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## Directed Stockpile Work

### Funding Schedule by Activity

	(dollars in thousands)				
	FY 2004	FY 2005	FY 2006	\$ Change	% Change
<b>Directed Stockpile Work <sup>a</sup></b>					
<b>Life Extension Programs</b>					
B61 Life Extension Program .....	43,456	58,321	50,810	-7,511	- 12.9%
W76 Life Extension Program .....	138,706	180,806	162,268	-18,538	-10.3%
W80 Life Extension Program .....	128,347	123,947	135,240	+11,293	+ 9.1%
W87 Life Extension Program .....	31,036	0	0	+ 0	+ 0.0%
<b>Subtotal, Life Extension Programs</b>	<b>341,545</b>	<b>363,074</b>	<b>348,318</b>	<b>-14,756</b>	<b>- 4.1%</b>
<b>Stockpile Systems</b>					
B61 Stockpile Systems .....	46,034	53,557	66,050	+12,493	+ 23.3%
W62 Stockpile Systems .....	11,568	5,145	8,967	+3,822	+ 74.3%
W76 Stockpile Systems .....	84,148	69,305	63,538	-5,767	- 8.3%
W78 Stockpile Systems .....	30,207	25,363	32,632	+7,269	+ 28.7%
W80 Stockpile Systems .....	21,743	16,448	26,315	+9,867	+ 60.0%
B83 Stockpile Systems .....	33,551	27,436	26,391	-1,045	- 3.8%
W84 Stockpile Systems .....	2,246	3,225	4,402	+1,177	+ 36.5%
W87 Stockpile Systems .....	48,760	44,154	50,678	+6,524	+ 14.8%
W88 Stockpile Systems .....	34,012	33,838	32,831	-1,007	- 3.0%
<b>Subtotal, Stockpile Systems.....</b>	<b>312,269</b>	<b>278,471</b>	<b>311,804</b>	<b>+33,333</b>	<b>+ 12.0%</b>
<b>Retired Warheads Stockpile Systems.....</b>	<b>24,568</b>	<b>35,073</b>	<b>35,245</b>	<b>+ 172</b>	<b>+ 0.5%</b>
<b>Stockpile Services</b>					
Production Support <sup>b</sup> .....	257,339	264,413	267,246	+ 2,833	+ 1.1%
Research & Development Support <sup>c</sup> .....	62,044	62,139	66,753	+ 4,614	+ 7.4%
Research & Development Certification and Safety Management, Technology, and Production .....	173,510	155,754	211,727	+ 55,973	+ 35.9%
Advanced Concepts .....	6,000	0	0	+ 0	+ 0.0%
Robust Nuclear Earth Penetrator.....	7,414	0	4,000	+ 4,000	+ 100.0%
Reliable Replacement Warhead.....	0	8,929	9,351	+ 422	+ 4.7%
<b>Subtotal, Stockpile Services .....</b>	<b>612,143</b>	<b>600,536</b>	<b>725,664</b>	<b>+125,128</b>	<b>+ 20.8%</b>
<b>Total, Directed Stockpile Work .....</b>	<b>1,290,525</b>	<b>1,277,154</b>	<b>1,421,031</b>	<b>+143,877</b>	<b>+ 11.3%</b>

<sup>a</sup> Starting in FY 2006, BWXT Y-12 is changing its costs estimating model by moving overhead activities related to facility operations and maintenance into direct funded activities in Readiness in Technical Base and Facilities-Operations of Facilities. The funding changes net to zero and are reflected in the FY 2006 Budget Submission. Comparability adjustments are reflected in the amounts of -\$60,974,000 in FY 2004 and -\$69,052,000 in FY 2005.

<sup>b</sup> Production Support has been removed as an allocation in other DSW categories in order to stabilize the funding profiles of the other categories and present a clearer look at both direct workload and programmatic support activities. Comparability adjustments are reflected in the amounts of +\$257,339,000 in FY 2004 and +\$264,413,000 in FY 2005.

<sup>c</sup> Research and Development Support has been removed as an allocation in other DSW categories in order to stabilize the funding profiles of the other categories and present a clearer look at both direct workload and programmatic support activities. Comparability adjustments are reflected in the amounts of +\$62,044,000 in FY 2004 and +\$62,139,000 in FY 2005.

## FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
<b>Life Extension Programs</b>						
B61 Life Extension Program ...	50,810	44,762	46,784	3,508	635	146,499
W76 Life Extension Program ..	162,268	137,680	112,084	140,990	135,747	688,769
W80 Life Extension Program ..	135,240	134,446	134,856	127,616	121,212	653,370
<b>Subtotal, Life Extension Programs .....</b>	<b>348,318</b>	<b>316,888</b>	<b>293,724</b>	<b>272,114</b>	<b>257,594</b>	<b>1,488,638</b>
<b>Stockpile Systems</b>						
B61 Stockpile Systems .....	66,050	74,729	113,291	113,486	147,013	514,569
W62 Stockpile Systems .....	8,967	6,097	4,695	2,590	0	22,349
W76 Stockpile Systems .....	63,538	52,982	62,879	54,082	57,606	291,087
W78 Stockpile Systems .....	32,632	49,186	36,108	38,678	34,272	190,876
W80 Stockpile Systems .....	26,315	31,906	31,449	36,656	38,300	164,626
B83 Stockpile Systems .....	26,391	38,860	35,515	37,672	36,529	174,967
W84 Stockpile Systems .....	4,402	1,021	1,020	1,051	1,023	8,517
W87 Stockpile Systems .....	50,678	45,150	34,536	34,229	36,267	200,860
W88 Stockpile Systems .....	32,831	36,968	35,149	37,538	36,053	178,539
<b>Subtotal, Stockpile Systems</b>	<b>311,804</b>	<b>336,899</b>	<b>354,642</b>	<b>355,982</b>	<b>387,063</b>	<b>1,746,390</b>
<b>Retired Warheads Stockpile Systems .....</b>	<b>35,245</b>	<b>30,156</b>	<b>29,776</b>	<b>30,188</b>	<b>29,304</b>	<b>154,669</b>
<b>Stockpile Services</b>						
Production Support .....	267,246	263,149	280,763	299,022	305,256	1,415,436
Research & Development Support.....	66,753	82,818	69,350	70,313	69,001	358,235
Research & Development Certification and Safety .....	211,727	224,230	255,106	262,649	265,645	1,219,357
Management, Technology, and Production.....	166,587	176,428	189,696	196,339	202,596	931,646
Robust Nuclear Earth Penetrator.....	4,000	14,000	0	0	0	18,000
Reliable Replacement Warhead.....	9,351	14,775	14,413	29,553	28,964	97,056
<b>Subtotal, Stockpile Services</b>	<b>725,664</b>	<b>775,400</b>	<b>809,328</b>	<b>857,876</b>	<b>871,462</b>	<b>4,039,730</b>
<b>Total, Directed Stockpile Work .....</b>	<b>1,421,031</b>	<b>1,459,343</b>	<b>1,487,470</b>	<b>1,516,160</b>	<b>1,545,423</b>	<b>7,429,427</b>

*cf FY06 or proposals for decade*

## Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Annual percentage of warheads in the Stockpile that are safe, secure, reliable, and available to the President for deployment (Annual Outcome)	R: 100%	R: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually, maintain 100% of the warheads in the stockpile as safe, secure, reliable, and available to the President for deployment.
Annual percentage of required Assessments and Reports completed to support stockpile certification and surety reporting to the President (Annual Output)	R: 100%	R: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually, complete 100% of the of required assessments and reports to support stockpile certification to the President.
Annual percentage of items supporting Enduring Stockpile Maintenance completed (Annual percentage of prior-year non-completed items completed) (Annual Output)	R: 93% (79%)	R: 85% (77%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	Annually, complete at least 95% of all scheduled maintenance activity (100% of prior-year non-completed items)
Cumulative percentage of progress in completing Nuclear Weapons Council (NWC)-approved W76-1 Life Extension Program (LEP) activity (Long-term Output)	R: 18%	R: 24%	T: 29%	T: 34%	T: 39%	T: 44%	T: 49%	T: 54%	By 2017, complete NWC-approved W-76-1 LEP.
Cumulative percentage of progress in completing NWC-approved W80-3 LEP activity (Long-term Output)	R: 18%	R: 22%	T: 30%	T: 36%	T: 42%	T: 48%	T: 54%	T: 60%	By 2015, complete NWC-approved W80-3 LEP.
Cumulative percentage of progress in completing NWC-approved B61-7/11 LEP activity (Long-term Output)	R: 10%	R: 20%	T: 30%	T: 40%	T: 70%	T: 90%	T: 100%	N/A	By 2009, complete NWC-approved B61-7/11 LEP.
Cumulative percentage of progress in completing NWC-approved W87 LEP (Long-term Output)	R: 85%	R: 100%	N/A	N/A	N/A	N/A	N/A	N/A	By 2004, complete NWC-approved W87 LEP.
Cumulative percentage of progress for the Robust Nuclear Earth Penetrator (RNEP), if appropriately authorized	N/A	R: 2%	N/A	T: 50%	T: 100%	N/A	N/A	N/A	By the beginning of FY 2008, complete the agreed upon RNEP phase 6.2/6.2A activities.
Cumulative percent reduction in projected W80 warhead production costs per warhead from established validated baseline, as computed and reported annually by the W80 LEP Cost Control Board. (EFFICIENCY MEASURE)	N/A	N/A	T: Baseline	T: 0.5%	T: 1.0%	T: 1.5%	T: 2.0%	N/A	By 2009, reduce the projected W80 LEP warhead production costs per warhead from established validated baseline by 2.0% (interim target).

