



# Paragon Analytics

## Radiochemistry Case Narrative

### Isotopic Polonium

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#### **New Horizons**

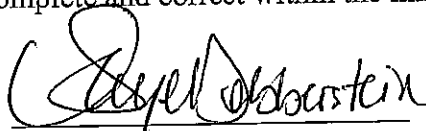
CSMRI / 2135

PA WO 0405169

1. This report consists of the analytical results for seven soil samples received by Paragon on 05/19/04.
2. These samples were prepared according to Paragon Analytics procedures PA SOP773R8
3. The samples were analyzed for the presence of Polonium-210 according to Paragon Analytics procedure PA SOP714R8. The analyses were completed on 06/12/04.
4. The isotopic analysis results for these samples are reported on a dry weight basis in units of pCi/gram.
5. Due to the poor availability of a 'NIST traceable' Polonium-209 tracer solution, the concentration of a dilution of isotopically pure Po-209 received from Oak Ridge National Laboratory was determined by cross calibration against two distinct NIST traceable sources (Po-210 and Pb/Po-210). While the calibration is not formally 'NIST traceable', the Po-209 concentration was calibrated against and is thus referenced to NIST traceable standards.
6. Results of this analysis are decay-corrected to the sampling date, based on the 138.4 day half-life of Po-210. This decay correction makes no assumptions as to the equilibrium state of Po-210 with the Pb-210 parent nuclide, which has a half-life of 22.3 years.
7. Paragon Analytics follows the convention outlined in ANSI N42.23 for reporting significant digits in the TPU and MDC results. ANSI N42.23 states that the TPU result should be rounded to two significant digits and that the MDC result should be rounded to the same decimal place as the TPU result. In practice, this could result in an MDC result with a reported value of 0 for samples with significant activity, including the batch laboratory control sample.

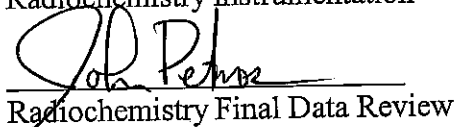
8. Sample H214 (PA ID 0405169-8) did not meet the requested MDC of 0.1 pCi/g, however the reported Po-210 activity exceeds its achieved MDC value. This sample is identified with an "M3" flag on the final reports.
9. Sample SDA064 (PA ID 0405169-13) has a chemical recovery of 117%, above the 110% upper control limit. It is identified with a "Y2" flag on the final reports. Likewise, sample E32 (PA ID 0405169-12) has a chemical recovery of 102%, however this meets acceptance criteria, and is therefore identified with a "Y1" flag on the final reports. These elevated chemical recoveries are likely caused by elevated native Po-210 activity tailing into the Po-209 tracer Region-of-Interest (ROI). Sample H236 (PA ID 0405169-10) also exhibits signs of tailing into the tracer ROI, although its chemical recovery is below 100%. These results should be considered estimates, and since the tracer is biased high due to the tailing effect, this consequently causes sample activity results to be biased low. These three samples are flagged with an "E" flag on the final reports to indicate the estimated values. The results are submitted with this qualification. Please refer to NCR 5738.
10. No further anomalous situations were encountered during the preparation or analysis of these samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.



Skye Dobberstein  
Radiochemistry Instrumentation

6/21/04  
Date

  
Radiochemistry Final Data Review

6/22/04  
Date

# CONTROLLED NON-CONFORMANCE REPORT

Initiated by Sm Date 6-16-04 Method/Procedure Po-210  
 Reason:  Non-Conformance Work Orders Affected 0405169  
 Client Inquiry PL040609-1  
 Other \_\_\_\_\_ Clients New Horizons

### SECTION I TYPE OF EVENT (circle as appropriate)

- 1. LCS / Surrogate / IS / Tracer or Chemical Yield  
Criteria Not Met
- 2. Calibration Criteria Not Met (ICAL, ICV, CCV)
- 3. Method Requirements Not Met (HTV, MB, \_\_\_\_\_)
- 4. Deviation from LQAP / SOP (i.e., PAI criteria not met)
- 5. Client Criteria Not Met (MDC, DER, \_\_\_\_\_)
- 6. Equipment Failure or Laboratory Incident / Error
- 7. Other \_\_\_\_\_

Explanation: Sample 0405169-13  
has a chemical yield of  
116.68%, above the upper  
control limit of 110%.  
This is likely due to native  
Po-210 activity tailing into  
the Po-209 ROI (tracer).  
Spectral quality is acceptable  
for accurate quantification.

Actions to Prevent Recurrence (Retrain, etc.):

7  
As directed below, samples #10 & #12 are  
potentially affected by native Po-210 tailing. Will  
flag accordingly.  
N/A - Samples have high native activity. SD 6/18/04

### SECTION II NOTIFICATION

Client Contacted?  (Y)  (N) Name: Sally Cuffin Date: 6/17/04 Time: 15:03

### SECTION III CORRECTIVE ACTIONS

- 1. Submit for Re-Prep. or Clean-up
- 2. Re-analyze 0.05g alg.
- 3. Resubmit Data (hc, edd, narrative)
- 4. Document in Narrative
- 5. Other \_\_\_\_\_

Approved by: DUS DPM g PM

### SECTION IV REQUEST FOR REWORK

Initial Batch ID: \_\_\_\_\_ Date: \_\_\_\_\_  
 Reworked Batch ID: 6/21/04 Date: \_\_\_\_\_  
 Outcome: DIS

Approved by: \_\_\_\_\_  
 Matrix Effect or Elevated / Sample Activity Suspected? (circle applicable)

### SECTION V DISPOSITION

Use as is  Repair  Reject

### SECTION VI COMMENTS

Narrate; Also evaluate other samples with  
elevated activity and flag any affected samples where native Po-210  
activity potentially effects tracer recovery. YP  
 SD 6/18/04

