



West Valley Nuclear Services

Report From the DOE Voluntary
Protection Program
Onsite Review, November 15 - 18, 1999

January 15, 2000



U.S. Department of Energy
Office of Environment, Safety and Health
Office of Worker Health and Safety
Office of Occupational Safety and Health Policy
Washington, D.C. 20585



This report has been reproduced directly from the best available copy.

Published for the Office of Worker Health and Safety by ES&H Technical Information Services.
Available through the Office of Environment, Safety and Health Information Portal at
<http://tis.eh.doe.gov/portal>

Available to DOE and DOE contractors from ES&H Technical Information Services,
U.S. Department of Energy, (800) 473-4375, fax: (301) 903-9823.

Available to the public from the U.S. Department of Commerce, Technology Administration,
National Technical Information Service, Springfield, VA 22161; (703) 605-6000.



This report has been reproduced directly from the best available copy.

Published for the Office of Worker Health and Safety by ES&H Technical Information Services.
Available through the Office of Environment, Safety and Health Information Portal at
<http://tis.eh.doe.gov/portal>

Available to DOE and DOE contractors from ES&H Technical Information Services,
U.S. Department of Energy, (800) 473-4375, fax: (301) 903-9823.

Available to the public from the U.S. Department of Commerce, Technology Administration,
National Technical Information Service, Springfield, VA 22161; (703) 605-6000.

Foreword

The U.S. Department of Energy (DOE) recognizes that true excellence can be encouraged and guided, but not standardized. For this reason, on January 26, 1994, the Department initiated the DOE Voluntary Protection Program (DOE-VPP) to encourage and recognize excellence in occupational safety and health protection. This program closely parallels the Occupational Safety and Health Administration's (OSHA) Voluntary Protection Program (VPP). Since its creation by OSHA in 1982, VPP has established the credibility of cooperative action among government, industry, and labor to achieve excellence in worker health and safety.

DOE-VPP outlines areas where DOE contractors and subcontractors can surpass mere compliance with DOE orders and OSHA standards and attain excellence. The program encourages the "stretch for excellence" through systematic approaches that involve everyone in the contractor or subcontractor workforce at DOE sites. DOE-VPP emphasizes creative solutions implemented through the cooperative efforts of managers, employees, and DOE.

DOE-VPP participants have redefined our perception of excellence in safety and health programs. Each participant in their own unique way has redefined the approach to each of the five tenets of the VPP to create an innovative new definition of excellence. In each area, Management Commitment, Employee Involvement, Worksite Analysis, Hazard Prevention and Training, DOE has learned from the facilities that have achieved VPP Star or Merit status. This report celebrates the entry into the DOE-VPP of another innovative, cutting edge site.

DOE believes that quality does not cost, it pays. Being a DOE-VPP participant clearly requires an investment, but the returns on investment are profound and measurable. However, the dollar and cents return on investment is only the beginning. VPP participation has proven to

result in a tangible, positive impact on employee morale, productivity, facility pride, empowerment, and greater cooperation between management and labor. It is truly a program that redefines the culture of an organization.

VPP is the right thing to do, not only because workers are human beings and can be harmed by their work, but also because they are creative, innovative individuals that can be inspired by their work. VPP unleashes the power of the workforce's collective wisdom and individual intellect to address challenges previously reserved for management. Employee participation and innovation will reach out and redefine every aspect of the work environment - impacting safety, health, productivity, morale, dedication, and commitment.

DOE-VPP consists of three programs, with names and functions similar to those in OSHA's VPP. These programs are STAR, MERIT, and DEMONSTRATION. The STAR program is the core of DOE-VPP. The program is aimed at truly outstanding protectors of employee safety and health. The MERIT program is a stepping stone for contractors and subcontractors that have good safety and health programs but need time and DOE guidance to achieve STAR status. The DEMONSTRATION program is rarely used; it allows DOE to recognize achievements in unusual situations about which DOE needs to learn more before determining approval requirements for STAR status.

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

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

Contractors interested in participating in the DOE-VPP evaluate how well their safety and health programs implement the DOE-VPP requirements contained in *U.S. Department of Energy Voluntary Protection Program, Part I: Program Elements*. They may decide to submit an application, using *Part III: Application Guidelines*.

The steps of the application review process described in *Part II: Procedures Manual* involve the area office, operations office, and program office to independently assess the application's completeness and the applicant's qualifications for DOE-VPP recognition. Comments from the review are resolved before the application is submitted to the DOE Office of Worker Health and Safety (EH-5).

DOE-VPP staff members may augment the application's information by requesting additional information, visiting the applicant's site, consulting the program office, talking to the applicant's OSHA VPP outreach partner, or receiving input from the applicant's DOE-VPP customer representative.

If the DOE-VPP staff approves the application, an onsite review is scheduled as described in *Part II: Procedures Manual*. Team members are selected, based on one or more of the following criteria:

- X Is the candidate a subject matter expert appropriate to the site's activities and complexity?
- X Does the candidate possess prior VPP experience (DOE and/or OSHA)?
- X Does the candidate bring worker representation experience to the team?
- X Is the candidate a safety or health pro-

fessional from outside of the Office of Environment, Safety and Health (EH)?

- X Is the candidate free from any apparent conflict of interest?

The Onsite Review Team interviews employees and management, reviews documents, and makes observations during facility walkthroughs to evaluate the applicant's implementation of DOE-VPP criteria found in *Part IV: Onsite Review Handbook*.

During daily team meetings, Review Team members assess findings, address issues, and seek additional input. At the review's conclusion, the Team presents its recommendation for the level of DOE-VPP recognition to the contractor.

The Team prepares an *Onsite Review Report* that contains the recommendation for recognition, and submits it to the Assistant Secretary for Environment, Safety and Health (EH-1) for approval. The contractor is notified of the Assistant Secretary's decision and, if approved, the DOE-VPP Headquarters office (EH-51, Office of Occupational Safety and Health Policy) arranges to present the flag to the site.

This report summarizes the Review Team's findings from the evaluation of West Valley Nuclear Services (WVNS) activities at the West Valley Demonstration Project (WVDP) during the week of November 15-18, 1999. It is a milestone in the Department's efforts to encourage the empowerment of employees, and the efforts to change the safety culture in DOE from compliance-driven *reactivity* to continuous improvement-driven *proactivity*.

The purpose of this report is to provide EH-1 with an assessment against the DOE-VPP criteria, together with other information necessary to make the final decision regarding the disposition of WVNS' certification of Star designation. Included are synopses of Review Team findings, and the Team's final recommendation for the site's certification for Star status.

