

**Independent Oversight
Inspection of Environment,
Safety, and Health Programs
at the**



Y-12 National Security Complex

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Table of Contents

	Abbreviations	i
1	Introduction	1
2	Positive Attributes	5
3	Weaknesses	7
4	Results	9
	4.1 <i>Work Planning and Control Processes</i>	9
	4.2 <i>Essential System Functionality</i>	13
	4.3 <i>Focus Areas</i>	16
	4.4 <i>Feedback and Improvement Systems</i>	17
5	Conclusions	20
6	Ratings	21
	Appendix A – Supplemental Information	23
	Appendix B – Site-Specific Findings	25

Abbreviations Used in This Report

AJHA	<i>Automated Job Hazard Analysis</i>
AQEP	<i>Assembly/Quality Evaluation Production</i>
B&W Y-12	<i>B&W Technical Services Y-12, L.L.C.</i>
CFR	<i>Code of Federal Regulations</i>
DOE	<i>U.S. Department of Energy</i>
ES&H	<i>Environment, Safety, and Health</i>
ESF	<i>Essential System Functionality</i>
FEOSH	<i>Federal Employee Occupational Safety and Health</i>
FI&S	<i>Facilities Infrastructure and Services</i>
FY	<i>Fiscal Year</i>
HMIS	<i>Hazardous Materials Information System</i>
HSS	<i>Office of Health, Safety and Security</i>
ISM	<i>Integrated Safety Management</i>
NA-10	<i>NNSA Deputy Administrator for Defense Programs</i>
NNSA	<i>National Nuclear Security Administration</i>
ORPS	<i>Occurrence Reporting and Processing System</i>
OSHA	<i>Occupational Safety and Health Administration</i>
PAMS	<i>Physical Asset Management Solution</i>
PPE	<i>Personal Protective Equipment</i>
RPP	<i>Radiation Protection Program</i>
SAC	<i>Specific Administrative Control</i>
SME	<i>Subject Matter Expert</i>
SSC	<i>Structures, Systems, and Components</i>
SSO	<i>Safety System Oversight</i>
VSS	<i>Vital Safety System</i>
Y-12	<i>Y-12 National Security Complex</i>
YSO	<i>Y-12 Site Office</i>

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1 Introduction

The U.S. Department of Energy (DOE) Office of Independent Oversight, within the Office of Health, Safety and Security (HSS), inspected environment, safety, and health (ES&H) programs at the DOE Y-12 Site Office (YSO) and Y-12 National Security Complex (Y-12) during March through May 2008. HSS reports directly to the Secretary of Energy, and the ES&H inspection was performed by Independent Oversight's Office of Environment, Safety and Health Evaluations.

Within DOE, the National Nuclear Security Administration (NNSA) has line management responsibility for Y-12. NNSA provides programmatic direction and funding for stockpile management, research and development, facility infrastructure activities, and ES&H implementation at Y-12. At the site level, line management responsibility for Y-12 operations falls under the YSO Manager. Under contract to DOE/NNSA, Y-12 is managed and operated by B&W Technical Services Y-12, L.L.C. (B&W Y-12), which is a partnership involving the Babcock and Wilcox Company and Bechtel.

Y-12's primary mission is to support the Department's nuclear weapons stockpile maintenance program. Y-12 also supports DOE and other Federal agencies in various aspects of testing and development, non-proliferation, and technology transfer. Y-12 stockpile maintenance activities include production/rework of nuclear weapon components, quality evaluations and surveillance of nuclear weapons components, secure storage of special nuclear material, and various other nuclear weapons-related activities.



Aerial View of the Y-12 National Security Complex

To support these activities, Y-12 operates numerous facilities and performs such activities as facility maintenance, construction, and waste management. Potential hazards that need to be effectively controlled at Y-12 include exposure to radiation, radiological contamination, hazardous chemicals, and various physical hazards associated with facility operations (e.g., machine operations and high-voltage electrical equipment). Radiological materials and hazardous chemicals are present in various forms at Y-12.

The purpose of this Independent Oversight inspection was to assess the effectiveness of ES&H programs at Y-12,

as implemented by B&W Y-12 under the direction of YSO and NNSA. Independent Oversight evaluated a sample of activities at Y-12 including:

- Implementation of the core functions of integrated safety management (ISM) for selected Y-12 facilities and activities, focusing on work planning and control systems at the activity and facility levels. The Independent Oversight inspection selectively evaluated:
 - Work activities in Building 9204-2E, where various assembly/disassembly and quality evaluation operations are performed
 - Work activities in Building 9212, where various uranium operations, such as casting, are performed
 - Work activities in Building 9215, where various uranium operations, such as machining, are performed
 - Facility maintenance performed by the Y-12 Facilities Maintenance Organization.
- Essential system functionality (ESF) for selected safety systems and supporting systems at Building 9204-2E. The Independent Oversight team also performed a limited review of the status of selected corrective actions (from the 2005 Independent Oversight ES&H inspection) for ESF weaknesses identified in Building 9212. In addition, Independent Oversight evaluated the Y-12 vital safety system (VSS) system engineer program and the YSO safety system oversight (SSO) program.
- YSO's and Y-12's effectiveness in managing and implementing selected aspects of the ES&H program that Independent Oversight identified as focus areas, including hazardous chemical management, waste management, and specific administrative controls (SACs) for nuclear facilities. Although these topics are not individually rated, the results of focus-area reviews are integrated with or considered in the evaluation of other ISM elements. In examining these areas, Independent Oversight focused primarily on the application of institutional programs to Y-12 at the activity and facility levels.
- YSO and B&W Y-12 feedback and continuous improvement systems, with a focus on their application to Y-12 facilities and activities that were evaluated during this Independent Oversight inspection. The review of feedback and improvement systems also constitutes the Independent Oversight evaluation of the effectiveness of YSO's and B&W Y-12's implementation of DOE Order 226.1A, *Implementation of DOE Oversight Policy*, which is a long-term Independent Oversight focus area. NNSA Headquarters was evaluated as part of a recent (December 2007) Independent Oversight inspection, and NNSA continues to develop corrective actions for both the Independent Oversight inspection and an internal NNSA assessment that identified a number of deficiencies. Therefore, the Independent Oversight review of NNSA focused on the status of corrective actions and progress in implementing certain programs.

Sections 2 and 3 discuss the key positive attributes and weaknesses, respectively, identified during this inspection. Section 4 provides a summary assessment of the effectiveness of the major ISM elements that were reviewed. Section 5 provides Independent Oversight's conclusions regarding the overall effectiveness of YSO and Y-12 management of ES&H programs, and Section 6 presents the ratings assigned during this inspection. Appendix A provides supplemental information, including team composition.

Appendix B presents the findings identified during this Independent Oversight inspection. The findings are also referenced in the applicable portions of Sections 3 and 4 of this report. In most cases, the findings

listed in Appendix B were derived from multiple individual deficiencies that are described in the detailed results provided to the site in a separate document.

