

No: Y15-635PD

Title: BWXT Y-12 Integrated Safety Management System

Rev. Date: 11/26/03

The Integrated Safety Management System (ISMS), which encompasses Integrated Safeguards and Security Management (ISSM), is applicable to all work performed by BWXT Y-12 employees.

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**BWXT Y-12, L.L.C.
Management Requirements**

Number: Y15-635PD
Rev. Date: 11/26/03
Supersedes: 10/30/03
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BWXT Y-12
Program Description

Subject: BWXT Y-12 Integrated Safety Management System

[D. N. Alger]
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11/21/03
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12/01/03
Effective Date

Concurrence:

This document has completed the management requirements process.

M. J. Keyser 11/25/03
Requirements Management

This document has been reviewed by an Authorized Derivative Classifier and UCNI Reviewing Official and has been determined to be UNCLASSIFIED and contains no UCNI.

This review does not constitute clearance for public release.

K. M. Bracic /s/ 11/21/03
Signature and Date

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REVISION LOG
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Revision Date	Description of Change	Pages Affected
11/26/03	DM/R-03-ET-045 Non-intent change to incorporate YSO approval comments: Update Figure 4 Changed operations manager to production support manager Admin. changes: Change Procedures to Procedure Change title of Y15-901PD	23 44 34 29, 51
10/30/03	Non-intent change to change effectivity date. Updated Revision Date.	All
09/15/03	DM/R-03-ET-037 Incorporate ISSM into ISM PD. Add reference to No More Surprises. Update ISMS Web page URL. Change document Y10-153 to Y14-153. Change title of Y90-027 "Procedure" to "Manual." Change title for Y15-202 and delete reference to Y15-203 and Y15-204. Change Y14-001INS to Y14-001. Add S/RID references on DOE verification and assessments for clarification. "ISM Scorecard" changed to "ISM Scorecard or metric," and deleted reference to Y/ESH-0002. Change Y15-312INS to Y15-312. Delete Figures 10-1 and 10-2 (combined with Figures 2-1 and 2-2). Change Y73-201INS to Y73-201 and change <i>Instruction</i> to <i>Procedure</i> in title. Add example of maintaining ISMS during reorganization. Appendix F. Add reference and Appendix E as improvement plan.	All

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REVISION LOG
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09/15/03 (cont.)	Change Dear Clause references: 970.5223-1 was formerly 970.5204-2. Add Environmental Management System and Appendix D. Change title of Y30-601 to "Baseline Change Control." Delete applicability to fee milestones. Delete BCCB.	
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1 SCOPE

The Integrated Safety Management System (ISMS), which encompasses Integrated Safeguards and Security Management (ISSM), is applicable to all work performed by BWXT Y-12 employees. For the purposes of this document, “safety” encompasses environment, safety, and health, including pollution prevention, waste minimization, and resource conservation. This program is also applicable to Y-12 National Security Complex (Y-12) contractors to the extent that such requirements are incorporated into contractor documents.

2 EXECUTIVE SUMMARY

This document describes the methodology of the BWXT Y-12 ISMS. ISMS is a process to ensure work is performed safely and securely by putting into place the controls and measures encompassing all facets of hazards/risks identification, hazard/risk assessment, integration of barriers/measures/controls, and authorization and execution of work. The ISMS described in this document reflects the common practices across Y-12.

The BWXT Y-12 management team is committed to doing work safely and securely and recognizes that line management responsibility, accountability, good management systems, and worker involvement are the key elements to an effective ISMS. BWXT Y-12 operations line management is responsible and accountable for ensuring that work performed in facilities is executed according to ISMS. All levels of management and each worker are ultimately responsible for safety and security and for the protection of the public, the environment, and Department of Energy (DOE) assets (information and property).

Protecting the workers, the public, the environment, and DOE assets is an important value considered in all activities planned or performed by BWXT Y-12. Use of ISMS to consistently instill this value in diverse Y-12 work activities requires a tailored ISMS program rather than a one-size-fits-all approach. ISMS was designed to be implemented based on the hazards and risks associated with specific facilities and organizations. While this document broadly establishes ISMS and its implementation from a site-wide perspective, it specifically describes a rigorous and formal system for implementation in all BWXT Y-12 facilities and organizations.

A fundamental element of ISMS continues to be the facility/organization safety envelope. For facilities with a safety basis, ISMS relies on the clear identification of the safety basis (SB) documents so that the proposed changes can be evaluated to ensure they remain within the safety envelope. This is accomplished through safety analysis to define the controls necessary to operate the facility safely and through the use of formal work control processes that identify additional controls that are implemented to address hazards specific to the work being performed.

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2 EXECUTIVE SUMMARY (cont.)

Implementation of ISMS focuses on clearly establishing line management's responsibility and accountability for safety and security. This is accomplished through a well-defined organization structure and by including specific roles and responsibilities of line managers in the procedures that implement ISMS. Reliance is placed on the Operational Safety Boards (OSBs), in support of the operations manager, to ensure consistent and adequate implementation and to ensure safe, secure operations. The operations manager assisted by the OSB will ensure that the security measures and safety controls are integrated such that work is accomplished safely and securely. The Executive Steering Group (ESG) provides policy and strategic planning support, ensures the work scope and budget process incorporates Integrated Safety Management (ISM)/ISSM principles, and oversees and guides implementation of ISMS across BWXT Y-12.

The processes and elements of ISMS are enhanced through worker involvement. Worker participation has been formalized through implementation of ISMS. Specifically, procedures and work packages for operational and maintenance activities are developed and validated by multidiscipline teams of support personnel assigned to the facility or organization. Workers are also involved in reviewing proposed procedures prior to their approval. This teamwork approach is important to assure that, when multiple measures/controls are established, they are balanced according to the potential hazards and risks to avoid imposing measures/controls that could, in fact, reduce the margin of safety or impair the workers' ability to work safely, securely, and effectively. I Care-We Care teams, management/labor forums, tool box meetings, and safety recognition programs are additional examples of worker involvement activities that routinely occur throughout Y-12. No More Surprises is a communication forum between employees and management. No More Surprises is "one-stop shopping" for employee feedback channels, incorporating programs such as I Care-We Care, the Employee Concerns Program, Ethics, and the Employee Question and Answer Forum.

2.1 Quality Assurance Program

It is the intent of the BWXT Y-12 Quality Assurance program to be fully consistent with and supportive of the company's ISMS program's functions and guiding principles. *Quality Program Description*, Y60-101PD, details the methodologies employed to do work processes safely and securely and in accordance with established procedures. It also describes mechanisms in place to seek continuous improvements by identifying and correcting findings and preventing recurrence.

2.2 Contractor Assurance System

Consistent with the recognition that an inherent characteristic of ISMS is improvement, BWXT Y-12 is implementing an integrated management system improvement initiative. These system improvements are targeted at improving management planning and performance effectiveness and efficiency consistent with commitments to continuously improve integrated safety and

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2.2 Contractor Assurance System (cont.)

security performance. See Appendix C for planned improvements for ISMS in calendar year (CY) 2003 and 2004.

2.3 Integrated Safeguards and Security Management

Y12-047, *Integrated Safety Management/Integrated Safeguards and Security Management (ISM/ISSM)* is the BWXT Y-12 policy on integration of ISM and ISSM. BWXT Y-12 policy is to systematically integrate safety and safeguards and security into management and work practices at all levels so that missions are accomplished safely and securely.

The term security is used to cover all areas of ISSM to ensure the adequate protection of DOE assets. Topical areas of safeguards and security are protection program management which includes security planning and vulnerability assessment, personnel security, information security which includes cyber security and operations security, nuclear materials control and accountability (NMC&A), and protection program operations which includes physical security systems and the protective force. Related cross-cutting areas (e.g., export control, classification, foreign visits and assignments, and foreign travel) affect operations at Y-12. Examples of DOE/National Nuclear Security Administration (NNSA) assets include special nuclear material, classified matter, unclassified sensitive information, and government property.

At the site level the ESG has been chartered to oversee and guide implementation of ISSM across BWXT Y-12. Both ISM and ISSM use the same five core functions to assure the necessary work structure exists to accomplish the work in a safe and secure environment. Safeguards and Security personnel are participating members of the ESG, Feedback and Improvement Working Group (FIWG), and Issue Management Prioritization and Risk Board.

The Site Safeguards and Security Plan (SSSP) documents the protection posture as assessed against the Design Basis Threat provided by NNSA and the local threat statement as provided by the NNSA Y-12 Site Office (YSO). The security planning process is outlined in DOE Order 470.1 and the DOE Format and Content Guide for SSSP.

At the facility and task level, Safeguards and Security subject matter experts (SMEs) are members or ad hoc members of OSBs in support of operations managers as specified in OSB charters. A checklist of security questions is available to aid planning of work in conjunction with Y73-045INS, *Automated Job Hazard Analysis*. Additionally, security SMEs are valuable members of project management teams assisting with the development of security plans for

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2.3 Integrated Safeguards and Security Management (cont.)

specific projects. As such, the Safeguards and Security SMEs interface with the various safety disciplines as well as the project management leadership for each specific project. The operations manager assisted by the OSB will ensure that the security measures and safety controls are integrated such that work is accomplished safely and securely.

A BWXT Y-12 ISSM Web site has been developed as a resource for employees. The URL is <https://www-internal.y12.doe.gov/security/issm/issm.htm>. Focus areas for security are described on the ISSM Web site. The focus areas are: classification and technical information; classified matter protection and control; cyber security; emanations security; foreign national visits and assignments; foreign ownership, control, or influence; information security; NMC&A; operations security; personnel security; physical security; protective systems; protection program operations (protective force); technical security; telecommunications security; and vulnerability analysis (VA).

2.4 Environmental Management System

Consistent with the requirements of DOE Order 450.1, "Environmental Protection Program," an Environmental Management System (EMS) is being implemented by BWXT Y-12. An EMS is a continuing cycle of planning, implementing, evaluating, and improving processes and actions undertaken to achieve environmental goals. EMS requirements must be addressed in the contractor's ISMS which must be submitted for DOE review and approval under DEAR 970.5223-1, Integration of environment, safety, and health into work planning and execution. The EMS must be part of the site's Integrated Safety Management (ISM) System by December 2005. See Appendix D for a description of EMS planning and implementation on-going by BWXT Y-12.

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3 INTEGRATED SAFETY MANAGEMENT SYSTEM OVERVIEW

DOE's *Safety Management System Policy*, DOE P 450.4, identifies the following six primary components of ISMS:

- Objective,
- Principles,
- Functions,
- Implementation,
- Responsibilities, and
- Mechanisms.

The first three components are described in detail in the DOE policy and apply universally across the DOE-NNSA complex. The last three—implementation, responsibilities, and mechanisms—are unique to each DOE-NNSA site and are tailored by each site according to a site's mission and organizational structure. Therefore, the remainder of the Overview provides a brief review of the first three components. Section 6 provides a detailed description of the BWXT Y-12 ISMS. Policy Y12-047, *Integrated Safety Management/Integrated Safeguards and Security Management*, describes how ISM and ISSM are integrated in the ISMS at BWXT Y-12.

3.1 Objective

The objective of ISMS, simply stated, is to provide a safe and secure workplace and to perform work safely and securely while protecting the worker, the public, the environment, and DOE assets. BWXT Y-12 procedure Y15-636, *Integrated Safety Management Program*, establishes the roles and responsibilities for the implementation of ISMS at BWXT Y-12.

In accordance with BWXT Y-12 policy Y72-001, *Environment, Safety, and Health Policy*, work will be performed in a manner which provides safe working conditions; protects workers' health, the public, and the environment; and conserves natural resources." It is the right and responsibility of BWXT Y-12 workers to actively participate in the planning of activities, as appropriate, to ensure their knowledge and experience improves work performance and to cause activities to be stopped when unsafe or unsecure conditions or practices are observed in their own work or that of others.

This concept is an intrinsic part of BWXT Y-12 programs and procedures. BWXT Y-12, through its people, programs, and procedures, seeks to meet its mission and customer expectations while ensuring adequate protection of the worker, the public, the environment, and DOE assets. However, mission and customer expectations must yield if adequate safety and security cannot be achieved.

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3.2 Guiding Principles

The following outlines the seven guiding principles for ISMS as established by DOE P450.4, and guiding principle number eight (worker involvement), which was designated as imperative to BWXT Y-12 ISMS implementation strategy success. The BWXT Y-12 core mechanism for implementation is identified for each principle.

- *Line Management Responsibility.* Line management is responsible for the safe, secure, and efficient conduct of work to ensure the protection of the public, the workers, the environment, and DOE assets. Procedures Y14-001, *Conduct of Operations Manual*, and Y15-636, *Integrated Safety Management Program*, clearly define that line management is responsible and accountable for safety and security of all activities performed within their facilities or organizations. This concept is further enforced in lower-tier program procedures.
- *Clear Roles and Responsibilities.* Clear and unambiguous lines of authority and responsibility for ensuring safety and security are established and maintained at all organizational levels. BWXT Y-12 policies, programs, and procedures identify specific roles and responsibilities for the safe and secure execution of work. Y15-636, *Integrated Safety Management Program*, provides a description of organizations, roles, and responsibilities for ISMS at Y-12.
- *Competence Commensurate with Responsibilities.* Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities. Procedure Y90-027, *Conduct of Training Manual*, defines the process for training and qualifying BWXT Y-12 personnel. Y14-001, *Conduct of Operations Manual*, requires managers and supervisors to only assign personnel to activities that they are qualified to perform.
- *Balanced Priorities.* Resources are effectively allocated to address safety, security, and programmatic and operational considerations. Y72-001, the BWXT Y-12 policy for *Environment, Safety, and Health*, is the top-level guiding principle for protecting the workers, the public, the environment, and preventing pollution whenever activities are planned and performed. Y72-006, *Y-12 Pollution Prevention and Sustainability Policy*, affirms the commitment of BWXT Y-12 to continually integrate sustainability principles into its activities in a safe, compliant, and cost-effective manner. Procedures Y30-600, *Work Plan Preparation and Administration*, and Y30-601, *Baseline Change Control*, define the budgetary process and control for assuring that protecting the public, the workers, the environment, and DOE assets is a priority when planning and addressing changes to BWXT Y-12 budgets.

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3.2 Guiding Principles (cont.)

