Pace Analytical™
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RTI Laboratories, Inc.

Client Ref.: Fort Monmouth 1207080

Pace-Pittsburgh Project No. 3072160

Pace Analysis Services, Inc.-Pittsburgh
1638 Roseytown Road
Suites 2, 3, & 4
Greensburg, PA 15601

Phone Number: 724-850-5600 Fax Number: 724-850-5601

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Case Narrative for Pace Analytical Job Number 3072160

8/1/2012

Eight Hundred and twenty three (823) low-energy beta contamination swipe samples were received in good condition at Pace Analytical on 06/25/12. One hundred (100) of the samples received were logged for radiochemical analyses under Pace Analytical Project number 3072160 with corresponding samples IDs of 3072160001 through 3072160100. This project narrative is for the analysis of all samples for Low-Energy-Beta (LEB) content by Liquid Scintillation Counting (LSC).

Samples were analyzed as specified in the generic Scope of Work (SOW) for Analytical Chemistry Laboratory Services for Environmental Samples USACE, Baltimore District.

All work was performed under the Purchase Order (PO) agreement number 12E-183 by and between Pace Analytical Services, Inc. and RTI Laboratories, Inc.

Low-Energy-Beta (LEB) analysis by Liquid Scintillation Counting (LSC)

The SOW for this project specified that the samples were to be analyzed utilizing detector window settings sufficient to include contributions from H-3, Ni-63, and C-14. Of these radionuclides, H-3 is the weakest beta emitter and C-14 is the strongest beta emitter, with Ni-63 having the most moderate beta energy of the three listed radionuclides. The system employed for sample counting has a higher response (efficiency) with higher beta particle energies. For this project, Pace calibrated all instruments utilized using NIST-traceable quantities of Ni-63, the most moderate beta-emitter listed by the client. Instrument window settings were chosen so as to measure contributions from all of the listed radionuclides of interest for the client.

The samples received were individual LEB smear samples that were collected by the client and placed into glass scintillation vials containing 5.0 mL of ASTM Type II water. The sample vials containing water and the filter swipes were provide to the client by Pace in order to maintain product consistency between samples, laboratory calibration sources, and laboratory blanks and spikes.

To each sample, as received, Pace added 15 mL of Ultima Gold LLT (Low-Level-Tritium) cocktail and individual samples were shaken until the filter swipes dissolved and a uniform sample/cocktail mixture was obtained. The prepared samples were counted on a LSC which was calibrated with NIST-traceable quantities of Ni-63. Samples were counted for a duration sufficient to achieve the project-specified detection limit of 10 dpm/filter for an energy window setting of 1 – 160 keV.

Batch quality control analyses performed for each set of 20 samples consisted of one batch method blank (MB), one Laboratory Control Sample (LCS), and one LCS Duplicate (LCSD). The LCS and LCSD samples used were "static" sources that were prepared by Pace prior to the onset of analyses and consisted of a blank filter of the same lot as those used for sample analysis directly spiked with a quantity of Ni-63.

Case Narrative for Pace Analytical Job Number 3072160

Following analysis of many samples, it was discovered that incorrect LCS and LCSD sources were counted with sample batches. In the attached data package, any logbook or instrument printouts with recordings of LCSs and LCSDs without an accompanying five digit batch ID should be considered to be extraneous information that does not relate to this project.

Upon discovery of the issue related to counting of incorrect LCSs and LCSDs, the laboratory counted the required spike samples and all QC information has been provided.

Numerous samples and QC samples exhibited "quenching" with a corresponding instrument quench value (TSIE) that was outside of the range of the calibration curve generated. Quenching is the effect of unknown sample components which when combined with liquid scintillation cocktails may cause a suppression of the light measured by the liquid scintillation counter. For liquid scintillation analysis, compensation for quenching is made by preparing a calibration curve that relates the instrument quench values (TSIEs) to the instrument response (efficiency).

For all samples in this project with noted TSIE values outside of the calibration range, the observed sample quench was **less** than the least-quenched source utilized for calibration. The resulting calibration curves for this project were second order polynomials that showed extremely good correlation between TSIEs and system efficiency. For this reason, the calibration curves were extrapolated to determine the sample-specific efficiency for all samples, including those outside of the calibration range. It is estimated that curve extrapolation could not contribute greater than 1% difference in the results provided.

No further anomalous events were noted during the preparation or analysis of the samples for Low-Energy-Beta by Liquid Scintillation Counting. Unless indicated otherwise, all data quality objectives and quality control acceptance criteria were satisfied.

General Comments

Please note that analytical results, as well as the CSU (Combined Standard Uncertainty – a.k.a. TPU) are reported at the 1.96 sigma level for all sample analyses.

No further anomalous events were noted during the preparation or analysis of the samples referenced in this project narrative.

Unless noted otherwise, all data quality objectives and quality control acceptance criteria were satisfied.

Radiochemistry Manager or Designate

8/1/12
Date

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

July 27, 2012

Mr. Chino Ortiz
RTI Laboratories, Inc.
31628 Glendale Street
Livonia, MI 48150

RE: Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Dear Mr. Ortiz:
Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Carin A. Ferris

Carin Ferris

carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
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CERTIFICATIONS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4 Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH 0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana/TNI Certification #: LA080002
Louisiana/TNI Certification #: 4086
Maine Certification #: PA0091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: ANTE
Virgin Island/PADEP Certification
Virginia Certification #: 00112
Virginia VELAP (Cert # 460198)
Washington Certification #: C868
West Virginia Certification #: 143
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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SAMPLE SUMMARY

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3072160001	SU-01-17	Wipe	06/11/12 00:01	06/25/12 10:15
3072160002	SU-01-18	Wipe	06/11/12 00:01	06/25/12 10:15
3072160003	SU-01-19	Wipe	06/11/12 00:01	06/25/12 10:15
3072160004	SU-01-20	Wipe	06/11/12 00:01	06/25/12 10:15
3072160005	SU-01-21	Wipe	06/11/12 00:01	06/25/12 10:15
3072160006	SU-01-22	Wipe	06/11/12 00:01	06/25/12 10:15
3072160007	SU-01-23	Wipe	06/11/12 00:01	06/25/12 10:15
3072160008	SU-01-24	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160037	SU-02-18	Wipe	06/11/12 00:01	06/25/12 10:15

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
3072160038	SU-02-19	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160040	SU-02-21	Wipe	06/11/12 00:01	06/25/12 10:15
3072160041	SU-03-1	Wipe	06/11/12 00:01	06/25/12 10:15
3072160042	SU-03-2	Wipe	06/11/12 00:01	06/25/12 10:15
3072160043	SU-03-2D	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160054	SU-03-13	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160067	SU-03-25	Wipe	06/11/12 00:01	06/25/12 10:15
3072160068	SU-03-26	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160071	SU-03-28	Wipe	06/11/12 00:01	06/25/12 10:15
3072160072	SU-03-29	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160074	SU-03-31	Wipe	06/11/12 00:01	06/25/12 10:15

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
3072160075	SU-03-32	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160091	SU-03-46	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160095	2541-F3	Wipe	06/11/12 00:01	06/25/12 10:15
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3072160098	2541-F6	Wipe	06/11/12 00:01	06/25/12 10:15
3072160099	2541-F7	Wipe	06/11/12 00:01	06/25/12 10:15
3072160100	2541-F8	Wipe	06/11/12 00:01	06/25/12 10:15

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SAMPLE ANALYTE COUNT

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3072160001	SU-01-17	EPA 906.0M	RMK	1	PASI-PA
3072160002	SU-01-18	EPA 906.0M	RMK	1	PASI-PA
3072160003	SU-01-19	EPA 906.0M	RMK	1	PASI-PA
3072160004	SU-01-20	EPA 906.0M	RMK	1	PASI-PA
3072160005	SU-01-21	EPA 906.0M	RMK	1	PASI-PA
3072160006	SU-01-22	EPA 906.0M	RMK	1	PASI-PA
3072160007	SU-01-23	EPA 906.0M	RMK	1	PASI-PA
3072160008	SU-01-24	EPA 906.0M	RMK	1	PASI-PA
3072160009	SU-01-24D	EPA 906.0M	RMK	1	PASI-PA
3072160010	SU-01-25	EPA 906.0M	RMK	1	PASI-PA
3072160011	SU-01-26	EPA 906.0M	RMK	1	PASI-PA
3072160012	SU-01-27	EPA 906.0M	RMK	1	PASI-PA
3072160013	SU-01-28	EPA 906.0M	RMK	1	PASI-PA
3072160014	SU-01-29	EPA 906.0M	RMK	1	PASI-PA
3072160015	SU-01-30	EPA 906.0M	RMK	1	PASI-PA
3072160016	SU-01-31	EPA 906.0M	RMK	1	PASI-PA
3072160017	SU-01-32	EPA 906.0M	RMK	1	PASI-PA
3072160018	SU-02-1	EPA 906.0M	RMK	1	PASI-PA
3072160019	SU-02-2	EPA 906.0M	RMK	1	PASI-PA
3072160020	SU-02-3	EPA 906.0M	RMK	1	PASI-PA
3072160021	SU-02-4	EPA 906.0M	RMK	1	PASI-PA
3072160022	SU-02-5	EPA 906.0M	RMK	1	PASI-PA
3072160023	SU-02-6	EPA 906.0M	RMK	1	PASI-PA
3072160024	SU-02-7	EPA 906.0M	RMK	1	PASI-PA
3072160025	SU-02-7D	EPA 906.0M	RMK	1	PASI-PA
3072160026	SU-02-8	EPA 906.0M	RMK	1	PASI-PA
3072160027	SU-02-9	EPA 906.0M	RMK	1	PASI-PA
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3072160029	SU-02-11	EPA 906.0M	RMK	1	PASI-PA
3072160030	SU-02-12	EPA 906.0M	RMK	1	PASI-PA
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3072160032	SU-02-14	EPA 906.0M	RMK	1	PASI-PA
3072160033	SU-02-15	EPA 906.0M	RMK	1	PASI-PA
3072160034	SU-02-16	EPA 906.0M	RMK	1	PASI-PA
3072160035	SU-02-17	EPA 906.0M	RMK	1	PASI-PA
3072160036	SU-02-17D	EPA 906.0M	RMK	1	PASI-PA
3072160037	SU-02-18	EPA 906.0M	RMK	1	PASI-PA

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Project: Fort Monmouth 1207080
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3072160038	SU-02-19	EPA 906.0M	RMK	1	PASI-PA
3072160039	SU-02-20	EPA 906.0M	RMK	1	PASI-PA
3072160040	SU-02-21	EPA 906.0M	RMK	1	PASI-PA
3072160041	SU-03-1	EPA 906.0M	RMK	1	PASI-PA
3072160042	SU-03-2	EPA 906.0M	RMK	1	PASI-PA
3072160043	SU-03-2D	EPA 906.0M	RMK	1	PASI-PA
3072160044	SU-03-3	EPA 906.0M	RMK	1	PASI-PA
3072160045	SU-03-4	EPA 906.0M	RMK	1	PASI-PA
3072160046	SU-03-5	EPA 906.0M	RMK	1	PASI-PA
3072160047	SU-03-6	EPA 906.0M	RMK	1	PASI-PA
3072160048	SU-03-7	EPA 906.0M	RMK	1	PASI-PA
3072160049	SU-03-8	EPA 906.0M	RMK	1	PASI-PA
3072160050	SU-03-9	EPA 906.0M	RMK	1	PASI-PA
3072160051	SU-03-10	EPA 906.0M	RMK	1	PASI-PA
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3072160064	SU-03-22	EPA 906.0M	MBT	1	PASI-PA
3072160065	SU-03-23	EPA 906.0M	MBT	1	PASI-PA
3072160066	SU-03-24	EPA 906.0M	MBT	1	PASI-PA
3072160067	SU-03-25	EPA 906.0M	MBT	1	PASI-PA
3072160068	SU-03-26	EPA 906.0M	MBT	1	PASI-PA
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3072160071	SU-03-28	EPA 906.0M	MBT	1	PASI-PA
3072160072	SU-03-29	EPA 906.0M	MBT	1	PASI-PA
3072160073	SU-03-30	EPA 906.0M	MBT	1	PASI-PA
3072160074	SU-03-31	EPA 906.0M	MBT	1	PASI-PA

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3072160075	SU-03-32	EPA 906.0M	MBT	1	PASI-PA
3072160076	SU-03-33	EPA 906.0M	MBT	1	PASI-PA
3072160077	SU-03-34	EPA 906.0M	MBT	1	PASI-PA
3072160078	SU-03-35	EPA 906.0M	MBT	1	PASI-PA
3072160079	SU-03-36	EPA 906.0M	MBT	1	PASI-PA
3072160080	SU-03-37	EPA 906.0M	MBT	1	PASI-PA
3072160081	SU-03-38	EPA 906.0M	MBT	1	PASI-PA
3072160082	SU-03-38D	EPA 906.0M	MBT	1	PASI-PA
3072160083	SU-03-39	EPA 906.0M	MBT	1	PASI-PA
3072160084	SU-03-40	EPA 906.0M	MBT	1	PASI-PA
3072160085	SU-03-41	EPA 906.0M	MBT	1	PASI-PA
3072160086	SU-03-42	EPA 906.0M	MBT	1	PASI-PA
3072160087	SU-03-43	EPA 906.0M	MBT	1	PASI-PA
3072160088	SU-03-43D	EPA 906.0M	MBT	1	PASI-PA
3072160089	SU-03-44	EPA 906.0M	MBT	1	PASI-PA
3072160090	SU-03-45	EPA 906.0M	MBT	1	PASI-PA
3072160091	SU-03-46	EPA 906.0M	MBT	1	PASI-PA
3072160092	SU-03-47	EPA 906.0M	MBT	1	PASI-PA
3072160093	2541-F1	EPA 906.0M	MBT	1	PASI-PA
3072160094	2541-F2	EPA 906.0M	MBT	1	PASI-PA
3072160095	2541-F3	EPA 906.0M	MBT	1	PASI-PA
3072160096	2541-F4	EPA 906.0M	MBT	1	PASI-PA
3072160097	2541-F5	EPA 906.0M	MBT	1	PASI-PA
3072160098	2541-F6	EPA 906.0M	MBT	1	PASI-PA
3072160099	2541-F7	EPA 906.0M	MBT	1	PASI-PA
3072160100	2541-F8	EPA 906.0M	MBT	1	PASI-PA

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-01-17 **Lab ID: 3072160001** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.92U ± 4.26 (9.32)**	dpm/sample	07/21/12 00:13		

Sample: SU-01-18 **Lab ID: 3072160002** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.71U ± 3.82 (9.41)**	dpm/sample	07/21/12 00:21		

Sample: SU-01-19 **Lab ID: 3072160003** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.534U ± 4.15 (9.48)**	dpm/sample	07/21/12 00:29		

Sample: SU-01-20 **Lab ID: 3072160004** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.802U ± 4.14 (9.38)**	dpm/sample	07/21/12 00:37		

Sample: SU-01-21 **Lab ID: 3072160005** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.73U ± 4.36 (9.30)**	dpm/sample	07/21/12 00:45		

Sample: SU-01-22 **Lab ID: 3072160006** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.0193U ± 3.99 (9.28)**	dpm/sample	07/21/12 00:53		

Sample: SU-01-23 **Lab ID: 3072160007** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.601U ± 4.05 (9.61)**	dpm/sample	07/21/12 01:01		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-01-24 **Lab ID: 3072160008** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**6.77J ± 4.99 (9.53)**	dpm/sample	07/21/12 01:09		

Sample: SU-01-24D **Lab ID: 3072160009** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.0194U ± 4.00 (9.31)**	dpm/sample	07/21/12 01:17		

Sample: SU-01-25 **Lab ID: 3072160010** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.35U ± 4.16 (9.25)**	dpm/sample	07/21/12 01:25		

Sample: SU-01-26 **Lab ID: 3072160011** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.314U ± 4.01 (9.41)**	dpm/sample	07/21/12 01:33		

Sample: SU-01-27 **Lab ID: 3072160012** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.0195U ± 4.02 (9.35)**	dpm/sample	07/21/12 01:41		

Sample: SU-01-28 **Lab ID: 3072160013** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.35U ± 4.17 (9.28)**	dpm/sample	07/21/12 01:49		

Sample: SU-01-29 **Lab ID: 3072160014** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.08U ± 4.14 (9.28)**	dpm/sample	07/21/12 01:57		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-01-30 **Lab ID: 3072160015** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.22U ± 4.35 (9.42)**	dpm/sample	07/21/12 02:05		

Sample: SU-01-31 **Lab ID: 3072160016** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.861U ± 3.93 (9.39)**	dpm/sample	07/21/12 02:13		

Sample: SU-01-32 **Lab ID: 3072160017** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-2.51U ± 3.66 (9.28)**	dpm/sample	07/21/12 02:21		

Sample: SU-02-1 **Lab ID: 3072160018** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.799U ± 4.13 (9.35)**	dpm/sample	07/21/12 02:29		

Sample: SU-02-2 **Lab ID: 3072160019** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.0193U ± 3.98 (9.27)**	dpm/sample	07/21/12 02:37		

Sample: SU-02-3 **Lab ID: 3072160020** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.22U ± 4.35 (9.42)**	dpm/sample	07/21/12 02:45		

Sample: SU-02-4 **Lab ID: 3072160021** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**6.12J ± 4.79 (9.28)**	dpm/sample	07/21/12 04:44		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-02-5 **Lab ID: 3072160022** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.524U ± 3.93 (9.29)**	dpm/sample	07/21/12 04:52		

Sample: SU-02-6 **Lab ID: 3072160023** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**3.82J ± 4.71 (9.77)**	dpm/sample	07/21/12 05:00		

Sample: SU-02-7 **Lab ID: 3072160024** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-6.71U ± 3.73 (10.8)**	dpm/sample	07/21/12 05:16		

Sample: SU-02-7D **Lab ID: 3072160025** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.44U ± 4.26 (9.46)**	dpm/sample	07/21/12 05:24		

Sample: SU-02-8 **Lab ID: 3072160026** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.67U ± 3.87 (9.52)**	dpm/sample	07/21/12 05:32		

Sample: SU-02-9 **Lab ID: 3072160027** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.260U ± 4.09 (9.58)**	dpm/sample	07/21/12 05:40		

Sample: SU-02-10 **Lab ID: 3072160028** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**4.18J ± 4.53 (9.26)**	dpm/sample	07/21/12 05:48		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-02-11 **Lab ID: 3072160029** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.35U ± 3.80 (9.26)**	dpm/sample	07/21/12 05:56		

Sample: SU-02-12 **Lab ID: 3072160030** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.63U ± 3.78 (9.30)**	dpm/sample	07/21/12 06:04		

Sample: SU-02-13 **Lab ID: 3072160031** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.80U ± 4.38 (9.32)**	dpm/sample	07/21/12 06:12		

Sample: SU-02-14 **Lab ID: 3072160032** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.09U ± 3.85 (9.29)**	dpm/sample	07/21/12 06:20		

Sample: SU-02-15 **Lab ID: 3072160033** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.807U ± 3.95 (9.43)**	dpm/sample	07/21/12 06:28		

Sample: SU-02-16 **Lab ID: 3072160034** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.79U ± 4.37 (9.29)**	dpm/sample	07/21/12 06:36		

Sample: SU-02-17 **Lab ID: 3072160035** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-2.76U ± 3.66 (9.38)**	dpm/sample	07/21/12 06:44		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-02-17D **Lab ID: 3072160036** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.08U ± 3.84 (9.26)**	dpm/sample	07/21/12 06:52		

Sample: SU-02-18 **Lab ID: 3072160037** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-2.72U ± 3.61 (9.25)**	dpm/sample	07/21/12 07:00		

Sample: SU-02-19 **Lab ID: 3072160038** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.41U ± 4.16 (9.23)**	dpm/sample	07/21/12 07:08		

Sample: SU-02-20 **Lab ID: 3072160039** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.14U ± 4.12 (9.24)**	dpm/sample	07/21/12 07:16		

Sample: SU-02-21 **Lab ID: 3072160040** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.849U ± 4.09 (9.24)**	dpm/sample	07/21/12 07:24		

Sample: SU-03-1 **Lab ID: 3072160041** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.811U ± 3.97 (9.48)**	dpm/sample	07/21/12 07:57		

Sample: SU-03-2 **Lab ID: 3072160042** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.41U ± 4.18 (9.28)**	dpm/sample	07/21/12 08:05		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
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Sample: SU-03-2D **Lab ID: 3072160043** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.56U ± 4.39 (9.41)**	dpm/sample	07/21/12 08:13		

Sample: SU-03-3 **Lab ID: 3072160044** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.900U ± 4.40 (10.5)**	dpm/sample	07/21/12 08:21		

Sample: SU-03-4 **Lab ID: 3072160045** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.578U ± 4.05 (9.23)**	dpm/sample	07/21/12 08:29		

Sample: SU-03-5 **Lab ID: 3072160046** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**3.34U ± 5.22 (11.1)**	dpm/sample	07/21/12 08:37		

Sample: SU-03-6 **Lab ID: 3072160047** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**3.71J ± 4.58 (9.50)**	dpm/sample	07/21/12 08:45		

Sample: SU-03-7 **Lab ID: 3072160048** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-3.12U ± 3.70 (9.57)**	dpm/sample	07/21/12 08:53		

Sample: SU-03-8 **Lab ID: 3072160049** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.97U ± 4.24 (9.24)**	dpm/sample	07/21/12 09:01		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-03-9 **Lab ID: 3072160050** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.63U ± 3.77 (9.27)**	dpm/sample	07/21/12 09:09		

Sample: SU-03-10 **Lab ID: 3072160051** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.14U ± 4.14 (9.28)**	dpm/sample	07/21/12 09:17		

Sample: SU-03-11 **Lab ID: 3072160052** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.64U ± 3.79 (9.33)**	dpm/sample	07/21/12 09:25		

Sample: SU-03-12 **Lab ID: 3072160053** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**3.34U ± 4.42 (9.26)**	dpm/sample	07/21/12 09:41		

Sample: SU-03-13 **Lab ID: 3072160054** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.579U ± 4.05 (9.24)**	dpm/sample	07/21/12 09:49		

Sample: SU-03-14 **Lab ID: 3072160055** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-6.77U ± 5.23 (14.3)**	dpm/sample	07/21/12 09:57		

Sample: SU-03-15 **Lab ID: 3072160056** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.254U ± 4.00 (9.37)**	dpm/sample	07/21/12 10:05		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-03-16 **Lab ID: 3072160057** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.522U ± 3.91 (9.26)**	dpm/sample	07/21/12 10:13		

Sample: SU-03-16D **Lab ID: 3072160058** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.863U ± 4.16 (9.39)**	dpm/sample	07/21/12 10:21		

Sample: SU-03-17 **Lab ID: 3072160059** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.14U ± 4.14 (9.27)**	dpm/sample	07/21/12 10:29		

Sample: SU-03-18 **Lab ID: 3072160060** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.837U ± 4.09 (9.77)**	dpm/sample	07/21/12 10:37		

Sample: SU-03-19 **Lab ID: 3072160061** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.14U ± 4.13 (9.24)**	dpm/sample	07/21/12 11:09		

Sample: SU-03-20 **Lab ID: 3072160062** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.78U ± 4.34 (9.24)**	dpm/sample	07/21/12 11:17		

Sample: SU-03-21 **Lab ID: 3072160063** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.578U ± 4.05 (9.23)**	dpm/sample	07/21/12 11:25		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-03-22 **Lab ID: 3072160064** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.790U ± 3.87 (9.23)**	dpm/sample	07/21/12 11:33		

Sample: SU-03-23 **Lab ID: 3072160065** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.17U ± 4.23 (9.48)**	dpm/sample	07/21/12 11:41		

Sample: SU-03-24 **Lab ID: 3072160066** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.90U ± 3.75 (9.30)**	dpm/sample	07/21/12 11:49		

Sample: SU-03-25 **Lab ID: 3072160067** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.35U ± 3.81 (9.26)**	dpm/sample	07/21/12 11:57		

Sample: SU-03-26 **Lab ID: 3072160068** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**5.87J ± 4.77 (9.30)**	dpm/sample	07/21/12 12:05		

Sample: SU-03-26D **Lab ID: 3072160069** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.0387U ± 3.99 (9.27)**	dpm/sample	07/21/12 12:13		

Sample: SU-03-27 **Lab ID: 3072160070** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.28U ± 4.36 (9.42)**	dpm/sample	07/21/12 12:21		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-03-28 **Lab ID: 3072160071** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.530U ± 3.97 (9.40)**	dpm/sample	07/21/12 12:29		

Sample: SU-03-29 **Lab ID: 3072160072** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.15U ± 4.18 (9.36)**	dpm/sample	07/21/12 12:38		

Sample: SU-03-30 **Lab ID: 3072160073** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.49U ± 4.41 (9.78)**	dpm/sample	07/21/12 12:46		

Sample: SU-03-31 **Lab ID: 3072160074** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.522U ± 3.91 (9.25)**	dpm/sample	07/21/12 12:54		

Sample: SU-03-32 **Lab ID: 3072160075** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**3.20U ± 4.57 (9.64)**	dpm/sample	07/21/12 13:02		

Sample: SU-03-33 **Lab ID: 3072160076** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.68U ± 3.89 (9.56)**	dpm/sample	07/21/12 13:10		

Sample: SU-03-34 **Lab ID: 3072160077** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.43U ± 4.22 (9.37)**	dpm/sample	07/21/12 13:18		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-03-35 **Lab ID: 3072160078** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-3.71U ± 3.65 (9.64)**	dpm/sample	07/21/12 13:26		

Sample: SU-03-36 **Lab ID: 3072160079** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.0401U ± 4.13 (9.60)**	dpm/sample	07/21/12 13:34		

Sample: SU-03-37 **Lab ID: 3072160080** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**6.76J ± 4.93 (9.41)**	dpm/sample	07/21/12 13:42		

Sample: SU-03-38 **Lab ID: 3072160081** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.856U ± 4.12 (9.31)**	dpm/sample	07/21/12 14:14		

Sample: SU-03-38D **Lab ID: 3072160082** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.254U ± 3.98 (9.34)**	dpm/sample	07/21/12 14:22		

Sample: SU-03-39 **Lab ID: 3072160083** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.595U ± 4.17 (9.50)**	dpm/sample	07/21/12 14:30		

Sample: SU-03-40 **Lab ID: 3072160084** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.311U ± 4.04 (9.30)**	dpm/sample	07/21/12 14:38		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-03-41 **Lab ID: 3072160085** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.527U ± 3.95 (9.35)**	dpm/sample	07/21/12 14:46		

Sample: SU-03-42 **Lab ID: 3072160086** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**4.19J ± 4.55 (9.29)**	dpm/sample	07/21/12 14:54		

Sample: SU-03-43 **Lab ID: 3072160087** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.525U ± 3.94 (9.32)**	dpm/sample	07/21/12 15:02		

Sample: SU-03-43D **Lab ID: 3072160088** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.02U ± 4.35 (9.49)**	dpm/sample	07/21/12 15:10		

Sample: SU-03-44 **Lab ID: 3072160089** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.65U ± 3.82 (9.40)**	dpm/sample	07/21/12 15:18		

Sample: SU-03-45 **Lab ID: 3072160090** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-1.94U ± 3.82 (9.49)**	dpm/sample	07/21/12 15:26		

Sample: SU-03-46 **Lab ID: 3072160091** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.47U ± 4.35 (9.66)**	dpm/sample	07/21/12 15:34		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: SU-03-47 **Lab ID: 3072160092** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**8.68J ± 5.16 (9.36)**	dpm/sample	07/21/12 15:42		

Sample: 2541-F1 **Lab ID: 3072160093** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.51U ± 4.30 (9.23)**	dpm/sample	07/21/12 15:50		

Sample: 2541-F2 **Lab ID: 3072160094** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**3.34U ± 4.42 (9.25)**	dpm/sample	07/21/12 15:58		