In accordance with DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*, NNSA must develop a corrective action plan to address each of the findings identified in Appendix B. DOE Order 470.2B also requires that the corrective action plan address all findings listed in Appendix B, including the associated individual deficiencies, and include appropriate causal analyses, corrective actions, and recurrence controls for each finding. The weaknesses in Section 3 provide a management-level summary of the findings; these weaknesses do not need to be separately addressed in the NNSA corrective action plan because the findings encompass the scope of the weaknesses.

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2

Positive Attributes

Positive attributes were identified in several ES&H programs, particularly in certain aspects of technical procedures, radiation protection programs (RPPs), preventive maintenance, employee involvement, and YSO processes.

The Y-12 technical procedure process provides a comprehensive system for development, review, approval, use, and modification of procedures. The operating procedures and job performance aids for observed production activities were well written, technically accurate, and contained the appropriate information and level of detail to perform the tasks safely. The documents included appropriate precautions, limitations, cautions, and notes to effectively integrate the applicable health and safety controls from the automated job hazard analysis (AJHA). Manufacturing workers in the facilities have significant experience working with the established processes and a high level of knowledge about their areas of responsibility.

Y-12 has a robust and comprehensive RPP, and implementation of requirements was generally effective. B&W Y-12 Radiological Control maintains a comprehensive set of technical basis documents, site requirements, and procedures that effectively incorporate applicable information contained in DOE implementation guides and standards and provide an appropriate program framework to achieve compliance with 10 CFR 835. The Y-12 RPP is supported by a comprehensive implementation matrix that cross-references where each regulatory requirement is flowed down and implemented by the management requirements and technical basis documents. Collectively, the set of administrative, dosimetry, field operations, and instrumentation procedures and technical basis documents is one of the more mature and comprehensive within the DOE complex and could serve as a model for other sites whose programs are not supported by sufficiently detailed implementing requirements and procedures. Similarly, DOE site offices responsible for evaluating and approving contractor RPPs could utilize this type of model as a gauge for setting approval standards for contractor programs.

B&W Y-12's Physical Asset Management Solution (PAMS) process for establishing VSS proactive maintenance requirements is well designed to effectively improve system availability and reliability, and where applied, provides a well-justified set of maintenance activities for important Y-12 systems. The process, initially piloted for mission-critical systems, provided significant improvement in, or justifications for, existing maintenance requirements for those systems and significantly enhanced the system design knowledge of personnel involved in the facilitated analyses. B&W Y-12 currently has four PAMS facilitators supporting requested analyses of the maintenance needs for new systems, planned restarts, and previously identified mission-critical facility systems. As a new initiative, B&W Y-12 is developing lists of unreliable systems for each production facility through review of maintenance histories. Production and facility management will review the draft list to eliminate identified systems of low importance. The remaining systems will then be considered for PAMS processing based on management priority and available funding.

B&W Y-12’s use of Design Authority Representatives in addition to VSS System Engineers enhances configuration management of individual systems, the integrated consideration of proposed changes to multiple systems associated with the facility, and the maintenance of the facility design and safety basis. Design Authority Representatives are responsible for ensuring correct technical bases are established and maintained, that design inputs from all appropriate technical disciplines are obtained and integrated in completed engineering products, that changes are reviewed, approved, and documented in accordance with applicable change control procedures, and assisting system engineers in completing change control responsibilities. These functions provide backup for the system engineer’s responsibility for configuration management of assigned systems, while enhancing the review and maintenance of the facility’s design and safety basis.

B&W Y-12 has effectively implemented a number of Specific Administrative Controls (SACs) as part of its improvement of nuclear facility safety bases and operations. The SACs are more rigorous than programmatic administrative controls. In addition, B&W Y-12 is actively seeking alternatives to some SACs, consistent with the DOE expectation to use SACs only when it *is not* practical to achieve the safety function through an engineered control. For example, at 9212, B&W Y-12 first elevated an existing administrative control for uranium concentration to a SAC, and is now determining the feasibility of replacing this SAC with an engineered control to ensure criticality safety.

The B&W Y-12 “President’s Forum” of managers and employee representatives proactively monitor, evaluate, and improve safety performance at Y-12 and support efforts to achieve the site’s goal of zero accidents (“Target Zero”). The Y-12 President presides over monthly meetings, attended by 100 to 200 employees, to discuss various aspects of safety performance and ongoing initiatives. Volunteer committees are established to analyze selected adverse trends or problem areas, and develop recommendations for correction and recurrence controls. To date, five teams have addressed such important areas as: reinvigoration of the behavior-based safety program, wellness, environmental awareness, improving radiological frisking techniques, and ergonomics. The President’s Forum also supports organization volunteers who present information to site employees on selected topics, including ES&H topics, through various mechanisms such as morning announcements, posters, seminars, and the website newsletter.

YSO has implemented two noteworthy processes that enhance YSO’s ability to implement its safety management responsibilities. First, YSO has implemented a detailed and self-critical set of internal performance indicators that provide appropriate performance information to YSO management and staff. The YSO performance indicator process is governed by an effective procedure and is being used to continuously improve YSO performance (e.g., timeliness of the conduct of assessments and actions; clarity of tasking; and, improving the quality of inputs and issues into the monthly assessment report, monthly self-assessment report, and the performance assessment matrix). The results of internal performance indicators are displayed prominently on a bulletin board in the front office. Second, YSO effectively uses an automated workflow tool – Pegasus – to enhance the ability of YSO managers and staff to perform important safety management responsibilities. The Pegasus-based processes at YSO are mature and widely used to track ES&H-related correspondence, tasking, issues, and corrective actions to closure. In addition, YSO procedures and other command media are integrated with Pegasus so that directives result in quality inputs to the system. YSO also has an information technology professional on staff to provide real-time support and to help YSO staff better utilize the capabilities of the Pegasus tool, such as developing custom views and sorting data to facilitate trend analysis and “data mining.” YSO also uses the Pegasus tool and processes to electronically communicate issues to the contractor, thus streamlining contractor notification and response and improving the timeliness and effectiveness of the communications. The YSO application of internal performance indicators and the use of the Pegasus tool are noteworthy practices; other DOE site offices could benefit from evaluating these practices and adapting similar processes to their site-specific needs.

3

Weaknesses

Although aspects of ES&H management are effective, there are continuing weaknesses in ISM programs at Y-12, most significantly in implementation of site processes, engineering and safety basis quality, and corrective actions.

In some instances, **B&W Y-12 management and supervision have not strictly enforced established processes in the areas of activity-level hazard analysis and controls, and ensured that certain conduct of operations requirements were implemented with sufficient rigor.** B&W Y-12 management and supervision applied appropriate rigor and attention to detail in strictly meeting design and quality control specifications throughout the processes and activities reviewed by the Independent Oversight team. However, in some cases, the level of attention to detail was not as rigorous in analyzing hazards and implementing hazard controls and other safety-related processes. Across all three Y-12 manufacturing facilities reviewed (9204-2E, 9212, and 9215), AJHA process implementation lacked sufficient rigor and was not in accordance with institutional requirements, as necessary, to ensure all hazards and controls associated with the work were clearly identified, understood, and conveyed to workers. In particular, the implementation strategy for controls in AJHAs was not adequate in most of the AJHAs reviewed. At all three facilities, Independent Oversight identified examples of management's failure to ensure that requirements were followed. At 9212, management has not ensured that institutional conduct of operations requirements are sufficiently flowed down and effectively implemented so that all work is properly categorized, authorized, released, briefed, and performed within established controls. Several observed work activities in 9215 are indicative of a lack of rigor with respect to line management ensuring that work processes and procedures are adequate before work commences, or that procedures are developed or modified to control new work or changes in conditions. In 9204-2E, several AJHA controls were not adequately implemented, including a control to use neoprene gloves when working with a strong acid bath containing a known carcinogen. (See Finding #C-1.)

