OUR PROGRAM PERFORMANCE

HIERARCHY OF STRATEGIC GOALS, PROGRAM GOALS, AND ANNUAL TARGETS

Departmental program activities are aligned with the Department's budget request, Strategic Plan and Annual Performance Plan. This approach allows us to clearly link annual performance with annual budget resources and the Strategic Plan goals. After extensive consultation among senior executive staff, the Department issued a new Strategic Plan on September 29, 2003 (http://crinfo.doe.gov/officedocs/me20/03StrategicPlan.pdf). The Strategic Plan is built around four Strategic Goals and seven General Goals. The Annual Targets that were entered into the Department's performance tracking system at the beginning of the Fiscal Year were developed before the Strategic Plan was revised; however, every Annual Target has been matched to a corresponding Strategic and General Goal, allowing us to report our performance against the full set of Annual Targets.

The Department tracked its performance against eight General Management Goals and 49 Targets related to the management of the Department's activities in Fiscal Year 2003 (see the "Updated FY 2003 Targets" column in the Fiscal Year 2004 Annual Performance Plan, http://orinfo.doe.gov/officedocs/me20/fy04-APP.pdf). Our results against these Management Goals and Targets are discussed in the introduction to the Performance Results section.

OUR PERFORMANCE CASCADE – HOW IT WORKS

The linking of strategic goals, general goals, and annual performance goals is shown in the following example:

Energy Strategic Goal: To protect our national and economic security by reducing imports and promoting a diverse supply of reliable, affordable, and environmentally sound energy.

General Goal 4: ENERGY SECURITY: Improve energy security by developing technologies that foster a diverse supply of reliable, affordable and environmentally sound energy, by providing for reliable delivery of energy, guarding against energy emergencies, exploring advanced technologies that make a fundamental improvement in our mix of energy options, and improving energy efficiency.

Program Goal: The Hydrogen Fuel Cell and Infrastructure Technologies Program goal is to develop hydrogen production, storage, and delivery technologies to the point of being cost and performance competitive and used by the Nation's transportation, energy and power industries.

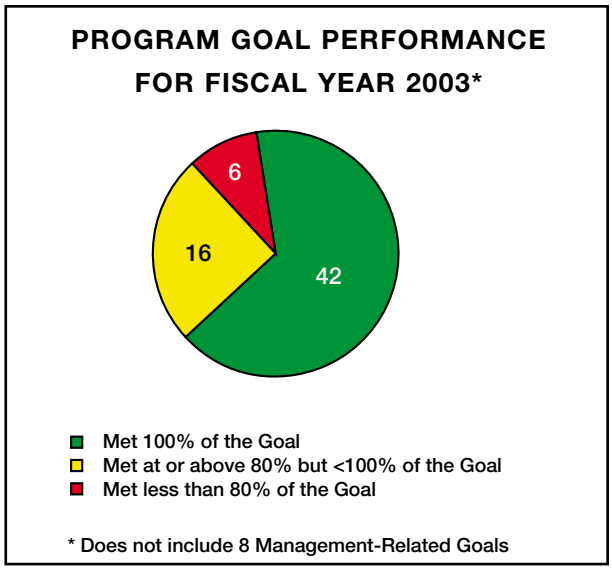
Key Intermediate Objective: By 2015, technologies are developed that allow a decision by industry to commercialize fuel-cell vehicles and hydrogen infrastructure and also facilitate an evaluation by the Federal government of policy instruments that foster the delivery of commercial quantities of

hydrogen.

FY 2004 Annual Performance Goal and Target: The cost of hydrogen from renewables is estimated at $3.60 per gallon of gasoline equivalent

The Department reports actual Fiscal Year performance against its targets annually in the Performance and Accountability Report. This report provides the basis for evaluating the Department's progress toward the program goals, and therefore the strategic goals. Each year, the Department will adjust the strategies, as necessary, based on actual performance, the current resources available, and updated national, energy, and economic outlook. This will ensure that the Department is continuously fulfilling its mission to protect national, economic, and energy security with advanced science and technology.

Our performance for Fiscal Year 2003 against our Program Goals is depicted in the following chart, using the color-coding scheme that is provided by our performance tracking system:



What follows is a summary of the Department's significant performance results for Fiscal Year 2003 against its most important Program Goals and Annual Targets. For Fiscal Year 2003, the definitions used for our rating or assessment of each Annual Target is as follows:

- 100 percent of the Goal (or Target) was met (equivalent to Green in the performance tracking system, and equivalent to "Met Goal" in the Fiscal Year 2002 Performance and Accountability Report);
- Met at or above 80 percent, but below 100 percent, of the Goal (or Target) (equivalent to Yellow in the performance tracking system, and equivalent to "Mixed Results" in the Fiscal Year 2002 Performance and Accountability Report);
- Met less than 80 percent of the Goal (or Target) (equivalent to Red in the performance tracking system, and equivalent to "Not Met" in the Fiscal Year 2002 Performance and Accountability Report).

Detailed Performance results for Fiscal Year 2003 for all of the Department's Program Goals and Annual Targets are provided in the Performance Results sections.

VALIDATION AND VERIFICATION OF PERFORMANCE

Validation and verification of the Department's performance are accomplished by periodic reviews, certifications, and audits. Because of the size and diversity of the Department's portfolio, validation and verification is supported by extensive automated systems, external expert analysis, and management reviews.

For the overall Agency, the Office of Management, Budget and Evaluation issues Government Performance and Results Act guidance on reporting in the December timeframe, when the staff begins to report on the first quarter status. The Department's end-of-year reporting process includes certifications by heads of organizational elements regarding the accuracy of reported results. The results are reviewed for quality and completeness and are reviewed and audited by the Office of the Inspector General. Multiple data sources exist within the program offices performing the work, the National Laboratories, or our contractors. The performance reporting process requires that heads of Departmental elements report the status of the revised final performance measures and certify that the information provided is accurate and complete.

