The AMWTP is operated for the U.S. DOE by Bechtel BWXT Idaho, LLC

PD-ISM-01, Rev. 3

Advanced Mixed Waste Treatment Project

Integrated Safety Management System Description Document

September 2008

Approved:

Signature on file. See DCR-7350	9/25/08
Jeff Mousseau, President and General Manager	Date

Next Periodic Review: 9/30/09

Advanced Mixed Waste Treatment Project

Integrated Safety Management System Description Document

September 2008

"All of us, together, are united in continuing to make the AMWTP the safest worksite possible, by actively caring for the safety of each other."

Executive Summary

This Integrated Safety Management System (ISMS) document applies to the Advanced Mixed Waste Treatment Project (AMWTP), managed by Bechtel BWXT Idaho, LLC (BBWI) for the U.S. Department of Energy (DOE). It also applies to subcontractors performing work for BBWI through flow down of requirements in the individual subcontracts. The BBWI ISMS ensures that safety and environmental protection considerations are integrated throughout work planning and execution to ensure jobsite safety for every worker. The principles of Integrated Safety Management (ISM) serve as the foundation of the implementing mechanisms for work at the site. The structure of requirements to achieve safety is based on sound principles such as detailed defense in depth, redundancy of protective measures, robust technical competence in operations and management oversight, and compliance with DOE directives.

The BBWI ISMS operates as an integral, visible part of BBWI business processes. ISMS integration includes prioritizing work planning and execution; establishing clear, balanced priorities; allocating resources to address programmatic and operational considerations; collecting and analyzing samples; correcting noncompliances; addressing the hazards related to AMWTP facilities, operations, and work; and applying feedback from contractor assurance processes back into all phases of the project.

The ISMS is fully developed and implemented through BBWI procedures, policies, and practices. Work planning and associated work activities are performed in a safety-conscious work environment. Management systems have been integrated, institutionalized, and transmitted via these same policies, procedures, and practices. These systems are tailored to align with the eight guiding principles and five core functions of integrated safety management, and they will be modified, as appropriate, to address ESS&H hazards associated with any new activities. The implemented ISMS is dynamic and will adapt in response to any new environmental or safety standards. To ensure this process remains strong and viable, BBWI is implementing a five-year Human Performance Improvement (HPI) Plan to continuously improve the way we successfully manage safe production at the AMWTP.

BBWI's mission is to safely and compliantly:

- certify and/or ship for off-site disposal at least 10,370 m^3 of transuranic (TRU) and mixed low-level waste (MLLW) with a minimum of that amount comprised of 1,120 m^3 MLLW,
- retrieve 18,700 m^3 of waste
- receive and process our first production quantities of offsite TRU waste.

In the course of meeting this objective, BBWI will be strategically utilizing subcontractors. These subcontractors will be required to follow the ISMS principles to ensure they perform work safely and compliantly. Effective upfront work planning and proven systems and processes are in place to enable the BBWI team to make the AMWTP the nation's safest and most efficient waste processing facility.

BBWI developed the AMWTP ISMS in accordance with Contract No. DE-AC07-99ID13727, Section C, Statement of Work for the AMWTP, paragraph D, Integrated Safety Management System and Environmental, Security, Safety, and Health Program (ESS&H).

This document will be reviewed annually in parallel with the ISMS annual evaluation.

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ACRONYMS

AK	acceptable knowledge
ALARA	as low as reasonably achievable
AMLLW	alpha mixed low-level waste
AMOW	approved method of work
AMWTP	Advanced Mixed Waste Treatment Project
AOI	Abnormal Operating Instruction
BBS	Behavior-Based Safety
BBWI	Bechtel BWXT Idaho LLC
BEA	Battelle Energy Alliance
CARB	Corrective Action Review Board
CBFO	Carlsbad Field Office
CCR	competence commensurate with responsibility
CD	critical decision
CMMS	computerized maintenance management system
COC	Conduct of Operations Committee
CoO	Conduct of Operations
CPI	cost performance index
CSA	criticality safety analysis
CSE	cognizant system engineer
CV	cost variance
CWI	CH2M-WG, Idaho, LLC
DEAR	U.S. Department of Energy Acquisition Regulation
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DSA	documented safety analysis
EMS	Environmental Management System
EPA	U.S. Environmental Protection Agency
EPD	employee position description
ESC	Electrical Safety Committee
ESIT	Employee Safety and Improvement Team
ESS&H	Environmental, Security, Safety, and Health Program
EVMS	Earned Value Management System
FCG	Facility Change Group
FMP	facility modification proposal
FOI	facility operating instruction
FPP	Fire Protection Program
HAZOP	hazard and operability
HPI	human performance improvement
HWMA	Hazardous Waste Management Act