## Detailed Justification

(dollars in thousands)

	FY 2004	FY 2005	FY 2006
<b>Life Extension Program Total .....</b>	<b>341,545</b>	<b>363,074</b>	<b>348,318</b>

The Life Extension Program has been developed to extend the stockpile lifetime of a warhead or warhead components at least 20 years with a goal of 30 years. This activity is performed in conjunction with the applicable service from the Department of Defense following the procedural guidelines of the Phase 6.x process. The activities below describe what research, development and production work is required to meet the authorized First Production Unit (FPU) date, with the necessary weapon Military Characteristics throughout the Stockpile-to-Target Sequence environments.

▪ **B61 Life Extension Program.....** **43,456**      **58,321**      **50,810**

The B61 Life Extension Program will extend the life of the B61 for an additional 20 years with the FPU in FY 2006. The B61 Life Extension Program includes refurbishment of the canned subassembly (CSA) and replacement of associated seals, foam supports, cables and connectors, the group X kit, and limited life components on the B61 Mods 7 and 11.

In FY 2006, programmatic activities will include conducting Inter-laboratory Peer Review (IPR); completing the Addendum to the Final Weapons Design Report and the Design Review and Acceptance Group (DRAAG) Review; completing phases 6.4 and phase 6.5; receiving phase 6.6 authorization; completing the Major Assembly Release (MAR); and ramp up of the production processes to a steady state rate and delivery of the First Production Unit (FPU) in June 2006. Production quantities required by the Production and Planning Directive (P&PD) 2005-0 will be delivered for the fiscal year. Components for disassembly operations necessary to mine reuse components will be conducted and components will be manufactured for assembly and delivery in early FY 2007.

▪ **W76 Life Extension Program.....** **138,706**      **180,806**      **162,268**

The W76 Life Extension Program will extend the life of the W76 for an additional 30 years with the FPU in FY 2007. Activities will include design, qualification, and certification activities to ensure the design of the refurbished warheads meets all required military characteristics; work associated with the manufacturability of the components including the nuclear explosive package; the Arming, Fuzing, and Firing (AF&F) system; the gas transfer system; and the associated cables, elastomers, valves, pads, foam supports, telemetries, and miscellaneous parts.

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In FY 2006, activities include completion of a production readiness review, issuance of Sub-System Engineering Releases to the production plants and completion of certification/qualification activities to certify the refurbished design with margins and uncertainties; fabrication activities, procedure development, and training, process prove-in activities on the AF&F and telemetry and aft supports, AF&F subsystems, and other major assemblies. The W76 LEP activities will include continuation of Seamless Safety for the 21<sup>st</sup> Century (SS-21) integrated activities and procurement of tools developed through this process. The SS-21 process integrates the weapon, facility, tooling (testers & equipment), operating procedures, and personnel to form a safe, efficient, and effective operating environment for weapons assembly and disassembly processes at the Pantex Plant. These activities will be sustained throughout FY 2006, and will include additional procurements for

(dollars in thousands)

FY 2004	FY 2005	FY 2006
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tooling developed as part of the SS-21 process. Production of piece parts will continue this year including the ramp up to support FPU and full production. Readiness preparation activities and process prove-in efforts will be completed in FY 2006. Radiation hardness activities, required by the DoD weapon Military Characteristics document, will be performed as part of certification activities throughout FY 2006.

- **W80 Life Extension Program.....**                      **128,347**                      **123,947**                      **135,240**

The W80 Life Extension Program extends the life of the W80 for an additional 20 years with the FPU in FY 2009, consistent with the Department of Defense schedules. In this LEP, the nuclear package is not being refurbished but other components are being replaced/refurbished to extend warhead life and improve security and use control. Activities will include qualification and certification activities to ensure refurbished warheads meet all required military characteristics; replacing the neutron generator, trajectory sensing signal generator, gas transfer system, and other associated components.

