DOE/EH- 0710

IDAHO NATIONAL LABORATORY

Battelle Energy Alliance, LLC

Report from the Department of Energy
Voluntary Protection Program
On-site Review
May 8-12, 2006

U.S. DEPARTMENT OF ENERGY
Assistant Secretary for Environment, Safety and Health
Office of Corporate Performance Assessment
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"...Some of us will serve in government for a season; others will spend an entire career here. But all of us should dedicate ourselves to great goals: We are not here to mark time, but to make progress, to achieve results, and to leave a record of excellence."

? George W. Bush
President of the United States
October 15, 2001
Constitution Hall, Washington, DC

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

AED Automated External Defibrillator

ALARA As Low As Reasonably Achievable

ANSI American National Standards Institute

BBS Behavioral Based Safety

BEA Battelle Energy Alliance

BLS Bureau of Labor Statistics

CFA Central Facilities Area

CHAMPS Computerized History and Maintenance Planning Software

CPR Cardiopulmonary Resuscitation

DART Days Away, Restricted, or Transferred

DO IT Define, Observe, Intervene, Test program

DOE U.S. Department of Energy

DOE-ID Department of Energy-Idaho Operations Office

DOE-VPP U.S. Department of Energy Voluntary Protection Program

EBR Experimental Breeder Reactor

EMR Employee Modification Rate

EH Office of Environment, Safety and Health

ES&H Environment, Safety, and Health

ESH&Q Environment, Safety, Health and Quality

EST Employee Safety Team

ICARE Issues Communication and Resolution Environment

INL Idaho National Laboratory

INPO Institute of Nuclear Power Operators

INTEC Idaho Nuclear Technology and Engineering

ISO International Standards Organization

ISMS Integrated Safety Management System

JHA Job Hazard Analysis

JTA Job Task Analysis

LEST Laboratory Employee Safety Team

MFC Materials and Fuels Complex

MSDS Material Safety Data Sheet

NAICS North American Industry Classification System

OSHA U.S. Department of Labor's Occupational Safety and Health Administration

PAPC President's Accident Prevention Council

PBF Power Burst Facility

PCS Project Control System

PEMP Performance Evaluation and Measurement Plan

PIR Potential Issue Report

POD Plan-Of-the-Day

PPE Personal Protective Equipment

RTC Reactor Technology Complex

R&D Research and Development

RWMC Radioactive Waste Management Complex

SOAR Safety Observations Achieve Results program

S&H Safety and Health

SIP Safety Improvement Plan

SWE Safe Work Environment

TAN Test Area North

TRA Test Reactor Area

VPP Voluntary Protection Program

WCB Willow Creek Building

EXECUTIVE SUMMARY

The Department of Energy Voluntary Protection Program (DOE-VPP) onsite review of Battelle Energy Alliance (BEA) the prime contractor of the Idaho National Laboratory (INL) was conducted during the week of May 7-12, 2006. In February, 2005, Battelle Energy Alliance (BEA) was selected to operate the Idaho National Laboratory (INL). BEA is led by Battelle Memorial Institute and the organization includes BWX Technologies, Inc., Washington Group International, the Electric Power Research Institute, and an alliance of university collaborators. The alliance of university collaborators or the consortium is be led by the Massachusetts Institute of Technology and includes the University of New Mexico, North Carolina State University, Ohio State University, and Oregon State University as well as regional collaboration with Boise State University, Idaho State University, and the University of Idaho.

Management Leadership

The DOE-VPP Onsite Review Team (Team) found strong evidence of safety and health (S&H) commitment from all levels of management. The Team noted that management demonstrated a very strong commitment to employee S&H and they held themselves both responsible and accountable for S&H in the workplace. All managers, supervisors and employees are evaluated as to their performance in the safety and health area. Top-level management is visible and actively participates in the S&H program.

The BEA-INL VPP has adapted an infrastructure that best accommodates this laboratory. They have a series of organizationally and geographic entities that are each represented by Employee Safety Teams (EST). Each area is coordinated by its own EST and then the entire laboratory is coordinated by the VPP Program office and the Laboratory Employee Safety Team (LEST). Each of the ESTs are chaired by an elected employee and each area has a VPP management champion (usually a member of the Leadership Management Team) that interacts with each area and team. The LEST is co-chaired by an elected individual contributor and the Laboratory Director. Working level integration among all these activities across the INL is sustained by each worker population. The Team found weaknesses neither between the variety of operating EST's nor among their VPP, Integrated Safety Management System (ISMS), and Behavior Based Safety (BBS) operating interfaces. In fact, the Team noted that their effective transformation of the old Argonne West operation into the new BEA VPP was facilitated by this arrangement.

Employee Involvement

The Team found that employees are actively involved in S&H in the workplace. Employee involvement not only occurs through their participation in the safety meetings and training activities, but also through the safety inspection processes, the worker observation program and in periodic self-assessments. Employees openly stated that they not only felt responsible for their own safety, but also for their peers' safety. The Team found during the interviews that employees usually spoke in terms "our" efforts when referring to their peers and management. This clearly demonstrates a strong sense of ownership and pride in S&H by the employees. The Team observed that a strong safety "culture" has developed at this site. Notably, employees are not only involved in hazard recognition, job hazard analyses, but also in hazard resolution. In particular, the Team noted the success of the employees at the Materials and Fuels Complex

(MFC) which was formerly the Argonne-West facility. The EST has instituted a dynamic implementation of VPP and is openly aiming at becoming the best VPP facility at INL.

In addition, the Team noted that the BEA-INL employees have developed a series of programs and activities to ensure continuous awareness among its workers. These include; DO IT, STAR, and the newest form of BBS called SOAR, which is the next phase of the site's previous Worker Applied Safety Process (WASP).

Worksite Analyses

Various forms of self-inspections are conducted at this site. Job hazard analyses are thorough and extensively utilized. Employees are not only encouraged to report any unsafe conditions, but are expected to report and correct the situation(s), if safe to do so. Accident investigation processes involve employees and result in an analysis to determine the root cause. Identified hazards are immediately addressed with appropriate corrective actions are being taken in a timely manner. The site has conducted multiple, comprehensive surveys covering this site. The site also conducts numerous inspections of all units and areas throughout the entire worksite.

Hazard Prevention and Control

BEA has a full complement of safety and health professional staff. Safety and health rules have been clearly laid out for all employees and managers. The site employs a standard hierarchy of control for the prevention and mitigation of hazards in the work environment consisting of engineering controls, administrative controls, and personal protective equipment (PPE). The PPE program is an in depth program that is well integrated into the operations control, safety and health oversight and training portions of the site's programs. BEA has implemented a comprehensive preventive maintenance (PM) program that uses a combination of preventive, predictive, and corrective maintenance to enhance the availability, operability, and reliability of plant structures, systems and components. The site has mature, well functioning emergency preparedness, radiation protection and medical programs.

The Team found that in 2006, BEA-INL addressed the winter weather as the most significant facility work place hazard. Management, guided by the LEST/EST instituted new procedures and made changes to their walkways, roads and parking lots to reduce the potential for trips, slips and falls during the winter months. The unpredictability of daily snow and ice conditions has necessitated a facility-wide effort to address daily safety during Idaho's most difficult weather months.

Safety and Health Training

The Team noted from employee interviews and document reviews that employees at most levels knew how to identify and protect themselves and others from hazards associated with their jobs. As was noted on several occasions during the interviews, the training provided to employees has made them more conscious of health and safety issues not only in their work environment, but also in their everyday lives away from the site.

Management clearly supports the S&H training programs as evidenced by employee interviews, funding levels, documentation review, accreditation and nationally recognized awards. In

addition, interviews with personnel, who conduct safety and health inspections and self-assessments, confirm that they were provided in-depth hazard recognition training.

It was noted, however, that programs and some projects have a vulnerability that the operations side did not demonstrate. New conditions and/or a gradual increase or "creep" in the scope of work creates an environment where personnel competence and requisite training and qualifications may become out-of-date. Managers need to be clear on their responsibilities when a changed condition exists and need reinforcement on the processes they should use to identify the appropriate personnel training and qualification for the amended program.

Program Strengths, Best Practices and Areas for Improvement

This report is organized to present an evaluation of the applicant's performance against each of the five major tenets of the DOE-VPP. Accordingly, readers will find detailed discussions of Management Leadership, Employee Involvement, Worksite Analysis, Hazard Prevention and Control, and Safety and Health Training in the body of this report. At the conclusion of each discussion of a major tenet, the Team has included information concerning the strengths noted for that program area, any best practices identified for that tenet, and identification of those areas where the Team felt improvement could be made.

Those items identified as "best practices" are a subset of the identified program "strengths." They are separately categorized to identify them as programs, practices or procedures which could be easily transferred and used by other organizations to enhance their safety and health effort. Readers desiring this level of detail are encouraged to examine this report in its entirety.

Conclusion

The Team concludes that the applicant has met and/or exceeded each of the five DOE-VPP tenets. Accordingly, the technical opinion of the on-site review team as documented in this report will be presented to senior management for their consideration.

I. INTRODUCTION

The DOE-VPP onsite review of the BEA-INL was conducted during May 7-12, 2006, in Idaho Falls, ID. The operating contractor for DOE is Battelle Energy Alliance, LLC (BEA). BEA-INL has approximately 3500 full-time employees and is charged with the stewardship of the Idaho National Laboratory (INL). INL is the primary DOE research facility for the study and investigation of nuclear disciplines.

