, allowed to cool, and the contents transferred to a volumetric flask where it is made to volume with Type I water.

Aliquots of the digestate are analyzed for Cd and As by inductively coupled argon plasma atomic emission spectroscopy (ICP-AES). This method uses an ultrasonic nebulizer to enhance the sensitivity of each analyte. Quantification is achieved by interpolating the response of relevant calibration curves prepared from standard metal solutions of aqueous standards in the same acid concentration as samples to minimize matrix effects.

The method can be modified by replacing ICP-AES with ICP-MS (inductively coupled argon plasma – mass spectrometry) equipped with a Collision Reaction Interface (CRI) with H₂ and He as collisional/reactive gases and (b) (4)

11.5.11 T-310: Determination of Tobacco Products pH

The tobacco product from a freshly opened source is ground to obtain a particle size smaller than 4 mm. Two (2) grams of ground tobacco is extracted as soon as possible with 20 mL of degassed Type I water on a mechanical shaker for 30 minutes. The sample is placed in the dark and allowed to stand one additional hour. The supernatant is then decanted into a 10 mL disposable polystyrene beaker where its pH is measured using a combination electrode and potentiometer standardized by buffer solutions.

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11.5.12 TWT-00300: Determination of Moisture in Tobacco Products

The tobacco product from a freshly opened source is ground to obtain a particle size smaller than 4 mm. Five (5) grams of ground tobacco product is dried as soon as possible uncovered in an oven ($99 \pm 0.5^\circ\text{C}$) for 3 hours and moisture is determined gravimetrically in accordance with AOAC 966.02.

12 Calculations and Control Article Results Evaluation

12.1 Evaluation of Results

Labstat will evaluate the data obtained from the analysis of the test and control articles in two stages:

- I. For each test method, a comparison will be done of the analytical results for the control article with the Labstat's in-house targets determined from historical data. If the control article results are acceptable per the criteria described in the Labstat's standard operating procedures, then
- II. The data obtained from the analysis of test articles will be subjected to an outlier test. Values identified as outliers are then scrutinized for an assignable cause and, if one is found, the value is removed from the data set. If none is found, the value is assumed to be a legitimate member of the data set and included in all subsequent calculations.

12.2 Results Tables

Labstat will provide data tables with individual values and descriptive statistics of results (mean, standard deviation, N, and 95% confidence interval for the mean) for each mainstream smoke and smokeless tobacco constituent (including measurements of test article weight and cigarette smoke puff count) for each test article.

12.2.1 Values Below Limits of Quantification or Detection

Values below detection limit or less than the limit of quantification will be replaced with values equal to half the limit of quantification.

If any of the values are not quantifiable then the standard deviation and 95% confidence interval for the mean will be reported as Not Available (NA). Footnotes will be added to summary tables to indicate non-quantified values.

12.2.2 Mainstream Cigarette Smoke Yields

The mainstream smoke yields for each cigarette test article will be reported for both smoking regimens as follows:

- on a mass/cigarette basis; and



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- on a mass/mg nicotine basis.

For each cigarette test article, the means of individual nicotine yield values will be calculated and used to determine the mainstream smoke yields on a mass/mg nicotine basis. Values expressed in units of mass/mg nicotine will be calculated as mass/cigarette divided by mg nicotine/cigarette. Nicotine/mg nicotine will not be calculated for cigarette test articles.

12.2.3 Smokeless Tobacco Constituent Results

The constituent results for each smokeless tobacco test article will be reported as follows:

- on a mass/g smokeless tobacco 'dry weight'⁵ basis;
- on a mass/pouch 'as is' basis; and
- on a mass/mg nicotine basis.

The means of individual nicotine values, individual pouch 'as is' weight values and individual moisture values will be calculated and used to determine the mass/pouch 'as is' and mass/mg nicotine values starting with HPHC values expressed in units of mass/g smokeless tobacco 'dry weight' basis.

Values expressed in units of mass/pouch 'as is' will be calculated as mass/g smokeless tobacco 'dry weight' * (1-moisture proportion) * mass/pouch 'as is', where "moisture proportion" is the decimal equivalent of the mean of individual moisture values expressed in percent units.

Values expressed in units of mass/mg nicotine will be calculated as mass/g smokeless tobacco 'dry weight' basis divided by mg nicotine/g smokeless tobacco 'dry weight' basis.

Nicotine/mg nicotine will not be calculated for smokeless tobacco test articles.

Free nicotine will be calculated both in units of mass/g smokeless tobacco 'dry weight' basis and in units of mass/pouch 'as is' basis.

Free nicotine in units of mass/g smokeless tobacco 'dry weight' basis will be calculated following the CDC method (74 FR 712, January 7, 2009) for all smokeless products using measured pH and nicotine values. The percent of free nicotine depends only on pH, and is calculated as $10^{\text{pH}-8.02} / (1+10^{\text{pH}-8.02}) * 100$. After calculating the mean of individual values of the percent of free nicotine, values of free nicotine will be calculated as the mean of

⁵ "Smokeless tobacco 'dry weight'" includes both pouch material and tobacco, composited as described in section 11.3 of this protocol.



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the percent of free nicotine times the measured nicotine value on a mg/g 'dry weight' basis, divided by 100.

Free nicotine values expressed in units of mass/pouch 'as is' basis, will be calculated as free nicotine on a mass/g smokeless tobacco 'dry weight' basis * (1-moisture proportion) * mass/pouch 'as is', where "moisture proportion" is the decimal equivalent of the mean of individual moisture values expressed in percent units.

Free nicotine/mg nicotine will not be calculated for smokeless tobacco test articles.

Summary statistics for reference smokeless product CRP1 will be calculated only in units of mass/g smokeless tobacco 'dry weight' basis and on a mass/pouch 'as is' basis.

13 Statistical Analysis

Refer to *Appendix A. Statistical Analysis Plan (SAP)*.

14 Final Study Report

The QA inspected final study report will include, but not necessarily be limited to, the following:

- Table of Contents
- Executive Summary
- Administrative Information
- Test and Control Article Identification
- Materials and Methods
- Experimental Design
- Analytical Methods Synopses
- Test and Control Article Results
- Quality Assurance Statement
- GLP Compliance Statement
- Study Director Signature
- Reference to Archives
- Copy of Study Protocol

Labstat will provide the GLP final study report as a single document to the Sponsor, in a hard copy format, inspected by the Quality Assurance Unit, containing the GLP Compliance Statement and signed by the Study Director.

In addition to the official GLP final study report, Labstat will provide the Sponsor with a CD-ROM containing a copy of the official GLP study report (pdf file with table of contents) and the study results in electronic format (unprotected Excel and SAS version 5 transport (*.xpt) files with accompanying information in Excel or pdf files defining variables).

Note: All electronic files submitted by Labstat will be verified for accuracy.



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15 Record and Material Retention

Labstat will not archive any test or control article for this study. The Sponsor will arrange for test article storage and archival with (b) (4) (b) (4).

Upon receipt of a written acceptance of the final study report by the Sponsor, Labstat will destroy any sealed/unsealed containers of test articles as per its internal procedures.

All study records, including laboratory notebooks, raw physical data, electronic data, the study protocol and any study protocol amendments or deviations, and the signed final study report and any study report amendments will be retained by Labstat, either as originals or certified copies, for ten years from the date of the final study report.

At that time, the Sponsor will be contacted in order to determine the final disposition of the archival records. The Sponsor will be responsible for all costs associated with continued storage, shipment to another facility or disposal of archived records.

16 Regulatory Compliance

This study will be conducted in compliance with all applicable requirements of the United States Code of Federal Regulations 21 CFR Part 58.

17 Quality Assurance

The Quality Assurance Unit (QAU) will inspect the facilities, equipment, personnel, methods, and practices used in this study, as well as critical study phases. Further, the QAU will inspect the data and the final study report to assure that they are in conformance with this study protocol, Labstat's standard operating procedures, and the applicable Good Laboratory Practice regulations and/or principles.

18 Study Protocol Amendments

Any changes made to this study protocol will be made through a study protocol amendment which will list the reason(s) for the change(s) and must be signed and dated by the Sponsor and the Study Director and maintained with the study protocol.

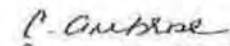


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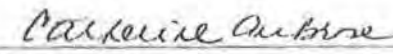
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19 Study Protocol Approval


Catherine Ambrose
Test Facility Management
Labstat International ULC

January 17, 2014
Date



Joy Bodnar
Sponsor Representative
R.J. Reynolds Tobacco Company

January 20, 2014
Date


Andrew Masters
Study Director
Labstat International ULC

2014-1-21
Date

20 Study Protocol Quality Assurance Review for GLP Compliance


Violeta Vidican
Quality Systems Manager
Labstat International ULC

Jan 21, 2014
Date



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Appendix A, Statistical Analysis Plan (SAP)

1 Treatment of Exceptional Values

Exceptional values will be identified using a Dixon-style test statistic (Barnett & Lewis, 1978) to determine the proportion of the range that the outlier accounts for (calculated as the larger of $(X_n - X_{n-1})$ and $(X_2 - X_1)$ divided by $(X_n - X_1)$, where X_1 and X_2 are the smallest and second-smallest values, and X_n and X_{n-1} are the largest and second-largest values). A value that results in a test statistic greater than 0.95 will be identified as an exceptional value. Analyses will be conducted both with and without inclusion of exceptional values.

2 Comparison of Smokeless Tobacco Product Means

Means for each smokeless tobacco HPHC (Nicotine, free nicotine, arsenic, cadmium, acetaldehyde, crotonaldehyde, formaldehyde, benzo(a)pyrene, NNN, and NNK) for each Camel snus test article will be compared to the average of those for the other five Swedish snus test articles from the Swedish and United States markets (General Original Snus (US), General Original Snus (Sweden), Granit Snus, Catch Dry Eucalyptus Mini and Skruf Stark Snus) on the basis of the variation among their means using a mixed model.

The classification variable GROUP will be assigned the value "0" for each of the Camel snus test articles while the other five Swedish snus test articles will all be assigned the value "1". The variable PRODUCT will be assigned a unique value for each product. The SAS code below will perform this analysis for the first Camel snus test article (i.e. PRODUCT=1) for constituent "chem" for data set "all", with the "Type 3 Tests of Fixed Effects" p-value for GROUP providing a comparison between the means of the first Camel snus test article and the set of other Swedish snus test articles.

$P < 0.05$ will indicate that the Camel snus test article is statistically significantly different from the set of other Swedish snus test articles. Constituent means will be compared on a mass/unit 'as is' basis, a 'dry weight' basis, and a mass/mg nicotine basis.

```
PROC MIXED DATA=all ;  
CLASS GROUP PRODUCT ;  
MODEL chem = GROUP / DDFM=KR ;  
RANDOM PRODUCT(GROUP) ;  
WHERE GROUP = 1 OR PRODUCT = 1 ;  
RUN ;
```

If the data include values below quantification or detection limits, products with less than four quantified values will be excluded from the analysis. If the Camel

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snus test article is excluded on this basis, then "No Comparison Made" will be reported.

3 Comparison of Camel Snus Means with Leading Non-menthol and Leading Menthol U.S. Cigarette Means

Means for smokeless tobacco HPHCs (nicotine, arsenic, cadmium, acetaldehyde, crotonaldehyde, formaldehyde, benzo(a)pyrene, NNN and NNK) for each Camel snus test article will be compared to cigarette smoke yields of each of the two market leading cigarettes (separately for ISO and Health Canada Intense smoking regimens) on a mass/pouch 'as is' or mass/cigarette basis and a mass /mg nicotine basis using a two-sided Wilcoxon rank sum test with average ranks assigned to ties.

Following the Bonferroni method for p-value adjustment, p-values less than 0.025 ($=0.05/2$) will be required for statistical significance to control the family-wise error rate for each Camel snus test article at $p=0.05$ for each cigarette smoking regimen. This procedure will allow comparisons of snus and cigarette test articles for endpoints with values below quantification or detection limits. This testing will be performed only for endpoints determined for both smokeless tobacco and cigarette test articles.

4 Sample Size

Seven replicate measurements will be reported for each constituent for each test article, consistent with FDA recommendations for the 2012 HPHC submission.

5 Figures, Tables and Listings

5.1 Reference Product Results

Reference product results will be included only in data listings.

5.2 Figures

Figures will include the following:

- I. For Smokeless Tobacco Test Articles:
 - a. replicate values for each HPHC on a mass/g smokeless tobacco 'dry weight' basis;
 - b. replicate values for each HPHC on a mass/pouch 'as is' basis; and
 - c. replicate values for each HPHC on a mass/mg nicotine basis.
- II. For Smokeless Tobacco and Cigarette Test Articles:
 - a. replicate values for each HPHC on a mass/pouch 'as is' basis or mass/cigarette basis; and

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- b. replicate values for each HPHC on a mass/mg nicotine basis;

Test articles will be ordered on the x-axis of figures with the Camel snus test article first, followed by the other Swedish snus, then the ISO and Health Canada Intense smoke yields.

Each of these figures will include only one Camel snus variety, with separate figures for each Camel snus variety.

5.3 Tables

5.3.1 Summary Statistics for Camel Snus Test Articles

Results for the six Camel snus test articles will be listed in separate columns. Results for different endpoints will be presented on different rows, with mean, standard deviation, number of replicates, and 95% confidence interval for the mean presented in separate rows. Results will be presented in the following order:

- a. Test article weight (mass/pouch), moisture, and pH measurements on an 'as is' basis;
- b. HPHC results, including free nicotine, on a mass/g smokeless tobacco 'dry weight' basis;
- c. HPHC results calculated on a mass/pouch 'as is' basis;
- d. HPHC results calculated on a mass/mg nicotine basis.

5.3.2 Summary Statistics for Other Swedish Snus Test Articles

Results for the five other Swedish snus test articles will be listed in separate columns. Results for different endpoints will be presented on different rows, with mean, standard deviation, number of replicates, and 95% confidence interval for the mean presented in separate rows. Results will be presented in the following order:

- a. Test article weight (mass/pouch), moisture, and pH measurements on 'as is' basis;
- b. HPHC results, including free nicotine, on a mass/g smokeless tobacco 'dry weight' basis;
- c. HPHC results calculated on a mass/pouch 'as is' basis;
- d. HPHC results calculated on a mass/mg nicotine basis.

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5.3.3 Summary Statistics for Leading Market Cigarette Test Articles

Results for the two leading market cigarette test articles will be listed in separate columns, with ISO mainstream smoke yields for all three test articles followed by Health Canada Intense mainstream smoke yields. Results for different endpoints will be presented on different rows, with mean, standard deviation, number of replicates, and 95% confidence interval for the mean presented in separate rows. Results will be presented in the following order:

- a. Measurements on a mass/cigarette basis, including results for number of puffs, TPM, water, PMNWF (particulate matter, nicotine and water free), and carbon monoxide as well as yields for the mainstream smoke HPHCs;
- b. Mainstream smoke HPHC results calculated on a mass/mg nicotine basis.

5.3.4 Statistical Results for Comparison of Each Camel Snus Test Article to the Set of Other Swedish Snus Test Articles

Separate tables of results will be prepared for comparisons of each Camel snus test article to other Swedish snus test articles. Tables will present the estimated mean and standard error for the Camel snus test article and the grand mean and standard error of the set of other five Swedish snus test articles, with a p-value comparing them. Results will be presented in the following order:

- a. All HPHC results, including free nicotine, on a mass/g smokeless tobacco 'dry weight' basis;
- b. All smokeless tobacco HPHCs, including free nicotine, on a mass/pouch 'as is' basis;
- c. All HPHC results on a mass/mg nicotine basis.

Results for endpoints excluding exceptional values (if any) will follow those with exceptional values included.

5.3.5 Statistical Results for Comparison of Each Camel Snus Test Article to Leading Market Cigarette Test Articles

Separate tables of results will be prepared for comparison of each Camel snus test article to cigarette test articles.

Tables will present the means for the Camel snus test article and for each cigarette test article with each smoking regimen. Adjusted p-values comparing the Camel snus test article to each of the market leading cigarette test articles for both smoking regimens

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will be presented in the next row of the table, underneath the mean of the comparison cigarette test article. Results will be presented first for all the HPHCs on a mass/pouch 'as is' or mass/cigarette basis, followed by results for all HPHCs on a mass/mg nicotine basis.

Results for endpoints excluding exceptional values (if any) will follow those with exceptional values included.

5.4 Data Listings

Data listings will include all measurement values determined. Individual replicate values below detection limits or quantification limits and exceptional values will be identified in listings as such. Data listings will include the following:

- I. For Smokeless Tobacco Test Articles:
 - a. Individual replicate values for pH, moisture, and test article weight (mass/pouch) on a 'as is' basis;
 - b. Individual replicate values of HPHC measurements, including free nicotine, on a mass/g smokeless tobacco 'dry weight' basis;
 - c. Individual replicate values of HPHC measurements, including free nicotine, on a mass/pouch 'as is' basis; and
 - d. Individual replicate values of HPHC measurements on a mass/mg nicotine basis.
- II. For Cigarette Test Articles:
 - a. Individual replicate values of the ISO smoking regimen measurements on a mass/cigarette basis;
 - b. Individual replicate values of the Health Canada Intense smoking regimen measurements on a mass/cigarette basis;
 - c. Individual replicate values the ISO smoking regimen measurements on a mass/mg nicotine basis; and
 - d. Individual replicate values the Health Canada Intense smoking regimen measurements on a mass/mg nicotine basis.

Appendix J

Figures

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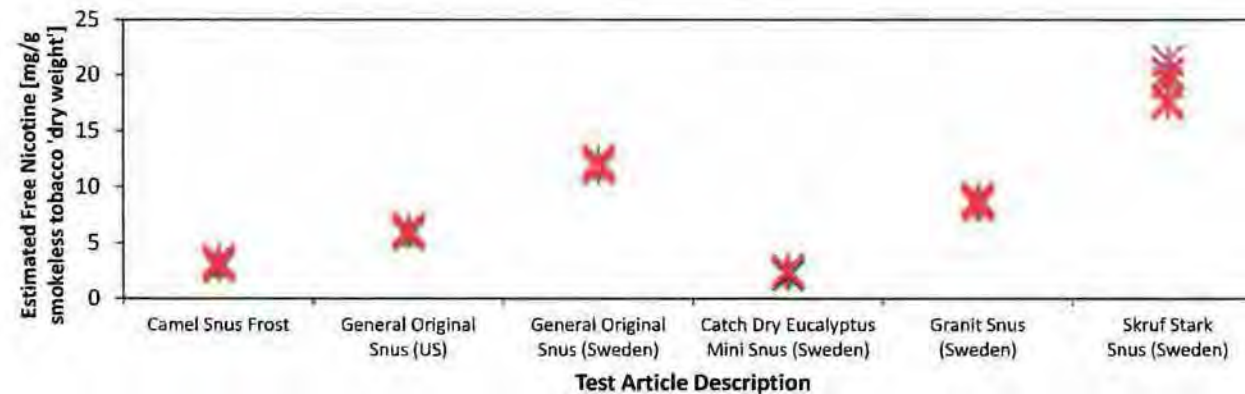
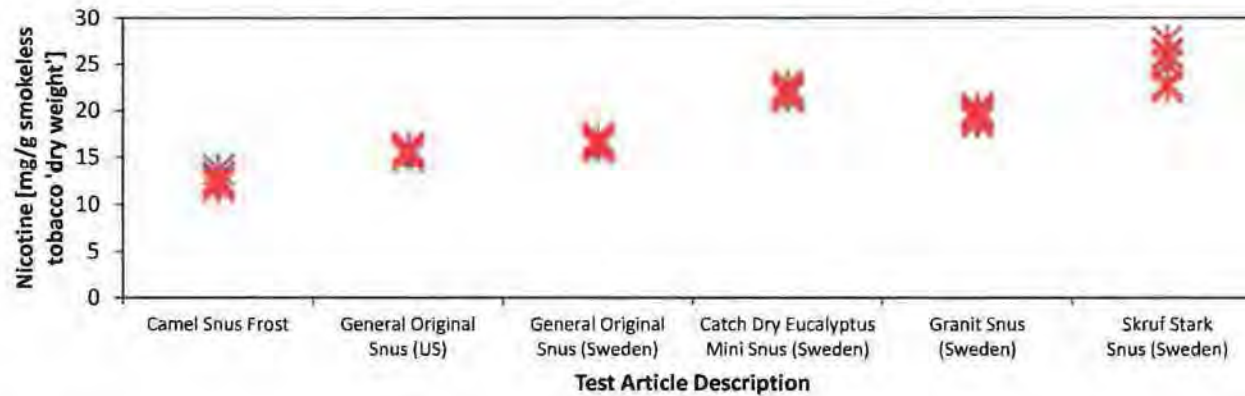


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'**Test Article Description: Camel Snus Frost; Test Article ID: 1400892**

Study Report prepared by Labstat International ULC



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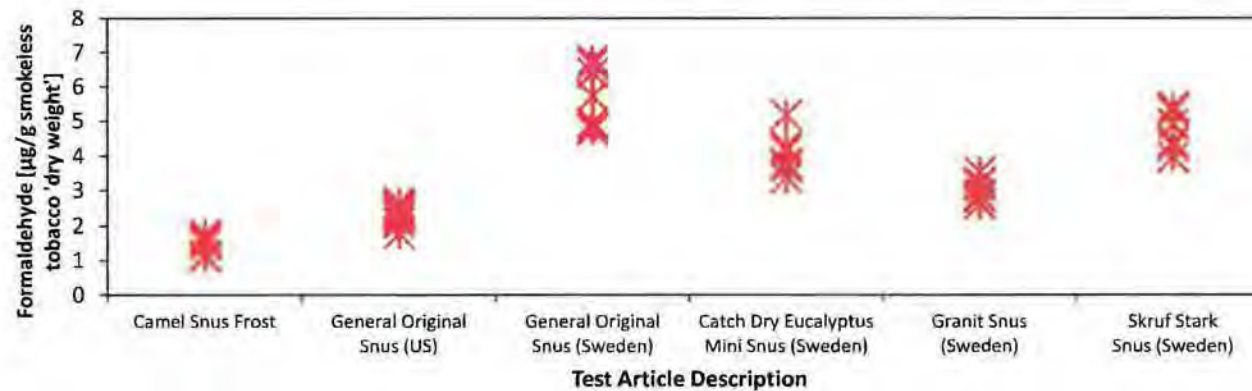
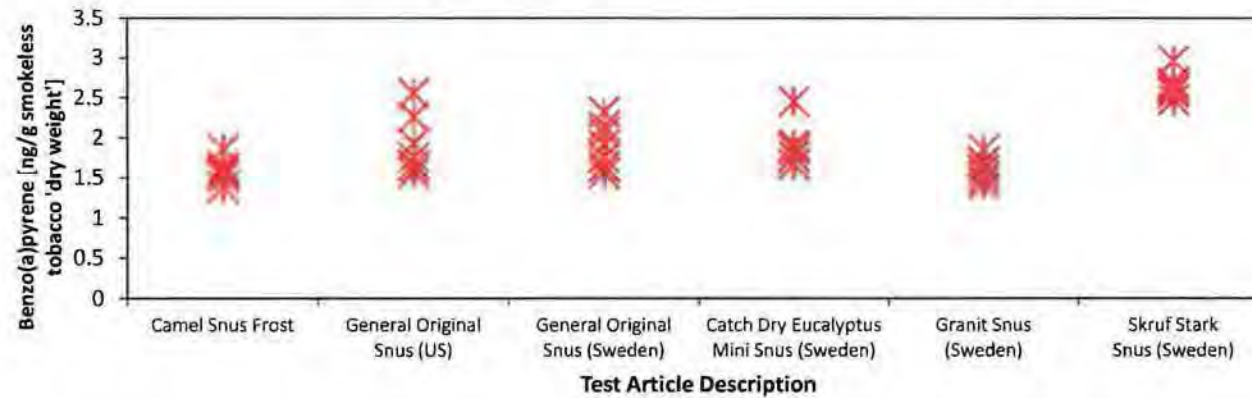
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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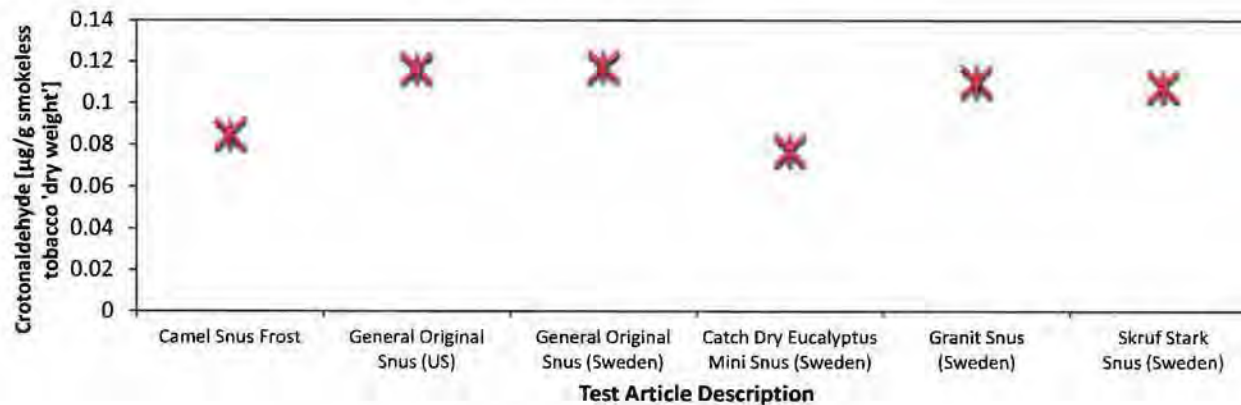
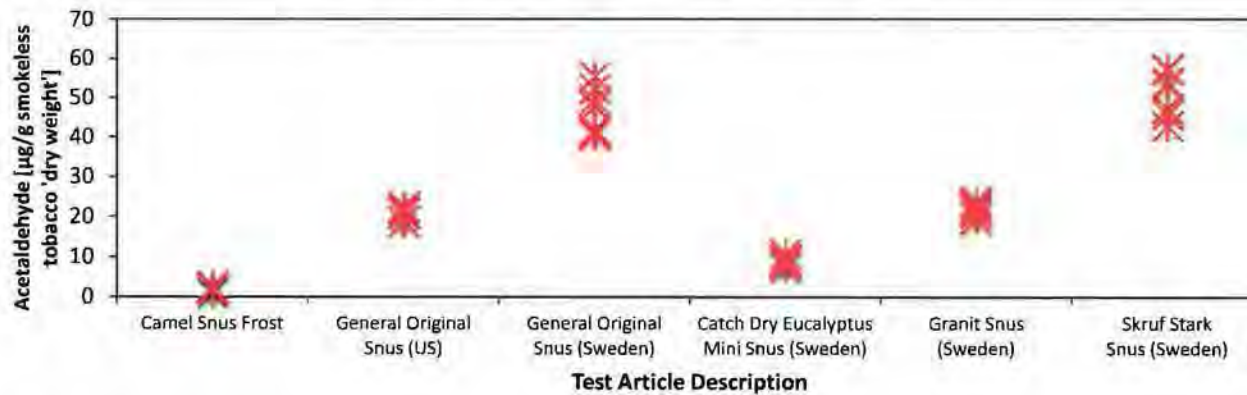
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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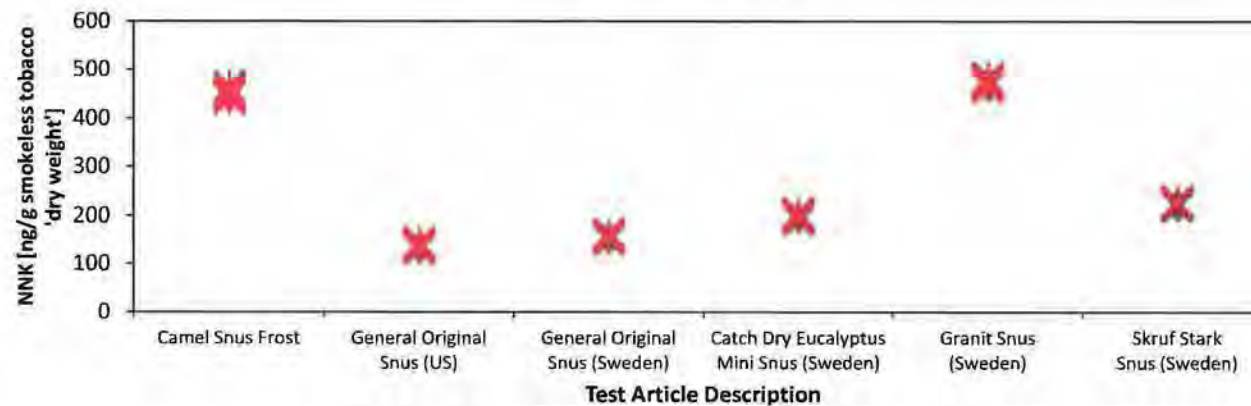
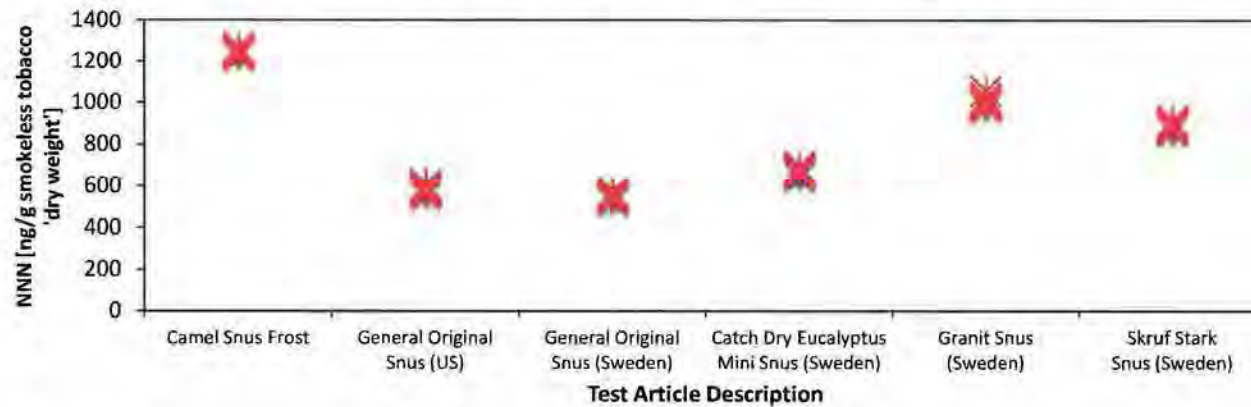
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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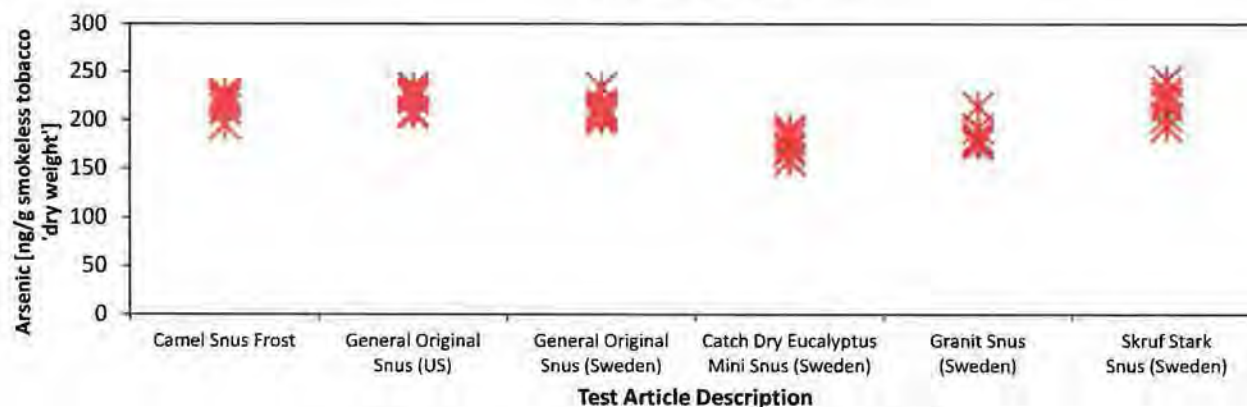
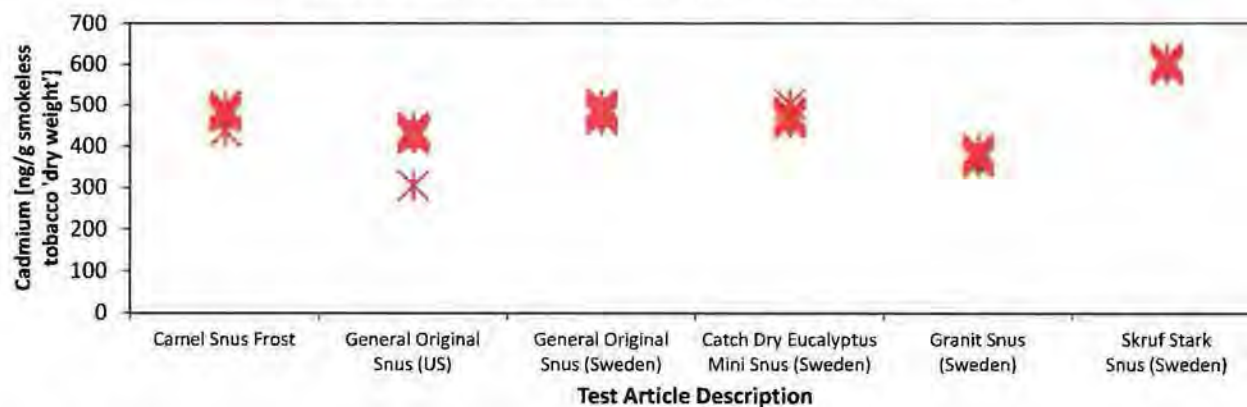


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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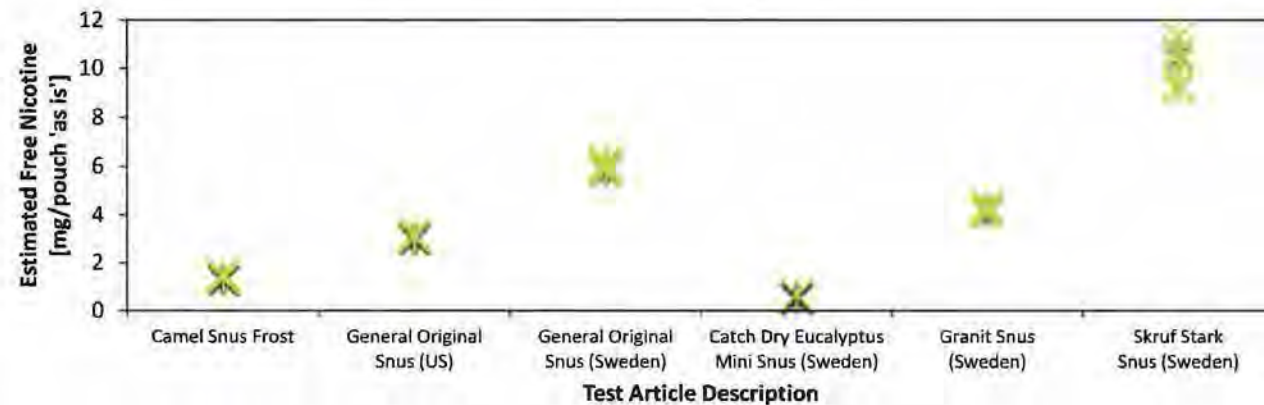
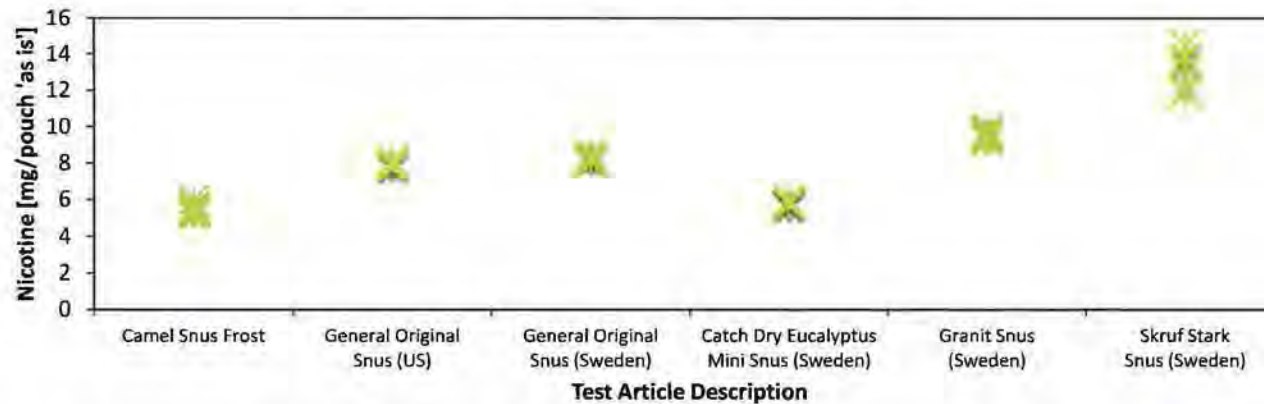


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

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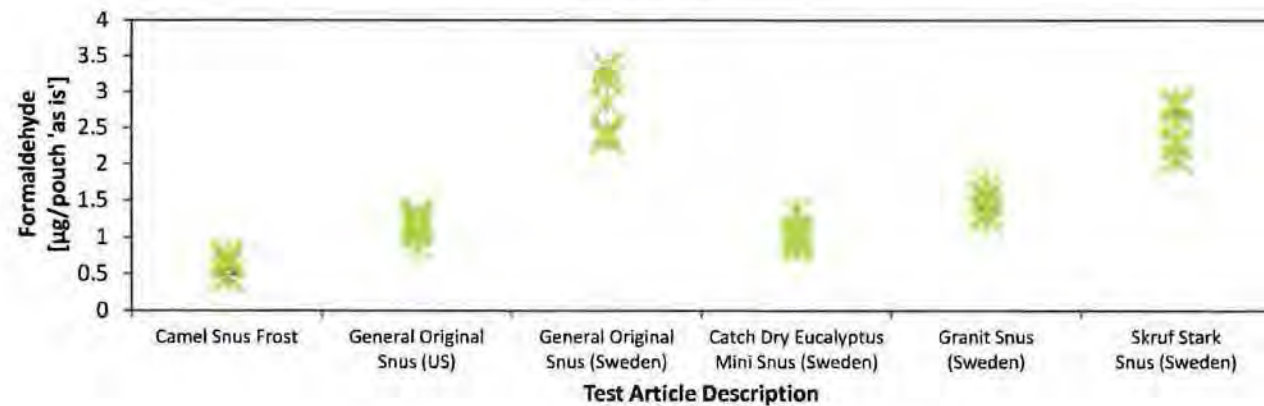
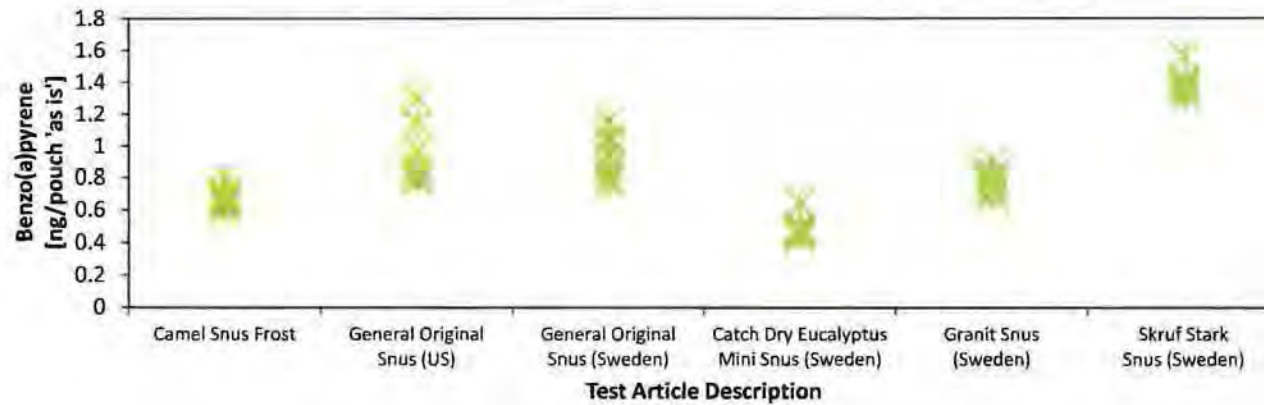


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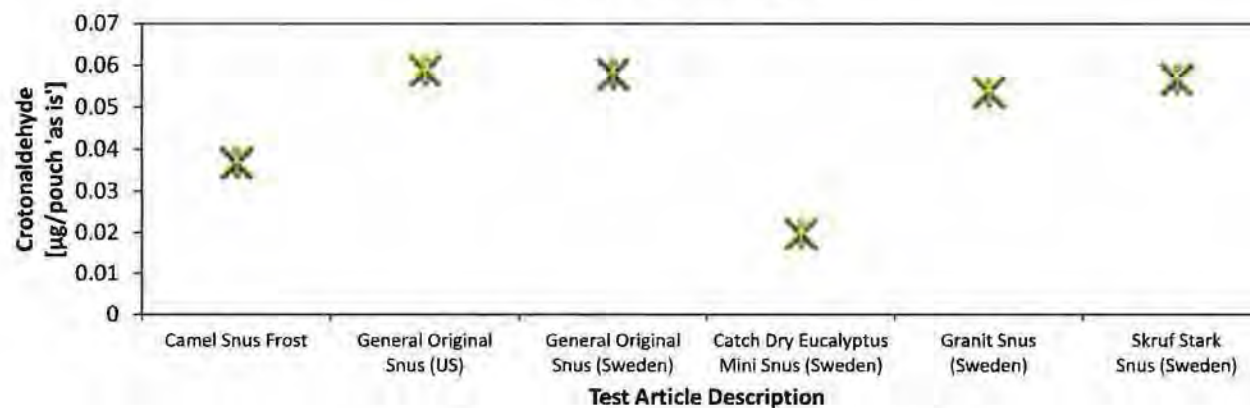
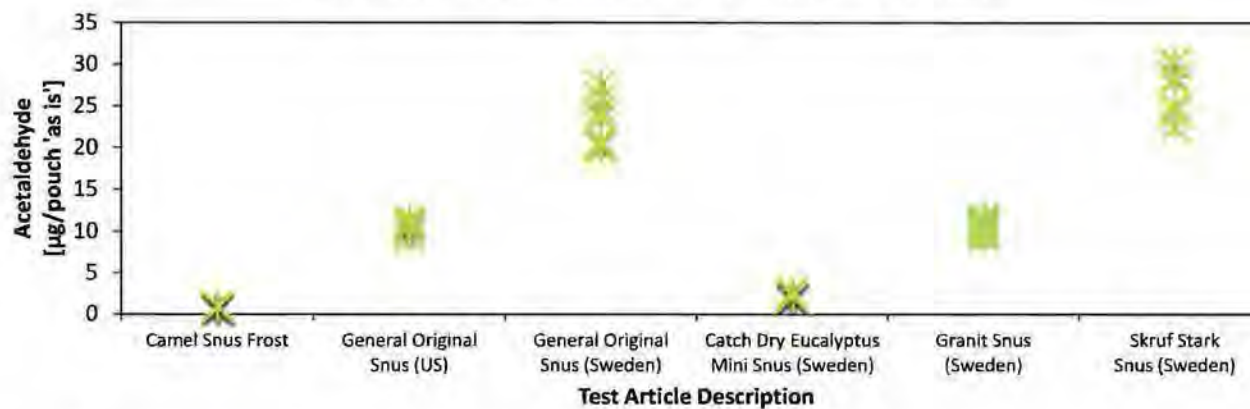


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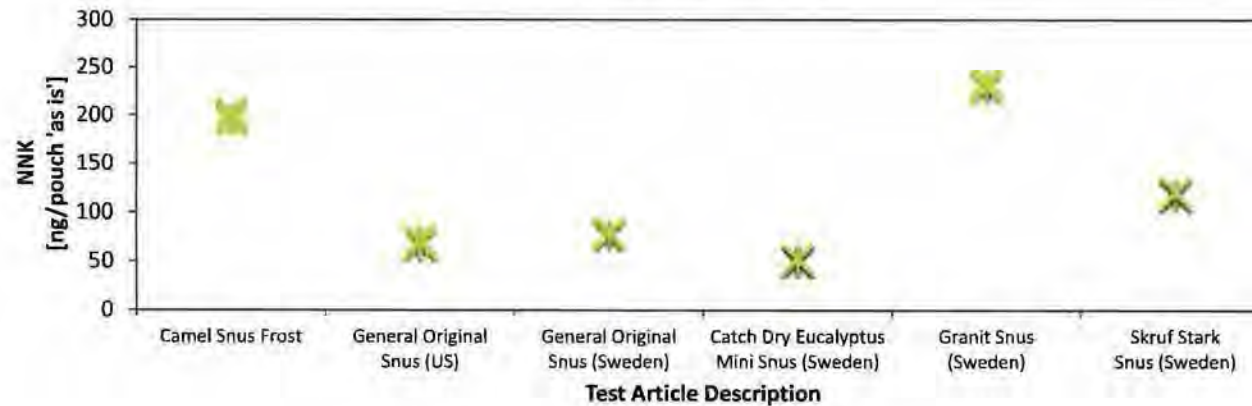
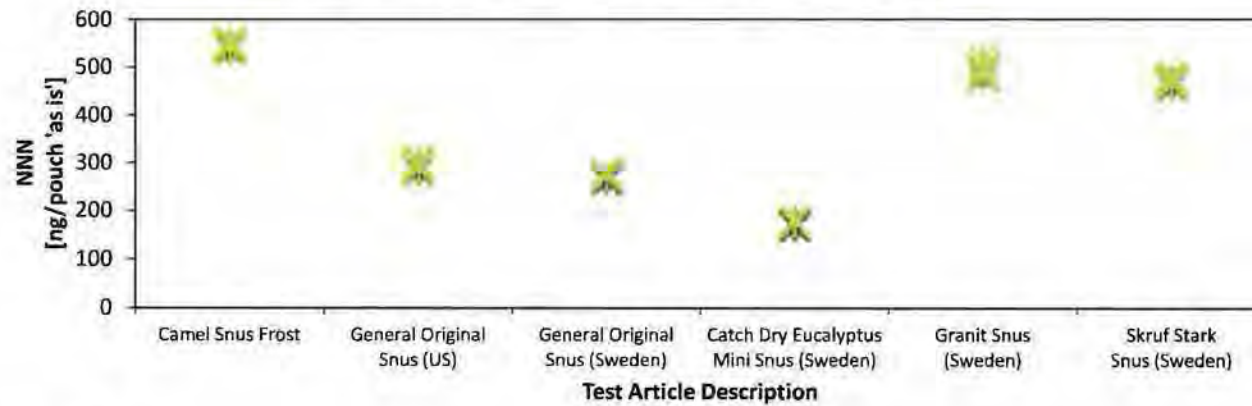


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Frost; Test Article ID: 1400892**

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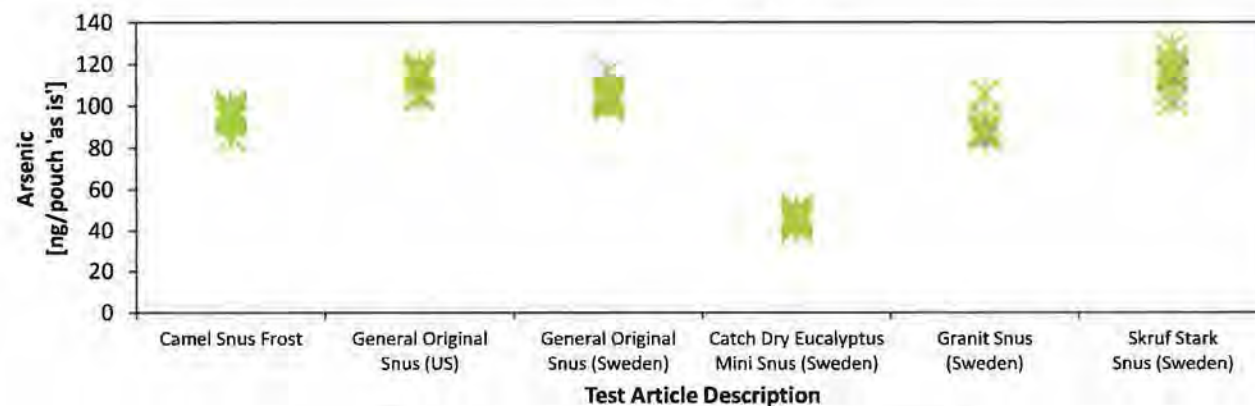
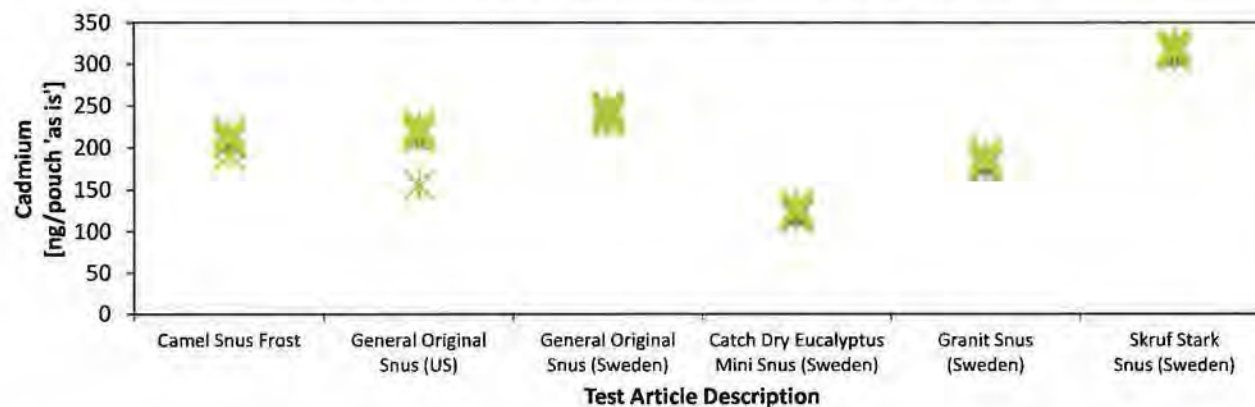
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



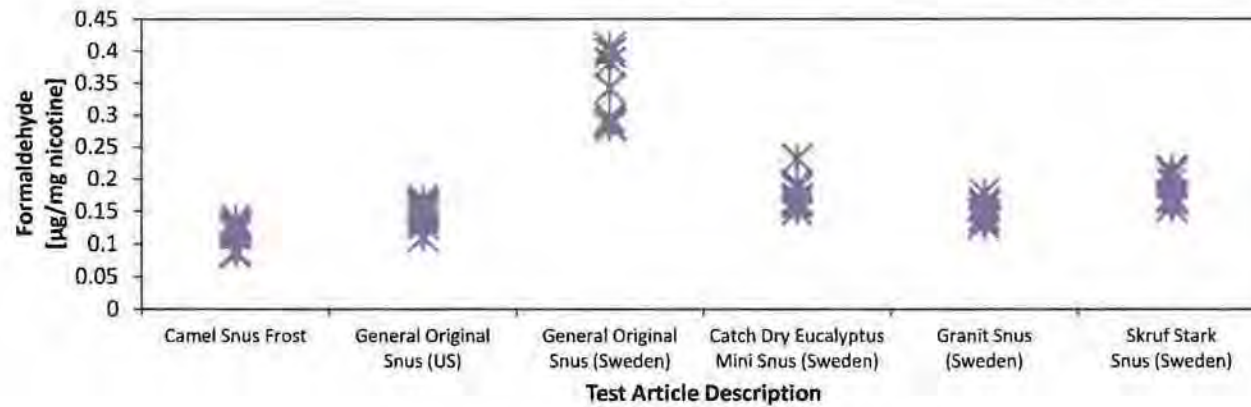
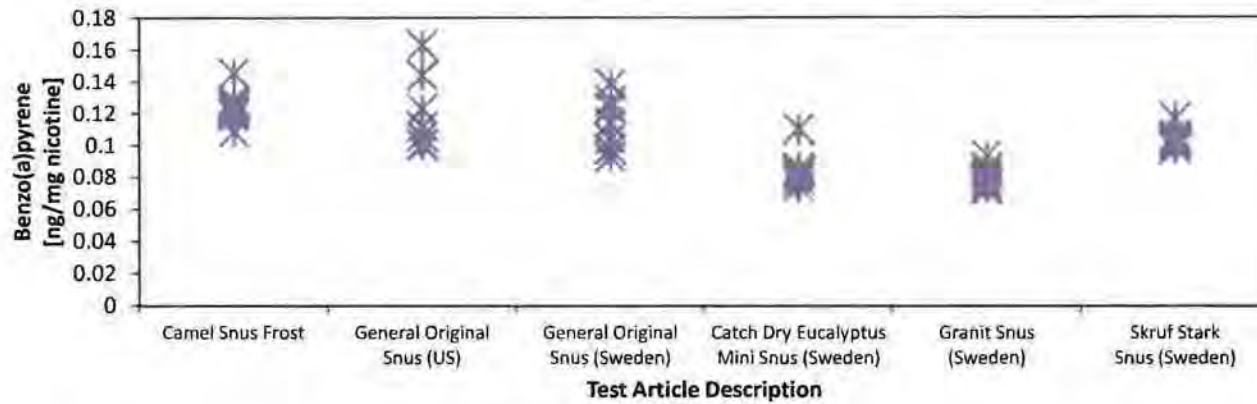
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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Frost; Test Article ID: 1400892**

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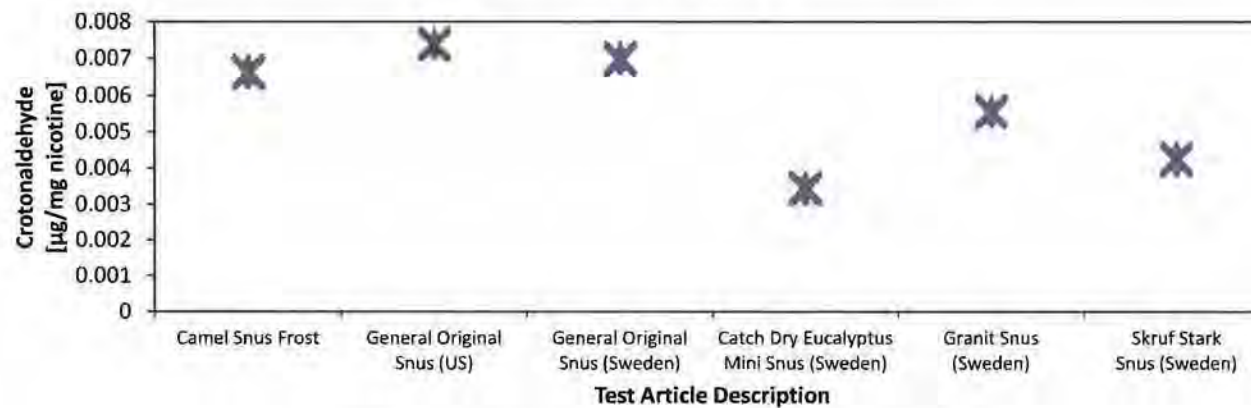
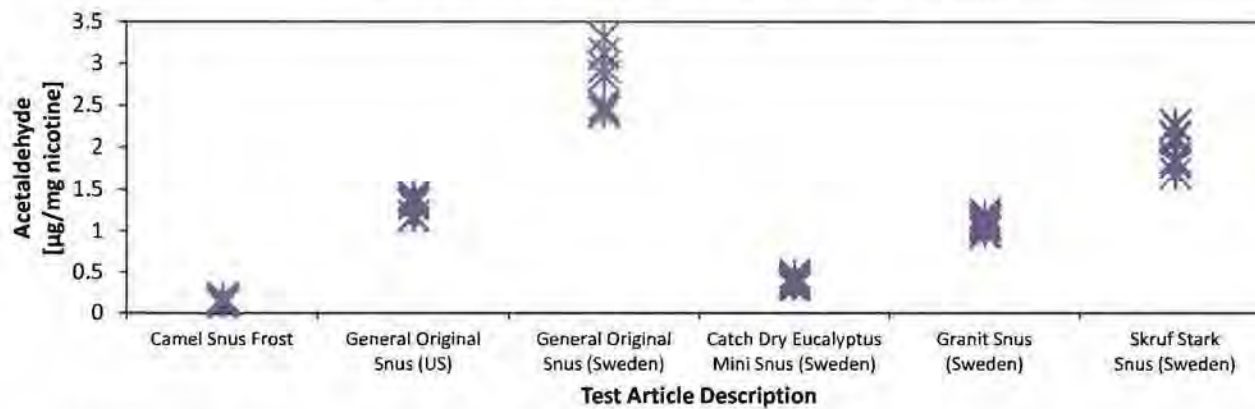
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

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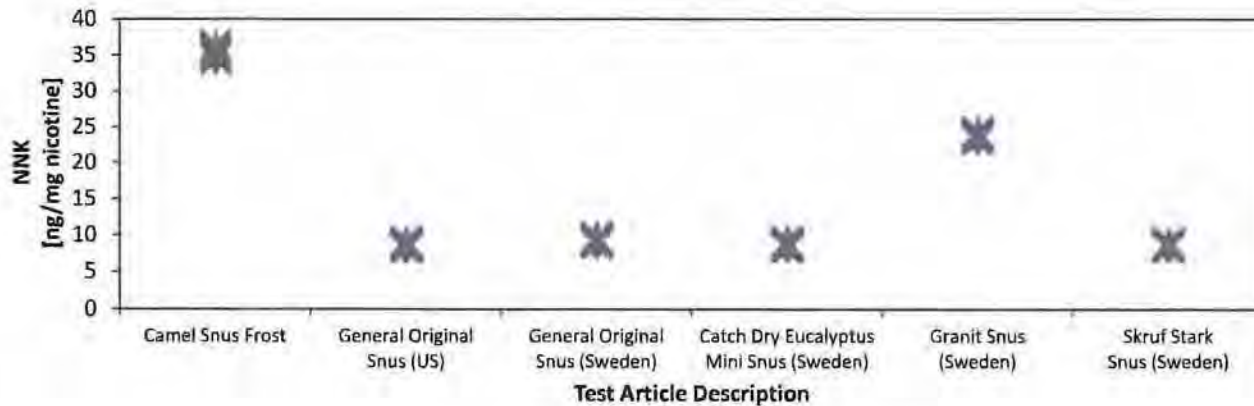
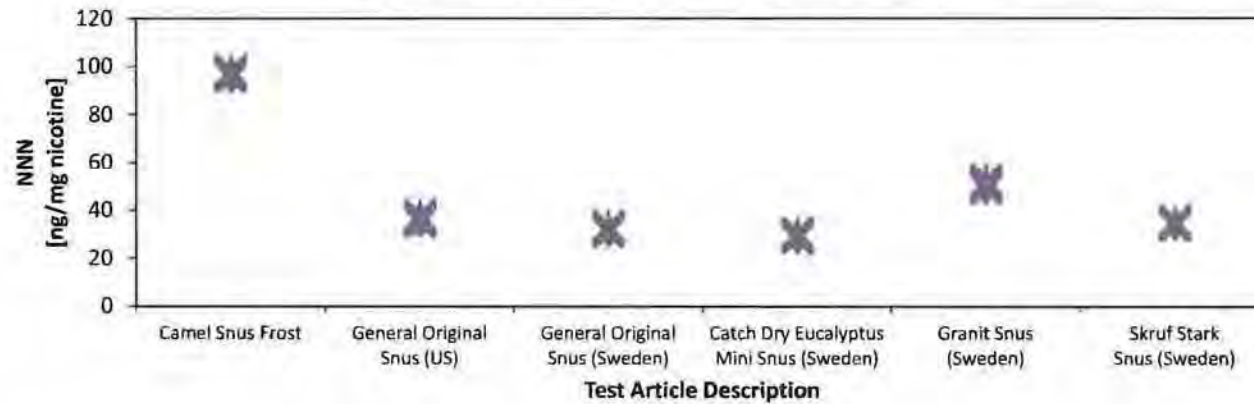


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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Frost; Test Article ID: 1400892**

