

## Health Physics Sample Records

**Sample ID:** 142453

**Type:** RLSSS

**Type Detail:** SAND

**Status:** APPROVED

**Rasterized:** ☒

**Description:** 140530BD info 2 STARYARD

### Common

**Resp Org:** P4000 - PROJECT MANAGEMEN

**Cross Ref Sample ID:**

**Priority:** Y

**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:** 05/30/14 12:17

**Comments:**

### Origin

**Mat. Size/Volume:** 2167 GRAMS

**Docmnt/MO/Act #:**

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

**Description:** INFO 2 STARYARD

### Collection

**Sample Tech:** DYNES, WILLIAM J

**Sample Date:** 05/30/14 10:45

**Count Time:** 900 (secs.)

**Tritium Req:** No

**Sample Size/Volume:** 2167 GRAMS

**Instructions:**

**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:**

**Elev:** 100

**Room:**

**Depth:** 3" (in.)

**Equip ID:**

**Stored By:** ,

**Date:** 00/00/00 00:00

**Sample Loc:**

**Other:**

**Material Loc:**

# Health Physics Sample Records

Sample ID: 142453

Type: RLSSS





















Type Detail: SAND

Status: APPROVED

Rasterized: 

Description: 140530BD info 2 STARYARD

## Analysis

Geometry	MCA ID	Quant.	Units	Method	FP/AP	Lab	Analysis By	Date	Mod ID	Mod Date
A_1L_marinelli_sand_	30283	2167	GR		.000		HENDERSON, JOE C	05/30/14 13:13		
Isotope	Mode	Activity	Activity Uncert.	LLD/MDA	% Abund.	Atom. No.	Comments		Mod Id	Mod Date
0 K-40	NT	0.00002332	1.75E-6		7.164%	40				
0 TL-208	NT	5.007E-7	1.155E-7		0.154%	208				
0 BI-212	NT	2.03E-6	7.29E-7		0.624%	212				
0 PB-212	NT	1.586E-6	1.37E-7		0.487%	212				
0 BI-214	NT	8.981E-7	1.462E-7		0.276%	214				
0 PB-214	NT	1.094E-6	2.24E-7		0.336%	214				
0 RN-222	NT	0.0002893	0.000064		88.870%	222				
0 RA-226	NT	4.984E-6	1.509E-6		1.531%	226				
0 AC-228	NT	1.511E-6	2.69E-7		0.464%	228				
0 U-235	NT	3.085E-7	9.34E-8		0.095%	235				
0 BE-7	AP	6.8902E-7			0.000%	7				
0 MN-54	AP	1.0383E-7			0.000%	54				
0 MN-56	AP	1.2122E-7			0.000%	56				
0 CO-57	AP	1.0696E-7			0.000%	57				
0 CO-58	AP	8.1202E-8			0.000%	58				
0 CO-60	AP	1.5785E-7			0.000%	60				
0 SB-124	AP	8.3402E-8			0.000%	124				
0 SB-125	FP	2.7914E-7			0.000%	125				
0 CS-134	FP	9.761E-8			0.000%	134				
0 CS-137	FP	1.3446E-7			0.000%	137				

## Analysis Review

Re-Analyze: No

Lic Rad Mat Present: No

Reviewed: COOPER, TERRY L

Date: 06/10/14 10:35

Hp Eng Rvw Req'd: Yes

Rad Mat Present: Yes

HP Notified Name:

Comments:


## Health Physics Sample Records

Sample ID: 142453

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized: 

Description: 140530BD info 2 STARYARD

### Review/Approve

#### HP Eng Review

Reviewed: COOPER, TERRY L

Date: 06/10/14 10:35

Comments: U-235 is likely mis-ID'd from Ac-228 and Ra-226 peaks

#### Disposition

Disposition: OTHER

Result: Sample contains only natural isotopes

Remarks:

#### Final Approval

Approved: COOPER, TERRY L

Date: 06/10/14 10:36

Comments:

```

*****
*          SONGS                      HEALTH PHYSICS REPORT          30-MAY-2014 13:02  *
*-----*
*          >>>> SAMPLE  PARAMETERS <<<<          *
*
* Title      : 140530BD INFO 2 STARYARD          *
*
* ID         : 30283                      Acquisition date: 30-MAY-2014 12:59:51 *
* Start Time: 30-MAY-2014 12:59:00          *
* Stop Time : 30-MAY-2014 12:59:00          Counting System   : U2GSP          *
* Quantity  : 2.16700E+03 GR                IHPS Sample Number: 142453          *
* Geometry  : A_1L_marinelli_sand_1        Analysis Library  : HP_NATURAL          *
*          Operator: JOE HENDERSON          *
*-----*
*          >>>> A #41-TP11679B  PARAMETERS <<<<          *
*
* Elapsed Live Time : 0 00:03:00.32      Calibration      : 29-MAY-2014 23:37      *
* Elapsed Real Time : 0 00:03:00.45      Energy Offset   : 2.56487E-01          *
* Deadtime          : 0.1%                Energy Slope    : 4.99495E-01          *
* Activity Mult Factor: 1.00000E+00      Energy Tolerance: 1.00000          *
* Half Life Ratio   : 8.00000            Sensitivity      : 5.00000          *
*
*****