Recent revisions to the job hazards analysis process have resulted in several types of work activities not receiving sufficient analysis of hazardous waste management issues to ensure environmental requirements were met during work performance. As a result, line and support organizations do not always have the controls necessary to ensure hazardous waste is being managed within environmental regulatory requirements for several types of work activities, including operating facility work performed by technical procedures and minor maintenance work performed without the development of a waste management plan. The current hazard analysis tools do not adequately address environmental compliance issues (including hazardous waste). Thus, the process is not sufficient to initiate involvement by environmental officers or other environmental subject matter experts (SMEs) in defining environmental hazards and implementing controls in technical procedures, or during the development of maintenance work packages that ensure environmental requirements are met during work performance. This situation has resulted in a number

of compliance concerns identified during this inspection resulting from the lack of effective processes for effectively performing environmental hazard analyses and implementing controls. (See Finding #F-1.)

B&W Y-12 has not ensured quality in the generation, review, verification, and approval of engineering and safety basis documents. A significant number of technical quality deficiencies were identified in a relatively small sampling of supporting analyses, procedures, and other documentation relating to safety structures, systems, and components (SSCs). One example involved several components, identified in the safety analysis report as performing safety functions in the high temperature cutoff circuit for the environment chambers, that had not been properly graded for safety and quality. Although no instances of actual unsafe conditions or safety SSCs operability compromises were identified, technical quality deficiencies have the potential to compromise facility safety. The potentially most significant safety concern involved an unanalyzed condition with the potential for building flooding due to failure of a fire protection water supply line. Although other possible flooding sources had been identified and analyzed, this source, a more probable large potential flooding threat, had not been recognized. In both of these examples, B&W Y-12 entered the potentially inadequate safety analysis process. A similar deficiency in the quality of safety basis documents was identified in the 2005 Independent Oversight inspection. (See Findings #E-1 through E-3.)

YSO and B&W Y-12 have not effectively managed safety issues that result in the timely correction of identified deficiencies and the establishment of effective recurrence controls at Y-12. Although many issues are being effectively managed by B&W Y-12, many other ES&H problems are not being formally identified, documented, and managed to ensure resolution in accordance with the site issues management program. Identified issues are sometimes improperly screened for significance and assigned a low significance level precluding causal analysis, extent-of-condition determinations, and effectiveness reviews. When causal analysis is performed or extent of condition is addressed, the results are not consistently accurate or conservative, and recurrence controls are often inadequate. Trending and analysis of some assessment activities are not being performed as required; the results of trending of issues management and other data sets are not being effectively analyzed and acted upon. Weaknesses and deficiencies in the identification and management of issues were identified, to some extent, in all organizations reviewed by Independent Oversight and in all elements of the B&W Y-12 contractor assurance system, particularly in the various assessment programs and the responses to events and incidents, including injuries and illnesses. The corrective actions, recurrence controls, and effectiveness reviews for many of the findings from the 2005 Independent Oversight inspection were not fully effective in addressing the causes and preventing recurrence. The YSO corrective action program contains weaknesses in the conduct of causal analysis and effectiveness reviews that contribute to recurring deficiencies and insufficient actions to resolve identified deficiencies in YSO and Y-12 ES&H programs. For example, several of the findings from the 2005 Independent Oversight inspection were not adequately addressed, in part, because YSO did not perform sufficient analysis and effectiveness reviews. (See Findings #D-2 through D-3.)

4

Results

The following sections provide a summary assessment of the YSO and Y-12 activities that Independent Oversight evaluated during this inspection.

4.1 Work Planning and Control Processes

The Independent Oversight review of work planning and control processes focused on the adequacy and implementation of institutional expectations and requirements for activity-level work planning and control.

The 2008 Independent Oversight inspection determined that Y-12 has made progress in improving institutional processes and the implementation of the ISM core functions in a number of areas since the 2005 Independent Oversight inspection. Most activities at Y-12 “production” facilities (encompassing work activities at Buildings 9204-2E, 9212, and 9215, as well as some other Y-12 facilities) are performed in accordance with detailed technical procedures. When the procedures and processes are strictly followed, the workplace hazards are, in most cases, effectively controlled.

However, deficiencies in implementing the site processes and ES&H requirements were evident at all three of the evaluated production facilities and in maintenance activities. A few of the observed



Special Materials Processing

deficiencies can be attributed to Y-12 processes that warrant further improvements (e.g., environmental hazards are not sufficiently considered, and some chemicals are inappropriately excluded from the site chemical management system). However, most of the observed deficiencies occurred because B&W Y-12 management and supervision did not strictly enforce established requirements and rigorous implementation of hazard control and other safety-related processes (e.g., not stopping work to fix a deficient procedure). Across all production facilities reviewed, implementation of the AJHA process was not always

performed with sufficient rigor or in accordance with institutional requirements, as necessary, to ensure all hazards and controls associated with the work were clearly identified, understood, and conveyed to workers. Similar concerns were evident in maintenance activities. (See Finding #C-1.)

In general, workers demonstrated that they would implement safety controls in accordance with procedures and requirements. However, managers and supervisors, in a number of instances, directed or allowed a deviation from a site process (e.g., performing an activity without a specifically applicable procedure, directing workers to use a glove that is not consistent with the procedure requirements, allowing work to proceed without stopping to fix procedures or AJHAs). The managers and supervisors are experienced and knowledgeable of the facility hazards; consequently, in most cases, managers and supervisors selected (and workers used) appropriate ES&H controls so the deviations from the process did not result in a significant degradation in worker safety. However, in a few instances, the deviations resulted in an increased risk to workers (e.g., the failure to use a neoprene glove). Further, the deficiencies noted on this Independent Oversight inspection (i.e., management and supervisor deviation from site processes, working without a procedure) could result in accidents and events and are similar to those that contributed to a uranium chip fire at Y-12 that caused an unplanned radiation exposure to a number of workers. (See Finding #C-1.)

9204-2E Production

The Assembly/Quality Evaluation Production (AQEP) organization provides for the disassembly and assembly of components for the nation's nuclear stockpile. Independent Oversight observed the work activities of several Production teams in various areas.

AQEP has defined the scope of work activities in sufficient detail to permit adequate identification and analysis of activity-level hazards. With the exception of environmental concerns, hazards are adequately identified and analyzed through the hazard analysis process. In most cases, AQEP work is authorized, pre-job briefed, and performed in strict accordance with established controls by highly competent and knowledgeable workers.