### SECTION VII APPROVAL SIGNATURES

Project Manager (PM) Debbie Fazio Date 6/17/04  
 Department Manager (DPM) [Signature] Date 6/21/04 (Verification of Disposition)  
 QA Manager [Signature] Date 6/21/04

### SECTION VIII DISTRIBUTION

PM  Dept. Manager  Lab Director  Rpt. Group or  Rad

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: PL040609-1MB

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 09-Jun-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes

Final Aliquot: 0.500 g  
Result Units: pCi/g  
File Name: O40601B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	0.009 +/- 0.045	0.065	U

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.403	6.9	pCi/g	81.8	20 - 110 %	

### Comments:

**Qualifiers/Flags:**

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
LT - Result is less than Requested MDC, greater than sample specific MDC.

**Abbreviations:**

TPU - Total Propagated Uncertainty (see PAI SOP 743)  
MDC - Minimum Detectable Concentration (see PAI SOP 709)  
BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: *PL0405169-1*

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: PL040609-1LCS

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 09-Jun-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes

Final Aliquot: 0.500 g  
Result Units: pCi/g  
File Name: OR40601L

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13981-52-7	Po-210	15.3 +/- 2.5	0.1	14.4	106	83 - 117	P

## Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.403	7.0	pCi/g	83.8	20 - 110 %	

### Comments:

#### Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- LT - Result is less than Requested MDC, greater than sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS Recovery within control limits.
- M - The requested MDC was not met.
- M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *PL0405169-1*

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: H214  
Lab ID: 0405169-8DUP

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 04-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.501 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: O51698D

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
13981-52-7	Po-210	37.8 +/- 6.2	28.8 +/- 4.7	1.15	2.13	

### Comments:

#### Duplicate Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- W - DER is greater than Warning Limit of 1.42
- D - DER is greater than Control Limit of 2.13
- LT - Result is less than Request MDC, greater than sample specific MDC
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- DER - Duplicate Error Ratio
- BDL - Below Detection Limit
- NR - Not Reported

Data Package ID: *PL0405169-1*

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: IC1008  
Lab ID: 0405169-2

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 03-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.509 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: O51692

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	1.22 +/- 0.33	0.08	

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.251	7.4	pCi/g	90.0	20 - 110 %	

### Comments:

#### Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- LT - Result is less than Requested MDC, greater than sample specific MDC.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M - The requested MDC was not met.

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: *PL0405169-1*

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID:	IC1025
Lab ID:	0405169-4

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 04-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.507 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: O51694

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	7.9 +/- 1.4	0.1	

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.289	6.20	pCi/g	74.8	20 - 110 %	

### Comments:

#### Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- LT - Result is less than Requested MDC, greater than sample specific MDC.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M - The requested MDC was not met.

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: *PL0405169-1*



# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: IC1028
Lab ID: 0405169-6

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 04-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.501 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: O51696

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	3.57 +/- 0.69	0.09	

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.387	7.5	pCi/g	88.9	20 - 110 %	

### Comments:

#### Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- LT - Result is less than Requested MDC, greater than sample specific MDC.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M - The requested MDC was not met.

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: *PL0405169-1*

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: H214
Lab ID: 0405169-8

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 04-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.500 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: O51698

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	37.8 +/- 6.2	0.1	M3

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.396	5.75	pCi/g	68.5	20 - 110 %	

### Comments:

#### Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- LT - Result is less than Requested MDC, greater than sample specific MDC.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M - The requested MDC was not met.

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: PL0405169-1

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: H214  
Lab ID: 0405169-8DUP

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 04-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QC Batch ID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.501 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: O51698D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	28.8 +/- 4.7	0	

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.393	6.07	pCi/g	72.4	20 - 110 %	

### Comments:

#### Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- LT - Result is less than Requested MDC, greater than sample specific MDC.
- M - The requested MDC was not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- W - DER is greater than Warning Limit of 1.42
- D - DER is greater than Control Limit of 2.13

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: PL0405169-1

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: H236  
Lab ID: 0405169-10

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 05-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.501 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: OR516910

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	88 +/- 14	0	E

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.393	6.7	pCi/g	79.5	20 - 110 %	

### Comments:

#### Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- LT - Result is less than Requested MDC, greater than sample specific MDC.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M - The requested MDC was not met.

#### Abbreviations:

- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: *PL0405169-1*

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: E32
Lab ID: 0405169-12

Sample Matrix: SOIL  
Prep SOP: PAI 711 Rev 5  
Date Collected: 10-May-04  
Date Prepared: 09-Jun-04  
Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1  
QCBatchID: PL040609-1-1  
Run ID: PL040609-1A  
Count Time: 300 minutes  
Report Basis: Dry Weight

Final Aliquot: 0.502 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: O516912

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	44.1 +/- 6.8	0	Y1, E

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.376	8.6	pCi/g	102	20 - 110 %	Y1

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PL0405169-1*

# Polonium-210 by Alpha Spectroscopy

PAI 714 Rev 8

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0405169

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: SDA064

Lab ID: 0405169-13

Sample Matrix: SOIL

Prep SOP: PAI 711 Rev 5

Date Collected: 13-May-04

Date Prepared: 09-Jun-04

Date Analyzed: 12-Jun-04

Prep Batch: PL040609-1

QCBatchID: PL040609-1-1

Run ID: PL040609-1A

Count Time: 300 minutes

Report Basis: Dry Weight

Final Aliquot: 0.501 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: O516913

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-52-7	Po-210	580 +/- 88	0	Y2, E

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Po-209	8.392	9.8	pCi/g	117	20 - 110 %	Y2

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample-specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PL0405169-1*