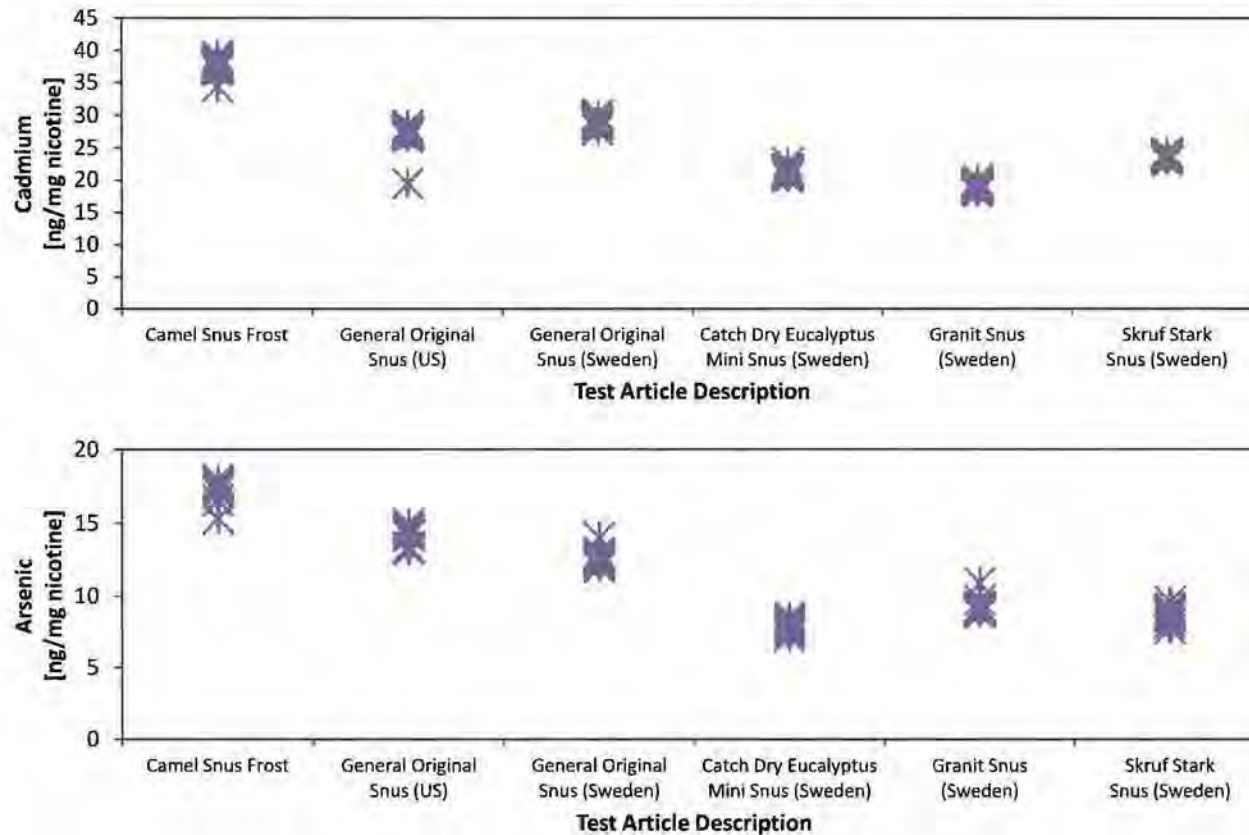
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Smokeless Tobacco Test Article Figures: mass/mg nicotine
Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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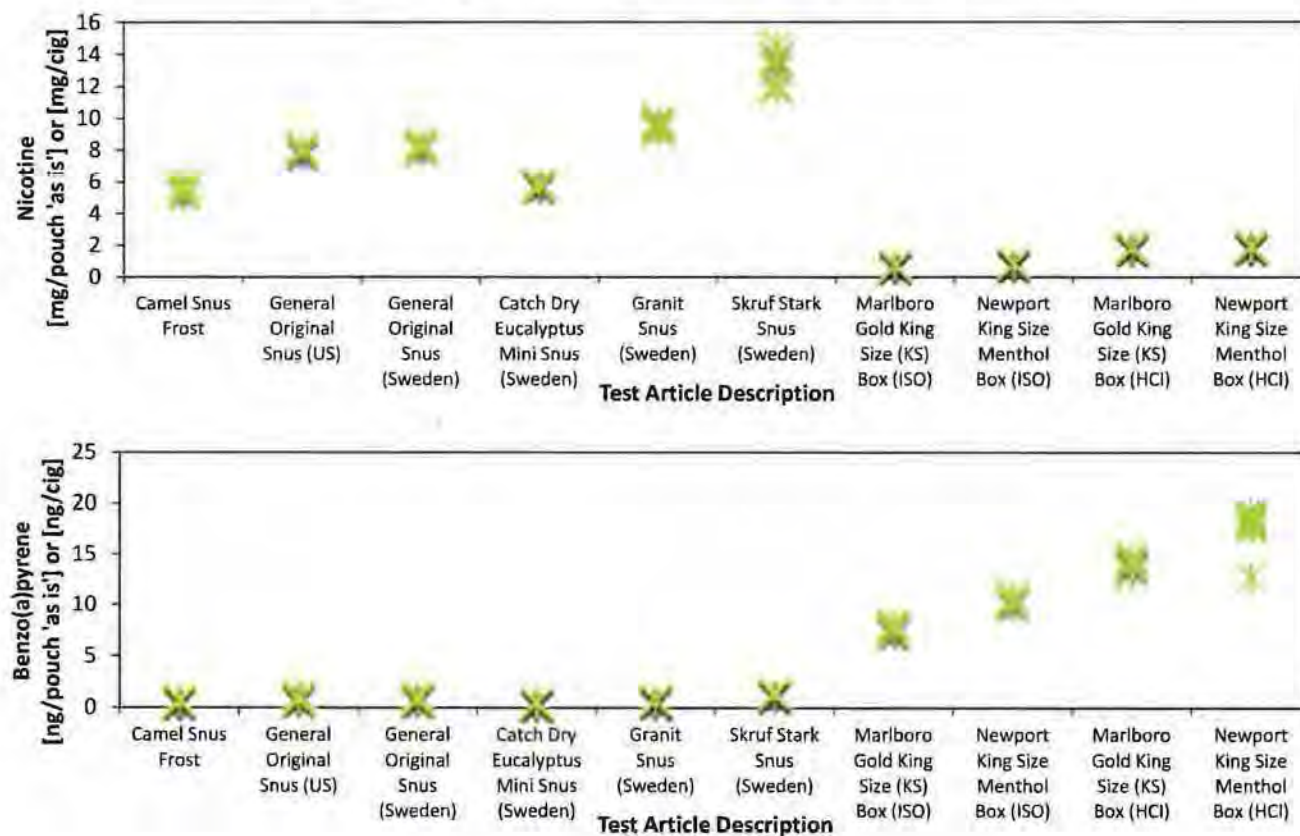
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette
Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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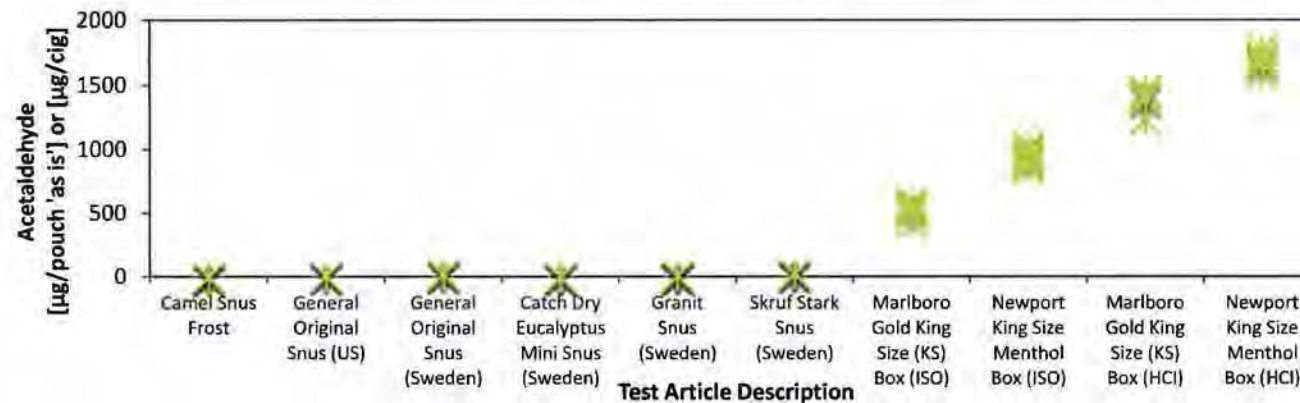
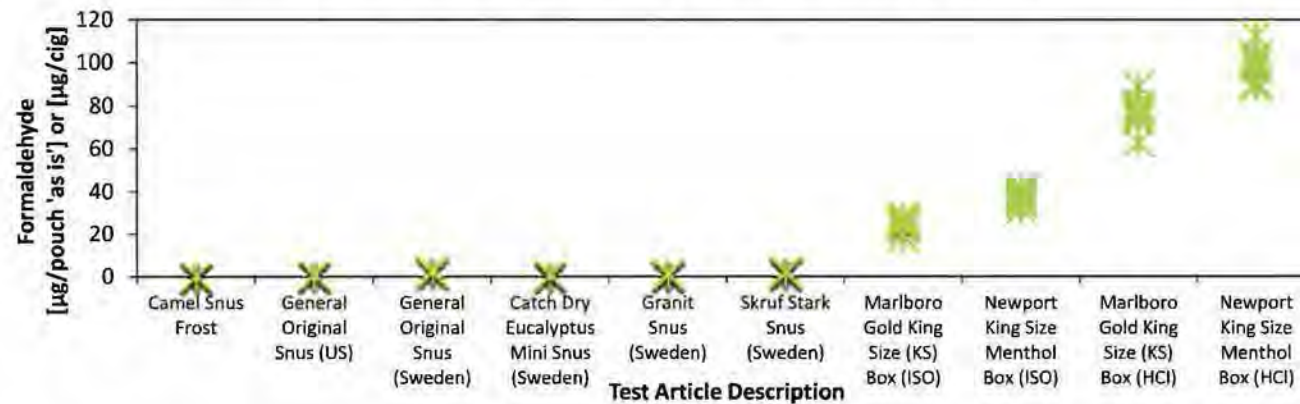
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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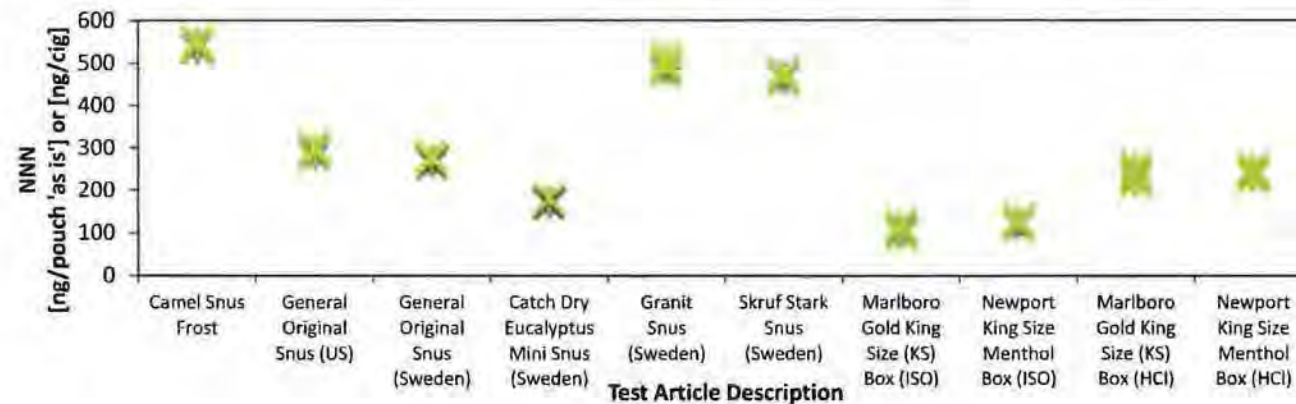
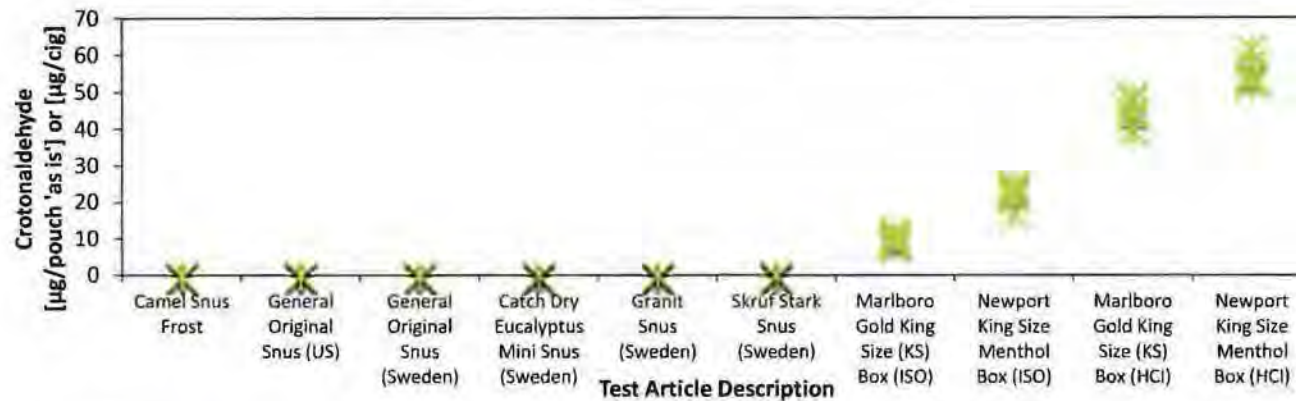
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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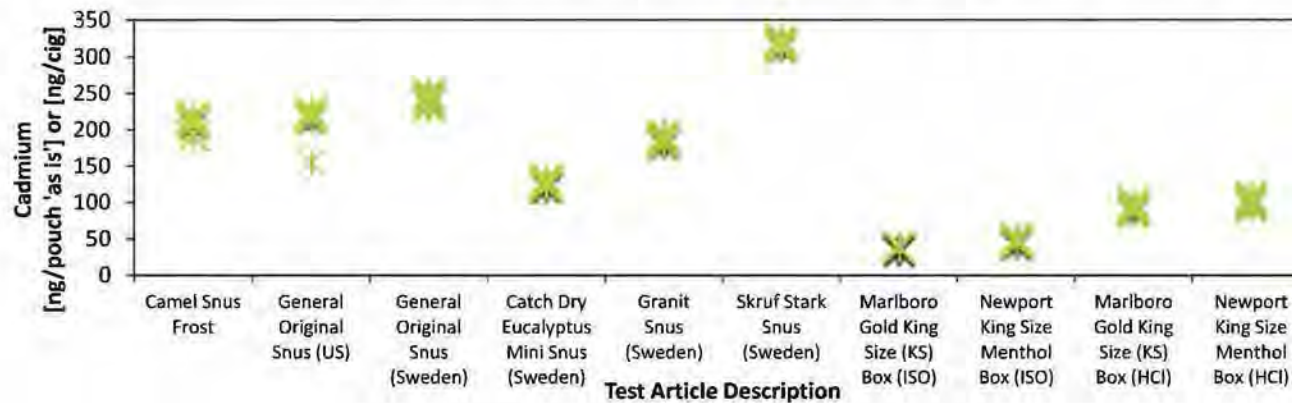
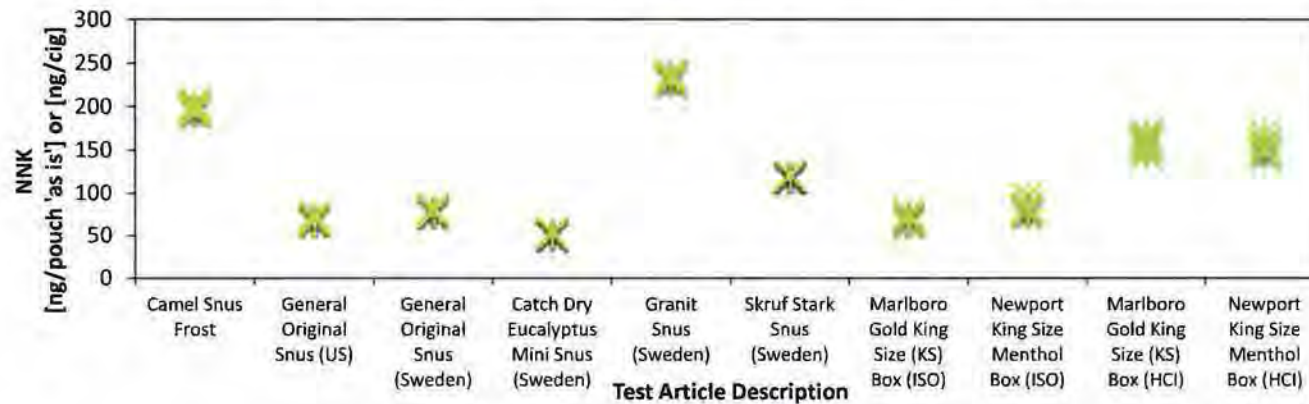
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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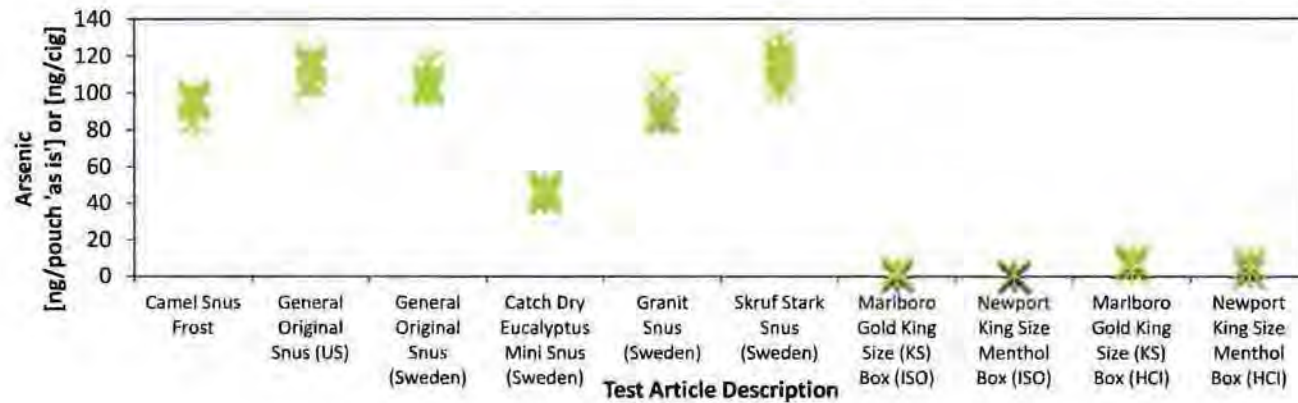
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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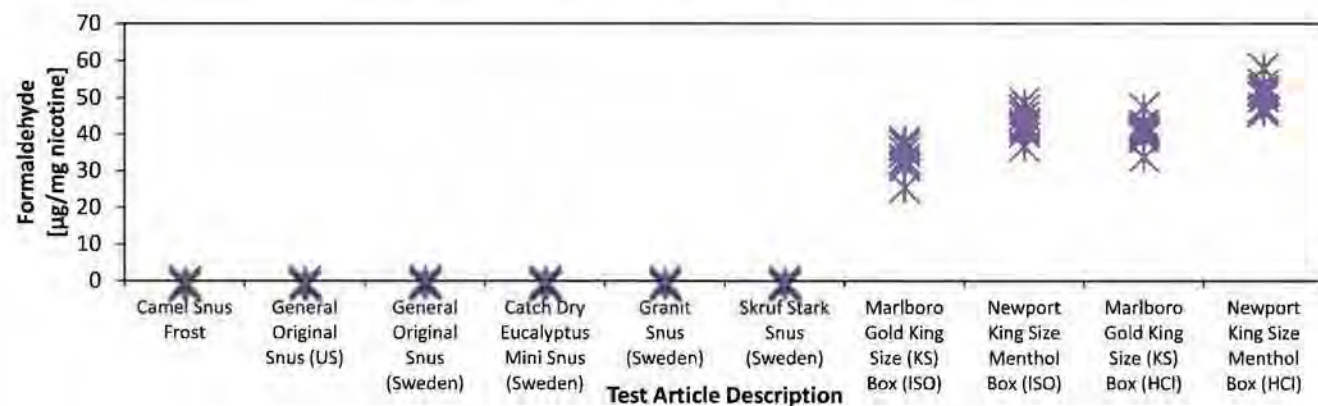
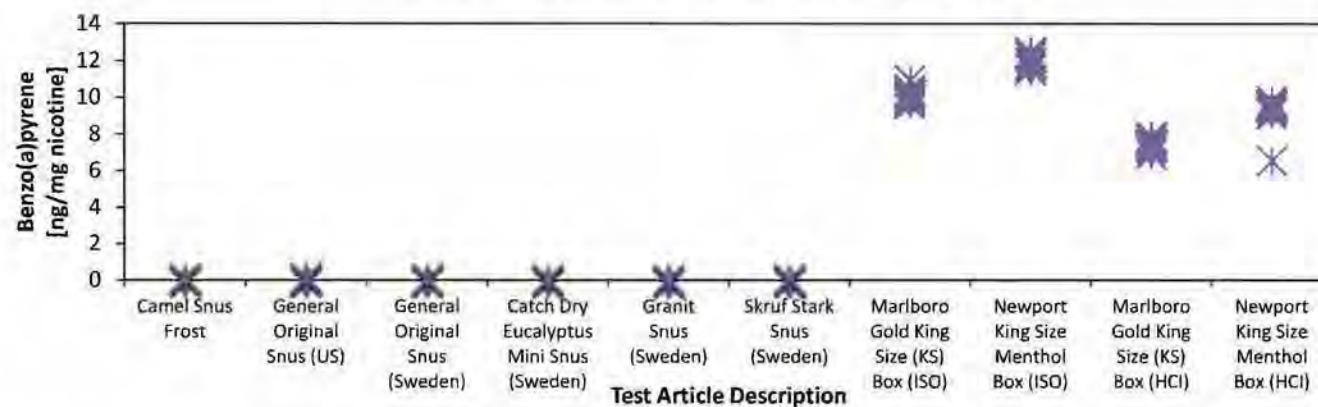


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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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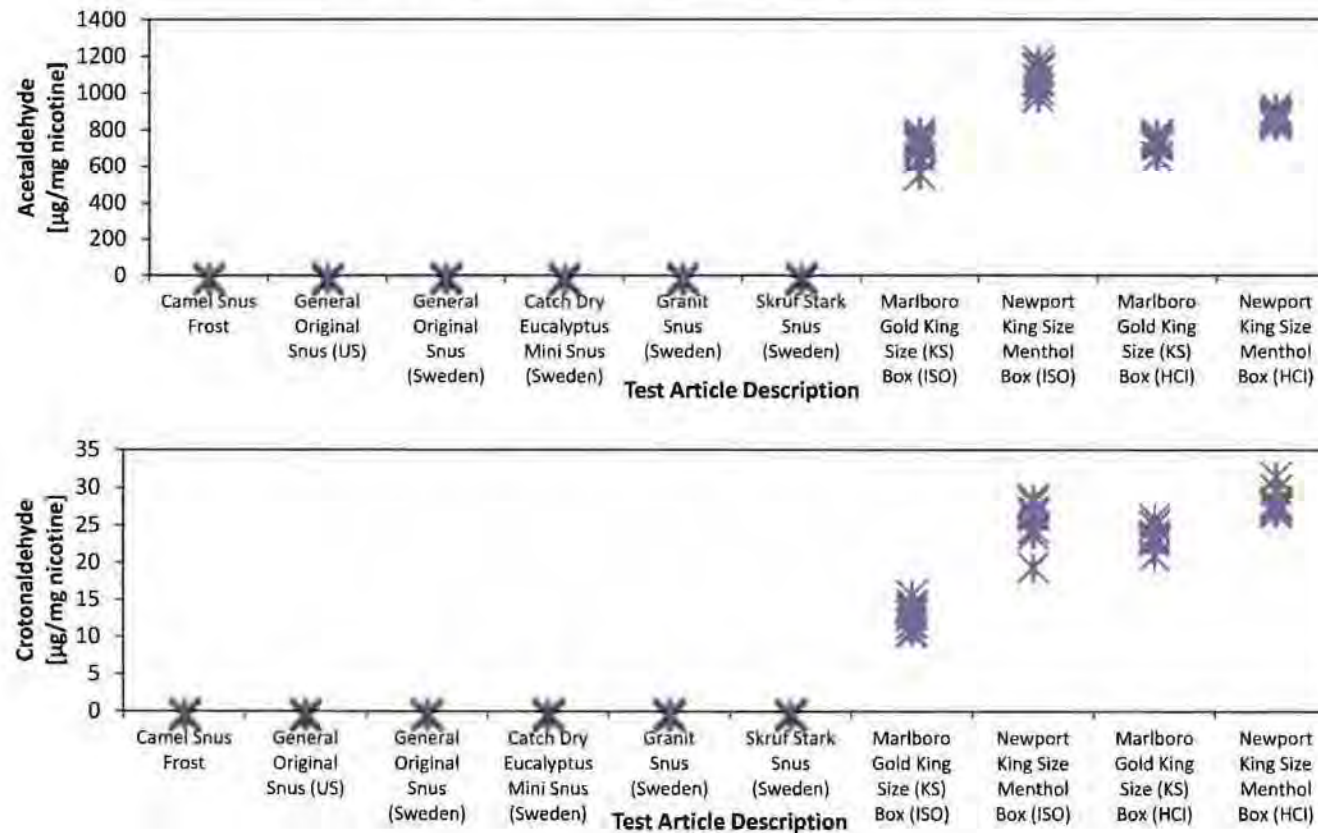
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine
Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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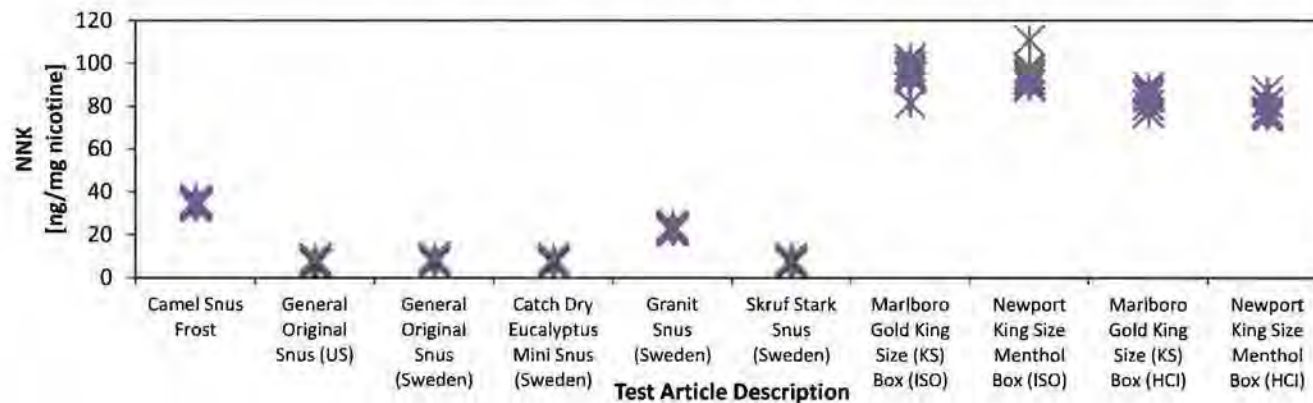
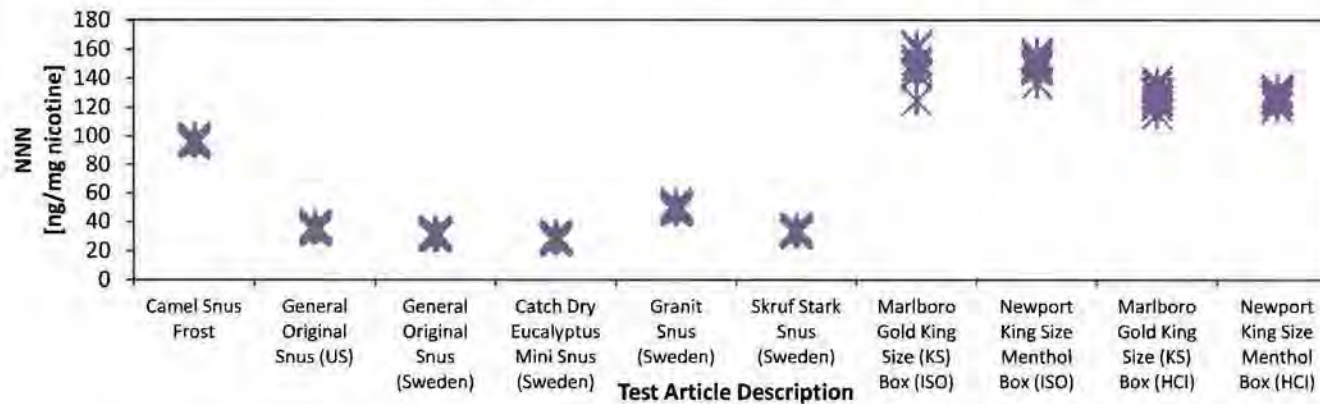
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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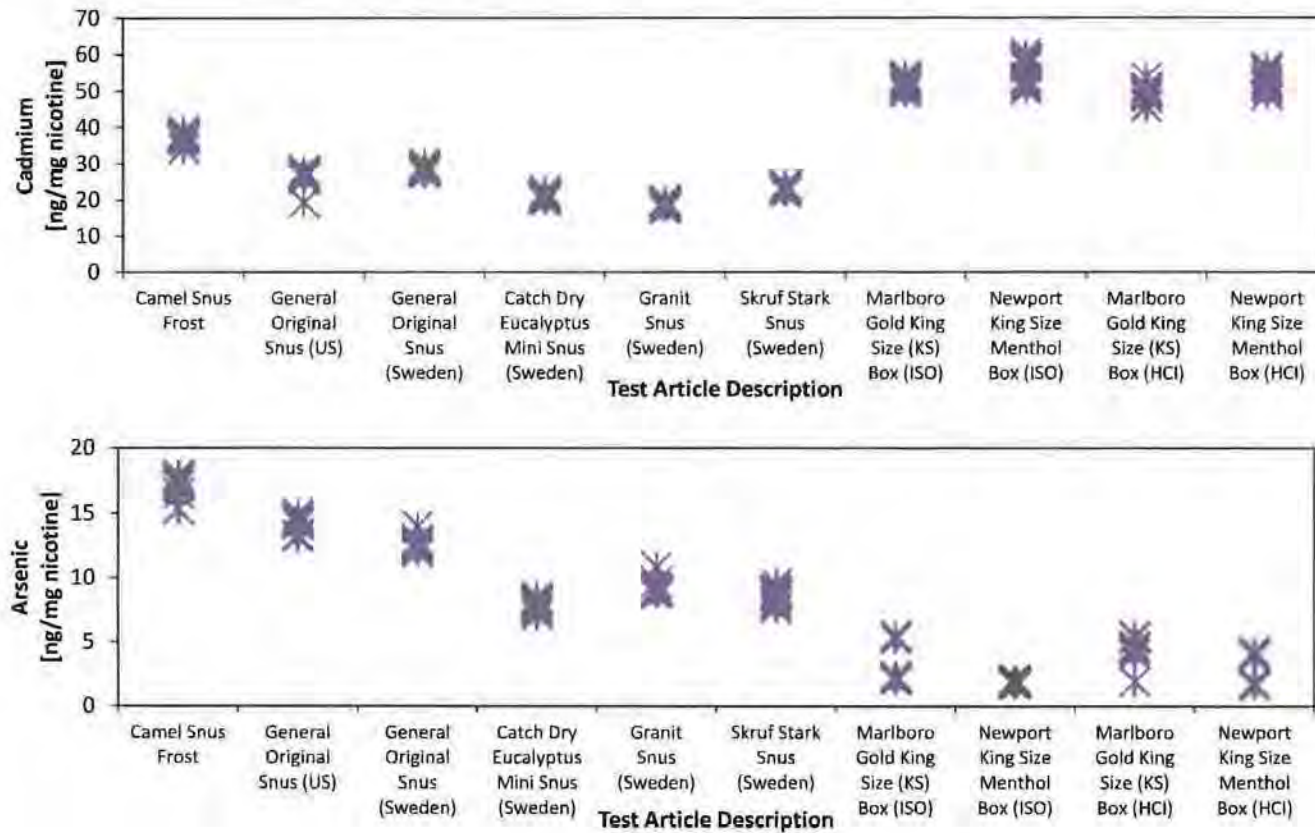
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Frost; Test Article ID: 1400892



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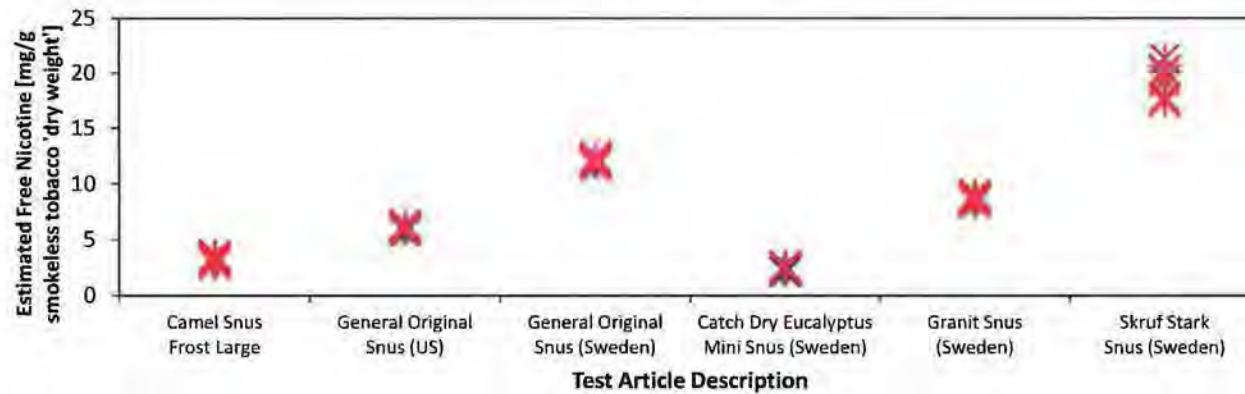
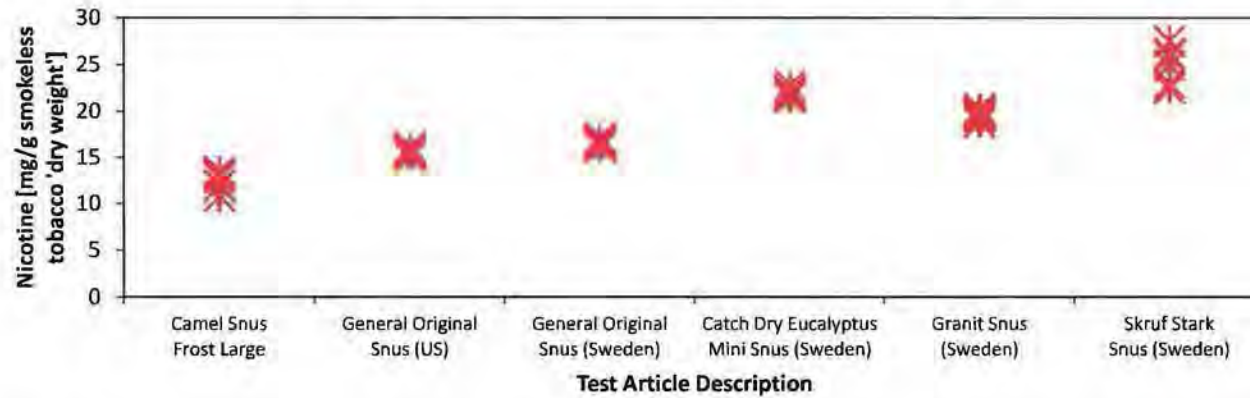
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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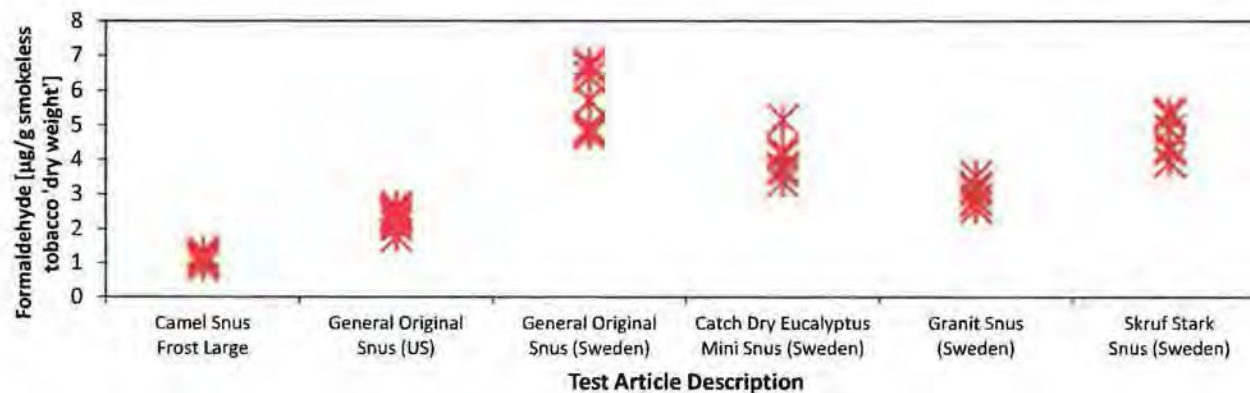
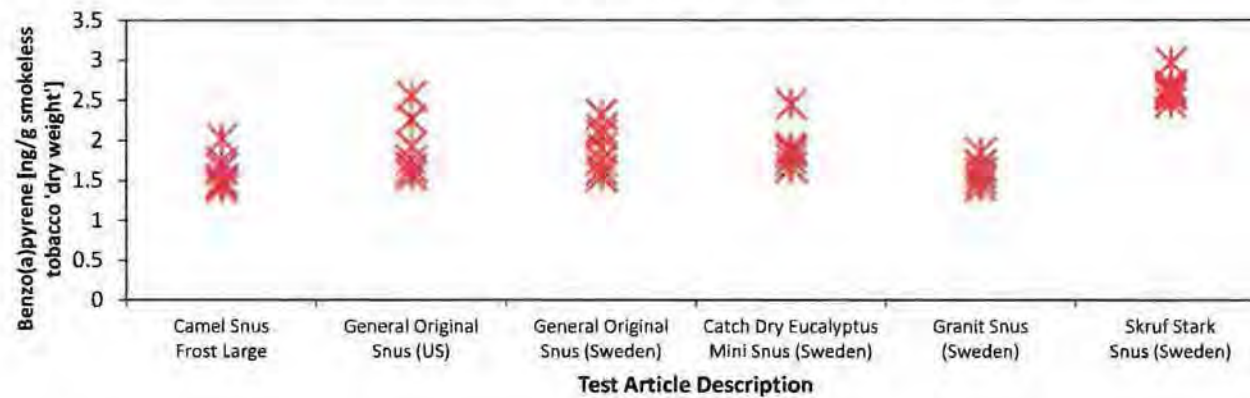


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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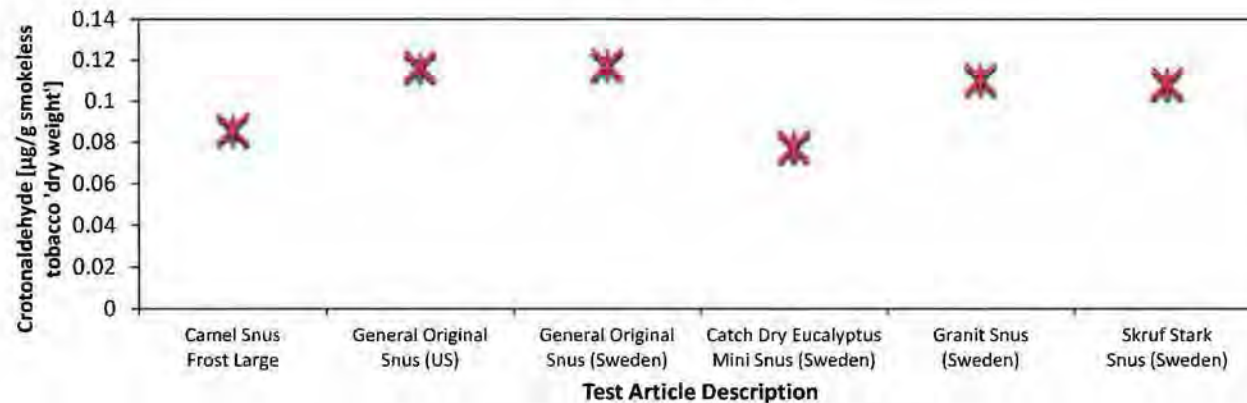
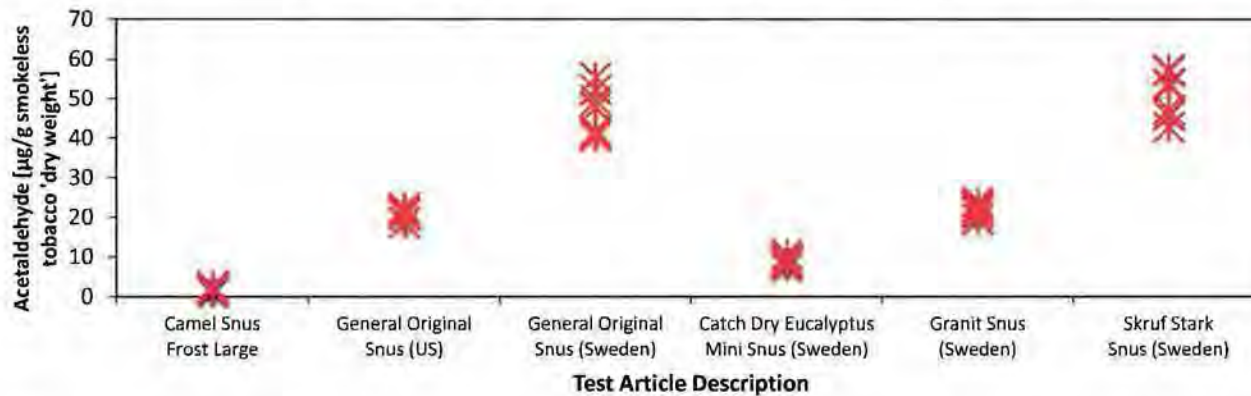


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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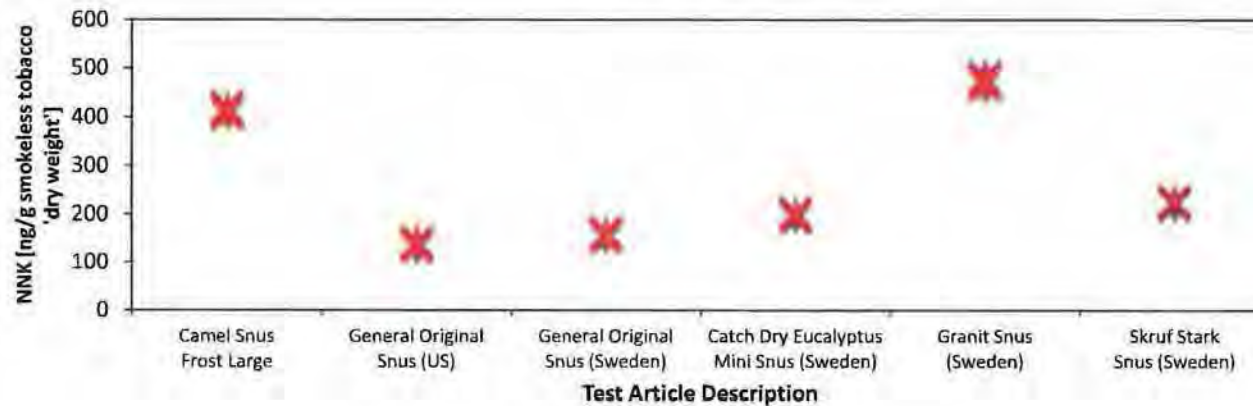
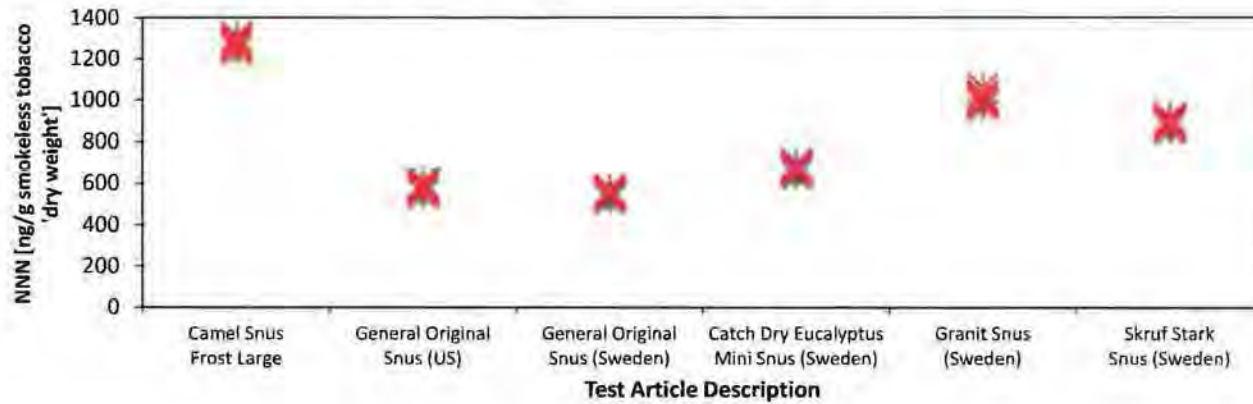


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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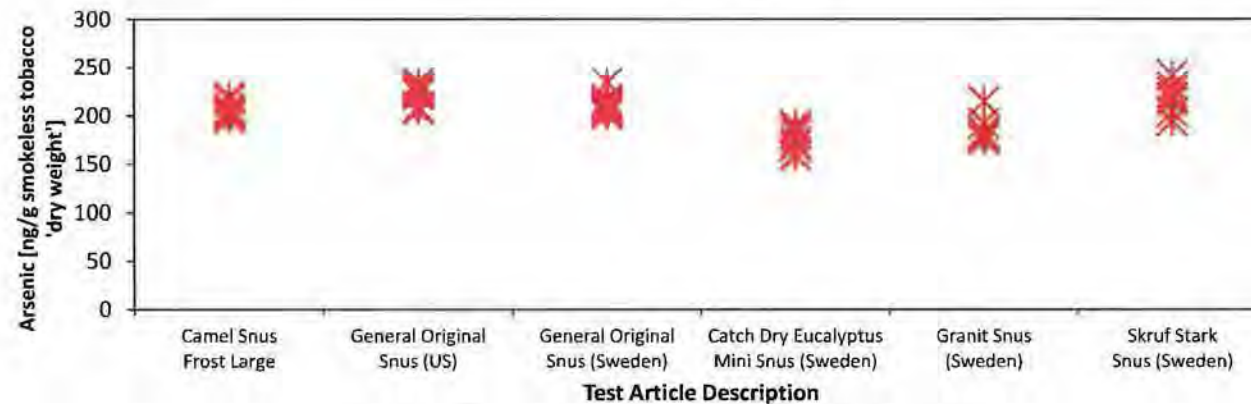
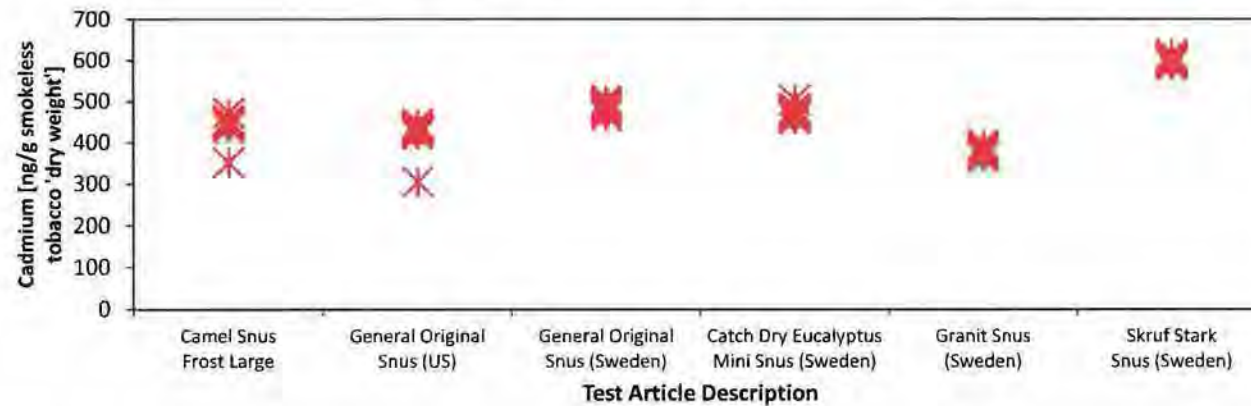
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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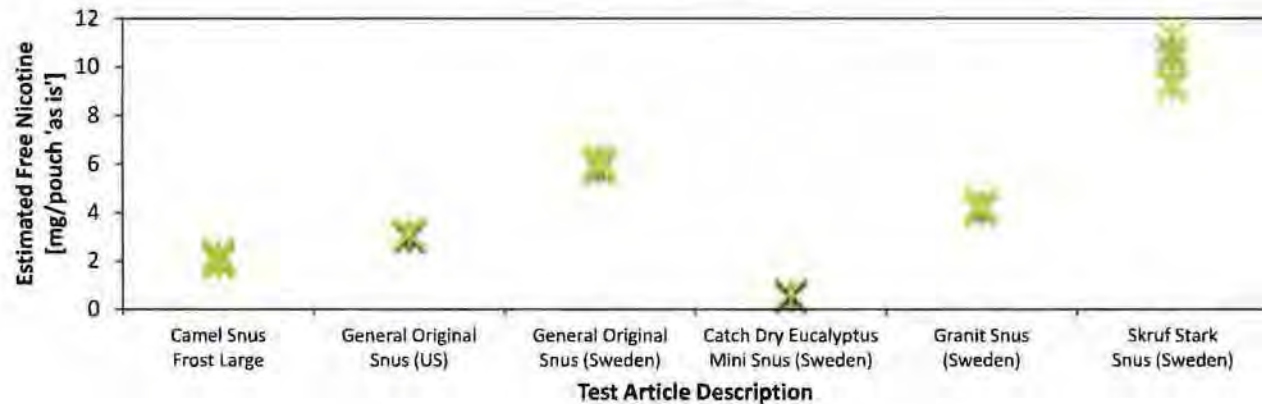
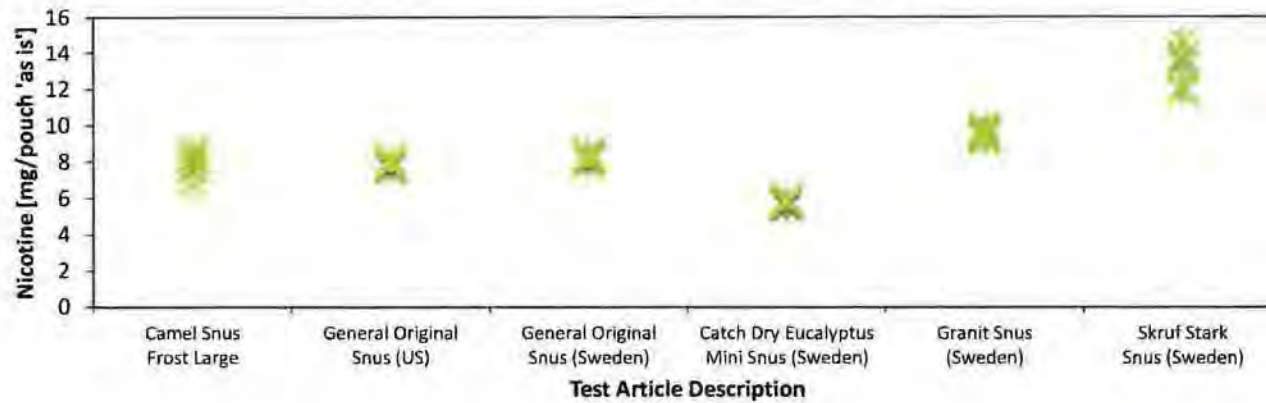
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'
Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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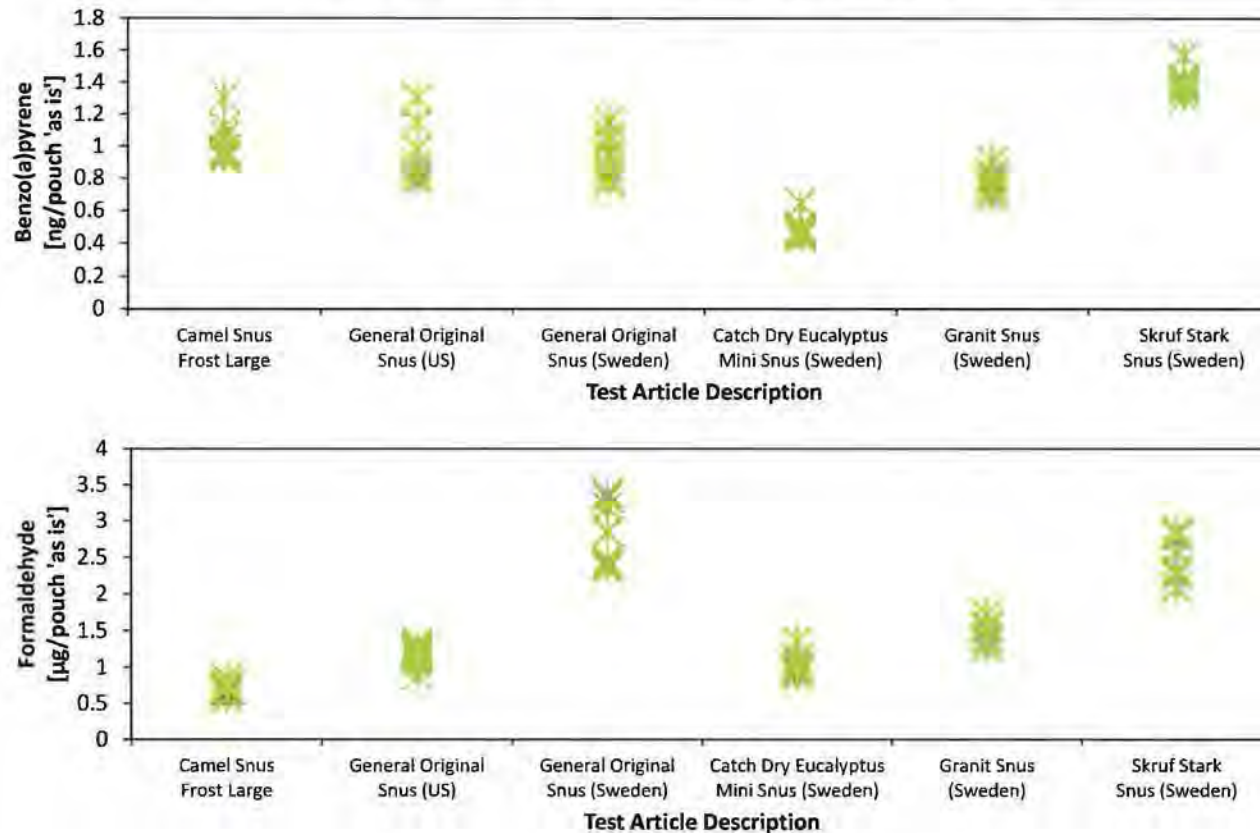
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'
Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



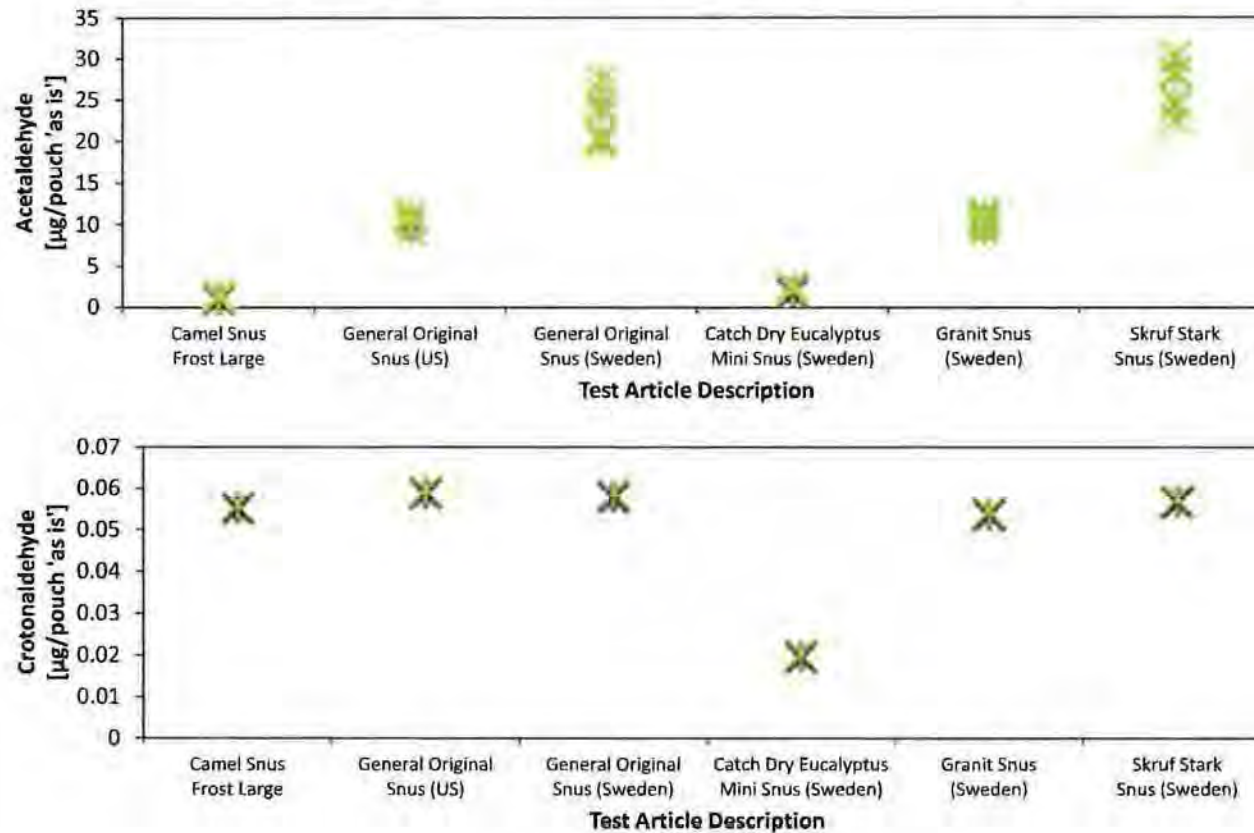
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'
Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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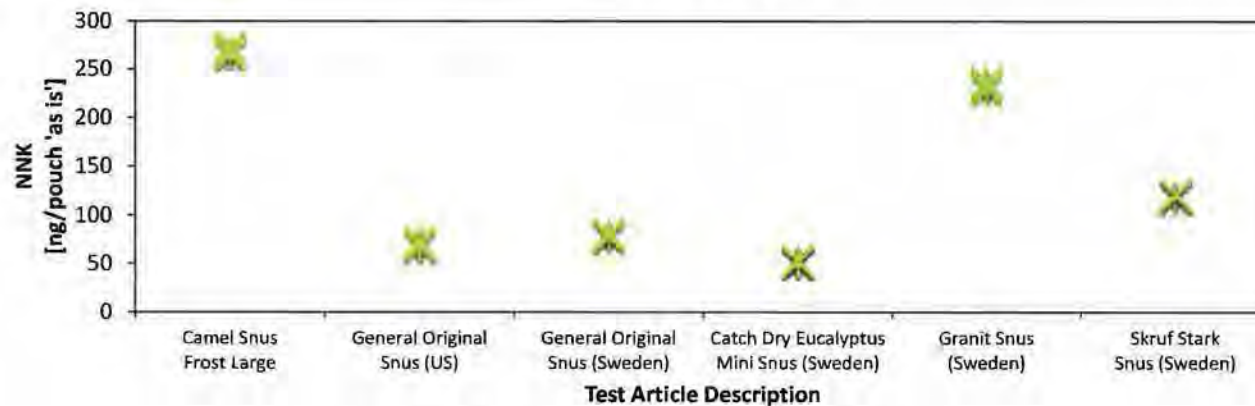
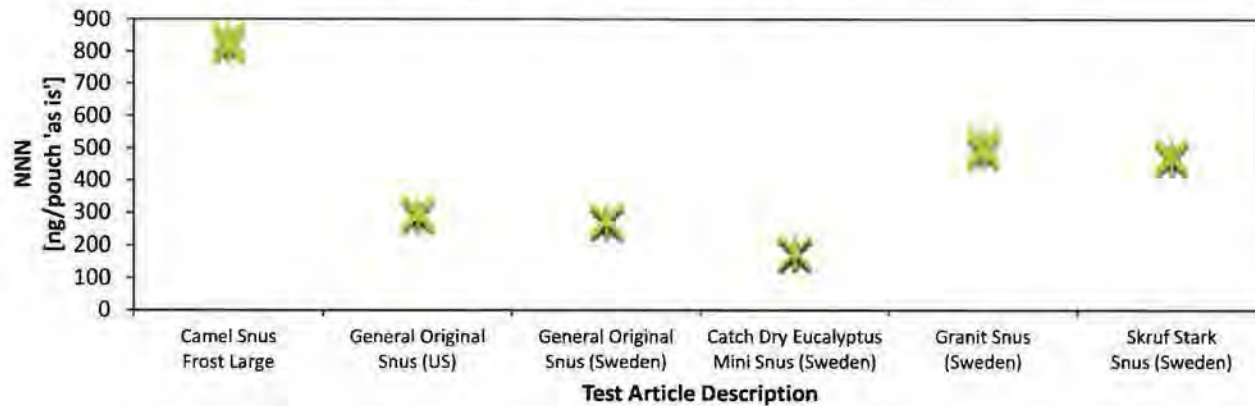