Although some AJHAs contained deficiencies in the documentation of implementation strategies, AQEP has identified the appropriate hazard controls for production work activities in the AJHAs and technical procedures in most cases. Increased management attention is needed in a few areas to ensure that hazard controls are implemented with the appropriate rigor and attention to detail. (See Finding #C-1.)

Overall, AQEP has effectively implemented the ISM process at the task level. With few exceptions, work is adequately defined and scheduled, and hazards are adequately identified and analyzed. Production has identified the appropriate hazard controls for task-level work activities in most cases, and work is authorized and performed in accordance with established controls by highly competent and knowledgeable workers. In a few areas, however, increased management attention is needed to ensure that implementation of hazard controls receives the appropriate level of rigor and attention to detail. (See Finding #C-1.)

9212

Independent Oversight reviewed the application of the core functions associated with programmatic work performed by the casting operations group in Building 9212. The review included operations directly associated with uranium casting, and supporting activities.

Existing technical procedures adequately define the scope of work for current manufacturing operations. Radiation work permits adequately specify the allowable work activities that may be performed.

Radiological hazards have been well analyzed over the years and continue to be evaluated through a formally defined radiological work permit and “as low as reasonably achievable” review processes, as well as comprehensive continuous air monitoring and sampling programs. Other hazards, such as industrial and chemical hazards, are identified and analyzed through the AJHA and the health hazard assessment processes. However, the Independent Oversight team identified a number of deficiencies in the implementation of the AJHA process such that hazards and controls were not sufficiently identified, analyzed, implemented, and communicated to workers. Some of these deficiencies are longstanding but were not captured by ES&H professionals, line managers, supervisors, or workers, indicating a lack of rigor in following and understanding institutional requirements. (See Finding #C-1.)

Engineering controls, such as hoods and enclosures, are supplemented by administrative controls including postings, radiological work permits, and personal protective equipment (PPE). The most prevalent administrative control for production work is the use of procedures; the Y-12 technical procedure process provides a comprehensive system for development, review, approval, use, and modification of procedures. Y-12 also has a robust and comprehensive RPP, and implementation of requirements was generally effective. However, weaknesses were evident in conduct of operations programs including ensuring compliance with site requirements in the areas of work classification, plan-of-the-day/work authorization, pre-job and crew briefings, and implementation of AJHA controls. (See Finding #C-1.)

Most observed production activities were performed safely. Operators in the facility have significant experience working with the established production processes and a high level of knowledge concerning their areas of responsibility.

Overall, many hazards at 9212 are adequately identified, analyzed, and controlled. However, improvement is needed to ensure effective implementation of site hazard analysis processes and conduct of operations requirements. In a number of instances, work control documents, such as AJHAs, were not understood and followed as written, or corrected. While these deficiencies, in many cases, have been mitigated by an experienced and stable workforce coupled with other facility controls, the number of deficiencies and the failure of managers and supervisors to take corrective actions are not consistent with Y-12 institutional and DOE ISM and nuclear safety expectations. (See Finding #C-1.)

9215

Various machining activities are performed in Building 9215. During this inspection, Independent Oversight observed work activities that included machining and inventory operations, routine surveillances of supervisor rounds, fume hood calibrations, machine cleaning, and filter change-out work activities. Worker hazards associated with these activities include potential exposure to hazardous chemicals and radiological materials, and hazards typical of a machine shop (e.g., high voltage, noise).



Chemical Processing

The majority of work is well defined and documented in technical procedures; however, an exception was observed in one work activity (i.e., hood filter change out). For this activity, most work evolutions are performed without an appropriate technical work document. As a result, work scope and work boundaries were unclear, a hazard analysis for the work observed was not performed, and formal SME reviews were not conducted.

At the facility level, hazards are typically identified, analyzed, and documented through the safety analysis process. At the activity level, hazards are generally well defined and analyzed through the AJHA process. Radiological hazards are well characterized, and many non-radiological hazards are identified and analyzed, although some concerns have been identified with the design and implementation of the health hazard assessment process. Building 9215 has an effective program for the removal of legacy chemicals. However, for hazardous chemicals present in the building, the assignment of chemicals as construction materials, or materials commonly used by the public, may bypass the necessary safety analysis and/or administrative controls. (See Finding #C-1.)

At the facility level, engineering controls are used extensively in this building for the control of hazards. Radiological controls are robust and consistently implemented. The Hazardous Materials Inventory System (HMIS) process provides useful identification and control of hazardous chemicals in the facility, but, in a couple of cases, the inventory is not accurate. At the activity level, technical procedures and area postings are sufficiently implemented; however, the Chip Packing Hood Air Flow surveillance procedure and hood certification label contained several deficiencies. Although many hazard controls are adequately identified in AJHAs, a few deficiencies were noted in specific AJHAs reviewed during this inspection (e.g., pre-job briefs listed as a control but not performed, use of incorrect safety gloves). (See Finding #C-1.)

There are a variety of mechanisms in place to ensure that work is authorized and performed within controls. However, in several examples, supervision did not ensure that work was performed within procedures or required controls. (See Finding #C-1.)

Overall, many hazards at 9215 are adequately controlled and a number of initiatives are contributing to improved worker safety, such as the efforts to reduce inventories of hazardous chemicals. With a few exceptions, the processes are adequate. However, implementation of the processes is not consistently effective; as a result, some hazards were not adequately controlled and some work was not performed in accordance with established procedures and requirements. (See Finding #C-1.)

Maintenance

Maintenance at Y-12 is managed and conducted primarily by the Facilities Infrastructure and Services Division (FI&S). ISM is incorporated into the maintenance planning process through the use of maintenance service requests, work orders, hazard identification worksheets, AJHAs, and work instructions as described in Y-12 procedures. Independent Oversight evaluated work performed by FI&S in facilities located throughout the site, including the primary west end production facilities, maintenance shops, and several other buildings, and included preventive and corrective maintenance and modification activities.

Most work definitions for Y-12 FI&S maintenance were adequate to determine the potential hazards present for the observed work activities. In some cases, the process relies on the supervisor's, or worker's, walkdown and assessment of conditions to supplement the work orders. Also, Y-12 has created a maintenance support entity to reduce some of the administrative burden on line supervision and enable line supervision to spend more time in the field. Although the quality varies, pre-job briefings were conducted for all maintenance work observed and the expectation for conducting pre-job briefings is well established.

Hazard analyses performed in connection with maintenance work orders, work instructions, hazard identification worksheets, and AJHAs have improved since the 2005 Independent Oversight inspection. However, some hazards (e.g., noise, arc flash) present during work activities were not sufficiently analyzed to ensure appropriate controls had been established, and deficiencies in AJHA implementation were evident. (See Finding #C-1.)

With some exceptions, engineered and administrative controls have been used effectively to ensure worker safety. Most work control documents specified appropriate PPE. However, the specificity of controls in AJHAs or work instructions was not always adequate to ensure that individuals wear the appropriate PPE for the specific activity. Additionally, in some cases, workers were directed to seek assistance from ES&H SMEs in the establishment of controls, which assumes that the crafts are sufficiently cognizant of the hazards and controls to know what questions to ask. These conditions represent potential safety vulnerabilities. However, some controls were missed or not adequately communicated to the workers for hazards including noise, welding activities, and electrical arc flashes. In addition, some work controls are not always adequate to ensure appropriate workplace monitoring by industrial hygiene, and some maintenance activities continue to use hazardous materials where a less hazardous substance is feasible. Deficiencies were also identified in the implementation of environmental controls in maintenance activities. (See Findings #C-1 and #F-1.)



