

Fiscal Year 2005 Budget Request For Nuclear Weapons Activities

An analysis for Tri-Valley CAREs
by Dr. Robert Civiak

OVERVIEW OF THE REQUEST

On February 2, 2004, President Bush submitted his budget request for fiscal year 2005, which begins October 1, 2004. **The budget requests \$6.6 billion for Nuclear Weapons Activities.** That is an increase of \$335 million, or 5.4 percent, over the 2004 appropriation.

The 2005 request continues a decade long upsurge in funding for nuclear weapons (see Fig. 1). The request is 130 percent higher than Department of Energy (DOE) spending in 1995 for comparable activities. Even after accounting for inflation (constant dollars), the nuclear weapons budget has grown by 84 percent since 1995. The 2005 request is more than one and one-half times the average amount spent on nuclear weapons during the Cold War (in constant dollars) and represents the second highest spending level ever.

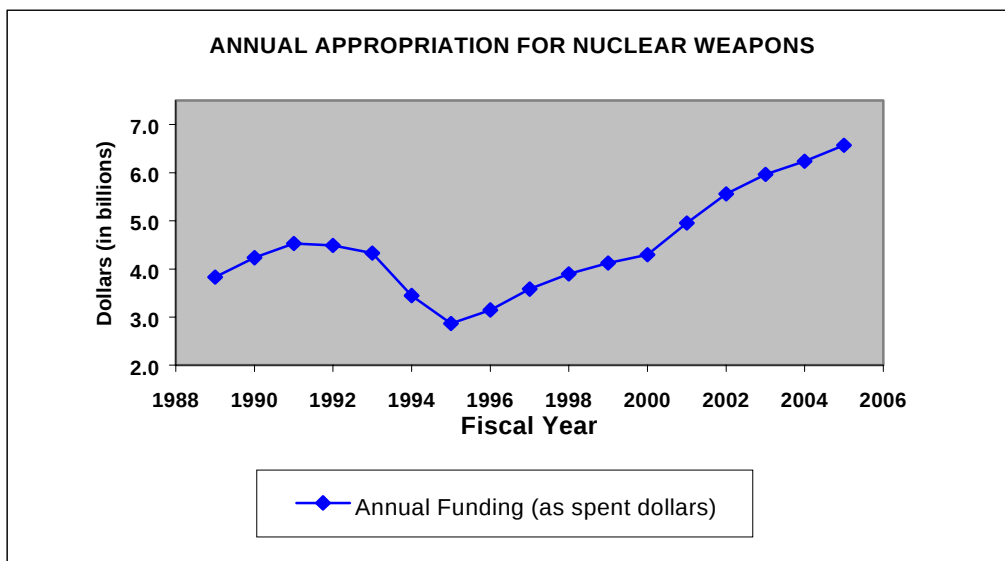


Figure 1

This year, for the first time, the National Nuclear Security Administration (NNSA), a semi-independent agency within the Department of Energy, has provided a five-year budget projection. The outyear budget shows continued growth in spending on nuclear weapons of 3.3 percent/yr through 2009, when it will approach \$7.5 billion. Even that underestimates what will be required to continue the current program. It excludes major projects costing billions of dollars, which the NNSA is planning but has not formally approved, such as a Modern Pit Facility and an Advanced Hydrotest Facility. It also excludes at least \$1 billion that the NNSA will have to spend to upgrade security throughout the weapons complex.

The 2005 budget:

- Calls for upgrades to every nuclear weapon in the U.S. stockpile.
- Requests \$336 million for 2005 to manufacture and certify new plutonium pits, the first stage in a nuclear weapon. That includes \$30 million for a Modern Pit Facility, despite the recently announced indefinite delay in that facility.

