

# Primary Certification

## Mission Supporting Goals and Objectives

Primary Certification integrates the laboratory research and development efforts in materials science, engineering, and dynamic system behavior to develop certification tools and methodologies to certify the performance and safety of any rebuilt or aged primary to a specific yield.

## Funding Schedule

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Boost Physics .....	3,549	5,156	5,175	19	0.4%
Engineering Component Analysis .....	100	250	565	315	126.0%
Materials Science Integration and Analysis ...	13,581	12,605	12,124	-481	-3.8%
Integrated Hydro Test Assessment .....	875	1,855	2,233	378	20.4%
Subcritical Experiments .....	23,814	28,158	24,680	-3,478	-12.4%
Legacy Data Analysis and Archiving .....	3,477	2,824	2,382	-442	-15.7%
Total, Primary Certification .....	45,396	50,848	47,159	(3,689)	-7.3%

## Performance Measures

### Performance will be demonstrated by:

- Evaluating historical test data for archiving.
- Assessing the effect of engineering and manufacturing technologies on pits.
- Conducting experiments and testing validated computational models.
- Continuing development of an improved dynamic model.
- Obtaining equation of state (EOS) and other data from subcritical experiments.
- Evaluating thermochemically based high explosive EOS.
- Validating pit material EOS models in FY 2003.
- Conducting subcritical experiments: Piano, Trumpet 1, 2, and 3.

### Past achievements in this campaign include:

- OBOE 6, 7 and 8 subcritical experiments fired successfully and yielded excellent results.
- Improvements were made to the radiographic scatter reducing collimator that allows flash x-ray radiography of thick weapon geometry objects.
- Weapon geometry hydros have been successfully fired.
- A new fiber optic diagnostic for measuring high explosive burn front velocity was developed.

## Detailed Program Justification

(dollars in thousands)			
	FY 2001	FY 2002	FY 2003
<b>Boost Physics</b> .....	3,549	5,156	5,175
Develop an improved thermonuclear boost model to support the campaign certification goal.			
<b>Engineering Component Analysis</b> .....	100	250	565
Assess the impact of new manufacturing technologies on remanufactured components; and develop a pit engineering evaluation of each stockpile weapon system.			
<b>Materials Science Integration and Analysis</b> .....	13,581	12,605	12,124
Validate improved materials properties models and use these models to improve computational predictions of primary performance.			
<b>Integrated Hydro Test Assessment</b> .....	875	1,855	2,233
Conduct integrated hydrodynamic experiments to validate computational models and to demonstrate a certification methodology for aged and remanufactured components.			
<b>Subcritical Experiments</b> .....	23,814	28,158	24,680
Conduct integrated subcritical experiments to measure the properties of remanufactured and aged pits.			
<b>Legacy Data Analysis and Archiving</b> .....	3,477	2,824	2,382
Analyze historical nuclear test data and develop an accessible archive of information relevant to the certification of primaries in the enduring stockpile.			
<b>Total, Primary Certification</b> .....	<b>45,396</b>	<b>50,848</b>	<b>47,159</b>

## Explanation of Funding Changes from FY 2002 to FY 2003

FY 2003 vs. FY 2002 (\$000)
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### Primary Certification

- # Principal change is a decrease in funding for Nevada support of subcritical experiments in this activity. This is due to a programmatic decision to move appropriate funding of the Accordian subcritical experiment to DSW.

**Total Funding Change, Primary Certification** ..... **-3,689**