Operating Experience Summary

U.S. Department of Energy
Office of Health, Safety and Security
OE Summary 2013-01
April 1, 2013

Inside This Issue

- Idaho National Laboratory Plutonium Contamination Investigation Results 1
- Department of Energy and Pacific Northwest National Laboratory Collaborate to Deploy a More Effective Readiness Process 9

Idaho National Laboratory Plutonium Contamination Investigation Results

1

The following article provides an overview of the results from the investigation of the November 2011 Idaho National Laboratory Plutonium contamination event. An Accident Investigation Board was appointed to determine the causes of the accident and to identify corrective actions to prevent recurrence; these corrective actions are reviewed in this article.

After reading the article, we encourage you to visit the Operating Experience Summary *blog at http://oesummary.wordpress.com and rate the article in terms of value to you and provide a comment on the article and/or identify topics that would be of interest to you for future articles.*

We also encourage readers to submit articles of their own for sharing in the Operating Experience Summary. *Please let us know if you have something to share.*

On November 8, 2011, workers at the Idaho National Laboratory (INL) Materials and Fuels Complex (MFC) Zero Power Physics Reactor (ZPPR) Facility were packaging plutonium (Pu) reactor fuel plates for transfer to another Department of Energy (DOE) facility. Two of the fuel plate storage containers (called clamshells) had atypical labels indicating potential abnormalities with the fuel plates located inside. In one of the containers, workers discovered a Pu fuel plate wrapped in plastic and tape. When the workers began to remove the wrapping material, an uncontrolled release of radioactive contaminants occurred, resulting in the contamination of 16 workers and the physical facility. The relative location of the ZPPR Facility is shown in Figure 1-1. (ORPS Report NE-ID--BEA-ZPPR-2011-0001)

An Accident Investigation Board (Board) was appointed on November 10, 2011, to determine the causes of the accident and to identify corrective actions to prevent recurrence. In its final report, the Board concluded that over time a number of opportunities had been missed that could have prevented this accident.

The Board concluded that contributing causes included underlying ZPPR safety basis (SB) deficiencies and lack of important historical information transfer to new management and contractors regarding the integrity of the legacy fuel plates. Taken together, the SB deficiencies and inadequate background information led to ineffective work controls and hazard recognition that resulted in the uncontrolled release. The Board's final report can be found at http://www.hss.doe.gov/sesa/corporatesafety/aip/docs/accidents/typea/INL_AI_Report_11-08-2011.pdf.

On the day of the release, workers in the ZPPR Work Room removed fuel plates from clamshells and were packaging them

Figure 1-1. Aerial view of the Materials and Fuels Complex ZPPR Facility

into transport containers in order to move them to another national laboratory as part of an effort to support mixed oxide (MOX) fuel research and development. The plutonium-uranium-molybdenum metal alloy plates had been in storage for up to 28 years. Personnel in the area included two health physics technicians, one staff specialist, the Shift Supervisor, one safeguards staff member, three security police officers, three operators, and four operators-in-training. The Nuclear Facilities Manager was not in the area but was consulted via telephone during the work when the atypical markings on the two clamshells were discovered. A health physics technician was called to the ZPPR Control Room to assist after the vault continuous air monitor (CAM) alarmed and evacuation of the workroom was initiated.

During the planned fuel packaging operation, workers had been instructed to open the Pu clamshells. After removing them from the ZPPR Vault storage, technicians noted that two of the clamshells had atypical notes on them: “Plate dented” and “Swollen upper left corner.” One of the two labels further indicated potential abnormalities with the fuel plates inside. The Shift Supervisor called the Nuclear Facilities Manager for consultation, and a decision was made to proceed with the packaging operation. The four clamshells to be processed for shipment were then taken to the ZPPR Work Room and placed in the South Hood (Figure 1-2).