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893**

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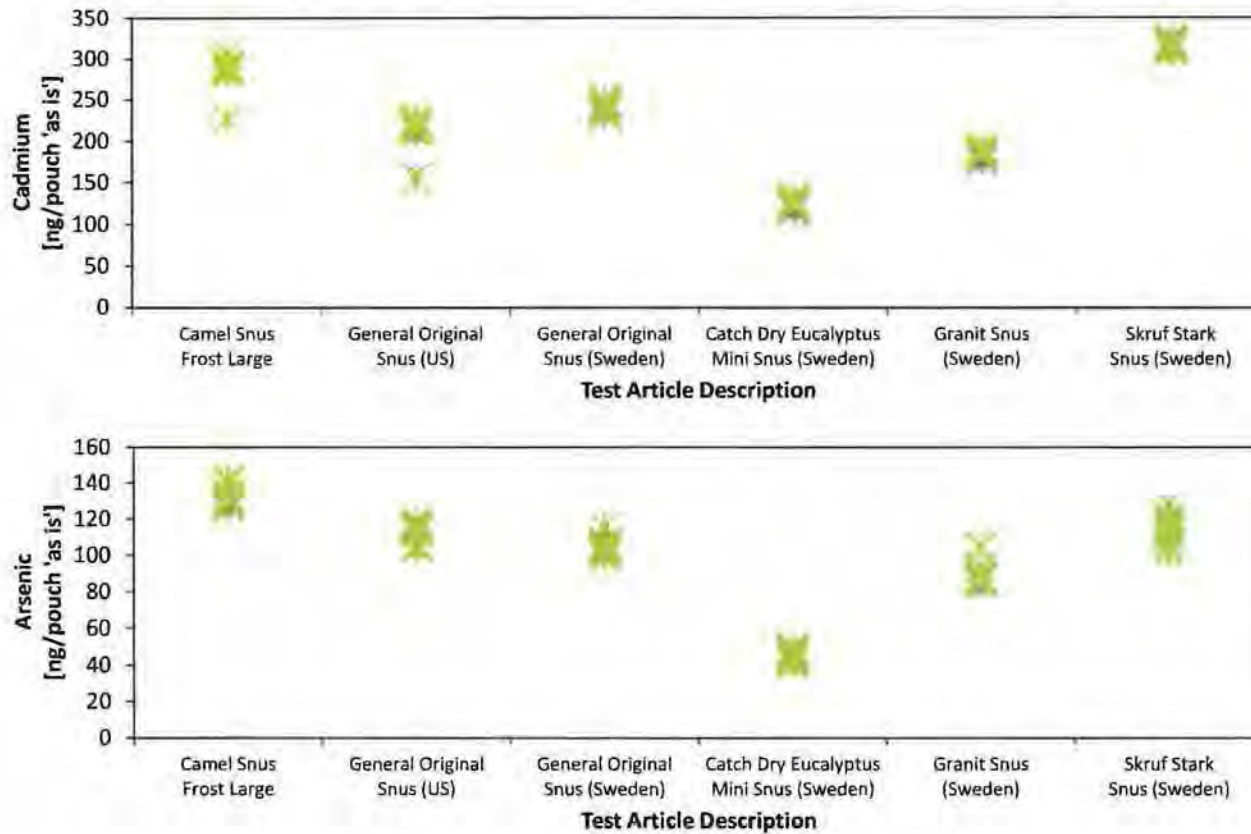
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'
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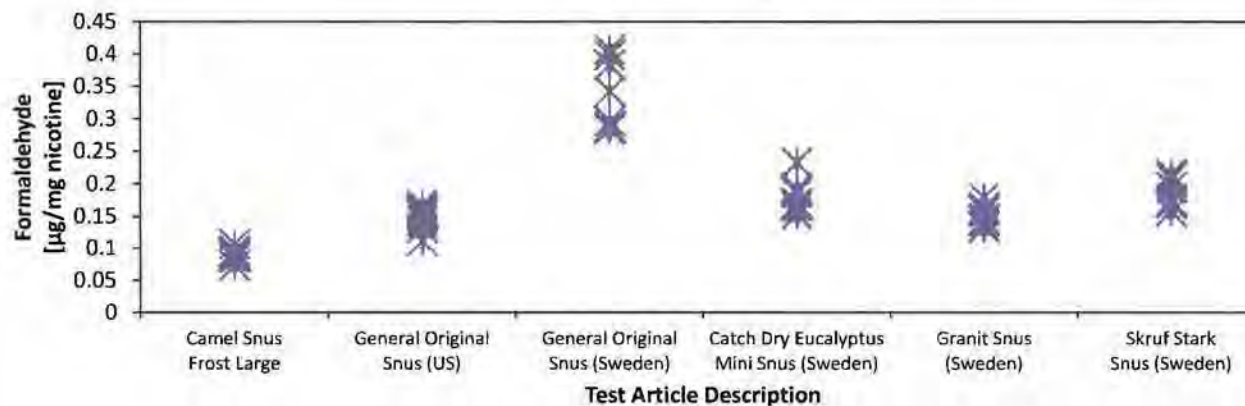
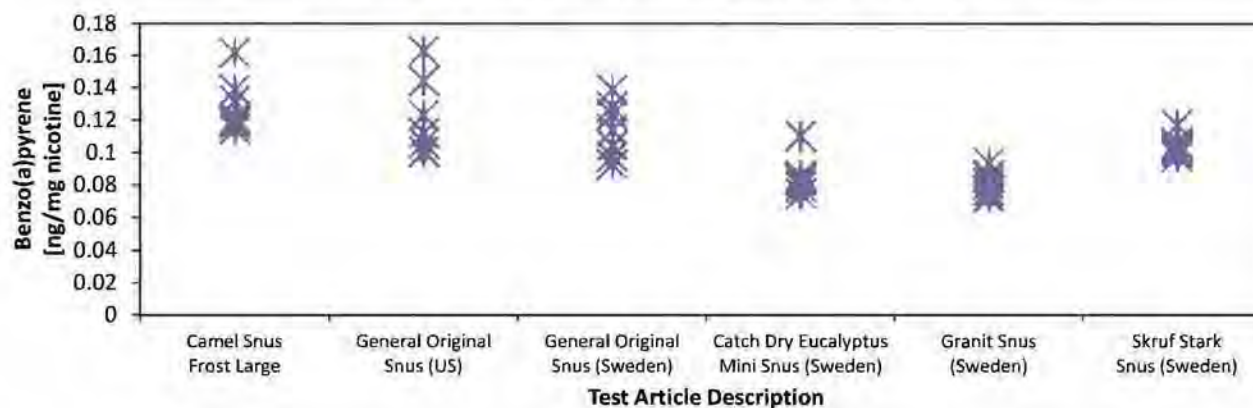
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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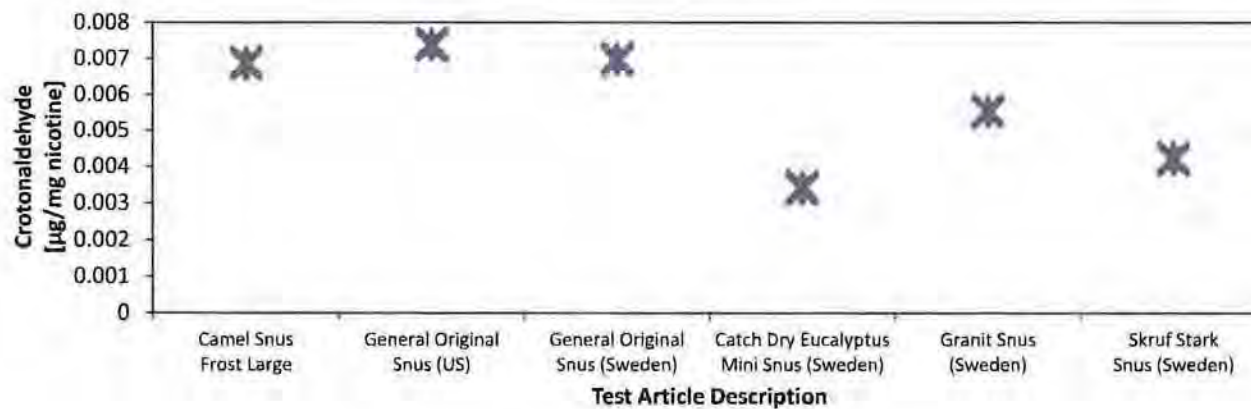
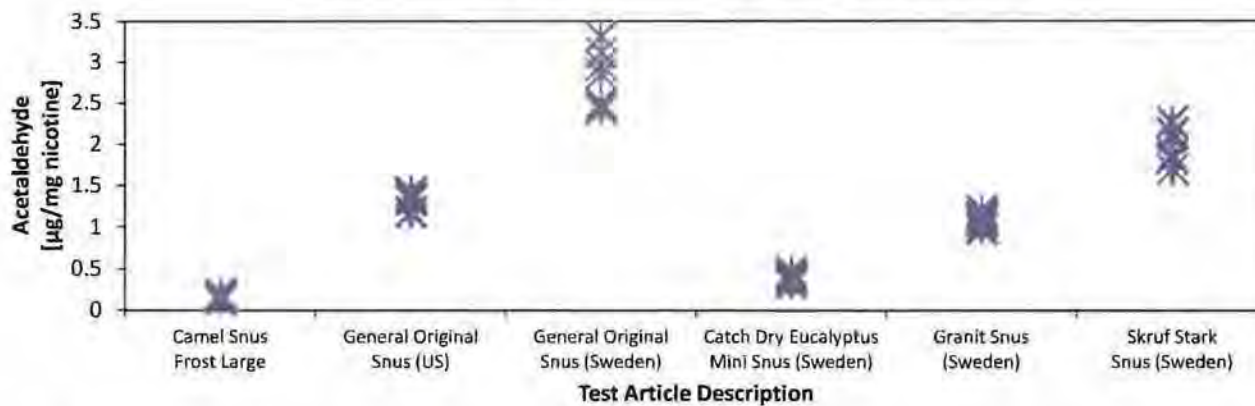


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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893**

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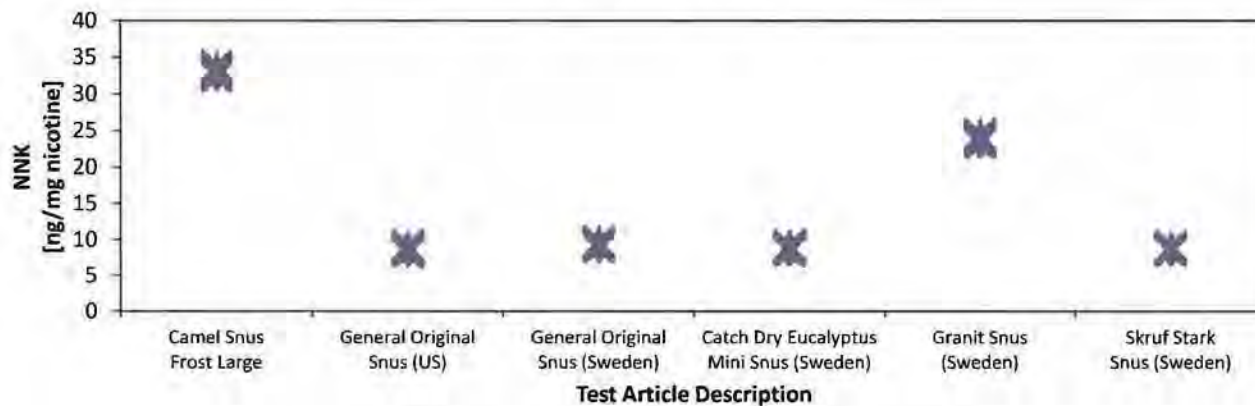
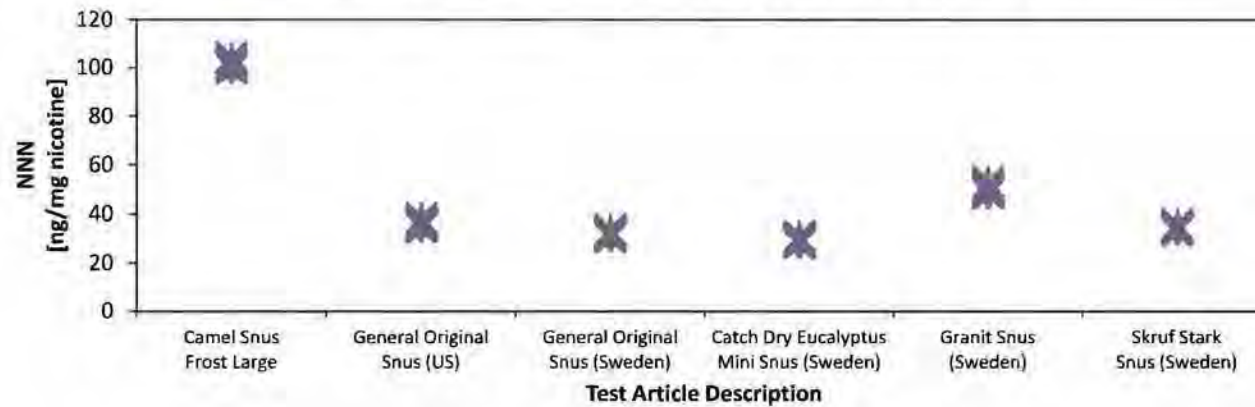
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Smokeless Tobacco Test Article Figures: mass/mg nicotine
Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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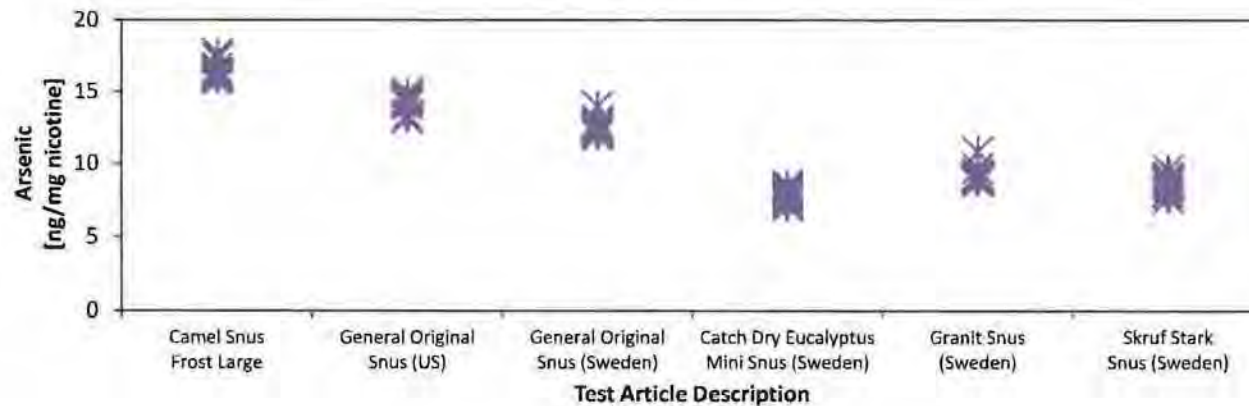
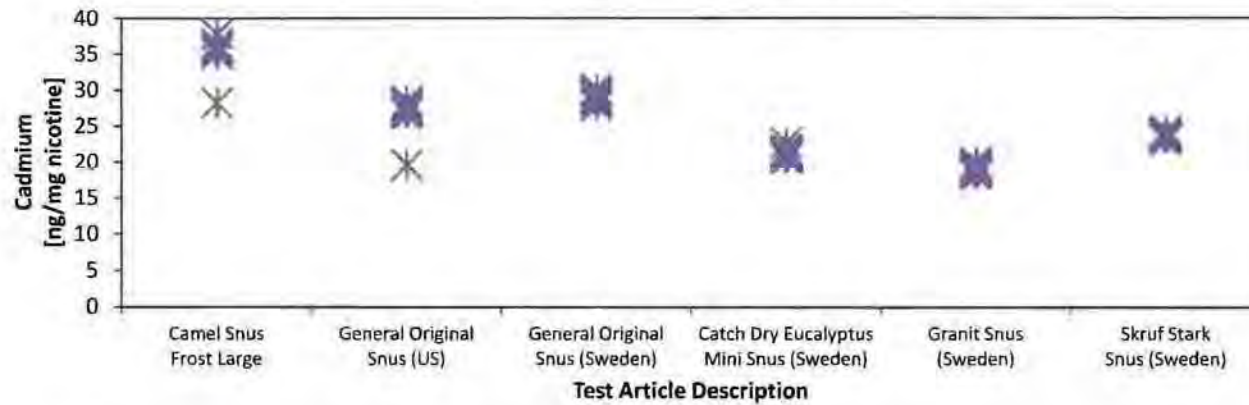


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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893**

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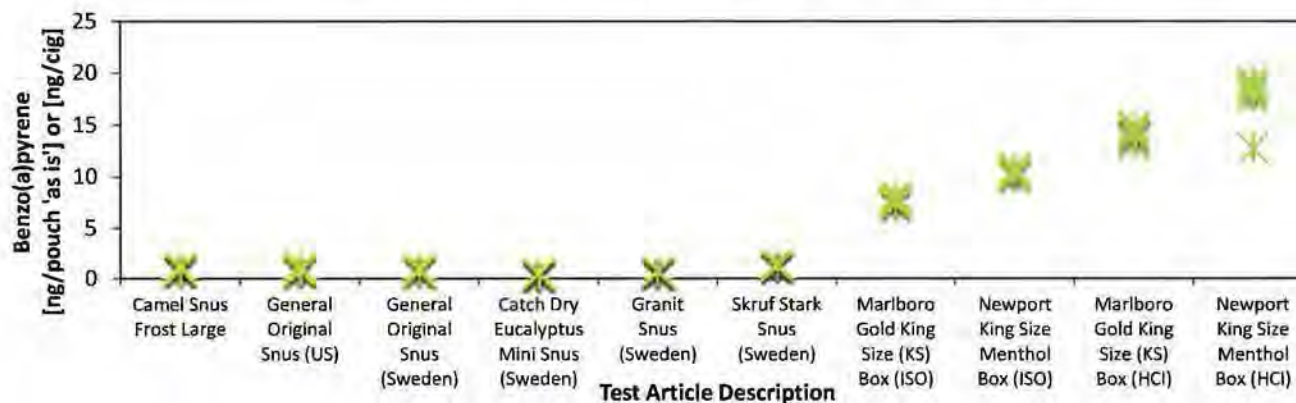
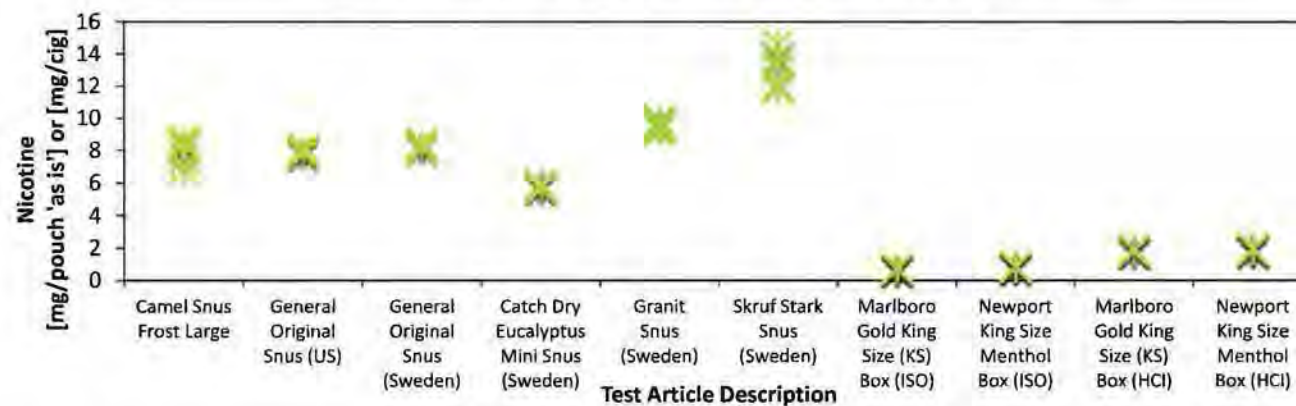
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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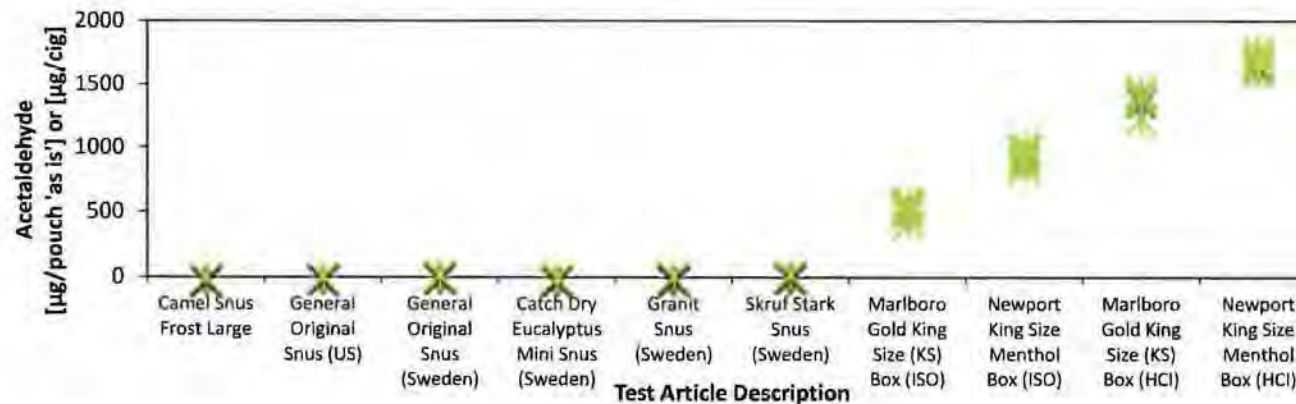
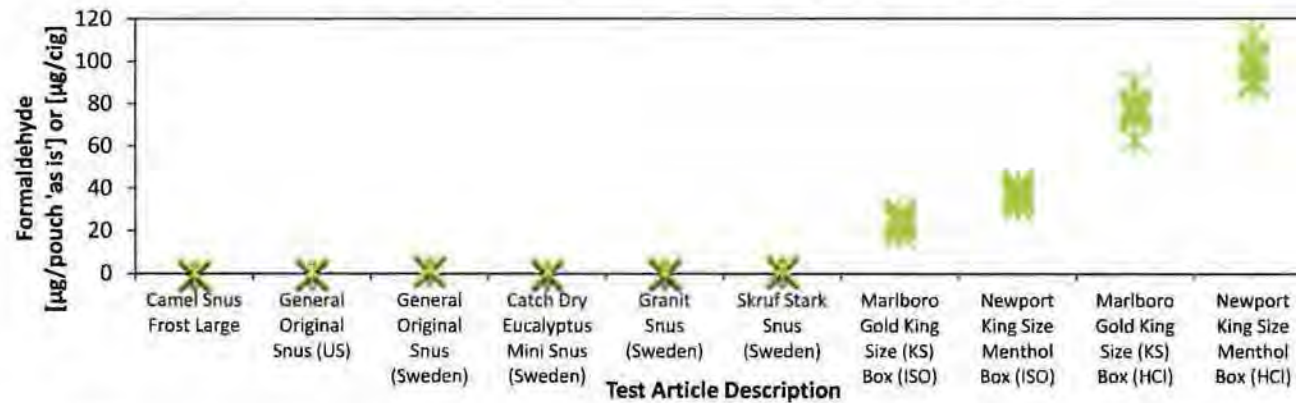


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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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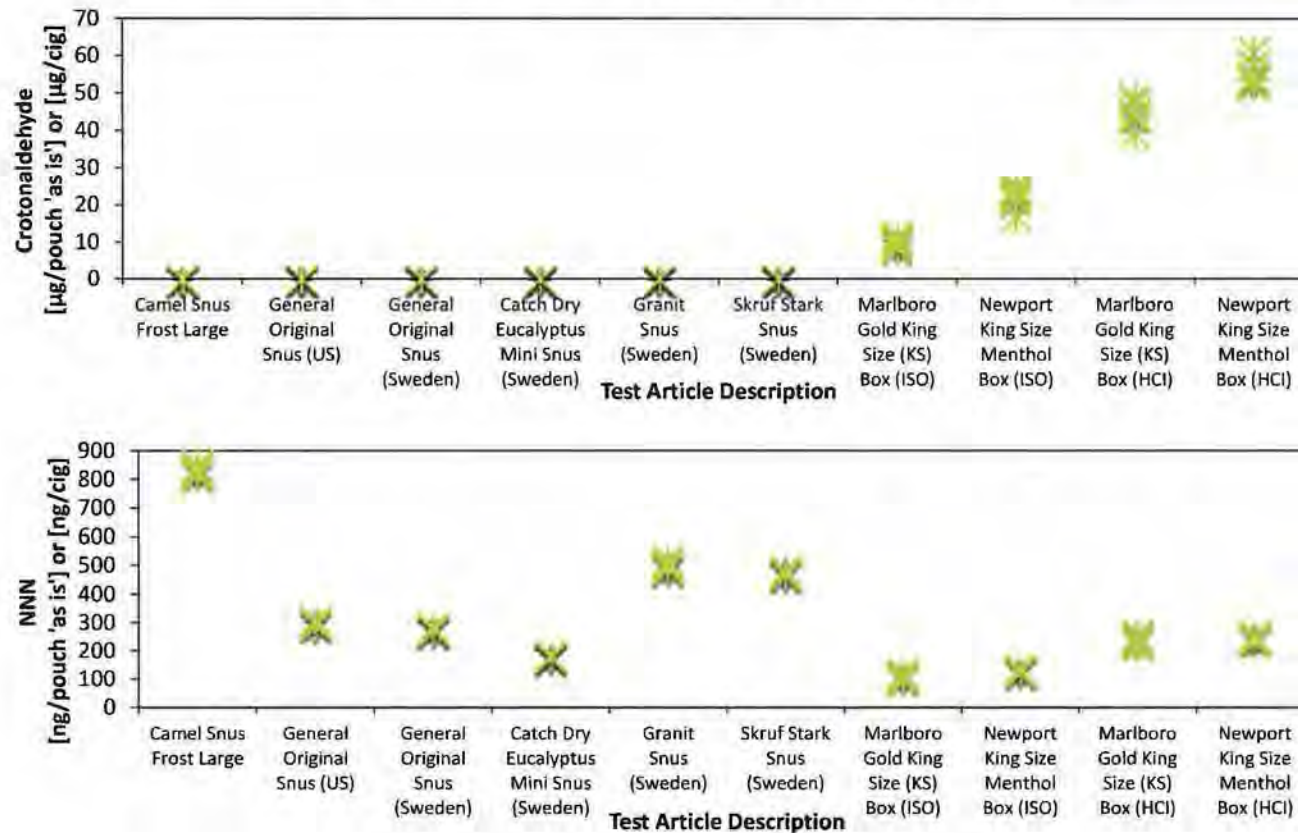
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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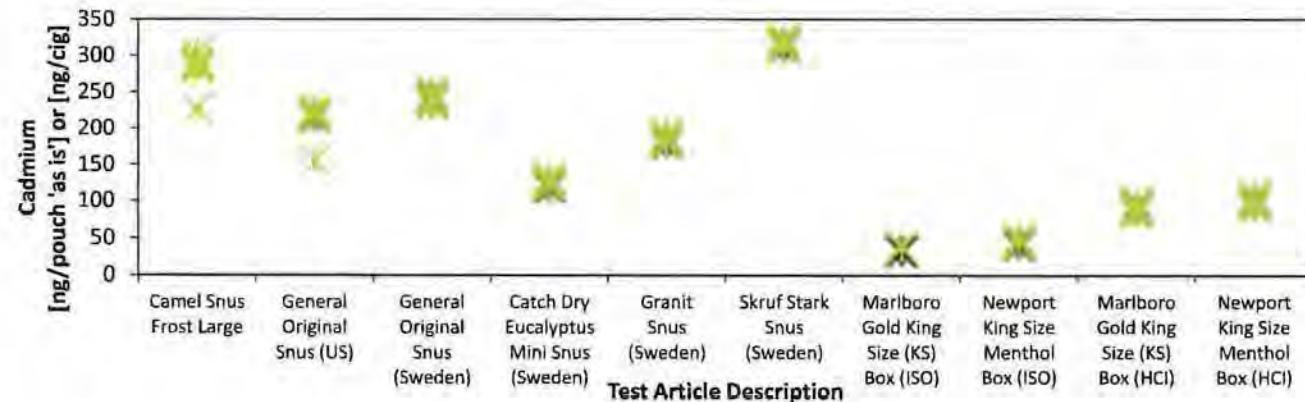
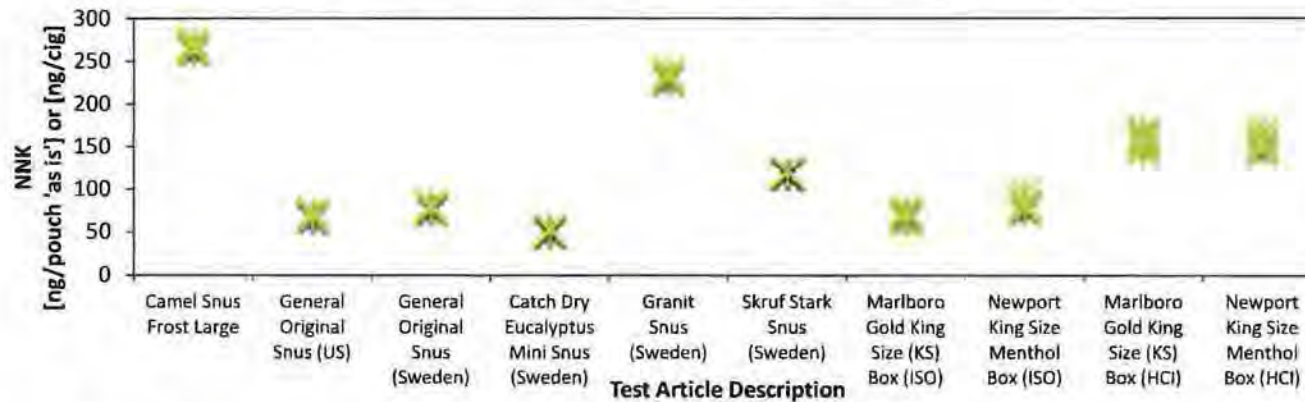
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



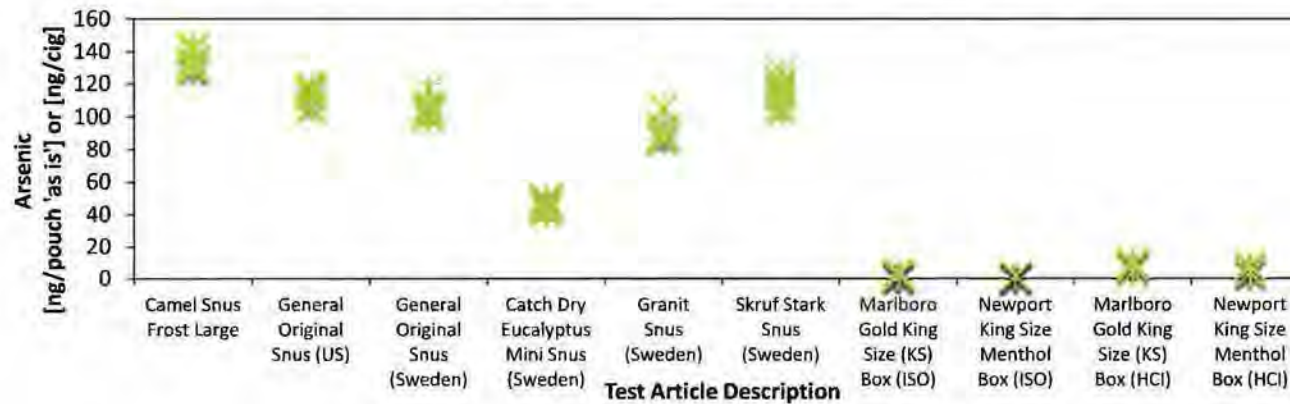
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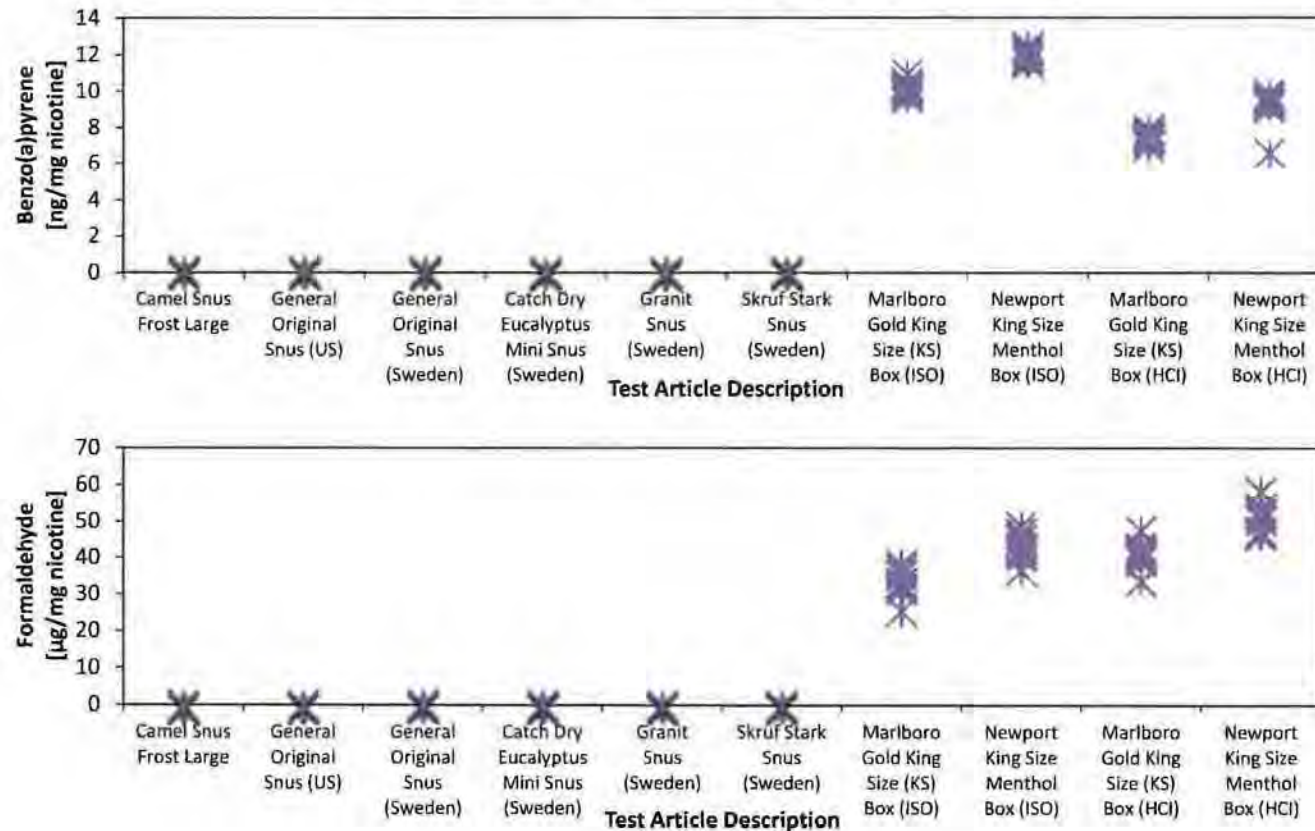
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



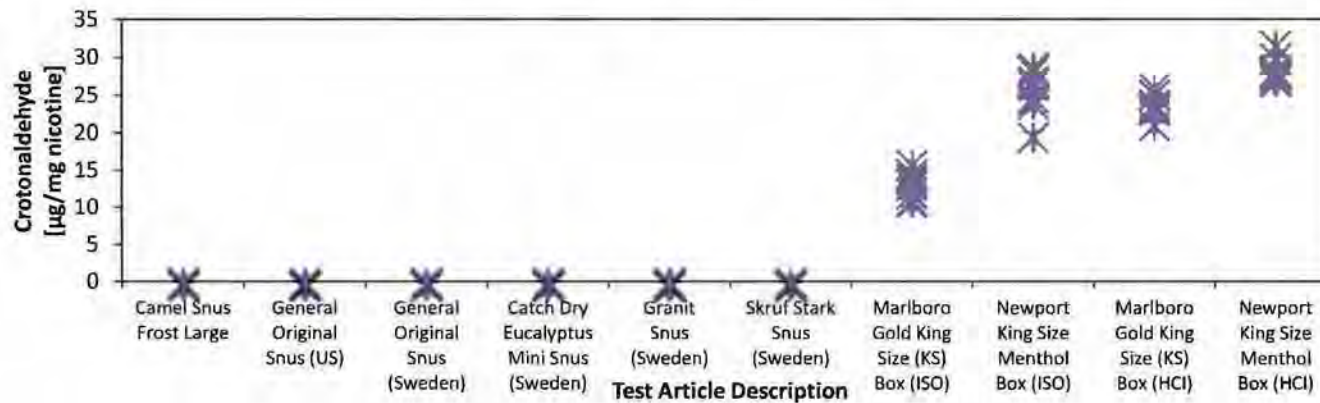
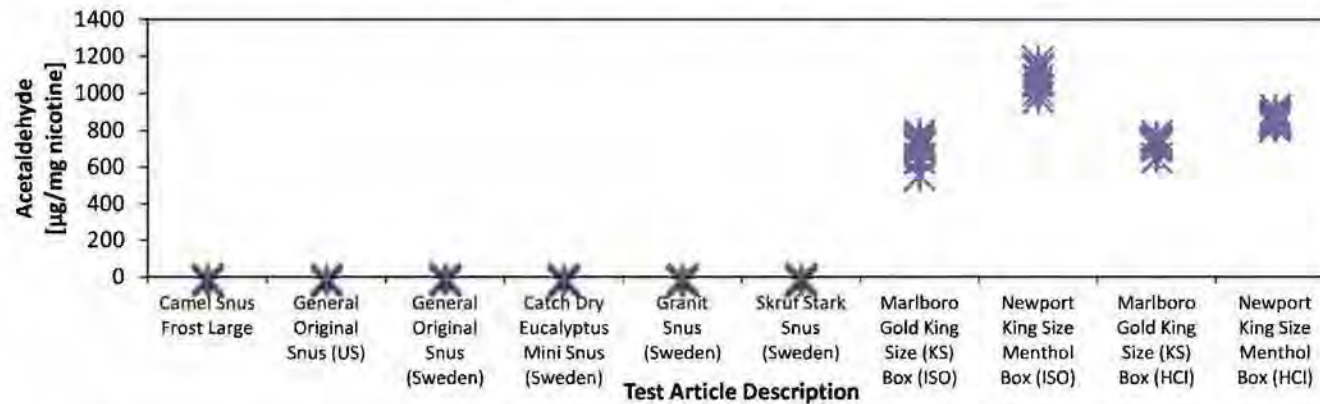
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893**

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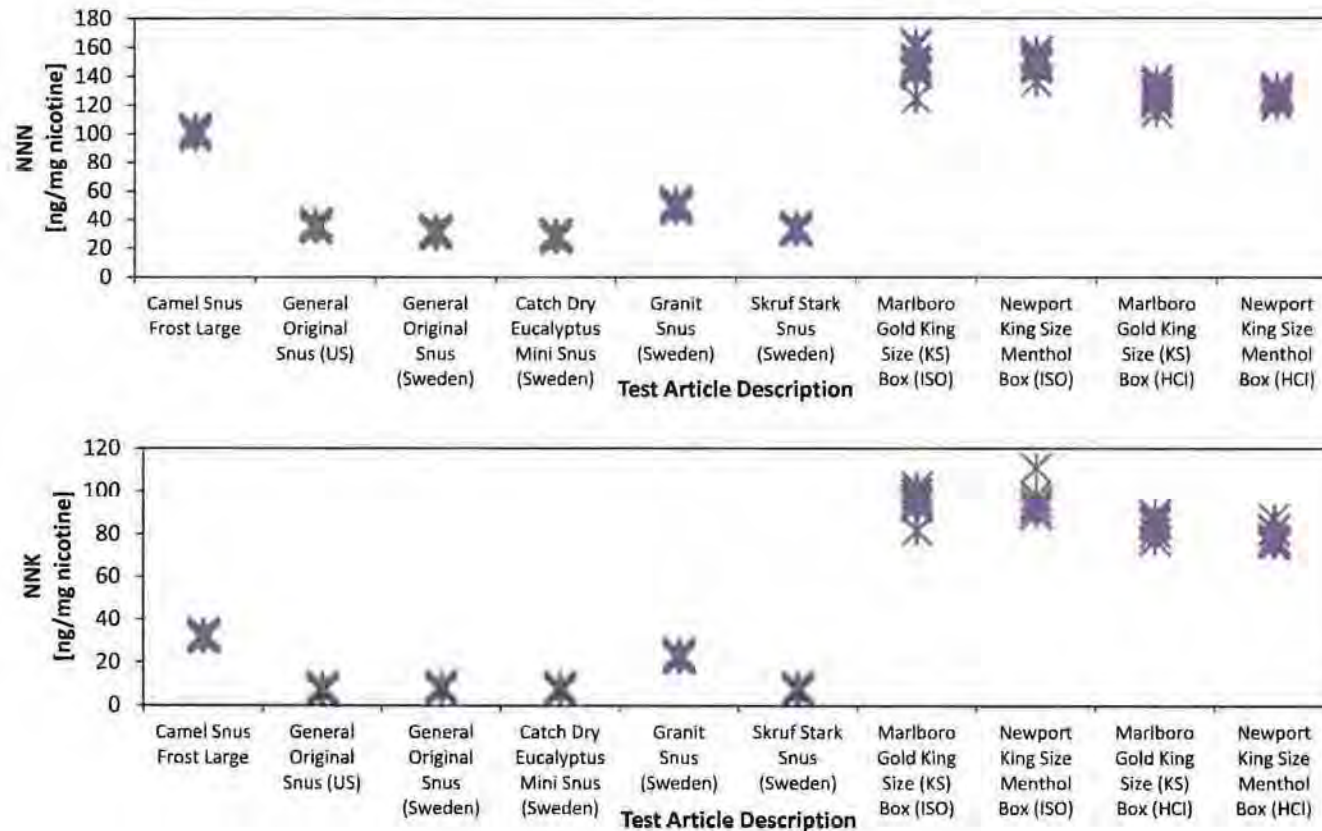


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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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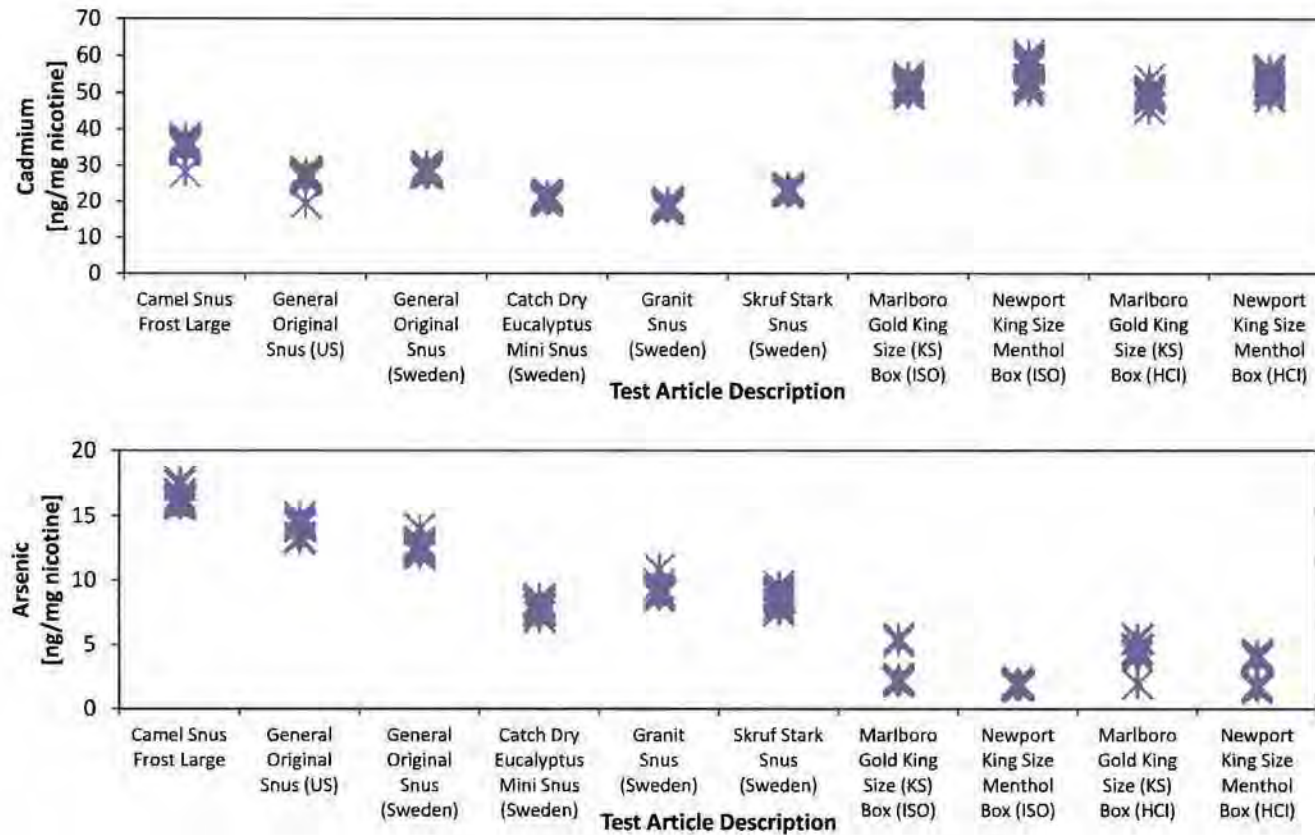
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Frost Large; Test Article ID: 1400893



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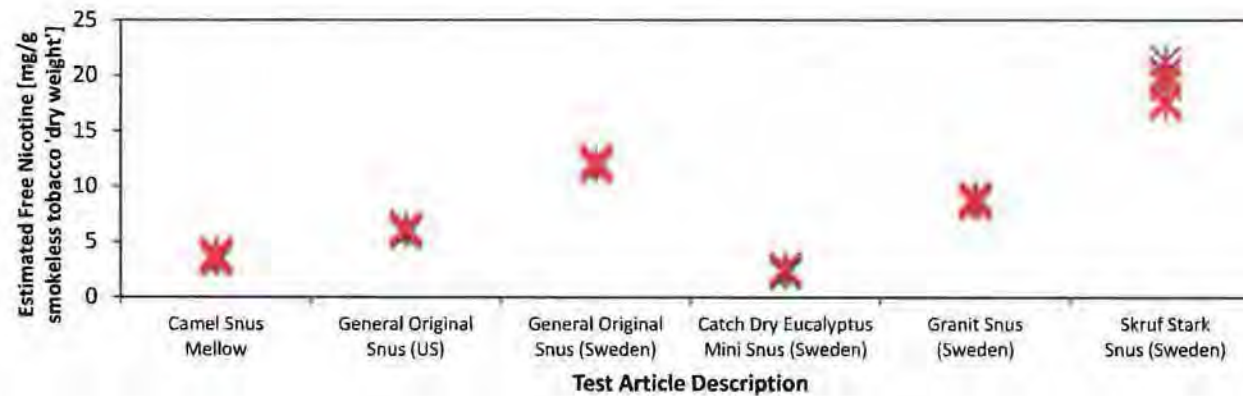
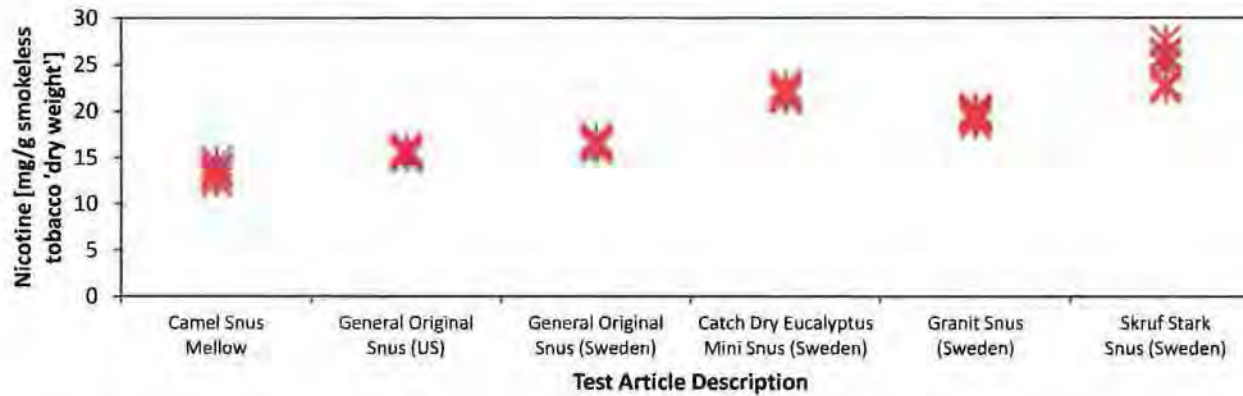


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'**Test Article Description: Camel Snus Mellow; Test Article ID: 1400894**

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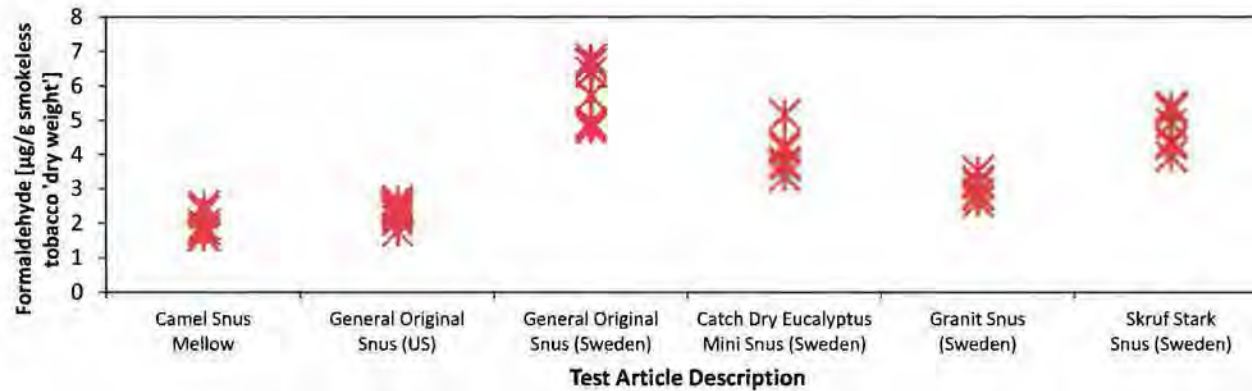
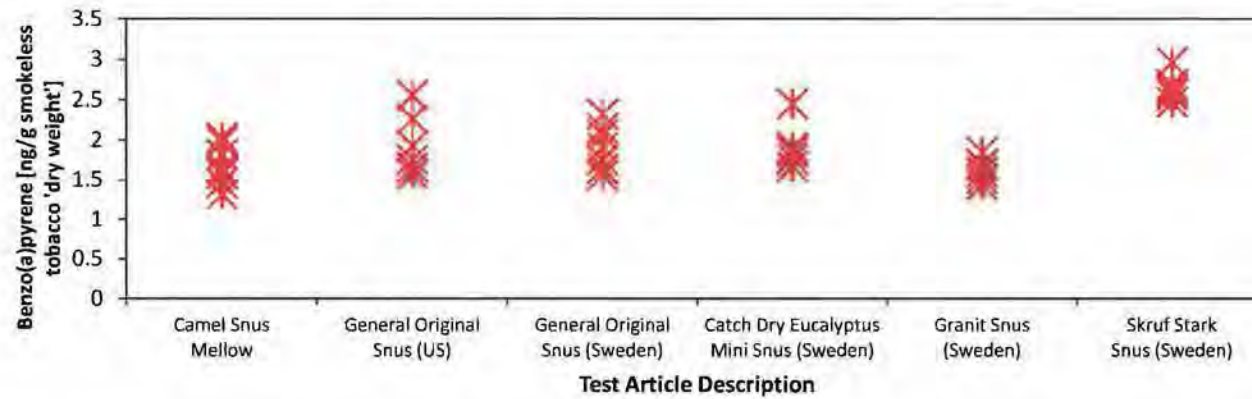
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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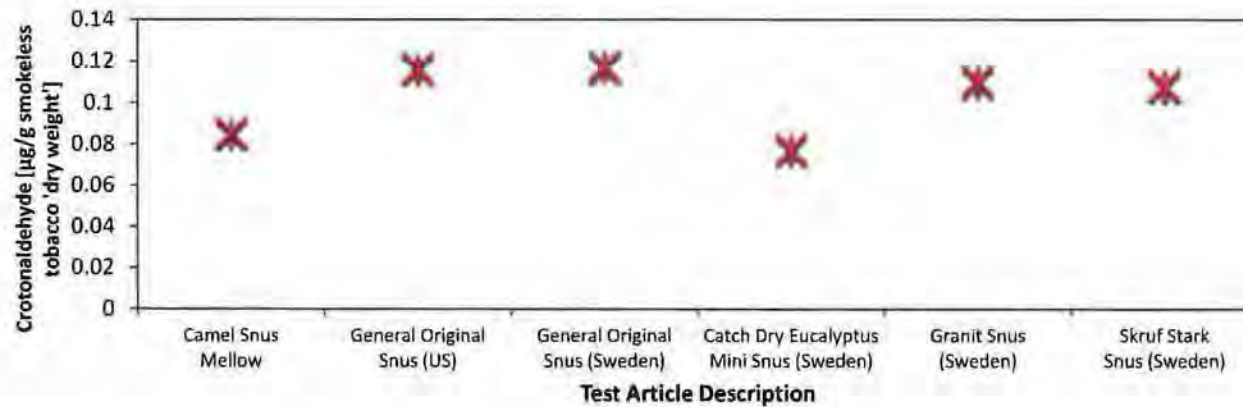
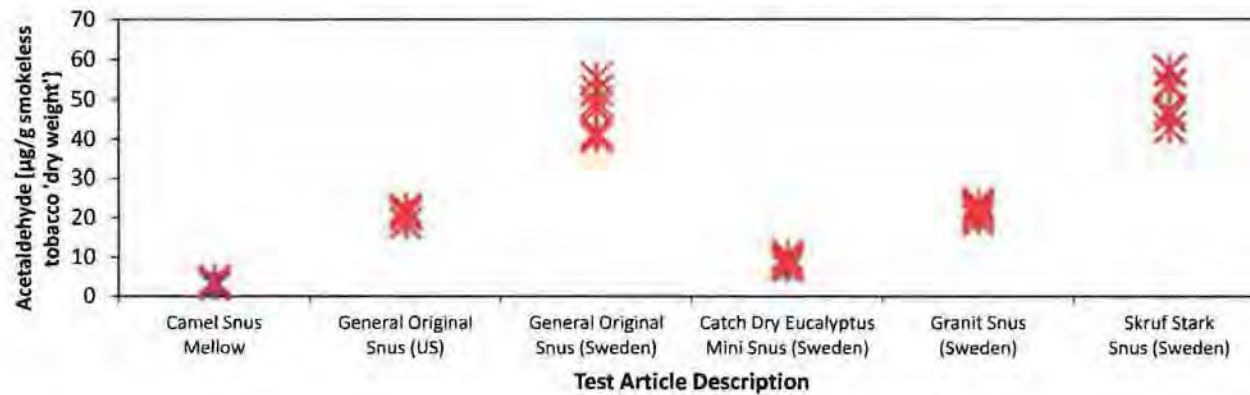
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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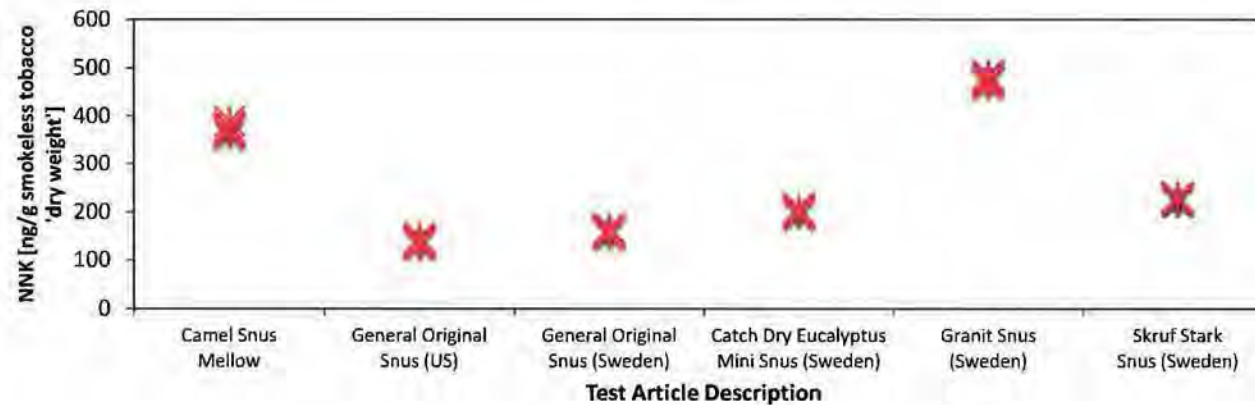
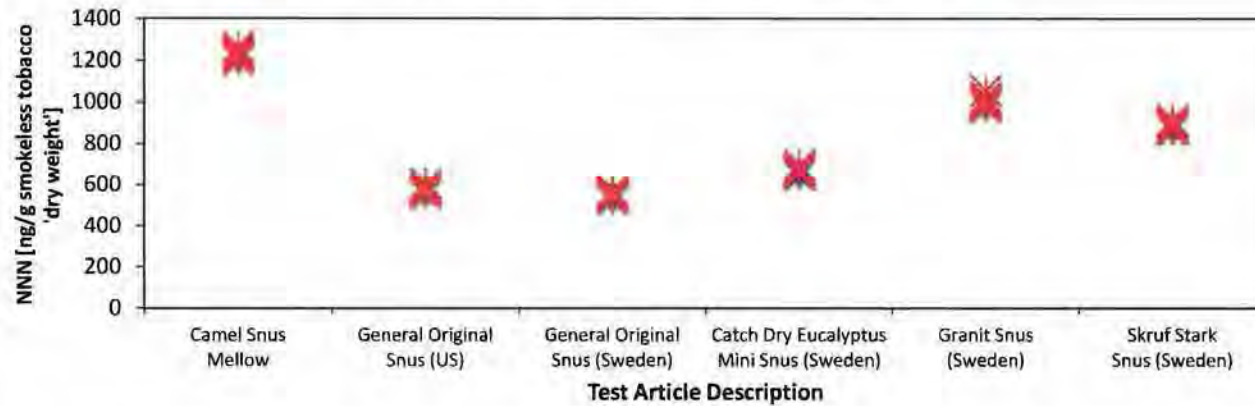
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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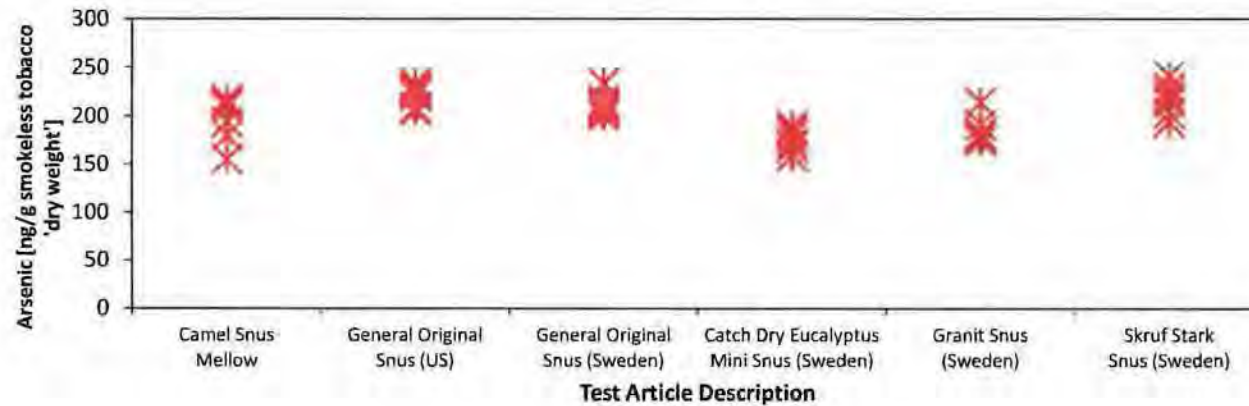
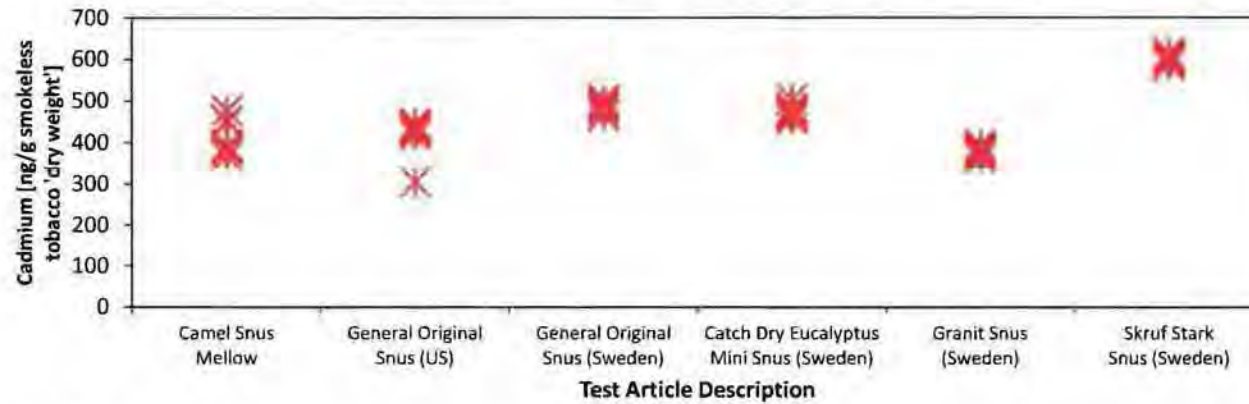


