

The



October 2012



Message

2012 National Day of Remembrance – October 30, 2012

On July 16, 2012, the United States Senate announced the passage of S. Res. 519, a Senate resolution designating October 30, 2012, as a National Day of Remembrance (NDR) for Nuclear Weapons Program Workers. Mr. Udall of Colorado submitted the resolution on behalf of himself and Mr. Alexander, Mr. Bingaman, Mr. Brown of Ohio, Ms. Cantwell, Mr. Corker, Mr. Crapo, Mrs. Gillibrand, Mr. Graham, Mr. McConnell, Mr. Reid, and Mr. Udall of New Mexico.

This year will mark the fourth anniversary of the NDR, honoring the thousands of men and women who tirelessly served our country by building and maintaining our nuclear

weapons complex during World War II through the Cold War. This is also a day to recognize the current U.S. Department of Energy (DOE) workforce who serve our country by maintaining national security and advancing our nation in the areas of science and technology today, tomorrow, and for years to come.

Seventy years ago this month, in the midst of the Second World War, President Roosevelt established the Manhattan Project. Within a remarkably short time, thousands of workers at sites throughout the country had begun working under a veil of secrecy to complete a project that most knew very little about.

Their work not only strengthened our national security, but also helped make the United States a leader in science, technology, and engineering. And continuing up to the present day, their efforts have resulted in astounding innovations that have improved our defense and advanced a wide range of fields, including physics, chemistry, computing, and nuclear medicine.

On this National Day of Remembrance, let us reflect on the significant contributions of our nuclear security workers, both past and present, and thank them for their service. ■

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HSS Security Evaluations: Beyond the Y-12 Breach

In response to the July 28, 2012, security breach at the Y-12 National Security Complex (Y-12), the Secretary of Energy directed HSS to evaluate the adequacy of protection of Category I quantities of special nuclear material (SNM) across the DOE complex, including National Nuclear Security Administration (NNSA) sites.

Initial Actions

As a first critical step, HSS supported NNSA's initial response and recovery actions at Y-12. NNSA initially identified such problems as inoperative (or unheeded) alarm and monitoring systems, and a lack of effective performance and discipline among the protective force.

Focusing on Y-12

In August and September, HSS also planned and conducted a broad-based inspection of Y-12 security operations, focusing on elements of the security programs related to protection of SNM. These elements include protection program management, vulnerability assessment, protective force management and operations, physical security systems, nuclear material control and accountability, and the human reliability program. A major part of the inspection involved performance testing, ranging from limited-scope testing of security police officers' performance of specific duties to large-scale "force-on-force" tests in which the site's protective force was challenged by a simulated opposing force using laser-based simulation weaponry. The simulated opposing force was

provided by the HSS Composite Adversary Team (CAT), a group of experienced tactical operators who are specially trained to role-play as adversaries to rigorously test the performance of the Department's most critical protection systems, including site protective forces. HSS also maintains its own inventory of laser-enhanced engagement simulation systems (ESS) weaponry and accessories that promote maximum realism in performance testing while maintaining safety. The CAT and ESS resources were a powerful supplement to the teams of inspectors who examined security operations at Y-12.

The results were reported to the Secretary of Energy on September 28, 2012.

Focusing on the Extent of the Problem

Extending the view beyond Y-12, the HSS Office of Security is leading a series of reviews at other DOE/NNSA Category I SNM sites to determine whether any inadequate conditions, similar to those at Y-12, are evident. These "extent-of-condition" reviews are being conducted on a demanding three-month schedule at eight sites:

- Oak Ridge National Laboratory
- Los Alamos National Laboratory
- Office of Secure Transportation
- Nevada National Security Site
- Savannah River Site
- Pantex Plant
- Hanford Site
- Idaho National Laboratory.

The reviews will address vital aspects of protection policy, planning, and performance at these sites. They will include compliance, maintenance, and compensatory measures for security systems, as well as all aspects of assessment, surveillance, and performance testing of both security systems and protective forces.

Led by HSS, these extent-of-condition reviews will call on subject matter experts from HSS, NNSA, and the DOE Offices of Environmental Management, Science, and Nuclear Energy. The reviews are to be completed and reported on by December 31, 2012.

Focusing on the DOE/NNSA Complex

Over the coming year, HSS is planning a series of comprehensive inspections at the eight sites listed above. These inspections will feature an enhanced approach to testing the performance of DOE/NNSA protection systems against a broader spectrum of potential threats and adversary capabilities. In recent years, HSS performance testing has been conducted largely on an announced schedule. The enhanced performance testing methods will rely more on activities that are not announced, or are performed on short notice, and that involve a wider array of situations.