The INL VPP application was submitted to the Department of Energy (DOE) Idaho Operations Office for concurrence and approval prior to being submitted to the Office of Environment, Safety and Health (EH) for final review. Accordingly, this application has been reviewed and approved by the Idaho Operations Office (ID) and this onsite review was conducted with the knowledge and concurrence of ID.

The Team evaluated the safety programs of BEA-INL against the requirements of the DOE-VPP. The DOE-VPP onsite review team (Team) consisted of safety professionals from DOE Headquarters, the Hanford site near Richland, WA, the Strategic Petroleum Reserve, and observers from the Department of Defense, VPP Center of Excellence and the Department of Transportation, Federal Railroad Administration. (See Appendix A for a roster of the Team members). During the site visit the Team evaluated relevant safety documents, observed the workspaces and conditions, conducted interviews, and toured the facilities to evaluate and verify the information submitted in this VPP application. The Team interviewed approximately 250 INL staff members.

Prior to the onsite portion of this process, the team conducted their customary review of other sources of safety and health information and data relative to the applicant. An outline of some of the information and data reviewed is provided in Appendix B of this document.

Physical Site

In operation since 1949, the INL is a government reservation located in the southeastern Idaho desert covering 890 square miles or an area roughly the size of Rhode Island. It was established as the National Reactor Testing Station and for many years was the site of the largest concentration of nuclear reactors in the world. Fifty-two nuclear reactors were built at INL. At the end of the Cold War, waste treatment and cleanup of previously contaminated sites became a priority. Today, the INL is a science-based, applied engineering national laboratory dedicated to meeting the Nation's environmental, energy, nuclear technology, and national security needs.

The INL consists of many facilities situated both on the expansive high-desert site located approximately 30 miles from the city of Idaho Falls as well as laboratories and administrative offices in the city. About 30 percent of the INL's employees work in administrative, scientific support, and non-nuclear laboratory programs and have offices in the city of Idaho Falls. The primary INL facilities on the desert site managed by BEA are the Materials and Fuels Complex (MFC) and the Reactor Technology Complex (RTC). BEA also manages the site services and administrative support function located at the Central Facilities Area (CFA) on the desert site, and manages the Specific Manufacturing Capability (SMC) facility, whose customer is the U.S. Army.

Organization

In February 2005, Battelle Energy Alliance (BEA) was selected to operate the Idaho National Laboratory (INL). DOE entered into a 10-year management and operations contract with BEA valued at approximately $4.8 billion. BEA is led by Battelle Memorial Institute and the organization includes BWX Technologies, Inc., Washington Group International, the Electric Power Research Institute, and an alliance of university collaborators. The alliance of university collaborators or the consortium will be led by the Massachusetts Institute of Technology and includes such nuclear engineering universities as New Mexico, North Carolina State, Ohio State, and Oregon State as well as a regional collaboration with the major Idaho universities-Boise State, Idaho State, and the University of Idaho.

Employees

About 30 percent of the INL's employees work in administrative, scientific support, and non-nuclear laboratory programs and have offices in the city of Idaho Falls. Presently, BEA employs a workforce of approximately 3,500 employees:

Executives: 20 Managers: 254
Exempt: 1865 Non-Exempt: 623
Bargaining Unit: 747

BEA employees represented by collective bargaining groups include:

- Teamsters Union,
- Security, Police, and Fire Professionals of America
- Idaho Building and Construction Trades Council,
- Amalgamated Transit Union and
- United Steelworkers.

Type of Work Performed

The Idaho National Laboratory (INL) principal mission is to develop and demonstrate advanced nuclear technologies. The laboratory conducts basic and applied research to protect our nation's critical infrastructure and enhance our national security, facilitate DOE's legacy cleanup and stewardship responsibilities, and advance energy-related sciences. INL serves as the nation's lead laboratory for nuclear energy research and development. The laboratory also supports technology development for other Federal agencies. It plays a key role in nuclear materials nonproliferation research and development, serves as the integrated engineering systems innovator for the Department of Defense, the Intelligence Community, and others in the development of special solutions, assessments, and technologies. Active INL research programs include those related to hydrogen production, plasma technologies, biotechnology, and alternate fuel transportation systems, biotechnology, physical systems modeling, systems engineering, intelligent automations and remote systems, applied engineering, materials processing, chemical separations and processing, and sensing and diagnostics.

Types of Hazards

Numerous hazards are present in the INL environment of research and development, manufacturing, engineering, maintenance, construction, security, and reactor operation. Hazards include radiation, temperature extremes, electricity, hoisting and rigging, working at heights, chemicals, heavy metals, petroleum products, cryogenics, materials handling, noise, airborne contaminants, confined spaces, asbestos, lead, lasers, operating of small hand tools, rotating parts on equipment, ergonomics, and typical construction concerns. Some of the hazards are created by acts of nature, such as snow- and ice-covered walkways and roadways, range fires, and high winds.

II. INJURY AND ILLNESS DATA

Because of the size, complexity and uniqueness of operations, there are five distinct North American Industry Classification System (NAICS) Codes that apply to the Idaho National Laboratory (INL) operations. The NAICS codes for this contractor's operations include: 5417, 332, 5616, 811, 221

Since being awarded the contract to operate INL, Battelle Energy Alliance (BEA) has experienced a Total Recordable Case Rate (February through September 2005), as measured at the end of the performance period, of 1.35. The Day Away, Restricted, and Transfer Case Rate for that same time period is 0.56.

The distribution of BEA-INL employees according to NAICS category and the pro-rated Total Recordable Case rate and the Day Away, Restricted, and Transfer Case Rate since BEA became the primary operating contractor are as follows:

NAICS Segment or Catagory	Percentage of BEA Workforce	Total Recordable Case rate (TRCR)	TRCR Pro-rated from Feb. 2005	Day Away, Restricted, & Transfer Case Rate (DART)	DART Pro-rated from Feb. 2005
5417 (R&D)	50%	2.1	1.05	1.0	0.50
332 (Fabricated Metal)	6%	8.5	0.51	4.2	0.25
5616 (Invest./Security)	18%	2.6	0.47	1.2	0.22
811 (Repair/Maint.)	12%	4.2	0.50	2.1	0.25
221 (Utilities)	14%	4.4	0.62	2.2	0.31

DOE M231.1-1A requires Battelle Energy Alliance to report occupational injuries and illnesses for "selected subcontractors" (those who employ more than 10 employees on DOE work being performed). The Total Recordable Case Rate for the same time period for select subcontractors was 1.91 (one case). The Day Away, Restricted, and Transfer Case Rate is 1.91 (one case).

Injury Incidence/Lost Workday Case Rate – 5417 R&D

Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	No. of Lost or Restricted Workday Cases	Lost or Restricted Workday Case Incidence Rate
2003	N/A	N/A	N/A	N/A	N/A
2004	N/A	N/A	N/A	N/A	N/A
2005 (Feb.-Sept.)			1.05		0.50
3-yr. (cy) avg.	N/A	N/A	N/A	N/A	N/A
BLS rate for NAICS 5417			1.6		0.70

Injury Incidence/Lost Workday Case Rate – 332 Fabricated Metal

Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	No. of Lost or Restricted Workday Cases	Lost or Restricted Workday Case Incidence Rate
2003	N/A	N/A	N/A	N/A	N/A
2004	N/A	N/A	N/A	N/A	N/A
2005 (Feb.-Sept.)			0.51		0.25
3-yr. (cy) avg.	N/A	N/A	N/A	N/A	N/A
BLS rate for NAICS 332			8.0		3.9

Injury Incidence/Lost Workday Case Rate - 5616 Investigation/Security

Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	No. of Lost or Restricted Workday Cases	Lost or Restricted Workday Case Incidence Rate
2003	N/A	N/A	N/A	N/A	N/A
2004	N/A	N/A	N/A	N/A	N/A
2005 (Feb.-Sept.)			0.47		0.22
3-yr. (cy) avg.	N/A	N/A	N/A	N/A	N/A
BLS rate for NAICS 5616			2.6		1.5

Injury Incidence/Lost Workday Case Rate - 811 Repair/Maintenance

Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	No. of Lost or Restricted Workday Cases	Lost or Restricted Workday Case Incidence Rate
2003	N/A	N/A	N/A	N/A	N/A
2004	N/A	N/A	N/A	N/A	N/A
2005 (Feb.-Sept.)			0.50		0.25
3-yr. (cy) avg.	N/A	N/A	N/A	N/A	N/A
BLS rate for NAICS 811			3.9		1.9

Injury Incidence/Lost Workday Case Rate - 221 Utilities

Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	No. of Lost or Restricted Workday Cases	Lost or Restricted Workday Case Incidence Rate
2003	N/A	N/A	N/A	N/A	N/A
2004	N/A	N/A	N/A	N/A	N/A
2005 (Feb.-Sept.)			0.62		0.31
3-yr. (cy) avg.	N/A	N/A	N/A	N/A	N/A
BLS rate for NAICS 221			2.6		1.2

III. MANAGEMENT LEADERSHIP

Responsibility

Safety and Health Program roles and responsibilities are well defined in Laboratory documents and effectively communicated to all employees through documents, meetings, and training. From the level of senior management through line management to supervisors and to individual employees, safety and health responsibilities are clearly defined, and each employee has the authority commensurate with his or her level of responsibility. Key priorities within the INL "vision" statement and their strategic plan focus on INL efforts to achieve world-leading safety behavior and safety performance. The safety expectations within the Laboratory are established in Laboratory-wide program documents; PDD-9000, *Laboratory Excellence Program and Organization Structure* and PDD-1004, *Integrated Safety Management.* The Laboratory's roles and responsibilities, accountabilities, and authorities (R2A2s) documents define the key positions within the laboratory. As an example, the INL R2A2s for the Laboratory Director state that the incumbent must demonstrate management commitment to risk management and operational topics such as Environment, Safety and Health, quality, safeguards and security.