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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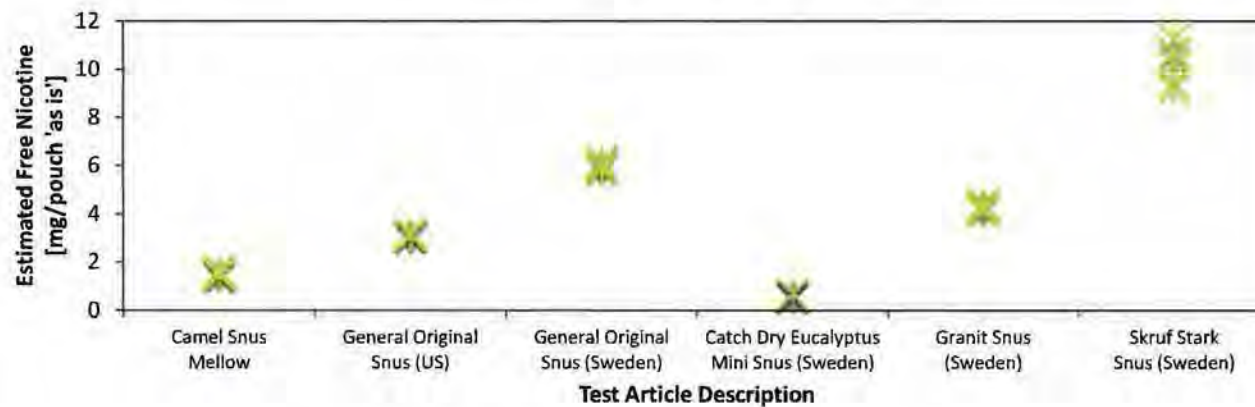
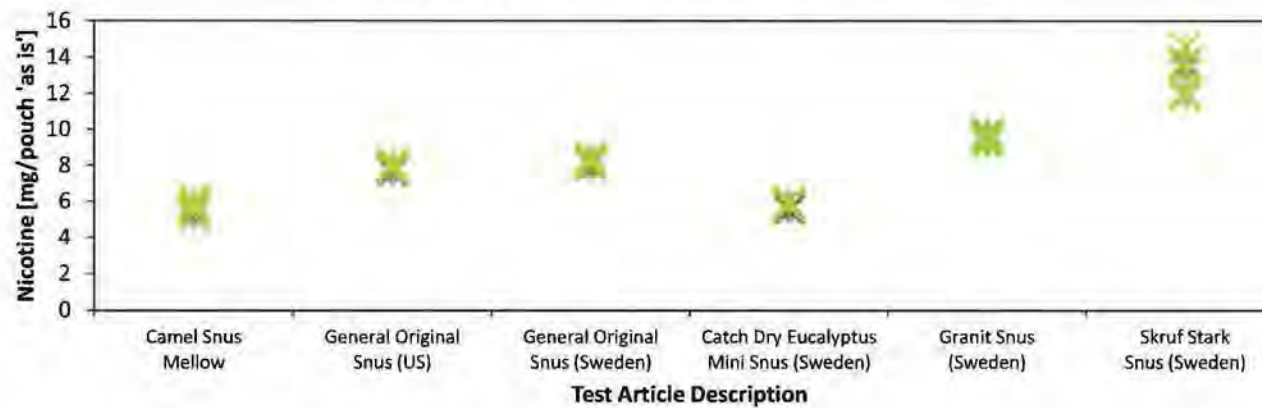


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Mellow; Test Article ID: 1400894**

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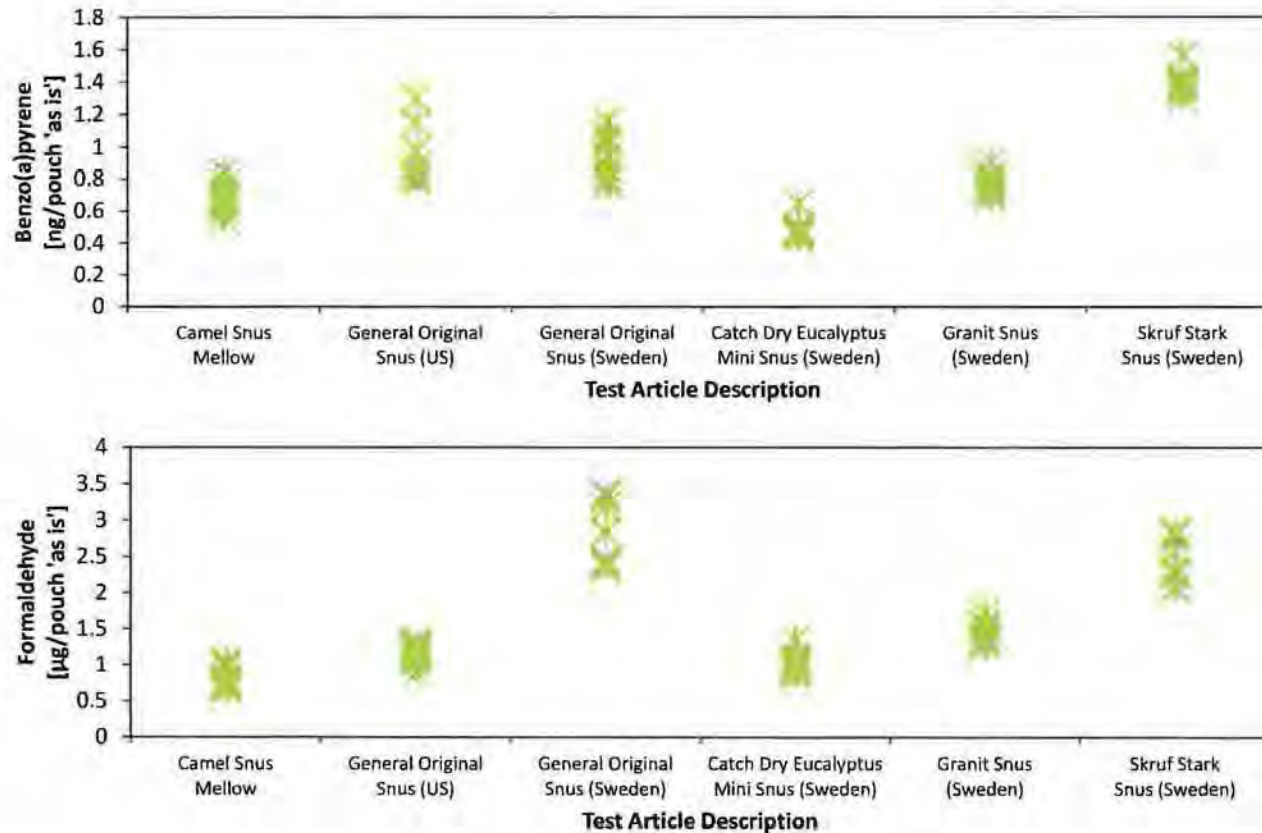
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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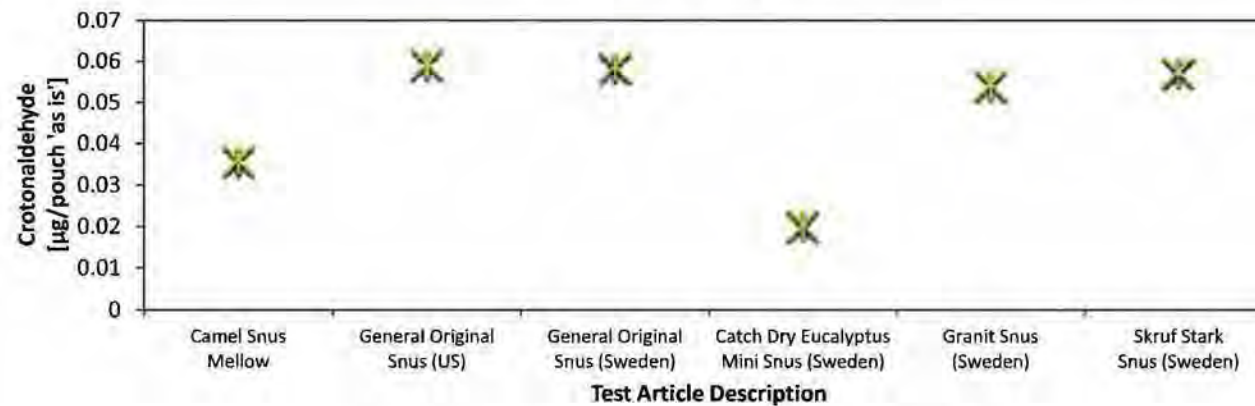
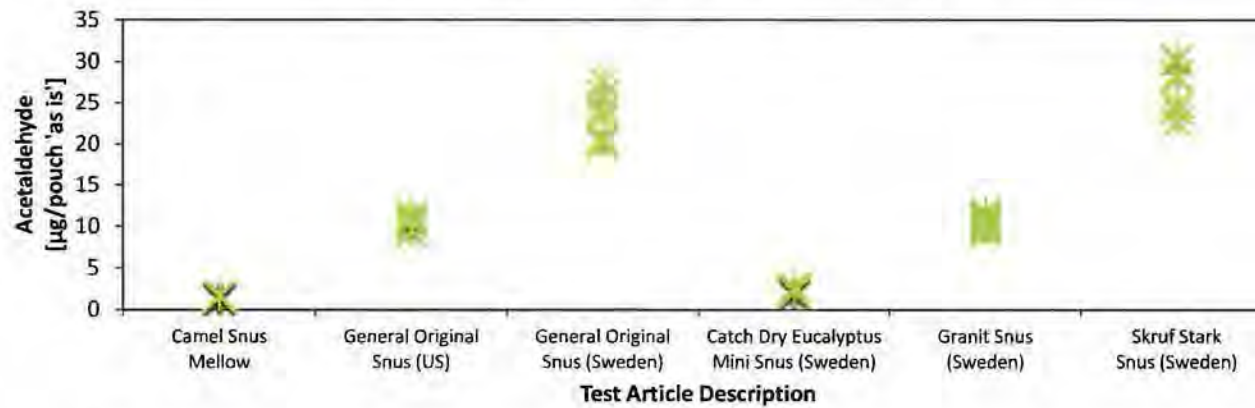
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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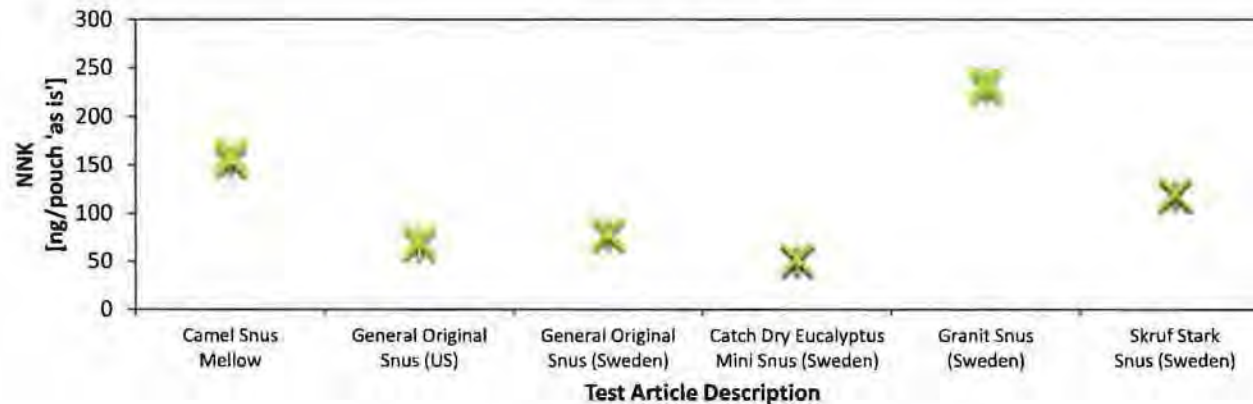
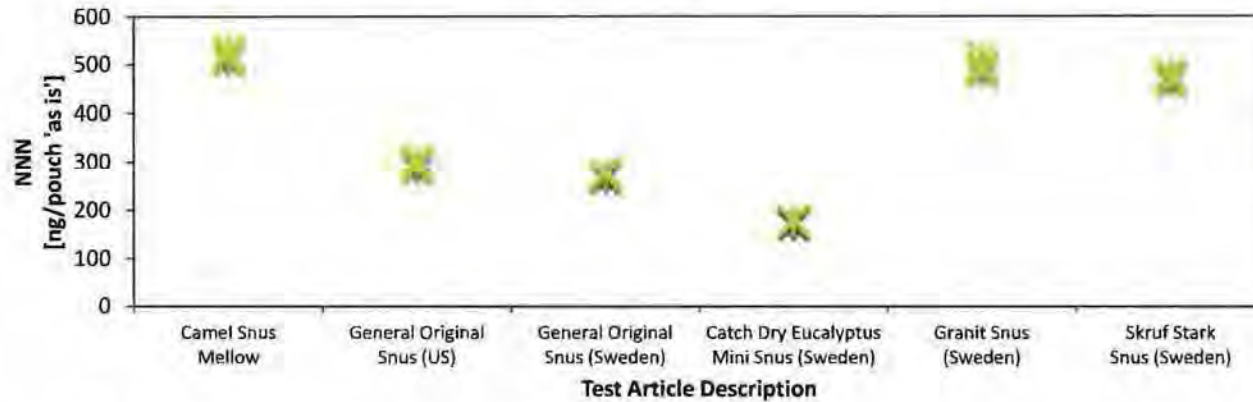


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Mellow; Test Article ID: 1400894**

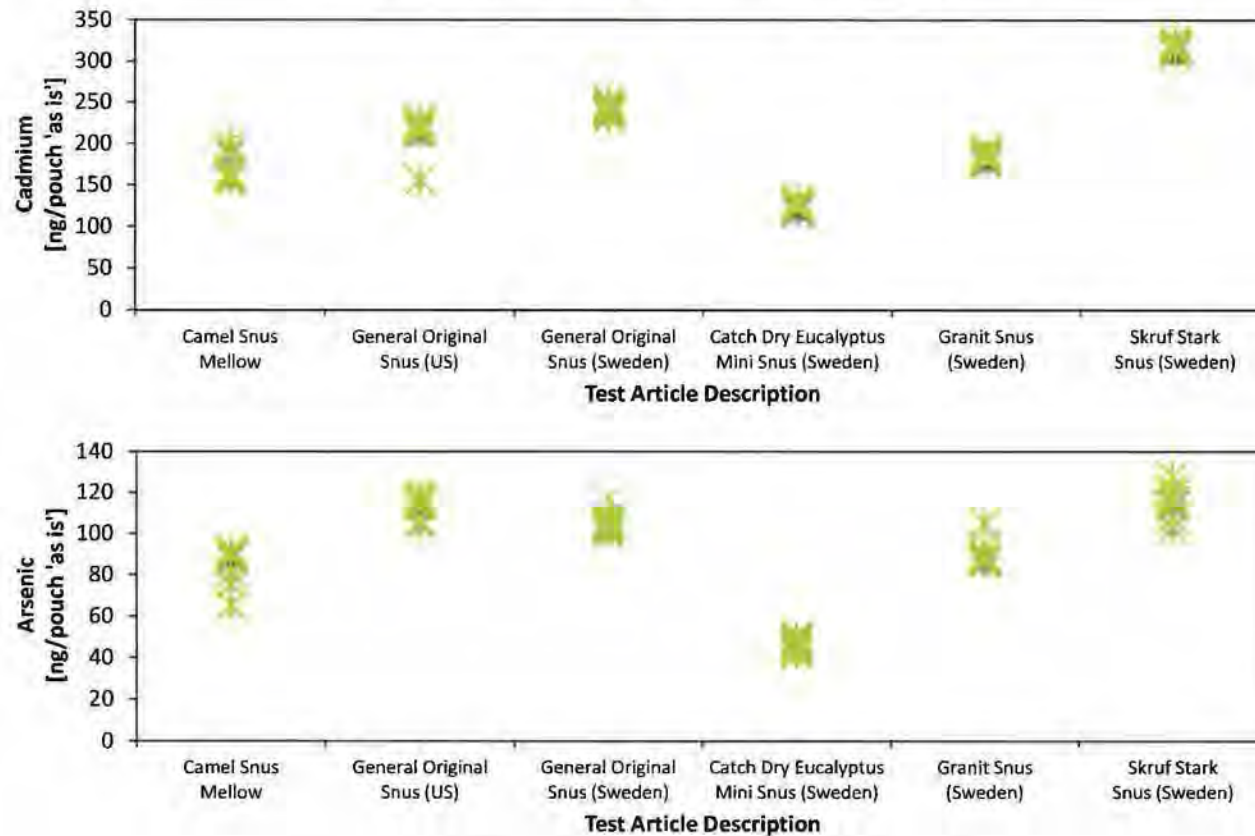
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Mellow; Test Article ID: 1400894**

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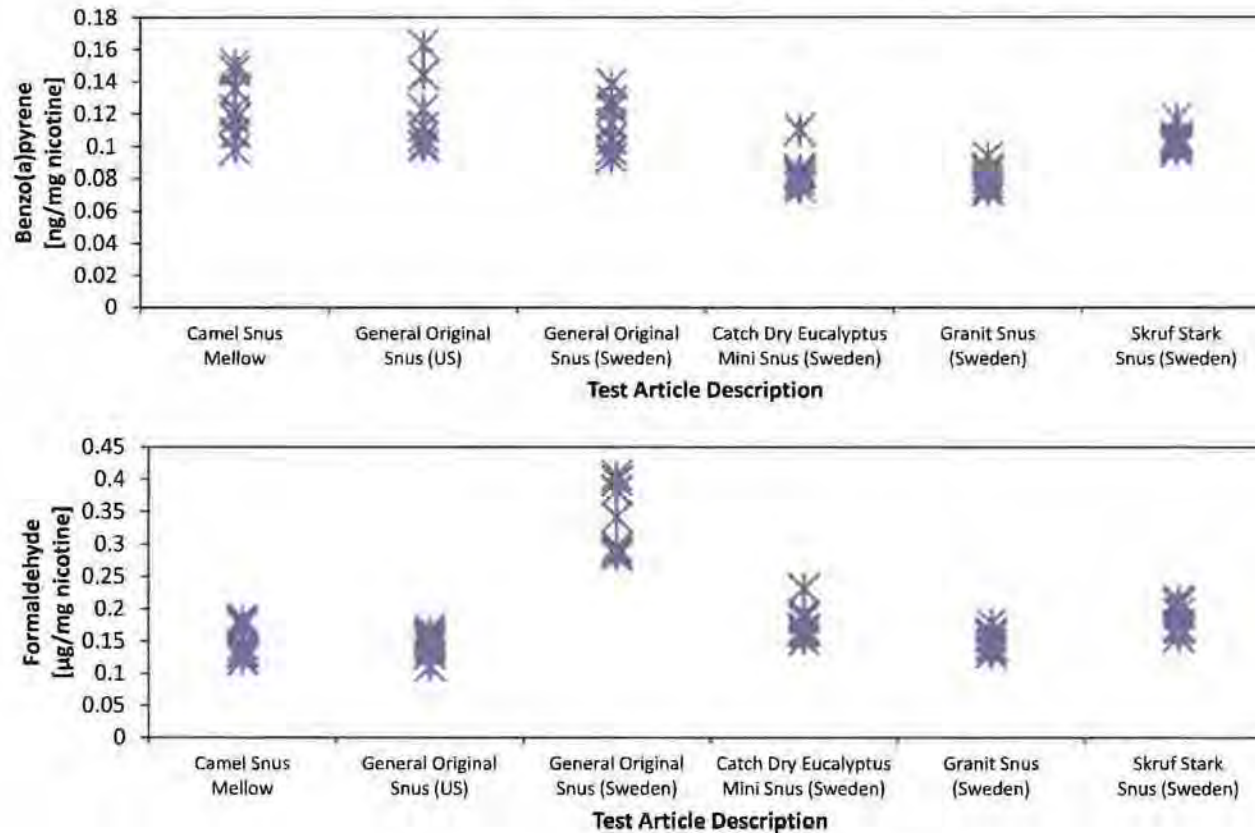
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Smokeless Tobacco Test Article Figures: mass/mg nicotine
Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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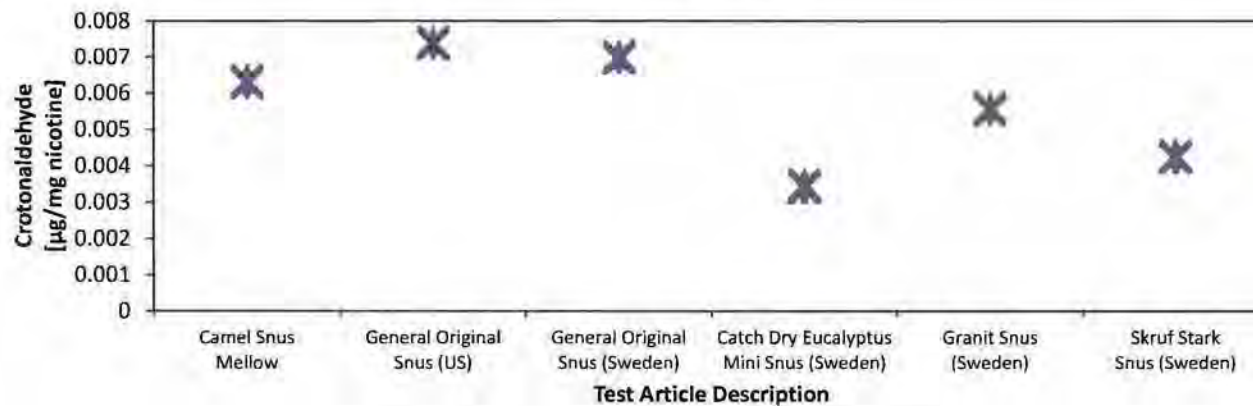
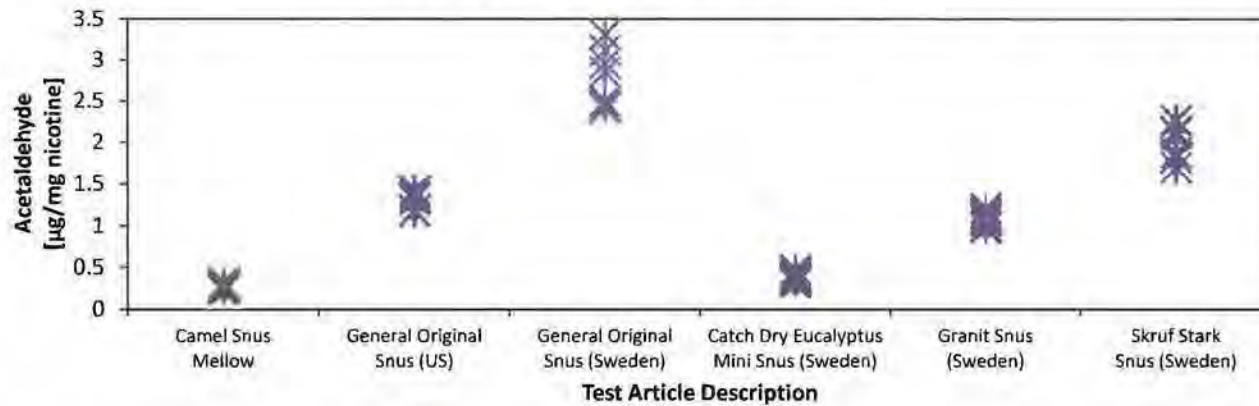
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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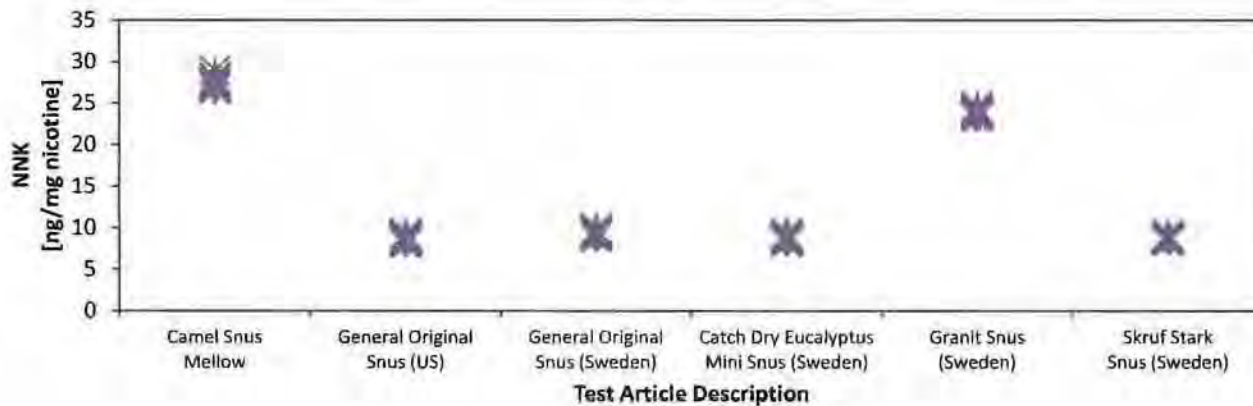
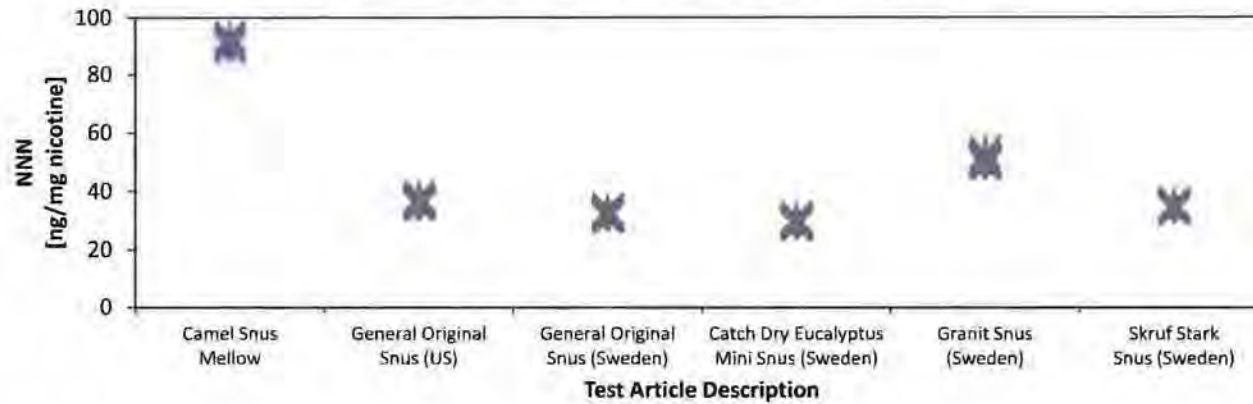
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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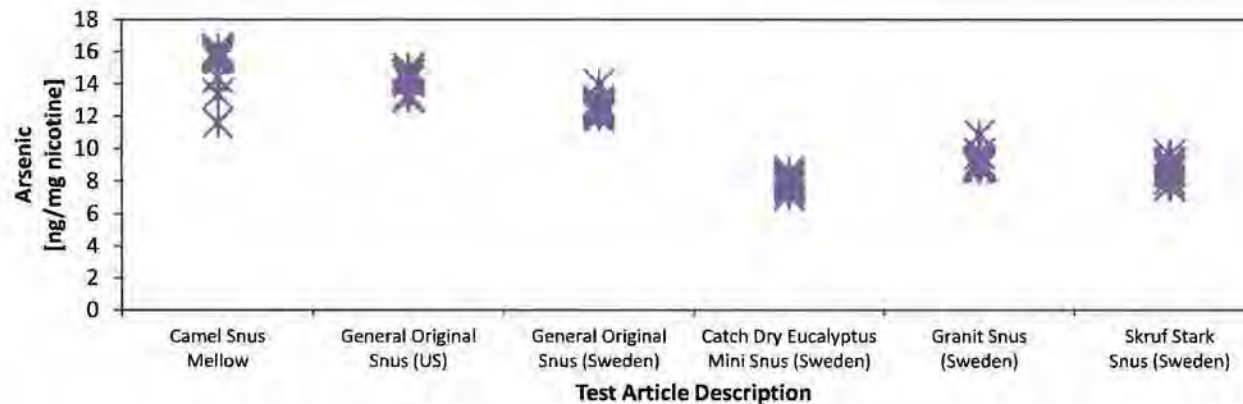
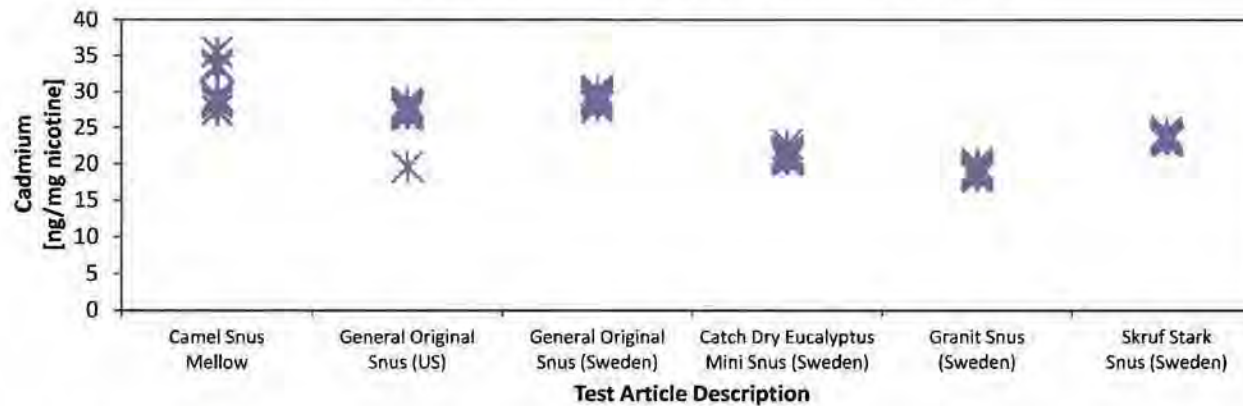
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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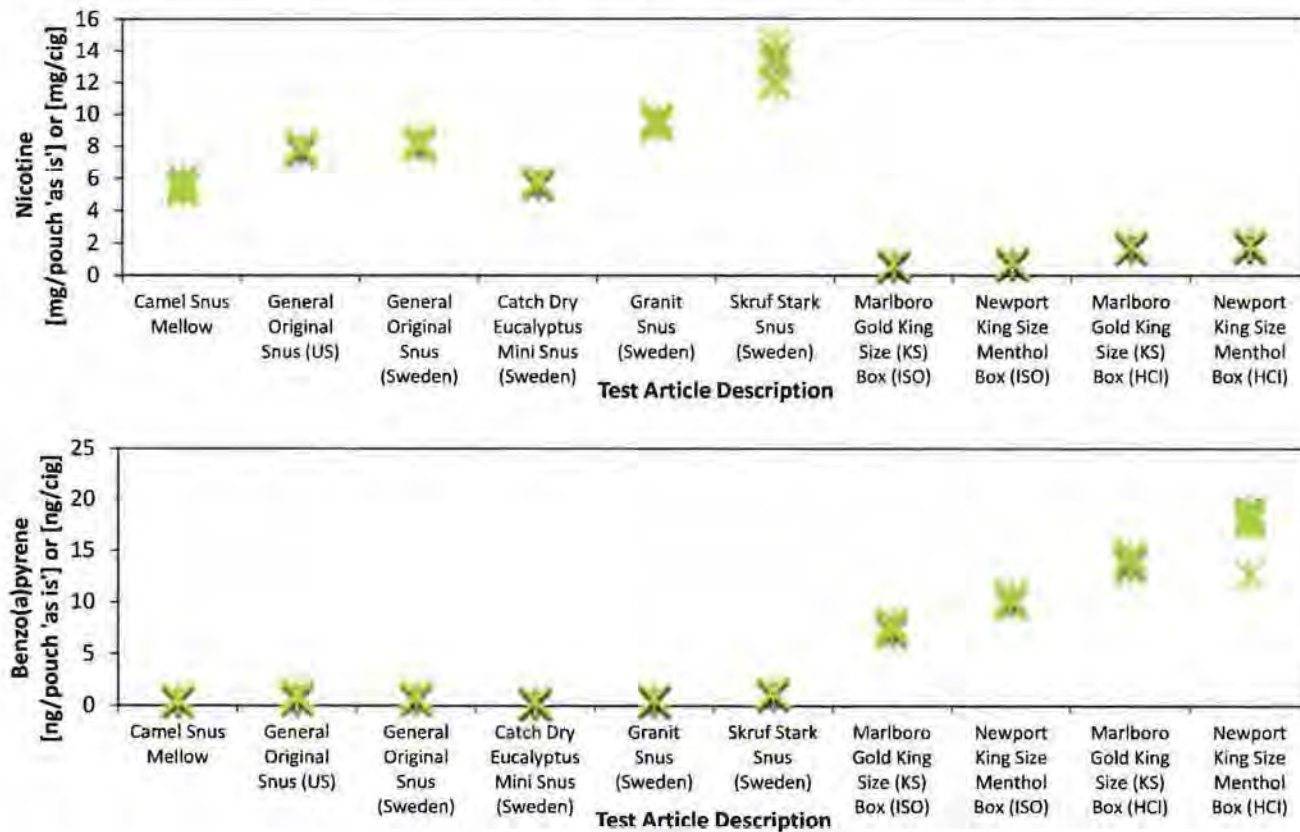
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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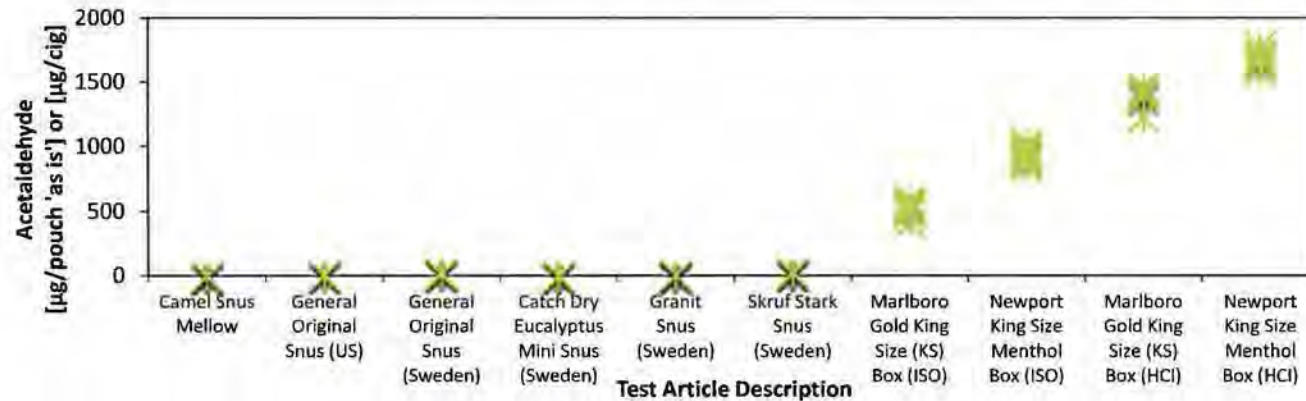
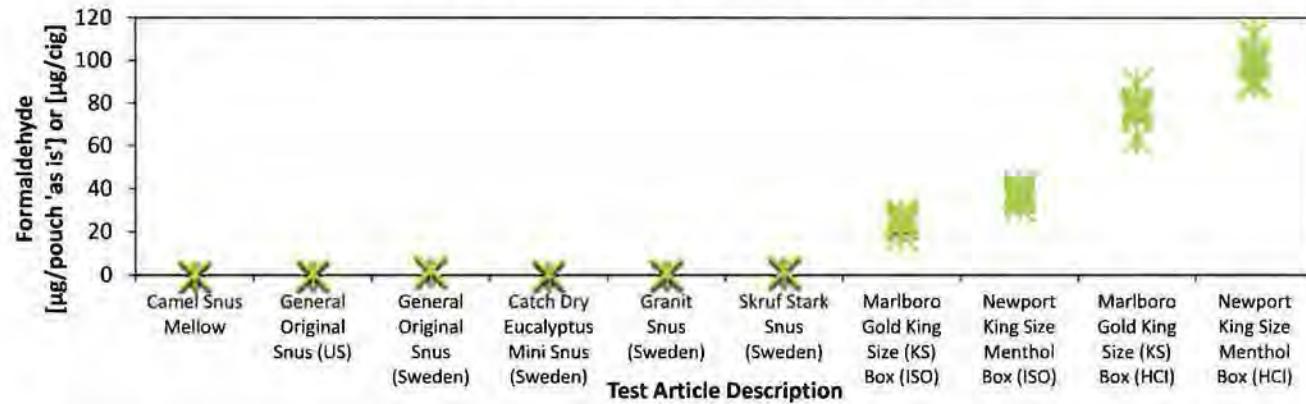
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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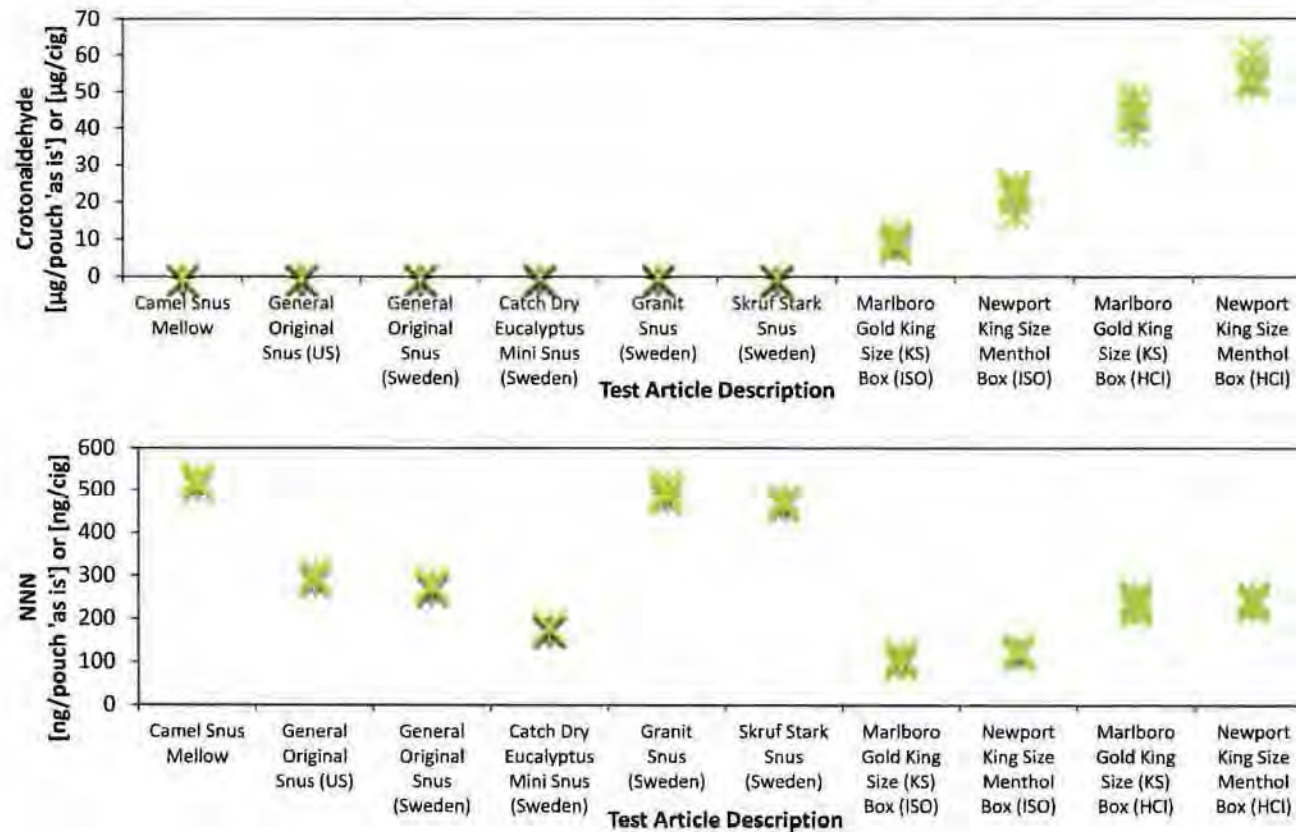
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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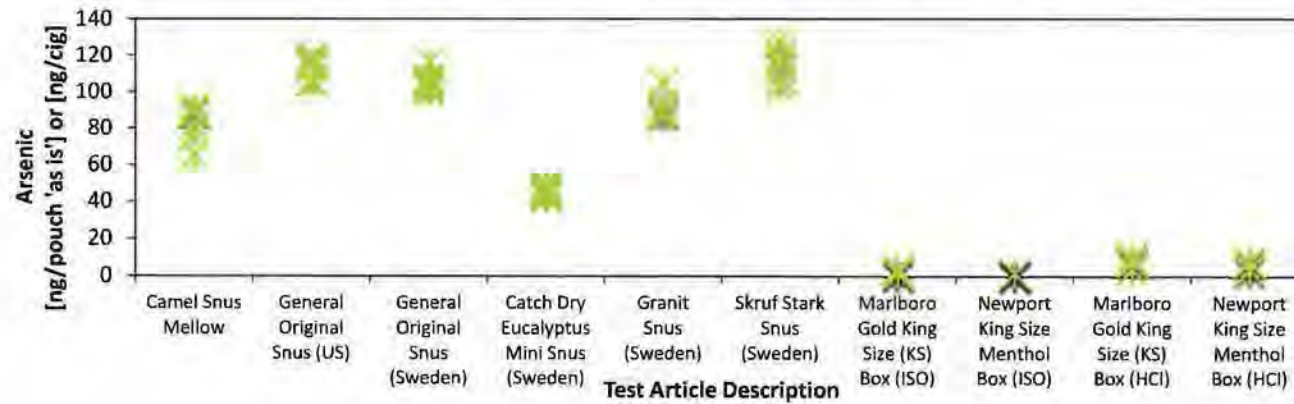
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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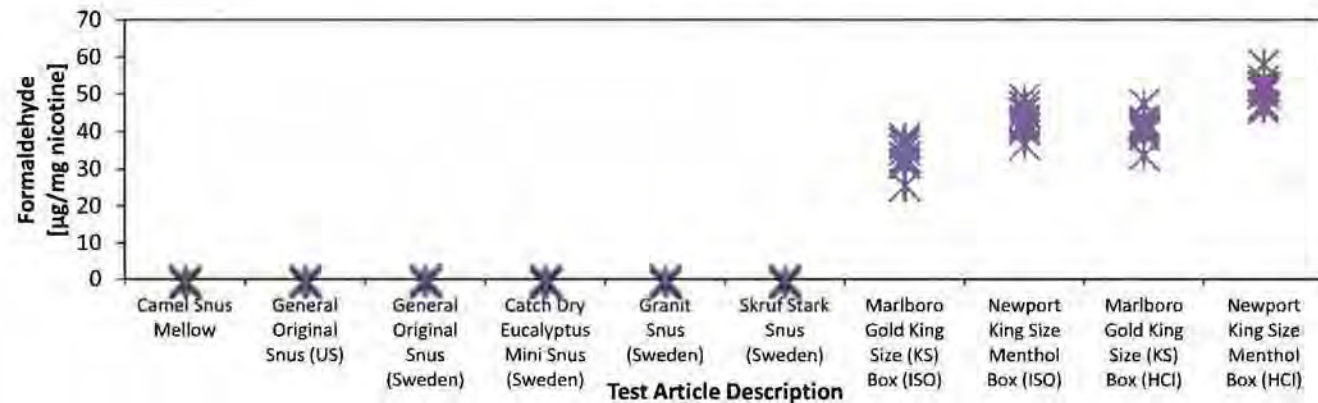
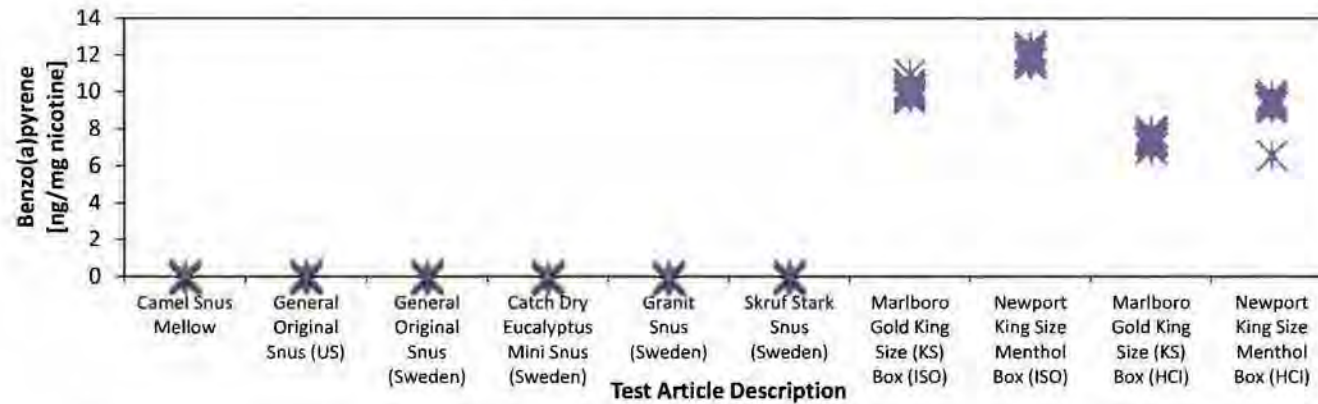


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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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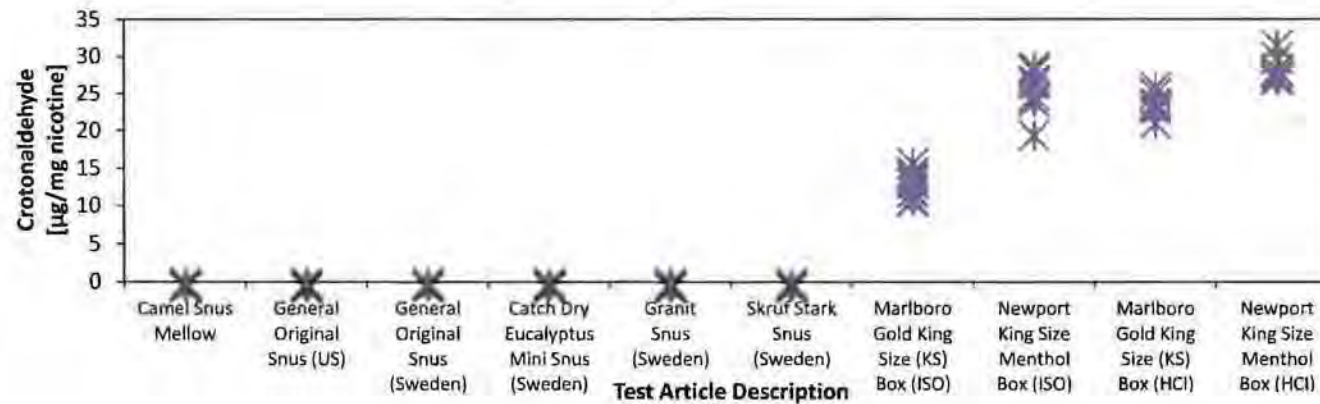
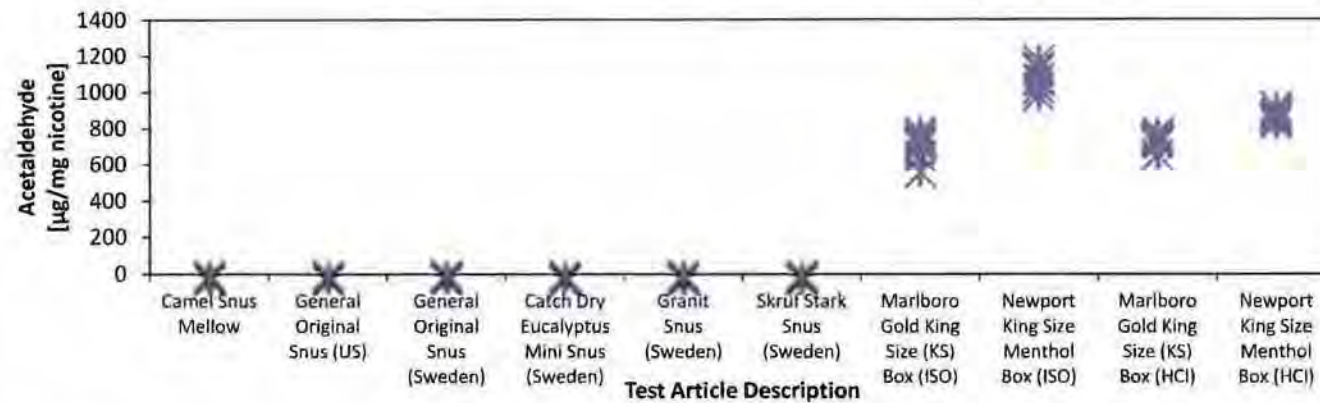
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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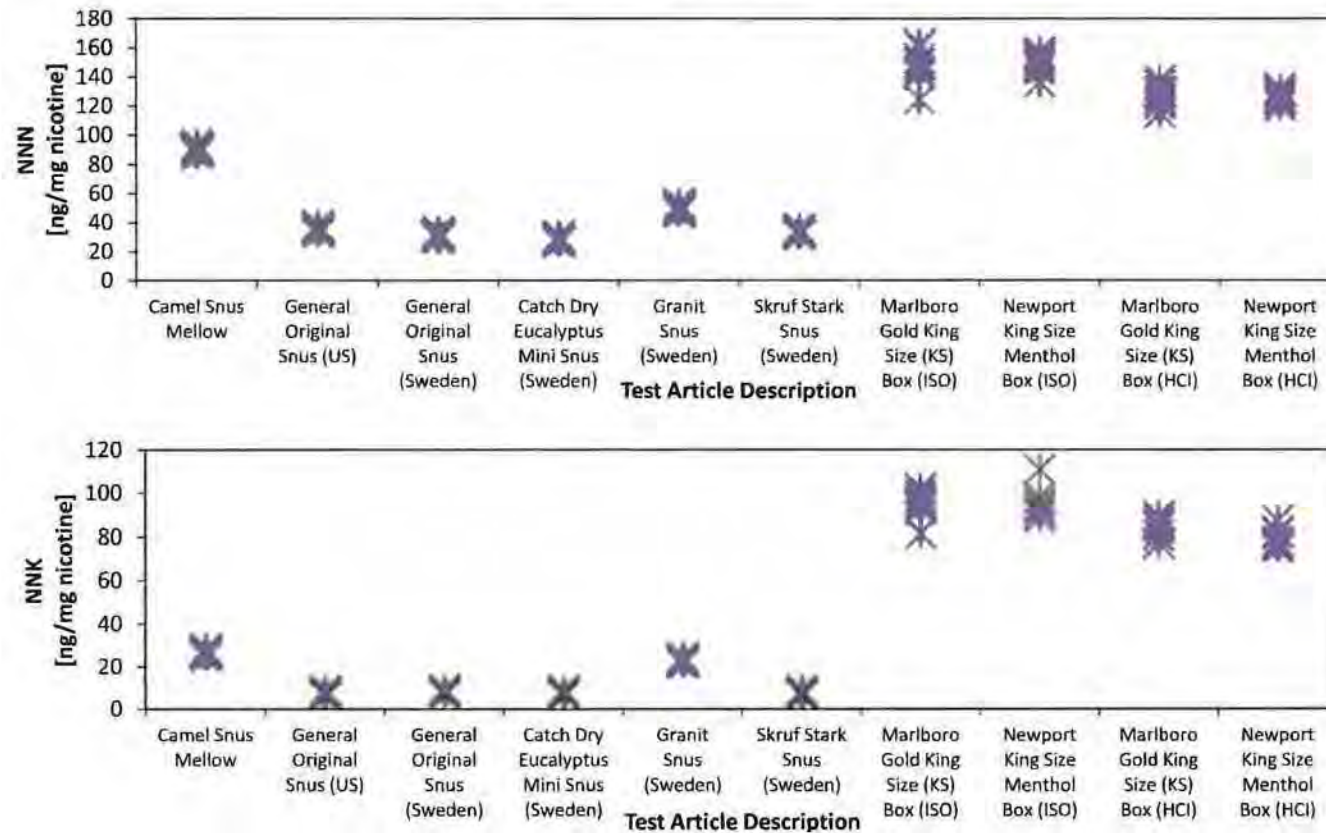
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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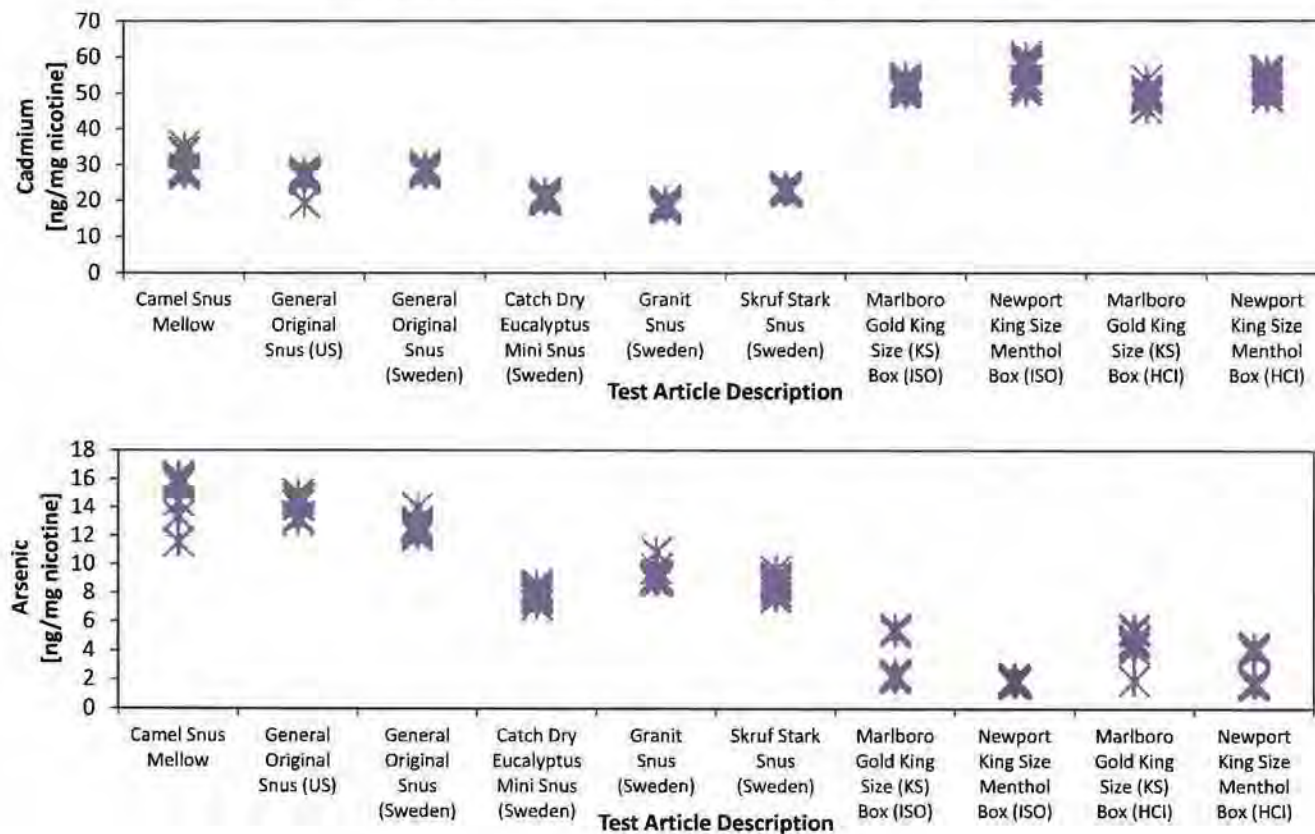
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mellow; Test Article ID: 1400894



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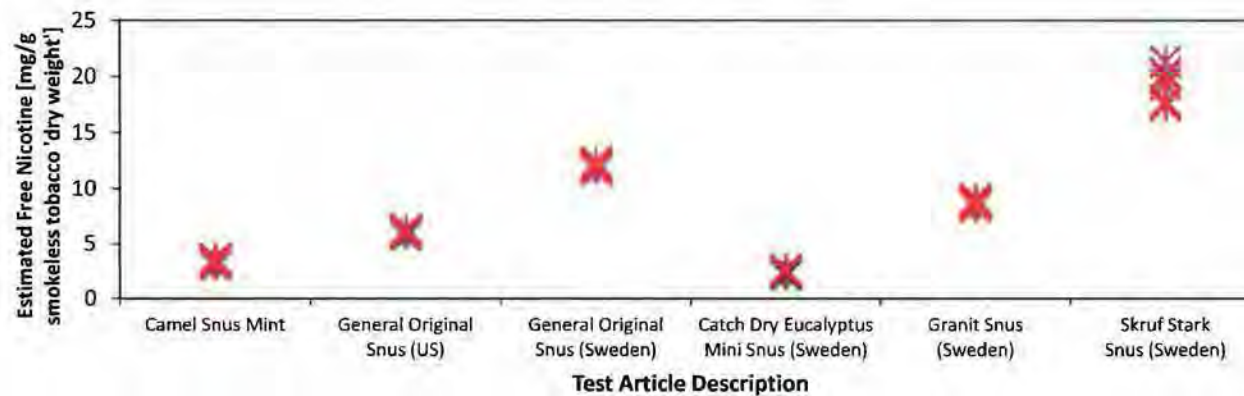
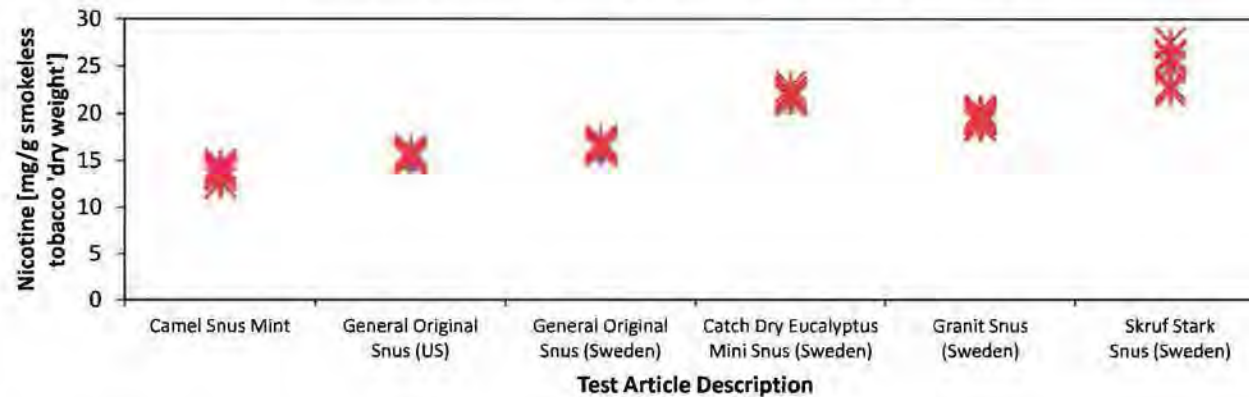
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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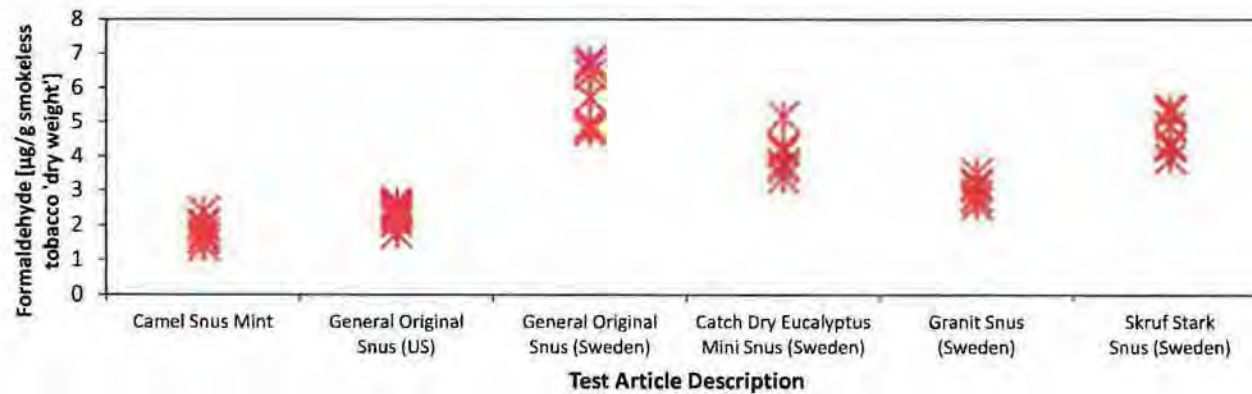
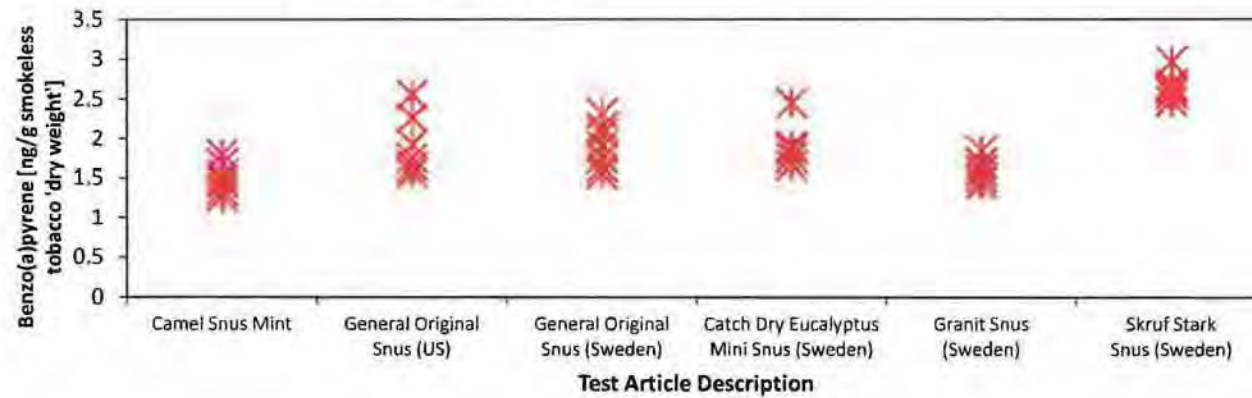
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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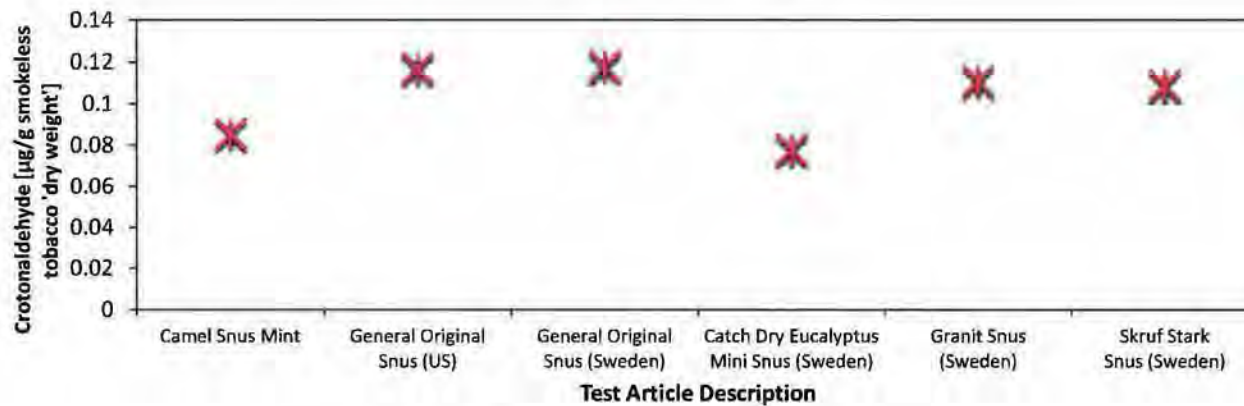
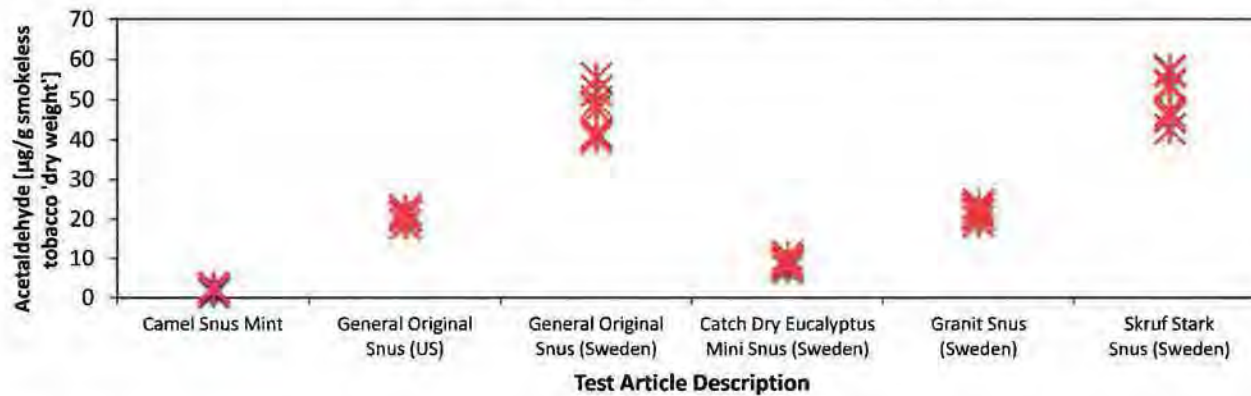