In Fiscal Year 2002, the Department acquired new commercial software for performance tracking. The new system was used for tracking Fiscal Year 2003 results and is a computer based system for collecting and presenting results and performance on a quantitative basis. This system allows remote data entry, monitoring, and oversight. Data entry is controlled through a password system that provides an auditable record of changes. Program offices and managers directly

update results and performance assessments during the year, and the end-of-year information is used for analysis and preparation of this Performance and Accountability Report. In accordance with the Federal Managers' Financial Integrity Act of 1992, the Department performs extensive evaluations of its management controls in effect during the fiscal year. Our evaluations include an assessment of whether the management controls of the Department were in compliance with the standards prescribed by the Comptroller General. The purpose of these evaluations is to provide reasonable assurance that the management controls are working effectively, that program and administrative functions including the accuracy and reliability of the reporting of performance results are performed in an economical and efficient manner consistent with applicable laws, and the potential for waste, fraud, abuse, or mismanagement of assets was minimized.

DEFENSE: SIGNIFICANT PERFORMANCE RELATED TO MEETING NATIONAL SECURITY CHALLENGES

Defense Strategic Goal: To protect our national security by applying advanced science and nuclear technology to the Nation's defense.

The Department's Argonne National Laboratory has developed a miniature sensor that detects, at non-lethal concentrations, chemical poisons, bacteria or viruses that terrorists may use. This micro-electronic "nose" employs solid state ceramic metallic materials. Its sensor arrays are smaller than a postage stamp, and can be installed into personal monitors or at fixed positions in buildings. The sensor received an R&D 100 Award from R&D magazine in 2002.

In Fiscal Year 2000, the National Nuclear Security Administration was established as a semi-autonomous agency within the Department in response to a Congressional mandate to reinvigorate the security posture throughout the nuclear weapons program, and to reaffirm the nation's commitment to maintaining the nuclear deterrence capabilities of the United States.

The National Nuclear Security Administration is comprised of three major areas - Defense Programs, Defense Nuclear Nonproliferation, and the Naval Reactors Program, and has several complementary missions:

- Provide a safe, secure and reliable nuclear deterrent and implement the President's decisions on the Nuclear Posture Review recommendations;
- Reduce the threat posed by the proliferation of weapons of mass destruction and continue to support the Global War on Terrorism through aggressive nuclear nonproliferation programs;
- Maintain a robust security posture at National Nuclear Security Administration facilities;
- Revitalize the nuclear weapons complex infrastructure;
- Support the nuclear propulsion needs of the United States Navy; and
- Support the President's Management Agenda for more effective government.

Following the September 11, 2001 terrorist attacks, the Department immediately implemented measures to augment safeguards and security for its most critical assets. Departmental sites have significantly increased the level of security by increasing the size of protective forces, enhancing training, upgrading equipment, limiting access

Sandia National Laboratory security personnel observe effects of explosive device designed to stun kidnappers or terrorists. Sandia National Laboratory developed a non-lethal device, about the size of a small soda can, which creates a blinding, deafening, yet harmless explosion when lobbed into a room. This device is of interest to police departments and law enforcement officials from a variety of federal agencies.

to key areas, and improving cyber security. The Department also upgraded its emergency response assets, which are available to be deployed in emergencies around the world.

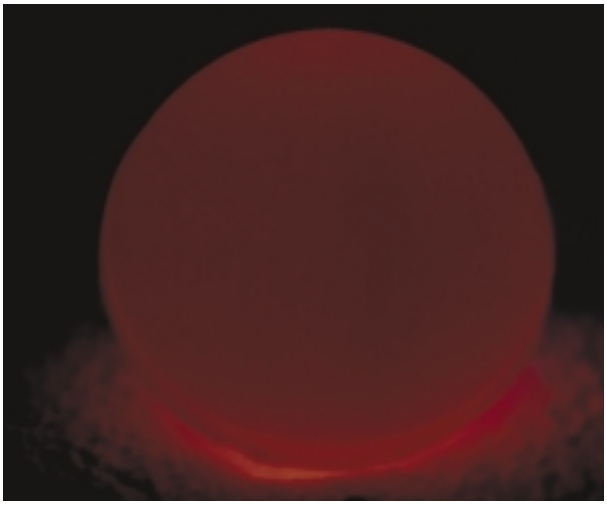
Secretary of Energy Abraham recently directed the Department to update the Design Basis Threat, which provides the basis for establishing and assessing protective effectiveness at Department facilities, based on the latest intelligence. The new Design Basis Threat, approved in May 2003, is derived from national intelligence threat information and reflects the most credible threats to Departmental assets and operations. It is effective immediately and will be implemented over the next several years.

NUCLEAR POSTURE REVIEW

As the Nuclear Posture Review (the Review) has articulated, the 21st century presents the prospect of a national security environment in which threats may evolve more quickly, be more variable in nature, and be less predictable than in the past. In this broad threat environment, nuclear weapons will continue to play a critical role in the overall United States security posture. At the same time, the Review affirmed that, for the foreseeable future, offensive strike systems, both nuclear and non-nuclear, integrated with both passive and active defenses and a revitalized defense infrastructure, will become the New Triad. This new concept of our national security strengthens our overall abilities to deter threats to the United States, allies, and friends and reassures allies of the United States' commitments, and dissuades arms competition by potential adversaries.

The Review offered a basic reassessment of the role of nuclear forces and their contribution toward meeting The United States' defense policy goals. It established the need for a capabilities-based force, a dramatic departure from the threat-based rationale for the nuclear forces of the past. This change, in combination with the judgment to no longer plan our forces as if Russia presented an immediate threat, contributed to the strategic policy decision on dramatic reductions in the level of operationally deployed strategic nuclear forces. This was codified by Presidents Bush and Putin on May 24, 2002 in the Moscow Treaty, in which over the next decade, the number of deployed warheads will be cut by approximately two-thirds from today's level.

