EnergX, LLC
Transuranic Waste Processing Center

Report from the DOE
Voluntary Protection Program
Onsite Review
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Foreword

The U.S. Department of Energy (DOE) recognizes that true excellence can be encouraged and guided but not standardized. For this reason, on January 26, 1994, the Department initiated the DOE Voluntary Protection Program (DOE-VPP) to encourage and recognize excellence in occupational safety and health protection. The DOE-VPP closely parallels the Occupational Safety and Health Administration (OSHA) Voluntary Protection Program (VPP), which was established by OSHA in 1982 and has demonstrated that cooperative action among government, industry, and labor can achieve excellence in worker health and safety. The Office of Health Safety and Security (HSS) assumed responsibility for DOE-VPP in October 2006.

The DOE-VPP outlines areas where DOE contractors and subcontractors can comply with DOE orders and OSHA standards while also "stretching for excellence." DOE-VPP emphasizes systematic and creative approaches involving cooperative efforts of everyone in the contractor or subcontractor workforce at DOE sites, including contractor managers and workers.

Requirements for DOE-VPP participation are based on comprehensive management systems, with employees actively involved in assessing, preventing, and controlling the potential health and safety hazards at their sites. DOE-VPP is designed to apply to all contractors in the DOE complex and encompasses production facilities, research and development operations, and various subcontractors and support organizations.

DOE contractors are not required to apply for participation in the DOE-VPP. In keeping with OSHA's VPP philosophy, participation is strictly voluntary. Additionally, participants may withdraw from the program at any time.

DOE-VPP consists of three programs, which are based on and similar to those in OSHA's VPP. These programs are Star, Merit, and Demonstration. The Star program is the core of DOE-VPP, and its achievement indicates truly outstanding protectors of employee safety and health. The Merit program is a steppingstone for contractors and subcontractors that have good safety and health programs but need time and DOE guidance to achieve Star status. The Demonstration program is expected to be used rarely; it exists to allow DOE to recognize achievements in unusual situations about which DOE needs to learn more before determining approval requirements for the Star program.

By approving an applicant for participation in DOE-VPP, DOE recognizes that the applicant is meeting, at a minimum, the basic elements of ongoing, systematic protection of employees at the site. The symbols of this recognition are DOE-provided certificates of approval and the right to fly the VPP flags (e.g., VPP Star flag for sites with Star status). The participant may also choose to use the DOE-VPP logo on letterhead or on award items for employee incentive programs. Further, each approved site will have a designated DOE staff person to handle information and assistance requests from DOE contractors, and DOE will work cooperatively with the contractors to resolve health and safety problems.

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ABBREVIATIONS AND ACRONYMS

AHA	Activity Hazard Analysis
ALARA	As Low As Reasonably Achievable
ARM	Area Radiation Monitors
BBA	Box Breakdown Area
CAM	Continuous Air Monitors
CH	Contact Handled
CM	Corrective Maintenance
CPR	Cardiopulmonary Resuscitation
DART	Days Away, Restricted, or Transferred
DOE	U.S. Department of Energy
DOE-VPP	U.S. Department of Energy Voluntary Protection Program
DSA	Documented Safety Analysis
FWENC	Foster Wheeler Environmental Corporation
GET	General Employee Training
IDR	Interdisciplinary Review Process
ISMS	Integrated Safety Management System
HSS	Office of Health, Safety and Security
LOTO	Lockout/Tagout
MIP	Maintenance Implementation Plan
MMC	Methodist Medical Center
NDA	Non-Destructive Analysis
NDE	Non-Destructive Examination
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations Office
OSHA	Occupational Safety and Health Administration
PvM	Preventive Maintenance
PPE	Personal Protective Equipment
RCT	Radiological Control Technicians
RH	Remote Handled
RWP	Radiation Work Permit
TOO	Timely Orders to Operators
TRU	Transuranic
TWPC	Transuranic Waste Processing Center
VPP	Voluntary Protection Program

EXECUTIVE SUMMARY

EnergX, LLC (EnergX) is the prime contractor for operation of the Transuranic Waste Processing Center adjacent to the Oak Ridge National Laboratory. In October 2007, EnergX applied to participate in the U.S. Department of Energy Voluntary Protection Program (DOE-VPP). This report documents the results of the onsite assessment by the Office of Worker Safety and Health Assistance to determine whether EnergX qualifies as a DOE-VPP participant, and at what level they qualify.

EnergX has substantially, but not completely, met the qualifications of a DOE-VPP Star site. EnergX has implemented several initiatives that either have or are expected to contribute to improved safety. These include but are not limited to: (1) performing a collective significance analysis of precursor events and incidents that are normally not considered to be significant; (2) conducting a Safety Conscious Work Environment survey and analyzing the results to identify improvements; (3) conducting a company wide safety stand down where groups of employees examined recent events with a facilitator using Human Performance Improvement principles. As shown in Table 1, the DOE-VPP Team (VPP Team) also identified a number of improvements that EnergX needs to make in order to fully qualify as a DOE-VPP Star site, as well as some additional opportunities for improvement in each of the five tenants of VPP, as shown in Table 2. Most of the improvements relate to implementing systematic processes to replace the more informal processes that have been stressed by organizational growth and schedule pressures.

While EnergX has enjoyed an exceptional safety record with only one recordable injury and no lost time accidents in the past six years, managers and workers have not challenged themselves to push further improvements and pursue excellence. EnergX did not perform a critical self-assessment in connection with their application to the DOE-VPP which substantially hindered their readiness.

EnergX's experienced, well-trained workforce is participating in the safety program. However, middle managers, supervisors, and project management personnel have not been sufficiently encouraged to participate in safety committees. These personnel are responsible for production, and their absence on the safety committees may have led, in some cases, to perceptions by workers that safety considerations are secondary to production.

EnergX has implemented many improvements, but those improvements will take more time to become ingrained into the safety culture. In accordance with the DOE-VPP program documents, the VPP Team has identified actions the applicant needs to complete to achieve Star status. Those items identified as "Needed Improvement to Reach Star Status" are those items the VPP Team believes need to be implemented for EnergX to achieve DOE-VPP Star status. Consequently, the VPP Team is recommending that EnergX be admitted to the DOE-VPP at the Merit Level.

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I. INTRODUCTION

The U.S. Department of Energy Voluntary Protection Program (DOE-VPP) onsite review of EnergX, LLC (EnergX) at the Transuranic (TRU) Waste Processing Center (TWPC) was conducted March 10-21, 2008.

EnergX employs approximately 170 people to operate the TWPC which is located adjacent to the DOE's Oak Ridge National Laboratory site. EnergX became the prime contractor (as of January 2008) after the initial contractor, Foster Wheeler Environmental Corporation (FWENC), was recently bought out. EnergX submitted their application for the DOE-VPP in October 2007. After review by the Oak Ridge Operations Office (ORO) and the Office of Worker Safety and Health Assistance, the onsite review was scheduled.

