RTI Laboratories, Inc.

Client Ref.: Fort Monmouth 1207083

Pace-Pittsburgh Project No. 3072162

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

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Case Narrative for Pace Analytical Job Number 3072162

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 twenty three (123) of the samples received were logged for radiochemical analyses under Pace Analytical Project number 3072162 with corresponding samples IDs of 3072162001 through 3072162123. 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 3072162

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
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(724)850-5600

July 27, 2012

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

RE: Project: Fort Monmouth 1207083
Pace Project No.: 3072162

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.
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CERTIFICATIONS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

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 1207083
Pace Project No.: 3072162

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3072162001	292-8	Wipe	06/06/12 00:01	06/25/12 10:15
3072162002	292-9	Wipe	06/06/12 00:01	06/25/12 10:15
3072162003	292-10	Wipe	06/06/12 00:01	06/25/12 10:15
3072162004	292-11	Wipe	06/06/12 00:01	06/25/12 10:15
3072162005	292-12	Wipe	06/06/12 00:01	06/25/12 10:15
3072162006	292-12D	Wipe	06/06/12 00:01	06/25/12 10:15
3072162007	292-13	Wipe	06/06/12 00:01	06/25/12 10:15
3072162008	292-14	Wipe	06/06/12 00:01	06/25/12 10:15
3072162009	292-15	Wipe	06/06/12 00:01	06/25/12 10:15
3072162010	292-16	Wipe	06/06/12 00:01	06/25/12 10:15
3072162011	292-17	Wipe	06/06/12 00:01	06/25/12 10:15
3072162012	292-18	Wipe	06/06/12 00:01	06/25/12 10:15
3072162013	292-19	Wipe	06/06/12 00:01	06/25/12 10:15
3072162014	292-20	Wipe	06/06/12 00:01	06/25/12 10:15
3072162015	292-21	Wipe	06/06/12 00:01	06/25/12 10:15
3072162016	292-22	Wipe	06/06/12 00:01	06/25/12 10:15
3072162017	292-23	Wipe	06/06/12 00:01	06/25/12 10:15
3072162018	292-24	Wipe	06/06/12 00:01	06/25/12 10:15
3072162019	292-25	Wipe	06/06/12 00:01	06/25/12 10:15
3072162020	292-26	Wipe	06/06/12 00:01	06/25/12 10:15
3072162021	292-27	Wipe	06/06/12 00:01	06/25/12 10:15
3072162022	292-28	Wipe	06/06/12 00:01	06/25/12 10:15
3072162023	292-29	Wipe	06/06/12 00:01	06/25/12 10:15
3072162024	292-29D	Wipe	06/06/12 00:01	06/25/12 10:15
3072162025	292-30	Wipe	06/06/12 00:01	06/25/12 10:15
3072162026	292-C1	Wipe	06/19/12 00:01	06/25/12 10:15
3072162027	292-C2	Wipe	06/19/12 00:01	06/25/12 10:15
3072162028	292-C3	Wipe	06/19/12 00:01	06/25/12 10:15
3072162029	SH-1	Wipe	06/07/12 00:01	06/25/12 10:15
3072162030	SH-2	Wipe	06/07/12 00:01	06/25/12 10:15
3072162031	SH-3	Wipe	06/07/12 00:01	06/25/12 10:15
3072162032	SH-4	Wipe	06/07/12 00:01	06/25/12 10:15
3072162033	SH-4D	Wipe	06/07/12 00:01	06/25/12 10:15
3072162034	SH-5	Wipe	06/07/12 00:01	06/25/12 10:15
3072162035	SH-6	Wipe	06/07/12 00:01	06/25/12 10:15
3072162036	SH-7	Wipe	06/07/12 00:01	06/25/12 10:15
3072162037	SH-8	Wipe	06/07/12 00:01	06/25/12 10:15

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Project: Fort Monmouth 1207083
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Lab ID	Sample ID	Matrix	Date Collected	Date Received
3072162038	SH-9	Wipe	06/07/12 00:01	06/25/12 10:15
3072162039	SH-10	Wipe	06/07/12 00:01	06/25/12 10:15
3072162040	SH-11	Wipe	06/07/12 00:01	06/25/12 10:15
3072162041	SH-12	Wipe	06/07/12 00:01	06/25/12 10:15
3072162042	SH-13	Wipe	06/07/12 00:01	06/25/12 10:15
3072162043	SH-14	Wipe	06/07/12 00:01	06/25/12 10:15
3072162044	SH-15	Wipe	06/07/12 00:01	06/25/12 10:15
3072162045	SH-16	Wipe	06/07/12 00:01	06/25/12 10:15
3072162046	SH-16D	Wipe	06/07/12 00:01	06/25/12 10:15
3072162047	SH-17	Wipe	06/07/12 00:01	06/25/12 10:15
3072162048	SH-18	Wipe	06/07/12 00:01	06/25/12 10:15
3072162049	SH-19	Wipe	06/07/12 00:01	06/25/12 10:15
3072162050	SH-20	Wipe	06/07/12 00:01	06/25/12 10:15
3072162051	SH-21	Wipe	06/07/12 00:01	06/25/12 10:15
3072162052	SH-22	Wipe	06/07/12 00:01	06/25/12 10:15
3072162053	SH-23	Wipe	06/07/12 00:01	06/25/12 10:15
3072162054	SH-23D	Wipe	06/07/12 00:01	06/25/12 10:15
3072162055	SH-24	Wipe	06/07/12 00:01	06/25/12 10:15
3072162056	SH-25	Wipe	06/07/12 00:01	06/25/12 10:15
3072162057	SH-26	Wipe	06/07/12 00:01	06/25/12 10:15
3072162058	SH-27	Wipe	06/07/12 00:01	06/25/12 10:15
3072162059	SH-28	Wipe	06/07/12 00:01	06/25/12 10:15
3072162060	SH-29	Wipe	06/07/12 00:01	06/25/12 10:15
3072162061	SH-30	Wipe	06/07/12 00:01	06/25/12 10:15
3072162062	SH-B1	Wipe	06/19/12 00:01	06/25/12 10:15
3072162063	SH-B2	Wipe	06/19/12 00:01	06/25/12 10:15
3072162064	SH-B3	Wipe	06/19/12 00:01	06/25/12 10:15
3072162065	SH-B4	Wipe	06/19/12 00:01	06/25/12 10:15
3072162066	SH-B5	Wipe	06/19/12 00:01	06/25/12 10:15
3072162067	SH-B6	Wipe	06/19/12 00:01	06/25/12 10:15
3072162068	SH-BSUMP	Wipe	06/19/12 00:01	06/25/12 10:15
3072162069	SH-BOILERSUMP	Wipe	06/19/12 00:01	06/25/12 10:15
3072162070	SH-2FF	Wipe	06/19/12 00:01	06/25/12 10:15
3072162071	SH-2FS	Wipe	06/19/12 00:01	06/25/12 10:15
3072162072	SH-1F-W-S	Wipe	06/19/12 00:01	06/25/12 10:15
3072162073	SH-1F-W-F	Wipe	06/19/12 00:01	06/25/12 10:15
3072162074	SH-1F-RS	Wipe	06/19/12 00:01	06/25/12 10:15

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SAMPLE SUMMARY

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
3072162075	SH-1F-RF	Wipe	06/19/12 00:01	06/25/12 10:15
3072162076	SH-MS-S	Wipe	06/19/12 00:01	06/25/12 10:15
3072162077	SH-MS-F	Wipe	06/19/12 00:01	06/25/12 10:15
3072162078	SH-08-S	Wipe	06/19/12 00:01	06/25/12 10:15
3072162079	SH-10-D	Wipe	06/19/12 00:01	06/25/12 10:15
3072162080	SH-06-D	Wipe	06/19/12 00:01	06/25/12 10:15
3072162081	2541-BIAS-25	Wipe	06/19/12 00:01	06/25/12 10:15
3072162082	SU-01-BIAS-79	Wipe	06/19/12 00:01	06/25/12 10:15
3072162083	SU-02-BIAS-8	Wipe	06/19/12 00:01	06/25/12 10:15
3072162084	SU-03-BIAS-23	Wipe	06/19/12 00:01	06/25/12 10:15
3072162085	SU-04-BIAS-24	Wipe	06/19/12 00:01	06/25/12 10:15
3072162086	SU-05-BIAS-24	Wipe	06/19/12 00:01	06/25/12 10:15
3072162087	SU-06-BIAS-2	Wipe	06/19/12 00:01	06/25/12 10:15
3072162088	SU-07-BIAS-5	Wipe	06/19/12 00:01	06/25/12 10:15
3072162089	SU-08-BIAS-1	Wipe	06/19/12 00:01	06/25/12 10:15
3072162090	SU-08-BIAS-2	Wipe	06/19/12 00:01	06/25/12 10:15
3072162091	SU-08-BIAS-3	Wipe	06/19/12 00:01	06/25/12 10:15
3072162092	SU-09-BIAS-1	Wipe	06/19/12 00:01	06/25/12 10:15
3072162093	SU-11-BIAS	Wipe	06/19/12 00:01	06/25/12 10:15
3072162094	SU-12-BIAS	Wipe	06/19/12 00:01	06/25/12 10:15
3072162095	SU-13-BIAS	Wipe	06/19/12 00:01	06/25/12 10:15
3072162096	SU-14-BIAS-25	Wipe	06/19/12 00:01	06/25/12 10:15
3072162097	SU-15-BIAS	Wipe	06/19/12 00:01	06/25/12 10:15
3072162098	SU-09-VENT PIPE	Wipe	06/19/12 00:01	06/25/12 10:15
3072162099	SU-09-VENT OPENING	Wipe	06/19/12 00:01	06/25/12 10:15
3072162100	SU-102-FD	Wipe	06/21/12 00:01	06/25/12 10:15
3072162101	SU-214A-FD	Wipe	06/21/12 00:01	06/25/12 10:15
3072162102	SH-1-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162103	SH-2-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162104	SH-3-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162105	SH-5-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162106	SH-6-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162107	SH-8-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162108	SH-10-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162109	SH-12-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162110	SH-14-M	Wipe	06/21/12 00:01	06/25/12 10:15
3072162111	SH-17-M	Wipe	06/21/12 00:01	06/25/12 10:15

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SAMPLE SUMMARY

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3072162112	**SH-18-M**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162113	**SH-19-M**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162114	**SH-25-M**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162115	**SH-26-M**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162116	**SH-28-M**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162117	**SH-29-M**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162118	**SH-30-M**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162119	**SU10-BIAS**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162120	**2541-FBIAS**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162121	**SU12-BIAS2**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162122	**SU6-BIAS1**	Wipe	06/21/12 00:01	06/25/12 10:15
3072162123	**SU9-BIAS2**	Wipe	06/21/12 00:01	06/25/12 10:15

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SAMPLE ANALYTE COUNT

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3072162001	292-8	EPA 906.0M	MBT	1	PASI-PA
3072162002	292-9	EPA 906.0M	MBT	1	PASI-PA
3072162003	292-10	EPA 906.0M	MBT	1	PASI-PA
3072162004	292-11	EPA 906.0M	MBT	1	PASI-PA
3072162005	292-12	EPA 906.0M	MBT	1	PASI-PA
3072162006	292-12D	EPA 906.0M	MBT	1	PASI-PA
3072162007	292-13	EPA 906.0M	MBT	1	PASI-PA
3072162008	292-14	EPA 906.0M	MBT	1	PASI-PA
3072162009	292-15	EPA 906.0M	MBT	1	PASI-PA
3072162010	292-16	EPA 906.0M	MBT	1	PASI-PA
3072162011	292-17	EPA 906.0M	MBT	1	PASI-PA
3072162012	292-18	EPA 906.0M	MBT	1	PASI-PA
3072162013	292-19	EPA 906.0M	MBT	1	PASI-PA
3072162014	292-20	EPA 906.0M	MBT	1	PASI-PA
3072162015	292-21	EPA 906.0M	MBT	1	PASI-PA
3072162016	292-22	EPA 906.0M	MBT	1	PASI-PA
3072162017	292-23	EPA 906.0M	MBT	1	PASI-PA
3072162018	292-24	EPA 906.0M	MBT	1	PASI-PA
3072162019	292-25	EPA 906.0M	MBT	1	PASI-PA
3072162020	292-26	EPA 906.0M	MBT	1	PASI-PA
3072162021	292-27	EPA 906.0M	MBT	1	PASI-PA
3072162022	292-28	EPA 906.0M	MBT	1	PASI-PA
3072162023	292-29	EPA 906.0M	MBT	1	PASI-PA
3072162024	292-29D	EPA 906.0M	MBT	1	PASI-PA
3072162025	292-30	EPA 906.0M	MBT	1	PASI-PA
3072162026	292-C1	EPA 906.0M	MBT	1	PASI-PA
3072162027	292-C2	EPA 906.0M	MBT	1	PASI-PA
3072162028	292-C3	EPA 906.0M	MBT	1	PASI-PA
3072162029	SH-1	EPA 906.0M	MBT	1	PASI-PA
3072162030	SH-2	EPA 906.0M	MBT	1	PASI-PA
3072162031	SH-3	EPA 906.0M	MBT	1	PASI-PA
3072162032	SH-4	EPA 906.0M	MBT	1	PASI-PA
3072162033	SH-4D	EPA 906.0M	MBT	1	PASI-PA
3072162034	SH-5	EPA 906.0M	MBT	1	PASI-PA
3072162035	SH-6	EPA 906.0M	MBT	1	PASI-PA
3072162036	SH-7	EPA 906.0M	MBT	1	PASI-PA
3072162037	SH-8	EPA 906.0M	MBT	1	PASI-PA

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SAMPLE ANALYTE COUNT

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Pace Project No.: 3072162

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3072162038	SH-9	EPA 906.0M	MBT	1	PASI-PA
3072162039	SH-10	EPA 906.0M	MBT	1	PASI-PA
3072162040	SH-11	EPA 906.0M	MBT	1	PASI-PA
3072162041	SH-12	EPA 906.0M	MBT	1	PASI-PA
3072162042	SH-13	EPA 906.0M	MBT	1	PASI-PA
3072162043	SH-14	EPA 906.0M	MBT	1	PASI-PA
3072162044	SH-15	EPA 906.0M	MBT	1	PASI-PA
3072162045	SH-16	EPA 906.0M	MBT	1	PASI-PA
3072162046	SH-16D	EPA 906.0M	MBT	1	PASI-PA
3072162047	SH-17	EPA 906.0M	MBT	1	PASI-PA
3072162048	SH-18	EPA 906.0M	MBT	1	PASI-PA
3072162049	SH-19	EPA 906.0M	MBT	1	PASI-PA
3072162050	SH-20	EPA 906.0M	MBT	1	PASI-PA
3072162051	SH-21	EPA 906.0M	MBT	1	PASI-PA
3072162052	SH-22	EPA 906.0M	MBT	1	PASI-PA
3072162053	SH-23	EPA 906.0M	MBT	1	PASI-PA
3072162054	SH-23D	EPA 906.0M	MBT	1	PASI-PA
3072162055	SH-24	EPA 906.0M	MBT	1	PASI-PA
3072162056	SH-25	EPA 906.0M	MBT	1	PASI-PA
3072162057	SH-26	EPA 906.0M	MBT	1	PASI-PA
3072162058	SH-27	EPA 906.0M	MBT	1	PASI-PA
3072162059	SH-28	EPA 906.0M	MBT	1	PASI-PA
3072162060	SH-29	EPA 906.0M	MBT	1	PASI-PA
3072162061	SH-30	EPA 906.0M	MBT	1	PASI-PA
3072162062	SH-B1	EPA 906.0M	MBT	1	PASI-PA
3072162063	SH-B2	EPA 906.0M	MBT	1	PASI-PA
3072162064	SH-B3	EPA 906.0M	MBT	1	PASI-PA
3072162065	SH-B4	EPA 906.0M	MBT	1	PASI-PA
3072162066	SH-B5	EPA 906.0M	MBT	1	PASI-PA
3072162067	SH-B6	EPA 906.0M	MBT	1	PASI-PA
3072162068	SH-BSUMP	EPA 906.0M	MBT	1	PASI-PA
3072162069	SH-BOILERSUMP	EPA 906.0M	MBT	1	PASI-PA
3072162070	SH-2FF	EPA 906.0M	MBT	1	PASI-PA
3072162071	SH-2FS	EPA 906.0M	MBT	1	PASI-PA
3072162072	SH-1F-W-S	EPA 906.0M	MBT	1	PASI-PA
3072162073	SH-1F-W-F	EPA 906.0M	MBT	1	PASI-PA
3072162074	SH-1F-RS	EPA 906.0M	MBT	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3072162075	SH-1F-RF	EPA 906.0M	MBT	1	PASI-PA
3072162076	SH-MS-S	EPA 906.0M	MBT	1	PASI-PA
3072162077	SH-MS-F	EPA 906.0M	MBT	1	PASI-PA
3072162078	SH-08-S	EPA 906.0M	MBT	1	PASI-PA
3072162079	SH-10-D	EPA 906.0M	MBT	1	PASI-PA
3072162080	SH-06-D	EPA 906.0M	MBT	1	PASI-PA
3072162081	2541-BIAS-25	EPA 906.0M	MBT	1	PASI-PA
3072162082	SU-01-BIAS-79	EPA 906.0M	MBT	1	PASI-PA
3072162083	SU-02-BIAS-8	EPA 906.0M	MBT	1	PASI-PA
3072162084	SU-03-BIAS-23	EPA 906.0M	MBT	1	PASI-PA
3072162085	SU-04-BIAS-24	EPA 906.0M	MBT	1	PASI-PA
3072162086	SU-05-BIAS-24	EPA 906.0M	MBT	1	PASI-PA
3072162087	SU-06-BIAS-2	EPA 906.0M	MBT	1	PASI-PA
3072162088	SU-07-BIAS-5	EPA 906.0M	MBT	1	PASI-PA
3072162089	SU-08-BIAS-1	EPA 906.0M	MBT	1	PASI-PA
3072162090	SU-08-BIAS-2	EPA 906.0M	MBT	1	PASI-PA
3072162091	SU-08-BIAS-3	EPA 906.0M	MBT	1	PASI-PA
3072162092	SU-09-BIAS-1	EPA 906.0M	MBT	1	PASI-PA
3072162093	SU-11-BIAS	EPA 906.0M	MBT	1	PASI-PA
3072162094	SU-12-BIAS	EPA 906.0M	MBT	1	PASI-PA
3072162095	SU-13-BIAS	EPA 906.0M	MBT	1	PASI-PA
3072162096	SU-14-BIAS-25	EPA 906.0M	MBT	1	PASI-PA
3072162097	SU-15-BIAS	EPA 906.0M	MBT	1	PASI-PA
3072162098	SU-09-VENT PIPE	EPA 906.0M	MBT	1	PASI-PA
3072162099	SU-09-VENT OPENING	EPA 906.0M	MBT	1	PASI-PA
3072162100	SU-102-FD	EPA 906.0M	MBT	1	PASI-PA
3072162101	SU-214A-FD	EPA 906.0M	MBT	1	PASI-PA
3072162102	SH-1-M	EPA 906.0M	MBT	1	PASI-PA
3072162103	SH-2-M	EPA 906.0M	MBT	1	PASI-PA
3072162104	SH-3-M	EPA 906.0M	MBT	1	PASI-PA
3072162105	SH-5-M	EPA 906.0M	MBT	1	PASI-PA
3072162106	SH-6-M	EPA 906.0M	MBT	1	PASI-PA
3072162107	SH-8-M	EPA 906.0M	MBT	1	PASI-PA
3072162108	SH-10-M	EPA 906.0M	MBT	1	PASI-PA
3072162109	SH-12-M	EPA 906.0M	MBT	1	PASI-PA
3072162110	SH-14-M	EPA 906.0M	MBT	1	PASI-PA
3072162111	SH-17-M	EPA 906.0M	MBT	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3072162112	**SH-18-M**	EPA 906.0M	MBT	1	PASI-PA
3072162113	**SH-19-M**	EPA 906.0M	MBT	1	PASI-PA
3072162114	**SH-25-M**	EPA 906.0M	MBT	1	PASI-PA
3072162115	**SH-26-M**	EPA 906.0M	MBT	1	PASI-PA
3072162116	**SH-28-M**	EPA 906.0M	MBT	1	PASI-PA
3072162117	**SH-29-M**	EPA 906.0M	MBT	1	PASI-PA
3072162118	**SH-30-M**	EPA 906.0M	MBT	1	PASI-PA
3072162119	**SU10-BIAS**	EPA 906.0M	MBT	1	PASI-PA
3072162120	**2541-FBIAS**	EPA 906.0M	MBT	1	PASI-PA
3072162121	**SU12-BIAS2**	EPA 906.0M	MBT	1	PASI-PA
3072162122	**SU6-BIAS1**	EPA 906.0M	MBT	1	PASI-PA
3072162123	**SU9-BIAS2**	EPA 906.0M	MBT	1	PASI-PA

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: 292-8 **Lab ID: 3072162001** Collected: 06/06/12 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	**4.23J ± 4.49 (9.11)**	dpm/sample	07/22/12 08:31		

Sample: 292-9 **Lab ID: 3072162002** Collected: 06/06/12 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	**3.57J ± 4.31 (8.91)**	dpm/sample	07/22/12 08:39		

Sample: 292-10 **Lab ID: 3072162003** Collected: 06/06/12 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	**1.89U ± 4.07 (8.87)**	dpm/sample	07/22/12 08:47		

Sample: 292-11 **Lab ID: 3072162004** Collected: 06/06/12 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	**3.01U ± 4.21 (8.86)**	dpm/sample	07/22/12 08:55		

Sample: 292-12 **Lab ID: 3072162005** Collected: 06/06/12 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 ± 3.60 (8.86)**	dpm/sample	07/22/12 09:03		

Sample: 292-12D **Lab ID: 3072162006** Collected: 06/06/12 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 ± 4.04 (8.90)**	dpm/sample	07/22/12 09:11		

Sample: 292-13 **Lab ID: 3072162007** Collected: 06/06/12 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 ± 4.18 (8.87)**	dpm/sample	07/22/12 09:19		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: 292-14 **Lab ID: 3072162008** Collected: 06/06/12 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	**0.797U ± 3.94 (8.93)**	dpm/sample	07/22/12 09:27		

Sample: 292-15 **Lab ID: 3072162009** Collected: 06/06/12 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	**5.50J ± 4.56 (8.89)**	dpm/sample	07/22/12 09:35		

Sample: 292-16 **Lab ID: 3072162010** Collected: 06/06/12 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 ± 3.68 (8.96)**	dpm/sample	07/22/12 09:43		

Sample: 292-17 **Lab ID: 3072162011** Collected: 06/06/12 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 ± 3.88 (8.89)**	dpm/sample	07/22/12 09:51		

Sample: 292-18 **Lab ID: 3072162012** Collected: 06/06/12 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 ± 4.07 (8.89)**	dpm/sample	07/22/12 10:00		

Sample: 292-19 **Lab ID: 3072162013** Collected: 06/06/12 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 ± 3.65 (8.88)**	dpm/sample	07/22/12 10:08		

Sample: 292-20 **Lab ID: 3072162014** Collected: 06/06/12 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 ± 3.60 (8.86)**	dpm/sample	07/22/12 10:16		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: 292-21 **Lab ID: 3072162015** Collected: 06/06/12 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	**2.53U ± 4.26 (9.14)**	dpm/sample	07/22/12 10:24		

Sample: 292-22 **Lab ID: 3072162016** Collected: 06/06/12 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	**2.46U ± 4.15 (8.90)**	dpm/sample	07/22/12 10:32		

Sample: 292-23 **Lab ID: 3072162017** Collected: 06/06/12 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 ± 4.04 (8.90)**	dpm/sample	07/22/12 10:40		

Sample: 292-24 **Lab ID: 3072162018** Collected: 06/06/12 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	**-0.583U ± 3.74 (8.93)**	dpm/sample	07/22/12 10:48		

Sample: 292-25 **Lab ID: 3072162019** Collected: 06/06/12 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	**2.75U ± 4.22 (8.96)**	dpm/sample	07/22/12 10:56		

Sample: 292-26 **Lab ID: 3072162020** Collected: 06/06/12 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	**4.20J ± 4.46 (9.06)**	dpm/sample	07/22/12 11:04		

Sample: 292-27 **Lab ID: 3072162021** Collected: 06/06/12 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	**-1.98U ± 3.55 (8.94)**	dpm/sample	07/22/12 11:36		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: 292-28 **Lab ID: 3072162022** Collected: 06/06/12 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	**0.818U ± 4.04 (9.17)**	dpm/sample	07/22/12 11:44		

Sample: 292-29 **Lab ID: 3072162023** Collected: 06/06/12 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	**5.21J ± 4.51 (8.86)**	dpm/sample	07/22/12 11:52		

Sample: 292-29D **Lab ID: 3072162024** Collected: 06/06/12 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	**1.36U ± 4.00 (8.90)**	dpm/sample	07/22/12 12:00		

Sample: 292-30 **Lab ID: 3072162025** Collected: 06/06/12 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	**4.39J ± 4.41 (8.89)**	dpm/sample	07/22/12 12:08		

Sample: 292-C1 **Lab ID: 3072162026** Collected: 06/19/12 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	**-0.0386U ± 3.80 (8.88)**	dpm/sample	07/22/12 12:17		

Sample: 292-C2 **Lab ID: 3072162027** Collected: 06/19/12 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	**3.29J ± 4.26 (8.88)**	dpm/sample	07/22/12 12:25		

Sample: 292-C3 **Lab ID: 3072162028** Collected: 06/19/12 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	**-0.582U ± 3.74 (8.92)**	dpm/sample	07/22/12 12:33		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: SH-1 **Lab ID: 3072162029** Collected: 06/07/12 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	**4.12J ± 4.37 (8.88)**	dpm/sample	07/22/12 12:41		

Sample: SH-2 **Lab ID: 3072162030** Collected: 06/07/12 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	**3.56J ± 4.30 (8.89)**	dpm/sample	07/22/12 12:49		

Sample: SH-3 **Lab ID: 3072162031** Collected: 06/07/12 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	**0.252U ± 3.85 (8.91)**	dpm/sample	07/22/12 12:57		

Sample: SH-4 **Lab ID: 3072162032** Collected: 06/07/12 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 ± 3.98 (8.93)**	dpm/sample	07/22/12 13:05		

Sample: SH-4D **Lab ID: 3072162033** Collected: 06/07/12 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	**1.62U ± 4.03 (8.88)**	dpm/sample	07/22/12 13:13		

Sample: SH-5 **Lab ID: 3072162034** Collected: 06/07/12 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	**2.20U ± 4.14 (8.94)**	dpm/sample	07/22/12 13:21		

Sample: SH-6 **Lab ID: 3072162035** Collected: 06/07/12 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	**-0.850U ± 3.69 (8.88)**	dpm/sample	07/22/12 13:29		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: SH-7 **Lab ID: 3072162036** Collected: 06/07/12 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 ± 3.76 (8.86)**	dpm/sample	07/22/12 13:37		

Sample: SH-8 **Lab ID: 3072162037** Collected: 06/07/12 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	**2.18U ± 4.11 (8.88)**	dpm/sample	07/22/12 13:45		

Sample: SH-9 **Lab ID: 3072162038** Collected: 06/07/12 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 ± 3.72 (8.87)**	dpm/sample	07/22/12 13:53		

Sample: SH-10 **Lab ID: 3072162039** Collected: 06/07/12 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	**-2.24U ± 3.48 (8.86)**	dpm/sample	07/22/12 14:01		

Sample: SH-11 **Lab ID: 3072162040** Collected: 06/07/12 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 ± 3.64 (8.87)**	dpm/sample	07/22/12 14:09		

Sample: SH-12 **Lab ID: 3072162041** Collected: 06/07/12 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 ± 3.99 (8.87)**	dpm/sample	07/22/12 16:19		

Sample: SH-13 **Lab ID: 3072162042** Collected: 06/07/12 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	**1.11U ± 4.04 (9.07)**	dpm/sample	07/22/12 16:27		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
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Sample: SH-14 **Lab ID: 3072162043** Collected: 06/07/12 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	**2.47U ± 4.17 (8.94)**	dpm/sample	07/22/12 16:35		

Sample: SH-15 **Lab ID: 3072162044** Collected: 06/07/12 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	**2.45U ± 4.15 (8.88)**	dpm/sample	07/22/12 16:43		

Sample: SH-16 **Lab ID: 3072162045** Collected: 06/07/12 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	**3.01U ± 4.21 (8.86)**	dpm/sample	07/22/12 16:51		

Sample: SH-16D **Lab ID: 3072162046** Collected: 06/07/12 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 ± 3.96 (8.88)**	dpm/sample	07/22/12 16:59		

Sample: SH-17 **Lab ID: 3072162047** Collected: 06/07/12 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	**4.66J ± 4.44 (8.88)**	dpm/sample	07/22/12 17:07		

Sample: SH-18 **Lab ID: 3072162048** Collected: 06/07/12 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 ± 3.91 (8.86)**	dpm/sample	07/22/12 17:15		

Sample: SH-19 **Lab ID: 3072162049** Collected: 06/07/12 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	**4.71J ± 4.49 (8.98)**	dpm/sample	07/22/12 17:23		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
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Sample: SH-20 **Lab ID: 3072162050** Collected: 06/07/12 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	**2.18U ± 4.10 (8.86)**	dpm/sample	07/22/12 17:31		

Sample: SH-21 **Lab ID: 3072162051** Collected: 06/07/12 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	**-1.70U ± 3.61 (8.98)**	dpm/sample	07/22/12 17:39		

Sample: SH-22 **Lab ID: 3072162052** Collected: 06/07/12 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	**3.01U ± 4.21 (8.86)**	dpm/sample	07/22/12 17:48		

Sample: SH-23 **Lab ID: 3072162053** Collected: 06/07/12 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 ± 4.19 (8.89)**	dpm/sample	07/22/12 17:56		

Sample: SH-23D **Lab ID: 3072162054** Collected: 06/07/12 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 ± 3.84 (8.87)**	dpm/sample	07/22/12 18:04		

Sample: SH-24 **Lab ID: 3072162055** Collected: 06/07/12 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 ± 3.96 (8.89)**	dpm/sample	07/22/12 18:12		