- *Identification of Standards and Requirements.* BWXT Y-12 implements this guiding principle through the use of the BWXT Y-12 Standards/Requirements Identification Documents (S/RIDs) and DOE directives and other DOE guidance. The BWXT Y-12 S/RIDs address Environment, Safety and Health (ES&H) and Quality Assurance requirements. BWXT Y-12 procedure Y15-058INS, *Requirements Compliance Assurance*, describes the process for maintenance of S/RIDs as well as the process for ensuring flowdown of requirements into appropriate programs, policies, and procedures. Procedures Y15-902, *Management Assessment*, and Y15-903, *Independent Assessment*, describe the process for ensuring S/RIDs are consistently assessed. For security, DOE orders, directives, and other DOE guidance are used.
- *Hazard Controls and Protective Strategies Tailored to Work Being Performed.* Administrative and engineering controls to prevent and mitigate hazards and risks are integrated and tailored to the work and associated hazards and risks. A number of BWXT Y-12 procedures assure that hazard controls are tailored to the work being performed, including Y74-802, *Safety Basis Documents for Nuclear, PSM/RMP, and Chemically Hazardous Facilities*, Y73-045INS, *Automated Job Hazard Analysis*, Y17-001, *Engineering, Design, and Support During Construction*, Y73-164INS, *Subcontract Environmental Safety and Health Management Instruction*, and Y18-007, *Maintenance Job Planning and Execution*. VAs and the SSSP assess and document the security posture against the Design Basis Threat as provided by NNSA and outlined in DOE Order 470.1 and the DOE Format and Content Guide for SSSP. This program prepares and manages the SSSP and ongoing VA. Analyses include those for Insider, Outsider, theft, and other related evaluations of security.
- *Operations Authorization.* The conditions and requirements to be satisfied for operations to be initiated and conducted are clearly established and agreed-upon. Procedure Y15-190INS, *Readiness Manual*, ensures that activities and processes are authorized. This principle is implemented through the BWXT Y-12 *Conduct of Operations Manual*, Y14-001.
- *Worker Involvement.* Workers are involved in hazard and risk identification, identification of controls/measures, planning of work, and feedback. BWXT Y-12 integrated worker involvement is accomplished through the processes described in the procedures identified in the discussions of the previous seven principles. This is accomplished through inclusion of workers on the multidiscipline teams.

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3.3 Functions

The framework for the safety and security management system is organized around the following ISMS core functions:

- define scope of work,
- analyze hazards and risks,
- develop and implement safety controls and security measures,
- perform work,
- and feedback and improvement.

The BWXT Y-12 ISMS can be described at three levels: the site-level processes, facility-level processes, and activity task-level processes. Figure 1 shows the relationship and some of the key mechanisms of the safety management functions at each level.

This program description describes a common sense approach to ISMS with efforts focused towards assignment of specific line management responsibilities, increased worker involvement, the integration of ES&H programs, and where needed, improvements to upgrade key programs that form the foundation of ISMS.

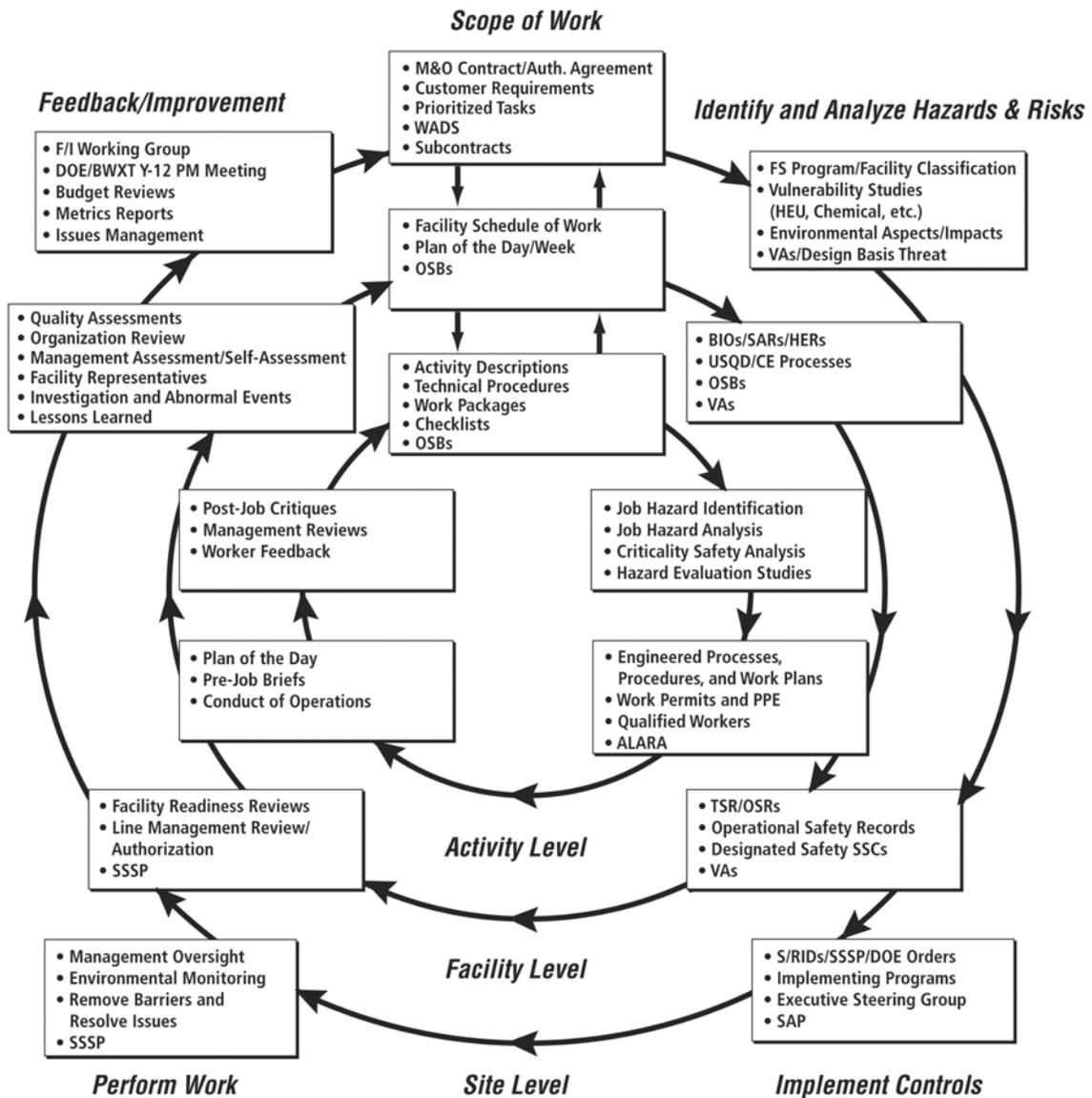
3.3.1 Current ISMS Infrastructure

The ISMS infrastructure includes the site-level programs that prescribe the processes for business and program management, prioritization and allocation of resources, budget and cost management, etc.; S/RIDs which identify DOE-NNSA requirements and regulations; and specific safety management programs and procedures that implement ES&H (including waste management and pollution prevention) requirements at the site, facility, and task levels. DOE orders, directives, and other DOE guidance are used for security. A graphical representation of the ISMS infrastructure is shown in Figures 2-1 and 2-2.

At the site level, ISMS begins with the documents which describe the scope of work to be accomplished. DOE-NNSA defines the site-level scope of work on an annual basis. Priorities are established between DOE-NNSA Headquarters, YSO, and the contractor. Production schedules and commitments are formalized in the Management and Operating Contract (M&O) as Work Authorization Directives (WADs). Budgets include the necessary ES&H resources required to execute the work safely and securely and to maintain the infrastructure of the facilities. This budgeting and contract administration process is defined in procedure Y30-600, *Work Plan Preparation and Administration*.

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3.3.1 Current ISMS Infrastructure (cont.)

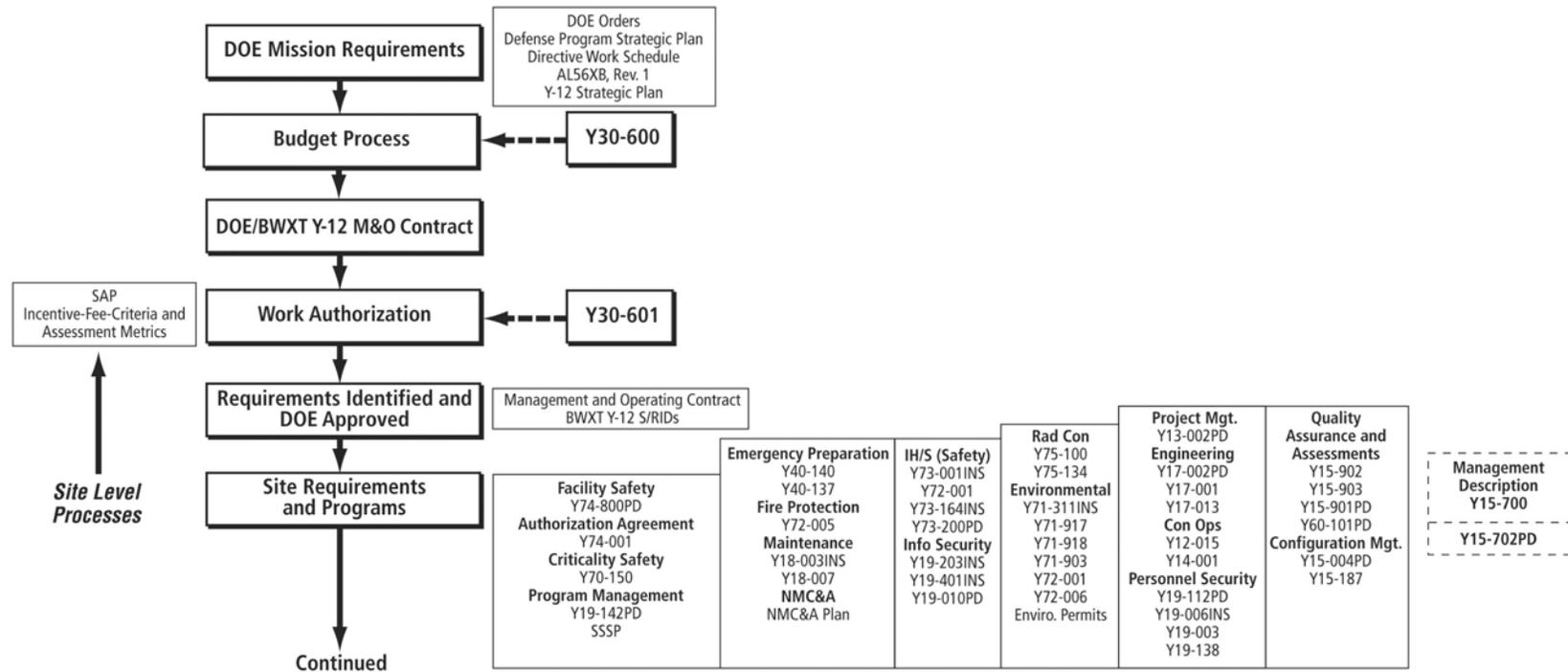


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Figure 1. Core ISMS Functions

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3.3.1 Current ISMS Infrastructure (cont.)

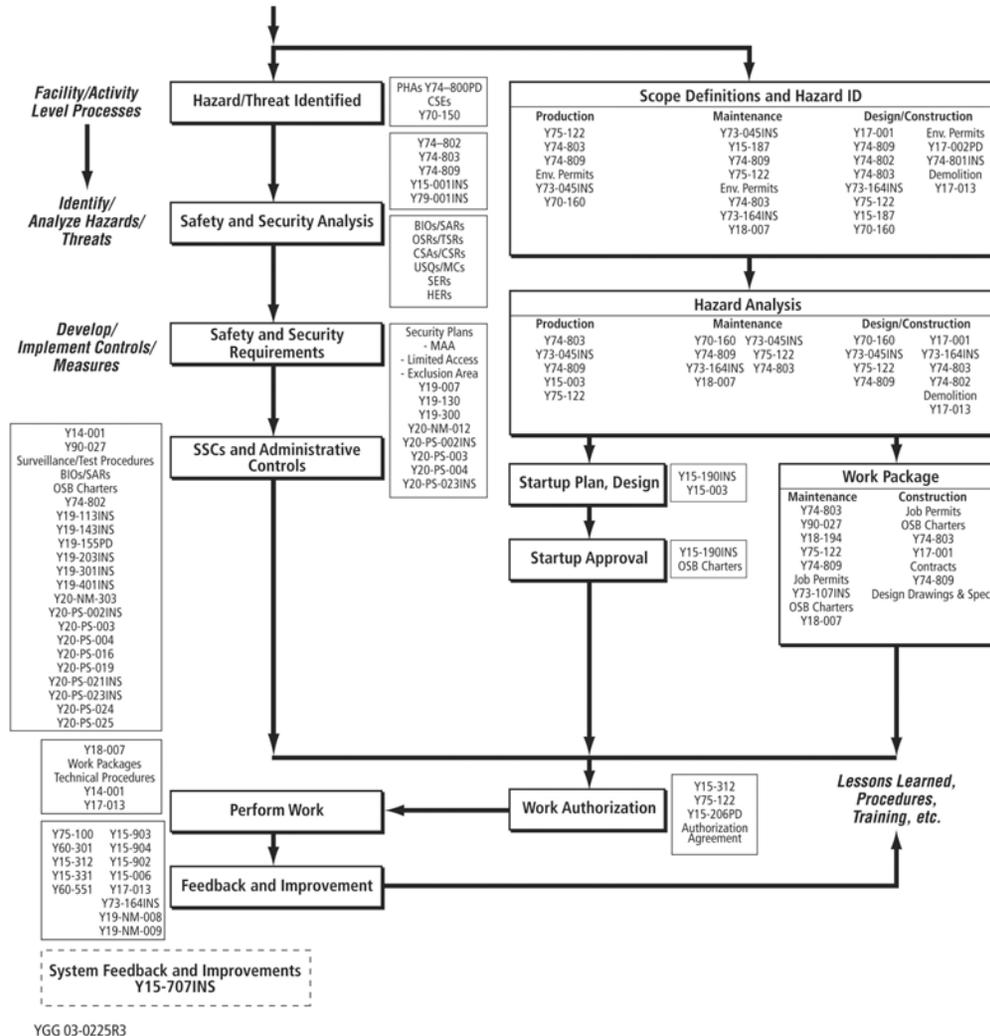


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Figure 2-1. Y-12 Detailed ISMS Infrastructure

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3.3.1 Current ISMS Infrastructure (cont.)



YGG 03-0225R3

Figure 2-2. Y-12 Detailed ISMS Infrastructure (cont.)

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3.3.1 Current ISMS Infrastructure (cont.)

ESG provides BWXT Y-12 policy and strategic planning support, oversight, and direction of the ISMS policies and practices. ESG monitors the budgeting and prioritization process to ensure ES&H activities are appropriately integrated into the work mix based upon a quantitative evaluation of risk reduction and cost/benefit analyses. Unresolved conflicts arising from the budgeting and prioritization process are referred to ESG for resolution.

