

## Health Physics Sample Records

Sample ID: **142480**

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized: ☐

Description: 140603BD 9 , CAMP MESA # 6

### 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: COUNT TO MDA

Reviewed: DYNES, WILLIAM J

Date: 06/05/14 09:35

Comments:

### Origin

Mat. Size/Volume: 1453 GRAMS

Docmnt/MO/Act #:

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

Description: CAMP MESA # 6

### Collection

Sample Tech: DYNES, WILLIAM J

Sample Date: 06/03/14 12:42

Count Time: 900 (secs.)

Tritium Req: No

Sample Size/Volume: 1453 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: 142480

Type: RLSSS



















Type Detail: SAND

Status: APPROVED

Rasterized: 

Description: 140603BD 9 , CAMP MESA # 6

## Analysis

| Geometry             | MCA ID | Quant.     | Units            | Method  | FP/AP    | Lab       | Analysis By     | Date           | Mod ID | Mod Date |
|----------------------|--------|------------|------------------|---|----------|-----------|-----------------|----------------|--------|----------|
| A_1L_marinelli_sand_ | 30369  | 1453       | GR               |   | .000     |           | PARK, MICHAEL C | 06/05/14 16:13 |        |          |
| Isotope              | Mode   | Activity   | Activity Uncert. | LLD/MDA   | % Abund. | Atom. No. | Comments        |                | Mod Id | Mod Date |
| 0 K-40               | NT     | 0.00001413 | 1.6E-6           |    | 72.468%  | 40        |                 |                |        |          |
| 0 TL-208             | NT     | 2.771E-7   | 6.86E-8          |    | 1.421%   | 208       |                 |                |        |          |
| 0 PB-212             | NT     | 6.328E-7   | 1.244E-7         |    | 3.245%   | 212       |                 |                |        |          |
| 0 BI-214             | NT     | 4.909E-7   | 1.257E-7         |    | 2.518%   | 214       |                 |                |        |          |
| 0 PB-214             | NT     | 7.305E-7   | 2.28E-7          |    | 3.746%   | 214       |                 |                |        |          |
| 0 RA-226             | NT     | 2.453E-6   | 8.71E-7          |    | 12.581%  | 226       |                 |                |        |          |
| 0 AC-228             | NT     | 6.322E-7   | 2.183E-7         |    | 3.242%   | 228       |                 |                |        |          |
| 0 U-235              | NT     | 1.518E-7   | 5.39E-8          |    | 0.779%   | 235       |                 |                |        |          |
| 0 BE-7               | AP     | 7.9944E-7  |                  |    | 0.000%   | 7         |                 |                |        |          |
| 0 MN-54              | AP     | 1.3858E-7  |                  |    | 0.000%   | 54        |                 |                |        |          |
| 0 MN-56              | AP     | 9.7799E-8  |                  |    | 0.000%   | 56        |                 |                |        |          |
| 0 CO-57              | AP     | 7.791E-8   |                  |    | 0.000%   | 57        |                 |                |        |          |
| 0 CO-58              | AP     | 1.5096E-7  |                  |    | 0.000%   | 58        |                 |                |        |          |
| 0 CO-60              | AP     | 1.6212E-7  |                  |    | 0.000%   | 60        |                 |                |        |          |
| 0 SB-124             | AP     | 7.0785E-8  |                  |    | 0.000%   | 124       |                 |                |        |          |
| 0 SB-125             | FP     | 2.3617E-7  |                  |   | 0.000%   | 125       |                 |                |        |          |
| 0 CS-134             | FP     | 7.2984E-8  |                  |  | 0.000%   | 134       |                 |                |        |          |
| 0 CS-137             | FP     | 1.5786E-7  |                  |  | 0.000%   | 137       |                 |                |        |          |

## Analysis Review

Re-Analyze: No

Lic Rad Mat Present: No

Reviewed: COOPER, TERRY L

Date: 06/10/14 14:44

Hp Eng Rvw Rqd: Yes

Rad Mat Present: Yes

HP Notified Name:

Comments:


## Health Physics Sample Records

Sample ID: 142480

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized: 

Description: 140603BD 9 , CAMP MESA # 6

### Review/Approve

#### HP Eng Review

Reviewed: COOPER, TERRY L

Date: 06/10/14 14:45

Comments: U-235 is likely mis-ID'd off the Ra-226 energy peak

#### Disposition

Disposition: OTHER

Result: Sample contains only natural isotopes

Remarks:

#### Final Approval

Approved: COOPER, TERRY L

Date: 06/10/14 14:53

Comments:

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*****
*          SONGS                      HEALTH PHYSICS REPORT          5-JUN-2014 16:07  *
*-----*
*          >>>> SAMPLE  PARAMETERS <<<<          *
*
* Title      : 140603BD 9 , CAMP MESA # 6          *
*
* ID         : 30369                               Acquisition date: 5-JUN-2014 16:04:05. *
* Start Time: 5-JUN-2014 16:04:00.                  Counting System   : U2GSP          *
* Stop Time : 5-JUN-2014 16:04:00.                  IHPS Sample Number: 142480      *
* Quantity  : 1.45300E+03 GR                        Analysis Library  : HP_NATURAL    *
* Geometry  : A_1L_marinelli_sand_1                 Operator: MICHAEL PARK          *
*-----*
*          >>>> A #41-TP11679B  PARAMETERS <<<<          *
*
* Elapsed Live Time : 0 00:03:00.46  Calibration      : 5-JUN-2014 08:09:      *
* Elapsed Real Time  : 0 00:03:00.49  Energy Offset   : 2.12659E-01          *
* Deadtime           : 0.0%           Energy Slope    : 4.99528E-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  | 77.21   | 26   | 28    | 1.34 | 154.15  | 151  | 7  | 40.3 | 1.79E+00 | BI-214<br>PB-212<br>PB-214 |
| 1  | 186.28  | 18   | 10    | 1.83 | 372.49  | 369  | 8  | 35.5 | 2.42E+00 | U-235<br>RA-226            |
| 1  | 238.58  | 56   | 22    | 1.27 | 477.18  | 474  | 9  | 19.7 | 2.98E+00 | PB-212                     |
| 1  | 295.22  | 24   | 10    | 1.80 | 590.56  | 584  | 10 | 31.2 | 6.92E-01 | PB-214                     |
| 1  | 338.43  | 21   | 9     | 1.56 | 677.07  | 676  | 6  | 31.6 | 3.73E+00 | AC-228                     |
| 1  | 351.95  | 29   | 10    | 2.04 | 704.14  | 699  | 11 | 28.8 | 2.15E+00 | PB-214                     |
| 1  | 582.89  | 19   | 2     | 1.94 | 1166.46 | 1162 | 8  | 24.8 | 2.72E-01 | TL-208                     |
| 1  | 609.24  | 23   | 2     | 1.72 | 1219.21 | 1215 | 10 | 25.6 | 1.13E+00 | BI-214                     |
| 1  | 911.11  | 13   | 2     | 1.49 | 1823.53 | 1818 | 10 | 34.5 | 5.87E-01 | AC-228                     |
| 1  | 1460.77 | 78   | 0     | 2.10 | 2923.89 | 2919 | 10 | 11.3 | 4.82E-01 | K-40                       |

Summary of Nuclide Activity  
Sample ID : 30369

Page : 2  
Acquisition date : 5-JUN-2014 16:04:05

Total number of lines in spectrum 10  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 10 100.00%

Nuclide Type : natural

| Nuclide          | Hlife     | Decay | Uncorrected<br>uCi/GR | Decay Corr<br>uCi/GR | Decay Corr<br>1-Sigma Error | 1-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-----------------------|----------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 1.413E-05             | 1.413E-05            | 0.160E-05                   | 11.29             | A     |
| TL-208           | 3.05M     | 1.41  | 1.966E-07             | 2.771E-07            | 0.686E-07                   | 24.76             | A     |
| PB-212           | 10.64H    | 1.00  | 6.317E-07             | 6.328E-07            | 1.244E-07                   | 19.65             | A     |
| BI-214           | 19.90M    | 1.06  | 4.646E-07             | 4.909E-07            | 1.257E-07                   | 25.60             | A     |
| PB-214           | 26.80M    | 1.04  | 7.011E-07             | 7.305E-07            | 2.280E-07                   | 31.22             | A     |
| RA-226           | 1600.00Y  | 1.00  | 2.453E-06             | 2.453E-06            | 0.871E-06                   | 35.52             | A     |
| AC-228           | 6.13H     | 1.00  | 6.303E-07             | 6.322E-07            | 2.183E-07                   | 34.53             | A     |
| U-235            | 7.04E+08Y | 1.00  | 1.518E-07             | 1.518E-07            | 0.539E-07                   | 35.52             | A     |
| Total Activity : |           |       | 1.936E-05             | 1.950E-05            |                             |                   |       |