Sample: SH-25 **Lab ID: 3072162056** Collected: 06/07/12 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	**4.66J ± 4.44 (8.88)**	dpm/sample	07/22/12 18:20		

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ANALYTICAL RESULTS

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Sample: SH-26 **Lab ID: 3072162057** Collected: 06/07/12 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	**7.42J ± 4.81 (8.87)**	dpm/sample	07/22/12 18:28		

Sample: SH-27 **Lab ID: 3072162058** Collected: 06/07/12 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	**4.38J ± 4.40 (8.86)**	dpm/sample	07/22/12 18:36		

Sample: SH-28 **Lab ID: 3072162059** Collected: 06/07/12 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	**2.20U ± 4.14 (8.96)**	dpm/sample	07/22/12 18:44		

Sample: SH-29 **Lab ID: 3072162060** Collected: 06/07/12 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 ± 3.51 (9.04)**	dpm/sample	07/22/12 18:52		

Sample: SH-30 **Lab ID: 3072162061** Collected: 06/07/12 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	**5.80J ± 4.62 (8.95)**	dpm/sample	07/22/12 19:24		

Sample: SH-B1 **Lab ID: 3072162062** Collected: 06/19/12 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 ± 3.98 (8.85)**	dpm/sample	07/22/12 19:32		

Sample: SH-B2 **Lab ID: 3072162063** Collected: 06/19/12 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 ± 4.08 (8.99)**	dpm/sample	07/22/12 19:40		

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ANALYTICAL RESULTS

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Sample: SH-B3 **Lab ID: 3072162064** Collected: 06/19/12 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	**2.04U ± 4.38 (9.55)**	dpm/sample	07/22/12 19:48		

Sample: SH-B4 **Lab ID: 3072162065** Collected: 06/19/12 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	**3.55J ± 4.60 (9.59)**	dpm/sample	07/22/12 19:57		

Sample: SH-B5 **Lab ID: 3072162066** Collected: 06/19/12 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	**1.89U ± 4.06 (8.85)**	dpm/sample	07/22/12 20:05		

Sample: SH-B6 **Lab ID: 3072162067** Collected: 06/19/12 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	**3.27J ± 4.24 (8.85)**	dpm/sample	07/22/12 20:13		

Sample: SH-BSUMP **Lab ID: 3072162068** Collected: 06/19/12 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 ± 4.07 (8.89)**	dpm/sample	07/22/12 20:21		

Sample: SH-BOILERSUMP **Lab ID: 3072162069** Collected: 06/19/12 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	**4.79J ± 5.42 (11.1)**	dpm/sample	07/22/12 20:29		

Sample: SH-2FF **Lab ID: 3072162070** Collected: 06/19/12 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 ± 4.17 (8.85)**	dpm/sample	07/22/12 20:37		

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ANALYTICAL RESULTS

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Sample: SH-2FS **Lab ID: 3072162071** Collected: 06/19/12 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 ± 3.64 (8.87)**	dpm/sample	07/22/12 20:45		

Sample: SH-1F-W-S **Lab ID: 3072162072** Collected: 06/19/12 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	**1.62U ± 4.02 (8.85)**	dpm/sample	07/22/12 20:53		

Sample: SH-1F-W-F **Lab ID: 3072162073** Collected: 06/19/12 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	**-2.58U ± 3.55 (9.13)**	dpm/sample	07/22/12 21:01		

Sample: SH-1F-RS **Lab ID: 3072162074** Collected: 06/19/12 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 ± 3.90 (8.85)**	dpm/sample	07/22/12 21:09		

Sample: SH-1F-RF **Lab ID: 3072162075** Collected: 06/19/12 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	**2.83U ± 4.34 (9.22)**	dpm/sample	07/22/12 21:17		

Sample: SH-MS-S **Lab ID: 3072162076** Collected: 06/19/12 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	**4.83J ± 4.61 (9.21)**	dpm/sample	07/26/12 16:20		

Sample: SH-MS-F **Lab ID: 3072162077** Collected: 06/19/12 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 ± 4.17 (9.10)**	dpm/sample	07/26/12 16:28		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
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Sample: SH-08-S **Lab ID: 3072162078** Collected: 06/19/12 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 ± 4.37 (9.19)**	dpm/sample	07/26/12 16:36		

Sample: SH-10-D **Lab ID: 3072162079** Collected: 06/19/12 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	**4.94J ± 4.48 (8.87)**	dpm/sample	07/26/12 16:44		

Sample: SH-06-D **Lab ID: 3072162080** Collected: 06/19/12 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 ± 3.98 (8.85)**	dpm/sample	07/26/12 16:52		

Sample: 2541-BIAS-25 **Lab ID: 3072162081** Collected: 06/19/12 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	**-2.49U ± 3.69 (9.34)**	dpm/sample	07/26/12 17:24		

Sample: SU-01-BIAS-79 **Lab ID: 3072162082** Collected: 06/19/12 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	**0.540U ± 4.10 (9.34)**	dpm/sample	07/26/12 17:32		

Sample: SU-02-BIAS-8 **Lab ID: 3072162083** Collected: 06/19/12 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	**2.48U ± 4.37 (9.40)**	dpm/sample	07/26/12 17:40		

Sample: SU-03-BIAS-23 **Lab ID: 3072162084** Collected: 06/19/12 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	**-1.96U ± 3.83 (9.49)**	dpm/sample	07/26/12 17:48		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
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Sample: SU-04-BIAS-24 **Lab ID: 3072162085** Collected: 06/19/12 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	**1.10U ± 4.17 (9.34)**	dpm/sample	07/26/12 17:57		

Sample: SU-05-BIAS-24 **Lab ID: 3072162086** Collected: 06/19/12 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	**1.93U ± 4.28 (9.36)**	dpm/sample	07/26/12 18:05		

Sample: SU-06-BIAS-2 **Lab ID: 3072162087** Collected: 06/19/12 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	**3.32U ± 4.49 (9.41)**	dpm/sample	07/26/12 18:13		

Sample: SU-07-BIAS-5 **Lab ID: 3072162088** Collected: 06/19/12 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	**-1.93U ± 3.78 (9.37)**	dpm/sample	07/26/12 18:21		

Sample: SU-08-BIAS-1 **Lab ID: 3072162089** Collected: 06/19/12 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	**3.86J ± 4.52 (9.34)**	dpm/sample	07/26/12 18:29		

Sample: SU-08-BIAS-2 **Lab ID: 3072162090** Collected: 06/19/12 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	**6.65J ± 4.91 (9.39)**	dpm/sample	07/26/12 18:38		

Sample: SU-08-BIAS-3 **Lab ID: 3072162091** Collected: 06/19/12 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 ± 4.30 (9.72)**	dpm/sample	07/26/12 18:46		

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ANALYTICAL RESULTS

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Sample: SU-09-BIAS-1 **Lab ID: 3072162092** Collected: 06/19/12 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	**5.33J ± 4.80 (9.53)**	dpm/sample	07/26/12 18:54		

Sample: SU-11-BIAS **Lab ID: 3072162093** Collected: 06/19/12 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	**5.81J ± 4.79 (9.38)**	dpm/sample	07/26/12 19:02		

Sample: SU-12-BIAS **Lab ID: 3072162094** Collected: 06/19/12 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	**-1.39U ± 3.84 (9.34)**	dpm/sample	07/26/12 19:10		

Sample: SU-13-BIAS **Lab ID: 3072162095** Collected: 06/19/12 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 ± 4.42 (9.43)**	dpm/sample	07/26/12 19:18		

Sample: SU-14-BIAS-25 **Lab ID: 3072162096** Collected: 06/19/12 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 ± 3.77 (9.44)**	dpm/sample	07/23/12 00:31		

Sample: SU-15-BIAS **Lab ID: 3072162097** Collected: 06/19/12 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	**-0.829U ± 3.91 (9.34)**	dpm/sample	07/23/12 00:38		

Sample: SU-09-VENT PIPE **Lab ID: 3072162098** Collected: 06/19/12 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 ± 4.43 (9.45)**	dpm/sample	07/23/12 00:46		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: SU-09-VENT OPENING **Lab ID: 3072162099** Collected: 06/19/12 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	**-0.270U ± 3.99 (9.36)**	dpm/sample	07/23/12 00:54		

Sample: SU-102-FD **Lab ID: 3072162100** Collected: 06/21/12 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	**-1.40U ± 3.87 (9.41)**	dpm/sample	07/23/12 01:02		

Sample: SU-214A-FD **Lab ID: 3072162101** Collected: 06/21/12 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	**0.277U ± 4.17 (9.59)**	dpm/sample	07/23/12 01:34		

Sample: SH-1-M **Lab ID: 3072162102** Collected: 06/21/12 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	**2.20U ± 4.32 (9.37)**	dpm/sample	07/23/12 01:42		

Sample: SH-2-M **Lab ID: 3072162103** Collected: 06/21/12 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	**-2.52U ± 3.74 (9.46)**	dpm/sample	07/23/12 01:50		

Sample: SH-3-M **Lab ID: 3072162104** Collected: 06/21/12 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	**-0.830U ± 3.92 (9.35)**	dpm/sample	07/23/12 01:58		

Sample: SH-5-M **Lab ID: 3072162105** Collected: 06/21/12 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	**-0.562U ± 3.97 (9.39)**	dpm/sample	07/23/12 02:06		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: SH-6-M **Lab ID: 3072162106** Collected: 06/21/12 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	**1.66U ± 4.23 (9.33)**	dpm/sample	07/23/12 02:15		

Sample: SH-8-M **Lab ID: 3072162107** Collected: 06/21/12 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	**-3.32U ± 3.59 (9.35)**	dpm/sample	07/23/12 02:23		

Sample: SH-10-M **Lab ID: 3072162108** Collected: 06/21/12 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	**4.76J ± 4.70 (9.48)**	dpm/sample	07/23/12 02:31		

Sample: SH-12-M **Lab ID: 3072162109** Collected: 06/21/12 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	**3.88J ± 4.55 (9.39)**	dpm/sample	07/23/12 02:39		

Sample: SH-14-M **Lab ID: 3072162110** Collected: 06/21/12 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 (9.34)**	dpm/sample	07/23/12 02:47		

Sample: SH-17-M **Lab ID: 3072162111** Collected: 06/21/12 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 ± 4.39 (9.36)**	dpm/sample	07/23/12 02:55		

Sample: SH-18-M **Lab ID: 3072162112** Collected: 06/21/12 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	**0.000U ± 4.02 (9.33)**	dpm/sample	07/23/12 03:03		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: SH-19-M **Lab ID: 3072162113** Collected: 06/21/12 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	**-2.77U ± 3.68 (9.40)**	dpm/sample	07/23/12 03:11		

Sample: SH-25-M **Lab ID: 3072162114** Collected: 06/21/12 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	**1.93U ± 4.28 (9.36)**	dpm/sample	07/23/12 03:19		

Sample: SH-26-M **Lab ID: 3072162115** Collected: 06/21/12 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	**5.51J ± 4.73 (9.32)**	dpm/sample	07/23/12 03:27		

Sample: SH-28-M **Lab ID: 3072162116** Collected: 06/21/12 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	**-0.270U ± 3.98 (9.33)**	dpm/sample	07/23/12 03:35		

Sample: SH-29-M **Lab ID: 3072162117** Collected: 06/21/12 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	**-7.61U ± 3.24 (9.91)**	dpm/sample	07/23/12 03:43		

Sample: SH-30-M **Lab ID: 3072162118** Collected: 06/21/12 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	**-1.66U ± 3.80 (9.33)**	dpm/sample	07/23/12 03:51		

Sample: SU10-BIAS **Lab ID: 3072162119** Collected: 06/21/12 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	**-0.562U ± 3.97 (9.38)**	dpm/sample	07/23/12 04:00		

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ANALYTICAL RESULTS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

Sample: 2541-FBIAS **Lab ID: 3072162120** Collected: 06/21/12 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	**4.13J ± 4.57 (9.36)**	dpm/sample	07/23/12 04:08		

Sample: SU12-BIAS2 **Lab ID: 3072162121** Collected: 06/21/12 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	**3.03U ± 4.42 (9.35)**	dpm/sample	07/23/12 04:40		

Sample: SU6-BIAS1 **Lab ID: 3072162122** Collected: 06/21/12 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	**-0.828U ± 3.91 (9.32)**	dpm/sample	07/23/12 04:48		

Sample: SU9-BIAS2 **Lab ID: 3072162123** Collected: 06/21/12 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	**3.33U ± 4.50 (9.43)**	dpm/sample	07/23/12 04:56		

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

QC Batch: RADC/12512 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072162001, 3072162002, 3072162003, 3072162004, 3072162005, 3072162006, 3072162007, 3072162008, 3072162009, 3072162010, 3072162011, 3072162012, 3072162013, 3072162014, 3072162015, 3072162016, 3072162017, 3072162018, 3072162019, 3072162020

METHOD BLANK: 459111 Matrix: Impact Plate
Associated Lab Samples: 3072162001, 3072162002, 3072162003, 3072162004, 3072162005, 3072162006, 3072162007, 3072162008, 3072162009, 3072162010, 3072162011, 3072162012, 3072162013, 3072162014, 3072162015, 3072162016, 3072162017, 3072162018, 3072162019, 3072162020

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	3.40J ± 4.40 (9.18)	dpm/sample	07/22/12 08:23	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

QC Batch: RADC/12513 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072162021, 3072162022, 3072162023, 3072162024, 3072162025, 3072162026, 3072162027, 3072162028, 3072162029, 3072162030, 3072162031, 3072162032, 3072162033, 3072162034, 3072162035, 3072162036, 3072162037, 3072162038, 3072162039, 3072162040

METHOD BLANK: 459112 Matrix: Impact Plate
Associated Lab Samples: 3072162021, 3072162022, 3072162023, 3072162024, 3072162025, 3072162026, 3072162027, 3072162028, 3072162029, 3072162030, 3072162031, 3072162032, 3072162033, 3072162034, 3072162035, 3072162036, 3072162037, 3072162038, 3072162039, 3072162040

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	3.16U ± 4.42 (9.30)	dpm/sample	07/22/12 11:28	

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

QC Batch: RADC/12514 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072162041, 3072162042, 3072162043, 3072162044, 3072162045, 3072162046, 3072162047, 3072162048, 3072162049, 3072162050, 3072162051, 3072162052, 3072162053, 3072162054, 3072162055, 3072162056, 3072162057, 3072162058, 3072162059, 3072162060

METHOD BLANK: 459113 Matrix: Impact Plate
Associated Lab Samples: 3072162041, 3072162042, 3072162043, 3072162044, 3072162045, 3072162046, 3072162047, 3072162048, 3072162049, 3072162050, 3072162051, 3072162052, 3072162053, 3072162054, 3072162055, 3072162056, 3072162057, 3072162058, 3072162059, 3072162060

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	-1.72U ± 3.65 (9.08)	dpm/sample	07/22/12 16:11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

QC Batch: RADC/12515 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072162061, 3072162062, 3072162063, 3072162064, 3072162065, 3072162066, 3072162067, 3072162068, 3072162069, 3072162070, 3072162071, 3072162072, 3072162073, 3072162074, 3072162075, 3072162076, 3072162077, 3072162078, 3072162079, 3072162080

METHOD BLANK: 459114 Matrix: Impact Plate
Associated Lab Samples: 3072162061, 3072162062, 3072162063, 3072162064, 3072162065, 3072162066, 3072162067, 3072162068, 3072162069, 3072162070, 3072162071, 3072162072, 3072162073, 3072162074, 3072162075, 3072162076, 3072162077, 3072162078, 3072162079, 3072162080

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	5.83J ± 4.83 (9.42)	dpm/sample	07/22/12 19:16	

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

QC Batch: RADC/12516 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072162081, 3072162082, 3072162083, 3072162084, 3072162085, 3072162086, 3072162087, 3072162088, 3072162089, 3072162090, 3072162091, 3072162092, 3072162093, 3072162094, 3072162095, 3072162096, 3072162097, 3072162098, 3072162099, 3072162100

METHOD BLANK: 459115 Matrix: Impact Plate
Associated Lab Samples: 3072162081, 3072162082, 3072162083, 3072162084, 3072162085, 3072162086, 3072162087, 3072162088, 3072162089, 3072162090, 3072162091, 3072162092, 3072162093, 3072162094, 3072162095, 3072162096, 3072162097, 3072162098, 3072162099, 3072162100

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	2.59U ± 4.57 (9.81)	dpm/sample	07/26/12 17:16	

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

QC Batch: RADC/12517 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072162101, 3072162102, 3072162103, 3072162104, 3072162105, 3072162106, 3072162107, 3072162108, 3072162109, 3072162110, 3072162111, 3072162112, 3072162113, 3072162114, 3072162115, 3072162116, 3072162117, 3072162118, 3072162119, 3072162120

METHOD BLANK: 459116 Matrix: Impact Plate
Associated Lab Samples: 3072162101, 3072162102, 3072162103, 3072162104, 3072162105, 3072162106, 3072162107, 3072162108, 3072162109, 3072162110, 3072162111, 3072162112, 3072162113, 3072162114, 3072162115, 3072162116, 3072162117, 3072162118, 3072162119, 3072162120

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	-2.75U ± 4.08 (10.3)	dpm/sample	07/23/12 01:26	

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QUALITY CONTROL DATA

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

QC Batch: RADC/12518 Analysis Method: EPA 906.0M
QC Batch Method: EPA 906.0M Analysis Description: 906.0 LSC Low Energy Beta
Associated Lab Samples: 3072162121, 3072162122, 3072162123

METHOD BLANK: 459117 Matrix: Impact Plate
Associated Lab Samples: 3072162121, 3072162122, 3072162123

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
LSC Low Energy Beta	-0.879U ± 4.15 (9.90)	dpm/sample	07/23/12 04:32	

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QUALIFIERS

Project: Fort Monmouth 1207083
Pace Project No.: 3072162

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: 3072162

Chain of Custody
And
Sample Receiving Conditions
Upon Receipt Form

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	US Army Corps of Engineers
Address:	10 South Howard Street
	Baltimore, MD
Email To:	david.j.watters@usace.army.mil
Phone: 443-253-0916	Fax: none
Requested Due Date/TAT:	ASAP

Section B Required Project Information:

Report To:	David Watters
Copy To:	Alan Warminski
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

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
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	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	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) Y/N	Analysis Test: Gross Low Energy Beta Analysis	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N			3072162
682	275-24D	WP	G	NA	NA	06/05/12		NA	1	X									X		
683	275-25	WP	G	NA	NA	06/05/12		NA	1	X									X		
684	275-26	WP	G	NA	NA	06/05/12		NA	1	X									X		
685	275-27	WP	G	NA	NA	06/05/12		NA	1	X									X		
686	275-28	WP	G	NA	NA	06/05/12		NA	1	X									X		
687	275-29	WP	G	NA	NA	06/05/12		NA	1	X									X		
688	275-30	WP	G	NA	NA	06/05/12		NA	1	X									X		
689	275-C8	WP	G	NA	NA	06/05/12		NA	1	X									X		
690	275-C13	WP	G	NA	NA	06/05/12		NA	1	X									X		
691	275-C15	WP	G	NA	NA	06/05/12		NA	1	X									X		
692	275-C17	WP	G	NA	NA	06/05/12		NA	1	X									X		
693	292-1	WP	G	NA	NA	06/06/12		NA	1	X									X		
694	292-2	WP	G	NA	NA	06/06/12		NA	1	X									X		
695	292-3	WP	G	NA	NA	06/06/12		NA	1	X									X		
696	292-4	WP	G	NA	NA	06/06/12		NA	1	X									X		
697	292-5	WP	G	NA	NA	06/06/12		NA	1	X									X		
698	292-6	WP	G	NA	NA	06/06/12		NA	1	X									X		
699	292-6D	WP	G	NA	NA	06/06/12		NA	1	X									X		
700	292-7	WP	G	NA	NA	06/06/12		NA	1	X									X		
701	292-8	WP	G	NA	NA	06/06/12		NA	1	X									X		001
702	292-9	WP	G	NA	NA	06/06/12		NA	1	X									X		002
703	292-10	WP	G	NA	NA	06/06/12		NA	1	X									X		003

6/25/12 1015

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	US Army Corps of Engineers	Report To:	David Watters	Attention:	
Address:	10 South Howard Street	Copy To:	Alan Warminski		
	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

Site Location STATE: NJ

Requested Analysis Filtered (Y/N)

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
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	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	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	Y/N: Analysis Test: Gross Low Energy Beta Analysis	Residual Chlorine (Y/N)	3572162 Pace Project No./ Lab I.D.
704	292-11	WP	G	NA	NA	06/06/12		NA	1	X								X		004
705	292-12	WP	G	NA	NA	06/06/12		NA	1	X								X		005
706	292-12D	WP	G	NA	NA	06/06/12		NA	1	X								X		006
707	292-13	WP	G	NA	NA	06/06/12		NA	1	X								X		007
708	292-14	WP	G	NA	NA	06/06/12		NA	1	X								X		008
709	292-15	WP	G	NA	NA	06/06/12		NA	1	X								X		009
710	292-16	WP	G	NA	NA	06/06/12		NA	1	X								X		010
711	292-17	WP	G	NA	NA	06/06/12		NA	1	X								X		011
712	292-18	WP	G	NA	NA	06/06/12		NA	1	X								X		012
713	292-19	WP	G	NA	NA	06/06/12		NA	1	X								X		013
714	292-20	WP	G	NA	NA	06/06/12		NA	1	X								X		014
715	292-21	WP	G	NA	NA	06/06/12		NA	1	X								X		015
716	292-22	WP	G	NA	NA	06/06/12		NA	1	X								X		016
717	292-23	WP	G	NA	NA	06/06/12		NA	1	X								X		017
718	292-24	WP	G	NA	NA	06/06/12		NA	1	X								X		018
719	292-25	WP	G	NA	NA	06/06/12		NA	1	X								X		019
720	292-26	WP	G	NA	NA	06/06/12		NA	1	X								X		020
721	292-27	WP	G	NA	NA	06/06/12		NA	1	X								X		021
722	292-28	WP	G	NA	NA	06/06/12		NA	1	X								X		022
723	292-29	WP	G	NA	NA	06/06/12		NA	1	X								X		023
724	292-29D	WP	G	NA	NA	06/06/12		NA	1	X								X		024
725	292-30	WP	G	NA	NA	06/06/12		NA	1	X								X		025

6/25/12 1015

CHAIN-OF-CUSTODY / Analytical Request Document

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Pace Analytical™ www.pacelabs.com

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Copy To:	Alan Warminski
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

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TISSUE	TS

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726	292-C1	WP	G	NA	NA	06/19/12		NA	1	X								N	X		026
727	292-C2	WP	G	NA	NA	06/19/12		NA	1	X									X		027
728	292-C3	WP	G	NA	NA	06/19/12		NA	1	X									X		028
729	SH-1	WP	G	NA	NA	06/07/12		NA	1	X									X		029
730	SH-2	WP	G	NA	NA	06/07/12		NA	1	X									X		030
731	SH-3	WP	G	NA	NA	06/07/12		NA	1	X									X		031
732	SH-4	WP	G	NA	NA	06/07/12		NA	1	X									X		032
733	SH-4D	WP	G	NA	NA	06/07/12		NA	1	X									X		033
734	SH-5	WP	G	NA	NA	06/07/12		NA	1	X									X		034
735	SH-6	WP	G	NA	NA	06/07/12		NA	1	X									X		035
736	SH-7	WP	G	NA	NA	06/07/12		NA	1	X									X		036
737	SH-8	WP	G	NA	NA	06/07/12		NA	1	X									X		037
738	SH-9	WP	G	NA	NA	06/07/12		NA	1	X									X		038
739	SH-10	WP	G	NA	NA	06/07/12		NA	1	X									X		039
740	SH-11	WP	G	NA	NA	06/07/12		NA	1	X									X		040
741	SH-12	WP	G	NA	NA	06/07/12		NA	1	X									X		041
742	SH-13	WP	G	NA	NA	06/07/12		NA	1	X									X		042
743	SH-14	WP	G	NA	NA	06/07/12		NA	1	X									X		043
744	SH-15	WP	G	NA	NA	06/07/12		NA	1	X									X		044
745	SH-16	WP	G	NA	NA	06/07/12		NA	1	X									X		045
746	SH-16D	WP	G	NA	NA	06/07/12		NA	1	X									X		046
747	SH-17	WP	G	NA	NA	06/07/12		NA	1	X									X		047

6/25/12 1015

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Copy To:	Alan Warminski
Purchase Order No.:	
Project Name:	Fort Monmouth Rad Survey
Project Number:	

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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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748	SH-18	WP	G	NA	NA	06/07/12		NA	1	X							N	X		048
749	SH-19	WP	G	NA	NA	06/07/12		NA	1	X								X		049
750	SH-20	WP	G	NA	NA	06/07/12		NA	1	X								X		050
751	SH-21	WP	G	NA	NA	06/07/12		NA	1	X								X		051
752	SH-22	WP	G	NA	NA	06/07/12		NA	1	X								X		052
753	SH-23	WP	G	NA	NA	06/07/12		NA	1	X								X		053
754	SH-23D	WP	G	NA	NA	06/07/12		NA	1	X								X		054
755	SH-24	WP	G	NA	NA	06/07/12		NA	1	X								X		055
756	SH-25	WP	G	NA	NA	06/07/12		NA	1	X								X		056
757	SH-26	WP	G	NA	NA	06/07/12		NA	1	X								X		057
758	SH-27	WP	G	NA	NA	06/07/12		NA	1	X								X		058
759	SH-28	WP	G	NA	NA	06/07/12		NA	1	X								X		059
760	SH-29	WP	G	NA	NA	06/07/12		NA	1	X								X		060
761	SH-30	WP	G	NA	NA	06/07/12		NA	1	X								X		061
762	SH-B1	WP	G	NA	NA	06/19/12		NA	1	X								X		062
763	SH-B2	WP	G	NA	NA	06/19/12		NA	1	X								X		063
764	SH-B3	WP	G	NA	NA	06/19/12		NA	1	X								X		064
765	SH-B4	WP	G	NA	NA	06/19/12		NA	1	X								X		065
766	SH-B5	WP	G	NA	NA	06/19/12		NA	1	X								X		066
767	SH-B6	WP	G	NA	NA	06/19/12		NA	1	X								X		067
768	SH-BSUMP	WP	G	NA	NA	06/19/12		NA	1	X								X		068
769	SH-BOILERSUMP	WP	G	NA	NA	06/19/12		NA	1	X								X		069

6/25/12 1015

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Project Number:	

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

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
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770	SH-2FF	WP	G	NA	NA	06/19/12		NA	1	X								N		070
771	SH-2FS	WP	G	NA	NA	06/19/12		NA	1	X								X		071
772	SH-1F-W-S	WP	G	NA	NA	06/19/12		NA	1	X								X		072
773	SH-1F-W-F	WP	G	NA	NA	06/19/12		NA	1	X								X		073
774	SH-1F-RS	WP	G	NA	NA	06/19/12		NA	1	X								X		074
775	SH-1F-RF	WP	G	NA	NA	06/19/12		NA	1	X								X		075
776	SH-MS-S	WP	G	NA	NA	06/19/12		NA	1	X								X		076
777	SH-MS-F	WP	G	NA	NA	06/19/12		NA	1	X								X		077
778	SU-08-S	WP	G	NA	NA	06/19/12		NA	1	X								X		078
779	SU-10-D	WP	G	NA	NA	06/19/12		NA	1	X								X		079
780	SU-06-D	WP	G	NA	NA	06/19/12		NA	1	X								X		080
781	2541-BIAS-25	WP	G	NA	NA	06/19/12		NA	1	X								X		081
782	SU-01-BIAS-79	WP	G	NA	NA	06/19/12		NA	1	X								X		082
783	SU-02-BIAS-8	WP	G	NA	NA	06/19/12		NA	1	X								X		083
784	SU-03-BIAS-23	WP	G	NA	NA	06/19/12		NA	1	X								X		084
785	SU-04-BIAS-24	WP	G	NA	NA	06/19/12		NA	1	X								X		085
786	SU-05-BIAS-24	WP	G	NA	NA	06/19/12		NA	1	X								X		086
787	SU-06-BIAS-2	WP	G	NA	NA	06/19/12		NA	1	X								X		087
788	SU-07-BIAS-5	WP	G	NA	NA	06/19/12		NA	1	X								X		088
789	SU-08-BIAS-1	WP	G	NA	NA	06/19/12		NA	1	X								X		089
790	SU-08-BIAS-2	WP	G	NA	NA	06/19/12		NA	1	X								X		090
791	SU-08-BIAS-3	WP	G	NA	NA	06/19/12		NA	1	X								X		091

6/25/12 1015

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792	SU-09-BIAS-1	WP	G	NA	NA	06/19/12		NA	1	X								X		092
793	SU-11-BIAS	WP	G	NA	NA	06/19/12		NA	1	X								X		093
794	SU-12-BIAS	WP	G	NA	NA	06/19/12		NA	1	X								X		094
795	SU-13-BIAS	WP	G	NA	NA	06/19/12		NA	1	X								X		095
796	SU-14-BIAS-25	WP	G	NA	NA	06/19/12		NA	1	X								X		096
797	SU-15-BIAS	WP	G	NA	NA	06/19/12		NA	1	X								X		097
798	SU-09-VENT PIPE	WP	G	NA	NA	06/19/12		NA	1	X								X		098
799	SU-09-VENT OPENING	WP	G	NA	NA	06/19/12		NA	1	X								X		099
800	SH-102-FD	WP	G	NA	NA	06/21/12		NA	1	X								X		100
801	SH-214A-FD	WP	G	NA	NA	06/21/12		NA	1	X								X		101
802	SH-1-M	WP	G	NA	NA	06/21/12		NA	1	X								X		102
803	SH-2-M	WP	G	NA	NA	06/21/12		NA	1	X								X		103
804	SH-3-M	WP	G	NA	NA	06/21/12		NA	1	X								X		104
805	SH-5-M	WP	G	NA	NA	06/21/12		NA	1	X								X		105
806	SH-6-M	WP	G	NA	NA	06/21/12		NA	1	X								X		106
807	SH-8-M	WP	G	NA	NA	06/21/12		NA	1	X								X		107
808	SH-10-M	WP	G	NA	NA	06/21/12		NA	1	X								X		108
809	SH-12-M	WP	G	NA	NA	06/21/12		NA	1	X								X		109
810	SH-14-M	WP	G	NA	NA	06/21/12		NA	1	X								X	VR 6/26	110
811	SH-17-M	WP	G	NA	NA	06/21/12		NA	1	X								X		111
812	SH-18-M	WP	G	NA	NA	06/21/12		NA	1	X								X		112
813	SH-19-M	WP	G	NA	NA	06/21/12		NA	1	X								X		113