Examples of tests that may be conducted with little or no notice include:

- Alarm response and assessment performance tests (ARAPTs)

incorporating various potential adversary actions

- Security incident performance tests in which the protective force responds to reported and unreported suspicious packages or vehicles
- Access control tests in which the protective force responds to such situations as persons using false credentials or vehicles attempting to enter with controlled or prohibited items

- Tests in which the protective force responds to a wider variety of potential threats, such as active shooters, protestor activists, or malevolent insiders.

Inspections will continue to include large-scale force-on-force tests, but these will be based on a broader range of potential threat scenarios that are constructed specifically to stress potential points of failure, as defined by the site's vulnerability assessment data and processes.

Going Forward

HSS has developed a new protocol that provides a formal mechanism for planning, coordinating, and safely conducting enhanced performance tests to better evaluate the protection of SNM within the DOE/NNSA complex. This protocol builds on HSS's proven appraisal process and will be refined on the basis of experience at Y-12 and each successive Category I site. The result will be a robust and flexible performance testing regime that provides better information for decision-making. ■

Nuclear Safety Workshop: Post-Fukushima Initiatives and Results

On September 19-20, 2012, the DOE held a second Nuclear Safety Workshop covering results of the Department's actions to improve its posture for analyzing and responding to severe accidents in light of lessons learned from the March 2011 nuclear accident in Japan.

Sponsored by DOE and championed by Deputy Secretary of Energy Daniel Poneman, the two-day workshop discussed the lessons learned in a national and international context. The workshop theme was *Post Fukushima Initiatives and Results*, and included technical breakout sessions focused on Beyond Design-Basis Events Analysis and Response; Safety Culture; and Risk Assessment and Management.

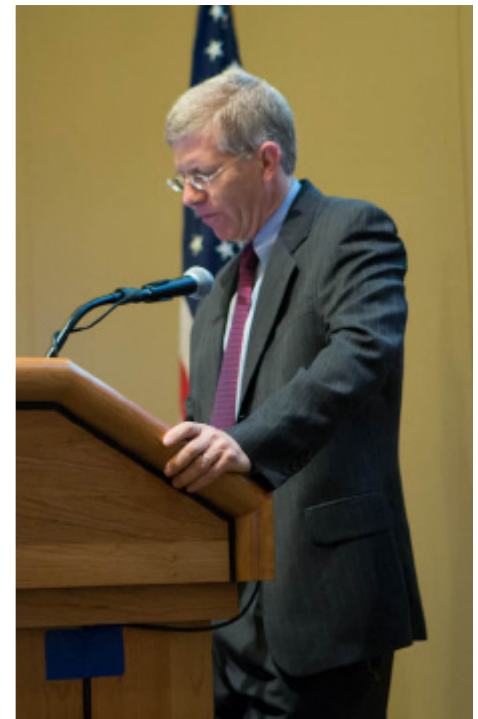
Over 200 high-ranking officials and technical experts participated in the workshop, including (in addition to DOE representatives) representatives from the International Atomic Energy Agency (IAEA), Nuclear Regulatory Commission (NRC),

Defense Nuclear Facilities Safety Board (DNFSB), Environmental Protection Agency, U.S. Chemical Safety Board (CSB), Institute of Nuclear Power Operations (INPO), Federal Aviation Administration, and National Aeronautics and Space Administration (NASA). There was also participation from the academic community, including participation from the University of Maryland and Vanderbilt University.

Keynote speakers were:

- Deputy Secretary of Energy Daniel Poneman
- DOE Chief Health, Safety and Security Officer Glenn Podonsky
- Nuclear Regulatory Commissioner William Ostendorff
- Defense Nuclear Facilities Safety Board Chairman Dr. Peter S. Winokur

- International Atomic Energy Agency Head of Operational Safety Miroslav Lipar
- Tokyo Electric Power Company General Manager Akira Kawano



Deputy Secretary of Energy Daniel Poneman

- Human Performance Analysis Corporation Chief Executive Dr. Sonja B. Haber.

The keynote speeches focused on high-level actions that have been taken or are planned to improve nuclear safety in light of lessons learned from the March 2011 accident at the Fukushima Daiichi plants. These included discussions of how safety culture plays a key role in safety performance and in preventing accidents.

After the keynote speeches, the participants broke out into three concurrent technical sessions, which had very energetic and insightful discussions aimed at identifying how safety can be improved. The closing plenary session summarized the results of the breakout sessions as described below.