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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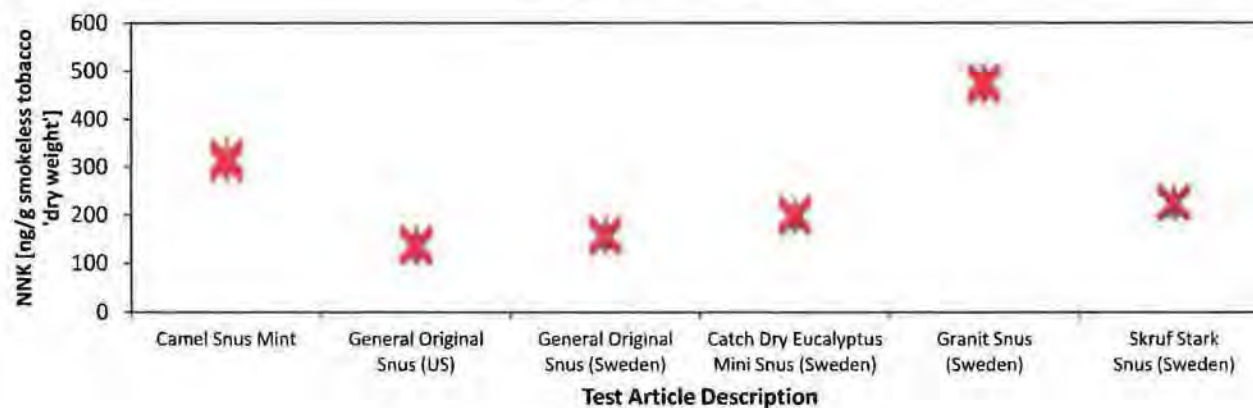
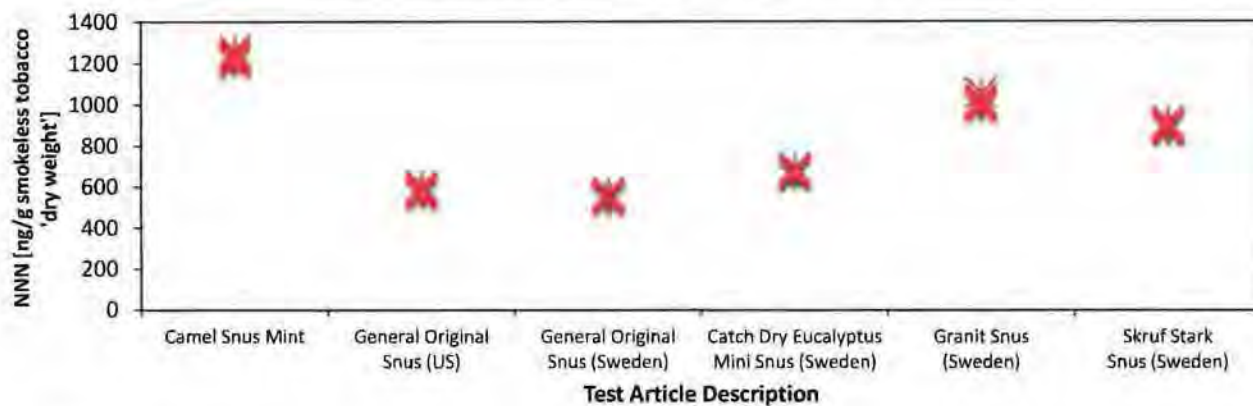
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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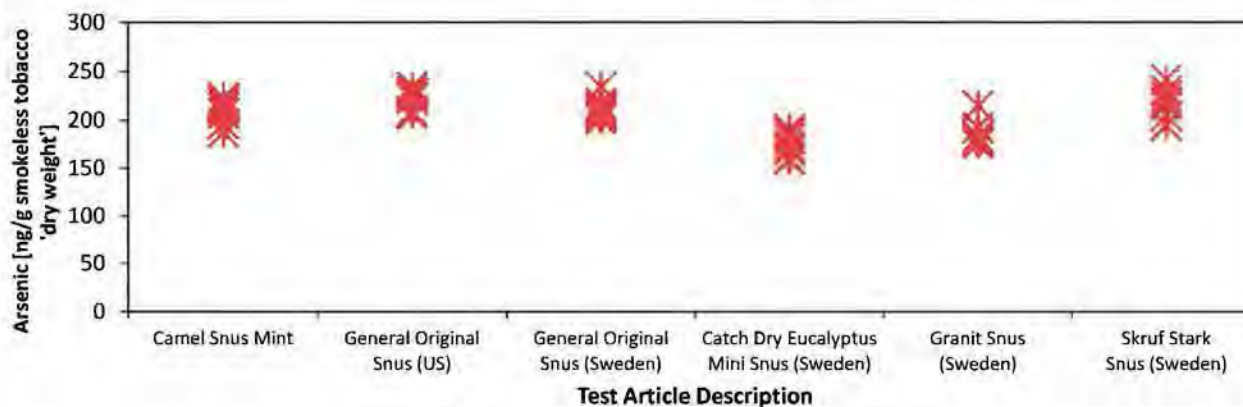
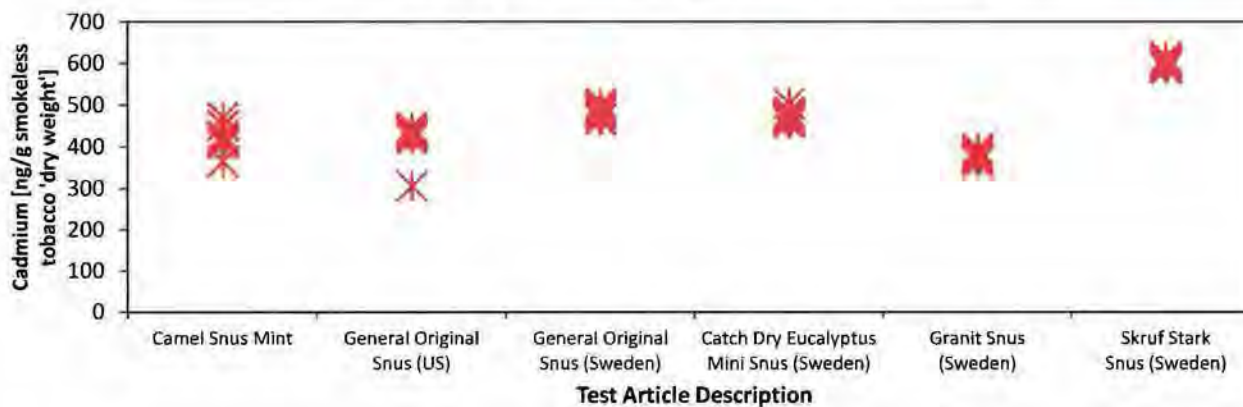


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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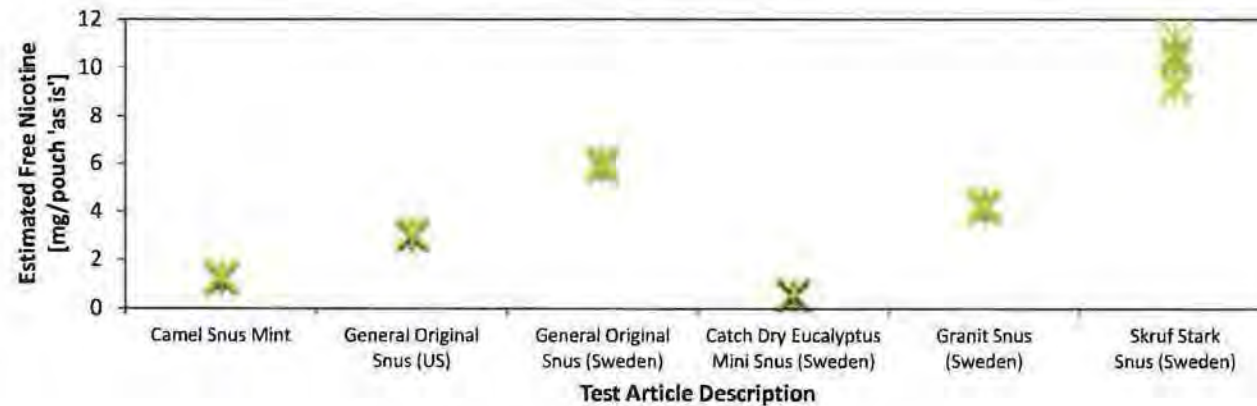
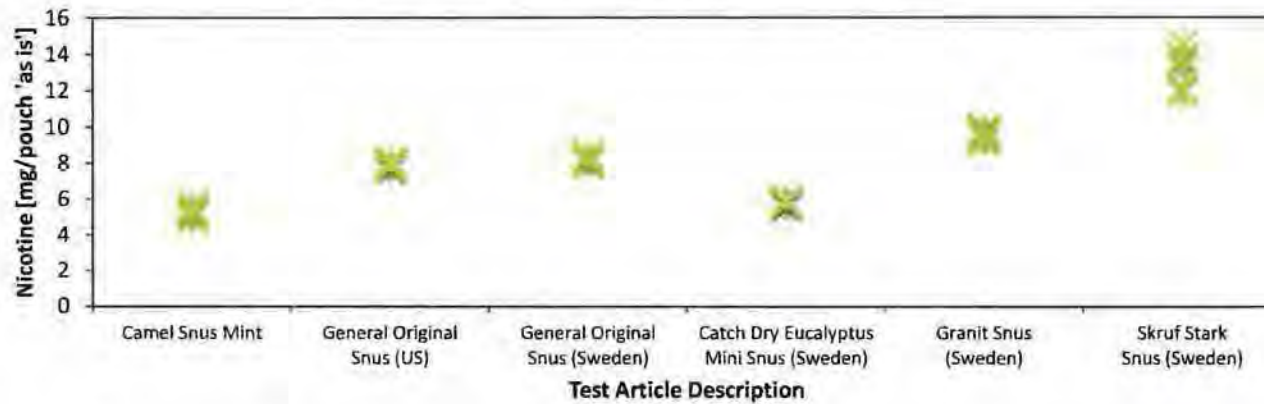


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Mint; Test Article ID: 1400895**

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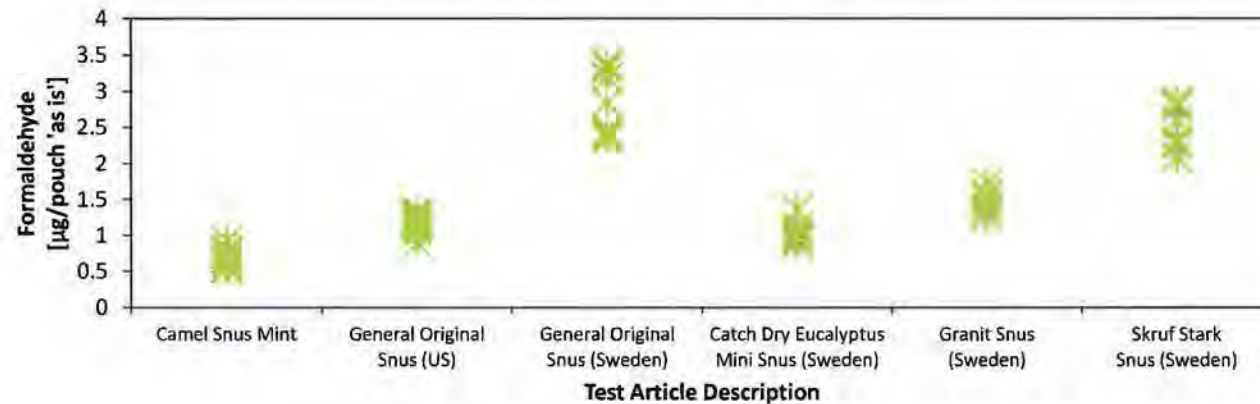
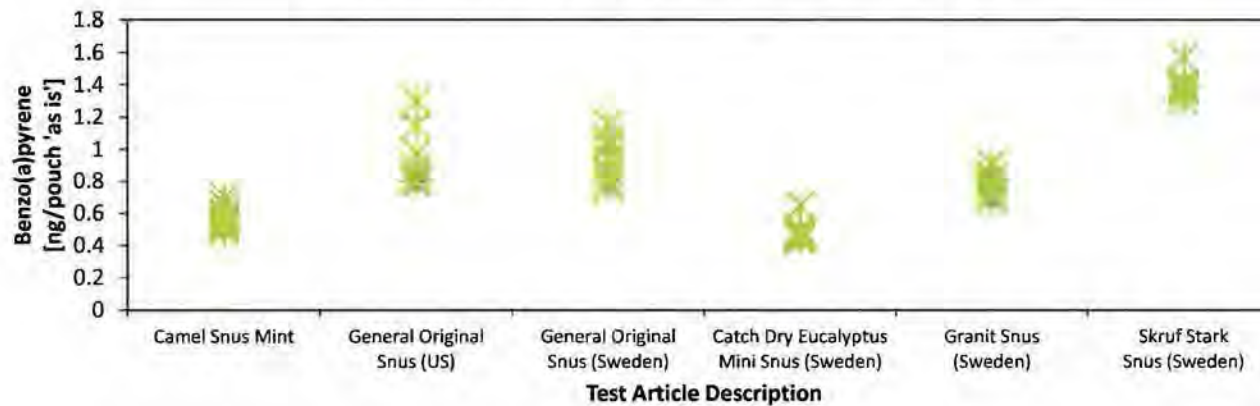
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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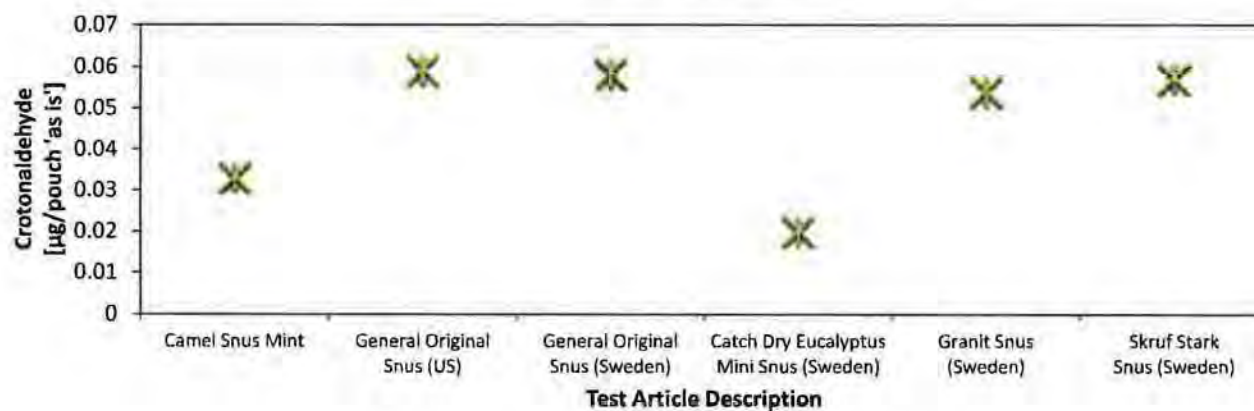
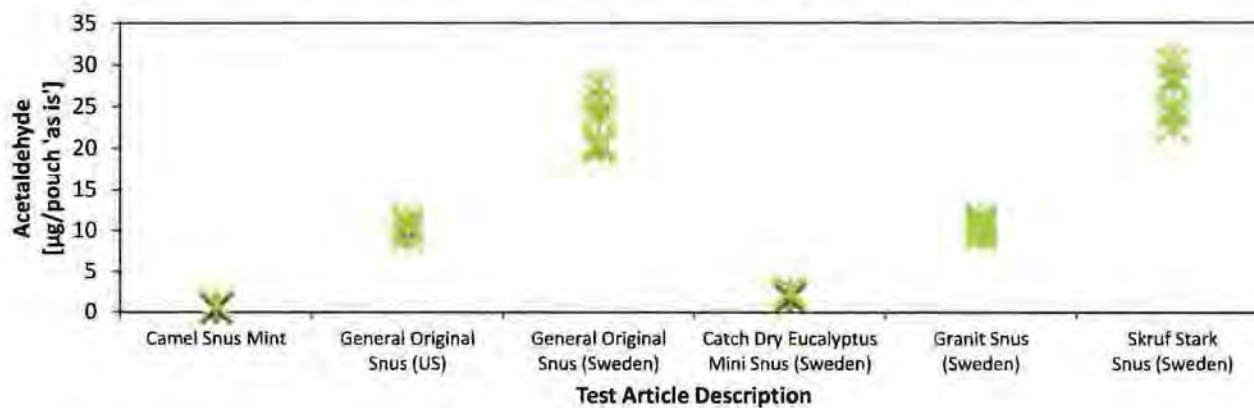


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Mint; Test Article ID: 1400895**

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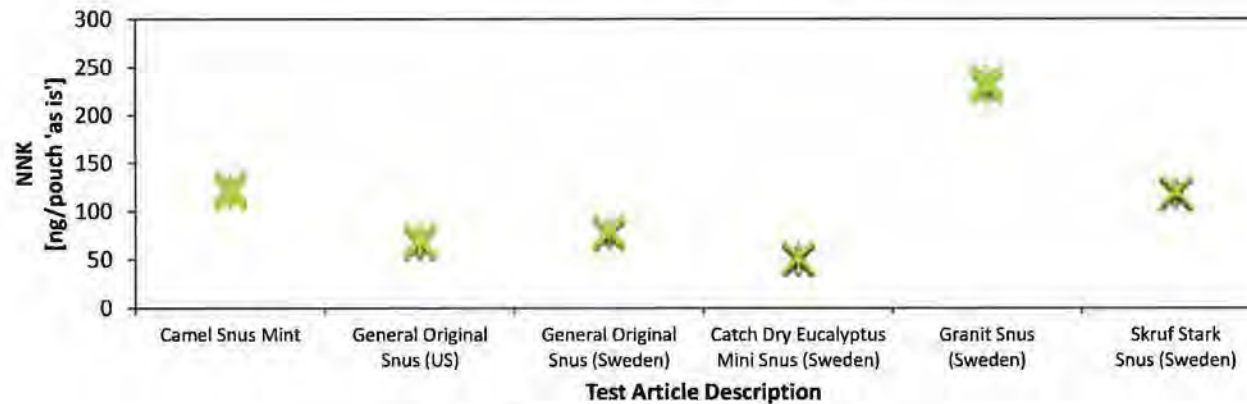
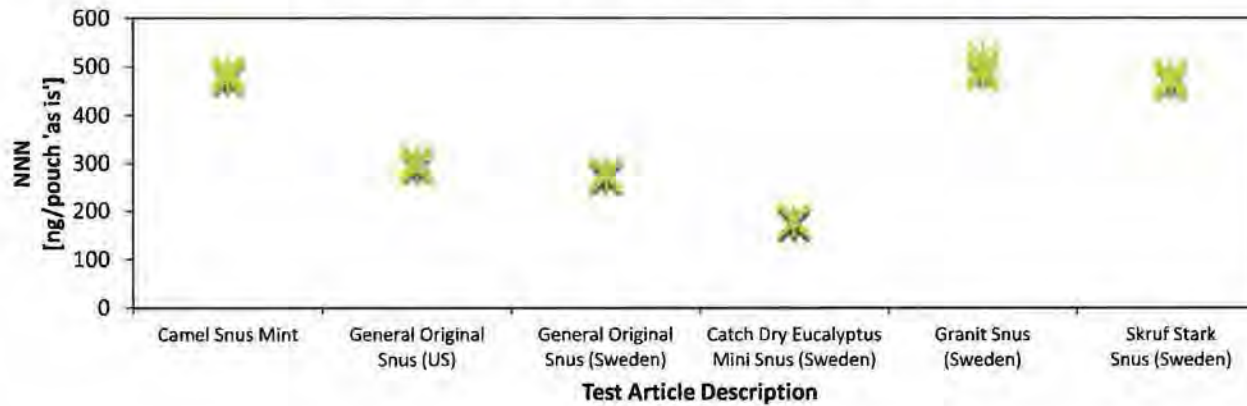


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Mint; Test Article ID: 1400895**

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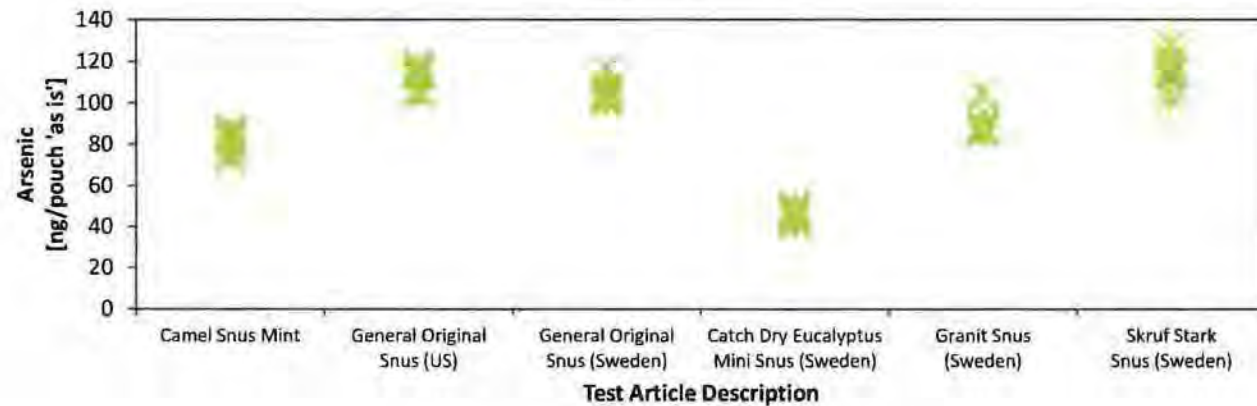
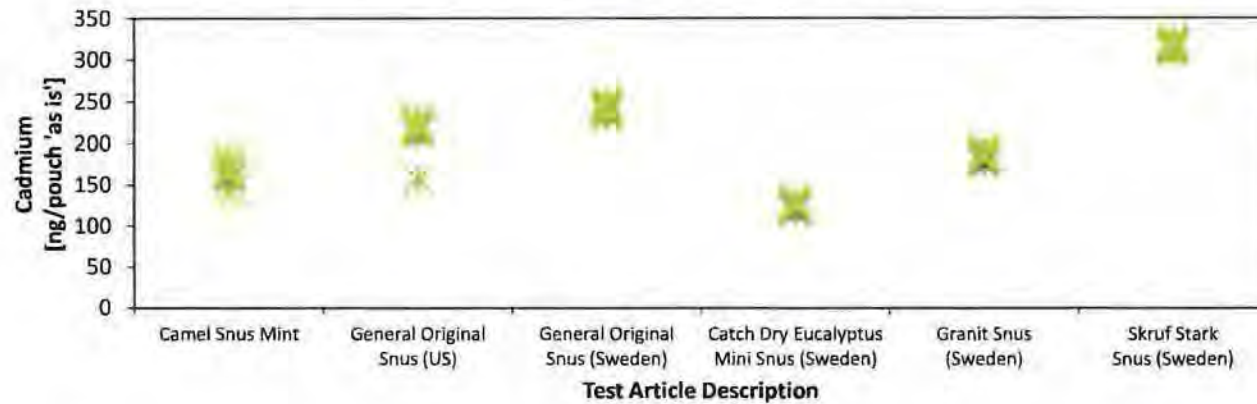


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Mint; Test Article ID: 1400895**

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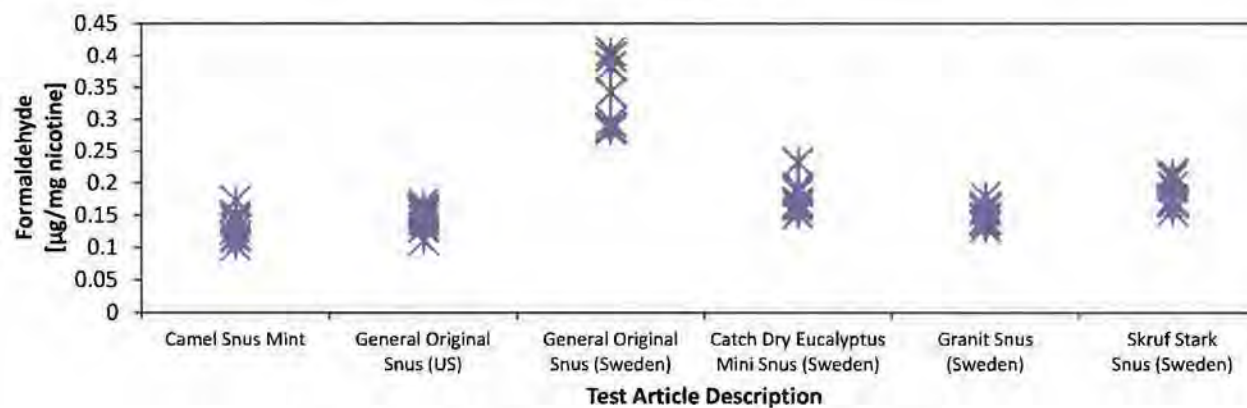
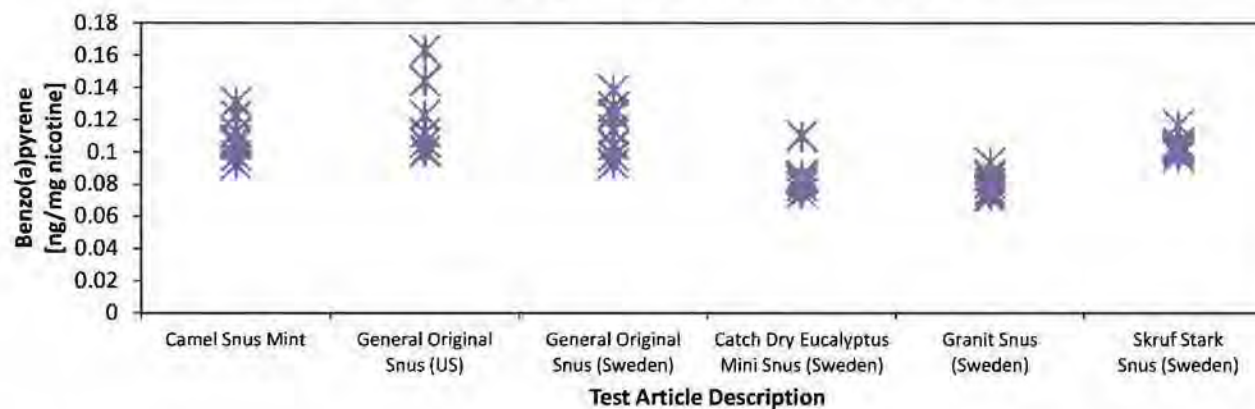
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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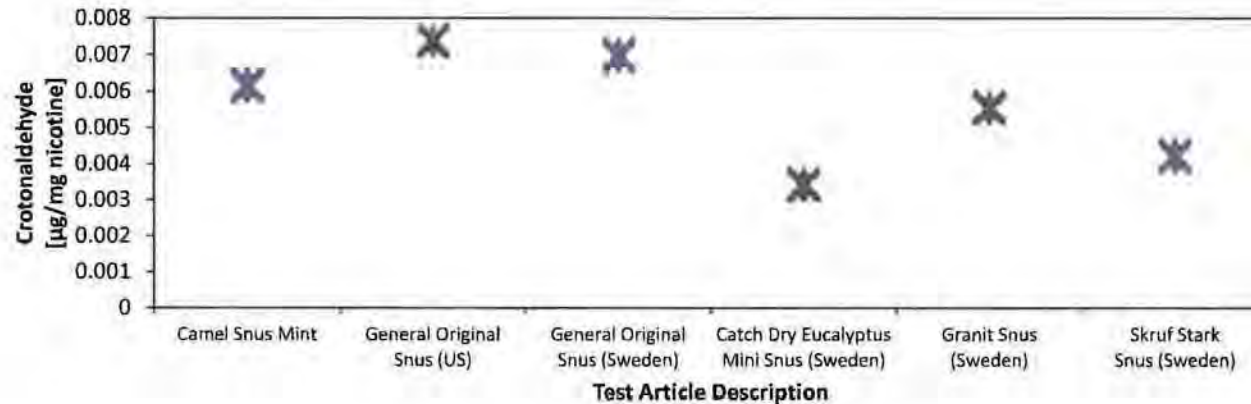
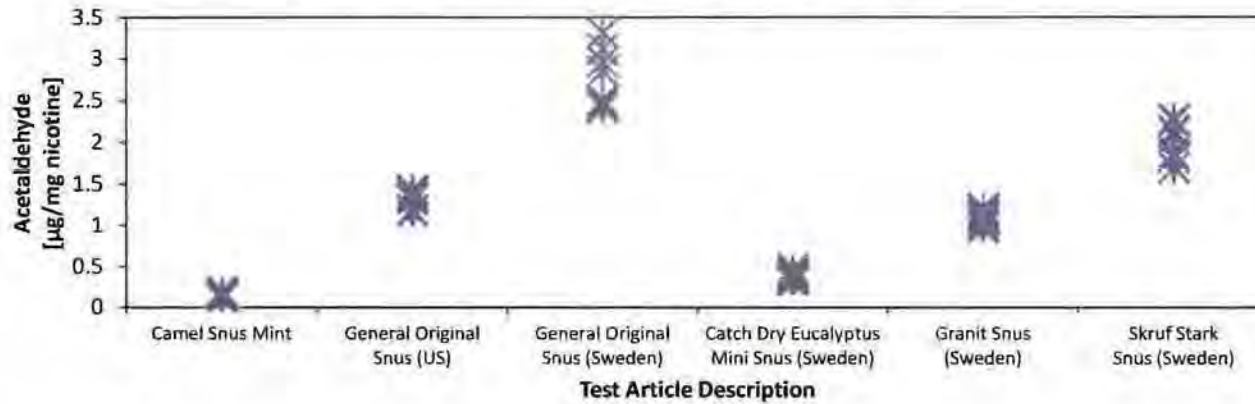


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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Mint; Test Article ID: 1400895**

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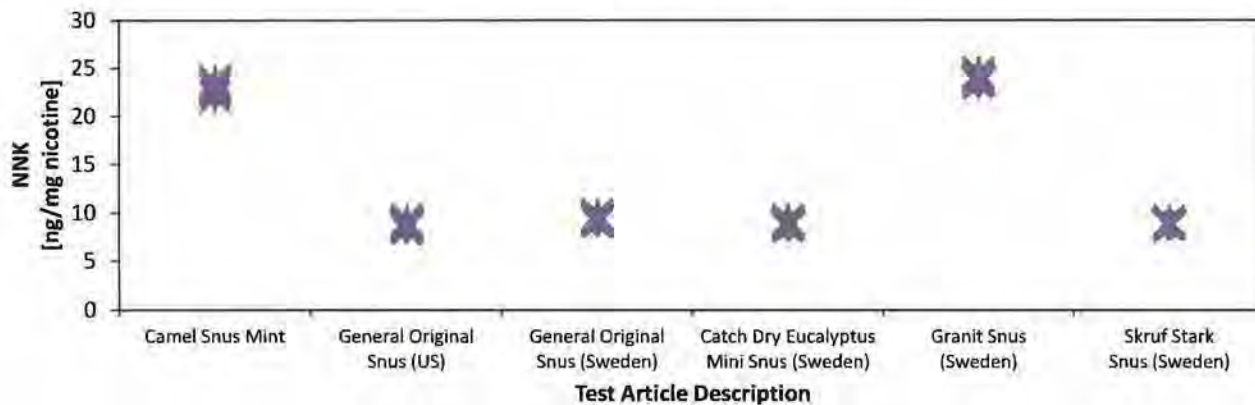
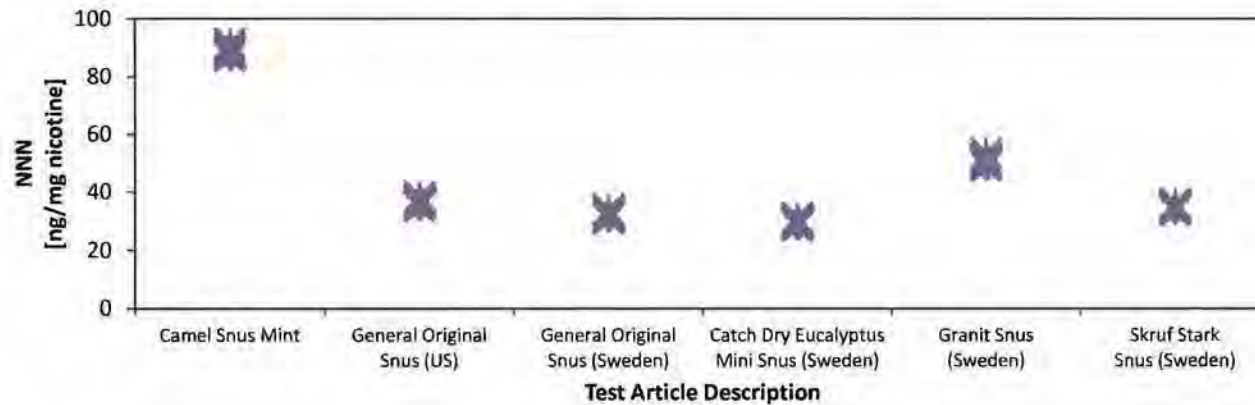
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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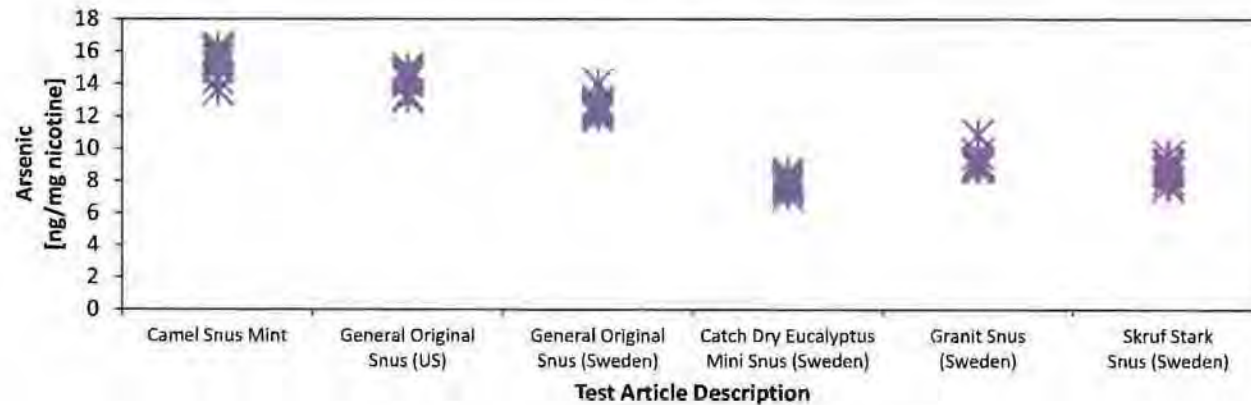
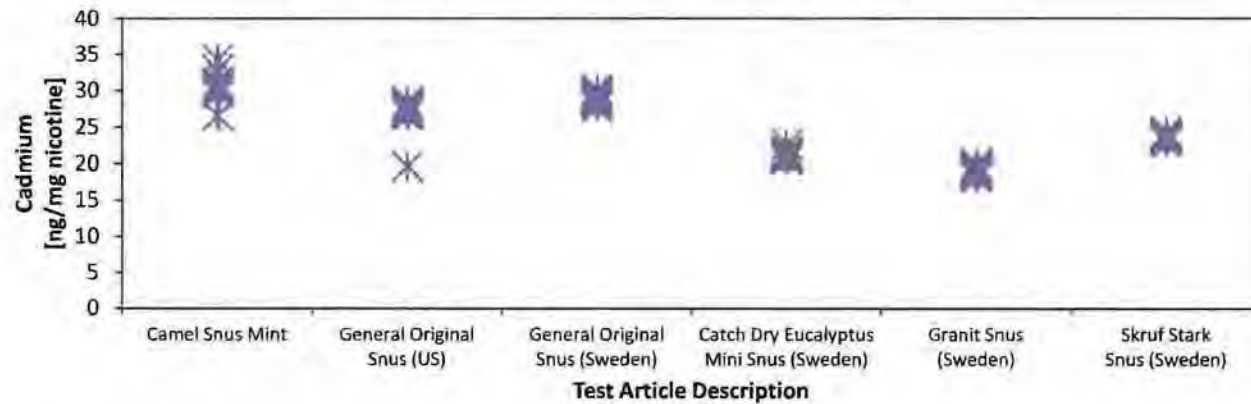


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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Mint; Test Article ID: 1400895**

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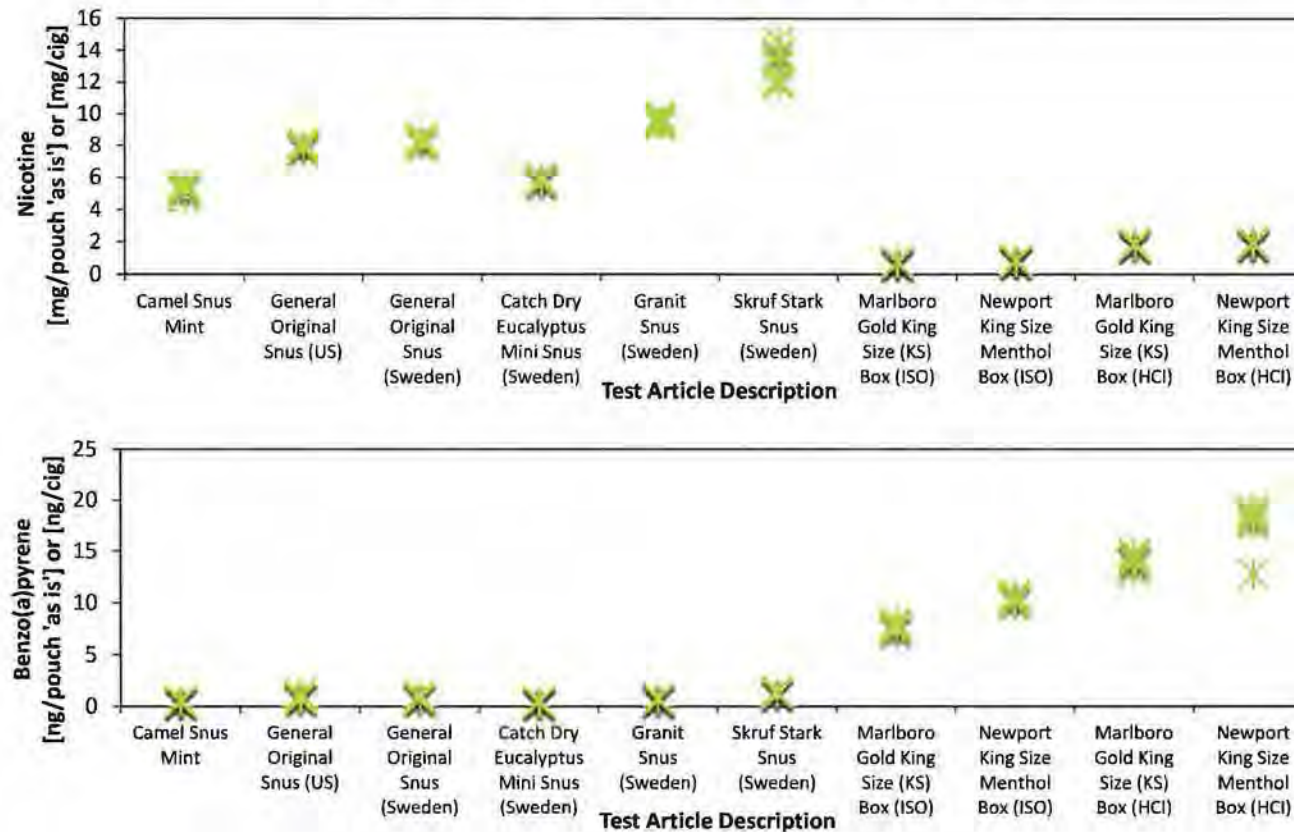
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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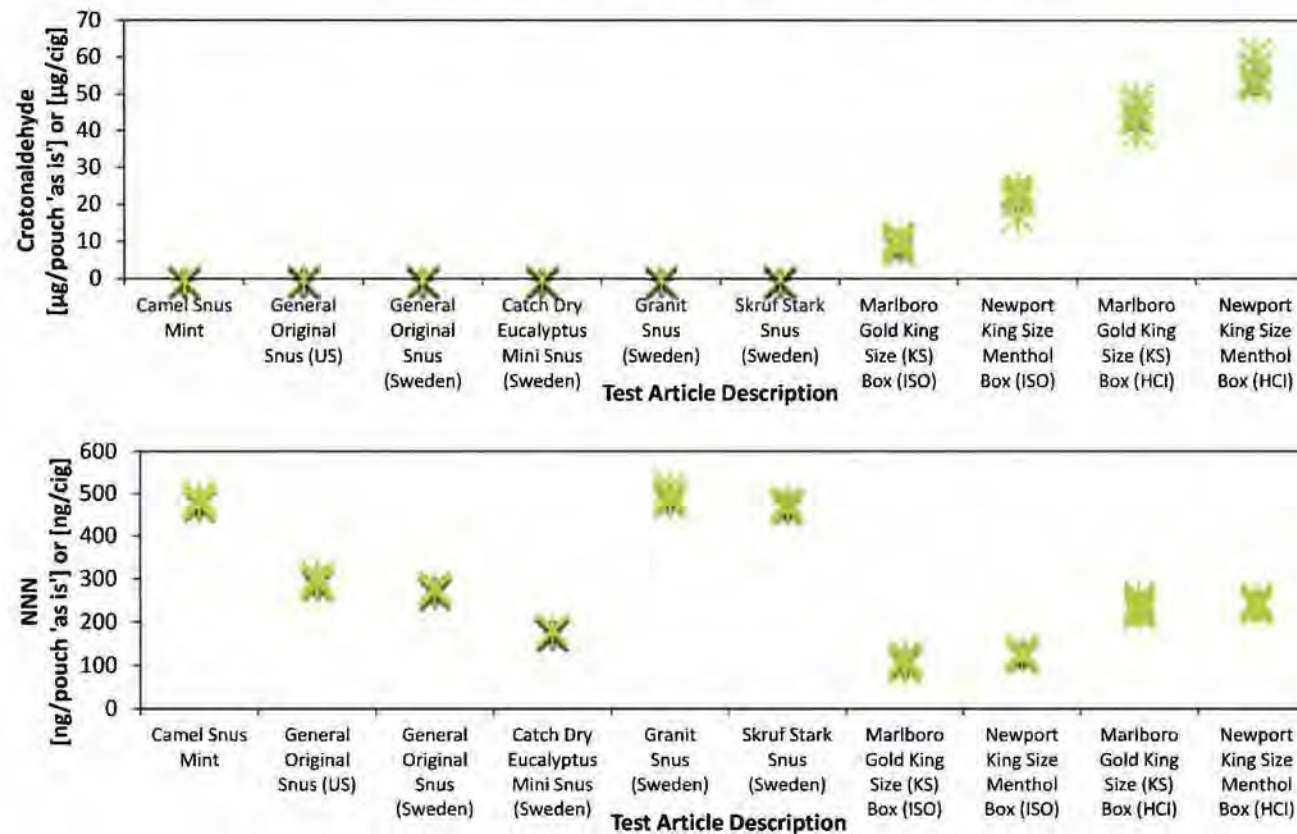


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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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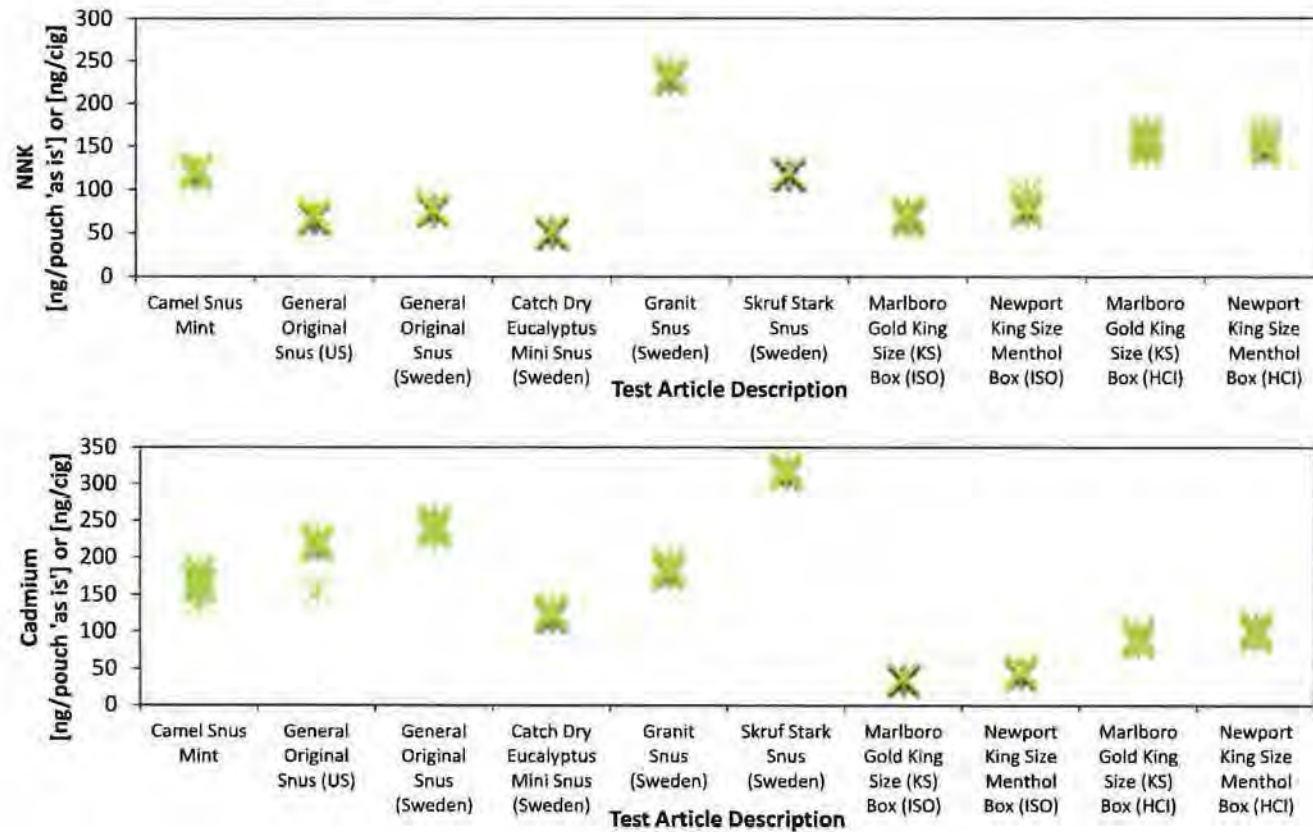
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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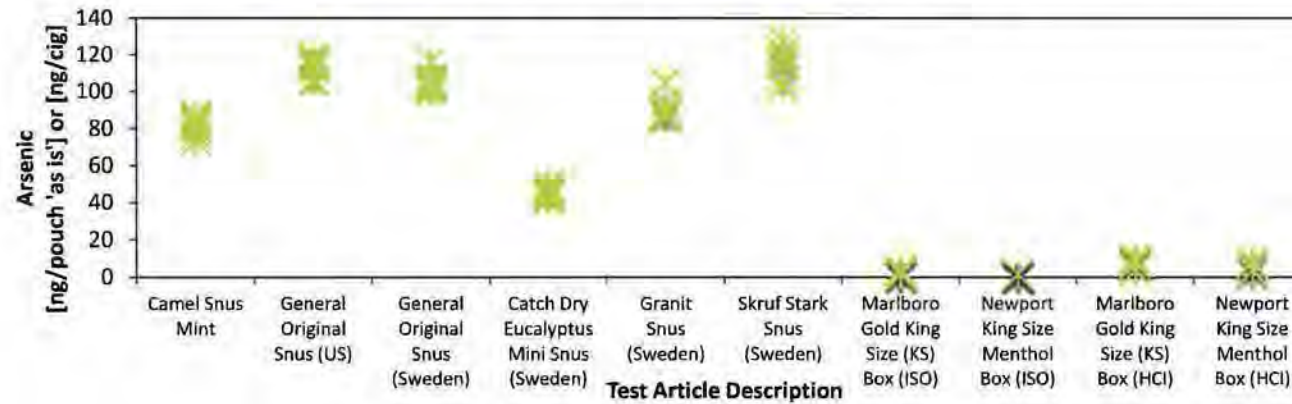
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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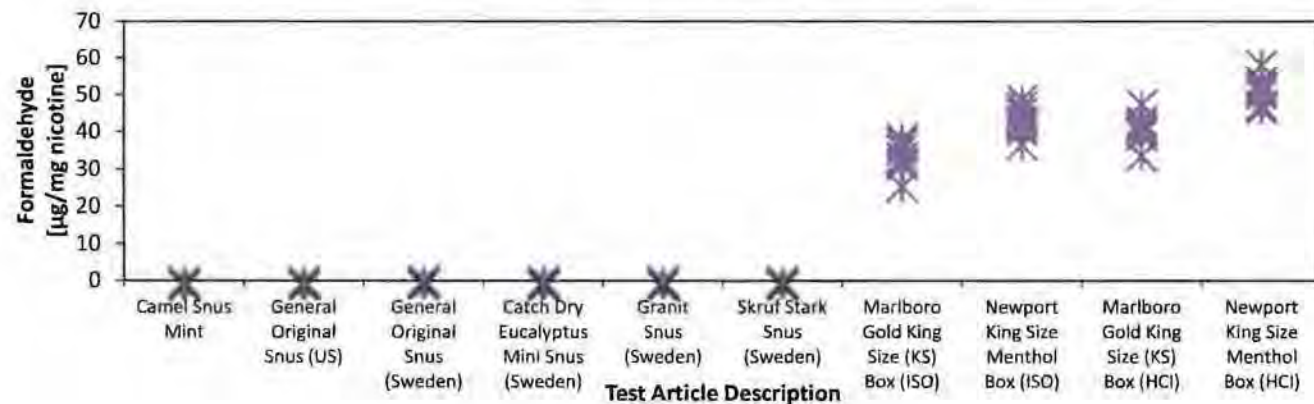
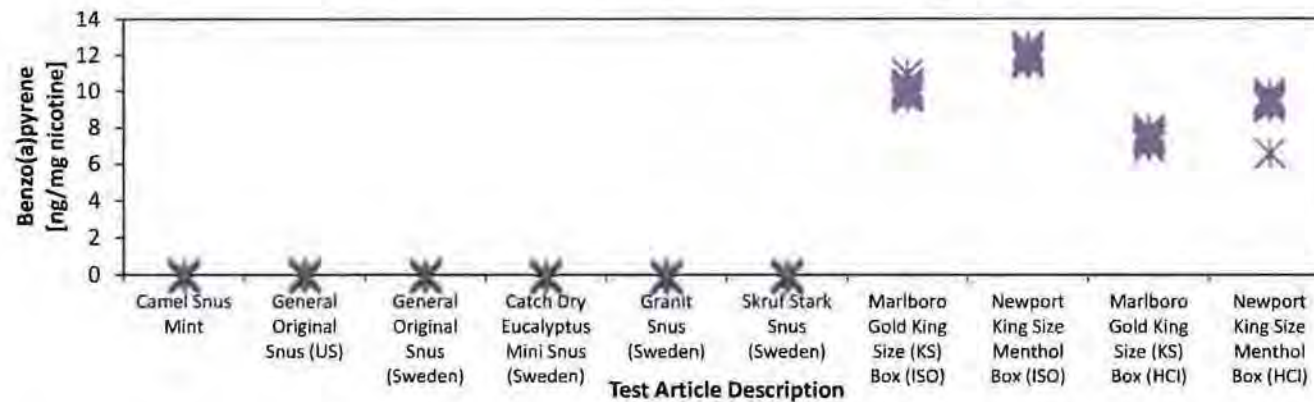
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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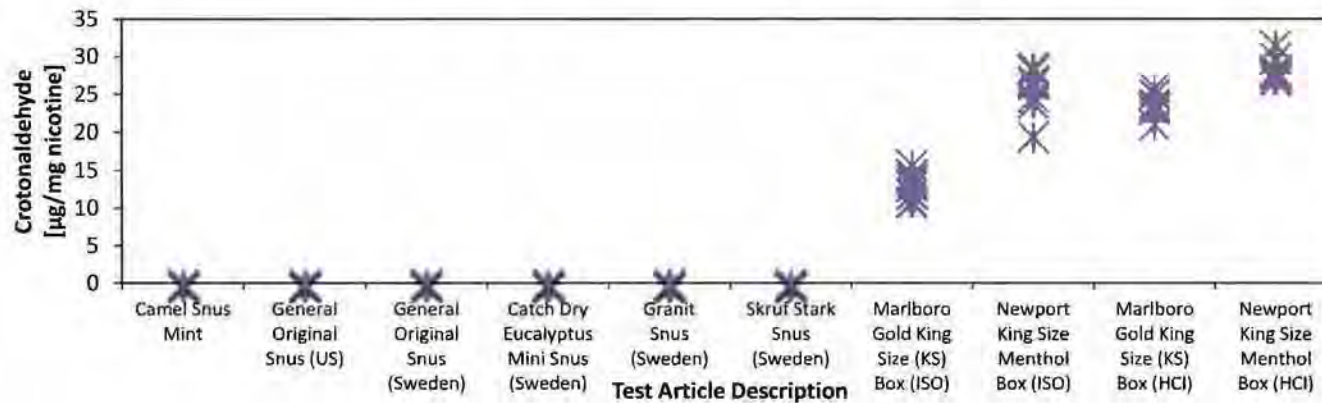
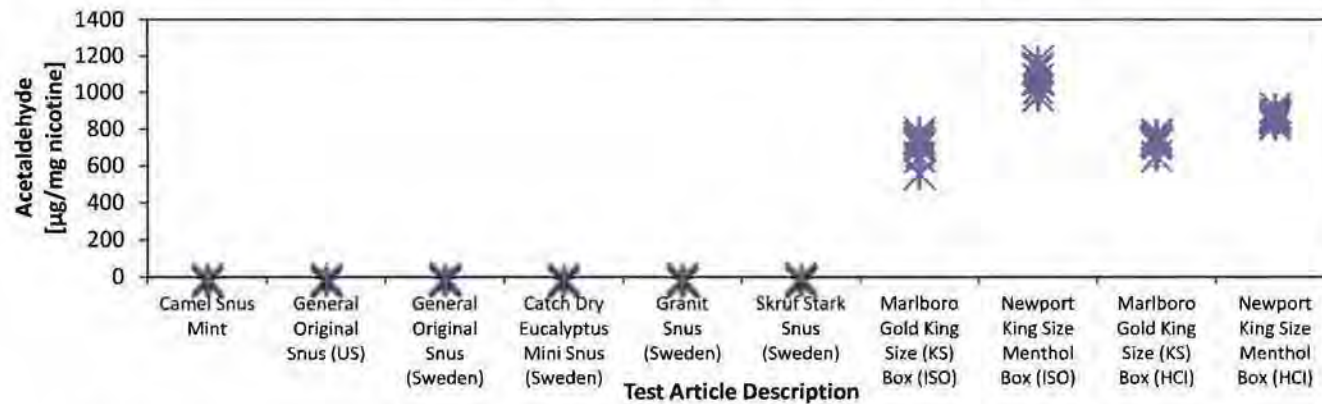
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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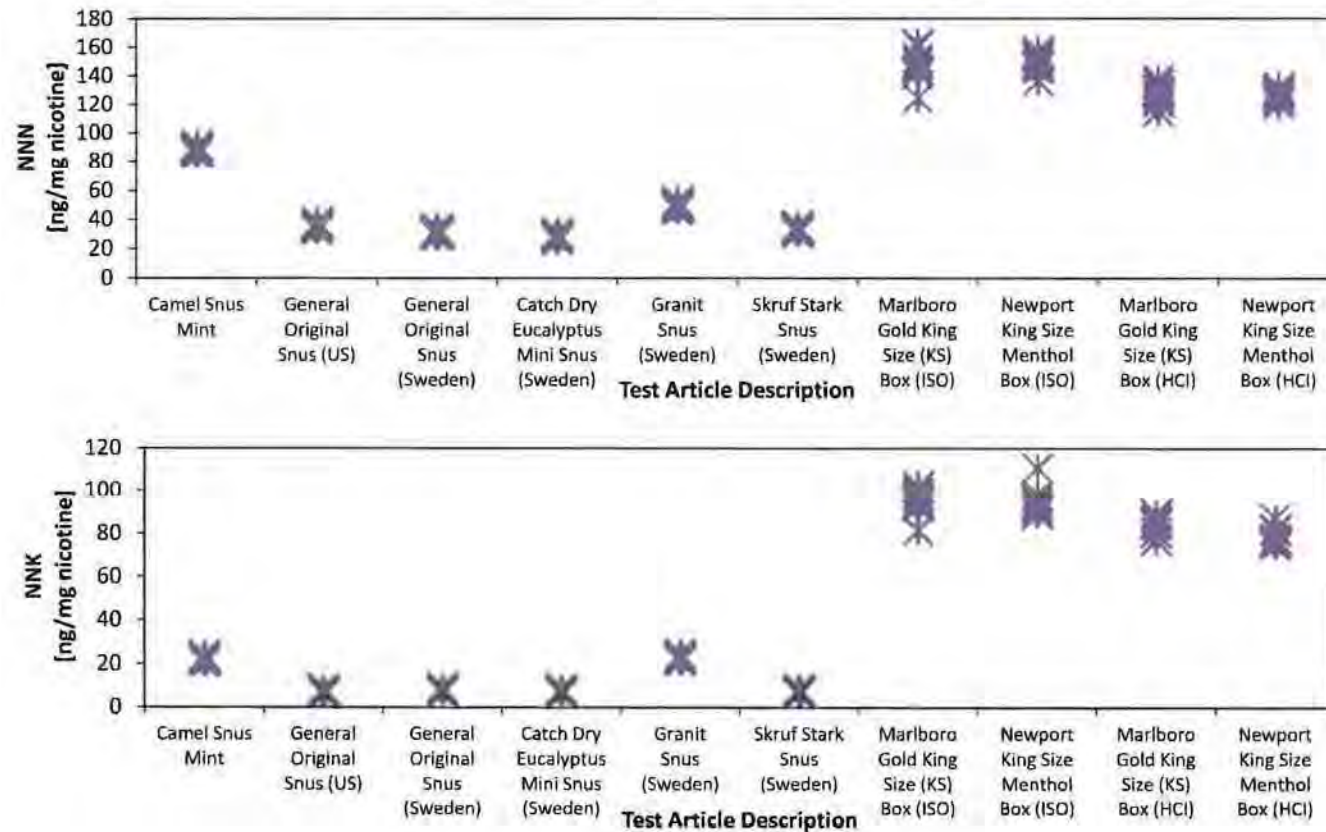
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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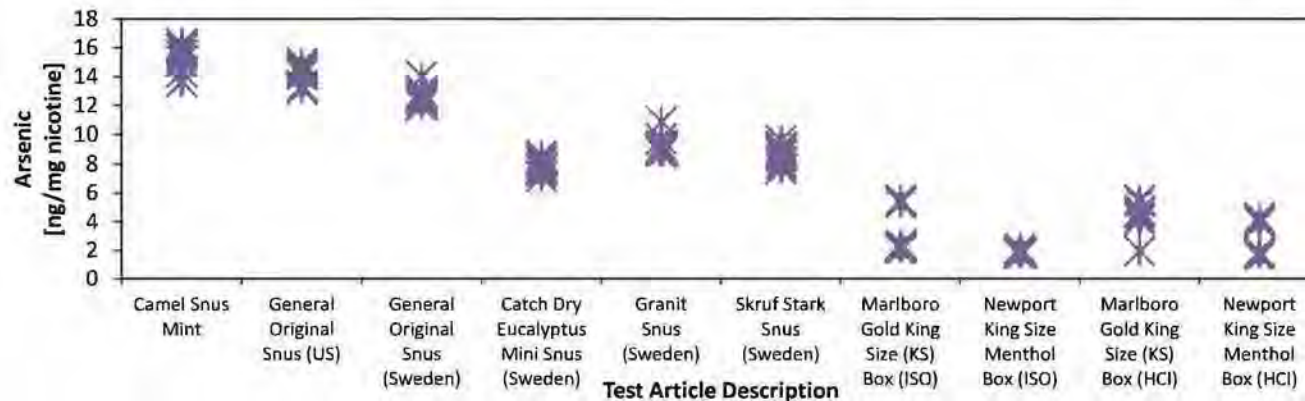
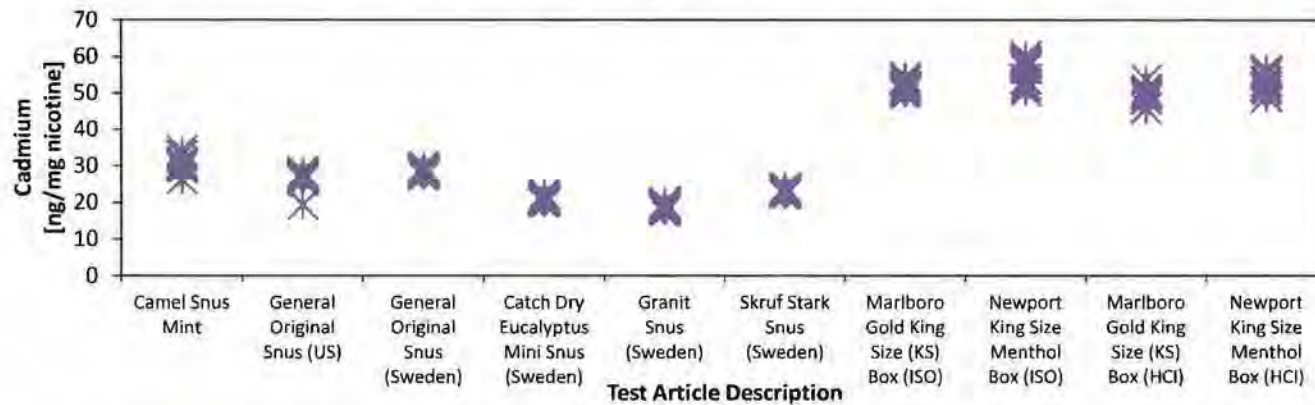