```

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	77.15	76	121	0.87	153.94	151	7	26.7	3.09E+00	BI-214 PB-212 PB-214
1	92.94	85	101	1.81	185.56	182	9	24.2	6.08E-01	AC-228 U-235
1	186.33	55	56	1.42	372.53	368	11	30.3	1.63E+00	U-235 RA-226
1	238.60	208	50	1.12	477.17	472	31	8.6	2.04E+00	PB-212
1	241.91	29	41	1.15	483.80	472	31	42.6		PB-214
1	295.28	53	18	1.59	590.65	586	9	20.5	2.23E+00	PB-214
1	338.14	36	36	1.76	676.46	671	15	39.7	1.33E+00	AC-228
1	351.88	104	28	1.26	703.98	699	11	13.8	6.27E-01	PB-214
1	510.42	37	7	2.69	1021.39	1015	13	22.1	5.06E-01	RN-222 TL-208
1	583.28	42	13	1.34	1167.27	1163	10	23.1	1.87E+00	TL-208
1	609.37	60	7	1.77	1219.51	1215	11	16.3	4.30E+00	BI-214
1	726.92	17	6	1.65	1454.87	1449	9	35.9	5.49E-01	AC-228 BI-212
1	795.45	16	4	2.13	1592.07	1588	9	33.5	1.09E+00	AC-228
1	911.30	46	3	2.71	1824.03	1818	15	17.8	1.45E+00	AC-228
1	968.92	18	6	1.56	1939.40	1935	12	36.0	3.95E-01	AC-228
1	1119.97	25	0	2.03	2241.85	2238	10	20.4	3.86E-01	BI-214
1	1460.66	191	3	1.87	2924.02	2918	12	7.5	4.94E-01	K-40
1	1764.55	17	0	1.85	3532.55	3528	8	22.4	3.30E-01	BI-214

Summary of Nuclide Activity  
Sample ID : 30283

Page : 2  
Acquisition date : 30-MAY-2014 12:59:51

Total number of lines in spectrum 18  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 18 100.00%

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	2.332E-05	2.332E-05	0.175E-05	7.51	A
TL-208	3.05M	1.68	2.985E-07	5.007E-07	1.155E-07	23.07	A
BI-212	1.01H	1.03	1.976E-06	2.030E-06	0.729E-06	35.94	A
PB-212	10.64H	1.00	1.582E-06	1.586E-06	0.137E-06	8.64	A
BI-214	19.90M	1.09	8.276E-07	8.981E-07	1.462E-07	16.28	A
PB-214	26.80M	1.06	1.030E-06	1.094E-06	0.224E-06	20.48	A
RN-222	3.83D	1.00	2.893E-04	2.893E-04	0.640E-04	22.12	A
RA-226	1600.00Y	1.00	4.984E-06	4.984E-06	1.509E-06	30.27	A
AC-228	6.13H	1.00	1.504E-06	1.511E-06	0.269E-06	17.80	A
U-235	7.04E+08Y	1.00	3.085E-07	3.085E-07	0.934E-07	30.27	A