Requirements flow down to the organizational level for planning, scheduling, and work execution. The organization manager, assisted by OSB, maintains evidence demonstrating any action taken for lessons learned that are applicable to operations, facilities, processes, systems, projects, and/or job activities, and reviews organizational responses to lessons learned for adequacy and completeness. The organization manager is supported by one or more OSBs that are established in each facility or organization in accordance with procedure Y15-636, *Integrated Safety Management Program*. OSB is comprised of personnel (e.g., technical, ES&H, and other support organization) who assist in the evaluation, analysis, planning, and oversight activities in the facility/organization.

Workers are actively involved throughout the ISMS process. For example, workers are involved in work scope definition, hazard and risk identification and job walkdowns, and review and verification of the work plans and procedures that implement hazard controls and risk measures. Workers have the authority per Y73-001INS, *BWXT Y-12 Industrial Safety Programs*, to stop a job if work packages and procedures cannot be followed as written. Worker feedback is accomplished through post-job reviews, work plan revisions, and participation in assessments. Where appropriate, worker feedback will be incorporated into work control documents.

The operations and/or facility managers are responsible to ensure, prior to execution, activities in the facility are authorized within the safety envelope. For the most part, annual production requirements utilize existing processes and capabilities. However, new activities and tasks shall be evaluated in accordance with procedure Y15-190INS, *Readiness Manual*. The Y15-190INS process ensures that (1) the work can be performed within the approved safety basis, and if

necessary the safety basis is updated to support the requirements via procedures Y74-802, *Safety Basis Documents for Nuclear, PSM/RMP, and Chemical Hazardous Facilities*, Y74-809, *Unreviewed Safety Question Determinations*, or Y74-803, *Change Evaluation/Major Change Determination*; (2) task-level hazards and risks are identified and analyzed; (3) necessary controls and measures are implemented prior to start-up; and (4) procedures are written, training is conducted, and the appropriate level of review is performed. The operations manager authorizes and schedules work via the facility's or organization's Plan of the Day.

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3.3.1 Current ISMS Infrastructure (cont.)

The Configuration Management program is described in Y15-004PD. Changes to existing structures, systems, and components (SSCs) included in the Configuration Management program are initiated through procedure Y15-187, *Integrated Safety and Change Control Process*.

Y13-002PD, *Project Management Program Description*, Y17-002PD, *Conduct of Engineering Program*, and Y17-001, *Engineering, Design, and Support During Construction*, describe the engineering and design process. If the design is a maintenance installation, procedure Y73-045INS, *Automated Job Hazard Analysis*, is invoked to identify the hazards and risks associated with the installation activities. Procedure Y73-045INS, *Automated Job Hazard Analysis*, is then used to analyze the hazards so that controls can be identified and implemented using procedure Y18-007, *Maintenance Job Planning and Execution*. If the design results in construction, S/RID and the contract(s) are invoked in conjunction with procedure Y73-045INS, *Automated Job Hazards Analysis*, to identify the hazards and risks associated with the installation activities. Y73-164INS, *Subcontract Environmental Safety and Health Management Instruction*, describes the requirements for controlling safety and health risks arising from on-site activities performed by service subcontractors. Y73-164INS addresses activities in facilities whenever such activities are subcontracted or procured by BWXT Y-12 personnel. Y73-164INS is applicable to subcontractors to the extent such requirements are incorporated into contract documents. Projects are managed in accordance with Y13-002PD, *Project Management Program Description*.

The other major component of work at the facility and task levels is maintenance work involving like-for-like repair activities. The scope of the work is defined and the hazards and risks are identified using procedure Y73-045INS, *Automated Job Hazard Analysis*. The execution of this procedure determines the final job grade and indicates the level of planning required for the task based on the hazards identified as well as the function of the equipment to be serviced. Maintenance then follows the program as defined in Y18-003INS, *Maintenance Management Program*. Work packages are prepared with input from appropriate individuals including workers and approved by the responsible line manager. The operations/facility manager (assisted by OSB) is responsible to ensure that maintenance work is properly authorized and executed within the approved safety envelope.

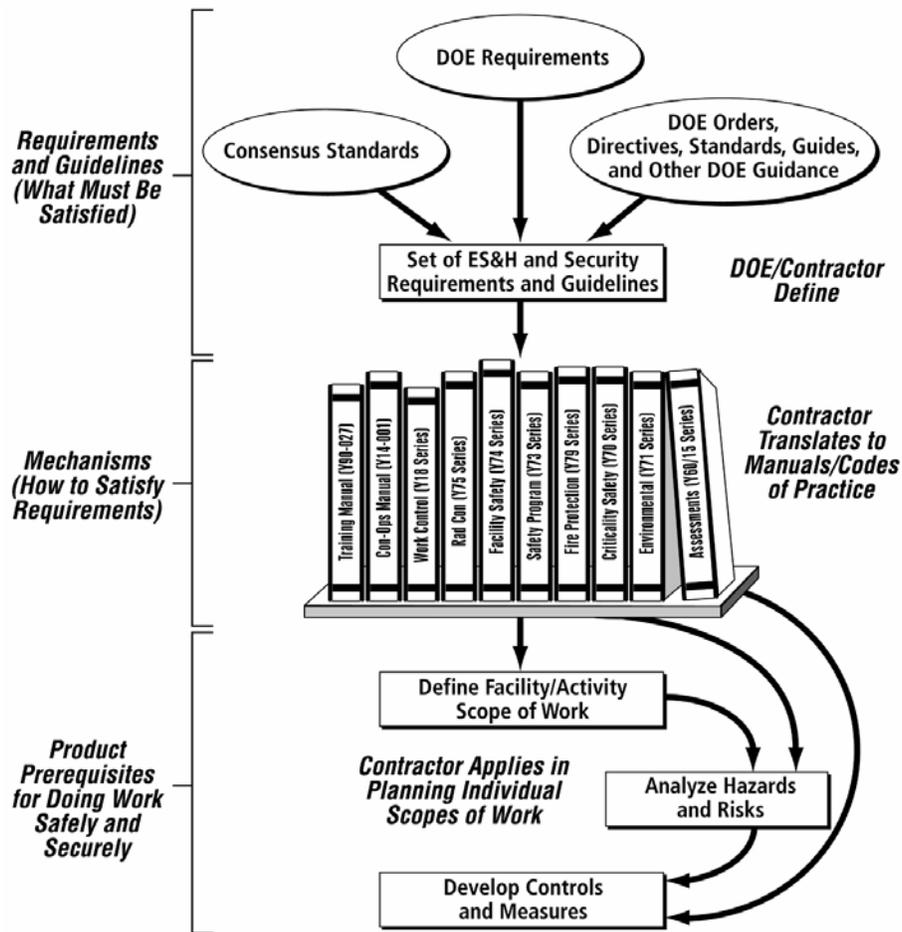
3.3.2 Institutionalization Through Standards-Based Safety Management and Security Requirements

Programmatic requirements flow down from DOE orders, standards, rules, and laws, in addition to applicable industry standards. These requirements are documented in S/RIDs and DOE orders, policies, and guidance. Site-level programs that implement S/RIDs are institutionalized through site-level procedures. Figure 3 depicts this flow down of standards and requirements into site-level implementing procedures. These procedures define the roles and responsibilities for the

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3.3.2 Institutionalization Through Standards-Based Safety Management and Security Requirements (cont.)

implementation of the ES&H and security program requirements with a strong focus on the responsibilities of line management for program performance.



YGG 00-0848R4

Figure 3. Standards-Based Safety Management and Security Requirements

BWXT Y-12 procedure Y15-058INS, *Requirements Compliance Assurance*, describes the process for maintenance of S/RIDs as well as the process for ensuring flowdown of requirements into appropriate programs, policies, and procedures. Procedure Y15-902, *Management Assessment*, and Y15-903, *Independent Assessment*, describe the process for ensuring S/RIDs are consistently assessed. The goal is to identify the appropriate set of assessments derived from S/RIDs that must be performed by operations and support organizations during a specific period.

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3.3.2 Institutionalization Through Standards-Based Safety Management and Security Requirements (cont.)

The results of these assessments provide feedback to management regarding their areas of interest. Operations and support organizations are to augment this set with additional assessments in areas of interest to their organizations. Procedure Y15-312, *Issues Management*, is utilized to resolve any noncompliances that are identified. In addition, compensatory measures are identified and implemented where necessary to immediately reduce the risk to the workers, public, environment, and DOE assets.

4 REQUIREMENTS

Department of Energy Acquisition Regulation (DEAR) 970.5223-1 and DOE Order 450.1. S/RIDs 11289 and 11290.

5 PROGRAM ELEMENTS

The following program elements are included in the ISMS program description:

- Definition of the Scope of Work,
- Identification/Analysis of the Hazards and Risks,
- Development and Implementation of Controls and Measures,
- Performance of Work, and
- Feedback and Improvement

In addition, the guiding principles are identified, as applicable, for the specific BWXT Y-12 programs.

6 INTERFACES/ROLES AND RESPONSIBILITIES

6.1 BWXT Y-12

BWXT Y-12 activities are managed through a structure that accommodates production work conducted in the traditional (vertical) organization in addition to maintenance or project work that is performed at the request of facility/organizational line by support organizations. The BWXT Y-12 organizational structure, including program operations, program management, and program support functions, is available on the Web. The general manager and deputy general manager have overall accountability for the effectiveness of the ISMS program. The deputy general manager is the process owner and utilizes an ISMS program manager as the responsible party to maintain the program description and perform overall program coordination. The safe, secure, efficient, and environmentally responsible operation of BWXT Y-12 requires the commitment of every employee. All personnel share the responsibility for the successful

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6.1 BWXT Y-12 (cont.)

day-to-day accomplishment of work. The ISMS guiding principles of line management responsibility for safety and security and clear roles and responsibilities are essential in planning, executing, and improving work processes.

6.2 DOE-NNSA Interface

The DOE-NNSA Site Office interfaces with BWXT Y-12 to ensure continued excellence in mission execution, ES&H, and security. The DOE-NNSA and BWXT Y-12 senior managers collaborate to clearly define strategic ES&H and security expectations. Those strategic elements are:

- develop clear roles for companies (DOE-NNSA contractors and private industry) carrying out work within Y-12,
- optimize the utilization of ES&H and security resources,
- support line ownership of ES&H and security performance through alignment of management systems and processes,
- support sound risk management and decision-making,
- develop new contracting mechanisms and vehicles that address ES&H and security performance and criteria in the contracting language,
- develop communication methods that effectively involve stakeholders in the communication process, and
- recognize and assimilate lessons learned in key activities required to achieve DOE-NNSA and BWXT Y-12 long-term goals.

Within the mission requirements of BWXT Y-12, DOE-NNSA proposes the fiscal year work scope task to BWXT Y-12 at the start of the new fiscal year budget process. The Finance and Business Management Organization (FBMO) reviews the proposed work scope based on plant capacity and DOE-NNSA's priorities and initiates the fiscal year budget process by providing draft budget planning guidance.

6.3 Line Management Responsibility: Safety Boards

BWXT Y-12 is organized to satisfy the guiding principle that line management is responsible and accountable for integrating safety and security into the performance of work. ISMS is focused on providing the line manager with the technical resources necessary to fulfill this responsibility.

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6.3 Line Management Responsibility: Safety Boards (cont.)

ESG provides policy and strategic direction, ensures that the work scope and budget process incorporates ISMS principles, and oversees and guides implementation of ISMS across BWXT Y-12. The ESG's responsibilities include the review of corrective actions and status of red alert lessons learned to ensure appropriate management action is taken if commitments are not being met.

On a day-to-day basis, the line management is responsible for planning, approving, and executing work in accordance with procedure Y15-636, *Integrated Safety Management Program*. Typically, OSBs are established in each operational facility and are chaired by the operations manager. However, OSBs may also be established at the organization or system level to support operations/systems that are spread across multiple facilities and are chaired by the organizational manager. Production organizations responsible for operations areas that are tenants within an operations facility have established organization-level OSBs chaired by the organization manager. Plant-wide systems that are important to safety have established system-level OSBs. Individual charters are established for each OSB as they are formed in accordance with procedure Y15-636, *Integrated Safety Management Program*.

In addition to the members of OSB (which include many positions that are matrixed to the OSB chair), several key positions of OSB also report to the OSB chair through the direct chain of command. When a support organization is performing work in a facility, the support organization's line management is responsible for the safe, secure conduct of the work subject to the facility's work authorization process. The operations/facility manager is ultimately responsible for authorizing the work to be performed, the safety and security of the workers, ensuring that the scope of work is within the authorization agreement (AA) for the facility, and approving system restoration, as required. The management structure in the operating organizations/facilities with tenants (shown in Figure 4) includes the following chain of command. Roles and responsibilities are further described in Y14-001, *Conduct of Operations Manual*.

7 IMPLEMENTING ELEMENTS

Section 3 of this document addressed the basic structure of the BWXT Y-12 ISMS which is implemented by line management via mechanisms prescribed in site-level ES&H and security programs and procedures. The remainder of this document addresses in greater detail the specific mechanisms and how they are integrated at the site level and at the facility/task levels to assure work is performed safely and securely. Figure 2 shows the ISMS infrastructure with references to the broader set of implementing procedures and other mechanisms that comprise ISMS.