Tooling Manufacture

Most work evolutions observed by Independent Oversight were performed safely and in accordance with established controls. Y-12 has taken some important steps to assist the FI&S maintenance crafts in their readiness to perform work, including the increased availability of first line supervisors in the field and an increased emphasis on the conduct of pre-job briefings. In a few cases, controls were not followed because they were not clearly communicated. However, workers demonstrated a good understanding of safety and health requirements and a willingness to follow them. (See Finding #C-1.)

Overall, B&W Y-12 has improved work planning and control for maintenance activities since 2005, and many work activities are being performed safely. With some exceptions (e.g., environmental hazards and requirements for interfacing with SMEs), the processes are generally adequate. However, management has not ensured that processes are consistently implemented with sufficient rigor and attention by work planners and SMEs, resulting in some hazards that were not adequately analyzed or controlled. (See Finding #C-1.)

4.2 Essential System Functionality

The review of essential safety system functionality focused on three areas: (1) functionality of selected essential systems at 9204-2E at Y-12, which is a hazard category 2 nuclear facility; (2) effectiveness of Y-12 corrective actions in addressing the findings from the 2005 Independent Oversight inspection; and (3) the Y-12 VSS system engineer and the YSO SSO programs.

Functionality of Selected Essential Systems at 9204-2E

Engineering Design and Safety Basis. The review focused on selected systems including aspects of fire protection, environmental chambers, and gloveboxes.

The fire protection system review entailed four wet-pipe systems protecting the building interior and one dry-pipe system protecting the outside loading dock. The systems meet applicable code requirements and are generally well designed. The review identified a significant concern regarding the potential for flooding due to a fire system pipe break. B&W Y-12 declared a potential inadequacy of safety analysis in response to this discovery. Also, several configuration management issues involving calculation inputs, document control, and “attention to technical detail” quality concerns were discovered. (See Findings #E-1 through E-3.)

The environmental chamber high temperature cutoff system review examined the two chambers in the field, reviewed control wiring diagrams to verify their design functional capability, and confirmed that the designs had been appropriately translated into testing procedures and other documents. The design of the system appeared to be adequate to reliably perform its design safety function. However, significant technical issues concerning configuration management were identified, as discussed below.

Two gloveboxes (GB-1 and GB-2), the disassembly glovebox and the quality assurance glovebox, respectively, were reviewed. The primary focus was on over-/under-pressure protection and water accumulation prevention aspects of the designs. Although no operability issues were identified, the over-/under-pressure protection supporting analyses for both gloveboxes contained significant non-conservative discrepancies that compromised the quality of these documents and indicated unsatisfactory execution of the generation, review, and approval process. Also, the procedure on engineering design analysis and calculations continues to have some weaknesses. Although the procedure was revised to address most of the previously identified deficiencies, new deficiencies were identified in the area of design inputs. Several examples were observed in actual calculations where design inputs were not provided or sources clearly indicated. (See Finding #E-2.)

Configuration Management. Although B&W Y-12 has established a strong configuration management program in terms of its scope and breadth, concerns were identified with the quality of implementation at the detailed level. For example, a recently issued B&W Y-12 standing order allows temporary nuclear facility changes outside the existing safety basis by allowing the creation of a “safety basis supplement.” However, no procedure explicitly defines and describes the expectations and requirements for such a document; its approval by DOE, either directly or through the unreviewed safety question process, is not required in the standing order. Additionally, the standing order itself was not reviewed and approved by DOE. A new standing order requiring DOE approval was issued on April 28, 2008.

In several instances, inadequate document control was identified, including the use of surveillance test data sheets containing obsolete acceptance criteria and a design drawing containing incorrect temperature setpoint data. One significant issue that was identified involved the inadequate designation of several safety-significant components of the environmental chamber high temperature cut-off system in various safety implementation documents. B&W Y-12 declared a separate potential inadequacy in safety analysis for these concerns. (See Finding #E-3.)

Operations and Surveillance Testing. Operations were effectively controlled by the shift manager. Observations of activities throughout the building demonstrated performance in accordance with the conduct of operations manual. For example, the shift manager’s status board was up to date with appropriate status descriptions for safety equipment and special conditions or cautions. B&W Y-12 is transitioning to an

electronic storage of records, but additional attention is needed to ensure that official training and qualification records are maintained as required by the training manual. Surveillance testing of the fire suppression system and the high temperature cutoff for the environmental chambers was adequate, with one isolated exception (traceability of installed and test instrumentation). (See Finding #E-4.)

Maintenance. The maintenance program meets the requirements of DOE Order 433.1, provides generally effective support for production and operations, and appropriately integrates with the system engineer program to ensure configuration management of reviewed VSSs. No significant problems in this functional area were identified that would affect the performance of the reviewed systems. The computerized master equipment list is still being populated, but already provides a well-designed link to VSS maintenance histories and significant support and data management for configuration management, maintenance, procurement, and system engineering. Finally, B&W Y-12's process for establishing VSS proactive maintenance requirements is a strength, where applied, and is well designed to effectively improve system availability and reliability.

Procurement. B&W Y-12's procurement processes for safety-significant SSCs are well defined to support effective configuration management of installed and new VSSs; however, minor deficiencies in documentation detracted from an otherwise well-implemented program. No significant problems were identified in this functional area that could affect the performance of the reviewed systems.

Y-12 VSS System Engineer and YSO SSO and Engineering Programs

System Engineering. From an overall perspective, the system engineer program and the interviewed system engineers provide effective support for operations, maintenance, and configuration management of assigned VSSs. No significant problems were identified in these functional areas that affect the performance of the reviewed systems. However, VSS system engineers do not periodically assess system reliability, or trend or compare system and component performance against established criteria, as required by DOE Order 420.1B. Further, required job task analyses for VSS and equipment system engineers were not adequate to ensure these engineers were prepared to perform certain assigned engineering tasks. Also, enhanced VSS walkdown training, established to resolve performance deficiencies, was not made a requirement for VSS system engineer initial qualification or their continuing training program, and several qualified VSS system engineers have not received the training. (See Findings #E-5 and E-6.)

YSO Safety System Oversight. YSO has an adequate safety system program description. The YSO staff member responsible for SSO for the environmental chambers has adequate working protocols to coordinate with the corresponding system engineer and has conducted several walkdown surveillances in the facility. However, there is no baseline schedule for coverage of systems through the quarterly VSS walkthroughs to ensure that all systems are covered at an appropriate periodicity; little documented evidence of assessments was available for Independent Oversight review regarding VSS configuration; material condition; and reliability, availability, and maintainability reviews of the 9204-2E safety systems. Further, SSO surveillances, reviews, and assessments did not identify the system engineer training and performance deficiencies, or the several significant engineering design, safety basis, and configuration control issues. (See Finding #D-1.)