Contents

Foreword iii

Abbreviations and Acronyms..... vii

Executive Summary ix

I. INTRODUCTION..... 1

II. QUANTIFIABLE PROGRAM RESULTS..... 3

III. MANAGEMENT LEADERSHIP..... 5

 A. Commitment (Policy and Goals)..... 5

 B. Written Program..... 5

 C. Responsibility 5

 D. Authority and Resources..... 6

 E. Line Accountability 6

 F. Management Visibility..... 6

 G. Site Orientation 6

 H. Subcontractor Programs..... 7

 I. Annual Self-Evaluation..... 7

IV. EMPLOYEE INVOLVEMENT 9

V. WORKSITE ANALYSIS 11

 A. Pre-Use, Pre-Startup Analysis..... 11

 B. Comprehensive Surveys..... 11

 C. Self-Inspections..... 12

 D. Routine Hazard Analyses..... 12

 E. Employee Reports of Hazards..... 13

 F. Accident Investigations..... 13

 G. Trend Analysis 14

VI. HAZARD PREVENTION AND CONTROL..... 17

 A. Access to Certified Professionals 17

 B. Methods of Hazard Control 17

 C. Positive Reinforcement..... 17

 D. Disciplinary System 18

 E. Preventive Maintenance..... 18

 F. Emergency Preparedness and Response 19

 G. Medical Programs 19

 H. Radiation Protection 19

 I. HAZWOPER/HASP 20

VII. SAFETY AND HEALTH TRAINING..... 23

VIII. GENERAL ASSESSMENT..... 25

 A. Safety and Health Conditions 25

 B. Safety and Health Programs..... 25

IX. RECOMMENDATION 27

APPENDIX: DOE-VPP Onsite Review Team for WVNS..... 29

Abbreviations and Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
APT	Accident Prevention Team
BLS	Bureau of Labor Statistics [of the U.S. Department of Labor]
CHP	Certified Health Physicist
CHMM	Certified Hazard Materials Manager
CIH	Certified Industrial Hygienist
CSP	Certified Safety Professional
DOE	[U.S.] Department of Energy
DOE-VPP	Department of Energy Voluntary Protection Program
ECP	Employee Concerns Program
EH	Office of Environment, Safety and Health
EH-1	Assistant Secretary for Environment, Safety and Health
EH-5	Office of Worker Health and Safety
EH-51	Office of Occupational Safety and Health Policy
EIS	Environmental Impact Statement
EIT	Event Investigation Team
ES&H	environment, safety and health
GET	General Employee Training
HASP	health and safety plan
HazMat	hazardous materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
IH&S	Industrial Hygiene and Safety
ISMS	Integrated Safety Management System
IUOE	International Union of Operating Engineers
JHA	job hazard analysis
JSA	job safety analysis
LWD	lost workday
LWDI	lost workday incidence
MSDS	material safety data sheet
NYSERDA	New York State Energy Research and Development Authority
OSHA	Occupational Safety and Health Administration [of the U.S. Department of Labor]

PHA—preliminary hazard analysis

PM—preventive maintenance

POD—Plan of the Day

PPE—personal protective equipment

RII—recordable injury incidence

RN—registered nurse

SIC—standard industrial classification

VPP—Voluntary Protection Program

WVDP—West Valley Demonstration Project

WVNS—West Valley Nuclear Services

Executive Summary

This report summarizes the Department of Energy Voluntary Protection Program (DOE-VPP) Review Team's findings from the four-day onsite evaluation of West Valley Nuclear Services' (WVNS) comprehensive safety and health program at the West Valley Demonstration Project (WVDP), conducted November 15-18, 1999. The site was evaluated against the program requirements contained in the *U.S. Department of Energy Voluntary Protection Program, Part I: Program Elements* to determine its success in implementing the five tenets of DOE-VPP.

Onsite Review Team

The DOE-VPP Onsite Review Team was composed of safety and health professionals, including DOE Headquarters personnel and a representative from the Ohio Field Office. Personnel from the sponsoring DOE Field organization are encouraged to take an active part in all phases of the DOE-VPP preparation and certification process. The Team also included a member of the International Union of Operating Engineers (IUOE), who is currently employed at another DOE Star site. Team member names and assignments can be found in the Appendix to this report.

Evaluation Summary

The Team determined that WVNS at the WVDP has established and implemented programs supporting all the DOE-VPP tenets. Programs and procedures exceed basic compliance requirements with DOE standards, orders, and guidelines. WVNS has institutionalized a system that integrates a comprehensive and effective set of safety programs and procedures. Highlights of WVNS accomplishments in implementing the five DOE-VPP tenets are summarized as follows:

❶ **Management Leadership**—WVNS management has successfully established and implemented policies and procedures that have

effected an excellent safety and health program. At WVNS, management was visibly involved in all aspects of the safety and health program. Management actively promotes a zero tolerance policy for accidents that might result in occupational exposures and environmental contamination. The Onsite Review Team documented open and effective communication regarding safety throughout the WVNS organization. Management is committed to take the time to walk around the plant. In addition, involvement in the Central Safety Committee, the open door policy, and use of Safety Awareness Days, all demonstrate management's commitment. The company has effectively folded subcontractors into their programs. WVNS line managers have been assigned primary responsibility for safety program implementation. Line managers were observed to be cognizant and proactive on safety matters.

❷ **Employee Involvement**—A number of employee-driven programs and committees were observed during the Onsite Review. WVNS employees were fully engaged in all areas of the safety program. Noteworthy programs include the "Safety Success Team" and the "Safety Observers." Both programs operate on a day-to-day basis and provide employees with the ability to find and prevent workplace hazards. Employees are free to develop and carry out safety campaigns and activities that serve to raise awareness about safety. Employees are meaningfully involved in the Central Safety Committee, Accident Prevention Team (APT), Integrated Safety Management System (ISMS) Steering Committee, Health Care Committee, and an assortment of other programs and committees. Notably, the Onsite Review Team was impressed with worker involvement on the Ergonomics Task Team, where members evaluate tasks that employees feel may have ergonomic concerns, and coordinate fixes.

Management and workers have successfully established a culture within which cooperation

and respect underlie the conduct of an excellent safety and health program.

③ **Worksite Analysis**—WVNS has implemented programs and procedures that support a comprehensive, integrated worksite analysis system. The Onsite Review Team performed a thorough review of the processes comprising the worksite analysis program. Based on document review, analysis, and discussions, the Review Team concluded that all seven sub-elements of this tenet were met.

- **Pre-Use, Pre-Startup Analysis**—All new chemicals must be reviewed and approved by the safety department before they are used. New construction and modifications to existing buildings require the involvement of safety early in the process. Employees are involved in all phases of project planning.
- **Comprehensive Surveys**—Safety and health departments perform annual comprehensive surveys. Workers are involved in all surveys. In addition, workers are significantly involved in the annual VPP evaluation through the “VPP Task Team.”
- **Routine Hazard Assessments**—Routine assessments are conducted on an ongoing basis with a multi-disciplinary team that includes workers.
- **Routine Hazard Analyses**—The Team noted routine hazard analysis at multiple levels based on the nature of the job. Repetitive tasks are reviewed under the job safety analysis (JSA) program. More complex work activity is evaluated by multi-disciplinary teams that include specific expertise depending on the nature of the work and hazards. The Onsite Review Team randomly reviewed several hazard analyses and JSAs, and interviewed employees and managers. The Team concluded that hazards were well understood and communicated to workers. The output of the hazard analysis is integrated into training activities.

- **Employee Reports of Hazards**—The Employee Concerns Program (ECP) encourages WVNS and subcontractor employees to formally report unsafe conditions. Employees felt empowered to correct many conditions and unanimously indicated that management responded quickly when the fixes were more complex. Concerns and corrective actions are tracked on a monthly basis. The Environment, Safety and Health (ES&H) Executive Committee reviews progress and trends. Documents reviewed during the evaluation indicated that all non-imminent hazards were corrected within 5 days. Serious hazards were mitigated immediately.
- **Accident Investigations**—The APT conducts accident investigations. This team of workers and managers reviews all injuries and illnesses, including first aid cases, and investigates all mishaps or events. The APT uses a team approach to identify root causes and prevent recurrence. The process clearly defines evaluation and reporting requirements.
- **Trend Analysis**—The WVNS performance analyses program provides data for safety and health trending. A comprehensive set of indicators is disseminated to management. Notably, the site trends safety improvements which track the number of suggestions made and corrections accomplished on a monthly basis. Injury and illness data is routinely tracked and reported to management with an emphasis on trends and focused concerns.

④ **Hazard Prevention and Control**—The hazards identified through WVNS’ worksite analysis are eliminated or mitigated promptly. The employer is committed to the proper hierarchy of hazard control. The Onsite Review Team observed extensive reliance on engineering controls. The programs and process reflect integration with the other DOE-VPP tenets and meet the requirements for this tenet.

⑤ **Safety and Health Training**—The training program served both WVNS and sub-contractor employees. The program was comprehensive and well administered. Information from accidents and employee suggestions is incorporated into training courses. The DOE-VPP Team’s interviews revealed that employees view the range of subjects, content, and quality of training as excellent. The Team concluded that WVNS met all the requirements for this tenet.

Recommendation

The Onsite Review Team recommends that WVNS be accepted into the DOE-VPP at the Star level.

