APPENDIX P-4
FSS SAMPLE & MEASUREMENT LOCATIONS & COORDINATES

Survey Area: LSA 10 **Description:** Burial Pits Open Land Area
Survey Unit: 13 **Description:** Northern Survey Unit in "Area 2"
Survey Type: FSS **Classification:** Class 1

Measurement or Sample ID	Surface or CSM	Type	Start Elevation*	End Elevation*	Northing** (Y Axis)	Easting** (X Axis)	Remarks / Notes
L10-13-01-B-E-S-00	Uniform	S	426.4	426.0	865152.8	827426.0	Excavation 6-inch grab
L10-13-02-B-R-S-00	Uniform	S	431.2	429.7	865105.9	827398.9	Root 12-inch composite
L10-13-03-B-E-S-00	Uniform	S	429.7	429.2	865105.9	827398.9	Excavation 6-inch grab
L10-13-04-B-E-S-00	Uniform	S	421.5	421.1	865105.9	827453.1	Excavation 6-inch grab
L10-13-05-B-R-S-00	Uniform	S	429.1	428.0	865105.9	827507.2	Root 7-inch composite
L10-13-06-B-E-S-00	Uniform	S	428.0	427.5	865105.9	827507.2	Excavation 6-inch grab
L10-13-07-B-R-S-00	Uniform	S	431.5	430.6	865059.0	827426.0	Root 5-inch composite
L10-13-08-B-E-S-00	Uniform	S	430.6	430.1	865059.0	827426.0	Excavation 6-inch grab
L10-13-09-B-E-S-00	Uniform	S	415.3	414.8	865059.0	827480.1	Excavation 6-inch grab
L10-13-10-B-R-S-00	Uniform	S	429.7	428.4	865059.0	827534.3	Root 10-inch composite
L10-13-11-B-E-S-00	Uniform	S	428.4	427.9	865059.0	827534.3	Excavation 6-inch grab
L10-13-12-B-E-S-00	Uniform	S	419.1	418.6	865012.1	827507.2	Excavation 6-inch grab
L10-13-07-B-R-Q-00	Uniform	Q	431.5	430.6	865059.0	827426.0	Excavation 6-inch grab
L10-13-13-B-R-B-00	Uniform	B	435.0	431.5	865063.0	827417.0	Biased 6-inch Grab
L10-13-14-B-E-B-00	Uniform	B	419.1	418.6	865069.6	827494.4	Sidewall 6-inch grab
L10-13-15-B-E-B-00	Uniform	B	421.6	421.1	865060.7	827453.1	Sidewall 6-inch grab

Green shaded samples are the samples at each sample location, for use in WRS test.

*Elevations are in feet above mean sea level.
** Missouri - East State Plane Coordinates [North American Datum (NAD) 1983]
Surface: Floor = F; Wall = W; Ceiling = C; Roof = R
CSM: Three-Layer (Surface-Root-Excavation) or Uniform DCGLs used
Type: Systematic = S, Biased = B; QC =Q; Investigation = I