Requested Analysis Filtered (Y/N)

6/25/12 1015

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REGULATORY AGENCY

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814	SH-25-M	DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	WP	G	NA	NA	06/21/12		NA	1	X									X		114
815	SH-26-M		WP	G	NA	NA	06/21/12		NA	1	X									X		115
816	SH-28-M		WP	G	NA	NA	06/21/12		NA	1	X									X		116
817	SH-29-M		WP	G	NA	NA	06/21/12		NA	1	X									X		117
818	SH-30-M		WP	G	NA	NA	06/21/12		NA	1	X									X		118
819	SU10-BIAS		WP	G	NA	NA	06/21/12		NA	1	X									X		119
820	2541-FBIAS		WP	G	NA	NA	06/21/12		NA	1	X									X		120
821	SU12-BIAS2		WP	G	NA	NA	06/21/12		NA	1	X									X		121
822	SU6-BIAS1		WP	G	NA	NA	06/21/12		NA	1	X									X		122
823	SU9-BIAS2		WP	G	NA	NA	06/21/12		NA	1	X									X		123

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Blanks provided pre lab request. They do not represent "samples" USACE expects analysis results for (other than standard lab QC). Two boxes in Shipment.	John Beckman / USACE	6/22/12	15:00		6/25/12	1015	NA	N	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Beckman / USACE

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 6/22/12

[signature] 6/25/12

Sample Condition Upon Receipt

Pace Analytical

Client Name: RTI Project # 30072(2

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

Optional
Proj. Due Date:
Proj. Name:

Tracking #: 8759 2865 3784

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: VER 6/25/12

Temp should be above freezing to 6°C Comments:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WQ		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
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	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] **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)

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page 2

Pace Analytical

Project Number: 3-22162

Client Name: RTI

Item No.	Matrix Code	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 (FLS? VWS?)	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	WP																	1						
003	↓																	↓						

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12512	HBN	91087
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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1 459111-BLANK for HBN 91087 [RADC/1251

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

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 08:23 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796283 **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** 7/22/2012 08:23 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796283 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	3.40J ± 4.40 (9.18)	dpm/sa	3.40J ± 4.40 (9.18)		dpm/sa	

2 3072162001-292-8

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 08:31 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790790 **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** 7/22/2012 08:31 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790790 **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	4.23J ± 4.49 (9.11)	dpm/sa	4.23J ± 4.49 (9.11)		dpm/sa		

3 3072162002-292-9

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

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Batch	RADC/12512	HBN	91087
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

3 3072162002-292-9

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12512	**Prep Date**	7/22/2012 08:39	**Dilution**	
Method	EPA 906.0M	**HBN**	91087	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790791	**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**	7/22/2012 08:39	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790791	**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	3.57J ± 4.31 (8.91)	dpm/sa	3.57J ± 4.31 (8.91)		dpm/sa		

4 3072162003-292-10

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12512	**Prep Date**	7/22/2012 08:47	**Dilution**	
Method	EPA 906.0M	**HBN**	91087	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790792	**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**	7/22/2012 08:47	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790792	**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	1.89U ± 4.07 (8.87)	dpm/sa	1.89U ± 4.07 (8.87)		dpm/sa		

5 3072162004-292-11

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12512	HBN	91087
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072162004-292-11

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790793

Batch RADC/12512
HBN 91087
Instru NONE

Prep Date 7/22/2012 08:55
Hold Date 12/3/2012 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 2790793

Instru NONE
Col ID
File

Run Date 7/22/2012 08:55
Hold Date 12/3/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	3.01U ± 4.21 (8.86)	dpm/sa	3.01U ± 4.21 (8.86)		dpm/sa		

6 3072162005-292-12

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/6/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790794

Batch RADC/12512
HBN 91087
Instru NONE

Prep Date 7/22/2012 09:03
Hold Date 12/3/2012 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 2790794

Instru NONE
Col ID
File

Run Date 7/22/2012 09:03
Hold Date 12/3/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-1.41U ± 3.60 (8.86)	dpm/sa	-1.41U ± 3.60 (8.86)		dpm/sa		

7 3072162006-292-12D

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/6/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch RADC/12512 HBN 91087
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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7 3072162006-292-12D

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 09:11 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790795 **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** 7/22/2012 09:11 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790795 **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 ± 4.04 (8.90)	dpm/sa	1.63U ± 4.04 (8.90)		dpm/sa		

8 3072162007-292-13

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 09:19 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790796 **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** 7/22/2012 09:19 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790796 **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	2.72U ± 4.18 (8.87)	dpm/sa	2.72U ± 4.18 (8.87)		dpm/sa		

9 3072162008-292-14

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch RADC/12512 HBN 91087
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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9 3072162008-292-14

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 09:27 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790797 **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** 7/22/2012 09:27 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790797 **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	0.797U ± 3.94 (8.93)	dpm/sa	0.797U ± 3.94 (8.93)		dpm/sa		

10 3072162009-292-15

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 09:35 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790798 **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** 7/22/2012 09:35 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790798 **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	5.50J ± 4.56 (8.89)	dpm/sa	5.50J ± 4.56 (8.89)		dpm/sa		

11 3072162010-292-16

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12512	HBN	91087
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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11 3072162010-292-16

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12512	**Prep Date**	7/22/2012 09:43	**Dilution**	
Method	EPA 906.0M	**HBN**	91087	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790799	**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**	7/22/2012 09:43	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790799	**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	-1.15U ± 3.68 (8.96)	dpm/sa	-1.15U ± 3.68 (8.96)		dpm/sa		

12 3072162011-292-17

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12512	**Prep Date**	7/22/2012 09:51	**Dilution**	
Method	EPA 906.0M	**HBN**	91087	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790800	**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**	7/22/2012 09:51	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790800	**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 ± 3.88 (8.89)	dpm/sa	0.522U ± 3.88 (8.89)		dpm/sa		

13 3072162012-292-18

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12512	HBN	91087
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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13 3072162012-292-18

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12512	**Prep Date**	7/22/2012 10:00	**Dilution**	
Method	EPA 906.0M	**HBN**	91087	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790801	**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**	7/22/2012 10:00	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790801	**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	1.90U ± 4.07 (8.89)	dpm/sa	1.90U ± 4.07 (8.89)		dpm/sa		

14 3072162013-292-19

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12512	**Prep Date**	7/22/2012 10:08	**Dilution**	
Method	EPA 906.0M	**HBN**	91087	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790802	**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**	7/22/2012 10:08	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790802	**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 ± 3.65 (8.88)	dpm/sa	-1.14U ± 3.65 (8.88)		dpm/sa		

15 3072162014-292-20

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch RADC/12512 HBN 91087
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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15 3072162014-292-20

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 10:16 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790803 **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** 7/22/2012 10:16 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790803 **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 ± 3.60 (8.86)	dpm/sa	-1.41U ± 3.60 (8.86)		dpm/sa		

16 3072162015-292-21

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 10:24 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790804 **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** 7/22/2012 10:24 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790804 **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	2.53U ± 4.26 (9.14)	dpm/sa	2.53U ± 4.26 (9.14)		dpm/sa		

17 3072162016-292-22

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch RADC/12512 HBN 91087
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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17 3072162016-292-22

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 10:32 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790805 **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** 7/22/2012 10:32 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790805 **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	2.46U ± 4.15 (8.90)	dpm/sa	2.46U ± 4.15 (8.90)		dpm/sa		

18 3072162017-292-23

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 10:40 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790806 **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** 7/22/2012 10:40 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790806 **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	1.63U ± 4.04 (8.90)	dpm/sa	1.63U ± 4.04 (8.90)		dpm/sa		

19 3072162018-292-24

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch RADC/12512 HBN 91087
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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19 3072162018-292-24

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 10:48 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790807 **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** 7/22/2012 10:48 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790807 **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	-0.583U ± 3.74 (8.93)	dpm/sa	-0.583U ± 3.74 (8.93)		dpm/sa		

20 3072162019-292-25

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12512 **Prep Date** 7/22/2012 10:56 **Dilution**
Method EPA 906.0M **HBN** 91087 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790808 **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** 7/22/2012 10:56 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790808 **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	2.75U ± 4.22 (8.96)	dpm/sa	2.75U ± 4.22 (8.96)		dpm/sa		

21 3072162020-292-26

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12512	**HBN**	91087
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072162020-292-26

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12512	**Prep Date**	7/22/2012 11:04	**Dilution**
Method	EPA 906.0M		**HBN**	91087	**Hold Date**	12/3/2012 23:59	**Analyst** MBT
Schedule	2790809		**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**	7/22/2012 11:04	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst** MBT
Schedule	2790809		**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	4.20J ± 4.46 (9.06)	dpm/sa	4.20J ± 4.46 (9.06)		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 14:00	Assigned Analyst	MBT
Batch ID	12512	Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB 9060W	HBN	91087
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
	459111	BLANK	IP		QCACCOUNT	3.40J	4.40	9.18	7/22/12 8:23
3072162	3072162001	PS	WP	6/6/2012 0:01	RTI	4.23J	4.49	9.11	7/22/12 8:31
3072162	3072162002	PS	WP	6/6/2012 0:01	RTI	3.57J	4.31	8.91	7/22/12 8:39
3072162	3072162003	PS	WP	6/6/2012 0:01	RTI	1.89U	4.07	8.87	7/22/12 8:47
3072162	3072162004	PS	WP	6/6/2012 0:01	RTI	3.01U	4.21	8.86	7/22/12 8:55
3072162	3072162005	PS	WP	6/6/2012 0:01	RTI	-1.41U	3.60	8.86	7/22/12 9:03
3072162	3072162006	PS	WP	6/6/2012 0:01	RTI	1.63U	4.04	8.90	7/22/12 9:11
3072162	3072162007	PS	WP	6/6/2012 0:01	RTI	2.72U	4.18	8.87	7/22/12 9:19
3072162	3072162008	PS	WP	6/6/2012 0:01	RTI	0.797U	3.94	8.93	7/22/12 9:27
3072162	3072162009	PS	WP	6/6/2012 0:01	RTI	5.50J	4.56	8.89	7/22/12 9:35
3072162	3072162010	PS	WP	6/6/2012 0:01	RTI	-1.15U	3.68	8.96	7/22/12 9:43
3072162	3072162011	PS	WP	6/6/2012 0:01	RTI	0.522U	3.88	8.89	7/22/12 9:51
3072162	3072162012	PS	WP	6/6/2012 0:01	RTI	1.90U	4.07	8.89	7/22/12 10:00
3072162	3072162013	PS	WP	6/6/2012 0:01	RTI	-1.14U	3.65	8.88	7/22/12 10:08
3072162	3072162014	PS	WP	6/6/2012 0:01	RTI	-1.41U	3.60	8.86	7/22/12 10:16
3072162	3072162015	PS	WP	6/6/2012 0:01	RTI	2.53U	4.26	9.14	7/22/12 10:24
3072162	3072162016	PS	WP	6/6/2012 0:01	RTI	2.46U	4.15	8.90	7/22/12 10:32
3072162	3072162017	PS	WP	6/6/2012 0:01	RTI	1.63U	4.04	8.90	7/22/12 10:40
3072162	3072162018	PS	WP	6/6/2012 0:01	RTI	-0.583U	3.74	8.93	7/22/12 10:48
3072162	3072162019	PS	WP	6/6/2012 0:01	RTI	2.75U	4.22	8.96	7/22/12 10:56
3072162	3072162020	PS	WP	6/6/2012 0:01	RTI	4.20J	4.46	9.06	7/22/12 11:04

7/27/12

7/27/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12512
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012
Act. Rpt Units dpm

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

Bkg CPM 5.73
Bkg Duration 30.0 min
Bkg Ref BKG 7/22/2012
Bkg Ct Date/Time: 7/22/2012 7:16
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
459111	1.0	7/22/12 8:23	7.0	7/22/12 8:23	7.43	323.0	dpm/S	High, Evaluate
3072162001	1.0	6/6/12 0:01	7.0	7/22/12 8:31	7.86	313.4	dpm/S	High, Evaluate
3072162002	1.0	6/6/12 0:01	7.0	7/22/12 8:39	7.57	250.3	dpm/S	Pass
3072162003	1.0	6/6/12 0:01	7.0	7/22/12 8:47	6.71	260.8	dpm/S	Pass
3072162004	1.0	6/6/12 0:01	7.0	7/22/12 8:55	7.29	268.0	dpm/S	Pass
3072162005	1.0	6/6/12 0:01	7.0	7/22/12 9:03	5.00	266.1	dpm/S	Pass
3072162006	1.0	6/6/12 0:01	7.0	7/22/12 9:11	6.57	254.2	dpm/S	Pass
3072162007	1.0	6/6/12 0:01	7.0	7/22/12 9:19	7.14	278.0	dpm/S	Pass
3072162008	1.0	6/6/12 0:01	7.0	7/22/12 9:27	6.14	247.2	dpm/S	Pass
3072162009	1.0	6/6/12 0:01	7.0	7/22/12 9:35	8.57	254.6	dpm/S	Pass
3072162010	1.0	6/6/12 0:01	7.0	7/22/12 9:43	5.14	243.6	dpm/S	Pass
3072162011	1.0	6/6/12 0:01	7.0	7/22/12 9:51	6.00	284.4	dpm/S	Pass
3072162012	1.0	6/6/12 0:01	7.0	7/22/12 10:00	6.71	254.7	dpm/S	Pass
3072162013	1.0	6/6/12 0:01	7.0	7/22/12 10:08	5.14	283.2	dpm/S	Pass
3072162014	1.0	6/6/12 0:01	7.0	7/22/12 10:16	5.00	271.6	dpm/S	Pass
3072162015	1.0	6/6/12 0:01	7.0	7/22/12 10:24	7.00	225.1	dpm/S	Pass
3072162016	1.0	6/6/12 0:01	7.0	7/22/12 10:32	7.00	253.5	dpm/S	Pass
3072162017	1.0	6/6/12 0:01	7.0	7/22/12 10:40	6.57	253.6	dpm/S	Pass
3072162018	1.0	6/6/12 0:01	7.0	7/22/12 10:48	5.43	292.0	dpm/S	Pass
3072162019	1.0	6/6/12 0:01	7.0	7/22/12 10:56	7.14	243.4	dpm/S	Pass
3072162020	1.0	6/6/12 0:01	7.0	7/22/12 11:04	7.86	231.7	dpm/S	Pass
LCS12512	1.0	7/22/12 11:12	7.0	7/22/12 11:12	61.14	315.1	dpm/S	High, Evaluate
LCSD12512	1.0	7/22/12 11:20	7.0	7/22/12 11:20	62.86	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**	MBT
Matrix	Smear	**PrepSOP1**	0
Batch ID	12512	**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
459111	0.5006	0.0000	1.0000	3.396	4.382	4.401	9.178	3.312	1.023	4.382	1.00
3072162001	0.5077	0.1269	0.9929	4.225	4.457	4.485	9.114	3.289	1.015	4.457	1.00
3072162002	0.5191	0.1269	0.9929	3.570	4.290	4.311	8.914	3.217	0.993	4.290	1.00
3072162003	0.5214	0.1269	0.9929	1.893	4.059	4.065	8.874	3.202	0.989	4.059	1.00
3072162004	0.5221	0.1270	0.9929	3.009	4.198	4.213	8.863	3.198	0.988	4.198	1.00
3072162005	0.5220	0.1270	0.9929	-1.408	3.598	3.602	8.864	3.199	0.988	3.598	1.00
3072162006	0.5201	0.1270	0.9929	1.626	4.033	4.038	8.896	3.210	0.991	4.033	1.00
3072162007	0.5216	0.1270	0.9929	2.722	4.164	4.177	8.870	3.201	0.988	4.164	1.00
3072162008	0.5180	0.1270	0.9929	0.797	3.938	3.939	8.932	3.223	0.995	3.938	1.00
3072162009	0.5202	0.1270	0.9929	5.498	4.514	4.561	8.894	3.210	0.991	4.514	1.00
3072162010	0.5167	0.1270	0.9929	-1.150	3.675	3.678	8.955	3.232	0.998	3.675	1.00
3072162011	0.5205	0.1271	0.9929	0.522	3.882	3.883	8.889	3.208	0.990	3.882	1.00
3072162012	0.5202	0.1271	0.9929	1.897	4.068	4.074	8.894	3.209	0.991	4.068	1.00
3072162013	0.5208	0.1271	0.9929	-1.141	3.646	3.649	8.885	3.206	0.990	3.646	1.00
3072162014	0.5221	0.1271	0.9929	-1.408	3.597	3.601	8.863	3.198	0.987	3.597	1.00
3072162015	0.5064	0.1271	0.9929	2.526	4.254	4.264	9.136	3.297	1.018	4.254	1.00
3072162016	0.5200	0.1271	0.9929	2.460	4.143	4.153	8.899	3.211	0.991	4.143	1.00
3072162017	0.5200	0.1272	0.9929	1.627	4.035	4.039	8.898	3.211	0.991	4.035	1.00
3072162018	0.5184	0.1272	0.9929	-0.583	3.744	3.745	8.925	3.221	0.994	3.744	1.00
3072162019	0.5166	0.1272	0.9929	2.749	4.205	4.218	8.956	3.232	0.998	4.205	1.00
3072162020	0.5107	0.1272	0.9929	4.201	4.431	4.459	9.060	3.270	1.010	4.431	1.00
LCS12512	0.5065	0.0000	1.0000	109.395	11.561	17.432	9.070	3.273	1.011	11.561	1.00
LCSD12512	0.4996	0.0000	1.0000	114.341	11.880	18.086	9.195	3.318	1.025	11.880	1.00

cjm 7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	RMK		
Date:	7/27/2012	**Method:**	EPA 906.0M
Worklist:	12512	**SOP:**	
Matrix:	Filter	**MB Sample ID:**	459111

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	3.3960	4.4010	9.1780	3.31200		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/22/12 3:40	7/22/12 3:48				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.904	1184.904				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.490	118.490				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	109.395	114.341				
1.96 Sigma Unc:	17.432	18.086				
% Recovery:	92.32%	96.50%				
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.:	LCS12512					
Duplicate Sample I.D.	LCSD12512					
Sample Result (pCi/L, g, F):	109.3950					
1.96 Sigma Unc:	17.4320					
Sample Duplicate Result (pCi/L, g, F):	114.3410					
Duplicate Sample 1.96 Sigma Unc.	18.0860					
Either results below MDC?	NO					
Relative Percent Difference:	4.42%					
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:

7/27/12

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12512

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	3.30	5.90	5.73	297.75	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

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			7/22/2012 8:30
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/22/2012 8:23	459111
2	15	7/22/2012 8:31	3072162001
3	23	7/22/2012 8:39	3072162002
4	31	7/22/2012 8:47	3072162003
5	39	7/22/2012 8:55	3072162004
6	47	7/22/2012 9:03	3072162005
7	55	7/22/2012 9:11	3072162006
8	63	7/22/2012 9:19	3072162007
9	71	7/22/2012 9:27	3072162008
10	79	7/22/2012 9:35	3072162009
11	87	7/22/2012 9:43	3072162010
12	95	7/22/2012 9:51	3072162011
13	104	7/22/2012 10:00	3072162012
14	112	7/22/2012 10:08	3072162013
15	120	7/22/2012 10:16	3072162014
16	128	7/22/2012 10:24	3072162015
17	136	7/22/2012 10:32	3072162016
18	144	7/22/2012 10:40	3072162017
19	152	7/22/2012 10:48	3072162018
20	160	7/22/2012 10:56	3072162019
21	168	7/22/2012 11:04	3072162020
22	176	7/22/2012 11:12	LCS12512
23	184	7/22/2012 11:20	LCSD12512
24	192	7/22/2012 11:28	459112
25	200	7/22/2012 11:36	3072161021
26	208	7/22/2012 11:44	3072161022
27	216	7/22/2012 11:52	3072161023
28	224	7/22/2012 12:00	3072161024
29	232	7/22/2012 12:08	3072161025
30	241	7/22/2012 12:17	3072161026
31	249	7/22/2012 12:25	3072161027
32	257	7/22/2012 12:33	3072161028
33	265	7/22/2012 12:41	3072161029
34	273	7/22/2012 12:49	3072161030
35	281	7/22/2012 12:57	3072161031
36	289	7/22/2012 13:05	3072161032
37	297	7/22/2012 13:13	3072161033
38	305	7/22/2012 13:21	3072161034
39	313	7/22/2012 13:29	3072161035
40	321	7/22/2012 13:37	3072161036
41	329	7/22/2012 13:45	3072161037
42	337	7/22/2012 13:53	3072161038
43	345	7/22/2012 14:01	3072161039
44	353	7/22/2012 14:09	3072161040
45	362	7/22/2012 14:18	LCS12513
46	370	7/22/2012 14:26	LCSD12513

7/31/12

Protocol #: 8 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
8	1	7.00	7	4.71	7.43	7.43	322.97	3
8	2	7.00	15	4.86	7.86	7.86	313.35	2
8	3	7.00	23	4.14	7.71	7.57	250.31	2
8	4	7.00	31	3.00	6.71	6.71	260.75	2
8	5	7.00	39	3.57	7.43	7.29	267.99	2
8	6	7.00	47	1.86	5.14	5.00	266.13	3
8	7	7.00	55	3.14	6.57	6.57	254.19	2
8	8	7.00	63	3.86	7.29	7.14	278.03	3
8	9	7.00	71	3.43	6.29	6.14	247.16	2
8	10	7.00	79	4.43	8.57	8.57	254.56	2
8	11	7.00	87	2.29	5.29	5.14	243.63	3
8	12	7.00	95	4.14	5.86	6.00	284.36	1
8	13	7.00	104	4.14	6.57	6.71	254.65	2
8	14	7.00	112	2.29	5.29	5.14	283.16	4
8	15	7.00	120	2.86	5.00	5.00	271.57	3
8	16	7.00	128	3.14	7.00	7.00	225.06	1
8	17	7.00	136	3.57	7.00	7.00	253.51	2
8	18	7.00	144	3.57	6.57	6.57	253.63	2
8	19	7.00	152	2.86	5.57	5.43	292.01	2
8	20	7.00	160	3.57	7.14	7.14	243.44	3
8	21	7.00	168	3.71	7.57	7.86	231.66	1
8	22	7.00	176	44.00	60.14	61.14	315.07	0
8	23	7.00	184	43.86	61.86	62.86	324.07	0
8	24	7.00	192	4.43	7.29	7.29	330.33	2
8	25	7.00	200	1.71	4.71	4.71	246.59	2
8	26	7.00	208	2.43	6.14	6.14	222.38	3
8	27	7.00	216	4.86	8.43	8.43	271.17	1
8	28	7.00	224	3.57	6.57	6.43	287.63	2
8	29	7.00	232	5.57	8.00	8.00	283.54	2
8	30	7.00	241	2.71	5.71	5.71	254.66	1
8	31	7.00	249	5.00	7.57	7.43	253.00	2
8	32	7.00	257	1.86	5.57	5.43	246.44	3
8	33	7.00	265	5.00	7.71	7.86	258.46	1
8	34	7.00	273	3.43	7.43	7.57	285.40	2
8	35	7.00	281	3.14	6.00	5.86	288.97	3
8	36	7.00	289	3.00	6.29	6.29	246.62	2
8	37	7.00	297	2.86	6.57	6.57	283.19	3
8	38	7.00	305	3.29	7.00	6.86	294.70	3
8	39	7.00	313	3.43	5.43	5.29	280.92	2

Protocol #: 8 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
8	40	7.00	321	2.86	5.57	5.57	275.12	2
8	41	7.00	329	5.00	6.86	6.86	282.41	2
8	42	7.00	337	2.00	5.43	5.43	263.55	3
8	43	7.00	345	2.00	4.57	4.57	268.69	4
8	44	7.00	353	2.43	5.43	5.14	277.63	4
8	45	7.00	362	40.86	56.43	56.71	324.07	0
8	46	7.00	370	39.57	54.57	54.86	320.24	1

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

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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
BKG 7/22/12	NA	Swipe H3C14	3	4	7/21/12 1500	~~7/21/12~~ 30	NA	
459111	12512	"	16	8	7/21/12 1500	7	"	
307216 2001	"	"	1	"	"	"	"	"
2								
3								
4								
5								
6								
7								
8								
9								
10								
11			↓					
12			36					
13								
14								
15								
16								
17								
18								
19								
20								
LCS12512								
LCSD12512	↓	↓	↓	↓	↓	↓	↓	↓

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
459112	12513	Sumpl H3C14	36	8	9/21/12 1500	7	NA	AL
3072161021	"	"	15	"	"	"	"	"
22			"					
23			"					
24			"					
25			"					
26			"					
27			"					
28			"					
29			"					
30			"					
31			"					
32			↓					
33			27					
34			"					
35			"					
36			"					
37			"					
38			"					
39			"					
40			"					
LCS12513								
LCSD12513	↓	↓	↓	↓	↓	↓	↓	↓

Run comments: _____

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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1 459112-BLANK for HBN 91088 [RADC/1251

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

Prep Information

Procedure 9060 I LEB **Batch** RADC/12513 **Prep Date** 7/22/2012 11:28 **Dilution**
Method EPA 906.0M **HBN** 91088 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796288 **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** 7/22/2012 11:28 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796288 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	3.16U ± 4.42 (9.30)	dpm/sa	3.16U ± 4.42 (9.30)			dpm/sa

2 3072162021-292-27

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12513 **Prep Date** 7/22/2012 11:36 **Dilution**
Method EPA 906.0M **HBN** 91088 **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790810 **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** 7/22/2012 11:36 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/3/2012 23:59 **Analyst** MBT
Schedule 2790810 **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	-1.98U ± 3.55 (8.94)	dpm/sa	-1.98U ± 3.55 (8.94)					dpm/sa

3 3072162022-292-28

Type PS **Matrix** Wipe **Collected** 6/6/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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3 3072162022-292-28

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 11:44	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790811	**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**	7/22/2012 11:44	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790811	**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	0.818U ± 4.04 (9.17)	dpm/sa	0.818U ± 4.04 (9.17)		dpm/sa		

4 3072162023-292-29

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 11:52	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790812	**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**	7/22/2012 11:52	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790812	**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	5.21J ± 4.51 (8.86)	dpm/sa	5.21J ± 4.51 (8.86)		dpm/sa		

5 3072162024-292-29D

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072162024-292-29D

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 12:00	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790813	**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**	7/22/2012 12:00	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790813	**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	1.36U ± 4.00 (8.90)	dpm/sa	1.36U ± 4.00 (8.90)		dpm/sa		

6 3072162025-292-30

Type	PS	**Matrix**	Wipe	**Collected**	6/6/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 12:08	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790814	**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**	7/22/2012 12:08	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/3/2012 23:59	**Analyst**	MBT
Schedule	2790814	**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	4.39J ± 4.41 (8.89)	dpm/sa	4.39J ± 4.41 (8.89)		dpm/sa		

7 3072162026-292-C1

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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7 3072162026-292-C1

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790815

Batch RADC/12513
HBN 91088
Instru NONE

Prep Date 7/22/2012 12:17
Hold Date 12/16/2012 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 2790815

Instru NONE
Col ID
File

Run Date 7/22/2012 12:17
Hold Date 12/16/2012 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	-0.0386U ± 3.80 (8.88)	dpm/sa	-0.0386U ± 3.80 (8.88)		dpm/sa		

8 3072162027-292-C2

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790816

Batch RADC/12513
HBN 91088
Instru NONE

Prep Date 7/22/2012 12:25
Hold Date 12/16/2012 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 2790816

Instru NONE
Col ID
File

Run Date 7/22/2012 12:25
Hold Date 12/16/2012 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	3.29J ± 4.26 (8.88)	dpm/sa	3.29J ± 4.26 (8.88)		dpm/sa		

9 3072162028-292-C3

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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9 3072162028-292-C3

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 12:33	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790817	**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**	7/22/2012 12:33	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790817	**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	-0.582U ± 3.74 (8.92)	dpm/sa	-0.582U ± 3.74 (8.92)		dpm/sa		

10 3072162029-SH-1

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 12:41	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790818	**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**	7/22/2012 12:41	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790818	**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	4.12J ± 4.37 (8.88)	dpm/sa	4.12J ± 4.37 (8.88)		dpm/sa		

11 3072162030-SH-2

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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11 3072162030-SH-2

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 12:49	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790819	**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**	7/22/2012 12:49	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790819	**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	3.56J ± 4.30 (8.89)	dpm/sa	3.56J ± 4.30 (8.89)		dpm/sa		

12 3072162031-SH-3

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 12:57	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790820	**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**	7/22/2012 12:57	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790820	**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	0.252U ± 3.85 (8.91)	dpm/sa	0.252U ± 3.85 (8.91)		dpm/sa		

13 3072162032-SH-4

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12513	**HBN**	91088
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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13 3072162032-SH-4

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12513	**Prep Date**	7/22/2012 13:05	**Dilution**
Method	EPA 906.0M		**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790821		**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**	7/22/2012 13:05	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790821		**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	1.09U ± 3.98 (8.93)	dpm/sa	1.09U ± 3.98 (8.93)		dpm/sa		

14 3072162033-SH-4D

Type	PS		**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12513	**Prep Date**	7/22/2012 13:13	**Dilution**
Method	EPA 906.0M		**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790822		**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**	7/22/2012 13:13	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790822		**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	1.62U ± 4.03 (8.88)	dpm/sa	1.62U ± 4.03 (8.88)		dpm/sa		

15 3072162034-SH-5

Type	PS		**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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15 3072162034-SH-5

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12513	**Prep Date**	7/22/2012 13:21	**Dilution**
Method	EPA 906.0M		**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst** MBT
Schedule	2790823		**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**	7/22/2012 13:21	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst** MBT
Schedule	2790823		**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	2.20U ± 4.14 (8.94)	dpm/sa	2.20U ± 4.14 (8.94)		dpm/sa		