Interviews with managers and employees reflected that managers generally understand their safety and health responsibilities, and that they are aware of the potential hazards that employees might be exposed to. Due to the nature of projects and work at the INL, some managers are not "read into" the programs under their purview. To influence safe work practices in these instances, managers are active in Job Hazard Analysis development, engage in aspects of pre-job briefings, and use their subordinate managers and staff to ensure that all expectations are clear, hazards are identified and employees can perform work safely.

Some of the biggest transition challenges identified by BEA managers have been bringing together safety management concepts from multiple partner company's into a single, BEA safety management strategy. The INL's VPP history and the strength of the employee driven safety culture has greatly helped to facilitate the cohering of this strategy.

Accountability

The BEA annual review process holds all employees, including managers and supervisors, accountable for their performance in safety and health-related areas. Nonunion employees at all levels are held accountable for their safety actions and contributions through a personal annual review. Each employee has a primary ES&H element in their individual performance plan and their performance in understanding and participating in Safety and Health programs is evaluated. Less-than-average performance could result in little, if any, performance pay increase. Safety accountability for represented employees (unionized) is included in the working agreement between the union and BEA. For example, the extended working contract between BEA and the United Steel Workers, which represents the largest body of represented workers at INL, states that "All employees shall cooperate by following safe work practices and complying with health and safety rules during employment, the proven violation of which shall be cause for disciplinary action" (Article 19). Positive Reinforcement (R+) for safe behavior is essential to achieve an overall safety culture. A major element in the company's BBS process is providing peer-to-peer feedback. INL has made a significant effort to educate employees on how to provide positive

feedback that is sincere and timely. Employees are taught that reinforcement should match the behavior observed. It is given for the purpose of increasing and/or promoting behavior that results in safe production. BEA-INL management is committed to providing the leadership, direction, goals, training, resources, and standards to assist employees in the performance of their duties in a safe and healthful manner. Management and employees appear to share the responsibilities to carry out individual duties in a safe manner. The employees' position descriptions include their responsibilities under the ISMS requirements and expectations. Their formal performance appraisal system with safety and health responsibilities is a critical element for safety accountability.

Safety and Health Program Self-Evaluation

The VPP criteria and basis of the INL Safety and Health Program is evaluated at least annually. The issues derived from the evaluation result in unit-specific and Laboratory-wide improvement action plans and all improvement actions are tracked to completion. The ultimate goal of the annual evaluation is continuous improvement of the Safety and Health program, systems and processes. Safety and health trending data includes the results of the annual evaluation(s), and each of the VPP units within the 10 EST's develops goals and objectives for the year using this information. The LEST also develops laboratory-level goals and objectives using input from the EST's. The LEST and the VPP unit ESTs periodically review the status of the objectives (action plans) as a part of their regular meeting agendas.

BEA effectively utilizes self-evaluations and the data gathered during evaluations to enhance their programs and drive feedback and improvement, and corrective actions. This process will serve as an effective tool to move the INL program to the next level of excellence. BEA recently conducted a self-assessment of their VPP safety program and identified a few areas for further improvement. The Team noted that further improvement in communication is needed to help some employees have a better understanding of the overall VPP program/effort. This would help employees understand the correlation between their own work processes and procedures and the VPP at INL.

Site Orientation

BEA maintains a comprehensive program for ensuring that new employees, subcontractors, vendors, and visitors receive the necessary laboratory orientation. This orientation is periodically updated and refresher training is presented, thus providing a high level of awareness regarding the potential hazards at INL. On-line Web-based initial briefings including briefings on security, ES&H, site access, general employee radiological training, and INL Policy briefings/training are tailored to the individual, based on work location and job assignment.

In particular, visitors are oriented to security, safety and health, emergency evacuation, and general organizational information. All new employees are required to complete site orientation training including safety and heath information, "Stop Work" responsibilities, worker rights, and an overview of ISMS and VPP requirements.

Employee Notification

Employees are initially notified of their rights at the new employee orientation. Their right to access information is also communicated by way of several different mechanisms after the initial orientation. Posters and annual ESH&Q refresher training are just a couple of these mechanisms. Employees new to the INL participate in the New Employee Orientation. Employee notification rights are discussed in various Laboratory-wide documents, such as PDD-14001, Occupational Safety and Health Program Overview; LWP-13840, Corrective Action System; LWP-14001, Occupational Injury and Illness Reporting and Follow-up; LWP-9301, Event Investigation and Occurrence Reporting; LWP-14002, Stop Work Authority.

Annual safety and health training re-enforces the initial orientation on VPP requirements. In addition to the annual training, employee representatives have the opportunity to participate in a variety of safety councils, and they receive copies of weekly newsletters that address safety and health issues and VPP. The Team, however, noted during site interviews that some employees were not aware of their role in VPP safety program. Increased communication and education in this area may be beneficial.

Commitment

BEA management vigorously endorses and supports a strong safety and health culture by funding, developing, and implementing on-going Safety and Health programs and processes for the Idaho National Laboratory (INL) and the community. Management has issued the safety policy, vision, and value statement and demonstrates their commitment through active, day-to-day involvement in workplace activities. Management has effectively communicated the vision that, "All injuries are viewed as preventable." The fundamental premise of the INL Integrated Safety Management System (ISMS) is that work will be performed safely. Laboratory-wide Program Description Document (PDD)-1004, INL Integrated Safety Management System, describes the engineering model that prescribes the procedures and processes necessary to do work safely. PDD-1004 also describes the bases for the development of BEA's work processes, which are guided by the five core functions and eight guiding principles of ISMS, and which permeate the organization, with primary focus on the worker. Specific safety and health goals are set yearly. In the first quarter of each fiscal year, the Laboratory Employee Safety Team (LEST) develops their safety and health goals and objectives for the year. These goals and objectives are disseminated to the 10 VPP unit Employee Safety Teams (ESTs) as information to consider as they develop VPP unit-level goals and objectives. All levels of management/supervision and employees (union and non-bargain unit) are involved with goal establishment and evaluation.

BEA managers are involved at every level and show their commitment to worker safety by helping to identify the worksite hazards and reduce the risk of injury and illness to employees. This level of commitment is reflected in accessibility of managers. The employees indicated that they were able to communicate both formally and informally with their managers for any safety issue and take action for their concerns. Interviews indicated that employees do understand the priority of safety and health protection in relation to other organizational values, though none stated that safety was the first consideration, all maintained that safety is a primary focus. However, the Team noted that frequent change in the management organization and budgetary cut may have raised some doubt among some employees about the sincerity of management commitment.

BEA has undertaken a safety culture improvement effort to enhance ISMS implementation. This effort emphasizes a broad, comprehensive set of organizational attributes for improving safety behaviors. The organization has received training on these expectations, has completed two separate surveys, and has received feedback on the surveys and improvement opportunities. Positive examples of these expectations were evident in the freedom to raise issues without fear of retaliation, high trust levels within work crews.

Contract Workers

All contractors working for BEA-INL are expected to safely perform in a quality manner while protecting worker health and the environment. BEA-INL reviews the safety performance history of all subcontractors before a contract is awarded. Specific requirements for subcontractors, including safety requirements, are documented during the procurement process. Periodic inspections of subcontractor work activities are routine. Subcontractors are required to use the same processes and follow the same rules. However, based on limited interviews the Team noted that there is a perception among a few of those employees who were interviewed that the same level of rigor for safety requirements applied to BEA-INL employees is not applied to sub-contractors.

The acquisition of services is controlled by Laboratory-Wide Procedure (LWP)-4002, Service Acquisitions. Subcontractors who are performing work that has the potential to be hazardous must qualify based on safety and health performance before they are allowed to work at INL. Once accepted for work at INL, subcontractor employee training is required for Laboratory access, and access is controlled to make sure that only trained, qualified personnel are allowed on site. Regular surveillances are conducted to verify subcontractor compliance. Repeated safety and health violations by a subcontractor or the subcontractor's employees may result in the withholding of contract payments, dismissal from the Laboratory, and prohibition from bidding on future work at INL. A company desiring to perform work at INL that has the potential for being hazardous must submit their safety and health performance data. It includes general company information plus historical injury and illness data. Offerors who employee 10 employees or less will be evaluated on their worker's compensation claims for the three previous years and their experience modification rate (EMR). Offerors who employ 11 or more employees will be evaluated on their EMR, Total Recordable Case Rate (TRCR), and Lost Workday Case Rate (LWCR) over the previous three years. Based on the information submitted, the offeror will be assigned a status condition of 1) approved, 2) conditional approved, or 3) not approved. Depending on the status, an offeror may be required to submit documents such as their safety policy and procedures, employee involvement activities, work control process, stop work authority, etc. This information is evaluated against specific requirements by the Subcontract Formation Group which includes a safety professional. Conformance to the requirements qualifies the offeror to be considered for award of a subcontract for INL work. Failure to meet the requirements results in disqualification and a letter from BEA detailing the reason for disqualification and any required improvement action. All BEA Requests for Proposal (RFPs) require an offeror to be approved before contract award.

