

## Health Physics Sample Records

**Sample ID:** 142454

**Type:** RLSSS

**Type Detail:** SAND

**Status:** APPROVED

**Rasterized:** ☐

**Description:** 140530BD info 3 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 12:23

**Comments:**

### Origin

**Mat. Size/Volume:** 2031 GRAMS

**Docmnt/MO/Act #:**

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

**Description:** STARYARD INFO 3

### Collection

**Sample Tech:** DYNES, WILLIAM J

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

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

**Tritium Req:** No

**Sample Size/Volume:** 2031 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:** (in.)

**Equip ID:**

**Stored By:** ,

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

**Sample Loc:**

**Other:**

**Material Loc:**

# Health Physics Sample Records

Sample ID: 142454

Type: RLSSS




















Type Detail: SAND

Status: APPROVED

Rasterized: 

Description: 140530BD info 3 STARYARD

## Analysis

Geometry	MCA ID	Quant.	Units	Method	FP/AP	Lab	Analysis By	Date	Mod ID	Mod Date
C_1L_marinelli_sand_	30281	2031 GR			.000		HENDERSON, JOE C	05/30/14 13:03		
Isotope	Mode	Activity	Activity Uncert.	LLD/MDA	% Abund.	Atom. No.	Comments		Mod Id	Mod Date
0 K-40	NT	0.00002044	1.6E-6		60.609%	40				
0 TL-208	NT	7.356E-7	1.049E-7		2.181%	208				
0 BI-212	NT	2.787E-6	6.51E-7		8.264%	212				
0 PB-212	NT	1.437E-6	1.87E-7		4.261%	212				
0 BI-214	NT	1.178E-6	1.51E-7		3.493%	214				
0 PB-214	NT	8.645E-7	2.307E-7		2.563%	214				
0 RA-226	NT	4.759E-6	2.049E-6		14.111%	226				
0 AC-228	NT	1.229E-6	2.64E-7		3.644%	228				
0 U-235	NT	2.945E-7	1.268E-7		0.873%	235				
0 BE-7	AP	5.6943E-7			0.000%	7				
0 MN-54	AP	1.3131E-7			0.000%	54				
0 MN-56	AP	1.1203E-7			0.000%	56				
0 CO-57	AP	1.1811E-7			0.000%	57				
0 CO-58	AP	1.087E-7			0.000%	58				
0 CO-60	AP	8.8365E-8			0.000%	60				
0 SB-124	AP	7.9118E-8			0.000%	124				
0 SB-125	FP	2.5575E-7			0.000%	125				
0 CS-134	FP	8.768E-8			0.000%	134				
0 CS-137	FP	1.5085E-7			0.000%	137				

## Analysis Review

Re-Analyze: No

Lic Rad Mat Present: No

Reviewed: COOPER, TERRY L

Date: 06/09/14 14:01

Hp Eng Rvw Req'd: No

Rad Mat Present: Yes

HP Notified Name:

Comments:


## Health Physics Sample Records

Sample ID: **142454**

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized: 

Description: 140530BD info 3 STARYARD

### Review/Approve

#### HP Eng Review

Reviewed: ,

Date: 00/00/00 00:00

Comments:

#### Disposition

Disposition: OTHER

Result:

Remarks:

#### Final Approval

Approved: COOPER, TERRY L

Date: 06/09/14 14:29

Comments:

```

*****
*          SONGS                      HEALTH PHYSICS REPORT          30-MAY-2014 13:01  *
*-----*
*          >>>> SAMPLE  PARAMETERS <<<<          *
*
* Title      : 140530BD INFO 3 STARYARD          *
*
* ID         : 30281                      Acquisition date: 30-MAY-2014 12:58:00 *
* Start Time: 30-MAY-2014 12:58:00          *
* Stop Time : 30-MAY-2014 12:58:00          Counting System   : U2GSP          *
* Quantity  : 2.03100E+03 GR                IHPS Sample Number: 142454          *
* Geometry  : C_1L_marinelli_sand_1        Analysis Library  : HP_NATURAL          *
*          Operator: JOE HENDERSON          *
*-----*
*          >>>> C #41-TP11750A  PARAMETERS <<<<          *
*
* Elapsed Live Time : 0 00:03:00.35      Calibration      : 29-MAY-2014 21:45      *
* Elapsed Real Time : 0 00:03:00.46      Energy Offset    : -1.13380E-01          *
* Deadtime          : 0.1%                Energy Slope     : 4.99622E-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	90.02	44	100	1.26	180.41	176	8	41.8	1.63E+00	AC-228 U-235 PB-212 PB-214
1	186.25	48	82	3.90	372.99	366	14	43.1	1.86E+00	U-235 RA-226
1	238.61	174	104	1.15	477.78	473	9	13.0	1.20E+01	PB-212
1	295.49	40	19	1.53	591.61	588	10	26.7	1.95E+00	PB-214
1	300.24	29	14	2.40	601.13	597	9	29.8	1.47E+00	PB-212
1	337.99	39	18	1.68	676.67	672	10	26.1	2.90E+00	AC-228
1	351.59	79	13	1.94	703.88	697	13	15.3	1.75E+00	PB-214
1	462.90	24	5	2.09	926.64	922	9	25.4	2.41E-01	AC-228
1	511.07	24	15	1.29	1023.04	1019	8	34.6	1.92E+00	TL-208
1	582.88	72	8	1.77	1166.73	1161	11	14.3	8.59E-01	TL-208
1	609.33	78	7	1.48	1219.67	1215	9	12.8	5.81E-01	BI-214
1	727.44	23	2	2.24	1455.99	1451	10	23.4	2.37E-01	AC-228 BI-212
1	911.02	36	8	1.98	1823.31	1819	8	21.5	2.15E+00	AC-228
1	968.95	23	2	2.61	1939.21	1935	8	21.7	3.26E-01	AC-228
1	1121.11	8	7	0.86	2243.63	2236	15	100.0	1.71E+00	BI-214
1	1460.67	164	0	2.03	2922.91	2917	12	7.8	5.68E-01	K-40

Summary of Nuclide Activity  
Sample ID : 30281

Page : 2  
Acquisition date : 30-MAY-2014 12:58:00

Total number of lines in spectrum 16  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 16 100.00%

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	2.044E-05	2.044E-05	0.160E-05	7.84	A
TL-208	3.05M	1.38	5.314E-07	7.356E-07	1.049E-07	14.27	A
BI-212	1.01H	1.02	2.739E-06	2.787E-06	0.651E-06	23.38	A
PB-212	10.64H	1.00	1.434E-06	1.437E-06	0.187E-06	13.00	A
BI-214	19.90M	1.05	1.118E-06	1.178E-06	0.151E-06	12.82	A
PB-214	26.80M	1.04	8.315E-07	8.645E-07	2.307E-07	26.69	A
RA-226	1600.00Y	1.00	4.759E-06	4.759E-06	2.049E-06	43.06	A
AC-228	6.13H	1.00	1.226E-06	1.229E-06	0.264E-06	21.48	A
U-235	7.04E+08Y	1.00	2.945E-07	2.945E-07	1.268E-07	43.06	A
Total Activity :			3.337E-05	3.372E-05			

Grand Total Activity : 3.337E-05 3.372E-05

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

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

Unidentified Energy Lines  
Sample ID : 30281

Page : 3  
Acquisition date : 30-MAY-2014 12:58:00

None

Flags: "T" = Tentatively associated

Interference Report  
Sample ID : 30281

Page : 4  
Acquisition date : 30-MAY-2014 12:58:00

No interference correction performed