When opening the first clamshell, workers discovered that the Pu fuel plate was wrapped in multiple layers of plastic and tape. (An unused clamshell and fuel plate are shown in Figure 1-3.) When workers cut the plastic and tape, they observed powder fall from the wrapping into the clamshell. A smear was taken and the clamshell was closed. The smear pegged a count rate meter on the lowest scale, and through subsequent analysis on December 8, 2001, was found to contain 5.5 million disintegrations per minute [dpm] alpha. Three minutes after the plastic was cut, the CAM alarmed from the uncontrolled release of radioactive contaminants which spread into the ZPPR

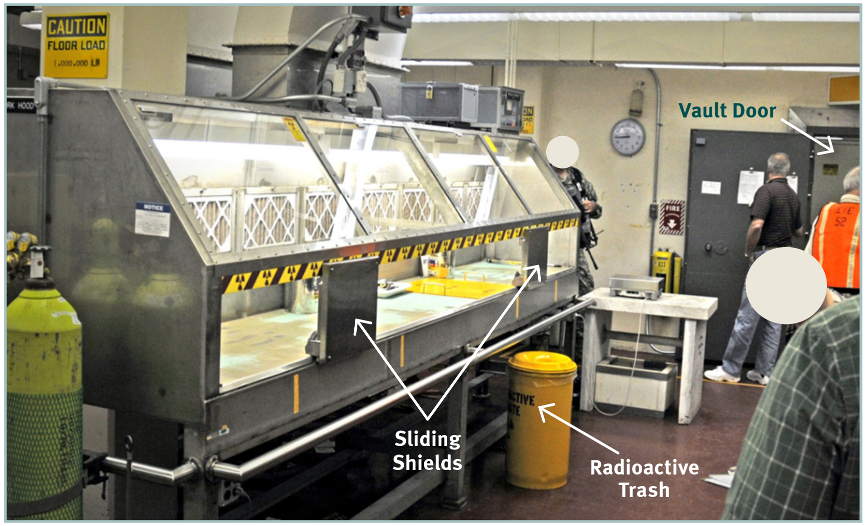

Figure 1-2. ZPPR Work Room South Hood area (circa 2008)

Workroom and resulted in measurable levels of contamination to 16 workers and the facility’s structures, systems, and components (SSC).


Figure 1-3. Clamshell with fuel plate

After the CAM alarmed, all personnel evacuated to the ZPPR Control Room using normal pathways. MFC emergency response personnel began to survey and decontaminate affected personnel, who were then transported to the site medical facility for additional evaluation and treatment. The ZPPR area was sealed off to prevent the possible spread of contamination. An airborne survey outside the ZPPR facility indicated radioactive contamination was limited to the interior work area. Based on subsequent interview testimony and conservative assumptions, the Board estimated less than 1 percent of available material from the damaged fuel element was released during the event.

The accident resulted in the contamination of all 16 affected individuals. The external contamination levels ranged from 600 counts per minute (cpm) on the head and hand of one individual down to non-detectable. All workers were evaluated for internal exposure. Fifteen of the 16 workers received intakes of Americium and Plutonium. One worker did not receive any exposure. The committed effective dose equivalent for the 16 workers ranged from zero millirem (mrem) to less than 1,500 mrem. The committed dose equivalent to bone surfaces, the most highly irradiated single organ or tissue, ranged from zero mrem to less than 16,500 mrem. All of the assessed doses to all of the workers are below the Federal annual limit of 5 rem to the effective whole body and less than 50 rem to any single organ or tissue.

The six individuals with the highest nasal smear results (overall results ranged from 3 dpm to 289 dpm) were sent to the Central Facilities Area (CFA) Medical for chelation; only four of these individuals opted for chelation. The ten individuals who had lower nasal smear results were sent to the lung counting facility and were also offered the option of chelation (see textbox, *What is Chelation?*).

The Board noted that had all exposed workers opted for the treatment, which should be administered as soon as possible after exposure for best results, operating contractor Battelle Energy Alliance (BEA) did not have enough of the preferred type of chelation in supply at the time of the accident. BEA had chelation material available for 15 chelation applications, 10 with Ca-DTPA and 5 with Zn-DTPA. Ca-DTPA is preferred for initial chelation unless a medical condition, such as kidney problems or pregnancy, requires use of Zn-DTPA. In the past, 45 chelation applications were locally available (three sets of 15). However, due to an increase in the cost of the chelation material and budget constraints, the Radiation Emergency Assistance Center/Training Site (REAC/TS) was able to provide only one set of 15 chelate applications to BEA; that set was kept at CFA Medical. Additional Zn-DTPA chelation doses arrived at the site from REAC/TS on the following day.