The EnergX scope of work at TWPC includes processing supernate liquids from the Capacity Increase Project tanks, sludge from the Melton Valley Storage Tanks, and contact handled (CH) and remote handled (RH) solid waste from the Oak Ridge National Laboratory (ORNL). Samples of the supernate and sludge waste are analyzed and evaluated to ensure proper operational control during processing and characterization of the waste for transportation and disposal. Non-destructive analysis (NDA) and non-destructive examination (NDE) techniques are utilized for examination of the solid waste, generally characterized as CH, for operational and transportation/disposal characterization. Supernate liquids are evaporated, and the concentrated solution is further concentrated and solidified prior to packaging for disposal. Sludge is treated, as necessary, for stabilization of mercury, lead, cadmium, and chrome, and the resulting waste is de-watered for packaging in canisters for disposal. Solid waste is examined, treated, and repackaged, as necessary.

Recognition in the DOE-VPP requires an onsite review by the Office of Health, Safety and Security (HSS) DOE-VPP Team (VPP Team) to determine whether the applicant is performing at a level deserving DOE-VPP Star recognition. The VPP Team evaluated EnergX safety programs against the provisions of the DOE-VPP. During the site visit, the VPP Team observed activities, evaluated relevant safety documents and procedures, and conducted interviews to assess the strength and effectiveness of EnergX health and safety programs.

During the review, the VPP Team had contact (in the form of interviews, work observations, document reviews, and meetings) with approximately 70 employees from all levels of the organization. As a Category 2 Non-reactor Nuclear Facility, TWPC contains radiological, chemical, and industrial hazards. Although some chemical hazards exist from waste processing encapsulation activities, the majority of the potential chemical hazards are associated with waste sorting and characterization activities. Industrial hazards run the gamut from heavy equipment operations, hoisting and rigging, ergonomic hazards, elevated work, and electrical hazards. The radiological hazards run the full spectrum from low-level CH wastes to higher-level RH wastes and mixed wastes, and may be in the form of surface or airborne contamination. Activities observed during the review included glove box operations, operation of the Box Breakdown Area (BBA), maintenance and construction activities, radiological surveys, and daily plan-of-the-day meetings. The VPP Team also observed several committee meetings related to safety improvements.

II. INJURY INCIDENCE/LOST WORKDAYS CASE RATE

The VPP Team conducted a review of the Occupational Safety and Health Administration (OSHA) 300 logs. The table below summarizes the OSHA reportable data for EnergX and their subcontractors at the TWPC. EnergX does not separately track subcontractor performance statistics, but includes all injury and illness cases in their statistics.

Only one recordable case has occurred in the past three years, and that injury occurred to a construction subcontractor. In that case, the person received a cut from improperly handling concrete reinforcement wire that resulted in the doctor administering antibiotics and a prescription level of Ibuprofen (resulting in the case being recordable).

EnergX
INJURY INCIDENCE/LOST WORKDAYS CASE RATE

Injury Incidence/Lost Workdays Case Rate					
Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	DART* Cases	DART Case Rate
2005	148,829	0	0.00	0	0.00
2006	181,744	0	0.00	0	0.00
2007	297,341	1	0.67	0	0.00
Three Years	627,914	1	0.32	0	0.00
Bureau of Labor Statistics (BLS-2005) average for NAICS Code 562211 (Hazardous Waste Treatment and Disposal)			Total cases	3.9	Total cases 2.2

*Days Away, Restricted, or Transferred

Conclusions

TWPC has not had a lost time accident or injury since 2002. Consequently, the safety statistics for TWPC are far below the industry averages, and meet the DOE-VPP Star criteria.

III. MANAGEMENT LEADERSHIP

Management leadership is a key element in obtaining and sustaining an effective safety culture. The contractor must demonstrate senior-level management commitment to occupational safety and health in general, and to meeting the requirements of the DOE-VPP. Management systems for comprehensive planning must address health and safety requirements and initiatives. As with any other management system, authority and responsibility for employee health and safety must be integrated within the management system of the organization and must involve employees at all levels of the organization. Elements of the management system must include clearly communicated policies and goals, clear definition and appropriate assignment of responsibility and authority, adequate resources, and accountability for both managers and workers. Finally, managers must be visible, accessible, and credible to employees.

Senior managers at EnergX have clearly expressed their support for maintaining a safe work environment through policy statements, support for safety committees, provision of resources for safety awards and lunches, and their support for obtaining DOE-VPP Star status. The written safety policy is clearly posted throughout the plant site, and is also available to all employees on the website. The safety policy is continually reinforced verbally by managers, supervisors, and workers during the course of normal business. Additionally, safety and health performance is included as an element in the performance appraisal of managers and supervisors.

Managers collectively have vast experience dealing with complex nuclear, environmental, and worker safety issues from the Navy, Commercial Nuclear Industry, and the DOE.

In 2007, EnergX, in response to a rise in incidents that were not reportable, initiated a review of the collective significance of those events. The results of that review, published in the Collective Significance Report, were "that seemingly repetitive weaknesses in the recognition of work hazards exist at the TWPC." The EnergX Team "concluded that incidents described in TWPC incident investigation reports reveal behaviors involving weaknesses in the recognition of work hazards. The Team also concluded that the identified behaviors exist in work activities across the TWPC." Overall, the report represented a thorough, proactive approach to identifying undesired behaviors and actions to reduce or eliminate those behaviors. The report listed several recommended corrective actions that are being implemented. Based on the VPP Team's observations (discussed later), more time is needed for those corrective actions to mature and have the desired effect.

Due in part to the results of the Collective Significance Report, EnergX declared a half-day safety stand-down in January 2008. During that stand-down, workers were provided an opportunity to discuss in detail any of the events covered in the Collective Significance Report. At the end of the safety stand-down, workers were requested to complete a Safety Conscious Work Environment survey. That survey, while mostly positive, revealed some potential concerns of workers regarding retaliation for raising safety concerns. EnergX is working to eliminate any perception of retribution or retaliation for raising safety concerns, and to ensure that workers are not fearful of reporting any concerns.

Workers did not report any acts of retaliation or retribution during interviews with the VPP Team, but there were indications that some managers and supervisors may appear to minimize safety concerns in favor of meeting production deadlines and goals. This appearance may be driven by recent pressure from DOE to accelerate production at TWPC to meet goals agreed upon with the State of Tennessee. EnergX has a difficult challenge to balance its production goals with its commitment to safety.

The EnergX practice for conducting daily plan-of-the-day meetings was notable. Led from the operations control point, the meeting could be accessed by all employees through a call-in number. All workers at the site had the opportunity to hear what operations were expected for the day, and thus to be aware of any potential exposure hazards. Activities discussed during the meeting included waste handling and sorting, waste movements, ongoing reviews and assessments, other special activities, lessons learned from across the complex, and pertinent safety topics. The General Manager was present at the control point each day, and other senior managers were either present at the control point or attended through the call-in number. Each meeting was ended with an opportunity for anyone to ask questions or raise concerns.

Resources for TWPC operation are currently limited by a number of factors. However, there was no indication that resources for identified safety improvements were being restricted. The safety committees have identified and funded a number of improvements; management perceived the additional costs as an investment in future operations. EnergX has access to the necessary subject matter expertise, either on staff or through the ORO.