Quality Record

TestAmerica Analytical Results

Sample ID	Sample Start Depth (ft)	Type (Systematic, Bias, QC)	Ra-226 Result	Ra-226 Uncertainty	Ra-226 MDC	Ra-226 Qualifier	Ra-226 Net Result*	Ra-226 Corrected Result	Tc-99 Result	Tc-99 Corrected Result	Tc-99 Uncertainty	Tc-99 MDC	Tc-99 Qualifier	Th-232 Result	Th-232 Uncertainty	Th-232 MDC	Th-232 Qualifier	Th-232 Net Result**	Th-232 Corrected Result	Inferred U-234 Result	Inferred U-234 Uncertainty	Inferred U-234 MDC	Inferred U-234 Qualifier	U-235 Result	U-235 Uncertainty	U-235 MDC	U-235 Qualifier	U-238 Result	U-238 Uncertainty	U-238 MDC	U-238 Qualifier	Sample ID	Sample Start Depth (ft)	Type (Systematic, Bias, QC)	Enr.	SOF	Root Stratum SOF Verification (unexcavated/not backfilled only) Is Sample in the Root Stratum?	Is ROOT Sample SOF > 0.05?	root count	excavation count	surface count	MDC SOF
L10-13-01-B-E-S-00	6.83	S	1.120	0.161	0.068	NA	0.050	0.050	0.241	0.241	0.055	0.198	NA	0.890	0.176	0.143	NA	-0.110	0.000	6.536	NA	NA	NA	0.360	0.162	0.225	NA	1.660	0.578	0.849	NA	L10-13-01-B-E-S-00	6.83	S	3.3	0.09	EXCAVATION	good		1		0.15
L10-13-02-B-R-S-00	3.45	S	1.090	0.150	0.060	NA	0.020	0.020	0.266	0.266	0.142	0.201	NA	1.090	0.168	0.098	NA	0.090	0.090	1.493	NA	NA	NA	0.078	0.125	0.224	U	0.908	0.292	0.815	NA	L10-13-02-B-R-S-00	3.45	S	1.4	0.08	ROOT	good	1			0.12
L10-13-03-B-E-S-00	4.92	S	1.130	0.153	0.060	NA	0.060	0.060	0.245	0.245	0.081	0.213	NA	1.060	0.187	0.115	NA	0.060	0.060	3.624	NA	NA	NA	0.200	0.146	0.212	U	0.814	0.344	1.060	U	L10-13-03-B-E-S-00	4.92	S	3.7	0.10	EXCAVATION	good		1		0.13
L10-13-04-B-E-S-00	12.36	S	1.560	0.214	0.087	NA	0.490	0.490	0.104	0.104	0.096	0.203	U	1.050	0.179	0.098	NA	0.050	0.050	2.537	NA	NA	NA	0.138	0.149	0.266	U	0.952	0.336	0.957	U	L10-13-04-B-E-S-00	12.36	S	2.3	0.31	EXCAVATION	good		1		0.14
L10-13-05-B-R-S-00	3.82	S	1.280	0.174	0.071	NA	0.210	0.210	0.071	0.071	0.078	0.194	U	1.270	0.208	0.139	NA	0.270	0.270	3.622	NA	NA	NA	0.197	0.184	0.260	U	1.330	0.558	0.855	NA	L10-13-05-B-R-S-00	3.82	S	2.3	0.28	ROOT	good	1			0.15
L10-13-06-B-E-S-00	4.92	S	1.030	0.144	0.062	NA	-0.040	0.000	0.021	0.021	0.020	0.204	U	1.120	0.157	0.099	NA	0.120	0.120	3.615	NA	NA	NA	0.198	0.120	0.163	NA	1.110	0.492	0.760	NA	L10-13-06-B-E-S-00	4.92	S	2.7	0.09	EXCAVATION	good		1		0.11
L10-13-07-B-R-S-00	4.00	S	1.420	0.209	0.095	NA	0.350	0.350	0.358	0.358	0.080	0.202	NA	1.350	0.225	0.190	NA	0.350	0.350	2.524	NA	NA	NA	0.134	0.160	0.287	U	1.310	0.656	1.020	NA	L10-13-07-B-R-S-00	4.00	S	1.6	0.40	ROOT	good	1			0.19