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7.1 Site-Level Mechanisms

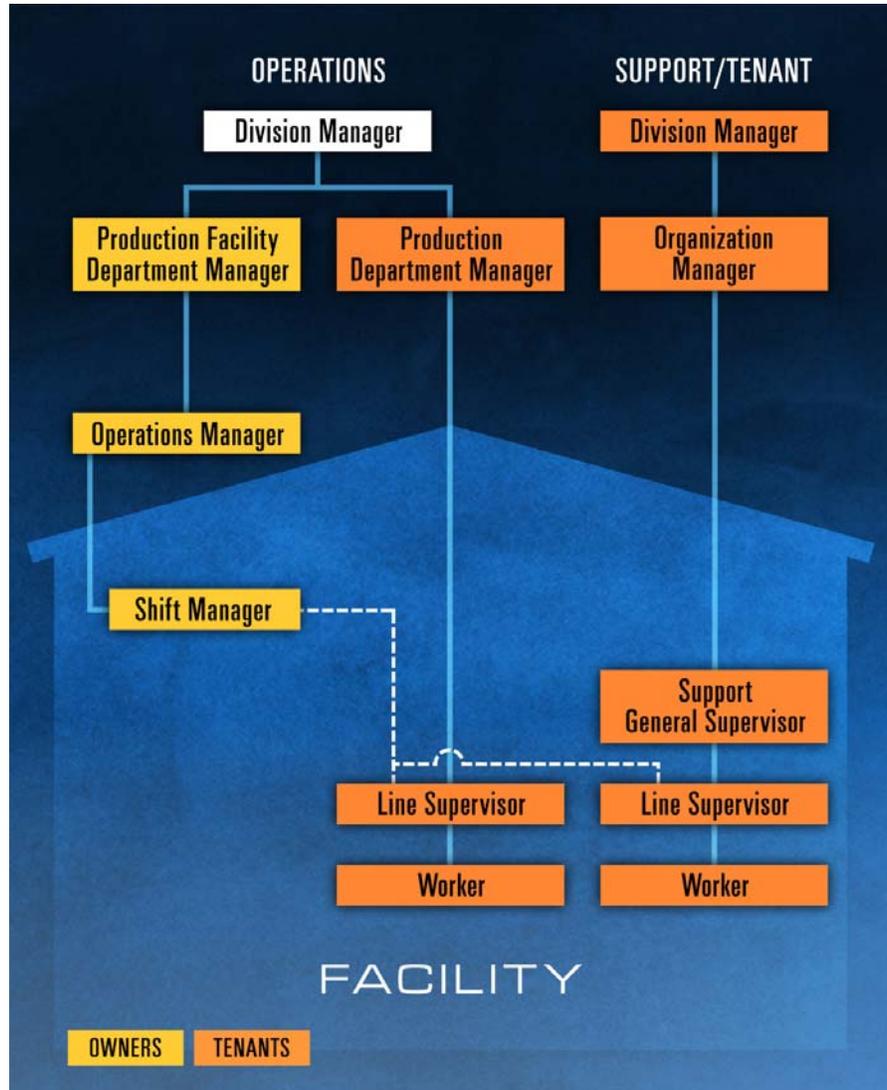


Figure 4. Chain of Command

Define Scope of Work (Site-Level Mechanisms)

Safety objectives, measures, and commitments are established and agreed to between NNSA YSO and BWXT Y-12 annually and are consistent with mission, budget guidance, ES&H work scope, site incentive plans, and continuous improvement. The minimum set of performance indicators are posted on the ISMS home page, (i.e., safety statistics, radiological control performance indicators, environmental statistics, and nuclear and criticality safety statistics).

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7.1 Site-Level Mechanisms (cont.)

ISMS relies on a well-defined and understood scope of work to establish appropriate levels of resources for performing work safely and securely. Site-level mechanisms exist for planning, estimating, and budgeting for the required resources based on DOE-NNSA mission requirements. From these processes, facility-level work requirements are established.

The BWXT Y-12 contract with DOE-NNSA provides a high-level definition of the scope of work. BWXT Y-12 receives its mission requirements from DOE-NNSA via the *Defense Programs Strategic Plan*, the *Directive Work Schedule*, and other contract mechanisms. Each fiscal year, budget targets are established. FBMO reviews the proposed work and initiates the budget process in accordance with Y30-600, *Work Plan Preparation and Administration*. ESG functions in an oversight role, assuring that ISMS principles are incorporated in business plans and budgets, that budget priorities are appropriately balanced with regard to mission-related and ISMS priorities, and that ISMS is properly planned into work activities.

In accordance with procedure Y30-600, *Work Plan Preparation and Administration*, detailed task estimates are developed. This process incorporates the agreed upon production and ES&H priorities for BWXT Y-12 and DOE-NNSA. Within this process, personnel requirements are projected through integration in production work scopes. This includes not only the skilled labor and supervisory requirements, but also the technical personnel (procedure writers, training support, process engineers, etc.) and ES&H personnel (criticality safety engineers, radiological engineers and technicians, industrial hygiene, etc.) needed to support operations.

In addition, management identifies expected levels of maintenance and construction support (based on the maintenance backlog and preventive maintenance schedule) as well as the capital equipment and facility upgrades that need to be funded. This process includes identification of requirements for safety management in each facility/organization, for example, development of Safety Analysis Reports (SARs), hazard analysis checklists, startup of new waste streams, and upgrades to equipment (such as human engineering for engineered controls that improve worker safety or reduce risk, etc.).

The budget reconciliation process matches production, ES&H, and plant infrastructure requirements with available funding based on priorities. The budget reconciliation process is directed by FBMO. Unresolved items are elevated to the general manager for resolution. The

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7.1 Site-Level Mechanisms (cont.)

budget reconciliation process is an iterative process that culminates each fiscal year in agreement between BWXT Y-12 and DOE-NNSA authorizing BWXT Y-12 to execute the agreed upon work scope. The BWXT Y-12 contract provides for WADs, performance metrics, incentive fee criteria, and performance milestones for the budget execution year and contains requirements for the execution of DEAR Clause 970.5223-1, including pass down of these requirements to subcontractors. This process may be reiterated based on changes in mission, DOE-NNSA requirements, or newly identified work requirements; however, once the contract is approved, all changes are formally controlled.

BWXT Y-12 uses Systems, Applications, and Products (SAP) to track, manage, and control the budget. Following development of the budget, SAP provides the mechanism for evaluating plant performance against the budget plan.

Site procedure Y30-601, *Baseline Change Control*, defines the process for review and approval of changes in the baselines of WADs and work breakdown structure tasks.

The status review of prioritized tasks and resolution of issues across facilities is accomplished through periodic meetings. On a periodic basis, DOE-NNSA and BWXT Y-12 management meet and review the status of the contract metrics and deliverables, identifying areas of concern and corrective actions required.

Analyze Hazards and Risks (Site-Level Mechanisms)

Authorized work is carried out in over 250 principle facilities located at Y-12. Facilities are screened to determine the facility hazard classification based on the facility's inventory of material and other classification criteria. The overall Facility Safety program, including roles and responsibilities, is defined in Y74-800PD, *Facility Safety Program*. Guidance and criteria for determining facility hazard classifications are found in Y74-800PD. Analysis of hazards, identification of controls, and preparation of SB documents are described in procedure Y74-802, *Safety Basis Documents for Nuclear, PSM/RMP, and Chemically Hazardous Facilities*. Y71-937PD, *Chemical Safety Management Program*, describes the essential components of chemical safety and the integration of these components into Y-12's ISMS.

VAs and SSSP assess and document the security posture against the Design Basis Threat as provided by NNSA and outlined in DOE Order 470.1 and the DOE Format and Content Guide for SSSP. This program prepares and manages SSSP and ongoing VA. Analyses include those for Insider, Outsider, theft, and other related evaluations of security.

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7.1 Site-Level Mechanisms (cont.)

Develop and Implement Controls and Measures (Site-Level Mechanisms)

In the establishment of safety controls, BWXT Y-12 utilizes the hierarchy outlined in DOE Order 440.1, *Worker Protection Management for DOE Federal and Contractor Employees*:

- engineered controls,
- work practices and administrative controls that limit worker exposures, and
- personal protective equipment (PPE).

At BWXT Y-12, engineered barriers are used when possible to control hazards and mitigate potential accidents. Administrative controls are used to maintain the integrity of the engineered systems (configuration management), add additional margin through the implementation of a quality assurance program, and provide the administrative structure for operations, maintenance, ES&H programs, and security. PPE, as prescribed in accordance with Y73-116INS, *Personal Protective Equipment Program*, is utilized when engineered barriers and administrative controls are either unavailable or insufficient to mitigate the hazards.

Engineered barriers are the first choice in defining controls to protect employees and the public. Design and construction of engineered systems for the processing or control of hazardous material is based on industry, DOE-NNSA, and regulatory standards. Passive engineered barriers are preferred whenever possible as they are more reliable than active systems. In all cases, systems, when installed, conform to required design requirements at the time of installation. Older systems that do not meet current design standards are evaluated to determine appropriate controls and/or compensatory measures as required.

The engineered design of systems/equipment used with highly enriched uranium is based on the criticality standard of double contingency. This standard results in redundant and diverse systems of control such as geometry and spacing that are often passive in controlling criticality. Other systems that control or mitigate radiological hazards include ventilation systems, alarm systems, and boundary control stations.

To ensure that the engineered controls are reliable, administrative controls are needed to maintain system configuration and operability. Reliability of the engineered systems is dependent on adequate operating and maintenance procedures, configuration management, and current safety documentation. The implementation of approved SB documents and associated administrative controls ensures that engineered barriers and operating parameters are maintained within the facility's safety basis when required.

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7.1 Site-Level Mechanisms (cont.)

Technical procedures provide additional administrative controls. Procedures provide directions to ensure that BWXT Y-12 facilities are operated within their design basis and are used to support safe operations of those facilities. It is BWXT Y-12 policy that any time work cannot be performed consistent with applicable procedures, the work shall be stopped per Y73-001INS, *BWXT Y-12 Industrial Safety Program*, supervision notified, and the work shall remain stopped until the discrepancy is resolved. Procedure Y15-202, *Technical Procedure Process Manual*, establishes the requirements for development, validation, approval, and control of technical procedures. Multidiscipline teams that include the procedure writer, the worker, and appropriate ES&H representatives develop technical procedures.

Worker involvement in procedure development and verification through tabletop reviews and system walkdowns is essential to ensure that procedures are usable, technically correct, and contain the appropriate ES&H requirements.

Using experienced personnel who have an understanding of the engineered and administrative controls and the PPE requirements is key to handling abnormal situations should these controls fail. Therefore, a training and qualification program supporting work execution is an essential element of ISMS. In accordance with DOE Order 5480.20A, as captured in the BWXT Y-12 S/RIDs, qualification and certification programs have been established for employees working in or supporting nuclear facilities. Prior to performing work, an employee must complete the applicable training, qualification, or certification program. Also, the qualification and certification programs undergo continuous review to ensure that they adequately capture the training requirements for the work presently being performed or anticipated. In addition, BWXT Y-12 procedure Y90-027, *Conduct of Training Manual*, identifies and assigns responsibilities for training program execution to ensure that personnel receive training commensurate with the hazard level and complexity of operations associated with their job assignments.

VAs and SSSP assess and document the security posture against the Design Basis Threat as provided by NNSA and outlined in DOE Order 470.1 and the DOE Format and Content Guide for SSSP. This program prepares and manages the SSSP and ongoing VA. Analyses include those for Insider, Outsider, theft, and other related evaluations of security.

A Training Working Group (TWG) has been established to coordinate and integrate training program execution across the site for both nuclear and non-nuclear facilities. TWG is made up of the training managers from each organization that report in a matrix fashion to the BWXT Y-12 training manager.

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7.1 Site-Level Mechanisms (cont.)

Perform Work (Site-Level Mechanisms)

Work is conducted in accordance with Y14-001, *Conduct of Operations Manual*. This manual establishes the requirements necessary to control operations in a disciplined manner to ensure work is conducted according to procedures with the appropriate level of rigor and formality. The manual establishes clear roles and responsibilities for the control of work activities. Conduct of Operations promotes the ISMS principles of individual ownership and accountability for decisions and actions during the course of daily operations. Chapter 1 of the manual defines the interfaces between operations and plant system owners.

Feedback and Improvement (Site-Level Mechanisms)

The site-level mechanisms for determining system effectiveness are BWXT Y-12 assessments (management assessments and independent assessments), performance measurements (the key safety metrics that are posted on the ISMS home page), and DOE-NNSA Oversight feedback. These mechanisms provide input that is evaluated for overall effectiveness by FIWG and reported in the Quarterly Reports. System effectiveness is reviewed in monthly and quarterly meetings with NNSA YSO and internal BWXT Y-12 meetings (e.g., senior staff meetings, FIWG meetings, ESG meetings). One of the effectiveness tools used is the Annual Corporate Independent Assessment of ISMS which adds an element of external independence. The Corporate Independent Assessment provides input for the Annual Report.

A wide range of site-level programs is in place to meet the ISMS principle for performance monitoring, assessment, and feedback. The BWXT Y-12 assessment programs, lessons learned program, operational critiques, occurrence reporting, employee suggestion program, and various oversight programs at the site, corporate level, and DOE-NNSA, provide mechanisms/tools by which line management and workers can take advantage of previous mistakes or feedback from those involved on how work might be accomplished better, more efficiently, and/or more cost effectively in a safe and secure environment.

The BWXT Y-12 assessment program is comprised of three areas: DOE-NNSA Oversight, BWXT Y-12 assessments, and performance measurement. A summary of each is as follows:

DOE-NNSA Oversight—DOE-NNSA provides day-to-day oversight of facility operations. NNSA staff reviews safety documentation, evaluates procedure compliance, audits various ES&H programs, and investigates operational events. They provide direct feedback to DOE-NNSA area management on performance of the contractor and all subcontractors. Other external oversight and assessments are often conducted and provide feedback on processes and activities. This feedback is used in the Y-12 Complex Assessment Program to improve overall performance.

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7.1 Site-Level Mechanisms (cont.)

BWXT Y-12 Assessments—The Assessment program is executed as described in *BWXT Y-12 Assessment and Corrective Action Program Description*, Y15-901PD. This program includes management assessments (see *Management Assessment*, Y15-902) and independent assessments (see *Independent Assessment*, Y15-903). The management of issues identified in external, management, and independent assessments is described in Y15-312, *Issues Management*.

Management assessments are performed in accordance with Y15-902, *Management Assessment*. This procedure requires line managers to develop annual management assessment schedules and plans based on recommendations from functional/program managers. This procedure also requires the line management use of the ISMS scorecard or metric.

Independent assessments are performed in accordance with Y15-903, *Independent Assessment*, and consist of site-wide assessments on functions and programs by Quality Assurance, ES&H, Safeguards and Security, etc.

Assessments (i.e., management, internal, external) result in identification of findings. These findings (issues) are documented, analyzed for root cause, and risk-categorized in accordance with Y15-312, *Issues Management*. The corrective actions developed to resolve these are monitored to closure. All issues are trended in accordance with Y15-312.

Performance Measurement—Site-level performance metrics are negotiated each fiscal year. These metrics are used by DOE-NNSA to quantitatively judge BWXT Y-12 performance in a wide range of areas, including safety management programs, in addition to production performance and business management. Monthly reviews of site-wide performance metrics are held with senior management. The monthly reviews focus on the status of the contract performance metrics in addition to key safety management performance objectives and indicators.

The deputy general manager with support from the ISMS program manager has overall responsibility for updating, trending, and reporting on the company-level ISMS performance indicators. They will routinely present a performance indicator report to BWXT Y-12 senior management, ESG, and DOE-NNSA YSO. The current set of performance indicators used to determine the state of the Y-12 ISMS is located on the BWXT Y-12 home page at URL <https://home1.y12.doe.gov/esh/isms>. BWXT Y-12 will evaluate the effectiveness of the performance indicators and recommend changes as appropriate to senior management on an annual basis as outlined in DOE G450.4-1B. The home page will be maintained by the ISMS program manager.