TWPC is expected to be returned to a green-field status eventually. Because of the temporary nature of TWPC operations, there are strong incentives to minimize construction of new buildings. Many personnel are located in temporary trailers, and office space is very limited. EnergX must be vigilant to ensure temporary offices are adequate for the mission, including electrical power requirements for office equipment and the ergonomic setup of work stations. Further, EnergX must ensure that temporary storage spaces and trailers are securely anchored and supported.

Opportunity for Improvement #1: EnergX should review the installation of all temporary storage and office spaces to ensure they adequately meet applicable commercial occupancy codes and standards.

As part of their safety program, EnergX has instituted three separate safety committees. Two of those committees (discussed later in Employee Involvement) are for workers. The third committee is the Executive Work Safe Council. This council is chaired by the General Manager, and consists of most of the senior management team. This council receives input from the two employee committees, and provides a forum to balance production and safety issues. However, safety committees do not include middle managers and the project control organization, which are critical in ensuring production and safety concerns are appropriately balanced at the working level. The Project Management organization and middle managers and supervisors need to be engaged and included in the safety committees. Without their visible participation and support, EnergX will have difficulty ensuring production and safety goals are appropriately balanced.

Needed Improvement to Reach Star Status #1: EnergX needs to include the Project Management organization and middle managers in one or more of the safety committees to ensure production and safety goals are appropriately balanced.

The Collective Significance Report identified the need to improve work planning and control processes. EnergX has a DOE-approved integrated safety management system (ISMS) description. The Safety Management System Description document defines the many parts of the ISMS. While EnergX has most of the elements of work planning and control in place in separate instructions, the system has not been clearly defined and integrated by an overall process or procedure. Consequently, the process used depends on individual perception of requirements. As discussed later in the Work Site Analysis and Hazard Prevention and Control Sections, there are some weaknesses in the activity hazard analysis (AHA) and integration of the controls into work orders or work instructions. EnergX has chartered a Work Planning Improvement Committee to address these weaknesses, and the corrective actions from that committee need to be implemented and brought to maturity.

Needed Improvement to Reach Star Status #2: EnergX needs to implement a systematic work control process that ensures clear expectations for work planning and control are set and consistently implemented.

Although managers clearly support employees raising safety issues or concerns, EnergX does not have a formal written process or employee concerns program. Due to the small size of the site and the workforce, the ORO has approved the company having an ombudsman rather than a full employee concerns program. Although in place for several years, not all employees were aware of the ombudsman or how to raise concerns. Approximately three months ago, EnergX appointed a new ombudsman who has made efforts to better advertise the program. That person is also working to establish a more formal employee concerns program. Once the program was advertised, three safety concerns were quickly raised, two of which are significant and reflect longstanding concerns. The new employee concerns program procedure was still in draft as of this evaluation, and did not provide a specified means of written input. Consequently, it does not appear that there has been an effective written employee concerns process in place for at least one year as required by the DOE-VPP on-site assessment criteria. The draft process needs to be finalized, approved, and effectively implemented and demonstrated.

Needed Improvement to Reach Star Status #3: EnergX needs to finalize and implement the draft employee concerns program, and ensure an element for written concerns is added to the process.

In January of 2008, the contract for operation of TWPC was officially transferred to EnergX as the prime contractor. As a result of that change, a large number of procedure revisions have been identified. EnergX has an interdisciplinary review (IDR) process that is intended to identify and track document revisons. As of this review, many of the procedures and policies requiring changes had not been entered into the IDR process. Effort is being made to get

changes issued, but a process to coordinate and prioritize those changes is lacking. Consequently, there is some frustration that changes may be taking too long to implement. Examples of procedures that need to be revised but had not been entered into the IDR process included the Occupational Medical Procedure and the employee concerns program. EnergX should implement a means to prioritize and track necessary document revisions, either by using the IDR process or another integrated means, and ensure all the necessary personnel are aware of their contributions and due dates.

Opportunity for Improvement #2: EnergX should implement an integrated tracking system to capture all identified document changes that provides priorities and due dates to all involved personnel.

EnergX managers did not charter a critical self-evaluation in connection with the DOE-VPP application process. EnergX initially made the decision to pursue VPP status in March 2007. At that time, they were a subcontractor to FWENC. Since then, there have been a number of changes. EnergX completed their application in October 2007, and submitted it to ORO. Without a critical self-assessment, EnergX missed some elements of the expectations for DOE-VPP Star status. Although EnergX has made very good progress, they need to demonstrate the sustained ability to conduct effective self-assessment against the tenets of VPP, and develop and implement an appropriate Safety Improvement Plan as a result of that assessment.

Needed Improvement to Reach Star Status #4: EnergX needs to perform an annual self-assessment using the tenets of VPP, and integrate the results of that assessment into a Safety Improvement Plan.

As a result of the contract change (from a privatization contract to a government owned contractor operated cost plus fee contract), there have been a number of DOE orders and regulations added to the requirements set for EnergX. One of the basic expectations of the DOE-VPP is compliance with all requirements. EnergX has not completed a baseline assessment of their compliance with the DOE requirements. There is a plan to conduct a broad range of subject matter assessments, but it will take some time for those assessments to be completed and deficiencies corrected. Further, to achieve DOE-VPP Star status, EnergX needs to first ensure full compliance and then shift the focus from demonstrating compliance with the requirement to demonstrating excellence. The shift from compliance to excellence is a key component to achieving DOE-VPP Star status.

As part of the process of shifting from compliance to excellence, EnergX has an opportunity to conduct a critical review of all their existing procedures to ensure the structure of procedures, instructions, and plans are well integrated and have clearly define expectations. The result will probably be not just a reduced number of procedures and instructions, but a more effective set of implementing procedures that are more readily used by personnel and lead to more efficient and safe mission accomplishment.

Finally, EnergX has demonstrated the ability to achieve and maintain zero accidents and injuries. TWPC has not experienced a lost-time injury since 2002, and has had only one recordable injury

since that time. The VPP Team repeatedly heard from workers that TWPC was the safest place they had ever worked. While this attitude is notable, it also presents a special challenge in getting people to identify improvements. Managers must find ways to encourage workers to continually question and challenge the status quo. Although resources may be tight in the current contract situation, workers must be encouraged to look for potential improvements.

Conclusions

EnergX managers have demonstrated leadership in their pursuit of DOE-VPP, and are encouraging workers to get involved. Growth of the organization and contract changes in the past year have resulted in systemic stresses that are being addressed. Improvements and changes made in the past year need time to mature and to demonstrate effectiveness. EnergX needs to demonstrate an effective self-assessment process using the tenets of VPP, and implement a Safety Improvement Plan based on that assessment. Finally, EnergX needs to ensure that middle managers and the Project Management organization are fully involved with the effort to achieve DOE-VPP Star status.

IV. EMPLOYEE INVOLVEMENT

Employees at all levels must continue to be involved in the structure and operation of the safety and health program and in decisions that affect employee health and safety. Employee participation is considered to be in addition to the individual right to notify appropriate managers of hazardous conditions and practices.