Sample: 2541-F3 **Lab ID: 3072160095** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.97U ± 4.23 (9.23)**	dpm/sample	07/21/12 16:06		

Sample: 2541-F4 **Lab ID: 3072160096** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**1.41U ± 4.16 (9.23)**	dpm/sample	07/21/12 16:14		

Sample: 2541-F5 **Lab ID: 3072160097** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**0.309U ± 4.02 (9.24)**	dpm/sample	07/21/12 16:22		

Sample: 2541-F6 **Lab ID: 3072160098** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.251U ± 3.94 (9.23)**	dpm/sample	07/21/12 16:30		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

Sample: 2541-F7 **Lab ID: 3072160099** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**2.79U ± 4.36 (9.27)**	dpm/sample	07/21/12 16:39		

Sample: 2541-F8 **Lab ID: 3072160100** Collected: 06/11/12 00:01 Received: 06/25/12 10:15 Matrix: Wipe
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
LSC Low Energy Beta	EPA 906.0M	**-0.791U ± 3.87 (9.24)**	dpm/sample	07/21/12 16:47		

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

QC Batch: RADC/12502 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072160001, 3072160002, 3072160003, 3072160004, 3072160005, 3072160006, 3072160007, 3072160008, 3072160009, 3072160010, 3072160011, 3072160012, 3072160013, 3072160014, 3072160015, 3072160016, 3072160017, 3072160018, 3072160019, 3072160020

METHOD BLANK: 459101 Matrix: Impact Plate
Associated Lab Samples: 3072160001, 3072160002, 3072160003, 3072160004, 3072160005, 3072160006, 3072160007, 3072160008, 3072160009, 3072160010, 3072160011, 3072160012, 3072160013, 3072160014, 3072160015, 3072160016, 3072160017, 3072160018, 3072160019, 3072160020

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	-0.334U ± 4.27 (10.0)	dpm/sample	07/21/12 00:05	

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

QC Batch: RADC/12503 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072160021, 3072160022, 3072160023, 3072160024, 3072160025, 3072160026, 3072160027, 3072160028, 3072160029, 3072160030, 3072160031, 3072160032, 3072160033, 3072160034, 3072160035, 3072160036, 3072160037, 3072160038, 3072160039, 3072160040

METHOD BLANK: 459102 Matrix: Impact Plate
Associated Lab Samples: 3072160021, 3072160022, 3072160023, 3072160024, 3072160025, 3072160026, 3072160027, 3072160028, 3072160029, 3072160030, 3072160031, 3072160032, 3072160033, 3072160034, 3072160035, 3072160036, 3072160037, 3072160038, 3072160039, 3072160040

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	0.877U ± 4.22 (9.55)	dpm/sample	07/21/12 04:36	

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

QC Batch: RADC/12504 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072160041, 3072160042, 3072160043, 3072160044, 3072160045, 3072160046, 3072160047, 3072160048, 3072160049, 3072160050, 3072160051, 3072160052, 3072160053, 3072160054, 3072160055, 3072160056, 3072160057, 3072160058, 3072160059, 3072160060

METHOD BLANK: 459103 Matrix: Impact Plate
Associated Lab Samples: 3072160041, 3072160042, 3072160043, 3072160044, 3072160045, 3072160046, 3072160047, 3072160048, 3072160049, 3072160050, 3072160051, 3072160052, 3072160053, 3072160054, 3072160055, 3072160056, 3072160057, 3072160058, 3072160059, 3072160060

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	4.40J ± 4.78 (9.76)	dpm/sample	07/21/12 07:49	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

QC Batch: RADC/12505 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072160061, 3072160062, 3072160063, 3072160064, 3072160065, 3072160066, 3072160067, 3072160068, 3072160069, 3072160070, 3072160071, 3072160072, 3072160073, 3072160074, 3072160075, 3072160076, 3072160077, 3072160078, 3072160079, 3072160080

METHOD BLANK: 459104 Matrix: Impact Plate
Associated Lab Samples: 3072160061, 3072160062, 3072160063, 3072160064, 3072160065, 3072160066, 3072160067, 3072160068, 3072160069, 3072160070, 3072160071, 3072160072, 3072160073, 3072160074, 3072160075, 3072160076, 3072160077, 3072160078, 3072160079, 3072160080

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	3.08U ± 4.40 (9.28)	dpm/sample	07/21/12 11:01	

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

QC Batch: RADC/12506 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072160081, 3072160082, 3072160083, 3072160084, 3072160085, 3072160086, 3072160087, 3072160088, 3072160089, 3072160090, 3072160091, 3072160092, 3072160093, 3072160094, 3072160095, 3072160096, 3072160097, 3072160098, 3072160099, 3072160100

METHOD BLANK: 459105 Matrix: Impact Plate
Associated Lab Samples: 3072160081, 3072160082, 3072160083, 3072160084, 3072160085, 3072160086, 3072160087, 3072160088, 3072160089, 3072160090, 3072160091, 3072160092, 3072160093, 3072160094, 3072160095, 3072160096, 3072160097, 3072160098, 3072160099, 3072160100

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	-0.835U ± 4.08 (9.75)	dpm/sample	07/21/12 14:06	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: Fort Monmouth 1207080
Pace Project No.: 3072160

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty

(MDC) - Minimum Detectable Concentration

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Project Number: 3072160

Chain of Custody
And
Sample Receiving Conditions Upon Receipt Form

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CHAIN-OF-CUSTODY / Analytical Request Document

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Requested Due Date/TAT:	ASAP

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Purchase Order No.:	
Project Name:	Fort Monmouth Rad Survey
Project Number:	

Section C Invoice Information:

Attention:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Carin Ferris
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ ☐ OTHER NRC

Site Location STATE: NJ

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(A-Z, 0-9 / ,-)
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OIL	OL
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OTHER	OT
TISSUE	TS

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																		N			3072160
484	SU-01-2	WP	G	NA	NA	06/11/12		NA	1	X									X		
485	SU-01-3	WP	G	NA	NA	06/11/12		NA	1	X									X		
486	SU-01-4	WP	G	NA	NA	06/11/12		NA	1	X									X		
487	SU-01-5	WP	G	NA	NA	06/11/12		NA	1	X									X		
488	SU-01-5D	WP	G	NA	NA	06/11/12		NA	1	X									X		
489	SU-01-6	WP	G	NA	NA	06/11/12		NA	1	X									X		
490	SU-01-7	WP	G	NA	NA	06/11/12		NA	1	X									X		
491	SU-01-8	WP	G	NA	NA	06/11/12		NA	1	X									X		
492	SU-01-9	WP	G	NA	NA	06/11/12		NA	1	X									X		
493	SU-01-10	WP	G	NA	NA	06/11/12		NA	1	X									X		
494	SU-01-11	WP	G	NA	NA	06/11/12		NA	1	X									X		
495	SU-01-12	WP	G	NA	NA	06/11/12		NA	1	X									X		
496	SU-01-12D	WP	G	NA	NA	06/11/12		NA	1	X									X		
497	SU-01-13	WP	G	NA	NA	06/11/12		NA	1	X									X		
498	SU-01-14	WP	G	NA	NA	06/11/12		NA	1	X									X		
499	SU-01-15	WP	G	NA	NA	06/11/12		NA	1	X									X		
500	SU-01-16	WP	G	NA	NA	06/11/12		NA	1	X									X		
501	SU-01-17	WP	G	NA	NA	06/11/12		NA	1	X									X		001
502	SU-01-18	WP	G	NA	NA	06/11/12		NA	1	X									X		002
503	SU-01-19	WP	G	NA	NA	06/11/12		NA	1	X									X		003
504	SU-01-20	WP	G	NA	NA	06/11/12		NA	1	X									X		004
505	SU-01-21	WP	G	NA	NA	06/11/12		NA	1	X									X		005

6/25/12 1015

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Attention:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Carin Ferris
Pace Profile #:	

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506	SU-01-22	WP	G	NA	NA	06/11/12		NA	1	X								X			006
507	SU-01-23	WP	G	NA	NA	06/11/12		NA	1	X								X			007
508	SU-01-24	WP	G	NA	NA	06/11/12		NA	1	X								X			008
509	SU-01-24D	WP	G	NA	NA	06/11/12		NA	1	X								X			009
510	SU-01-25	WP	G	NA	NA	06/11/12		NA	1	X								X			010
511	SU-01-26	WP	G	NA	NA	06/11/12		NA	1	X								X			011
512	SU-01-27	WP	G	NA	NA	06/11/12		NA	1	X								X			012
513	SU-01-28	WP	G	NA	NA	06/11/12		NA	1	X								X			013
514	SU-01-29	WP	G	NA	NA	06/11/12		NA	1	X								X			014
515	SU-01-30	WP	G	NA	NA	06/11/12		NA	1	X								X			015
516	SU-01-31	WP	G	NA	NA	06/11/12		NA	1	X								X			016
517	SU-01-32	WP	G	NA	NA	06/11/12		NA	1	X								X			017
518	SU-02-1	WP	G	NA	NA	06/11/12		NA	1	X								X			018
519	SU-02-2	WP	G	NA	NA	06/11/12		NA	1	X								X			019
520	SU-02-3	WP	G	NA	NA	06/11/12		NA	1	X								X			020
521	SU-02-4	WP	G	NA	NA	06/11/12		NA	1	X								X			021
522	SU-02-5	WP	G	NA	NA	06/11/12		NA	1	X								X			022
523	SU-02-6	WP	G	NA	NA	06/11/12		NA	1	X								X			023
524	SU-02-7	WP	G	NA	NA	06/11/12		NA	1	X								X			024
525	SU-02-7D	WP	G	NA	NA	06/11/12		NA	1	X								X			025
526	SU-02-8	WP	G	NA	NA	06/11/12		NA	1	X								X			026
527	SU-02-9	WP	G	NA	NA	06/11/12		NA	1	X								X			027

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	Baltimore, MD			Address:	
Email To:	david.j.watters@usace.army.mil	Purchase Order No.:		Pace Quote Reference:	
Phone:	443-253-0916 Fax: none	Project Name:	Fort Monmouth Rad Survey	Pace Project Manager:	Carin Ferris
Requested Due Date/TAT:	ASAP	Project Number:		Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ ☐ OTHER NRC

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528	SU-02-10	WP	G	NA	NA	06/11/12		NA	1	X									X		028
529	SU-02-11	WP	G	NA	NA	06/11/12		NA	1	X									X		029
530	SU-02-12	WP	G	NA	NA	06/11/12		NA	1	X									X		030
531	SU-02-13	WP	G	NA	NA	06/11/12		NA	1	X									X		031
532	SU-02-14	WP	G	NA	NA	06/11/12		NA	1	X									X		032
533	SU-02-15	WP	G	NA	NA	06/11/12		NA	1	X									X		033
534	SU-02-16	WP	G	NA	NA	06/11/12		NA	1	X									X		034
535	SU-02-17	WP	G	NA	NA	06/11/12		NA	1	X									X		035
536	SU-02-17D	WP	G	NA	NA	06/11/12		NA	1	X									X		036
537	SU-02-18	WP	G	NA	NA	06/11/12		NA	1	X									X		037
538	SU-02-19	WP	G	NA	NA	06/11/12		NA	1	X									X		038
539	SU-02-20	WP	G	NA	NA	06/11/12		NA	1	X									X		039
540	SU-02-21	WP	G	NA	NA	06/11/12		NA	1	X									X		040
541	SU-03-1	WP	G	NA	NA	06/11/12		NA	1	X									X		041
542	SU-03-2	WP	G	NA	NA	06/11/12		NA	1	X									X		042
543	SU-03-2D	WP	G	NA	NA	06/11/12		NA	1	X									X		043
544	SU-03-3	WP	G	NA	NA	06/11/12		NA	1	X									X		044
545	SU-03-4	WP	G	NA	NA	06/11/12		NA	1	X									X		045
546	SU-03-5	WP	G	NA	NA	06/11/12		NA	1	X									X		046
547	SU-03-6	WP	G	NA	NA	06/11/12		NA	1	X									X		047
548	SU-03-7	WP	G	NA	NA	06/11/12		NA	1	X									X		048
549	SU-03-8	WP	G	NA	NA	06/11/12		NA	1	X									X		049

6/25/12 COLS

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REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
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										Requested Analysis Filtered (Y/N)								Y/N	N		
550	SU-03-9	WP	G	NA	NA	06/11/12		NA	1	X									X		050
551	SU-03-10	WP	G	NA	NA	06/11/12		NA	1	X									X		051
552	SU-03-11	WP	G	NA	NA	06/11/12		NA	1	X									X		052
553	SU-03-12	WP	G	NA	NA	06/11/12		NA	1	X									X		053
554	SU-03-13	WP	G	NA	NA	06/11/12		NA	1	X									X		054
555	SU-03-14	WP	G	NA	NA	06/11/12		NA	1	X									X		055
556	SU-03-15	WP	G	NA	NA	06/11/12		NA	1	X									X		056
557	SU-03-16	WP	G	NA	NA	06/11/12		NA	1	X									X		057
558	SU-03-16D	WP	G	NA	NA	06/11/12		NA	1	X									X		058
559	SU-03-17	WP	G	NA	NA	06/11/12		NA	1	X									X		059
560	SU-03-18	WP	G	NA	NA	06/11/12		NA	1	X									X		060
561	SU-03-19	WP	G	NA	NA	06/11/12		NA	1	X									X		061
562	SU-03-20	WP	G	NA	NA	06/11/12		NA	1	X									X		062
563	SU-03-21	WP	G	NA	NA	06/11/12		NA	1	X									X		063
564	SU-03-22	WP	G	NA	NA	06/11/12		NA	1	X									X		064
565	SU-03-23	WP	G	NA	NA	06/11/12		NA	1	X									X		065
566	SU-03-24	WP	G	NA	NA	06/11/12		NA	1	X									X		066
567	SU-03-25	WP	G	NA	NA	06/11/12		NA	1	X									X		067
568	SU-03-26	WP	G	NA	NA	06/11/12		NA	1	X									X		068
569	SU-03-26D	WP	G	NA	NA	06/11/12		NA	1	X									X		069
570	SU-03-27	WP	G	NA	NA	06/11/12		NA	1	X									X		070
571	SU-03-28	WP	G	NA	NA	06/11/12		NA	1	X									X		071

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572	SU-03-29	WP	G	NA	NA	06/11/12		NA	1	X								X			072
573	SU-03-30	WP	G	NA	NA	06/11/12		NA	1	X								X			073
574	SU-03-31	WP	G	NA	NA	06/11/12		NA	1	X								X			074
575	SU-03-32	WP	G	NA	NA	06/11/12		NA	1	X								X			075
576	SU-03-33	WP	G	NA	NA	06/11/12		NA	1	X								X			076
577	SU-03-34	WP	G	NA	NA	06/11/12		NA	1	X								X			077
578	SU-03-35	WP	G	NA	NA	06/11/12		NA	1	X								X			078
579	SU-03-36	WP	G	NA	NA	06/11/12		NA	1	X								X			079
580	SU-03-37	WP	G	NA	NA	06/11/12		NA	1	X								X			080
581	SU-03-38	WP	G	NA	NA	06/11/12		NA	1	X								X			081
582	SU-03-38D	WP	G	NA	NA	06/11/12		NA	1	X								X			082
583	SU-03-39	WP	G	NA	NA	06/11/12		NA	1	X								X			083
584	SU-03-40	WP	G	NA	NA	06/11/12		NA	1	X								X			084
585	SU-03-41	WP	G	NA	NA	06/11/12		NA	1	X								X			085
586	SU-03-42	WP	G	NA	NA	06/11/12		NA	1	X								X			086
587	SU-03-43	WP	G	NA	NA	06/11/12		NA	1	X								X			087
588	SU-03-43D	WP	G	NA	NA	06/11/12		NA	1	X								X			088
589	SU-03-44	WP	G	NA	NA	06/11/12		NA	1	X								X			089
590	SU-03-45	WP	G	NA	NA	06/11/12		NA	1	X								X			090
591	SU-03-46	WP	G	NA	NA	06/11/12		NA	1	X								X			091
592	SU-03-47	WP	G	NA	NA	06/11/12		NA	1	X								X			092
593	2541-F1	WP	G	NA	NA	06/11/12		NA	1	X								X			093

6/25/12 1015

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SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) ↓Analysis Test↓ Y/N	Gross Low Energy Beta Analysis	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 3972160
594	2541-F2	WP	G	NA	NA	06/11/12		NA	1	X								N	X		094
595	2541-F3	WP	G	NA	NA	06/11/12		NA	1	X									X		095
596	2541-F4	WP	G	NA	NA	06/11/12		NA	1	X									X		096
597	2541-F5	WP	G	NA	NA	06/11/12		NA	1	X									X		097
598	2541-F6	WP	G	NA	NA	06/11/12		NA	1	X									X		098
599	2541-F7	WP	G	NA	NA	06/11/12		NA	1	X									X		099
600	2541-F8	WP	G	NA	NA	06/11/12		NA	1	X									X		100
601	2541-F9	WP	G	NA	NA	06/11/12		NA	1	X									X		
602	2541-F10	WP	G	NA	NA	06/11/12		NA	1	X									X		
603	2541-F11	WP	G	NA	NA	06/11/12		NA	1	X									X		
604	2541-F12	WP	G	NA	NA	06/11/12		NA	1	X									X		
605	2541-F13	WP	G	NA	NA	06/11/12		NA	1	X									X		
606	2541-F13D	WP	G	NA	NA	06/11/12		NA	1	X									X		
607	2541-F14	WP	G	NA	NA	06/11/12		NA	1	X									X		
608	2541-F15	WP	G	NA	NA	06/11/12		NA	1	X									X		
609	2541-F16	WP	G	NA	NA	06/11/12		NA	1	X									X		
610	2541-F17	WP	G	NA	NA	06/11/12		NA	1	X									X		
611	2541-F18	WP	G	NA	NA	06/11/12		NA	1	X									X		
612	2541-F19	WP	G	NA	NA	06/11/12		NA	1	X									X		
613	2541-F20	WP	G	NA	NA	06/11/12		NA	1	X									X		
614	2541-F21	WP	G	NA	NA	06/11/12		NA	1	X									X		
615	2541-F22	WP	G	NA	NA	06/11/12		NA	1	X									X		

6125/h 125

Sample Condition Upon Receipt

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Client Name: RTI Project # 3572160

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Optional
Proj. Due Date:
Proj. Name:

Tracking #: 775928653780 6/25/12

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☑ Other cardboard

Thermometer Used 5 6 7 Type of Ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temperature NA Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: VEL 6/25/12

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	☑Yes	☐No	☐N/A
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A
Sampler Name & Signature on COC:	☐Yes	☑No	☐N/A
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A
Short Hold Time Analysis (<72hr):	☑Yes	☐No	☐N/A
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A
Sufficient Volume:	☑Yes	☐No	☐N/A
Correct Containers Used:	☑Yes	☐No	☐N/A
-Pace Containers Used:	☑Yes	☐No	☐N/A
Containers Intact:	☑Yes	☐No	☐N/A
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A
Sample Labels match COC:	☑Yes	☐No	☐N/A
-Includes date/time/ID/Analysis Matrix: WO			
All containers needing preservation have been checked.	☐Yes	☐No	☑N/A
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☑No	
Samples checked for dechlorination:	☐Yes	☐No	☑N/A
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A
Trip Blank Present:	☐Yes	☐No	☑N/A
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A
Pace Trip Blank Lot # (if purchased):			

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
Initial when completed VEL	Lot # of added preservative
14.	
15.	
16.	

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Calvin Ferro **Date:** 6/27/12

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

page 2

Project Number: 552160

Client Name: ETT

Item No.													
	001	002											
Matrix Code	WW	↓											
Glass Jar (120 / 250 / 500 / 1L)													
Soil kit (2 SB, 1M, soil jar)													
Chemistry (250 / 500 / 1L)													
Organics (1L)													
Nutrient (250 / 500)													
Phenolics (250 ml)													
TOC (40 ml / 250 ml)													
TOX (250 ml)													
Total Metals													
Dissolved Metals preserved Y N													
O & G (1L)													
TPH (1L)													
VOA (40 ml 30 ml)													
Cyanide (250 ml)													
Sulfide (500 ml)													
Bacteria (120 ml)													
Wipes / swipe/ smear/ filter	↓	↓											
Radchem Nalgene (125 / 250 / 500 / 1L)													
Radchem Nalgene (1/2 gal. / 1 galL)													
Cubitainer (500 ml / 4L)													
Ziploc													
Other													
Other													
Other													

SCURF Back (CD16-4 15May2012).xls

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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1 459101-BLANK for HBN 91075 [RADC/1250

Type BLANK **Matrix** Impact Plate **Collected** **% Moisture**
Client QCACCOUNT **WO** **Work ID**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12502 **Prep Date** 7/21/2012 00:05 **Dilution**
Method EPA 906.0M **HBN** 91075 **Hold Date** 12/25/2012 23:59 **Analyst** RMK
Schedule 2796268 **Instru** NONE **CC** OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 00:05 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** RMK
Schedule 2796268 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	-0.334U ± 4.27 (10.0)	dpm/sa	-0.334U ± 4.27 (10.0)		dpm/sa	

2 3072160001-SU-01-17

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12502 **Prep Date** 7/21/2012 00:13 **Dilution**
Method EPA 906.0M **HBN** 91075 **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790581 **Instru** NONE **CC** OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 00:13 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790581 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.92U ± 4.26 (9.32)	dpm/sa	1.92U ± 4.26 (9.32)		dpm/sa		

3 3072160002-SU-01-18

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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3 3072160002-SU-01-18

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12502	**Prep Date**	7/21/2012 00:21	**Dilution**	
Method	EPA 906.0M	**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790582	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 00:21	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790582	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.71U ± 3.82 (9.41)	dpm/sa	-1.71U ± 3.82 (9.41)		dpm/sa		

4 3072160003-SU-01-19

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12502	**Prep Date**	7/21/2012 00:29	**Dilution**	
Method	EPA 906.0M	**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790583	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 00:29	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790583	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.534U ± 4.15 (9.48)	dpm/sa	0.534U ± 4.15 (9.48)		dpm/sa		

5 3072160004-SU-01-20

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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5 3072160004-SU-01-20

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 00:37	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790584		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 00:37	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790584		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.802U ± 4.14 (9.38)	dpm/sa	0.802U ± 4.14 (9.38)		dpm/sa		

6 3072160005-SU-01-21

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 00:45	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790585		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 00:45	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790585		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.73U ± 4.36 (9.30)	dpm/sa	2.73U ± 4.36 (9.30)		dpm/sa		

7 3072160006-SU-01-22

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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7 3072160006-SU-01-22

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 00:53	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790586		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 00:53	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790586		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.0193U ± 3.99 (9.28)	dpm/sa	-0.0193U ± 3.99 (9.28)		dpm/sa		

8 3072160007-SU-01-23

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 01:01	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790587		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 01:01	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790587		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.601U ± 4.05 (9.61)	dpm/sa	-0.601U ± 4.05 (9.61)		dpm/sa		

9 3072160008-SU-01-24

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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9 3072160008-SU-01-24

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 01:09	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790588		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 01:09	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790588		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	6.77J ± 4.99 (9.53)	dpm/sa	6.77J ± 4.99 (9.53)		dpm/sa		

10 3072160009-SU-01-24D

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 01:17	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790589		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 01:17	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790589		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.0194U ± 4.00 (9.31)	dpm/sa	-0.0194U ± 4.00 (9.31)		dpm/sa		

11 3072160010-SU-01-25

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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11 3072160010-SU-01-25

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12502	**Prep Date**	7/21/2012 01:25	**Dilution**	
Method	EPA 906.0M	**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790590	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 01:25	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790590	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.35U ± 4.16 (9.25)	dpm/sa	1.35U ± 4.16 (9.25)		dpm/sa		

12 3072160011-SU-01-26

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12502	**Prep Date**	7/21/2012 01:33	**Dilution**	
Method	EPA 906.0M	**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790591	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 01:33	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790591	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.314U ± 4.01 (9.41)	dpm/sa	-0.314U ± 4.01 (9.41)		dpm/sa		

13 3072160012-SU-01-27

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	**HBN**	91075
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	RMK

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13 3072160012-SU-01-27

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 01:41	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790592		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 01:41	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790592		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.0195U ± 4.02 (9.35)	dpm/sa	-0.0195U ± 4.02 (9.35)		dpm/sa		

14 3072160013-SU-01-28

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12502	**Prep Date**	7/21/2012 01:49	**Dilution**
Method	EPA 906.0M		**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790593		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 01:49	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790593		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.35U ± 4.17 (9.28)	dpm/sa	1.35U ± 4.17 (9.28)		dpm/sa		

15 3072160014-SU-01-29

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	**HBN**	91075
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	RMK

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15 3072160014-SU-01-29

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790594

Batch RADC/12502
HBN 91075
Instru NONE

Prep Date 7/21/2012 01:57
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790594

Instru NONE
Col ID
File

Run Date 7/21/2012 01:57
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.08U ± 4.14 (9.28)	dpm/sa	1.08U ± 4.14 (9.28)		dpm/sa		

16 3072160015-SU-01-30

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790595

Batch RADC/12502
HBN 91075
Instru NONE

Prep Date 7/21/2012 02:05
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790595

Instru NONE
Col ID
File

Run Date 7/21/2012 02:05
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.22U ± 4.35 (9.42)	dpm/sa	2.22U ± 4.35 (9.42)		dpm/sa		

17 3072160016-SU-01-31

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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17 3072160016-SU-01-31

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12502	**Prep Date**	7/21/2012 02:13	**Dilution**	
Method	EPA 906.0M	**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790596	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 02:13	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790596	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.861U ± 3.93 (9.39)	dpm/sa	-0.861U ± 3.93 (9.39)		dpm/sa		

18 3072160017-SU-01-32

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12502	**Prep Date**	7/21/2012 02:21	**Dilution**	
Method	EPA 906.0M	**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790597	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 02:21	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790597	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-2.51U ± 3.66 (9.28)	dpm/sa	-2.51U ± 3.66 (9.28)		dpm/sa		

19 3072160018-SU-02-1

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	HBN	91075
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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19 3072160018-SU-02-1

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790598

Batch RADC/12502
HBN 91075
Instru NONE

Prep Date 7/21/2012 02:29
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790598

Instru NONE
Col ID
File

Run Date 7/21/2012 02:29
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.799U ± 4.13 (9.35)	dpm/sa	0.799U ± 4.13 (9.35)		dpm/sa		

20 3072160019-SU-02-2

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790599

Batch RADC/12502
HBN 91075
Instru NONE

Prep Date 7/21/2012 02:37
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790599

Instru NONE
Col ID
File

Run Date 7/21/2012 02:37
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.0193U ± 3.98 (9.27)	dpm/sa	-0.0193U ± 3.98 (9.27)		dpm/sa		

21 3072160020-SU-02-3

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12502	**HBN**	91075
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	RMK

21 3072160020-SU-02-3

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12502	**Prep Date**	7/21/2012 02:45	**Dilution**	
Method	EPA 906.0M	**HBN**	91075	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790600	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 02:45	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790600	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.22U ± 4.35 (9.42)	dpm/sa	2.22U ± 4.35 (9.42)		dpm/sa		

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Creation Date	06/28/2012 13:56		Assigned Analyst	RMK
Batch ID	12502		Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB	9060W	HBN	91075
Method	EPA 906.0M	EPA 906.0m		