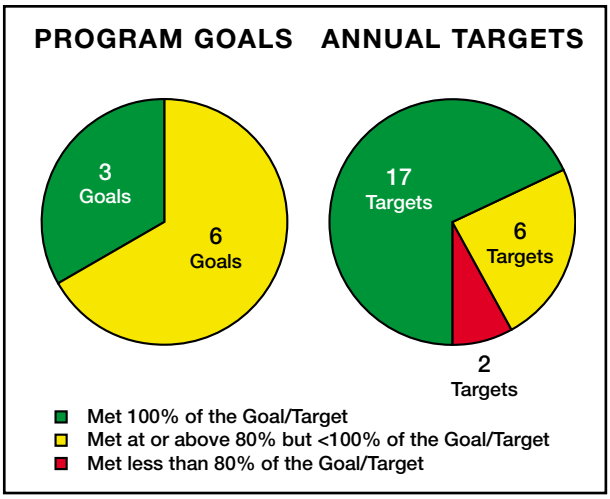
To meet the challenges of an uncertain and unpredictable threat environment, the nuclear weapons enterprise must be able to respond rapidly and decisively. This is the idea behind the third leg of the New Triad. That is, by providing the means to respond to new, unexpected, or emerging threats in a timely manner, the research and development and industrial infrastructure needed to develop, build, and maintain nuclear offensive forces and defensive systems (of which the nuclear enterprise is a key component) is itself a principal tool for achieving our overall defense strategy. This concept, and its endorsement by the Nuclear Posture Review, has had enormous implications for the National Nuclear Security Administration in helping to gain strong support for its programs from the Department of Defense and Congress.



Plutonium pellet illuminated by its own energy. Plutonium facilities at Los Alamos National Laboratory are used to work on the two major isotopes, PU-239 and PU-238, of the man-made element plutonium.

We are pressing ahead with efforts to reverse the deterioration of the nuclear weapons infrastructure, restore lost production capabilities and modernize others in order to meet the stockpile refurbishment plan. We are actively assessing the Review's implications in a number of other related areas. Finally, we are pursuing initiatives endorsed by the Review that are intended to provide the nuclear weapons enterprise with the flexibility to provide a timely response to technological surprise, or to changes in the threat environment.

FY 2003 PERFORMANCE AT A GLANCE



COSTS AT A GLANCE

DEFENSE STRATEGIC GOAL COSTS (IN MILLIONS)

GPRA PROGRAM ACTIVITIES	FY 2003 Costs	FY 2002 Costs
General Goal 1 - Nuclear Weapons Stewardship	$5,214	$4,864
General Goal 2 – Nuclear Nonproliferation	$968	$757
General Goal 3 – Naval Reactors	$665	$657
TOTAL COSTS	$6,847	$6,278

AREAS OF FOCUS

Moscow Treaty

The Strategic Offensive Reduction Treaty between the United States and Russia (also known as the Moscow Treaty), reducing strategic nuclear weapons to 1,700-2,200 deployed weapons by the year 2012 on each side:

- Was signed by both President Bush and President Putin on May 24, 2002;
- The United States Senate provided its Advice and Consent for Ratification on March 6, 2003;
- The Russian Federation Council approved the Treaty on May 20, 2003; and
- The Treaty entered into force on June 1, 2003.

This treaty will have a significant impact on the numbers and composition of strategic nuclear forces of both the United States and Russia. The National Nuclear Security Administration will be involved in the process of these strategic nuclear force restructuring activities in both countries. Planning for the United States' strategic forces will rely on a significantly smaller nuclear stockpile to deter foes wishing to acquire, proliferate, and employ weapons of mass destruction. Key to this approach is to build and sustain a flexible force structure able to deal with a dynamic strategic environment. In related activities to support the United States' cooperative threat reduction and nonproliferation objectives, the National Nuclear Security Administration will continue to assist Russia in eliminating or securing its reduced number of deployed warheads and weapons grade nuclear materials as they undertake comparable nuclear force restructuring. The Moscow Treaty will provide tremendous opportunities to increase international stability and joint United States/Russian cooperation.

Group of Eight (G-8) Nations Global Partnership Against the Spread of Weapons and Materials of Mass Destruction

In its June 26-27, 2002 Summit in Kananaskis, Canada, the G-8 nations (the United States, Canada, United Kingdom, France, Japan, Italy, Germany, and Russia) reached agreement on a Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. The partnership has recommitted the G-8 to address nonproliferation, disarmament, counter-terrorism, and nuclear safety issues. The partnership pledged to provide $20 billion over the next ten years for nonproliferation and threat reduction in the former Soviet Union. The United States is committed to provide $10 billion over the next ten years, to be matched by $10 billion from other members. To date, the Department has pledges for $8 billion of this $10 billion, including $2 billion from Russia itself. The impact of this global initiative recently expanded beyond the G-8 nations alone when, as announced by President Bush on June 2, 2003, Norway, Poland, Switzerland, Finland and Sweden joined the partnership. This effort will complement the United States'

programs and meets past Congressional concerns that we not carry a disproportionate burden. The Defense Nuclear Nonproliferation Program represents the Department in this effort and is very much involved in the process.

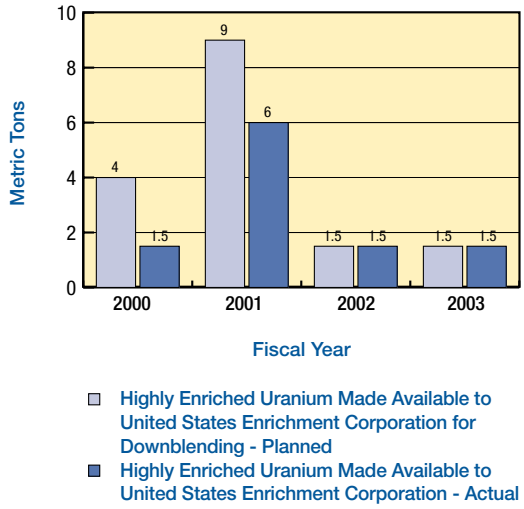
A hazardous materials decontamination exercise at the Nevada Test Site.

Elimination of Weapons Grade Plutonium Production (Program Transfer from the Department of Defense to the Department of Energy)

Since its transfer from the Department of Defense to the Department of Energy this year, substantial progress was made in implementing the Elimination of Weapons-Grade Plutonium Production Program between the United States and Russia. The Department of Energy will provide an alternative fossil fuel power source to permit shutdown of three Russian nuclear power reactors which, in addition to providing vital energy and heat for two Russian cities, can also produce a total of 1.2 metric tons of weapons-grade plutonium per year. On December 20, 2002, the program received formal Department of Energy approval to proceed, and two United States contractors were selected in May 2003 as system integrators for the work.