The VPP Team found that the workers at the TWPC are cooperative and ready to follow safety and health procedures and processes that are in place. The workers are passionate about work, their company, and their coworkers. They are mature, well seasoned, well qualified, and competent. Through informal interviews and field observations, the VPP Team verified several avenues in which the workforce at TWPC is involved. This involvement appeared to be stronger among the operators, radiological control technicians (RCTs), and maintenance workers.

TWPC has three safety committees, all of which were established approximately one year ago. Two of these committees were established to foster employee involvement. The first is the Office Administrative Committee, and the second is the Operations and Maintenance Committee. The third committee, the Executive Work Safe Council, is discussed in the Management Leadership Section. The Operations and Maintenance Committee is focused on the nuclear operations and maintenance, while the Office Administrative Committee focuses on the support staff. Committee membership is made up of volunteer employees from the main work groups (operations, RCTs, and maintenance). These committees are well known among the workforce and have proven to be a reliable avenue for the workers to get safety issues addressed. For example, the Operations and Maintenance Safety Committee was instrumental in the identification and purchase of a supplemental safety shoe that reduces the pain and fatigue experienced when standing or walking on hard surfaces for an extended period of time. Workers were very complimentary of these when working in the operating area of TWPC. The committees were also involved in the identification and installation of a crane in the BBA to reduce the ergonomic hazards of lifting heavy objects while wearing bubble-suits. The committee was also instrumental in the decision to pave a new parking lot rather than just use gravel.

Employees are beginning to take an active role in critiques and accident investigations. Although not yet included in the associated procedures, EnergX has clearly demonstrated the desire to have workers who experience, observe, or discover the incident more involved in analyzing events and identifying corrective actions to prevent recurrence. For example, during the assessment, there was an incident in which a forklift was damaged during an incorrect lift. EnergX conducted a critique that involved the workers, concentrated on identifying the facts rather than laying blame, and formed the basis for a subsequent investigation. The investigation was still ongoing when this assessment concluded, so the final results were not yet available.

Opportunity for Improvement #3: EnergX should formalize the involvement of workers in the accident investigation process and provide event investigation training for the workers.

Workers are involved in the development and renewal of procedures and can, at any time, make comments or suggestions regarding a needed change to a procedure or AHA. For complex or high-hazard procedures, employees are involved in developing, validating, and verifying the AHA and procedures, including job walkdowns. For example, the VPP Team observed the review of the RH waste procedure. This is a new process being developed for the handling of wastes that are greater than 200 mrem on contact. The processes for opening, sorting, and repackaging these wastes will involve special operations in a hot-cell using remote manipulators, video equipment, and other special tools. Workers have been involved by identifying process improvements, working to eliminate potential ergonomic stresses, redesigning equipment to facilitate future maintenance, and minimizing worker exposures.

TWPC has a procedure (T-CM-FW-P-IS-009/Rev.8) to perform weekly/monthly/quarterly inspections of all work spaces. This procedure includes a list of responsibilities for the Project Manager; Operations Manager; Environmental Safety, Health, and Quality Manager; and Health and Safety Officer to perform during these inspections. The procedure includes a checklist that workers use to perform the inspections. The VPP Team reviewed the results of the inspections conducted during the last year and compared results with conditions observed by the VPP Team during this assessment. The comparison indicates that not all workers are adequately involved in performing inspections, and that the inspections are not being used as an opportunity to identify and correct degraded conditions (such as housekeeping and minor maintenance requirements). Some inspections identified needed actions and indicated work orders had been submitted, but most did not. The identification of problems and work orders clearly depended on the specific individual performing the inspection. Further, the inspections are rotated with one person performing the inspections for an entire quarter before another person takes over.

Needed Improvement to Reach Star Status #5: EnergX needs to get more workers involved in regular inspections of work areas and raise their standard of acceptable conditions to ensure degraded conditions are aggressively identified and corrected.

At the beginning of each day and after lunch each day, a working lead conducts a turnover meeting. This meeting is used to describe plant status, work activities, identify any outside contractors that may be performing work in the plant, and disseminate a safety message to help get workers focused on the tasks and hazards at hand. This meeting is a forum for workers to discuss other abnormalities or changes within the plant that may cause a distraction to the normal workforce. This meeting is well attended by all workers and is held in the main control point. However, the VPP Team observed that in some cases, workers were not attentive, and others were creating distractions (entering and leaving the room, returning items to or removing items from the refrigerator, signing in at the access control station). These distractions were not prevented by the working lead, and may prevent other workers from getting the full benefit of the meeting.

Opportunity for Improvement #4: EnergX should ensure work turnover meetings are held without distractions, either by restricting access to the room or holding the meetings in another location, and reminding workers that other activities should not be conducted until the meeting is finished.

An essential element of employee involvement is the ability to report safety concerns in writing, and ensure the employee receives feedback on the status of the concern. As discussed in the Management Leadership Section, EnergX has some elements of an employee concerns program in place, but the process has not been formally implemented through a procedure, and does not include provisions for written concerns. (See Needed Improvement to Reach Star Status # 3.)

Two recurring observations were made by all workers contacted by the VPP Team. First, workers understood their right to stop work when they have questions or observe unsafe conditions. Second, workers almost universally expressed opinions that this (TWPC) is the safest place they have ever worked. These attitudes are healthy but, as previously discussed, may contribute to complacency and hinder needed process improvements. Workers should clearly understand that they not only have a right but a responsibility to stop work, including the work of other individuals as well as their own work, when they observe unsafe conditions or acts. Workers, even those who believe that TWPC is the safest place they have ever worked, need to be encouraged not to be satisfied but to be involved with making TWPC the safest place it can be. Observations by the VPP Team during this assessment clearly indicated that workers want to be safe, but may not always hold a universally high standard regarding safety. This is the same condition observed by EnergX in the Collective Significance Report previously discussed.

Conclusions

TWPC has a number of processes, procedures, and activities in place to enhance worker involvement and ownership of safety among the workforce. As indicated by the opportunities for improvement, maturity and rigor are needed to fully embrace the value added to the worker in maintaining an injury free work environment.

V. WORKSITE ANALYSIS

Management of health and safety programs must begin with a thorough understanding of all hazards that might be encountered during the course of work, and the ability to recognize and correct new hazards. There must be a systematic approach to identifying and analyzing all hazards encountered during the course of work, and the results of the analysis must be used in subsequent work planning efforts. Effective safety programs also integrate feedback from workers regarding additional hazards that are encountered, and include a system to ensure that new or newly recognized hazards are properly addressed. Successful worksite analysis also involves implementing preventive and/or mitigative measures during work planning to anticipate and minimize the impact of such hazards.

The safety envelope for nuclear activities at TWPC is defined by the documented safety analysis (DSA) for operation approved by DOE. The DSA provides comprehensive identification and evaluation of hazards, and a selected suite of controls that are intended to assure safe operation of the TWPC facility. DOE has issued a safety evaluation report approving facility operation. To maintain the integrity and applicability of the DSA, EnergX has an approved unreviewed safety question process that is rigorous and appropriately utilized. The facility is in the process of updating the DSA to incorporate new DOE guidance for TRU facilities.