- Requests \$28 million for 2005 and \$485 million over five years to design a "Robust Nuclear Earth Penetrator," ignoring opposition in Congress to new nuclear weapons.
- Requests \$30 million for Enhanced Test Readiness to reduce the time needed to prepare for and conduct a full-scale, underground nuclear test to 18 months.
- Funds gold-plated infrastructure projects, including the world's fastest computers and state-of-the-art microfabrication facilities, to design and build new nuclear weapon components.
- Increases funding to investigate new target concepts for the National Ignition Facility (NIF) mega-laser at the Livermore Lab, while postponing the projected ignition date to 2014.

"IMPROVING" EXISTING NUCLEAR WEAPONS

Under the Bush Administration, the NNSA has done away with its earlier pretense that it was only maintaining the stockpile. NNSA now openly acknowledges costly programs to modify, alter, and refurbish (i.e. upgrade) all of the weapons in the stockpile. The most ambitious upgrades have the innocuous sounding name, "Life Extension Program" (LEP). At the beginning of an LEP, NNSA analyzes the performance features of a particular weapon (called military requirements) and reviews the design of each component in the weapon. It then formulates a multi-year plan to disassemble all units of that type of weapon and rebuild them with dozens of new and modified components. Few, if any, of the replacements are actually required to extend the life of aging components. The vast majority of them are intended to improve the performance of the component or of the entire weapon. Improved components may be lighter, more rugged, more tamper proof or radiation resistant, or may improve the consistency of the weapon's explosive yield, add new yield options, conserve tritium use, or improve the accuracy of delivery.

Each LEP costs billions of dollars and takes ten or more years to plan and execute, but they are initiated without any specific request to or authorization by the Congress. The budget requests \$477 million for 2005 (an increase of \$100 million or 27 percent over 2004) to continue LEPs on three weapon systems, the B61, W76, and W80. The budget contains no information on how many of those weapons the Administration plans to refurbish, what role the weapons might play in U.S. security, or why the upgrades are needed. Some of that information is available to those with access to classified documents, but there is no opportunity for a public debate on the merits of the weapons upgrades. Furthermore, the Administration has not even updated its classified Stockpile Plan, which projects how many of each type of nuclear weapon it proposes to maintain. The last version of the stockpile plan was prepared before Presidents Bush and Putin signed the Moscow Treaty in November 2001 limiting the number of deployed strategic nuclear weapons.

According to the 2005 budget, which for the first time presents some information on each LEP, NNSA plans to spend more than \$1.3 billion on the LEP for the W76 alone from 2003-2009. The full cost is still unknown since the project began in 2001 and will not be complete until 2013. Furthermore, the LEP numbers exclude an additional \$905 million that NNSA plans to spend between 2003 and 2009 on the W76 for ongoing assessments, limited life component exchanges, surveillance, and routine alterations, modifications, and repairs. Under the W76 LEP, NNSA plans to upgrade the nuclear explosive package; the arming, fuzing, and firing system; the gas transfer system; and associated cables, elastomers, valves, pads, foam supports, tapered tapes, telemetries, and miscellaneous parts. That is nearly every part in the primary.

DESIGNING NEW NUCLEAR WEAPONS

The 2005 budget also funds the design an entirely new type of nuclear weapon called the **Robust Nuclear Earth Penetrator (RNEP)**. The RNEP would use a rocket motor to propel it into the ground before detonating, thus delivering more of its explosive punch to underground bunkers or munitions facilities. The U.S. already has a gravity propelled, earth penetrating nuclear weapon and several other options for attacking buried targets. Nevertheless, the NNSA is intent on pursuing this new nuclear weapon, even without a formal requirements document from the military.

Last year, Congress fiercely debated whether it should provide any funds to begin design work on the RNEP. In the end, it provided \$7.5 million of the \$15 million the Administration requested for 2004, but said that none of the funds could be used for engineering development. This year's budget requests \$27.6 million for research and development on the RNEP in 2005 and a whopping \$485 million over five years. The five-year plan calls for engineering development (phase 6.3) on the RNEP to begin in 2007. The budget states that subsystem tests and a full system test of the proposed RNEP design will be completed in 2005.

