

Health Physics Sample Records

Sample ID: 142459

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized:

Description: 140529BD 25 STARYARD SURVEY PT 25

Common

Resp Org: P4000 - PROJECT MANAGEMEN

Cross Ref Sample ID:

Priority: N

Contact: COOPER, TERRY L

Survey No:

Reference ID:

Accounting Subcode:

Unknown Mat: NO

Hazardous Mat: NO

Comments:

Reviewed: DYNES, WILLIAM J

Date: 06/04/14 07:28

Comments:

Origin

Mat. Size/Volume: 2037 GRAMS

Docmnt/MO/Act #:

Proposed Ship Date: 00/00/00 00:00

Description: STARYARD SURVEY PT 25

Collection

Sample Tech: DYNES, WILLIAM J

Sample Date: 05/29/14 12:05

Count Time: 900 (secs.)

Tritium Req: No

Sample Size/Volume: 2072 GRAMS

Instructions: COUNT TO MDA

Comments: COUNT TO MDA

RLSSS

Exempt: No

Evaluated: No

Chem Notification: No

State Permit: No

Offsite Analysis: No

Effluent Permit: No

Container Surveyed: No

Cleared For Release: Yes

Container Evaluated: Yes

Form 212 Ready:

Location

Unit: NON-UNIT RE

Area: MS

Elev: 100

Room:

Depth: (in.)

Equip ID:

Stored By: ,

Date: 00/00/00 00:00

Sample Loc:

Other:

Material Loc:

Health Physics Sample Records

Sample ID: **142459**

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized:

Description: 140529BD 25 STARYARD SURVEY PT 25

Analysis

| Geometry | MCA ID | Quant. | Units | Method | FP/AP | Lab | Analysis By | Date | Mod ID | Mod Date |
|----------------------|--------|--------|-------|--------|-------|-----|-----------------|----------------|--------|----------|
| A_1L_marinelli_sand_ | 30340 | 2072 | GR | | .000 | | PARK, MICHAEL C | 06/04/14 15:48 | | |

| Isotope | Mode | Activity | Activity Uncert. | LLD/MDA | % Abund. | Atom. No. | Comments | Mod Id | Mod Date |
|---------|--------|----------|------------------|----------|----------|-----------|----------|--------|----------|
| 0 | K-40 | NT | 0.00001438 | 1.44E-6 | | 83.711% | 40 | | |
| 0 | TL-208 | NT | 3.465E-7 | 7.6E-8 | | 2.017% | 208 | | |
| 0 | PB-212 | NT | 6.664E-7 | 1.009E-7 | | 3.879% | 212 | | |
| 0 | BI-214 | NT | 5.6E-7 | 1.158E-7 | | 3.260% | 214 | | |
| 0 | PB-214 | NT | 5.543E-7 | 2.099E-7 | | 3.227% | 214 | | |
| 0 | AC-228 | NT | 6.71E-7 | 2.07E-7 | | 3.906% | 228 | | |
| 0 | BE-7 | AP | 5.4442E-7 | | | 0.000% | 7 | | |
| 0 | MN-54 | AP | 1.4326E-7 | | | 0.000% | 54 | | |
| 0 | MN-56 | AP | 6.8611E-8 | | | 0.000% | 56 | | |
| 0 | CO-57 | AP | 7.3798E-8 | | | 0.000% | 57 | | |
| 0 | CO-58 | AP | 2.3842E-8 | | | 0.000% | 58 | | |
| 0 | CO-60 | AP | 1.0901E-7 | | | 0.000% | 60 | | |
| 0 | SB-124 | AP | 7.703E-8 | | | 0.000% | 124 | | |
| 0 | SB-125 | FP | 1.5715E-7 | | | 0.000% | 125 | | |
| 0 | CS-134 | FP | 8.1451E-8 | | | 0.000% | 134 | | |
| 0 | CS-137 | FP | 9.1721E-8 | | | 0.000% | 137 | | |

Analysis Review

Re-Analyze: No

Lic Rad Mat Present: No

Reviewed: COOPER, TERRY L

Date: 06/10/14 13:26

Hp Eng Rvw Req'd: Yes

Rad Mat Present: Yes

HP Notified Name:

Comments:

Health Physics Sample Records

Sample ID: 142459

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized:

Description: 140529BD 25 STARYARD SURVEY PT 25

Review/Approve

HP Eng Review

Reviewed: COOPER, TERRY L

Date: 06/10/14 13:26

Comments:

Disposition

Disposition: OTHER

Result: Sample contains only natural isotopes

Remarks:

Final Approval

Approved: COOPER, TERRY L

Date: 06/10/14 13:26

Comments:

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*****
*          SONGS                      HEALTH PHYSICS REPORT          4-JUN-2014 15:42  *
*-----*
*          >>>> SAMPLE PARAMETERS <<<<<          *
*-----*
* Title      : 140529BD 25 STARYARD SURVEY PT 25          *
* ID         : 30340                      Acquisition date: 4-JUN-2014 15:39:08. *
* Start Time: 4-JUN-2014 15:39:00.          Counting System   : U2GSP          *
* Stop Time  : 4-JUN-2014 15:39:00.          IHPS Sample Number: 142459         *
* Quantity   : 2.07200E+03 GR                Analysis Library  : HP_NATURAL         *
* Geometry   : A_1L_marinelli_sand_1        Operator: MICHAEL PARK          *
*-----*
*          >>>> A #41-TP11679B PARAMETERS <<<<<          *
*-----*
* Elapsed Live Time : 0 00:03:00.43          Calibration       : 3-JUN-2014 20:38: *
* Elapsed Real Time : 0 00:03:00.49          Energy Offset    : 2.22491E-01         *
* Deadtime          : 0.0%                   Energy Slope     : 4.99526E-01         *
* Activity Mult Factor: 1.00000E+00          Energy Tolerance: 1.00000         *
* Half Life Ratio   : 8.00000                Sensitivity      : 5.00000         *
*-----*
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Post-NID Peak Search Report

| It | Energy | Area | Bkgnd | FWHM | Channel | Left | Pw | %Err | Fit | Nuclides |
|----|---------|------|-------|------|---------|------|----|------|----------|----------------------------|
| 1 | 76.95 | 34 | 69 | 1.61 | 153.61 | 151 | 8 | 45.9 | 4.36E+00 | BI-214 PB-212 PB-214 |
| 1 | 238.44 | 84 | 30 | 0.94 | 476.90 | 473 | 7 | 15.1 | 5.77E+00 | PB-212 |
| 1 | 295.07 | 26 | 20 | 1.76 | 590.26 | 586 | 11 | 37.9 | 9.35E-01 | PB-214 |
| 1 | 338.73 | 28 | 7 | 2.77 | 677.67 | 673 | 14 | 28.4 | 8.13E-01 | AC-228 |
| 1 | 351.78 | 53 | 5 | 1.61 | 703.80 | 699 | 9 | 15.7 | 9.22E-01 | PB-214 |
| 1 | 583.23 | 33 | 6 | 1.16 | 1167.15 | 1163 | 8 | 21.9 | 5.54E-01 | TL-208 |
| 1 | 609.25 | 37 | 6 | 1.53 | 1219.23 | 1214 | 11 | 20.7 | 4.41E-01 | BI-214 |
| 1 | 911.27 | 20 | 3 | 1.51 | 1823.89 | 1817 | 12 | 30.9 | 7.21E-01 | AC-228 |
| 1 | 1460.79 | 113 | 4 | 2.36 | 2924.06 | 2917 | 14 | 10.0 | 3.51E-01 | K-40 |

Summary of Nuclide Activity
Sample ID : 30340

Page : 2
Acquisition date : 4-JUN-2014 15:39:08

Total number of lines in spectrum 9
Number of unidentified lines 0
Number of lines tentatively identified by NID 9 100.00%

