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Title: Shelf Life Program at LANL (U)

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Shelf Life Program at LANL

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Pit Surveillance Working Group

April 28, 2011

Lawrence Livermore National Laboratory

ABSTRACT

LANL and LLNL shelf life units are listed. Disposition of units is given along with those units currently being tested. Cost for testing a single unit is \$47,827. Issues with the shelf life program are given. The five year nuclear stockpile plan (FYNSP) is given for both destructive testing and the shelf life testing.

LLNL UNITS INCLUDE:

W62 MC2406-1303, 1343, 1380;

W80 119-1227, 2725, 7063, 7088, 8215, 50501 released by DA

124-1790S(V), 8848S, 9759S(V)

B83 MC3350-2432(V), 2676, 7000

W84 MC3437-1987, 4066, 7677(V)

W87 MC3737-82540, 90573, SOW3(V)

LANL UNITS INCLUDE:

B61 118-~~7432~~, ~~9406~~, 42601(V) released by DA

123-6622S, 7622S, 7632S, 8242S

125-4029S, 7490S, 9942S

W76-0 116-~~1488S~~, 1505S(V), 1761S(V), ~~2392S~~, 3768(V), ~~4854S~~, ~~5613S~~, 6060S(V), ~~6203S~~, 6404S(V)

6504S(V), 6903S(V), ~~7397S~~, ~~7481S~~, 7536S(V), 7972S(V), ~~8136S~~, ~~8604S~~, 9031S(V), 9398S(V)

Only 9 pits will be done in FY11

W76-1 116-~~3461S~~, ~~3557S~~, ~~4099S~~, ~~7143S~~

W78 117-2295(V), 5340S, 7893(V), 8931, 9942S

W88-0/1 126-22354S, 40078S, 48260S, 59998S

W88-3 126-3072

5 special order units

COST FOR SHELF LIFE PROGRAM

Activities

Unpack-20 hrs, \$2672

Weight – 10 hrs, \$1336

Visual Inspection-5 hrs, \$935

Gas Analysis- 20 hrs, \$3,744

Photography-40 hrs, \$5,427

ARS-45 hrs, \$5,365

Ultrasonic Testing- 18 hrs, \$2,405

Radiography (high and low energy, 6 MeV and 220 KeV)-135 hrs, \$23,601

Pack for Storage- 20 hrs, \$2672

Total Cost \$47,827.

ISSUES

ALARA from handling

Storage Issues

Throughput – competing for resources with other programs especially in radiography

Is 2 year cycle necessary?

Would a six year cycle work?

FYNSP – Pits Destructive Testing

System	FY12	FY13	FY14	FY15	FY16	FY17
B61 123		1		1		1
B61 125	1		1		1	
W76-0		1B			1B	
W76-1	1	1	1	1+1B	1B	1+1B
W78	1+1B	1+1B	1+1B	1+1B	1+1B	1+1B
W88	1		1		1	
Retired	2	2	2	2	2	2
W80						
B83	1					
W84	1					
W87						
Total	9	7	7	7	8	7
Total Boost	1	2	1	2	3	2

FYNSP – Pits Shelf Life

System	FY12	FY13	FY14	FY15	FY16	FY17
B61	7		7		7	
W76-0		4		4		4
W76-1		4		4		4
W78	5		5		5	
W88	4		7		7	
W80	(3)					
B83	(3)					
W84	(3)					
W87	(3)					
Total	16	8	19	8	19	8

Shelf Life Program at LANL (U)

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LLNL Pits

- W62 MC2406-1303, 1343, 1380
- W80 119-1227, 2725, 7063, 7088, 8215, 50501 Released by DA
- W80 124-1790S(V), 8848S, 9759S(V)
- B83 MC3350-2432(V), 2676, 7000
- W84 MC3437-1987, 4066, 7677(V)
- W87 MC3737-82540, 90573, SOW3(V)

LANL Pits

- B61 118-7432, 9406, 42601(V) Released by DA
- B61 123-6622S, 7622S, 7632S, 8242S
- B61 125-4029S, 7490S, 9942S
- W76-0 116-1505S(V), 7972(V) Released to W76 LEP
- W76-0 116-1488S, 2392S, 4854S, 5613S, 6203S, 7397S, 7481S, 8136S, 8604S Currently being tested
- W76-0 116-1761S(V), 3768(V), 6060S(V), 6404S(V), 6504S(V), 6903S(V), 7536S(V), 9031S(V), 9398S(V)
- W76-1 116-3461S, 3375S, 4099S, 7143S Currently being tested
- W78 117-2295(V), 5340S, 7893(V), 8931, 9942S

LANL Pits (continued)

- W88-0/1 126-22354S, 40078S, 48260S, 59998S
- W88-3 126-3072
- Special order units SS1, SOW1, SOW2, TTW-002, TTW-003SC

Cost of Shelf Life Program

■ Activities

- Unpack-20 hrs, \$2,672
- Weight-10 hrs, \$1,336
- Visual Inspection-5 hrs, \$935
- Gas Analysis-20 hrs, \$3,774
- Photography-40 hrs, \$5,427
- ARS-45 hrs, \$5,365
- Ultrasonic Testing-18 hrs, \$2,045
- Radiography (220 KeV, 6 MeV)-135 hrs, \$23,601
- Pack for Storage-20 hrs, \$2,672
- Total Cost \$47,827

Issues

- ALARA due to handling older units
- Storage Issues
- Throughput-competing for resources with other programs, especially in radiography
- Is 2 year cycle necessary?
- Six year cycle?

Status

- Report complete on the 117 Cycle 30.
- FSTF complete on the 116, beginning post FSTF testing
- Coring the 126 Cycle 19.
- Beginning Destructive Evaluation of the 123 Cycle 109.
- Getting ready for disassembly of three units.
- Wrapping up reporting on the 76-1 shelf-life units.
- About ½ through the 76-0 shelf-life units.
- Fully scheduled through the remainder of the year for FSTF studies.

FYNBP- Pits Destructive Testing

	FY12	FY13	FY14	FY15	FY16	FY17
B61 123		1		1		1
B61 125	1		1		1	
W76-0 116		1B			1B	
W76-1 116	1	1	1	1+1B	1B	1+1B
W78 117	1+1B	1+1B	1+1B	1+1B	1+1B	1+1B
W88 126	1		1		1	
Retired	2	2	2	2	2	2
Total	7	7	7	7	8	6
Boost	1	2	1	2	3	2

LLNL- Pits Destructive Testing

System	FY12	FY13	FY14	FY15	FY16	FY17
W80 124						
B83 MC3350	1					
W84 MC3437	1					
W87 MC3737						
Total	2					

FYNISP-Pits Shelf Life

System	FY12	FY13	FY14	FY15	FY16	FY17
B61	7		7		7	
W76-0		4		4		4
W76-1		4		4		4
W78	5		5		5	
W88	4		7		7	
Total	16	8	19	8	19	8

LLNL-Shelf Life Pits

System	FY12	FY13	FY14	FY15	FY16	FY17
W80	(3)					
B83	(3)					
W84	(3)					
W87	(3)					

References

- 2Y59497 LANL Shelf Life Program Requirements
- Shelf Life Handbook, 9/10, LA-UR-10-06494
- SIER 2010LA3345 rev. 2, W76-0 18 to 9 shelf life units
- GE1K0656-000, B61
- GE2K0529-000, W76-0
- GE2K0530-000, W76-1
- GE3K0192-000, W78
- GE5K0119-000, W88