16 3072162035-SH-6

Type	PS		**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12513	**Prep Date**	7/22/2012 13:29	**Dilution**
Method	EPA 906.0M		**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst** MBT
Schedule	2790824		**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**	7/22/2012 13:29	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst** MBT
Schedule	2790824		**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	-0.850U ± 3.69 (8.88)	dpm/sa	-0.850U ± 3.69 (8.88)		dpm/sa		

17 3072162036-SH-7

Type	PS		**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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17 3072162036-SH-7

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790825

Batch RADC/12513
HBN 91088
Instru NONE

Prep Date 7/22/2012 13:37
Hold Date 12/4/2012 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 2790825

Instru NONE
Col ID
File

Run Date 7/22/2012 13:37
Hold Date 12/4/2012 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	-0.309U ± 3.76 (8.86)	dpm/sa	-0.309U ± 3.76 (8.86)		dpm/sa		

18 3072162037-SH-8

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790826

Batch RADC/12513
HBN 91088
Instru NONE

Prep Date 7/22/2012 13:45
Hold Date 12/4/2012 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 2790826

Instru NONE
Col ID
File

Run Date 7/22/2012 13:45
Hold Date 12/4/2012 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	2.18U ± 4.11 (8.88)	dpm/sa	2.18U ± 4.11 (8.88)		dpm/sa		

19 3072162038-SH-9

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12513	HBN	91088
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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19 3072162038-SH-9

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 13:53	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790827	**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**	7/22/2012 13:53	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790827	**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	-0.579U ± 3.72 (8.87)	dpm/sa	-0.579U ± 3.72 (8.87)		dpm/sa		

20 3072162039-SH-10

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 14:01	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790828	**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**	7/22/2012 14:01	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790828	**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	-2.24U ± 3.48 (8.86)	dpm/sa	-2.24U ± 3.48 (8.86)		dpm/sa		

21 3072162040-SH-11

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12513	**HBN**	91088
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072162040-SH-11

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12513	**Prep Date**	7/22/2012 14:09	**Dilution**	
Method	EPA 906.0M	**HBN**	91088	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790829	**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**	7/22/2012 14:09	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790829	**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 ± 3.64 (8.87)	dpm/sa	-1.14U ± 3.64 (8.87)		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 14:00		Assigned Analyst	MBT
Batch ID	12513		Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB	9060W	HBN	91088
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
	459112	BLANK	IP		QCACCOUNT	3.16U	4.42	9.30	7/22/12 11:28
3072162	3072162021	PS	WP	6/6/2012 0:01	RTI	-1.98U	3.55	8.94	7/22/12 11:36
3072162	3072162022	PS	WP	6/6/2012 0:01	RTI	0.818U	4.04	9.17	7/22/12 11:44
3072162	3072162023	PS	WP	6/6/2012 0:01	RTI	5.21J	4.51	8.86	7/22/12 11:52
3072162	3072162024	PS	WP	6/6/2012 0:01	RTI	1.36U	4.00	8.90	7/22/12 12:00
3072162	3072162025	PS	WP	6/6/2012 0:01	RTI	4.39J	4.41	8.89	7/22/12 12:08
3072162	3072162026	PS	WP	6/19/2012 0:01	RTI	-0.0386U	3.80	8.88	7/22/12 12:17
3072162	3072162027	PS	WP	6/19/2012 0:01	RTI	3.29J	4.26	8.88	7/22/12 12:25
3072162	3072162028	PS	WP	6/19/2012 0:01	RTI	-0.582U	3.74	8.92	7/22/12 12:33
3072162	3072162029	PS	WP	6/7/2012 0:01	RTI	4.12J	4.37	8.88	7/22/12 12:41
3072162	3072162030	PS	WP	6/7/2012 0:01	RTI	3.56J	4.30	8.89	7/22/12 12:49
3072162	3072162031	PS	WP	6/7/2012 0:01	RTI	0.252U	3.85	8.91	7/22/12 12:57
3072162	3072162032	PS	WP	6/7/2012 0:01	RTI	1.09U	3.98	8.93	7/22/12 13:05
3072162	3072162033	PS	WP	6/7/2012 0:01	RTI	1.62U	4.03	8.88	7/22/12 13:13
3072162	3072162034	PS	WP	6/7/2012 0:01	RTI	2.20U	4.14	8.94	7/22/12 13:21
3072162	3072162035	PS	WP	6/7/2012 0:01	RTI	-0.850U	3.69	8.88	7/22/12 13:29
3072162	3072162036	PS	WP	6/7/2012 0:01	RTI	-0.309U	3.76	8.86	7/22/12 13:37
3072162	3072162037	PS	WP	6/7/2012 0:01	RTI	2.18U	4.11	8.88	7/22/12 13:45
3072162	3072162038	PS	WP	6/7/2012 0:01	RTI	-0.579U	3.72	8.87	7/22/12 13:53
3072162	3072162039	PS	WP	6/7/2012 0:01	RTI	-2.24U	3.48	8.86	7/22/12 14:01
3072162	3072162040	PS	WP	6/7/2012 0:01	RTI	-1.14U	3.64	8.87	7/22/12 14:09

7/31/12

7/27/12

LIMS Load
Printed 7/26/2012 at 1:52 PM

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	MBT		
Matrix	Smear	**PrepSOP1**		**Bkg CPM**	5.73
Batch ID	12513	**PrepSOP2**	n/a	**Bkg Duration**	30.0 min
Prep Start	7/16/2012 12:00	**AnalSOP1**		**Bkg Ref**	BKG 7/22/2012
Prep Finish	7/16/2012	**AnalSOP2**	n/a	**Bkg Ct Date/Time:**	7/22/2012 7:16
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
459112	1.0	7/22/12 11:28	7.0	7/22/12 11:28	7.29	330.3	dpm/S	High, Evaluate
3072162021	1.0	6/6/12 0:01	7.0	7/22/12 11:36	4.71	246.6	dpm/S	Pass
3072162022	1.0	6/6/12 0:01	7.0	7/22/12 11:44	6.14	222.4	dpm/S	Pass
3072162023	1.0	6/6/12 0:01	7.0	7/22/12 11:52	8.43	271.2	dpm/S	Pass
3072162024	1.0	6/6/12 0:01	7.0	7/22/12 12:00	6.43	287.6	dpm/S	Pass
3072162025	1.0	6/6/12 0:01	7.0	7/22/12 12:08	8.00	283.5	dpm/S	Pass
3072162026	1.0	6/19/12 0:01	7.0	7/22/12 12:17	5.71	254.7	dpm/S	Pass
3072162027	1.0	6/19/12 0:01	7.0	7/22/12 12:25	7.43	253.0	dpm/S	Pass
3072162028	1.0	6/19/12 0:01	7.0	7/22/12 12:33	5.43	246.4	dpm/S	Pass
3072162029	1.0	6/7/12 0:01	7.0	7/22/12 12:41	7.86	258.5	dpm/S	Pass
3072162030	1.0	6/7/12 0:01	7.0	7/22/12 12:49	7.57	285.4	dpm/S	Pass
3072162031	1.0	6/7/12 0:01	7.0	7/22/12 12:57	5.86	289.0	dpm/S	Pass
3072162032	1.0	6/7/12 0:01	7.0	7/22/12 13:05	6.29	246.6	dpm/S	Pass
3072162033	1.0	6/7/12 0:01	7.0	7/22/12 13:13	6.57	283.2	dpm/S	Pass
3072162034	1.0	6/7/12 0:01	7.0	7/22/12 13:21	6.86	294.7	dpm/S	Pass
3072162035	1.0	6/7/12 0:01	7.0	7/22/12 13:29	5.29	280.9	dpm/S	Pass
3072162036	1.0	6/7/12 0:01	7.0	7/22/12 13:37	5.57	275.1	dpm/S	Pass
3072162037	1.0	6/7/12 0:01	7.0	7/22/12 13:45	6.86	282.4	dpm/S	Pass
3072162038	1.0	6/7/12 0:01	7.0	7/22/12 13:53	5.43	263.6	dpm/S	Pass
3072162039	1.0	6/7/12 0:01	7.0	7/22/12 14:01	4.57	268.7	dpm/S	Pass
3072162040	1.0	6/7/12 0:01	7.0	7/22/12 14:09	5.14	277.6	dpm/S	Pass
LCS12513	1.0	7/22/12 14:18	7.0	7/22/12 14:18	56.71	324.1	dpm/S	High, Evaluate
LCSD12513	1.0	7/22/12 14:26	7.0	7/22/12 14:26	54.86	320.2	dpm/S	High, Evaluate

LEB Data Input
Printed 7/26/2012 at 1:53 PM

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	12513	**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
459112	0.4941	0.0000	1.0000	3.157	4.403	4.419	9.297	3.355	1.036	4.403	1.00
3072162021	0.5178	0.1273	0.9929	-1.984	3.543	3.551	8.935	3.224	0.996	3.543	1.00
3072162022	0.5045	0.1273	0.9929	0.818	4.044	4.045	9.171	3.310	1.022	4.044	1.00
3072162023	0.5221	0.1273	0.9929	5.208	4.466	4.509	8.862	3.198	0.987	4.466	1.00
3072162024	0.5197	0.1273	0.9929	1.356	4.001	4.004	8.903	3.213	0.992	4.001	1.00
3072162025	0.5207	0.1273	0.9929	4.391	4.378	4.409	8.886	3.207	0.990	4.378	1.00
3072162026	0.5202	0.0917	0.9949	-0.039	3.799	3.799	8.876	3.203	0.989	3.799	1.00
3072162027	0.5198	0.0918	0.9949	3.287	4.241	4.259	8.883	3.206	0.990	4.241	1.00
3072162028	0.5178	0.0918	0.9949	-0.582	3.741	3.742	8.919	3.218	0.994	3.741	1.00
3072162029	0.5210	0.1246	0.9931	4.116	4.342	4.370	8.879	3.204	0.989	4.342	1.00
3072162030	0.5203	0.1247	0.9931	3.561	4.279	4.300	8.892	3.209	0.991	4.279	1.00
3072162031	0.5194	0.1247	0.9931	0.252	3.853	3.853	8.908	3.214	0.993	3.853	1.00
3072162032	0.5178	0.1247	0.9931	1.089	3.978	3.981	8.934	3.224	0.995	3.978	1.00
3072162033	0.5208	0.1247	0.9931	1.624	4.028	4.033	8.883	3.206	0.990	4.028	1.00
3072162034	0.5174	0.1247	0.9931	2.199	4.128	4.136	8.941	3.226	0.996	4.128	1.00
3072162035	0.5212	0.1247	0.9931	-0.850	3.685	3.686	8.876	3.203	0.989	3.685	1.00
3072162036	0.5219	0.1248	0.9931	-0.309	3.757	3.757	8.864	3.199	0.988	3.757	1.00
3072162037	0.5209	0.1248	0.9931	2.184	4.100	4.108	8.881	3.205	0.990	4.100	1.00
3072162038	0.5218	0.1248	0.9931	-0.579	3.719	3.720	8.867	3.200	0.988	3.719	1.00
3072162039	0.5221	0.1248	0.9931	-2.237	3.473	3.483	8.861	3.198	0.987	3.473	1.00
3072162040	0.5217	0.1248	0.9931	-1.139	3.639	3.642	8.869	3.200	0.988	3.639	1.00
LCS12513	0.4996	0.0000	1.0000	102.032	11.296	16.604	9.195	3.318	1.025	11.296	1.00
LCSD12513	0.5027	0.0000	1.0000	97.728	11.047	16.059	9.139	3.298	1.018	11.047	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	RMK				
Date:	7/27/2012	**Method:**	EPA 906.0M		
Worklist:	12513	**SOP:**			
Matrix:	Filter	**MB Sample ID:**	459112		

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	3.1570	4.4190	9.2970	3.35500		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/22/12 14:18	7/22/12 14:26				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.894	1184.894				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.489	118.489				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	102.032	97.728				
1.96 Sigma Unc:	16.604	16.059				
% Recovery:	86.11%	82.48%				
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.:	LCS12513					
Duplicate Sample I.D.	LCSD12513					
Sample Result (pCi/L, g, F):	102.0320					
1.96 Sigma Unc:	16.6040					
Sample Duplicate Result (pCi/L, g, F):	97.7280					
Duplicate Sample 1.96 Sigma Unc.	16.0590					
Either results below MDC?	NO					
Relative Percent Difference:	4.31%					
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: 12513

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%

22 Jul 12 07:16 Page #1

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

used for 1251 $, 15 On 7/31/12

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	3.30	5.90	5.73	297.75	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

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			7/22/2012 8:30
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/22/2012 8:23	459111
2	15	7/22/2012 8:31	3072162001
3	23	7/22/2012 8:39	3072162002
4	31	7/22/2012 8:47	3072162003
5	39	7/22/2012 8:55	3072162004
6	47	7/22/2012 9:03	3072162005
7	55	7/22/2012 9:11	3072162006
8	63	7/22/2012 9:19	3072162007
9	71	7/22/2012 9:27	3072162008
10	79	7/22/2012 9:35	3072162009
11	87	7/22/2012 9:43	3072162010
12	95	7/22/2012 9:51	3072162011
13	104	7/22/2012 10:00	3072162012
14	112	7/22/2012 10:08	3072162013
15	120	7/22/2012 10:16	3072162014
16	128	7/22/2012 10:24	3072162015
17	136	7/22/2012 10:32	3072162016
18	144	7/22/2012 10:40	3072162017
19	152	7/22/2012 10:48	3072162018
20	160	7/22/2012 10:56	3072162019
21	168	7/22/2012 11:04	3072162020
22	176	7/22/2012 11:12	LCS12512
23	184	7/22/2012 11:20	LCSD12512
24	192	7/22/2012 11:28	459112
25	200	7/22/2012 11:36	3072161021
26	208	7/22/2012 11:44	3072161022
27	216	7/22/2012 11:52	3072161023
28	224	7/22/2012 12:00	3072161024
29	232	7/22/2012 12:08	3072161025
30	241	7/22/2012 12:17	3072161026
31	249	7/22/2012 12:25	3072161027
32	257	7/22/2012 12:33	3072161028
33	265	7/22/2012 12:41	3072161029
34	273	7/22/2012 12:49	3072161030
35	281	7/22/2012 12:57	3072161031
36	289	7/22/2012 13:05	3072161032
37	297	7/22/2012 13:13	3072161033
38	305	7/22/2012 13:21	3072161034
39	313	7/22/2012 13:29	3072161035
40	321	7/22/2012 13:37	3072161036
41	329	7/22/2012 13:45	3072161037
42	337	7/22/2012 13:53	3072161038
43	345	7/22/2012 14:01	3072161039
44	353	7/22/2012 14:09	3072161040
45	362	7/22/2012 14:18	LCS12513
46	370	7/22/2012 14:26	LCSD12513

7/31/12

Protocol #: 8 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
8	1	7.00	7	4.71	7.43	7.43	322.97	3
8	2	7.00	15	4.86	7.86	7.86	313.35	2
8	3	7.00	23	4.14	7.71	7.57	250.31	2
8	4	7.00	31	3.00	6.71	6.71	260.75	2
8	5	7.00	39	3.57	7.43	7.29	267.99	2
8	6	7.00	47	1.86	5.14	5.00	266.13	3
8	7	7.00	55	3.14	6.57	6.57	254.19	2
8	8	7.00	63	3.86	7.29	7.14	278.03	3
8	9	7.00	71	3.43	6.29	6.14	247.16	2
8	10	7.00	79	4.43	8.57	8.57	254.56	2
8	11	7.00	87	2.29	5.29	5.14	243.63	3
8	12	7.00	95	4.14	5.86	6.00	284.36	1
8	13	7.00	104	4.14	6.57	6.71	254.65	2
8	14	7.00	112	2.29	5.29	5.14	283.16	4
8	15	7.00	120	2.86	5.00	5.00	271.57	3
8	16	7.00	128	3.14	7.00	7.00	225.06	1
8	17	7.00	136	3.57	7.00	7.00	253.51	2
8	18	7.00	144	3.57	6.57	6.57	253.63	2
8	19	7.00	152	2.86	5.57	5.43	292.01	2
8	20	7.00	160	3.57	7.14	7.14	243.44	3
8	21	7.00	168	3.71	7.57	7.86	231.66	1
8	22	7.00	176	44.00	60.14	61.14	315.07	0
8	23	7.00	184	43.86	61.86	62.86	324.07	0
8	24	7.00	192	4.43	7.29	7.29	330.33	2
8	25	7.00	200	1.71	4.71	4.71	246.59	2
8	26	7.00	208	2.43	6.14	6.14	222.38	3
8	27	7.00	216	4.86	8.43	8.43	271.17	1
8	28	7.00	224	3.57	6.57	6.43	287.63	2
8	29	7.00	232	5.57	8.00	8.00	283.54	2
8	30	7.00	241	2.71	5.71	5.71	254.66	1
8	31	7.00	249	5.00	7.57	7.43	253.00	2
8	32	7.00	257	1.86	5.57	5.43	246.44	3
8	33	7.00	265	5.00	7.71	7.86	258.46	1
8	34	7.00	273	3.43	7.43	7.57	285.40	2
8	35	7.00	281	3.14	6.00	5.86	288.97	3
8	36	7.00	289	3.00	6.29	6.29	246.62	2
8	37	7.00	297	2.86	6.57	6.57	283.19	3
8	38	7.00	305	3.29	7.00	6.86	294.70	3
8	39	7.00	313	3.43	5.43	5.29	280.92	2

Protocol #: 8 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
8	40	7.00	321	2.86	5.57	5.57	275.12	2
8	41	7.00	329	5.00	6.86	6.86	282.41	2
8	42	7.00	337	2.00	5.43	5.43	263.55	3
8	43	7.00	345	2.00	4.57	4.57	268.69	4
8	44	7.00	353	2.43	5.43	5.14	277.63	4
8	45	7.00	362	40.86	56.43	56.71	324.07	0
8	46	7.00	370	39.57	54.57	54.86	320.24	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
BKG 7/22/12	NA	Swipe H3C14	3	4	7/21/12 1500	~~NA~~ 30 7/21/12	NA	
459111	12512		16	8	7/21/12 1500	7		
3072162001			1					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11			↓					
12			36					
13								
14								
15								
16								
17								
18								
19								
20								
LCS12512								
LCSD12512	↓	↓	↓	↓	↓	↓	↓	↓

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
459112	12513	Sumpl H3C14	36	8	9/21/12 1500	7	NA	R
3072161021	↓	↓	15	↓	↓	↓	↓	↓
22			↓					
23								
24								
25								
26								
27								
28								
29								
30								
31								
32			↓					
33			27					
34			↓					
35								
36								
37								
38								
39								
↓ 40								
LCS12513								
LCSD12513	↓	↓	↓	↓	↓	↓	↓	↓

Run comments: _____

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12514	HBN	91089
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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1 459113-BLANK for HBN 91089 [RADC/1251

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

Prep Information

Procedure 9060 I LEB **Batch** RADC/12514 **Prep Date** 7/22/2012 16:11 **Dilution**
Method EPA 906.0M **HBN** 91089 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796298 **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** 7/22/2012 16:11 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796298 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	-1.72U ± 3.65 (9.08)	dpm/sa	-1.72U ± 3.65 (9.08)			dpm/sa

2 3072162041-SH-12

Type PS **Matrix** Wipe **Collected** 6/7/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12514 **Prep Date** 7/22/2012 16:19 **Dilution**
Method EPA 906.0M **HBN** 91089 **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790830 **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** 7/22/2012 16:19 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790830 **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	1.35U ± 3.99 (8.87)	dpm/sa	1.35U ± 3.99 (8.87)					dpm/sa

3 3072162042-SH-13

Type PS **Matrix** Wipe **Collected** 6/7/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12514	**HBN**	91089
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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3 3072162042-SH-13

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790831

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 16:27
Hold Date 12/4/2012 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 2790831

Instru NONE
Col ID
File

Run Date 7/22/2012 16:27
Hold Date 12/4/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	1.11U ± 4.04 (9.07)	dpm/sa	1.11U ± 4.04 (9.07)		dpm/sa		

4 3072162043-SH-14

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790832

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 16:35
Hold Date 12/4/2012 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 2790832

Instru NONE
Col ID
File

Run Date 7/22/2012 16:35
Hold Date 12/4/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	2.47U ± 4.17 (8.94)	dpm/sa	2.47U ± 4.17 (8.94)		dpm/sa		

5 3072162044-SH-15

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12514	HBN	91089
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072162044-SH-15

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12514	**Prep Date**	7/22/2012 16:43	**Dilution**	
Method	EPA 906.0M	**HBN**	91089	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790833	**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**	7/22/2012 16:43	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790833	**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	2.45U ± 4.15 (8.88)	dpm/sa	2.45U ± 4.15 (8.88)		dpm/sa		

6 3072162045-SH-16

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12514	**Prep Date**	7/22/2012 16:51	**Dilution**	
Method	EPA 906.0M	**HBN**	91089	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790834	**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**	7/22/2012 16:51	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790834	**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	3.01U ± 4.21 (8.86)	dpm/sa	3.01U ± 4.21 (8.86)		dpm/sa		

7 3072162046-SH-16D

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12514	HBN	91089
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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7 3072162046-SH-16D

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12514	**Prep Date**	7/22/2012 16:59	**Dilution**	
Method	EPA 906.0M	**HBN**	91089	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790835	**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**	7/22/2012 16:59	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790835	**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	1.08U ± 3.96 (8.88)	dpm/sa	1.08U ± 3.96 (8.88)		dpm/sa		

8 3072162047-SH-17

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12514	**Prep Date**	7/22/2012 17:07	**Dilution**	
Method	EPA 906.0M	**HBN**	91089	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790836	**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**	7/22/2012 17:07	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790836	**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	4.66J ± 4.44 (8.88)	dpm/sa	4.66J ± 4.44 (8.88)		dpm/sa		

9 3072162048-SH-18

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch RADC/12514 HBN 91089
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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9 3072162048-SH-18

Prep Information

Procedure 9060 I LEB **Batch** RADC/12514 **Prep Date** 7/22/2012 17:15 **Dilution**
Method EPA 906.0M **HBN** 91089 **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790837 **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** 7/22/2012 17:15 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790837 **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 ± 3.91 (8.86)	dpm/sa	0.791U ± 3.91 (8.86)		dpm/sa		

10 3072162049-SH-19

Type PS **Matrix** Wipe **Collected** 6/7/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12514 **Prep Date** 7/22/2012 17:23 **Dilution**
Method EPA 906.0M **HBN** 91089 **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790838 **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** 7/22/2012 17:23 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790838 **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	4.71J ± 4.49 (8.98)	dpm/sa	4.71J ± 4.49 (8.98)		dpm/sa		

11 3072162050-SH-20

Type PS **Matrix** Wipe **Collected** 6/7/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12514	**HBN**	91089
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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11 3072162050-SH-20

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790839

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 17:31
Hold Date 12/4/2012 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 2790839

Instru NONE
Col ID
File

Run Date 7/22/2012 17:31
Hold Date 12/4/2012 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	2.18U ± 4.10 (8.86)	dpm/sa	2.18U ± 4.10 (8.86)		dpm/sa		

12 3072162051-SH-21

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790840

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 17:39
Hold Date 12/4/2012 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 2790840

Instru NONE
Col ID
File

Run Date 7/22/2012 17:39
Hold Date 12/4/2012 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	-1.70U ± 3.61 (8.98)	dpm/sa	-1.70U ± 3.61 (8.98)		dpm/sa		

13 3072162052-SH-22

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12514	HBN	91089
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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13 3072162052-SH-22

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790841

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 17:48
Hold Date 12/4/2012 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 2790841

Instru NONE
Col ID
File

Run Date 7/22/2012 17:48
Hold Date 12/4/2012 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	3.01U ± 4.21 (8.86)	dpm/sa	3.01U ± 4.21 (8.86)		dpm/sa		

14 3072162053-SH-23

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790842

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 17:56
Hold Date 12/4/2012 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 2790842

Instru NONE
Col ID
File

Run Date 7/22/2012 17:56
Hold Date 12/4/2012 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	2.73U ± 4.19 (8.89)	dpm/sa	2.73U ± 4.19 (8.89)		dpm/sa		

15 3072162054-SH-23D

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12514	HBN	91089
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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15 3072162054-SH-23D

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12514	**Prep Date**	7/22/2012 18:04	**Dilution**	
Method	EPA 906.0M	**HBN**	91089	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790843	**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**	7/22/2012 18:04	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790843	**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 ± 3.84 (8.87)	dpm/sa	0.251U ± 3.84 (8.87)		dpm/sa		

16 3072162055-SH-24

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12514	**Prep Date**	7/22/2012 18:12	**Dilution**	
Method	EPA 906.0M	**HBN**	91089	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790844	**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**	7/22/2012 18:12	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790844	**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	1.08U ± 3.96 (8.89)	dpm/sa	1.08U ± 3.96 (8.89)		dpm/sa		

17 3072162056-SH-25

Type	PS	**Matrix**	Wipe	**Collected**	6/7/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch RADC/12514 HBN 91089
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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17 3072162056-SH-25

Prep Information

Procedure 9060 I LEB **Batch** RADC/12514 **Prep Date** 7/22/2012 18:20 **Dilution**
Method EPA 906.0M **HBN** 91089 **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790845 **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** 7/22/2012 18:20 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790845 **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	4.66J ± 4.44 (8.88)	dpm/sa	4.66J ± 4.44 (8.88)		dpm/sa		

18 3072162057-SH-26

Type PS **Matrix** Wipe **Collected** 6/7/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12514 **Prep Date** 7/22/2012 18:28 **Dilution**
Method EPA 906.0M **HBN** 91089 **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790846 **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** 7/22/2012 18:28 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790846 **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	7.42J ± 4.81 (8.87)	dpm/sa	7.42J ± 4.81 (8.87)		dpm/sa		

19 3072162058-SH-27

Type PS **Matrix** Wipe **Collected** 6/7/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12514	**HBN**	91089
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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19 3072162058-SH-27

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790847

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 18:36
Hold Date 12/4/2012 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 2790847

Instru NONE
Col ID
File

Run Date 7/22/2012 18:36
Hold Date 12/4/2012 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	4.38J ± 4.40 (8.86)	dpm/sa	4.38J ± 4.40 (8.86)		dpm/sa		

20 3072162059-SH-28

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790848

Batch RADC/12514
HBN 91089
Instru NONE

Prep Date 7/22/2012 18:44
Hold Date 12/4/2012 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 2790848

Instru NONE
Col ID
File

Run Date 7/22/2012 18:44
Hold Date 12/4/2012 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	2.20U ± 4.14 (8.96)	dpm/sa	2.20U ± 4.14 (8.96)		dpm/sa		

21 3072162060-SH-29

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/7/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12514	**HBN**	91089
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072162060-SH-29

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12514	**Prep Date**	7/22/2012 18:52	**Dilution**	
Method	EPA 906.0M	**HBN**	91089	**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790849	**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**	7/22/2012 18:52	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/4/2012 23:59	**Analyst**	MBT
Schedule	2790849	**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 ± 3.51 (9.04)	dpm/sa	-2.56U ± 3.51 (9.04)			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 14:01		Assigned Analyst	MBT
Batch ID	12514		Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB	9060W	HBN	91089
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
	459113	BLANK	IP		QCACCOUNT	-1.72U	3.65	9.08	7/22/12 16:11
3072162	3072162041	PS	WP	6/7/2012 0:01	RTI	1.35U	3.99	8.87	7/22/12 16:19
3072162	3072162042	PS	WP	6/7/2012 0:01	RTI	1.11U	4.04	9.07	7/22/12 16:27
3072162	3072162043	PS	WP	6/7/2012 0:01	RTI	2.47U	4.17	8.94	7/22/12 16:35
3072162	3072162044	PS	WP	6/7/2012 0:01	RTI	2.45U	4.15	8.88	7/22/12 16:43
3072162	3072162045	PS	WP	6/7/2012 0:01	RTI	3.01U	4.21	8.86	7/22/12 16:51
3072162	3072162046	PS	WP	6/7/2012 0:01	RTI	1.08U	3.96	8.88	7/22/12 16:59
3072162	3072162047	PS	WP	6/7/2012 0:01	RTI	4.66J	4.44	8.88	7/22/12 17:07
3072162	3072162048	PS	WP	6/7/2012 0:01	RTI	0.791U	3.91	8.86	7/22/12 17:15
3072162	3072162049	PS	WP	6/7/2012 0:01	RTI	4.71J	4.49	8.98	7/22/12 17:23
3072162	3072162050	PS	WP	6/7/2012 0:01	RTI	2.18U	4.10	8.86	7/22/12 17:31
3072162	3072162051	PS	WP	6/7/2012 0:01	RTI	-1.70U	3.61	8.98	7/22/12 17:39
3072162	3072162052	PS	WP	6/7/2012 0:01	RTI	3.01U	4.21	8.86	7/22/12 17:48
3072162	3072162053	PS	WP	6/7/2012 0:01	RTI	2.73U	4.19	8.89	7/22/12 17:56
3072162	3072162054	PS	WP	6/7/2012 0:01	RTI	0.251U	3.84	8.87	7/22/12 18:04
3072162	3072162055	PS	WP	6/7/2012 0:01	RTI	1.08U	3.96	8.89	7/22/12 18:12
3072162	3072162056	PS	WP	6/7/2012 0:01	RTI	4.66J	4.44	8.88	7/22/12 18:20
3072162	3072162057	PS	WP	6/7/2012 0:01	RTI	7.42J	4.81	8.87	7/22/12 18:28
3072162	3072162058	PS	WP	6/7/2012 0:01	RTI	4.38J	4.40	8.86	7/22/12 18:36
3072162	3072162059	PS	WP	6/7/2012 0:01	RTI	2.20U	4.14	8.96	7/22/12 18:44
3072162	3072162060	PS	WP	6/7/2012 0:01	RTI	-2.56U	3.51	9.04	7/22/12 18:52

7/31/12

7/26/12

LIMS Load
Printed 7/26/2012 at 9:34 AM

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12514
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012
Act. Rpt Units dpm