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/GR	Decay Corr uCi/GR	1-Sigma %Error
K-40	1460.83	164	10.67*	5.560E-01	2.044E-05	2.044E-05	7.84
TL-208	72.80	-----	2.14	1.486E+00	-----	Line Not Found	-----
	74.97	-----	3.60	1.577E+00	-----	Line Not Found	-----
	84.79	-----	1.27	1.917E+00	-----	Line Not Found	-----
	252.45	-----	0.80	2.004E+00	-----	Line Not Found	-----
	277.28	-----	6.80	1.917E+00	-----	Line Not Found	-----
	510.61	24	21.60	1.297E+00	6.413E-07	8.877E-07	34.61
	583.02	72	86.00*	1.158E+00	5.314E-07	7.356E-07	14.27
	763.06	-----	1.64	8.934E-01	-----	Line Not Found	-----
	860.30	-----	12.00	7.922E-01	-----	Line Not Found	-----
BI-212	727.25	23	6.65*	9.372E-01	2.739E-06	2.787E-06	23.38
	785.51	-----	1.11	8.678E-01	-----	Line Not Found	-----
	1078.69	-----	0.54	6.429E-01	-----	Line Not Found	-----
	1620.66	-----	1.51	5.680E-01	-----	Line Not Found	-----
PB-212	74.81	-----	10.50	1.570E+00	-----	Line Not Found	-----
	77.11	-----	17.70	1.661E+00	-----	Line Not Found	-----
	87.19	-----	6.27	1.983E+00	-----	Line Not Found	-----
	90.13	44	1.86	2.052E+00	8.499E-06	8.513E-06	41.81
	115.12	-----	0.59	2.376E+00	-----	Line Not Found	-----
	238.58	174	43.60*	2.055E+00	1.434E-06	1.437E-06	13.00
	300.03	29	3.34	1.842E+00	3.426E-06	3.432E-06	29.78
BI-214	76.86	-----	0.58	1.651E+00	-----	Line Not Found	-----
	79.29	-----	0.97	1.741E+00	-----	Line Not Found	-----
	609.31	78	46.10*	1.112E+00	1.118E-06	1.178E-06	12.82
	665.44	-----	1.56	1.023E+00	-----	Line Not Found	-----
	768.35	-----	4.88	8.873E-01	-----	Line Not Found	-----
	806.16	-----	1.23	8.454E-01	-----	Line Not Found	-----
	934.04	-----	3.16	7.310E-01	-----	Line Not Found	-----
	1120.27	8	15.00	6.238E-01	6.112E-07	6.440E-07	100.04
	1155.18	-----	1.69	6.105E-01	-----	Line Not Found	-----
	1238.11	-----	5.92	5.846E-01	-----	Line Not Found	-----
	1280.95	-----	1.47	5.747E-01	-----	Line Not Found	-----
	1377.66	-----	4.02	5.602E-01	-----	Line Not Found	-----
	1385.30	-----	0.78	5.595E-01	-----	Line Not Found	-----
	1401.48	-----	1.39	5.583E-01	-----	Line Not Found	-----
	1407.97	-----	2.48	5.578E-01	-----	Line Not Found	-----
	1509.22	-----	2.19	5.568E-01	-----	Line Not Found	-----
	1583.22	-----	0.72	5.628E-01	-----	Line Not Found	-----
	1661.26	-----	1.15	5.753E-01	-----	Line Not Found	-----
	1729.58	-----	3.05	5.918E-01	-----	Line Not Found	-----
	1764.49	-----	15.90	6.023E-01	-----	Line Not Found	-----
	1847.41	-----	2.12	6.331E-01	-----	Line Not Found	-----
PB-214	53.17	-----	1.10	5.203E-01	-----	Line Not Found	-----
	74.81	-----	6.52	1.570E+00	-----	Line Not Found	-----
	77.11	-----	11.00	1.661E+00	-----	Line Not Found	-----
	87.19	-----	3.88	1.983E+00	-----	Line Not Found	-----
	90.13	44	1.15	2.052E+00	1.375E-05	1.429E-05	41.81
	241.92	-----	7.46	2.043E+00	-----	Line Not Found	-----
	258.94	-----	0.55	1.981E+00	-----	Line Not Found	-----



Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					uCi/GR	uCi/GR	
RA-226	295.09	40	19.20*	1.857E+00	8.315E-07	8.645E-07	26.69
	351.87	79	37.10	1.687E+00	9.269E-07	9.637E-07	15.28
	785.83	-----	1.09	8.674E-01	-----	Line Not Found	-----
	839.00	-----	0.59	8.122E-01	-----	Line Not Found	-----
	81.07	-----	0.18	1.802E+00	-----	Line Not Found	-----
	186.11	48	3.28*	2.260E+00	4.759E-06	4.759E-06	43.06
	89.96	44	3.40	2.052E+00	4.650E-06	4.663E-06	41.81