These contractors will be responsible for oversight, verification, and payment to the Russian Federation Integrating Contractor for work completed. Although the projects will be executed in the Russian Federation, using Russian equipment and personnel, the Department is implementing a rigorous oversight plan to monitor the progress through a formal project management system. As a sign of continued momentum on this program, officials from the United States and Russia signed agreements in Moscow on July 17, 2003 that will allow access to the traditionally closed Russian nuclear cities of Seversk and Zheleznogorsk, to begin the important work of shutting down the last weapons-grade plutonium production reactors in operation in the world.

The graph below depicts the quantity (in metric tons) of highly-enriched uranium that the Department has made available to the United States Enrichment Corporation for down-blending to low-enriched uranium. Low-enriched fuel can be used in commercial nuclear power plants.



United States and Dutch Governments Launch First "Megaport" Effort to Detect Terrorist Shipments of Nuclear Material

On August 13, 2003 in Rotterdam, Netherlands, the United States and Dutch governments announced an effort to work together in the war on terrorism by installing special equipment at Europe's busiest seaport, to detect hidden shipments of nuclear and other radioactive material. Secretary of Energy Spencer Abraham and Dutch State Secretary of Finance, Joop Wijn, signed the cooperative agreement for the new program aimed at thwarting illicit shipments of weapons material. The Department plans to work with other international ports in the near future.

Rotterdam, one of the world's largest seaports, handles more than 300 million metric tons of cargo each year. Thousands of commercial ships traveling between Asia, Europe, Africa, the Americas and the Middle East pass through Rotterdam's vast maze of docks and container facilities. Security experts have warned that terrorists seeking to build nuclear weapons, or so-called "dirty bombs" — conventional explosives laced with radioactive material — might attempt to use commercial shipping channels to smuggle the necessary nuclear components.

The United States, in an operation dubbed "First Line of Defense," has been working with other governments in a number of countries to locate and secure such materials to keep them out of terrorist hands. The United States-Dutch agreement complements the Department's Megaports Initiative, part of the United States government's "Second Line of Defense" program, intended to identify and intercept illegal shipments of weapons materials. The effort complements the Homeland Security Department's Container Security Initiative, in which Customs and Border Protection agents partner with countries operating major shipping ports to help safeguard the international supply chain.

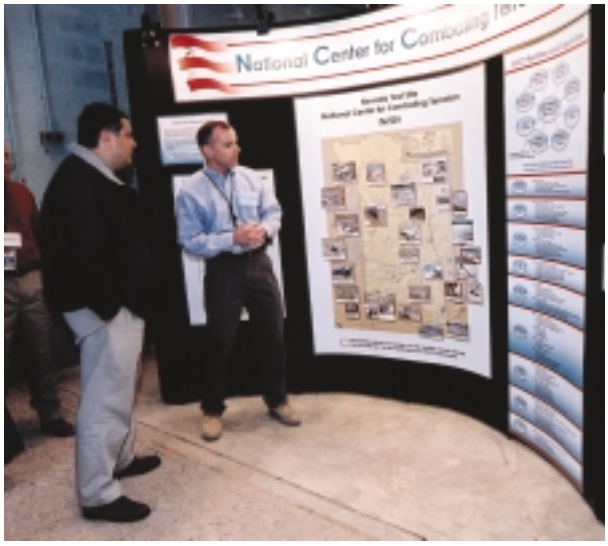
The Second Line of Defense is expertise based on five years of experience equipping international seaports, airports and vehicle crossings with radiation detection equipment and response systems, primarily in Russia. The specialized radiation-detection technology was developed by Department of Energy laboratories as part of the overall United States nuclear security program to guard against proliferation of weapons materials.

Secretary Abraham Hosts International Conference on Radioactive Sources

The International Conference on Security of Radioactive Sources took place in March 2003, in Vienna, Austria. Secretary of Energy Abraham presided over the conference, which was co-sponsored by Russia and the United States and hosted by Austria. It was organized by the International Atomic Energy Agency in cooperation with the European Commission, the World Customs Organization, the International Criminal Police Organization, and the European Police Office. The conference resulted in a number of findings to promote greater international cooperation in addressing the security concerns raised by insufficiently controlled radioactive sources, to the need to identify those sources which pose the greatest risks, and the need for strong national action by all States to minimize those risks over the whole life-cycle of the sources. It emphasized that, while it is important that cooperation in making available the beneficial uses of radioactive sources continue, all users of such sources share a responsibility for managing them in a safe and secure manner. It emphasized that the need for effective security arrangements should be balanced with the need to ensure continued beneficial uses of radioactive sources.

The conference produced two major findings:

- High-risk radioactive sources that are not under secure and regulated control, including so-called "orphan" sources, raise serious security and safety concerns. Therefore, an international initiative to facilitate the location, recovery and securing of such radioactive sources throughout the world should be launched under International Atomic Energy Agency sponsorship.
- Effective national infrastructures for the safe and secure management of vulnerable and dangerous radioactive sources are essential for ensuring the long-term security and control of such sources. In order to promote the establishment and maintenance of such infrastructures, States should make a concerted effort to follow the principles contained in the Code of Conduct on the Safety and Security of Radioactive Sources that is currently being revised. An international initiative to encourage and assist governments in their efforts to establish effective national infrastructures and to fulfill their responsibilities should be launched under International Atomic Energy Agency sponsorship, and the International Atomic Energy Agency should promote broad adherence to the Code of Conduct once its revised version has been approved.



Secretary of Energy Abraham at the Nevada Test Site being briefed on the National Center for Combating Terrorism.

The following sections provide an overview of the results associated with our performance against our most significant Defense Goals and Annual Targets for Fiscal Year 2003. These Goals and Targets have been selected to provide a balanced analytical assessment of our performance.

GENERAL GOALS ASSOCIATED WITH THE DEFENSE STRATEGIC GOAL

GENERAL GOAL 1 - NUCLEAR WEAPONS STEWARDSHIP: Ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security, and reliability of the U.S. nuclear weapons stockpile.