Project	Sample ID	Sample Type	Matrix	Collection Date/Time	Client ID	LEB Activity	LEB Unc.	LEB MDC	Analysis Date/Time
	459101	BLANK	IP		QCACCOUNT	-0.334U	4.27	10.0	7/21/12 0:05
3072160	3072160001	PS	WP	6/11/2012 0:01	RTI	1.92U	4.26	9.32	7/21/12 0:13
3072160	3072160002	PS	WP	6/11/2012 0:01	RTI	-1.71U	3.82	9.41	7/21/12 0:21
3072160	3072160003	PS	WP	6/11/2012 0:01	RTI	0.534U	4.15	9.48	7/21/12 0:29
3072160	3072160004	PS	WP	6/11/2012 0:01	RTI	0.802U	4.14	9.38	7/21/12 0:37
3072160	3072160005	PS	WP	6/11/2012 0:01	RTI	2.73U	4.36	9.30	7/21/12 0:45
3072160	3072160006	PS	WP	6/11/2012 0:01	RTI	-0.0193U	3.99	9.28	7/21/12 0:53
3072160	3072160007	PS	WP	6/11/2012 0:01	RTI	-0.601U	4.05	9.61	7/21/12 1:01
3072160	3072160008	PS	WP	6/11/2012 0:01	RTI	6.77J	4.99	9.53	7/21/12 1:09
3072160	3072160009	PS	WP	6/11/2012 0:01	RTI	-0.0194U	4.00	9.31	7/21/12 1:17
3072160	3072160010	PS	WP	6/11/2012 0:01	RTI	1.35U	4.16	9.25	7/21/12 1:25
3072160	3072160011	PS	WP	6/11/2012 0:01	RTI	-0.314U	4.01	9.41	7/21/12 1:33
3072160	3072160012	PS	WP	6/11/2012 0:01	RTI	-0.0195U	4.02	9.35	7/21/12 1:41
3072160	3072160013	PS	WP	6/11/2012 0:01	RTI	1.35U	4.17	9.28	7/21/12 1:49
3072160	3072160014	PS	WP	6/11/2012 0:01	RTI	1.08U	4.14	9.28	7/21/12 1:57
3072160	3072160015	PS	WP	6/11/2012 0:01	RTI	2.22U	4.35	9.42	7/21/12 2:05
3072160	3072160016	PS	WP	6/11/2012 0:01	RTI	-0.861U	3.93	9.39	7/21/12 2:13
3072160	3072160017	PS	WP	6/11/2012 0:01	RTI	-2.51U	3.66	9.28	7/21/12 2:21
3072160	3072160018	PS	WP	6/11/2012 0:01	RTI	0.799U	4.13	9.35	7/21/12 2:29
3072160	3072160019	PS	WP	6/11/2012 0:01	RTI	-0.0193U	3.98	9.27	7/21/12 2:37
3072160	3072160020	PS	WP	6/11/2012 0:01	RTI	2.22U	4.35	9.42	7/21/12 2:45

7h 7/31/12

LIMS Load
Printed 7/30/2012 at 4:44 PM

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12502
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012
Act. Rpt Units dpm

Analyst RMK
PrepSOP1
PrepSOP2 n/a
AnalSOP1
AnalSOP2 n/a
Aliq. Rpt Units Sample

Bkg CPM 6.30
Bkg Duration 30.0 min
Bkg Ref BKG072012
Bkg Ct Date/Time: 7/20/2012 9:55
Instrument ID: System #3

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Sample	Analysis Volume (Sample)	Ref. Date	Count Duration (min)	Count Start Date/Time	Sample Gross CPM	TSIE #	Activity Report Units	TSIE Within Quench Curve
459101	1.0	7/21/12 0:05	7.0	7/21/12 0:05	6.14	345.4	dpm/S	High, Evaluate
3072160001	1.0	6/11/12 0:01	7.0	7/21/12 0:13	7.29	292.8	dpm/S	Pass
3072160002	1.0	6/11/12 0:01	7.0	7/21/12 0:21	5.43	304.3	dpm/S	Pass
3072160003	1.0	6/11/12 0:01	7.0	7/21/12 0:29	6.57	311.2	dpm/S	Pass
3072160004	1.0	6/11/12 0:01	7.0	7/21/12 0:37	6.71	301.5	dpm/S	Pass
3072160005	1.0	6/11/12 0:01	7.0	7/21/12 0:45	7.71	289.1	dpm/S	Pass
3072160006	1.0	6/11/12 0:01	7.0	7/21/12 0:53	6.29	285.4	dpm/S	Pass
3072160007	1.0	6/11/12 0:01	7.0	7/21/12 1:01	6.00	320.5	dpm/S	High, Evaluate
3072160008	1.0	6/11/12 0:01	7.0	7/21/12 1:09	9.71	314.9	dpm/S	High, Evaluate
3072160009	1.0	6/11/12 0:01	7.0	7/21/12 1:17	6.29	290.9	dpm/S	Pass
3072160010	1.0	6/11/12 0:01	7.0	7/21/12 1:25	7.00	272.1	dpm/S	Pass
3072160011	1.0	6/11/12 0:01	7.0	7/21/12 1:33	6.14	304.5	dpm/S	Pass
3072160012	1.0	6/11/12 0:01	7.0	7/21/12 1:41	6.29	297.7	dpm/S	Pass
3072160013	1.0	6/11/12 0:01	7.0	7/21/12 1:49	7.00	286.6	dpm/S	Pass
3072160014	1.0	6/11/12 0:01	7.0	7/21/12 1:57	6.86	286.2	dpm/S	Pass
3072160015	1.0	6/11/12 0:01	7.0	7/21/12 2:05	7.43	305.0	dpm/S	Pass
3072160016	1.0	6/11/12 0:01	7.0	7/21/12 2:13	5.86	302.2	dpm/S	Pass
3072160017	1.0	6/11/12 0:01	7.0	7/21/12 2:21	5.00	285.1	dpm/S	Pass
3072160018	1.0	6/11/12 0:01	7.0	7/21/12 2:29	6.71	298.0	dpm/S	Pass
3072160019	1.0	6/11/12 0:01	7.0	7/21/12 2:37	6.29	281.7	dpm/S	Pass
3072160020	1.0	6/11/12 0:01	7.0	7/21/12 2:45	7.43	305.7	dpm/S	Pass
LCS12502	1.0	7/30/12 13:18	7.0	7/30/12 13:18	64.86	323.5	dpm/S	High, Evaluate
LCSD12502	1.0	7/30/12 13:26	7.0	7/30/12 13:26	59.29	332.4	dpm/S	High, Evaluate

7/31/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	RMK
Matrix	Smear	**PrepSOP1**	0
Batch ID	12502	**PrepSOP2**	n/a
Prep Start	7/16/2012 12:00	**AnalSOP1**	0
Prep Finish	7/16/2012	**AnalSOP2**	n/a

Uncertainty Factors	
UE1	5.39%
UE2	10.60%
UE3	1.00%
UE4	0.00%

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Sample	Low Energy Beta Emitters Efficiency (cpm/dpm)	Decay Time (Years)	Decay Factor	Activity (dpm/S)	Count Uncertainty (dpm/S)	C.S.U. (dpm/S)	MDC (dpm/S)	Critical Level (dpm/S)	Zero UNC	Use UNC	Unit Conversion Factor
459101	0.4784	0.0000	1.0000	-0.334	4.272	4.272	10.031	3.634	1.070	4.272	1.00
3072160001	0.5181	0.1095	0.9939	1.922	4.258	4.264	9.318	3.376	0.994	4.258	1.00
3072160002	0.5131	0.1096	0.9939	-1.706	3.816	3.821	9.410	3.409	1.004	3.816	1.00
3072160003	0.5091	0.1096	0.9939	0.534	4.151	4.152	9.483	3.436	1.012	4.151	1.00
3072160004	0.5145	0.1096	0.9939	0.802	4.143	4.145	9.384	3.400	1.001	4.143	1.00
3072160005	0.5193	0.1096	0.9939	2.732	4.349	4.361	9.297	3.368	0.992	4.349	1.00
3072160006	0.5203	0.1096	0.9939	-0.019	3.991	3.991	9.279	3.362	0.990	3.991	1.00
3072160007	0.5025	0.1096	0.9939	-0.601	4.054	4.055	9.608	3.481	1.025	4.054	1.00
3072160008	0.5066	0.1096	0.9939	6.772	4.919	4.985	9.530	3.453	1.017	4.919	1.00
3072160009	0.5187	0.1097	0.9939	-0.019	4.003	4.003	9.307	3.372	0.993	4.003	1.00
3072160010	0.5221	0.1097	0.9939	1.349	4.155	4.158	9.248	3.350	0.987	4.155	1.00
3072160011	0.5130	0.1097	0.9939	-0.314	4.008	4.008	9.411	3.409	1.004	4.008	1.00
3072160012	0.5162	0.1097	0.9939	-0.019	4.022	4.022	9.352	3.388	0.998	4.022	1.00
3072160013	0.5200	0.1097	0.9939	1.354	4.172	4.175	9.285	3.364	0.990	4.172	1.00
3072160014	0.5201	0.1097	0.9939	1.083	4.136	4.138	9.283	3.363	0.990	4.136	1.00
3072160015	0.5127	0.1097	0.9939	2.218	4.337	4.345	9.417	3.412	1.005	4.337	1.00
3072160016	0.5142	0.1098	0.9939	-0.861	3.925	3.926	9.390	3.402	1.002	3.925	1.00
3072160017	0.5204	0.1098	0.9939	-2.514	3.643	3.656	9.278	3.361	0.990	3.643	1.00
3072160018	0.5161	0.1098	0.9939	0.799	4.131	4.132	9.355	3.389	0.998	4.131	1.00
3072160019	0.5211	0.1098	0.9939	-0.019	3.985	3.985	9.266	3.357	0.988	3.985	1.00
3072160020	0.5123	0.1098	0.9939	2.219	4.340	4.348	9.424	3.414	1.005	4.340	1.00
LCS12502	0.5001	0.0000	1.0000	117.096	12.064	18.455	9.595	3.476	1.024	12.064	1.00
LCSD12502	0.4922	0.0000	1.0000	107.653	11.731	17.392	9.749	3.532	1.040	11.731	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	RMK		
Date:	7/31/2012	**Method:**	EPA 906.0M
Worklist:	12502	**SOP:**	
Matrix:	Filter	**MB Sample ID:**	459101

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	-0.3340	4.2720	10.0310	3.63400		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/30/12 13:18	7/30/12 13:26				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (DPM/Sample):	1184.715	1184.715				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (DPM/Sample, g, F):	118.472	118.472				
1.96 Sigma Uncertainty (Calculated):	2.136	2.136				
Result (DPM/Sample, g, F):	117.096	107.653				
1.96 Sigma Unc:	18.455	17.392				
% Recovery:	98.84%	90.87%				
Assessment:	Pass	Pass				
Upper % Recovery Limits:	125.00%	125.00%				
Lower % Recovery Limits:	75.00%	75.00%				

Duplicate Sample Assessment

LCS/LCSD Y or N?:	Y					
Analyte:	SC Low Energy Beta					
Sample I.D.:	LCS12502					
Duplicate Sample I.D.	LCSD12502					
Sample Result (DPM/Sample, g, F):	117.0960					
1.96 Sigma Unc:	18.4550					
nple Duplicate Result (DPM/Sample, g, F):	107.6530					
Duplicate Sample 1.96 Sigma Unc.	17.3920					
Either results below MDC?	NO					
Relative Percent Difference:	8.40%					
Assessment:	Pass					
% RPD Limit:	25.00%					

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Sample Matrix Spike Control Assessment

Analyte:			
Sample Collection Date:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Spike I.D.:			
MS/MSD Decay Corrected Spike Conc. (DPM/Sample):			
Spike Volume Used in MS (mL):			
Spike Volume Used in MSD (mL):			
MS Aliquot (L, g, F):			
MS Target Conc.(DPM/Sample, g, F):			
MSD Aliquot (L, g, F):			
MSD Target Conc. (DPM/Sample, g, F):			
MS Spike uncertainty (calculated):			
MSD Spike uncertainty (calculated):			
Sample Result:			
Sample 1.96 Sigma Unc.:			
Sample Matrix Spike Result:			
Sample MS 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample MSD 1.96 Sigma Unc.:			
MS % Recovery:			
MSD % Recovery:			
MS Assessment:			
MSD Assessment:			
MS/MSD Upper % Recovery Limits:			
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment

Analyte:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Sample Matrix Spike Result:			
Sample Matrix Spike 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample Matrix Spike Duplicate 1.96 Sigma Unc.:			
MS/MSD Relative Percent Difference:			
MS/ MSD RPD Assessment:			
% RPD Limit:			

Comments:

7/31/12

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12502

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Calibration Information				
Instr. ID:	*System #2*	*System #3*		
Cal Type:	*LEB Quenched*	*LEB Quenched*		
Cal ID:	*81012-493*	*81012-493*		
Description:	*5 mL DI +15 mL Ultima LLT*	*5 mL DI +15 mL Ultima LLT*		
Window:	*1.0-160.0*	*1.0-160.0*		
Eff. Date:	*7/20/2012*	*7/19/2012*		
Exp. Date:	*7/20/2013*	*7/19/2013*		
Fit Type:	*Polynomial*	*Polynomial*		
polynomial = ax^5 + bx^4 + cx^3 + dx^2 + ex + f				
a	0	0		
b	0	0		
c	0	0		
d	-8.4166E-06	-7.7122E-06		
e	4.3584E-03	4.1665E-03		
f	-6.9579E-02	-4.0645E-02		

Miscellaneous Defaults

PrepSOP1
PrepSOP2 n/a
AnalSOP1
AnalSOP2 n/a

Sigma 1.96
Zero Factor 2.71

Low Energy Beta CSU Derivation

CSU Analysis for Preparation

Mass Aliquot

uncert (g)	mass (g)	rel unc
0.0003	2.000	0.02%

Decay/Ingrowth Correction

Precision of Sample Count Time	5 min
T1/2	12.43 years
Decay Correction Uncertainty	0.08%

			CSU (TPU) for Preparation	5.39%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Sample Dissolution	2.00%	1	2.00%	0.0004
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

			CSU (TPU) for Yield Correction	1.00%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Absence of Yield Monitoring	1.00%	1	1.00%	0.0001

			CSU (TPU) for Analysis	10.60%
Description	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
SRM Uncertainty	3.50%	1	3.50%	0.0012
Source Reproducibility	5.00%	1	5.00%	0.0025
Curve Fitting Uncertainty	5.00%	1	5.00%	0.0025
Count reproducibility	5.00%	1	5.00%	0.0025
Decay/Ingrowth Correction	0.08%	1	0.08%	0.0000
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

Total Uncertainty	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
UE1	5.39%	1	5.39%	0.0029
UE2	10.60%	1	10.60%	0.0112
UE3	1.00%	1	1.00%	0.0001
UE4	0.00%	1	0.00%	0.0000
				11.93%

Protocol #: 4 SWIPE_H3_C14 User :

Time: 30.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	2.0	0.00
Region C:	1.0 -	160	0	0.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	2.97	6.60	6.30	301.41	3

BKG 072012

Pace Analytical Services
Count Start Date/Time Calculator

System #3		Protocol ID:	SWIPE_H3_C14
		Data File:	
Date in upper Left hand corner of Printout			7/20/2012 21:07
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/20/2012 21:00	459100
2	15	7/20/2012 21:08	3072159081
3	23	7/20/2012 21:16	3072159082
4	31	7/20/2012 21:24	3072159083
5	39	7/20/2012 21:32	3072159084
6	47	7/20/2012 21:40	3072159085
7	55	7/20/2012 21:48	3072159086
8	63	7/20/2012 21:56	3072159087
9	71	7/20/2012 22:04	3072159088
10	79	7/20/2012 22:12	3072159089
11	87	7/20/2012 22:20	3072159090
12	95	7/20/2012 22:28	3072159091
13	103	7/20/2012 22:36	3072159092
14	111	7/20/2012 22:44	3072159093
15	119	7/20/2012 22:52	3072159094
16	128	7/20/2012 23:01	3072159095
17	136	7/20/2012 23:09	3072159096
18	144	7/20/2012 23:17	3072159097
19	152	7/20/2012 23:25	3072159098
20	160	7/20/2012 23:33	3072159099
21	168	7/20/2012 23:41	3072159100
22	176	7/20/2012 23:49	LCS12501
23	184	7/20/2012 23:57	LCSD12501
24	192	7/21/2012 0:05	459101
25	200	7/21/2012 0:13	3072160001
26	208	7/21/2012 0:21	3072160002
27	216	7/21/2012 0:29	3072160003
28	224	7/21/2012 0:37	3072160004
29	232	7/21/2012 0:45	3072160005
30	240	7/21/2012 0:53	3072160006
31	248	7/21/2012 1:01	3072160007
32	256	7/21/2012 1:09	3072160008
33	264	7/21/2012 1:17	3072160009
34	272	7/21/2012 1:25	3072160010
35	280	7/21/2012 1:33	3072160011
36	288	7/21/2012 1:41	3072160012
37	296	7/21/2012 1:49	3072160013
38	304	7/21/2012 1:57	3072160014
39	312	7/21/2012 2:05	3072160015
40	320	7/21/2012 2:13	3072160016
41	328	7/21/2012 2:21	3072160017
42	336	7/21/2012 2:29	3072160018
43	344	7/21/2012 2:37	3072160019
44	352	7/21/2012 2:45	3072160020

7/31/12

– 12502

Protocol #:20 SWIPE_H3_C14 User :

Time: 7.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	0.0	0.00
Region C:	1.0 -	160	0	3.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	1	7.00	7	4.43	7.14	7.14	313.95	2
20	2	7.00	15	3.00	6.43	6.43	341.29	2
20	3	7.00	23	3.29	6.14	6.00	349.05	3
20	4	7.00	31	5.57	9.14	9.14	310.61	2
20	5	7.00	39	3.86	6.29	6.29	314.42	3
20	6	7.00	47	3.14	5.86	5.86	312.75	2
20	7	7.00	55	5.29	8.43	8.29	302.86	1
20	8	7.00	63	3.43	6.57	6.43	302.78	3
20	9	7.00	71	3.29	5.43	5.29	273.75	4
20	10	7.00	79	3.57	7.14	7.00	272.30	2
20	11	7.00	87	4.29	8.00	8.14	293.08	2
20	12	7.00	95	3.86	7.29	7.29	270.72	2
20	13	7.00	103	2.00	4.43	4.14	276.57	5
20	14	7.00	111	2.43	6.71	6.71	278.10	3
20	15	7.00	119	3.86	7.14	7.00	279.85	3
20	16	7.00	128	4.43	6.86	6.71	314.88	2
20	17	7.00	136	4.14	7.29	7.43	306.09	2
20	18	7.00	144	4.43	7.29	7.29	288.41	3
20	19	7.00	152	3.43	7.14	7.00	318.74	3
20	20	7.00	160	2.00	4.71	4.14	302.79	6
20	21	7.00	168	3.14	6.29	6.29	280.29	2
20	22	7.00	176	42.14	55.57	56.14	309.32	0
20	23	7.00	184	44.00	59.14	59.57	315.04	1
20	24	7.00	192	3.71	6.14	6.14	345.41	2
20	25	7.00	200	4.14	7.43	7.29	292.81	1
20	26	7.00	208	2.00	5.71	5.43	304.29	3
20	27	7.00	216	4.00	6.71	6.57	311.16	3
20	28	7.00	224	3.43	6.86	6.71	301.51	3
20	29	7.00	232	3.43	7.71	7.71	289.09	2
20	30	7.00	240	3.29	6.43	6.29	285.38	3
20	31	7.00	248	4.14	6.29	6.00	320.54	3
20	32	7.00	256	5.43	9.57	9.71	314.94	1
20	33	7.00	264	3.14	6.43	6.29	290.94	2
20	34	7.00	272	3.43	7.14	7.00	272.07	3
20	35	7.00	280	3.57	6.14	6.14	304.46	2
20	36	7.00	288	4.14	6.57	6.29	297.68	3
20	37	7.00	296	3.86	7.14	7.00	286.59	3
20	38	7.00	304	3.86	7.14	6.86	286.24	3
20	39	7.00	312	4.43	7.29	7.43	305.04	2

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	40	7.00	320	3.57	6.00	5.86	302.21	3
20	41	7.00	328	2.29	5.14	5.00	285.07	3
20	42	7.00	336	3.86	6.71	6.71	297.98	2
20	43	7.00	344	3.29	6.14	6.29	281.73	2
20	44	7.00	352	4.43	7.57	7.43	305.73	2

Pace Analytical Services
Count Start Date/Time Calculator

System #3		Protocol ID:	SWIPE_H3_C14
		Data File:	
	Date in upper Left hand corner of Printout		7/30/2012 13:09
		Sample Ct Duration (min)	7.0

S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/30/2012 13:02	3072155009
2	15	7/30/2012 13:10	3072155016
3	23	7/30/2012 13:18	LCS12502
4	31	7/30/2012 13:26	LCSD12502
5	39	7/30/2012 13:34	459065

7/31/12

Time: 7.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0	20.0	0	0.0	0.00
Region B:	2.0	160	0	0.0	0.00
Region C:	1.0	160	0	3.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	1	7.00	7	4.00	6.29	6.14	314.87	3
20	2	7.00	15	4.29	7.86	7.71	294.67	2
20	3	7.00	23	47.71	64.43	64.86	323.52	0
20	4	7.00	31	43.43	58.86	59.29	332.35	0
20	5	7.00	39	4.43	7.29	7.14	299.98	3

Protocol #: 4 SWIPE_H3_C14 User :

Time: 30.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	2.0	0.00
Region C:	1.0 -	160	0	0.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	3.83	7.13	7.03	295.93	2

NOT used in calc
7/31/12

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
3072159097	12501	Swipe-H3_C14	14	20	7/20/12 0900	7	NA	JLK
98								
99								
100								
LCS 12501								
LCSD 12501								
MB (459101)	12502							
3072160081			40					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13			9					
14								
15								
16								
17								

Run comments: _____

Peer Review: _____

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
30721600 18	12502	Swipe_H3_C14	9	20	7/20/12 0900	7	MA	RMK
19								
20								
LCS 12502								
LCSD 12502								
LCS 12476	12476	Swipe_H3_C14	18	7	7/20/12 0950	7	MA	RMK
LCSD 12476								
LCS 12477	12477							
LCSD 12477								
LCS 12478	12478							
LCSD 12478								
LCS 12479	12479							
LCSD 12479								
LCS 12480	12480		6					
LCSD 12480								
LCS 12486	12486							
LCSD 12486								
LCS 12487	12487							
LCSD 12487								
LCS 12488	12488							
LCSD 12488								
LCS 12489	12489	Swipe_H3_C14	11	7	7/20/12 1130	7	MA	RMK
LCSD 12489								
LCS 12490	12490							

Run comments: _____

Peer Review: _____

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
BIU Background	N/A	N/A	3	4	7/22/12 1030	40 30	MD	[illegible]
3072155009			20	21		7		
↓ 16								
WO12502								
WO12502								
MB 459005	12490							
~~BB MB 459107~~			3 (partial)	10 (LHS)		7		
~~3072161018 17 07/22/12~~			27					
~~18~~								
~~19~~		NC 7/22/12						
~~20~~								
21	12508					7		
22								
23								
24								
25								
26				5 07/23/12				
27								
28								
29								
30								
31								
32								
33								

Run comments:

Peer Review:

J:\QAQC\Master\Document Management\Radiological\Liquid Scintillation Runlog (R023-3 7Oct2010).XLS

Low Energy Beta Sample Analysis Data

7/22/12

Quality Control Review

Batch	RADC/12503	HBN	91076
Rule	9060 I LEB	Status	WP
Create Date	6/28/2012	Analyst	RMK

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1 459102-BLANK for HBN 91076 [RADC/1250

Type BLANK **Matrix** Impact Plate **Collected** **% Moisture**
Client QCACCOUNT **WO** **Work ID**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12503 **Prep Date** 7/21/2012 04:36 **Dilution**
Method EPA 906.0M **HBN** 91076 **Hold Date** 12/25/2012 23:59 **Analyst** RMK
Schedule 2796269 **Instru** NONE **CC** OK *

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 04:36 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** RMK
Schedule 2796269 **File** **CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	0.877U ± 4.22 (9.55)	dpm/sa	0.877U ± 4.22 (9.55)		dpm/sa	

2 3072160021-SU-02-4

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12503 **Prep Date** 7/21/2012 04:44 **Dilution**
Method EPA 906.0M **HBN** 91076 **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790601 **Instru** NONE **CC** OK *

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 04:44 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790601 **File** **CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	6.12J ± 4.79 (9.28)	dpm/sa	6.12J ± 4.79 (9.28)		dpm/sa		

3 3072160022-SU-02-5

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

7/23/12

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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3 3072160022-SU-02-5

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 04:52	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790602		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 04:52	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790602		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.524U ± 3.93 (9.29)	dpm/sa	-0.524U ± 3.93 (9.29)		dpm/sa		

4 3072160023-SU-02-6

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 05:00	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790603		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 05:00	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790603		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	3.82J ± 4.71 (9.77)	dpm/sa	3.82J ± 4.71 (9.77)		dpm/sa		

5 3072160024-SU-02-7

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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5 3072160024-SU-02-7

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 05:16	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790604		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 05:16	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790604		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-6.71U ± 3.73 (10.8)	dpm/sa	-6.71U ± 3.73 (10.8)		dpm/sa		

6 3072160025-SU-02-7D

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 05:24	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790605		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 05:24	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790605		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.44U ± 4.26 (9.46)	dpm/sa	1.44U ± 4.26 (9.46)		dpm/sa		

7 3072160026-SU-02-8

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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7 3072160026-SU-02-8

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 05:32	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790606		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 05:32	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790606		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.67U ± 3.87 (9.52)	dpm/sa	-1.67U ± 3.87 (9.52)		dpm/sa		

8 3072160027-SU-02-9

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 05:40	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790607		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 05:40	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790607		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.260U ± 4.09 (9.58)	dpm/sa	-0.260U ± 4.09 (9.58)		dpm/sa		

9 3072160028-SU-02-10

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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9 3072160028-SU-02-10

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 05:48	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790608		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 05:48	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790608		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	4.18J ± 4.53 (9.26)	dpm/sa	4.18J ± 4.53 (9.26)		dpm/sa		

10 3072160029-SU-02-11

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 05:56	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790609		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 05:56	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790609		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.35U ± 3.80 (9.26)	dpm/sa	-1.35U ± 3.80 (9.26)		dpm/sa		

11 3072160030-SU-02-12

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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11 3072160030-SU-02-12

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 06:04	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790610		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 06:04	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790610		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.63U ± 3.78 (9.30)	dpm/sa	-1.63U ± 3.78 (9.30)		dpm/sa		

12 3072160031-SU-02-13

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 06:12	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790611		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 06:12	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790611		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.80U ± 4.38 (9.32)	dpm/sa	2.80U ± 4.38 (9.32)		dpm/sa		

13 3072160032-SU-02-14

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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13 3072160032-SU-02-14

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 06:20	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790612		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 06:20	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790612		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.09U ± 3.85 (9.29)	dpm/sa	-1.09U ± 3.85 (9.29)		dpm/sa		

14 3072160033-SU-02-15

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 06:28	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790613		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 06:28	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790613		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.807U ± 3.95 (9.43)	dpm/sa	-0.807U ± 3.95 (9.43)		dpm/sa		

15 3072160034-SU-02-16

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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15 3072160034-SU-02-16

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 06:36	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790614		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 06:36	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790614		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.79U ± 4.37 (9.29)	dpm/sa	2.79U ± 4.37 (9.29)		dpm/sa		

16 3072160035-SU-02-17

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 06:44	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790615		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 06:44	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790615		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-2.76U ± 3.66 (9.38)	dpm/sa	-2.76U ± 3.66 (9.38)		dpm/sa		

17 3072160036-SU-02-17D

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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17 3072160036-SU-02-17D

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 06:52	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790616		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 06:52	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790616		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.08U ± 3.84 (9.26)	dpm/sa	-1.08U ± 3.84 (9.26)		dpm/sa		

18 3072160037-SU-02-18

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 07:00	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790617		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 07:00	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790617		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-2.72U ± 3.61 (9.25)	dpm/sa	-2.72U ± 3.61 (9.25)		dpm/sa		

19 3072160038-SU-02-19

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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19 3072160038-SU-02-19

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12503	**Prep Date**	7/21/2012 07:08	**Dilution**	
Method	EPA 906.0M	**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790618	**Instru**	NONE			**CC**	OK *