	93.35	-----	5.60	2.124E+00	-----	Line Not Found	-----
	99.55	-----	1.30	2.229E+00	-----	Line Not Found	-----
	105.36	-----	2.00	2.301E+00	-----	Line Not Found	-----
AC-228	108.99	-----	0.67	2.335E+00	-----	Line Not Found	-----
	129.03	-----	2.90	2.414E+00	-----	Line Not Found	-----
	153.89	-----	0.84	2.377E+00	-----	Line Not Found	-----
	209.39	-----	4.10	2.168E+00	-----	Line Not Found	-----
	216.24	-----	0.80	2.141E+00	-----	Line Not Found	-----
	270.26	-----	3.80	1.941E+00	-----	Line Not Found	-----
	328.07	-----	3.50	1.756E+00	-----	Line Not Found	-----
	338.42	39	12.40	1.726E+00	1.356E-06	1.360E-06	26.14
	340.94	-----	0.52	1.718E+00	-----	Line Not Found	-----
	409.62	-----	2.20	1.531E+00	-----	Line Not Found	-----
U-235	463.10	24	4.60	1.402E+00	2.707E-06	2.715E-06	25.40
	562.65	-----	1.01	1.195E+00	-----	Line Not Found	-----
	581.52	-----	3.00	1.160E+00	-----	Line Not Found	-----
	726.63	23	0.87	9.372E-01	2.093E-05	2.099E-05	23.38
	755.28	-----	1.32	9.027E-01	-----	Line Not Found	-----
	772.28	-----	1.09	8.827E-01	-----	Line Not Found	-----
	782.12	-----	0.59	8.716E-01	-----	Line Not Found	-----
	794.79	-----	4.60	8.576E-01	-----	Line Not Found	-----
	830.59	-----	0.63	8.205E-01	-----	Line Not Found	-----
	835.60	-----	1.71	8.155E-01	-----	Line Not Found	-----
U-235	840.44	-----	0.94	8.108E-01	-----	Line Not Found	-----
	904.29	-----	0.89	7.542E-01	-----	Line Not Found	-----
	911.16	36	29.00*	7.488E-01	1.226E-06	1.229E-06	21.48
	964.64	-----	5.80	7.091E-01	-----	Line Not Found	-----
	968.97	23	17.40	7.061E-01	1.409E-06	1.413E-06	21.74
	1246.60	-----	0.57	5.825E-01	-----	Line Not Found	-----
	1459.19	-----	1.06	5.560E-01	-----	Line Not Found	-----
	1496.00	-----	1.05	5.563E-01	-----	Line Not Found	-----
	1501.44	-----	0.58	5.565E-01	-----	Line Not Found	-----
	1580.30	-----	0.71	5.624E-01	-----	Line Not Found	-----
U-235	1588.23	-----	3.60	5.634E-01	-----	Line Not Found	-----
	1630.47	-----	1.95	5.696E-01	-----	Line Not Found	-----
	1638.10	-----	0.54	5.709E-01	-----	Line Not Found	-----
	89.96	44	3.36	2.052E+00	4.705E-06	4.705E-06	41.81
	93.35	-----	5.50	2.124E+00	-----	Line Not Found	-----
	105.36	-----	1.98	2.301E+00	-----	Line Not Found	-----
	109.18	-----	1.50	2.336E+00	-----	Line Not Found	-----
	143.79	-----	10.50	2.402E+00	-----	Line Not Found	-----
	163.38	-----	4.70	2.347E+00	-----	Line Not Found	-----

Nuclide Line Activity Report (continued)  
Sample ID : 30281

Page : 7  
Acquisition date : 30-MAY-2014 12:58:00

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/GR	Decay Corr uCi/GR	1-Sigma %Error
	185.74	48	53.00*	2.260E+00	2.945E-07	2.945E-07	43.06
	194.96	-----	0.59	2.226E+00	-----	Line Not Found	-----
	202.13	-----	1.00	2.197E+00	-----	Line Not Found	-----
	205.33	-----	4.70	2.184E+00	-----	Line Not Found	-----

Flag: "\*" = Keyline

Minimum Detectable Activity Report  
Sample ID : 30281

Page : 8  
Acquisition date : 30-MAY-2014 12:58:00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/GR)
BE-7	3.	477.61	5.6943E-07
MN-54	6.	834.83	1.3131E-07
MN-56	4.	846.81	1.1203E-07
CO-57	42.	122.06	1.1811E-07
CO-58	4.	810.79	1.0870E-07
CO-60	1.	1173.24	8.8365E-08
SB-124	4.	602.73	7.9118E-08
SB-125	7.	427.88	2.5575E-07
CS-134	5.	604.71	8.7680E-08
CS-137	11.	661.66	1.5085E-07