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7.1 Site-Level Mechanisms (cont.)

Feedback and Improvement Quarterly Report—The BWXT Y-12 Feedback and Improvement Quarterly Report prepared by FIWG provides senior line managers with feedback and evaluation mechanisms based on the review and roll-up of quarterly BWXT Y-12 operational, safety, and security performance information generated from key sources of performance information and indicators. The report provides continuous improvement of objectives.

A number of BWXT Y-12 Management System Feedback and Improvement products are produced each quarter. Independently, these products provide an analysis of elements of performance. FIWG and BWXT Y-12 senior management have established the architecture to produce an integrated, coherent feedback and improvement picture for Y-12. Thus, senior line management is provided with a more broad-based analysis of performance trends and conclusions to provide a basis for supporting improvement decisions. Issues accepted by management from the FIWG Quarterly Report will be assigned, tracked, reported, and followed to completion.

FIWG is established under a charter approved by the general manager and chaired by the Quality Assurance division manager, with representation from the ES&H and Quality Assurance divisions. FIWG reviews and analyzes feedback and improvement products including the Independent and External Assessment Quarterly Summary, the Management Assessment Quarterly Report, the ISMS scorecard or metric, the Issues Management Quarterly Report, lessons learned, performance indicators, and other feedback and improvement information. The BWXT Y-12 Feedback and Improvement Report focuses on site-level ISMS performance.

is a flowchart depicting the function of the FIWG and the Quarterly Feedback and Improvement Management Review Process.

Annual Corporate Independent Assessments—DOE Policy 450.4, *Safety Management System Policy*, defines the expectations that DOE facilities will be operated in accordance with an ISMS. DEARs further define those expectations and implement them via contractual requirements. Sections (d) and (e) of DEAR clause 970.5223-12 require the contractor to measure ISMS effectiveness on an annual basis. To fulfill this requirement, the BWXT Y-12 general manager commissions a corporate team to perform an independent review of the BWXT Y-12 ISMS. The Corporate ISMS Review team conducts the review using Criteria and Review Approach Documents developed consistent with continuing core expectations. The scope of the site-wide Corporate ISMS Review is tailored to evaluate existing ISMS performance concerns noted in the FIWG quarterly reports and assess management areas of interest. The results of the Corporate Independent Assessment are factored into the annual report on ISMS. NNSA YSO participates in the Corporate Independent Assessment as observers and provides feedback.

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7.1 Site-Level Mechanisms (cont.)

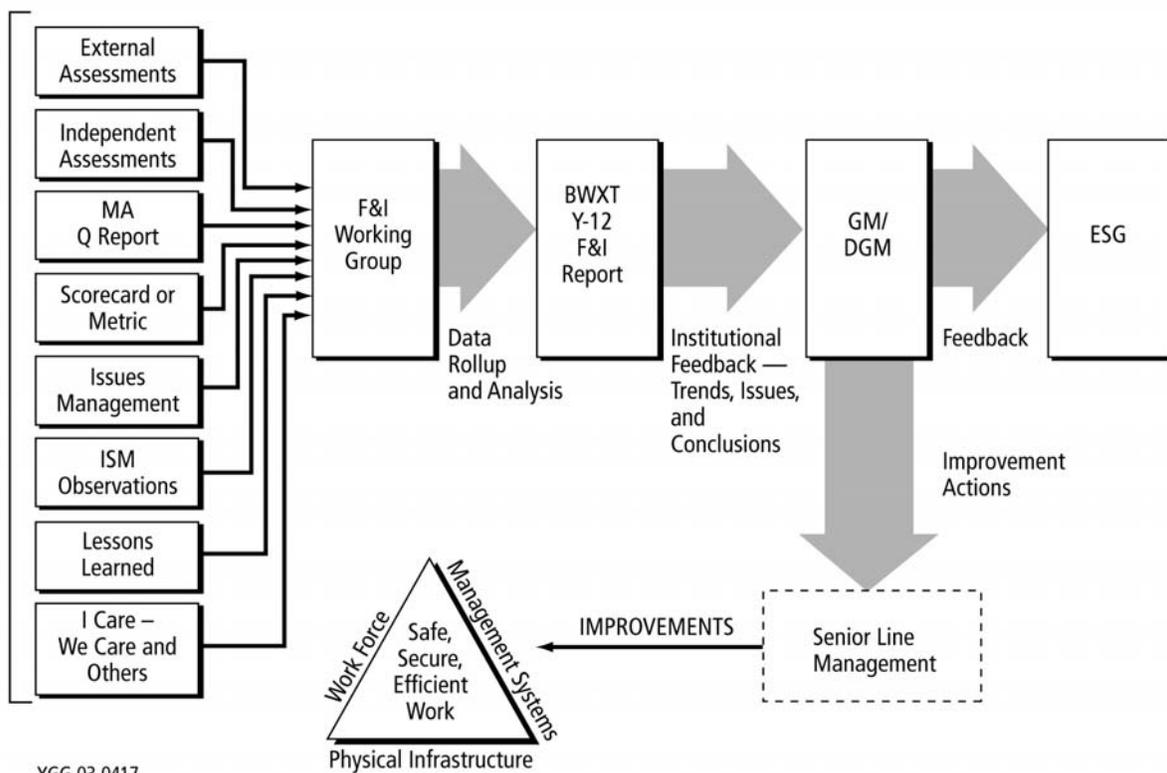


Figure 5. BWXT Y-12 Feedback and Improvement Management Review Process

7.2 Facility and Task-Level Mechanisms

Define Scope of Work (Facility and Task-Level Mechanisms)

Once the work scope is agreed upon contractually, the operating organizations are responsible for carrying out the mission (1) while fulfilling the requirements of all applicable laws, regulations, DOE-NNSA directives, and standard industrial practices, and (2) within the approved AA for the facility. Hands-on work that may be performed in a facility generally falls into five categories:

- operational work,
- maintenance work,
- project work (includes demolition work),
- construction (direct-hire or subcontract) work, and
- subcontractor work.

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7.2 Facility and Task-Level Mechanisms (cont.)

At the individual task level, work control processes are institutionalized for each type of work that is performed. These work control processes ensure that, for each task being performed, the scope of work is defined, the hazards and risks associated with the task are identified and analyzed, controls and measures are identified, integrated, and implemented before the work is performed, and feedback mechanisms are used to evaluate work execution. Implementation of these functions is tailored according to the hazards and risks associated with the particular task. The work control processes use OSBs to encourage face-to-face participation by workers, line management, ES&H, Safeguards and Security, and support personnel in work planning. The operations manager assisted by the OSB will ensure that the security measures and safety controls are integrated such that work is accomplished safely and securely.

Operational Work

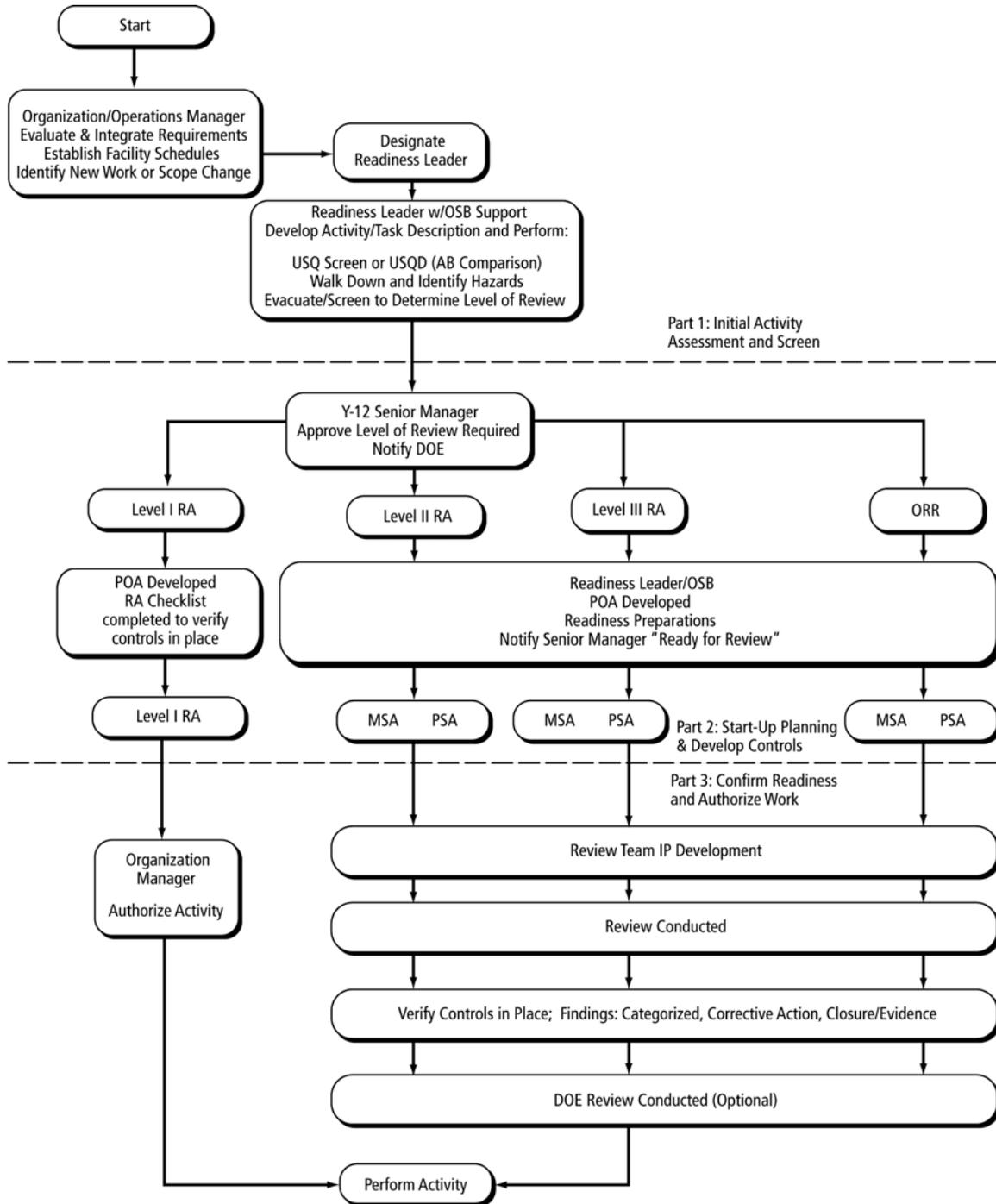
An important part of the work planning process is a clear definition of the scope of the work to be performed. *Operational work* is defined as work performed by a production or operations organization. The scope of operational work includes hands-on work performed by organizations such as Manufacturing, Product Certification, Technology Development, and Analytical Chemistry, including activities such as assembly and disassembly of weapons components, manufacturing of components, and weapons quality assurance and evaluation activities. Also included in operational work are activities such as operational checks, rounds, and surveillances.

An overview of the operational work authorization process is shown in Figure 6. The scope of operational work authorized for each nuclear facility is defined via an applicable readiness assessment or review and falls within each facility's approved safety basis and AA. BWXT Y-12 procedure Y15-190INS, *Readiness Manual*, establishes responsibilities and requirements for formal readiness assessment and reviews according to DOE Order 425.1, *Startup and Restart of DOE Non-Reactor Nuclear Facilities*. This site-level procedure establishes the basis for confirming readiness, identifies specific confirmation processes, and designates approval authorities.

The operations manager is responsible at the task level to ensure all activities in the facility are authorized within the safety envelope. For the most part, annual production requirements utilize existing processes and capabilities. However, each facility, process, and activity change is evaluated against the safety basis in accordance with procedures Y74-809, *Unreviewed Safety Question Determination*, and Y74-803, *Change Evaluation/Major Change Determination*, to ensure that the work can be performed within the approved safety basis; otherwise, DOE approval is required. Any new task-level hazards and risks are identified using procedure Y73-045INS, *Automated Job Hazard Analysis*. Hazards are analyzed using procedure Y73-045INS, *Automated Job Hazard Analysis*, controls and measures are implemented, training is conducted, and applicable authorization is obtained prior to start-up.

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7.2 Facility and Task-Level Mechanisms (cont.)



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Figure 6. Operational Work Authorization Process Flowchart

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7.2 Facility and Task-Level Mechanisms (cont.)

Operational activities are described in the technical procedures that detail the step-by-step actions that are performed during work execution. Procedure Y15-202, *Technical Procedure Process Manual*, establishes the requirements for development, validation, approval, and control of operating procedures. Y15-202, *Technical Procedure Process Manual*, establishes a graded approach to the method of determining the need for and the development review and approval of Work Instructions. Surveillance, testing, and preventive maintenance activities performed on safety SSCs are also formalized using technical procedures.

As allowed by Y15-202, *Technical Procedure Process Manual*, Analytical Chemistry laboratory procedures are prepared in accordance with Y/P65-9059, *Analytical Chemistry Organization Procedures*. This procedure requires that "Hazards" are addressed in the analytical procedures. The Hazards section must mention specific cautions for hazards unique to the given procedure, such as electrical shock, acid splash, or generation of hazardous gases or fumes requiring operation in a hood. Analytical Chemistry procedure review includes technical and compliance reviews which evaluate health and safety as well as technical issues in the procedure. Per the requirements of the Occupational Safety and Health Administration, Occupational Exposure to Hazardous Chemicals in Laboratories (29 CFR 1910.1450) and BWXT Y-12 Y73-220PD, *Hazardous Chemicals in Laboratories*, Analytical Chemistry has a written and implemented chemical hygiene plan (Y/P65-9087). All Analytical Chemistry personnel are required to be trained to the Chemical Hygiene Plan. The essential components of chemical safety, the integration of those components in Y-12 ISMS, and the functional integration of chemical safety across BWXT Y-12 organizations and programs is documented in the *Chemical Safety Management Program Description*, Y71-937PD.

Maintenance Work

Maintenance work is performed in a support role to the line manager. The maintenance provider works closely with the line managers and other support organizations to plan, schedule, and perform maintenance work. Maintenance work control centers with dedicated managers, line supervisors, planners, and selected craft employees are established in each manufacturing facility.

For maintenance activities, the scope of work to be performed is initially identified by the customer requesting service in the form of a Maintenance Job Request (MJR). Before a maintenance task is executed, the associated work package is developed, in accordance with the appropriate maintenance work control planning procedure such as Y18-007, *Maintenance Job Planning and Execution*, that describes a more detailed scope of work, including hazard mitigation and sufficient work instructions (e.g., Y10-24-39-001 describes work package development and job planning for Equipment Services Department).

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7.2 Facility and Task-Level Mechanisms (cont.)