Organization

The BEA review process has established quarterly walk-through by senior managers of their areas. These reviews facilitate management’s commitment, reinforce employee’s awareness, and fosters safe behaviors in work places. Additional reinforcement is provided by the recognition

and award process. Monthly LEST and bi-monthly EST meetings, self assessment program, and Job Hazard Analysis program (JHA) are further demonstration of BEA management commitment.

Though management is committed to safety overall, management leadership in the implementation of the VPP does not meet the full potential reflected in their commitment and implementation of programs. The Team noted that some employees may not have good understanding of the VPP Program. This may be due to lack of in-depth understanding of VPP areas since those are cultural based rather than written requirements that reflect compliance only orientation. Involving more employees in all aspects of safety program management including areas such as development of programmatic goals and decision-making, and employees driving the programmatic implementation of VPP are areas for improvement.

Top-level management is clearly visible and actively participates in the S&H program. Managers are held accountable for their S&H responsibilities and maintain a policy of accessibility with regard to S&H issues that arise in the workplace. An "open door" policy ensures that any employee at any time can express a safety concern to any level of management.

As stated, the organizational structure of Laboratory area directors, ESH&Q area managers, and safety professionals is designed to provide technical support, as needed throughout the organization. The ESH&Q Director reports directly to the Laboratory Director. Eight organizations report to the ESH&Q Director including the Price Anderson Amendment Act (PAAA), ISMS, Safety /Fire Protection/Industrial Hygiene, Occupational Medicine, Quality Assurance, Performance Assurance, Environmental Compliance, and Radiological Control groups. The Laboratory Director and the Labor-Management Team provide coordination to ensure implementation of Laboratory-wide programs and policies. "Line management" as defined by the contractor consists of those managers who direct work that requires implementation of hazard mitigation. These managers adhere to the ISMS values in that they ensure that work is planned in accordance with Laboratory policy, they verify controls before authorizing the commencement of work, they ensure that all work is within the approved safety basis for the facility where the work is taking place and they ensure that work is conducted safely.

Resources

The Laboratory includes numerous facilities, processes, and disciplines, and these resources are maintained and upgraded to ensure effective support of BEA safety and health needs. BEA has sufficient resources including safety professionals in industrial safety, industrial hygiene, and radiological control to support essential programs for workers safety and health. Moreover, BEA plans and budgets are developed and prioritized, or updated annually for all programmatic and indirect budgets for the upcoming execution (fiscal) year. Work plans are developed with input from those who will potentially perform. Funding for indirect work activities also review and approval by the ESH&Q director. On completion of the planning process, a summary of the planning documents is submitted to DOE-ID for approval. BEA presently has the following safety and health support: Safety/ Fire Protection /Industrial Hygiene personnel – 42; Occupational Medicine – 31; Quality Assurance – 59; Performance Assurance – 7; Environmental Compliance – 29; Radiological Control – 77; Fire Department – 91. Equipment and other resources necessary to perform safety and health duties are adequate. Cost data collected between February 1st (when BEA assumed the contract) and November 1st, shows the ESH&Q budget to be approximately $28.7 million, which is 5.7% of the laboratory budget. In addition, other funds are utilized sustain and support employee safety groups as well as ad hoc

groups working safety issues, conducting audits, performing inspections and preventative maintenance activities, and conducting safety and health training.

Planning

Safety, health, and the environment are primary considerations integrated into the BEA planning processes, from top Laboratory-wide strategic planning down through planning for each job. Management Planning Laboratory planning is an ongoing process that begins with the INL Strategic Plan, developed by the INL L/M Team. The plan is used to translate the statement of work, mission statements, and commitments specified in the M&O contract into strategic objectives covering a 10-year period. The Laboratory-wide planning documents derived from the INL Strategic Plan and Laboratory Agenda include: -Performance Evaluation and Measurement Plan (PEMP) -Program Directorate Business Plans -Functional area plans (such as the INL Ten-Year Comprehensive Site Plan). Planning and execution of direct and indirect work scope is planned and executed within established processes of a Project Control System (PCS) (see Figure 2). Manual 5, Project Control System, contains the majority of the Laboratory-wide and functional procedures for implementing the PCS processes. A Work Breakdown Structure at the laboratory level is used to define all work scope-direct and indirect-for purposes of categorizing work into projects, assigning management responsibilities, trending, and reporting cost and schedule performance.

At the company level, safety and health planning is incorporated into the annual budget process. The safety improvement plan (SIP) is developed annually by the LEST members and management, in conjunction with the VPP Champion's Team. The BEA management annually evaluates and revises a formal implementation plan that includes the goals and actions from the SIP.

Management Leadership Strengths

1. Management Support and Commitment – Interviews of managers and workers at all levels confirmed a strong management commitment for safety. In almost every instance, those employees interviewed spoke about "our work," clearly including themselves and their managers as part of a single team.

2. Integration of Behavior Based Safety (BBS) and Human Performance (HuP) – INL was a leader in implementation of BBS over the past decade. As the next step in continuous improvement of VPP, BEA is now committed to integrating Human Performance concepts gleaned from the Institute of Nuclear Power Operators (INPO) initiative on Human Performance. The Team found that Human Performance training provided to workers to be most valuable; especially the segments on identification of error precursors.

3. Universal understanding of stop work authority – The Team found strong evidence that the employees know that they have authority to exercise stop work authority without fear of reprisal if they feel they or someone else can be injured. Several workers were able to narrate instances where stop work authority had been exercised without reprisal or negative feedback.

Management Leadership Best Practices

1. Subcontractor mentoring and qualification program – The Team found the subcontractor mentoring and qualification program to be an outstanding program and a "win-win" program. In this program, the BEA construction staff mentors construction subcontractors in the VPP process. This is a low cost – high value program that could be transferred to other DOE worksites and to the private sector, as well. Potential benefits to safety and health are very high.

2. Creation of union safety members under contract – The Team found that union representatives were integrated into well functioning employee safety teams (EST) through encouragement by management. In some cases, union members serve full time in safety positions. This concept provides high value in terms of cost avoidance and it should be used by others.

3. Management Issuance of letter of expectation and concerns – When BEA took over management of the INL, a letter of expectations and concerns was issued. Included was the expectation that users of equipment were responsible for ensuring that the equipment was safe for use rather than relying on equipment inspection tags. This action empowered the employees to become fully responsible for their safety. This was an outstanding strategy and it should be employed across the complex.

4. "You did it right" – At RTC, the Team noted the implementation of the "You did it right" program which provides an "on the spot" presentation for unusually safe work by workers. The presentation consists of a two-part ticket. The worker puts one part in the monthly raffle box and the manager keeps the other part. Drawings are held monthly to present monetary award to the workers. This process awards employees for safety and also provides accountability to upper management that supervisors are getting out in the field. This program and concept should be exported to other sites for their use.

Management Leadership Areas for Improvement

1. Senior Management Visibility in the Workplace – The Team found that while senior managers are engaged in conducting walkthroughs of the work spaces in laboratories and facilities near company headquarters, they are not routinely conducting walkthroughs of work spaces in off site facilities such as CFA, RTC, MFC, and SMC. This worker-manager interaction is highly desirable and it is certainly a practice of those organizations that are considered "best-in-class."

2. Adapting, communication and control (change) management – The site has undergone a tremendous change due to new contractor and integration of ANL-W into INL and resulting procedure and control processes. Both managers and workers have a lot of stress due to this substantial change. In some cases communication regarding change has been less than clear. While the Team feels that management has done an effective job of managing change, there is room to further improve. Management should take steps to enhance the communication of information and to control the flow of information at a manageable rate.

Conclusion

The review team found strong management commitment to safety and evidence of the active involvement of management to achieve a safe working environment for employees. BEA meets or exceeds all aspects of this VPP tenet.

IV. EMPLOYEE INVOLVEMENT

Employee interviews clearly indicated that BEA employees are actively engaged in the safety and health program and, in many cases, are the originators of ideas that significantly contribute to the success of the S&H program. The employees also stated that management has empowered them to proactively administer the S&H program, thus meeting the DOE-VPP criteria for employee involvement. Appendix C of this document provides a copy of the employee-unions acknowledgement and endorsement of VPP at this worksite.

Safety and Health Committees

Employee teaming has created a synergistic effect in BEA efforts to accomplish the goal of creating an injury-free work place and the existing safety and health committees are the hub of employee involvement at INL. There are ten (10) Employee Safety Teams (EST's) located across the laboratory.

Four EST units are divided according to geographical location. They include the following:

- Reactor Technology Complex (RTC),
- Materials and Fuels Complex (MFC),
- Central Facilities Area (CFA), and
- Specific Manufacturing Capability (SMC).

The other six (6) units are located in town and are divided by work organizations. They include the following:

- Infrastructure,
- Science and Technology,
- Nuclear Programs,
- Business Management,
- National and Homeland Security, and
- Facility and Site Services.