What is Chelation?

Chelation is a process used to remove unwanted metals from the body by administering an agent that binds to the metal and promotes its excretion. There are two processes: one uses calcium (Ca-DTPA), the other zinc (Zn-DTPA). The synthetic amino acid is injected into the body, where it binds (chelates) with any heavy metal present in the body, creating a compound that can be excreted in the urine. DTPA is currently approved by the Food and Drug Administration for chelation of three radioactive materials: plutonium, americium, and curium.

Source: Centers for Disease Control
http://www.bt.cdc.gov/radiation/dtpa.asp

Event Investigation

During the investigation, the Board analyzed information and events dating back to the origins of the ZPPR facility final SB in 1972, through transitions in site management that occurred in 2004 and 2005, to a timeline of events the day of the accident, including the initial medical treatment of contaminated workers. The investigation included analyses of the impacts of organizational transitions, past processes and procedures when the ZPPR was actively in operation, the historical and current technical assumptions of the ZPPR SB, current work planning and control procedures, and the emergency management and response programs and their implementation at the facility. The Board also evaluated the oversight and self-assessment systems used by DOE and BEA relative to work planning and control, and radiological protection programs.

Site Management Transitions

History

INL has been in operation since 1949: originally as an artillery test site; then as the National Reactor Testing Station established by the newly-formed Atomic Energy Commission; and in 1972, as a national laboratory. The site's MFC, originally named Argonne National Laboratory-West, was managed by the University of Chicago until 2005 when BEA LLC was awarded the managing contract. The MFC focused on nuclear materials and processing technologies and housed the ZPPR, which was used to mock up reactor cores for experimental purposes from 1969 until 1992, when it was put on operational standby. In the following years, the reactor and auxiliary equipment were removed from the facility. Current activities at the ZPPR facility include vault storage of fuel plates, handling the plates for surveillance and inspection, and packaging them for shipment. Work continues today with the disposition of the site's plutonium inventory.

Prior to the ZPPR's 1992 deactivation, day-to-day operations followed specific procedures and practices for handling damaged fuel plates and placing them in a storage vault. Information about the fuel plates was recorded in a handwritten Suspect Fuel Log and some of the fuel containers were labeled according to their condition, as shown in Figure 1-4. The Board determined that fuel plate storage information had not been effectively transitioned into current work planning and operating procedures for work performed on the day of the accident. Although the Suspect Fuel Log was housed in the ZPPR facility, its contents and value were not known by the workers, their immediate supervisors, or the Nuclear Facilities Manager.

Figure 1-4. Clamshell 45 M (left) with notes that upper left corner of fuel plate is open and to open in hood and Clamshell 47 S (right) with notes that plate is dented and wrapped in plastic and the direction to check monthly

The Idaho Operations Office (DOE-ID) and BEA have conducted comprehensive transition planning and vulnerability analyses, which were updated annually to bring all MFC facilities into compliance. Multiple reviews of the annual updates failed to identify the legacy deficiencies in the technical bases, which assumed a low probability of damaged Pu fuel plate cladding and thus did not require associated defense-in-depth controls. However, the Board's investigation found the probability of encountering damaged fuel plates is higher than expressed in the ZPPR safety basis. The Board established that these inaccurate underlying assumptions supported the continued reliance on a confinement hood rather than the use of a typically-required glovebox for fuel plate packaging operations. The Board concluded that DOE-ID's oversight roles and responsibilities to conduct reviews of the SB technical assumptions were not well communicated, understood, or resourced as needed.

In 2005, BEA took over management of the MFC from the University of Chicago. The Board found that during that management and organizational transition, historical ZPPR work practices and information were lost; if known, these resources could have been used to establish more effective work controls for handling Pu fuel plates.

Event Analysis

The Board conducted an extensive review of the hazards, the targets (the people and objects of the hazards), and the controls that management systems put in place to separate the hazards from the targets and in this event, determined that barriers to injury failed on several fronts.