Beyond Design-Basis Events Analysis and Response Session

This session included discussions of the draft guidance developed by DOE to perform beyond design basis event (BDBE) evaluations at DOE



DOE Chief Health, Safety and Security Officer Glenn Podonsky

nuclear facilities, the results of pilot application of the draft guidance at four DOE facilities, and INPO and NRC efforts to facilitate safety improvements in light of lessons learned from Fukushima Daiichi. The session included presentations by DOE Headquarters, Savannah River Site, Oak Ridge National Laboratory, INPO, and the NRC.

Insights and lessons learned identified from this session include:

- A multi-discipline team (including safety analysts and experts in natural phenomena hazards, operations, and emergency management) was vital to effective evaluation of BDBEs during the pilots.
- DOE should continue to interact with the NRC and INPO to share philosophies and techniques relative to evaluation of BDBEs and identification of means to mitigate them.
- Refinements in DOE draft guidance are needed to address such issues as scope of facilities where BDBE evaluations are warranted, how to screen some natural phenomena events, and scope of events.

The next steps identified were to complete the DOE report on pilots and to include the program offices and representatives of organizations participating in the pilots in that effort.

Safety Culture Session

This session included discussions of what safety culture is and why it is important, assessment of safety culture, what has DOE been doing in the area of safety culture, and the role

of the differing professional opinion process in a positive safety culture. The session included presentations by DOE Headquarters, Pantex Plant, the Hanford Waste Treatment and Immobilization Plant, IAEA, and the NRC.

Insights and lessons learned identified from this session include:

- Leaders play a significant role in establishing and maintaining safety culture.
- Building a healthy safety culture is a continuous journey, not an endpoint.
- Building a healthy safety culture takes significant commitment.

Potential actions identified to enhance performance in this area include:

- Establish feedback process for self-assessment guidance.
- Establish a plan for sustainability of performance over the long term.
- Expand DOE efforts to fully educate its personnel on safety culture.
- Consider creating advocacy roles for safety culture at DOE and contractor organizations,
- Develop a briefing package on safety culture for new senior leadership.

Risk Assessment and Management Session

This session included discussions of how risk assessment and management is applied at DOE, NASA, CSB, and the NRC, as well as discussion on some actual and proposed risk assessment

and management applications at DOE. The session included presentations by DOE Headquarters, Idaho National Laboratory, Pacific Northwest National Laboratory, NASA, CSB, NRC, and the DNFSB.

Insights and lessons learned identified from this session include:

- Probabilistic risk assessment (PRA) is a comparative analysis tool to be used to support the traditional deterministic methods.
- The calculated PRA values should not be used exclusively to make safety basis decisions.
- PRA is a particularly useful tool for analyzing risks for complex systems.



The Associate Deputy Secretary, Vice Admiral (retired) Melvin Williams, closed the workshop by discussing his insights on the importance of leadership and working together as a team. In closing, he thanked the participants for their efforts to help DOE improve nuclear safety. ■



**Nuclear Regulatory Commissioner
William Ostendorff**

Potential actions identified to enhance performance in this area include:

- Develop more in-house capability related to risk analysis.
- Establish a central organization responsible for risk policy, guidance, and review.
- Develop PRAs for complex category 2 facilities.
- Perform analysis to evaluate risk of building collapse.



**Tokyo Electric Power Company
General Manager Akira Kawano**

NTC Launches New Video Teleconferencing System

Beginning in August 2012, the National Training Center (NTC) is pleased to offer the DOE complex greater access to a number of classes without the added cost of travel with the deployment of LifeSize video teleconferencing (VTC). This

high-definition VTC system, which is currently available in the NTC auditorium, two classrooms, and a conference room, will enable the NTC to host courses via VTC and deliver training to up to 15 locations. Participants in conferences can

join sessions through another VTC system or through live-stream video from a personal computer. Students from many locations will be able to see the instructor and interact either directly through another VTC system or, if they are using live-stream

video, through web chat or an audio conference call. Subject-matter experts will be able to join training sessions to present information on a particular topic without traveling

to the host site. LifeSize facilitates NTC's mission of providing cost-effective, high-quality training to the DOE complex.

For additional information regarding this new technology and the classes for which it can be deployed, please contact Ellen Beaulieu at 505-845-6703. ■

Office of Classification Projects Enhance Transparency in Government

Part of the many responsibilities of the HSS Office of Classification (HS-60) is to ensure that classified information and documents that no longer meet the criteria for protection for national security reasons are promptly declassified and released. This mission is consistent with President Barack Obama's Memorandum on Transparency and Open Government issued on January 21, 2009, committing the government to an unprecedented level of openness, and Executive Order (EO) 13526, which requires agencies to review policies and practices to limit the use of classification. Over the past year, HS-60 has been engaged in a number of projects to enhance openness within DOE. Three notable examples are OpenNet, the declassification and release of 10,000 pages of Secretariat files of the Atomic Energy Commission (AEC), and the Fundamental Classification Guidance Review.