L10-13-08-B-E-S-00	4.92	S	1.200	0.160	0.058	NA	0.130	0.130	0.622	0.622	0.103	0.207	NA	1.060	0.158	0.112	NA	0.060	0.060	2.352	NA	NA	NA	0.126	0.125	0.228	U	1.090	0.491	0.759	NA	L10-13-08-B-E-S-00	4.92	S	1.8	0.14	EXCAVATION	good		1		0.13
L10-13-09-B-E-S-00	18.90	S	1.340	0.188	0.077	NA	0.270	0.270	0.401	0.401	0.111	0.244	NA	1.280	0.189	0.107	NA	0.280	0.280	3.553	NA	NA	NA	0.194	0.149	0.213	U	1.210	0.549	0.845	NA	L10-13-09-B-E-S-00	18.90	S	2.5	0.33	EXCAVATION	good		1		0.13
L10-13-10-B-R-S-00	3.61	S	1.160	0.160	0.068	NA	0.090	0.090	-0.012	0.000	0.042	0.198	U	1.190	0.167	0.142	NA	0.190	0.190	1.582	NA	NA	NA	0.080	0.140	0.258	U	1.290	0.513	0.780	NA	L10-13-10-B-R-S-00	3.61	S	1.0	0.16	ROOT	good	1			0.15
L10-13-11-B-E-S-00	4.92	S	0.990	0.142	0.065	NA	-0.080	0.000	0.090	0.090	0.056	0.211	U	1.090	0.167	0.092	NA	0.090	0.090	4.477	NA	NA	NA	0.247	0.157	0.199	NA	1.040	0.293	0.770	NA	L10-13-11-B-E-S-00	4.92	S	3.6	0.08	EXCAVATION	good		1		0.12
L10-13-12-B-E-S-00	15.45	S	1.200	0.166	0.090	NA	0.130	0.130	0.108	0.108	0.060	0.250	U	1.280	0.183	0.137	NA	0.280	0.280	2.016	NA	NA	NA	0.108	0.135	0.247	U	0.937	0.305	0.835	NA	L10-13-12-B-E-S-00	15.45	S	1.8	0.23	EXCAVATION	good		1		0.16
L10-13-13-B-R-B-00	3.46	B	1.040	0.144	0.086	NA	-0.030	0.000	2.830	2.830	0.337	0.215	NA	1.380	0.209	0.077	NA	0.380	0.380	19.741	NA	NA	NA	1.090	0.208	0.240	NA	3.430	0.770	1.020	NA	L10-13-13-B-R-B-00	3.46	B	4.8	0.45		good				0.12
L10-13-14-B-E-B-00	14.55	B	1.450	0.280	0.101	NA	0.380	0.380	0.528	0.528	0.171	0.280	NA	1.170	0.325	0.237	NA	0.170	0.170	33.264	NA	NA	NA	1.790	0.539	0.595	NA	2.570	1.920	3.130	U	L10-13-14-B-E-B-00	14.55	B	9.8	0.53		good				0.27
L10-13-15-B-E-B-00	13.28	B	1.650	0.297	0.164	NA	0.580	0.580	0.055	0.055	0.076	0.260	U	1.370	0.314	0.156	NA	0.370	0.370	1.553	NA	NA	NA	0.084	0.303	0.604	U	0.695	1.610	2.700	U	L10-13-15-B-E-B-00	13.28	B	1.9	0.51		good				0.26
L10-13-07-B-R-Q-00	4.00	Q	1.310	0.172	0.063	NA	0.240	0.240	0.340	0.340	0.058	0.212	NA	1.150	0.166	0.114	NA	0.150	0.150	2.336	NA	NA	NA	0.124	0.125	0.231	U	1.260	0.527	0.807	NA	L10-13-07-B-R-Q-00	4.00	Q	1.6	0.24		good				0.13
Systematic Minimum			0.000						0.000					0.000						1.493				0.078				0.814							2.3	0.08						
Systematic Maximum			0.490						0.622					0.350						6.536				0.360				1.660							0.40				12	4	8	0	
Systematic Mean			0.150						0.211					0.153						3.161				0.172				1.138							0.19				count tot			
Systematic Median			0.110						0.175					0.105						3.045				0.166				1.100							0.15							
Systematic Standard Deviation			0.153						0.183					0.115						1.412				0.080				0.236							0.11							
			With ingrowth, use Ra226 bkg =				1.07							Th232 bkg =			1.0																										