I. Introduction

The DOE-VPP onsite review of WVNS at the WVDP was conducted from November 15 through 18, 1999. The site was evaluated against the program requirements contained in *U.S. Department of Energy Voluntary Protection Program, Part I: Program Elements* to determine its success in implementing the five tenets of DOE-VPP. The Onsite Review Team member names and individual responsibilities are listed in the Appendix to this report.

The Team conducted over 100 interviews during the course of the review. The interviews were conducted with a cross section of the site's staff in two work shifts. These individuals represented all labor categories, managers, supervisors, and workers, covering both hourly and non-exempt work categories. Most interview subjects were selected randomly and scheduled on short notice to promote a good selection of worker age, skill, technical discipline, and work area. The Team also conducted several general meetings with site workers and interviewed key senior contractor managers individually.

The Onsite Review Team made every effort during the evaluation to address as many technical work areas as possible. For each of these areas, Review Team members took focus assignments and worked individually to independently assess assigned areas. Walking tours, documentation reviews, interviews, general dialogue, and conversation at the job sites, as well as attendance at daily job-based meetings and other routine gatherings were the principal methods for data collection. In addition, the Team met privately several times each day to share observations and perceptions, and to focus specific attention on identified topics and circumstances of interest that warranted gathering additional information.

In the area of documentation, the Team reviewed a broad variety of management, training, and program support documents.

These included manuals, correspondence, audits, reports, graphs, statistical summaries, procedures, records, and formal guidance and direction. In each case, the Team assessed the consistency, technical validity, currency, utility, and quality of each document.

The WVDP is a unique DOE facility that has evolved through three phases of operation. WVDP began as a project in 1962 wherein the State of New York encouraged a private company to build and operate the first nuclear fuel reprocessing plant as a means to enhance the economic environment of the western part of the state. During this phase of the plant's history, 1966-1972, WVDP successfully reprocessed 640 metric tons of spent nuclear fuel and recovered useable uranium and plutonium, which resulted in the generation of over 600,000 gallons of a variety of nuclear waste products. Next, the site went through a period of dormancy as the operating commercial company ceased operations and withdrew from participation in the state's program. From 1972 until 1976, the plant was shut down by the operator to perform modifications. Subsequently, custody was returned to the state. In the third phase, which began in 1980 when the West Valley Demonstration Project Act was passed, Congress reopened the site for operations and assigned primary management responsibility to DOE. This facility is also unique in that the Act left the State of New York with joint responsibility for management of the site with DOE.

Following a 1978 DOE study, President Jimmy Carter signed the West Valley Demonstration Project Act into law on October 1, 1980. Under the Act, DOE is required to solidify the high-level liquid waste stored in an underground tank into a solid form suitable for transport and disposal. In 1981, scientists identified vitrification as the best method to stabilize liquid high-level waste. Vitrification is the process of combining high-level radioactive waste with glass forming materials and heating them to produce a durable glass compound.

DOE has already accomplished the first phase of the project, which was the process of safely turning highly radioactive liquid waste into manageable solid glass filled canisters, or vitrification. By June 9, 1998, a total of 18 million curries had been immobilized into 208 solid glass canisters. Currently, DOE is turning its attention to cleaning up and shipping out a variety of waste and shutting down the facilities. There are six major tasks to be completed at WVDP:

1. Complete removal and vitrification of the remaining high-level waste.
2. Ship spent nuclear fuel stored onsite in 2001.
3. Accelerate low-level waste shipping.
4. Begin cleanup of non-operating facilities for eventual closure.
5. Develop additional systems to remotely handle, clean, dismantle, and package radioactive hardware.
6. Continue managing onsite groundwater contamination.

Together, DOE and the New York State Energy Research and Development Authority (NYSERDA) are preparing an Environmental Impact Statement (EIS) on the project completion and long-term site management. Alternatives range from dismantling all facilities with offsite disposal of all wastes, to ongoing monitoring and maintenance of the facilities and wastes in their present condition.

The primary purpose of the onsite review was to assess WVNS' implementation of systems and programs to meet DOE-VPP criteria. The Team also verified the information in WVNS' application by reviewing additional onsite documentation, and by conducting more than 75 formal and informal interviews of both managerial and non-managerial WVNS associates.

II. Quantifiable Program Results

The DOE-VPP Onsite Review Team reviewed the OSHA *Log and Summary of Occupational Injuries and Illnesses* (OSHA 200 log) for the current year (1999) and three preceding calendar years. The recordable injury incidence (RII) rate and the lost workday incidence (LWDI) rate were calculated for WVNS, using the following standard formulas:

RII rate =

$$\frac{\text{No. of recordable incidents [Col.(1) + Col.(2) + Col.(6)] x 200,000}{\text{No. of employee hours worked}}$$

and LWDI rate =

$$\frac{\text{No. of lost workday (LWD) cases [Col.(2)] x 200,000}{\text{No. of employee hours worked}}$$

The following table provides the data and rates for the preceding three calendar years, together with the three-year average for WVNS only, not for the entire project. It also provides the Bureau of Labor Statistics (BLS) National Average Rates for the Standard Industrial Classification (SIC) codes of 4953 and 2819.

Injury and Illness Rates at WVNS					
Calendar Year	LWD Injury Cases	RII Cases	Employee-Hours Worked	LWDI Rate	RII Rate
1996	26	34	2,082,712	2.5	3.26
1997	18	39	1,959,733	1.84	3.98
1998	3	16	1,916,205	0.31	1.67
3-Year Average Rates	47	89	5,958,650	1.58	2.99
BLS Average for SIC 4953				5.9	10.8
BLS Average for SIC 2819				1.8	3.8

Since the site's mission is to vitrify wastes, the DOE-VPP Onsite Review Team compared the WVNS injury and illness rates with the BLS

National Average rates for both SIC code 4953, which denotes refuse systems, and SIC code 2819, which denotes industrial inorganic chemicals manufacturing. The WVNS 3-year average rates for both RII and LWDI are below the industry averages (1998) published by BLS for both SIC codes 4953 and 2819, meeting the DOE-VPP requirement for Star designation. The continuing downward trend in the WVNS rates is notable.

The data entered on the OSHA 200 log support the information submitted in the application and contained in the associated injury and illness documents, including first-aid logs and DOE accident/incident reports. The Safety and Health Manager for Industrial Hygiene and Safety (IH&S) is responsible for maintaining the injury/illness information and is very familiar with the recordability of occupational injuries and illnesses. The injury/illness trending reports are generated on a monthly basis and discussed during the monthly Central Safety Steering Committee meeting.

III. Management Leadership

A. Commitment (Policy and Goals)

WVNS has successfully established and communicated clear goals and policies for worker safety. Management depends on the recommendations and information flowing up from the plant committee and activities in establishing safety goals. Communication is enhanced by the involvement of employees through committee and program participation.

WVNS is committed to maintaining its excellent safety program. The site safety and health policy statement reads, “**Exceed Customer Expectations without Injury or Illness.**” They have succeeded in creating open communication between employees and management.

The overall goal for the WVNS safety and health program is to reach zero recordable injuries and illnesses. This goal is also well communicated and echoed by employees at all levels. The objectives to achieve the site’s goal are derived from the program evaluation process and are incorporated in the accountability system.

B. Written Program

The company has developed a comprehensive written safety and health program. The “West Valley Demonstration Project (WVDP) Industrial Hygiene and Safety Manual,” WVDP-011, serves as the umbrella document for a series of subject-specific supporting manuals, including those for lockout/tagout, radiological controls, fire protection, and the Safety Observers Program.

All critical elements of a written safety and health program, including management leadership, employee involvement, worksite analysis, hazard prevention and control, and safety and health training, were included in WVNS’ written safety and health program documents. The

distribution of WVNS’ ES&H program manuals to area reference center locations is controlled by WVNS’ administrative procedures. Revisions to these manuals are controlled and distributed only to listed custodians within WVNS.