ICP	Idaho Cleanup Project
INL	Idaho National Laboratory
INST	work instruction
ISIH	Industrial Safety/Industrial Hygiene
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
ISSM	Integrated Safeguards and Security Management
IT	Information Technology
ITP	Individual Training Plan
IWTS	Integrated Waste Tracking System
JD	Job Description
KEYS	Keeping Everyone and Yourself Safe
LLW	low-level waste
LA	Liquid Absorbent
LO/TO	lockout/tagout
LSW	Line Supervisory Watch
MLLW	mixed low-level waste
MP	management procedure
NFM	nuclear facility manager
NWI	North Wind, Inc.
OI	operating instruction
OMP	Occupational Medical Program
ORPS	Occurrence Reporting and Processing System
ORB	Operation Review Board
OSHA	Occupational Safety and Health Administration
PA	Plant Automation
PAAA	Price Anderson Amendments Act
PEP	Project Execution Plan
POD	plan of the day
POW	plan of the week
PPE	personal protective equipment
PSM	Plant Shift Manager
PTW	permit to work
QA	quality assurance
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
RPP	Radiation Protection Program
RPTW	request for permit to work
RTR	Real-Time Radiography
RSTL	Radiological Shift Team Leader
RWMC	Radioactive Waste Management Complex

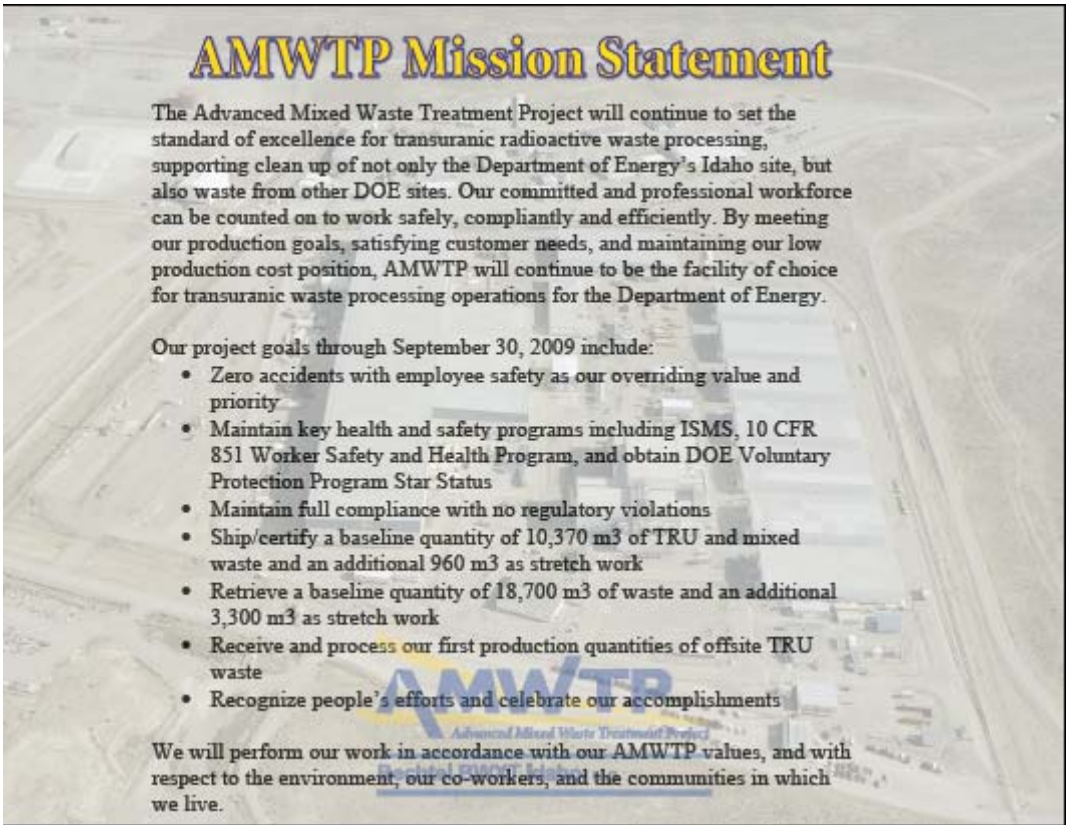
SAT	systematic approach to training
SAC	specific administrative control
SCW	Special Case Waste
SEC	Senior Executive Council
SME	subject matter expert
SMP	Safety Management Program
SPI	schedule performance index
SPOMC	Safety Performance Objectives, Measures, and Commitments
SS	Shift Supervisor
SSC	systems, structures, and components
SSW	Senior Supervisor Watch
SSWC	safe system work control
STL	shift team lead
STR	subcontract technical representative
SV	schedule variance
SWB	standard waste box
TDOP	Ten-Drum Overpack
TRU	transuranic
TRUPACT-II	Transuranic Package Transporter Model II
TSA-RE	Transuranic Storage Area Retrieval Enclosure
TSDF	treatment, storage and disposal facilities
TSR	technical safety requirement
USQ	unreviewed safety question
VPP	Voluntary Protection Program
WAC	waste acceptance criteria
WBS	work breakdown structure
WIPP	Waste Isolation Pilot Plant
WMF	Waste Management Facility
WSHP	Worker Safety and Health Program