In FY 2006, efforts will include a system thermo-mechanical test, modeling and assessment, development of a joint test assembly (JTA-5) flight test unit; support for chemistry and material science, and component design and production preparations; process prove-in activities beginning with the warhead electrical system subassembly and cover, gas transfer system, cables, warhead interface module, and environmental controls.

- **W87 Life Extension Program.....**                      **31,036**                      **0**                      **0**

The W87 life extension program was completed in late FY 2004.

- Stockpile Systems Total.....**                      **312,269**                      **278,471**                      **311,804**

Each weapon-type in the stockpile requires routine maintenance; periodic repair; replacement of limited life components; surveillance to assure continued safety, security, and reliability; and other support activities. The activities below describe those specific activities by weapon-type.

- **B61 Stockpile Systems .....**                      **46,034**                      **53,557**                      **66,050**

Enduring stockpile workload efforts on all modifications of the B61 will include ongoing assessment and certification activities; limited life component exchange activities; surveillance activities; and required alterations, modifications, repairs, and safety studies. In FY 2006, activities include supporting the annual assessment process; providing laboratory and management support to the Project Officer's Group (POG) and DoD Safety Studies; supporting resolution of Significant Finding Investigations (SFIs); submission of data for surveillance cycle reports; conduct integrated experiments per current approved baseline plan; conduct development, design, and peer reviews on the spin rocket motor and support stockpile flight tests of the spin rocket motor; producing the 1M and 2M gas reservoirs; production activities for the spin rocket motor; continuing surveillance tests for the B61-3/4/10 and the B61-7/11; disassembling and inspecting the stockpile laboratory tests units; and conducting component laboratory tests and stockpile flight tests for stockpile evaluation.

(dollars in thousands)

	FY 2004	FY 2005	FY 2006
▪ <b>W62 Stockpile Systems</b> .....	<b>11,568</b>	<b>5,145</b>	<b>8,967</b>
<p>Enduring stockpile workload efforts on the W62 will include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required repairs. In FY 2006, activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs; conducting material, component, and system level tests, analysis, and evaluation of performance and safety; continuing a normal cycle of surveillance tests plus additional targeted surveillance of aging components; and conducting stockpile laboratory and flight tests and disassembly and inspection of test units and test beds. Surveillance must be maintained through FY 2007 in preparation for the retirement of the W62.</p>			
▪ <b>W76 Stockpile Systems</b> .....	<b>84,148</b>	<b>69,305</b>	<b>63,538</b>
<p>Enduring stockpile workload efforts on the W76 will include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, and safety studies. In FY 2006, specific activities include: supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline plan; steady state production of the 1X Acorn; production of the MC4380A replacement Neutron Generator; production of telemetry units and neutron generator monitors; production of unique structural parts and Acorns for joint test assemblies; building joint test assemblies; conducting stockpile laboratory and flight tests; and disassembling and inspecting test units.</p>			
▪ <b>W78 Stockpile Systems</b> .....	<b>30,207</b>	<b>25,363</b>	<b>32,632</b>
<p>Enduring stockpile workload efforts on the W78 will include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, and safety studies. In FY 2006, activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline plan; completing the MC4381 Neutron Generator FPU, initiating production activities for the firing system to support surveillance rebuilds, continuing work on the improved LF-7A gas transfer system, conducting stockpile flight tests using the redesigned W78 joint test assemblies, and disassembly and inspection of stockpile laboratory and flight units and test beds, and completion of Phase 6.2/6.2A Surety Study in coordination with DoD.</p>			
▪ <b>W80 Stockpile Systems</b> .....	<b>21,743</b>	<b>16,448</b>	<b>26,315</b>
<p>Enduring stockpile workload efforts on all modifications of the W80 include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, safety studies, and safety studies. In FY 2006, specific activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline</p>			

(dollars in thousands)

FY 2004	FY 2005	FY 2006
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plan; the steady state production of the 1K reservoir; producing telemetry units, neutron generator monitors, cables, and other joint test assembly hardware for support of stockpile flight tests; continuing polymeric evaluation testing; building joint test assemblies; and conducting the disassembly and inspection of stockpile laboratory units, flight tests units, and test beds.