OpenNet (<https://www.osti.gov/opennet/>) is an Internet database of declassified and publicly released DOE documents first started under President Bill Clinton's Openness Initiative in 1994. OpenNet provides easy, timely access to declassified documents and other related

information. While most of the initial collections in OpenNet back in 1994 were only bibliographic citations, most documents added since then are full text documents. The OpenNet database is growing every year, with DOE sites contributing declassified records as they become available.

In addition to these routine additions to OpenNet, this year HS-60 has made a special effort to declassify and make available via OpenNet 10,000 pages of the AEC Secretariat files, dated from 1958 to 1966, that give insight into the AEC's activities during a key segment of the Cold War era. With these resources online, the interested public and historians have access to detailed documentation of the inner workings of the AEC, without the delay of making and processing requests under the Freedom of Information Act. As resources permit, HS-60 plans to continue the review, declassification, and placement online of these important historic DOE collections as a cost-effective means for the public to understand the mission of DOE and its past efforts.

Finally, under EO 13526, DOE was required to analyze and ensure that National Security Information classification guidance policy is

applied appropriately to protect information according to current national security standards. Only with accurate standards can agencies avoid overclassification of information, a problem that is costly to the government because it leads to protecting more information and documents than truly need that protection. Overclassification is also a major complaint of the public, as it prevents the public from understanding government actions and decisions. In June 2012, HS-60 published the "National Security Information Fundamental Classification Guidance Review" (available on OpenNet), which involved approximately 200 subject matter experts in 36 subject area working groups looking at over 2,800 National Security Information topics. HS-60 identified essential information protected through classification, explained why the information requires continued classification, and recommended improvements to the existing classification guidance. The review's recommendations will streamline, clarify, and enhance DOE classification guidance to prevent overclassification and thereby limit the use of classification to only that information that is important to the national security. ■

Screening of Former DOE Workers for Early Lung Cancer with Low-Dose Helical Computed Tomography

Since 2000, DOE has made screening for occupational lung cancer with low-dose helical computed tomographic (CT) scans available to workers who are at high risk for lung cancer. This screening is provided through the Former Worker Medical Screening Program (FWP), which is managed by HSS.

Because former workers undertook essential activities to fulfill the Department's mission, many of them were at risk for lung cancer. Through the FWP, DOE initiated the Early Lung Cancer Detection (ELCD) program using low-dose helical CT scans to detect lung cancers at an earlier, more treatable stage. Lung cancer results in about 160,000 deaths in the U.S. every year. The most common causes of lung cancer are long-term exposures to tobacco smoke and residential radon emissions, but occupational hazards, such as asbestos and ionizing radiation, also cause or contribute to the disease.

In 2000, the Worker Health Protection Program (WHPP), one of the FWP projects that is administered by Queens College of the City University of New York and the United Steelworkers, began using low-dose helical CT scans to screen Gaseous Diffusion Plant (GDP) workers for lung cancer. This screening program was provided to individuals, both current and former production workers, who met established eligibility criteria, including a history of at-risk occupational exposures.

From 2000 to 2006, WHPP used low-dose helical CT scans as a primary screening test for ELCD among workers with histories of significant occupational exposure during employment with DOE at the three GDPs (Oak Ridge K-25, Paducah, and Portsmouth). In 2006, WHPP began a similar program at Y-12 and Oak Ridge National Laboratory (ORNL). In 2010, WHPP started to offer CT screening to former

workers at Mound Plant and the Feed Materials Production Center (FMPC or Fernald) and restarted screening at the three GDPs.

FWP medical screening services, including the ELCD, are covered by DOE human subjects protection requirements, and DOE has taken steps to ensure that participants are fully informed of the possible risks and benefits of the ELCD. The WHPP screening program is overseen and approved by two Institutional Review Boards (IRBs), which were established to oversee the protection of human subjects in research. The IRBs review the materials that the FWP provides to potential participants – both for information and to gain participants' informed consent – to ensure that they clearly and accurately depict the benefits and risks of participating in the screening program, the screening process, and how individuals' test results will be stored and protected.