The Team verified that all aspects of the safety and health program are appropriate to the size of the worksite, the complexity of the hazards, and the nature of the industry. The ES&H program manuals cover functional areas such as hoisting and rigging, lockout/tagout, and accident/ incident investigation procedures.

C. Responsibility

Roles and responsibilities for safety at WVDP are clearly established in a written policy, entitled “WVDP Worker Safety Policy.” The policy statement supports communication and reinforcement of its goals by recognizing key plant documents, programs, and the committee. The policy sets the stage for a well-integrated program by comprehensively establishing, assigning, and supporting communication of responsibilities for safety. Individual performance agreements for positions from the top of the organization to the hourly worker included clear statements and objectives that reinforced safety roles and responsibilities. Notably, top managers had individualized safety goals and objectives that were responsive to needs recognized by the site committee and safety professionals.

At WVNS, line managers are primarily responsible for implementing safety and health programs. A management policy statement clearly assigns safety and health responsibility to line managers, supervisors, and associate employees.

Managers who were interviewed understood that they are responsible not only for going beyond mere compliance, but also for becoming proac-

tive in safety and health. For example, all directors interviewed were aware of injury rates for their respective departments and had been indirectly involved in finding the causes of previous accidents. They felt that it was their responsibility to be on top of safety- and health-related issues.

The safety and industrial hygiene departments develop programmatic safety and health guidance documents and procedures that are to be implemented by line managers. Interviews with all levels of management and associates clearly indicated that safety and health is the responsibility of line managers; safety and health professionals are used strictly as resources.

Interviews with management and employees showed that responsibilities are well communicated, understood, and accepted by the vast majority.

D. Authority and Resources

Authority to prevent, recognize, and correct hazards is well integrated throughout the organization. Workers and first line managers expressed a sincere belief that they had the authority to get problems solved quickly. Occupational safety and health resources are appropriate for the work site. The numbers and disciplines of staff safety professionals are good and have remained constant for several years. The central safety organization maintains 4-5 industrial hygienists and safety professionals on staff. Operational organizations, such as solid waste and construction, have their own safety staff. The level of training among the general population of workers has enabled them to effectively recognize and control safety and health hazards.

Evidence gathered by the Team clearly demonstrated that WVNS managers have sufficient resources to carry out their safety and health program responsibilities.

Many employees interviewed by the Team mentioned that safety and health receives first priority at WVDP. Almost all employees inter-

viewed volunteered that they have the authority to stop or refuse work that they deem unsafe or unhealthful. No instances were discovered in which inadequate authority or resources have been provided for assigned responsibilities.

E. Line Accountability

The annual performance agreements for managers and employees contain safety objectives and goals. Manager agreements included a variety of customized goals and objectives that were responsive to past reviews and evaluations of the safety program. In November 1998, WVNS published a guide for planning and evaluating employee performance. The guide included a list of sample safety objectives. The list reflects the input of several teams and committees and is very useful. Based on discussions with managers and employees, safety performance is critical to a manager's success. Workers expressed confidence in the sincerity of their managers toward safety performance.

F. Management Visibility

Manager involvement in all WVNS safety programs and activities is a matter of policy. In practice, managers were able to convincingly describe their involvement across the complete range of safety programs and activities. Based on employee interviews, it was clear that managers and employees work together on all safety activities. Employees and managers routinely cooperate on a number of committee and training activities, evaluations, and planning sessions.

G. Site Orientation

Visitors entering the WVDP site view a visitor indoctrination video that covers the generic hazards of the site as well as the emergency evacuation procedures. Security procedures ensure that all persons entering the site receive the orientation training. Entry and exit from the site is adequately controlled by security.

WVNS practices strict personnel accountability to assure that all personnel are accounted for in case of an evacuation. Upon initial employment, all personnel are required to successfully complete one-day General Employee Training (GET). A written examination is administered following completion of the GET program. All personnel are requalified every two years in GET. The site-specific training and examination includes information regarding radiation safety, industrial safety, emergency plans and procedures, and other pertinent information. Additionally, visitors and contractor personnel are under continuous escort while they are at the WVNS site, unless they have received the appropriate training necessary to ensure safe execution of their duties. While onsite, the Review Team observed visitors undergoing safety indoctrination on several occasions.

H. Subcontractor Programs

WVNS subcontract workers are required, at a minimum, to follow the same safety and health requirements as the rest of the site. Contracts are given based on past safety and health performance. An Experience Modification Rate of less than one, as well as the total recordable case rate below the industry average, is considered in selection of the construction contractors. Additionally, before a contractor initiates work onsite, they are required to submit a safety and health program outline. Every new contractor employee is required to attend a comprehensive 4-hour hazard recognition training program specific to the types of hazards an employee may be exposed to at the site. The DOE-VPP Team interviewed several contractor employees about their stop work authority, and everyone indicated that they could stop work without any fear of reprisal from their supervisors or WVNS management. Construction workers can also file a safety concern to either their management or WVNS management. During the walkaround of the construction sites at WVDP, the DOE-VPP Review Team found no apparent hazards. For example, the Team found that every bar protruding above ground was provided with a plastic cover. Additionally, all subcontractor employees were found to follow safety rules,

including appropriate use of personal protective equipment (PPE). The Team also noted that every employee in the articulating type manlifts had their body harness tied to the baskets.

WVNS also has a mechanism in place to issue a notice of violation, if warranted, although such a situation has never arisen during the past four years in the construction department. WVNS construction safety engineers visit the construction activities daily and conduct safety inspections. The construction safety engineers also conduct a formal weekly inspection of the construction sites, documenting hazards in addition to their daily presence at the construction sites.

Subcontractors are carefully selected based upon injury/illness and workers' compensation experience. Their workers generally receive training from the WVNS training organization. The type and frequency of training is similar to that of WVNS employees. Contractors are required to comply with the site's requirements. WVNS and DOE oversee subcontractor performance. Subcontractor injury/illness experience has been excellent.

The construction subcontractor safety program is clearly documented and fully implemented to meet the DOE-VPP requirements. Construction safety and health provisions are specified in the contract. The Team verified, through document reviews, that a bidding contractor's safety and health performance is heavily weighted in the selection process. Construction contractors must submit their OSHA 200 log injury and illness data, along with their experience modification rates, for the preceding three years.

If a contractor's rate of illness or injury exceeds the BLS average for its SIC code, WVNS closely reviews the data to determine the root cause and works with the contractor to establish a plan to reduce the level.

I. Annual Self-Evaluation

WVNS has established a VPP task team of workers and managers to perform the Annual

Self-Evaluation. The 1998 report is comprehensive and includes clear descriptions of the program, a status of activity, and opportunities for improvement. Notably, report recommendations have been visibly rolled up into future goals and objectives.

The DOE-VPP requirements for excellence in management leadership were met by WVNS' demonstration of top-level management commitment to occupational safety and health and the DOE-VPP. Management's commitment was confirmed by Onsite Review Team members' observations of operations and site conditions, as well as by interviews with associates.

IV. Employee Involvement

The relationship between hourly employees and their supervisors or team leaders has developed into a strong partnership in the effort to keep the WVDP a safe place to work. Interviews and document reviews confirmed that employees at all levels are involved in the structure and operation of the safety and health program and in decisions that affect worker health and safety.

Management was very helpful in providing Review Team members with access to employees for both formal and informal interviews. In the course of this review, the Team interviewed more than 100 hourly employees. While the employees' concern for the future of DOE and WVDP was clear, their pride in the safety of their place of employment was just as evident.

While it may not be feasible for the safety and health program to become entirely employee "owned," WVNS is moving in that direction. All employees interviewed about reporting hazard concerns answered readily and could point to a fairly recent experience in their work areas in which they had reported a suspected hazard and received a quick response or made the correction themselves.

Employees know what their roles are in the event of an emergency; all said they had practiced those roles. They are knowledgeable about the potential hazards involved in their work and the proper way to protect themselves.

Many employees could thoroughly explain their committees and/or representatives, functions, and achievements. Every employee who was interviewed understood hazard notification and correction.