- **B83 Stockpile Systems** ..... **33,551**                      **27,436**                      **26,391**

Enduring stockpile workload efforts on all modifications of the B83 include ongoing assessment and certification activities; limited life component exchange activities; surveillance activities; and required alterations, modifications, repairs, and safety studies. In FY 2006, specific activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; conducting material, component, and system level testing and evaluating performance and safety characteristics; surveillance of B83 detonators and pits in support of the annual certification effort; accomplishing stockpile laboratory and flight tests; completing the disassembly and inspection of stockpile laboratory and flight test units; and rebuilding B83-1 test units.

- **W84 Stockpile Systems** ..... **2,246**                      **3,225**                      **4,402**

Enduring stockpile workload efforts on all modifications of the W84 include ongoing assessment and certification activities. In FY 2006, specific activities include: supporting the annual assessment process; providing laboratory and management support to the POG; and supporting resolution of SFI's; conducting material, component and system level testing and evaluating performance and safety characteristics; disassembly and inspection of some existing Joint Test Assembly (JTA) units. Although there is no delivery system for the W84, the DoD requires NNSA to maintain W84 in the inactive stockpile.

- **W87 Stockpile Systems** ..... **48,760**                      **44,154**                      **50,678**

Enduring stockpile workload efforts on the W87 include ongoing assessment and certification activities, limited life component exchange activities; surveillance activities; and required alterations, modifications, repairs, and safety studies. In FY 2006, specific activities include: supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; conducting material, component, and system level testing; and evaluating performance and safety characteristics; producing environmental sensing devices, firing sets, and lightening arrestor connectors in support of surveillance rebuilds for the protected period; restarting production of other cables, valves, and mechanical piece parts; developing a new W87 stockpile flight test vehicle; conducting disassemblies and inspections of eight stockpile laboratory test units, and three stockpile flight test units; production of three joint test assemblies, and production of test beds; providing range support and data collection of W87 stockpile flight tests; and continuing surveillance of W87 detonators and pits and completion of Phase 6.2/6.2A Surety Study in coordination with DoD.

- **W88 Stockpile Systems** ..... **34,012**                      **33,838**                      **32,831**

Enduring stockpile workload efforts on the W88 include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, and safety studies. In FY 2006, specific activities include:

(dollars in thousands)

FY 2004	FY 2005	FY 2006
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supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; submitting data for surveillance cycle reports; conducting integrated experiments per current approved baseline plan; and ongoing engineering development activities for the 4T reservoir; continuing forging procurements and disassembling and inspection of stockpile laboratory test units and stockpile flight test units and production of joint test assemblies and test beds.

**Retired Warheads Stockpile Systems..... 24,568 35,073 35,245**

Retired Warhead Stockpile Systems workload focuses on weapon returns, dismantlement, characterization of components, disposal of excess components, and surveillance of components from the retired systems. Retired Warheads Stockpile Systems includes: continuing the safety surveillance of retired stockpile warheads; conducting hazard assessment studies to establish engineering and administrative controls for safe weapon disassembly operations; issuing safety analysis reports; conducting laboratory and production plant safety studies in implementation of SS-21 for retired systems; providing oversight for testers; and supporting the Tri-lab office. Also included are workload activities on the B53, W56, B61-3/4, and component characterization disposition for W68 AF&F system, W79 components, W62, W76 AF&F's, and workload processes unique to the storage and disposition of weapons that have been dismantled as part of the Surveillance Program or are designated in excess.

**Stockpile Services Total..... 612,143 600,536 725,664**

Stockpile Services covers research, development and production work that supports multi units, which are not attributable to one warhead type. In addition, this major category includes R&D and Production Support which have been removed from other DSW categories to stabilize the funding profiles and present a clearer look at both direct workload and programmatic support activities.



(dollars in thousands)

FY 2004	FY 2005	FY 2006
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ultimately serve multiple weapon types. Stockpile Management efforts in FY 2006 include updating the Stockpile Dismantlement Data Base to fully support the Engineering Data Warehouse with Nuclear Weapons Complex access; supporting the GTS Redevelopment Reclamation FPU, fielding of ESC core surveillance diagnostics, the Classified Application Project in accordance with Baseline Schedule, and the close-out of SFI's per approved yearly closure plans; maintaining technical knowledge, engineering practices, and information systems; conducting component engineering activities, reservoir forging development, program management and integration, special stockpile studies, and independent assessments; integrating projects; conducting required training for stockpile systems; performing safety and use control assessments; providing payments resulting from court orders that were based upon manufacture of nuclear warheads components; conducting activities that develop, maintain, surveil stockpile multi-use components, instrumentation, and ancillary equipment; and supporting certain activities that cannot be associated with specific weapon types. Responsive Infrastructure activities will be performed to identify, develop, and demonstrate improvements that can be incorporated into normal business practices as part of the Stockpile Stewardship Program (SSP) that supports manufacturing and production activities.