Nuclide Type : natural

| Nuclide | Hlife | Decay | Uncorrected uCi/GR | Decay Corr uCi/GR | Decay Corr 1-Sigma Error | 1-Sigma %Error | Flags |
|------------------|-----------|-------|-----------------------|----------------------|-----------------------------|-------------------|-------|
| K-40 | 1.28E+09Y | 1.00 | 1.438E-05 | 1.438E-05 | 0.144E-05 | 10.04 | A |
| TL-208 | 3.05M | 1.43 | 2.428E-07 | 3.465E-07 | 0.760E-07 | 21.92 | A |
| PB-212 | 10.64H | 1.00 | 6.652E-07 | 6.664E-07 | 1.009E-07 | 15.14 | A |
| BI-214 | 19.90M | 1.06 | 5.289E-07 | 5.600E-07 | 1.158E-07 | 20.67 | A |
| PB-214 | 26.80M | 1.04 | 5.312E-07 | 5.543E-07 | 2.099E-07 | 37.87 | A |
| AC-228 | 6.13H | 1.00 | 6.689E-07 | 6.710E-07 | 2.070E-07 | 30.85 | A |
| Total Activity : | | | 1.702E-05 | 1.718E-05 | | | |

Grand Total Activity : 1.702E-05 1.718E-05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 30340

Page : 3
Acquisition date : 4-JUN-2014 15:39:08

None

Flags: "T" = Tentatively associated

Interference Report
Sample ID : 30340

Page : 4
Acquisition date : 4-JUN-2014 15:39:08

No interference correction performed

Nuclide Type: natural

| Nuclide | Energy | Area | %Abn | %Eff | Uncorrected Decay Corr | | 1-Sigma %Error |
|---------|---------|-------|-----------|-----------|------------------------|----------------|-------------------|
| | | | | | uCi/GR | uCi/GR | |
| K-40 | 1460.83 | 113 | 10.67* | 5.314E-01 | 1.438E-05 | 1.438E-05 | 10.04 |
| TL-208 | 72.80 | ----- | 2.14 | 1.594E+00 | ----- | Line Not Found | ----- |
| | 74.97 | ----- | 3.60 | 1.692E+00 | ----- | Line Not Found | ----- |
| | 84.79 | ----- | 1.27 | 2.058E+00 | ----- | Line Not Found | ----- |
| | 252.45 | ----- | 0.80 | 2.021E+00 | ----- | Line Not Found | ----- |
| | 277.28 | ----- | 6.80 | 1.920E+00 | ----- | Line Not Found | ----- |
| | 510.61 | ----- | 21.60 | 1.265E+00 | ----- | Line Not Found | ----- |
| | 583.02 | 33 | 86.00* | 1.128E+00 | 2.428E-07 | 3.465E-07 | 21.92 |
| | 763.06 | ----- | 1.64 | 8.744E-01 | ----- | Line Not Found | ----- |
| | 860.30 | ----- | 12.00 | 7.770E-01 | ----- | Line Not Found | ----- |
| | PB-212 | 74.81 | ----- | 10.50 | 1.685E+00 | ----- | Line Not Found |
| 77.11 | | 34 | 17.70 | 1.776E+00 | 7.884E-07 | 7.899E-07 | 45.93 |
| 87.19 | | ----- | 6.27 | 2.129E+00 | ----- | Line Not Found | ----- |
| 90.13 | | ----- | 1.86 | 2.206E+00 | ----- | Line Not Found | ----- |
| 115.12 | | ----- | 0.59 | 2.535E+00 | ----- | Line Not Found | ----- |