These six units fall under an overlying group, the Science and Technology Complex. The changes to the EST's structure under the new contractor, BEA, has created a stronger correlation to the actual work being done and therefore better understanding of the safety impacts in the work being performed.

The Laboratory Employee Safety Teams (LEST's) under former contractor (BBWI) management held their last meeting in January 2005 and the current LEST under BEA management held their first meeting in February 2005. The LEST has representatives from each of the 10 BEA EST-VPP units. The LEST includes: two (2) co-chairpersons; a vice-chairperson; the unit EST chairpersons (10); a BBS representative; and a union representative. The United Steel Workers Safety and Health Representative is representing all unions on the LEST team. The ESH&Q director is on the team by assignment of the LEST official charter. INL's laboratory director is the co-chairperson on the team. The other co-chairperson is an individual contributor. Every effort is made to ensure that all employees within a unit are represented on the team. The LEST and each of the ESTs are governed by written, official charters.

Degree and Manner of Involvement

BEA employee empowerment permits employees participate in the Safety and Health Program using numerous venues, such as:

-Performing behavioral observations, offering safety improvement recommendations and feedback
-Reporting and resolving safety concerns
-Participating in work control walk-downs and in pre-and post-job briefings
-Participating on inspection teams
-Preparing and reviewing job safety analyses
-Participating on injury, illness, and first aid investigations
-Establishing safety goals and objectives
-Developing safety programs
-Preparing improvement actions resulting from annual program evaluations
-Developing and delivery of training
-Sharing safety experiences through safety shares, safety meetings, and submittals to safety publications such as the Pause for Safety and certain unit newsletters.

See EST's for additional examples of employee participation in the decision processes.

Most employees interviewed felt they owned the safety program or process. As is required by the VPP Star criteria, employees at all levels appear to be involved in the operation of the safety program and in decisions that affect directly affect their safety and health. As an example, employees are involved in continuous improvement programs such as work planning, JHA development, workplace inspections, and other various initiatives.

Employees at most levels expressed that they were comfortable raising concerns. No barriers to communication with management when it comes to safety and health were identified. Employees were candid and showed no fear in talking with the VPP review team during interviews. Most employees indicated that they understood their rights and responsibilities, and are very knowledgeable about safety and health overall, though in a few cases they were not aware of the VPP specifics.

These interviews confirmed that a strong safety culture exists at all levels, and employees feel empowered to voice safety concerns. All employees interviewed (formally and informally) strongly expressed their readiness to stop work if they felt conditions were unsafe and they believed that management would support their action(s). Some employees were able to give examples of when they intervened after observing an unsafe act or condition, and most felt that their interventions were positively received.

Some employees who were informally interviewed conveyed that since the transition of the primary contractor there has been an increased awareness of safety in the work place. They recognize these efforts are aimed at making the workplace safer but they asserted that there needs to be a conscious effort to ensure there is not "safety overkill." These employees believe management should focus and communicate on how to balance the facility's priorities, to incorporate safety, but not "over-do" safety.

Overall, it was clear that most of the work force has welcomed the opportunity for increased safety and increased participation in the safety program. They indicated that the company's

efforts have kept safety in the forefront. Many workers indicated that the effort has moved the BEA-INL safety programs to a higher level. Some comments made during the interviews were:

"This is a safe place to work".
"This is the safest place I have worked "
"This is the safest company I've worked for".
"Employees donated over four months of personal leave to the technician injured in the Heyrend Accident"

BEA employees are generally participating in the ownership and operation of the VPP. They work closely with managers through one of ten (10) different EST's and the site-wide LEST to manage and expand their safety and health programs. One Team suggestion was to begin a process of membership rotation to encourage more involvement by larger numbers of employees; especially among the operations from the field. Additionally, the Team felt that these councils should begin a review of the entire safety and health program to simplify its elements and thereby make it more comprehensible to a greater number of employees.

Employee Involvement Strengths

1. The team noted across the Site that employees had a positive attitude and unity towards safety.

2. Employees were united in the opinion that that all accidents can be prevented. The creation of ten Employee Safety Teams (ESTs) has provided an avenue for employees to take ownership for the development of targeted safety programs that address employee safety concerns or perceived weaknesses. The ESTs provide a means for all employees, regardless of level of responsibility in the organization, to contribute to and promote continuous improvement in the Safety and Health Program. The ESTs have created subcommittees which provide additional opportunities for employee involvement. Interviews indicated that although not everyone volunteered to participate in, they all were willing to help when asked. The Laboratory Employee Safety Team (LEST) which encompasses the whole facility, has an operational relationship with all EST's that works effectively for all employees.

3. Interviews demonstrated that there was a universal understanding of stop work authority. Although many of those interviewed had never used stop work authority, they had either observed its use in the past, or they could cite examples where they would not hesitate to use it. It was apparent that there was no fear of reprisal should someone elect to use their stop work authority.

Employee Involvement Best Practices

1. The team felt that the practice of providing EST members with distinctive shirts is a unique way of providing not only a means to readily identify its members, but it also promotes unity. The MFC EST has established the practice of its members wearing their EST shirts every Monday. This serves as a gentle reminder to everyone coming back from the weekend to remember safety and creates a mindset to be safe that is continued throughout the week.

2. Active employee involvement and participation at all levels was evident to the team. The EST membership includes active participation by employees from all levels (including management). As mentioned under strengths, the establishment of ESTs and the use of focused subcommittees

(such as accident/injury investigation; employee recognition; building inspections; communications; trending and analysis; and human performance), allows an opportunity for increased participation. The subcommittees then are able to "recruit" additional participants for activities that fall under that subcommittee. Examples include (but are not limited to), conducting various Behavior-Based Safety initiatives or observation under the Worker Applied Safety Program (WASP) or Safety Observation Achieves Results (SOAR).

Employee Involvement Areas for Improvement

No areas for improvement of employee involvement were noted.

Conclusion

Employee ownership has taken root throughout the INL. The employees are proud of their worksite and feel safety is integral to it.

V. WORKSITE ANALYSIS

Routine Hazard Analysis

Laboratory-Level Hazard Identification, Analysis, and Control Hazard identification, analysis, and control begin with identifying applicable ES&H standards and requirements derived from a number of sources. These standards are used to determine the minimum level of controls that must be in place before work is authorized. These core standards and requirements are established through the Requirements Management System (RMS) and are the core of the INL envelope for safety and compliance. They are: DOE Directives (List B), Federal codes and standards, Consensus standards, State and local laws and ordinances, and Corporate and laboratory policies. Laboratory-level programs and systems establish the framework, limits, and controls for maintaining facilities and activities within the INL safety and compliance envelope. Within the framework of INL safety standards and requirements, facility hazard categorization and analysis establishes the safe work envelopes for hazardous INL facilities. The type and extent of each safety analysis and its associated documentation is determined by the hazard categorization of the facility. The hazard categorization process, based on an assessment of the facility and activities, is used to first determine whether the facility contains radiological inventory and, if so, whether the facility is categorized as either a Hazard Category 3 and above, or a Radiological and other-than-nuclear facility.

The team observed that in some office spaces the habit of routine hazard analysis by each employee appeared absent. Office equipment operation, cleanliness, clutter, unqualified electrical appliances became unrecognized as hazards. The team suggests that each office based employee consider strengthening their daily regimen for routine assessment of their workspaces. Likewise the team noted that some industrial workspaces at the RTC were undersized for their suite of equipment and for safe work operation. The team felt that these spaces need further routine hazard analysis to improve space utilization and or to identify additional space is needed to assure that all work is performed safely without the current congestion.

An example of employees actively engaging in hazard identification, analysis and mitigation occurred at MFC where the SPO weight room door opened into a congested area. The door had no window and there was a high potential of injuring someone by the opening and closing of the door. The condition was reported to the EST. Team members researched the situation and coordinated with management to procure and install a door with a window to alleviate the hazardous situation.

Work control processes are currently institutionalized across the organization via STD-101, Integrated Work Control Process, MCP-3571, Independent Hazard Review, and MCP-3562, Hazard Identification Analysis and Control of Operational Activities. BEA is in the process of revising and consolidating these processes. This will create an operational vulnerability during and after the process migration. It is essential that all employees understand their work control responsibilities throughout this change process and that all are aware that they are expected to question the approach if a step appears unsafe, to step back if the process does not appear complete, and to get help, as needed, to ensure the work is conducted safely.

Employee Reporting of Hazards

Employees are encouraged and expected to identify, without fear of reprisal, conditions that compromise or are not in compliance with laboratory programs. LWP-13840, Corrective Action System, presents the reporting system for employees to accomplish this task. Employees are able to document any potential safety issue upon discovering it using either the Potential Issue Report (PIR), EDMS Form 414.79, or directly entering the issue into the iCARE tracking system. In either case, the issue is entered into the iCARE system and assigned to a responsible person so that proper action can be taken. The issue is tracked to resolution. Also, the Employee Concerns process is available when an employee wants to maintain anonymity regarding the safety issue. Employees are authorized to stop work that poses an imminent threat to employees, the public, or the environment. Employees report conditions or practices that may pose safety and health hazards. BEA employees are educated in staff meetings and safety meetings, by posters and bulletins, and in formal training to report any hazard or unsafe condition to their management. LWP-13840, Corrective Action System, defines the requirements for the documentation, categorization, classification, cause analysis, correction, and follow-up of issues.