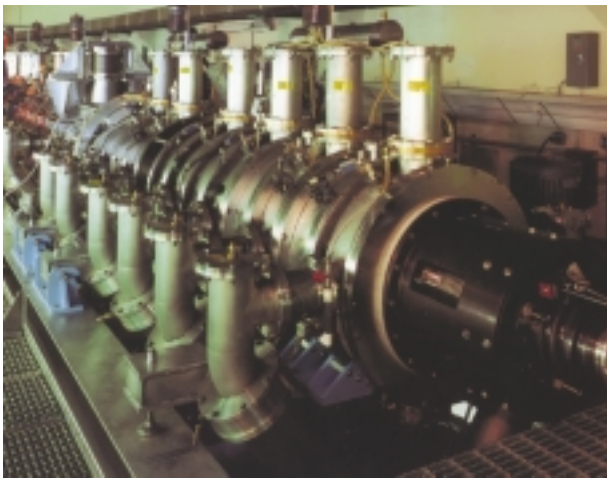
The most important responsibility of the Secretary of Energy, in cooperation with the Secretary of Defense, is certifying to the President that the Nation's nuclear weapons stockpile is safe, secure, and reliable, and there is no need to resume underground nuclear testing. Our nuclear deterrent protected the Nation and helped win a 50-year Cold War, and continues to be a key strategic component of our national security posture. The threats our Nation faces today are dramatically different from those of a few years ago, and the Department must respond to these changing threats.

The Atlas Pulsed Power Experimental Facility was built at the Los Alamos National Laboratory as part of the stockpile stewardship program to validate certain elements of nuclear weapons computer codes.

Our challenge today is to maintain the safety, security, and reliability of an aging nuclear weapons stockpile without resorting to underground testing; develop a nuclear weapons stockpile surveillance and engineering base; refurbish and extend the lives of selected nuclear systems; and maintain a science and technology base, including the capability to restore the manufacturing base for the production of replacement weapons if the need should arise.

To ensure that the existing nuclear stockpile continues to meet its military requirements, the National Nuclear Security Administration has a comprehensive refurbishment program presently working on four warhead types. This program designs, builds, tests, and installs new sub-systems and components, extending the operational service life of these warheads for years.

The National Nuclear Security Administration is also restoring the full range of manufacturing capabilities needed to respond to any stockpile contingency. In particular, the National Nuclear Security Administration is moving to restore the capability and capacity to manufacture plutonium pits, the trigger for modern nuclear weapons, required by the nuclear weapons stockpile. The National Nuclear Security Administration will continue planning for the design

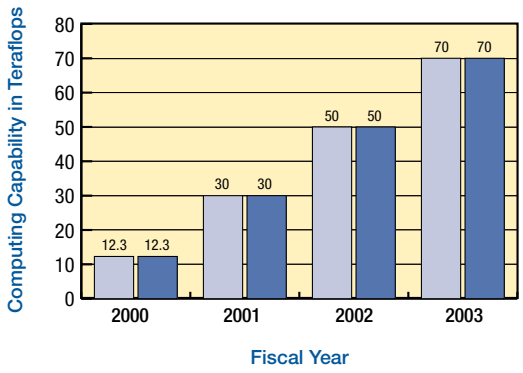


Lawrence Livermore National Laboratory's upgraded flash x-ray machine will be one of the most capable radiographic facilities in the world. In the absence of nuclear testing, advanced radiography is the most important experimental tool currently available to help maintain the nation's aging nuclear stockpile.

and construction of a modern pit facility to support long-term pit manufacturing. In Fiscal Year 2004, the National Nuclear Security Administration will resume producing tritium, a gas that is required for all U.S. nuclear warheads to operate as designated.

The Y-12 Plant in Tennessee supports the nuclear weapons program by fabricating and certifying components for the weapons stockpile, developing and fabricating test hardware for the three weapons design laboratories, and conducting related process development activities.

The National Nuclear Security Administration is also investing in the leading edge scientific and engineering tools required to support the stockpile, now and into the future. Three areas deserve special mention. First, with the Advanced Scientific Computing Initiative Campaign, the National Nuclear Security Administration



is working with United States computer manufacturers to acquire the world's fastest and most capable computers to address nuclear weapons performance issues that several years ago were impossible to solve. Second, the Dual Axis Radiographic Hydrotest Facility is providing images of weapons implosion processes, which provides critical data to validate computer codes. Third, later this year, the world's most powerful laser, the National Ignition Facility at Lawrence Livermore National Laboratory, will begin to carry out experiments in support of the nuclear weapons stockpile.

EXTERNAL FACTORS

The following external factors could affect our ability to achieve these stewardship goals:

- **Technology:** Technological development is inherently unpredictable. The discovery of an insurmountable scientific or engineering obstacle in a credible science-based stockpile stewardship program could force the resumption of underground nuclear testing.
- **Nuclear Threats:** Changes in the nuclear threats posed to the United States could require changes to our nuclear weapons stewardship programs.

HOW WE SERVE THE PUBLIC IN THIS AREA

The National Nuclear Security Administration accomplished a number of significant milestones this year:

- Delivered the first certifiable W88 warhead plutonium pit;
- Began irradiation of the first Tritium Producing Burnable Absorber Rods in the Tennessee Valley Authority's Watts Bar Reactor;

Excavation began during 2000 for the National Nuclear Security Administration's Tritium Extraction Facility at the Savannah River Site. The facility is being constructed to safely and efficiently extract tritium, a radioactive form of hydrogen gas, from rods that have been irradiated for 18 months beginning in Fiscal Year 2004 in Tennessee Valley Authority reactors. Tritium is a vital, but perishable component of the United States' nuclear weapons.

- Continued delivery of W87 Life Extended warheads to the United States Air Force;
- Completed environmental documentation in support of the Modern Pit Facility;
- Delivered four ultraviolet beams of National Ignition Facility laser light to the target chamber;
- Performed two and three-dimensional computer simulations of aging stockpile weapons focused on Life Extension Program activities;
- Shipped nuclear weapons, weapons components, and nuclear materials safely through the Secure Transportation Asset;
- Conducted sub-critical experiments at the Nevada Test Site to better understand plutonium aging, a total of 20 such experiments have been performed; and
- Began studies on the robust nuclear earth penetrator.

These major milestones were accomplished by the Department's weapons complex in addition to the manufacture of thousands of components needed to maintain the stockpile. The weapons complex also carried out hundreds of smaller scale experiments, performed surveillance activities, conducted numerous investigations to ensure weapons safety and operability, conducted flight tests with the support of the Department of Defense, deployed new manufacturing tools and processes at the production plants, and safely dismantled weapons excess to national security requirements. As a result, the Secretaries of Energy and Defense were able once again to certify to the President that the nuclear stockpile was safe, secure and reliable, without the need for underground nuclear testing. In a very uncertain world, this confidence in the United States nuclear deterrent underpins our free society, provides for the protection of our allies.