The scope of the work is defined and the hazards and risks are identified in accordance with procedure Y73-045INS, *Automated Job Hazard Analysis*. The execution of this procedure determines the level of planning required for the task, based on the hazards and risks as well as the type of equipment to be serviced. The identified hazards are analyzed using procedure Y73-045INS, *Automated Job Hazard Analysis*. The execution of this procedure results in identification of the controls necessary to perform the work safely. Maintenance work packages are prepared by the maintenance provider and approved by the responsible line manager. The operations manager (assisted by OSB) is responsible to ensure that maintenance work is properly planned; controls are established to protect the workers, the public, the environment, and DOE assets; and work is authorized and executed. An overview of the maintenance work control process is depicted in Figure 7.

If, during the identification of work by the customer, it is determined that a change to an existing SSCs included in the Configuration Management program is required, a change request is initiated per procedure Y15-187, *Integrated Safety and Change Control Process*. The change is reviewed by OSB if required and approved by the operations manager before the work can be executed. Temporary Modifications are controlled by Y14-153, *Temporary Modification Control*.

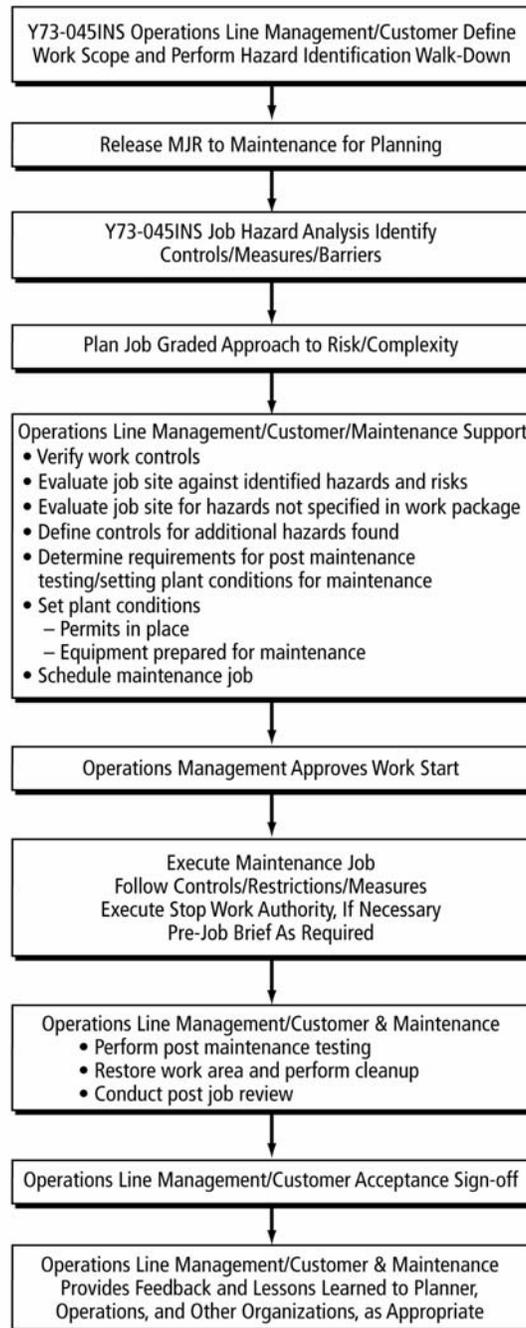
Project Work

When a present or future need or requirement is identified by an organization, the organization shall determine whether the mechanism required to meet the need is a project. Projects are unique efforts that support a program mission with defined start and completion end points, undertaken to create a product, facility, or system with interdependent activities planned to meet a common objective or mission. Projects include planning and execution of construction, renovation, modification, or demolition efforts, and large capital equipment or technology development activities. Tasks that do not include the above elements, such as basic research, grants, and operations and maintenance of facilities, are not considered projects. Upon the determination by the organization's senior line management that a project should be authorized, a project manager and Core Project Team are selected (see Y13-002PD, *Project Management Program Description*).

The Project Management System has five key elements. They are identification of the project (define requirements), planning the project, endorsement of the project, execution of the project, and transition and closeout of the project.

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7.2 Facility and Task-Level Mechanisms (cont.)



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Figure 7. Maintenance Work Control Process

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7.2 Facility and Task-Level Mechanisms (cont.)

1. Identification of the Project (Define Requirements)

During the identification stage of the project, the customer defines a need and communicates the need for a project. The project manager and Core Project Team are assigned, planning funds are obtained, and the Core Project Team, including the customer, define the project scope. For line item projects, the DOE-NNSA project manager is a member of the Core Project Team. After the project has been identified, the Core Project Team is established and then identifies the key service providers and stakeholders for the project, and charters the formal Project Team. The team, in order for formal project planning to take place, identifies the functional and operational requirements along with preparing budget and schedule estimates.

2. Planning the Project

During the development of the Project Execution Plan, a hazard and risk analysis is performed for the scope of work and hazard and risk mitigation plans are developed. Also, during the planning phase of the project, the full set of project requirements is identified and the Systems Requirements Document (SRD) is completed. The final output of the planning phase is a Project Execution Plan, which includes cost, schedule, and the appropriate plans that allow for the execution of the work effort.

3. Endorsement of the Project

During the endorsement phase of the project, the Project Team and BWXT Y-12 senior management must formally endorse the Project Execution Plan. Appropriate approvals, when required by procedure, must be obtained from DOE-NNSA before any work can be performed on the project.

4. Project Execution

The project must be executed in conformance with the approved (endorsed) Project Execution Plan, with the defined measurements and reporting being performed. If the work can not be performed as planned, then the change control process must be used to alter the project's baseline as described in the Project Execution Plan. Changes to the Project Execution Plan must be approved at the same level that approved the original plan. The final step in the execution of the project is the formal acceptance of the project by the customer in conformance with the turnover plan that was developed as part of the planning process.

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7.2 Facility and Task-Level Mechanisms (cont.)

5. Transition and Project Closeout

Upon acceptance of the project by the customer, appropriate documentation is transitioned to the customer, and the customer begins the process of demonstrating that operations are ready to proceed in accordance with procedure Y15-190INS, *Readiness Manual*. The Project Team will closeout the project by archiving project files, documenting customer feedback, completing the project management evaluation, closing all financial and procurement issues, and verifying that lessons learned have been formally documented. Upon completion of these activities, the Project Team will be demobilized.

Demolition Work (Project Work)

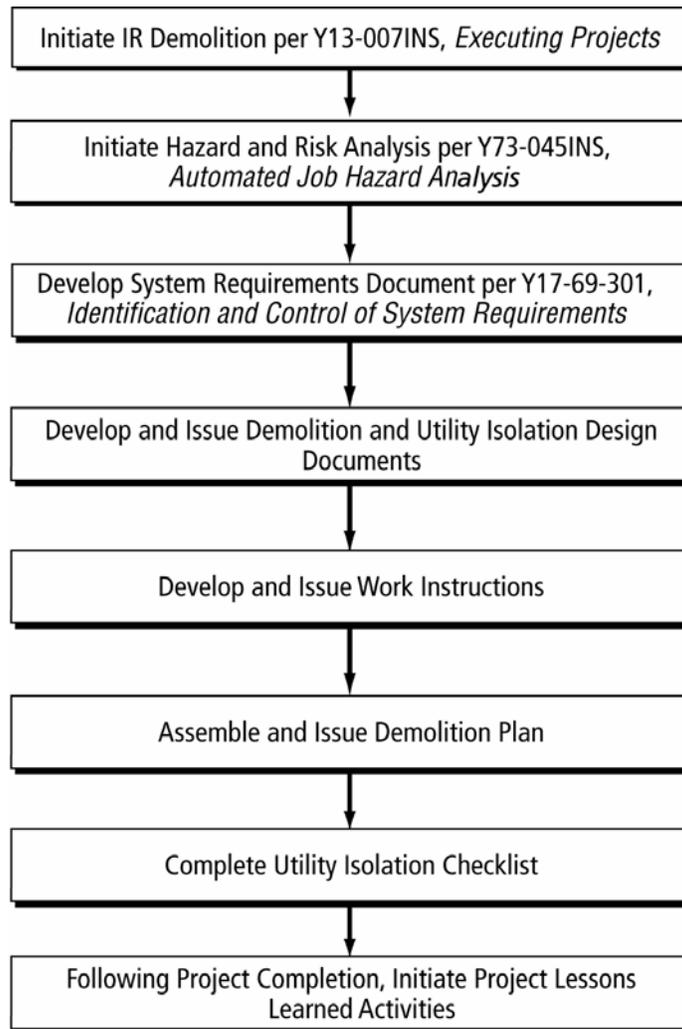
Y17-013, *Planning and Preparing for Demolition Work*, describes the requirements and responsibilities for planning and preparing for demolition projects and tasks to be performed at Y-12. The process includes identifying the scope of work and hazards and risks associated with the work; identifying design mitigating actions; producing, and obtaining approval of, design documents and work instructions; and issuing a demolition plan, which defines the demolition and supporting activities and is required for gaining approval to demolish a facility. Y17-013 applies to projects and tasks performed under the Infrastructure Reduction (IR) program at Y-12. See Figure 8.

Construction Work (Direct-Hire or Subcontracted)

The Construction organization, through procedures Y17-64-301, *Construction Work Planning*; Y17-64-302, *Execution of Direct Hire Work*; and Y17-64-401INS, *Construction Subcontract Management*, performs construction work. For plant modifications and most project work, the Construction organization is responsible for planning, controlling, executing, testing, and turning over the completed work. Changes to design are controlled by procedure Y17-64-312, *Construction Change Control*. Engineering defines the design requirements and develops drawings and specifications. Construction develops Certified for Construction packages, and the safety aspects of the work are defined for the actual work activities. Work is then performed by Construction and/or Construction subcontractors. Feedback and assessment is accomplished through project planning and formal construction reviews. Figure 9 depicts the overall Engineering and Construction workflow.

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7.2 Facility and Task-Level Mechanisms (cont.)



YGG-03-0231R1

Figure 8. Planning and Preparing for Demolition Work

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7.2 Facility and Task-Level Mechanisms (cont.)

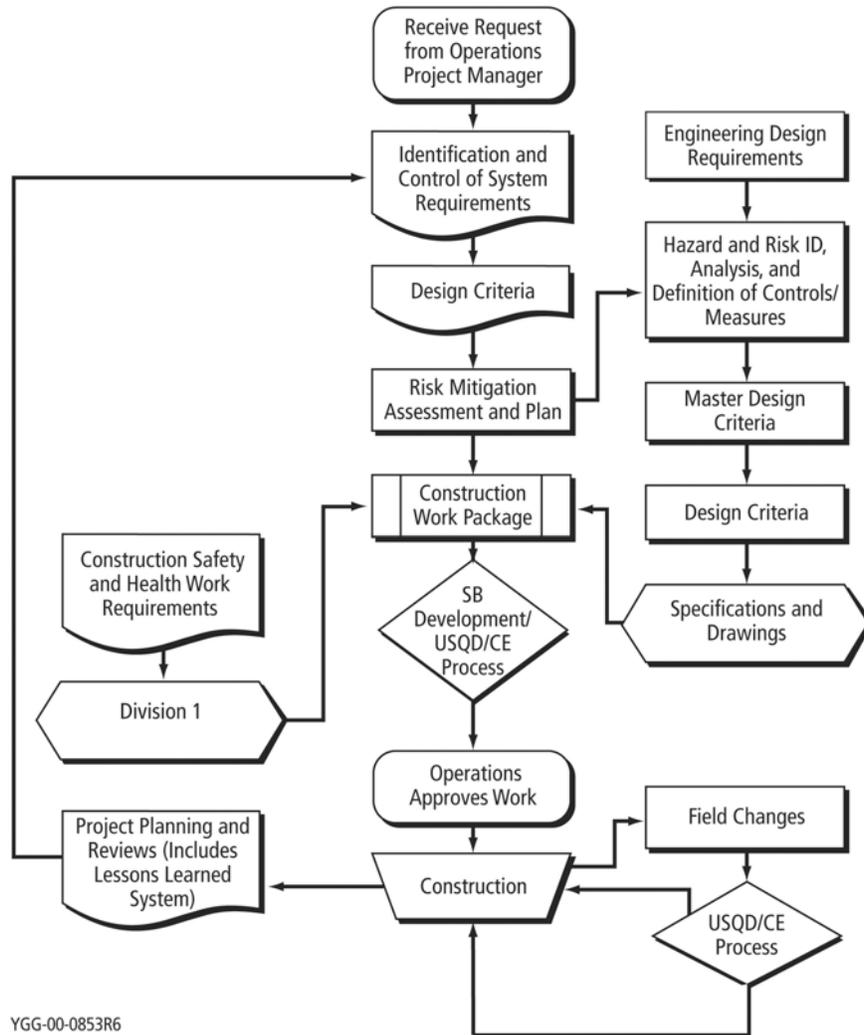


Figure 9. Engineering and Construction Workflow

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7.2 Facility and Task-Level Mechanisms (cont.)

Subcontract Work

Procedure Y73-164INS, *Subcontract Environmental Safety and Health Management Instruction*, describes a process for BWXT Y-12 baseline ES&H requirements to be implemented on subcontracted work activities at Y-12. The program description delineates clear roles and the responsibilities for each role in establishing appropriate safety and health controls for subcontractors to implement for their work activities. The primary roles include work requestor, ES&H support personnel, facility organization representative, and procurement personnel. Potential subcontractors are required to complete a preliminary screening process that includes previous accident and injury data from their company, current Experience Modification Rate (EMR) for Workers Compensation Insurance purposes, and other pertinent vital data related to past ES&H program requirements to be placed on subcontractors based on the anticipated hazard severity and potential for exposure that will be encountered when performing the scope of work. Based on this determination, subcontractors must submit an appropriate Worker Protection Plan that is tailored to the work scope and potential hazards, and include the controls they intend to employ for accident and injury prevention. This submittal is reviewed by the work requestor, procurement representative, and appropriate ES&H personnel and must be accepted as adequate prior to the subcontractor receiving notice to proceed work. The program description also requires oversight of subcontractor work activities to ensure compliance with ES&H requirements for the duration of the subcontract.

Analyze Hazards (Facility and Task-Level Mechanisms)

To ensure that work scope is performed within the facility's AA, the safety envelope of the facility must be clearly defined, understood, and maintained by line management of the facility. The requirements found in S/RIDs and commitments to implement programs, such as configuration management, maintenance, selection and qualification of operating personnel, and procedures development and implementation are necessary to maintain the safety envelope.