NOTES:
Gross results in units of pCi/g
* Background with ingrowth (1.07 pCi/g) subtracted from gross result
**Background (1.0 pCi/g) subtracted from gross result
U Qualifier: Result is less than the sample detection limit.
All uncertainty values are reported at the 2-sigma confidence level.

Ave Conc. Ra-226, SS	Ave Conc. Tc-99, SS	Ave Conc. Th-232, SS	Ave Conc. U-234, SS	Ave Conc. U-235, SS	Ave Conc. U-238, SS
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
0.000	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Ave Conc. Ra-226, RS	Ave Conc. Tc-99, RS	Ave Conc. Th-232, RS	Ave Conc. U-234, RS	Ave Conc. U-235, RS	Ave Conc. U-238, RS
-	-	-	-	-	-
0.020	0.266	0.090	1.493	0.078	0.908
-	-	-	-	-	-
-	-	-	-	-	-
0.210	0.071	0.270	3.622	0.197	1.330
-	-	-	-	-	-
0.350	0.358	0.350	2.524	0.134	1.310
-	-	-	-	-	-
-	-	-	-	-	-
0.090	0.000	0.190	1.582	0.080	1.290
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
0.168	**0.174**	**0.225**	**2.306**	**0.122**	**1.210**

Ave Conc. Ra-226, ES	Ave Conc. Tc-99, ES	Ave Conc. Th-232, ES	Ave Conc. U-234, ES	Ave Conc. U-235, ES	Ave Conc. U-238, ES
0.05	0.241	0	6.5357	0.36	1.66
-	-	-	-	-	-
0.06	0.245	0.06	3.6242	0.2	0.814
0.49	0.104	0.05	2.5374	0.138	0.952
-	-	-	-	-	-
0	0.0208	0.12	3.6154	0.198	1.11
-	-	-	-	-	-
0.13	0.222	0.06	2.3518	0.126	1.09
0.27	0.401	0.28	3.5532	0.194	1.21
-	-	-	-	-	-
0	0.09	0.09	4.4774	0.247	1.04
0.13	0.108	0.28	2.0158	0.108	0.937
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
0.141	**0.229**	**0.118**	**3.589**	**0.196**	**1.102**

Use corrected net results for all DE calcs.

$DCLG_W$, Measure Tc-99, All SEAs

	Uniform
U-234	195.4
U-235	51.6
U-238	168.8
Tc-99	25.1
Th-232	2.0
Ra-226	1.9

Infer U234			
U-238/U235	**U-234/U235**	**U-234**	**%**
4.6	18.2	6.5	3.3
11.6	19.1	1.5	1.4
4.1	18.1	3.6	3.7
6.9	18.4	2.5	2.3
6.8	18.4	3.6	2.3
5.6	18.3	3.6	2.7
9.8	18.8	2.5	1.6
8.7	18.7	2.4	1.8
6.2	18.3	3.6	2.5
16.2	19.9	1.6	1.0
4.2	18.1	4.5	3.6
8.7	18.7	2.0	1.8
3.1	18.1	19.7	4.8
1.4	18.6	33.3	9.8
8.3	18.6	1.6	1.9
10.2	18.8	2.3	1.6
		Average Enrichment (%)	**2.33**

Infer U-234 MDC using U-235 MDC * ratio of U-234:U-235 @ that sample's enrichment
4.084819778
4.272008805
3.841620459
4.89090827
4.78058703
2.976283468
5.406796223
4.255666561
3.901206726
5.12209701
3.607334615
4.610305441
4.34660066
11.05706886
11.23108194
4.351811594

weighted SOF_{MEAN} **0.19**

	SS	RS	ES
fractions	0	0.3333333	0.666667

SOF_{MEAN} Re-use Backfill Material
0.14 Stockpile 3

SOF_{MEAN} Groundwater
0.16

SOF_{TOT} <=1

$SOF_{MEAN, SU}$ 0.45 **PASS**

Calculate the dose contribution for the SU by multiplying $SOF_{MEAN,SU}$ (including contribution from Re-use backfill and Groundwater) by 25 mrem.
12.3 mrem