| 238.58 | | 84 | 43.60* | 2.083E+00 | 6.652E-07 | 6.664E-07 | 15.14 |
| 300.03 | | ----- | 3.34 | 1.834E+00 | ----- | Line Not Found | ----- |
| BI-214 | 76.86 | 34 | 0.58 | 1.776E+00 | 2.406E-05 | 2.547E-05 | 45.93 |
| | 79.29 | ----- | 0.97 | 1.869E+00 | ----- | Line Not Found | ----- |
| | 609.31 | 37 | 46.10* | 1.084E+00 | 5.289E-07 | 5.600E-07 | 20.67 |
| | 665.44 | ----- | 1.56 | 9.985E-01 | ----- | Line Not Found | ----- |
| | 768.35 | ----- | 4.88 | 8.685E-01 | ----- | Line Not Found | ----- |
| | 806.16 | ----- | 1.23 | 8.283E-01 | ----- | Line Not Found | ----- |
| | 934.04 | ----- | 3.16 | 7.177E-01 | ----- | Line Not Found | ----- |
| | 1120.27 | ----- | 15.00 | 6.114E-01 | ----- | Line Not Found | ----- |
| | 1155.18 | ----- | 1.69 | 5.973E-01 | ----- | Line Not Found | ----- |
| | 1238.11 | ----- | 5.92 | 5.697E-01 | ----- | Line Not Found | ----- |
| | 1280.95 | ----- | 1.47 | 5.585E-01 | ----- | Line Not Found | ----- |
| | 1377.66 | ----- | 4.02 | 5.401E-01 | ----- | Line Not Found | ----- |
| | 1385.30 | ----- | 0.78 | 5.391E-01 | ----- | Line Not Found | ----- |
| | 1401.48 | ----- | 1.39 | 5.370E-01 | ----- | Line Not Found | ----- |
| | 1407.97 | ----- | 2.48 | 5.362E-01 | ----- | Line Not Found | ----- |
| | 1509.22 | ----- | 2.19 | 5.292E-01 | ----- | Line Not Found | ----- |
| | 1583.22 | ----- | 0.72 | 5.296E-01 | ----- | Line Not Found | ----- |
| | 1661.26 | ----- | 1.15 | 5.351E-01 | ----- | Line Not Found | ----- |
| | 1729.58 | ----- | 3.05 | 5.442E-01 | ----- | Line Not Found | ----- |
| 1764.49 | ----- | 15.90 | 5.503E-01 | ----- | Line Not Found | ----- | |
| PB-214 | 1847.41 | ----- | 2.12 | 5.694E-01 | ----- | Line Not Found | ----- |
| | 53.17 | ----- | 1.10 | 5.543E-01 | ----- | Line Not Found | ----- |
| | 74.81 | ----- | 6.52 | 1.685E+00 | ----- | Line Not Found | ----- |
| | 77.11 | 34 | 11.00 | 1.776E+00 | 1.269E-06 | 1.324E-06 | 45.93 |
| | 87.19 | ----- | 3.88 | 2.129E+00 | ----- | Line Not Found | ----- |
| | 90.13 | ----- | 1.15 | 2.206E+00 | ----- | Line Not Found | ----- |
| | 241.92 | ----- | 7.46 | 2.067E+00 | ----- | Line Not Found | ----- |
| | 258.94 | ----- | 0.55 | 1.994E+00 | ----- | Line Not Found | ----- |
| | 295.09 | 26 | 19.20* | 1.852E+00 | 5.312E-07 | 5.543E-07 | 37.87 |
| | 351.87 | 53 | 37.10 | 1.662E+00 | 6.181E-07 | 6.449E-07 | 15.65 |
| | 785.83 | ----- | 1.09 | 8.495E-01 | ----- | Line Not Found | ----- |
| | 839.00 | ----- | 0.59 | 7.964E-01 | ----- | Line Not Found | ----- |