Total Activity : 3.251E-04 3.256E-04

Grand Total Activity : 3.251E-04 3.256E-04

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

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

Unidentified Energy Lines  
Sample ID : 30283

Page : 3  
Acquisition date : 30-MAY-2014 12:59:51

None

Flags: "T" = Tentatively associated

Interference Report  
Sample ID : 30283

Page : 4  
Acquisition date : 30-MAY-2014 12:59:51

No interference correction performed

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					uCi/GR	uCi/GR	
K-40	1460.83	191	10.67*	5.314E-01	2.332E-05	2.332E-05	7.51
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	37	21.60	1.265E+00	9.374E-07	1.572E-06	22.12
	583.02	42	86.00*	1.128E+00	2.985E-07	5.007E-07	23.07
	763.06	-----	1.64	8.744E-01	-----	Line Not Found	-----
	860.30	-----	12.00	7.770E-01	-----	Line Not Found	-----
BI-212	727.25	17	6.65*	9.170E-01	1.976E-06	2.030E-06	35.94
	785.51	-----	1.11	8.498E-01	-----	Line Not Found	-----
	1078.69	-----	0.54	6.305E-01	-----	Line Not Found	-----
	1620.66	-----	1.51	5.316E-01	-----	Line Not Found	-----
PB-212	74.81	-----	10.50	1.685E+00	-----	Line Not Found	-----
	77.11	76	17.70	1.784E+00	1.669E-06	1.674E-06	26.68
	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	208	43.60*	2.082E+00	1.582E-06	1.586E-06	8.64
	300.03	-----	3.34	1.834E+00	-----	Line Not Found	-----
BI-214	76.86	76	0.58	1.784E+00	5.095E-05	5.529E-05	26.68
	79.29	-----	0.97	1.869E+00	-----	Line Not Found	-----
	609.31	60	46.10*	1.084E+00	8.276E-07	8.981E-07	16.28
	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	25	15.00	6.116E-01	1.882E-06	2.042E-06	20.43
	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	17	15.90	5.504E-01	1.369E-06	1.486E-06	22.36
	1847.41	-----	2.12	5.694E-01	-----	Line Not Found	-----
PB-214	53.17	-----	1.10	5.543E-01	-----	Line Not Found	-----
	74.81	-----	6.52	1.685E+00	-----	Line Not Found	-----
	77.11	76	11.00	1.784E+00	2.686E-06	2.855E-06	26.68
	87.19	-----	3.88	2.129E+00	-----	Line Not Found	-----
	90.13	-----	1.15	2.206E+00	-----	Line Not Found	-----
	241.92	29	7.46	2.067E+00	1.298E-06	1.379E-06	42.57
	258.94	-----	0.55	1.994E+00	-----	Line Not Found	-----



Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					uCi/GR	uCi/GR	
RN-222	295.09	53	19.20*	1.852E+00	1.030E-06	1.094E-06	20.48
	351.87	104	37.10	1.662E+00	1.166E-06	1.239E-06	13.76
	785.83	-----	1.09	8.495E-01	-----	Line Not Found	-----
	839.00	-----	0.59	7.964E-01	-----	Line Not Found	-----
	510.00	37	0.07*	1.265E+00	2.893E-04	2.893E-04	22.12
	81.07	-----	0.18	1.934E+00	-----	Line Not Found	-----
	186.11	55	3.28*	2.338E+00	4.984E-06	4.984E-06	30.27
	89.96	-----	3.40	2.201E+00	-----	Line Not Found	-----
	93.35	85	5.60	2.270E+00	4.644E-06	4.664E-06	24.24
	99.55	-----	1.30	2.389E+00	-----	Line Not Found	-----
AC-228	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	36	12.40	1.705E+00	1.167E-06	1.172E-06	39.71
	340.94	-----	0.52	1.696E+00	-----	Line Not Found	-----
U-235	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	17	0.87	9.170E-01	1.510E-05	1.517E-05	35.94
	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	16	4.60	8.393E-01	2.933E-06	2.946E-06	33.52
	830.59	-----	0.63	8.043E-01	-----	Line Not Found	-----
U-235	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	46	29.00*	7.348E-01	1.504E-06	1.511E-06	17.80
	964.64	-----	5.80	6.962E-01	-----	Line Not Found	-----
	968.97	18	17.40	6.934E-01	1.055E-06	1.060E-06	36.03
	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	-----
U-235	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	-----
	89.96	-----	3.36	2.201E+00	-----	Line Not Found	-----
U-235	93.35	85	5.50	2.270E+00	4.728E-06	4.728E-06	24.24
	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	-----

Nuclide Line Activity Report (continued)  
Sample ID : 30283

Page : 7  
Acquisition date : 30-MAY-2014 12:59:51

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/GR	Decay Corr uCi/GR	1-Sigma %Error
	163.38	-----	4.70	2.453E+00	-----	Line Not Found	-----
	185.74	55	53.00*	2.338E+00	3.085E-07	3.085E-07	30.27
	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	-----

Flag: "\*" = Keyline

Minimum Detectable Activity Report  
Sample ID : 30283

Page : 8  
Acquisition date : 30-MAY-2014 12:59:51

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/GR)
BE-7	6.	477.61	6.8902E-07
MN-54	4.	834.83	1.0383E-07
MN-56	5.	846.81	1.2122E-07
CO-57	45.	122.06	1.0696E-07
CO-58	2.	810.79	8.1202E-08
CO-60	4.	1332.50	1.5785E-07
SB-124	5.	602.73	8.3402E-08
SB-125	10.	427.88	2.7914E-07
CS-134	7.	604.71	9.7610E-08
CS-137	9.	661.66	1.3446E-07