As discussed in Section III of this report, EnergX has chartered a Work Planning Improvement Committee to address weaknesses. TWPC does not currently have a comprehensive work control process. Work control is managed through the corrective maintenance plan; however, the maintenance plan does not incorporate the elements of the five core functions, nor does it address requirements for configuration management and quality assurance. Procedures are in place to address those areas but the procedures are not well integrated through an overarching work control process. (See Needed Improvement to Reach Star Status #2.)

Due to the number of modifications to the facility and its components during the RH build-out, it is critical that the work control process be clearly defined and followed. For example, the VPP Team reviewed the lid extraction tool modification work package. Procedures were followed to develop the change package, perform the unreviewed safety question evaluation, and evaluate the change required. After observing the modification work to the lid extraction tool and reviewing the work package and engineering's supporting calculations, the VPP Team discovered that the A325 hex head bolts that were the basis for the shear force failure calculations were not the fasteners that were ultimately utilized in the modification. The final change (using half inch dowels to secure the brace plates) was incorporated in the new design change notification drawings, but the change of the fasteners to dowels from the hex head bolts was not communicated to the lead structural engineer for recalculation of the shear force. When this was identified to EnergX, the lead structural engineer reevaluated the design and determined that the change to the dowels resulted in a decrease in the shear capacity (120k psi to 97k psi tensile strength); however, this was still well within the safety limits. While the VPP Team's observations confirmed that Operations and Maintenance personnel were well supported by the Engineering and Safety Basis Groups, with frequent personnel interaction, the bulk of their process relied significantly on informal communication and individual craft or operator knowledge of "who do I need to call." As a result, the drawings were appropriately updated to

reflect the final modification changes, but due to the informal communication approach, the structural engineer, who was responsible for performing the failure mode calculations, was not involved.

Opportunity for Improvement #5: EnergX should review all final installed configurations for the RH process and ensure the final configuration matches the considerations and assumptions in the design calculations.

Separate from the DSA are hazards that are addressed by consensus standards or standard industrial hazards that are addressed by OSHA regulations. EnergX applies those standards and requirements through industrial safety and hygiene programs to meet the requirements contained therein. EnergX has performed extensive workplace monitoring for respiratory hazards, including a broad range of metals, as well as other potential chemicals of concern. All samples taken to date have either been below the detection limit or well below occupational exposure levels. EnergX has recently increased their monitoring for noise levels due to concerns identified by workers, supervisors, and safety personnel. Some additional hazardous noise sources were identified, and EnergX is working to either eliminate the noise hazard through redesign, or ensure the area is appropriately controlled as a hearing protection area.

The TWPC utilizes the AHA process to document the task-level evaluation of work hazards. The AHA may be prepared for a task-specific work evolution or for routine work. At TWPC, an AHA can be performed by a knowledgeable worker or group of workers. Once the AHA is documented and approved, the AHA is discussed in a pre-job briefing prior to commencement of work activities. The pre-job briefing engages the team of workers performing the tasks and solicits questions or comments that may impact their safety or facilitate task performance. TWPC follows the documented process and prepares the documentation in accordance with their procedure.

Workers, supervisors, and managers consistently considered the AHA as a work document. That is, the AHA is intended to be used by the worker during the conduct of work. Experience throughout DOE has consistently shown that AHAs, when properly detailed and documented, are usually not suitable as work documents. Conversely, AHAs that are designed to be used as work documents typically do not provide an effective hazard analyses because the information needed by a worker is more focused than the information needed for a hazard analysis. The objective of the integrated safety management process should be to ensure the results of the hazard analysis are a clearly defined control set for the analyzed hazards. Those controls should then be implemented through work procedures, work instructions, work orders, or worker training, as appropriate. As implemented, the EnergX AHA process does not capture the analysis that demonstrates identified controls are appropriate.

In 2006, the Office of Independent Oversight identified a finding that "the FWENC/TWPC AHA process does not contain a sufficient set of requirements and guidance to ensure that the appropriate hazards analysis is effectively and consistently applied to all activities and that corresponding controls are identified and implemented in accordance with **DOE Policy 450.4, *"Safety Management System Policy,"*** and **DOE Order 440.1, *"Worker Protection Management for DOE Federal and Contractor Employees."*** The VPP Team reviewed the

current AHA process and the corrective actions associated with that finding. EnergX considers the corrective actions complete. Based on observations of current AHA practices and reviews of existing AHAs at TWPC, EnergX corrective actions have not yet effectively addressed the previous finding.

Needed Improvement to Reach Star Status #6: EnergX needs to review and revise the corrective actions to address the previous findings identified by the Office of Independent Oversight. They need to ensure the AHA process is sufficiently detailed, adequately captures the analysis, and that identified controls are moved into work instructions and work orders.

Radiological hazards are addressed through the radiation work permit (RWPs) process. An RWP is required for all work inside radiologically controlled areas. This document describes current conditions; personal protective equipment (PPE); expected conditions, limits, and response actions if limits are exceeded. Permits may be generic or job specific. Workers entering areas addressed by generic or specific permits must read, understand, and sign the permit prior to entry into the controlled area.

As previously discussed in Section IV, EnergX has established requirements for periodic environment, health, and safety inspections of TWPC. These inspections have not been consistently used as an effective means of identifying and correcting potentially hazardous conditions. (See Needed Improvement to Reach Star Status #5.)

Issues that require formal corrective actions are entered into an issues tracking system for resolution. Other corrective actions may be entered into the maintenance system for repair or replacement.

EnergX tracks and trends events and performance indicators. Performance goals; environment, safety, and health initiatives; Safety Council suggestions; radiological exposure data; and training and qualifications are just a few of the areas tracked at TWPC. Integrated safety management performance is evaluated and trended on a monthly basis and is discussed monthly at the Executive Work Safe Council meeting. Trend results and analysis are reported monthly to DOE. TWPC utilizes a lessons learned program that communicates information garnered internally and externally to site personnel. Lessons learned may potentially reduce risk, improve efficiency, and enhance quality, safety, and cost effectiveness at TWPC. Previous assessments have been complimentary of the lessons learned process at TWPC, and that process remains effective.

Conclusions

EnergX has analyzed the major hazards associated with operation of TWPC. The elements of a systematic approach to hazard analysis at the activity level are in place, but EnergX needs to integrate those elements, and ensure the AHA process is adequately detailed to ensure resulting controls are appropriate and adequately understood by the workers. Actively engaging the workforce in the identification of hazards will contribute to improvements.

VI. HAZARD PREVENTION AND CONTROL

Once hazards have been identified and analyzed, they must be eliminated (by substitution or changing work methods) or addressed by the implementation of effective controls (engineered controls, administrative controls, and/or PPE). Equipment maintenance, PPE, processes to ensure compliance with requirements, and emergency preparedness must also be implemented where necessary. Safety rules and work procedures must be developed, communicated, and understood by supervisors and employees, and followed by everyone in the workplace, to prevent mishaps or control their frequency and/or severity.