1.0 Introduction

The framework for the ISMS across the DOE Complex is based on a set of written policies, rules, orders, standards, and human performance tools. The implementation of the hierarchy of these directives and tools for the AMWTP establishes a safe workplace for the protection of workers, the public, the environment, and it provides a rigorous, documented means of performing work safely.

To augment the many safety practices that are in place at the AMWTP and confirm they remain consistent with ISMS requirements, BBWI maintains its focus and philosophy to ensure a strong viable ISMS. The ISMS, as currently implemented, is dynamic and will be adapted in response to any new hazards associated with new activities, new federal regulations, and environmental or safety standard changes, including emerging DOE, human performance, and consensus industry standards.

BBWI has developed and implemented procedures, policies, and practices designed to ensure the safety of workers, the public, and the environment—and safety, in turn, is fundamental to the continued success of the project. Leading the way, BBWI developed a policy and goal of "Zero Accidents and Injuries," formalized in GDE-10, BBWI AMWTP Employee Handbook; in POL-003, BBWI Injury-Free Workplace Policy; and in the mission statement illustrated in Figure 1.



AMWTP Mission Statement

The Advanced Mixed Waste Treatment Project will continue to set the standard of excellence for transuranic radioactive waste processing, supporting clean up of not only the Department of Energy's Idaho site, but also waste from other DOE sites. Our committed and professional workforce can be counted on to work safely, compliantly and efficiently. By meeting our production goals, satisfying customer needs, and maintaining our low production cost position, AMWTP will continue to be the facility of choice for transuranic waste processing operations for the Department of Energy.

Our project goals through September 30, 2009 include:

- Zero accidents with employee safety as our overriding value and priority
- Maintain key health and safety programs including ISMS, 10 CFR 851 Worker Safety and Health Program, and obtain DOE Voluntary Protection Program Star Status
- Maintain full compliance with no regulatory violations
- Ship/certify a baseline quantity of 10,370 m3 of TRU and mixed waste and an additional 960 m3 as stretch work
- Retrieve a baseline quantity of 18,700 m3 of waste and an additional 3,300 m3 as stretch work
- Receive and process our first production quantities of offsite TRU waste
- Recognize people's efforts and celebrate our accomplishments

We will perform our work in accordance with our AMWTP values, and with respect to the environment, our co-workers, and the communities in which we live.

Figure 1. AMWTP Mission Statement.
Our mission is to work safely and compliantly to meet milestones, and be the premier waste processing facility. Goals are established to support the mission.

1.1 Purpose

The elements of the ISMS are an integral part of the BBWI management philosophy. ISMS elements are required for the safe performance of work, as passed down via Contract No. DE-AC07-99ID13727 between BBWI and DOE and via the DOE requirements hierarchy established in List B to the contract.