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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Mint; Test Article ID: 1400895



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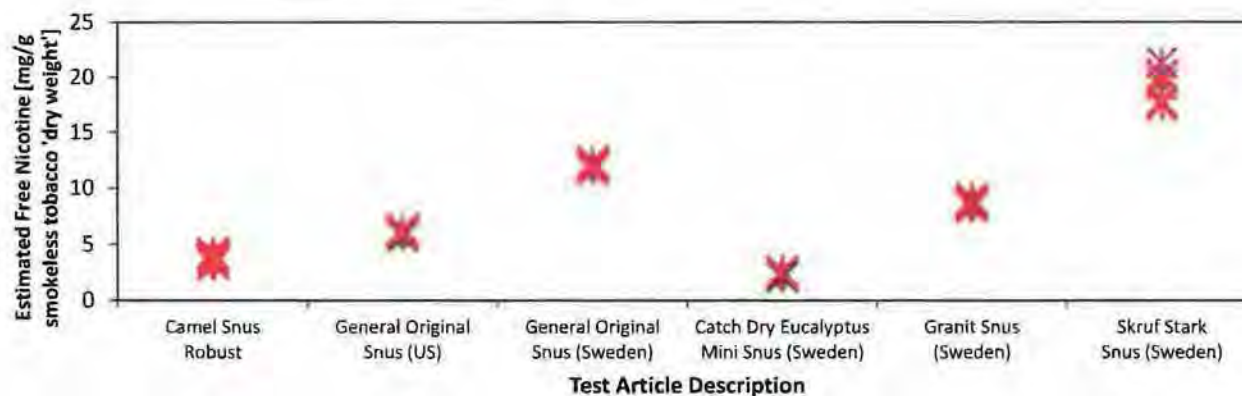
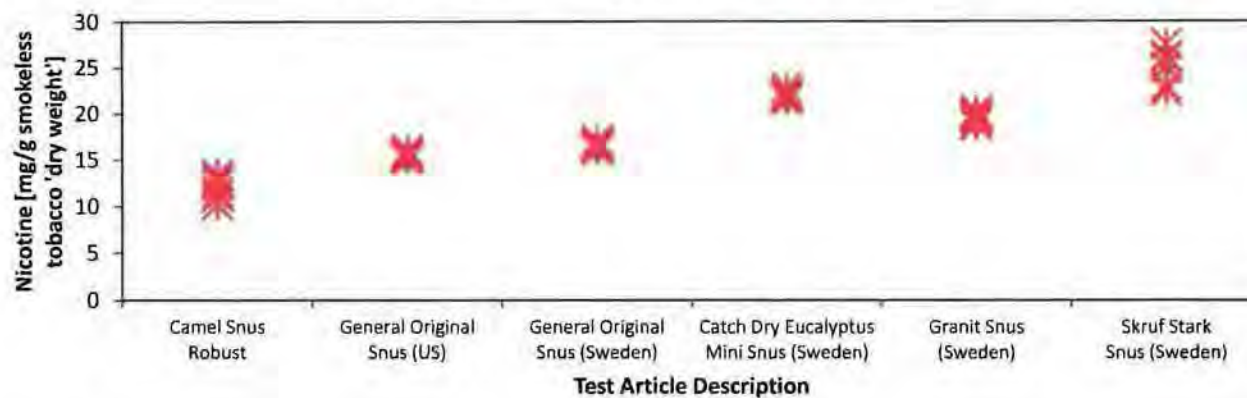
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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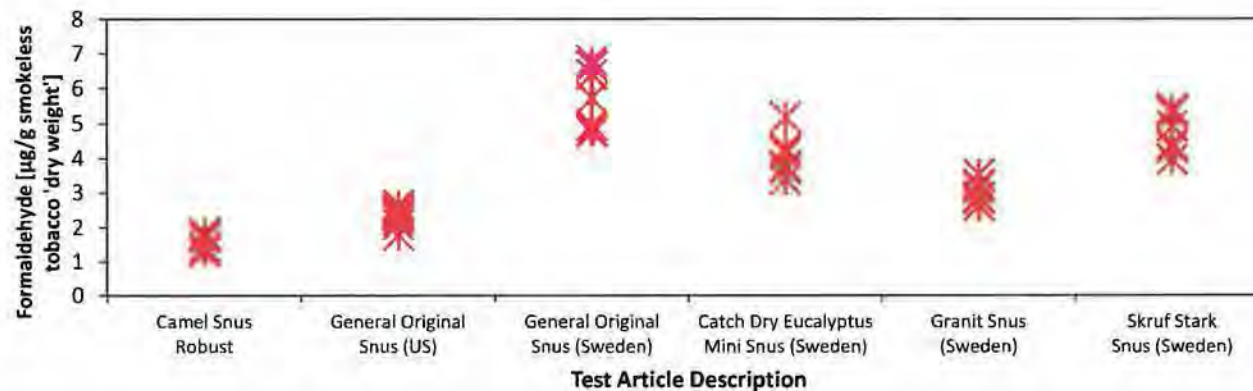
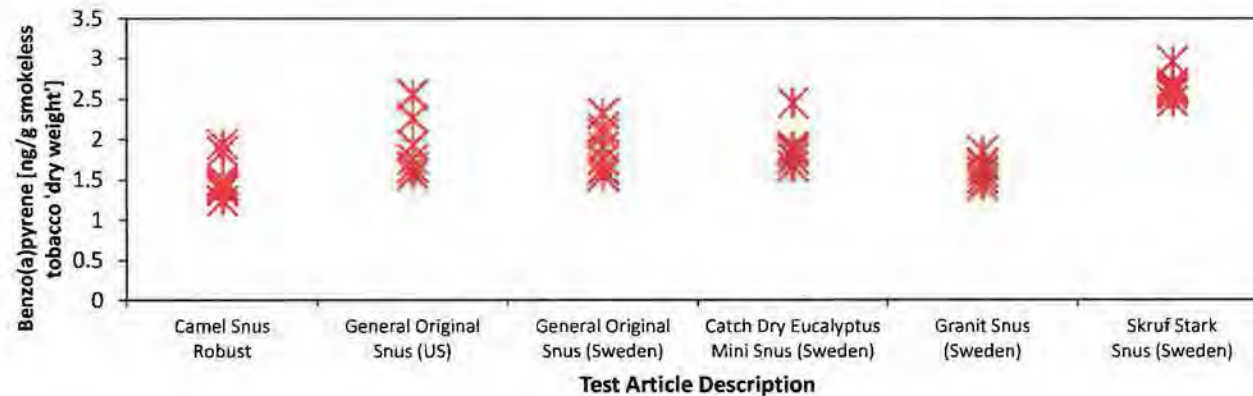
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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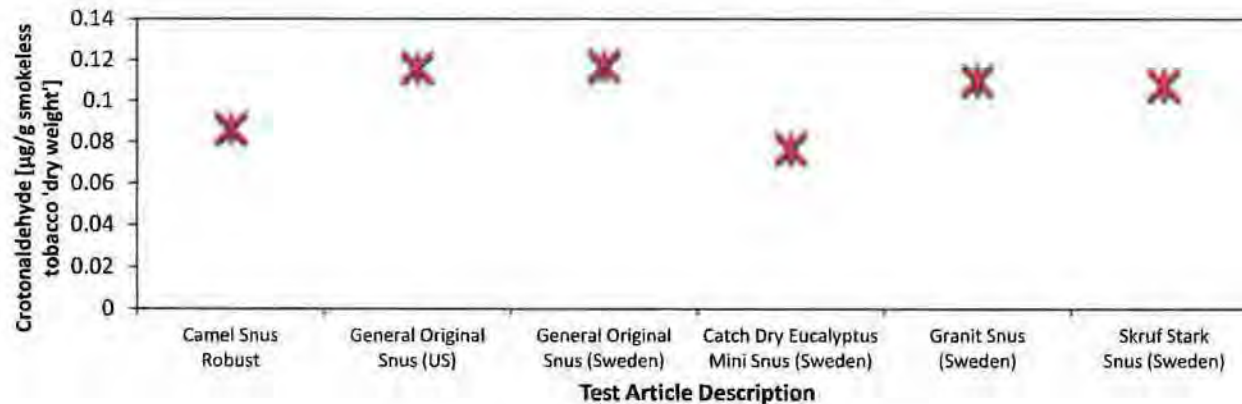
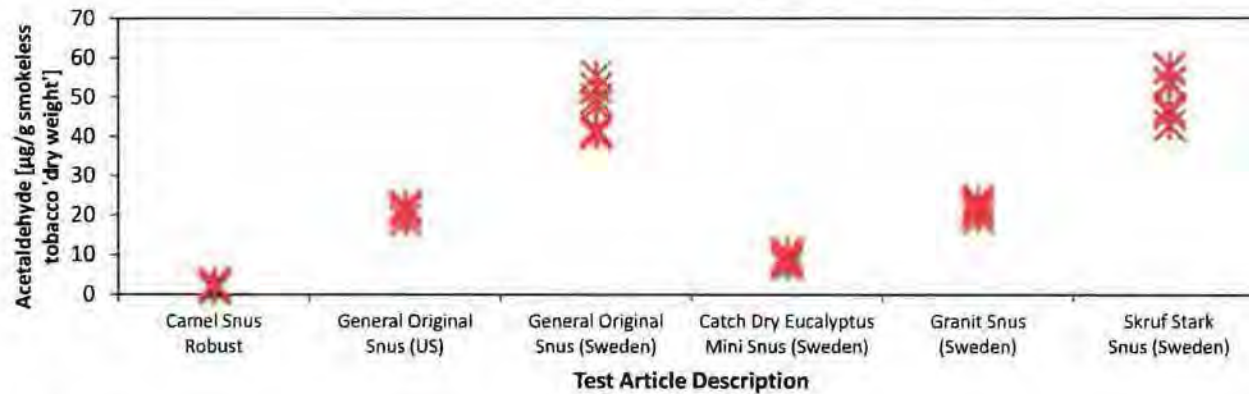
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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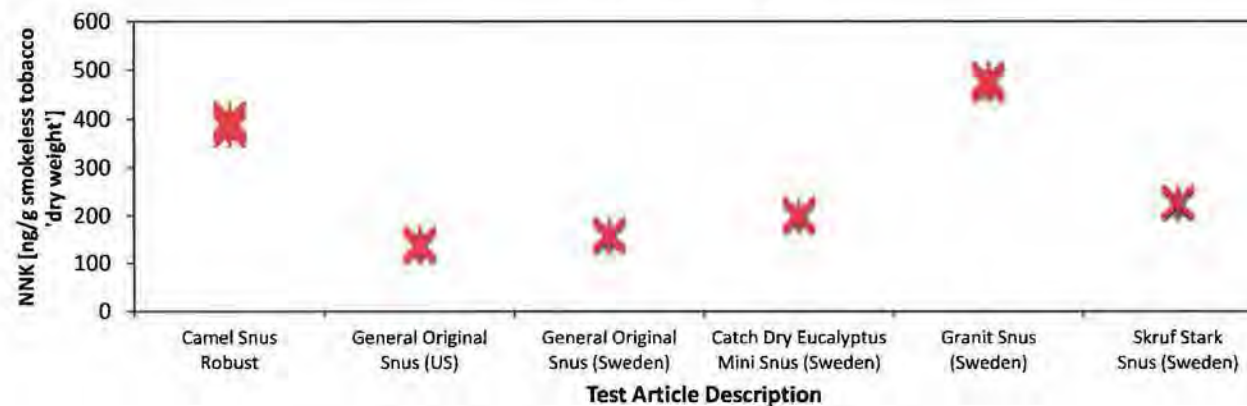
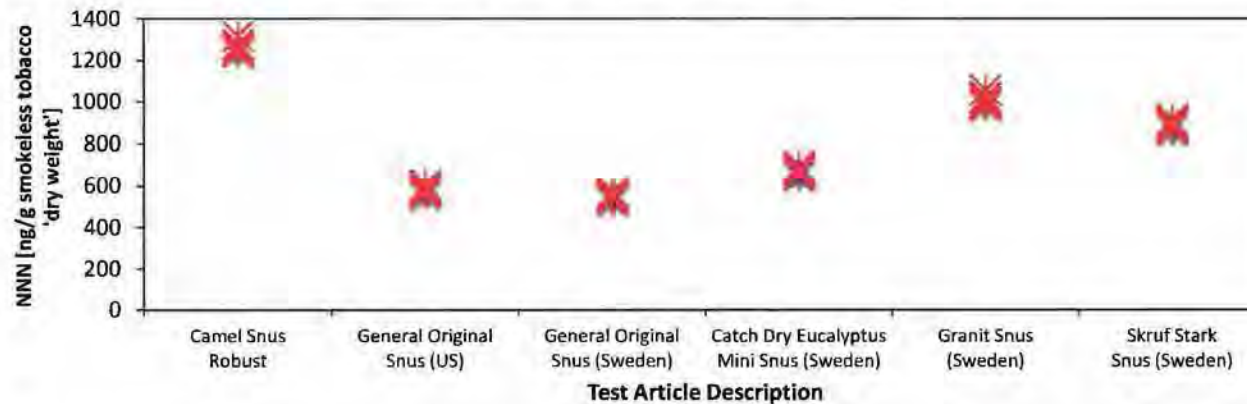
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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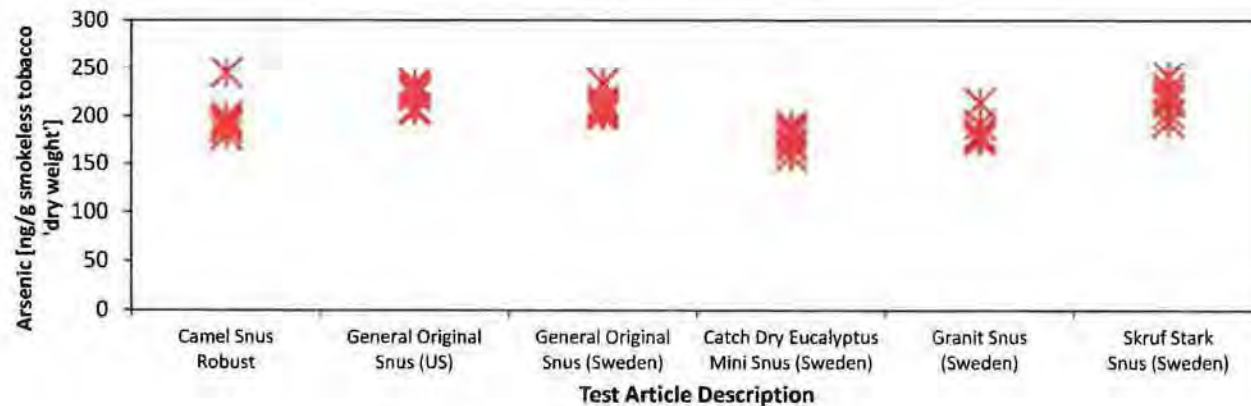
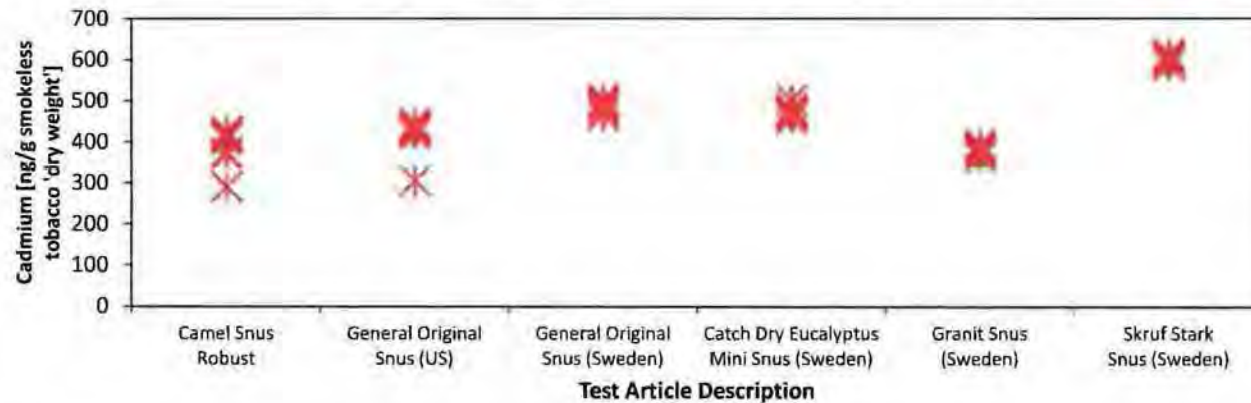
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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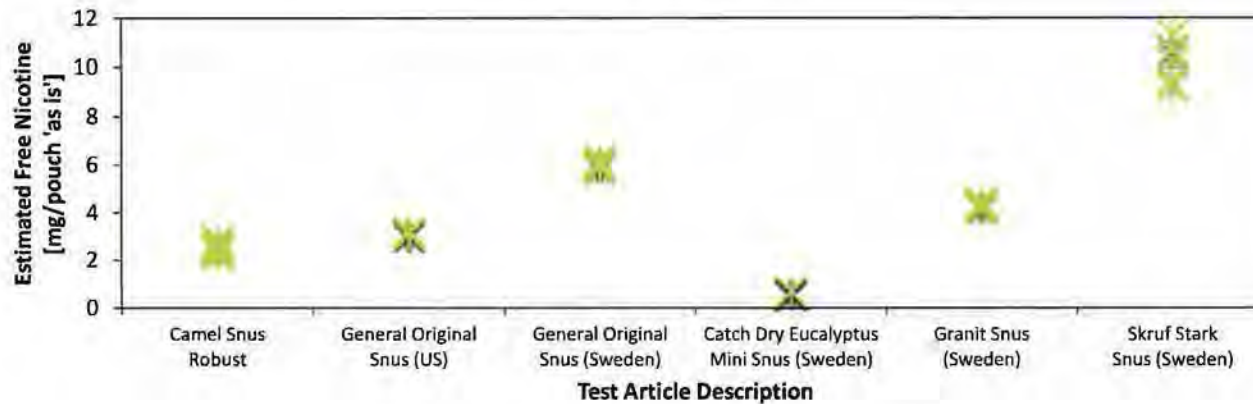
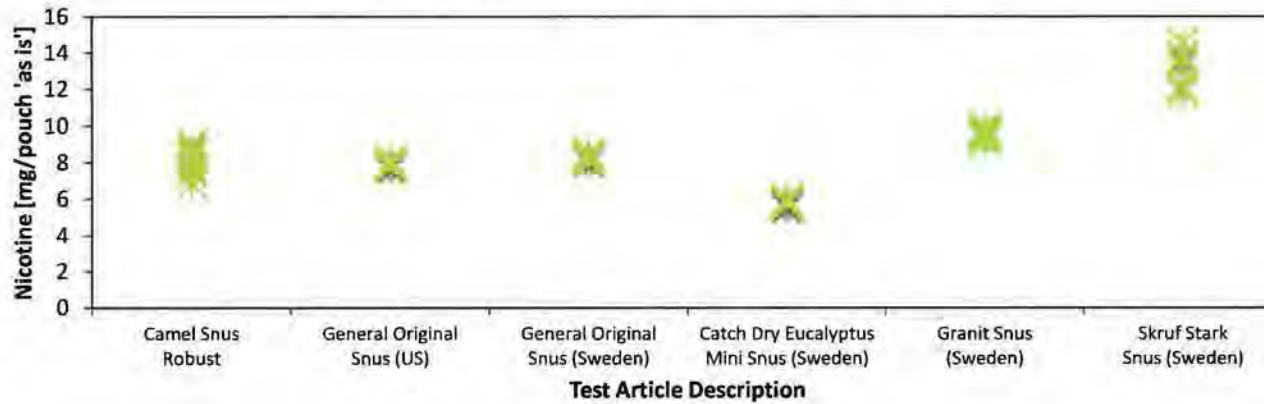


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Robust; Test Article ID: 1400896**

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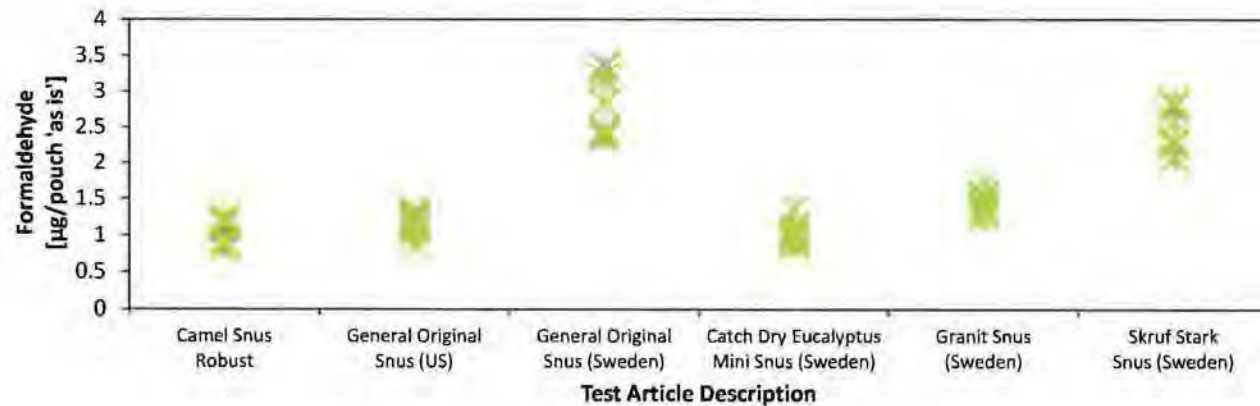
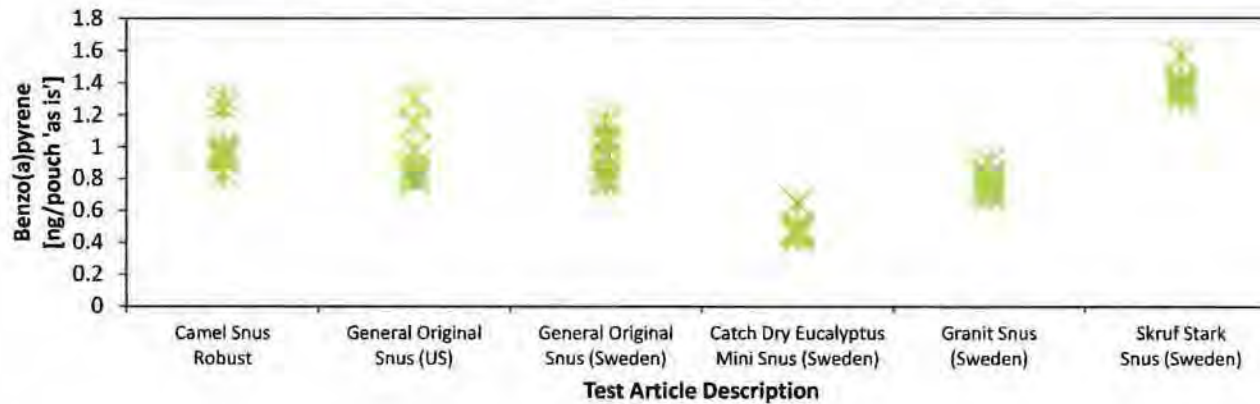


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Robust; Test Article ID: 1400896**

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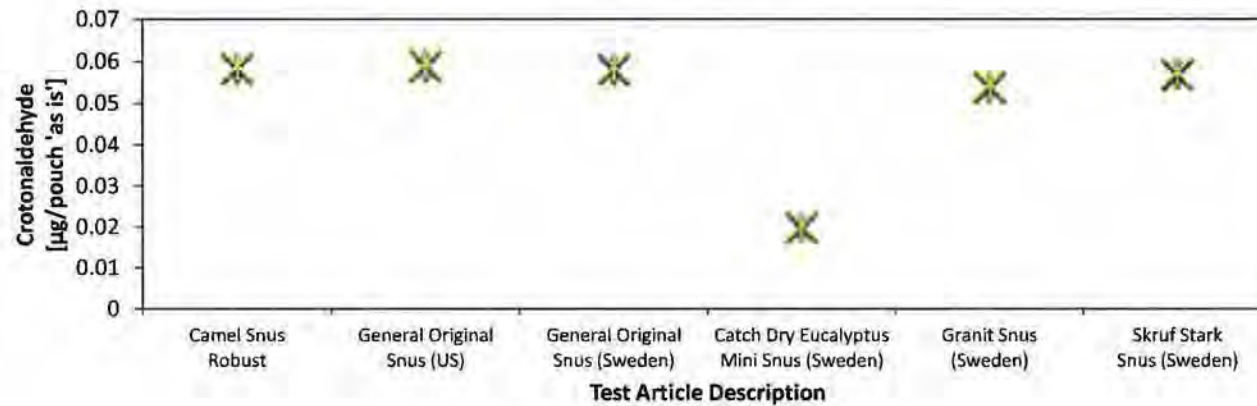
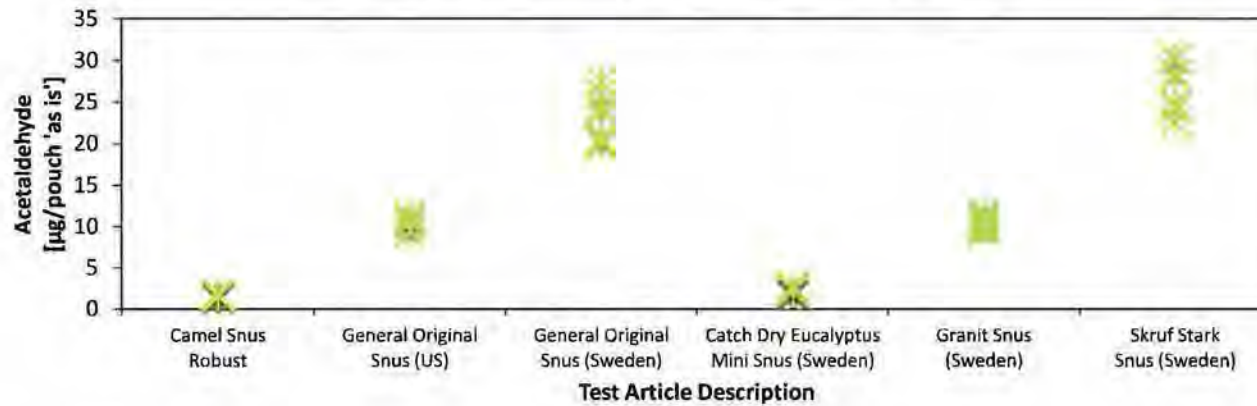


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Robust; Test Article ID: 1400896**

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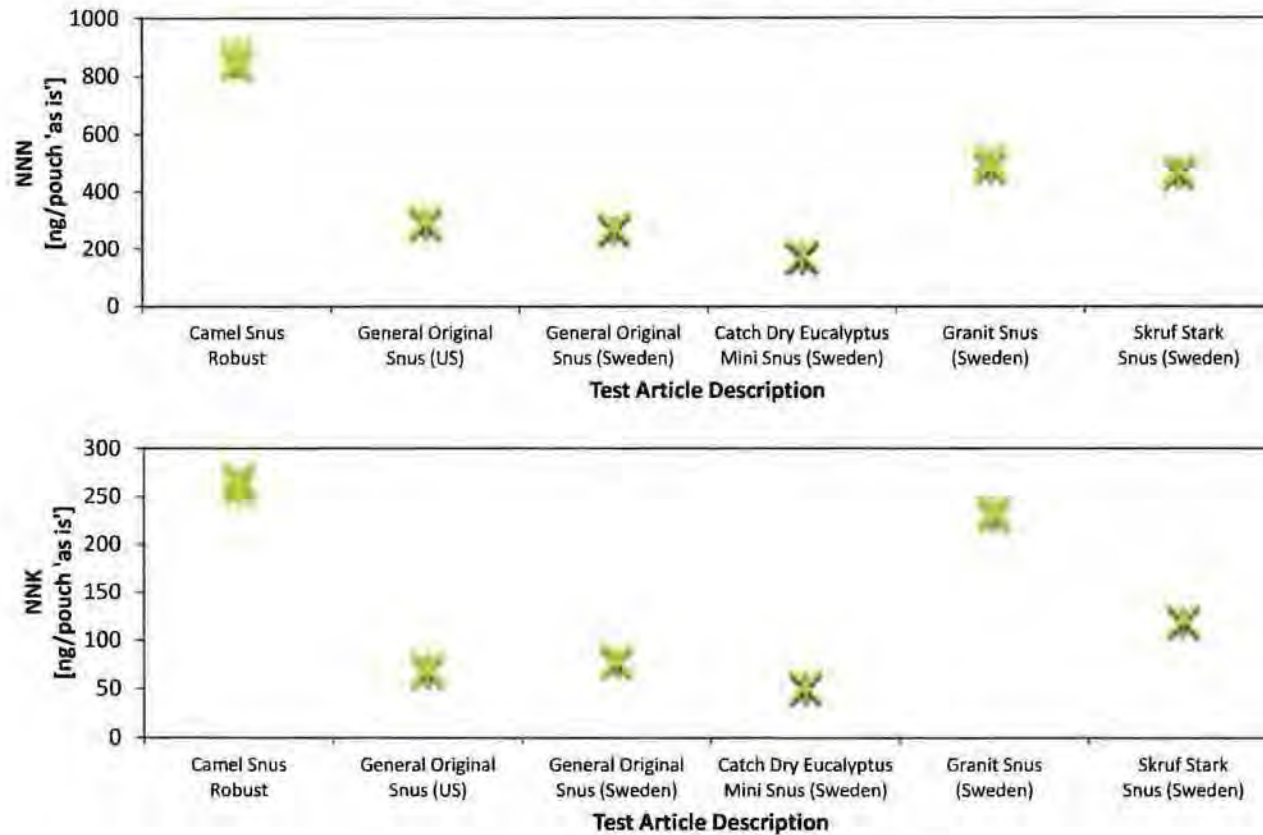
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



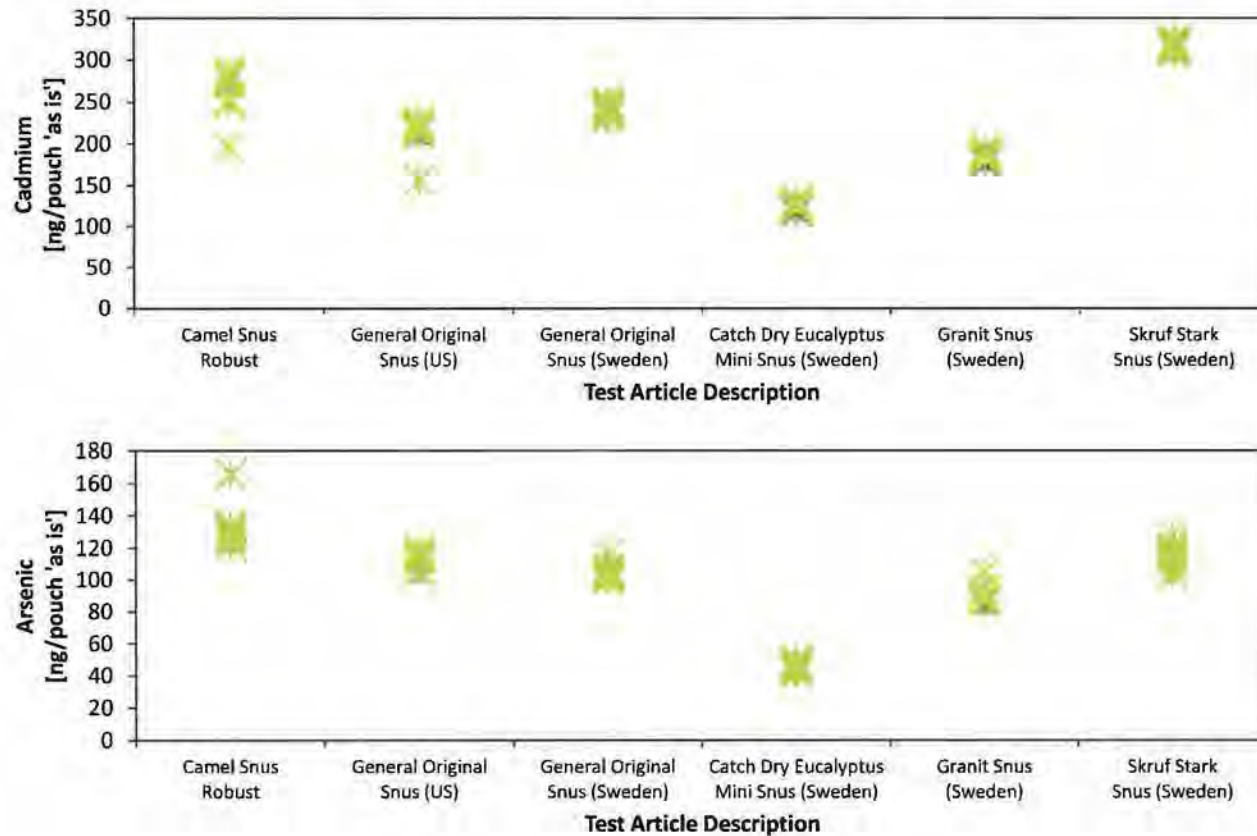
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Robust; Test Article ID: 1400896**

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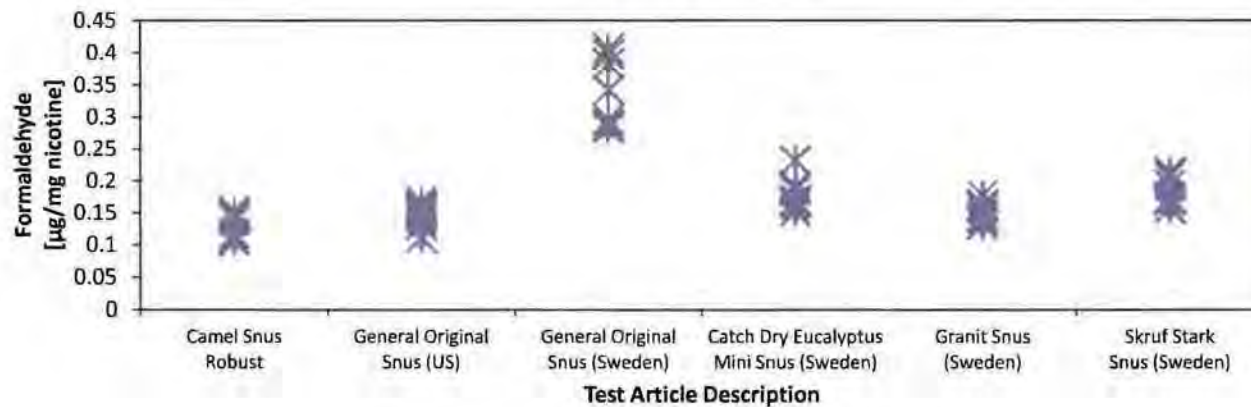
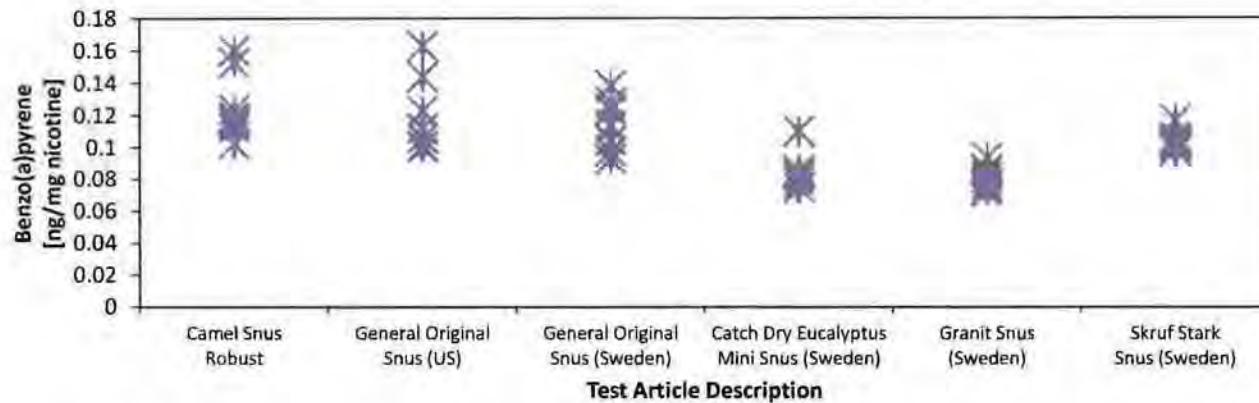


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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Robust; Test Article ID: 1400896**

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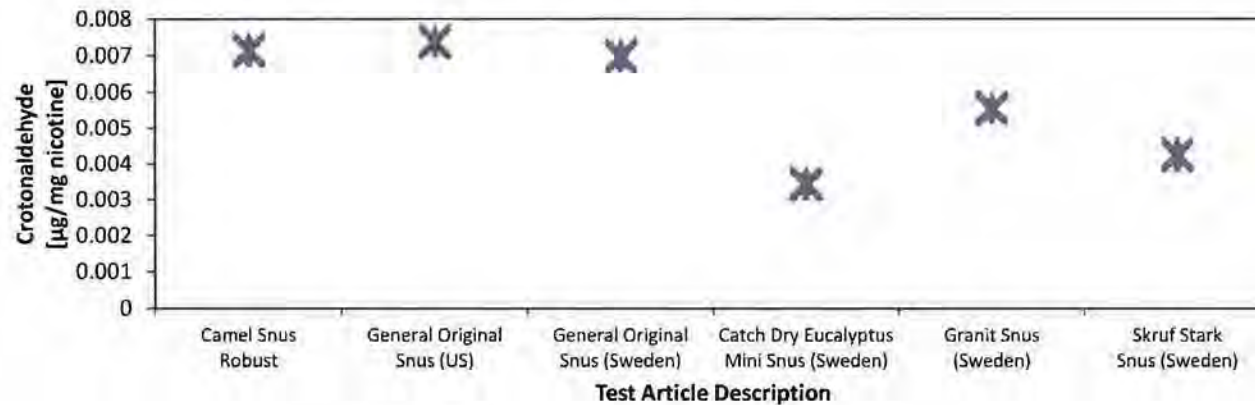
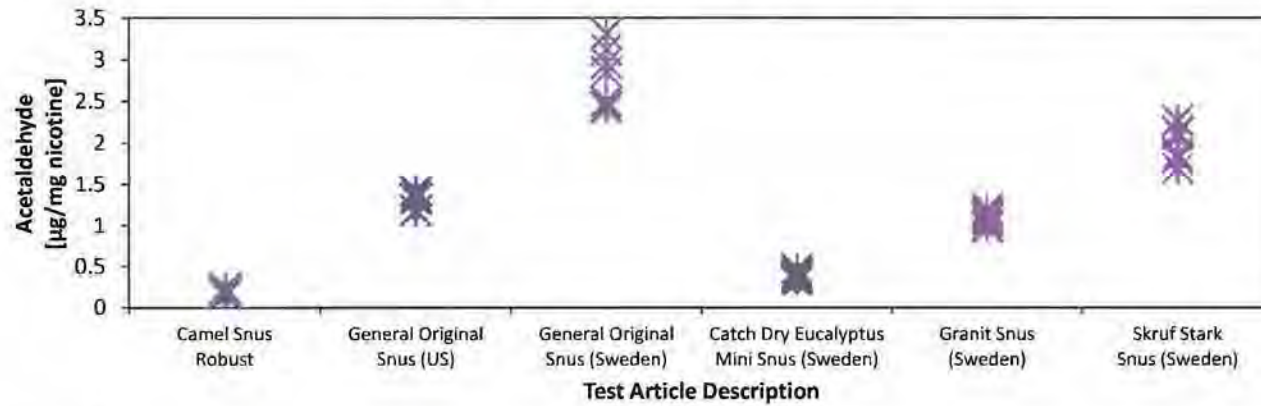
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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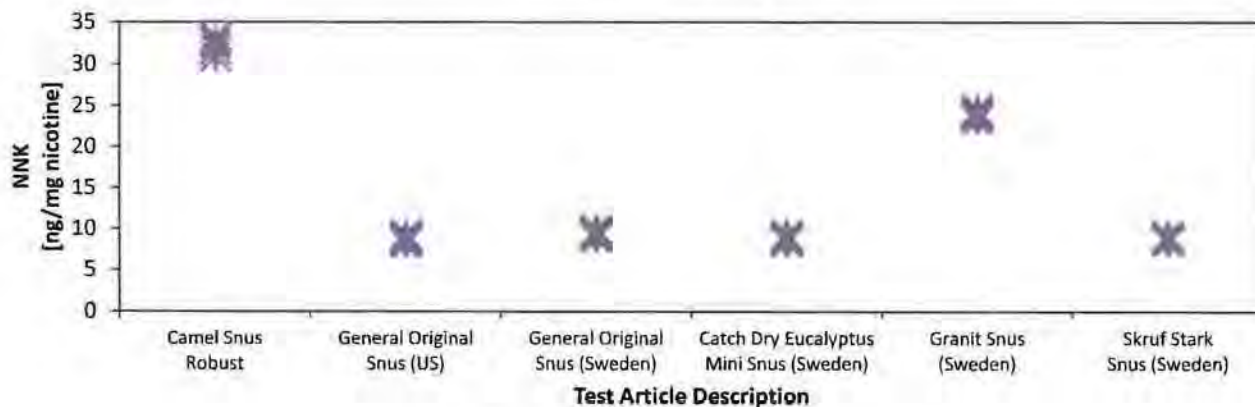
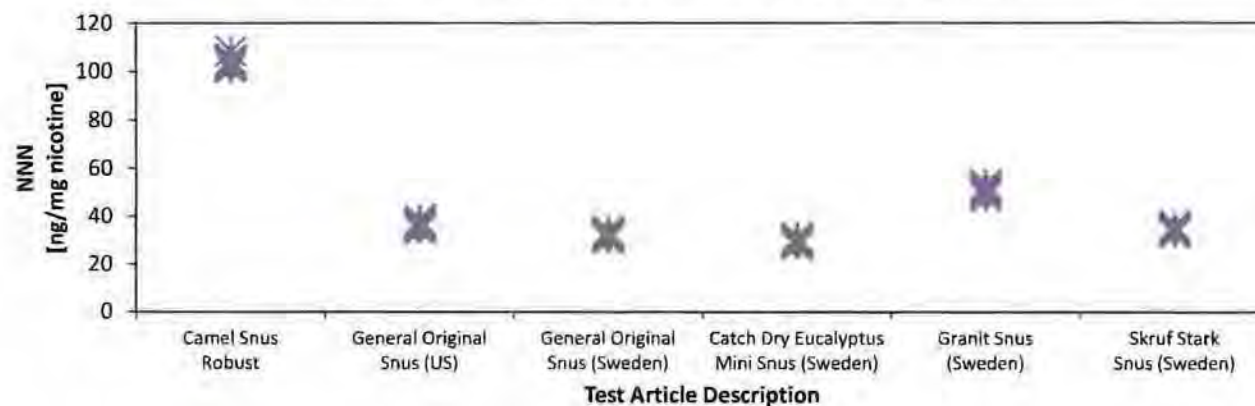
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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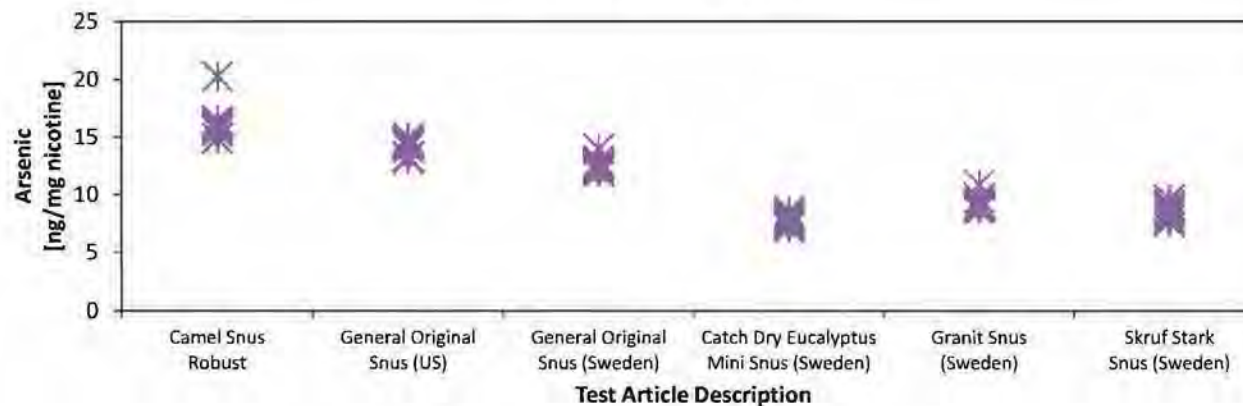
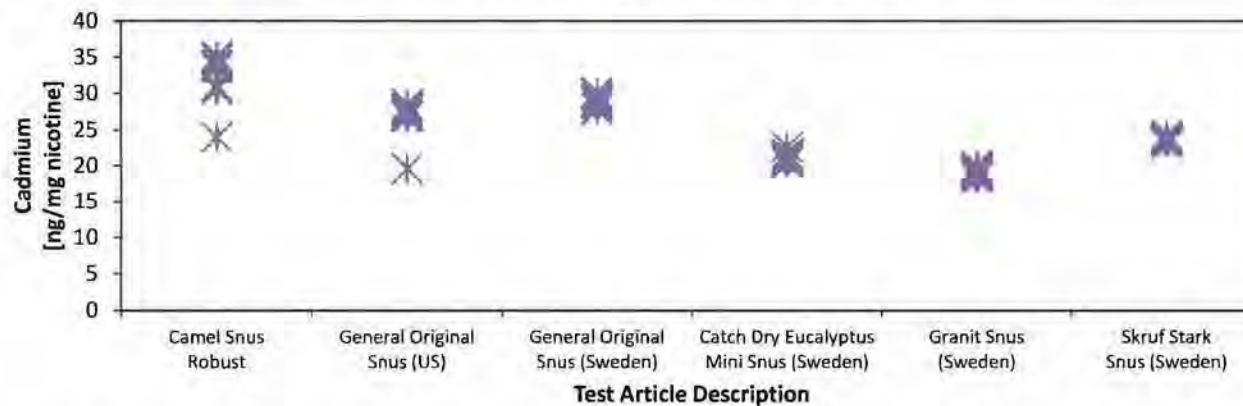


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Smokeless Tobacco Test Article Figures: mass/mg nicotine**Test Article Description: Camel Snus Robust; Test Article ID: 1400896**

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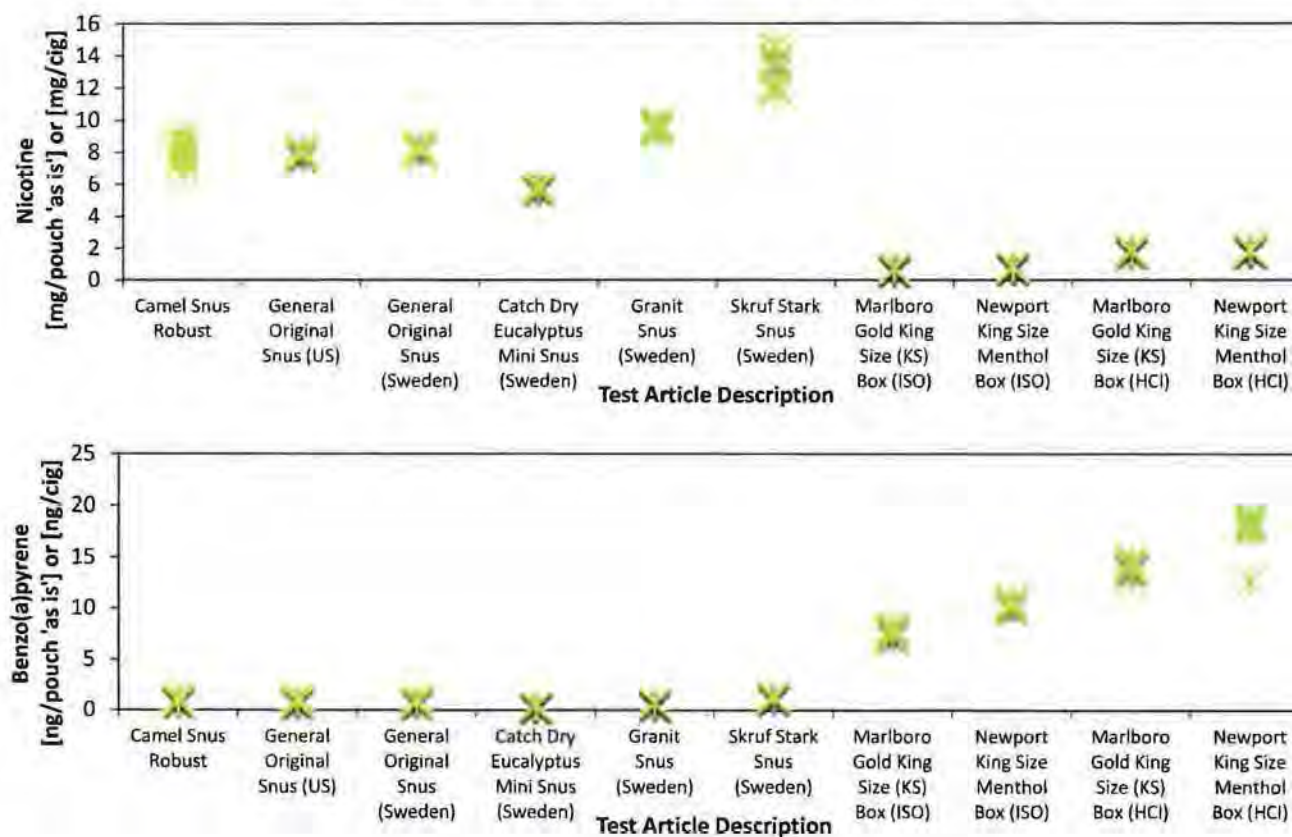


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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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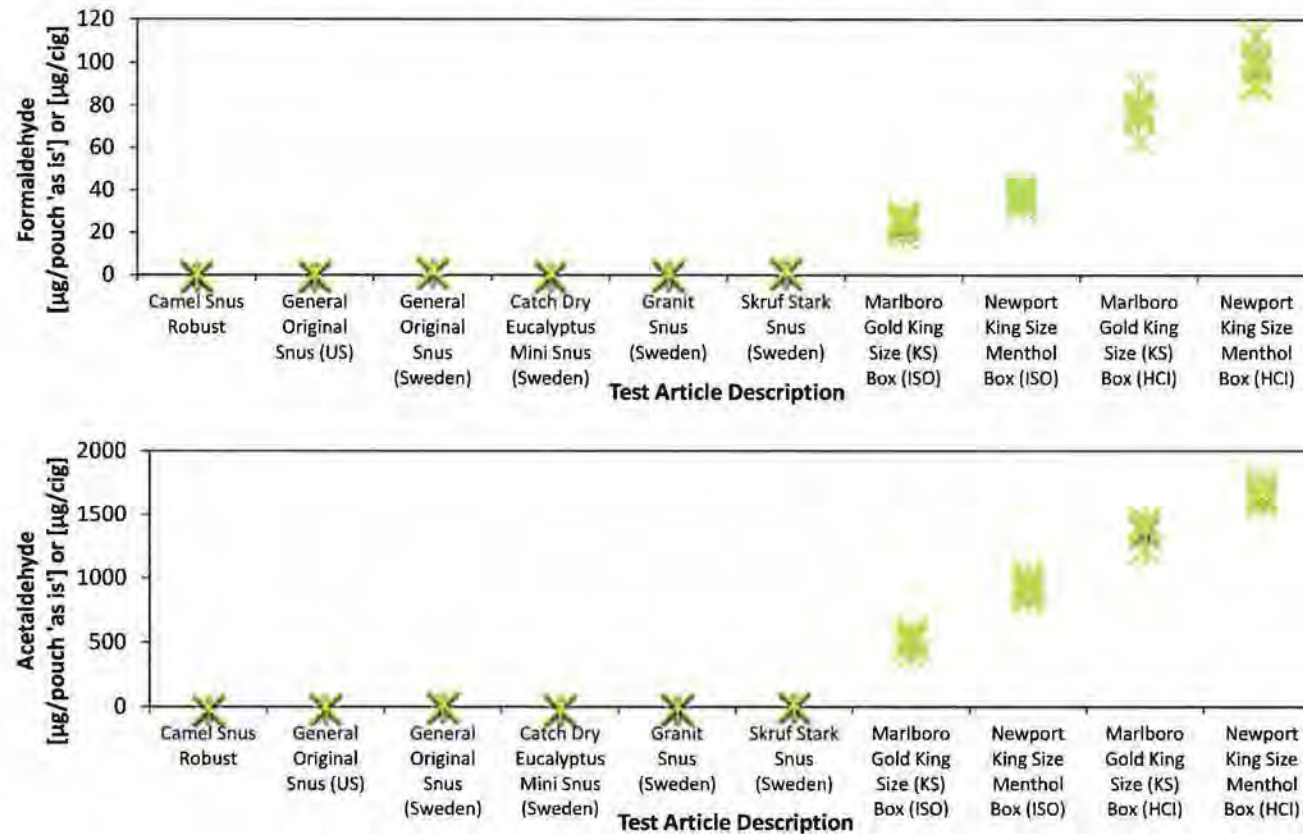
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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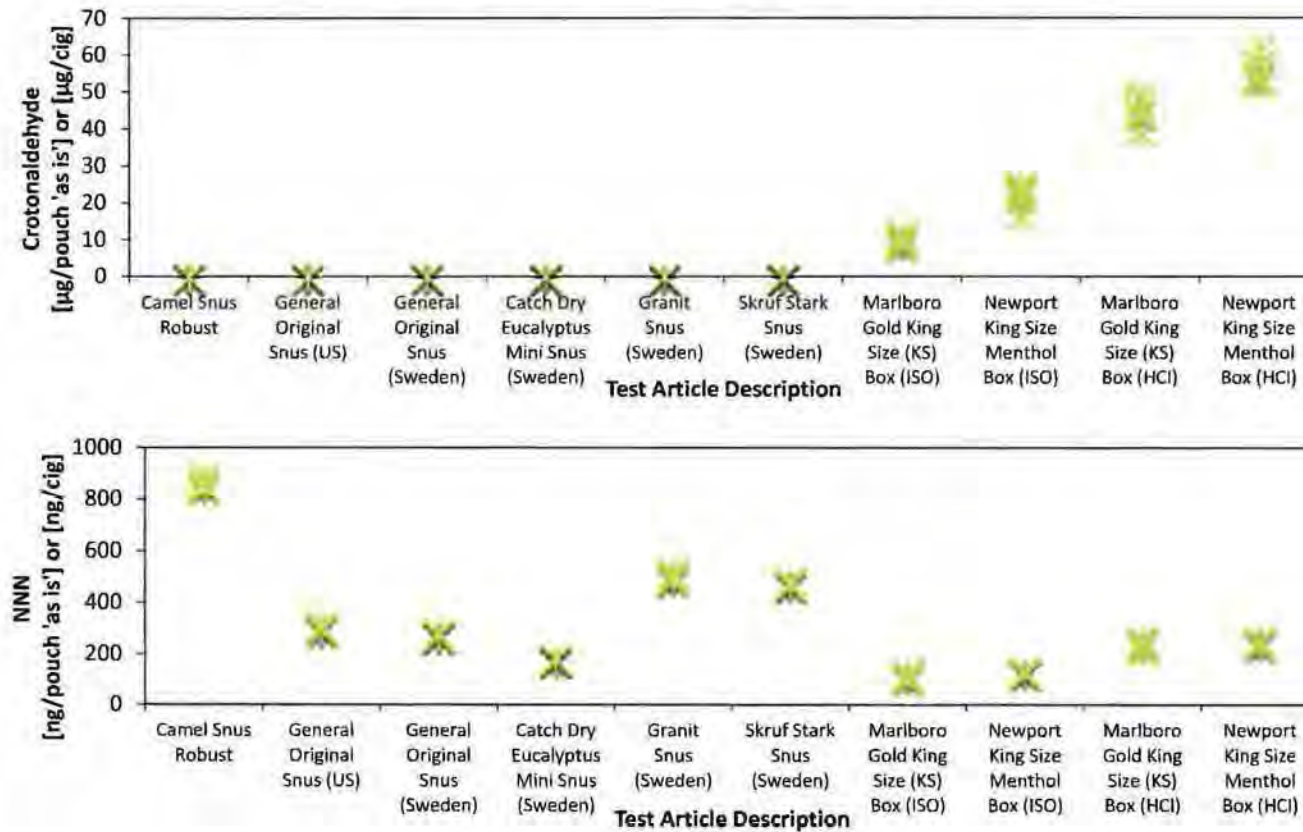
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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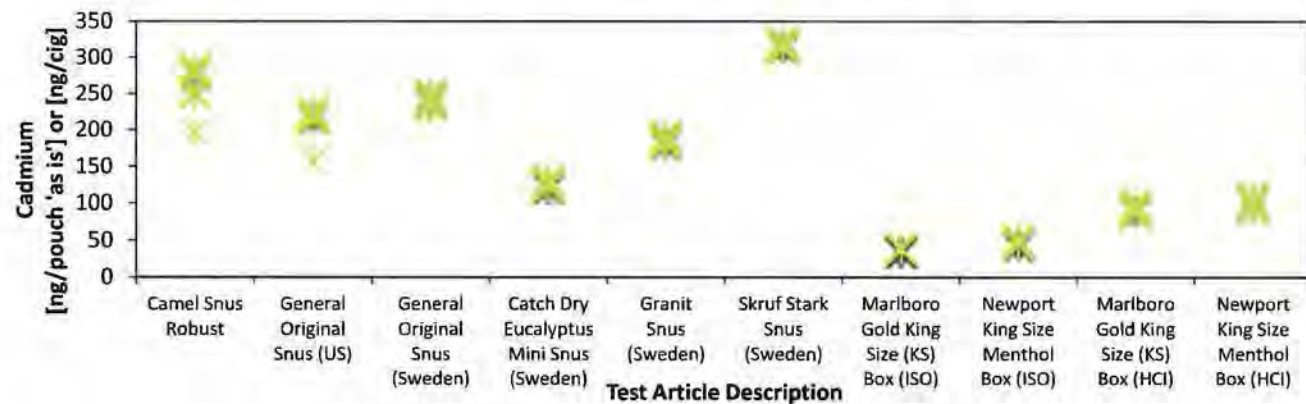
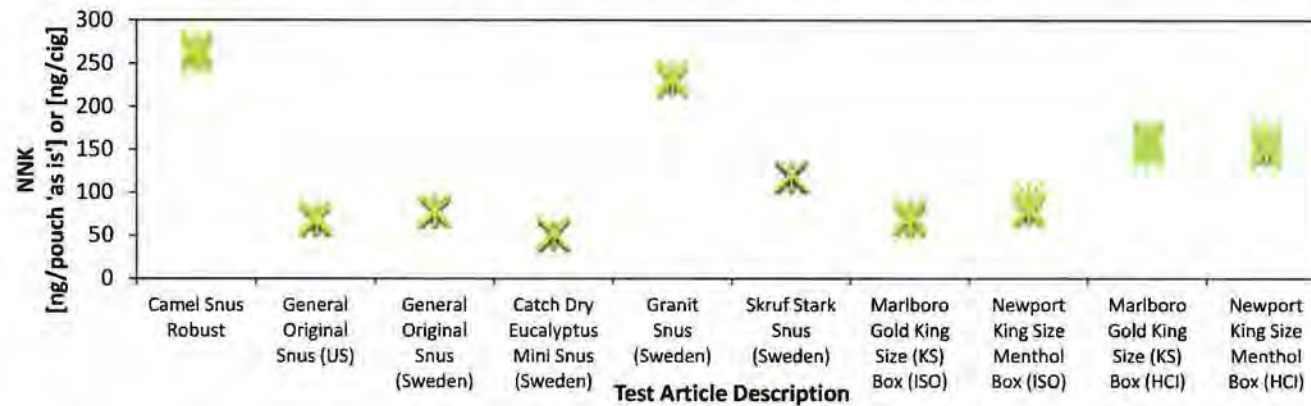
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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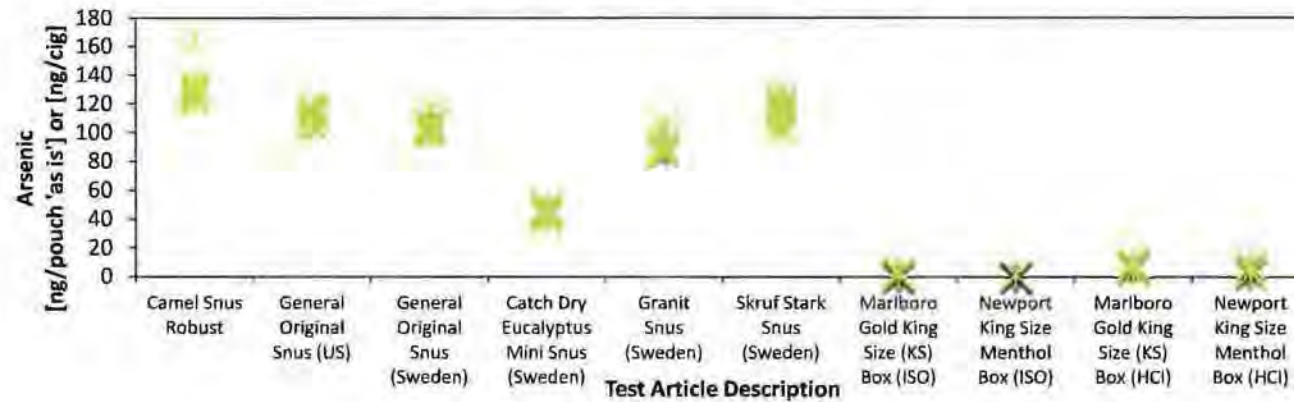
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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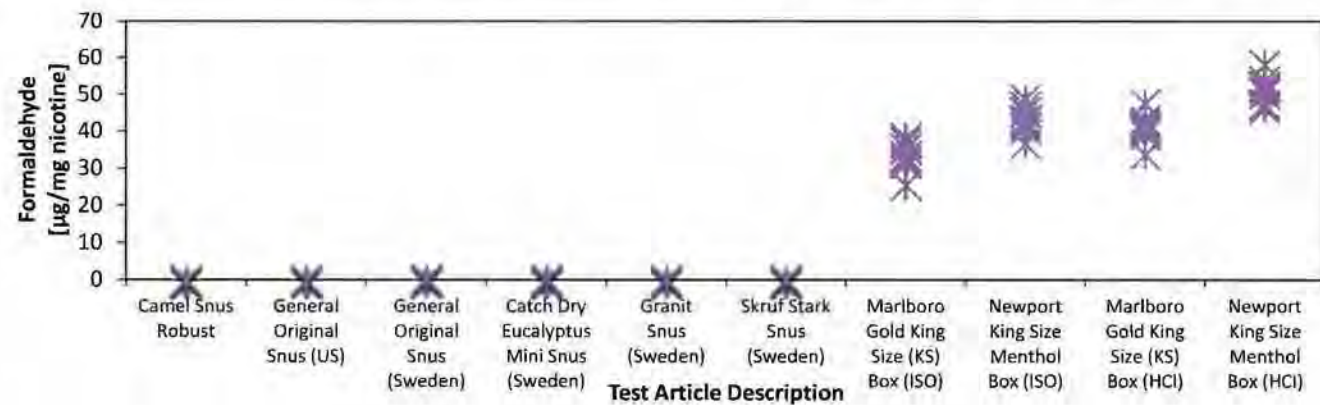
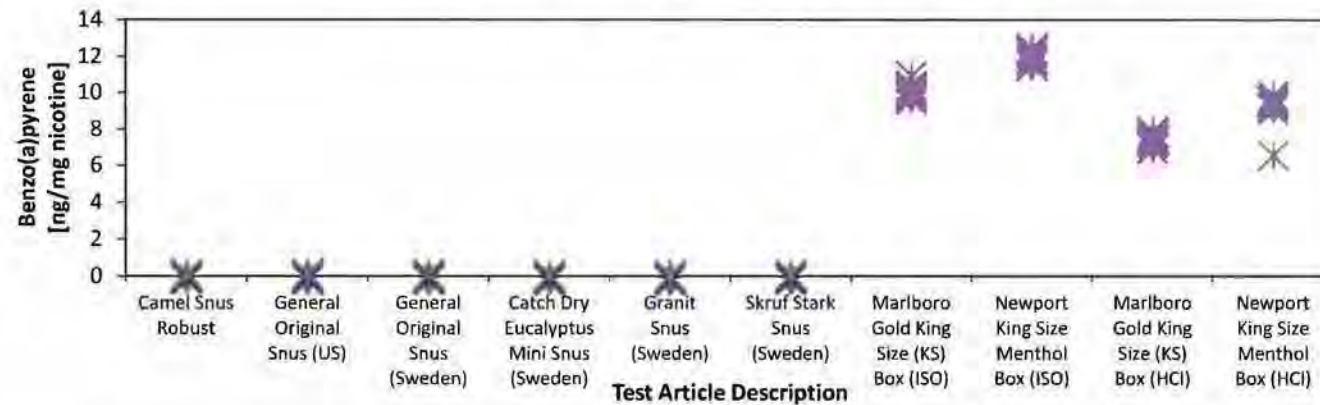