Depending on the facility classification (based on the operations and the types and inventories of materials stored), a formal safety analysis may be performed to determine the safety basis of the facility. A documented safety analysis—typically a SAR—and a Technical Safety Requirements (TSR) are required in accordance with the compliance plan for 10 CFR 830, Subpart B, for nuclear facilities. An implementation plan for non-nuclear facilities has been issued. BWXT Y-12 Y74-800PD, *Facility Safety Program*, defines the process and the requirements for formal safety analysis. Results of the safety analysis are documented in an appropriate SB document. The SB documentation identifies those SSCs important to safety and the requirements to maintain them operational. Senior management and DOE-NNSA approve the SB documents.

Subject: BWXT Y-12 Integrated Safety Management System
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7.2 Facility and Task-Level Mechanisms (cont.)

Analysis of potential hazards and risks associated with a task is the responsibility of line management who will involve the appropriate technical expertise and subject matter experts, as needed. Procedure Y73-045INS, *Automated Job Hazard Analysis*, identifies hazards and risks for specific tasks whenever an activity is planned. After the hazards and risks are identified, procedure Y73-045INS, *Automated Job Hazard Analysis*, is used to analyze the hazards and risks and identify preventive and mitigative controls and measures. The Job Hazard Identification/Job Hazard Analysis process identifies the controls and barriers for potential radiological hazards and standard industrial hazards such as confined space, elevated work, work requiring the use of respirators, and asbestos or hazardous chemical or materials. Relevant technical information will be consulted including Material Safety Data Sheets (MSDSs), schematics and drawings, field walkdown notes, and other technical data to develop adequate technical basis for decisions involving hazardous materials or activities. Ongoing activities which began before the implementation of the ISMS program that have not been analyzed for hazards using these processes shall be analyzed in a timely manner as directed by line management.

The life cycle of chemicals required to accomplish the work must also be considered. The *Chemical Safety Management Program Description*, Y71-937PD, provides factors to consider during work planning, chemical selection, and acquisition. Opportunities to prevent pollution and, where feasible, eliminate the use of hazardous materials are initially considered. Waste management and pollution prevention requirements are addressed in the BWXT Y-12 environmental program. Procedure Y71-903, *Y-12 Waste Management*, defines the elements of managing waste and preventing pollution for BWXT Y-12 activities. Work is assessed for impacts on waste management and pollution prevention through the maintenance, operations, construction, and project work planning mechanisms and through procedure Y71-915, *National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) Review and Compliance Documentation Program*.

Nuclear criticality safety hazards for specific processes and activities are identified and analyzed according to procedure Y70-160, *Criticality Safety Approval System*. Other tools, such as Y73-201, *Chronic Beryllium Disease Prevention Program (CBDPP) Procedure*, and Y74-809, *Unreviewed Safety Question Determinations*, may also be used to evaluate the potential hazards associated with a specific task. Should the activity involve a change to the safety basis, this change is controlled through Y74-802, *Safety Basis Documents for Nuclear, PSM/RMP, and Chemically Hazardous Facilities*.

AAs establish the formal commitment to perform the authorized scope of work within the boundaries of the defined safety envelope. AAs are developed and controlled through procedure Y74-001, *Authorization Agreements*. Once developed, AAs are submitted to DOE-NNSA for approval. (Refer to Appendix E for improvement plan for CY 2003 and CY 2004.)

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7.2 Facility and Task-Level Mechanisms (cont.)

VAs and SSSP assess and document the security posture against the Design Basis Threat as provided by NNSA and outlined in DOE Order 470.1 and the DOE Format and Content Guide for SSSP. This program prepares and manages SSSP and ongoing VA. Analyses include those for Insider, Outsider, theft, and other related evaluations of security.

Develop and Implement Controls and Measures (Facility and Task-Level Mechanisms)

Based on the safety analysis, operational safety requirements (OSRs) or TSRs establish the necessary nuclear controls within the facility. Similar controls for non-nuclear hazards are established in the SAR/Hazard Evaluation Report (HER). These SB controls, which are implemented by procedures, along with formal work control processes used to plan and execute operational, maintenance, construction, and project activities to ensure controls are in place for other hazards, defines the operational safety envelope. These work control processes implement the safety management functions at the work activity level: they ensure that through the utilization of OSB (line management, ES&H experts, Safeguards and Security experts, and workers) and before any activity is performed, the scope of work is understood; the associated hazards and risks have been identified and analyzed; the controls and measures commensurate with the hazards and risks have been integrated and established; and the controls will remain in place throughout work execution. The work control processes ensure that planned work or changing scope of work falls within the facility's AA.

Revisions to a facility's SB documentation may be required whenever the facility, inventory, or administrative controls are modified such that the safety basis is no longer appropriate for existing or proposed future hazards. An Unreviewed Safety Question Determination (USQD) or Change Evaluation is required to evaluate a planned change in BWXT Y-12 facilities, equipment, or work scope to determine if the proposed activity may cause the operation to be outside the approved safety basis. The USQD process is defined in procedure Y74-809, *Unreviewed Safety Question Determinations*, and the Change Evaluation process by procedure Y74-803, *Change Evaluation/Major Change Determination*. If this is the case, the line manager is responsible for ensuring that the new hazards are identified, added to the facility safety analysis, and the appropriate controls, if necessary, are implemented before the activity is authorized. All USQDs and Major Changes are reviewed and approved by operations or organization management and DOE-NNSA.

Subject: BWXT Y-12 Integrated Safety Management System
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7.2 Facility and Task-Level Mechanisms (cont.)

At the task level, specific hazards and risks associated with the work scope are identified using procedure Y73-045INS, *Automated Job Hazard Analysis*. The identified hazards and risks are analyzed and controls and measures are determined using the process prescribed in site procedure Y73-045INS, *Automated Job Hazard Analysis*. The specific controls and barriers are prescribed by the site-level ES&H procedures that contain the requirements associated with each particular hazard. Controls are integrated and implemented through engineered design of the process, administrative controls that flow into work instructions, procedures, and permits, and through required PPE. The associated work package development is controlled by procedure Y18-007, *Maintenance Job Planning and Execution*.

Technical procedures for operational and maintenance activities are developed according to procedure Y15-202, *Technical Procedure Process Manual*, and validated by multidiscipline teams that include not only the procedure writer but, where appropriate, the worker and the technical support personnel assigned to the facility or organization. The facility OSB, in support of the operations manager, provides the necessary support to this process and is responsible for ensuring that the hazards and risks specific to the work activity are evaluated and the appropriate integrated controls and measures are incorporated into the procedure or work package. Workers are also involved in reviewing proposed procedures and in the verification and validation of procedures prior to their approval. This teamwork approach is important to assure that, when multiple controls are established, they are balanced according to the potential risks to avoid imposing controls that could, in fact, reduce the margin of safety or impair the workers' ability to work safely, securely, and effectively.

Perform Work (Facility and Task-Level Mechanisms)

After the scope of work is well understood, hazards and risks have been identified and analyzed, and controls and measures established to prevent or mitigate the hazards and risks, procedure Y14-001, *Conduct of Operations Manual*, is used to ensure that all work is authorized and that established controls remain in place throughout work execution. The production support manager is responsible to ensure that workers are properly trained, current procedures are available, orders are posted and executed, and technical support is available as needed to ensure the safe and secure conduct of work. The operations manager, assisted by OSB, is responsible for authorizing all work that takes place in the facility, regardless of the type of work or who is performing it. Once approved, work is authorized by the operations manager and is executed according to established procedures, approved work packages, or checklists.

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7.2 Facility and Task-Level Mechanisms (cont.)

Work is performed by personnel who are trained or appropriate skill-of-the-craft is selected and, as necessary, qualified or certified to perform their assigned task. Pre-job briefs are conducted and the work procedures or instructions, results of hazard analysis, and the required permits and controls necessary to the job are reviewed with the worker. Work is performed in a disciplined manner with strict adherence to procedures. The Conduct of Operations program establishes these requirements, roles, and responsibilities for work execution. Line supervision and members of OSB are responsible to ensure that during work execution, controls remain in place.

Hazard communication training for employees stresses hazard recognition and acceptance of individual roles and responsibilities for worker safety. When abnormal conditions arise, or when there is a perceived threat to the safety and security of the worker, the public, or to the protection of the environment and DOE assets, workers are trained to execute stop work authority.

Feedback and Improvement (Facility and Task-Level Mechanisms)

Within each facility, management assessments are performed. Procedure Y15-902, *Management Assessment*, identifies the requirements for each BWXT Y-12 organization to implement management assessments of operations in various functional areas such as Conduct of Operations, Conduct of Maintenance, Configuration Management, Radiological Control, Training, etc. The use of the ISMS scorecard or metric by line management during management assessments ensures alignment and efficient application of assessments and ISMS principles. Trending of facility-specific performance metrics contributes to the awareness of opportunities for improvement.

Post-job debriefs and, when useful, management reviews are used to evaluate the safety, security, and effectiveness of work execution, and the results or lessons learned are used to revise and improve work methods. Lessons learned are incorporated into procedure and work package revisions and are shared across facilities via the lessons learned program.

Critiques and management reviews are used to identify areas requiring improvement in procedures, equipment, qualification, and supervision. A critique or management review is initiated when problems or issues are identified during work execution. The critique or management review evaluates the procedures involved and actions taken, and gathers appropriate knowledge on the equipment and actual physical environment where the event occurred. The purpose of the review is to pursue the issues identified until resolved. The net result is often not only the resolution of the issue at hand, but insights into other potential areas that need improvement and promulgation of lessons learned, as appropriate. The critique and management review processes are also tools to be used when processes go well to ensure that benefits from superior work practices and personnel performances are shared across the organization.

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7.2 Facility and Task-Level Mechanisms (cont.)

One of the most important elements of the BWXT Y-12 assessment program is management presence in the workplace. Management observation of daily activities is considered one of the primary and most effective techniques for performance of assessments. Post-job debriefs, toolbox safety meetings, assessments, and continuing training all take place where the work is performed and provide face-to-face communication and feedback between the line supervisor and the worker.

7.3 Maintaining an Approved ISMS

Annual Updates

In accordance with DEAR Clause 48 CFR 970.5223-1 and Chapter IV of DOE G 450.4-1B, *Integrated Safety Management System Guide*, BWXT Y-12 is required to maintain the integrity of ISMS and to generate revisions as scheduled by the DOE-NNSA contracting officer. The ISMS Annual Report based upon the criteria found in Chapter IV of the ISMS guide will be developed using the results of the annual ISMS assessment, lessons learned, the ISMS scorecard or metric, and other assessment information and feedback. This will conclude and recommend whether an update to the ISMS Program Description is needed. The ISMS Program Description will be prepared as scheduled by the Contracting Officer and provided to DOE-NNSA as follows:

- submit a total revision of the ISMS description for DOE-NNSA approval,
- submit page revisions of non-intent changes that have occurred as a result of the feedback and improvement process, or
- submit a letter to DOE-NNSA indicating no change to the ISMS Program Description.

NNSA YSO direction is to submit one of the above in January of each year as signified by approval of this procedure.

Maintaining the Program Description

Chapter IV of DOE G 450.4-1B, *Integrated Safety Management System Guide*, provides guidance for maintaining the integrity of an approved ISMS. BWXT Y-12 is committed to perform work in conformance with ISMS as described in this document. An essential component of maintaining the integrity of an approved ISMS is to ensure significant changes (defined as “intent changes”) to implementing processes and procedures are evaluated before any changes are made. Requirements Management will maintain the list of documents found in Appendix B on the Management Requirements Documents Web home page. They will review all documents submitted for review and designate the ISMS program manager as a required reviewer if the document submitted is in Appendix B.

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7.3 Maintaining an Approved ISMS (cont.)

The ISMS program manager is responsible for maintaining the integrity of the processes that integrate the ISMS program by reviewing changes to current and newly-proposed implementing procedures. These requirements can be found in Y15-235, *Administrative Management Requirements Process Manual*.

An inherent characteristic of ISMS is improvement. BWXT Y-12 assures that changes to ISMS are managed in a manner that maintains the consistency with the ISMS principles. The BWXT Y-12 ISMS program manager in support of the deputy general manager is responsible for assuring that the Y-12 management processes and procedures identified in Appendix B are consistent with the ISMS Program Description, and that when appropriate due to a proposed new process or organization modification, will draft a proposed modification to the Program Description for ESG and DOE-NNSA approval. ESG will formally address the matter before the modification is authorized. Concurrent with the annual update, the ISMS program manager will advise ESG on the status and accuracy of the program description. The deputy general manager, chair of ESG, is responsible for assuring that the contractual requirements for an annual review and update of the performance objectives, performance measures, and commitments in response to program and budget guidance and direction is accomplished.

Nonintentional changes may be made and an informational copy given to NNSA YSO.

Consistent with the recognition that an inherent characteristic ISMS is improvement, BWXT Y-12 is implementing an integrated management system improvement initiative starting in January 2003. These system improvements are targeted at improving management planning and performance effectiveness and efficiency consistent with commitments to continuously improve integrated safety and security performance. See Appendix C, D, E, and F for planned improvements for ISMS in CY 2003 and CY 2004. An example of how to maintain the integrity of ISMS during reorganizing is given in Appendix F as a guide.

7.4 DOE ISMS Verification and Assessments (S/RIDs 11289 and 11290)

BWXT Y-12 will cooperate fully with ISMS verification teams and assessment teams from DOE. BWXT Y-12 will provide administrative support and make relevant facilities and materials available for these assessments as requested by DOE.

Corrective Action Plans (CAPs) will be prepared to address opportunities for improvements (OFIs) from ISMS verifications and to address findings from assessments and other oversight activities in accordance with procedure Y15-312, *Issues Management*. BWXT Y-12 will utilize a graded approach as allowed by DOE P 450 and incorporated in Y15-312, considering the significance of the OFIs and findings, unless otherwise directed by DOE. After receiving the final report for ISMS verification with OFIs or the assessment report with findings, BWXT Y-12

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7.4 DOE ISMS Verification and Assessments (S/RIDs 11289 and 11290) (cont.)

will prepare the CAPs within 30 days or 60 days, respectively unless otherwise directed. BWXT Y-12 will complete corrective actions in a timely manner in accordance with the approved CAP. CAPs will be tracked and effectiveness of these actions will be verified in accordance with Y15-312. Verification will be done on a sampling basis unless otherwise instructed.