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

Bkg CPM 5.73
Bkg Duration 30.0 min
Bkg Ref BKG 7/22/2012
Bkg Ct Date/Time: 7/22/2012 7:16
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
459113	1.0	7/22/12 16:11	7.0	7/22/12 16:11	4.86	315.8	dpm/S	High, Evaluate
3072162041	1.0	6/7/12 0:01	7.0	7/22/12 16:19	6.43	277.5	dpm/S	Pass
3072162042	1.0	6/7/12 0:01	7.0	7/22/12 16:27	6.29	310.0	dpm/S	Pass
3072162043	1.0	6/7/12 0:01	7.0	7/22/12 16:35	7.00	293.8	dpm/S	Pass
3072162044	1.0	6/7/12 0:01	7.0	7/22/12 16:43	7.00	282.3	dpm/S	Pass
3072162045	1.0	6/7/12 0:01	7.0	7/22/12 16:51	7.29	267.1	dpm/S	Pass
3072162046	1.0	6/7/12 0:01	7.0	7/22/12 16:59	6.29	283.6	dpm/S	Pass
3072162047	1.0	6/7/12 0:01	7.0	7/22/12 17:07	8.14	282.0	dpm/S	Pass
3072162048	1.0	6/7/12 0:01	7.0	7/22/12 17:15	6.14	266.9	dpm/S	Pass
3072162049	1.0	6/7/12 0:01	7.0	7/22/12 17:23	8.14	300.1	dpm/S	Pass
3072162050	1.0	6/7/12 0:01	7.0	7/22/12 17:31	6.86	273.6	dpm/S	Pass
3072162051	1.0	6/7/12 0:01	7.0	7/22/12 17:39	4.86	300.3	dpm/S	Pass
3072162052	1.0	6/7/12 0:01	7.0	7/22/12 17:48	7.29	272.4	dpm/S	Pass
3072162053	1.0	6/7/12 0:01	7.0	7/22/12 17:56	7.14	285.1	dpm/S	Pass
3072162054	1.0	6/7/12 0:01	7.0	7/22/12 18:04	5.86	276.8	dpm/S	Pass
3072162055	1.0	6/7/12 0:01	7.0	7/22/12 18:12	6.29	285.0	dpm/S	Pass
3072162056	1.0	6/7/12 0:01	7.0	7/22/12 18:20	8.14	282.7	dpm/S	Pass
3072162057	1.0	6/7/12 0:01	7.0	7/22/12 18:28	9.57	261.3	dpm/S	Pass
3072162058	1.0	6/7/12 0:01	7.0	7/22/12 18:36	8.00	274.8	dpm/S	Pass
3072162059	1.0	6/7/12 0:01	7.0	7/22/12 18:44	6.86	297.2	dpm/S	Pass
3072162060	1.0	6/7/12 0:01	7.0	7/22/12 18:52	4.43	306.2	dpm/S	Pass
LCS12514	1.0	7/22/12 19:00	7.0	7/22/12 19:00	59.00	322.6	dpm/S	High, Evaluate
LCSD12514	1.0	7/22/12 19:08	7.0	7/22/12 19:08	58.14	332.0	dpm/S	High, Evaluate

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	12514	**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
459113	0.5060	0.0000	1.0000	-1.719	3.645	3.651	9.080	3.277	1.012	3.645	1.00
3072162041	0.5217	0.1251	0.9931	1.351	3.985	3.989	8.868	3.200	0.988	3.985	1.00
3072162042	0.5098	0.1251	0.9931	1.106	4.041	4.043	9.075	3.275	1.011	4.041	1.00
3072162043	0.5178	0.1251	0.9931	2.470	4.160	4.170	8.935	3.224	0.996	4.160	1.00
3072162044	0.5210	0.1251	0.9930	2.455	4.135	4.145	8.881	3.205	0.989	4.135	1.00
3072162045	0.5220	0.1251	0.9930	3.009	4.197	4.213	8.862	3.198	0.987	4.197	1.00
3072162046	0.5207	0.1251	0.9930	1.083	3.957	3.959	8.885	3.206	0.990	3.957	1.00
3072162047	0.5210	0.1252	0.9930	4.658	4.408	4.443	8.880	3.204	0.989	4.408	1.00
3072162048	0.5220	0.1252	0.9930	0.791	3.908	3.909	8.863	3.198	0.987	3.908	1.00
3072162049	0.5151	0.1252	0.9930	4.711	4.458	4.493	8.981	3.241	1.001	4.458	1.00
3072162050	0.5220	0.1252	0.9930	2.180	4.092	4.100	8.863	3.198	0.988	4.092	1.00
3072162051	0.5151	0.1252	0.9930	-1.701	3.605	3.611	8.982	3.241	1.001	3.605	1.00
3072162052	0.5220	0.1252	0.9930	3.009	4.197	4.212	8.862	3.198	0.987	4.197	1.00
3072162053	0.5204	0.1252	0.9930	2.729	4.174	4.187	8.891	3.208	0.991	4.174	1.00
3072162054	0.5217	0.1253	0.9930	0.251	3.836	3.836	8.867	3.200	0.988	3.836	1.00
3072162055	0.5204	0.1253	0.9930	1.084	3.959	3.961	8.890	3.208	0.991	3.959	1.00
3072162056	0.5209	0.1253	0.9930	4.659	4.409	4.444	8.882	3.205	0.990	4.409	1.00
3072162057	0.5215	0.1253	0.9930	7.415	4.724	4.806	8.872	3.201	0.988	4.724	1.00
3072162058	0.5219	0.1253	0.9930	4.380	4.368	4.399	8.864	3.199	0.988	4.368	1.00
3072162059	0.5164	0.1253	0.9930	2.203	4.136	4.144	8.958	3.233	0.998	4.136	1.00
3072162060	0.5121	0.1254	0.9930	-2.557	3.499	3.512	9.035	3.260	1.007	3.499	1.00
LCS12514	0.5008	0.0000	1.0000	106.360	11.489	17.115	9.173	3.310	1.022	11.489	1.00
LCSD12514	0.4925	0.0000	1.0000	106.407	11.599	17.193	9.328	3.366	1.039	11.599	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	RMK		
Date:	7/27/2012	**Method:**	EPA 906.0M
Worklist:	12514	**SOP:**	
Matrix:	Filter	**MB Sample ID:**	459113

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	-1.7190	3.6510	9.0800	3.27700		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/22/12 19:00	7/22/12 19:08				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.890	1184.889				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.489	118.489				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	106.360	106.407				
1.96 Sigma Unc:	17.115	17.193				
% Recovery:	89.76%	89.80%				
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.:	LCS12514					
Duplicate Sample I.D.	LCSD12514					
Sample Result (pCi/L, g, F):	106.3600					
1.96 Sigma Unc:	17.1150					
Sample Duplicate Result (pCi/L, g, F):	106.4070					
Duplicate Sample 1.96 Sigma Unc.	17.1930					
Either results below MDC?	NO					
Relative Percent Difference:	0.04%					
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:

07/31/12

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12514

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

used for 12514,15 07/31/12

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	3.30	5.90	5.73	297.75	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

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			7/22/2012 16:18
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/22/2012 16:11	459113
2	15	7/22/2012 16:19	3072162041
3	23	7/22/2012 16:27	3072162042
4	31	7/22/2012 16:35	3072162043
5	39	7/22/2012 16:43	3072162044
6	47	7/22/2012 16:51	3072162045
7	55	7/22/2012 16:59	3072162046
8	63	7/22/2012 17:07	3072162047
9	71	7/22/2012 17:15	3072162048
10	79	7/22/2012 17:23	3072162049
11	87	7/22/2012 17:31	3072162050
12	95	7/22/2012 17:39	3072162051
13	104	7/22/2012 17:48	3072162052
14	112	7/22/2012 17:56	3072162053
15	120	7/22/2012 18:04	3072162054
16	128	7/22/2012 18:12	3072162055
17	136	7/22/2012 18:20	3072162056
18	144	7/22/2012 18:28	3072162057
19	152	7/22/2012 18:36	3072162058
20	160	7/22/2012 18:44	3072162059
21	168	7/22/2012 18:52	3072162060
22	176	7/22/2012 19:00	LCS12514
23	184	7/22/2012 19:08	LCSD12514
24	192	7/22/2012 19:16	459114
25	200	7/22/2012 19:24	3072162061
26	208	7/22/2012 19:32	3072162062
27	216	7/22/2012 19:40	3072162063
28	224	7/22/2012 19:48	3072162064
29	233	7/22/2012 19:57	3072162065
30	241	7/22/2012 20:05	3072162066
31	249	7/22/2012 20:13	3072162067
32	257	7/22/2012 20:21	3072162068
33	265	7/22/2012 20:29	3072162069
34	273	7/22/2012 20:37	3072162070
35	281	7/22/2012 20:45	3072162071
36	289	7/22/2012 20:53	3072162072
37	297	7/22/2012 21:01	3072162073
38	305	7/22/2012 21:09	3072162074
39	313	7/22/2012 21:17	3072162075

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	2.00	5.14	4.86	315.84	5
20	2	7.00	15	4.57	6.43	6.43	277.50	2
20	3	7.00	23	3.71	6.29	6.29	310.03	2
20	4	7.00	31	2.57	7.00	7.00	293.77	2
20	5	7.00	39	3.57	7.00	7.00	282.28	1
20	6	7.00	47	3.57	7.14	7.29	267.14	2
20	7	7.00	55	3.43	6.29	6.29	283.56	2
20	8	7.00	63	4.29	8.14	8.14	281.99	1
20	9	7.00	71	3.29	6.14	6.14	266.87	2
20	10	7.00	79	4.57	8.29	8.14	300.14	1
20	11	7.00	87	3.00	6.57	6.86	273.60	2
20	12	7.00	95	1.43	5.00	4.86	300.25	4
20	13	7.00	104	3.14	7.14	7.29	272.44	3
20	14	7.00	112	3.43	7.14	7.14	285.14	2
20	15	7.00	120	2.43	6.00	5.86	276.78	3
20	16	7.00	128	3.29	6.29	6.29	284.96	3
20	17	7.00	136	4.14	7.86	8.14	282.70	2
20	18	7.00	144	4.86	9.57	9.57	261.29	1
20	19	7.00	152	3.57	8.14	8.00	274.81	3
20	20	7.00	160	2.71	6.86	6.86	297.18	2
20	21	7.00	168	1.86	4.57	4.43	306.20	4
20	22	7.00	176	43.71	58.29	59.00	322.61	0
20	23	7.00	184	43.86	57.43	58.14	332.02	0
20	24	7.00	192	3.86	8.43	8.57	337.13	2
20	25	7.00	200	4.86	8.71	8.71	295.31	1
20	26	7.00	208	2.71	6.57	6.43	276.19	3
20	27	7.00	216	4.00	6.43	6.57	302.92	2
20	28	7.00	224	3.57	6.71	6.71	340.90	1
20	29	7.00	233	4.00	7.29	7.43	197.42	1
20	30	7.00	241	2.71	6.86	6.71	263.10	2
20	31	7.00	249	4.71	7.29	7.43	263.82	1
20	32	7.00	257	3.71	6.71	6.71	251.12	2
20	33	7.00	265	2.71	7.71	7.71	152.41	1
20	34	7.00	273	4.29	7.14	7.14	273.54	1
20	35	7.00	281	2.43	5.00	5.14	283.01	3
20	36	7.00	289	4.14	6.29	6.57	274.85	2
20	37	7.00	297	2.14	4.57	4.43	315.72	4
20	38	7.00	305	2.86	6.29	6.14	263.70	2
20	39	7.00	313	3.14	6.86	7.14	322.56	1

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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
3072159045	12499	Swipe_H3.C14	10	27	7/21/12 1430	7	NA	RMK
046								
047								
048								
049								
050								
051								
052			8					
053								
054								
055								
056								
057								
058								
059								
060								
LCS 12499								
LCSD 12499								
MB	12514	Swipe_H3.C14	20	20	7/22/12 1346	7	NA	RMK
3072162041								
42								
43								
44								
45								

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
30721620 46	12514	Swipe_H3.C14	20	20	7/22/12 1346	7	MA	
47								
48								
49								
50								
51								
52			14					
53								
54								
55								
56								
57								
58								
59								
60								
LCS								
LCSD								
MB	12515							
30721662061			9					
62								
63								
64								
65								
66								

Run comments: _____

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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1 459114-BLANK for HBN 91090 [RADC/1251

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

Prep Information

Procedure 9060 I LEB **Batch** RADC/12515 **Prep Date** 7/22/2012 19:16 **Dilution**
Method EPA 906.0M **HBN** 91090 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796308 **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** 7/22/2012 19:16 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796308 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	5.83J ± 4.83 (9.42)	dpm/sa	5.83J ± 4.83 (9.42)			dpm/sa

2 3072162061-SH-30

Type PS **Matrix** Wipe **Collected** 6/7/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12515 **Prep Date** 7/22/2012 19:24 **Dilution**
Method EPA 906.0M **HBN** 91090 **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790850 **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** 7/22/2012 19:24 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/4/2012 23:59 **Analyst** MBT
Schedule 2790850 **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	5.80J ± 4.62 (8.95)	dpm/sa	5.80J ± 4.62 (8.95)					dpm/sa

3 3072162062-SH-B1

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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3 3072162062-SH-B1

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 19:32	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790851	**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**	7/22/2012 19:32	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790851	**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 ± 3.98 (8.85)	dpm/sa	1.35U ± 3.98 (8.85)		dpm/sa		

4 3072162063-SH-B2

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 19:40	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790852	**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**	7/22/2012 19:40	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790852	**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 ± 4.08 (8.99)	dpm/sa	1.64U ± 4.08 (8.99)		dpm/sa		

5 3072162064-SH-B3

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072162064-SH-B3

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790853

Batch RADC/12515
HBN 91090
Instru NONE

Prep Date 7/22/2012 19:48
Hold Date 12/16/2012 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 2790853

Instru NONE
Col ID
File

Run Date 7/22/2012 19:48
Hold Date 12/16/2012 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	2.04U ± 4.38 (9.55)	dpm/sa	2.04U ± 4.38 (9.55)		dpm/sa		

6 3072162065-SH-B4

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790854

Batch RADC/12515
HBN 91090
Instru NONE

Prep Date 7/22/2012 19:57
Hold Date 12/16/2012 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 2790854

Instru NONE
Col ID
File

Run Date 7/22/2012 19:57
Hold Date 12/16/2012 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	3.55J ± 4.60 (9.59)	dpm/sa	3.55J ± 4.60 (9.59)		dpm/sa		

7 3072162066-SH-B5

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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7 3072162066-SH-B5

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 20:05	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790855	**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**	7/22/2012 20:05	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790855	**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	1.89U ± 4.06 (8.85)	dpm/sa	1.89U ± 4.06 (8.85)		dpm/sa		

8 3072162067-SH-B6

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 20:13	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790856	**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**	7/22/2012 20:13	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790856	**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	3.27J ± 4.24 (8.85)	dpm/sa	3.27J ± 4.24 (8.85)		dpm/sa		

9 3072162068-SH-BSUMP

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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9 3072162068-SH-BSUMP

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 20:21	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790857	**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**	7/22/2012 20:21	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790857	**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	1.90U ± 4.07 (8.89)	dpm/sa	1.90U ± 4.07 (8.89)		dpm/sa		

10 3072162069-SH-BOILERSUMP

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 20:29	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790858	**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**	7/22/2012 20:29	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790858	**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	4.79J ± 5.42 (11.1)	dpm/sa	4.79J ± 5.42 (11.1)		dpm/sa		

11 3072162070-SH-2FF

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch RADC/12515 HBN 91090
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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11 3072162070-SH-2FF

Prep Information

Procedure 9060 I LEB **Batch** RADC/12515 **Prep Date** 7/22/2012 20:37 **Dilution**
Method EPA 906.0M **HBN** 91090 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790859 **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** 7/22/2012 20:37 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790859 **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	2.72U ± 4.17 (8.85)	dpm/sa	2.72U ± 4.17 (8.85)		dpm/sa		

12 3072162071-SH-2FS

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12515 **Prep Date** 7/22/2012 20:45 **Dilution**
Method EPA 906.0M **HBN** 91090 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790860 **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** 7/22/2012 20:45 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790860 **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 ± 3.64 (8.87)	dpm/sa	-1.14U ± 3.64 (8.87)		dpm/sa		

13 3072162072-SH-1F-W-S

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

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Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

13 3072162072-SH-1F-W-S

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 20:53
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59
Schedule	2790861	**Instru**	NONE		

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	**Instru**	NONE	**Run Date**	7/22/2012 20:53
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59
Schedule	2790861	**File**			

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	1.62U ± 4.02 (8.85)	dpm/sa	1.62U ± 4.02 (8.85)		dpm/sa		

14 3072162073-SH-1F-W-F

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083

% Moisture	
Location	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 21:01
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59
Schedule	2790862	**Instru**	NONE		

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	**Instru**	NONE	**Run Date**	7/22/2012 21:01
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59
Schedule	2790862	**File**			

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	-2.58U ± 3.55 (9.13)	dpm/sa	-2.58U ± 3.55 (9.13)		dpm/sa		

15 3072162074-SH-1F-RS

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083

% Moisture	
Location	

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

Quality Control Review

Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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15 3072162074-SH-1F-RS

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 21:09	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790863	**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**	7/22/2012 21:09	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790863	**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 ± 3.90 (8.85)	dpm/sa	0.790U ± 3.90 (8.85)		dpm/sa		

16 3072162075-SH-1F-RF

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/22/2012 21:17	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790864	**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**	7/22/2012 21:17	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790864	**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	2.83U ± 4.34 (9.22)	dpm/sa	2.83U ± 4.34 (9.22)		dpm/sa		

17 3072162076-SH-MS-S

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch RADC/12515 HBN 91090
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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17 3072162076-SH-MS-S

Prep Information

Procedure 9060 I LEB **Batch** RADC/12515 **Prep Date** 7/26/2012 16:20 **Dilution**
Method EPA 906.0M **HBN** 91090 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790865 **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** 7/26/2012 16:20 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790865 **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	4.83J ± 4.61 (9.21)	dpm/sa	4.83J ± 4.61 (9.21)		dpm/sa		

18 3072162077-SH-MS-F

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12515 **Prep Date** 7/26/2012 16:28 **Dilution**
Method EPA 906.0M **HBN** 91090 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790866 **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** 7/26/2012 16:28 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790866 **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	1.94U ± 4.17 (9.10)	dpm/sa	1.94U ± 4.17 (9.10)		dpm/sa		

19 3072162078-SH-08-S

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12515	HBN	91090
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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19 3072162078-SH-08-S

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790867

Batch RADC/12515
HBN 91090
Instru NONE

Prep Date 7/26/2012 16:36
Hold Date 12/16/2012 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 2790867

Instru NONE
Col ID
File

Run Date 7/26/2012 16:36
Hold Date 12/16/2012 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	3.12U ± 4.37 (9.19)	dpm/sa	3.12U ± 4.37 (9.19)		dpm/sa		

20 3072162079-SH-10-D

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790868

Batch RADC/12515
HBN 91090
Instru NONE

Prep Date 7/26/2012 16:44
Hold Date 12/16/2012 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 2790868

Instru NONE
Col ID
File

Run Date 7/26/2012 16:44
Hold Date 12/16/2012 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	4.94J ± 4.48 (8.87)	dpm/sa	4.94J ± 4.48 (8.87)		dpm/sa		

21 3072162080-SH-06-D

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12515	**HBN**	91090
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072162080-SH-06-D

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12515	**Prep Date**	7/26/2012 16:52	**Dilution**	
Method	EPA 906.0M	**HBN**	91090	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790869	**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**	7/26/2012 16:52	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790869	**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 ± 3.98 (8.85)	dpm/sa	1.35U ± 3.98 (8.85)			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 14:01		Assigned Analyst	MBT
Batch ID	12515		Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB	9060W	HBN	91090
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
	459114	BLANK	IP		QCACCOUNT	5.83J	4.83	9.42	7/22/12 19:16
3072162	3072162061	PS	WP	6/7/2012 0:01	RTI	5.80J	4.62	8.95	7/22/12 19:24
3072162	3072162062	PS	WP	6/19/2012 0:01	RTI	1.35U	3.98	8.85	7/22/12 19:32
3072162	3072162063	PS	WP	6/19/2012 0:01	RTI	1.64U	4.08	8.99	7/22/12 19:40
3072162	3072162064	PS	WP	6/19/2012 0:01	RTI	2.04U	4.38	9.55	7/22/12 19:48
3072162	3072162065	PS	WP	6/19/2012 0:01	RTI	3.55J	4.60	9.59	7/22/12 19:57
3072162	3072162066	PS	WP	6/19/2012 0:01	RTI	1.89U	4.06	8.85	7/22/12 20:05
3072162	3072162067	PS	WP	6/19/2012 0:01	RTI	3.27J	4.24	8.85	7/22/12 20:13
3072162	3072162068	PS	WP	6/19/2012 0:01	RTI	1.90U	4.07	8.89	7/22/12 20:21
3072162	3072162069	PS	WP	6/19/2012 0:01	RTI	4.79J	5.42	11.1	7/22/12 20:29
3072162	3072162070	PS	WP	6/19/2012 0:01	RTI	2.72U	4.17	8.85	7/22/12 20:37
3072162	3072162071	PS	WP	6/19/2012 0:01	RTI	-1.14U	3.64	8.87	7/22/12 20:45
3072162	3072162072	PS	WP	6/19/2012 0:01	RTI	1.62U	4.02	8.85	7/22/12 20:53
3072162	3072162073	PS	WP	6/19/2012 0:01	RTI	-2.58U	3.55	9.13	7/22/12 21:01
3072162	3072162074	PS	WP	6/19/2012 0:01	RTI	0.790U	3.90	8.85	7/22/12 21:09
3072162	3072162075	PS	WP	6/19/2012 0:01	RTI	2.83U	4.34	9.22	7/22/12 21:17
3072162	3072162076	PS	WP	6/19/2012 0:01	RTI	4.83J	4.61	9.21	7/26/12 16:20
3072162	3072162077	PS	WP	6/19/2012 0:01	RTI	1.94U	4.17	9.10	7/26/12 16:28
3072162	3072162078	PS	WP	6/19/2012 0:01	RTI	3.12U	4.37	9.19	7/26/12 16:36
3072162	3072162079	PS	WP	6/19/2012 0:01	RTI	4.94J	4.48	8.87	7/26/12 16:44
3072162	3072162080	PS	WP	6/19/2012 0:01	RTI	1.35U	3.98	8.85	7/26/12 16:52

07/31/12

7/27/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12515
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012
Act. Rpt Units dpm

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

Bkg CPM 5.73
Bkg Duration 30.0 min
Bkg Ref BKG 7/22/2012
Bkg Ct Date/Time: 7/22/2012 7:16
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
459114	1.0	7/22/12 19:16	7.0	7/22/12 19:16	8.57	337.1	dpm/S	High, Evaluate
3072162061	1.0	6/7/12 0:01	7.0	7/22/12 19:24	8.71	295.3	dpm/S	Pass
3072162062	1.0	6/19/12 0:01	7.0	7/22/12 19:32	6.43	276.2	dpm/S	Pass
3072162063	1.0	6/19/12 0:01	7.0	7/22/12 19:40	6.57	302.9	dpm/S	Pass
3072162064	1.0	6/19/12 0:01	7.0	7/22/12 19:48	6.71	340.9	dpm/S	High, Evaluate
3072162065	1.0	6/19/12 0:01	7.0	7/22/12 19:57	7.43	197.4	dpm/S	Pass
3072162066	1.0	6/19/12 0:01	7.0	7/22/12 20:05	6.71	263.1	dpm/S	Pass
3072162067	1.0	6/19/12 0:01	7.0	7/22/12 20:13	7.43	263.8	dpm/S	Pass
3072162068	1.0	6/19/12 0:01	7.0	7/22/12 20:21	6.71	251.1	dpm/S	Pass
3072162069	1.0	6/19/12 0:01	7.0	7/22/12 20:29	7.71	152.4	dpm/S	Pass
3072162070	1.0	6/19/12 0:01	7.0	7/22/12 20:37	7.14	273.5	dpm/S	Pass
3072162071	1.0	6/19/12 0:01	7.0	7/22/12 20:45	5.14	283.0	dpm/S	Pass
3072162072	1.0	6/19/12 0:01	7.0	7/22/12 20:53	6.57	274.9	dpm/S	Pass
3072162073	1.0	6/19/12 0:01	7.0	7/22/12 21:01	4.43	315.7	dpm/S	High, Evaluate
3072162074	1.0	6/19/12 0:01	7.0	7/22/12 21:09	6.14	263.7	dpm/S	Pass
3072162075	1.0	6/19/12 0:01	7.0	7/22/12 21:17	7.14	322.6	dpm/S	High, Evaluate
3072162076	1.0	6/19/12 0:01	7.0	7/26/12 16:20	8.14	321.4	dpm/S	High, Evaluate
3072162077	1.0	6/19/12 0:01	7.0	7/26/12 16:28	6.71	313.3	dpm/S	High, Evaluate
3072162078	1.0	6/19/12 0:01	7.0	7/26/12 16:36	7.29	320.5	dpm/S	High, Evaluate
3072162079	1.0	6/19/12 0:01	7.0	7/26/12 16:44	8.29	281.2	dpm/S	Pass
3072162080	1.0	6/19/12 0:01	7.0	7/26/12 16:52	6.43	270.1	dpm/S	Pass
LCS12515	1.0	7/26/12 17:00	7.0	7/26/12 17:00	55.29	313.4	dpm/S	High, Evaluate
LCSD12515	1.0	7/26/12 17:08	7.0	7/26/12 17:08	55.86	328.6	dpm/S	High, Evaluate

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	12515	**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
459114	0.4875	0.0000	1.0000	5.826	4.783	4.834	9.425	3.401	1.050	4.783	1.00
3072162061	0.5172	0.1254	0.9930	5.802	4.572	4.624	8.945	3.228	0.997	4.572	1.00
3072162062	0.5218	0.0926	0.9949	1.348	3.977	3.980	8.850	3.194	0.986	3.977	1.00
3072162063	0.5138	0.0926	0.9949	1.643	4.075	4.080	8.988	3.243	1.001	4.075	1.00
3072162064	0.4835	0.0926	0.9949	2.038	4.369	4.376	9.552	3.447	1.064	4.369	1.00
3072162065	0.4813	0.0926	0.9948	3.550	4.581	4.600	9.594	3.462	1.069	4.581	1.00
3072162066	0.5217	0.0926	0.9948	1.888	4.049	4.055	8.852	3.194	0.986	4.049	1.00
3072162067	0.5218	0.0927	0.9948	3.275	4.226	4.244	8.850	3.194	0.986	4.226	1.00
3072162068	0.5193	0.0927	0.9948	1.897	4.068	4.074	8.893	3.209	0.991	4.068	1.00
3072162069	0.4152	0.0927	0.9948	4.793	5.394	5.424	11.122	4.013	1.239	5.394	1.00
3072162070	0.5220	0.0927	0.9948	2.715	4.153	4.166	8.847	3.192	0.986	4.153	1.00
3072162071	0.5208	0.0927	0.9948	-1.139	3.639	3.641	8.867	3.200	0.988	3.639	1.00
3072162072	0.5219	0.0927	0.9948	1.618	4.012	4.017	8.848	3.193	0.986	4.012	1.00
3072162073	0.5061	0.0927	0.9948	-2.582	3.534	3.547	9.126	3.293	1.017	3.534	1.00
3072162074	0.5218	0.0928	0.9948	0.790	3.902	3.904	8.851	3.194	0.986	3.902	1.00
3072162075	0.5009	0.0928	0.9948	2.830	4.328	4.342	9.220	3.327	1.027	4.328	1.00
3072162076	0.5018	0.1032	0.9943	4.831	4.571	4.607	9.209	3.323	1.026	4.571	1.00
3072162077	0.5077	0.1032	0.9943	1.941	4.163	4.169	9.101	3.284	1.014	4.163	1.00
3072162078	0.5026	0.1032	0.9943	3.122	4.355	4.371	9.194	3.318	1.024	4.355	1.00
3072162079	0.5211	0.1032	0.9943	4.941	4.436	4.475	8.867	3.200	0.988	4.436	1.00
3072162080	0.5221	0.1032	0.9943	1.349	3.977	3.981	8.850	3.194	0.986	3.977	1.00
LCS12515	0.5077	0.0000	1.0000	97.624	10.981	16.005	9.050	3.266	1.008	10.981	1.00
LCSD12515	0.4957	0.0000	1.0000	101.131	11.303	16.530	9.268	3.345	1.033	11.303	1.00

7/27/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst: RMK
Date: 7/27/2012 **Method:** EPA 906.0M
Worklist: 12515 **SOP:**
Matrix: Filter **MB Sample ID:** 459114

Method Blank Assessment						
Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	5.8260	4.8340	9.4250	3.40100		

Laboratory Control Sample Assessment						
	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/26/12 17:00	7/26/12 17:08				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.802	1184.801				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.480	118.480				
1.96 Sigma Uncertainty (Calculated):	2.136	2.136				
Result (pCi/L, g, F):	97.624	101.131				
1.96 Sigma Unc:	16.005	16.530				
% Recovery:	82.40%	85.36%				
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.:	LCS12515					
Duplicate Sample I.D.	LCSD12515					
Sample Result (pCi/L, g, F):	97.6240					
1.96 Sigma Unc:	16.0050					
Sample Duplicate Result (pCi/L, g, F):	101.1310					
Duplicate Sample 1.96 Sigma Unc.	16.5300					
Either results below MDC?	NO					
Relative Percent Difference:	3.53%					
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:

7/27/31/12

Test: Low Energy Beta
Matrix: Smear
Batch ID: 12515

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*	*7/19/2013*		
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%