TWPC uses engineering controls as the primary method to limit employee exposure to hazards. The Process Building utilizes a negative pressure HEPA filtered ventilation system for containment areas. The RH hot cell is designed to minimize contact with high radiation waste through remote handling. The BBA utilizes high ventilation flow rates, airlocks, local ventilation trunks, and other contamination control measures. In addition, temporary engineering controls in the BBA have been implemented; such as lining walls and floors with disposable coverings to minimize decontamination efforts. For those situations where engineering controls are ineffective for eliminating or controlling the hazard, requirements for PPE are established.

EnergX provides PPE as required for the job being performed. Some examples include: safety boots; arc-flash and electrical protective clothing; respirators, hearing protection; face shields; safety eye wear; hard hats; and gloves. Evaluation and approval of PPE with input from workers for non-radiological hazards is determined by the Health and Safety Manager, and for radiological hazards, by the Radiological Control Manager.

Employees are trained in the proper use, maintenance, and limitations of PPE during General Employee Training (GET) and Radiological Worker II Training. The PPE requirements for a specific task are documented in the RWPs or the AHA. Prior to issuing respiratory protection to an individual, the respiratory protection procedure (CM-P-IS-027/Rev. 2) requires the issuer of PPE to verify medical evaluation date, respiratory protection training, and fit test date prior to issuing PPE. The Training Group provides a weekly report to enable the issuer to confirm this information. The report does not include the size of respirator the user has been fit tested and approved to use. As a result, the issuer of PPE is required to issue respirator masks based on the individual's recollection.

Opportunity for Improvement #6: The Training Group should update their weekly report to include the size of the respirator the individual is qualified to use.

EnergX has made some changes to optimize the use of PPE and incorporate worker comfort. Some examples include the following.

- For some tasks, workers in highly contaminated radiological areas are required to wear supplied air bubble suits as described in the RWP. EnergX worked with the supplying vendor to ensure that the suits had extra reinforcements at stress points and additional exhaust vents for breathability and worker comfort.

- The use of cut resistance gloves is required in the processing of the CH waste. EnergX has devoted substantial attention to evaluating many forms of cut resistant gloves. Recently, contact was made with a French firm who were identified as the sole supplier of a proven and tested cut resistant glove for use with glove boxes. This evaluation was the direct result of employee feedback and optimal use of PPE.

- Workers in containment are subject to heat stress and EnergX has made ample use of cool vests to mitigate this hazard. In addition, workers are required to weigh in and weigh out so loss of fluids can be monitored. EnergX also uses worker rotation to minimize each individual's exposure to heat stress.

EnergX operates TWPC to process, ship, and dispose of DOE's TRU waste inventory stored at the Oak Ridge Complex. Compliant with 10 CFR 835, EnergX has implemented a comprehensive radiation protection program. It also requires operating TWPC in accordance with as low as reasonably achievable (ALARA) and ISMS principles. As previously discussed, RWPs are the means used to communicate radiological controls to the workers. Access to the operating portion of the facility is controlled by logging onto the RWP database using electronic dosimeters. The RWP database sets the dose and dose rate alarm on the electronic dosimeter specific to each RWP, task, and allowable worker exposure. The use of the RWP database coupled with comprehensive use of electronic dosimeters allows external dose to be reviewed promptly and investigations of anomalous results initiated in an expeditious manner.

RCTs identify and measure radiological hazards at TWPC. RCTs perform periodic, routine radiological surveys in radiological areas to ensure that radiation dose rates and surface contamination are within regulatory and administrative limits. Routine surveys are also used to identify changes in radiological conditions. As required by the applicable RWP, RCTs provide initial, intermittent, or continuous coverage of work. This coverage consists of dose rate and contamination measurements, and air sampling for radioactive particulates. For entry into Contamination Areas, High Contamination Areas, High Radiation Areas, Very High Radiation Areas, and Airborne Radioactivity Areas, personnel are required to complete Radiological Worker II Training and be entered into TWPC's internal dosimetry program.

Continuous airborne monitors (CAMs) and area radiation monitors (ARMs) are located strategically in normally-occupied radiological areas. CAMs and ARMs have local read out and alarm capability and are linked digitally for remote readout and alarm at the Control Point in the Personnel Building. Area radiation monitors are installed in areas of the TWPC with potentially changing dose rates to warn personnel of increases in radiation dose rates. CAMs are located in areas with the potential for airborne radioactivity to promptly warn personnel to leave areas with airborne radioactivity and minimize internal exposure.

In addition to the DSA, EnergX maintains a considerable number of procedures and plans in order to define and describe work activities and roles and responsibilities. Most of the procedures reviewed were appropriate and met DOE expectations. However, based on VPP Team observations and facility walkdowns, several issues were observed that resulted in a more detailed review of the facility's lockout/tagout (LOTO) process. Several recommendations for

improving the LOTO program were made as a result of the review of the EnergX LOTO procedure and its application throughout the facility.

EnergX uses an extensive suite of procedures to conduct the waste handling and sorting processes. In addition to the procedures, they employ timely orders to operators (TOO) "to provide Operations Management a method to communicate, in writing, short-term information and administrative instructions to Operations and Maintenance personnel in a timely fashion." EnergX has a procedure to approve and control TOO that establishes five criteria that each order must meet. Those criteria are:

- TOO are clearly written, dated, and maintained in an accessible location;
- TOO are issued by the Operations Manager or designee, to communicate pertinent and relevant information to personnel;
- TOO have defined termination or cancellation dates;
- Appropriate personnel periodically review TOO and document their review; and
- TOO that are no longer applicable or are outdated are removed or cancelled.

The procedure further establishes that as a general rule, orders in effect for an extensive period of time should be incorporated into a procedure or company policy. The approved orders are kept in a notebook at the control point, and are required to be reviewed each shift by appropriate personnel, including the Waste Operations Leads and Waste Operators.

The VPP Team reviewed the current set of TOO and determined that the use of TOO is not following the established company policy. Many of the orders in the book have been in effect for over a year without being incorporated into procedures or company policies. Many of the orders do not have defined termination or cancellation dates. The result is that the TOO may in some cases be used instead of more systematic processes to revise existing procedures or issue new procedures.

Needed Improvement to Reach Star Status #7: EnergX should review the existing Timely Orders to Operators against the company policy, and ensure the orders are appropriately removed, incorporated into existing procedures or policies, and that remaining orders have clearly established expiration dates.

Opportunity for Improvement #7: EnergX should establish a maximum time period that Timely Order to Operators may be in effect until it expires (e.g., 6 months) and must be reviewed for continued applicability. EnergX should further establish a maximum number of times a TOO may be renewed (e.g., no more than twice).

Current EnergX practice is to utilize LOTO locks and tags for Operations to maintain configuration control over non-energized systems (i.e., sludge line system isolation). **DOE Order 5480.19, *"Conduct of Operations Requirements for Doe Facilities,"*** and EnergX LOTO procedure specify that the purpose and use of LOTO locks and tags is for isolating energized

systems. As in the case of the sludge line isolation and others, Operations should use the administrative LOTO section of their procedure for Operations configuration management activities.