WRS TEST						
SAMPLE ID	**AREA** (Reference, Survey Unit)	**Gross SOF ($X_{i,ref}$, $Y_{i,SU}$)**	**ADJUSTED SOF (Z_i)**	**RANKS**	**REFERENCE AREA RANKS**	
9574-SS-140910-01-01	Reference	1.31	2.310	42	42	
9574-SS-140910-01-02	Reference	1.18	2.179	33	33	
9574-SS-140910-01-03	Reference	1.06	2.064	28	28	
9574-SS-140910-01-04	Reference	1.10	2.101	29	29	
9574-SS-140910-01-05	Reference	1.29	2.293	41	41	
9574-SS-140910-01-07	Reference	1.34	2.339	43	43	
9574-SS-140910-01-08	Reference	1.15	2.154	32	32	
9574-SS-140910-01-09	Reference	1.18	2.182	34	34	
9574-SS-140910-01-10	Reference	1.23	2.227	39	39	
9574-SS-140910-01-11	Reference	1.38	2.380	44	44	
9574-SS-140910-01-12	Reference	1.05	2.055	27	27	
9574-SS-140910-01-13	Reference	0.94	1.941	17	17	
9574-SS-140910-01-14	Reference	1.12	2.119	30	30	
9574-SS-140910-01-15	Reference	1.15	2.152	31	31	
9574-SS-140910-01-16	Reference	1.03	2.028	24	24	
9574-SS-140910-01-17	Reference	0.44	1.443	12	12	
9574-SS-140910-01-18	Reference	1.19	2.188	36	36	
9574-SS-140910-01-20	Reference	0.76	1.757	14	14	
9574-SS-140910-01-21	Reference	1.02	2.023	23	23	
9574-SS-140910-01-22	Reference	1.02	2.018	22	22	
9574-SS-140910-01-23	Reference	1.00	2.002	19	19	
9574-SS-140910-01-24	Reference	0.87	1.873	16	16	
9574-SS-140910-01-25	Reference	1.04	2.040	26	26	
9574-SS-140910-01-26	Reference	0.96	1.959	18	18	
9574-SS-140910-01-27	Reference	1.20	2.204	37	37	
9574-SS-140910-01-28	Reference	1.01	2.007	21	21	
9574-SS-140910-01-29	Reference	1.22	2.223	38	38	
9574-SS-140910-01-30	Reference	1.03	2.035	25	25	
9574-SS-140910-01-31	Reference	1.00	2.005	20	20	
9574-SS-140910-01-32	Reference	0.86	1.865	15	15	
9574-SS-140910-01-33	Reference	1.24	2.238	40	40	Min adjusted bkg SOF
9574-SS-140910-01-34	Reference	1.19	2.185	35	35	1.44
L10-13-01-B-E-S-00	Survey Unit	1.09	1.094	1	0	No WRS test necessary
L10-13-02-B-R-S-00	Survey Unit	1.14	1.144	4	0	No WRS test necessary
L10-13-03-B-E-S-00	Survey Unit	1.16	1.162	5	0	No WRS test necessary
L10-13-04-B-E-S-00	Survey Unit	1.37	1.371	10	0	No WRS test necessary
L10-13-05-B-R-S-00	Survey Unit	1.34	1.342	9	0	No WRS test necessary
L10-13-06-B-E-S-00	Survey Unit	1.13	1.132	3	0	No WRS test necessary
L10-13-07-B-R-S-00	Survey Unit	1.46	1.460	13	0	Perform WRS test
L10-13-08-B-E-S-00	Survey Unit	1.21	1.207	6	0	No WRS test necessary
L10-13-09-B-E-S-00	Survey Unit	1.39	1.390	11	0	No WRS test necessary
L10-13-10-B-R-S-00	Survey Unit	1.22	1.223	7	0	No WRS test necessary
L10-13-11-B-E-S-00	Survey Unit	1.10	1.104	2	0	No WRS test necessary
L10-13-12-B-E-S-00	Survey Unit	1.29	1.294	8	0	No WRS test necessary
			Rank Sums	990	911	W_r
			# Reference Area Measurements	**m**	32	
			# Survey Unit Measurements	**n**	12	
			Total Number of Measurements	**N**	44	
			(1-α) percentile of a standard normal distribution (MARSSIM Pg. I-10)	**z**	1.645	α = 0.05
			WRS Critical Value (MARSSIM Pg. I-10, Eq. I.1)	**CV**	783	
				TEST:	**PASS**	