Effectiveness of YSO and Y-12 Corrective Actions for 2005 Independent Oversight ESF Findings

ESF findings from the 2005 Independent Oversight inspection involved inappropriate rigor, formality, and attention to detail for safety system technical bases, and ineffective implementation of the design change control process. Some of the corrective actions for the underlying issues were adequate. However, in some cases, the corrective actions were not adequate to address the underlying causes and prevent recurrences, particularly for those concerns that entailed insufficient level and degree of detail. In other cases, closure evidence was inadequate because it did not describe nor reference any additional documents that may support

the logic and assumptions of the corrective actions. B&W Y-12 also did not adequately address certain key observations concerning the system engineer program identified by its own independent assessments. YSO actions following B&W Y-12 corrective actions associated with the 2005 Independent Oversight inspection findings did not include sufficient independent verification of the effectiveness of the corrective actions. (See Findings #D-1 and D-3.)

4.3 Focus Areas

Chemical Management

B&W Y-12 has a centrally controlled process for procuring hazardous materials for use on site. Additional controls are in place to ensure that responsible personnel are notified of hazardous materials being stored and used by subcontractors. These processes have enabled B&W Y-12 to ensure hazardous materials stored and used on site are identified and that material safety data sheets are available. In addition, the HMIS inventory database is adequate for compliance with the Occupational Safety and Health Administration (OSHA) hazard communication standard.

However, further improvements are warranted in some areas. While the HMIS database is used to support the hazardous materials identification process and unneeded materials and chemicals program, there are no established expectations of accuracy that are sufficient to meet the needs of the various users of this database. The inventory data managed in HMIS does not reflect quantities and locations of hazardous materials that are present on site because chemical usage is typically only updated on a quarterly basis; some hazardous materials (such as those brought on site by subcontractors) are tracked separately from HMIS, and the inventory procedure is not sufficiently rigorous to capture all chemicals that are outside of specific storage areas. Also, tracking of hazardous chemicals in HMIS using bulk inventories does not provide sufficient information to determine how long particular chemicals have been in storage, and B&W Y-12 does not currently have procedures in place to ensure that chemicals or chemical containers are monitored to ensure they do not degrade and present additional hazards. In addition, while B&W Y-12 has implemented a program to perform a one-time cleanout of aging hazardous materials, the initial screening to identify these chemicals did not identify all such materials.

B&W Y-12 had previously (May 2007) self-identified weaknesses in their chemical management program that are similar to the weaknesses identified by this Independent Oversight inspection. Although B&W Y-12 has initiated several improvement actions as a result of their review, there is no formal corrective action plan for resolving some of the significant issues identified. (See Finding #D-3)

Hazardous Waste Management

B&W Y-12 has effectively implemented the site-wide waste management program to ensure regulatory requirements are being met. The central 90-day accumulation area is being well operated but needs facility improvements to ensure compliance. In addition, B&W Y-12 has successfully expanded the program to address permitted storage facilities, which were previously managed by another contractor. Some aspects of waste management program procedures and hazardous waste training are effective. In addition, line and support organizations are required to have environmental officers assist line personnel in maintaining environmental compliance and effectively managing waste.

However, a recent revision to the job hazards analysis has resulted in hazards identification worksheets that do not trigger involvement by environmental SMEs. As a result, several types of work activities did not have sufficient environmental controls to ensure regulatory requirements were met. In addition, the buildup of

legacy equipment and materials combined with poor housekeeping have hindered effective waste management. These deficiencies have increased the potential for non-compliances with regulatory requirements and indicate the need to strengthen implementation of several aspects of environmental compliance within line organizations. (See Finding #F-1.)

Specific Administrative Controls

Most SACs are adequately defined and implemented and follow the guidance in DOE-STD-1186. However, some of the sampled SACs were inconsistent in their content, implementation, or both. A number of factors contribute to the inconsistencies. Little formal direction or guidance is provided for choosing which controls to elevate to SACs, or determining the type (i.e., limiting condition for operation or directive action). Several aspects of implementation were also ambiguous, including formal documentation of independent verification, approach for responding to SAC violation, and level of detail within the SAC and its implementation procedure. Specific training sessions or other local guidance is not provided regarding these points of SAC implementation.

4.4 Feedback and Improvement Systems

NNSA/YSO

NNSA Headquarters has not established processes to implement all elements of DOE Order 226.1. Corrective action plans from recent Independent Oversight inspections and a review of NNSA Deputy Administrator for Defense Programs (NA-10) by the Chief, Defense Nuclear Safety have not yet been established, in part because NA-10 was undergoing reorganization at the time of this inspection.

Many aspects of the YSO safety oversight program are mature and effective. The YSO Facility Representative program provides adequate coverage of Y-12 facilities; the Facility Representatives perform regular and effective assessments, surveillances, and walkthroughs of Y-12 facilities and track, follow-up, and close findings in accordance with actions entered into the Pegasus issues management system. The Facility Representative program is effective in keeping YSO management informed about Y-12 facility operations and issues, and is supported by a mature and effective qualification program. The YSO technical qualification program is mature, well documented, well managed, and proactively supported by YSO senior management. YSO is the only site office to date to achieve accreditation of its technical qualification program. All personnel at YSO with technical responsibilities participate in the technical qualification program, and many YSO personnel are qualified in multiple functional areas. The YSO contract performance evaluation process is a detailed and mature process that appropriately considers ES&H measures and targets in award fees and feedback to the contractor, and provides for appropriate NNSA involvement. YSO has a mature and effective process for managing issues and work activities, which includes extensive and well-integrated use of the Pegasus tool. YSO also has a detailed and self-critical set of internal performance indicators that provide appropriate performance information to YSO management and staff.

YSO is in the process of defining, refining, and implementing a risk-informed oversight process (the enhanced oversight process) that is aimed at ensuring an appropriate amount of oversight hours are applied to 28 defined functional areas. Utilizing a complex combination of quantitative factors and professional judgment, base oversight hours are adjusted (up or down). The goal of the enhanced oversight process is to analyze risk, and apply oversight resources where they are most needed. Additionally, as the contractor assurance system matures (i.e., more effective contractor self-assessments are conducted, more issues are accurately identified, and effective corrective actions are completed) YSO oversight within a given functional area may be reduced. The enhanced oversight process is unique to YSO and was initiated in fiscal year (FY)

2007 and refined for FY 2008. The concept is logical, has appropriate management attention, and is being continuously improved.

However, there are some weaknesses in YSO oversight and internal processes. Although YSO performs many effective assessments, YSO management has not ensured that certain directive requirements are effectively communicated and/or implemented. Specifically, YSO does not have an accurate list of directive- and YSO-required assessments, a process to keep the list current, a definition of periodicity for “periodic” directive assessments, and a means of being able to reconcile the accomplishment of required assessments over multiple years. A number of directive-required assessments were either missed or not accurately reflected in the existing oversight process requirements. While YSO has an effective process for tracking issues using Pegasus, there are weaknesses in the YSO corrective action program in the conduct of causal analysis and effectiveness reviews. These weaknesses contribute to recurring deficiencies and insufficient actions to resolve identified deficiencies in YSO and Y-12 ES&H programs. YSO’s recent changes to the issues management procedure are designed to improve the conduct of causal analysis for deficiencies identified by YSO self-assessments. In addition, weaknesses were identified in some aspects of YSO processes for implementing the requirements of Federal Employee Occupational Safety and Health (FEOSH) and the corporate operating experience program. For example, the YSO FEOSH process does not address some requirements (e.g., annual FEOSH goals and objectives, and injury and illness investigation quality checks), and YSO does not have an approved implementing procedure for its Corporate Operating Experience Program. YSO management has a good understanding of needed improvements and effective tools to continue improving their oversight of contractor effectiveness. (See Finding #D-1.)