The BBWI ISMS is a continuous feedback and improvement system that will continue to protect workers, the public, and the environment. The ISMS elements adapt in response to new federal regulations, environmental or safety standards and continue to place a high value on worker input and involvement. BBWI, and its entire management team, has a moral obligation to keep the workers, the public, and the environment safe. This is accomplished through our commitment to continuously maintain and improve a strong ISMS.

This document describes the ISMS implemented by BBWI to ensure the five core functions and eight guiding principles are integrated into work performed under the BBWI contract. In this document, the term "safety" encompasses aspects of environmental protection; safety; health management, including radiation protection; pollution prevention, and waste minimization; and human performance principles. This document fulfills the intent of DOE Acquisition Regulation (DEAR) Clause 970.5223-1, Integration of Environment, Safety and Health into Work Planning and Execution.

1.2 Project Scope Overview

The ISMS discussed in this document applies to the activities and facilities associated with safe operation of the AMWTP. It includes support of the U.S. Department of Energy Idaho Operations Office (DOE-ID) objective to ship the entire 65,000 m^3 by the end of 2012. As Figure 2 illustrates, BBWI work scope includes:

- retrieval of waste from storage, characterization, treatment as necessary, certification, preparation, and loading of shipments to Waste Isolation Pilot Plant (WIPP);
- providing payload assembly and shipping support for shipment of waste to WIPP and other off-site disposal locations.

Figure 2. AMWTP Process.
BBWI teamwork, from retrieval to shipping, contributes to overall safe operations and efficiency.

BBWI will continue to improve conduct of operations, conduct of engineering, conduct of maintenance, fully utilize the Employee Safety and Improvement Team (ESIT), and maintain an excellent safety record while continually improving overall operational performance and efficiency. Key elements of BBWI's management strategy for the AMWTP include clear lines of responsibility and authority, delivery on commitments, safe and compliant operations, disciplined project management methodologies (e.g., baseline control, change control, configuration management, earned value reporting), quality products, effective communication, innovative problem solving, and continuous improvement.

1.2.1 *Waste Storage and Retrieval*

The vast majority of the waste AMWTP processes resulted from the manufacture of nuclear components at the Rocky Flats Plant in Colorado. Shipped to Idaho in the 1970s and early 1980s for storage, the waste contains industrial debris such as rags, work clothing, machine parts, tools, soil, and sludge, which is highly contaminated with transuranic radioactive elements (primarily plutonium). Most of the waste is mixed waste—it is contaminated with radioactive and non-radioactive hazardous chemicals such as oils and solvents.

The Transuranic Storage Area-Retrieval Enclosure (TSA-RE) covers approximately seven acres and originally housed approximately 53,300 m^3 of waste stacked on asphalt pads under a soil berm, which is enclosed within a metal structure (Figure 3).

Five storage modules (each measuring 120 feet by 240 feet) also hold up to approximately 12,000 m^3 of waste. The waste is stored in drums and boxes and stacked warehouse-style on concrete pads, but it is not covered with soil like the waste in the TSA-RE (Figure 3).

Retrieval is the stage where some of the high-consequence work transpires with respect to the general public as reflected in the Documented Safety Analysis (DSA) design base accidents. Insufficient container integrity and the possibility of a deflagration are examples of hazards that are addressed in the work planning and execution.

After the waste is retrieved from the storage facilities, it is characterized and staged for further processing.

Figure 3. Waste Storage and Retrieval.
We begin with the safe retrieval and storage of the waste.

1.2.2 *Characterization*

After retrieval and drum venting, each waste container is examined in one of three characterization facilities (waste management facility [WMF]-634, WMF-628 or WMF-610) to verify its contents (Figure 4).

These facilities house waste-testing equipment, including real-time radiography (RTR) units, gamma spectrometry assay equipment, a drum-coring unit, and headspace gas and analysis sampling equipment. Each item of equipment performs a specific function to verify the contents of the waste containers before they are treated and shipped.

- RTR x-rays the waste containers; it is powerful enough to identify the components of a light bulb inside a waste drum.
- Assay equipment measures the amount of radiation and identifies the radioisotopes present in each waste container.