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%

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

used for 125I $, 15
Jn 7/31/12

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	3.30	5.90	5.73	297.75	3

SYSTEM NORMALIZED

C14 IPA DATA PROCESSED

H3 IPA DATA PROCESSED

BKG IPA DATA PROCESSED

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			7/22/2012 16:18
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/22/2012 16:11	459113
2	15	7/22/2012 16:19	3072162041
3	23	7/22/2012 16:27	3072162042
4	31	7/22/2012 16:35	3072162043
5	39	7/22/2012 16:43	3072162044
6	47	7/22/2012 16:51	3072162045
7	55	7/22/2012 16:59	3072162046
8	63	7/22/2012 17:07	3072162047
9	71	7/22/2012 17:15	3072162048
10	79	7/22/2012 17:23	3072162049
11	87	7/22/2012 17:31	3072162050
12	95	7/22/2012 17:39	3072162051
13	104	7/22/2012 17:48	3072162052
14	112	7/22/2012 17:56	3072162053
15	120	7/22/2012 18:04	3072162054
16	128	7/22/2012 18:12	3072162055
17	136	7/22/2012 18:20	3072162056
18	144	7/22/2012 18:28	3072162057
19	152	7/22/2012 18:36	3072162058
20	160	7/22/2012 18:44	3072162059
21	168	7/22/2012 18:52	3072162060
22	176	7/22/2012 19:00	LCS12514
23	184	7/22/2012 19:08	LCSD12514
24	192	7/22/2012 19:16	459114
25	200	7/22/2012 19:24	3072162061
26	208	7/22/2012 19:32	3072162062
27	216	7/22/2012 19:40	3072162063
28	224	7/22/2012 19:48	3072162064
29	233	7/22/2012 19:57	3072162065
30	241	7/22/2012 20:05	3072162066
31	249	7/22/2012 20:13	3072162067
32	257	7/22/2012 20:21	3072162068
33	265	7/22/2012 20:29	3072162069
34	273	7/22/2012 20:37	3072162070
35	281	7/22/2012 20:45	3072162071
36	289	7/22/2012 20:53	3072162072
37	297	7/22/2012 21:01	3072162073
38	305	7/22/2012 21:09	3072162074
39	313	7/22/2012 21:17	3072162075

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	2.00	5.14	4.86	315.84	5
20	2	7.00	15	4.57	6.43	6.43	277.50	2
20	3	7.00	23	3.71	6.29	6.29	310.03	2
20	4	7.00	31	2.57	7.00	7.00	293.77	2
20	5	7.00	39	3.57	7.00	7.00	282.28	1
20	6	7.00	47	3.57	7.14	7.29	267.14	2
20	7	7.00	55	3.43	6.29	6.29	283.56	2
20	8	7.00	63	4.29	8.14	8.14	281.99	1
20	9	7.00	71	3.29	6.14	6.14	266.87	2
20	10	7.00	79	4.57	8.29	8.14	300.14	1
20	11	7.00	87	3.00	6.57	6.86	273.60	2
20	12	7.00	95	1.43	5.00	4.86	300.25	4
20	13	7.00	104	3.14	7.14	7.29	272.44	3
20	14	7.00	112	3.43	7.14	7.14	285.14	2
20	15	7.00	120	2.43	6.00	5.86	276.78	3
20	16	7.00	128	3.29	6.29	6.29	284.96	3
20	17	7.00	136	4.14	7.86	8.14	282.70	2
20	18	7.00	144	4.86	9.57	9.57	261.29	1
20	19	7.00	152	3.57	8.14	8.00	274.81	3
20	20	7.00	160	2.71	6.86	6.86	297.18	2
20	21	7.00	168	1.86	4.57	4.43	306.20	4
20	22	7.00	176	43.71	58.29	59.00	322.61	0
20	23	7.00	184	43.86	57.43	58.14	332.02	0
20	24	7.00	192	3.86	8.43	8.57	337.13	2
20	25	7.00	200	4.86	8.71	8.71	295.31	1
20	26	7.00	208	2.71	6.57	6.43	276.19	3
20	27	7.00	216	4.00	6.43	6.57	302.92	2
20	28	7.00	224	3.57	6.71	6.71	340.90	1
20	29	7.00	233	4.00	7.29	7.43	197.42	1
20	30	7.00	241	2.71	6.86	6.71	263.10	2
20	31	7.00	249	4.71	7.29	7.43	263.82	1
20	32	7.00	257	3.71	6.71	6.71	251.12	2
20	33	7.00	265	2.71	7.71	7.71	152.41	1
20	34	7.00	273	4.29	7.14	7.14	273.54	1
20	35	7.00	281	2.43	5.00	5.14	283.01	3
20	36	7.00	289	4.14	6.29	6.57	274.85	2
20	37	7.00	297	2.14	4.57	4.43	315.72	4
20	38	7.00	305	2.86	6.29	6.14	263.70	2
20	39	7.00	313	3.14	6.86	7.14	322.56	1

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			7/26/2012 16:27
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/26/2012 16:20	3072162076
2	15	7/26/2012 16:28	3072162077
3	23	7/26/2012 16:36	3072162078
4	31	7/26/2012 16:44	3072162079
5	39	7/26/2012 16:52	3072162080
6	47	7/26/2012 17:00	LCS12515
7	55	7/26/2012 17:08	LCSD12515
8	63	7/26/2012 17:16	459115
9	71	7/26/2012 17:24	3072162081
10	79	7/26/2012 17:32	3072162082
11	87	7/26/2012 17:40	3072162083
12	95	7/26/2012 17:48	3072162084
13	104	7/26/2012 17:57	3072162085
14	112	7/26/2012 18:05	3072162086
15	120	7/26/2012 18:13	3072162087
16	128	7/26/2012 18:21	3072162088
17	136	7/26/2012 18:29	3072162089
18	145	7/26/2012 18:38	3072162090
19	153	7/26/2012 18:46	3072162091
20	161	7/26/2012 18:54	3072162092
21	169	7/26/2012 19:02	3072162093
22	177	7/26/2012 19:10	3072162094
23	185	7/26/2012 19:18	3072162095

Protocol #:15 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
15	1	7.00	7	3.86	8.00	8.14	321.44	1
15	2	7.00	15	4.00	6.86	6.71	313.30	2
15	3	7.00	23	4.00	7.57	7.29	320.45	2
15	4	7.00	31	5.00	8.29	8.29	281.22	2
15	5	7.00	39	2.29	6.71	6.43	270.12	3
15	6	7.00	47	39.71	54.57	55.29	313.38	0
15	7	7.00	55	42.29	55.71	55.86	328.63	1
15	8	7.00	63	4.57	7.71	7.71	330.89	1
15	9	7.00	71	2.71	5.29	5.14	278.61	3
15	10	7.00	79	4.57	6.71	6.71	279.86	2
15	11	7.00	87	3.71	7.86	7.71	292.45	2
15	12	7.00	95	3.00	5.43	5.43	304.05	3
15	13	7.00	104	3.57	7.00	7.00	260.34	3
15	14	7.00	112	4.29	7.29	7.43	283.83	1
15	15	7.00	120	5.00	8.29	8.14	293.87	2
15	16	7.00	128	2.00	5.57	5.43	286.42	3
15	17	7.00	136	4.57	8.57	8.43	262.36	2
15	18	7.00	145	5.71	9.71	9.86	248.83	1
15	19	7.00	153	4.00	6.71	6.86	321.92	2
15	20	7.00	161	5.57	9.00	9.14	307.38	1
15	21	7.00	169	5.43	9.29	9.43	288.36	2
15	22	7.00	177	2.86	6.00	5.71	260.75	3
15	23	7.00	185	4.86	7.86	7.86	296.64	1
1 MISSING TUBE(S)								
15	25	7.00	193	3.57	6.86	6.71	289.27	2
15	26	7.00	201	3.71	6.43	6.29	286.26	2
15	27	7.00	209	4.71	8.29	8.14	312.80	2
15	28	7.00	217	3.00	4.86	4.43	290.02	4
15	29	7.00	225	4.71	8.00	8.00	290.99	2
15	30	7.00	233	3.71	8.00	7.86	284.65	1
15	31	7.00	241	4.86	7.71	7.57	289.41	1
15	32	7.00	249	4.14	8.43	8.43	312.89	2
15	33	7.00	257	2.43	5.43	5.57	298.07	3
15	34	7.00	265	3.29	6.14	6.00	307.36	2
15	35	7.00	273	3.71	7.57	7.57	321.78	3
15	36	7.00	281	1.71	4.71	4.29	296.52	6
15	37	7.00	290	5.71	9.00	8.86	265.68	1
15	38	7.00	298	4.71	8.14	8.00	258.98	2
15	39	7.00	306	2.86	6.71	6.43	258.08	3

NOT NEED 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
3072162046	12514	Swipe_H3_C14	20	20	7/22/12 1346	7	MA	
47								
48								
49								
50								
51			↓					
52			14					
53								
54								
55								
56								
57								
58								
59								
60								
LCS								
LCSD	↓							
MB	12515		↓					
3072162061			9					
62								
63								
64								
65								
66	↓	↓	↓	↓	↓	↓	↓	↓

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
30721162067	12515	Surface H3 C14	9	20	7/22/12 1345	7	M4	
68								
69								
70								
71								
72			↓					
73			40					
74			1					
75 X								
76								
77								
78								
79								
80								
LCS ~~81~~								
LCSD	↓							
MB	12516							
30721162081			↓					
82			4					
83								
84								
85								
86								
87	↓	↓	↓	↓	↓	↓	↓	↓

Run comments: * Printout containing data for 30721162076 through 30721162095 was misplaced Samples were recounted on 7/26/12 in protocol 15.

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12516	HBN	91091
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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1 459115-BLANK for HBN 91091 [RADC/1251

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

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 17:16 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796309 **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** 7/26/2012 17:16 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796309 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	2.59U ± 4.57 (9.81)	dpm/sa	2.59U ± 4.57 (9.81)			dpm/sa

2 3072162081-2541-BIAS-25

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 17:24 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790870 **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** 7/26/2012 17:24 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790870 **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	-2.49U ± 3.69 (9.34)	dpm/sa	-2.49U ± 3.69 (9.34)					dpm/sa

3 3072162082-SU-01-BIAS-79

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch RADC/12516 HBN 91091
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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3 3072162082-SU-01-BIAS-79

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 17:32 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790871 **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** 7/26/2012 17:32 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790871 **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	0.540U ± 4.10 (9.34)	dpm/sa	0.540U ± 4.10 (9.34)		dpm/sa		

4 3072162083-SU-02-BIAS-8

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 17:40 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790872 **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** 7/26/2012 17:40 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790872 **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	2.48U ± 4.37 (9.40)	dpm/sa	2.48U ± 4.37 (9.40)		dpm/sa		

5 3072162084-SU-03-BIAS-23

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12516	HBN	91091
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072162084-SU-03-BIAS-23

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12516	**Prep Date**	7/26/2012 17:48	**Dilution**	
Method	EPA 906.0M	**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790873	**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**	7/26/2012 17:48	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790873	**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	-1.96U ± 3.83 (9.49)	dpm/sa	-1.96U ± 3.83 (9.49)		dpm/sa		

6 3072162085-SU-04-BIAS-24

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12516	**Prep Date**	7/26/2012 17:57	**Dilution**	
Method	EPA 906.0M	**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790874	**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**	7/26/2012 17:57	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790874	**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	1.10U ± 4.17 (9.34)	dpm/sa	1.10U ± 4.17 (9.34)		dpm/sa		

7 3072162086-SU-05-BIAS-24

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12516	HBN	91091
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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7 3072162086-SU-05-BIAS-24

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12516	**Prep Date**	7/26/2012 18:05	**Dilution**
Method	EPA 906.0M		**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790875		**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**	7/26/2012 18:05	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790875		**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	1.93U ± 4.28 (9.36)	dpm/sa	1.93U ± 4.28 (9.36)		dpm/sa		

8 3072162087-SU-06-BIAS-2

Type	PS		**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12516	**Prep Date**	7/26/2012 18:13	**Dilution**
Method	EPA 906.0M		**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790876		**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**	7/26/2012 18:13	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790876		**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	3.32U ± 4.49 (9.41)	dpm/sa	3.32U ± 4.49 (9.41)		dpm/sa		

9 3072162088-SU-07-BIAS-5

Type	PS		**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

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

Quality Control Review

Batch RADC/12516 HBN 91091
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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9 3072162088-SU-07-BIAS-5

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 18:21 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790877 **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** 7/26/2012 18:21 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790877 **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	-1.93U ± 3.78 (9.37)	dpm/sa	-1.93U ± 3.78 (9.37)		dpm/sa		

10 3072162089-SU-08-BIAS-1

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 18:29 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790878 **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** 7/26/2012 18:29 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790878 **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	3.86J ± 4.52 (9.34)	dpm/sa	3.86J ± 4.52 (9.34)		dpm/sa		

11 3072162090-SU-08-BIAS-2

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

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Batch	RADC/12516	HBN	91091
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

11 3072162090-SU-08-BIAS-2

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790879

Batch RADC/12516
HBN 91091
Instru NONE

Prep Date 7/26/2012 18:38
Hold Date 12/16/2012 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 2790879

Instru NONE
Col ID
File

Run Date 7/26/2012 18:38
Hold Date 12/16/2012 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	6.65J ± 4.91 (9.39)	dpm/sa	6.65J ± 4.91 (9.39)		dpm/sa		

12 3072162091-SU-08-BIAS-3

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790880

Batch RADC/12516
HBN 91091
Instru NONE

Prep Date 7/26/2012 18:46
Hold Date 12/16/2012 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 2790880

Instru NONE
Col ID
File

Run Date 7/26/2012 18:46
Hold Date 12/16/2012 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	0.863U ± 4.30 (9.72)	dpm/sa	0.863U ± 4.30 (9.72)		dpm/sa		

13 3072162092-SU-09-BIAS-1

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/19/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch RADC/12516 HBN 91091
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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13 3072162092-SU-09-BIAS-1

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 18:54 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790881 **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** 7/26/2012 18:54 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790881 **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	5.33J ± 4.80 (9.53)	dpm/sa	5.33J ± 4.80 (9.53)		dpm/sa		

14 3072162093-SU-11-BIAS

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12516 **Prep Date** 7/26/2012 19:02 **Dilution**
Method EPA 906.0M **HBN** 91091 **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790882 **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** 7/26/2012 19:02 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/16/2012 23:59 **Analyst** MBT
Schedule 2790882 **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	5.81J ± 4.79 (9.38)	dpm/sa	5.81J ± 4.79 (9.38)		dpm/sa		

15 3072162094-SU-12-BIAS

Type PS **Matrix** Wipe **Collected** 6/19/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12516	HBN	91091
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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15 3072162094-SU-12-BIAS

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12516	**Prep Date**	7/26/2012 19:10	**Dilution**
Method	EPA 906.0M		**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790883		**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**	7/26/2012 19:10	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790883		**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	-1.39U ± 3.84 (9.34)	dpm/sa	-1.39U ± 3.84 (9.34)		dpm/sa		

16 3072162095-SU-13-BIAS

Type	PS		**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12516	**Prep Date**	7/26/2012 19:18	**Dilution**
Method	EPA 906.0M		**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790884		**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**	7/26/2012 19:18	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790884		**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 ± 4.42 (9.43)	dpm/sa	2.78U ± 4.42 (9.43)		dpm/sa		

17 3072162096-SU-14-BIAS-25

Type	PS		**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

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

Quality Control Review

Batch	RADC/12516	HBN	91091
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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17 3072162096-SU-14-BIAS-25

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12516	**Prep Date**	7/23/2012 00:31	**Dilution**	
Method	EPA 906.0M	**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790885	**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**	7/23/2012 00:31	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790885	**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 ± 3.77 (9.44)	dpm/sa	-2.22U ± 3.77 (9.44)		dpm/sa		

18 3072162097-SU-15-BIAS

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12516	**Prep Date**	7/23/2012 00:38	**Dilution**	
Method	EPA 906.0M	**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790886	**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**	7/23/2012 00:38	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst**	MBT
Schedule	2790886	**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	-0.829U ± 3.91 (9.34)	dpm/sa	-0.829U ± 3.91 (9.34)		dpm/sa		

19 3072162098-SU-09-VENT PIPE

Type	PS	**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch	RADC/12516	HBN	91091
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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19 3072162098-SU-09-VENT PIPE

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12516	**Prep Date**	7/23/2012 00:46	**Dilution**
Method	EPA 906.0M		**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790887		**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**	7/23/2012 00:46	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790887		**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 ± 4.43 (9.45)	dpm/sa	2.79U ± 4.43 (9.45)		dpm/sa		

20 3072162099-SU-09-VENT OPENING

Type	PS		**Matrix**	Wipe	**Collected**	6/19/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12516	**Prep Date**	7/23/2012 00:54	**Dilution**
Method	EPA 906.0M		**HBN**	91091	**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790888		**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**	7/23/2012 00:54	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/16/2012 23:59	**Analyst** MBT
Schedule	2790888		**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	-0.270U ± 3.99 (9.36)	dpm/sa	-0.270U ± 3.99 (9.36)		dpm/sa		

21 3072162100-SU-102-FD

Type	PS		**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

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

Quality Control Review

Batch	RADC/12516	**HBN**	91091
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072162100-SU-102-FD

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12516	**Prep Date**	7/23/2012 01:02	**Dilution**
Method	EPA 906.0M		**HBN**	91091	**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790889		**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**	7/23/2012 01:02	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790889		**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	-1.40U ± 3.87 (9.41)	dpm/sa	-1.40U ± 3.87 (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 14:01	Assigned Analyst	MBT
Batch ID	12516	Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB 9060W	HBN	91091
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
	459115	BLANK	IP		QCACCOUNT	2.59U	4.57	9.81	7/26/12 17:16
3072162	3072162081	PS	WP	6/19/2012 0:01	RTI	-2.49U	3.69	9.34	7/26/12 17:24
3072162	3072162082	PS	WP	6/19/2012 0:01	RTI	0.540U	4.10	9.34	7/26/12 17:32
3072162	3072162083	PS	WP	6/19/2012 0:01	RTI	2.48U	4.37	9.40	7/26/12 17:40
3072162	3072162084	PS	WP	6/19/2012 0:01	RTI	-1.96U	3.83	9.49	7/26/12 17:48
3072162	3072162085	PS	WP	6/19/2012 0:01	RTI	1.10U	4.17	9.34	7/26/12 17:57
3072162	3072162086	PS	WP	6/19/2012 0:01	RTI	1.93U	4.28	9.36	7/26/12 18:05
3072162	3072162087	PS	WP	6/19/2012 0:01	RTI	3.32U	4.49	9.41	7/26/12 18:13
3072162	3072162088	PS	WP	6/19/2012 0:01	RTI	-1.93U	3.78	9.37	7/26/12 18:21
3072162	3072162089	PS	WP	6/19/2012 0:01	RTI	3.86J	4.52	9.34	7/26/12 18:29
3072162	3072162090	PS	WP	6/19/2012 0:01	RTI	6.65J	4.91	9.39	7/26/12 18:38
3072162	3072162091	PS	WP	6/19/2012 0:01	RTI	0.863U	4.30	9.72	7/26/12 18:46
3072162	3072162092	PS	WP	6/19/2012 0:01	RTI	5.33J	4.80	9.53	7/26/12 18:54
3072162	3072162093	PS	WP	6/19/2012 0:01	RTI	5.81J	4.79	9.38	7/26/12 19:02
3072162	3072162094	PS	WP	6/19/2012 0:01	RTI	-1.39U	3.84	9.34	7/26/12 19:10
3072162	3072162095	PS	WP	6/19/2012 0:01	RTI	2.78U	4.42	9.43	7/26/12 19:18
3072162	3072162096	PS	WP	6/19/2012 0:01	RTI	-2.22U	3.77	9.44	7/23/12 0:31
3072162	3072162097	PS	WP	6/19/2012 0:01	RTI	-0.829U	3.91	9.34	7/23/12 0:38
3072162	3072162098	PS	WP	6/19/2012 0:01	RTI	2.79U	4.43	9.45	7/23/12 0:46
3072162	3072162099	PS	WP	6/19/2012 0:01	RTI	-0.270U	3.99	9.36	7/23/12 0:54
3072162	3072162100	PS	WP	6/21/2012 0:01	RTI	-1.40U	3.87	9.41	7/23/12 1:02

7/31/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12516
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012
Act. Rpt Units dpm

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

Bkg CPM 6.43
Bkg Duration 30.0 min
Bkg Ref BKG 7/22/2012
Bkg Ct Date/Time: 7/22/2012 16:09
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
459115	1.0	7/26/12 17:16	7.0	7/26/12 17:16	7.71	330.9	dpm/S	High, Evaluate
3072162081	1.0	6/19/12 0:01	7.0	7/26/12 17:24	5.14	278.6	dpm/S	Pass
3072162082	1.0	6/19/12 0:01	7.0	7/26/12 17:32	6.71	279.9	dpm/S	Pass
3072162083	1.0	6/19/12 0:01	7.0	7/26/12 17:40	7.71	292.5	dpm/S	Pass
3072162084	1.0	6/19/12 0:01	7.0	7/26/12 17:48	5.43	304.1	dpm/S	Pass
3072162085	1.0	6/19/12 0:01	7.0	7/26/12 17:57	7.00	260.3	dpm/S	Pass
3072162086	1.0	6/19/12 0:01	7.0	7/26/12 18:05	7.43	283.8	dpm/S	Pass
3072162087	1.0	6/19/12 0:01	7.0	7/26/12 18:13	8.14	293.9	dpm/S	Pass
3072162088	1.0	6/19/12 0:01	7.0	7/26/12 18:21	5.43	286.4	dpm/S	Pass
3072162089	1.0	6/19/12 0:01	7.0	7/26/12 18:29	8.43	262.4	dpm/S	Pass
3072162090	1.0	6/19/12 0:01	7.0	7/26/12 18:38	9.86	248.8	dpm/S	Pass
3072162091	1.0	6/19/12 0:01	7.0	7/26/12 18:46	6.86	321.9	dpm/S	High, Evaluate
3072162092	1.0	6/19/12 0:01	7.0	7/26/12 18:54	9.14	307.4	dpm/S	Pass
3072162093	1.0	6/19/12 0:01	7.0	7/26/12 19:02	9.43	288.4	dpm/S	Pass
3072162094	1.0	6/19/12 0:01	7.0	7/26/12 19:10	5.71	260.8	dpm/S	Pass
3072162095	1.0	6/19/12 0:01	7.0	7/26/12 19:18	7.86	296.6	dpm/S	Pass
3072162096	1.0	6/19/12 0:01	7.0	7/23/12 0:31	5.29	298.5	dpm/S	Pass
3072162097	1.0	6/19/12 0:01	7.0	7/23/12 0:38	6.00	280.7	dpm/S	Pass
3072162098	1.0	6/19/12 0:01	7.0	7/23/12 0:46	7.86	299.6	dpm/S	Pass
3072162099	1.0	6/19/12 0:01	7.0	7/23/12 0:54	6.29	285.2	dpm/S	Pass
3072162100	1.0	6/21/12 0:01	7.0	7/23/12 1:02	5.71	245.8	dpm/S	Pass
LCS12516	1.0	7/23/12 1:10	7.0	7/23/12 1:10	59.71	324.2	dpm/S	High, Evaluate
LCSD12516	1.0	7/23/12 1:18	7.0	7/23/12 1:18	53.57	323.5	dpm/S	High, Evaluate

7/27/31/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	MBT
Matrix	Smear	**PrepSOP1**	0
Batch ID	12516	**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
459115	0.4936	0.0000	1.0000	2.593	4.555	4.565	9.813	3.558	1.037	4.555	1.00
3072162081	0.5215	0.1033	0.9943	-2.488	3.681	3.693	9.341	3.387	0.987	3.681	1.00
3072162082	0.5214	0.1033	0.9943	0.540	4.095	4.095	9.344	3.388	0.988	4.095	1.00
3072162083	0.5182	0.1033	0.9943	2.484	4.363	4.373	9.401	3.408	0.993	4.363	1.00
3072162084	0.5132	0.1033	0.9943	-1.960	3.822	3.829	9.493	3.442	1.003	3.822	1.00
3072162085	0.5214	0.1033	0.9943	1.100	4.167	4.169	9.345	3.388	0.988	4.167	1.00
3072162086	0.5206	0.1034	0.9943	1.932	4.277	4.283	9.357	3.393	0.989	4.277	1.00
3072162087	0.5177	0.1034	0.9943	3.322	4.468	4.486	9.410	3.412	0.994	4.468	1.00
3072162088	0.5200	0.1034	0.9943	-1.934	3.772	3.779	9.368	3.397	0.990	3.772	1.00
3072162089	0.5216	0.1034	0.9943	3.856	4.501	4.525	9.340	3.386	0.987	4.501	1.00
3072162090	0.5186	0.1034	0.9943	6.652	4.843	4.907	9.394	3.406	0.993	4.843	1.00
3072162091	0.5014	0.1034	0.9942	0.863	4.297	4.298	9.716	3.523	1.027	4.297	1.00
3072162092	0.5114	0.1035	0.9942	5.330	4.753	4.795	9.527	3.454	1.007	4.753	1.00
3072162093	0.5195	0.1035	0.9942	5.808	4.742	4.792	9.377	3.400	0.991	4.742	1.00
3072162094	0.5214	0.1035	0.9942	-1.389	3.837	3.841	9.344	3.388	0.987	3.837	1.00
3072162095	0.5167	0.1035	0.9942	2.784	4.412	4.425	9.429	3.419	0.996	4.412	1.00
3072162096	0.5159	0.0931	0.9948	-2.221	3.762	3.771	9.438	3.422	0.997	3.762	1.00
3072162097	0.5212	0.0932	0.9948	-0.829	3.913	3.914	9.342	3.387	0.987	3.913	1.00
3072162098	0.5154	0.0932	0.9948	2.789	4.420	4.433	9.447	3.425	0.998	4.420	1.00
3072162099	0.5203	0.0932	0.9948	-0.270	3.994	3.995	9.358	3.393	0.989	3.994	1.00
3072162100	0.5175	0.0877	0.9951	-1.398	3.863	3.866	9.405	3.410	0.994	3.863	1.00
LCS12516	0.4995	0.0000	1.0000	106.662	11.603	17.218	9.697	3.516	1.025	11.603	1.00
LCSD12516	0.5001	0.0000	1.0000	94.255	10.992	15.723	9.685	3.512	1.024	10.992	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	RMK		
Date:	7/27/2012	Method:	EPA 906.0M
Worklist:	12516	SOP:	
Matrix:	Filter	MB Sample ID:	459115

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	2.5930	4.5650	9.8130	3.55800		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/23/12 1:10	7/23/12 1:18				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.884	1184.884				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.488	118.488				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	106.662	94.255				
1.96 Sigma Unc:	17.218	15.723				
% Recovery:	90.02%	79.55%				
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.:	LCS12516					
Duplicate Sample I.D.	LCSD12516					
Sample Result (pCi/L, g, F):	106.6620					
1.96 Sigma Unc:	17.2180					
Sample Duplicate Result (pCi/L, g, F):	94.2550					
Duplicate Sample 1.96 Sigma Unc.	15.7230					
Either results below MDC?	NO					
Relative Percent Difference:	12.35%					
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: 12516

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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%

used for 12516, 17, 18
Jul 31 12

22 Jul 12 16:09
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	EL.TIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	2.90	6.53	6.43	299.83	5

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			7/26/2012 16:27
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
1	7	7/26/2012 16:20	3072162076
2	15	7/26/2012 16:28	3072162077
3	23	7/26/2012 16:36	3072162078
4	31	7/26/2012 16:44	3072162079
5	39	7/26/2012 16:52	3072162080
6	47	7/26/2012 17:00	LCS12515
7	55	7/26/2012 17:08	LCSD12515
8	63	7/26/2012 17:16	459115
9	71	7/26/2012 17:24	3072162081
10	79	7/26/2012 17:32	3072162082
11	87	7/26/2012 17:40	3072162083
12	95	7/26/2012 17:48	3072162084
13	104	7/26/2012 17:57	3072162085
14	112	7/26/2012 18:05	3072162086
15	120	7/26/2012 18:13	3072162087
16	128	7/26/2012 18:21	3072162088
17	136	7/26/2012 18:29	3072162089
18	145	7/26/2012 18:38	3072162090
19	153	7/26/2012 18:46	3072162091
20	161	7/26/2012 18:54	3072162092
21	169	7/26/2012 19:02	3072162093
22	177	7/26/2012 19:10	3072162094
23	185	7/26/2012 19:18	3072162095

Protocol #:15 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
15	1	7.00	7	3.86	8.00	8.14	321.44	1
15	2	7.00	15	4.00	6.86	6.71	313.30	2
15	3	7.00	23	4.00	7.57	7.29	320.45	2
15	4	7.00	31	5.00	8.29	8.29	281.22	2
15	5	7.00	39	2.29	6.71	6.43	270.12	3
15	6	7.00	47	39.71	54.57	55.29	313.38	0
15	7	7.00	55	42.29	55.71	55.86	328.63	1
15	8	7.00	63	4.57	7.71	7.71	330.89	1
15	9	7.00	71	2.71	5.29	5.14	278.61	3
15	10	7.00	79	4.57	6.71	6.71	279.86	2
15	11	7.00	87	3.71	7.86	7.71	292.45	2
15	12	7.00	95	3.00	5.43	5.43	304.05	3
15	13	7.00	104	3.57	7.00	7.00	260.34	3
15	14	7.00	112	4.29	7.29	7.43	283.83	1
15	15	7.00	120	5.00	8.29	8.14	293.87	2
15	16	7.00	128	2.00	5.57	5.43	286.42	3
15	17	7.00	136	4.57	8.57	8.43	262.36	2
15	18	7.00	145	5.71	9.71	9.86	248.83	1
15	19	7.00	153	4.00	6.71	6.86	321.92	2
15	20	7.00	161	5.57	9.00	9.14	307.38	1
15	21	7.00	169	5.43	9.29	9.43	288.36	2
15	22	7.00	177	2.86	6.00	5.71	260.75	3
15	23	7.00	185	4.86	7.86	7.86	296.64	1
1 MISSING TUBE(S)								
15	25	7.00	193	3.57	6.86	6.71	289.27	2
15	26	7.00	201	3.71	6.43	6.29	286.26	2
15	27	7.00	209	4.71	8.29	8.14	312.80	2
15	28	7.00	217	3.00	4.86	4.43	290.02	4
15	29	7.00	225	4.71	8.00	8.00	290.99	2
15	30	7.00	233	3.71	8.00	7.86	284.65	1
15	31	7.00	241	4.86	7.71	7.57	289.41	1
15	32	7.00	249	4.14	8.43	8.43	312.89	2
15	33	7.00	257	2.43	5.43	5.57	298.07	3
15	34	7.00	265	3.29	6.14	6.00	307.36	2
15	35	7.00	273	3.71	7.57	7.57	321.78	3
15	36	7.00	281	1.71	4.71	4.29	296.52	6
15	37	7.00	290	5.71	9.00	8.86	265.68	1
15	38	7.00	298	4.71	8.14	8.00	258.98	2
15	39	7.00	306	2.86	6.71	6.43	258.08	3