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 07:08	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790618	**File**				**CC**	OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.41U ± 4.16 (9.23)	dpm/sa	1.41U ± 4.16 (9.23)		dpm/sa		

20 3072160039-SU-02-20

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12503	**Prep Date**	7/21/2012 07:16	**Dilution**	
Method	EPA 906.0M	**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790619	**Instru**	NONE			**CC**	OK *

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 07:16	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790619	**File**				**CC**	OK *

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.14U ± 4.12 (9.24)	dpm/sa	1.14U ± 4.12 (9.24)		dpm/sa		

21 3072160040-SU-02-21

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12503	**HBN**	91076
Rule	9060 I LEB	**Status**	WP
Create Date	6/28/2012	**Analyst**	RMK

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21 3072160040-SU-02-21

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12503	**Prep Date**	7/21/2012 07:24	**Dilution**
Method	EPA 906.0M		**HBN**	91076	**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790620		**Instru**	NONE			**CC** OK *
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 07:24	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** RMK
Schedule	2790620		**File**				**CC** OK *

Analyte	CC	Posted Result		Result	MDL	RDL		Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK								
LSC Low Energy Beta	OK	0.849U ± 4.09 (9.24)	dpm/sa	0.849U ± 4.09 (9.24)			dpm/sa		

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Creation Date	06/28/2012 13:57		Assigned Analyst	RMK
Batch ID	12503		Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB	9060W	HBN	91076
Method	EPA 906.0M	EPA 906.0m		

Project	Sample ID	Sample Type	Matrix	Collection Date/Time	Client ID	LEB Activity	LEB Unc.	LEB MDC	Analysis Date/Time
	459102	BLANK	IP		QCACCOUNT	0.877U	4.22	9.55	7/21/12 4:36
3072160	3072160021	PS	WP	6/11/2012 0:01	RTI	6.12J	4.79	9.28	7/21/12 4:44
3072160	3072160022	PS	WP	6/11/2012 0:01	RTI	-0.524U	3.93	9.29	7/21/12 4:52
3072160	3072160023	PS	WP	6/11/2012 0:01	RTI	3.82J	4.71	9.77	7/21/12 5:00
3072160	3072160024	PS	WP	6/11/2012 0:01	RTI	-6.71U	3.73	10.8	7/21/12 5:16
3072160	3072160025	PS	WP	6/11/2012 0:01	RTI	1.44U	4.26	9.46	7/21/12 5:24
3072160	3072160026	PS	WP	6/11/2012 0:01	RTI	-1.67U	3.87	9.52	7/21/12 5:32
3072160	3072160027	PS	WP	6/11/2012 0:01	RTI	-0.260U	4.09	9.58	7/21/12 5:40
3072160	3072160028	PS	WP	6/11/2012 0:01	RTI	4.18J	4.53	9.26	7/21/12 5:48
3072160	3072160029	PS	WP	6/11/2012 0:01	RTI	-1.35U	3.80	9.26	7/21/12 5:56
3072160	3072160030	PS	WP	6/11/2012 0:01	RTI	-1.63U	3.78	9.30	7/21/12 6:04
3072160	3072160031	PS	WP	6/11/2012 0:01	RTI	2.80U	4.38	9.32	7/21/12 6:12
3072160	3072160032	PS	WP	6/11/2012 0:01	RTI	-1.09U	3.85	9.29	7/21/12 6:20
3072160	3072160033	PS	WP	6/11/2012 0:01	RTI	-0.807U	3.95	9.43	7/21/12 6:28
3072160	3072160034	PS	WP	6/11/2012 0:01	RTI	2.79U	4.37	9.29	7/21/12 6:36
3072160	3072160035	PS	WP	6/11/2012 0:01	RTI	-2.76U	3.66	9.38	7/21/12 6:44
3072160	3072160036	PS	WP	6/11/2012 0:01	RTI	-1.08U	3.84	9.26	7/21/12 6:52
3072160	3072160037	PS	WP	6/11/2012 0:01	RTI	-2.72U	3.61	9.25	7/21/12 7:00
3072160	3072160038	PS	WP	6/11/2012 0:01	RTI	1.41U	4.16	9.23	7/21/12 7:08
3072160	3072160039	PS	WP	6/11/2012 0:01	RTI	1.14U	4.12	9.24	7/21/12 7:16
3072160	3072160040	PS	WP	6/11/2012 0:01	RTI	0.849U	4.09	9.24	7/21/12 7:24

7/22/12 7/23/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	RMK			
Matrix	Smear	**PrepSOP1**		**Bkg CPM**	6.27	
Batch ID	12503	**PrepSOP2**	n/a	**Bkg Duration**	30.0	min
Prep Start	7/16/2012 12:00	**AnalSOP1**		**Bkg Ref**	BKG072112	
Prep Finish	7/16/2012	**AnalSOP2**	n/a	**Bkg Ct Date/Time:**	7/21/2012 2:54	
Act. Rpt Units	dpm	**Aliq. Rpt Units**	Sample	**Instrument ID:**	System #3	

Sample	Analysis Volume (Sample)	Ref. Date	Count Duration (min)	Count Start Date/Time	Sample Gross CPM	TSIE #	Activity Report Units	TSIE Within Quench Curve
459102	1.0	7/21/12 4:36	7.0	7/21/12 4:36	6.71	321.8	dpm/S	High, Evaluate
3072160021	1.0	6/11/12 0:01	7.0	7/21/12 4:44	9.43	289.5	dpm/S	Pass
3072160022	1.0	6/11/12 0:01	7.0	7/21/12 4:52	6.00	290.7	dpm/S	Pass
3072160023	1.0	6/11/12 0:01	7.0	7/21/12 5:00	8.14	331.7	dpm/S	High, Evaluate
3072160024	1.0	6/11/12 0:01	7.0	7/21/12 5:16	3.29	171.2	dpm/S	Pass
3072160025	1.0	6/11/12 0:01	7.0	7/21/12 5:24	7.00	311.0	dpm/S	Pass
3072160026	1.0	6/11/12 0:01	7.0	7/21/12 5:32	5.43	315.7	dpm/S	High, Evaluate
3072160027	1.0	6/11/12 0:01	7.0	7/21/12 5:40	6.14	320.3	dpm/S	High, Evaluate
3072160028	1.0	6/11/12 0:01	7.0	7/21/12 5:48	8.43	285.4	dpm/S	Pass
3072160029	1.0	6/11/12 0:01	7.0	7/21/12 5:56	5.57	254.4	dpm/S	Pass
3072160030	1.0	6/11/12 0:01	7.0	7/21/12 6:04	5.43	293.7	dpm/S	Pass
3072160031	1.0	6/11/12 0:01	7.0	7/21/12 6:12	7.71	296.6	dpm/S	Pass
3072160032	1.0	6/11/12 0:01	7.0	7/21/12 6:20	5.71	291.1	dpm/S	Pass
3072160033	1.0	6/11/12 0:01	7.0	7/21/12 6:28	5.86	308.2	dpm/S	Pass
3072160034	1.0	6/11/12 0:01	7.0	7/21/12 6:36	7.71	291.6	dpm/S	Pass
3072160035	1.0	6/11/12 0:01	7.0	7/21/12 6:44	4.86	303.1	dpm/S	Pass
3072160036	1.0	6/11/12 0:01	7.0	7/21/12 6:52	5.71	286.3	dpm/S	Pass
3072160037	1.0	6/11/12 0:01	7.0	7/21/12 7:00	4.86	281.8	dpm/S	Pass
3072160038	1.0	6/11/12 0:01	7.0	7/21/12 7:08	7.00	266.2	dpm/S	Pass
3072160039	1.0	6/11/12 0:01	7.0	7/21/12 7:16	6.86	278.0	dpm/S	Pass
3072160040	1.0	6/11/12 0:01	7.0	7/21/12 7:24	6.71	278.3	dpm/S	Pass
LCS12503	1.0	7/21/12 10:45	7.0	7/21/12 10:45	53.43	311.6	dpm/S	Pass
LCSD12503	1.0	7/21/12 10:53	7.0	7/21/12 10:53	61.43	320.0	dpm/S	High, Evaluate

7/21/22/12 7/23/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12503
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012

Analyst RMK
PrepSOP1 0
PrepSOP2 n/a
AnalSOP1 0
AnalSOP2 n/a

Uncertainty Factors	
UE1	5.39%
UE2	10.60%
UE3	1.00%
UE4	0.00%

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Sample	Low Energy Beta Emitters Efficiency (cpm/dpm)	Decay Time (Years)	Decay Factor	Activity (dpm/S)	Count Uncertainty (dpm/S)	C.S.U. (dpm/S)	MDC (dpm/S)	Critical Level (dpm/S)	Zero UNC	Use UNC	Unit Conversion Factor
459102	0.5015	0.0000	1.0000	0.877	4.223	4.224	9.547	3.458	1.021	4.223	1.00
3072160021	0.5192	0.1101	0.9939	6.124	4.738	4.794	9.279	3.361	0.992	4.738	1.00
3072160022	0.5188	0.1101	0.9939	-0.524	3.925	3.925	9.286	3.363	0.993	3.925	1.00
3072160023	0.4929	0.1101	0.9939	3.818	4.687	4.709	9.775	3.540	1.045	4.687	1.00
3072160024	0.4467	0.1101	0.9939	-6.713	3.638	3.725	10.785	3.906	1.153	3.638	1.00
3072160025	0.5092	0.1101	0.9939	1.442	4.258	4.262	9.461	3.427	1.011	4.258	1.00
3072160026	0.5061	0.1101	0.9939	-1.670	3.867	3.872	9.519	3.448	1.018	3.867	1.00
3072160027	0.5027	0.1102	0.9939	-0.260	4.089	4.089	9.584	3.471	1.025	4.089	1.00
3072160028	0.5203	0.1102	0.9939	4.177	4.506	4.534	9.259	3.354	0.990	4.506	1.00
3072160029	0.5202	0.1102	0.9939	-1.354	3.800	3.803	9.261	3.354	0.990	3.800	1.00
3072160030	0.5178	0.1102	0.9939	-1.632	3.779	3.784	9.304	3.370	0.995	3.779	1.00
3072160031	0.5167	0.1102	0.9939	2.804	4.369	4.382	9.324	3.377	0.997	4.369	1.00
3072160032	0.5187	0.1102	0.9939	-1.086	3.849	3.851	9.288	3.364	0.993	3.849	1.00
3072160033	0.5109	0.1102	0.9939	-0.807	3.948	3.949	9.430	3.415	1.008	3.948	1.00
3072160034	0.5185	0.1103	0.9939	2.794	4.354	4.366	9.291	3.365	0.993	4.354	1.00
3072160035	0.5137	0.1103	0.9939	-2.762	3.648	3.663	9.378	3.397	1.003	3.648	1.00
3072160036	0.5201	0.1103	0.9939	-1.083	3.838	3.841	9.263	3.355	0.990	3.838	1.00
3072160037	0.5210	0.1103	0.9939	-2.723	3.597	3.612	9.246	3.349	0.989	3.597	1.00
3072160038	0.5220	0.1103	0.9939	1.407	4.154	4.158	9.229	3.343	0.987	4.154	1.00
3072160039	0.5216	0.1103	0.9939	1.138	4.123	4.125	9.236	3.345	0.987	4.123	1.00
3072160040	0.5216	0.1104	0.9939	0.849	4.086	4.087	9.236	3.345	0.987	4.086	1.00
LCS12503	0.5088	0.0000	1.0000	92.688	10.787	15.446	9.410	3.408	1.006	10.787	1.00
LCSD12503	0.5029	0.0000	1.0000	109.674	11.681	17.537	9.520	3.448	1.018	11.681	1.00

7/22/12 7/23/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst: RMK
Date: 7/21/2012 **Method:** EPA 906.0M
Worklist: 12503 **SOP:**
Matrix: Filter **MB Sample ID:** 459102

Method Blank Assessment						
Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	0.8770	4.2240	9.5470	3.45800		

Laboratory Control Sample Assessment						
	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/21/12 10:45	7/21/12 10:53				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (DPM/Sample):	1184.920	1184.920				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (DPM/Sample, g, F):	118.492	118.492				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (DPM/Sample, g, F):	92.688	109.674				
1.96 Sigma Unc:	15.446	17.537				
% Recovery:	78.22%	92.56%				
Assessment:	Pass	Pass				
Upper % Recovery Limits:	125.00%	125.00%				
Lower % Recovery Limits:	75.00%	75.00%				

Duplicate Sample Assessment						
LCS/LCSD Y or N?:	Y					
Analyte:	SC Low Energy Beta					
Sample I.D.:	LCS12503					
Duplicate Sample I.D.	LCSD12503					
Sample Result (DPM/Sample, g, F):	92.6880					
1.96 Sigma Unc:	15.4460					
ıple Duplicate Result (DPM/Sample, g, F):	109.6740					
Duplicate Sample 1.96 Sigma Unc.	17.5370					
Either results below MDC?	NO					
Relative Percent Difference:	16.79%					
Assessment:	Pass					
% RPD Limit:	25.00%					

Sample Matrix Spike Control Assessment			
Analyte:			
Sample Collection Date			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Spike I.D.:			
MS/MSD Decay Corrected Spike Conc. (DPM/Sample):			
Spike Volume Used in MS (mL):			
Spike Volume Used in MSD (mL):			
MS Aliquot (L, g, F):			
MS Target Conc.(DPM/Sample, g, F)			
MSD Aliquot (L, g, F):			
MSD Target Conc. (DPM/Sample, g, F):			
MS Spike uncertainty (calculated):			
MSD Spike uncertainty (calculated):			
Sample Result:			
Sample 1.96 Sigma Unc.			
Sample Matrix Spike Result:			
Sample MS 1.96 Sigma Unc.			
Sample Matrix Spike Duplicate Result:			
Sample MSD 1.96 Sigma Unc.:			
MS % Recovery:			
MSD % Recovery:			
MS Assessment:			
MSD Assessment:			
MS/MSD Upper % Recovery Limits:			
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment			
Analyte:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Sample Matrix Spike Result:			
Sample Matrix Spike 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample Matrix Spike Duplicate 1.96 Sigma Unc.:			
MS/MSD Relative Percent Difference:			
MS/ MSD RPD Assessment			
% RPD Limit:			

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

7/22/12 7/23/12

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12503

Calibration Information				
Instr. ID:	*System #2*	*System #3*		
Cal Type:	*LEB Quenched*	*LEB Quenched*		
Cal ID:	*81012-493*	*81012-493*		
Description:	*5 mL DI +15 mL Ultima LLT*	*5 mL DI +15 mL Ultima LLT*		
Window:	*1.0-160.0*	*1.0-160.0*		
Eff. Date:	*7/20/2012*	*7/19/2012*		
Exp. Date:	*7/20/2013*	*7/19/2013*		
Fit Type:	*Polynomial*	*Polynomial*		
polynomial = ax^5 + bx^4 + cx^3 + dx^2 + ex + f				
a	0	0		
b	0	0		
c	0	0		
d	-8.4166E-06	-7.7122E-06		
e	4.3584E-03	4.1665E-03		
f	-6.9579E-02	-4.0645E-02		

Miscellaneous Defaults

PrepSOP1
PrepSOP2 n/a
AnalSOP1
AnalSOP2 n/a

Sigma 1.96
Zero Factor 2.71

7/23/12

Low Energy Beta CSU Derivation

CSU Analysis for Preparation

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Mass Aliquot

uncert (g)	mass (g)	rel unc
0.0003	2.000	0.02%

Decay/Ingrowth Correction

Precision of Sample Count Time	5 min
T1/2	12.43 years
Decay Correction Uncertainty	0.08%

			CSU (TPU) for Preparation	5.39%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Sample Dissolution	2.00%	1	2.00%	0.0004
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

			CSU (TPU) for Yield Correction	1.00%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Absence of Yield Monitoring	1.00%	1	1.00%	0.0001

			CSU (TPU) for Analysis	10.60%
Description	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
SRM Uncertainty	3.50%	1	3.50%	0.0012
Source Reproducibility	5.00%	1	5.00%	0.0025
Curve Fitting Uncertainty	5.00%	1	5.00%	0.0025
Count reproducibility	5.00%	1	5.00%	0.0025
Decay/Ingrowth Correction	0.08%	1	0.08%	0.0000
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

Total Uncertainty	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
UE1	5.39%	1	5.39%	0.0029
UE2	10.60%	1	10.60%	0.0112
UE3	1.00%	1	1.00%	0.0001
UE4	0.00%	1	0.00%	0.0000
				11.93%

7/23/12

Protocol #: 4 SWIPE_H3_C14 User :

Time: 30.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	2.0	0.00
Region C:	1.0 -	160	0	0.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	3.10	6.47	6.27	300.24	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

BKG072112

Pace Analytical Services
Count Start Date/Time Calculator

System #3		Protocol ID:	SWIPE_H3_C14
		Data File:	
Date in upper Left hand corner of Printout			7/21/2012 4:43
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/21/2012 4:36	459102
2	15	7/21/2012 4:44	3072160021
3	23	7/21/2012 4:52	3072160022
4	31	7/21/2012 5:00	3072160023
5	47	7/21/2012 5:16	3072160024
6	55	7/21/2012 5:24	3072160025
7	63	7/21/2012 5:32	3072160026
8	71	7/21/2012 5:40	3072160027
9	79	7/21/2012 5:48	3072160028
10	87	7/21/2012 5:56	3072160029
11	95	7/21/2012 6:04	3072160030
12	103	7/21/2012 6:12	3072160031
13	111	7/21/2012 6:20	3072160032
14	119	7/21/2012 6:28	3072160033
15	127	7/21/2012 6:36	3072160034
16	135	7/21/2012 6:44	3072160035
17	143	7/21/2012 6:52	3072160036
18	151	7/21/2012 7:00	3072160037
19	159	7/21/2012 7:08	3072160038
20	167	7/21/2012 7:16	3072160039
21	175	7/21/2012 7:24	3072160040
24	183	7/21/2012 7:32	459103
25	192	7/21/2012 7:41	3072160041
26	200	7/21/2012 7:49	3072160042
27	208	7/21/2012 7:57	3072160043
28	216	7/21/2012 8:05	3072160044
29	224	7/21/2012 8:13	3072160045
30	232	7/21/2012 8:21	3072160046
31	240	7/21/2012 8:29	3072160047
32	248	7/21/2012 8:37	3072160048
33	256	7/21/2012 8:45	3072160049
34	264	7/21/2012 8:53	3072160050
35	272	7/21/2012 9:01	3072160051
36	280	7/21/2012 9:09	3072160052
37	288	7/21/2012 9:17	3072160053
38	296	7/21/2012 9:25	3072160054
39	312	7/21/2012 9:41	3072160055
40	320	7/21/2012 9:49	3072160056
41	328	7/21/2012 9:57	3072160057
42	336	7/21/2012 10:05	3072160058
43	344	7/21/2012 10:13	3072160059
44	352	7/21/2012 10:21	3072160060
45	360	7/21/2012 10:29	LCS12504
46	368	7/21/2012 10:37	LCSD12504
47	376	7/21/2012 10:45	LCS12503
48	384	7/21/2012 10:53	LCSD12503

7/23/12

7/23/12

Protocol #:26 SWIPE_H3_C14 User :

Time: 7.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0	20.0	0	0.0	0.00
Region B:	2.0	160	0	0.0	0.00
Region C:	1.0	160	0	3.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
26	1	7.00	7	3.43	7.00	6.71	321.80	4
26	2	7.00	15	6.57	9.29	9.43	289.47	1
26	3	7.00	23	3.71	6.14	6.00	290.73	3
26	4	7.00	31	4.86	8.00	8.14	331.69	2
26	5	7.00	47	1.14	3.29	3.29	171.24	1
26	6	7.00	55	4.71	7.29	7.00	311.01	3
26	7	7.00	63	3.57	5.57	5.43	315.67	3
26	8	7.00	71	3.43	6.29	6.14	320.31	2
26	9	7.00	79	4.86	8.43	8.43	285.44	2
26	10	7.00	87	2.71	5.71	5.57	254.39	3
26	11	7.00	95	2.86	5.71	5.43	293.73	3
26	12	7.00	103	4.71	7.86	7.71	296.60	3
26	13	7.00	111	2.14	5.86	5.71	291.13	4
26	14	7.00	119	4.29	6.00	5.86	308.24	3
26	15	7.00	127	4.29	7.57	7.71	291.61	2
26	16	7.00	135	2.71	5.00	4.86	303.06	3
26	17	7.00	143	4.00	5.86	5.71	286.28	3
26	18	7.00	151	2.29	5.00	4.86	281.78	4
26	19	7.00	159	3.43	7.14	7.00	266.23	3
26	20	7.00	167	3.00	7.00	6.86	278.04	2
26	21	7.00	175	4.43	7.00	6.71	278.25	3
2 MISSING TUBE(S)								
26	24	7.00	183	5.00	8.57	8.43	334.00	2
26	25	7.00	192	2.14	6.14	5.86	312.23	3
26	26	7.00	200	4.14	7.00	7.00	289.24	3
26	27	7.00	208	3.71	7.71	7.57	306.50	2
26	28	7.00	216	3.57	6.14	5.86	361.08	3
26	29	7.00	224	3.71	6.71	6.57	274.39	2
26	30	7.00	232	4.71	7.86	7.71	376.95	2
26	31	7.00	240	5.29	8.29	8.14	314.23	2
26	32	7.00	248	1.43	5.00	4.71	319.13	5
26	33	7.00	256	4.00	7.29	7.29	279.82	2
26	34	7.00	264	3.00	5.57	5.43	287.85	2
26	35	7.00	272	4.29	6.86	6.86	288.88	2
26	36	7.00	280	2.29	5.71	5.43	297.17	3
26	37	7.00	288	4.43	7.86	8.00	284.94	3
26	38	7.00	296	3.43	6.57	6.57	281.05	2
26	39	7.00	312	3.71	4.29	4.00	424.84	2
26	40	7.00	320	3.00	6.43	6.14	301.98	3

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
26	41	7.00	328	3.86	6.29	6.00	284.93	4
26	42	7.00	336	3.43	6.71	6.71	304.58	3
26	43	7.00	344	3.71	6.57	6.86	286.99	1
26	44	7.00	352	2.71	6.14	5.86	331.66	3
26	45	7.00	360	39.29	55.00	55.43	270.27	0
26	46	7.00	368	40.86	56.86	57.29	324.11	0
26	47	7.00	376	38.71	53.00	53.43	311.63	0
26	48	7.00	384	46.86	61.29	61.43	319.95	0

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
MB (459102)	12503	Swipe-H3-C14	39	26	7/20/12 1608	7	NA	
3072160021								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32			32					
33								
34								
35								
36								
37								
38								
39								
40								
LCS 12503 *								
LCSD 12503 *								
MB (459103)	12504							

Run comments: * Samples did not count as they were left out of rack.

7/21/12

Peer Review: _____

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
3072160041	12504	Swipe-H3C14	7	26	7/20/12 1608	7	NA	
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53			34					
54								
55								
56								
57								
58								
59								
60								
LLS 12504								
LCSD *12504								
MB			9	27				
3072160061								

Run comments: * Samples LCS 12503 + LCSD 12504 were counted as last two samples after LCSD 12504. Incidentally omitted from runlog. 7/21/12

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12504	HBN	91077
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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1 459103-BLANK for HBN 91077 [RADC/1250

Type BLANK **Matrix** Impact Plate **Collected** **% Moisture**
Client QCACCOUNT **WO** **Work ID**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12504 **Prep Date** 7/21/2012 07:32 **Dilution**
Method EPA 906.0M **HBN** 91077 **Hold Date** 12/25/2012 23:59 **Analyst** RMK
Schedule 2796270 **Instru** NONE **CC** OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 07:32 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** RMK
Schedule 2796270 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	4.40J ± 4.78 (9.76)	dpm/sa	4.40J ± 4.78 (9.76)			dpm/sa

2 3072160041-SU-03-1

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12504 **Prep Date** 7/21/2012 07:41 **Dilution**
Method EPA 906.0M **HBN** 91077 **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790621 **Instru** NONE **CC** OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 07:41 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790621 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High	
Rad Chemistry	OK								
LSC Low Energy Beta	OK	-0.811U ± 3.97 (9.48)	dpm/sa	-0.811U ± 3.97 (9.48)					dpm/sa

3 3072160042-SU-03-2

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	HBN	91077
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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3 3072160042-SU-03-2

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 07:49	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790622	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 07:49	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790622	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.41U ± 4.18 (9.28)	dpm/sa	1.41U ± 4.18 (9.28)		dpm/sa		

4 3072160043-SU-03-2D

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 07:57	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790623	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 07:57	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790623	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.56U ± 4.39 (9.41)	dpm/sa	2.56U ± 4.39 (9.41)		dpm/sa		

5 3072160044-SU-03-3

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	HBN	91077
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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5 3072160044-SU-03-3

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 08:05	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790624	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 08:05	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790624	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.900U ± 4.40 (10.5)	dpm/sa	-0.900U ± 4.40 (10.5)		dpm/sa		

6 3072160045-SU-03-4

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 08:13	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790625	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 08:13	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790625	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.578U ± 4.05 (9.23)	dpm/sa	0.578U ± 4.05 (9.23)		dpm/sa		

7 3072160046-SU-03-5

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	HBN	91077
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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7 3072160046-SU-03-5

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 08:21	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790626	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 08:21	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790626	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	3.34U ± 5.22 (11.1)	dpm/sa	3.34U ± 5.22 (11.1)		dpm/sa		

8 3072160047-SU-03-6

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 08:29	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790627	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 08:29	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790627	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	3.71J ± 4.58 (9.50)	dpm/sa	3.71J ± 4.58 (9.50)		dpm/sa		

9 3072160048-SU-03-7

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	HBN	91077
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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9 3072160048-SU-03-7

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790628

Batch RADC/12504
HBN 91077
Instru NONE

Prep Date 7/21/2012 08:37
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790628

Instru NONE
Col ID
File

Run Date 7/21/2012 08:37
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-3.12U ± 3.70 (9.57)	dpm/sa	-3.12U ± 3.70 (9.57)		dpm/sa		

10 3072160049-SU-03-8

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790629

Batch RADC/12504
HBN 91077
Instru NONE

Prep Date 7/21/2012 08:45
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790629

Instru NONE
Col ID
File

Run Date 7/21/2012 08:45
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.97U ± 4.24 (9.24)	dpm/sa	1.97U ± 4.24 (9.24)		dpm/sa		

11 3072160050-SU-03-9

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch RADC/12504 HBN 91077
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst RMK

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11 3072160050-SU-03-9

Prep Information

Procedure 9060 I LEB **Batch** RADC/12504 **Prep Date** 7/21/2012 08:53 **Dilution**
Method EPA 906.0M **HBN** 91077 **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790630 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 08:53 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790630 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.63U ± 3.77 (9.27)	dpm/sa	-1.63U ± 3.77 (9.27)		dpm/sa		

12 3072160051-SU-03-10

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12504 **Prep Date** 7/21/2012 09:01 **Dilution**
Method EPA 906.0M **HBN** 91077 **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790631 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 09:01 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** RMK
Schedule 2790631 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.14U ± 4.14 (9.28)	dpm/sa	1.14U ± 4.14 (9.28)		dpm/sa		

13 3072160052-SU-03-11

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	HBN	91077
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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13 3072160052-SU-03-11

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 09:09	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790632	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 09:09	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790632	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.64U ± 3.79 (9.33)	dpm/sa	-1.64U ± 3.79 (9.33)		dpm/sa		

14 3072160053-SU-03-12

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 09:17	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790633	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 09:17	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790633	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	3.34U ± 4.42 (9.26)	dpm/sa	3.34U ± 4.42 (9.26)		dpm/sa		

15 3072160054-SU-03-13

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	**HBN**	91077
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	RMK

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15 3072160054-SU-03-13

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790634

Batch RADC/12504
HBN 91077
Instru NONE

Prep Date 7/21/2012 09:25
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790634