Opportunity for Improvement #8: EnergX should ensure that lockout/tagout s installed for the purpose of configuration control by Operations for non-energized systems utilize the Administrative lockout/tagout requirements or develop a process specific to that purpose. Further, the lockout/tagout procedure should be updated to ensure all administrative lockout/tagout s utilized for the purpose of configuration control are routinely inspected during operator routine surveillance to ensure positive control of those isolations are maintained. Finally, an alternative tag for administrative use should be identified and

In one case, a set of LOTOs were identified dating back to November 28, 2003. Initial inquiries revealed that no one in Operations or Maintenance was aware why the LOTOs were still in place. The review of the LOTO permit revealed that the locks were initially required because a skylight was leaking and allowing water to leak into the main building ventilation enclosure and come in contact with one of the four heaters in the enclosure. A work order was identified that indicated the skylight was repaired (10/28/03); however, the LOTO was never removed and the system never returned to service. In addition, the repair was completed prior to the LOTO permit being initiated to install the locks.

Opportunity for Improvement #9: EnergX should perform an investigation into the current status of the lockout/tagout Permit Number 03-191, MBV-HTR-480v Electrical Panel to determine the purpose for the lockout/tagout and determine if corrective maintenance is required to rectify the equipment status.

An essential element of the maintenance program for DOE nonreactor nuclear facilities is the Maintenance Implementation Plan (MIP). This document describes how the contractor implements the DOE expectations for maintenance of nuclear facilities, and is required to be submitted and approved by DOE. EnergX developed and completed their MIP and submitted it to ORO for approval in 2007. To date, the MIP has not been approved by ORO.

TWPC utilizes escorts for visitors at the site. Visitors may be subcontractors, members of the DOE community, State environmental inspectors, or foreign nationals that have a vested interest in project progress or capabilities. Currently, the expectations for escorting visitors are contained in GET. The expectation of the escort is to ensure the visitor's safety, describe emergency response requirements and actions, and identify areas where the visitor is prohibited from entering. The specific details of how to perform escort duties are left to the individual escort. Consequently, during the inspection, the VPP Team observed some escort practices that might not meet EnergX expectations. In one case, the escort did not maintain visual contact with the visitor when the escort moved behind a wall in the RH hot cell. EnergX does not have a specific requirement in a procedure or policy that requires escorts to maintain line-of-site contact, although this is a common expectation at other DOE sites. Given the nature of the hazard at TWPC, it may not be essential to maintain constant visual contact with a visitor, but the expectations should be clearly specified.

Opportunity for Improvement #10: EnergX should document escort duties in a procedure or policy to provide a more consistent approach in areas of span of control, line-of-sight requirements, and types of visitors and their individual requirements.

Occupational medical services for EnergX were previously provided by Concentra Medical Center. Last year, Concentra was replaced as the medical provider by Methodist Medical Center (MMC) Healthworks. All the existing records were transferred from Concentra to MMC Healthworks. EnergX had a draft procedure (**CM-A-OM-001, *"Occupational Medicine Services Program"***) that was not approved before the change in providers. That procedure has not yet been revised and approved to reflect the new provider.

EnergX uses respirator qualification as the basis for determining who receives annual physical examinations, but the physical is not limited to a respiratory-use physical. EnergX has new forms from MMC Healthworks which are provided to workers in advance of medical checkups. Those forms include detailed medical and occupational history forms, screenings for hearing protection, respirator use, chemical exposures, and other data the examining physician may find relevant.

During the evaluation, EnergX had its initial face-to-face meeting with the Medical Director and the Business Development Manager from MMC Healthworks. That meeting had been scheduled and rescheduled several times since the new contract was put in place, primarily due to the Medical Director's schedule. That meeting provided EnergX an opportunity to better explain operations at TWPC, as well as highlight any special medical concerns. EnergX initially intended to provide a tour of the operating facility for the Medical Director, but the group decided to reschedule the tour due to inclement weather. The Business Development Manager was already familiar with TWPC and EnergX, having served in that role with Concentra.

At the meeting, the MMC Healthworks Medical Director indicated that any abnormalities on the physical examination that would require work restrictions would be reported to both the employee and EnergX. Abnormalities that would not directly indicate a potential work restriction would only be reported to the employee with a recommendation that they follow up with their regular physician.

EnergX provides regular first aid and Cardiopulmonary Resuscitation (CPR) training classes on a voluntary basis, and the classes are well attended. EnergX has approximately 80 personnel that have had either first aid or CPR training, or both. Additionally, EnergX maintains several Automatic External Defibrillators around the site. While training is recommended for their use, it is not required, as the machine is designed to be used without training. Emergency medical services are provided, if necessary, by ORNL.

Site emergency preparedness activities are the primary driver for alarm testing and emergency drills. Site-wide alarm tests are conducted regularly, and each site area typically has two drills each year. Drills may include evacuation, take-cover, or personal injury scenarios. EnergX is scheduled to have an emergency management program inspection by the Office of Health Safety

and Security in May 2008. EnergX will need to address any findings raised during that inspection as part of their process to achieve DOE-VPP Star status.

EnergX maintains a number of individuals with professional certifications who are located at the site and perform a wide variety of functions throughout the project. The professional certifications include a certified safety professional, certified industrial hygienist, and certified health physicists. These onsite professionals work to review and implement a comprehensive safety and health program for the TWPC operations, maintenance, and construction activities.

The engineering and project management functions have professional engineers on staff and are responsible for all new design/installations, renovations to existing facilities, and preventive maintenance projects.

EnergX uses a graded approach to assure that the resources expended for maintenance are commensurate with the Facility's programmatic requirements for safety significant structures, systems, and components. The level of rigor applied to safety significant structures, systems, and components is greater than that applied to other Facility equipment.

Maintenance and inspection programs are implemented to maximize reliability during the life of the Facility. Scheduled maintenance is defined in maintenance procedures or work instructions. Drawings are used to determine how to isolate the component to ensure the safety of the worker and prevent equipment damage during maintenance activities. ALARA evaluations and appropriate engineering reviews are incorporated, as deemed appropriate by the Maintenance Supervisor or Operations Manager, into the procedures and instructions.

Before performing system maintenance, an AHA is used to determine the hazards presented by the work and the specific subsystem or component to ensure safety issues are identified and addressed. Hazardous sources will be isolated, and the system will be flushed, depressurized, drained, or blown down before breaching hazardous or radioactive system piping. Power sources are isolated before working on or near unguarded rotating equipment or before performing electrical work, except for testing which may require the equipment to be energized.

The two types of maintenance are preventive (PvM) and corrective (CM). TWPC uses an industry standard Maintenance Management software system, MP2, to schedule, track, and control PvM and CM equipment.

The PvM program consists of routine tasks that are performed to prevent equipment failure. The scheduling and frequency of these tasks are based on contract and regulatory requirements, manufacturers' recommendations, equipment performance specifications, systematic analysis through predictive maintenance, ALARA considerations, and engineering recommendations. The program can be revised as history and trends indicate. The purpose of PvM is to eliminate or minimize unplanned failure. Costs associated with PvM are offset by improved equipment reliability and availability and by reduced CM.