Nuclide Type: natural

| Nuclide | Energy | Area | %Abn | %Eff | Uncorrected Decay Corr | | 1-Sigma |
|---------|---------|-------|--------|-----------|------------------------|----------------|---------|
| | | | | | uCi/GR | uCi/GR | |
| AC-228 | 89.96 | ----- | 3.40 | 2.201E+00 | ----- | Line Not Found | ----- |
| | 93.35 | ----- | 5.60 | 2.279E+00 | ----- | Line Not Found | ----- |
| | 99.55 | ----- | 1.30 | 2.389E+00 | ----- | Line Not Found | ----- |
| | 105.36 | ----- | 2.00 | 2.463E+00 | ----- | Line Not Found | ----- |
| | 108.99 | ----- | 0.67 | 2.496E+00 | ----- | Line Not Found | ----- |
| | 129.03 | ----- | 2.90 | 2.562E+00 | ----- | Line Not Found | ----- |
| | 153.89 | ----- | 0.84 | 2.496E+00 | ----- | Line Not Found | ----- |
| | 209.39 | ----- | 4.10 | 2.221E+00 | ----- | Line Not Found | ----- |
| | 216.24 | ----- | 0.80 | 2.187E+00 | ----- | Line Not Found | ----- |
| | 270.26 | ----- | 3.80 | 1.948E+00 | ----- | Line Not Found | ----- |
| | 328.07 | ----- | 3.50 | 1.738E+00 | ----- | Line Not Found | ----- |
| | 338.42 | 28 | 12.40 | 1.703E+00 | 9.466E-07 | 9.496E-07 | 28.36 |
| | 340.94 | ----- | 0.52 | 1.696E+00 | ----- | Line Not Found | ----- |
| | 409.62 | ----- | 2.20 | 1.499E+00 | ----- | Line Not Found | ----- |
| | 463.10 | ----- | 4.60 | 1.368E+00 | ----- | Line Not Found | ----- |
| | 562.65 | ----- | 1.01 | 1.164E+00 | ----- | Line Not Found | ----- |
| | 581.52 | ----- | 3.00 | 1.131E+00 | ----- | Line Not Found | ----- |
| | 726.63 | ----- | 0.87 | 9.173E-01 | ----- | Line Not Found | ----- |
| | 755.28 | ----- | 1.32 | 8.833E-01 | ----- | Line Not Found | ----- |
| | 772.28 | ----- | 1.09 | 8.641E-01 | ----- | Line Not Found | ----- |
| | 782.12 | ----- | 0.59 | 8.534E-01 | ----- | Line Not Found | ----- |
| | 794.79 | ----- | 4.60 | 8.400E-01 | ----- | Line Not Found | ----- |
| | 830.59 | ----- | 0.63 | 8.043E-01 | ----- | Line Not Found | ----- |
| | 835.60 | ----- | 1.71 | 7.996E-01 | ----- | Line Not Found | ----- |
| | 840.44 | ----- | 0.94 | 7.951E-01 | ----- | Line Not Found | ----- |
| | 904.29 | ----- | 0.89 | 7.403E-01 | ----- | Line Not Found | ----- |
| | 911.16 | 20 | 29.00* | 7.348E-01 | 6.689E-07 | 6.710E-07 | 30.85 |
| | 964.64 | ----- | 5.80 | 6.962E-01 | ----- | Line Not Found | ----- |
| | 968.97 | ----- | 17.40 | 6.933E-01 | ----- | Line Not Found | ----- |
| | 1246.60 | ----- | 0.57 | 5.673E-01 | ----- | Line Not Found | ----- |
| | 1459.19 | ----- | 1.06 | 5.315E-01 | ----- | Line Not Found | ----- |
| | 1496.00 | ----- | 1.05 | 5.296E-01 | ----- | Line Not Found | ----- |
| | 1501.44 | ----- | 0.58 | 5.294E-01 | ----- | Line Not Found | ----- |
| | 1580.30 | ----- | 0.71 | 5.295E-01 | ----- | Line Not Found | ----- |
| | 1588.23 | ----- | 3.60 | 5.298E-01 | ----- | Line Not Found | ----- |
| | 1630.47 | ----- | 1.95 | 5.324E-01 | ----- | Line Not Found | ----- |
| | 1638.10 | ----- | 0.54 | 5.330E-01 | ----- | Line Not Found | ----- |

Flag: "*" = Keyline

Minimum Detectable Activity Report
Sample ID : 30340

Page : 7
Acquisition date : 4-JUN-2014 15:39:08

| Nuclide | Bckgnd Sum | Energy (keV) | MDA (uCi/GR) |
|---------|---------------|-----------------|-----------------|
| BE-7 | 3. | 477.61 | 5.4442E-07 |
| MN-54 | 8. | 834.83 | 1.4326E-07 |
| MN-56 | 1. | 846.81 | 6.8611E-08 |
| CO-57 | 18. | 122.06 | 7.3798E-08 |
| CO-58 | 0. | 810.79 | 2.3842E-08 |
| CO-60 | 2. | 1173.24 | 1.0901E-07 |
| SB-124 | 0. | 1690.98 | 7.7030E-08 |
| SB-125 | 2. | 427.88 | 1.5715E-07 |
| CS-134 | 4. | 604.71 | 8.1451E-08 |
| CS-137 | 3. | 661.66 | 9.1721E-08 |