With a large labor force in place at WVDP, WVNS created various labor-management safety and health committees. The following safety committee activities were reviewed:

- Safety Success Team,

- Safety Observers, and
- Central Safety Committee.

Safety Success Team

The Safety Success Team, an employee-driven team, was established in 1995 to enhance safety awareness and implement activities to educate the workforce in a continuing effort to reduce injuries in the workplace. The team purpose is to improve safety by ensuring each employee is directly responsible for his/her safety. The team is responsible for identifying and overseeing the resolution of issues of interest at the WVDP.

Safety Observers

The Safety Observers, consisting of a cross section of all WVDP personnel, serves as a forum to address safety concerns and issues that are found through safety walkdowns. Safety observers provide management with safety speakers upon request. These individuals provide employees with another way of reporting safety deficiencies, and their findings and suggestions are discussed at bi-monthly meetings.

Figure 1: Safety Observers Making Safety Observations at Stairs



Central Safety Committee

The Central Safety Committee was developed this year by initiative of the WVNS President. The Committee was developed to provide a forum for safety issues and status performance indicators to be discussed by staff management, IH&S Manager, Radiation Protection, and Environmental Affairs Managers and Safety Committee Chairmen. Information regarding site safety issues is provided to staff management and guests of the meeting, allowing consistent flowdown of information.

General Observations: The DOE-VPP Onsite Review Team relied heavily on random worker interviews. While reviewing documentation provided by management, a total of 50 formal interviews and another 50 informal interviews were conducted. WVNS management was extremely cooperative in providing access to workers and private meeting space for discussions.

The hourly workers, management, and supervisors expressed pride and confidence in the implementation of the safety program. It was apparent that the employees spoke with sincerity and without hesitation regarding past, present, and future safety plans. A number of persons interviewed were currently on committees, or other safety-oriented projects. Over 500 employees have participated in the Safety Observers Program. This program has the support of management, and employees are encouraged to get involved. Both hourly employees and management show their commitment to safety in the Safety Observers Program.

Workers indicated a visible and steady improvement in their safety program over the last 5 years. Many employees spoke of improved communication, increased management visibility, and opportunities to get involved in the safety program in a meaningful way. Having the right to stop work for a safety concern was supported by management and also practiced by the workers. In the last few years, engineers and planners routinely come to workers for input before starting various tasks. The company has instituted the principles of DOE's Enhanced

Work Planning approach. At WVNS, many safety campaigns and programs to encourage worker involvement were quite evident.

The general observation from employee interviews was consistent. Employees all felt they were empowered to stop work if they perceived a potential safety or health hazard. There was a genuine commitment to the VPP safety program, which was confirmed by interviews with all types of workers. Even the subcontractors who worked at the WVDP site emphasized in their interviews that safety was the main concern and it was never compromised for production. The workers stated, "This site was the safest job they had ever worked." This change in the way they perform the work has benefited their home life as well. Safety is not only practiced in the work place but also at home with families. It is the workers' perception that site management and DOE are committed to safety as the primary objective.

Recommendations

The Review Team recommends that the training process as currently performed at WVNS be continued and enhanced. Additionally, the Team recommends that there be continued effort to involve more hourly workers in site safety committees. Also, subcontractors should play a role in safety committees at WVNS since they play an important part in operations and construction. The Team found that WVNS has made excellent progress in addressing this goal and believes that the site's performance in this area now fully meets the DOE-VPP requirements.

V. Worksite Analysis

A. Pre-use/Pre-Startup Analysis

WVNS has a system in place that will assess hazards prior to purchase of a chemical or to any work being conducted that is non-routine in nature. The purchase order request for any new chemical requires approval by the industrial hygiene department. The industrial hygiene department conducts an in-depth hazards review of the chemical to be purchased, and determines whether or not it can be substituted with a less hazardous chemical. A similar process exists for construction of a new building where the ES&H personnel are involved in the design phase. The safety analysis process is initiated in the design stages of a project or a facility. For example, the DOE-VPP Onsite Review Team noted that a member of the safety and industrial hygiene group was involved in the early design stages of a new remote waste handling building proposed for construction.

At WVDP, when equipment, materials, processes, or facilities are purchased or significantly modified, they are analyzed for hazards prior to use, which meets the requirements for this subelement. The cornerstone to these evaluation efforts is the preliminary hazard analysis (PHA) program.

The work activities at WVDP undergo a thorough hazard analysis prior to commencement of work as part of the work instruction preparation. During the initial work planning process, hazards are identified through a hazards screening checklist. A work package is then completed that includes procedures, permits, hazard analyses, and supporting information necessary to perform the work. Employee input is included as part of the work package, prior to initiating the work. Several employees interviewed confirmed that they review and provide comments to the work package. In addition, they walk the work area prior to initiating the work. The job supervisors conduct a pre-job briefing, if needed, to relay hazards and unusual circum-

stances, such as heat or cold stress, physical and chemical hazards, etc., associated with the job.

The PHA program is a systematic review process that establishes the requirement for a formal ES&H review of changes that have the potential to affect the safety or health of employees. The review examines activities, such as the following:

- Equipment and facility modifications prior to construction/installation activities;
- A new process, or a change to an existing process; and
- New business or work for other projects.

A formal program exists at WVNS for determining readiness of processes, facilities, and activities. The WVNS policy document WV-368, *Operational Readiness Determination for Start-Up and Restart*, provides a graded approach for providing readiness of a process. WVNS demonstrated the safe startup/restart of the vitrification process without any adverse consequences affecting the safety and health of the employees.

B. Comprehensive Surveys

Both the industrial hygiene and safety departments perform comprehensive surveys for safety and health hazards on a periodic basis.

During walkthroughs of the WVDP facility, the Review Team made no observations of employee exposure to any particular safety or health hazard. With respect to chemical agents and other airborne contaminants, the potential for hazardous exposure appears to be minimal due to process orientation, material usage, material types, work practices, and engineering controls.

Health hazard surveys have been performed plant-wide for noise, asbestos, and a wide variety of chemical agents. The safety department performs comprehensive safety surveys annually. Other comprehensive surveys have been performed to identify confined spaced and inadequate machine guarding. A review of monitoring data maintained by the industrial hygiene department indicated extensive efforts to quantify worker exposures to chemical agents in process and laboratory areas. All exposure records that were reviewed indicated proper comparison of exposure levels of contaminants to OSHA Permissible Exposure Limits, American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values, or other limits. No instances of overexposure to chemical agents were found during the review. Generally, because of the type of work performed at WVDP and the relatively brief duration of activities, potential chemical exposures are short-term or intermittent.

As a further precaution, chemical monitoring is performed during maintenance and repair activities – two areas often overlooked as potential sources of significant chemical exposure.

C. Self-Inspections

At WVDP, several self-inspection methods are employed in identifying hazards. The Safety Observers, safety success team, IH&S professionals, line supervisors, and managers conduct inspections. The inspections conducted by the IH&S personnel verify compliance with OSHA requirements. These inspections are scheduled in such a manner that they are conducted monthly so that the entire site is covered on a quarterly basis to meet DOE-VPP requirements. Items identified requiring corrective actions are documented on a Surveillance Report Form. Area supervisors are notified of the deficiencies and they are tracked to completion on the open items tracking system.

Construction activities are inspected informally on a routine basis by the presence of the project/field engineer at the construction projects.

In addition, two dedicated construction safety engineers perform inspection of the construction sites at least daily. Construction subcontractors are required to conduct weekly inspection of their respective sites. During the walkdown of WVNS construction activities and other areas of the plant, the DOE-VPP Team did not observe any hazard requiring corrective actions.

Department managers and supervisors also are involved in the self-assessment activities. During the interviews and walkthroughs of various areas of the plant, the DOE-VPP Review Team noted that supervisors conduct house-keeping/safety inspections monthly. Upon request by the DOE-VPP Team, a supervisor produced his inspection sheet for the month. Employees also play a major role in the self-inspection process through the Safety Observers program. During the interviews, employees quoted several examples of their involvement in identifying and correcting hazards.