The budget also requests \$9.0 million in 2005 for the **Advanced Concepts Initiative (ACI)** to prepare for developing the new weapons of the future. Proposed activities include conducting pre-conceptual and conceptual designs and feasibility and cost studies for new options for the use of nuclear weapons. Among the options, is a new "mini-nuke," which would lower the threshold for the use of nuclear weapons. Congress was also split over funding for the ACI in 2004. The House initially provided no funds. However, in the end the House acceded to Senate desires to provide the full \$6 million requested. Congress did restrict obligation of \$4 million of that sum until the Administration submits a detailed Nuclear Weapons Stockpile Plan and Congress has had 90 days to review it. As mentioned, that plan is still pending.

INCREASES FOR ALL PROGRAM ELEMENTS

The 2005 budget continues the recent trend of increases throughout the "Stockpile Stewardship Program." Stockpile Stewardship is what the NNSA calls its program for enhancing the nuclear weapons stockpile. The budget account that funds Stockpile Stewardship is called "Nuclear Weapons Activities." This year's request for Nuclear Weapons Activities is summarized in Table 1, along with comparable 2004 funding levels. In several cases, the 2004 figure differs from the actual appropriation, because the NNSA redefined some program elements for the 2005 request.

Table 1 -- **Funding For Nuclear Weapons Activities** (Dollars in millions)

<u>Program Element</u>	<u>FY 2004 Appropriation</u>	<u>FY 2005 Request</u>	<u>2005 vs 2004 (Dollars)</u>	<u>2005 vs 2004 (Percent)</u>
Directed Stockpile Work	1,327	1,406	+80	+6.0
Campaigns	2,400	2,394	-6	-0.3
Readiness in Technical Base and Facilities	1,541	1,474	-66	-4.3
Facilities and Infrastructure Recapitalization Program	239	316	+77	+32.4
Secure Transportation	161	201	+40	+24.7
Nuclear Weapons Incident Response	89	99	+10	+11.3
Safeguards and Security	582	707	+125	+21.4

Adjustments	<u>-106</u>	<u>-30</u>	<u>+76</u>	+71.6
Weapons Activities Total	6,234	6,568	+335	+5.4

Directed Stockpile Work (DSW) -- The budget requests \$1.406 billion for Directed Stockpile Work. The DSW program element funds activities that directly relate to maintaining and upgrading nuclear weapons and to developing new weapon systems. The increase supports so-called Life Extension Programs for the W76 and W80 warheads and for B61 bombs. Life Extension is a euphemism for rebuilding existing nuclear weapons, which are nowhere near their end of life, with redesigned components that have enhanced capabilities.

Following direction from the Congress, the 2005 budget for the first time specifies how much NNSA plans to spend on each weapon system. The budget also lists the types of modifications NNSA plans for each weapon system, such as "pre-production engineering activities for the Alt 356/358/359 spin rocket motor" for the B61. There is, however, no substantive information on why the numerous alterations and modifications that NNSA plans to make are needed, what their benefits are, or the cost of specific upgrades.

Within the request for DSW, \$1.1 billion is designated for maintenance and improvement of the nine nuclear weapon systems currently in the U.S. stockpile. More than half of that sum (\$560 million) is for work on two systems -- the B61 and W76 -- which are respectively the workhorse weapons for the U.S. bomber fleet and for U.S. nuclear submarine-launched missiles. Both are currently undergoing "Life Extension." Remarkably, the request also includes \$6.1 million in 2005 and \$21 million over five years for maintenance on the W84 warhead, for which the U.S. military has no delivery system; and \$18.4 million in 2005 and \$63 million over five years for alterations and modifications to B62 bombs, which are scheduled to be retired by 2009.

The funds to design the Robust Nuclear Earth Penetrator and to support the Advanced Concepts Initiative are also included in DSW.