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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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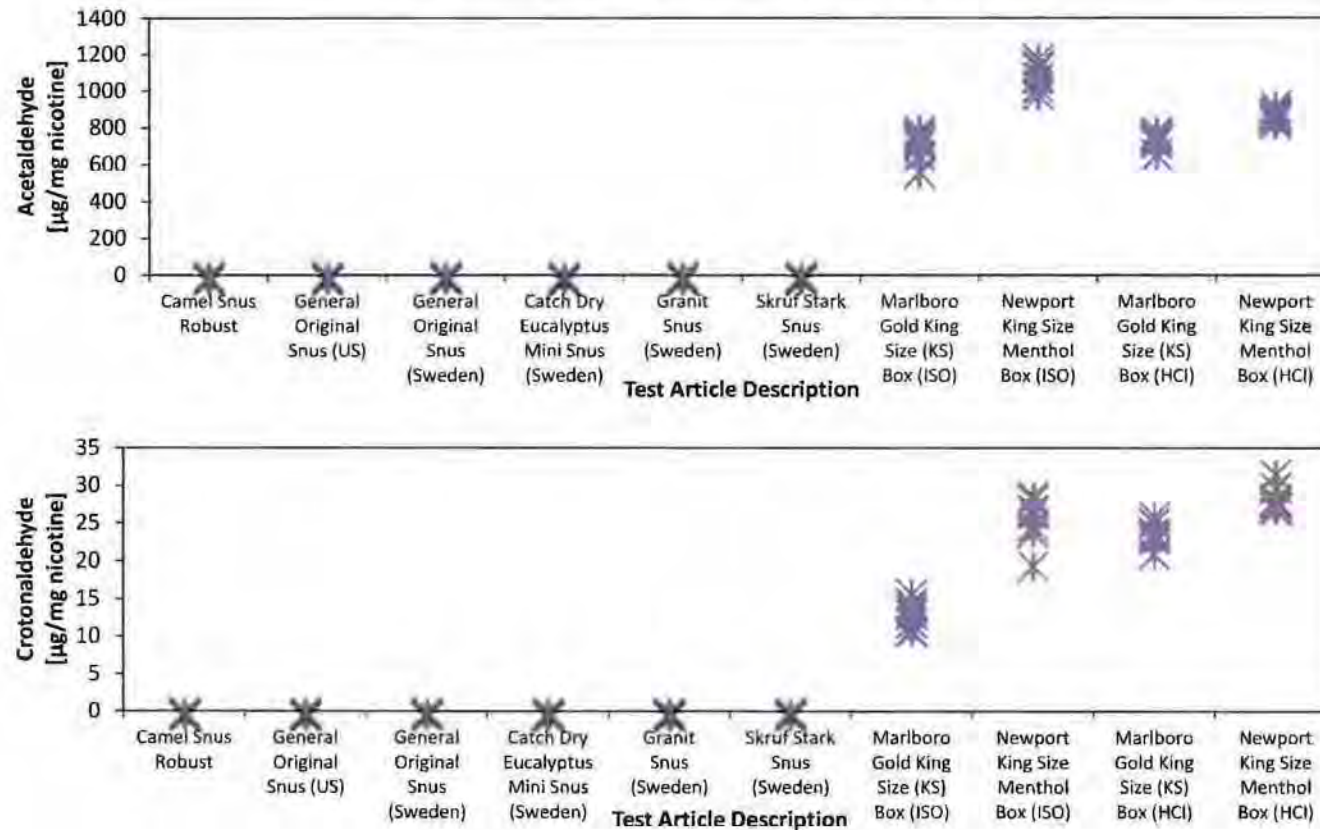
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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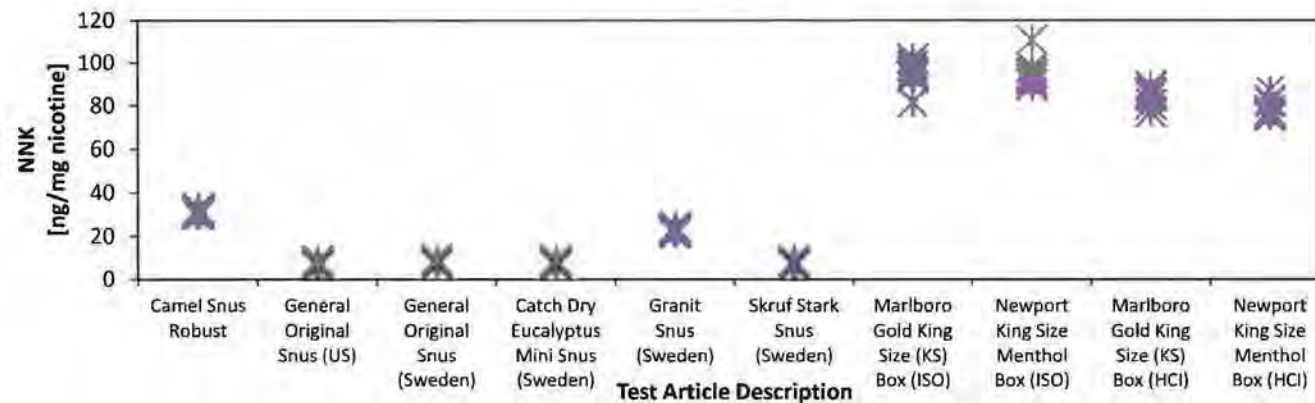
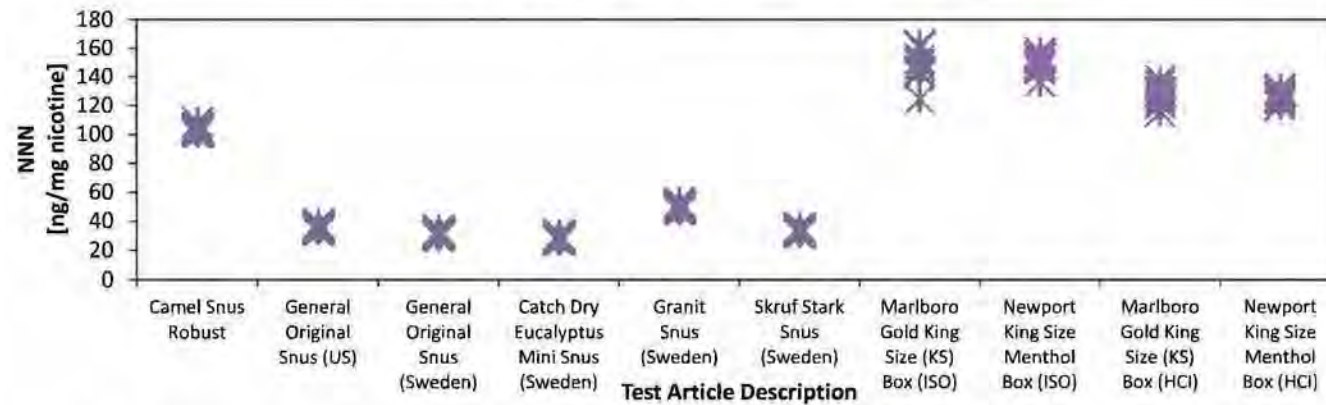
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Robust; Test Article ID: 1400896



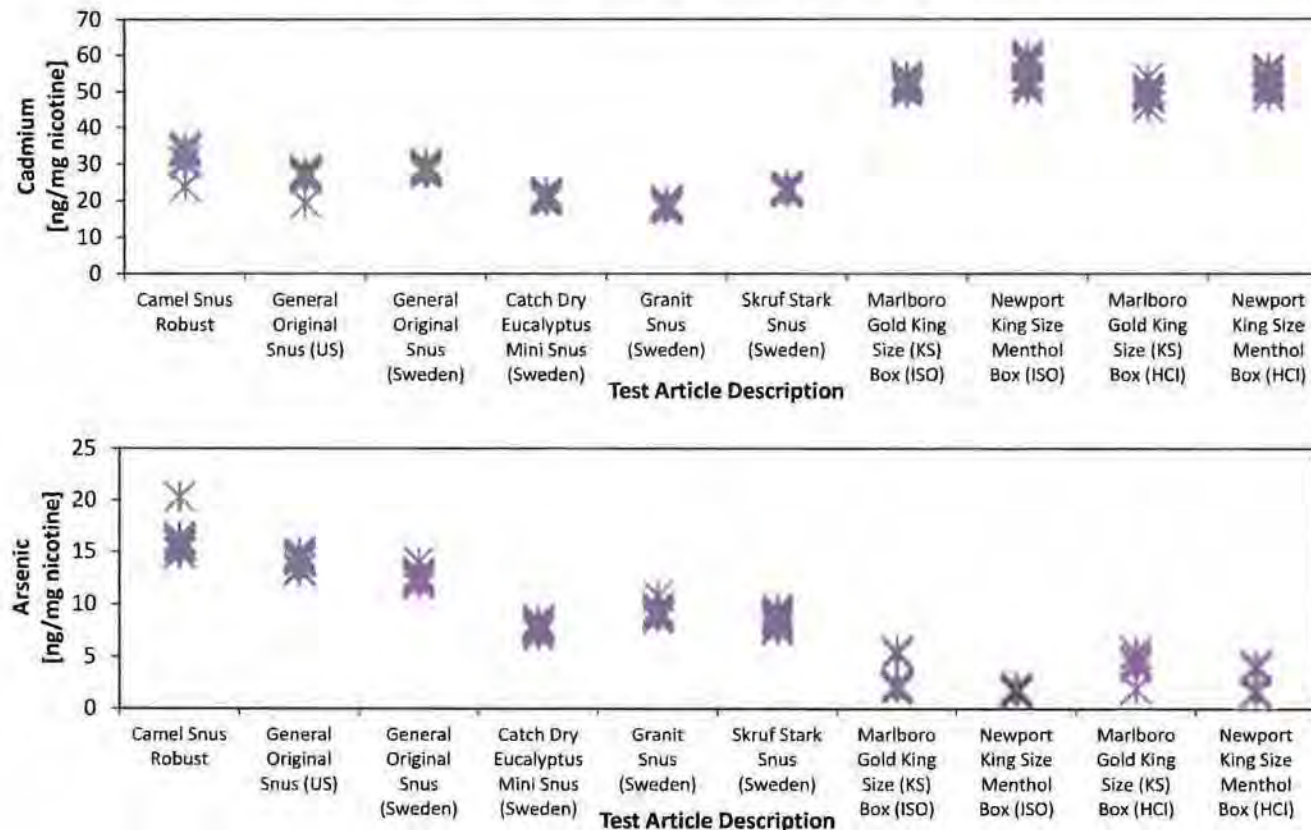
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine
Test Article Description: Camel Snus Robust; Test Article ID: 1400896



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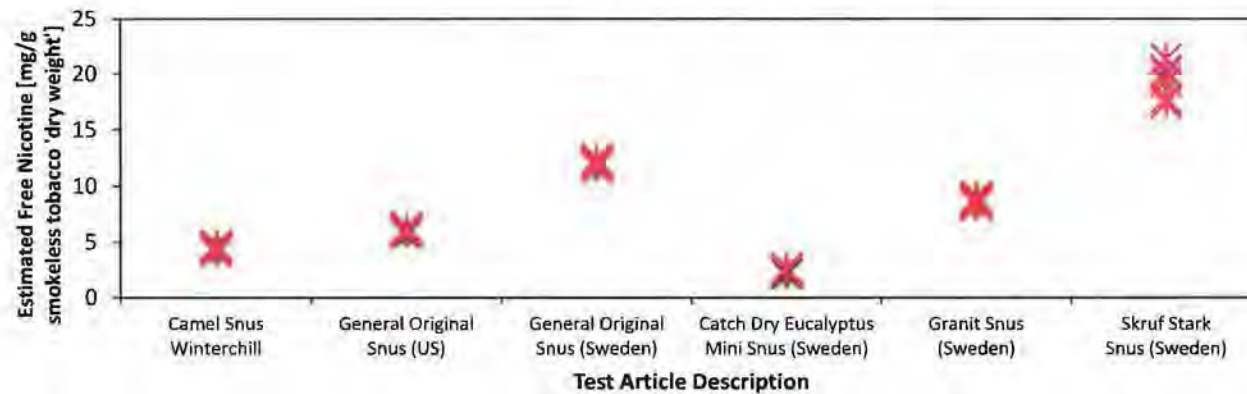
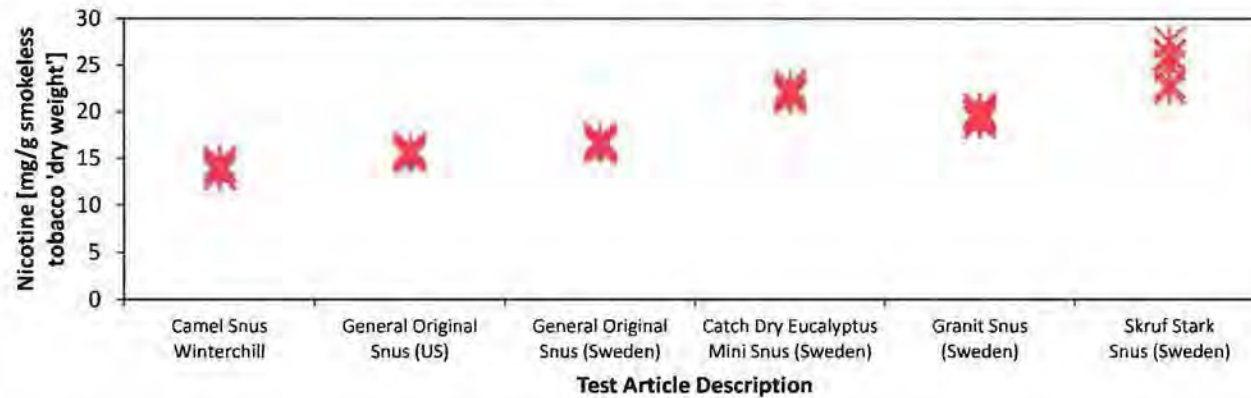
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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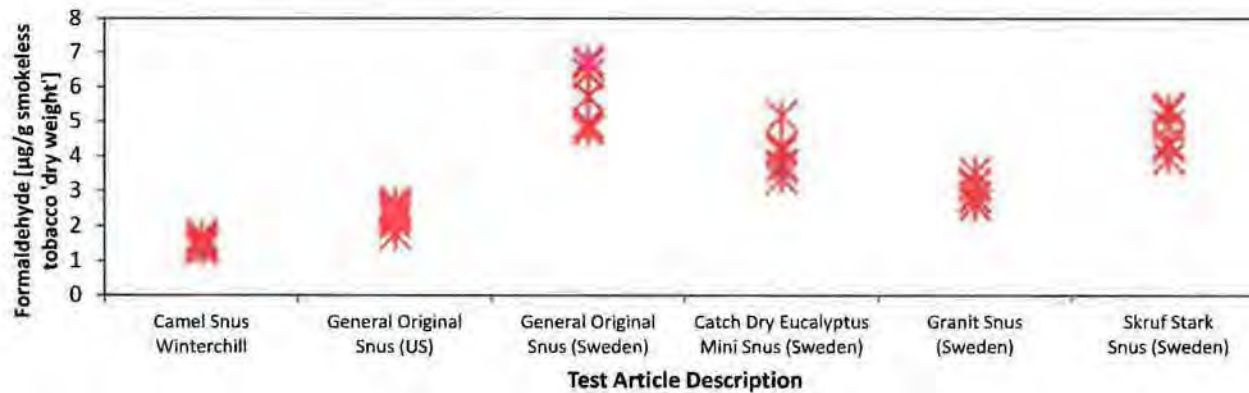
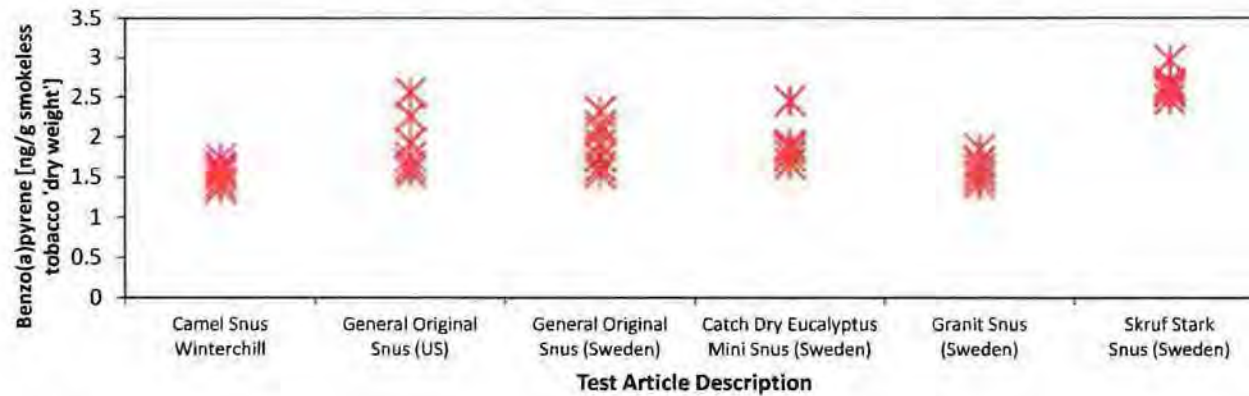
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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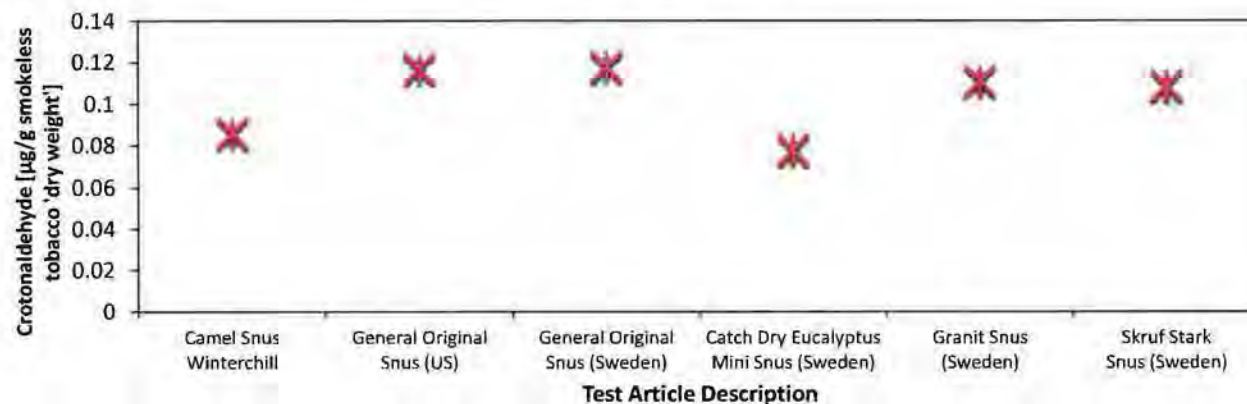
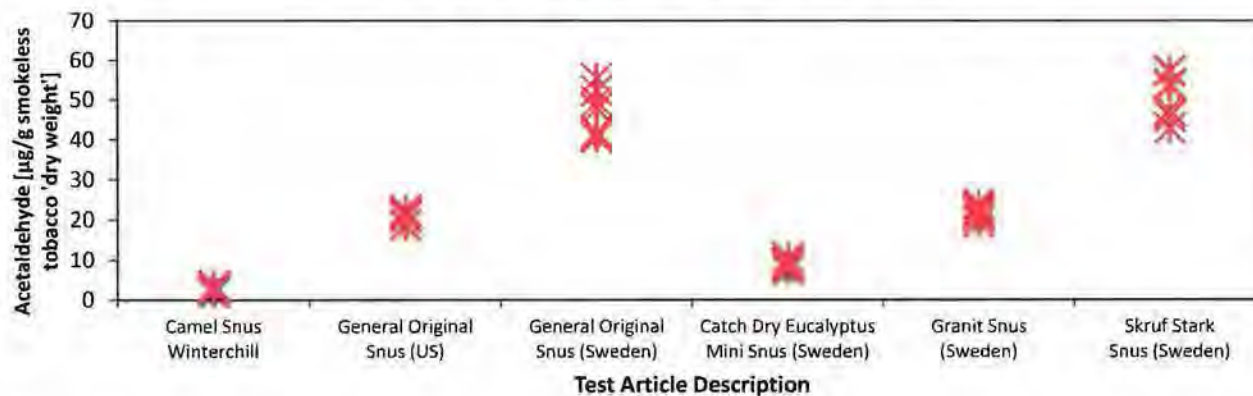


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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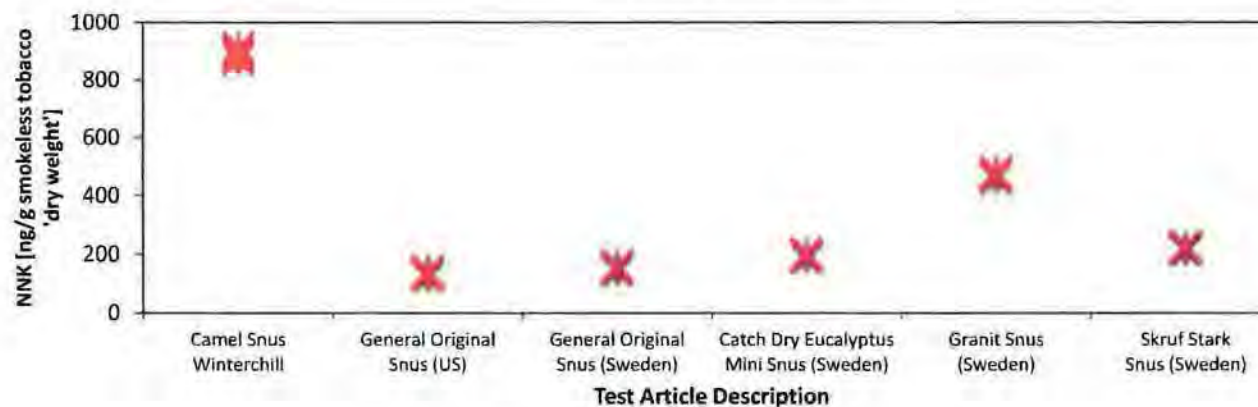
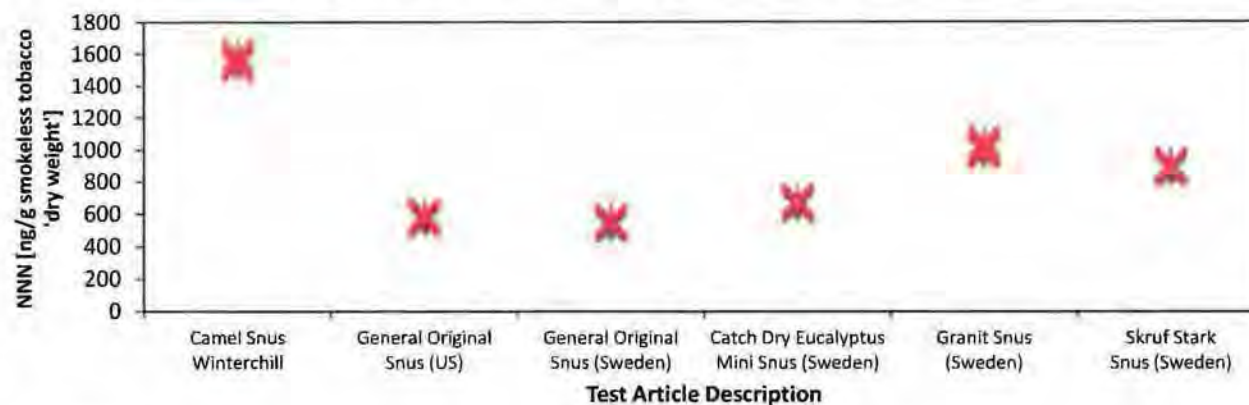


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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'**Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931**

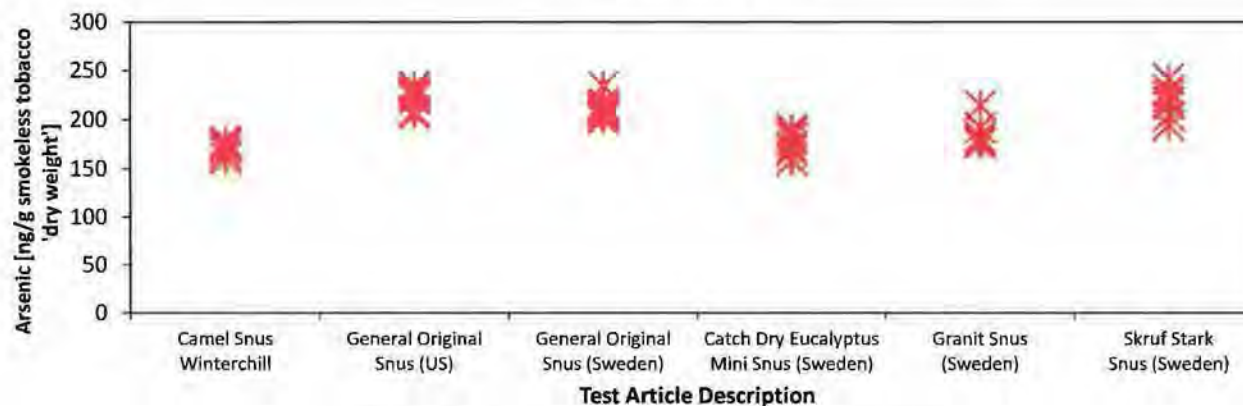
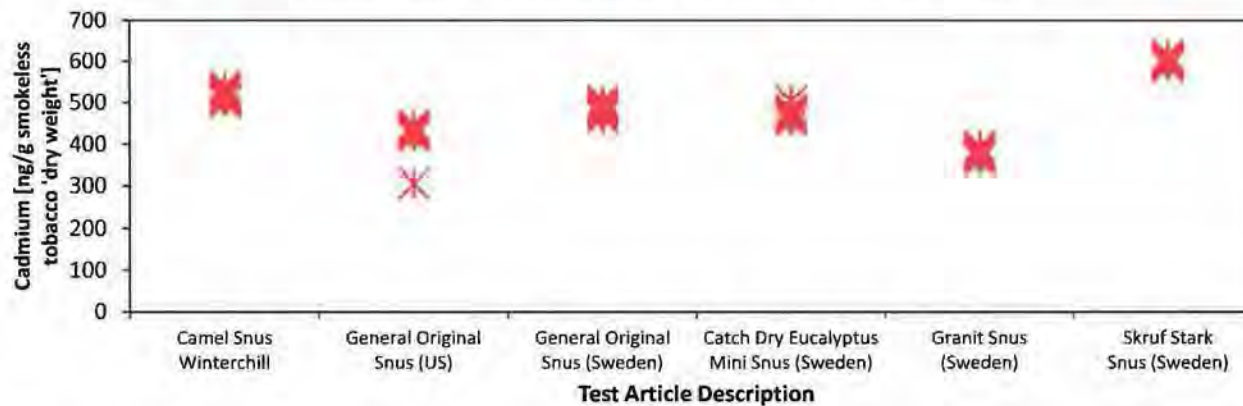
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Smokeless Tobacco Test Article Figures: mass/g smokeless tobacco 'dry weight'**Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931**

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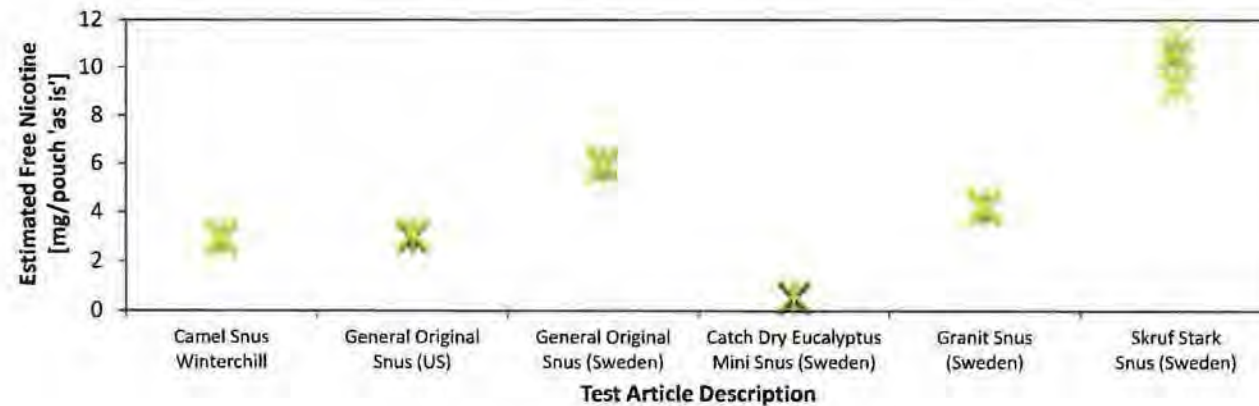
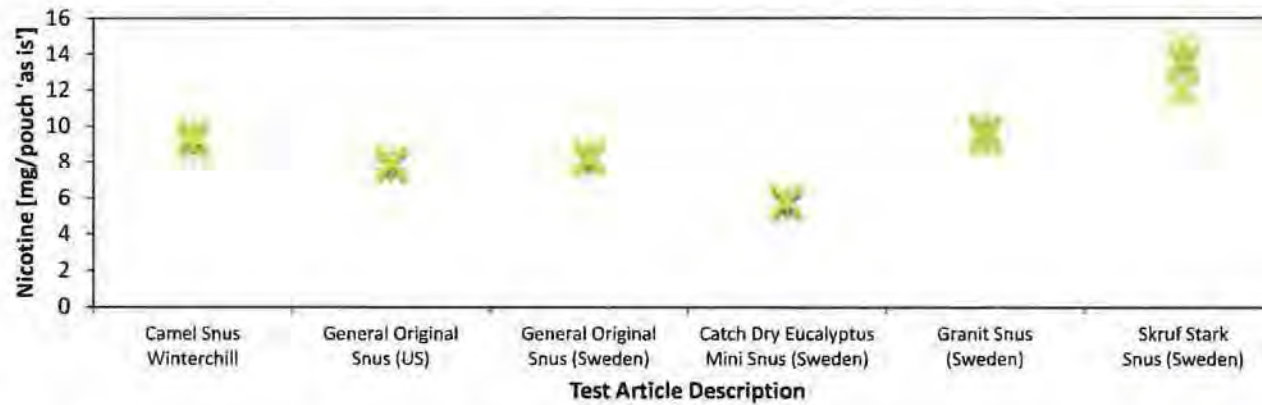


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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'**Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931**

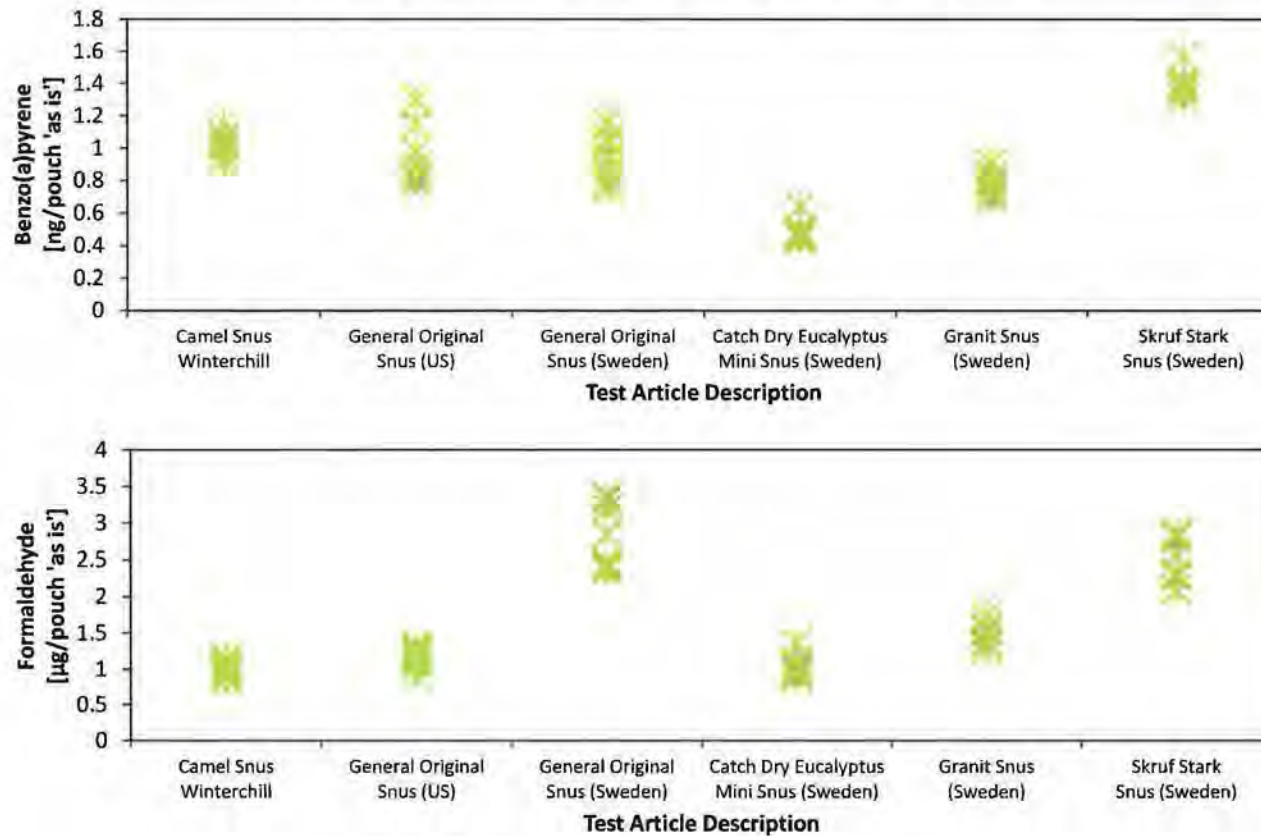
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'
Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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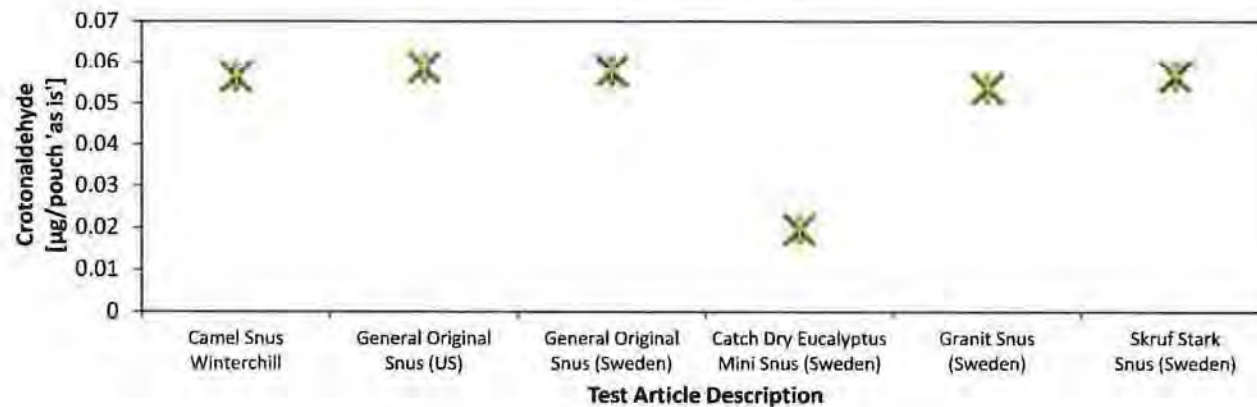
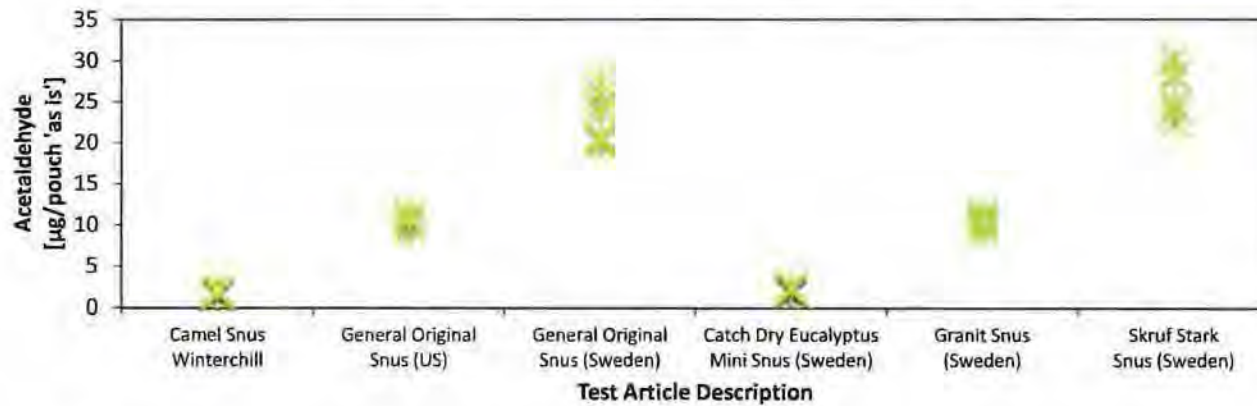
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'
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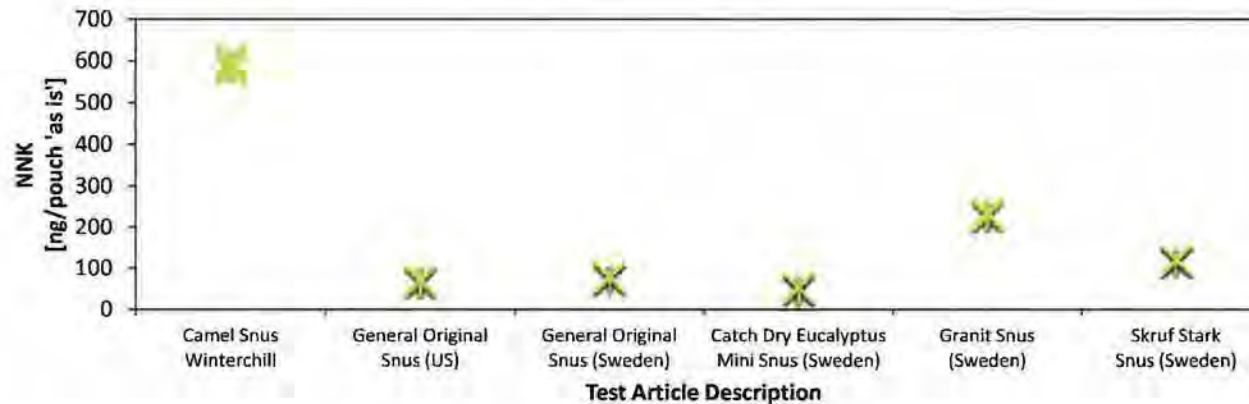
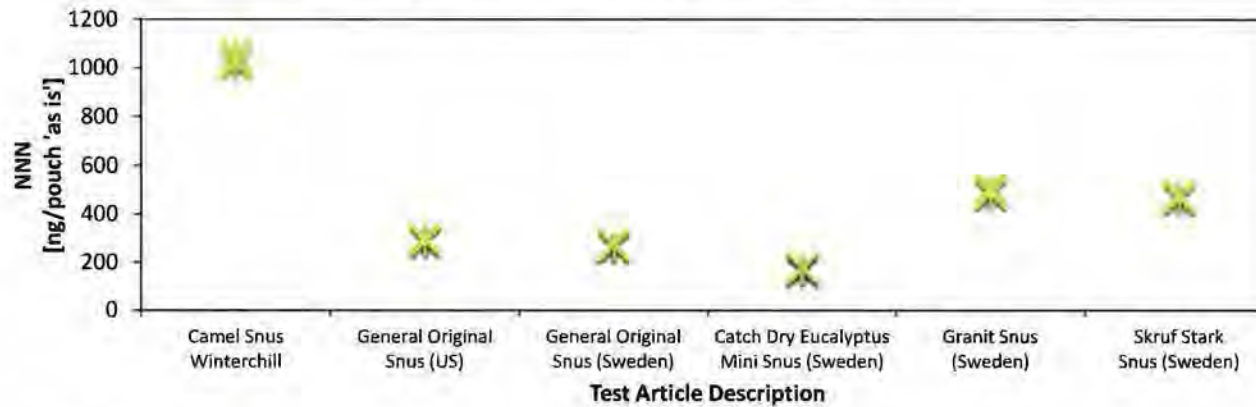
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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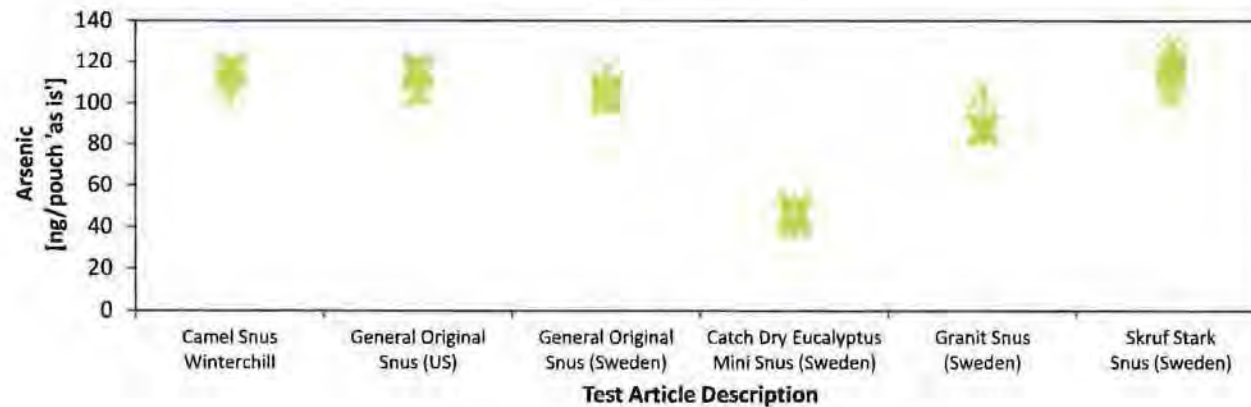
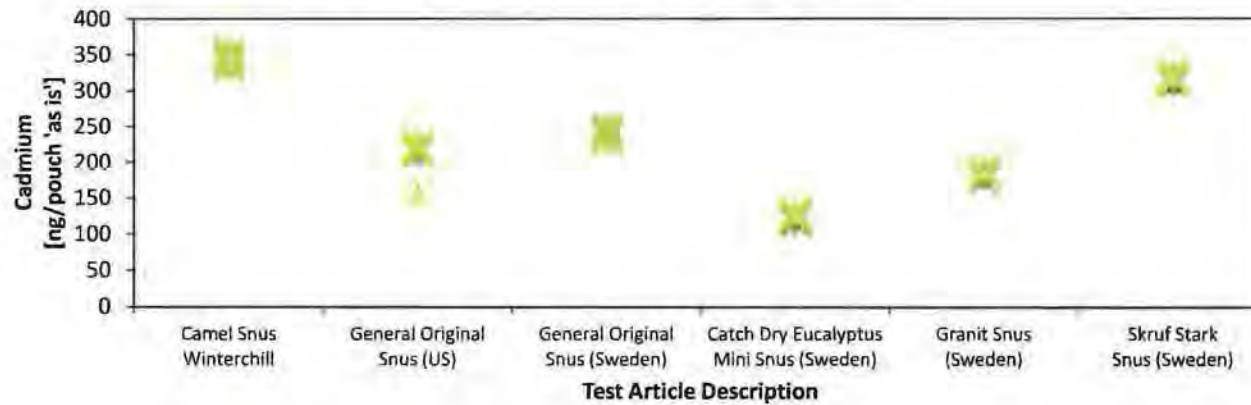
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Smokeless Tobacco Test Article Figures: mass/pouch 'as is'

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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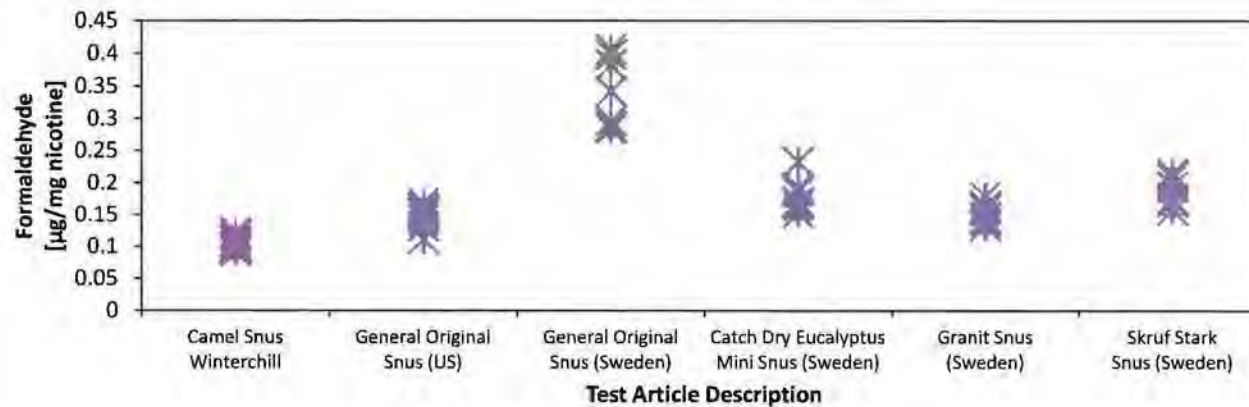
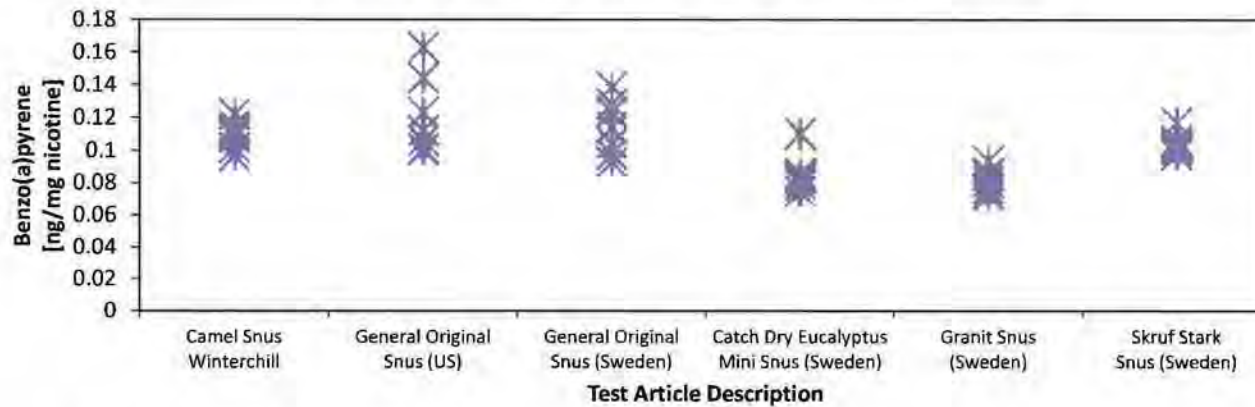
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Smokeless Tobacco Test Article Figures: mass/mg nicotine
Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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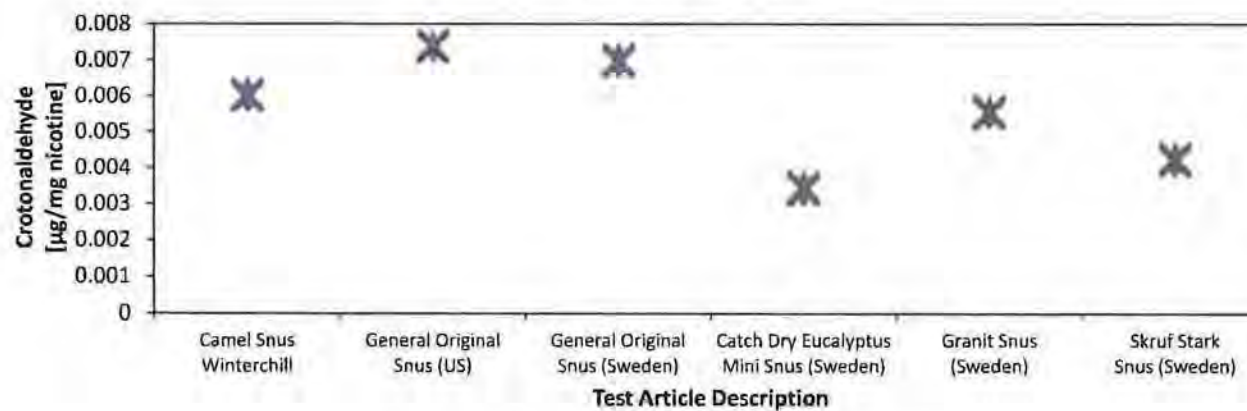
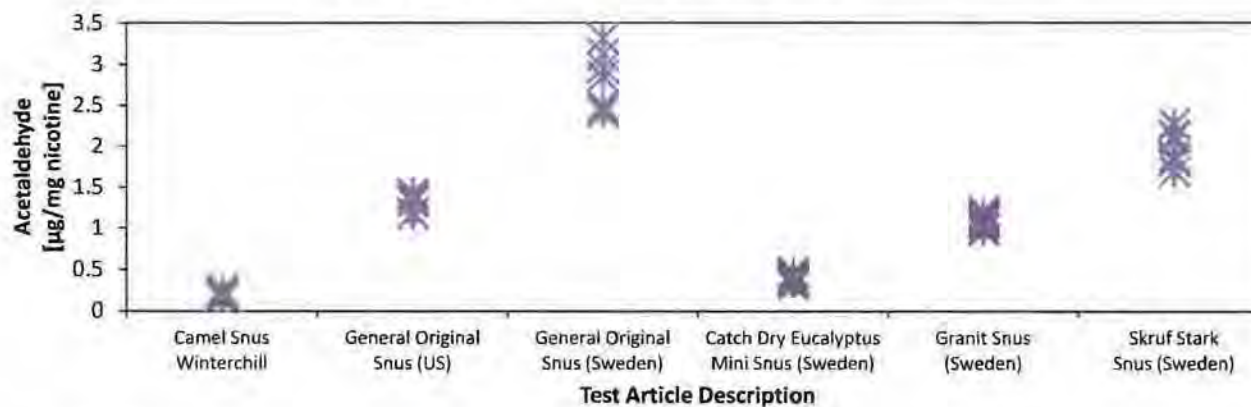
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Smokeless Tobacco Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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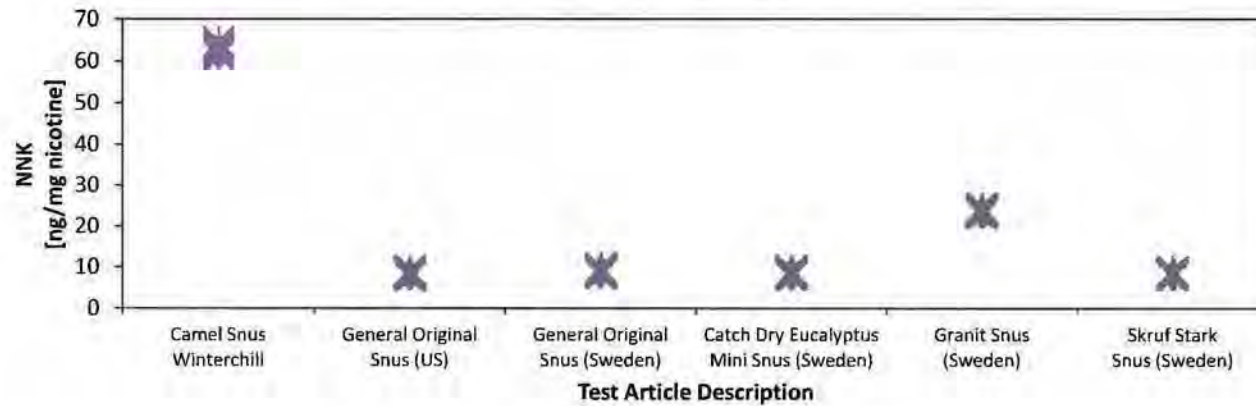
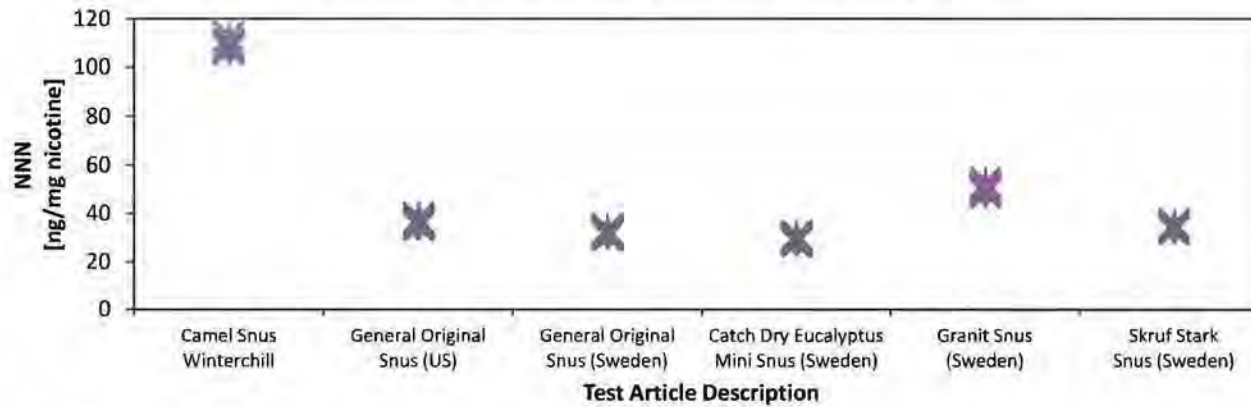
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Smokeless Tobacco Test Article Figures: mass/mg nicotine
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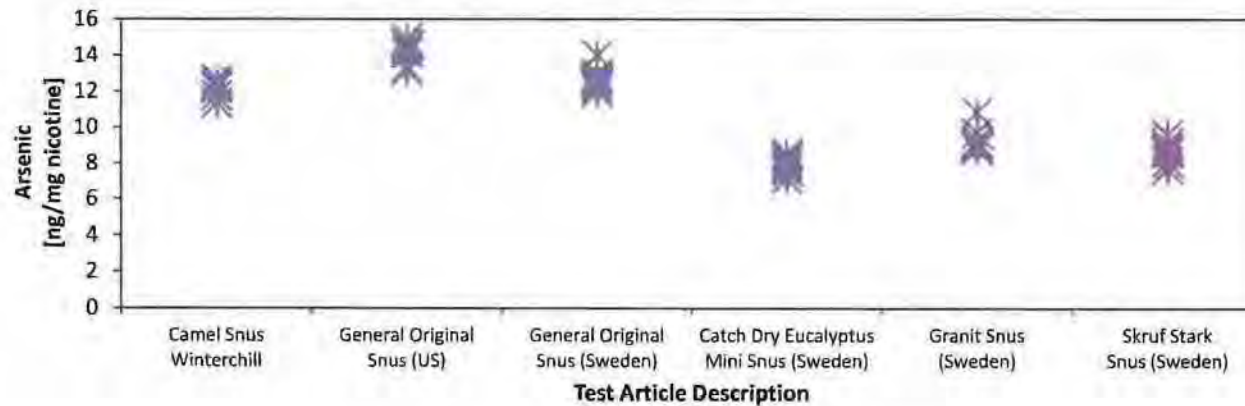
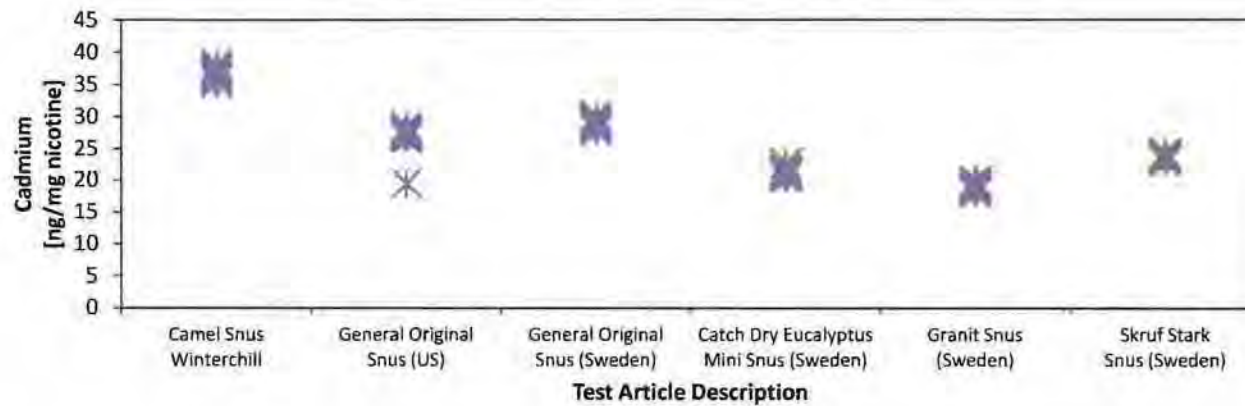
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Figures