D. Routine Hazard Analyses

The DOE-VPP Onsite Review Team noted that at WVNS, routine hazard analyses are conducted at multiple levels based on the nature of a job. Repetitive tasks undergo job hazard analyses (JHA), whereas more complex work will undergo a process requiring input from a work review group. A work review group is a multi-disciplinary team comprised of individuals from various operations and support groups (including safety and health, environmental, radiation protection, and quality). This group assists work instruction development and hazard analyses. A work request originates the work and may be accompanied by an industrial work permit and/or a radiation work permit based on the hazards identified by the work review group and through the hazards screening process.

WVNS instituted a JSA program approximately three years ago for jobs that are repetitive in nature, such as jobs involving offloading boxes from a trailer, or involving drums to be raised or lowered to different levels using forklifts. Upon review of several randomly selected JSAs, the

DOE-VPP review found them to be thorough and complete in identifying hazards and in recommending safe actions. Interviewed employees indicated that they were involved in the development of JSAs and sometimes develop their own with assistance from the safety professionals. The DOE-VPP Review Team also found that supervisors use these JSAs as a training tool. Development of a JSA is a formal process. All JSAs developed by the line workers are submitted to IH&S department for review and approval.

E. Employee Reports of Hazards

The ECP allows WVNS and subcontractor employees to formally report unsafe conditions for corrective measures. Interviewed employees indicated that if a hazardous situation is encountered, they will try to fix it, if possible, or otherwise bring it to management's attention for corrective action. They also indicated that management is very responsive in correcting the situations. Likewise, a supervisor during the interview mentioned that items relating to safety get top priority over other items. Several employees echoed this during the interviews. Under ECP, each employee has a right to stop or refuse to perform a job the employee perceives as unsafe. A job that is stopped cannot be started until the safety issue is resolved. Under ECP, employees are encouraged to file any concern without fear of reprisal. All interviewed employees confirmed that they are not afraid to go to anyone in resolving safety issues, including the plant manager.

In addition to a written request through the ECP form, employees can also file a safety improvement request by filing specific forms designated for this purpose. Safety improvement requests and resolutions are evaluated by the IH&S department and sent to the responsible manager for corrective actions. These items are tracked to completion through the site's open items tracking system. Additionally, an interviewed union representative indicated that employees can fill out a J-15 work request form for minor

maintenance items, and gave an example of a broken handrail on a staircase. The representative also mentioned that management made it even easier for employees to file concerns via a 24-hour ECP hotline. The messages are then translated to a written form by the Internal Audits and Employee Concerns group and appropriate corrective measures are taken.

Consistent with DOE-VPP requirements, employees interviewed indicated that they were strongly encouraged by all lines of management to express and report any safety and health concerns at any time, without fear of reprisal. Employees are empowered to stop any unsafe work activity at any time.

Employees can report safety and health concerns in many different ways. They can report a concern directly to their supervisor, union leadership, ES&H division, or an individual council member. If the employee wishes to remain anonymous, he or she can use one of several telephone hotlines. The Review Team found documented evidence that the six systems are in place for reporting hazards or safety and health concerns.

A database system for tracking reported hazards has been in place for six years. All valid hazards are investigated, formally tracked on a monthly basis, trended, and reported at ES&H executive committee meetings for review and discussion.

Documents reviewed by Team members verified that WVNS staff typically responds within five workdays to non-imminent hazards. The documents further verified that recognized hazards were adequately eliminated or controlled. If a safety or health concern cannot be readily resolved, WVNS issues a controlled work order and tracks it to completion.

Employees interviewed said they were very satisfied with the hazard reporting systems available to them and that management was very responsive in correcting hazards.

F. Accident Investigations

The accident investigations at WVNS involving occupational injuries are conducted by an APT comprised of both hourly and management personnel. All occupational injuries and illnesses including first-aid cases are reported to the Health Services department. APT members assist the supervisors of the injured employee in investigating the event and in determining the cause and appropriate corrective action. Corrective actions are tracked for completion by the APT as well as by members of the IH&S group by the open items tracking system.

In addition to occupational injury investigation, WVNS conducts event investigations based on the guidance provided in the Event Investigation and Reporting Manual, which establishes a system for determining, evaluating, reporting and correcting events and conditions, including those occurrences involving subcontractors. An event investigation team (EIT) trained in finding the root and contributing causes conducts event investigations. These members have received Taproot Incident Investigation training. Likewise, APT members have received Management Oversight and Risk Tree Analyses and Accident Investigation training.

EIT members also investigate all near miss events. The facility EIT member will conduct the review, root cause analyses, and chronology of the event with the affected employees, and determine the corrective actions. Actions are tracked in the open items tracking system. WVNS publishes a monthly report to show trends in incidents, length of reporting time, and corrective actions.

Applicable lessons learned from the accident and incident investigation are disseminated to cognizant personnel through various methods, including electronic mail, a weekly operations safety newsletter, and lessons learned bulletins.

DOE-VPP Team member review of WVNS' written accident and incident reports, and interviews with associates and contractors who had been directly involved in an accident, the inves-

tigation, and corrective actions, confirmed that WVNS' accident-investigation system meets or surpasses DOE-VPP requirements.

WVNS' accident/incident investigation process description thoroughly defines reporting and evaluation requirements and responsibilities for near-miss incidents, first aid, OSHA recordable injuries/illnesses, and property/vehicle damage accidents.

G. Trend Analysis

The WVNS performance analyses program provides data for safety and health program trending. Issues entered into the database are evaluated by program type, i.e., IH&S and radiological protection. Trending of safety program indicators is conducted routinely and disseminated to management for continuous improvements in the areas of adverse trends. Based on the information that is inputted into the database, the IH&S department trends the occupational injury and illness data for total recordable case rates, as well as lost workday case rates for both WVDP as a whole (which includes subcontractors) and WVNS. The trending also includes department levels. These statistics are trended quarterly to include location, body parts injured, and type of injury. These reports are provided to staff management at the monthly Central Safety Committee meeting. As a result of a trend noticed in hand and finger injuries, WVNS management took several actions, including awareness campaigns, safety meetings, and appropriate use of PPE. A significant drop in injuries was noted from these efforts. Likewise, WVNS noticed an increasing trend in ergonomic hazards involving musculoskeletal disorders. An ergonomic task team was formed to minimize these hazards.

WVNS also trends safety improvement items received per month and the type of deficiency. The focus site inspections are then conducted based on the trends from the information received from the Safety Improvement process. Employee reports of hazards are not trended, as there have been too few to provide useful in-

formation. Another trending focus includes safety deficiencies discovered during the Safety Observers Program. These deficiencies are trended quarterly. Status of closures and types of deficiencies are provided to the Central Safety Committee during their meetings.

WVNS has in place a thorough and comprehensive worksite analysis program that identifies and corrects hazards. Through interviews, document reviews, and site walkarounds, the Review Team verified that the system meets the requirements of this DOE-VPP tenet.

VI. Hazard Prevention and Control

The hazards identified through WVNS' worksite analysis process are eliminated or mitigated through effective implementation of controls. It is clear from WVNS' DOE-VPP application and the subsequent onsite review that WVNS is committed to following the proper hierarchy of hazard control. Engineering controls are comprehensive and complete. Administrative controls are thorough and support all operations. PPE is used where exposures cannot be brought to acceptable levels. It may be argued that PPE may be used in areas where the exposure potential has been so completely minimized that PPE may not be required. The following sections explain the methods of hazard prevention and control used by WVNS in meeting the requirements for this program element.

A. Access to Certified Professionals

Two certified industrial hygienists (CIH), three certified safety professionals (CSP), and two certified health physicists (CHP) are employed full-time at the site. One of the CIHs also maintains a current Certified Hazardous Material Manager (CHMM) certification. Two registered nurses (RN) with occupational health expertise are onsite full-time. In addition, an occupational physician (M.D., Ph.D. in physiology) is onsite 20 hours a week. All of these certified professionals report adequate support in terms of professional training and technical conference opportunities. Although professional certification may not be overtly encouraged, it is supported with offsite review course attendance and support for professional activities. The safety staff is actively engaged in the local chapters of their respective professional societies.