Campaigns -- The 2005 budget requests \$2.394 billion for six separately managed "Campaigns." Each Campaign seeks to improve the NNSA's capabilities or understanding of a particular factor relevant to modeling, designing, developing, testing, or producing nuclear weapons. Last year, the NNSA requested funding for 17 campaigns. This year NNSA grouped similar campaigns together to give it flexibility to move funds between related campaigns.

Each Campaign is intended to improve the NNSA's capabilities in a particular field. For example, within the Science Campaign, the Primary Assessment Technologies subprogram supports development of new ways to test and certify the performance of modified nuclear weapon primaries using aboveground and underground testing. The Dynamic Materials Properties subprogram focuses on better modeling of material behavior in an exploding nuclear weapon, which in turn helps improve design capabilities. Table 2 compares the budget request for the six redefined Campaigns with their comparable 2004 funding level.

Table 2-- **Funding For Campaigns** (Dollars in millions)

<u>Program Element</u>	<u>FY 2004 Appropriation</u>	<u>FY 2005 Request</u>	<u>2005 vs 2004 (Dollars)</u>	<u>2005 vs 2004 (Percent)</u>
Science Campaign	274	301	+27	+9.9
Engineering Campaign	265	243	-22	-8.3

Inertial Confinement Fusion and High Yield Campaign	514	492	-22	-4.2
Advanced Simulation and Computing Campaign	721	741	+20	+2.8
Pit Manufacturing and Certification Campaign	297	336	+30	+10.1
Readiness Campaign	<u>329</u>	<u>280</u>	<u>-49</u>	-4.7
Campaigns Total	2,400	2,394	-6	-0.3

Readiness in Technical Base and Facilities (RTBF) -- The budget requests \$1.474 billion for Readiness in Technical Base and Facilities. That is \$66 million less than the 2004 appropriation, after Congress added \$55 million to the Administration's 2004 request. RTBF supports the base operations of the laboratories and production sites in the NNSA weapons complex. Most of the funding in RTBF is directed to specific sites. Members of Congress, who represent states or districts that contain NNSA facilities, routinely add pork barrel spending for their sites to the RTBF budget. The NNSA usually takes advantage of that by requesting less than what it wants for RTBF, secure in the knowledge that Congress will increase the funding.

Facilities and Infrastructure Recapitalization Program (FIRP) -- This is a relatively new initiative to fund major improvements to the weapons complex facilities. The budget requests \$316 million for these improvements. RTBF and FIRP both fund weapon's complex infrastructure. The major difference is that FIRP is targeted to infrastructure improvements, while RTBF supposedly supports ongoing activities. However, the distinction between the two is unclear, as the 2005 request for RTBF includes \$206 million to build new facilities. The total 2005 request for RTBF and FIRP is \$11 million more than the 2004 appropriation.

Secure Transportation --The budget requests \$201 million for Secure Transportation of nuclear weapons and components, an increase of \$40 million (24.7 percent) over 2004. In addition to meeting NNSA's transportation needs, this program supports the transport of nuclear weapons and fissile materials for the Department of Defense and for DOE's Environmental Management (EM) Program. The increase this year is driven by: increases in NNSA's transportation needs as it increases the number of nuclear weapons it modifies and upgrades; and by expanding transportation needs in the EM program, as DOE seeks to close facilities and consolidate nuclear materials at a smaller number of sites.

Nuclear Weapons Incident Response -- This program provides funding for emergency management and radiological emergency response. NNSA experts train for and respond to nuclear and radiological incidents worldwide in an attempt to mitigate consequences that may occur. In the FY 2005 budget request, this is a separate program element for the first time. Funding was previously included in the RTBF Program Element. NNSA funds and maintains nuclear weapons incident response capabilities, but in an actual emergency, the Department of Homeland Security may assume control and direction of the emergency response teams. The budget requests \$99 million for NNSA's nuclear weapons incident response program, an increase of \$10 million (11.3 percent) over comparable 2004 activities.