Accident Investigations

Line management is responsible for the investigation, and employees can participate either as a part of the initial investigation team or as a member of the EST conducting a follow-up evaluation. *EST members receive training to participate in this process.* The results of investigations are used along with other safety and health data to establish trends and provide information for developing goals and objectives. Even though an investigation occurs after the fact, it is a preventative tool to eliminate similar situations in the future. LWP-14001, Occupational Injury and Illness Reporting and Follow-up, contains the accident investigation and reporting requirements with which BEA employees are required to comply. Employees are responsible to immediately report occupational injuries or illnesses and property or vehicle damage incidents per LWP-14001. Additionally, BEA is expanding the near miss process to include at risk behavior in the BBS process (SOAR) plus, the identification and mitigation of error precursors (Hu) in pre-job briefings and within the BBS observation process.

The MFC EST recognized that their employees perceived “investigations” as a negative. Therefore, they changed the terminology from “Incident Investigation” sub-team to the “Incident Resolution” sub-team. The EST’s recognition of employees’ discomfort and their effort to undertake simple actions to change perceptions contribute to this Unit’s ability to engage employees to make changes so similar incidents will not recur. This was a significant and commendable action on their part.

PreUse/Pre-Startup Analysis

New or remodeled facilities, operations, and processes are reviewed and analyzed to identify and mitigate potential hazards before work is started. Proposed construction designs and modifications are subjected to several layers of safety analyses utilizing safety and health professionals and other employees. All maintenance, operational activities, and construction work is performed in accordance with the work control processes. All new facilities require safety analysis before startup. The level of analysis depends on the hazards associated with the facility. Safety Analysis Reports (SARs) are prepared as specified for designated facilities.

Comprehensive Surveys

Comprehensive surveys are performed to identify existing or potential hazards to help ensure a safe and healthful work environment. As required by OSHA regulations, Laboratory-wide procedures, facility-specific procedures, and Radiological Control manuals, ES&H personnel evaluate facilities, processes, tasks, projects, and experiments to identify hazards, determine employee risk, prioritize sampling, and make recommendations for mitigation. Comprehensive surveys may include inventories of agents and situations such as asbestos, lasers, lead, and confined spaces. Facility exposure assessments are based upon potential exposure levels to toxic agents and other industrial hazards within the facility. Based on hazard characterization, sampling protocols are developed and executed by area industrial hygienists. The priority for controls is instituted in the following order, as much as is reasonably possible: substitution and/or elimination, engineering, administrative, and/or personal protective equipment.

Self-Inspections

Safety and health inspections are conducted to identify and correct hazards in the workplace and to ensure compliance with requirements imposed by regulations, permits, and procedures. EST members participate in CBT training, 00TRN795, Employee Safety Team Inspection Training. Other employees participate in this training on request. The safety and health inspections stated in LWP-13730, Developing, Integrating, and Implementing Assessment Plans and Schedules, and LWP-13740, Performing Inspections and Surveillances, are performed by management, ESTs (or members), individual workers, and safety and health professionals. These inspections are conducted frequently so that the entire worksite is regularly inspected. As issues are discovered in an inspection, they are documented and tracked as appropriate in the iCARE system. For those conducting the inspections, topical checklists are accessible on the VPP home page under safety and health Inspection Checklists. Self-Assessment Process for Continuous Improvement. The self-assessment process supports the INL goals of operational excellence and integrated safety management. Self-assessments are accomplished by workers, supervisors, and management.

It was noted that multiple units have all managers scheduled on a facility safety inspection (management self-assessment) rotation. They are encouraged to incorporate EST and general employee representatives on the inspections. The data from these activities is forwarded to the EST's for trending.

The team noted that hazard recognition as a general practice in work areas including laboratory, and industrial settings is a strength. Except as noted, the facility, the general employee surveillance of their work areas is exemplary. Even as visitors to other work areas, employees habitually inspect every work area that they enter for safety issues.

Trend Analysis

The data are available to both management and employees and are used as the basis to modify, change, or establish safety processes. The data are also used for the Laboratory and unit safety goals and objectives, from which employees develop their own safety and health action plans. BEA has systems and processes to collect, disseminate, and use Safety and Health Program trending data, and these data directly influence the development of our safety and health goals and objectives. The ESTs are utilized to facilitate this process throughout the safety team infrastructure. Safety & Health program trending is conducted at the Laboratory level and on a

limited scale at the unit level. The Performance Assurance group in the ESH&Q directorate prepares and distributes the INL ESH&Q Quarterly Performance Report and Analysis. This information addresses: Environmental, Safety and Health, Nuclear Safety, Assessment, Issue Management, Conduct of Operations, Noteworthy Practices and Lessons Learned. Another key source of safety and health trending data is the monthly Injury/Illness Summary report prepared and distributed by the INL Occupational Safety and Health Director. The EST retrieves the data from the Monthly Laboratory Injury/Illness Summary, Accident Report Forms, verbal communication with the Injury/Illness Coordinator, inspection/assessment/employee-reported concerns results from the tracking database, and root cause information from reports and investigation follow-up forms.

Worksite Analysis Strengths

The Team noted a disciplined practice of hazard recognition in all areas that fully supports a meticulous program of worksite hazard management.

Worksite Analysis Best Practices

The Team reported no additional best practices for worksite analysis

Worksite Analysis Areas for Improvement

1. The Reactor Technology Complex shops and workspaces are congested. The Team suggested that the work areas be reconfigured to reduce this congestion.

2. The Team noted that office and some laboratory workers need to address the hazards within their workspaces more diligently.

3. The Team noted that consolidation of work control procedures creates operations vulnerabilities that will have to be managed at multiple levels to avert adverse impacts.

Conclusion

Worksite analysis methods are effective in addressing the hazards for existing and new hazards. BEA-INL meets all of the requirements of the Worksite Analysis tenet for the DOE-VPP.

VI. HAZARD PREVENTION AND CONTROL

Radiation Protection

BEA maintains a comprehensive radiological control program to protect workers, the public, and the environment from the hazards associated with ionizing radiation. This program is continually monitored, and refinements are made to ensure that radiological exposures are maintained as low as reasonably achievable (ALARA). Radiation Protection Policy takes into account social, technical, economic, practical, and public policy considerations in maintaining occupational radiation exposures and radiological releases to ALARA levels. It does not just limit doses but is a process with the objective of achieving and maintaining exposures far below the applicable controlling limits of Code of Federal Regulations (CFR) 10 CFR 835, "Occupational Radiological Protection," PRD-183, INL Radiological Control Manual, and ANL-W Radiological Control Manual, W0000-0063-AP-07. INL is working to consolidate these two manuals into LRD-15001, Radiological Control Manual.

Medical Programs

The Medical Program is comprehensive and includes such aspects as pre-placement physicals, periodic physicals, injury and illness treatment, Employee Assistance Programs, and Health Promotion. The medical staff from physicians through technicians, are highly qualified and able to respond to any medical emergency. Medical facilities are strategically located to provide rapid and effective response. At BEA, the Occupational Medicine Program (OMP) is one of several directorates in the ESH&Q Organization. The medical director reports to the director of ESH&Q who in turn reports to the INL director. Integration of Occupational Medicine and Safety and Health begins at this level. Staff meetings are held every week with the director of ESH&Q, where safety, industrial hygiene, quality, radiological, environmental, and medical disciplines programmatically interface. There is an interface between the Occupational Medical professionals and the injury/illness investigation processes. Often, there is open dialogue between medical professionals and safety professionals when an injury occurs, to ensure appropriate causes are identified to prevent reoccurrence in the future. For BEA, the OMP staffs two clinics and four area dispensaries. One OMP clinic is located at the Willow Creek Building (WCB), the other at the Central Facilities Area (CFA). The WCB clinic has a greater volume of patients, but the type of patients seen at the CFA clinic are such (more physical exams, more trauma) that heavier staffing is required. The WCB clinic is staffed with one physician, one registered nurse (RN), and a traveling x-ray/exam technician. The CFA clinic is staffed with two physicians, three RNs, and a traveling x-ray/exam technician. The four dispensaries are located at the Reactor Technology Complex (RTC), Idaho Nuclear Technology and Engineering Center (INTEC), Test Area North (TAN), and Materials and Fuels Complex (MFC). Documentation and employee interviews indicated a lack of medical personnel performing walk- downs throughout every work location. These walk-downs are needed to best identify work place activities and to reduce potential work-place injuries and illnesses. Observations of the worksite indicated that there was limited availability of AEDs.

Professional Expertise

BEA employs a full complement of highly trained, competent, and experienced Safety and Health professionals. These professionals receive up-to-date information and training that allow them to effectively support line management safety and health needs. In order to promote excellence and maintain a safe work environment, BEA recruits and maintains a highly qualified staff of Safety and Health professionals that are nationally certified. They are used in supervisory positions as well as in direct operational safety support. The ESH&Q branch includes the following professionals: Safety Engineers, Industrial Hygienists, Fire Protection Engineers and Technicians, Radiation Control Engineers and Technicians, Emergency Response Specialists, Scientists, Physicians and Nurses, Employee Assistance Counselors, and Management and Technical Support personnel. BEA safety professionals perform ergonomic evaluations and facilitate work station improvements. Employees are also able to utilize a "work pace" ergo program to relieve work station strain and prevent future injury.