- **Advanced Concepts Initiative** ..... 6,000 0 0

The Advanced Concepts Initiative are activities coordinated with the DoD, for Pre-Phase 3/6.3 laboratory workload activities that potentially will enhance the military capabilities of the stockpile. This activity was zeroed out in the Consolidated Appropriations Act, 2005 (P.L. 108-447) and has been replaced by Stockpile Services Reliable Replacement Warhead.

**Congressionally Directed Activity:** The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), eliminates funding for advanced concepts research on new weapons design, but provided the same amount of funding for the Reliable Replacement Warhead program to improve the reliability, longevity, and certifiability of existing weapons and their components.

- **Reliable Replacement Warhead** ..... 0 8,929 9,351

The Consolidated Appropriations Act, 2005 (P.L. 108-447), replaced the Advanced Concepts Initiative with Reliable Replacement Warhead. The Reliable Replacement Warhead program is to demonstrate the feasibility of developing reliable replacement components that are producible and certifiable for the existing stockpile. The initial focus will be to provide cost and schedule efficient replacement pits that can be certified without Underground Tests.

**Congressionally Directed Activity:** The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), eliminates funding for advanced concepts research on new weapons design, but provided the same amount of funding for the Reliable Replacement Warhead program to improve the reliability, longevity, and certifiability of existing weapons and their components.

- **Robust Nuclear Earth Penetrator** ..... 7,414 0 4,000

The Robust Nuclear Earth Penetrator (RNEP) category includes funding for the Phase 6.2/2A Air Force-led study. The decision to complete this study was reaffirmed with DoD in January 2005.

(dollars in thousands)

FY 2004	FY 2005	FY 2006
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Activities include participating in integrated NNSA-DoD integrated product teams for development of RNEP requirements and programmatic documents; system design and integration; planning, cost and risks analyses; and phenomenology studies. The study is scheduled for completion in FY 2007. In FY 2006, activities include conduct of a B83 impact test, analyzing test data, and supporting integration meetings with the DoD.

**Congressionally Directed Activity:** The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), eliminates funding included in the request in favor of higher priority current mission requirements.

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<b>Total, Directed Stockpile Work .....</b>	<b>1,290,525</b>	<b>1,277,154</b>	<b>1,421,031</b>
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## Explanation of Funding Changes

FY 2006 vs. FY 2005 (\$000)
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### Life Extension Programs

<ul style="list-style-type: none"> <li>▪ <b>B61 Life Extension Program</b> This net funding decrease is the result of completed pre-production Research and Development activities partially offset by production of refurbished units in support of the program schedule.....</li> <li>▪ <b>W76 Life Extension Program</b> This net funding decrease reflects completion of the Life of Program Buy material procurements and reducing re-certification and disassembly work to meet revised disassembly requirements. This is partially offset by reallocation of Research and Development activities to the W76.....</li> <li>▪ <b>W80 Life Extension Program</b> This increase supports ramp up of process prove in activities for the Warhead Electrical System (WES) Subassembly, Gas Transfer System, Cables, Warhead Interface Module, Environmental Controls, and Warhead Electrical System Cover, and production planning activities to meet FY 2009 FPU.....</li> </ul>	<p>-7,511</p> <p>-18,538</p> <p>+11,293</p> <hr/> <p>-14,756</p>
<b>Total, Life Extension Programs .....</b>	