Instru NONE
Col ID
File

Run Date 7/21/2012 09:25
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.579U ± 4.05 (9.24)	dpm/sa	0.579U ± 4.05 (9.24)		dpm/sa		

16 3072160055-SU-03-14

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790635

Batch RADC/12504
HBN 91077
Instru NONE

Prep Date 7/21/2012 09:41
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790635

Instru NONE
Col ID
File

Run Date 7/21/2012 09:41
Hold Date 12/8/2012 23:59

Dilution
Analyst RMK
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-6.77U ± 5.23 (14.3)	dpm/sa	-6.77U ± 5.23 (14.3)		dpm/sa		

17 3072160056-SU-03-15

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	HBN	91077
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	RMK

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17 3072160056-SU-03-15

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 09:49	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790636	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 09:49	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790636	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.254U ± 4.00 (9.37)	dpm/sa	-0.254U ± 4.00 (9.37)		dpm/sa		

18 3072160057-SU-03-16

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 09:57	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790637	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 09:57	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790637	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.522U ± 3.91 (9.26)	dpm/sa	-0.522U ± 3.91 (9.26)		dpm/sa		

19 3072160058-SU-03-16D

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	**HBN**	91077
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	RMK

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19 3072160058-SU-03-16D

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 10:05	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790638	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 10:05	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790638	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.863U ± 4.16 (9.39)	dpm/sa	0.863U ± 4.16 (9.39)		dpm/sa		

20 3072160059-SU-03-17

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 10:13	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790639	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 10:13	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790639	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.14U ± 4.14 (9.27)	dpm/sa	1.14U ± 4.14 (9.27)		dpm/sa		

21 3072160060-SU-03-18

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12504	**HBN**	91077
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	RMK

21 3072160060-SU-03-18

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12504	**Prep Date**	7/21/2012 10:21	**Dilution**	
Method	EPA 906.0M	**HBN**	91077	**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790640	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 10:21	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	RMK
Schedule	2790640	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.837U ± 4.09 (9.77)	dpm/sa	-0.837U ± 4.09 (9.77)		dpm/sa		

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Creation Date	06/28/2012 13:57		Assigned Analyst	RMK
Batch ID	12504		Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB	9060W	HBN	91077
Method	EPA 906.0M	EPA 906.0m		

Project	Sample ID	Sample Type	Matrix	Collection Date/Time	Client ID	LEB Activity	LEB Unc.	LEB MDC	Analysis Date/Time
	459103	BLANK	IP		QCACCOUNT	4.40J	4.78	9.76	7/21/12 7:32
3072160	3072160041	PS	WP	6/11/2012 0:01	RTI	-0.811U	3.97	9.48	7/21/12 7:41
3072160	3072160042	PS	WP	6/11/2012 0:01	RTI	1.41U	4.18	9.28	7/21/12 7:49
3072160	3072160043	PS	WP	6/11/2012 0:01	RTI	2.56U	4.39	9.41	7/21/12 7:57
3072160	3072160044	PS	WP	6/11/2012 0:01	RTI	-0.900U	4.40	10.5	7/21/12 8:05
3072160	3072160045	PS	WP	6/11/2012 0:01	RTI	0.578U	4.05	9.23	7/21/12 8:13
3072160	3072160046	PS	WP	6/11/2012 0:01	RTI	3.34U	5.22	11.1	7/21/12 8:21
3072160	3072160047	PS	WP	6/11/2012 0:01	RTI	3.71J	4.58	9.50	7/21/12 8:29
3072160	3072160048	PS	WP	6/11/2012 0:01	RTI	-3.12U	3.70	9.57	7/21/12 8:37
3072160	3072160049	PS	WP	6/11/2012 0:01	RTI	1.97U	4.24	9.24	7/21/12 8:45
3072160	3072160050	PS	WP	6/11/2012 0:01	RTI	-1.63U	3.77	9.27	7/21/12 8:53
3072160	3072160051	PS	WP	6/11/2012 0:01	RTI	1.14U	4.14	9.28	7/21/12 9:01
3072160	3072160052	PS	WP	6/11/2012 0:01	RTI	-1.64U	3.79	9.33	7/21/12 9:09
3072160	3072160053	PS	WP	6/11/2012 0:01	RTI	3.34U	4.42	9.26	7/21/12 9:17
3072160	3072160054	PS	WP	6/11/2012 0:01	RTI	0.579U	4.05	9.24	7/21/12 9:25
3072160	3072160055	PS	WP	6/11/2012 0:01	RTI	-6.77U	5.23	14.3	7/21/12 9:41
3072160	3072160056	PS	WP	6/11/2012 0:01	RTI	-0.254U	4.00	9.37	7/21/12 9:49
3072160	3072160057	PS	WP	6/11/2012 0:01	RTI	-0.522U	3.91	9.26	7/21/12 9:57
3072160	3072160058	PS	WP	6/11/2012 0:01	RTI	0.863U	4.16	9.39	7/21/12 10:05
3072160	3072160059	PS	WP	6/11/2012 0:01	RTI	1.14U	4.14	9.27	7/21/12 10:13
3072160	3072160060	PS	WP	6/11/2012 0:01	RTI	-0.837U	4.09	9.77	7/21/12 10:21

7/31/12

LIMS Load
Printed 7/31/2012 at 10:01 AM

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	RMK			
Matrix	Smear	**PrepSOP1**		**Bkg CPM**	6.27	
Batch ID	12504	**PrepSOP2**	n/a	**Bkg Duration**	30.0	min
Prep Start	7/16/2012 12:00	**AnalSOP1**		**Bkg Ref**	BKG072112	
Prep Finish	7/16/2012	**AnalSOP2**	n/a	**Bkg Ct Date/Time:**	7/21/2012 2:54	
Act. Rpt Units	dpm	**Aliq. Rpt Units**	Sample	**Instrument ID:**	System #3	

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Sample	Analysis Volume (Sample)	Ref. Date	Count Duration (min)	Count Start Date/Time	Sample Gross CPM	TSIE #	Activity Report Units	TSIE Within Quench Curve
459103	1.0	7/21/12 7:32	7.0	7/21/12 7:32	8.43	334.0	dpm/S	High, Evaluate
3072160041	1.0	6/11/12 0:01	7.0	7/21/12 7:41	5.86	312.2	dpm/S	Pass
3072160042	1.0	6/11/12 0:01	7.0	7/21/12 7:49	7.00	289.2	dpm/S	Pass
3072160043	1.0	6/11/12 0:01	7.0	7/21/12 7:57	7.57	306.5	dpm/S	Pass
3072160044	1.0	6/11/12 0:01	7.0	7/21/12 8:05	5.86	361.1	dpm/S	High, Evaluate
3072160045	1.0	6/11/12 0:01	7.0	7/21/12 8:13	6.57	274.4	dpm/S	Pass
3072160046	1.0	6/11/12 0:01	7.0	7/21/12 8:21	7.71	377.0	dpm/S	High, Evaluate
3072160047	1.0	6/11/12 0:01	7.0	7/21/12 8:29	8.14	314.2	dpm/S	High, Evaluate
3072160048	1.0	6/11/12 0:01	7.0	7/21/12 8:37	4.71	319.1	dpm/S	High, Evaluate
3072160049	1.0	6/11/12 0:01	7.0	7/21/12 8:45	7.29	279.8	dpm/S	Pass
3072160050	1.0	6/11/12 0:01	7.0	7/21/12 8:53	5.43	287.9	dpm/S	Pass
3072160051	1.0	6/11/12 0:01	7.0	7/21/12 9:01	6.86	288.9	dpm/S	Pass
3072160052	1.0	6/11/12 0:01	7.0	7/21/12 9:09	5.43	297.2	dpm/S	Pass
3072160053	1.0	6/11/12 0:01	7.0	7/21/12 9:17	8.00	284.9	dpm/S	Pass
3072160054	1.0	6/11/12 0:01	7.0	7/21/12 9:25	6.57	281.1	dpm/S	Pass
3072160055	1.0	6/11/12 0:01	7.0	7/21/12 9:41	4.00	424.8	dpm/S	High, Evaluate
3072160056	1.0	6/11/12 0:01	7.0	7/21/12 9:49	6.14	302.0	dpm/S	Pass
3072160057	1.0	6/11/12 0:01	7.0	7/21/12 9:57	6.00	284.9	dpm/S	Pass
3072160058	1.0	6/11/12 0:01	7.0	7/21/12 10:05	6.71	304.6	dpm/S	Pass
3072160059	1.0	6/11/12 0:01	7.0	7/21/12 10:13	6.86	287.0	dpm/S	Pass
3072160060	1.0	6/11/12 0:01	7.0	7/21/12 10:21	5.86	331.7	dpm/S	High, Evaluate
LCS12504	1.0	7/21/12 10:29	7.0	7/21/12 10:29	55.43	270.3	dpm/S	Pass
LCSD12504	1.0	7/21/12 10:37	7.0	7/21/12 10:37	57.29	324.1	dpm/S	High, Evaluate

7/31/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	RMK
Matrix	Smear	**PrepSOP1**	0
Batch ID	12504	**PrepSOP2**	n/a
Prep Start	7/16/2012 12:00	**AnalSOP1**	0
Prep Finish	7/16/2012	**AnalSOP2**	n/a

Uncertainty Factors	
UE1	5.39%
UE2	10.60%
UE3	1.00%
UE4	0.00%

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Sample	Low Energy Beta Emitters Efficiency (cpm/dpm)	Decay Time (Years)	Decay Factor	Activity (dpm/S)	Count Uncertainty (dpm/S)	C.S.U. (dpm/S)	MDC (dpm/S)	Critical Level (dpm/S)	Zero UNC	Use UNC	Unit Conversion Factor
459103	0.4906	0.0000	1.0000	4.403	4.749	4.778	9.759	3.535	1.043	4.749	1.00
3072160041	0.5084	0.1104	0.9939	-0.811	3.967	3.969	9.476	3.432	1.013	3.967	1.00
3072160042	0.5193	0.1104	0.9939	1.414	4.176	4.179	9.278	3.360	0.992	4.176	1.00
3072160043	0.5119	0.1104	0.9939	2.555	4.376	4.387	9.411	3.409	1.006	4.376	1.00
3072160044	0.4583	0.1104	0.9939	-0.900	4.401	4.403	10.512	3.808	1.124	4.401	1.00
3072160045	0.5220	0.1104	0.9939	0.578	4.048	4.048	9.230	3.343	0.987	4.048	1.00
3072160046	0.4341	0.1105	0.9939	3.338	5.201	5.216	11.098	4.020	1.187	5.201	1.00
3072160047	0.5071	0.1105	0.9939	3.711	4.555	4.577	9.500	3.441	1.016	4.555	1.00
3072160048	0.5036	0.1105	0.9939	-3.117	3.678	3.696	9.567	3.465	1.023	3.678	1.00
3072160049	0.5214	0.1105	0.9939	1.968	4.230	4.236	9.240	3.347	0.988	4.230	1.00
3072160050	0.5197	0.1105	0.9939	-1.626	3.766	3.771	9.271	3.358	0.991	3.766	1.00
3072160051	0.5194	0.1105	0.9939	1.143	4.140	4.143	9.276	3.360	0.992	4.140	1.00
3072160052	0.5164	0.1106	0.9939	-1.637	3.789	3.794	9.328	3.379	0.997	3.789	1.00
3072160053	0.5204	0.1106	0.9939	3.345	4.406	4.424	9.258	3.353	0.990	4.406	1.00
3072160054	0.5212	0.1106	0.9939	0.579	4.054	4.054	9.244	3.348	0.988	4.054	1.00
3072160055	0.3375	0.1106	0.9939	-6.768	5.162	5.225	14.275	5.171	1.526	5.162	1.00
3072160056	0.5143	0.1106	0.9939	-0.254	3.997	3.997	9.368	3.393	1.002	3.997	1.00
3072160057	0.5204	0.1106	0.9939	-0.522	3.913	3.913	9.258	3.353	0.990	3.913	1.00
3072160058	0.5129	0.1107	0.9938	0.863	4.154	4.156	9.392	3.402	1.004	4.154	1.00
3072160059	0.5199	0.1107	0.9938	1.142	4.136	4.139	9.267	3.356	0.991	4.136	1.00
3072160060	0.4929	0.1107	0.9938	-0.837	4.092	4.094	9.774	3.540	1.045	4.092	1.00
LCS12504	0.5221	0.0000	1.0000	94.160	10.703	15.514	9.171	3.322	0.980	10.703	1.00
LCSD12504	0.4996	0.0000	1.0000	102.119	11.365	16.659	9.583	3.471	1.025	11.365	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	RMK		
Date:	7/21/2012	Method:	EPA 906.0M
Worklist:	12504	SOP:	
Matrix:	Filter	MB Sample ID:	459103

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	4.4030	4.7780	9.7590	3.53500		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/21/12 10:29	7/21/12 10:37				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (DPM/Sample):	1184.920	1184.920				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F)	1.000	1.000				
Target Conc. (DPM/Sample, g, F)	118.492	118.492				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (DPM/Sample, g, F):	94.160	102.119				
1.96 Sigma Unc:	15.514	16.659				
% Recovery:	79.47%	86.18%				
Assessment:	Pass	Pass				
Upper % Recovery Limits	125.00%	125.00%				
Lower % Recovery Limits	75.00%	75.00%				

Duplicate Sample Assessment

LCS/LCSD Y or N?:	Y					
Analyte:	SC Low Energy Beta					
Sample I.D.:	LCS12504					
Duplicate Sample I.D.	LCSD12504					
Sample Result (DPM/Sample, g, F):	94.1600					
1.96 Sigma Unc:	15.5140					
ple Duplicate Result (DPM/Sample, g, F):	102.1190					
Duplicate Sample 1.96 Sigma Unc	16.6590					
Either results below MDC?	NO					
Relative Percent Difference:	8.11%					
Assessment:	Pass					
% RPD Limit:	25.00%					

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Sample Matrix Spike Control Assessment

Analyte:			
Sample Collection Date:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Spike I.D.:			
MS/MSD Decay Corrected Spike Conc. (DPM/Sample):			
Spike Volume Used in MS (mL):			
Spike Volume Used in MSD (mL):			
MS Aliquot (L, g, F):			
MS Target Conc.(DPM/Sample, g, F):			
MSD Aliquot (L, g, F):			
MSD Target Conc. (DPM/Sample, g, F):			
MS Spike uncertainty (calculated):			
MSD Spike uncertainty (calculated):			
Sample Result:			
Sample 1.96 Sigma Unc.:			
Sample Matrix Spike Result:			
Sample MS 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample MSD 1.96 Sigma Unc.:			
MS % Recovery:			
MSD % Recovery:			
MS Assessment:			
MSD Assessment:			
MS/MSD Upper % Recovery Limits:			
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment

Analyte:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Sample Matrix Spike Result:			
Sample Matrix Spike 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample Matrix Spike Duplicate 1.96 Sigma Unc.:			
MS/MSD Relative Percent Difference:			
MS/ MSD RPD Assessment			
% RPD Limit:			

Comments:

Aug 7/31/12

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12504

Calibration Information				
Instr. ID:	*System #2*	*System #3*		
Cal Type:	*LEB Quenched*	*LEB Quenched*		
Cal ID:	*81012-493*	*81012-493*		
Description:	*5 mL DI +15 mL Ultima LLT*	*5 mL DI +15 mL Ultima LLT*		
Window:	*1.0-160.0*	*1.0-160.0*		
Eff. Date:	*7/20/2012*	*7/19/2012*		
Exp. Date:	*7/20/2013*	*7/19/2013*		
Fit Type:	*Polynomial*	*Polynomial*		
polynomial = ax^5 + bx^4 + cx^3 + dx^2 + ex + f				
a	0	0		
b	0	0		
c	0	0		
d	-8.4166E-06	-7.7122E-06		
e	4.3584E-03	4.1665E-03		
f	-6.9579E-02	-4.0645E-02		

Miscellaneous Defaults

PrepSOP1
PrepSOP2 n/a
AnalSOP1
AnalSOP2 n/a

Sigma 1.96
Zero Factor 2.71

Low Energy Beta CSU Derivation

CSU Analysis for Preparation

Mass Aliquot

uncert (g)	mass (g)	rel unc
0.0003	2.000	0.02%

Decay/Ingrowth Correction

Precision of Sample Count Time	5 min
T1/2	12.43 years
Decay Correction Uncertainty	0.08%

			CSU (TPU) for Preparation	5.39%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Sample Dissolution	2.00%	1	2.00%	0.0004
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

			CSU (TPU) for Yield Correction	1.00%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Absence of Yield Monitoring	1.00%	1	1.00%	0.0001

			CSU (TPU) for Analysis	10.60%
Description	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
SRM Uncertainty	3.50%	1	3.50%	0.0012
Source Reproducibility	5.00%	1	5.00%	0.0025
Curve Fitting Uncertainty	5.00%	1	5.00%	0.0025
Count reproducibility	5.00%	1	5.00%	0.0025
Decay/Ingrowth Correction	0.08%	1	0.08%	0.0000
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

Total Uncertainty	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
UE1	5.39%	1	5.39%	0.0029
UE2	10.60%	1	10.60%	0.0112
UE3	1.00%	1	1.00%	0.0001
UE4	0.00%	1	0.00%	0.0000
				11.93%

Time: 30.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	2.0	0.00
Region C:	1.0 -	160	0	0.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	3.10	6.47	6.27	300.24	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

BKG072112

Pace Analytical Services
Count Start Date/Time Calculator

System #3		Protocol ID:	SWIPE_H3_C14
		Data File:	
Date in upper Left hand corner of Printout			7/21/2012 4:43
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/21/2012 4:36	459102
2	15	7/21/2012 4:44	3072160021
3	23	7/21/2012 4:52	3072160022
4	31	7/21/2012 5:00	3072160023
5	47	7/21/2012 5:16	3072160024
6	55	7/21/2012 5:24	3072160025
7	63	7/21/2012 5:32	3072160026
8	71	7/21/2012 5:40	3072160027
9	79	7/21/2012 5:48	3072160028
10	87	7/21/2012 5:56	3072160029
11	95	7/21/2012 6:04	3072160030
12	103	7/21/2012 6:12	3072160031
13	111	7/21/2012 6:20	3072160032
14	119	7/21/2012 6:28	3072160033
15	127	7/21/2012 6:36	3072160034
16	135	7/21/2012 6:44	3072160035
17	143	7/21/2012 6:52	3072160036
18	151	7/21/2012 7:00	3072160037
19	159	7/21/2012 7:08	3072160038
20	167	7/21/2012 7:16	3072160039
21	175	7/21/2012 7:24	3072160040
24	183	7/21/2012 7:32	459103
25	192	7/21/2012 7:41	3072160041
26	200	7/21/2012 7:49	3072160042
27	208	7/21/2012 7:57	3072160043
28	216	7/21/2012 8:05	3072160044
29	224	7/21/2012 8:13	3072160045
30	232	7/21/2012 8:21	3072160046
31	240	7/21/2012 8:29	3072160047
32	248	7/21/2012 8:37	3072160048
33	256	7/21/2012 8:45	3072160049
34	264	7/21/2012 8:53	3072160050
35	272	7/21/2012 9:01	3072160051
36	280	7/21/2012 9:09	3072160052
37	288	7/21/2012 9:17	3072160053
38	296	7/21/2012 9:25	3072160054
39	312	7/21/2012 9:41	3072160055
40	320	7/21/2012 9:49	3072160056
41	328	7/21/2012 9:57	3072160057
42	336	7/21/2012 10:05	3072160058
43	344	7/21/2012 10:13	3072160059
44	352	7/21/2012 10:21	3072160060
45	360	7/21/2012 10:29	LCS12504
46	368	7/21/2012 10:37	LCSD12504
47	376	7/21/2012 10:45	LCS12503
48	384	7/21/2012 10:53	LCSD12503

7/31/12

Protocol #:26 SWIPE_H3_C14 User :

Time: 7.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	0.0	0.00
Region C:	1.0 -	160	0	3.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
26	1	7.00	7	3.43	7.00	6.71	321.80	4
26	2	7.00	15	6.57	9.29	9.43	289.47	1
26	3	7.00	23	3.71	6.14	6.00	290.73	3
26	4	7.00	31	4.86	8.00	8.14	331.69	2
26	5	7.00	47	1.14	3.29	3.29	171.24	1
26	6	7.00	55	4.71	7.29	7.00	311.01	3
26	7	7.00	63	3.57	6.57	5.43	315.67	3
26	8	7.00	71	3.43	6.29	6.14	320.31	2
26	9	7.00	79	4.86	8.43	8.43	285.44	2
26	10	7.00	87	2.71	5.71	5.57	254.39	3
26	11	7.00	95	2.86	5.71	5.43	293.73	3
26	12	7.00	103	4.71	7.86	7.71	296.60	3
26	13	7.00	111	2.14	5.86	5.71	291.13	4
26	14	7.00	119	4.29	6.00	5.86	308.24	3
26	15	7.00	127	4.29	7.57	7.71	291.61	2
26	16	7.00	135	2.71	5.00	4.86	303.06	3
26	17	7.00	143	4.00	5.86	5.71	286.28	3
26	18	7.00	151	2.29	5.00	4.86	281.78	4
26	19	7.00	159	3.43	7.14	7.00	266.23	3
26	20	7.00	167	3.00	7.00	6.86	278.04	2
26	21	7.00	175	4.43	7.00	6.71	278.25	3
2 MISSING TUBE(S)								
26	24	7.00	183	5.00	8.57	8.43	334.00	2
26	25	7.00	192	2.14	6.14	5.86	312.23	3
26	26	7.00	200	4.14	7.00	7.00	289.24	3
26	27	7.00	208	3.71	7.71	7.57	306.50	2
26	28	7.00	216	3.57	6.14	5.86	361.08	3
26	29	7.00	224	3.71	6.71	6.57	274.39	2
26	30	7.00	232	4.71	7.86	7.71	376.95	2
26	31	7.00	240	5.29	8.29	8.14	314.23	2
26	32	7.00	248	1.43	5.00	4.71	319.13	5
26	33	7.00	256	4.00	7.29	7.29	279.82	2
26	34	7.00	264	3.00	5.57	5.43	287.85	2
26	35	7.00	272	4.29	6.86	6.86	288.88	2
26	36	7.00	280	2.29	5.71	5.43	297.17	3
26	37	7.00	288	4.43	7.86	8.00	284.94	3
26	38	7.00	296	3.43	6.57	6.57	281.05	2
26	39	7.00	312	3.71	4.29	4.00	424.84	2
26	40	7.00	320	3.00	6.43	6.14	301.98	3

Protocol #:26 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
26	41	7.00	328	3.86	6.29	6.00	284.93	4
26	42	7.00	336	3.43	6.71	6.71	304.58	3
26	43	7.00	344	3.71	6.57	6.86	286.99	1
26	44	7.00	352	2.71	6.14	5.86	331.66	3
26	45	7.00	360	39.29	55.00	55.43	270.27	0
26	46	7.00	368	40.86	56.86	57.29	324.11	0
26	47	7.00	376	38.71	53.00	53.43	311.63	0
26	48	7.00	384	46.86	61.29	61.43	319.95	0

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
MB (459102)	12503	Swipe-H3_C14	39	26	7/20/12 1608	7	NA	A
3072160021								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32			32					
33								
34								
35								
36								
37								
38								
39								
40								
LCS 12503 *								
LCSD 12503 *								
MB (459103)	12504							

Run comments: * Samples did not count as they were left out of rack

7/21/12

Peer Review: _____

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
3072160041	12504	Swipe-H3C14	7	26	7/20/12 1608	7	NA	
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53			34					
54								
55								
56								
57								
58								
59								
60								
LLS 12504								
LCSD *12504								
MB			9	27				
3072160061								

Run comments: * Samples LCS 12503 + LCSD 12504 were counted as last two samples after LCSD 12504. Incidentally omitted from runlog. 7/21/12

Peer Review: _____

J:\QAQC\Master\Document Management\Radiological\Liquid Scintillation Runlog (R023-3 7Oct2010).XLS

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12505	**HBN**	91078
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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1 459104-BLANK for HBN 91078 [RADC/1250

Type BLANK **Matrix** Impact Plate **Collected** **% Moisture**
Client QCACCOUNT **WO** **Work ID**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12505 **Prep Date** 7/21/2012 11:01 **Dilution**
Method EPA 906.0M **HBN** 91078 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796275 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 11:01 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796275 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	3.08U ± 4.40 (9.28)	dpm/sa	3.08U ± 4.40 (9.28)			dpm/sa

2 3072160061-SU-03-19

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12505 **Prep Date** 7/21/2012 11:09 **Dilution**
Method EPA 906.0M **HBN** 91078 **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790641 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 11:09 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790641 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High	
Rad Chemistry	OK								
LSC Low Energy Beta	OK	1.14U ± 4.13 (9.24)	dpm/sa	1.14U ± 4.13 (9.24)					dpm/sa

3 3072160062-SU-03-20

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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3 3072160062-SU-03-20

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 11:17	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790642	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 11:17	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790642	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.78U ± 4.34 (9.24)	dpm/sa	2.78U ± 4.34 (9.24)		dpm/sa		

4 3072160063-SU-03-21

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 11:25	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790643	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 11:25	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790643	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.578U ± 4.05 (9.23)	dpm/sa	0.578U ± 4.05 (9.23)		dpm/sa		

5 3072160064-SU-03-22

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072160064-SU-03-22

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12505	**Prep Date**	7/21/2012 11:33	**Dilution**
Method	EPA 906.0M		**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790644		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 11:33	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790644		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.790U ± 3.87 (9.23)	dpm/sa	-0.790U ± 3.87 (9.23)		dpm/sa		

6 3072160065-SU-03-23

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12505	**Prep Date**	7/21/2012 11:41	**Dilution**
Method	EPA 906.0M		**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790645		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 11:41	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790645		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.17U ± 4.23 (9.48)	dpm/sa	1.17U ± 4.23 (9.48)		dpm/sa		

7 3072160066-SU-03-24

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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7 3072160066-SU-03-24

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790646

Batch RADC/12505
HBN 91078
Instru NONE

Prep Date 7/21/2012 11:49
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790646

Instru NONE
Col ID
File

Run Date 7/21/2012 11:49
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.90U ± 3.75 (9.30)	dpm/sa	-1.90U ± 3.75 (9.30)		dpm/sa		

8 3072160067-SU-03-25

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790647

Batch RADC/12505
HBN 91078
Instru NONE

Prep Date 7/21/2012 11:57
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790647

Instru NONE
Col ID
File

Run Date 7/21/2012 11:57
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.35U ± 3.81 (9.26)	dpm/sa	-1.35U ± 3.81 (9.26)		dpm/sa		

9 3072160068-SU-03-26

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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9 3072160068-SU-03-26

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12505	**Prep Date**	7/21/2012 12:05	**Dilution**
Method	EPA 906.0M		**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790648		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 12:05	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790648		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	5.87J ± 4.77 (9.30)	dpm/sa	5.87J ± 4.77 (9.30)		dpm/sa		

10 3072160069-SU-03-26D

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12505	**Prep Date**	7/21/2012 12:13	**Dilution**
Method	EPA 906.0M		**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790649		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 12:13	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790649		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.0387U ± 3.99 (9.27)	dpm/sa	0.0387U ± 3.99 (9.27)		dpm/sa		

11 3072160070-SU-03-27

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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11 3072160070-SU-03-27

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 12:21	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790650	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 12:21	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790650	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.28U ± 4.36 (9.42)	dpm/sa	2.28U ± 4.36 (9.42)		dpm/sa		

12 3072160071-SU-03-28

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 12:29	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790651	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 12:29	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790651	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.530U ± 3.97 (9.40)	dpm/sa	-0.530U ± 3.97 (9.40)		dpm/sa		

13 3072160072-SU-03-29

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

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Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

13 3072160072-SU-03-29

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790652

Batch RADC/12505
HBN 91078
Instru NONE

Prep Date 7/21/2012 12:38
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790652