NOT NEED 7/31/12

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			7/23/2012 5:04
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
63	507	7/23/2012 0:31	3072162096
64	515	7/23/2012 0:38	3072162097
65	523	7/23/2012 0:46	3072162098
66	531	7/23/2012 0:54	3072162099
67	539	7/23/2012 1:02	3072162100
68	547	7/23/2012 1:10	LCS12516
69	555	7/23/2012 1:18	LCSD12516
70	563	7/23/2012 1:26	459116
71	571	7/23/2012 1:34	3072162101
72	579	7/23/2012 1:42	3072162102
73	587	7/23/2012 1:50	3072162103
74	595	7/23/2012 1:58	3072162104
75	604	7/23/2012 2:06	3072162105
76	612	7/23/2012 2:15	3072162106
77	620	7/23/2012 2:23	3072162107
78	628	7/23/2012 2:31	3072162108
79	636	7/23/2012 2:39	3072162109
80	644	7/23/2012 2:47	3072162110
81	652	7/23/2012 2:55	3072162111
82	660	7/23/2012 3:03	3072162112
83	668	7/23/2012 3:11	3072162113
84	676	7/23/2012 3:19	3072162114
85	684	7/23/2012 3:27	3072162115
86	692	7/23/2012 3:35	3072162116
87	700	7/23/2012 3:43	3072162117
88	709	7/23/2012 3:51	3072162118
89	717	7/23/2012 4:00	3072162119
90	725	7/23/2012 4:08	3072162120
91	733	7/23/2012 4:16	LCS12517
92	741	7/23/2012 4:24	LCSD12517
93	749	7/23/2012 4:32	459117
94	757	7/23/2012 4:40	3072162121
95	765	7/23/2012 4:48	3072162122
96	773	7/23/2012 4:56	3072162123
97	781	7/23/2012 5:04	LCS12518
98	789	7/23/2012 5:12	LCSD12518

Protocol #:20 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	40	7.00	321	3.00	5.14	5.14	315.70	2
20	41	7.00	329	3.43	5.71	5.57	311.96	3
20	42	7.00	338	3.29	5.86	5.71	321.45	2
20	43	7.00	346	2.14	5.29	5.14	288.11	3
20	44	7.00	354	1.71	4.57	4.71	275.23	2
20	45	7.00	362	43.86	58.43	58.71	311.81	0
20	46	7.00	370	46.71	65.57	66.29	327.68	0
20	47	7.00	378	5.00	7.71	8.00	325.01	1
20	48	7.00	386	3.14	5.86	5.71	279.17	3
20	49	7.00	394	4.71	7.00	7.14	289.08	2
20	50	7.00	402	2.29	5.43	5.14	298.58	4
20	51	7.00	410	3.00	4.86	4.86	320.20	2
20	52	7.00	418	3.86	7.14	7.14	272.73	2
20	53	7.00	426	2.86	5.43	5.29	281.76	4
20	54	7.00	434	3.57	7.29	7.29	302.64	2
20	55	7.00	442	3.71	6.71	6.57	283.99	2
20	56	7.00	450	4.29	6.86	6.86	254.85	1
20	57	7.00	458	3.14	6.43	6.57	249.27	1
20	58	7.00	466	3.86	6.86	7.00	326.75	2
20	59	7.00	474	3.00	5.43	5.29	306.95	3
20	60	7.00	482	5.57	8.43	8.43	290.88	1
20	61	7.00	491	4.43	8.00	8.00	255.86	1
20	62	7.00	499	3.86	6.14	6.29	295.97	2
20	63	7.00	507	3.29	5.43	5.29	298.51	3
20	64	7.00	515	4.29	6.14	6.00	280.74	3
20	65	7.00	523	5.00	7.86	7.86	299.58	2
20	66	7.00	531	3.43	6.43	6.29	285.23	3
20	67	7.00	539	2.43	5.71	5.71	245.82	2
20	68	7.00	547	45.14	59.57	59.71	324.22	1
20	69	7.00	555	39.71	53.14	53.57	323.48	1
20	70	7.00	563	3.00	5.43	5.14	352.57	3
20	71	7.00	571	3.29	6.29	6.57	226.90	6
20	72	7.00	579	4.29	7.57	7.57	252.33	6
20	73	7.00	587	3.29	5.43	5.14	301.67	6
20	74	7.00	595	3.57	6.43	6.00	284.39	6
20	75	7.00	604	3.14	6.29	6.14	247.84	6
20	76	7.00	612	4.29	7.29	7.29	263.48	4
20	77	7.00	620	1.86	4.86	4.71	283.72	6
20	78	7.00	628	5.14	9.00	8.86	303.81	2
20	79	7.00	636	4.14	8.43	8.43	292.35	2
20	80	7.00	644	1.43	5.14	5.00	281.05	5
20	81	7.00	652	4.57	7.86	7.86	286.86	2
20	82	7.00	660	3.14	6.29	6.43	278.97	3
20	83	7.00	668	2.86	4.71	5.00	246.75	7
20	84	7.00	676	3.00	7.71	7.43	285.38	3
20	85	7.00	684	5.86	8.71	9.29	272.17	3
20	86	7.00	692	3.57	6.57	6.29	264.36	5
20	87	7.00	700	1.43	4.57	2.71	333.24	10
20	88	7.00	709	2.29	5.71	5.57	261.56	5
20	89	7.00	717	2.86	6.00	6.14	249.30	4
20	90	7.00	725	5.00	8.43	8.57	254.08	6
20	91	7.00	733	42.14	57.14	57.57	323.79	0
20	92	7.00	741	43.86	55.71	56.14	315.65	1
20	93	7.00	749	3.43	6.00	6.00	335.30	3
20	94	7.00	757	5.00	7.86	8.00	283.72	5
20	95	7.00	765	3.43	6.00	6.00	270.27	5

Not Photocopied correctly samples were recounted. 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
3072162067	12515	Surface H3 C14	9	20	7/22/12 1345	7	NA	
68								
69								
70								
71								
72			↓					
73			40					
74								
75 X								
76								
77								
78								
79								
80								
LCS 81								
LCSD	↓							
MB	12516							
3072162081			↓					
82			4					
83								
84								
85								
86								
87	↓	↓	↓	↓	↓	↓	↓	↓

Run comments: * printout containing data for 3072162076 through 3072162095 was misplaced samples were recounted on 7/26/12 in protocol 15.

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
3072162088	12516	SuperH3C14	4	20	7/22/12 1345	7	NA	
89								
90								
91								
92								
93								
94			13					
95								
96								
97								
98								
99								
100								
LCS								
LCSD								
MB	12517							
3072162101								
102								
103			27					
104								
105								
106								
107								
108								

Run comments: _____

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12517	HBN	91092
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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1 459116-BLANK for HBN 91092 [RADC/1251

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

Prep Information

Procedure 9060 I LEB **Batch** RADC/12517 **Prep Date** 7/23/2012 01:26 **Dilution**
Method EPA 906.0M **HBN** 91092 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796310 **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** 7/23/2012 01:26 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796310 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	-2.75U ± 4.08 (10.3)	dpm/sa	-2.75U ± 4.08 (10.3)		dpm/sa	

2 3072162101-SU-214A-FD

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12517 **Prep Date** 7/23/2012 01:34 **Dilution**
Method EPA 906.0M **HBN** 91092 **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790890 **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** 7/23/2012 01:34 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790890 **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	0.277U ± 4.17 (9.59)	dpm/sa	0.277U ± 4.17 (9.59)		dpm/sa		

3 3072162102-SH-1-M

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

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Batch	RADC/12517	HBN	91092
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

3 3072162102-SH-1-M

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790891

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 01:42
Hold Date 12/18/2012 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 2790891

Instru NONE
Col ID
File

Run Date 7/23/2012 01:42
Hold Date 12/18/2012 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	2.20U ± 4.32 (9.37)	dpm/sa	2.20U ± 4.32 (9.37)		dpm/sa		

4 3072162103-SH-2-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790892

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 01:50
Hold Date 12/18/2012 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 2790892

Instru NONE
Col ID
File

Run Date 7/23/2012 01:50
Hold Date 12/18/2012 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	-2.52U ± 3.74 (9.46)	dpm/sa	-2.52U ± 3.74 (9.46)		dpm/sa		

5 3072162104-SH-3-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12517	HBN	91092
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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5 3072162104-SH-3-M

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790893

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 01:58
Hold Date 12/18/2012 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 2790893

Instru NONE
Col ID
File

Run Date 7/23/2012 01:58
Hold Date 12/18/2012 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	-0.830U ± 3.92 (9.35)	dpm/sa	-0.830U ± 3.92 (9.35)		dpm/sa		

6 3072162105-SH-5-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790894

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 02:06
Hold Date 12/18/2012 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 2790894

Instru NONE
Col ID
File

Run Date 7/23/2012 02:06
Hold Date 12/18/2012 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	-0.562U ± 3.97 (9.39)	dpm/sa	-0.562U ± 3.97 (9.39)		dpm/sa		

7 3072162106-SH-6-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12517	HBN	91092
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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7 3072162106-SH-6-M

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790895

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 02:15
Hold Date 12/18/2012 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 2790895

Instru NONE
Col ID
File

Run Date 7/23/2012 02:15
Hold Date 12/18/2012 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	1.66U ± 4.23 (9.33)	dpm/sa	1.66U ± 4.23 (9.33)		dpm/sa		

8 3072162107-SH-8-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790896

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 02:23
Hold Date 12/18/2012 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 2790896

Instru NONE
Col ID
File

Run Date 7/23/2012 02:23
Hold Date 12/18/2012 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	-3.32U ± 3.59 (9.35)	dpm/sa	-3.32U ± 3.59 (9.35)		dpm/sa		

9 3072162108-SH-10-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12517	HBN	91092
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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9 3072162108-SH-10-M

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12517	**Prep Date**	7/23/2012 02:31	**Dilution**	
Method	EPA 906.0M	**HBN**	91092	**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790897	**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**	7/23/2012 02:31	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790897	**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	4.76J ± 4.70 (9.48)	dpm/sa	4.76J ± 4.70 (9.48)		dpm/sa		

10 3072162109-SH-12-M

Type	PS	**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12517	**Prep Date**	7/23/2012 02:39	**Dilution**	
Method	EPA 906.0M	**HBN**	91092	**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790898	**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**	7/23/2012 02:39	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790898	**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	3.88J ± 4.55 (9.39)	dpm/sa	3.88J ± 4.55 (9.39)		dpm/sa		

11 3072162110-SH-14-M

Type	PS	**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch RADC/12517 HBN 91092
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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11 3072162110-SH-14-M

Prep Information

Procedure 9060 I LEB **Batch** RADC/12517 **Prep Date** 7/23/2012 02:47 **Dilution**
Method EPA 906.0M **HBN** 91092 **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790899 **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** 7/23/2012 02:47 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790899 **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	-2.76U ± 3.66 (9.34)	dpm/sa	-2.76U ± 3.66 (9.34)		dpm/sa		

12 3072162111-SH-17-M

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12517 **Prep Date** 7/23/2012 02:55 **Dilution**
Method EPA 906.0M **HBN** 91092 **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790900 **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** 7/23/2012 02:55 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790900 **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	2.76U ± 4.39 (9.36)	dpm/sa	2.76U ± 4.39 (9.36)		dpm/sa		

13 3072162112-SH-18-M

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12517	HBN	91092
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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13 3072162112-SH-18-M

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12517	**Prep Date**	7/23/2012 03:03	**Dilution**	
Method	EPA 906.0M	**HBN**	91092	**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790901	**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**	7/23/2012 03:03	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790901	**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	0.000U ± 4.02 (9.33)	dpm/sa	0.000U ± 4.02 (9.33)		dpm/sa		

14 3072162113-SH-19-M

Type	PS	**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

Prep Information

Procedure	9060 I LEB	**Batch**	RADC/12517	**Prep Date**	7/23/2012 03:11	**Dilution**	
Method	EPA 906.0M	**HBN**	91092	**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790902	**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**	7/23/2012 03:11	**Dilution**	
Method	EPA 906.0M	**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst**	MBT
Schedule	2790902	**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	-2.77U ± 3.68 (9.40)	dpm/sa	-2.77U ± 3.68 (9.40)		dpm/sa		

15 3072162114-SH-25-M

Type	PS	**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**	
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**	

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

Quality Control Review

Batch RADC/12517 HBN 91092
Rule 9060 I LEB Status RE
Create Date 6/28/2012 Analyst MBT

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15 3072162114-SH-25-M

Prep Information

Procedure 9060 I LEB **Batch** RADC/12517 **Prep Date** 7/23/2012 03:19 **Dilution**
Method EPA 906.0M **HBN** 91092 **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790903 **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** 7/23/2012 03:19 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790903 **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	1.93U ± 4.28 (9.36)	dpm/sa	1.93U ± 4.28 (9.36)		dpm/sa		

16 3072162115-SH-26-M

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12517 **Prep Date** 7/23/2012 03:27 **Dilution**
Method EPA 906.0M **HBN** 91092 **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790904 **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** 7/23/2012 03:27 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790904 **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	5.51J ± 4.73 (9.32)	dpm/sa	5.51J ± 4.73 (9.32)		dpm/sa		

17 3072162116-SH-28-M

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12517	HBN	91092
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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17 3072162116-SH-28-M

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790905

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 03:35
Hold Date 12/18/2012 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 2790905

Instru NONE
Col ID
File

Run Date 7/23/2012 03:35
Hold Date 12/18/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-0.270U ± 3.98 (9.33)	dpm/sa	-0.270U ± 3.98 (9.33)		dpm/sa		

18 3072162117-SH-29-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

Prep Information

Procedure 9060 I LEB
Method EPA 906.0M
Schedule 2790906

Batch RADC/12517
HBN 91092
Instru NONE

Prep Date 7/23/2012 03:43
Hold Date 12/18/2012 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 2790906

Instru NONE
Col ID
File

Run Date 7/23/2012 03:43
Hold Date 12/18/2012 23:59

Dilution
Analyst MBT
CC OK F

Analyte	CC	Posted Result		Result	MDL	RDL	Req. Limits Low	Req. Limits High
Rad Chemistry	OK							
LSC Low Energy Beta	OK	-7.61U ± 3.24 (9.91)	dpm/sa	-7.61U ± 3.24 (9.91)		dpm/sa		

19 3072162118-SH-30-M

Type PS
Client RTI

Matrix Wipe
WO 3072162

Collected 6/21/2012 00:01
Work ID Fort Monmouth 1207083

% Moisture
Location

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

Quality Control Review

Batch	RADC/12517	**HBN**	91092
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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19 3072162118-SH-30-M

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12517	**Prep Date**	7/23/2012 03:51	**Dilution**
Method	EPA 906.0M		**HBN**	91092	**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790907		**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**	7/23/2012 03:51	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790907		**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	-1.66U ± 3.80 (9.33)	dpm/sa	-1.66U ± 3.80 (9.33)		dpm/sa		

20 3072162119-SU10-BIAS

Type	PS	**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12517	**Prep Date**	7/23/2012 04:00	**Dilution**
Method	EPA 906.0M		**HBN**	91092	**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790908		**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**	7/23/2012 04:00	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790908		**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	-0.562U ± 3.97 (9.38)	dpm/sa	-0.562U ± 3.97 (9.38)		dpm/sa		

21 3072162120-2541-FBIAS

Type	PS	**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**
Client	RTI	**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

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

Quality Control Review

Batch	RADC/12517	**HBN**	91092
Rule	9060 I LEB	**Status**	RE
Create Date	6/28/2012	**Analyst**	MBT

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21 3072162120-2541-FBIAS

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12517	**Prep Date**	7/23/2012 04:08	**Dilution**
Method	EPA 906.0M		**HBN**	91092	**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790909		**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**	7/23/2012 04:08	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790909		**File**				**CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL		Reg. Limits Low	High
Rad Chemistry	OK								
LSC Low Energy Beta	OK	4.13J ± 4.57 (9.36)	dpm/sa	4.13J ± 4.57 (9.36)			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 14:02		Assigned Analyst	MBT
Batch ID	12517		Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB	9060W	HBN	91092
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
	459116	BLANK	IP		QCACCOUNT	-2.75U	4.08	10.3	7/23/12 1:26
3072162	3072162101	PS	WP	6/21/2012 0:01	RTI	0.277U	4.17	9.59	7/23/12 1:34
3072162	3072162102	PS	WP	6/21/2012 0:01	RTI	2.20U	4.32	9.37	7/23/12 1:42
3072162	3072162103	PS	WP	6/21/2012 0:01	RTI	-2.52U	3.74	9.46	7/23/12 1:50
3072162	3072162104	PS	WP	6/21/2012 0:01	RTI	-0.830U	3.92	9.35	7/23/12 1:58
3072162	3072162105	PS	WP	6/21/2012 0:01	RTI	-0.562U	3.97	9.39	7/23/12 2:06
3072162	3072162106	PS	WP	6/21/2012 0:01	RTI	1.66U	4.23	9.33	7/23/12 2:15
3072162	3072162107	PS	WP	6/21/2012 0:01	RTI	-3.32U	3.59	9.35	7/23/12 2:23
3072162	3072162108	PS	WP	6/21/2012 0:01	RTI	4.76J	4.70	9.48	7/23/12 2:31
3072162	3072162109	PS	WP	6/21/2012 0:01	RTI	3.88J	4.55	9.39	7/23/12 2:39
3072162	3072162110	PS	WP	6/21/2012 0:01	RTI	-2.76U	3.66	9.34	7/23/12 2:47
3072162	3072162111	PS	WP	6/21/2012 0:01	RTI	2.76U	4.39	9.36	7/23/12 2:55
3072162	3072162112	PS	WP	6/21/2012 0:01	RTI	0.000U	4.02	9.33	7/23/12 3:03
3072162	3072162113	PS	WP	6/21/2012 0:01	RTI	-2.77U	3.68	9.40	7/23/12 3:11
3072162	3072162114	PS	WP	6/21/2012 0:01	RTI	1.93U	4.28	9.36	7/23/12 3:19
3072162	3072162115	PS	WP	6/21/2012 0:01	RTI	5.51J	4.73	9.32	7/23/12 3:27
3072162	3072162116	PS	WP	6/21/2012 0:01	RTI	-0.270U	3.98	9.33	7/23/12 3:35
3072162	3072162117	PS	WP	6/21/2012 0:01	RTI	-7.61U	3.24	9.91	7/23/12 3:43
3072162	3072162118	PS	WP	6/21/2012 0:01	RTI	-1.66U	3.80	9.33	7/23/12 3:51
3072162	3072162119	PS	WP	6/21/2012 0:01	RTI	-0.562U	3.97	9.38	7/23/12 4:00
3072162	3072162120	PS	WP	6/21/2012 0:01	RTI	4.13J	4.57	9.36	7/23/12 4:08

7/31/12

7/26/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12517
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012
Act. Rpt Units dpm

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

Bkg CPM 6.43
Bkg Duration 30.0 min
Bkg Ref BKG 7/22/2012
Bkg Ct Date/Time: 7/22/2012 16:09
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
459116	1.0	7/23/12 1:26	7.0	7/23/12 1:26	5.14	352.6	dpm/S	High, Evaluate
3072162101	1.0	6/21/12 0:01	7.0	7/23/12 1:34	6.57	226.9	dpm/S	Pass
3072162102	1.0	6/21/12 0:01	7.0	7/23/12 1:42	7.57	252.3	dpm/S	Pass
3072162103	1.0	6/21/12 0:01	7.0	7/23/12 1:50	5.14	301.7	dpm/S	Pass
3072162104	1.0	6/21/12 0:01	7.0	7/23/12 1:58	6.00	284.4	dpm/S	Pass
3072162105	1.0	6/21/12 0:01	7.0	7/23/12 2:06	6.14	247.8	dpm/S	Pass
3072162106	1.0	6/21/12 0:01	7.0	7/23/12 2:15	7.29	263.5	dpm/S	Pass
3072162107	1.0	6/21/12 0:01	7.0	7/23/12 2:23	4.71	283.7	dpm/S	Pass
3072162108	1.0	6/21/12 0:01	7.0	7/23/12 2:31	8.86	303.8	dpm/S	Pass
3072162109	1.0	6/21/12 0:01	7.0	7/23/12 2:39	8.43	292.4	dpm/S	Pass
3072162110	1.0	6/21/12 0:01	7.0	7/23/12 2:47	5.00	281.1	dpm/S	Pass
3072162111	1.0	6/21/12 0:01	7.0	7/23/12 2:55	7.86	286.9	dpm/S	Pass
3072162112	1.0	6/21/12 0:01	7.0	7/23/12 3:03	6.43	279.0	dpm/S	Pass
3072162113	1.0	6/21/12 0:01	7.0	7/23/12 3:11	5.00	246.8	dpm/S	Pass
3072162114	1.0	6/21/12 0:01	7.0	7/23/12 3:19	7.43	285.4	dpm/S	Pass
3072162115	1.0	6/21/12 0:01	7.0	7/23/12 3:27	9.29	272.2	dpm/S	Pass
3072162116	1.0	6/21/12 0:01	7.0	7/23/12 3:35	6.29	264.4	dpm/S	Pass
3072162117	1.0	6/21/12 0:01	7.0	7/23/12 3:43	2.71	333.2	dpm/S	High, Evaluate
3072162118	1.0	6/21/12 0:01	7.0	7/23/12 3:51	5.57	261.6	dpm/S	Pass
3072162119	1.0	6/21/12 0:01	7.0	7/23/12 4:00	6.14	249.3	dpm/S	Pass
3072162120	1.0	6/21/12 0:01	7.0	7/23/12 4:08	8.57	254.1	dpm/S	Pass
LCS12517	1.0	7/23/12 4:16	7.0	7/23/12 4:16	57.57	323.8	dpm/S	High, Evaluate
LCSD12517	1.0	7/23/12 4:24	7.0	7/23/12 4:24	56.14	315.7	dpm/S	High, Evaluate

7/25/12

7/26/12

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code	Low Energy Beta	**Analyst**	MBT
Matrix	Smear	**PrepSOP1**	0
Batch ID	12517	**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
459116	0.4697	0.0000	1.0000	-2.747	4.065	4.078	10.313	3.739	1.090	4.065	1.00
3072162101	0.5077	0.0878	0.9951	0.277	4.166	4.166	9.588	3.476	1.013	4.166	1.00
3072162102	0.5196	0.0878	0.9951	2.205	4.315	4.323	9.367	3.396	0.990	4.315	1.00
3072162103	0.5144	0.0878	0.9951	-2.520	3.729	3.741	9.462	3.431	1.000	3.729	1.00
3072162104	0.5205	0.0878	0.9951	-0.830	3.917	3.918	9.351	3.391	0.988	3.917	1.00
3072162105	0.5183	0.0878	0.9951	-0.562	3.970	3.971	9.392	3.405	0.993	3.970	1.00
3072162106	0.5218	0.0879	0.9951	1.656	4.230	4.235	9.329	3.383	0.986	4.230	1.00
3072162107	0.5207	0.0879	0.9951	-3.320	3.563	3.585	9.349	3.390	0.988	3.563	1.00
3072162108	0.5133	0.0879	0.9951	4.757	4.668	4.702	9.482	3.438	1.002	4.668	1.00
3072162109	0.5183	0.0879	0.9951	3.878	4.526	4.550	9.392	3.405	0.993	4.526	1.00
3072162110	0.5212	0.0879	0.9951	-2.757	3.642	3.657	9.340	3.386	0.987	3.642	1.00
3072162111	0.5199	0.0879	0.9951	2.764	4.381	4.393	9.362	3.394	0.989	4.381	1.00
3072162112	0.5215	0.0880	0.9951	0.000	4.020	4.020	9.334	3.384	0.986	4.020	1.00
3072162113	0.5179	0.0880	0.9951	-2.775	3.665	3.680	9.399	3.408	0.993	3.665	1.00
3072162114	0.5203	0.0880	0.9951	1.931	4.276	4.282	9.355	3.392	0.989	4.276	1.00
3072162115	0.5221	0.0880	0.9951	5.505	4.684	4.730	9.324	3.381	0.985	4.684	1.00
3072162116	0.5218	0.0880	0.9951	-0.270	3.982	3.982	9.328	3.382	0.986	3.982	1.00
3072162117	0.4914	0.0880	0.9951	-7.608	3.109	3.239	9.906	3.592	1.047	3.109	1.00
3072162118	0.5215	0.0880	0.9951	-1.657	3.796	3.801	9.333	3.384	0.986	3.796	1.00
3072162119	0.5187	0.0881	0.9951	-0.562	3.967	3.967	9.383	3.402	0.992	3.967	1.00
3072162120	0.5201	0.0881	0.9951	4.135	4.542	4.569	9.359	3.393	0.989	4.542	1.00
LCS12517	0.4999	0.0000	1.0000	102.305	11.390	16.692	9.690	3.513	1.024	11.390	1.00
LCSD12517	0.5061	0.0000	1.0000	98.220	11.113	16.147	9.571	3.470	1.011	11.113	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst: RMK
Date: 7/27/2012 Method: EPA 906.0M
Worklist: 12517 SOP:
Matrix: Filter MB Sample ID: 459116

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	-2.7470	4.0780	10.3130	3.73900		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/23/12 4:16	7/23/12 4:24				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.881	1184.881				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.488	118.488				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	102.305	98.220				
1.96 Sigma Unc:	16.692	16.147				
% Recovery:	86.34%	82.89%				
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.:	LCS12517					
Duplicate Sample I.D.	LCSD12517					
Sample Result (pCi/L, g, F):	102.3050					
1.96 Sigma Unc:	16.6920					
Sample Duplicate Result (pCi/L, g, F):	98.2200					
Duplicate Sample 1.96 Sigma Unc.	16.1470					
Either results below MDC?	NO					
Relative Percent Difference:	4.07%					
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: 12517

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%

used for 12514, 17, 18
7/31/12

22 Jul 12 16:09
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	EL.TIME	CPMA	CPMB	CPMC	tSIE	LUM
4	1	30.00	30	2.90	6.53	6.43	299.83	5

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			7/23/2012 5:04
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
63	507	7/23/2012 0:31	3072162096
64	515	7/23/2012 0:38	3072162097
65	523	7/23/2012 0:46	3072162098
66	531	7/23/2012 0:54	3072162099
67	539	7/23/2012 1:02	3072162100
68	547	7/23/2012 1:10	LCS12516
69	555	7/23/2012 1:18	LCSD12516
70	563	7/23/2012 1:26	459116
71	571	7/23/2012 1:34	3072162101
72	579	7/23/2012 1:42	3072162102
73	587	7/23/2012 1:50	3072162103
74	595	7/23/2012 1:58	3072162104
75	604	7/23/2012 2:06	3072162105
76	612	7/23/2012 2:15	3072162106
77	620	7/23/2012 2:23	3072162107
78	628	7/23/2012 2:31	3072162108
79	636	7/23/2012 2:39	3072162109
80	644	7/23/2012 2:47	3072162110
81	652	7/23/2012 2:55	3072162111
82	660	7/23/2012 3:03	3072162112
83	668	7/23/2012 3:11	3072162113
84	676	7/23/2012 3:19	3072162114
85	684	7/23/2012 3:27	3072162115
86	692	7/23/2012 3:35	3072162116
87	700	7/23/2012 3:43	3072162117
88	709	7/23/2012 3:51	3072162118
89	717	7/23/2012 4:00	3072162119
90	725	7/23/2012 4:08	3072162120
91	733	7/23/2012 4:16	LCS12517
92	741	7/23/2012 4:24	LCSD12517
93	749	7/23/2012 4:32	459117
94	757	7/23/2012 4:40	3072162121
95	765	7/23/2012 4:48	3072162122
96	773	7/23/2012 4:56	3072162123
97	781	7/23/2012 5:04	LCS12518
98	789	7/23/2012 5:12	LCSD12518

Protocol #:20 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	40	7.00	321	3.00	5.14	5.14	315.70	2
20	41	7.00	329	3.43	5.71	5.57	311.96	3
20	42	7.00	338	3.29	5.86	5.71	321.45	2
20	43	7.00	346	2.14	5.29	5.14	288.11	3
20	44	7.00	354	1.71	4.57	4.71	275.23	2
20	45	7.00	362	43.86	58.43	58.71	311.81	0
20	46	7.00	370	46.71	65.57	66.29	327.68	0
20	47	7.00	378	5.00	7.71	8.00	325.01	1
20	48	7.00	386	3.14	5.86	5.71	279.17	3
20	49	7.00	394	4.71	7.00	7.14	289.08	2
20	50	7.00	402	2.29	5.43	5.14	298.58	4
20	51	7.00	410	3.00	4.86	4.86	320.20	2
20	52	7.00	418	3.86	7.14	7.14	272.73	2
20	53	7.00	426	2.86	5.43	5.29	281.76	4
20	54	7.00	434	3.57	7.29	7.29	302.64	2
20	55	7.00	442	3.71	6.71	6.57	283.99	2
20	56	7.00	450	4.29	6.86	6.86	254.85	1
20	57	7.00	458	3.14	6.43	6.57	249.27	1
20	58	7.00	466	3.86	6.86	7.00	326.75	2
20	59	7.00	474	3.00	5.43	5.29	306.95	3
20	60	7.00	482	5.57	8.43	8.43	290.88	1
20	61	7.00	491	4.43	8.00	8.00	255.86	1
20	62	7.00	499	3.86	6.14	6.29	295.97	2
20	63	7.00	507	3.29	5.43	5.29	298.51	3
20	64	7.00	515	4.29	6.14	6.00	280.74	3
20	65	7.00	523	5.00	7.86	7.86	299.58	2
20	66	7.00	531	3.43	6.43	6.29	285.23	3
20	67	7.00	539	2.43	5.71	5.71	245.82	2
20	68	7.00	547	45.14	59.57	59.71	324.22	1
20	69	7.00	555	39.71	53.14	53.57	323.48	1
20	70	7.00	563	3.00	5.43	5.14	352.57	3
20	71	7.00	571	3.29	6.29	6.57	226.90	6
20	72	7.00	579	4.29	7.57	7.57	252.33	6
20	73	7.00	587	3.29	5.43	5.14	301.67	6
20	74	7.00	595	3.57	6.43	6.00	284.39	6
20	75	7.00	604	3.14	6.29	6.14	247.84	6
20	76	7.00	612	4.29	7.29	7.29	263.48	4
20	77	7.00	620	1.86	4.86	4.71	283.72	6
20	78	7.00	628	5.14	9.00	8.86	303.81	2
20	79	7.00	636	4.14	8.43	8.43	292.35	2
20	80	7.00	644	1.43	5.14	5.00	281.05	5
20	81	7.00	652	4.57	7.86	7.86	286.86	2
20	82	7.00	660	3.14	6.29	6.43	278.97	3
20	83	7.00	668	2.86	4.71	5.00	246.75	7
20	84	7.00	676	3.00	7.71	7.43	285.38	3
20	85	7.00	684	5.86	8.71	9.29	272.17	3
20	86	7.00	692	3.57	6.57	6.29	264.36	5
20	87	7.00	700	1.43	4.57	2.71	333.24	10
20	88	7.00	709	2.29	5.71	5.57	261.56	5
20	89	7.00	717	2.86	6.00	6.14	249.30	4
20	90	7.00	725	5.00	8.43	8.57	254.08	6
20	91	7.00	733	42.14	57.14	57.57	323.79	0
20	92	7.00	741	43.86	55.71	56.14	315.65	1
20	93	7.00	749	3.43	6.00	6.00	335.30	3
20	94	7.00	757	5.00	7.86	8.00	283.72	5
20	95	7.00	765	3.43	6.00	6.00	270.27	5