CM consists of those actions performed to restore failed or malfunctioning equipment to service per the current design. CM activities ensure that the condition that caused the failure is

identified, corrected, and documented. Analysis is performed, as needed, to determine the cause of failure and the corrective action to be taken, including feedback into the PvM programs, and maintenance training and qualification programs. The establishment of priorities for CM is based on TWPC mission and the relative importance of the equipment.

TWPC personnel are required to follow all safety and health rules, safe work practices, and procedures that are provided in GET, the handbook, Worker Health and Safety Program, work instructions, AHAs, procedures, manuals, and plans applicable to their workplace. The VPP Team observed that safety rules were periodically reinforced through daily turnover meetings, pre-job briefings, monthly all hands safety luncheons, and training.

Conclusions

EnergX maintains an appropriate balance of elimination, engineered controls, administrative controls, and PPE to control worker exposure to hazards associated with facility operation. Processes to maintain equipment are in place and effective. Safety rules and work procedures are developed, communicated, and understood by supervisors and employees, and generally followed by everyone in the workplace. EnergX needs to ensure the systems and processes used to implement and communicate controls to the worker are institutionalized and remain in place.

VII. SAFETY AND HEALTH TRAINING

Training is necessary to implement management's commitment to prevent exposure to hazards. Managers, supervisors, and employees must know and understand the policies, rules, and procedures established to prevent exposure to hazards. Managers, supervisors, and employees must understand their safety and health responsibilities and know how to effectively carry them out.

EnergX maintains a comprehensive training program that addresses facility operations, including health, safety, and environmental matters. The training program ensures personnel are trained to perform their job functions safely, competently, and effectively while protecting themselves, the public, and the environment.

The training program includes initial and continuing training components. Initial training is designed to provide personnel with the knowledge and skills to perform their respective job functions. Continuing training is designed to maintain or improve job proficiency. Continuing training may include retraining on complex or infrequently performed tasks or refresher training on safety and regulatory topics, and is a method for personnel to stay current.

Employees receive training in a formal fashion such as classroom delivery and also informally through avenues such as email, periodic flyers, or required reading. The curriculum varies depending on work assignment or function. The general population of the workforce receives the same safety training (i.e., fall protection, respirator, electrical safety, and respiratory protection). Each job classification has adequate specialized health and safety training, as well as job specific training required to perform their specific duties safely and efficiently. During the development of training, subject matter experts are used to ensure technical and safety aspects are accurate. During interviews and field observations at TWPC, workers (operators, RCTs, and maintenance) clearly demonstrated they have the training and skills to perform their work safely following approved work packages and procedures.

A significant portion of workers' training is devoted to ensuring compliance with the provisions of 29 CFR 1910.120. EnergX has prepared a matrix that demonstrates compliance with the provisions of the regulations, and all workers that may be exposed to hazardous wastes are appropriately trained.

EnergX uses a computerized system to track individual training requirements. This system is linked to the computer system used to assign job roles on a daily basis. If a worker's training requirements for the role assignment have expired, he or she cannot be assigned to that role. The system notifies supervisors in advance of expiring training, and allows the worker and supervisor to schedule the necessary training in a timely manner.

EnergX has made extensive use of mock-ups to train workers in waste handling and sorting processes. This practice allows workers to develop proficiency in glovebox operations without the associated contamination risk and has also provided EnergX with information that has been used to make some process and safety improvements.

Subcontractors visiting the site are required to either complete GET or be escorted. All personnel who will be on site for two weeks or longer are required to complete GET. The VPP Team observed several cases during this assessment where subcontractor qualifications were verified prior to allowing the subcontractor access to the site.

EnergX relies heavily on required reading and computer-based training for many aspects, such as procedure revisions and GET. While these methods give the worker access to the information, they do not always effectively ensure the information is retained by the worker. Some cases were identified by the VPP Team where workers were not clearly cognizant of procedure changes, even though the workers had signed off on the required reading.

Opportunity for Improvement #11: EnergX should evaluate their use of required reading as the primary means of training workers on procedure changes, and ensure that for major revisions to procedures, required reading is not the only training workers receive.

Supervisors and Managers receive the same safety and health training that the workers receive. In addition, they are trained on leadership, maintaining a drug free workplace, and addressing employee concerns.

Conclusions

Workers at TWPC are adequately trained to recognize the hazards associated with their work and implement the associated controls. Workers understand how to implement management's commitment to prevent exposure to hazards. Managers, supervisors, and employees know and understand the policies, rules, and procedures established to prevent exposure to hazards. Managers, supervisors, and employees clearly understand their safety and health responsibilities and know how to effectively carry them out.

VIII. CONCLUSIONS

TWPC is a comparatively new facility. EnergX has operated the facility for several years, initially as a subcontractor to FWENC, and now as a prime contractor to DOE. As such, they have an experienced workforce that understands the facility and its hazards. Since becoming a prime contractor, EnergX has been required to comply with a larger set of DOE requirements related to the safe operation of the facility. That has resulted in significant growth of the company, with the workforce growing from approximately 50-75 people three years ago to the current complement of approximately 170 workers. This growth has challenged the previously effective informal management and communication systems. EnergX has self-identified some improvements and put those in place, but the improvements have not yet had sufficient time to mature. Additionally, because of an otherwise stellar safety record of six years without a lost time injury, and only one recordable injury in that time, EnergX did not perform a self-evaluation against the tenets of the DOE-VPP. Consequently, EnergX has not yet established the culture of excellence and continuous improvement expected of a DOE-VPP Star participant. They have made excellent progress toward that goal in the 12 months since identifying the desire to pursue DOE-VPP Star status, but have not yet reached that level. The VPP Team recommends that EnergX at the TWPC be admitted to the DOE-VPP as a participant at the Merit level.

In accordance with the DOE-VPP documents, the VPP Team must identify the actions the applicant needs to complete in order to achieve Star status. Those items identified as “Needed Improvement to Reach Star Status” are those items the VPP Team believes need to be implemented for EnergX to achieve DOE-VPP Star status. As such, DOE will provide whatever assistance can be offered to help with necessary improvements to achieve Star status, and will reevaluate EnergX’s progress in 12 months.

Appendix A

Onsite VPP Audit Team Roster

Management

Glenn S. Podonsky, *Chief Health, Safety and Security Officer*
Michael A. Kilpatrick, *Deputy Director for Operations, Office of Health, Safety and Security*
Patricia R. Worthington, *Director, Office of Worker Health and Safety*
Bradley K. Davy, *Director, Office of Worker Safety and Health Assistance*

Quality Review Board

Michael Kilpatrick	Patricia Worthington
Dean Hickman	Robert Nelson

Review Team

Name	**Affiliation/ Phone**	**Project/Review element**
Bradley Davy	DOE/HSS 301-903- 2473	Team Lead Management Leadership, Employee Involvement, Safety and Health Training
Mike Gilroy	DOE/HSS 301-903-5326	Hazard Prevention and Control, Worksite Analysis
John Locklair	DOE/HSS 301-903-7660	Worksite Analysis, Hazard Prevention and Control
Elizabeth Norton	CH2M Hill Hanford Group Elizabeth_A_Norton@RL.gov	Employee Involvement, Safety and Health Training