Safeguards and Security -- The budget requests \$707 million for Safeguards and Security within the NNSA weapons complex; an increase of \$125 million (21 percent). The increase follows reports of repeated security lapses at several sites. (See for example, "Nuclear Insecurity," CBS News, 60 Minutes. Feb. 12, 2004). NNSA has also upgraded its "Design Basis Threat" (DBT) to require sites to withstand attack by a well-armed band of terrorists. The 2005 request for Safeguards and Security includes \$89.6 million to implement the new DBT. The request also includes \$18.3 million for DBT

implementation in the Secure Transportation program element. Site contractors will have to expand their protective forces and purchase more powerful weapons and more armored support equipment to meet the new requirement. The budget also requests \$27 million to begin designing major upgrades to the physical security infrastructure at Los Alamos National Laboratory and the Y-12 Facility in Oak Ridge Tennessee. NNSA estimates those two projects could cost as much as \$528 million.

NNSA's five-year budget projection does not include any funding beyond 2005 to meet the new DBT, to construct the upgrades to physical security at Los Alamos and Y-12, or to respond to the numerous other security concerns that have been identified. If security were adequately funded, it would add at least \$200 million per year and \$1 billion through 2009 to NNSA's outyear budget.

MASSIVE WASTEFUL SPENDING

The NNSA budget is chock full of wasteful spending. Following are some egregious examples.

Pit Manufacturing and Certification Campaign -- There are currently two types of warheads deployed on U.S. submarine-launched missiles -- the W76 and the W88. There are about 400 W88 warheads deployed and a much larger number of W76s deployed and in reserve. NNSA's surveillance program requires destructive testing of one pit of each type every year. The driving force behind the Pit Manufacturing and Certification Campaign is to build and certify new W88 pits, so the Navy will not have to replace any of the destroyed W88s with a marginally less capable W76. NNSA began working in 2000 to manufacture and certify plutonium pits for the W88 at the Los Alamos National Laboratory. It expects to spend \$2 billion from 2000 through 2007 to certify the first new W88 pit for the stockpile. NNSA also plans to spend \$21 million in 2005 and \$169 million over five years to expand the budding pit production capability at Los Alamos to 10-20 pits/year, even though it has not identified any near term need for new pits beyond the questionable requirement for one W88 per year.

In addition, NNSA is requesting \$29.8 million in 2005 for the Lawrence Livermore National Laboratory to perform initial design studies and environmental activities for a **Modern Pit Facility** that could cost \$3-5 billion to build and produce 250-900 pits/yr of any design. The budget calls for a formal preliminary design for that facility to begin as early as 2008 and projects spending \$374 million from 2005-2009 on it. Since the oldest pits in U.S. nuclear weapons have at least another 30 years of useful life before they begin to deteriorate (and quite possibly 30 or more years beyond that), there is no need for this facility. Just days before the budget was released, the NNSA announced an indefinite delay in selecting a site for the Modern Pit Facility. Nevertheless, NNSA wants to use the \$29.8 million it is requesting in the 2005 budget to continue the initial design and environmental activities.

Advanced Simulation and Computing Campaign -- There is no end to NNSA's desire to improve its ability to design and simulate the behavior of nuclear weapons. As recently as three years ago, the NNSA said it needed a computer with a speed of 100 trillion operations per second (teraOPS) to do the "necessary" simulations. That is more than 100 times the speed of the computers used to design the newest weapons in the stockpile today. NNSA now expects to reach the 100 teraOPS milestone in 2005. However, to maintain the flow of funding dollars, NNSA has increased its goal for computing speed to 350 teraOPS. The budget requests \$741 million in 2005 and \$4.03 billion over five years for the Advanced Simulation and Computing Campaign. Most of that spending is to purchase faster computers and to design and validate the more complex codes that will run on them.

Microsystems and Engineering Sciences Applications (MESA) Complex - The NNSA wants to be at the forefront in development of all new engineering technologies. Microsystems refers to an assortment of hot new technologies, none of which is used in any existing nuclear weapon. Nevertheless, the NNSA is building a Microsystems and Engineering Sciences Applications (MESA) complex at Sandia

National Laboratories, which it estimates will cost \$518 million. Once the MESA complex is completed, NNSA expects to spend \$240 million per year at that facility developing new microsystem technologies for nuclear weapons.