Safety and Health Rules

Safety and health behavior and expectations are established and posted throughout the facilities. The behavior and expectations are basic and easy for employees to remember. The result of employees following the behavior and expectations is a safe and productive work environment. The steps of the discipline policy are also effective tools when someone is found willfully violating safety and health requirements. Positive recognition has been the INL Safety and Health Program's first-string instrument in reinforcing safe behavior, and it continues to reap significant benefits in keeping safety and health awareness alive and flourishing at INL. Depending on the violation and circumstances, disciplinary action, up to and including dismissal, is authorized for safety and health violations. When violation of a Laboratory safety and health policy or procedure is identified, a formal established disciplinary system is followed. This system is described in GDE-10, Employee Handbook, available to every employee. The system is also described in POL-101, Management Resource Manual. These documents state the process for disciplining employees when they knowingly violate a Laboratory rule. Safety and health violations result in disciplinary action ranging from a written warning to termination. The level of discipline is commensurate with the seriousness of the violation and the employee's prior history. Disciplinary actions are documented with the intention of changing behavior.

Personal Protective Equipment

There are essentially no significant changes to the personal protective equipment (PPE) program since the initial VPP Application and the inclusion of the Materials and Fuels Complex. When the hazards of a work activity cannot be mitigated using engineering and administrative controls, workers are protected using Laboratory-supplied personal protective equipment. Personnel, procedures, training, work control processes, and facilities are available to ensure that required PPE is accessible and in proper operating condition. Work at INL involves potential for exposure to many types of industrial, chemical, and radiological environments and materials. Ensuring that worker exposure to these environments and materials is avoided, or at least minimized, requires established PPE programs and processes. The BEA policy is to provide PPE required to protect workers from hazards that cannot be otherwise eliminated or avoided by engineering or administrative controls.

Preventive Maintenance

Proper maintenance of resources is crucial to safe and effective operation of INL facilities. Preventive Maintenance (PM) and Predictive Maintenance (PdM) programs are therefore used to mitigate the chances and effects of unplanned equipment failure. Integrated work control puts all INL maintenance work into a single process. Equipment is consistently screened using uniform criteria to ensure hazards are appropriately identified, analyzed, and mitigated. Preventive/Predictive Maintenance is initiated by the equipment owner to determine which items require PM or PdM. Preventive maintenance is based on manufacturer's recommendations, plant operating experience, surveillance requirements, federal and state laws, industry codes and standards, safety analysis reports (SARs), technical safety requirements (TSRs), Resource Conservation and Recovery Act (RCRA) permits, and good engineering practice. Preventive maintenance intervals are based on optimum application of calendar time requirements, machine run times, and repetitive motion or performance counting techniques. Preventive maintenance programs are periodically reviewed and revised to optimize the cost/benefit ratio of PM requirements and equipment reliability.

Emergency Preparedness

There have been no significant changes to the Emergency Preparedness (EP) program since the initial VPP Application and the inclusion of the Materials & Fuels Complex. MFC is following the same Laboratory-wide procedures. The INL EP program is a function of BEA. The program is under contract to the DOE and managed by the DOE-ID. EP incorporates comprehensive emergency and RCRA contingency planning into the INL Emergency Plan/ RCRA Contingency Plan, PLN-114 (Laboratory-wide Manual 16A, Emergency Preparedness Base Plan). This is the basic plan for EP and readiness assurance for INL. It describes the EP program and explains the overall process developed to respond to and mitigate any consequences of emergencies that might arise at INL. The functions performed by the INL Emergency Response Organization (ERO) are defined as separate job titles, but any ERO member with the appropriate expertise and training may perform them. For example, the emergency action manager may perform communication functions, or the planning manager may perform safety functions. There are four general functions common to the Incident Command System (ICS) at all levels of emergency response and a fifth function assigned to the EOC. These five functions are: Command, Operations, Logistics, Planning, and Finance/legal (assigned to the EOC). Emergency drills and exercises are designed to enhance the training provided to ERO members; they also provide input when evaluating the overall effectiveness of the ERO. The EP director has designated a drill/exercise coordinator to manage and coordinate planning and execution of drills and exercises conducted at INL. The drill/exercise coordinator develops an annual INL drill and exercise schedule as the baseline document for training activities to support drills and exercises. Each member of the ERO participates in a drill or exercise at least annually to demonstrate proficiency in assigned response duties and responsibilities.

OS&H Program List

The two existing programs in place at MFC and balance of laboratory implement the safety, fire protection, and industrial hygiene requirements identified in DOE Order 420.1A, *Facility Safety*, and DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees.* The consolidation process included identifying best practices from each program and the development of consolidated requirements and procedures that apply to the entire laboratory.

Several areas have been identified where full compliance with the Laboratory program cannot be achieved at MFC by the effective date of the program documents. Where necessary to ensure the safety and health of personnel, actions have been identified and executed to mitigate associated risks until completion of all implementation actions. For example, elevated work activities have been suspended at MFC until the fall hazard prevention analysis, required by the consolidated fall protection process, is completed; all MFC confined spaces will be managed as required by the permit until the evaluation, documentation, and posting associated with downgrading to non-permit status has been completed.

Hazard Prevention and Control Strengths

The Team noted that the availability of S&H professional staff was an exceptional strength.

Hazard Prevention and Control Best Practices

1. Winter Hazards Management - Interviewed employees commented on the use of "sand for safety" for icy snowy conditions typical in the Idaho Falls winter.

2. VPP is no longer a strictly worksite specific program. BEA employees have developed a "24/7" safety attitude VPP principles are applied to their home life and private activities.

3. Hazard Prevention – BEA has a good program for identifying and controlling hazards, however, it is critical that new processes and changes to routine processes are reviewed to a greater level of detail in order to prevent injuries.

4. Accident Investigation Guide – BEA has a very useful accident investigation guide and it may be beneficial to other sites.

5. Workplace Ergonomics Program – The Team noted a comprehensive workplace program for ergonomic hazards has been created by BEA.

Hazard Prevention and Control Areas for Improvement

1. Automated external defibrillators (AED) - The Team noted a lack of AED's across the facilities and laboratory space.

2. Walkdowns by Medical Personnel – Interviews of employees indicated that Medical personnel are not regularly and routinely conducting walkdowns of work areas and spaces.

Conclusion

The Team felt that the BEA-INL meets all of the requirements of this tenet and its sub-elements as described above.

VII. SAFETY AND HEALTH TRAINING

BEA-INL is conducting Human Performance training as part of their SOAR program to improve the overall safety culture and enhance implementation of ISMS requirements. In the S&T unit, to help correlate Human Performance principles to the research and development community, training has been tailored and uses laboratory (versus operations) examples and the sessions discuss the scientific basis for why applied human performance principles positively impact the researcher's work environment.

BEA's Human Performance training and application is clearly a best practice and the emphasis on improving safe behaviors would be of value to many other DOE organizations. The Team noted that BEA/INL has identified certain areas of training for further improvement related to the determination of training requirements. Currently the individual manager decides what training his/her staff needs.

Managers

Managers were able to describe their safety and health responsibilities and were able to appropriately describe the hazards associated with jobs under their supervision and the potential adverse effects on employees.

The corporate and labor managers have had a number of opportunities to learn and be educated about VPP. Many of these leaders are very familiar with the elements and criteria of VPP and the Laboratory-wide implementation history of the process. In an overview training, the following aspects were discussed: Ten-year recordable case rate, Foundation of actively caring, VPP infrastructure by units, ESTs, Primary avenue of employee involvement, Sub-team interfaces, Behavior-based safety, Union commitment for Star status, Integration of human performance, Community outreach, Program elements and requirements, Transition steps from INEEL to INL, Path forward after February 2005.

In yet another training opportunity, the leadership team was presented with information on the following VPP topics: the VPP journey since 1996, EST interfaces, introduction to EST chairs, roles of the VPP management champions, safety as a cooperative effort between management, employees, and DOE, and how VPP can be used as a key tool in achieving a world class safety program. In addition, a recent training experience with the leadership has included concepts and principles of BBS.

Supervisors

Training for supervisors includes the same general training available to employees, plus additional training on supervisory responsibilities for safety. Some is Laboratory-wide and some is area-specific; dependent on the hazards and type of work involved. Supervisors attend various workshops and seminars that focus on effective leadership and developing supervisory skills. In addition to the training given to all employees, supervisors must understand their responsibilities and know how to carry them out effectively, and they must understand the policies, rules, and procedures established to prevent exposure to hazards. One of the responsibilities of a supervisor is to ensure that his or her employees follow all the rules and procedures. This assurance is accomplished by providing appropriate training, conducting management walkabouts, listening to

feedback from post job briefings, and one-on-one interviews with workers. Another critical responsibility of supervisors is to ensure that employees know how to respond to emergencies. Again, the necessary training is provided, and then drills are conducted to verify that emergency response is appropriate and effective. Formal Safety and Health Training Programs Supervisors are required to have training commensurate with their responsibilities. There are different training requirements for various job codes. The TRAIN database is able to produce a job requirements report that lists the qualifications, courses, and readings associated with a job code. This information is placed in a person's training plan; in addition, technical safety training may be included, depending on the hazards in the area, facility, or process to which he or she is assigned. Examples of the technical safety courses offered or required are as follows: Course 00TRN838 - Industrial Ergonomics, Course 00TRN812 - Office Ergonomics, Course 00TRN551 - Back Safety, Course 00TRN502 – Ladders, Course 000TRN92 - Laser Safety For Class 3B and 4 Lasers, Course 00TRN604 - Stop Work Authority, Course 000TRN32 - Hearing Conservation, and Course 00TRN606 - Heat Stress.