The WVNS occupational safety and health program is adequately staffed to provide the oversight and technical support necessary for

the organization to conduct its operations safely and responsibly.

B. Methods of Hazard Control

WVNS' approach to eliminating or mitigating hazards embraces the required hierarchy of controls as discussed below.

Process or material substitution—New chemicals (hazardous materials) are reviewed by the IH&S department prior to use in the plant. The IH&S department reviews material safety data sheets (MSDS) in accordance with the WVNS ES&H program.

Engineering controls—The use of engineering controls as the primary method of protecting associates was clearly evident throughout the facility. Virtually every process with the potential for emitting mists, vapors, or other airborne contaminants was serviced by local exhaust ventilation. Numerous examples of engineering ventilation controls were observed, including plating, plastics, and model shops.

Administrative controls—In all areas where associates could potentially be exposed to a chemical release, administrative methods of control were evident, including informational awareness postings.

Personal protective equipment—Although the primary method of protecting associates at the facility is through engineering controls, PPE is routinely used in a variety of common situations. A mechanism has been in place for several years that allows the occupational safety and health staff to track the purchase, use, maintenance, and disposal of all forms of PPE.

C. Positive Reinforcement

WVNS uses several different award methods to reward those that practice or promote outstanding safety. A successful safety coupon program

has resulted in approximately 10,000 spot awards for safe acts. The coupons have a nominal value of \$5 and can be used at the safety store, or can be redeemed for face value at the cafeteria. The safety store has a number of safety-related items that value up to \$20, including home fire extinguishers, smoke alarms, carbon monoxide alarms, and hunting safety equipment. This coupon program promotes onsite as well as offsite safety.

Safety coupons can be awarded by virtually anybody onsite by filling out a simple request form. A brief description of the safe action or reason for the award must be included on the form. The reason for the award is summarized directly on the face of the safety coupon itself. A random review of redeemed coupons identified a range of safe actions, from serving on a safety committee to removing a broken ladder from service.

Figure 2: DOE Handing Safety Coupon to Operator



The Ideas for Excellence Program is another example of positive reinforcement. Although ideas that may be submitted are not limited to safety and health, the program does welcome safety-related ideas. If the idea is accepted and implemented, and it results in quantifiable savings for the facility, the savings are shared with the employee. The Ideas for Excellence program is not intended to identify deficiencies but rather is used to identify and implement creative new ideas and approaches.

Four levels of award are associated with the WVNS Recognition Program. An annual rec-

ognition/appreciation dinner is held for participating employees, with their managers as guests.

Each employee's annual evaluation contains a safety and health component and each employee's annual goals and objectives must include safety and health related goals.

WVNS utilizes a variety of safety campaigns to maintain and focus employee awareness on safety. Recently, "Zero" candy bars were handed out to reinforce the employer's zero accident goal and to kickoff a DOE-VPP awareness day.

Figure 3: "Zero" Candy Bar Day/DOE-VPP Kickoff



D. Disciplinary System

WVNS uses a disciplinary method to encourage employees to work in a safe manner. The disciplinary method ranges from verbal reprimand to job termination. All associates are informed of the system by several means, including a section in the *Employee Handbook*, collective bargaining agreements, and the Management Policy Statement 25, "Environment, Safety, and Health Program." Bargaining-unit associates are covered by the language in their respective bargaining agreements.

E. Preventive Maintenance

Preventive maintenance (PM) work at WVNS is scheduled based on manufactures' recommendations or other information gathered from

experience. The PM or maintenance scheduling is administered by the Work Control Group. A computerized tracking and scheduling system generates PM job cards monthly, and work requests and work orders are issued each day to maintenance workers. PM activities include equipment lubrication, instrument calibration, and other required tasks designed to minimize equipment breakdowns and unscheduled outages at the site. Daily Plan of the Day (POD) meetings determine work schedules for the following day. A short meeting is held each morning with all work groups to discuss any changes that may have developed overnight that would affect safety or the day's work schedule. Job cards are issued to employees that contain the job requirements as well as information pertaining to Industrial Work Permits or other safety pertinent information required to do the job. As discussed previously, employees play a major role in determining hazards prior to conducting maintenance work. Interviewed employees indicated that safety-related maintenance activities get the highest priority within the PM program. During the walkthrough of the WVDP site, the Onsite Review Team noted the equipment to be in good working condition.

F. Emergency Preparedness and Response

The emergency preparedness and response program is comprehensive and well developed. All employees interviewed understood their responsibilities in the event of an emergency caused by an uncontrolled release of a hazardous substance. Members of the onsite hazardous materials response team who were interviewed conveyed a skill level and competence indicative of well-trained responders.

A well-publicized emergency event line, dial 812, exists at WVDP to report all potential emergencies. The shift supervisor is trained and serves as the on scene incident commander.

The emergency response plan documents a high degree of coordination that exists with outside responders through memoranda of agreements

with virtually every emergency-related service in the surrounding area. These agreements detailed the role of each organization in the event of an emergency associated with the site. Area responders participate regularly in site-wide drills. Of particular note were the agreements with two area hospitals in which contingency plans were made to perform decontamination of injured employees at the hospital.

G. Medical Programs

The site medical programs are well staffed and well integrated with the activities of the IH&S department. The Onsite Review Team interviewed an occupational health nurse and physician. Both professionals were well trained and knowledgeable of the site-wide safety and health hazards.

The occupational physician and nurse conduct site walkthroughs with industrial hygiene staff at least monthly. During the monthly walk-downs, medical staff reviews new processes, and new activities as well as old activity that may have been redesigned.

H. Radiation Protection

The Onsite Review Team conducted a general review of radiation protection for the WVDP with an emphasis on the quality of service provided at the job site and on the technical skill and capabilities of those providing that service. In general, the Review Team determined from informal interviews with both workers and radiation protection managers and staff that the quality of service is high and that services are provided by a trained and qualified staff supported with top of the line, well maintained, and calibrated equipment. The small size of this site (850 employees) allows for an emphasis on tailored support for each job and for close communication and feedback among operations. Likewise, the small size and presence of very strong relationships among all employees allows for rapid response to emerging needs and job requirements. The existing work safety culture

shared among all work activities aggressively supports this radiological protection program, and teamwork across all work disciplines enhances the effectiveness of this program. A critical element of this strong safety culture that directly impacts the execution of this radiological program is the authority of any participant involved in the job to shut down all activity deemed unsafe and to demand that conditions be corrected before work can be resumed or initiated. Radiological protection at the site is a shared function, and the level of worker radiological training is of such quality that workers can and do challenge as needed the support operations provided by the radiological protection organization. These challenges are used effectively by the organization to improve performance and training.

The radiation protection organization consists of four groups: operations, technical support, dosimetry and instrumentation, and engineering. Teams are compiled from these groups as needed to support the requirements of each job. With the small size of this site, there is a very high degree of empowerment within and across these groups to tailor support and make adjustments to services as needed for safe work.

Skill, knowledge, and ability are maintained current through an automated training management system that operates through line managers and assigns responsibility to each radiation protection technician. The re-qualification process is based on a formal recall system that warns each person six weeks in advance of his or her qualification expiration. The system provides for validation of each person's qualification status through the use of a badge carried by technicians as a companion to their security picture badge that identifies current qualification levels.

Recent internal and corporate audits have revealed that this activity is performing quality service and that it has the technical depth of staff, support systems, and physical assets to conduct an effective program that in practice protects the site's workers. The Team affirmed and validated these judgments.

Likewise, the Team's review of supporting documentation, such as directives, guidance, manuals, procedures, and lessons learned information supports this judgment of continuing competence and quality service. Additionally, managers conduct exercises, such as tabletop demonstrations, to further extend their planning and training effectiveness.