Nuclear Survivability -- The Nuclear Survivability activity, in the Engineering Campaign, is a relatively small program, but it is a prime example of the wasteful spending that appears throughout the NNSA budget. The goal of this activity is to improve the ability of warheads to operate in the high radiation environment that occurs only when other nuclear warheads are detonated nearby. This concern is a throwback to the Cold War requirement for nuclear weapons to survive an all out nuclear exchange or an attack by a nuclear-tipped anti-ballistic missile system. Both are ludicrous concerns in today's world. Moreover, all of the nuclear weapons in the current stockpile can already survive in those high radiation environments. The budget requests \$24.5 million for further improvements to Nuclear Survivability in 2005 and \$130 million over five years for this superfluous activity.

OTHER PROGRAMS OF SPECIAL INTEREST

The budget requests \$30 million for **Enhanced Test Readiness** to reduce the time needed to prepare for and conduct a full-scale, underground nuclear test to 18 months. Ever since the U.S. stopped full-scale, underground testing in 1992, DOE and NNSA have maintained a capability to resume testing within three years. After considerable debate over whether that readiness posture should be shortened, last year the Congress directed NNSA to restore a capability to test within 24 months, before it requests funds for a more aggressive 18-month readiness posture. The budget ignores the congressional direction. The Administration says it has no plans to actually conduct a nuclear weapons test. However, the NNSA's strong push to reduce the time needed to test and the fact that the NNSA is developing new weapons, such as the RNEP, which would likely have to be tested before they could enter the stockpile, raises questions about the Administration's commitment to continuing the test moratorium.

The 2005 budget no longer separately identifies any spending for **Weapons Dismantlement and Disposal**. In 2004, NNSA requested \$38 million to dismantle retired warheads. In 2005, funding for dismantlement is merged into a program element called **Retired Warheads Stockpile Systems** for which NNSA is requesting \$65 million. The new category includes the budget for storage and maintenance of retired stockpile warheads; safety studies for newly retired warheads; and preservation of components from dismantled warheads of types that remain in the stockpile. The NNSA is storing thousands of nuclear warheads, which are no longer actively deployed. However, it is not clear whether NNSA plans to dismantle any retired warheads in 2005. According to the NNSA budget office, dismantlement will be treated as a "flywheel" activity to keep workers busy if there is no work to do on scheduled maintenance or weapons modifications.

The budget requests \$80 million for **Tritium Readiness**, including construction of the Tritium Extraction Facility (TEF), which is nearing completion. Planning for the TEF and for resumption of tritium production began more than a decade ago, when the amount of tritium needed to maintain U.S. deployed nuclear weapons was 2 to 3 times what it is now. As a result, NNSA likely has sufficient tritium for the next fifteen years, or more, without any new production. The NNSA keeps its tritium needs classified for no apparent reason other than to prevent informed debate regarding its production needs.

The budget requests \$492 million for the **Inertial Confinement Fusion (ICF) and High Yield Campaign**, including \$130 million to continue construction of the **National Ignition Facility (NIF)** at Lawrence Livermore National Laboratory. The request for NIF construction is \$19 million less than the 2004 funding level as the multi-billion project moves toward completion. Total funding for the

Campaign is \$22 million less than in 2004, reflecting the reduced construction spending and the proposed cancellation of efforts to develop options for inertial fusion and Stockpile Stewardship using high-average power lasers (HAPL) and Z-pinches. In 2004, Congress provided \$29 million for HAPL and Z-pinches.

At the direction of Congress, NNSA realigned this Campaign to show subprograms related to the NIF more clearly. Those subprograms are summarized in Table 3. While construction funding for the NIF decreases, the budget requests a \$21.9 million (5.7 percent) increase for all NIF-related activities, including a \$41 million (17.1%) increase for NIF-related operating programs.