In April 2010, HSS approved the expansion of the ELCD, within the existing funding, to other FWP participants who are at high risk of lung cancer and meet the established eligibility criteria. Also, DOE continued to monitor related efforts, such as the National Institutes of Health (NIH)-sponsored National Lung Screening Trial (NLST), which investigated the potential benefits of CT scans for a population of nearly 50,000 individuals at increased risk of lung cancer. The main objective of the NLST was to compare two ways of detecting lung cancer – low-dose helical CT, and standard chest x-ray – to determine whether CT screening is better than chest x-rays in reducing mortality from lung cancer.

From 2000 through September 30, 2011, WHPP performed chest CT

Table 1. Stage of Lung Cancers Detected by WHPP Early Lung Cancer Detection Program, 2000-September 30, 2011

Site of ELCD Program	Number of Participants Screened	Number of Lung Cancers Detected	Number of Detected Lung Cancers That Were Staged	Number (%) of Early (Stage I or II Non-Small Cell or Limited Small Cell) Cancers Detected
Paducah	1,872	12	8	7 (88%)
Portsmouth	2,163	19	19	15 (79%)
K-25	2,700	23	22	18 (82%)
ORNL	1,133	8	8	2 (25%)
Y-12	2,598	14	14	9 (64%)
Mound Plant	486	1	1	0
FMPC	334	0	0	0
Total	11,286	77	72	51 (71%)

scans on 11,286 workers, for a total of 29,443 CT scans (including repeat scans for indeterminate nodules). The results are summarized in Table 1 on the previous page. Seventy-seven ELCD program participants were identified as having primary lung cancer. WHPP determined the stage of these cancers – indicated by a descriptor (usually numbers I to IV) of how much the cancer has spread – and determined that 51 of the 72 (71%) individuals whose lung cancers have been staged to date (5 are pending) had a Stage I or II non-small cell or limited small cell cancer at the time of diagnosis. CT screening detected these cancers at an early stage, when treatment is more likely to be effective, and proved to be better for early detection than conventional chest x-rays.

On June 29, 2011, the NIH published the primary results of the NLST online in the New England Journal of Medicine and in the print issue on August 4, 2011. The initial NLST findings showed that participants who received low-dose helical CT scans had a 20% lower risk of dying from lung cancer than those who were screened with chest x-rays. An additional finding, which was not the main purpose of the trial, showed that all-cause mortality (deaths due to any cause, including lung cancer) was 7% lower in those screened with CT than in those screened with chest x-ray.

While national medical authorities begin their discussions on how to apply more broadly the NLST's positive findings on low-dose helical CT scans, HSS is assessing efforts to expand its use of these screenings to additional eligible DOE workers. For example, the Building Trades National Medical Screening Program, another component of the FWP, began a pilot screening program in April 2011. This pilot program, coordinated by CPWR – The Center for Construction Research and Training and supported by the Building and Construction Trades Department of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) and the Knoxville Building and Construction Trades Council that represent construction workers at the Oak Ridge Reservation, included 100 participants at Oak Ridge. Baseline scans have been completed, and workers are now coming back for their three- or six-month follow-up scans to check on indeterminate nodules.

Also, WHPP recently expanded its ELCD program to former Nevada National Security Site (NNSS, formerly known as the Nevada Test Site) workers who may have been exposed to lung carcinogens such as asbestos, silica, beryllium, radioactive materials, and diesel exhaust. The opening ceremony for

the NNSS ELCD program was held on August 8, 2012, at the National Atomic Testing Museum in Las Vegas. Featured speakers included Mr. Glenn S. Podonsky, Chief Health, Safety and Security Officer; Dr. Lewis Pepper, Principal Investigator for the NNSS ELCD program; local representatives from the offices of Senator Harry Reid, Senator Dean Heller, Congressman Joe Heck, and Congresswoman Shelley Berkley; and Mr. Darren Enns of the Southern Nevada Building and Construction Trades.

An additional component of the FWP's CT scanning program is monitoring the mortality of the participants screened for ELCD at the GDPs from 2000 through 2006. HSS will continue to review this information, as well as relevant publications, to determine the effectiveness of providing CT scanning through the FWP.

Ultimately, the results of low-dose helical CT scans and medical evaluations provide valuable insights to advance the scientific and public health communities' understanding of the health effects that may result from work-related exposures. This improved knowledge is likely to lead to enhanced safety and health measures that will better protect the current and future generation of workers. ■

Solicitation of Comments, Questions, and Suggestions

HSS welcomes your thoughts about our newsletter. Please send or phone comments, questions, or suggestions to:

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This newsletter can be found on the HSS website at <http://www.hss.doe.gov>