Uniform DCGL Criteria Evaluation	
N/2 Value Verification	
Isotope(s)	**SOF (Ra/Tc/Th/Iso U)**
St. Dev.	0.11
$DCGL_{SOF}$	1
LBGR (Mean)	0.19
Shift	0.81
Relative Shift (Δ/σ)	7.16
MARSSIM Table 5.1 (P_r)	1.000000
N	12
N + 20%	14.4
N/2	8
FSS N/2	8
Verification Check	**SUFFICIENT MEASUREMENTS**

"N/2" Corresponds to the number of survey unit measurement locations required for the WRS Test

MARSSIM Table 5.1

Δ/σ	P_r
0.1	0.528182
0.2	0.556223
0.3	0.583985
0.4	0.611335
0.5	0.638143
0.6	0.664290
0.7	0.689665
0.8	0.714167
0.9	0.737710
1.0	0.760217
1.1	0.781627
1.2	0.801892
1.3	0.820978
1.4	0.838864
1.5	0.855541
1.6	0.871014
1.7	0.885299
1.8	0.898420
1.9	0.910413
2.0	0.921319
2.25	0.944167
2.5	0.961428
2.75	0.974067
3.0	0.983039
3.5	0.993329
4.0	0.997658
4.01	1.000000

MARSSIM Table 5.2, α = 0.05, β = 0.10

α (or β)	$Z_{1-\alpha}$ (or $Z_{1-\beta}$)
0.005	2.576
0.01	2.326
0.015	2.241
0.025	1.960
0.05	1.645
0.10	1.282
0.15	1.036
0.2	0.842
0.25	0.674
0.30	0.524

α
β

FORM HDP-PR-FSS-703-1
FIELD DUPLICATE SAMPLE ASSESSMENT

Survey Unit No.:	LSA 10-13				Survey Unit Description:		Burial Pits Open Land Area Northern Survey Unit in "Area 2"					
			Sample (pCi/g)		Field Duplicate Sample (pCi/g)							
Sample ID	Field Duplicate Sample ID	Radionuclide	Activity (x_i)	MDC	Activity (x_i)	MDC	Average Activity ($\bar{x}$) (pCi/g)	Nuclide DCGL (pCi/g)	Statistic[2]	Warning Limit	Control Limit	Statistic Exceeds Limit? (Y/N)
L10-13-07-B-R-S-00	L10-13-07-B-R-Q-00	Ra-226	1.42	0.0945	1.31	0.0627	1.365	1.9	0.11	0.269	0.403	N
L10-13-07-B-R-S-00	L10-13-07-B-R-Q-00	Tc-99	0.358	0.202	0.34	0.212	0.349	25.1	0.018	3.552	5.321	N
L10-13-07-B-R-S-00	L10-13-07-B-R-Q-00	Th-232	1.35	0.19	1.15	0.114	1.250	2.0	0.200	0.283	0.424	N
L10-13-07-B-R-S-00	L10-13-07-B-R-Q-00	U-234[1]	2.524	NA	2.336	NA	2.430	195.4	0.188	27.649	41.425	N
L10-13-07-B-R-S-00	L10-13-07-B-R-Q-00	U-235	0.134	0.287	0.124	0.231	0.129	51.6	NA	7.301	10.939	NA
L10-13-07-B-R-S-00	L10-13-07-B-R-Q-00	U-238	1.31	1.02	1.26	0.807	1.285	168.8	0.050	23.885	35.786	N

Comments:
1. U-234 is inferred, no MDC available.
2. Duplicate assessment is not necessary if the result of either sample is < MDC.