Grand Total Activity : 1.936E-05 1.950E-05

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

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

Unidentified Energy Lines  
Sample ID : 30369

Page : 3  
Acquisition date : 5-JUN-2014 16:04:05

None

Flags: "T" = Tentatively associated

Interference Report  
Sample ID : 30369

Page : 4  
Acquisition date : 5-JUN-2014 16:04:05

No interference correction performed

Nuclide Type: natural

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected Decay Corr |                | 1-Sigma |
|---------|---------|-------|--------|-----------|------------------------|----------------|---------|
|         |         |       |        |           | uCi/GR                 | uCi/GR         | %Error  |
| K-40    | 1460.83 | 78    | 10.67* | 5.314E-01 | 1.413E-05              | 1.413E-05      | 11.29   |
| 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  | 19    | 86.00* | 1.128E+00 | 1.966E-07              | 2.771E-07      | 24.76   |
| PB-212  | 763.06  | ----- | 1.64   | 8.744E-01 | -----                  | Line Not Found | -----   |
|         | 860.30  | ----- | 12.00  | 7.770E-01 | -----                  | Line Not Found | -----   |
|         | 74.81   | ----- | 10.50  | 1.685E+00 | -----                  | Line Not Found | -----   |
|         | 77.11   | 26    | 17.70  | 1.787E+00 | 8.417E-07              | 8.432E-07      | 40.29   |
|         | 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 | -----   |
| BI-214  | 238.58  | 56    | 43.60* | 2.082E+00 | 6.317E-07              | 6.328E-07      | 19.65   |
|         | 300.03  | ----- | 3.34   | 1.834E+00 | -----                  | Line Not Found | -----   |
|         | 76.86   | 26    | 0.58   | 1.787E+00 | 2.569E-05              | 2.714E-05      | 40.29   |
|         | 79.29   | ----- | 0.97   | 1.869E+00 | -----                  | Line Not Found | -----   |
|         | 609.31  | 23    | 46.10* | 1.084E+00 | 4.646E-07              | 4.909E-07      | 25.60   |
|         | 665.44  | ----- | 1.56   | 9.985E-01 | -----                  | Line Not Found | -----   |
|         | 768.35  | ----- | 4.88   | 8.685E-01 | -----                  | Line Not Found | -----   |
| PB-214  | 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 | -----   |
|         | 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   | 26    | 11.00  | 1.787E+00 | 1.354E-06              | 1.411E-06      | 40.29   |
|         | 87.19   | ----- | 3.88   | 2.129E+00 | -----                  | Line Not Found | -----   |
|         | 90.13   | ----- | 1.15   | 2.206E+00 | -----                  | Line Not Found | -----   |
| PB-214  | 241.92  | ----- | 7.46   | 2.067E+00 | -----                  | Line Not Found | -----   |
|         | 258.94  | ----- | 0.55   | 1.994E+00 | -----                  | Line Not Found | -----   |
|         | 295.09  | 24    | 19.20* | 1.852E+00 | 7.011E-07              | 7.305E-07      | 31.22   |
|         | 351.87  | 29    | 37.10  | 1.662E+00 | 4.832E-07              | 5.035E-07      | 28.79   |
|         | 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         |         |
| RA-226  | 81.07   | ----- | 0.18   | 1.934E+00 | -----                  | Line Not Found | -----   |
|         | 186.11  | 18    | 3.28*  | 2.338E+00 | 2.453E-06              | 2.453E-06      | 35.52   |
| 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  | 21    | 12.40  | 1.704E+00 | 1.022E-06              | 1.025E-06      | 31.58   |
|         | 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  | 13    | 29.00* | 7.349E-01 | 6.303E-07              | 6.322E-07      | 34.53   |
|         | 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 | -----   |
| U-235   | 89.96   | ----- | 3.36   | 2.201E+00 | -----                  | Line Not Found | -----   |
|         | 93.35   | ----- | 5.50   | 2.279E+00 | -----                  | Line Not Found | -----   |
|         | 105.36  | ----- | 1.98   | 2.463E+00 | -----                  | Line Not Found | -----   |
|         | 109.18  | ----- | 1.50   | 2.498E+00 | -----                  | Line Not Found | -----   |
|         | 143.79  | ----- | 10.50  | 2.533E+00 | -----                  | Line Not Found | -----   |
|         | 163.38  | ----- | 4.70   | 2.453E+00 | -----                  | Line Not Found | -----   |
|         | 185.74  | 18    | 53.00* | 2.338E+00 | 1.518E-07              | 1.518E-07      | 35.52   |
|         | 194.96  | ----- | 0.59   | 2.294E+00 | -----                  | Line Not Found | -----   |
|         | 202.13  | ----- | 1.00   | 2.257E+00 | -----                  | Line Not Found | -----   |
|         | 205.33  | ----- | 4.70   | 2.241E+00 | -----                  | Line Not Found | -----   |

Nuclide Line Activity Report (continued)  
Sample ID : 30369

Page : 7  
Acquisition date : 5-JUN-2014 16:04:05

Flag: "\*" = Keyline

Minimum Detectable Activity Report  
Sample ID : 30369

Page : 8  
Acquisition date : 5-JUN-2014 16:04:05

| Nuclide | Bckgnd<br>Sum | Energy<br>(keV) | MDA<br>(uCi/GR) |
|---------|---------------|-----------------|-----------------|
| BE-7    | 3.            | 477.61          | 7.9944E-07      |
| MN-54   | 3.            | 834.83          | 1.3858E-07      |
| MN-56   | 1.            | 846.81          | 9.7799E-08      |
| CO-57   | 9.            | 122.06          | 7.7910E-08      |
| CO-58   | 4.            | 810.79          | 1.5096E-07      |
| CO-60   | 2.            | 1173.24         | 1.6212E-07      |
| SB-124  | 1.            | 602.73          | 7.0785E-08      |
| SB-125  | 0.            | 635.89          | 2.3617E-07      |
| CS-134  | 1.            | 604.71          | 7.2984E-08      |
| CS-137  | 5.            | 661.66          | 1.5786E-07      |