Principal physical spaces, such as the laundry, and calibration and dosimetry laboratories, were toured and examined. In all cases, the space was well kept, clean, and professionally managed. Assigned workers in these spaces were knowledgeable and professional in the conduct of their duties. Each clearly knew their roles and responsibilities for sustaining safe operations. Each appreciated the critical roles that they play for safety. Interviews suggested that each assigned worker was extremely competent and exercised adequate control over their responsibilities.

Ultimately, the success of this safety program, like the others at the site, rests on a high degree of worker and technician empowerment to manage safety, and the ability and initiative of each of these people to practice safety as a part of every onsite activity. This is a program which has been built around the people, and it employs common sense and human nature to guide the necessary workday operational decisions and judgments.

Strong relationships between employees across the site have engendered very effective communication. Trust, and mutual respect are hallmarks of each of these relationships. Additionally, this site is populated with individuals of high character, high safety motivation, strong self-esteem, competence, and self-confidence.

I. HAZWOPER/HASP

WVNS' strategy for compliance with the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard is to identify the site as an interim status treatment storage and disposal facility [and therefore comply with

paragraph (p) of the standard] as opposed to an uncontrolled hazardous waste site. Although some aspects of the WVDP are similar in nature to an uncontrolled hazardous waste site, these procedures are erring on the side of safety and do not constitute an uncontrolled hazardous waste situation. For example, site procedures require that a radiation technician be present whenever any ground is being broken, the implication being that uncontrolled waste may be present. The Onsite Review Team concurred with WVNS' HAZWOPER compliance strategy.

The site-wide health and safety plan (HASP) is broken into two separate documents, both of which are comprehensive in nature and well integrated. One HASP addresses the entire site, while the second HASP is project-specific and covers the vitrification of high-level radioactive waste. Both HASPs address the required activities, including site control, training, medical monitoring, hazard assessment by substance, hazard controls, and a description of the lines of authority and roles. WVNS stages periodic hazardous material (HazMat) exercises to maintain preparedness.



Each HASP contained a section on radiation safety, industrial hygiene considerations, and safety hazards associated with the covered activities and processes.

Figures 4 and 5: Simulated Transportation Incidents



VII. Safety and Health Training

WVNS operates and maintains an effective safety and health training program that addresses both initial training and qualification, and an integrated automated re-qualification system. Because of its advantage of small size (850 staff and 100 contractors), this program is managed as a decentralized control operation with the principal burden placed on line management. The training program serves the needs of both employees and onsite contractors using common resources, procedures, and requirements. Within the operation of this program, a slight distinction between each group exists only because of the contractual requirements that define the relationships with the contractor's line managers. For all operational purposes, both populations are managed alike.

The Training Department has a small staff and serves principally as a coordinating and planning function. With the small size of this worker population, this approach appears to work well. The Records Department, with its computer-based recordkeeping services, compliments this department to provide meaningful courses in a coordinated and timely manner.

In-house trainers who serve their line managers as group training coordinators perform most training. These coordinators work in concert with each other and the staff of this Training Department, primarily with the training registrar, to plan, schedule, track, record, monitor, and assess training for each employee or contractor. Outside training vendors are used as needed to compliment and train staff trainers.

New employees usually spend the first six months or longer of their employment in a series of training courses. Each new-hire is provided with a formal training plan profile to execute and complete designated qualifications before they are allowed to walk the site unescorted. Individual training accomplishments and associated specific work competency qualifications are formally recorded in an automated system

and coordinated for the employee and line manager with the Training Department and Human Resource staff. Each employee carries a copy of his or her suit of job safety qualifications on a plastic card in conjunction with their security picture badge. Before work can commence on any approved job, the cognizant supervisor is required to use these carried records to verify the employee's fitness, suitability, and capability to do any work. Equipment and operational mock-ups are highly utilized to train workers.

Figure 6: Filter Replacement Mockup



Unqualified workers are not permitted to perform work. Additionally, the Records Department computer database is regarded as the only authority for recognizing authentic qualification. Word of mouth, documentation, personal endorsement, or any other means to verify approval of competence is not recognized.

Site visitors are addressed as they arrive and like employees are given a training profile. Much of this visitor training is accomplished using computer-assisted techniques but is recorded and managed through Records Department computer recording systems.

Likewise, for periodic re-qualification, the Records Department computer system determines the authenticity of work competence. Every effort is made by the registrar to ensure

that re-qualifications are performed before they lapse. Six weeks prior to the due date for re-qualification, a notice is generated from the computer to each associated line manager and to the worker. These reminders usually result in a concerted effort by the registrar, line manager, and worker to schedule and execute the required training. Classes are scheduled, trainers selected, and class rooms and other resources are prepared as needed to ensure that due dates are not exceeded. Additionally, where special circumstances of private needs limit regular processing training schedules, the registrar makes special arrangements as needed. Likewise, when individuals do not show up for scheduled classes, adjustments are swiftly effected to maximize the opportunities for utilizing these resources. Every effort is made and support provided to ensure that every employee/contractor suffers no lapse in recorded qualification. Such labor-intensive support is possible chiefly because of the small population and the eagerness of this population to retain the continuity of their qualifications.

Should the employee/contractor fail to meet required re-qualification due dates, the individual's picture badge is pulled by the security force and replaced with a yellow badge. These yellow badges are not punitive nor do they limit access to the site. Rather, they serve as a peer pressure incentive to quickly complete a re-qualification and restore the picture badge. There were fewer than six instances of yellow badge actions in the past year and of these, none lasted more than one week. In general, as with the yellow badge process, there is very strong support within the employee/contractor peer group to sustain and maintain this training system. Change is addressed within the Training Department as a planning function and coordinated collectively through the training coordinators and line managers.

VIII. General Assessment

A. Safety and Health Conditions

The Team conducted a number of walkarounds, both as a group and individually, and the consensus was that the site was exceptionally well maintained. Housekeeping and organization was extraordinary in all work areas, including the cold process room, warehouses, offices, and exterior areas.

B. Safety and Health Programs

Overall, the Review Team found the WVNS safety and health program to be very impressive. The program is comprehensive, innovative, and well communicated. The Team's interviews confirmed that WVNS is achieving its goal of putting safety and health first in providing excellent service.

IX. Recommendation

It is the unanimous recommendation of the DOE-VPP Onsite Review Team that West Valley Nuclear Services at the West Valley Demonstration Project be accepted into the U.S. Department of Energy Voluntary Protection Program at the STAR level.

Appendix: DOE-VPP Onsite Review Team for WVNS

Name/Affiliation	Specialty/Organization	Area(s) of Responsibility
Roy Gibbs	Team Leader, DOE/EH-5 Management Leadership Lead	Commitment, Responsibility, Line Accountability, Visible Management Involvement, Authority and Resources, Program Evaluation
Sanji Kanth	Sub-team Leader, DOE/EH-51 Worksite Analysis Lead	Records Review, RII, LWDI Rates, Self-Inspections, Preventive Maintenance, Pre-use/ Pre-startup Analysis, Site Orientation, Hazard Tracking, Construction Safety, Subcontractor Programs
Rex Bowser	DOE/EH-51 Radiation Protection Lead Safety and Health Training Lead	Radiation Protection, Safety and Health Training, Safety and Health Conditions, Accident Investigations, Trend Analysis, Job Hazard Analysis
Jeff Aboussie	Weldon Spring, IUOE Employee Involvement Lead	Employee Involvement, Employee Reports of Hazards, Disciplinary System
Matthew Fitzgerald	Consultant/SCIENTECH Inc. Hazard Prevention and Control Lead	Positive Reinforcement, Access to Certified Professionals, Comprehensive Surveys, Methods of Hazard Control, HAZWOPER, HASP, Medical Programs, Emergency Response
Vern McDougal	Observer/ATL International Inc.	N/A
Irvin (Bud) Schmidt, III	Observer/Ohio Operations Office	N/A