Employees

Processes are in place that formally define the training required, and assure completion, for employees. The Team confirmed through interviews, observations, and document reviews that each employee receives training commensurate with their job description, responsibilities, and authority.

Orientation for new employees includes all general safety and health training that is necessary for the individual to safely perform their job assignment. In addition each line manager is responsible for determining additional training requirements.

INL's process for ensuring an employee has "competence commensurate with responsibilities" (CCR) places a high priority on recruiting, selecting, and retaining staff that have an in-depth understanding of both the safety and the technical aspects of their jobs. The Laboratory staff currently carries out a broad spectrum of activities-from general administrative functions to operation of nuclear facilities; from bench-level experimentation to large, demonstration-scale R&D projects involving highly radioactive or hazardous materials and complex devices. INL's diverse set of work activities dictates the need for a highly flexible CCR process. The CCR requirements for processes such as work control are defined based on the risks, hazards, and complexity of the type of activity, facility, and worker. Management is responsible for understanding the specific ES&H hazards and implementing the appropriate mitigation strategies in conjunction with the applicable regulatory drivers and process requirements. The INL CCR process contains the basic elements to ensure work is performed safely by qualified workers in accordance with procedures. An Employee Position Description (EPD) defines the core competencies, as well as the basic knowledge, skills, and abilities required for a position. Education and experience are verified in the hiring process. Establish Employee Initial Competency and Identify and Establish Core Competencies. Employee competency is established through the use of new employee orientation training, new employee checklists, and individual training plans (ITPs). ITPs define an employee's training and qualifications (initial and continuing) at three distinct levels: laboratory-wide training, functional training, and facility-specific training. These three levels of training and qualifications are referred to as the three tiers of the CCR triangle. A Laboratory subcontract technical authority (STA) ensures the subcontractor receives a documented safety and health briefing (Blue Card, Site Access, and General Employee Radiological Training [GERT]) as a minimum for consulting, professional, or

administrative type services. Subcontractors performing work in a potentially hazardous environment require additional training as defined in LWP-4002, Appendix E, which provides additional information on the flow-down of ISMS requirements to subcontractors and vendors. Actions needed to maintain and improve worker competency that originate throughout the CCR process all feed into maintenance of the process, which includes the employee's training requirements.

The team was deeply impressed by the scope and content of the human performance training in all its various forms. The team considered this effort as a best practice suitable for sharing across the Department. Currently the INL is integrating its behavior based safety program with this human performance training and is achieving significant success.

Additionally the team noted another best practice in the safety training and review council that supports the operation of the facility's safeguards and securities programs. Whenever a new activity is being introduced, the team composed of a mix of employee and supervisory staff use the principles of ISMS and VPP as the basis for design and implementation of their new training plan. This approach results in a far more consistent and therefore successful training regimen.

Although there are extensive and effective online training programs that have successfully distributed skills and concept training across the facility, the team felt the need and benefit of classroom training should be reevaluated. More classroom training as a balance to the online training may significantly improve the competencies of workers. Face to face feedback during training sessions can create additional relevance and confidence for the quality of training programs.

Safety and Health Training Strengths

The Team noted no additional training strengths.

Safety and Health Training Best Practice

1. The Counterintelligence web page includes a list of staff members that have recently traveled to foreign locations. All potential foreign travelers are encouraged to approach employees that recently traveled to the same location and to use their observations on safety and security at those locations as a form of "lessons learned" thereby using a knowledge management approach to enhancing the safety of those preparing to travel.

2. The Team noted that the ISMS/VPP technical baseline has successfully served as the foundation for the Safeguards and Security training program.

Safety and Health Training Area for Improvement

As a result of the Heyrend Accident, issues regarding employee competence were raised. Until the beginning of 2006, BEA was procuring qualified technicians from the Idaho Clean-up Project through a shared services agreement. However, the Idaho Clean-up Project resource pool was significantly reduced through a late 2005 "buy-out", necessitating BEA projects to make a

decision to hire and qualify these personnel in-house. This new condition, including an incomplete qualification process, appears to have been a factor in this accident. It was not clear in the VPP review whether this "shared services environment" is clearly understood by the impacted project and operations personnel and therefore, the potential for safety vulnerabilities may be significant. BEA is encouraged to identify all shared services and to thoroughly educate its managers and employees as to the potential safety vulnerabilities for each of these areas. Also, this information and any resulting actions should be considered in work planning and execution.

Conclusion

The Team believes that the BEA-INL is meeting DOE-VPP requirements for the safety and health training tenet as described above.

VIII. CONCLUSION

The Team believes that BEA-INL operates a highly effective Star-level DOE-VPP program and that it meets the applicable technical requirement for participation in the DOE-VPP.
The Team will advise senior management within the Office of Environment, Safety and Health (EH) of their technical findings and their recommendation.

APPENDIX A

Onsite VPP Review Team Members

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Carol S. Henning	208-526-8042 henningsc@id.doe.gov	Dept. of Energy – Idaho Operations Office	Worksite Analysis

APPENDIX B

Review of Safety and Health Information and Data
Battelle Energy Alliance – Idaho National Laboratory

This appendix presents a review of other sources of safety and health information and data relative to the performance of Battelle Energy Alliance (BEA) since they began operation of the Idaho National Laboratory in February 2005. Such reviews are typically completed before each initial onsite evaluation of a new applicant and before each triennial onsite review of participating sites. The expectation of the VPP is that participating sites will have a mature, responsive program capable of identifying and addressing most issues prior to the presentation of an actual hazard. However, there is a fundamental realization within VPP that no workplace is perfect or without hazard(s). We expect VPP sites to be responsive and accountable in those rare occasions that accidents do occur; and capable of learning from the incident.

I. Price Anderson Act Enforcement History – February 2005 to date

A. No enforcement issues since BEA assumed operation of INL.

B. Since February 2005, there has been 26 PAAA issues entered into the ICARE
- 7 closed
- 18 actions in progress
- 1 Corrective Action Plan (CAP)

II. Radcon History – February 2005 to date

A. No reportable skin or clothing contaminations since February 2005

B. No exposures > 100 mr above administrative control level (ACL)

III. Occurrence Reporting and Processing System (ORPS) History – February 2005 to date

A. CY 2005 – 53 ORPS reports - 53 occurrences

B. CY 2006 – 18 ORPS reports - 18 occurrences

C. Presently, 66 ORPS are final with no further action required; 5 actions are open.

IV. Near Miss History (as reported through ORPS) – February 2005 to date

A. CY 2005 – 6 reports - 6 occurrences

B. CY 2006 – 5 reports - 5 occurrences

C. All near miss actions are final

V. Injury History for BEA–INL – February 2005 to date

A. During 2005, the Material and Fuels Complex (MFC) experienced a significant increase in injury rates. As a result of the increase in rates, MFC prepared a special Management Action Plan which included thirteen (13) separate corrective actions.

B. Overall, INL determined that winter-related events accounted for 15% of the entire total of injuries at the laboratory in 2005. Teaming with the other contractors on the INL site, BEA has developed a winter-hazards program and undertaken five (5) specific corrective actions across the site.

C. An accident ("Heyrend") where a newly hired employee severely cut his hand resulted in two (2), independent Type B investigations; one conducted by BEA and one conducted by DOE -ID. Due to the similarity of the findings of the two investigations, a consolidated Corrective Action Plan was prepared. Corrective actions are underway and the lesson learned are being applied across the entire laboratory.

APPENDIX C

Statement of Endorsement
by the
Department of Energy, Battelle Energy Alliance, and Union Leadership

The leadership from the following organizations is committed through teamwork and respect to endorse the DOE-Voluntary Protection Program (VPP) at the Idaho National Laboratory (INL). We join in communicating the vision of being a world class leader in Safety and Health. With this partnership, which includes worker involvement, we will work together to ensure that work activities are carried out in a manner that will protect, preserve, and nurture our people, facilities, neighbors and the environment. This united effort will sustain this Laboratory as a DOE-VPP Star Site.

Department of Energy Idaho Operations
Manager, Elizabeth D Sellers

Battelle Energy Alliance
United Steel Workers Local 652
President, John J. Grossenbacher

CH2MHILL, WG Idaho (CWI)
President, Alan M. Parker

United Steel Workers (USW) Local 652
President, Don Detonancour

Idaho Building and Construction Trades
Business Manager, Willis Norton

Security, Police and Fire Professionals of Amercia (SPFPA) Local 3
President, Kevin Hulse

Teamster Union Local 983
Vice President, Mike Oar

Amalgamated Transit Union (ATU)
Div 1517
President, Charles C Gordon

International Federation of Professional and Technical Engineers Local 94
President, Stacey L. Madson

Subcontractor Community
3-D Fire Protection, Lamar Hayward