Performed by: _____ Reviewed by: _____

Date: _____ Date: _____

Quality Record

LSA 10-13 Sys SOF

0.1
0.1
0.1
0.3
0.3
0.1
0.4
0.1
0.3
0.2
0.1
0.2

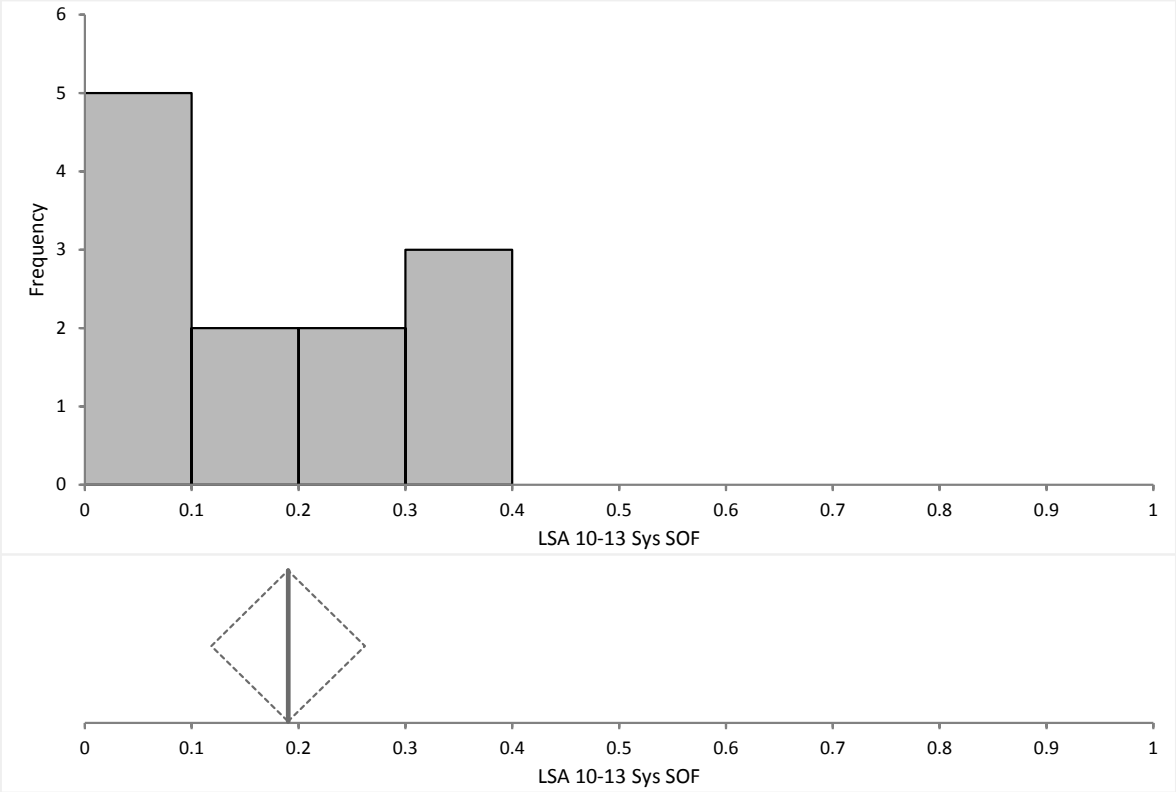
Distribution: LSA 10-13 Sys SOF

Analyse-it v4.65.2

SOFn Only A1:A13

Last updated 8 November 2016 at 13:14 by W. Clark Evers

Descriptives



	N
	12

	Mean	95% CI	Mean SE	SD	Variance	Skewness	Kurtosis
LSA 10-13 Sys SOF	0.19	0.12 to 0.26	0.033	0.11	0.01	0.6	-1.15

	Minimum	1st quartile	Median	96.14% CI	3rd quartile	Maximum	IQR
LSA 10-13 Sys SOF	0.1	0.09	0.15	0.09 to 0.31	0.30	0.4	0.21