### Stockpile Systems

<ul style="list-style-type: none"> <li>▪ <b>B61 Stockpile Systems</b> This increase supports conducting development, design, and peer reviews for the spin rocket motor and supports spin rocket motor production .....</li> <li>▪ <b>W62 Stockpile Systems</b> This increase supports resumption of surveillance disassembly and inspection activities not funded in FY 2005.....</li> <li>▪ <b>W76 Stockpile Systems</b> This decrease reflects realignment of funding requirements for neutron generator requirements.....</li> <li>▪ <b>W78 Stockpile Systems</b> This funding increase reflects a ramp up in production of the MC4381 Neutron Generator (NG) and meeting the NG FPU deliverable.....</li> <li>▪ <b>W80 Stockpile Systems</b> This increase supports partial recovery of surveillance disassembly and inspection backlog schedule from FY 2005 .....</li> </ul>	<p>+12,493</p> <p>+3,822</p> <p>-5,767</p> <p>+7,269</p> <p>+9,867</p>
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FY 2006 vs. FY 2005 (\$000)
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<ul style="list-style-type: none"> <li>▪ <b>B83 Stockpile Systems</b>            Funding decrease is due fewer surveillance rebuild requirements and completion of            caster bracket work .....</li> <li>▪ <b>W84 Stockpile Systems</b>            Funding increase supports preparation for and restart of safety surveillance            activities .....</li> <li>▪ <b>W87 Stockpile Systems</b>            This increase reflects the need to complete JTA and other surveillance component            production to support surveillance activities, some of which were deferred from FY            2005. ....</li> <li>▪ <b>W88 Stockpile Systems</b>            This decrease reflects completion of Seamless Safety for the 21st Century activities            and reduced requirements for surveillance components, which are offset by new            limited life component work scope and JTA deliveries .....</li> </ul>	<p>-1,045</p> <p>+1,177</p> <p>+6,524</p> <p>-1,007</p> <hr/> <p>+33,333</p>
<b>Total, Stockpile Systems .....</b>	
<b>Retired Warheads Stockpile Systems</b>	
The increase continues dismantlement efforts started in FY 2005 .....	+172
<b>Stockpile Services</b>	
<ul style="list-style-type: none"> <li>▪ <b>Production Support</b>            This increase supports previously under-funded activities in future capabilities,            process engineering, and manufacturing engineering for LEPs including the B61            and W76, the enduring stockpile, retired systems specifically the W62 and B83,            and procurement activities .....</li> <li>▪ <b>Research &amp; Development Support</b>            The increase is associated with Permissive Action Link equipment, and Gas            Transfer Systems design and aircraft compatibility .....</li> <li>▪ <b>Research &amp; Development Certification and Safety</b>            This increase reflects component testing at LANL and LLNL, supporting W76-1            and W80-3 life extension program hydrodynamics tests, initiation of sub-critical            experiments for LANL at Nevada Test Site, and increase in scope of work for            LLNL's <u>Accordion/Accordion Prime</u> sub-critical experiments at the Nevada Test            Site .....</li> </ul>	<p>+2,833</p> <p>+4,614</p> <p>+55,973</p>

FY 2006 vs. FY 2005 (\$000)
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<b>▪ Stockpile Management, Technology, and Production</b>	
This increase reflects additional requirements to support use control system studies.....	<b>+57,286</b>
<b>▪ Robust Nuclear Earth Penetrator Research &amp; Development</b>	
This increase reflects restart of the RNEP program to include performance of impact test, and analyses as part of the Phase 6.2/6.2A study. ....	<b>+4,000</b>
<b>▪ Reliable Replacement Warhead (RRW)</b>	
This funding increase continues a new RRW program put in place by the Consolidated Appropriations Act, 2005 (P.L. 108-447) .....	<b>+422</b>
<b>Total, Stockpile Services .....</b>	<b>+125,128</b>
<b>Total Funding Change, Directed Stockpile Work .....</b>	<b>+143,877</b>

### Capital Operating Expenses and Construction Summary

#### Capital Operating Expenses<sup>a</sup>

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	\$ Change	% Change
General Plant Projects.....	4,288	4,417	4,549	+ 132	+ 3.0%
Capital Equipment.....	38,320	39,470	40,654	+ 1,184	+ 3.0%
<b>Total, Capital Operating Expenses.....</b>	<b>42,608</b>	<b>43,887</b>	<b>45,203</b>	<b>+ 1,316</b>	<b>+ 3.0%</b>

<sup>a</sup> Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

## Detailed Justification

(dollars in thousands)

	FY 2004	FY 2005	FY 2006
<b>Enhanced Surety</b> .....	<b>32,137</b>	<b>32,791</b>	<b>29,845</b>

The Enhanced Surety subprogram demonstrates enhanced use-denial and advanced initiation options for the entire stockpile directly supporting the first National Nuclear Security Administration (NNSA) goal to ensure the safety, security, and control of the enduring nuclear weapons stockpile. This activity provides validated architectures, subsystems, components, and technology for inclusion in the stockpile refurbishment program to assure that modern nuclear safety standards are fully met and a new level of use-denial performance is achieved. A multi-technology approach is pursued to develop options for selection by weapon system designers during possible life extension programs (LEP), such as the B61 or W78. This approach will also address other refurbishments and stockpile improvement projects needed to meet future Department of Defense (DoD) requirements. Multi-technology development opens the design space and will result in synergistic improvements in other weapon components.