Figure 4. Characterization.
Multiple assessment methods at the Characterization Facility enable safe handling and treatment of the waste.

- Drum coring takes a sample of certain containers to determine their constituents.
- Headspace gas sampling checks for the presence of flammable and gases within waste containers.

In the characterization facilities, radiological exposure evaluation guidelines could potentially be exceeded for involved workers from exposure to direct radiation from the RTR systems. Therefore, systems such as interlocks, shielding, time delays, and alarms are required to protect workers from high direct radiation exposure associated with operations and surveillance performed to ensure operability of the systems and to prevent exposures.

After the containers are characterized, they are either staged in Type-II storage facilities, the loading facilities for packaging and shipment, or to the Treatment Facility for further processing.

1.2.3 *Treatment*

Characterized waste containers that need further treatment before they can be shipped are sent to the AMWTP Treatment Facility, where the highly contaminated waste is remotely sorted, repackaged and reduced in volume (Figure 5). Waste sent to the Treatment Facility is transported to different areas within the facility by an intricate system of interlocked conveyers and drum manipulators.

The Treatment Facility houses a supercompactor for significant reduction of the waste volume. In addition, a shredder reduces emptied wood and metal boxes to sawdust and metal scrap. The supercompactor, which can compress a 55-gallon drum to roughly one-fifth its original size and processes waste retrieved at the AMWTP.

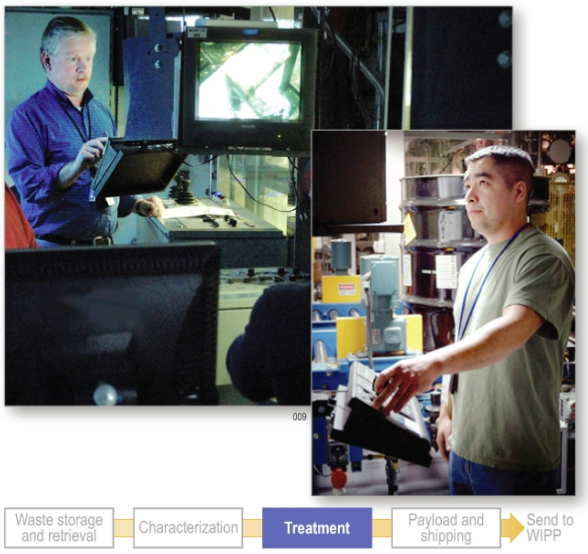


Figure 5. Treatment Facility.
We safely sort and supercompact the waste to maximize WIPP storage.

The facility also has two waste treatment boxlines, which contain floor-mounted manipulators (i.e., Brokk™), overhead power manipulators (i.e., PaR™), and manual master-slave manipulators. In the boxlines, the waste is remotely sorted and size-reduced. Any restricted items such as liquids or compressed gas cylinders are removed, and the waste is then repackaged.

Additional treatment methods include liquid absorption (LA), waste repackaging, liquid decanting, bulging drum recovery, and special case waste (SCW) operations.

Criticality safety is a concern at the Treatment Facility. As a result, the DSA requires additional TSR level controls to ensure a criticality in the supercompactor remains an extremely unlikely event.

These TSR level controls include safety significant systems, structures, and components (SSCs), such as, drum and packet assay systems, fissile tracking system interlocks, and specific administrative controls (SACs). Therefore, required functional testing, daily operational checks, and a drill program have been implemented into the work planning and execution.

1.2.4 *Payload Assembly and Shipping*

After the waste containers are characterized, they are either sent to the Treatment Facility for processing, or they are staged for direct routing to one of the Transuranic Package Transporter Model II (TRUPACT-II) loading facilities. Payload assembly and shipping require moving and lifting the payloads by means of hoisting and rigging. Payload assembly and transport container loading are performed in accordance with the requirements specified in the Safety Analysis Report for the TRUPACT-II Shipping Package.

Loading the TRUPACT-II containers for shipment to WIPP is a vital part of the waste preparation process. These containers are special double-containment vessels that are approved for waste transport.