Instru NONE
Col ID
File

Run Date 7/21/2012 12:38
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.15U ± 4.18 (9.36)	dpm/sa	1.15U ± 4.18 (9.36)		dpm/sa		

14 3072160073-SU-03-30

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790653

Batch RADC/12505
HBN 91078
Instru NONE

Prep Date 7/21/2012 12:46
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790653

Instru NONE
Col ID
File

Run Date 7/21/2012 12:46
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.49U ± 4.41 (9.78)	dpm/sa	1.49U ± 4.41 (9.78)		dpm/sa		

15 3072160074-SU-03-31

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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15 3072160074-SU-03-31

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 12:54	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790654	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 12:54	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790654	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.522U ± 3.91 (9.25)	dpm/sa	-0.522U ± 3.91 (9.25)		dpm/sa		

16 3072160075-SU-03-32

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 13:02	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790655	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 13:02	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790655	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	3.20U ± 4.57 (9.64)	dpm/sa	3.20U ± 4.57 (9.64)		dpm/sa		

17 3072160076-SU-03-33

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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17 3072160076-SU-03-33

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 13:10	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790656	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 13:10	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790656	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.68U ± 3.89 (9.56)	dpm/sa	-1.68U ± 3.89 (9.56)		dpm/sa		

18 3072160077-SU-03-34

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 13:18	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790657	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 13:18	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790657	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.43U ± 4.22 (9.37)	dpm/sa	1.43U ± 4.22 (9.37)		dpm/sa		

19 3072160078-SU-03-35

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	HBN	91078
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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19 3072160078-SU-03-35

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 13:26	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790658	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 13:26	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790658	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-3.71U ± 3.65 (9.64)	dpm/sa	-3.71U ± 3.65 (9.64)		dpm/sa		

20 3072160079-SU-03-36

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 13:34	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790659	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 13:34	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790659	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.0401U ± 4.13 (9.60)	dpm/sa	0.0401U ± 4.13 (9.60)		dpm/sa		

21 3072160080-SU-03-37

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12505	**HBN**	91078
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072160080-SU-03-37

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12505	**Prep Date**	7/21/2012 13:42	**Dilution**	
Method	EPA 906.0M	**HBN**	91078	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790660	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 13:42	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790660	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL		Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK								
LSC Low Energy Beta	OK	6.76J ± 4.93 (9.41)	dpm/sa	6.76J ± 4.93 (9.41)			dpm/sa		

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Creation Date	06/28/2012 13:58	Assigned Analyst	MBT
Batch ID	12505	Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB 9060W	HBN	91078
Method	EPA 906.0M EPA 906.0m		

Project	Sample ID	Sample Type	Matrix	Collection Date/Time	Client ID	LEB Activity	LEB Unc.	LEB MDC	Analysis Date/Time
	459104	BLANK	IP		QCACCOUNT	3.08U	4.40	9.28	7/21/12 11:01
3072160	3072160061	PS	WP	6/11/2012 0:01	RTI	1.14U	4.13	9.24	7/21/12 11:09
3072160	3072160062	PS	WP	6/11/2012 0:01	RTI	2.78U	4.34	9.24	7/21/12 11:17
3072160	3072160063	PS	WP	6/11/2012 0:01	RTI	0.578U	4.05	9.23	7/21/12 11:25
3072160	3072160064	PS	WP	6/11/2012 0:01	RTI	-0.790U	3.87	9.23	7/21/12 11:33
3072160	3072160065	PS	WP	6/11/2012 0:01	RTI	1.17U	4.23	9.48	7/21/12 11:41
3072160	3072160066	PS	WP	6/11/2012 0:01	RTI	-1.90U	3.75	9.30	7/21/12 11:49
3072160	3072160067	PS	WP	6/11/2012 0:01	RTI	-1.35U	3.81	9.26	7/21/12 11:57
3072160	3072160068	PS	WP	6/11/2012 0:01	RTI	5.87J	4.77	9.30	7/21/12 12:05
3072160	3072160069	PS	WP	6/11/2012 0:01	RTI	0.0387U	3.99	9.27	7/21/12 12:13
3072160	3072160070	PS	WP	6/11/2012 0:01	RTI	2.28U	4.36	9.42	7/21/12 12:21
3072160	3072160071	PS	WP	6/11/2012 0:01	RTI	-0.530U	3.97	9.40	7/21/12 12:29
3072160	3072160072	PS	WP	6/11/2012 0:01	RTI	1.15U	4.18	9.36	7/21/12 12:38
3072160	3072160073	PS	WP	6/11/2012 0:01	RTI	1.49U	4.41	9.78	7/21/12 12:46
3072160	3072160074	PS	WP	6/11/2012 0:01	RTI	-0.522U	3.91	9.25	7/21/12 12:54
3072160	3072160075	PS	WP	6/11/2012 0:01	RTI	3.20U	4.57	9.64	7/21/12 13:02
3072160	3072160076	PS	WP	6/11/2012 0:01	RTI	-1.68U	3.89	9.56	7/21/12 13:10
3072160	3072160077	PS	WP	6/11/2012 0:01	RTI	1.43U	4.22	9.37	7/21/12 13:18
3072160	3072160078	PS	WP	6/11/2012 0:01	RTI	-3.71U	3.65	9.64	7/21/12 13:26
3072160	3072160079	PS	WP	6/11/2012 0:01	RTI	0.0401U	4.13	9.60	7/21/12 13:34
3072160	3072160080	PS	WP	6/11/2012 0:01	RTI	6.76J	4.93	9.41	7/21/12 13:42

7/31/12

LIMS Load
Printed 7/31/2012 at 2:58 PM

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	MBT			
Matrix	Smear	**PrepSOP1**		**Bkg CPM**	6.27	
Batch ID	12505	**PrepSOP2**	n/a	**Bkg Duration**	30.0	min
Prep Start	7/16/2012 12:00	**AnalSOP1**		**Bkg Ref**	bkg 7/21/2012	
Prep Finish	7/16/2012	**AnalSOP2**	n/a	**Bkg Ct Date/Time:**	7/21/2012 2:54	
Act. Rpt Units	dpm	**Aliq. Rpt Units**	Sample	**Instrument ID:**	System #3	

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Sample	Analysis Volume (Sample)	Ref. Date	Count Duration (min)	Count Start Date/Time	Sample Gross CPM	TSIE #	Activity Report Units	TSIE Within Quench Curve
459104	1.0	7/21/12 11:01	7.0	7/21/12 11:01	7.86	298.3	dpm/S	Pass
3072160061	1.0	6/11/12 0:01	7.0	7/21/12 11:09	6.86	280.6	dpm/S	Pass
3072160062	1.0	6/11/12 0:01	7.0	7/21/12 11:17	7.71	279.6	dpm/S	Pass
3072160063	1.0	6/11/12 0:01	7.0	7/21/12 11:25	6.57	265.6	dpm/S	Pass
3072160064	1.0	6/11/12 0:01	7.0	7/21/12 11:33	5.86	274.4	dpm/S	Pass
3072160065	1.0	6/11/12 0:01	7.0	7/21/12 11:41	6.86	312.5	dpm/S	Pass
3072160066	1.0	6/11/12 0:01	7.0	7/21/12 11:49	5.29	293.5	dpm/S	Pass
3072160067	1.0	6/11/12 0:01	7.0	7/21/12 11:57	5.57	286.6	dpm/S	Pass
3072160068	1.0	6/11/12 0:01	7.0	7/21/12 12:05	9.29	292.9	dpm/S	Pass
3072160069	1.0	6/11/12 0:01	7.0	7/21/12 12:13	6.29	287.9	dpm/S	Pass
3072160070	1.0	6/11/12 0:01	7.0	7/21/12 12:21	7.43	307.4	dpm/S	Pass
3072160071	1.0	6/11/12 0:01	7.0	7/21/12 12:29	6.00	305.6	dpm/S	Pass
3072160072	1.0	6/11/12 0:01	7.0	7/21/12 12:38	6.86	301.6	dpm/S	Pass
3072160073	1.0	6/11/12 0:01	7.0	7/21/12 12:46	7.00	332.2	dpm/S	High, Evaluate
3072160074	1.0	6/11/12 0:01	7.0	7/21/12 12:54	6.00	282.6	dpm/S	Pass
3072160075	1.0	6/11/12 0:01	7.0	7/21/12 13:02	7.86	323.8	dpm/S	High, Evaluate
3072160076	1.0	6/11/12 0:01	7.0	7/21/12 13:10	5.43	318.6	dpm/S	High, Evaluate
3072160077	1.0	6/11/12 0:01	7.0	7/21/12 13:18	7.00	301.8	dpm/S	Pass
3072160078	1.0	6/11/12 0:01	7.0	7/21/12 13:26	4.43	324.1	dpm/S	High, Evaluate
3072160079	1.0	6/11/12 0:01	7.0	7/21/12 13:34	6.29	321.0	dpm/S	High, Evaluate
3072160080	1.0	6/11/12 0:01	7.0	7/21/12 13:42	9.71	305.9	dpm/S	Pass
LCS12505	1.0	7/21/12 13:50	7.0	7/21/12 13:50	59.43	322.8	dpm/S	High, Evaluate
LCSD12505	1.0	7/21/12 13:58	7.0	7/21/12 13:58	61.00	324.2	dpm/S	High, Evaluate

DM 7/31/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	MBT
Matrix	Smear	**PrepSOP1**	0
Batch ID	12505	**PrepSOP2**	n/a
Prep Start	7/16/2012 12:00	**AnalSOP1**	0
Prep Finish	7/16/2012	**AnalSOP2**	n/a

Uncertainty Factors	
UE1	5.39%
UE2	10.60%
UE3	1.00%
UE4	0.00%

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Sample	Low Energy Beta Emitters Efficiency (cpm/dpm)	Decay Time (Years)	Decay Factor	Activity (dpm/S)	Count Uncertainty (dpm/S)	C.S.U. (dpm/S)	MDC (dpm/S)	Critical Level (dpm/S)	Zero UNC	Use UNC	Unit Conversion Factor
459104	0.5160	0.0000	1.0000	3.082	4.384	4.399	9.279	3.361	0.992	4.384	1.00
3072160061	0.5212	0.1108	0.9938	1.139	4.126	4.128	9.243	3.348	0.988	4.126	1.00
3072160062	0.5214	0.1108	0.9938	2.779	4.330	4.343	9.240	3.347	0.988	4.330	1.00
3072160063	0.5219	0.1108	0.9938	0.578	4.048	4.048	9.230	3.343	0.987	4.048	1.00
3072160064	0.5219	0.1108	0.9938	-0.790	3.865	3.866	9.230	3.343	0.987	3.865	1.00
3072160065	0.5082	0.1108	0.9938	1.168	4.231	4.233	9.479	3.433	1.013	4.231	1.00
3072160066	0.5179	0.1109	0.9938	-1.904	3.740	3.747	9.303	3.369	0.995	3.740	1.00
3072160067	0.5200	0.1109	0.9938	-1.355	3.802	3.805	9.265	3.356	0.991	3.802	1.00
3072160068	0.5181	0.1109	0.9938	5.865	4.718	4.769	9.299	3.368	0.994	4.718	1.00
3072160069	0.5196	0.1109	0.9938	0.039	3.994	3.994	9.271	3.358	0.991	3.994	1.00
3072160070	0.5114	0.1109	0.9938	2.283	4.347	4.356	9.421	3.412	1.007	4.347	1.00
3072160071	0.5124	0.1109	0.9938	-0.530	3.974	3.975	9.402	3.406	1.005	3.974	1.00
3072160072	0.5145	0.1110	0.9938	1.154	4.180	4.182	9.365	3.392	1.001	4.180	1.00
3072160073	0.4924	0.1110	0.9938	1.492	4.404	4.408	9.785	3.544	1.046	4.404	1.00
3072160074	0.5209	0.1110	0.9938	-0.522	3.909	3.910	9.249	3.350	0.989	3.909	1.00
3072160075	0.4999	0.1110	0.9938	3.201	4.553	4.569	9.638	3.491	1.030	4.553	1.00
3072160076	0.5040	0.1110	0.9938	-1.677	3.883	3.888	9.559	3.462	1.022	3.883	1.00
3072160077	0.5144	0.1110	0.9938	1.428	4.216	4.219	9.366	3.393	1.001	4.216	1.00
3072160078	0.4997	0.1110	0.9938	-3.705	3.621	3.648	9.642	3.492	1.031	3.621	1.00
3072160079	0.5021	0.1111	0.9938	0.040	4.134	4.134	9.595	3.475	1.026	4.134	1.00
3072160080	0.5122	0.1111	0.9938	6.758	4.864	4.931	9.406	3.407	1.006	4.864	1.00
LCS12505	0.5007	0.0000	1.0000	106.172	11.546	17.136	9.563	3.464	1.022	11.546	1.00
LCSD12505	0.4995	0.0000	1.0000	109.563	11.721	17.554	9.585	3.472	1.025	11.721	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst: MBT
Date: 7/27/2012 Method: EPA 906.0M
Worklist: 12505 SOP:
Matrix: Filter MB Sample ID: 459104

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	3.0820	4.3990	9.2790	3.36100		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/21/12 13:50	7/21/12 13:58				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.917	1184.917				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.492	118.492				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	106.172	109.563				
1.96 Sigma Unc:	17.136	17.554				
% Recovery:	89.60%	92.46%				
Assessment:	Pass	Pass				
Upper % Recovery Limits:	125.00%	125.00%				
Lower % Recovery Limits:	75.00%	75.00%				

Duplicate Sample Assessment

LCS/LCSD Y or N?:	Y					
Analyte:	SC Low Energy Beta					
Sample I.D.:	LCS12505					
Duplicate Sample I.D.	LCSD12505					
Sample Result (pCi/L, g, F):	106.1720					
1.96 Sigma Unc:	17.1360					
Sample Duplicate Result (pCi/L, g, F):	109.5630					
Duplicate Sample 1.96 Sigma Unc.	17.5540					
Either results below MDC?	NO					
Relative Percent Difference:	3.14%					
Assessment:	Pass					
% RPD Limit:	25.00%					

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Sample Matrix Spike Control Assessment

Analyte:			
Sample Collection Date:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Spike I.D.:			
MS/MSD Decay Corrected Spike Conc. (pCi/L):			
Spike Volume Used in MS (mL):			
Spike Volume Used in MSD (mL):			
MS Aliquot (L, g, F):			
MS Target Conc.(pCi/L, g, F):			
MSD Aliquot (L, g, F):			
MSD Target Conc. (pCi/L, g, F):			
MS Spike uncertainty (calculated):			
MSD Spike uncertainty (calculated):			
Sample Result:			
Sample 1.96 Sigma Unc.:			
Sample Matrix Spike Result:			
Sample MS 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample MSD 1.96 Sigma Unc.:			
MS % Recovery:			
MSD % Recovery:			
MS Assessment:			
MSD Assessment:			
MS/MSD Upper % Recovery Limits:			
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment

Analyte:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Sample Matrix Spike Result:			
Sample Matrix Spike 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample Matrix Spike Duplicate 1.96 Sigma Unc.:			
MS/MSD Relative Percent Difference:			
MS/ MSD RPD Assessment:			
% RPD Limit:			

Comments:

7/31/12

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12505

Calibration Information				
Instr. ID:	*System #2*	*System #3*		
Cal Type:	*LEB Quenched*	*LEB Quenched*		
Cal ID:	*81012-493*	*81012-493*		
Description:	*5 mL DI +15 mL Ultima LLT*	*5 mL DI +15 mL Ultima LLT*		
Window:	*1.0-160.0*	*1.0-160.0*		
Eff. Date:	*7/20/2012*	*7/19/2012*		
Exp. Date:	*7/20/2013*	*7/19/2013*		
Fit Type:	*Polynomial*	*Polynomial*		
polynomial = ax^5 + bx^4 + cx^3 + dx^2 + ex + f				
a	0	0		
b	0	0		
c	0	0		
d	-8.4166E-06	-7.7122E-06		
e	4.3584E-03	4.1665E-03		
f	-6.9579E-02	-4.0645E-02		

Miscellaneous Defaults

PrepSOP1
PrepSOP2 n/a
AnalSOP1
AnalSOP2 n/a

Sigma 1.96
Zero Factor 2.71

Low Energy Beta CSU Derivation

CSU Analysis for Preparation

Mass Aliquot

uncert (g)	mass (g)	rel unc
0.0003	2.000	0.02%

Decay/Ingrowth Correction

Precision of Sample Count Time	5 min
T1/2	12.43 years
Decay Correction Uncertainty	0.08%

			CSU (TPU) for Preparation	5.39%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Sample Dissolution	2.00%	1	2.00%	0.0004
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

			CSU (TPU) for Yield Correction	1.00%
Description	**relative**	**of Critical**	**Uncertainty**	**Uncertainty**
Absence of Yield Monitoring	1.00%	1	1.00%	0.0001

			CSU (TPU) for Analysis	10.60%
Description	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
SRM Uncertainty	3.50%	1	3.50%	0.0012
Source Reproducibility	5.00%	1	5.00%	0.0025
Curve Fitting Uncertainty	5.00%	1	5.00%	0.0025
Count reproducibility	5.00%	1	5.00%	0.0025
Decay/Ingrowth Correction	0.08%	1	0.08%	0.0000
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025

Total Uncertainty	**Maximum**	**of Critical**	**Uncertainty**	**Uncertainty**
UE1	5.39%	1	5.39%	0.0029
UE2	10.60%	1	10.60%	0.0112
UE3	1.00%	1	1.00%	0.0001
UE4	0.00%	1	0.00%	0.0000
				11.93%

Protocol #: 4 SWIPE_H3_C14 User :

Time: 30.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	2.0	0.00
Region C:	1.0 -	160	0	0.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	3.10	6.47	6.27	300.24	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

BKG072112

Pace Analytical Services
Count Start Date/Time Calculator

System #3		Protocol ID:	SWIPE_H3_C14
		Data File:	
Date in upper Left hand corner of Printout			7/21/2012 11:08
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/21/2012 11:01	459104
2	15	7/21/2012 11:09	3072160061
3	23	7/21/2012 11:17	3072160062
4	31	7/21/2012 11:25	3072160063
5	39	7/21/2012 11:33	3072160064
6	47	7/21/2012 11:41	3072160065
7	55	7/21/2012 11:49	3072160066
8	63	7/21/2012 11:57	3072160067
9	71	7/21/2012 12:05	3072160068
10	79	7/21/2012 12:13	3072160069
11	87	7/21/2012 12:21	3072160070
12	95	7/21/2012 12:29	3072160071
13	104	7/21/2012 12:38	3072160072
14	112	7/21/2012 12:46	3072160073
15	120	7/21/2012 12:54	3072160074
16	128	7/21/2012 13:02	3072160075
17	136	7/21/2012 13:10	3072160076
18	144	7/21/2012 13:18	3072160077
19	152	7/21/2012 13:26	3072160078
20	160	7/21/2012 13:34	3072160079
21	168	7/21/2012 13:42	3072160080
22	176	7/21/2012 13:50	LCS12505
23	184	7/21/2012 13:58	LCSD12505
24	192	7/21/2012 14:06	459104 5 M 7/31/12
25	200	7/21/2012 14:14	3072160081
26	208	7/21/2012 14:22	3072160082
27	216	7/21/2012 14:30	3072160083
28	224	7/21/2012 14:38	3072160084
29	232	7/21/2012 14:46	3072160085
30	240	7/21/2012 14:54	3072160086
31	248	7/21/2012 15:02	3072160087
32	256	7/21/2012 15:10	3072160088
33	264	7/21/2012 15:18	3072160089
34	272	7/21/2012 15:26	3072160090
35	280	7/21/2012 15:34	3072160091
36	288	7/21/2012 15:42	3072160092
37	296	7/21/2012 15:50	3072160093
38	304	7/21/2012 15:58	3072160094
39	312	7/21/2012 16:06	3072160095
40	320	7/21/2012 16:14	3072160096
41	328	7/21/2012 16:22	3072160097
42	336	7/21/2012 16:30	3072160098
43	345	7/21/2012 16:39	3072160099
44	353	7/21/2012 16:47	3072160100
45	361	7/21/2012 16:55	LCS12506
46	369	7/21/2012 17:03	LCSD12506
47	377	7/21/2012 17:11	LCS12509
48	385	7/21/2012 17:19	LCSD12509

Protocol #:27 SWIPE_H3_C14 User :

Time: 7.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	0.0	0.00
Region C:	1.0 -	160	0	3.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	EL TIME	CPMA	CPMB	CPMC	tSIE	LUM
27	1	7.00	7	4.29	7.86	7.86	298.28	2
27	2	7.00	15	4.14	6.71	6.86	280.62	1
27	3	7.00	23	5.00	7.71	7.71	279.61	2
27	4	7.00	31	3.14	6.57	6.57	265.63	2
27	5	7.00	39	3.00	5.86	5.86	274.43	3
27	6	7.00	47	4.14	7.29	6.86	312.50	3
27	7	7.00	55	3.29	5.43	5.29	293.48	4
27	8	7.00	63	3.29	5.71	5.57	286.63	3
27	9	7.00	71	5.43	9.57	9.29	292.85	2
27	10	7.00	79	3.29	6.29	6.29	287.93	2
27	11	7.00	87	3.57	7.29	7.43	307.43	1
27	12	7.00	95	3.57	5.86	6.00	305.58	2
27	13	7.00	104	3.43	7.00	6.86	301.59	2
27	14	7.00	112	3.43	6.71	7.00	332.19	5
27	15	7.00	120	4.14	6.00	6.00	282.64	4
27	16	7.00	128	5.29	8.00	7.86	323.81	2
27	17	7.00	136	2.43	5.43	5.43	318.57	2
27	18	7.00	144	4.43	7.00	7.00	301.78	2
27	19	7.00	152	1.71	5.00	4.43	324.05	5
27	20	7.00	160	2.86	6.14	6.29	321.03	3
27	21	7.00	168	5.43	9.57	9.71	305.92	1
27	22	7.00	176	44.00	59.00	59.43	322.79	0
27	23	7.00	184	43.14	60.86	61.00	324.21	0
27	24	7.00	192	3.14	5.86	5.86	333.54	3
27	25	7.00	200	3.43	6.86	6.71	295.18	3
27	26	7.00	208	3.29	6.00	6.14	298.64	2
27	27	7.00	216	4.14	6.86	6.57	314.32	2
27	28	7.00	224	3.57	6.57	6.43	293.42	3
27	29	7.00	232	3.29	6.14	6.00	300.13	4
27	30	7.00	240	5.29	8.29	8.43	291.47	1
27	31	7.00	248	3.43	6.14	6.00	295.79	3
27	32	7.00	256	4.29	7.29	7.29	313.48	2
27	33	7.00	264	3.29	5.43	5.43	305.68	4
27	34	7.00	272	2.86	5.57	5.29	313.29	4
27	35	7.00	280	4.57	7.00	7.00	325.44	1
27	36	7.00	288	6.57	10.29	10.71	300.85	1
27	37	7.00	296	2.57	7.57	7.57	270.54	5
27	38	7.00	304	4.86	7.86	8.00	258.16	1
27	39	7.00	312	4.71	7.43	7.29	265.34	2

Protocol #:27 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
27	40	7.00	320	3.29	7.00	7.00	264.49	2
27	41	7.00	328	2.43	6.29	6.43	259.07	2
27	42	7.00	336	2.86	6.14	6.14	265.78	2
27	43	7.00	345	3.43	7.86	7.71	252.38	1
27	44	7.00	353	3.29	5.86	5.86	262.75	3
27	45	7.00	361	44.00	55.00	55.43	352.93	1
27	46	7.00	369	42.00	57.00	57.14	317.64	0
27	47	7.00	377	47.00	62.86	63.14	327.35	1
27	48	7.00	385	41.86	56.57	56.57	332.63	1

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

N3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
30721600 41	12504	Swipe-H3_C14	7	26	7/20/12 1608	7	NA	
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53			34					
54								
55								
56								
57								
58								
59								
60								
LCS 12504								
LCSD *12504								
MB (459104)	12505		9	27				
30721600 61								

Run comments: * Samples LCS 12503 + LCSD 12504 were counted as last two samples after LCSD 12504. Incidentally omitted from runlog. 7/21/12

Peer Review: _____

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
3072160062	12505	SW_pr_H3_C14	9	27	7/20/12 1608	7	NA	
63								
64								
65								
66								
67								
68								
69								
70								
71								
72			21					
73								
74								
75								
76								
77								
78								
79								
80								
LCS 12505								
LCSD 12505								
MB (459105)	12506							
3072160081			7					
82								

Run comments: _____

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12506	**HBN**	91079
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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1 459105-BLANK for HBN 91079 [RADC/1250

Type BLANK **Matrix** Impact Plate **Collected** **% Moisture**
Client QCACCOUNT **WO** **Work ID**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12506 **Prep Date** 7/21/2012 14:06 **Dilution**
Method EPA 906.0M **HBN** 91079 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796276 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 14:06 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796276 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	-0.835U ± 4.08 (9.75)	dpm/sa	-0.835U ± 4.08 (9.75)			dpm/sa

2 3072160081-SU-03-38

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12506 **Prep Date** 7/21/2012 14:14 **Dilution**
Method EPA 906.0M **HBN** 91079 **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790661 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 14:14 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790661 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High	
Rad Chemistry	OK								
LSC Low Energy Beta	OK	0.856U ± 4.12 (9.31)	dpm/sa	0.856U ± 4.12 (9.31)					dpm/sa

3 3072160082-SU-03-38D

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	**HBN**	91079
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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3 3072160082-SU-03-38D

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790662

Batch RADC/12506
HBN 91079
Instru NONE

Prep Date 7/21/2012 14:22
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790662

Instru NONE
Col ID
File

Run Date 7/21/2012 14:22
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.254U ± 3.98 (9.34)	dpm/sa	-0.254U ± 3.98 (9.34)		dpm/sa		

4 3072160083-SU-03-39

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790664

Batch RADC/12506
HBN 91079
Instru NONE

Prep Date 7/21/2012 14:30
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790664

Instru NONE
Col ID
File

Run Date 7/21/2012 14:30
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.595U ± 4.17 (9.50)	dpm/sa	0.595U ± 4.17 (9.50)		dpm/sa		

5 3072160084-SU-03-40

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	HBN	91079
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072160084-SU-03-40

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 14:38	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790666	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 14:38	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790666	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.311U ± 4.04 (9.30)	dpm/sa	0.311U ± 4.04 (9.30)		dpm/sa		

6 3072160085-SU-03-41

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 14:46	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790667	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 14:46	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790667	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.527U ± 3.95 (9.35)	dpm/sa	-0.527U ± 3.95 (9.35)		dpm/sa		

7 3072160086-SU-03-42

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	HBN	91079
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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7 3072160086-SU-03-42

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12506	**Prep Date**	7/21/2012 14:54	**Dilution**
Method	EPA 906.0M		**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790668		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 14:54	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790668		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	4.19J ± 4.55 (9.29)	dpm/sa	4.19J ± 4.55 (9.29)		dpm/sa		

8 3072160087-SU-03-43

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12506	**Prep Date**	7/21/2012 15:02	**Dilution**
Method	EPA 906.0M		**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790669		**Instru**	NONE			**CC** OK F
Initial Volume	1 mL	Default	1 mL				
Final Volume,	1 mL	Default	1 mL				

Analytical Information

Procedure	9060 I LEB		**Instru**	NONE	**Run Date**	7/21/2012 15:02	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst** MBT
Schedule	2790669		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.525U ± 3.94 (9.32)	dpm/sa	-0.525U ± 3.94 (9.32)		dpm/sa		

9 3072160088-SU-03-43D

Type	PS		**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	HBN	91079
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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9 3072160088-SU-03-43D

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 15:10	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790670	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 15:10	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790670	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.02U ± 4.35 (9.49)	dpm/sa	2.02U ± 4.35 (9.49)		dpm/sa		

10 3072160089-SU-03-44

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 15:18	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790671	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 15:18	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790671	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.65U ± 3.82 (9.40)	dpm/sa	-1.65U ± 3.82 (9.40)		dpm/sa		