Not photocopied correctly
Samples were recounted.
7/31/12

Protocol #:20 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	96	7.00	773	5.00	8.29	8.14	298.26	4
20	97	7.00	781	47.00	62.71	63.43	329.80	0
20	98	7.00	789	45.86	61.86	62.43	317.65	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
3072162088	12516	SuperH3C14	4	20	7/22/12 1345	7	NA	
89								
90								
91								
92								
93								
94				13				
95								
96								
97								
98								
99								
100								
LCS								
LCSD								
MB	12517							
3072162101								
102								
103				27				
104								
105								
106								
107								
108								

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
307216209	12517	SupeH3C14	27	26	7/22/12 1345	7	NA	
110								
111								
112								
113								
114			33					
115								
116								
117								
118								
119								
120								
LCS								
LCSD								
MB	12518							
307216221								
122								
123			18					
LCS								
LCSD								

Run comments: _____

Peer Review: _____

Low Energy Beta Sample Analysis Data

Quality Control Review

Batch	RADC/12518	HBN	91093
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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1 459117-BLANK for HBN 91093 [RADC/1251

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

Prep Information

Procedure 9060 I LEB **Batch** RADC/12518 **Prep Date** 7/23/2012 04:32 **Dilution**
Method EPA 906.0M **HBN** 91093 **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796311 **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** 7/23/2012 04:32 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/25/2012 23:59 **Analyst** MBT
Schedule 2796311 **File** **CC** OK F

Analyte	CC	Posted Result		Result	MDL	RDL	
Rad Chemistry	OK						
LSC Low Energy Beta	OK	-0.879U ± 4.15 (9.90)	dpm/sa	-0.879U ± 4.15 (9.90)		dpm/sa	

2 3072162121-SU12-BIAS2

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

Prep Information

Procedure 9060 I LEB **Batch** RADC/12518 **Prep Date** 7/23/2012 04:40 **Dilution**
Method EPA 906.0M **HBN** 91093 **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790910 **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** 7/23/2012 04:40 **Dilution**
Method EPA 906.0M **Col ID** **Hold Date** 12/18/2012 23:59 **Analyst** MBT
Schedule 2790910 **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	3.03U ± 4.42 (9.35)	dpm/sa	3.03U ± 4.42 (9.35)		dpm/sa		

3 3072162122-SU6-BIAS1

Type PS **Matrix** Wipe **Collected** 6/21/2012 00:01 **% Moisture**
Client RTI **WO** 3072162 **Work ID** Fort Monmouth 1207083 **Location**

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

Quality Control Review

Batch	RADC/12518	HBN	91093
Rule	9060 I LEB	Status	RE
Create Date	6/28/2012	Analyst	MBT

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3 3072162122-SU6-BIAS1

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12518	**Prep Date**	7/23/2012 04:48	**Dilution**
Method	EPA 906.0M		**HBN**	91093	**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790911		**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**	7/23/2012 04:48	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790911		**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	-0.828U ± 3.91 (9.32)	dpm/sa	-0.828U ± 3.91 (9.32)		dpm/sa		

4 3072162123-SU9-BIAS2

Type	PS		**Matrix**	Wipe	**Collected**	6/21/2012 00:01	**% Moisture**
Client	RTI		**WO**	3072162	**Work ID**	Fort Monmouth 1207083	**Location**

Prep Information

Procedure	9060 I LEB		**Batch**	RADC/12518	**Prep Date**	7/23/2012 04:56	**Dilution**
Method	EPA 906.0M		**HBN**	91093	**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790912		**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**	7/23/2012 04:56	**Dilution**
Method	EPA 906.0M		**Col ID**		**Hold Date**	12/18/2012 23:59	**Analyst** MBT
Schedule	2790912		**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	3.33U ± 4.50 (9.43)	dpm/sa	3.33U ± 4.50 (9.43)		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 14:02	Assigned Analyst	MBT
Batch ID	12518	Earliest Due Date	07/04/2012 07:12
A-code	9060 I LEB 9060W	HBN	91093
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
	459117	BLANK	IP		QCACCOUNT	-0.879U	4.15	9.90	7/23/12 4:32
3072162	3072162121	PS	WP	6/21/2012 0:01	RTI	3.03U	4.42	9.35	7/23/12 4:40
3072162	3072162122	PS	WP	6/21/2012 0:01	RTI	-0.828U	3.91	9.32	7/23/12 4:48
3072162	3072162123	PS	WP	6/21/2012 0:01	RTI	3.33U	4.50	9.43	7/23/12 4:56

7/31/12

7/26/12

LIMS Load
Printed 7/26/2012 at 9:52 AM

Pace Analytical Services
Low Energy Beta Emitters by Liquid Scintillation

Test Code Low Energy Beta
Matrix Smear
Batch ID 12518
Prep Start 7/16/2012 12:00
Prep Finish 7/16/2012
Act. Rpt Units dpm

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

Bkg CPM 6.43
Bkg Duration 30.0 min
Bkg Ref BKG 7/22/2012
Bkg Ct Date/Time: 7/22/2012 16:09
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
459117	1.0	7/23/12 4:32	7.0	7/23/12 4:32	6.00	335.3	dpm/S	High, Evaluate
3072162121	1.0	6/21/12 0:01	7.0	7/23/12 4:40	8.00	283.7	dpm/S	Pass
3072162122	1.0	6/21/12 0:01	7.0	7/23/12 4:48	6.00	270.3	dpm/S	Pass
3072162123	1.0	6/21/12 0:01	7.0	7/23/12 4:56	8.14	298.3	dpm/S	Pass
LCS12518	1.0	7/23/12 5:04	7.0	7/23/12 5:04	63.43	329.8	dpm/S	High, Evaluate
LCSD12518	1.0	7/23/12 5:12	7.0	7/23/12 5:12	62.43	317.7	dpm/S	High, Evaluate

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	12518	**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
459117	0.4893	0.0000	1.0000	-0.879	4.146	4.147	9.899	3.589	1.046	4.146	1.00
3072162121	0.5207	0.0881	0.9951	3.030	4.407	4.422	9.349	3.390	0.988	4.407	1.00
3072162122	0.5221	0.0882	0.9951	-0.828	3.905	3.906	9.323	3.380	0.985	3.905	1.00
3072162123	0.5160	0.0882	0.9951	3.330	4.480	4.497	9.434	3.420	0.997	4.480	1.00
LCS12518	0.4946	0.0000	1.0000	115.239	12.069	18.291	9.793	3.551	1.035	12.069	1.00
LCSD12518	0.5047	0.0000	1.0000	110.963	11.737	17.689	9.598	3.480	1.014	11.737	1.00

7/31/12

Quality Control Sample Performance Assessment

RCDU Upload

Analyst:	RMK		
Date:	7/27/2012	**Method:**	EPA 906.0M
Worklist:	12518	**SOP:**	
Matrix:	Filter	**MB Sample ID:**	459117

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc.	MDC	Critical Value	Flag	Assessment
LSC Low Energy Beta	-0.8790	4.1470	9.8990	3.58900		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	LSC Low Energy Beta					
Count Date:	7/23/12 5:04	7/23/12 5:12				
Spike I.D.:	09-009LEB	09-009LEB				
Spike Concentration (pCi/L):	1184.880	1184.880				
Volume Used (mL):	0.100	0.100				
Aliquot Volume (L, g, F):	1.000	1.000				
Target Conc. (pCi/L, g, F):	118.488	118.488				
1.96 Sigma Uncertainty (Calculated):	2.137	2.137				
Result (pCi/L, g, F):	115.239	110.963				
1.96 Sigma Unc:	18.291	17.689				
% Recovery:	97.26%	93.65%				
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.:	LCS12518					
Duplicate Sample I.D.	LCSD12518					
Sample Result (pCi/L, g, F):	115.2390					
1.96 Sigma Unc:	18.2910					
Sample Duplicate Result (pCi/L, g, F):	110.9630					
Duplicate Sample 1.96 Sigma Unc.	17.6890					
Either results below MDC?	NO					
Relative Percent Difference:	3.78%					
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: 12518

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*	*7/19/2013*		
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%

used for 12516, 17, 18
Jw 7/31/12

22 Jul 12 16:09 Page #1
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	EL.TIME	CPMA	CPMb	CPMC	tSIE	LUM
4	1	30.00	30	2.90	0.53	6.43	299.83	3

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			7/23/2012 5:04
		Sample Ct Duration (min)	7.0
S#	ELTIME	Calculated Count Start Date/Time	Sample ID
63	507	7/23/2012 0:31	3072162096
64	515	7/23/2012 0:38	3072162097
65	523	7/23/2012 0:46	3072162098
66	531	7/23/2012 0:54	3072162099
67	539	7/23/2012 1:02	3072162100
68	547	7/23/2012 1:10	LCS12516
69	555	7/23/2012 1:18	LCSD12516
70	563	7/23/2012 1:26	459116
71	571	7/23/2012 1:34	3072162101
72	579	7/23/2012 1:42	3072162102
73	587	7/23/2012 1:50	3072162103
74	595	7/23/2012 1:58	3072162104
75	604	7/23/2012 2:06	3072162105
76	612	7/23/2012 2:15	3072162106
77	620	7/23/2012 2:23	3072162107
78	628	7/23/2012 2:31	3072162108
79	636	7/23/2012 2:39	3072162109
80	644	7/23/2012 2:47	3072162110
81	652	7/23/2012 2:55	3072162111
82	660	7/23/2012 3:03	3072162112
83	668	7/23/2012 3:11	3072162113
84	676	7/23/2012 3:19	3072162114
85	684	7/23/2012 3:27	3072162115
86	692	7/23/2012 3:35	3072162116
87	700	7/23/2012 3:43	3072162117
88	709	7/23/2012 3:51	3072162118
89	717	7/23/2012 4:00	3072162119
90	725	7/23/2012 4:08	3072162120
91	733	7/23/2012 4:16	LCS12517
92	741	7/23/2012 4:24	LCSD12517
93	749	7/23/2012 4:32	459117
94	757	7/23/2012 4:40	3072162121
95	765	7/23/2012 4:48	3072162122
96	773	7/23/2012 4:56	3072162123
97	781	7/23/2012 5:04	LCS12518
98	789	7/23/2012 5:12	LCSD12518

Protocol #:20 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	40	7.00	321	3.00	5.14	5.14	315.70	2
20	41	7.00	329	3.43	5.71	5.57	311.96	3
20	42	7.00	338	3.29	5.86	5.71	321.45	2
20	43	7.00	346	2.14	5.29	5.14	288.11	3
20	44	7.00	354	1.71	4.57	4.71	275.23	2
20	45	7.00	362	43.86	58.43	58.71	311.81	0
20	46	7.00	370	46.71	65.57	66.29	327.68	0
20	47	7.00	378	5.00	7.71	8.00	325.01	1
20	48	7.00	386	3.14	5.86	5.71	279.17	3
20	49	7.00	394	4.71	7.00	7.14	289.08	2
20	50	7.00	402	2.29	5.43	5.14	298.58	4
20	51	7.00	410	3.00	4.86	4.86	320.20	2
20	52	7.00	418	3.86	7.14	7.14	272.73	2
20	53	7.00	426	2.86	5.43	5.29	281.76	4
20	54	7.00	434	3.57	7.29	7.29	302.64	2
20	55	7.00	442	3.71	6.71	6.57	283.99	2
20	56	7.00	450	4.29	6.86	6.86	254.85	1
20	57	7.00	458	3.14	6.43	6.57	249.27	1
20	58	7.00	466	3.86	6.86	7.00	326.75	2
20	59	7.00	474	3.00	5.43	5.29	306.95	3
20	60	7.00	482	5.57	8.43	8.43	290.88	1
20	61	7.00	491	4.43	8.00	8.00	255.86	1
20	62	7.00	499	3.86	6.14	6.29	295.97	2
20	63	7.00	507	3.29	5.43	5.29	298.51	3
20	64	7.00	515	4.29	6.14	6.00	280.74	3
20	65	7.00	523	5.00	7.86	7.86	299.58	2
20	66	7.00	531	3.43	6.43	6.29	285.23	3
20	67	7.00	539	2.43	5.71	5.71	245.82	2
20	68	7.00	547	45.14	59.57	59.71	324.22	1
20	69	7.00	555	39.71	53.14	53.57	323.48	1
20	70	7.00	563	3.00	5.43	5.14	352.57	3
20	71	7.00	571	3.29	6.29	6.57	226.90	6
20	72	7.00	579	4.29	7.57	7.57	252.33	6
20	73	7.00	587	3.29	5.43	5.14	301.67	6
20	74	7.00	595	3.57	6.43	6.00	284.39	6
20	75	7.00	604	3.14	6.29	6.14	247.84	6
20	76	7.00	612	4.29	7.29	7.29	263.48	4
20	77	7.00	620	1.86	4.86	4.71	283.72	6
20	78	7.00	628	5.14	9.00	8.86	303.81	2
20	79	7.00	636	4.14	8.43	8.43	292.35	2
20	80	7.00	644	1.43	5.14	5.00	281.05	5
20	81	7.00	652	4.57	7.86	7.86	286.86	2
20	82	7.00	660	3.14	6.29	6.43	278.97	3
20	83	7.00	668	2.86	4.71	5.00	246.75	7
20	84	7.00	676	3.00	7.71	7.43	285.38	3
20	85	7.00	684	5.86	8.71	9.29	272.17	3
20	86	7.00	692	3.57	6.57	6.29	264.36	5
20	87	7.00	700	1.43	4.57	2.71	333.24	10
20	88	7.00	709	2.29	5.71	5.57	261.56	5
20	89	7.00	717	2.86	6.00	6.14	249.30	4
20	90	7.00	725	5.00	8.43	8.57	254.08	6
20	91	7.00	733	42.14	57.14	57.57	323.79	0
20	92	7.00	741	43.86	55.71	56.14	315.65	1
20	93	7.00	749	3.43	6.00	6.00	335.30	3
20	94	7.00	757	5.00	7.86	8.00	283.72	5
20	95	7.00	765	3.43	6.00	6.00	270.27	5

Not Photocopied correctly samples were recounted. 7/31/12

Protocol #:20 SWIPE_H3_C14 User :

P#	S#	TIME	ELTIME	CPMA	CPMB	CPMC	tSIE	LUM
20	96	7.00	773	5.00	8.29	8.14	298.26	4
20	97	7.00	781	47.00	62.71	63.43	329.80	0
20	98	7.00	789	45.86	61.86	62.43	317.65	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
307216209	12517	SwpeH3C14	27	20	7/22/12 1345	7	NA	
110								
111								
112								
113								
114			↓					
115			33					
116								
117								
118								
119								
120								
LCS								
LCSD	↓							
MB	12518							
307216121								
122								
123			↓					
LCS			18					
LCSD	↓	↓	↓	↓	↓	↓	↓	↓

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

Analyst:	JLK
Calibration Date:	7/20/2012
Ni-63 Standard:	81012-493
Standard Bq on Reference Date	3456
Standard Total Mass (g)	4.99626
System ID:	System #2
Background:	7.83

Detector System Settings

Count Mode:	Low Level
Background Subtract:	Off
Low CPM Threshold:	Off
Static Controller:	On
Region:	1.0-160.0

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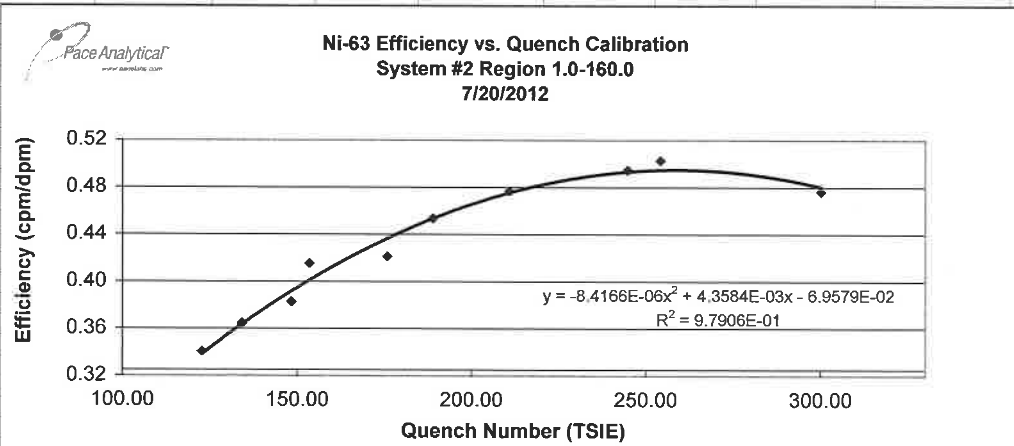
Source	Standard Mass	Standard Ref Date	Count Date	Decay Days	Standard Decay Factor	Decay Corrected Standard dpm/g	Standard Source dpm	Region 1-160 Ni-63 ROI Standard Source cpm	Source Ct. time (min)	Source Net Counts	TSIE	Region 1-160 Ni-63 Source Efficiency (cpm/dpm)	Calculated Efficiency from Curve	% 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				

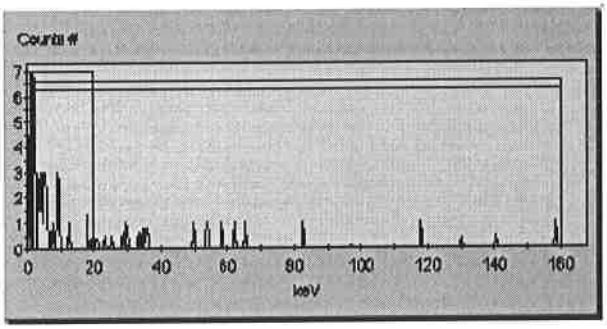
Instrument Block Data
Machine=2900
Version=1.10
426001
MODEL=2900
VERSION=1.10
SERIAL=426001
IPA Block Data
Software Version IC: 2.11
Software Version EC: 1.31
Instrument Model: 2900
Instrument Serial Number: 426001
3H Chi Square: 15.92 Date Processed: 7/19/12 11:40:58 AM

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

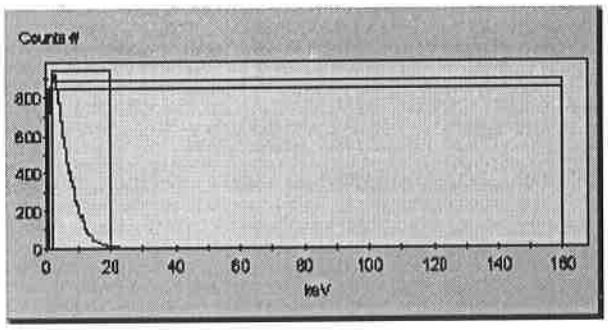
S#	PID	SMPL_ID / TIME	C.T. / LUM	DATE	CPMA	tSIE	CPMB	CPMC	MESSAGES
			BKG	8 7/20/12	4.34	317.6	6.45	7.83	
1	5	8:59:56 AM	8						

SpectraView Block Data



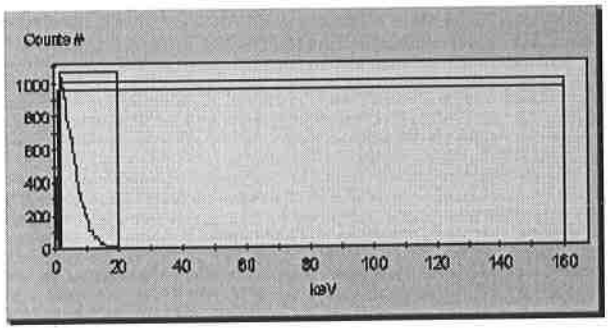
	NI63-20120719-N1	6 7/20/12	1763.93	300.1	1771.83	2020.85		
2	5 9:08:46 AM	0						

SpectraView Block Data



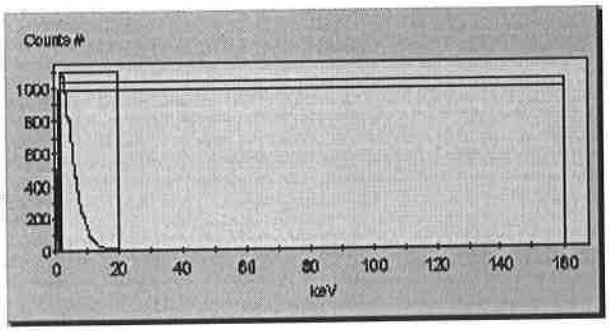
	NI63-20120179-N2	6 7/20/12	1813.72	254.2	1818.36	2082.61		
3	5 9:15:40 AM	0						

SpectraView Block Data



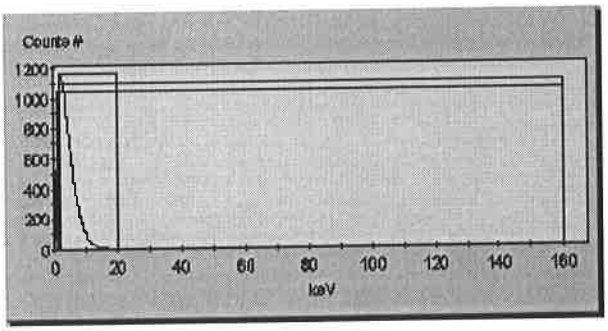
NI63-20120719-N3 6 7/20/12 1748.50 244.9 1754.08 2055.91
4 5 9:22:22 AM 0

SpectraView Block Data



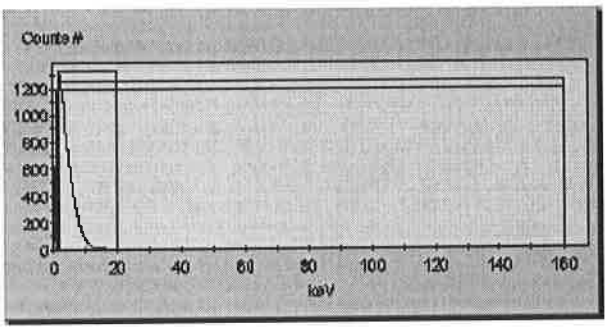
NI63-20120719-N4 6 7/20/12 1753.03 210.9 1756.32 2065.34
5 5 9:29:11 AM 0

SpectraView Block Data



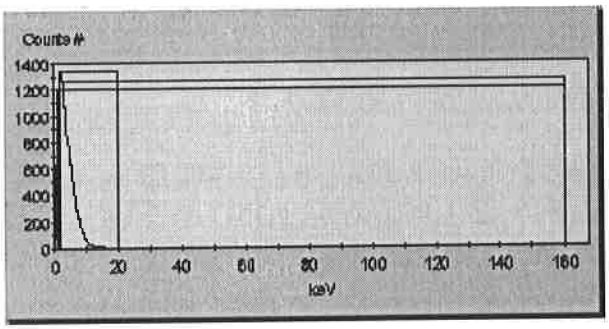
NI63-20120719-N5 6 7/20/12 1573.37 188.9 1575.74 1915.89
6 5 9:35:58 AM 0

SpectraView Block Data



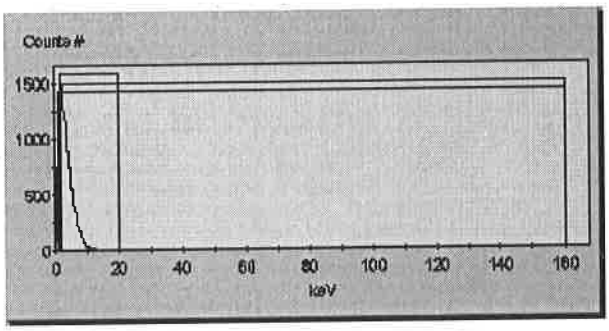
NI63-20120719-N6 7 7/20/12 1456.33 175.8 1458.71 1781.94
7 5 9:43:13 AM 0

SpectraView Block Data



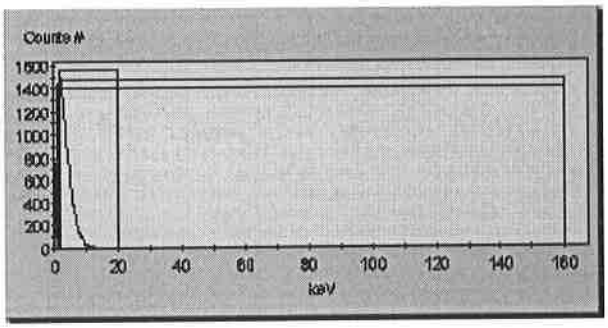
NI63-20120719-N7 3 7/20/12 2818.32 153.5 2821.87 3557.22
8 5 9:50:58 AM 0

SpectraView Block Data



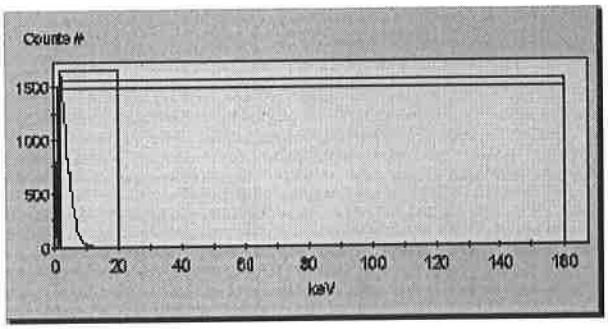
NI63-20120719-N8 4 7/20/12 2526.96 148.3 2529.45 3239.40
9 5 9:55:12 AM 0

SpectraView Block Data



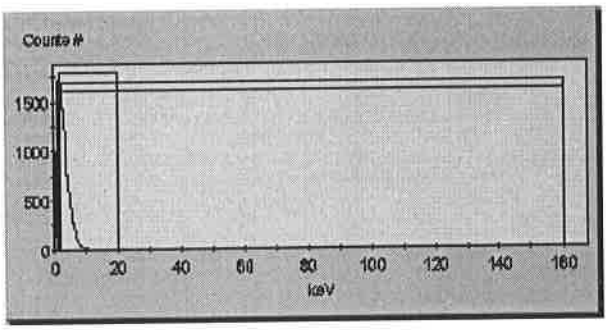
NI63-20120719-N9 4 7/20/12 2389.66 134.2 2392.64 3100.91
10 5 9:59:47 AM 0

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.-Pittsburgh

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
BKG	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								
BKG								

Run comments: _____

Peer Review: _____

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

Nickel-63 Efficiency Quench Curve Calibration

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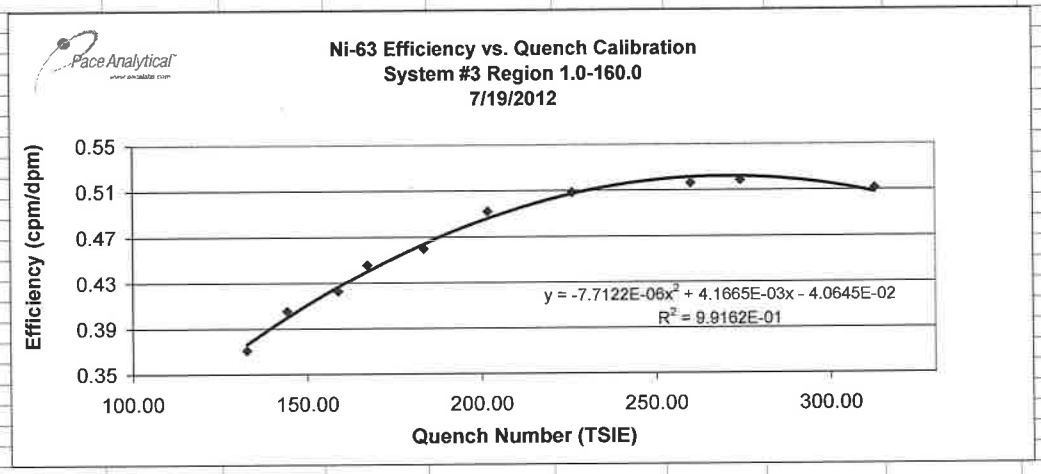
Analyst:	JLK	Detector System Settings	
Calibration Date:	7/19/2012	Count Mode:	Low Level
Ni-63 Standard:	81012-493	Background Subtract:	Off
Standard Bq on Reference Date	3456	Low Level Count Mode:	On
Standard Total Mass (g)	4.99626	Luminescence Correction:	On
System ID:	System #3	Region:	1.0-160.0
Background:	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
OM 7/20/12

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								
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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

$$\frac{25.26\,g \left(\frac{12334.51\ dpm}{g} \right)}{250.0\,ml} = 1246.3\ \frac{dpm}{ml}$$

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