Payload assembly is performed inside WMF-635 while AMWTP TRUPACT-II loading is performed inside WMF-618 and WMF-635. Payload assembly includes assembling the WIPP certified waste drums into one of the following groups:

Product drum payloads consist of:

- 3 or 6 puck drums,
- 55-gallon drums which consist of either 7 or 14 drums,
- Ten-Drum overpacks (TDOPs), which consist of 10 – 55-gallon drums,
- Standard waste boxes (SWBs) which consists of 4 - 55-gallon drums.

These certified payloads are then individually loaded into the TRUPACT-II containers for shipping (Figure 6).

After the payloads are placed in the TRUPACT-II containers, the containers undergo various visual and mechanical inspections before they are certified for travel. Once a TRUPACT-II container is certified, the waste is sent 1,300 miles to its final destination at WIPP in New Mexico.

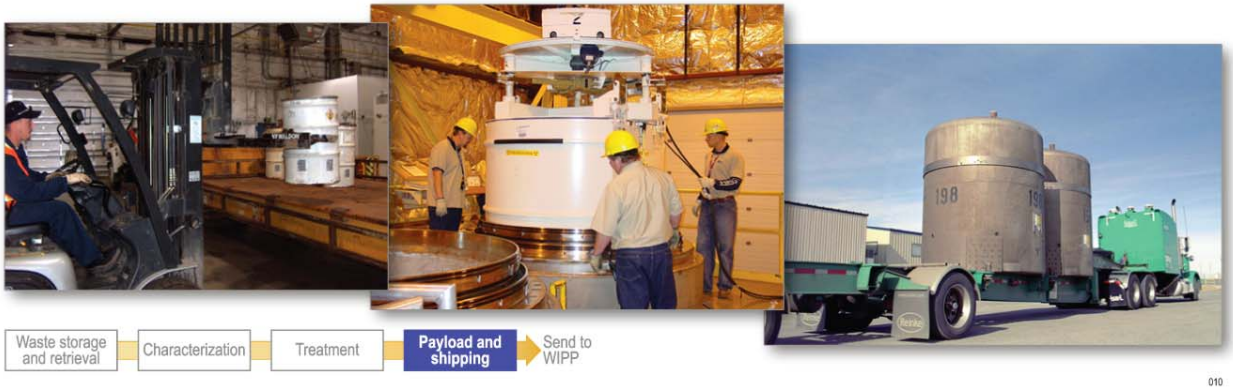


Figure 6. Payload and Shipping.
Payload assembly and loading methods optimize shipment volumes and ensure safe and compliant transport to WIPP.

1.2.5 *Mixed Low-Level Waste/Low-Level Waste Disposition*

BBWI has been contracted by the U.S. DOE-ID to optimize the processing of legacy transuranic (TRU) waste at the AMWTP for shipment toWIPP. Historical characterization indicates that a percentage of the AMWTP waste population is not TRU waste, but rather low-level waste (LLW) or mixed low-level waste (MLLW).

North Wind, Inc. (NWI), under subcontract with BBWI, is shipping LLW and MLLW to the appropriate treatment, storage, and disposal facilities (TSDFs) for necessary treatment, if required (to comply with land disposal restriction requirements) and final disposal. NWI has established and will maintain the contracting mechanisms and waste stream profiles with the TSDFs. BBWI is conducting specific container characterization and container data preparation activities. This container data is transferred to NWI, who verifies BBWI container data for compliance to the applicable TSDF waste acceptance criteria (WAC), establishes container and/or waste profiles, and receives and ships AMWTP waste containers. These activities constitute the LLW/MLLW Disposition Project. The scope of this project is to maintain a program to properly disposition defined quantities of MLLW/LLW waste within specified DOE funding parameters, while minimizing the disruption to AMWTP's TRU waste disposition operations and processes.

1.2.6 *Waste Programs*

Waste Programs validates and certifies data generated from the waste characterization processes by conducting Level I and Level II validation, followed by waste certification and transportation certification using existing processes and procedures. Waste Programs personnel support WIPP recertification audits, Carlsbad Field Office (CBFO) surveillances, U.S. Environmental Protection Agency (EPA) audits/assessments, and other receiver sites audits and inspections. Waste Programs personnel also support operations in process improvement initiatives. Reconciliation personnel provide oversight of characterization activities, interface with BBWI, DOE, WIPP and other entities to ensure work is performed within established controls. Reconciliation personnel also follow the progress of container data to ensure it is conveyed properly through the certification process.