11 3072160090-SU-03-45

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch RADC/12506 HBN 91079
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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11 3072160090-SU-03-45

Prep Information

Procedure 9060 I LEB **Batch** RADC/12506 **Prep Date** 7/21/2012 15:26 **Dilution**
Method EPA 906.0M **HBN** 91079 **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790672 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 15:26 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790672 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.94U ± 3.82 (9.49)	dpm/sa	-1.94U ± 3.82 (9.49)		dpm/sa		

12 3072160091-SU-03-46

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12506 **Prep Date** 7/21/2012 15:34 **Dilution**
Method EPA 906.0M **HBN** 91079 **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790673 **Instru** NONE **CC** OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure 9060 I LEB **Instru** NONE **Run Date** 7/21/2012 15:34 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/8/2012 23:59 **Analyst** MBT
Schedule 2790673 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.47U ± 4.35 (9.66)	dpm/sa	1.47U ± 4.35 (9.66)		dpm/sa		

13 3072160092-SU-03-47

Type PS **Matrix** Wipe **Collected** 6/11/2012 00:01 **% Moisture**
Client RTI **WO** 3072160 **Work ID** Fort Monmouth 1207080 **Location**

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	HBN	91079
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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13 3072160092-SU-03-47

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 15:42	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790674	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 15:42	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790674	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	8.68J ± 5.16 (9.36)	dpm/sa	8.68J ± 5.16 (9.36)		dpm/sa		

14 3072160093-2541-F1

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 15:50	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790675	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 15:50	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790675	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.51U ± 4.30 (9.23)	dpm/sa	2.51U ± 4.30 (9.23)		dpm/sa		

15 3072160094-2541-F2

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	HBN	91079
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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15 3072160094-2541-F2

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790676

Batch RADC/12506
HBN 91079
Instru NONE

Prep Date 7/21/2012 15:58
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790676

Instru NONE
Col ID
File

Run Date 7/21/2012 15:58
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	3.34U ± 4.42 (9.25)	dpm/sa	3.34U ± 4.42 (9.25)		dpm/sa		

16 3072160095-2541-F3

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790677

Batch RADC/12506
HBN 91079
Instru NONE

Prep Date 7/21/2012 16:06
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Initial Volume	1 mL	Default	1 mL
Final Volume,	1 mL	Default	1 mL

Analytical Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790677

Instru NONE
Col ID
File

Run Date 7/21/2012 16:06
Hold Date 12/8/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.97U ± 4.23 (9.23)	dpm/sa	1.97U ± 4.23 (9.23)		dpm/sa		

17 3072160096-2541-F4

Type PS
Client RTI

Matrix Wipe
WO 3072160

Collected 6/11/2012 00:01
Work ID Fort Monmouth 1207080

% Moisture
Location

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	HBN	91079
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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17 3072160096-2541-F4

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 16:14	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790678	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 16:14	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790678	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.41U ± 4.16 (9.23)	dpm/sa	1.41U ± 4.16 (9.23)		dpm/sa		

18 3072160097-2541-F5

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 16:22	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790679	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL Default	1 mL	
Final Volume,	1 mL Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 16:22	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790679	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	0.309U ± 4.02 (9.24)	dpm/sa	0.309U ± 4.02 (9.24)		dpm/sa		

19 3072160098-2541-F6

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	HBN	91079
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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19 3072160098-2541-F6

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 16:30	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790680	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 16:30	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790680	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.251U ± 3.94 (9.23)	dpm/sa	-0.251U ± 3.94 (9.23)		dpm/sa		

20 3072160099-2541-F7

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 16:39	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790681	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 16:39	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790681	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.79U ± 4.36 (9.27)	dpm/sa	2.79U ± 4.36 (9.27)		dpm/sa		

21 3072160100-2541-F8

Type	PS	**Matrix**	Wipe	**Collected**	6/11/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072160	**Work ID**	Fort Monmouth 1207080	**Location**	

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Quality Control Review

Batch	RADC/12506	**HBN**	91079
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072160100-2541-F8

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12506	**Prep Date**	7/21/2012 16:47	**Dilution**	
Method	EPA 906.0M	**HBN**	91079	**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790682	**Instru**	NONE			**CC**	OK F

Initial Volume	1 mL	Default	1 mL	
Final Volume,	1 mL	Default	1 mL	

Analytical Information

Procedure	9060 I LEB	**Instru**	NONE	**Run Date**	7/21/2012 16:47	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/8/2012 23:59	**Analyst**	MBT
Schedule	2790682	**File**				**CC**	OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Reg. Limits Low	Reg. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.791U ± 3.87 (9.24)	dpm/sa	-0.791U ± 3.87 (9.24)		dpm/sa		

** Indicates QC failure. For example, blank contamination or recoveries out of range.

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Creation Date	06/28/2012 13:58		Assigned Analyst	MBT	
Batch ID	12506		Earliest Due Date	07/04/2012 07:12	
A-code	9060 I LEB	9060W	HBN	91079	
Method	EPA 906.0M	EPA 906.0m			

Project	Sample ID	Sample Type	Matrix	Collection Date/Time	Client ID	LEB Activity	LEB Unc.	LEB MDC	Analysis Date/Time
	459105	BLANK	IP		QCACCOUNT	-0.835U	4.08	9.75	7/21/12 14:06
3072160	3072160081	PS	WP	6/11/2012 0:01	RTI	0.856U	4.12	9.31	7/21/12 14:14
3072160	3072160082	PS	WP	6/11/2012 0:01	RTI	-0.254U	3.98	9.34	7/21/12 14:22
3072160	3072160083	PS	WP	6/11/2012 0:01	RTI	0.595U	4.17	9.50	7/21/12 14:30
3072160	3072160084	PS	WP	6/11/2012 0:01	RTI	0.311U	4.04	9.30	7/21/12 14:38
3072160	3072160085	PS	WP	6/11/2012 0:01	RTI	-0.527U	3.95	9.35	7/21/12 14:46
3072160	3072160086	PS	WP	6/11/2012 0:01	RTI	4.19J	4.55	9.29	7/21/12 14:54
3072160	3072160087	PS	WP	6/11/2012 0:01	RTI	-0.525U	3.94	9.32	7/21/12 15:02
3072160	3072160088	PS	WP	6/11/2012 0:01	RTI	2.02U	4.35	9.49	7/21/12 15:10
3072160	3072160089	PS	WP	6/11/2012 0:01	RTI	-1.65U	3.82	9.40	7/21/12 15:18
3072160	3072160090	PS	WP	6/11/2012 0:01	RTI	-1.94U	3.82	9.49	7/21/12 15:26
3072160	3072160091	PS	WP	6/11/2012 0:01	RTI	1.47U	4.35	9.66	7/21/12 15:34
3072160	3072160092	PS	WP	6/11/2012 0:01	RTI	8.68J	5.16	9.36	7/21/12 15:42
3072160	3072160093	PS	WP	6/11/2012 0:01	RTI	2.51U	4.30	9.23	7/21/12 15:50
3072160	3072160094	PS	WP	6/11/2012 0:01	RTI	3.34U	4.42	9.25	7/21/12 15:58
3072160	3072160095	PS	WP	6/11/2012 0:01	RTI	1.97U	4.23	9.23	7/21/12 16:06
3072160	3072160096	PS	WP	6/11/2012 0:01	RTI	1.41U	4.16	9.23	7/21/12 16:14
3072160	3072160097	PS	WP	6/11/2012 0:01	RTI	0.309U	4.02	9.24	7/21/12 16:22
3072160	3072160098	PS	WP	6/11/2012 0:01	RTI	-0.251U	3.94	9.23	7/21/12 16:30
3072160	3072160099	PS	WP	6/11/2012 0:01	RTI	2.79U	4.36	9.27	7/21/12 16:39
3072160	3072160100	PS	WP	6/11/2012 0:01	RTI	-0.791U	3.87	9.24	7/21/12 16:47

7/31/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	MBT			
Matrix	Smear	**PrepSOP1**		**Bkg CPM**	6.27	
Batch ID	12506	**PrepSOP2**	n/a	**Bkg Duration**	30.0	min
Prep Start	7/16/2012 12:00	**AnalSOP1**		**Bkg Ref**	bkg 7/21/12	
Prep Finish	7/16/2012	**AnalSOP2**	n/a	**Bkg Ct Date/Time:**	7/21/2012 2:54	
Act. Rpt Units	dpm	**Aliq. Rpt Units**	Sample	**Instrument ID:**	System #3	

Sample	Analysis Volume (Sample)	Ref. Date	Count Duration (min)	Count Start Date/Time	Sample Gross CPM	TSIE #	Activity Report Units	TSIE Within Quench Curve
459105	1.0	7/21/12 14:06	7.0	7/21/12 14:06	5.86	333.5	dpm/S	High, Evaluate
3072160081	1.0	6/11/12 0:01	7.0	7/21/12 14:14	6.71	295.2	dpm/S	Pass
3072160082	1.0	6/11/12 0:01	7.0	7/21/12 14:22	6.14	298.6	dpm/S	Pass
3072160083	1.0	6/11/12 0:01	7.0	7/21/12 14:30	6.57	314.3	dpm/S	High, Evaluate
3072160084	1.0	6/11/12 0:01	7.0	7/21/12 14:38	6.43	293.4	dpm/S	Pass
3072160085	1.0	6/11/12 0:01	7.0	7/21/12 14:46	6.00	300.1	dpm/S	Pass
3072160086	1.0	6/11/12 0:01	7.0	7/21/12 14:54	8.43	291.5	dpm/S	Pass
3072160087	1.0	6/11/12 0:01	7.0	7/21/12 15:02	6.00	295.8	dpm/S	Pass
3072160088	1.0	6/11/12 0:01	7.0	7/21/12 15:10	7.29	313.5	dpm/S	High, Evaluate
3072160089	1.0	6/11/12 0:01	7.0	7/21/12 15:18	5.43	305.7	dpm/S	Pass
3072160090	1.0	6/11/12 0:01	7.0	7/21/12 15:26	5.29	313.3	dpm/S	High, Evaluate
3072160091	1.0	6/11/12 0:01	7.0	7/21/12 15:34	7.00	325.4	dpm/S	High, Evaluate
3072160092	1.0	6/11/12 0:01	7.0	7/21/12 15:42	10.71	300.9	dpm/S	Pass
3072160093	1.0	6/11/12 0:01	7.0	7/21/12 15:50	7.57	270.5	dpm/S	Pass
3072160094	1.0	6/11/12 0:01	7.0	7/21/12 15:58	8.00	258.2	dpm/S	Pass
3072160095	1.0	6/11/12 0:01	7.0	7/21/12 16:06	7.29	265.3	dpm/S	Pass
3072160096	1.0	6/11/12 0:01	7.0	7/21/12 16:14	7.00	264.5	dpm/S	Pass
3072160097	1.0	6/11/12 0:01	7.0	7/21/12 16:22	6.43	259.1	dpm/S	Pass
3072160098	1.0	6/11/12 0:01	7.0	7/21/12 16:30	6.14	265.8	dpm/S	Pass
3072160099	1.0	6/11/12 0:01	7.0	7/21/12 16:39	7.71	252.4	dpm/S	Pass
3072160100	1.0	6/11/12 0:01	7.0	7/21/12 16:47	5.86	262.8	dpm/S	Pass
LCS12506	1.0	7/21/12 16:55	7.0	7/21/12 16:55	55.43	332.9	dpm/S	High, Evaluate
LCSD12506	1.0	7/21/12 17:03	7.0	7/21/12 17:03	57.14	317.6	dpm/S	High, Evaluate

07/31/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	MBT
Matrix	Smear	**PrepSOP1**	0
Batch ID	12506	**PrepSOP2**	n/a
Prep Start	7/16/2012 12:00	**AnalSOP1**	0
Prep Finish	7/16/2012	**AnalSOP2**	n/a

Uncertainty Factors	
UE1	5.39%
UE2	10.60%
UE3	1.00%
UE4	0.00%

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Sample	Low Energy Beta Emitters Efficiency (cpm/dpm)	Decay Time (Years)	Decay Factor	Activity (dpm/S)	Count Uncertainty (dpm/S)	C.S.U. (dpm/S)	MDC (dpm/S)	Critical Level (dpm/S)	Zero UNC	Use UNC	Unit Conversion Factor
459105	0.4911	0.0000	1.0000	-0.835	4.082	4.083	9.750	3.532	1.042	4.082	1.00
3072160081	0.5172	0.1111	0.9938	0.856	4.120	4.121	9.314	3.374	0.996	4.120	1.00
3072160082	0.5158	0.1112	0.9938	-0.254	3.985	3.985	9.340	3.383	0.999	3.985	1.00
3072160083	0.5070	0.1112	0.9938	0.595	4.167	4.167	9.502	3.442	1.016	4.167	1.00
3072160084	0.5179	0.1112	0.9938	0.311	4.044	4.044	9.302	3.369	0.995	4.044	1.00
3072160085	0.5151	0.1112	0.9938	-0.527	3.953	3.953	9.352	3.387	1.000	3.953	1.00
3072160086	0.5186	0.1112	0.9938	4.191	4.521	4.549	9.290	3.365	0.993	4.521	1.00
3072160087	0.5170	0.1112	0.9938	-0.525	3.939	3.939	9.319	3.375	0.996	3.939	1.00
3072160088	0.5076	0.1112	0.9938	2.022	4.345	4.351	9.491	3.438	1.015	4.345	1.00
3072160089	0.5123	0.1113	0.9938	-1.650	3.820	3.825	9.403	3.406	1.005	3.820	1.00
3072160090	0.5077	0.1113	0.9938	-1.942	3.815	3.822	9.489	3.437	1.015	3.815	1.00
3072160091	0.4985	0.1113	0.9938	1.474	4.350	4.354	9.665	3.501	1.033	4.350	1.00
3072160092	0.5148	0.1113	0.9938	8.678	5.052	5.157	9.358	3.390	1.001	5.052	1.00
3072160093	0.5221	0.1113	0.9938	2.505	4.291	4.302	9.228	3.342	0.987	4.291	1.00
3072160094	0.5210	0.1113	0.9938	3.341	4.401	4.419	9.247	3.349	0.989	4.401	1.00
3072160095	0.5219	0.1113	0.9938	1.967	4.226	4.232	9.231	3.344	0.987	4.226	1.00
3072160096	0.5218	0.1114	0.9938	1.408	4.156	4.159	9.232	3.344	0.987	4.156	1.00
3072160097	0.5211	0.1114	0.9938	0.309	4.018	4.019	9.245	3.348	0.988	4.018	1.00
3072160098	0.5219	0.1114	0.9938	-0.251	3.938	3.938	9.231	3.343	0.987	3.938	1.00
3072160099	0.5197	0.1114	0.9938	2.788	4.344	4.357	9.271	3.358	0.991	4.344	1.00
3072160100	0.5217	0.1114	0.9938	-0.791	3.867	3.868	9.235	3.345	0.987	3.867	1.00
LCS12506	0.4917	0.0000	1.0000	99.986	11.365	16.473	9.738	3.527	1.041	11.365	1.00
LCSD12506	0.5047	0.0000	1.0000	100.797	11.237	16.456	9.487	3.436	1.014	11.237	1.00

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Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	MBT		
Date:	7/27/2012	**Method:**	EPA 906.0M
Worklist:	12506	**SOP:**	
Matrix:	Filter	**MB Sample ID:**	459105

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	-0.8350	4.0830	9.7500	3.53200		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/21/12 16:55	7/21/12 17:03				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.914	1184.914				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.491	118.491				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	99.986	100.797				
1.96 Sigma Unc:	16.473	16.456				
% Recovery:	84.38%	85.07%				
Assessment:	Pass	Pass				
Upper % Recovery Limits:	125.00%	125.00%				
Lower % Recovery Limits:	75.00%	75.00%				

Duplicate Sample Assessment

LCS/LCSD Y or N?:	Y					
Analyte:	SC Low Energy Beta					
Sample I.D.:	LCS12506					
Duplicate Sample I.D.	LCSD12506					
Sample Result (pCi/L, g, F):	99.9860					
1.96 Sigma Unc:	16.4730					
Sample Duplicate Result (pCi/L, g, F):	100.7970					
Duplicate Sample 1.96 Sigma Unc.	16.4560					
Either results below MDC?	NO					
Relative Percent Difference:	0.81%					
Assessment:	Pass					
% RPD Limit:	25.00%					

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Sample Matrix Spike Control Assessment

Analyte:			
Sample Collection Date:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Spike I.D.:			
MS/MSD Decay Corrected Spike Conc. (pCi/L):			
Spike Volume Used in MS (mL):			
Spike Volume Used in MSD (mL):			
MS Aliquot (L, g, F):			
MS Target Conc.(pCi/L, g, F):			
MSD Aliquot (L, g, F):			
MSD Target Conc. (pCi/L, g, F):			
MS Spike uncertainty (calculated):			
MSD Spike uncertainty (calculated):			
Sample Result:			
Sample 1.96 Sigma Unc.:			
Sample Matrix Spike Result:			
Sample MS 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample MSD 1.96 Sigma Unc.:			
MS % Recovery:			
MSD % Recovery:			
MS Assessment:			
MSD Assessment:			
MS/MSD Upper % Recovery Limits:			
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment

Analyte:			
Sample I.D.			
Sample MS I.D.			
Sample MSD I.D.			
Sample Matrix Spike Result:			
Sample Matrix Spike 1.96 Sigma Unc.:			
Sample Matrix Spike Duplicate Result:			
Sample Matrix Spike Duplicate 1.96 Sigma Unc.:			
MS/MSD Relative Percent Difference:			
MS/ MSD RPD Assessment:			
% RPD Limit:			

Comments:

7/31/12

Low Energy Beta CSU Derivation

CSU Analysis for Preparation

Mass Aliquot

uncert (g)	mass (g)	rel unc
0.0003	2.000	0.02%

Decay/Ingrowth Correction

Precision of Sample Count Time	5 min
T1/2	12.43 years
Decay Correction Uncertainty	0.08%

Description	relative	of Critical	CSU (TPU) for Preparation Uncertainty	Uncertainty	5.39%
Sample Dissolution	2.00%	1	2.00%	0.0004	
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025	

Description	relative	of Critical	CSU (TPU) for Yield Correction Uncertainty	Uncertainty	1.00%
Absence of Yield Monitoring	1.00%	1	1.00%	0.0001	

Description	Maximum	of Critical	CSU (TPU) for Analysis Uncertainty	Uncertainty	10.60%
SRM Uncertainty	3.50%	1	3.50%	0.0012	
Source Reproducibility	5.00%	1	5.00%	0.0025	
Curve Fitting Uncertainty	5.00%	1	5.00%	0.0025	
Count reproducibility	5.00%	1	5.00%	0.0025	
Decay/Ingrowth Correction	0.08%	1	0.08%	0.0000	
Estimated Additional Uncertainty	5.00%	1	5.00%	0.0025	

Total Uncertainty	Maximum	of Critical	Uncertainty	Uncertainty	
UE1	5.39%	1	5.39%	0.0029	
UE2	10.60%	1	10.60%	0.0112	
UE3	1.00%	1	1.00%	0.0001	
UE4	0.00%	1	0.00%	0.0000	
					11.93%

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12506

Calibration Information				
Instr. ID:	*System #2*	*System #3*		
Cal Type:	*LEB Quenched*	*LEB Quenched*		
Cal ID:	*81012-493*	*81012-493*		
Description:	*5 mL DI +15 mL Ultima LLT*	*5 mL DI +15 mL Ultima LLT*		
Window:	*1.0-160.0*	*1.0-160.0*		
Eff. Date:	*7/20/2012*	*7/19/2012*		
Exp. Date:	*7/20/2013*	*7/19/2013*		
Fit Type:	*Polynomial*	*Polynomial*		
polynomial = ax^5 + bx^4 + cx^3 + dx^2 + ex + f				
a	0	0		
b	0	0		
c	0	0		
d	-8.4166E-06	-7.7122E-06		
e	4.3584E-03	4.1665E-03		
f	-6.9579E-02	-4.0645E-02		

Miscellaneous Defaults

PrepSOP1
PrepSOP2 n/a
AnalSOP1
AnalSOP2 n/a

Sigma 1.96
Zero Factor 2.71

Protocol #: 4 SWIPE_H3_C14 User :

Time: 30.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	2.0	0.00
Region C:	1.0 -	160	0	0.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	3.10	6.47	6.27	300.24	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

BKG072112

Pace Analytical Services
Count Start Date/Time Calculator

System #3		Protocol ID:	SWIPE_H3_C14
		Data File:	
Date in upper Left hand corner of Printout			7/21/2012 11:08
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/21/2012 11:01	459104
2	15	7/21/2012 11:09	3072160061
3	23	7/21/2012 11:17	3072160062
4	31	7/21/2012 11:25	3072160063
5	39	7/21/2012 11:33	3072160064
6	47	7/21/2012 11:41	3072160065
7	55	7/21/2012 11:49	3072160066
8	63	7/21/2012 11:57	3072160067
9	71	7/21/2012 12:05	3072160068
10	79	7/21/2012 12:13	3072160069
11	87	7/21/2012 12:21	3072160070
12	95	7/21/2012 12:29	3072160071
13	104	7/21/2012 12:38	3072160072
14	112	7/21/2012 12:46	3072160073
15	120	7/21/2012 12:54	3072160074
16	128	7/21/2012 13:02	3072160075
17	136	7/21/2012 13:10	3072160076
18	144	7/21/2012 13:18	3072160077
19	152	7/21/2012 13:26	3072160078
20	160	7/21/2012 13:34	3072160079
21	168	7/21/2012 13:42	3072160080
22	176	7/21/2012 13:50	LCS12505
23	184	7/21/2012 13:58	LCSD12505
24	192	7/21/2012 14:06	459104 # 6 7/31/12
25	200	7/21/2012 14:14	3072160081
26	208	7/21/2012 14:22	3072160082
27	216	7/21/2012 14:30	3072160083
28	224	7/21/2012 14:38	3072160084
29	232	7/21/2012 14:46	3072160085
30	240	7/21/2012 14:54	3072160086
31	248	7/21/2012 15:02	3072160087
32	256	7/21/2012 15:10	3072160088
33	264	7/21/2012 15:18	3072160089
34	272	7/21/2012 15:26	3072160090
35	280	7/21/2012 15:34	3072160091
36	288	7/21/2012 15:42	3072160092
37	296	7/21/2012 15:50	3072160093
38	304	7/21/2012 15:58	3072160094
39	312	7/21/2012 16:06	3072160095
40	320	7/21/2012 16:14	3072160096
41	328	7/21/2012 16:22	3072160097
42	336	7/21/2012 16:30	3072160098
43	345	7/21/2012 16:39	3072160099
44	353	7/21/2012 16:47	3072160100
45	361	7/21/2012 16:55	LCS12506
46	369	7/21/2012 17:03	LCSD12506
47	377	7/21/2012 17:11	LCS12509
48	385	7/21/2012 17:19	LCSD12509

Time: 7.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	0.0	0.00
Region C:	1.0 -	160	0	3.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
27	1	7.00	7	4.29	7.86	7.86	298.28	2
27	2	7.00	15	4.14	6.71	6.86	280.62	1
27	3	7.00	23	5.00	7.71	7.71	279.61	2
27	4	7.00	31	3.14	6.57	6.57	265.63	2
27	5	7.00	39	3.00	5.86	5.86	274.43	3
27	6	7.00	47	4.14	7.29	6.86	312.50	3
27	7	7.00	55	3.29	5.43	5.29	293.48	4
27	8	7.00	63	3.29	5.71	5.57	286.63	3
27	9	7.00	71	5.43	9.57	9.29	292.85	2
27	10	7.00	79	3.29	6.29	6.29	287.93	2
27	11	7.00	87	3.57	7.29	7.43	307.43	1
27	12	7.00	95	3.57	5.86	6.00	305.58	2
27	13	7.00	104	3.43	7.00	6.86	301.59	2
27	14	7.00	112	3.43	6.71	7.00	332.19	3
27	15	7.00	120	4.14	6.00	6.00	282.64	4
27	16	7.00	128	5.29	8.00	7.86	323.81	2
27	17	7.00	136	2.43	5.43	5.43	318.57	2
27	18	7.00	144	4.43	7.00	7.00	301.78	2
27	19	7.00	152	1.71	5.00	4.43	324.05	5
27	20	7.00	160	2.86	6.14	6.29	321.03	2
27	21	7.00	168	5.43	9.57	9.71	305.92	1
27	22	7.00	176	44.00	59.00	59.43	322.79	0
27	23	7.00	184	43.14	60.86	61.00	324.21	0
27	24	7.00	192	3.14	5.86	5.86	333.54	3
27	25	7.00	200	3.43	6.86	6.71	295.18	3
27	26	7.00	208	3.29	6.00	6.14	298.64	2
27	27	7.00	216	4.14	6.86	6.57	314.32	2
27	28	7.00	224	3.57	6.57	6.43	293.42	2
27	29	7.00	232	5.29	6.14	6.00	300.13	4
27	30	7.00	240	5.29	8.29	8.43	291.47	1
27	31	7.00	248	3.43	6.14	6.00	295.79	3
27	32	7.00	256	4.29	7.29	7.29	313.48	2
27	33	7.00	264	3.29	5.43	5.43	305.68	4
27	34	7.00	272	2.86	5.57	5.29	313.29	4
27	35	7.00	280	4.57	7.00	7.00	325.44	1
27	36	7.00	288	6.57	10.29	10.71	300.85	1
27	37	7.00	296	2.57	7.57	7.57	270.54	3
27	38	7.00	304	4.86	7.86	8.00	258.16	1
27	39	7.00	312	4.71	7.43	7.29	265.34	2

Protocol #:27 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
27	40	7.00	320	3.29	7.00	7.00	264.49	2
27	41	7.00	328	2.43	6.29	6.43	259.07	2
27	42	7.00	336	2.86	6.14	6.14	265.78	2
27	43	7.00	345	3.43	7.86	7.71	252.38	1
27	44	7.00	353	3.29	5.86	5.86	262.75	3
27	45	7.00	361	44.00	55.00	55.43	332.93	1
27	46	7.00	369	42.00	57.00	57.14	317.64	0
27	47	7.00	377	47.00	62.86	63.14	327.35	1
27	48	7.00	385	41.86	56.57	56.57	332.63	1

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
30721600 41	12504	Swipe-H3_C14	7	26	7/20/12 1608	7	NA	
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53			34					
54								
55								
56								
57								
58								
59								
60								
LCS 12504								
LCSD *12504								
MB (459104)	12505		9	27				
30721600 61								

Run comments: * Samples LCS 12503 + LCSD 12504 were counted as last two samples after LCSD 12504. Incidentally omitted from runlog. 7/21/12

Peer Review: _____

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Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
3072160062	12505	SW_H3_C14	9	27	7/20/12 1608	7	NA	
63								
64								
65								
66								
67								
68								
69								
70								
71								
72			21					
73								
74								
75								
76								
77								
78								
79								
80								
LCS 12505								
LCSD 12505								
MB (459105)	12506							
3072160081			7					
82								

Run comments: _____

Peer Review: _____

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Pace Analytical Services, Inc.-Pittsburgh

Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
3072160083	12506	Swipe_43_c14	7	27	7/20/12 1608	7	MA	
84								
85								
86								
87								
88								
89								
90								
91								
92								
93			15					
94								
95								
96								
97								
98								
99								
100								
LCS 12506								
LCSD 12506								
LCS 12509	12509							
LCSD 12509								
MB (459108)			39	28	7/21/12 1430	7		
3072161091								

Run comments: _____

Peer Review: _____

Low Energy Beta Calibration Documentation

Low Energy Beta Smear Calibration Narrative
Applicable to Methods: Smear Counting
Date: 7/19/2012
Calibration Source Prep Analyst: JLK
Calibration Calculations by: JLK

Calibration Description Details:

Five (5.0) mL of DI water was added to each of ten glass liquid scintillation vials with reflective lids. Portions of Analytics SRM 81012-493 were added to each of the calibration vials in the masses documented in the table below. Fifteen (15) ml of Ultima Gold LLT liquid scintillation cocktail was added to each vial. The vials were capped and shaken gently to mix the contents. The caps were carefully removed, and varying volumes of nitromethane were added to the calibration vials in the quantities documented in the table. The calibration sources were capped and shaken to mix, wiped clean with methanol and DI water. A label was attached to the outside of each vial to be consistent with the sample vials.