The Board identified the main hazard as transuranic material that could harm workers and the facility during the mission of packaging fuel plates for shipment to another facility. The safety basis for the ZPPR facility failed to take into account the known damaged fuel plates. Such potential for failure had been brought to the attention of successive facility managers by the Independent Safety Review Committee (ISRC) Chairman in White Paper presentations, but no modifications were made to the SB and work continued under existing conditions. The SB also failed to accurately establish a failure rate of Pu plate cladding, to analyze the risk of that failure, and assess the potential exposure to the workers within the facility.

In addition, the Work Room hood where the damaged fuel plates were opened had not been maintained for the safe execution of such work, and it therefore failed to prevent the release of the radioactive material. Opening the damaged plates in a glovebox may have prevented the release, but a glovebox was deemed unnecessary, and so one was not used.

Training Inadequate

The Board concluded that workers were not trained to understand that dispersible Pu is an undetermined hazard requiring immediate evacuation from the area. A lack of mandatory, performance-based training led to workers remaining in the workroom while a smear was being assessed, thus increasing their exposure time to the release. Workers also did not recognize the hazards of loose and visible quantities of Pu material in the fume hood.

Although workers stopped when the two clamshells with the atypical markings were identified, work continued and no further stop work time was called. The Shift Supervisor and the Nuclear Facilities Manager failed to thoroughly evaluate the abnormal conditions of the work to be done, or utilize technical resources such as Radiological Control personnel before making the decision to proceed with work. Workers and management should have been trained to recognize and heed irregularities such as the abnormal condition of multiple wraps of plastic and red tape and then the visible quantity of Pu particulate and used their Stop Work authority. The Board also found that Radiological Control personnel had not been trained to evaluate facility radiation monitor data and accurately communicate this information.

Conclusions

Based on its analysis, the Board developed 18 conclusions that BEA can use to prevent recurrence. The Judgments of Need (JONs) were designated in five categories: Safety Basis, Work Planning and Control, Execution of Work, BEA Oversight, and Emergency Management.

Safety Basis

The Board concluded that DOE-ID and BEA oversight systems were not managed in ways to correct legacy deficiencies and, as a result, workers were at increased risk of exposure to uncontrolled radioactive material. BEA failed to recognize the significance of, and take action appropriate to respond to, information about the material condition of the fuel plates as described on the labels. The ZPPR Workroom South Hood, where the fuel plate unpacking work occurred, is not a defense-in-depth SSC, and was not maintained to provide assurance of its performance or operability as an SSC. Going forward, BEA needs to validate the technical basis used to support the safety and design of the ZPPR facility and legacy material, which would include a reassessment of the likelihood, severity, and risk of accidents and the effectiveness of hazard controls.

Work Planning and Control

The Board found that the packaging activity was not consistent with the BEA procedure development process and should have followed appropriately generated procedures rather than process worksheets. The planning effort did not include a thorough review of historical data to aid work planning. Evaluation points and limiting conditions required by the Radiological Work Permit (RWP) were not sufficient to stop work to reevaluate the hazards when unexpected hazards or conditions occurred. Additionally, although the vault CAM alarmed, its location, as determined in engineering evaluations, was not optimal for the work being performed in the workroom hood and should have been placed lower—that is, closer to the workers' breathing zones. (See Figure 1-5, which shows the location of the single CAM.)

As cited in its report, the Board concluded that a proper evaluation of work to be performed would have called for the damaged plates to be opened in a glovebox to prevent releases to the workroom and the workers. Further, the Board cited poor work planning that did not require workers to wear proper respiratory protection and full anti-contamination clothing while performing work that could lead to an uncontrolled release of Pu contamination. The as-low-as-reasonably-achievable review that had been conducted failed to result in hazard controls appropriate for the work being performed.