PERFORMANCE RESULTS

Program Goal NS 1-1: Conduct a program of warhead evaluation, maintenance, refurbishment, and production, planned in partnership with the Department of Defense.

Target NS 1-1a: Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile.

Assessment and Commentary: The program activity was completed in Fiscal Year 2003. The comprehensive science-based Stockpile Stewardship Program assessment (research and development, maintenance, refurbishments, and surveillance) supported the Secretarial (Defense and Energy) certification of the reliability and readiness of the nuclear weapon stockpile. This assessment-certification activity is critically important to the U.S. National Security in the absence of underground nuclear weapon testing.

Program Goal NS 1-2: Develop science, design, engineering, testing and manufacturing capabilities needed for long-term stewardship of the stockpile.

Target NS 1-2b: Implement the recommendations requested by the Nuclear Posture Review to refine test scenarios and evaluate the cost/benefit trade-offs to sustain optimum test readiness that best supports the New Triad.

Assessment and Commentary: The program activity was completed in Fiscal Year 2003. The Department examined a list of test scenarios and used it as the basis for a 2002 Enhanced Test Readiness Cost Study, a

report to the Nuclear Weapons Council, a 2003 Nuclear Test Readiness Report to Congress and continuing activities to support readiness to perform a broad range of tests, should the President so direct. An 18-month readiness posture was recommended as being reasonably optimal for most potential needs from a cost/benefit standpoint and the Nuclear Weapons Council concurred with that recommendation. Work to achieve 18-month readiness began in Fiscal Year 2003 in accordance with the Test Readiness Program Plan.

GENERAL GOAL 2 - NUCLEAR NONPROLIFERATION: Provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons.

The Department has significantly improved its ability to prevent and reverse the proliferation of weapons of mass destruction, and to reduce the nuclear threat by eliminating or securing nuclear weapons, weapons-usable nuclear material, and supporting infrastructure.

Simulated security and force-on-force training exercise at the Central Training Academy in Albuquerque, New Mexico.

Nuclear material must be made more physically secure. Border monitoring and export controls also help to ensure that nuclear materials stay where they belong. Through careful planning, nuclear materials can be consolidated. By reducing the number of sites storing this material, the vulnerability to threat or sabotage can be reduced. Nuclear material can be reduced, by down-blending highly enriched uranium or burning plutonium as mixed oxide fuel in nuclear energy plants. The production of excess nuclear material can thus be ended.

The Department is addressing the problem at its source—such as the dismantlement and destruction of weapons, the disposition of fissile materials, and the employment of former weapons scientists. It also means developing and maintaining effective border controls, as well as enhanced law enforcement efforts aimed at thwarting the trafficking of illicit nuclear materials. It also further strengthens the international framework for accomplishing all of these things.

The International Atomic Energy Agency is essential to the success of the Department's nonproliferation programs. The Department is working closely with the International Atomic Energy Agency to both ensure it can effectively carry out its duties, and to help all nations understand and deal with nuclear material challenges. However, nuclear materials security is ultimately a national responsibility. The responsibility for securing its own nuclear and radiological materials rests, in the end, with each individual member of the international community.

After September 11, 2001, there could be no doubt that terrorists would use nuclear materials to harm innocent citizens of the civilized nations of the world—if they could acquire them. The margin of error is small. There are any number of states and sub-state actors interested in acquiring nuclear or radiological materials. The International Atomic Energy Agency has reported some 200 attempts at the illicit smuggling of nuclear materials in the past decade alone. Even a little success in smuggling or theft can have a great impact. Based on International Atomic Energy Agency calculations, only a relatively small amount of highly enriched uranium could be enough for a nuclear explosive device. Also, if the goal is to build a radiological

Inflatable glovebags aid in combating bio-terrorism. Savannah River's Containment Fabrication Facility, which designs and fabricates radiological containments of any size for specific jobs, designed and produced self-supporting portable glovebags with inflatable frames. These glovebags allow personnel to safely examine suspicious mail or packages.

dispersal device, or "dirty bomb," the amount can be even less, depending on the material used. The Department needs to apply the best technologies, the best know-how, experience, and expertise to this problem. The Department has the scientific and technical expertise to address this threat.

The United States and Russia have taken major steps to secure Russian surplus materials usable for nuclear weapons. The unprecedented levels of cooperation between our countries have resulted in great strides in eliminating and securing inventories of surplus materials usable for nuclear weapons. The Department is making major progress on work related to plutonium disposition facilities in the United States and Russia to eliminate excess weapons plutonium, and accelerate our program for the elimination of Russian highly enriched uranium.

There are good reasons to focus on Russia. The fall of the Soviet Union led to the dissolution of an empire having over 40,000 nuclear weapons, and over a thousand metric tons of nuclear materials. At the same time, Russia lacked the infrastructure to assure that chains of command remain intact and nuclear weapons and materials remain securely beyond the reach of terrorists and weapons-proliferating states.

Russia is not the only nation with surplus nuclear materials. The United States is working with other countries to improve nuclear materials security, and working with a number of countries to repatriate and consolidate weapons-grade fuel in Russia, where it can be eliminated or secured.

EXTERNAL FACTORS

The following external factors could affect our ability to achieve these nuclear non-proliferation goals:

- **Close Cooperation with Russia:** Unprecedented levels of cooperation between the United States and Russia has made it possible to make great strides in eliminating and securing inventories of surplus materials. A close relationship is necessary for future progress.
- **International Atomic Energy Agency:** The International Atomic Energy Agency is essential to the success of our efforts to control nuclear proliferation. It is uncertain whether the International Atomic Energy Agency will receive the necessary funding, and show the necessary leadership to member countries. We are monitoring this situation closely.
- **Technology:** Technological development is uncertain and unpredictable. Our efforts to develop detection technology may be more or less successful than predicted, which would have a corresponding positive or negative impact on our efforts.