Technology development to improve the safety of the detonator interface to the nuclear explosive package will continue in FY 2006 with the coupling of an insensitive high explosive booster with a new compact initiator stronglink. A parallel effort to develop miniature, high energy density components to improve the surety of stockpile weapons will also continue in FY 2006 taking advantage of unique materials and engineering science expertise at the laboratories and synergies with Department of Defense (DoD) supported efforts.

In FY 2006, a joint program between laboratories for the development of a laser-fired optical initiation system will continue with the coupling of key components and demonstration of the compatibility of the technology with emerging weapon architectures. This advanced optical initiation technology offers significant improvement in safety by eliminating the possibility of any naturally occurring stimuli (such as lightning) from causing the weapon to initiate, while providing important use control features as well.

Approaches to integrated safety and surety will continue to be developed to provide enhanced area denial and better address the design basis threat requirements. Advanced security technologies that are appropriate for nuclear weapons will be demonstrated and incorporated into the architecture. Advanced use-control technologies will also be developed and demonstrated.

### **Weapons Systems Engineering Assessment**

<b>Technology</b> .....	<b>26,590</b>	<b>26,997</b>	<b>24,040</b>
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The Weapons Systems Engineering Assessment Technology subprogram has two major technical elements: (1) establishing a science-based engineering certification methodology and defining required underlying engineering research that ultimately improves responsiveness to future stockpile initiatives; and (2) conducting experiments and providing data necessary to develop and validate engineering computational models in collaboration with Advanced Simulation and Computing. These computational models are used to predict weapon system response to three Stockpile to Target Sequence (STS) environments: normal, abnormal and hostile. The activity also supports manufacturing development of critical components and subsystems; e.g., neutron generators, gas transfer systems, and microsystems. The campaign's objective is to establish the capability to predict engineering margins by integrating numerical simulations with experimental data. Validated

(dollars in thousands)

FY 2004	FY 2005	FY 2006
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computational tools are required to explore the operational parameter space of the nuclear weapons stockpile. Exploration of operational parameter space identifies failure modes and boundaries, thus, establishing engineering margins. Activities are carried out at Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), and Sandia National Laboratories (SNL).

In FY 2006, work will continue on non-intrusive instrumentation and telemetry systems to monitor Nuclear Explosive Package (NEP) components and high explosive (HE) response in weapon systems such as the W76-1 during in-flight load conditions. A system-level validation test will be performed to assess the models for predicting response of a conventional high explosive (CHE) weapon system in an accident scenario involving a near-by explosion.

Weapon qualification and certification efforts include: (1) experiments to develop and assess models to predict shock response of the W76-1 Arming, Firing and Fuzing (AF&F) system; (2) validation experiments for assessing braze model for the small neutron generator; and (3) Test Capabilities Revitalization (TCR) Phase 2 final engineering design activities to support the initiation of construction in FY 2008.

**Nuclear Survivability and Effects..... 22,418 9,365 9,386**

The Nuclear Survivability and Effects subprogram develops and validates modern tools needed to design and qualify the operability of the stockpile in nuclear environments. These environments can be either from natural (space), man-made (hostile, fratricide, surveillance) or intrinsic sources. These activities are focused on addressing changes made to the stockpile through scheduled refurbishments, surveillance discoveries, or natural aging. Specific stockpile deliverables on survivability will be funded under the DSW weapon category requiring the deliverable. In the absence of underground testing, and the closure of specialized research reactors, this activity relies increasingly on complex models and calculations supported by limited experimental evidence obtained on above ground radiation simulators. This activity also supports modern tool development for the Microelectronics Development Laboratory at Sandia, and (in cooperation with DoD) the performance of modern weapon output calculations that are needed to define some of the most stressing prompt nuclear environments. These calculations are critical to the DoD threat assessments as well as effectiveness assessments.

Specific FY 2006 planned activities include development and validation of models of cavity system-generated electromagnetic pulse (SGEMP) in the vacuum and high-pressure regimes. Other planned activities include; establishing qualification alternatives to the Sandia fast-burst neutron pulsed reactor (SPR,) investigating radiation-hardened design strategies, and improving laboratory radiation sources and diagnostics to support code validation and hardware qualification experiments. The validation of threat and effectiveness assessments with available test data will continue.

**Enhanced Surveillance ..... 93,111 101,862 96,207**

The Enhanced Surveillance subprogram provides component and material lifetime assessments and develops predictive capabilities for early identification and assessment of stockpile aging concerns. Because nuclear weapons are being retained in the stockpile for lifetimes beyond our experience and their design lifetime, the activity is pursuing a fundamental scientific understanding of stockpile aging and its impacts to give NNSA a firm basis for determining when systems must be refurbished. The