Y-12

B&W Y-12 has established and implemented the required elements of a contractor assurance system, and improvements were evident in all feedback and improvement areas since the 2005 Independent Oversight inspection. However, the lack of rigor in the definition and implementation of these assurance systems and processes limits their effectiveness in driving continuous improvement.

A variety of assessment activities are employed at Y-12 to evaluate safety programs and performance and to drive continuous improvement. Independent assessments and facility reviews are generally rigorous and comprehensive. However, approximately 90 percent of issues tracked in the formal issues management system are identified by external or internal independent assessments or events; less than 20 percent are identified through organization self-assessments. Although effective assessments were performed, numerous management assessments lacked sufficient scope and rigor and did not appropriately support conclusions, identify issues accurately, or as required by governing site procedures. The results of otherwise effective assessment programs, including enhanced floor and operational performance improvement surveillances and radiological awareness reports, are not being adequately documented, analyzed, and trended; managed in accordance with the site Feedback and Improvement Working Group and issues management process; or evaluated by site review boards for communication of cross-cutting or systemic performance problems to senior management. Recurring problems indicate that the current methods of communicating issues and tracking them to resolution have not been fully effective. (See Finding #D-2.)

Many safety issues are being effectively managed using the formal issues management program and the corrective action processing system documentation and tracking tool. Issues management now includes risk ranking and formal management of the resolution of negative observations. However, problems persist involving the failure to enter deficiencies into the formal management system, and rigorous management of the issues that are entered. Some issues are assigned lower significance levels that preclude more rigorous management, including causal analyses and extent-of-condition determinations. By procedure, Significance

Category 4 Occurrence Reporting and Processing System (ORPS) reportable events are arbitrarily classified as low significance, regardless of the specific circumstances and without applying the risk screening tool. Some deficiencies and needed corrective actions documented in injury and illness incidents, operational events, field surveillances, and management assessments were not being identified for formal issues management in accordance with the site system. In many cases, causal analyses are insufficient, extent of condition is not always addressed when appropriate, and appropriate recurrence controls are not identified or implemented. The corrective actions, recurrence controls, and effectiveness reviews for many of the findings from the 2005 Independent Oversight inspection were not fully effective in addressing the causes and preventing recurrence. (See Finding #D-3.)

Significance Category 2 and 3 ORPS reportable event reports were generally well written with good causal analysis and corrective actions and recurrence controls. Lesser incidents and events are also being formally critiqued and, in general, reflected good determination of timelines and needed actions and further investigation. However, in the reporting and management of many Significance Category 4 and non-ORPS reportable events, not all deficiencies in programs and performance were formally identified as issues, and identified issues are not consistently evaluated for causes and extent of condition to establish appropriate recurrence controls. OSHA recordable occupational injuries/illnesses and first aid cases are being identified in a timely manner and investigated, documented, and reported in a structured process. Although there have been improvements in the rigor of investigations and associated documentation in recent months, corrective actions and recurrence controls established to address the deficiencies noted by Independent Oversight in 2005 were not fully effective; procedural weaknesses, documentation discrepancies, and insufficient investigations persist. (See Finding #D-2 and D-3.)

The B&W Y-12 operating experience/lessons learned program has been strengthened since 2005 and provides better screening of external operating experience information and increased sharing of internally-generated lessons with the DOE complex. Lessons learned are being disseminated, reviewed by supervisors and workers, and incorporated into work activities. However, demonstration of excellence in the application of operating experience is limited by insufficient documentation, tracking, and corrective actions for external lessons learned; some relevant operating experience publications have not been distributed for technical evaluation or entered into the Y-12 lessons learned database.

Y-12 employees have many informal and formal means to communicate and obtain resolution of safety concerns, and ES&H-related concerns were, in general, appropriately resolved in a timely manner. For example, the B&W “President’s Forum” of managers and employees is a particularly effective and proactive process for involving management and workers in efforts to improve safety at Y-12.

Overall, B&W Y-12 has established and implemented the required elements of a contractor assurance system and has made improvements since the 2005 Independent Oversight inspection. However, weaknesses persist in identifying, documenting, and communicating program and performance deficiencies to the appropriate level of management, and in performing effective analysis of problems and establishing recurrence controls.

5

Conclusions

Many aspects of the Y-12 ISM program are effective. For example, most work observed was performed using well written and technically accurate procedures, and the RPP is comprehensive and effectively implemented. The nuclear safety systems maintenance, operations, and surveillance programs were effectively implemented for the systems reviewed, and the process for establishing proactive maintenance requirements is effective. In addition, YSO has implemented a risk-based approach for oversight; has notably effective processes for some aspects of issues management and performance measures; and has effective training, qualification, and contract performance measure processes. Further, YSO and B&W Y-12 have improved in many areas since the previous Independent Oversight inspection in 2005, including several aspects of work control processes and configuration management for nuclear safety systems, and feedback and improvement processes.

However, a number of deficiencies were identified with the technical quality of engineering products. A potential accident scenario has not been evaluated, and some deficiencies were identified in engineering design, configuration management programs, and the VSS system engineer program. Y-12 management and supervision have not always strictly enforced established site processes and ensured that hazard analysis and control processes were consistently followed and effectively implemented. While improvement is evident, continued weaknesses in important aspects of the contractor assurance system are also evident. YSO has some deficiencies in its oversight program (e.g., an inadequate baseline assessment program, insufficient evaluation of deficiencies and verification of the effectiveness of corrective actions, and gaps in SSO).

Increased YSO and B&W Y-12 management attention is needed to ensure timely and effective correction of recurring weaknesses. Particular emphasis needs to be applied to:

- Addressing the unanalyzed accident scenario and improving the quality of engineering calculations, analysis, some elements of configuration management, and the VSS system engineer program.
- Ensuring that established safety requirements are effectively implemented in all situations, with a particular focus on line management (i.e., facility level managers and supervisors) responsibility and accountability for safety.
- Enhancing the B&W Y-12 contractor assurance system, with particular emphasis on accurately capturing and categorizing safety issues, conducting appropriate causal analysis, establishing effective recurrence controls, and performing rigorous effectiveness reviews.
- Improving YSO management of requirements to ensure that all applicable oversight and occupational safety requirements are captured in processes and are fully implemented.

6 Ratings

The ratings (see next page for the purpose and definition of ratings) reflect the current status of the reviewed elements of Y-12 ISM programs.