HOW WE SERVE THE PUBLIC IN THIS AREA

The National Nuclear Security Administration's nonproliferation activities are central to the Bush Administration's National Strategy to Combat Weapons of Mass Destruction, released in December 2002, which lists "Strengthened Nonproliferation" as a pillar of its approach to reducing proliferation threats. Secretary Abraham and the National Nuclear Security Administration are committed to this critical mission. This commitment is reflected in the diversity of our programs to address nonproliferation concerns in Russia and, increasingly, throughout the world. The National Nuclear Security Administration recognizes that proliferation is a multi-faceted problem, and has implemented significant actions to reduce the threat.

- **Improved the physical security of nuclear material:** The National Nuclear Security Administration accomplishes this primarily through its Materials Protection, Control and Accounting program in Russia, as well as the Newly Independent States/Baltics. The National Nuclear Security Administration is conducting a Top-to-Bottom review of whether upgrades outside Russia are needed. Finally, the National Nuclear Security Administration continued its programs to secure radiological sources that could be used in radiological dispersal devices, also known as dirty bombs.
- **Consolidated nuclear material:** By reducing the number of locations where this material is stored, we greatly reduce its vulnerability to theft or sabotage. In Fiscal Year 2003, we moved all weapons-usable material into fewer locations, thus improving security.
- **Reduced nuclear material:** The United States and Russia will each dispose of 34 metric tons of weapons grade plutonium by irradiating it as mixed oxide fuel, making the material no longer readily usable for nuclear weapons. This program is on track. Over 75 percent of the detailed design of the United States mixed oxide facility will be completed this year; Russia will use the same design. By disposing of 68 metric tons of plutonium in the United States and Russia, the plutonium disposition program will reduce the threat that this material could pose if acquired by hostile nations or terrorist groups.
- **Worked to end the production of nuclear material:** The value of reducing nuclear materials increases greatly if no new material is being produced at the same time. The Elimination of Weapons-Grade Plutonium Production Program (discussed above) aims to accomplish just that by replacing Russia's remaining plutonium production reactors with fossil fuel energy plants to meet the energy needs of local communities. This will set the stage for final closure of these three Russian reactors by 2011.
- **Slowed illicit trafficking of nuclear materials:** The Second Line of Defense Program focuses on cooperative efforts to minimize the risk of illicit trafficking of special nuclear material and radiological materials across international borders such as border crossings, airports, and seaports. It targeted strategic border points around the world for deployment of radiation detection equipment, while maintaining existing equipment in more than twenty countries world-wide.
- **Mitigated the threat of the "Brain Drain":** The National Nuclear Security Administration's Russian Transition Initiatives program integrated two strategic thrusts: commercializing technology and downsizing Russia's weapons complex. This approach transformed former weapons infrastructure expertise into commercially viable, peaceful business ventures and contracts across the complex by closing those elements that have no civilian or commercial potential.
- **Continued to improve the ability to detect proliferation:** Research and development in proliferation detection are key to identifying threats at borders or other critical thoroughfares, detecting clandestine proliferation activities, and verifying treaty adherence.

PERFORMANCE RESULTS

Program Goal NS 2-1: Enhance the capability to detect weapons of mass destruction, including nuclear, chemical, and biological systems, and terrorist threats.

Target NS 2-1a: Demonstrate prototype commercial cargo inspection system to detect fissile materials and high explosives.

Assessment and Commentary: In March 2003, the Department's mission, funding and staffing associated with achieving this performance target, was transferred to the Department of Homeland Security. At the time of the transfer, efforts were on-schedule and within cost to fully achieve this target. In addition, the Department has confirmed the Department of Homeland Security that this target was successfully accomplished in Fiscal Year 2003.

Program Goal NS 2-3: Protect or eliminate weapons and weapons-usable nuclear material or infrastructure and redirect excess foreign weapons expertise to civilian enterprises.

Target NS 2-3b: Install material protection, control and accountability upgrades on nuclear weapons and materials, eliminate weapons-usable materials, and consolidate the number of storage locations for weapons-usable materials into fewer building and sites to improve security in Russia.

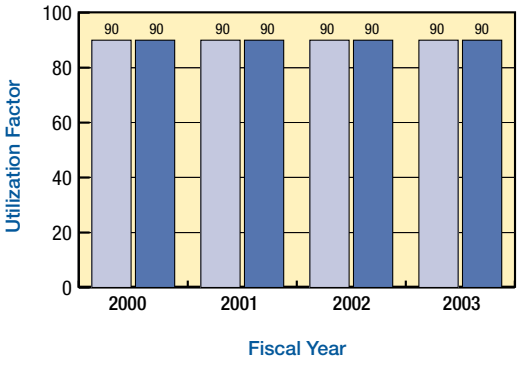
Assessment and Commentary: The Department secured a cumulative total of 22 percent of the 600 metric tons of weapons-usable nuclear material in Russia, secured 77 percent of the Russian Navy warhead sites and secured a total of nine Radiological Dispersal Devices sites (exceeding the target of eight) in regions of concern containing radiological materials. The security of these vulnerable weapons-usable materials and radiological materials prevents the theft and or diversion of these materials for illicit purposes such as nuclear terrorism including a radiological attack against the United States.

In addition, the Department converted 16.1 percent (not meeting the target of 16.5 percent) of the 27 metric tons of the Highly Enriched Uranium to Low Enriched Uranium and installed radiation detection equipment at 39 (not meeting the target of 46) strategic and transit border sites in Russia. The security of vulnerable nuclear warheads and conversion of surplus Highly Enriched Uranium to Low Enriched Uranium prevents the theft and diversion of these weapons and Highly Enriched Uranium for illicit purposes and prevents the proliferation of the materials, technology and expertise relating to weapons of mass destruction. The deployment of radiation detection equipment at strategic transit and border crossings and at air and sea transshipment hubs in Russian and other countries will provide these governments with the technical means to detect and interdict illicit trafficking in nuclear and radioactive materials.