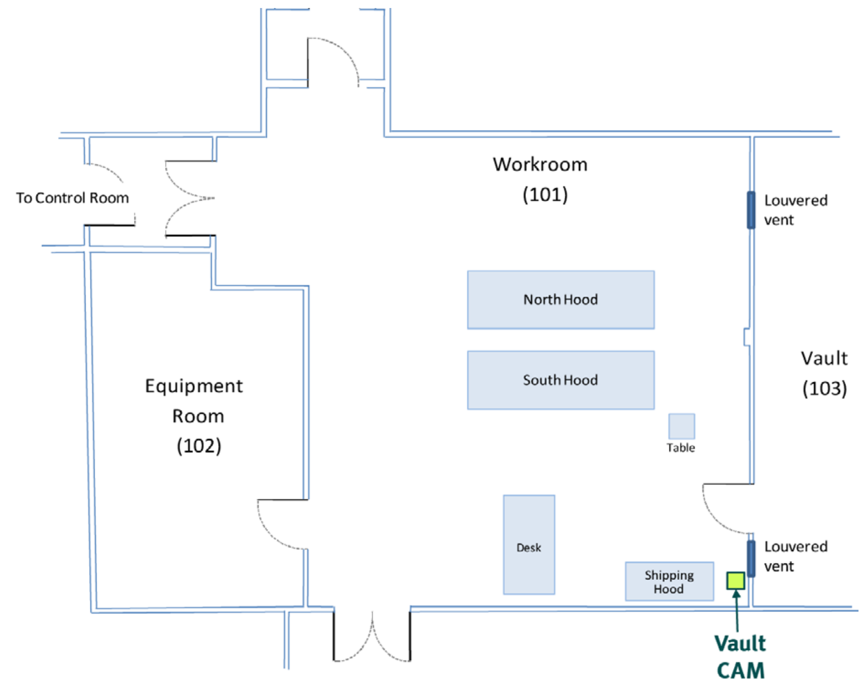

Figure 1-5. Diagram of ZPPR Work Room

The Board's report also contained the conclusions of its extensive Change, Human Performance, and Causal Factor analyses. Highlights of those findings include:

- The lack of CAMs in place specific to the work area; appropriately positioned CAMs would have reduced the time to alarm and limited personnel exposure.
- The work in the workroom was performed with the vault door open, thus creating an unknown and unanalyzed air flow.
- The impact of the ISRC Chairman's White Paper regarding the history and safety of the stored fuel plates was not recognized when site management and contract changes occurred at the site.

Execution of Work

Workers failed to realize that cutting the fuel plate wrapping, which was conducted without an approved procedure step to direct the action, was outside the boundaries of the RWP and should have resulted in a Stop Work. The Board also found inadequacies in worker training that did not inform workers to stop work when abnormal conditions (such as multiple wraps of plastic and red tape on the fuel plates) were encountered. Workers also did not know that a visible quantity of Pu particulate represented a hazard requiring immediate evacuation. Radiological Control personnel had not been trained to evaluate facility radiation monitor data and accurately communicate this information.

BEA Oversight

The Board concluded that although there has been a noticeable increase in the number of self-assessments conducted for the work at the MFC, they lack the quality and depth needed to consistently identify and correct issues that significantly impact performance. Going forward, the Board stated that BEA must apply a concerted effort in the planning for and field observance of work activities at MFC until measurable improvement is attained. Mentoring and direction for MFC personnel conducting oversight activities in the field must be provided to improve deficiency identification.

Emergency Management

The Board found that BEA's emergency management program did not sufficiently coordinate a timely response to the ZPPR operational emergency and recommended that BEA conduct training that includes drills and exercises specific to contamination events and evaluations of the radiological impact of accidents.

The Board also pointed to BEA's lack of procedures or a written technical basis document for assessing positive lung count results in terms of radiation dose after an exposure event. This lack of a guidance document led to confusion about best methods for the timing and conditions of collecting and handling lung count and bioassay samples from those in the work area at the time of the event (e.g., should victims have showered or not showered or blown their noses before providing a nasal smear). There was also confusion on the part of medical personnel who were collecting samples as to decay calculations of the damaged fuel plates that led to the exposure event. These calculations were needed to assess the impact of the Pu exposure on the workers, but BEA had not evaluated the dose contributions of the isotopes in the fuel plates before the November 8, 2011, incident.

Judgments of Need

The Board identified immediate JONs in this incident, including the areas of concern for immediate action listed below. These JONs point to critical lessons learned that have applicability throughout the Complex.