2.0 ISMS Overview

An ISMS is a systematic, phased approach to performing work safely. The seven guiding principles and five core functions of ISM form the foundation of ISMS implementation at the AMWTP. An eighth guiding principle—Worker Involvement—is added to acknowledge that those performing work are in the best position to provide feedback that will continuously improve safety (Figure 7). BBWI has integrated the ISMS guiding principles and core functions into AMWTP work processes to ensure that hazards and risks are identified and that the controls needed to mitigate them are defined and implemented. Worker involvement in this process is fundamental to success:

- All employees know that safety is integral to every activity. As such, they actively participate in recognizing hazards in their individual work activities and participate in the mitigation process.
- Employees understand their safety responsibilities and consider safety to be a personal value.
- Organizational systems and processes provide added assurance that hazards are controlled and human errors are minimized and mitigated.
- Continuous learning of safety measures and continuous improvement in safety performance are expected and consistently achieved.

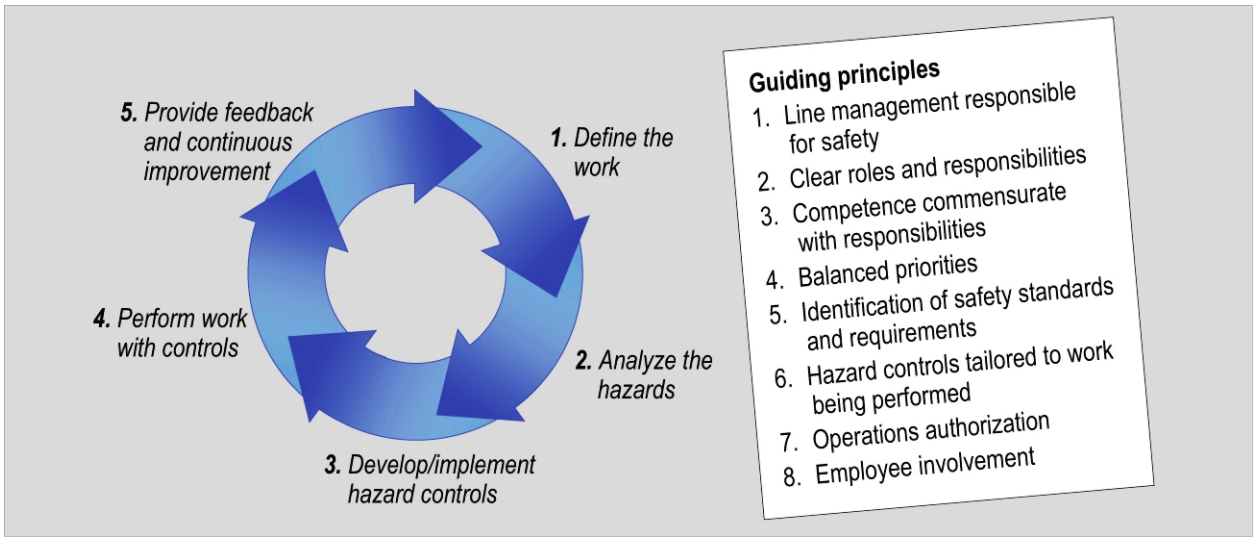


Figure 7. Core Functions and Guiding Principles.
The core functions and guiding principles enable safe, efficient operations, effective compliance programs, and fulfillment of AMWTP missions.

3.0 BBWI Organization

3.1 Overview

BBWI's approach to staffing the contract scope to reflect the single-purpose nature of the project is to recruit and empower an entire management team. Clear lines of responsibility are established from the worker to first line supervisors through the management structure, to the President and General Manager.

3.2 Management Structure

The BBWI management structure is detailed in RPT-PEP-01, AMWTP Project Execution Plan. Appendix E of the AMWTP Project Execution Plan (PEP) includes additional information identifying the line management functional management structures and associated processes. The AMWTP organization charts are created, maintained, and periodically updated in accordance with MP-ADMN-1.19, AMWTP Organization Charts, and can be found on the AMWTP internal website.

The President and General Manager is also the Project Manager and is accountable to DOE-ID for the work scope described in this contract.