The samples were counted on each of Pace's 2 liquid scintillation counters, and calculations were performed to determine the ratio of detector Ni-63 efficiency versus quench number (TSIE) for each detector system.

Cal Source ID	Mass (g) of Ni-63 Standard 81012-493	Volume of Nitromethane Added (uL)
Ni63-20120719-N1	0.1019	0
Ni63-20120719-N2	0.0995	10
Ni63-20120719-N3	0.0998	20
Ni63-20120719-N4	0.1040	30
Ni63-20120719-N5	0.1014	40
Ni63-20120719-N6	0.1015	50
Ni63-20120719-N7	0.2060	60
Ni63-20120719-N8	0.2034	70
Ni63-20120719-N9	0.2044	80
Ni63-20120719-N10	0.2036	90

7/20/12
7/20/12

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

81012-493

Ni-63 5 mL Liquid in Flame Sealed Vial

Customer: Pace Analytical Services, Inc.
P.O. No.: PI-12089, Item 18

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by the Department Des Applications Et De La Metrologie Des Rayonnements Ionisants (DAMRI), Paris, France. The master solution was calibrated by liquid scintillation counting. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty* , % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Ni-63	3.656E+04	3.456E+03	0.2	1.5	3.0	11/05/2009

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities < 0.1 %. 4.99626 g 0.1M HCl solution with approximately 30 μg/g Ni carrier.

Source Prepared by: N. Kasate
N.E. Kasate, Radiochemist

QA Approved: D. M. Montgomery
D. M. Montgomery, QA Manager

Date: 11-6-09

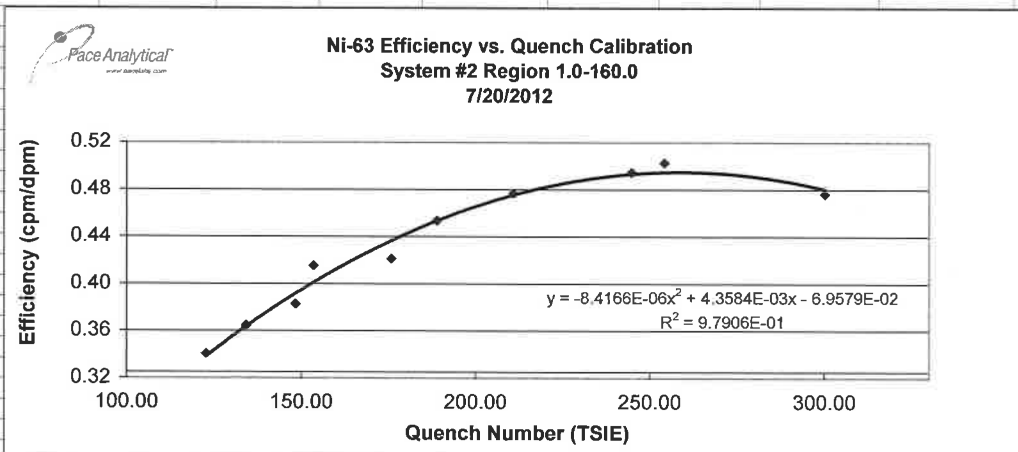
ACCREDITED SOURCE CALIBRATION LABORATORY — HEALTH PHYSICS SOCIETY — FOUNDED 1956

Nickel-63 Efficiency Quench Curve Calibration

Pace Analytical™ www.pacelabs.com

Analyst:	JLK	Detector System Settings	
Calibration Date:	7/20/2012	Count Mode:	Low Level
Ni-63 Standard:	81012-493	Background Subtract:	Off
Standard Bq on Reference Date	3456	Low CPM Threshold:	Off
Standard Total Mass (g)	4.99626	Static Controller:	On
System ID:	System #2	Region:	1.0-160.0
Background:	7.83		

Source	Standard Mass	Standard Ref Date	Count Date	Decay Days	Standard Decay Factor	Decay Corrected Standard dpm/g	Standard Source dpm	Region 1-160 Ni-63 ROI Standard Source cpm	Source Ct. time (min)	Source Net Counts	TSIE	Region 1-160 Ni-63 Source Efficiency (cpm/dpm)	Calculated Efficiency from Curve	% Diff from Cal	Source Acceptable (<10%)
Ni-63 20120719-N1	0.1019	11/5/2009	7/20/2012	988.38	0.99995	41500.9	4228.94	2020.85	6.00	12078.12	300.10	0.4760	0.4804	0.92%	Yes
Ni-63 20120719-N2	0.0995	11/5/2009	7/20/2012	988.38	0.99995	41500.9	4129.34	2082.61	6.00	12448.68	254.20	0.5024	0.4945	-1.59%	Yes
Ni-63 20120719-N3	0.0998	11/5/2009	7/20/2012	988.38	0.99995	41500.9	4141.79	2055.91	6.00	12288.48	244.90	0.4945	0.4930	-0.30%	Yes
Ni-63 20120719-N4	0.1040	11/5/2009	7/20/2012	988.38	0.99995	41500.9	4316.10	2065.34	6.00	12345.06	210.90	0.4767	0.4752	-0.31%	Yes
Ni-63 20120719-N5	0.1014	11/5/2009	7/20/2012	988.38	0.99995	41500.9	4208.19	1915.89	6.00	11448.36	188.90	0.4534	0.4534	-0.01%	Yes
Ni-63 20120719-N6	0.1015	11/5/2009	7/20/2012	988.38	0.99995	41500.9	4212.34	1781.94	7.00	12418.77	175.80	0.4212	0.4365	3.64%	Yes
Ni-63 20120719-N7	0.2060	11/5/2009	7/20/2012	988.38	0.99995	41500.9	8549.19	3557.22	3.00	10648.17	153.50	0.4152	0.4011	-3.38%	Yes
Ni-63 20120719-N8	0.2034	11/5/2009	7/20/2012	988.38	0.99995	41500.9	8441.29	3239.40	4.00	12926.28	148.30	0.3828	0.3917	2.31%	Yes
Ni-63 20120719-N9	0.2044	11/5/2009	7/20/2012	988.38	0.99995	41500.9	8482.79	3100.91	4.00	12372.32	134.20	0.3646	0.3637	-0.24%	Yes
Ni-63 20120719-N10	0.2036	11/5/2009	7/20/2012	988.42	0.99995	41500.9	8449.59	2889.22	4.00	11525.56	122.70	0.3410	0.3385	-0.74%	Yes



C	-8.4166E-06
D	4.3584E-03
E	-6.9579E-02

JLK 7/20/12
[illegible] 7/20/12

Printed 7/20/2012 at 11:26 AM

Ni63 quench cal 20120719 SYS2
P:\QA Folders\Calibrations\Ni59 and Ni63 Cals\Ni63 quench cal 20120719 SYS2

Assay Definition-

Assay Description:
5 ml DI + FILTER +15 ml ULTIMA GOLD LLT Cocktail

Assay Type: CPM
Report Name: H3report
Output Data Path: C:\Packard\Tricarb\Results\Default\SWIPE_H-3_C-14_E
Raw Results Path: C:\Packard\Tricarb\Results\Default\SWIPE_H-3_C-14_E\20120720_0859.results
RTF File Name: C:\Packard\Tricarb\Results\Default\SWIPE_H-3_C-14_E\H3cpm.rtf
Comma-Delimited File Name: C:\Packard\Tricarb\Results\Default\SWIPE_H-3_C-14_E\12482.txt
Assay File Name: C:\Packard\TriCarb\Assays\SWIPE_H-3_C-14_E.lsa

Count Conditions-

Nuclide: FILTER
Quench Indicator: tSIE
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 8.00
Count Mode: Low Level
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	2.0	20.0	0.00
B	2.0	160.0	0.00
C	1.0	160.0	1.80

Count Corrections-

Static Controller: On Luminescence Correction: n/a
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

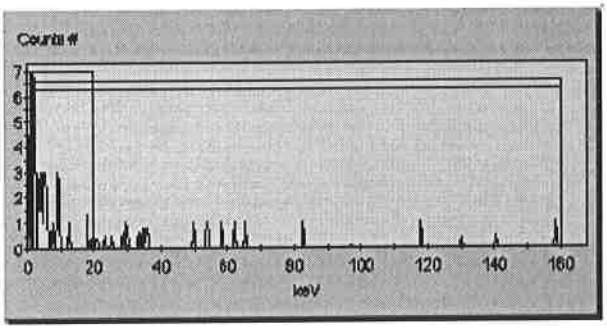
Instrument Block Data
Machine=2900
Version=1.10
426001
MODEL=2900
VERSION=1.10
SERIAL=426001
IPA Block Data
Software Version IC: 2.11
Software Version EC: 1.31
Instrument Model: 2900
Instrument Serial Number: 426001
3H Chi Square: 15.92 Date Processed: 7/19/12 11:40:58 AM

14C Chi Square: 10.90 Date Processed: 7/19/12 11:40:58 AM
3H E^2/B (1-18.6 keV): 303.70 Date Processed: 7/19/12 11:40:58 AM
14C E^2/B (4-156 keV): 554.79 Date Processed: 7/19/12 11:40:58 AM
3H Efficiency (0-18.6 keV): 62.31 Date Processed: 7/19/12 11:40:58 AM
14C Efficiency (0-156 keV): 95.37 Date Processed: 7/19/12 11:40:58 AM
IPA Background Date Processed: 7/19/12 11:40:58 AM
3H Background CPM (0-18.6 keV): 12.62 Date Processed: 7/19/12 11:40:58 AM
14C Background CPM (0-156 keV): 19.93 Date Processed: 7/19/12 11:40:58 AM
3H Calibration DPM: 278800
3H Reference Date: 12/5/07
14C Calibration DPM: 135100
===== IPA Errors and Warnings for Last Aquired Data Per Parameter ====
7/19/12 11:40:58 AM: WARNING: Questionable H3 Efficiency value - Please rerun quench curves
== End of IPA Errors and Warnings for Last Aquired Data Per Parameter ==

Cycle 1 Results

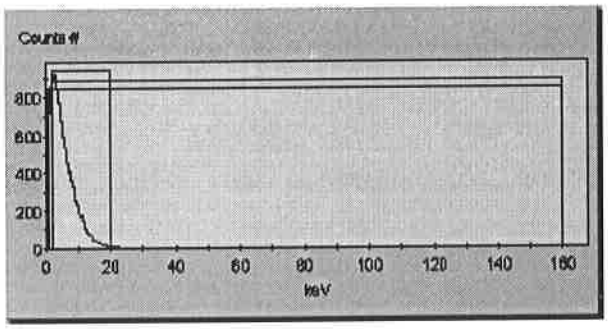
S#	PID	TIME	SMPL_ID / LUM	C.T.	DATE	CPMA	tSIE	CPMB	CPMC	MESSAGES
			BKG	8	7/20/12	4.34	317.6	6.45	7.83	
1	5	8:59:56 AM	8							

SpectraView Block Data



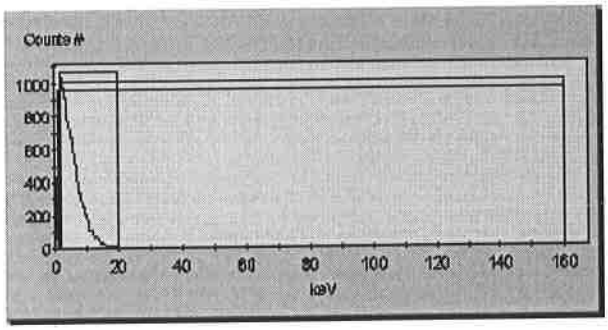
		NI63-20120719-N1	6	7/20/12		1763.93	300.1	1771.83	2020.85	
2	5	9:08:46 AM	0							

SpectraView Block Data



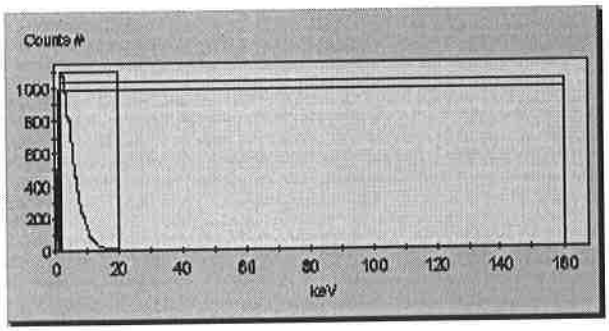
		NI63-20120179-N2	6	7/20/12		1813.72	254.2	1818.36	2082.61	
3	5	9:15:40 AM	0							

SpectraView Block Data



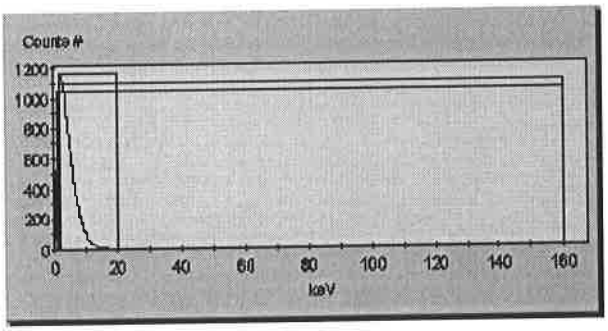
NI63-20120719-N3 6 7/20/12 1748.50 244.9 1754.08 2055.91
4 5 9:22:22 AM 0

SpectraView Block Data



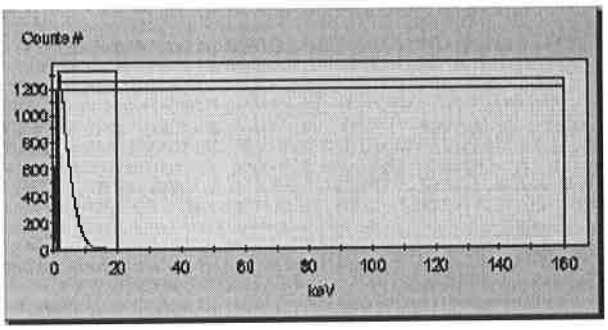
NI63-20120719-N4 6 7/20/12 1753.03 210.9 1756.32 2065.34
5 5 9:29:11 AM 0

SpectraView Block Data



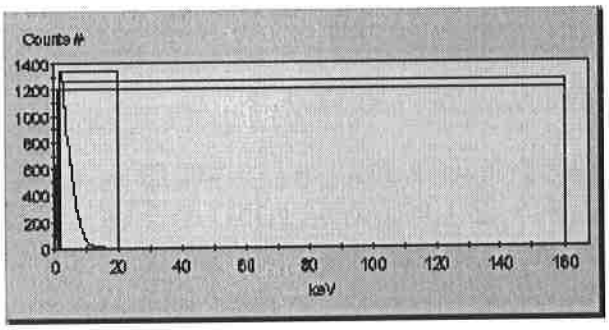
NI63-20120719-N5 6 7/20/12 1573.37 188.9 1575.74 1915.89
6 5 9:35:58 AM 0

SpectraView Block Data



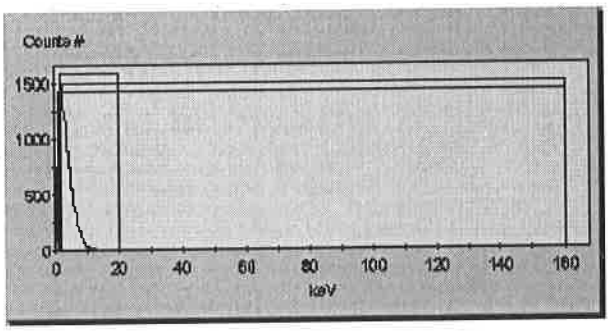
NI63-20120719-N6 7 7/20/12 1456.33 175.8 1458.71 1781.94
7 5 9:43:13 AM 0

SpectraView Block Data



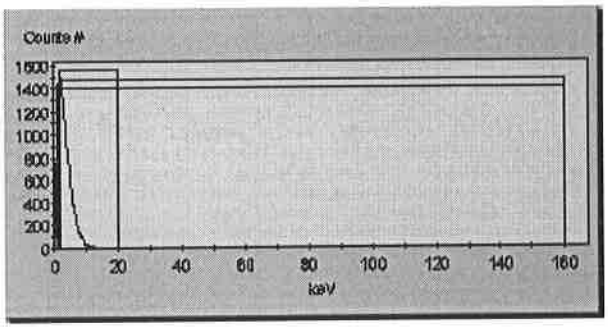
NI63-20120719-N7 3 7/20/12 2818.32 153.5 2821.87 3557.22
8 5 9:50:58 AM 0

SpectraView Block Data



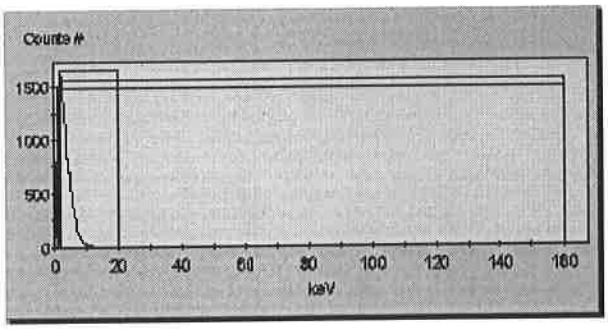
NI63-20120719-N8 4 7/20/12 2526.96 148.3 2529.45 3239.40
9 5 9:55:12 AM 0

SpectraView Block Data



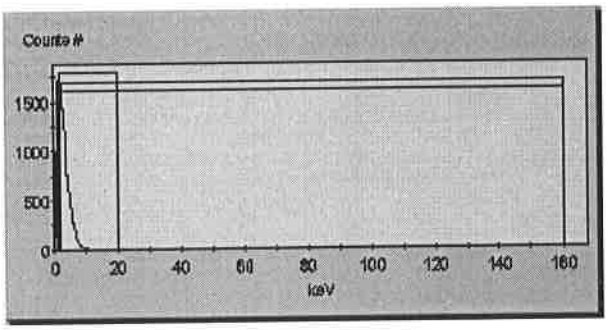
NI63-20120719-N9 4 7/20/12 2389.66 134.2 2392.64 3100.91
10 5 9:59:47 AM 0

SpectraView Block Data



NI63-20120719-N10 4 7/20/12 2122.40 122.7 2124.50 2889.22
11 5 10:04:33 AM 0

SpectraView Block Data



Pace Analytical

Pace Analytical Services, Inc.-Pittsurgh

Liquid Scintillation Counter Run Log System 2

Logbook ID: 8-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
3KG	N Cal	Supe H3/C14	5	1	7/20/12 0845	8	7/20/12 0900	
N1 6320120719 N1								
N2								
N3								
N4								
N5								
N6								
N7								
N8								
N9								
N10								
3072 158038		Supe H3/C14	12	8	7/20/12 0945	12	NA	
39								
40								
LCS								
LCSD								
PKG								

Run comments: _____

Peer Review: _____

Nickel-63 Efficiency Quench Curve Calibration

Pace Analytical™
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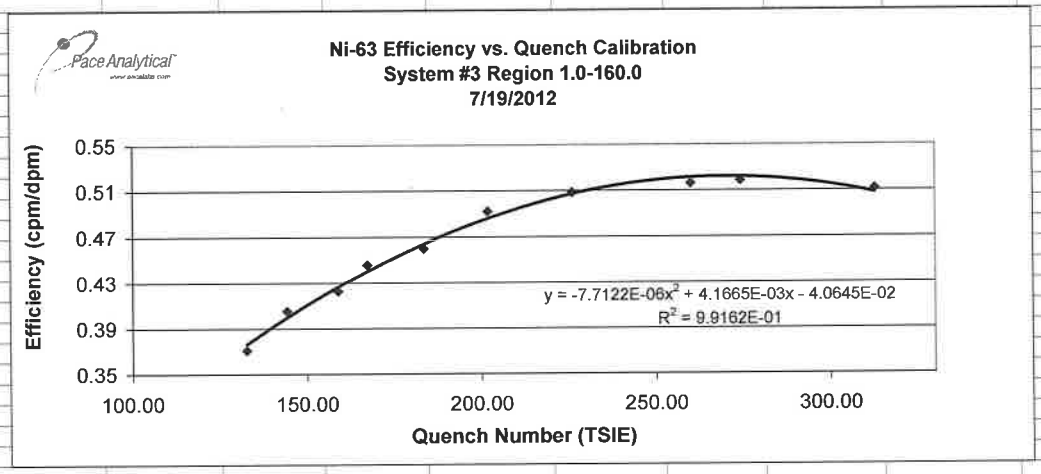
Analyst:	JLK	Detector System Settings	
Calibration Date:	7/19/2012	Count Mode:	Low Level
Ni-63 Standard:	81012-493	Background Subtract:	Off
Standard Bq on Reference Date	3456	Low Level Count Mode:	On
Standard Total Mass (g)	4.99626	Luminescence Correction:	On
System ID:	System #3	Region:	1.0-160.0
Background:	8.00		

Source	Standard Mass	Standard Ref Date	Count Date	Decay Days	Standard Decay Factor	Decay Corrected Standard dpm/g	Standard Source dpm	Region 1-160 Ni-63 ROI Standard Source cpm	Source Ct. time (min)	Source Net Counts	TSIE	Region 1-160 Ni-63 Source Efficiency (cpm/dpm)	Calculated Efficiency from Curve	% Diff from Cal	Source Acceptable (<10%)
Ni-63 20120719-N1	0.1019	11/5/2009	7/19/2012	987.52	0.99995	41500.9	4228.94	2170.96	4.58	9906.36	312.86	0.5115	0.5080	-0.68%	Yes
Ni-63 20120719-N2	0.0995	11/5/2009	7/19/2012	987.52	0.99995	41500.9	4129.34	2150.00	4.64	9938.88	274.25	0.5187	0.5220	0.62%	Yes
Ni-63 20120719-N3	0.0998	11/5/2009	7/19/2012	987.52	0.99995	41500.9	4141.79	2146.02	4.65	9941.79	260.02	0.5162	0.5213	0.99%	Yes
Ni-63 20120719-N4	0.1040	11/5/2009	7/19/2012	987.52	0.99995	41500.9	4316.10	2202.43	4.52	9918.82	226.09	0.5084	0.5071	-0.25%	Yes
Ni-63 20120719-N5	0.1014	11/5/2009	7/19/2012	987.52	0.99995	41500.9	4208.19	2079.17	4.80	9941.62	201.84	0.4922	0.4861	-1.23%	Yes
Ni-63 20120719-N6	0.1015	11/5/2009	7/19/2012	987.52	0.99995	41500.9	4212.34	1946.38	5.11	9905.12	183.62	0.4602	0.4644	0.92%	Yes
Ni-63 20120719-N7	0.2060	11/5/2009	7/19/2012	987.52	0.99995	41500.9	8549.19	3821.07	2.61	9952.11	167.31	0.4460	0.4406	-1.22%	Yes
Ni-63 20120719-N8	0.2034	11/5/2009	7/19/2012	987.52	0.99995	41500.9	8441.29	3576.62	2.78	9920.76	158.90	0.4228	0.4267	0.93%	Yes
Ni-63 20120719-N9	0.2044	11/5/2009	7/19/2012	987.52	0.99995	41500.9	8482.79	3445.83	2.88	9900.95	144.19	0.4053	0.3998	-1.35%	Yes
Ni-63 20120719-N10	0.2036	11/5/2009	7/19/2012	987.52	0.99995	41500.9	8449.59	3141.96	3.17	9934.65	132.62	0.3709	0.3763	1.45%	Yes



C	-7.7122E-06
D	4.1665E-03
E	-4.0645E-02

7/7/2012
OK 7/30/12

Protocol #: 1 SWIPE_H3_C14 User :

Time: 7.00
Data Mode: CPM Nuclide: MANUAL
Background Subtract: None

	LL	UL	LCR	2S%	BKG
Region A:	2.0 -	20.0	0	0.0	0.00
Region B:	2.0 -	160	0	2.0	0.00
Region C:	1.0 -	160	0	2.0	0.00

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count

Pace Analytical Services, Inc. LSC Instrument 3
Luminescence Correction On
Low Level Count Mode On

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
1	1	7.00	7	4.14	7.86	8.00	325.58	1
1	2	4.58	13	1638.86	2147.60	2170.96	312.86	0
1	3	4.64	18	1581.68	2130.82	2150.00	274.25	0
1	4	4.65	24	1626.88	2127.31	2146.02	260.02	0
1	5	4.52	30	1663.50	2189.38	2202.43	226.09	0
1	6	4.80	35	1585.42	2070.00	2079.17	201.84	0
1	7	5.11	42	1494.52	1941.29	1946.38	183.62	0
1	8	2.61	45	2947.51	3815.33	3821.07	167.31	0
1	9	2.78	49	2737.77	3572.66	3576.62	158.90	0
1	10	2.88	53	2642.01	3442.01	3445.83	144.19	0
1	11	3.17	58	2460.25	3136.59	3141.96	132.62	0

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Pace Analytical Services, Inc.-Pittsburgh

Liquid Scintillation Counter Run Log System 3

Logbook ID: 4-R023-3

REMINDER: Start Daily Checks Prior to Sample Protocol!

Sample No.	Worklist	Protocol Name	Tray Number	Protocol Number	Added to Detector Date& Time	Count time (min)	Actual Count Start Date & Time	Analyst
N163 20120719 N2	N.63Cal	Swipe H3C14	5	1	7/19/12 1330	7	n/a	
N3								
N4								
N5								
N6								
N7								
N8								
N9								
N10								
MB		Swipe H3C14	27	45	7/20/12 0900			
30 72159041								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52			23					
53								
54								

Run comments: _____

Peer Review: _____

Standards

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 • U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

71157A-493

Ni-63 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ni-63
ACTIVITY (dps):	1.061 E4
HALF-LIFE:	100.1 years
CALIBRATION DATE:	April 5, 2005 12:00 EST
RELATIVE EXPANDED UNCERTAINTY (k=2):	3.0%

Impurities: γ-impurities <0.1%

5.08501 grams 0.1M HCl solution with 30 μg/g Ni carrier.

P O NUMBER PI-4864, Item 2

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 7-22-05

Rcd 8-16-05

Pace Analytical™
www.pacelabs.com

Radioactive Standards Dilution Logbook

09-009 N:63 Spike Solution

Parent source: 09-008
Parent Conc: 12334.51 dpm/g
Ref date: 4/5/2005 12:00 EST

Explication: ND

$$25.26\,g \left(\frac{12334.51\ dpm/g}{250.0\,ml} \right) = 1246.3\ \frac{dpm}{ml}$$

diluted 25.26 g of 09-008 to 250.0 ml w/ 0.1 N HCl on 5/3/2009

0.1 N HCl DL09-0167

Pace Analytical™
www.pacelabs.com

Radioactive Standards Dilution Logbook

09-008 Ni-63 Spike "A" Solution

Parent Source: Analytics 71157A-493
Parent Cnc.: 10610 DPS (Bq)
Parent Ref date: 4/5/2005 12:00 EST
NO EXP ASSIGNED

5.0210 g	10610 DPS	60 dps/dpm = 12334.51 dpm/g
5.08501 g	50.9616 g	

diluted 5.0210 g of 71157A-493 to 50.9616 g w/ 0.1 N HCl on 5/3/2009

0.1 N HCl DL09-0167

ANALYTICS
1380 Seaboard Ind Blvd * Atlanta, GA 30318 * USA * 404-352-8677
Ni-63
SRS 71157A-493 Qty 0.29 µCi QA
Date 04/05/05 12:00 EST Exp. XXXXXX
PO # PI-4864, Item 2
5.08501 g 0.1M HCl solution
CAUTION RADIOACTIVE MATERIAL