- Validate the technical basis used to support the safety and design basis of facilities, including a reassessment of the likelihood, severity, and risk of accidents and the effectiveness of hazard controls.
- Evaluate and revise as needed the Potential Inadequacy of the Safety Basis and unreviewed safety questions processes to ensure that they are applied when new safety information is discovered.
- Obtain DOE-ID review and approval prior to performing Pu fuel handling operations outside a glovebox.
- Ensure that equipment is maintained as credited in the documented safety analyses.

- Ensure that a thorough review of available historical resources and lessons learned is conducted to determine their effect, if any, on the scope of work.
- Evaluate the placement and positioning of air monitoring equipment to provide workers with early indications of a radiological hazard.
- Reinforce Stop Work expectations.
- Provide facility-specific training for all personnel on the unique hazards of handling plutonium.
- Provide training to Radiological Control personnel on evaluating and effectively communicating facility radiation monitor data.
- Develop and implement training on radiological response, including drills, exercises, and evaluation of radiological consequences of accidents.
- Evaluate processes used to identify radiological source term information for use in evaluating and responding to radiological emergencies.

The Board's final report is available at http://www.hss.doe.gov/sesa/corporatesafety/aip/docs/accidents/typea/INL_AI_Report_11-08-2011.pdf.

KEYWORDS: Accident Investigation Board, Materials and Fuels Complex, plutonium, Pu, Zero Power Physics Reactor, ZPPR, fuel plates, Radiological Work Permit, chelation, work planning and control

ISM CORE FUNCTIONS: Analyze the Hazards, Develop and Implement Hazard Controls, Perform Work within Controls, Provide Feedback and Improvement

Department of Energy and Pacific Northwest National Laboratory Collaborate to Deploy a More Effective Readiness Process

2

The following article, prepared by Pacific Northwest National Laboratory (PNNL), provides a brief look at the challenges of operational readiness in the Department of Energy (DOE) Complex and discusses recent process improvements implemented at one site. Once associated with prescriptive DOE assessments that often sent contractors back to make costly fixes before gaining approval to operate, readiness is now being integrated into projects up-front, promoting preparation so that contractors obtain approval for startup without delay or rework.

After reading the article, we encourage you to visit the Operating Experience Summary *blog at http://oesummary.wordpress.com and rate the article in terms of value to you and provide a comment on the article and/or identify topics that would be of interest to you for future articles.*

We also encourage readers to submit articles of their own for sharing in the Operating Experience Summary. *Please let us know if you have something to share.*

Introduction

One approach to avoiding the need for additional DOE readiness assessments and operational readiness reviews is for contractors to institutionalize new methods for achieving readiness early in the project life cycle. Such an approach can mean that readiness is achieved and verified along the way, potentially eliminating the need for a more formal assessment and saving both time and money for the Department and its contractors. Representatives from DOE and the National Nuclear Security Administration (NNSA) reviewed the readiness of a project to construct and operate new hot cells at PNNL's Category 2 Nuclear Facility, the Radiochemical Processing Laboratory (RPL). The DOE readiness assessment was completed with no significant findings. This success was achieved by defining and understanding the required outcomes early and working to meet and verify them as the project progressed.

A New Readiness Approach

DOE Order 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*, places stronger emphasis on the process of achieving readiness before verifying readiness. Several years ago, PNNL began planning to construct new hot cells in the RPL. Using an approach to achieve readiness as part of the project scope, rather than verifying readiness just prior to startup, the Laboratory earned a near-perfect score on the readiness assessment, thus avoiding rework or delays. Since that time, PNNL has continued to enhance its understanding of what readiness means and has developed a corresponding process that can be used on both nuclear and nonnuclear projects. DOE wanted to offer the Complex at least two models for achieving readiness: the Y-12 National Security Complex model is intensive and appropriate for a larger facility; the PNNL process is equivalent to a nuclear process, but can be scaled up and down to fit any project of any size (Figure 2-1). PNNL will share its approach with other contractors that want to achieve readiness for high-risk projects and avoid errors that can lead to delays or added costs.

Figure 2-1. PNNL's readiness process is flexible enough to be used on nuclear projects, such as hot cell installation, as well as smaller high-risk projects.