Work Planning and Control				
ACTIVITY	CORE FUNCTION RATINGS			
	Core Function #1 – Define the Scope of Work	Core Function #2 – Analyze the Hazards	Core Function #3 – Develop and Implement Controls	Core Function #4 – Perform Work Within Controls
9204-2E	Effective Performance	Effective Performance	Needs Improvement	Effective Performance
9212	Effective Performance	Needs Improvement	Needs Improvement	Effective Performance
9215	Effective Performance	Effective Performance	Needs Improvement	Effective Performance
Maintenance	Effective Performance	Needs Improvement	Needs Improvement	Effective Performance

Essential System Functionality	
Engineering Design and Authorization Basis	Needs Improvement
Configuration Management	Needs Improvement
Operations	Effective Performance
Surveillance Testing	Effective Performance
Maintenance and Procurement	Effective Performance
System Engineering and Oversight	Needs Improvement

Feedback and Continuous Improvement - Core Function #5	
YSO Feedback and Continuous Improvement Processes	Effective Performance
B&W Y-12 Feedback and Continuous Improvement Processes	Needs Improvement

Ratings – Purpose and Definitions

The Office of Independent Oversight uses a three-tier rating system that is intended to provide line management with a tool for determining where resources might be applied toward improving environment, safety, and health. It is not intended to provide a relative rating between specific facilities or programs at different sites because of the many differences in missions, hazards, and facility life cycles, and the fact that these reviews use a sampling technique to evaluate management systems and programs. The rating system helps to communicate performance information quickly and simply. The three ratings and the associated management responses are:

- **Significant Weakness (Red):** Indicates that senior management needs to immediately focus attention and resources to resolve the identified management system or programmatic weaknesses. A Significant Weakness rating normally reflects a number of significant findings identified within a management system or program that degrade its overall effectiveness and/or that are longstanding deficiencies that have not been adequately addressed. In most cases, a Significant Weakness rating warrants immediate action and compensatory measures as appropriate.
- **Needs Improvement (Yellow):** Indicates a need for improvement and a significant increase in attention to a management system or program. This rating is anticipatory and provides an opportunity for line management to correct and improve performance before it results in a significant weakness.
- **Effective Performance (Green):** Indicates effective overall performance in a management system or program. There may be specific findings or deficiencies that require attention and resolution, but that do not degrade the overall effectiveness of the system or program.

APPENDIX A

Supplemental Information

A.1 Dates of Review

Planning Visit	March 10-13, 2008
Onsite Inspection Visit	March 31 – April 10, 2008
Report Validation and Closeout	April 29 – May 1, 2008

A.2 Review Team Composition

A.2.1 Management

Glenn S. Podonsky, Chief Health, Safety and Security Officer
 Michael A. Kilpatrick, Deputy Chief for Operations, Office of Health, Safety and Security
 William Eckroade, Director, Office of Independent Oversight
 Thomas Staker, Director, Office of Environment, Safety and Health Evaluations
 William Miller, Deputy Director, Office of Environment, Safety and Health Evaluations

A.2.2 Quality Review Board

Michael Kilpatrick	Bradley Peterson	Thomas Staker
Dean Hickman	Robert Nelson	William Sanders

A.2.3 Review Team

Thomas Staker, Team Leader
 Shiv Seth, Essential System Functionality Lead

Phil Aiken	Jimmy Coaxum	Vic Crawford	Larry Denicola
Ivon Fergus	Bob Guy	Marvin Mielke	Bob Compton
Jon Johnson	Joe Lischinsky	Jim Lockridge	Tim Martin
Joe Panchison	Don Prevatte	Ed Stafford	Mario Vigliani

A.2.4 Administrative Support

Jennifer Bird	Tom Davis
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APPENDIX B

Site-Specific Findings

Table B-1. Site-Specific Findings Requiring Corrective Action

FINDING STATEMENTS	
C-1	In some instances, B&W Y-12 management and supervision have not strictly enforced established safety requirements and processes in the areas of hazards analysis and control, including AJHA process implementation, and certain conduct of operations requirements with sufficient rigor, as required by DOE Policy 450.4, <i>Safety Management System Policy</i> .
D-1	YSO management has not ensured that certain directive requirements are effectively communicated and/or implemented (e.g., assessments, Federal Employee Occupational Safety and Health, corrective action effectiveness reviews, and operating experience), as required by DOE Policy 450.4, <i>Safety Management System Policy</i> .
D-2	B&W Y-12 has not established and implemented fully effective assessment programs and activities with sufficient rigor to ensure that safety programs and performance are consistently and accurately evaluated with deficiencies identified to drive continuous improvement, as required by DOE Order 226.1A, <i>Implementation of Department of Energy Oversight Policy</i> , and by DOE Order 414.1C, <i>Quality Assurance</i> .
D-3	B&W Y-12 has not established and implemented a fully effective corrective action program that ensures that safety deficiencies are appropriately documented, rigorously categorized and evaluated, with root causes and extent of condition accurately identified, and that appropriate and effective recurrence controls are identified and implemented, as required by DOE Order 226.1A, <i>Implementation of Department of Energy Oversight Policy</i> , and DOE Order 414.1C, <i>Quality Assurance</i> .
E-1	The 9204-2E safety basis and supporting analyses did not evaluate potential accident scenarios and the associated consequences of failure of the fire system piping in a lower level storage room, as required by 10 CFR 830.204(b)(3), <i>Documented Safety Analysis</i> .
E-2	B&W Y-12 has not ensured quality in the generation, review, and approval of safety-related calculations and analyses, commensurate with their importance to safety, as required by 10 CFR 830.122, <i>Quality Assurance Criteria</i> .
E-3	B&W Y-12 has not ensured adequate configuration management of safety systems in the areas of control of safety-related documents and translation of design and safety bases requirements into safety-related documents and procedures, as required by 10 CFR 830.122, <i>Quality Assurance Criteria</i> , and DOE Order 420.1B, <i>Facility Safety</i> .
E-4	Documentation of the use of measurement and test instruments during surveillances of the safety environmental chamber high temperature cutoff systems does not meet the quality assurance requirements of 10 CFR 830.122 (h), <i>Quality Assurance Criteria</i> , Criterion 8 – Performance/Inspection and Acceptance Testing, and B&W Y-12 Quality Program Description.
E-5	B&W Y-12 has not ensured that system engineers are adequately trained and qualified to perform assigned work, as required by 10 CFR 830.122(b), <i>Quality Assurance Criteria</i> , Criterion 2 – Management/Personnel Training and Qualification, DOE Order 5480.20A, and the B&W Y-12 Conduct of Training Manual.

FINDING STATEMENTS

E-6	B&W Y-12 VSS system engineers do not periodically assess system reliability, nor trend and compare safety system and component performance against established criteria, as required by DOE Order 420.1B, <i>Facility Safety</i> , and the B&W Y-12 VSS System Engineer Program Description.
F-1	B&W Y-12 has not adequately implemented a process for identifying, analyzing, and controlling environmental aspects during work planning and control processes for several types of work (e.g., operations performed using technical procedures and most maintenance work) in order to ensure compliance with hazardous waste regulations in accordance with DOE Order 450.1 Chg 2, <i>Environmental Protection Program</i> .