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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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Phillip Kleinschmidt, IPM-1

## LLNL Pits

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- **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

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- 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)

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- **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

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## ■ 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

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- 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

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- 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  $\frac{1}{2}$  through the 76-0 shelf-life units.
- Fully scheduled through the remainder of the year for FSTF studies.

## FYNSP- 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	1					
MC3350						
W84	1					
MC3437						
W87						
MC3737						
Total	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	
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

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- **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**