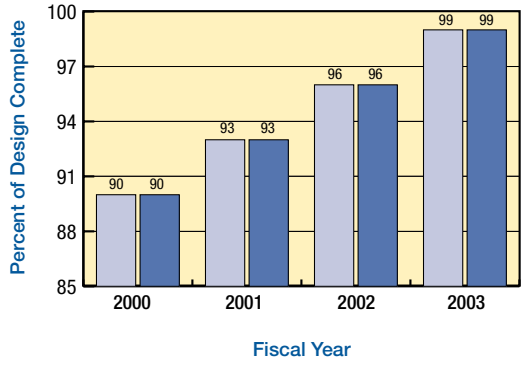
In order to mitigate these shortfalls, the National Nuclear Security Administration plans to continue the pursuit of a Material, Consolidation and Conversion Agreement with the Russian Federation for the conversion of Highly Enriched Uranium to Low Enriched Uranium, and implementing agreements with Ukraine and Azakhstan for the installation of radiation detection equipment at strategic areas.

GENERAL GOAL 3 - NAVAL REACTORS: Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation.

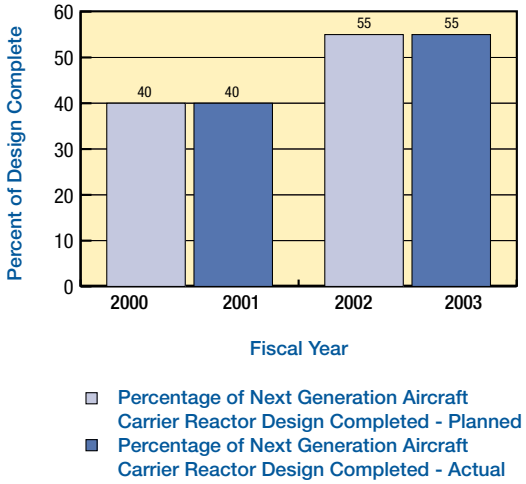
The Department of Energy is responsible for providing the United States Navy with safe, militarily effective nuclear propulsion plants. Naval nuclear propulsion plants currently power 40 percent of the Navy's warships, and the Department will continue fulfilling this responsibility. The Department, through the National



Nuclear Security Administration, will continue to provide the Navy and the Department of Defense reliable and militarily effective nuclear power through the Naval Reactors program. The Department is embarking on a long-term effort to develop and deploy a new reactor core design to meet the demands of longer, more arduous ship deployments. The Naval Reactors program has developed an enviable reputation for processes, skills, and technologies.



Two strategies will be used to accomplish this goal. First, we will ensure the safety, performance, reliability, and service life of operating reactors. Second, we will develop new technologies, methods, and materials to support reactor plant design for future generations of reactors for submarines, aircraft carriers, and other combat ships, as required.



The chart above indicates that the Naval Reactors program is on target in completing 55 % of the next generation aircraft carrier reactor design in Fiscal Year 2003.

EXTERNAL FACTORS

The Department does not believe there are any major external factors with the potential to affect our ability to achieve this goal.

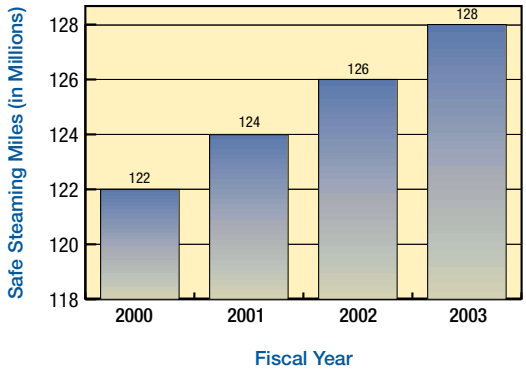
HOW WE SERVE THE PUBLIC IN THIS AREA

Naval Reactors continues the success it has had for more than 50 years, and is a prime example of how to manage unforgiving and complex technology. The Naval Reactors program, which supports the nuclear-powered submarines and carriers on station around the world, remains a vital part of the national security mission and the Global War on Terrorism:

- Naval Reactors supported 103 reactors in 82 nuclear-powered warships.
- Naval Reactors continued to design and develop the reactor for the new transformational aircraft carrier CVN-21.
- Naval Reactors maintained and replaced some of the program's 50-plus year-old infrastructure (as well as remediation at sites no longer in use), allowing Naval Reactors to continue its "clean-as-you-go" policy.

PERFORMANCE RESULTS

Program Goal NS 3-1: Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operations.



Target NS 3-1a: Complete safe steaming of approximately two million miles in nuclear-powered ships.

Assessment and Commentary: In Fiscal Year 2003, nuclear-powered ships steamed over two million miles, surpassing 128 million miles of safe operation. Naval Reactors has ensured the safety, performance, reliability, and service-life of operating reactors for uninterrupted Fleet operations in support of national security requirements. Navy warships are deployed around the world every hour of every day to provide a credible "forward presence", ready to respond on-the-scene wherever America's interests are threatened. Nuclear propulsion plays an essential role in this, providing the mobility, flexibility, and endurance that today's smaller Navy requires to meet a growing number of missions. Naval Reactors supports this role by providing militarily effective nuclear propulsion plants and ensuring their safe, reliable, and long-lived operation.

CHALLENGES AND EXPECTATIONS FOR THE FUTURE

In the area of Weapons Activities, we will see in the upcoming years final system delivery and checkout of a 100 teraflop computer, located at Lawrence Livermore National Laboratory, which is needed to process the highly complex, three dimensional weapons related simulations used for continuing nuclear stockpile certification. The National Ignition Facility, also at Lawrence Livermore National Laboratory, will begin conducting experiments in 2004, using the first eight of 192 lasers to provide new physics knowledge to help model and simulate nuclear explosions. When fully operational, it will permit us to create and measure extreme temperature and pressure conditions of nuclear explosions for the 2010 nuclear stockpile stewardship requirements. Both of these programs are vital to certifying the U.S. nuclear weapons stockpile without underground nuclear testing.

We will increase our activities in the area of Defense Nuclear Nonproliferation, as we provide assistance to Russia to enhance the security of its nuclear weapons and special nuclear material. This includes expanded projects with the Russian Navy and Strategic Rocket Forces. We will also increase our Megaport program to permit the interception of nuclear materials aboard ships as they pass through international seaports en route to the United States.

The Naval Reactors program has embarked on a program to develop a new reactor core to meet the demands of more time at sea for its nuclear powered submarines and aircraft carriers. This new program, called the Transformational Technology Core Program, will provide extended range and life to the nuclear propulsion systems of future ships and submarines, when compared to today's systems. This is important to better serve the Navy's increased requirements to deploy in response to threats posed to the U.S. by terrorists and rogue nations.