Table 3 -- **Summary of NIF-Related Funding** (Dollars in Millions)

<u>Subprogram</u>	<u>FY 2004 Appropriation</u>	<u>FY 2005 Request</u>	<u>2005 vs 2004 (Dollars)</u>	<u>2005 vs 2004 (Percent)</u>
Ignition	68.7	76.4	+7.7	+11.2
Support of Stockpile Program	33.0	39.0	+6.0	+18.1
NIF Diagnostics, Cryogenics, and Experiment Support	34.1	44.0	+9.9	+29.0
NIF Demonstration Program	<u>96.3</u>	<u>113.7</u>	<u>+17.4</u>	+18.1
Subtotal NIF-Related Operating Programs	232.1	273.1	+41.0	+17.1
NIF Construction	<u>149.1</u>	<u>130.0</u>	<u>-19.1</u>	-12.8
Total NIF-Related	381.2	403.1	+21.9	+5.7

The budget states that NIF continues to meet all milestones on or ahead of schedule, and that construction will be completed at the end of 2008. The NNSA last revised the schedule for NIF in 2001, when it set back completion of the project by three years. The 2005 budget notes that ignition is now scheduled for 2014, which is seven years later than the pre-2001 schedule and appears to represent a new three to four-year delay, which was not announced previously. The new delay indicates that Livermore may still not have solved the long-standing challenges of focusing the 192 laser beams onto targets and of designing targets that will support ignition. The budget requests an increase in funding for a phase plate, to help in focusing the beams, and increases support for new concepts in ignition target design.

BUDGET-RELATED RECOMMENDATIONS

To make informed decisions about funding needs for nuclear weapons, Congress should request a detailed plan for the nuclear weapons stockpile from the Administration. The plan should specify how many of each type of nuclear weapon are deployed and in reserve, projections by warhead type for the next ten years, the current inventory of tritium, the amount of tritium needed to support the weapons in the projected stockpile for the next ten years, and a schedule for when new pits will be needed for each warhead design. This report should be unclassified. Similar information regarding conventional weapon systems is not classified and there is no reason why the numbers of nuclear weapons remain classified.

Pending receipt of such a report, Congress should:

- Freeze funding for the three continuing Life Extension Programs (LEPs) at their 2004 level of \$377 million, which is \$100 million less than the budget request;
- Provide none of the \$29.8 million requested for the Modern Pit Facility; and

- Provide no funding for tritium production or readiness, except to put the Tritium Extraction Facility in a safe standby mode and to place irradiated tritium targets in safe storage.

In addition, Congress should:

- Provide none of the \$27.6 million requested for the Robust Nuclear Earth Penetrator (RNEP);
- Provide none of the \$9.0 million requested for the Advanced Concept Initiative (ACI);
- Provide no funding to reduce the time for a full-scale, underground nuclear weapons test to less than 24 months;
- Provide none of the \$24.5 million requested for nuclear survivability;
- Freeze funding for NIF-related operating programs at the 2004 level of \$232 million (\$41 million less than the budget request), until the U.S. General Accounting Office can determine the likelihood that ignition will be achieved at the NIF by 2014 under the current plan and can estimate how much additional spending will be needed to achieve ignition; and
- Designate \$30 to \$50 million of the funds saved from the above cuts to resume a regular schedule for dismantling of retired warheads from the U.S. stockpile.

About the author:

Dr. Robert Civiak has been doing research and policy analysis for 25 years. He received a Ph.D. in Physics from the University of Pittsburgh in 1974. From 1978 through 1988, Bob was a Specialist in Energy Technology and Section Head in the Science Policy Research Division of the Congressional Research Service. During the spring and summer of 1988, he was a Visiting Scientist at Livermore Lab. From 1988 – 1999, Bob was a Program Examiner in the White House Office of Management and Budget. At OMB, his primary responsibilities included oversight and budget of the national security activities of the Dept. of Energy.