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APPENDIX A
Acronyms/Abbreviations
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AA	authorization agreement
AJHA	Automated Job Hazard Analysis
ALARA	as low as reasonably achievable
BIO	Basis for Interim Operation
CSA	Criticality Safety Approval
CSE	Criticality Safety Evaluation
CSR	Criticality Safety Requirement
CY	calendar year
DEAR	Department of Energy Acquisition Regulation
DGM	Deputy General Manager
DOE	Department of Energy
EMR	experience modification rate
ES&H	Environment, Safety, and Health
ESG	Executive Steering Group
FAM	Functional Area Manager
FBMO	Finance and Business Management Organization
FIWG	Feedback and Improvement Working Group
FS	Facility Safety
GM	General Manager
HER	Hazard Evaluation Report
HEU	Highly Enriched Uranium
ID	Identification
IH	Industrial Hygiene
IR	Infrastructure Reduction
IS	Industrial Safety
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
ISSM	Integrated Safeguards and Security Management
M&O	Management and Operating Contract
MC	Major Change
MJR	Maintenance Job Request
MSDS	Material Safety Data Sheet
NEPA	National Environmental Policy Act
NHPA	National Historical Preservation Act
NMC&A	Nuclear Materials Controls and Accountability
OFIs	opportunities for improvements
ORO	Oak Ridge Operations
ORR	Oak Ridge Reservation

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OSB	Operational Safety Board
OSR	Operational Safety Requirements
PHA	Preliminary Hazard Analysis
PM	Project Manager
PMT	Performance Measurement Team
PPE	personal protective equipment
PSM	Process Safety Management
PSM/RMP	a facility classification which is a composite of the PSM and RMP acronyms; the individual acronym meanings are not spelled out when used in this manner
QA	Quality Assurance
Rad Con	Radiation Control organization
RMP	Risk Management Plan
RSM	Risk Management Program
S/RID	Standards/Requirements Identification Document
SAP	Systems, Applications, and Products
SAR	Safety Analysis Report
SB	Safety Basis (as an adjective)
SER	Safety Evaluation Report
SME	subject matter experts
SRD	Systems Requirements Document
SSCs	structures, systems, and components
SSSP	Site Safeguards and Security Plan
TSR	Technical Safety Requirements
TWG	Training Working Group
USQD	Unreviewed Safety Question Determination
VA	Vulnerability Analysis
WAD	Work Authorization Directive
Y-12	Y-12 National Security Complex
YSO	Y-12 Site Office

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APPENDIX B
Documents Referenced in Y15-635PD
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Y13-002PD	<i>Project Management Program Description</i>
Y14-001	<i>Conduct of Operations Manual</i>
Y14-153	<i>Temporary Modification Control</i>
Y15-004PD	<i>Configuration Management Program</i>
Y15-058INS	<i>Requirements Compliance Assurance</i>
Y15-187	<i>Integrated Safety and Change Control Process</i>
Y15-190INS	<i>Readiness Manual</i>
Y15-202	<i>Technical Procedure Process Manual</i>
Y15-235	<i>Administrative Management Requirements Process Manual</i>
Y15-312	<i>Issues Management</i>
Y15-331	<i>Lessons Learned Program</i>
Y15-636	<i>Integrated Safety Management Program</i>
Y15-901PD	<i>BWXT Y-12 Assessment and Corrective Action Program Description</i>
Y15-902	<i>Management Assessment</i>
Y15-903	<i>Independent Assessment</i>
Y17-001	<i>Engineering, Design, and Support During Construction</i>
Y17-002PD	<i>Conduct of Engineering Program</i>
Y17-013	<i>Planning and Preparing for Demolition Work</i>
Y17-64-301	<i>Construction Work Planning</i>
Y17-64-302	<i>Execution of Direct Hire Work</i>
Y17-64-312	<i>Construction Change Control</i>
Y17-64-401INS	<i>Construction Subcontract Management</i>
Y18-003INS	<i>Maintenance Management Program</i>
Y18-007	<i>Maintenance Job Planning and Execution</i>
Y18-194	<i>Preventive Maintenance (PM) Program</i>
Y30-600	<i>Work Plan Preparation and Administration</i>
Y30-601	<i>Baseline Change Control</i>
Y40-137	<i>Y-12 Emergency Management Hazards Assessment Process</i>
Y40-140	<i>Y-12 National Security Complex Building/Facility Emergency Program</i>
Y60-101PD	<i>Quality Program Description</i>
Y60-301	<i>Control of Nonconforming Items (and Services)</i>
Y70-150	<i>Nuclear Criticality Safety Program</i>
Y70-160	<i>Criticality Safety Approval System</i>
Y71-311INS	<i>Y-12 Pollution Prevention Program Implementation Instruction</i>
Y71-903	<i>Y-12 Waste Management</i>

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Y71-915	<i>National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) Review and Compliance</i>
Y71-917	<i>Y-12 Complex Air Permitting and Compliance Documentation Program</i>
Y71-918	<i>Water Quality and NPDES Permit Compliance Program</i>
Y71-937PD	<i>Chemical Safety Management Program</i>
Y72-001	<i>Environment, Safety, and Health Policy</i>
Y73-001INS	<i>BWXT Y-12 Industrial Safety Program</i>
Y73-045INS	<i>Automated Job Hazard Analysis</i>
Y73-107INS	<i>Lockout/Tagout for Personnel Protection</i>
Y73-164INS	<i>Subcontract Environmental Safety and Health Management Instruction</i>
Y73-200PD	<i>Industrial Hygiene Program</i>
Y73-201	<i>Chronic Beryllium Disease Prevention Program (CBDPP) Procedure</i>
Y73-220PD	<i>Hazardous Chemicals in Laboratories Program</i>
Y74-001	<i>Authorization Agreements</i>
Y74-800PD	<i>Facility Safety Program</i>
Y74-802	<i>Safety Basis Documents for Nuclear, PSM/RMP, and Chemically Hazardous Facilities</i>
Y74-803	<i>Change Evaluation/Major Change Determination</i>
Y74-809	<i>Unreviewed Safety Question Determinations</i>
Y75-100	<i>Y-12 Site Radiological Control Program</i>
Y75-122	<i>Radiological Work Permit</i>
Y75-134	<i>Y-12 National Security Complex ALARA Program for Radiological Protection</i>
Y79-001INS	<i>Y-12 Fire Protection Program Manual</i>
Y90-027	<i>Conduct of Training Manual</i>
Y/P65-9059	<i>Analytical Chemistry Organization Procedures</i>
Y/P65-9087	<i>Analytical Chemistry Chemical Hygiene Plan</i>

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APPENDIX C
Contractor Assurance System
(Page 1 of 2)

During (CY) 2003, BWXT Y-12 will complete the plan for implementation of the BWXT Y-12 Contractor Assurance System (CAS) for execution during CY 2004. The main thrust of the Contractor Assurance System is to enhance BWXT Y-12's ability to systematically manage operational responsibilities through improved compliance controls, metrics, performance assessment and validation, and enhancement of other quality assurance methods. CAS is being implemented cooperatively with NNSA and YSO.

Implementation of CAS will:

- enable more effective management of risk associated with program management (e.g., program planning), functional (e.g., Environment, Safety, and Health; Safeguards and Security; and Quality), business (e.g., Financial Management, Human Resources), and Work Execution (e.g., Enriched Uranium Operations, Quality Evaluation);
- implement more systematic and focused BWXT Y-12 self-assessments and other feedback and improvement activities;
- automate the ability to identify and correct performance and compliance trends before they become significant issues; and
- enhance risk and resource prioritization decisions.

BWXT Y-12 will complete the baseline gap analysis supporting CAS during 2003. The analysis will result in the identification of needed improvements in BWXT Y-12's current assurance system and provide the basis for development of a CAS implementation plan for phased execution during 2004. The implementation effort will be managed as a company project, i.e., established scope, schedule, and cost baselines.

Y15-700, *BWXT Y-12 L.L.C. Management Description*, provides a description of the BWXT Y-12 enterprise, upper-tier organization structure, roles and responsibilities, a description of the BWXT Y-12 management system, and other information. The revision to Y15-700 also identifies management system improvement initiatives (e.g., CAS, strategic planning) to be implemented during the current and next calendar years.

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The management system improvements described in this Appendix are scheduled to be implemented by the end of calendar year (CY) 2003. For CY 2003 the referenced documents in this Appendix will be dash-lined as shown in Figures 2-1 and 2-2 to the ISMS infrastructure. No revisions to Y15-635PD, BWXT Y-12 Integrated Safety management System are required for the documents listed in this Appendix. The subsequent CY 2004 annual revision to Y15-635PD, *BWXT Y-12 Integrated Safety Management System* to be provided to the Y-12 Site Office by December 31, 2004-will describe the BWXT Y-12 Integrated Management System that incorporates the above summarized management system enhancements.

Listed Directives for Appendix C:

Y15-700, *BWXT Y-12 L.L.C. Management Description*

Y15-702PD, *Baseline Configuration and Control System Description*

Y15-707INS, *System Feedback and Improvement Process*

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APPENDIX D
ENVIRONMENTAL MANAGEMENT SYSTEM
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The Department of Energy (DOE) Order 450.1, *Environment Protection*, was issued in January 2003. Its objective is to implement sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by DOE operations and by which DOE cost effectively meets or exceeds compliance with applicable environmental; public health; and resource protection laws, regulations, and DOE requirements. This objective must be accomplished by implementing Environmental Management Systems (EMSs). An EMS is a continuing cycle of planning, implementing, evaluating, and improving processes and actions undertaken to achieve environmental goals. These EMSs must be part of Integrated Safety Management Systems (ISMSs) established pursuant to DOE P 450.4, *Safety Management System Policy*, dated October 15, 1996.

A BWXT Y-12 complex-wide EMS Planning Team has been chartered and will serve throughout the EMS implementation. Declaration of ISO 14001 implementation by the end of FY 2004 is the goal; however the order requirement is for an EMS integrated with the site ISM by end of December 2005. A key accomplishment to date has been the development and implementation of Y71-66-EC-216, *Environmental Aspect and Impact Identification and Significance Determination*, to identify significant complex-wide environmental aspects and impacts. An environmental aspect is an element of an organization's activities, products, or services that can interact with the environment. It could involve consumption of material or energy, generation of waste or noise, or the release of a chemical. Environmental impacts are changes to the environment resulting from an aspect.

ESG serves as the management sponsor for Y-12 EMS implementation to oversee and direct the full integration of the EMS components with the BWXT Y-12 ISM system. NNSA has identified the EMS described in the International Organization for Standardization (ISO) voluntary standard ISO 14001, *Environmental Management Systems Specification with Guidance for Use*, as the model of choice. The ISO 14001 model is an internationally recognized standard that provides a widely recognized set of principles and standards for integrating environmental considerations into daily business decisions, including performance and cost.

Multiple Facility/Organizational Specific EMS Planning Teams were established in FY 2003 to facilitate EMS Implementation within their Y-12 facilities/organizations. These Facility/Organizational Specific EMS Planning Teams will work with the complex-wide team to:

- identify facility/specific environmental aspects and impacts associated with activities (process/operations) that take place, products manufactured, and services performed at the facility

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- identify environmental objectives, targets, performance metrics, and management programs that should be applied to specific functions at relevant levels within the facility, and
- identify operational, document, and records keeping controls, monitoring procedures, and training (existing and/or required) that are needed to ensure effective environmental management, and that the significant aspects are adequately controlled.

New or revised Management Requirements (procedures and instructions) that may be recommended to ensure a unified and consistent implementation of the EMS across BWXT Y-12 operations will be conducted in accordance with Y15-235, *Management Requirements System Process*. Y71-66-EC-216, *Environmental Aspect and Impact Identification and Significance Determination*, will be converted to a site-level management requirement after the Facility/Organizational Specific EMS Planning team have provided feedback.

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APPENDIX E
FURTHER IMPLEMENTATION OF ISSM REVIEW
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As an improvement plan for CY 2003 and CY 2004, BWXT Y-12 will review the opportunity to include security into the Authorization Agreements (AAs). In this way, AAs would be the shell document that encompasses the safety envelope and security. If it is determined that including security into AAs is the proper approach, each AA will be revised individually to include security at the next scheduled revision. This would be a further implementation of ISSM.

If it is determined to revise and submit the AAs to include security, a change control process similar to USQD will be developed for security changes.

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APPENDIX F
EXAMPLE OF MAINTAINING THE INTEGRITY OF ISMS
DURING REORGANIZATION
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Y15-700PD, *Management Description*, was created and approved to provide the general framework of how BWXT Y-12 is structured. It outlines the top-level processes used to efficiently manage and execute work, providing the overarching assignment of responsibilities, delegation of authorities, and the processes employed to plan, perform, assure, improve, and document the execution of work. It provides the basic management philosophy and structure of BWXT Y-12 to employees, customers, regulators, and other stakeholders. The Y15-700PD is a dashed-line ISMS implementation procedure for CY 2003 and CY 2004 in the ISMS program description as the improvement plan for ISMS and the contractor assurance initiative. Y15-700PD (reference Section 4.6, Lower-tier Organization) provides the guidance for reorganization. On an organizational level, Manufacturing has drafted a detailed implementation path forward, as follows:

As part of BWXT's commitment to continual improvement The President and General Manager has initiated reorganization at Y-12 to promote improved communications and to focus responsibility and accountability. The transition to this new organization will be accomplished in phases, with the first phase to include all of Manufacturing. The ISMS program will be maintained through out this process and the description contained in the remainder of this document will continue to be valid.

To accomplish this an Implementation Plan has been prepared for the first phase that describes the actions, decisions, and activities that must be accomplished to implement the General Manager's direction and ensure that the ISMS program remains in effect. As part of this transition process the Executive Steering Group will review and oversee the Implementation Plan is a prioritization of the 472 procedures that constitute BWXT's command media. The procedures will be placed into three priorities;

Priority 1 – Procedures that must be reviewed and if impacted by the reorganization must be revised prior to making the reorganization official;

Priority 2 – Procedures that will be reviewed after the reorganization is official and if impacted will be revised within the first six months following the reorganization; and

Priority 3 – Procedures that are clearly not impacted by the reorganization or that can safely be updated the next time the procedure is revised.

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APPENDIX F
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Procedures that are referenced in Appendix B of this Program Description are all Priority 1 and will be reviewed to determine if they need to be revised to reflect the new organization. If the procedures are impacted then the procedures will be revised including NNSA concurrence if required.

The Implementation Plan will utilize the Guiding Principles and applicable Core Requirements from DOE Order 425.1C, *Startup and Restart of Nuclear Facilities*. Manufacturing will conduct a review to ensure the activities by the Implementation are in fact complete before they “stand-up” the new organization. This includes ensuring that:

The organization is staffed;

The personnel are trained and qualified for their positions or a plan is in place for completing their training/qualification; and

There is a clear plan for follow-on activities including an independent assessment after the reorganization in manufacturing is official.

Through these actions BWXT will ensure that the ISMS program, as approved by YSO, is in effect during the transition to the new organization and after the new organization is implemented.