Nonnuclear Projects at PNNL

The Quiet Wing (Q Wing) at the Environmental Molecular Sciences Laboratory (EMSL) was the first PNNL project to integrate the new readiness approach from planning to startup. The Q Wing is a world-class research environment that houses an integrated suite of ultra-sensitive microscopy instruments. The EMSL readiness process smoothed out the transition from project completion to startup of operations. According to the Manager of EMSL's project office, coordination between the project team and startup team was weak in the past, but the Q Wing started months ahead of schedule by coordinating among the project team, the facilities operations team, and research end-users. This *guided discovery* approach meant the team found things it had not expected, and, as a result, the eventual turnover to operations was nearly seamless (Figure 2-2).

Figure 2-2. PNNL used the readiness process when installing high-tech equipment in its Environmental Molecular Sciences Laboratory.

This readiness approach was considered a best practice after its use for Q Wing startup and later for installing high-tech research equipment at EMSL. As one staffer put it, "Good management, quality, and streamlining—it all adds up to dollars and time saved." The new readiness approach is being used for a radiological annex at PNNL's 3410 Building, currently in the design phase. The readiness team and research team are already working on standard operating procedures.

NNSA Takes Note of the PNNL Process

PNNL's emerging readiness process was recognized when NNSA published two articles from the Laboratory's Operating Experience/Lessons Learned Program in its June 2011 *Technical Bulletin*. Noting PNNL's success in nuclear facility readiness, the Technical Lead for Operations and Readiness pointed out that the two articles mirror the principles and approaches that have characterized successful readiness programs throughout the Complex. Other DOE facilities are demonstrating acceptance of the new readiness process (even though it is not required by DOE Orders) for nonnuclear projects. For example, a weapons designer at Los Alamos National Laboratory uses a similar process to ensure his experiments are ready before conducting work.

An Acceptable and Cost-Effective Approach for Achieving Readiness

There is no doubt that achieving readiness involves costs, but when compared to the expense of reworking facilities that do not meet readiness standards at completion, the cost of achieving and verifying readiness early in a project life cycle is comparatively small. The EMSL Manager at PNNL reflected that much of the value of achieving readiness lies in finding and mitigating risks. "Although that is not usually the mentality for research startups, it should be," he said. "Readiness is a de facto way to identify and manage risks when starting up a facility for research. If nothing else, it helps identify those things that are important and addresses them ahead of time."

Where Is Readiness Going?

Because DOE's ultimate goal is to foster continuous improvement in processes for achieving and verifying readiness, the Department supports contractor efforts to develop their own readiness capability to complete and start up a facility, activity, or operation without delays or rework. That capability ultimately includes having the right people with the knowledge and understanding to guide a team through all stages of a project and achieve a successful startup.

Questions regarding this *OE Summary* article can be directed to Nick A. Regoli, PE, Senior Advisor, Startup & Operational Readiness, Nuclear & Materials Operations Division, PNNL, at 509-372-4765 or Nicholas.Regoli@pnnl.gov.

The Office of Health, Safety and Security (HSS), Office of Analysis publishes the *Operating Experience Summary* to promote safety throughout the Department of Energy (DOE) Complex by encouraging the exchange of lessons-learned information among DOE facilities.

To issue the Summary in a timely manner, HSS relies on preliminary information such as daily operations reports, notification reports, and conversations with cognizant facility or DOE field office staff. If you have additional pertinent information or identify inaccurate statements in the Summary, please bring this to the attention of Mr. Stephen Domotor, (301) 903-1018, or e-mail address stephen.domotor@hq.doe.gov, so we may issue a correction. If you have difficulty accessing the Summary on the Web (http://www.hss.energy.gov/sesa/analysis/oesummary/index.html), please contact the Information Center, (800) 473-4375, for assistance. We would like to hear from you regarding how we can make our products better and more useful. Please forward any comments to Mr. Domotor at the e-mail address above.

The process for receiving e-mail notification when a new edition of the Summary is published is simple and fast. New subscribers can sign up at the Document Notification Service web page: http://www.hss.energy.gov/InfoMgt/dns/hssdnl.html. If you have any questions or problems signing up for the e-mail notification, please contact Mr. Stephen Domotor by telephone at (301) 903-1018 or by e-mail at stephen.domotor@hq.doe.gov.