Smokeless Tobacco Test Article Figures: mass/mg nicotine
Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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Figures

Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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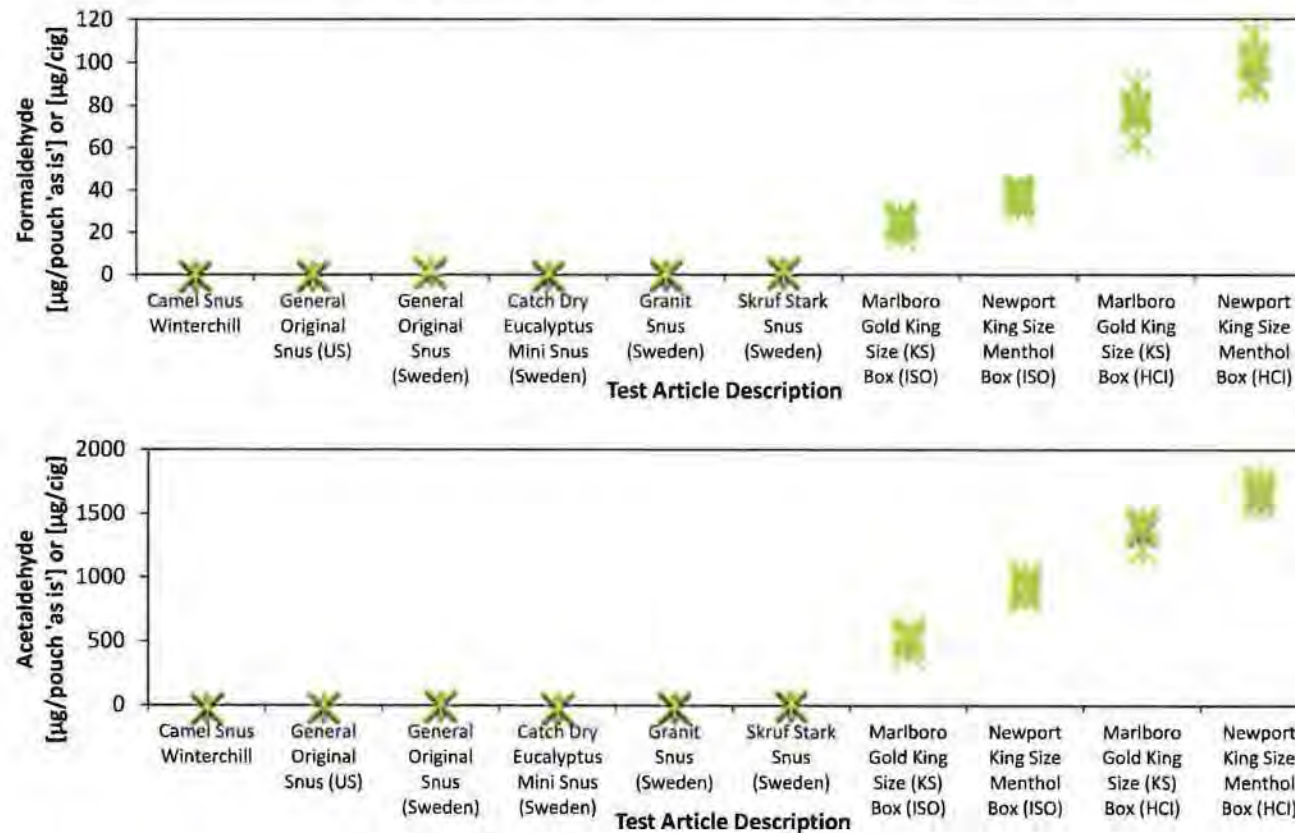
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Figures

Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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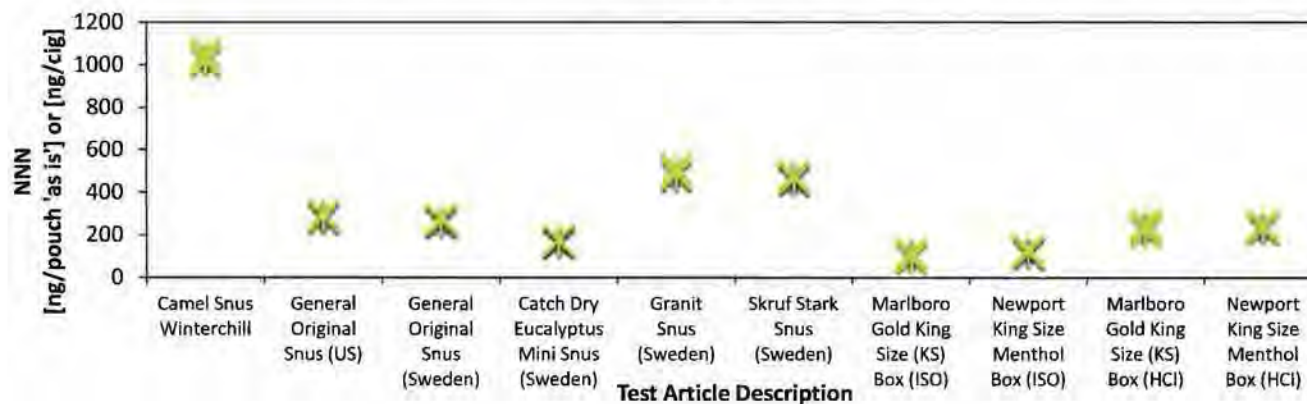
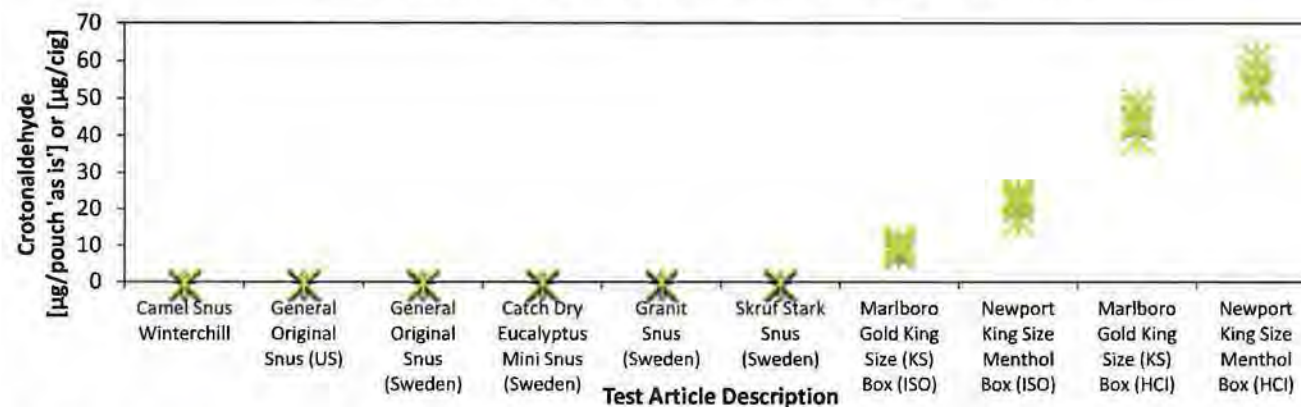
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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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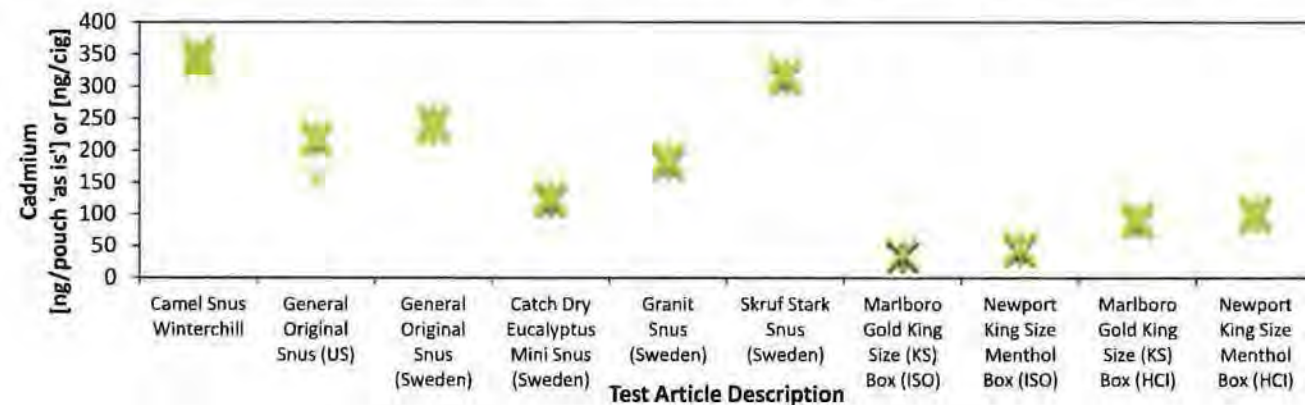
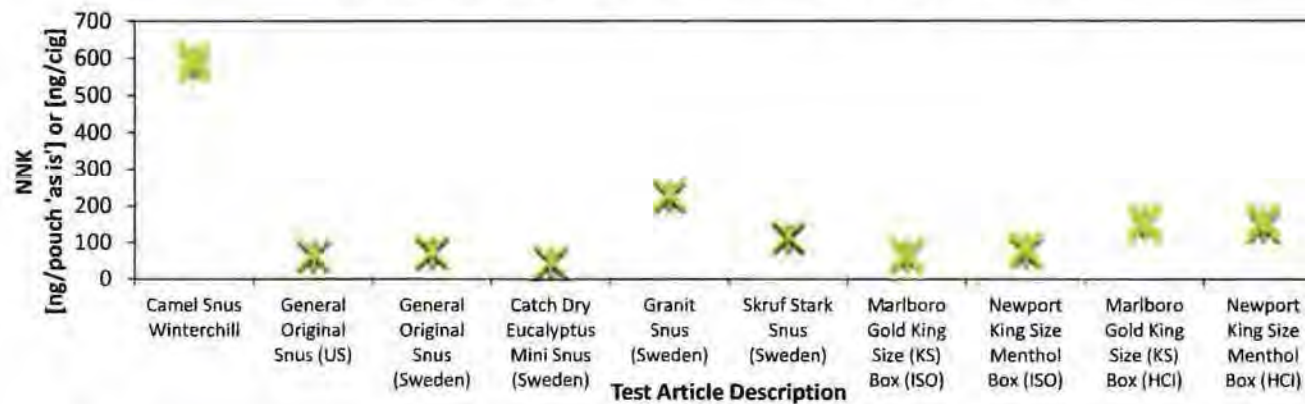
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Figures

Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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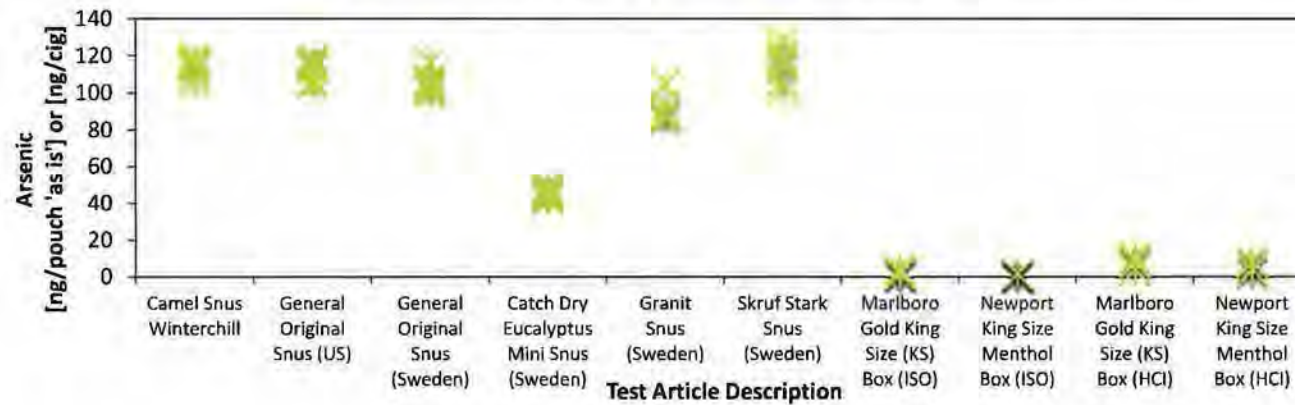


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Smokeless Tobacco and Cigarette Test Article Figures: mass/pouch 'as is' or mass/cigarette

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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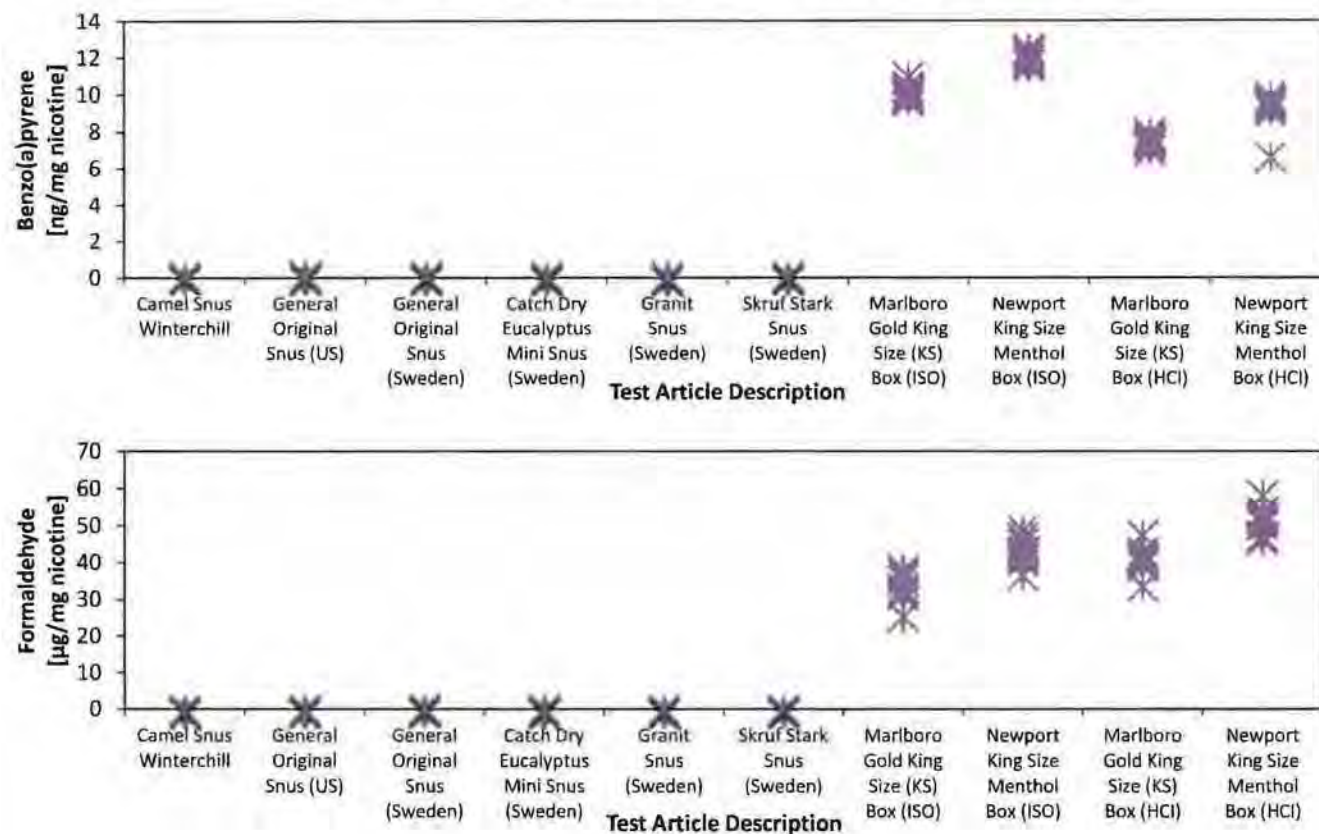
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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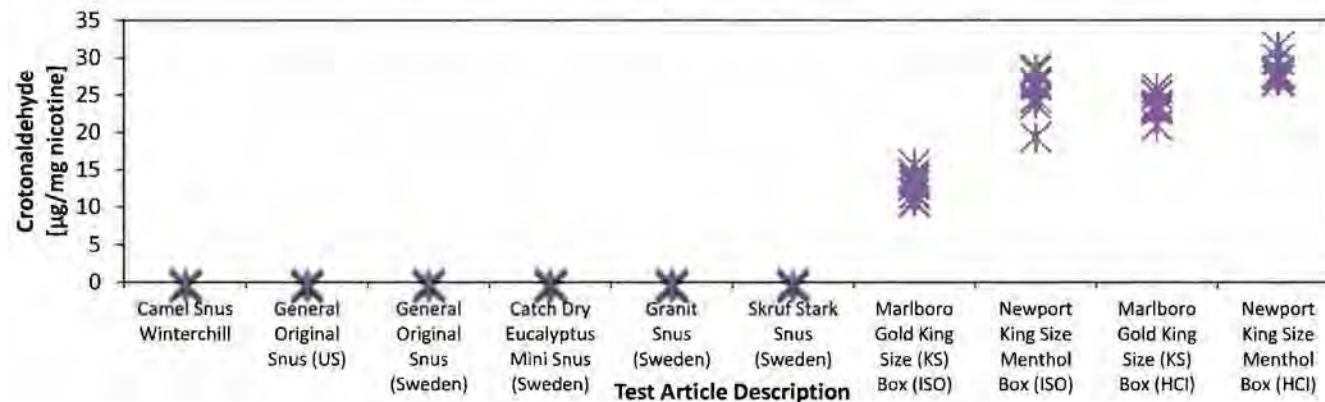
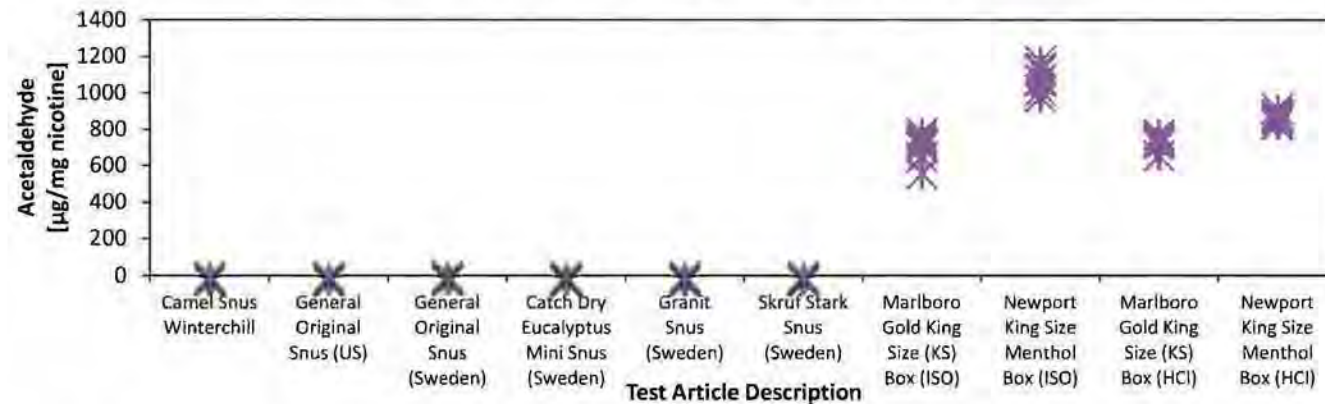
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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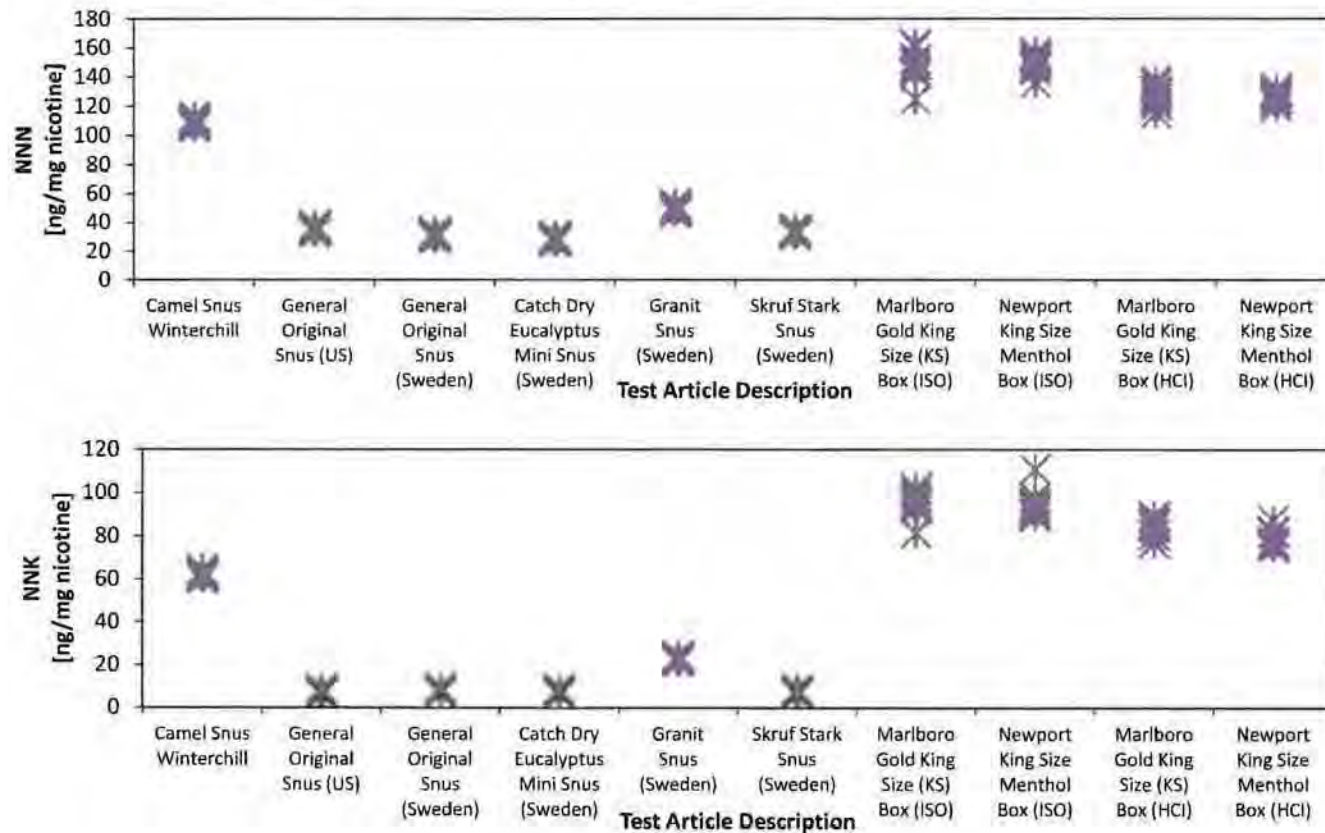
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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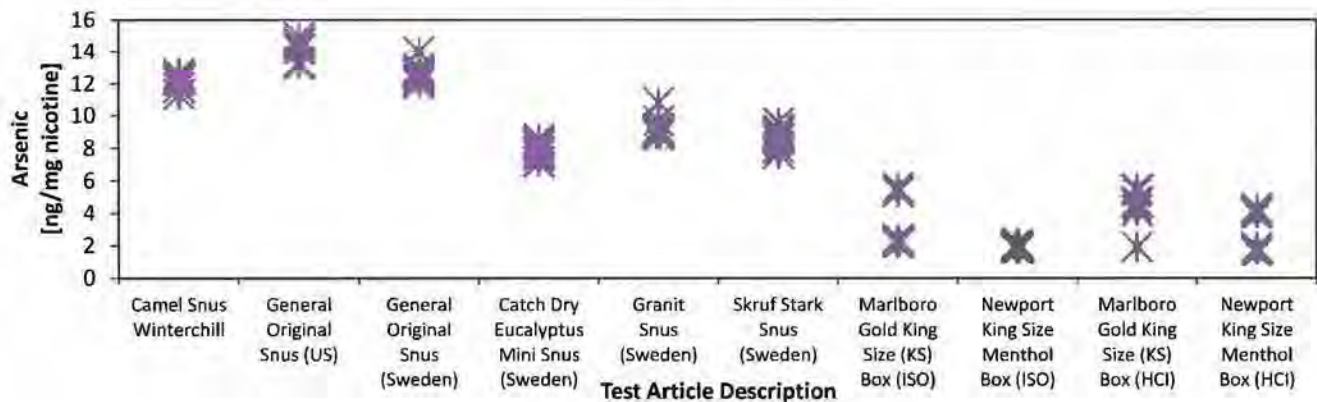
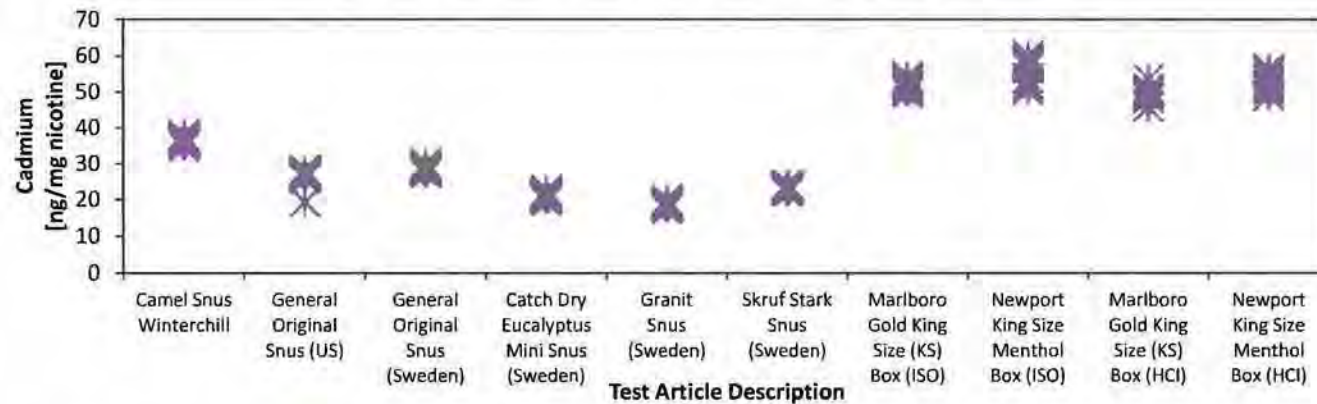
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Smokeless Tobacco and Cigarette Test Article Figures: mass/mg nicotine

Test Article Description: Camel Snus Winterchill; Test Article ID: 1400931



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Appendix K1
Statistical Analysis Results -
Camel Snus Vs. Other Swedish Snus

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Statistical Analysis Results - Camel Snus vs. Other Swedish Snus

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to the Set of Other Swedish Snus Test Articles

		Camel Snus Frost Test Article ID: 1400892		OTHER SWEDISH SNUS		Comparison p-value
Result	Unit	Mean	Std. Err.	Grand Mean	Std. Err.	
Nicotine	[mg/g smokeless tobacco 'dry weight']	12.8	0.2	19.9	0.6	0.1714
Free Nicotine	[mg/g smokeless tobacco 'dry weight']	3.33	0.05	9.86	0.99	0.4062
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	1.60	0.05	2.01	0.07	0.3942
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	1.48	0.09	4.00	0.23	0.1668
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	2.28	0.10	29.9	2.9	0.2388
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	No Comparison Made. Results below detection limits.				
NNN	[ng/g smokeless tobacco 'dry weight']	1249	5	744	31	0.0836
NNK	[ng/g smokeless tobacco 'dry weight']	454	3	242	21	0.2267
Cadmium	[ng/g smokeless tobacco 'dry weight']	479	7	474	14	0.9567
Arsenic	[ng/g smokeless tobacco 'dry weight']	219	4	204	4	0.5523
Nicotine	[mg/pouch 'as is']	5.61	0.09	9.06	0.43	0.3185
Free Nicotine	[mg/pouch 'as is']	1.46	0.02	4.92	0.56	0.4306
Benzo(a)pyrene	[ng/pouch 'as is']	0.702	0.024	0.929	0.054	0.5615
Formaldehyde	[µg/pouch 'as is']	0.653	0.042	1.84	0.13	0.2579
Acetaldehyde	[µg/pouch 'as is']	1.00	0.04	14.8	1.6	0.2827
Crotonaldehyde	[µg/pouch 'as is']	No Comparison Made. Results below detection limits.				
NNN	[ng/pouch 'as is']	549	2	345	21	0.2438
NNK	[ng/pouch 'as is']	200	1	112	11	0.3337
Cadmium	[ng/pouch 'as is']	211	3	218	11	0.9287
Arsenic	[ng/pouch 'as is']	96.1	1.9	95.1	4.5	0.9760
Benzo(a)pyrene	[ng/mg nicotine]	0.125	0.004	0.102	0.004	0.2957
Formaldehyde	[µg/mg nicotine]	0.116	0.007	0.204	0.013	0.3721
Acetaldehyde	[µg/mg nicotine]	0.179	0.008	1.53	0.14	0.2495
Crotonaldehyde	[µg/mg nicotine]	No Comparison Made. Results below detection limits.				
NNN	[ng/mg nicotine]	97.9	0.4	37.5	1.3	0.0025
NNK	[ng/mg nicotine]	35.5	0.3	12.2	1.0	0.0331
Cadmium	[ng/mg nicotine]	37.5	0.6	24.1	0.7	0.0363
Arsenic	[ng/mg nicotine]	17.1	0.3	10.6	0.4	0.0948

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Statistical Analysis Results - Camel Snus vs. Other Swedish Snus

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to the Set of Other Swedish Snus Test Articles

		Camel Snus Frost Large Test Article ID: 1400893		OTHER SWEDISH SNUS		Comparison p-value
Result	Unit	Mean	Std. Err.	Grand Mean	Std. Err.	
Nicotine	[mg/g smokeless tobacco 'dry weight']	12.5	0.4	19.9	0.6	0.1587
Free Nicotine	[mg/g smokeless tobacco 'dry weight']	3.38	0.10	9.86	0.99	0.4096
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	1.83	0.08	2.01	0.07	0.4251
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	1.14	0.05	4.00	0.23	0.1277
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	2.32	0.10	29.9	2.9	0.2393
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	No Comparison Made. Results below detection limits.				
NNN	[ng/g smokeless tobacco 'dry weight']	1281	9	744	31	0.0713
NNK	[ng/g smokeless tobacco 'dry weight']	415	2	242	21	0.3083
Cadmium	[ng/g smokeless tobacco 'dry weight']	439	15	474	14	0.7278
Arsenic	[ng/g smokeless tobacco 'dry weight']	208	3	204	4	0.8826
Nicotine	[mg/pouch 'as is']	8.09	0.24	9.06	0.43	0.7653
Free Nicotine	[mg/pouch 'as is']	2.19	0.06	4.92	0.56	0.5273
Benzo(a)pyrene	[ng/pouch 'as is']	1.053	0.050	0.929	0.054	0.7468
Formaldehyde	[µg/pouch 'as is']	0.740	0.030	1.84	0.13	0.2892
Acetaldehyde	[µg/pouch 'as is']	1.50	0.07	14.8	1.6	0.2979
Crotonaldehyde	[µg/pouch 'as is']	No Comparison Made. Results below detection limits.				
NNN	[ng/pouch 'as is']	830	6	345	21	0.0315
NNK	[ng/pouch 'as is']	269	1	112	11	0.1198
Cadmium	[ng/pouch 'as is']	285	10	218	11	0.4423
Arsenic	[ng/pouch 'as is']	134	2	95.1	4.5	0.2751
Benzo(a)pyrene	[ng/mg nicotine]	0.130	0.006	0.102	0.004	0.2159
Formaldehyde	[µg/mg nicotine]	0.091	0.004	0.204	0.013	0.2674
Acetaldehyde	[µg/mg nicotine]	0.186	0.008	1.53	0.14	0.2515
Crotonaldehyde	[µg/mg nicotine]	No Comparison Made. Results below detection limits.				
NNN	[ng/mg nicotine]	103	1	37.5	1.3	0.0018
NNK	[ng/mg nicotine]	33.2	0.2	12.2	1.0	0.0451
Cadmium	[ng/mg nicotine]	35.2	1.2	24.1	0.7	0.0633
Arsenic	[ng/mg nicotine]	16.6	0.3	10.6	0.4	0.1144

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Statistical Analysis Results - Camel Snus vs. Other Swedish Snus

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to the Set of Other Swedish Snus Test Articles

Result	Unit	Camel Snus Mellow Test Article ID: 1400894		OTHER SWEDISH SNUS		Comparison p-value
		Mean	Std. Err.	Grand Mean	Std. Err.	
Nicotine	[mg/g smokeless tobacco 'dry weight']	13.4	0.3	19.9	0.6	0.2059
Free Nicotine	[mg/g smokeless tobacco 'dry weight']	3.67	0.08	9.86	0.99	0.4292
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	1.69	0.10	2.01	0.07	0.5090
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	2.07	0.13	4.00	0.23	0.2655
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	4.05	0.08	29.9	2.9	0.2651
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	No Comparison Made. Results below detection limits.				
NNN	[ng/g smokeless tobacco 'dry weight']	1232	7	744	31	0.0914
NNK	[ng/g smokeless tobacco 'dry weight']	372	3	242	21	0.4294
Cadmium	[ng/g smokeless tobacco 'dry weight']	419	16	474	14	0.5849
Arsenic	[ng/g smokeless tobacco 'dry weight']	198	9	204	4	0.8071
Nicotine	[mg/pouch 'as is']	5.68	0.12	9.06	0.43	0.3272
Free Nicotine	[mg/pouch 'as is']	1.55	0.03	4.92	0.56	0.4417
Benzo(a)pyrene	[ng/pouch 'as is']	0.717	0.043	0.929	0.054	0.5865
Formaldehyde	[µg/pouch 'as is']	0.877	0.055	1.84	0.13	0.3453
Acetaldehyde	[µg/pouch 'as is']	1.71	0.03	14.8	1.6	0.3046
Crotonaldehyde	[µg/pouch 'as is']	No Comparison Made. Results below detection limits.				
NNN	[ng/pouch 'as is']	521	3	345	21	0.3046
NNK	[ng/pouch 'as is']	157	1	112	11	0.5997
Cadmium	[ng/pouch 'as is']	177	7	218	11	0.6263
Arsenic	[ng/pouch 'as is']	84	4	95.1	4.5	0.7365
Benzo(a)pyrene	[ng/mg nicotine]	0.126	0.007	0.102	0.004	0.2766
Formaldehyde	[µg/mg nicotine]	0.154	0.010	0.204	0.013	0.5990
Acetaldehyde	[µg/mg nicotine]	0.301	0.006	1.53	0.14	0.2880
Crotonaldehyde	[µg/mg nicotine]	No Comparison Made. Results below detection limits.				
NNN	[ng/mg nicotine]	91.7	0.5	37.5	1.3	0.0037
NNK	[ng/mg nicotine]	27.7	0.2	12.2	1.0	0.1012
Cadmium	[ng/mg nicotine]	31.2	1.2	24.1	0.7	0.1798
Arsenic	[ng/mg nicotine]	14.7	0.6	10.6	0.4	0.2386

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Statistical Analysis Results - Camel Snus vs. Other Swedish Snus

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to the Set of Other Swedish Snus Test Articles

		Camel Snus Mint Test Article ID: 1400895		OTHER SWEDISH SNUS		Comparison p-value
Result	Unit	Mean	Std. Err.	Grand Mean	Std. Err.	
Nicotine	[mg/g smokeless tobacco 'dry weight']	13.7	0.2	19.9	0.6	0.2228
Free Nicotine	[mg/g smokeless tobacco 'dry weight']	3.50	0.06	9.86	0.99	0.4173
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	1.51	0.07	2.01	0.07	0.3145
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	1.84	0.12	4.00	0.23	0.2201
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	2.55	0.08	29.9	2.9	0.2426
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	No Comparison Made. Results below detection limits.				
NNN	[ng/g smokeless tobacco 'dry weight']	1231	8	744	31	0.0918
NNK	[ng/g smokeless tobacco 'dry weight']	318	3	242	21	0.6365
Cadmium	[ng/g smokeless tobacco 'dry weight']	425	13	474	14	0.6255
Arsenic	[ng/g smokeless tobacco 'dry weight']	209	5	204	4	0.8193
Nicotine	[mg/pouch 'as is']	5.39	0.09	9.06	0.43	0.2922
Free Nicotine	[mg/pouch 'as is']	1.37	0.02	4.92	0.56	0.4196
Benzo(a)pyrene	[ng/pouch 'as is']	0.594	0.028	0.929	0.054	0.4039
Formaldehyde	[µg/pouch 'as is']	0.721	0.049	1.84	0.13	0.2820
Acetaldehyde	[µg/pouch 'as is']	1.00	0.03	14.8	1.6	0.2826
Crotonaldehyde	[µg/pouch 'as is']	No Comparison Made. Results below detection limits.				
NNN	[ng/pouch 'as is']	484	3	345	21	0.4069
NNK	[ng/pouch 'as is']	125	1	112	11	0.8822
Cadmium	[ng/pouch 'as is']	167	5	218	11	0.5465
Arsenic	[ng/pouch 'as is']	82.3	2.0	95.1	4.5	0.7027
Benzo(a)pyrene	[ng/mg nicotine]	0.110	0.005	0.102	0.004	0.6910
Formaldehyde	[µg/mg nicotine]	0.134	0.009	0.204	0.013	0.4663
Acetaldehyde	[µg/mg nicotine]	0.186	0.006	1.53	0.14	0.2515
Crotonaldehyde	[µg/mg nicotine]	No Comparison Made. Results below detection limits.				
NNN	[ng/mg nicotine]	90.7	0.5	37.5	1.3	0.0042
NNK	[ng/mg nicotine]	25.4	0.7	12.2	1.0	0.2081
Cadmium	[ng/mg nicotine]	31.0	0.7	24.1	0.7	0.1900
Arsenic	[ng/mg nicotine]	15.0	0.4	10.6	0.4	0.1943

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Statistical Analysis Results - Camel Snus vs. Other Swedish Snus

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to the Set of Other Swedish Snus Test Articles

Result	Unit	Camel Snus Robust Test Article ID: 1400896		OTHER SWEDISH SNUS		Comparison p-value
		Mean	Std. Err.	Grand Mean	Std. Err.	
Nicotine	[mg/g smokeless tobacco 'dry weight']	12.1	0.4	19.9	0.6	0.1437
Free Nicotine	[mg/g smokeless tobacco 'dry weight']	3.85	0.14	9.86	0.99	0.4413
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	1.54	0.10	2.01	0.07	0.3411
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	1.61	0.09	4.00	0.23	0.1837
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	2.74	0.09	29.9	2.9	0.2454
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	No Comparison Made. Results below detection limits.				
NNN	[ng/g smokeless tobacco 'dry weight']	1270	9	744	31	0.0756
NNK	[ng/g smokeless tobacco 'dry weight']	393	4	242	21	0.3667
Cadmium	[ng/g smokeless tobacco 'dry weight']	387	18	474	14	0.4060
Arsenic	[ng/g smokeless tobacco 'dry weight']	199	8	204	4	0.8443
Nicotine	[mg/pouch 'as is']	8.19	0.29	9.06	0.43	0.7889
Free Nicotine	[mg/pouch 'as is']	2.60	0.09	4.92	0.56	0.5883
Benzo(a)pyrene	[ng/pouch 'as is']	1.04	0.07	0.929	0.054	0.7671
Formaldehyde	[µg/pouch 'as is']	1.09	0.06	1.84	0.13	0.4502
Acetaldehyde	[µg/pouch 'as is']	1.85	0.06	14.8	1.6	0.3091
Crotonaldehyde	[µg/pouch 'as is']	No Comparison Made. Results below detection limits.				
NNN	[ng/pouch 'as is']	858	6	345	21	0.0265
NNK	[ng/pouch 'as is']	266	3	112	11	0.1259
Cadmium	[ng/pouch 'as is']	262	12	218	11	0.6046
Arsenic	[ng/pouch 'as is']	135	5	95.1	4.5	0.2728
Benzo(a)pyrene	[ng/mg nicotine]	0.127	0.008	0.102	0.004	0.2578
Formaldehyde	[µg/mg nicotine]	0.133	0.007	0.204	0.013	0.4594
Acetaldehyde	[µg/mg nicotine]	0.226	0.008	1.53	0.14	0.2637
Crotonaldehyde	[µg/mg nicotine]	No Comparison Made. Results below detection limits.				
NNN	[ng/mg nicotine]	105	1	37.5	1.3	0.0016
NNK	[ng/mg nicotine]	32.4	0.3	12.2	1.0	0.0506
Cadmium	[ng/mg nicotine]	32.0	1.5	24.1	0.7	0.1443
Arsenic	[ng/mg nicotine]	16.4	0.7	10.6	0.4	0.1224

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Study Report - Appendix K1

Statistical Analysis Results - Camel Snus vs. Other Swedish Snus

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to the Set of Other Swedish Snus Test Articles

		Camel Snus Winterchill Test Article ID: 1400931		OTHER SWEDISH SNUS		Comparison p-value
Result	Unit	Mean	Std. Err.	Grand Mean	Std. Err.	
Nicotine	[mg/g smokeless tobacco 'dry weight']	14.2	0.2	19.9	0.6	0.2511
Free Nicotine	[mg/g smokeless tobacco 'dry weight']	4.65	0.05	9.86	0.99	0.5002
Benzo(a)pyrene	[ng/g smokeless tobacco 'dry weight']	1.56	0.05	2.01	0.07	0.3608
Formaldehyde	[µg/g smokeless tobacco 'dry weight']	1.52	0.06	4.00	0.23	0.1711
Acetaldehyde	[µg/g smokeless tobacco 'dry weight']	3.18	0.14	29.9	2.9	0.2518
Crotonaldehyde	[µg/g smokeless tobacco 'dry weight']	No Comparison Made. Results below detection limits.				
NNN	[ng/g smokeless tobacco 'dry weight']	1561	11	744	31	0.0207
NNK	[ng/g smokeless tobacco 'dry weight']	893	7	242	21	0.0118
Cadmium	[ng/g smokeless tobacco 'dry weight']	520	5	474	14	0.6432
Arsenic	[ng/g smokeless tobacco 'dry weight']	173	3	204	4	0.2379
Nicotine	[mg/pouch 'as is']	9.43	0.11	9.06	0.43	0.9079
Free Nicotine	[mg/pouch 'as is']	3.10	0.04	4.92	0.56	0.6680
Benzo(a)pyrene	[ng/pouch 'as is']	1.04	0.03	0.929	0.054	0.7693
Formaldehyde	[µg/pouch 'as is']	1.01	0.04	1.84	0.13	0.4095
Acetaldehyde	[µg/pouch 'as is']	2.12	0.09	14.8	1.6	0.3178
Crotonaldehyde	[µg/pouch 'as is']	No Comparison Made. Results below detection limits.				
NNN	[ng/pouch 'as is']	1040	7	345	21	0.0097
NNK	[ng/pouch 'as is']	595	5	112	11	0.0037
Cadmium	[ng/pouch 'as is']	347	3	218	11	0.1745
Arsenic	[ng/pouch 'as is']	115	2	95.1	4.5	0.5537
Benzo(a)pyrene	[ng/mg nicotine]	0.110	0.003	0.102	0.004	0.6841
Formaldehyde	[µg/mg nicotine]	0.107	0.004	0.204	0.013	0.3297
Acetaldehyde	[µg/mg nicotine]	0.225	0.010	1.53	0.14	0.2633
Crotonaldehyde	[µg/mg nicotine]	No Comparison Made. Results below detection limits.				
NNN	[ng/mg nicotine]	110	1	37.5	1.3	0.0012
NNK	[ng/mg nicotine]	63.1	0.5	12.2	1.0	0.0022
Cadmium	[ng/mg nicotine]	36.8	0.3	24.1	0.7	0.0433
Arsenic	[ng/mg nicotine]	12.2	0.2	10.6	0.4	0.6217

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Appendix K2
Statistical Analysis Results -
Camel Snus Vs. Market Leading Cigarettes

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Statistical Analysis Results - Camel Snus vs. Market Leading Cigarettes

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to Market Leading Cigarette Test Articles

Result	Unit	Statistic	Camel Snus Frost	Marlboro Gold King	Newport King Size	Marlboro Gold King	Newport King Size
			Test Article ID: 1400892	Size (KS) Box Test Article ID: 1400588 ISO	Menthol Box Test Article ID: 1400589 ISO	Size (KS) Box Test Article ID: 1400589 INT	Menthol Box Test Article ID: 1400589 INT
Nicotine	[mg/pouch 'as is'] or [mg/cigarette]	Mean p-value	5.61	0.756 0.002	0.872 0.002	1.88 0.002	1.94 0.002
Benzo(a)pyrene	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	0.702	7.71 0.002	10.50 0.002	14.1 0.002	17.5 0.002
Formaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.653	25.2 0.002	37.9 0.002	77.9 0.002	99.7 0.002
Acetaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	1.00	532 0.002	944 0.002	1384 0.002	1686 0.002
Crotonaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.038	9.73 0.001	22.2 0.001	44.7 0.001	55.4 0.001
NNN	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	549	112 0.002	130 0.002	241 0.002	248 0.002
NNK	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	200	72.4 0.002	84.1 0.002	160 0.002	156 0.002
Cadmium	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	211	39.5 0.002	48.7 0.002	94.4 0.002	104 0.002
Arsenic	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	96.1	2.52 0.001	1.87 0.001	8.45 0.002	5.62 0.002
Benzo(a)pyrene	[ng/mg nicotine]	Mean p-value	0.125	10.2 0.002	12.0 0.002	7.50 0.002	9.08 0.002
Formaldehyde	[µg/mg nicotine]	Mean p-value	0.116	33.4 0.002	43.5 0.002	41.3 0.002	51.4 0.002
Acetaldehyde	[µg/mg nicotine]	Mean p-value	0.179	703 0.002	1082 0.002	734 0.002	869 0.002
Crotonaldehyde	[µg/mg nicotine]	Mean p-value	0.007	12.9 0.001	25.5 0.001	23.7 0.001	28.6 0.001
NNN	[ng/mg nicotine]	Mean p-value	97.9	149 0.002	149 0.002	128 0.002	128 0.002
NNK	[ng/mg nicotine]	Mean p-value	35.5	95.8 0.002	96.5 0.002	85.0 0.002	80.3 0.002
Cadmium	[ng/mg nicotine]	Mean p-value	37.5	52.3 0.002	55.9 0.002	50.1 0.002	53.4 0.002
Arsenic	[ng/mg nicotine]	Mean p-value	17.1	3.34 0.001	2.14 0.001	4.49 0.002	2.90 0.002

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Statistical Analysis Results - Camel Snus vs. Market Leading Cigarettes

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to Market Leading Cigarette Test Articles

Result	Unit	Statistic	Camel Snus Frost Large Test Article ID: 1400893	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 ISO	Newport King Size Menthol Box Test Article ID: 1400589 ISO	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 INT	Newport King Size Menthol Box Test Article ID: 1400589 INT
Nicotine	[mg/pouch 'as is'] or [mg/cigarette]	Mean p-value	8.09	0.756 0.002	0.872 0.002	1.88 0.002	1.94 0.002
Benzo(a)pyrene	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	1.05	7.71 0.002	10.50 0.002	14.1 0.002	17.6 0.002
Formaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.740	25.2 0.002	37.9 0.002	77.9 0.002	99.7 0.002
Acetaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	1.50	532 0.002	944 0.002	1384 0.002	1686 0.002
Crotonaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.056	9.7 0.001	22.2 0.001	44.7 0.001	55.4 0.001
NNN	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	830	112 0.002	130 0.002	241 0.002	248 0.002
NNK	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	269	72.4 0.002	84.1 0.002	160 0.002	156 0.002
Cadmium	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	285	39.5 0.002	48.7 0.002	94.4 0.002	104 0.002
Arsenic	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	134	2.52 0.001	1.87 0.001	8.45 0.002	5.62 0.002
Benzo(a)pyrene	[ng/mg nicotine]	Mean p-value	0.130	10.2 0.002	12.0 0.002	7.50 0.002	9.08 0.002
Formaldehyde	[µg/mg nicotine]	Mean p-value	0.091	33.4 0.002	43.5 0.002	41.3 0.002	51.4 0.002
Acetaldehyde	[µg/mg nicotine]	Mean p-value	0.186	703 0.002	1082 0.002	734 0.002	869 0.002
Crotonaldehyde	[µg/mg nicotine]	Mean p-value	0.007	12.9 0.001	25.5 0.001	23.7 0.001	28.6 0.001
NNN	[ng/mg nicotine]	Mean p-value	103	149 0.002	149 0.002	128 0.002	128 0.002
NNK	[ng/mg nicotine]	Mean p-value	33.2	95.8 0.002	96.5 0.002	85.0 0.002	80.3 0.002
Cadmium	[ng/mg nicotine]	Mean p-value	35.2	52.3 0.002	55.9 0.002	50.1 0.002	53.4 0.002
Arsenic	[ng/mg nicotine]	Mean p-value	16.6	3.34 0.001	2.14 0.001	4.49 0.002	2.90 0.002

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Statistical Analysis Results - Camel Snus vs. Market Leading Cigarettes

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to Market Leading Cigarette Test Articles

			Camel Snus Mellow Test Article ID: 1400894	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 ISO	Newport King Size Menthol Box Test Article ID: 1400589 ISO	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 INT	Newport King Size Menthol Box Test Article ID: 1400589 INT
Result	Unit	Statistic					
Nicotine	[mg/pouch 'as is'] or [mg/cigarette]	Mean p-value	5.68	0.756 0.002	0.872 0.002	1.88 0.002	1.94 0.002
Benzo(a)pyrene	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	0.717	7.71 0.002	10.50 0.002	14.1 0.002	17.6 0.002
Formaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.877	25.2 0.002	37.9 0.002	77.9 0.002	99.7 0.002
Acetaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	1.71	532 0.002	944 0.002	1384 0.002	1686 0.002
Crotonaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.036	9.7 0.001	22.2 0.001	44.7 0.001	55.4 0.001
NNN	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	521	112 0.002	130 0.002	241 0.002	248 0.002
NNK	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	157	72.4 0.002	84.1 0.002	160 0.337	156 0.482
Cadmium	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	177	39.5 0.002	48.7 0.002	94.4 0.002	104 0.002
Arsenic	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	83.8	2.52 0.001	1.87 0.001	8.45 0.002	5.62 0.002
Benzo(a)pyrene	[ng/mg nicotine]	Mean p-value	0.126	10.2 0.002	12.0 0.002	7.50 0.002	9.08 0.002
Formaldehyde	[µg/mg nicotine]	Mean p-value	0.154	33.4 0.002	43.5 0.002	41.3 0.002	51.4 0.002
Acetaldehyde	[µg/mg nicotine]	Mean p-value	0.301	703 0.002	1082 0.002	734 0.002	869 0.002
Crotonaldehyde	[µg/mg nicotine]	Mean p-value	0.006	12.9 0.001	25.5 0.001	23.7 0.001	28.6 0.001
NNN	[ng/mg nicotine]	Mean p-value	91.7	149 0.002	149 0.002	128 0.002	128 0.002
NNK	[ng/mg nicotine]	Mean p-value	27.7	95.8 0.002	96.5 0.002	85.0 0.002	80.3 0.002
Cadmium	[ng/mg nicotine]	Mean p-value	31.2	52.3 0.002	55.9 0.002	50.1 0.002	53.4 0.002
Arsenic	[ng/mg nicotine]	Mean p-value	14.7	3.34 0.001	2.14 0.001	4.49 0.002	2.90 0.002

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Sheet: Camel Snus vs Cigarette

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Statistical Analysis Results - Camel Snus vs. Market Leading Cigarettes

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to Market Leading Cigarette Test Articles

			Camel Snus Mint Test Article ID: 1400895	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 ISO	Newport King Size Menthol Box Test Article ID: 1400589 ISO	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 INT	Newport King Size Menthol Box Test Article ID: 1400589 INT
Result	Unit	Statistic					
Nicotine	[mg/pouch 'as is'] or [mg/cigarette]	Mean	5.39	0.756	0.872	1.88	1.94
		p-value		0.002	0.002	0.002	0.002
Benzo(a)pyrene	[ng/pouch 'as is'] or [ng/cigarette]	Mean	0.594	7.71	10.50	14.1	17.6
		p-value		0.002	0.002	0.002	0.002
Formaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean	0.721	25.2	37.9	77.9	99.7
		p-value		0.002	0.002	0.002	0.002
Acetaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean	1.00	532	944	1384	1686
		p-value		0.002	0.002	0.002	0.002
Crotonaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean	0.034	9.7	22.2	44.7	55.4
		p-value		0.001	0.001	0.001	0.001
NNN	[ng/pouch 'as is'] or [ng/cigarette]	Mean	484	112	130	241	248
		p-value		0.002	0.002	0.002	0.002
NNK	[ng/pouch 'as is'] or [ng/cigarette]	Mean	125	72.4	84.1	160	156
		p-value		0.002	0.002	0.002	0.002
Cadmium	[ng/pouch 'as is'] or [ng/cigarette]	Mean	167	39.5	48.7	94.4	104
		p-value		0.002	0.002	0.002	0.002
Arsenic	[ng/pouch 'as is'] or [ng/cigarette]	Mean	82.3	2.52	1.87	8.45	5.62
		p-value		0.001	0.001	0.002	0.002
Benzo(a)pyrene	[ng/mg nicotine]	Mean	0.110	10.2	12.0	7.50	9.08
		p-value		0.002	0.002	0.002	0.002
Formaldehyde	[µg/mg nicotine]	Mean	0.134	33.4	43.5	41.3	51.4
		p-value		0.002	0.002	0.002	0.002
Acetaldehyde	[µg/mg nicotine]	Mean	0.186	703	1082	734	869
		p-value		0.002	0.002	0.002	0.002
Crotonaldehyde	[µg/mg nicotine]	Mean	0.006	12.9	25.5	23.7	28.6
		p-value		0.001	0.001	0.001	0.001
NNN	[ng/mg nicotine]	Mean	89.7	149	149	128	128
		p-value		0.002	0.002	0.002	0.002
NNK	[ng/mg nicotine]	Mean	23.2	95.8	96.5	85.0	80.3
		p-value		0.002	0.002	0.002	0.002
Cadmium	[ng/mg nicotine]	Mean	30.9	52.3	55.9	50.1	53.4
		p-value		0.002	0.002	0.002	0.002
Arsenic	[ng/mg nicotine]	Mean	15.3	3.34	2.14	4.49	2.90
		p-value		0.001	0.001	0.002	0.002

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Statistical Analysis Results - Camel Snus vs. Market Leading Cigarettes

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to Market Leading Cigarette Test Articles

			Camel Snus Robust Test Article ID: 1400896	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 ISO	Newport King Size Menthol Box Test Article ID: 1400589 ISO	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 INT	Newport King Size Menthol Box Test Article ID: 1400589 INT
Result	Unit	Statistic					
Nicotine	[mg/pouch 'as is'] or [mg/cigarette]	Mean p-value	8.19	0.756 0.002	0.872 0.002	1.88 0.002	1.94 0.002
Benzo(a)pyrene	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	1.04	7.71 0.002	10.50 0.002	14.1 0.002	17.6 0.002
Formaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	1.09	25.2 0.002	37.9 0.002	77.9 0.002	99.7 0.002
Acetaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	1.85	532 0.002	944 0.002	1384 0.002	1686 0.002
Crotonaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.059	9.7 0.001	22.2 0.001	44.7 0.001	55.4 0.001
NNN	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	858	112 0.002	130 0.002	241 0.002	248 0.002
NNK	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	266	72.4 0.002	84.1 0.002	160 0.002	156 0.002
Cadmium	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	262	39.5 0.002	48.7 0.002	94.4 0.002	104 0.002
Arsenic	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	135	2.52 0.001	1.87 0.001	8.45 0.002	5.62 0.002
Benzo(a)pyrene	[ng/mg nicotine]	Mean p-value	0.127	10.2 0.002	12.0 0.002	7.50 0.002	9.08 0.002
Formaldehyde	[µg/mg nicotine]	Mean p-value	0.133	33.4 0.002	43.5 0.002	41.3 0.002	51.4 0.002
Acetaldehyde	[µg/mg nicotine]	Mean p-value	0.226	703 0.002	1082 0.002	734 0.002	869 0.002
Crotonaldehyde	[µg/mg nicotine]	Mean p-value	0.007	12.9 0.001	25.5 0.001	23.7 0.001	28.6 0.001
NNN	[ng/mg nicotine]	Mean p-value	105	149 0.002	149 0.002	128 0.002	128 0.002
NNK	[ng/mg nicotine]	Mean p-value	32.4	95.8 0.002	96.5 0.002	85.0 0.002	80.3 0.002
Cadmium	[ng/mg nicotine]	Mean p-value	32.0	52.3 0.002	55.9 0.002	50.1 0.002	53.4 0.002
Arsenic	[ng/mg nicotine]	Mean p-value	16.4	3.34 0.001	2.14 0.001	4.49 0.002	2.90 0.002

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Sheet: Camel Snus vs Cigarette

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Statistical Analysis Results - Camel Snus vs. Market Leading Cigarettes

Statistical Analysis Results for the Comparison of Each Camel Snus Test Article to Market Leading Cigarette Test Articles

			Camel Snus Winterhill Test Article ID: 1400931	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 ISO	Newport King Size Menthol Box Test Article ID: 1400589 ISO	Marlboro Gold King Size (KS) Box Test Article ID: 1400588 INT	Newport King Size Menthol Box Test Article ID: 1400589 INT
Result	Unit	Statistic					
Nicotine	[mg/pouch 'as is'] or [mg/cigarette]	Mean p-value	9.43	0.756 0.002	0.872 0.002	1.88 0.002	1.94 0.002
Benzo(a)pyrene	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	1.04	7.71 0.002	10.50 0.002	14.1 0.002	17.6 0.002
Formaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	1.01	25.2 0.002	37.9 0.002	77.9 0.002	99.7 0.002
Acetaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	2.12	532 0.002	944 0.002	1384 0.002	1686 0.002
Crotonaldehyde	[µg/pouch 'as is'] or [µg/cigarette]	Mean p-value	0.058	9.73 0.001	22.2 0.001	44.7 0.001	55.4 0.001
NNN	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	1040	112 0.002	130 0.002	241 0.002	248 0.002
NNK	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	595	72.4 0.002	84.1 0.002	160 0.002	156 0.002
Cadmium	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	347	39.5 0.002	48.7 0.002	94.4 0.002	104 0.002
Arsenic	[ng/pouch 'as is'] or [ng/cigarette]	Mean p-value	115	2.52 0.001	1.87 0.001	8.45 0.002	5.62 0.002
Benzo(a)pyrene	[ng/mg nicotine]	Mean p-value	0.110	10.2 0.002	12.0 0.002	7.50 0.002	9.08 0.002
Formaldehyde	[µg/mg nicotine]	Mean p-value	0.107	33.4 0.002	43.5 0.002	41.3 0.002	51.4 0.002
Acetaldehyde	[µg/mg nicotine]	Mean p-value	0.225	703 0.002	1082 0.002	734 0.002	869 0.002
Crotonaldehyde	[µg/mg nicotine]	Mean p-value	0.006	12.9 0.001	25.5 0.001	23.7 0.001	28.6 0.001
NNN	[ng/mg nicotine]	Mean p-value	110	149 0.002	149 0.002	128 0.002	128 0.002
NNK	[ng/mg nicotine]	Mean p-value	63.1	95.8 0.002	96.5 0.002	85.0 0.002	80.3 0.002
Cadmium	[ng/mg nicotine]	Mean p-value	36.8	52.3 0.002	55.9 0.002	50.1 0.002	53.4 0.002
Arsenic	[ng/mg nicotine]	Mean p-value	12.2	3.34 0.001	2.14 0.001	4.49 0.002	2.90 0.002

Glossary of Abbreviations

Regimen:

ISO: puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, none.

INT: puff volume, 55mL; interval, 30 sec; duration, 2 sec; vent blocking, 100%.

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