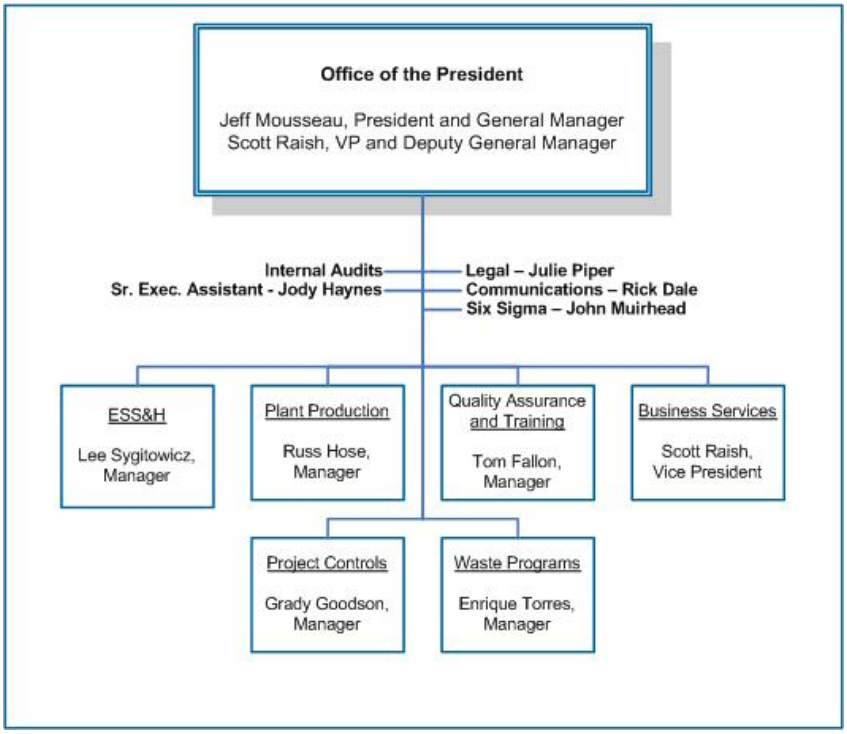


Figure 8. Organization Chart.
Our management structure provides clear lines of authority, responsibility, and accountability.

3.3 Project Scope and Strategy

RPT-PEP-01 describes BBWI's approach to managing the contract and achieving the near-term goals to accelerate retrieval efforts and certify TRU waste and ship both TRU and MLLW waste out of Idaho. To support this effort, an accelerated retrieval plan has been developed. This schedule supports the approved DOE-ID Performance Management Plan objective to ship the entire above ground inventory of TRU and MLLW in the TSA-RE by the end of 2012. To facilitate accomplishment of this objective, DOE-ID has extended BBWI's Management and Operations Contract for the AMWTP through September 30, 2009.

As discussed in Section 1.0, the project work scope includes retrieval of waste from storage, characterization, treatment as necessary, certification, preparation, and loading of shipments for transport to WIPP. In addition to the TRU waste, BBWI applies cost savings identified through process improvements to treat and dispose of alpha mixed low-level waste (AMLLW) and MLLW. AMLLW that cannot be shipped to WIPP is treated and disposed of at DOE or commercial facilities, providing the best value to the government.

BBWI's project execution strategy is designed for maximum efficiency. It involves opening multiple dig faces to optimize retrieval, fully deploying AMWTP and other subcontractor characterization capabilities, maximizing use of the Treatment Facility to compact waste and maximize volume per shipment, and minimizing the actual waste volume requiring disposal at WIPP.

All containers are staged for venting after retrieval to enhance safety by reducing handling of unvented drums. Shipments average approximately 15 per week, consistent with the eight-week rolling schedule as published by the WIPP to meet the volume targets.

Additional details of the AMWTP scope are provided in the Work Breakdown Structure (WBS) included in Project Execution Plan (PEP), Appendix F, and the WBS Dictionary in PEP, Appendix G.

3.4 Authorizing and Performing Work at the Operations Level

Operations Management ensures that work activities are conducted in compliance with facility and project requirements, such as safety basis documents and environmental regulations and permits, by appropriately trained and qualified personnel following approved work control documents or procedures. Operations are conducted in accordance with the company conduct of operations program which provides the operational framework for safe and efficient operations. This framework, based on DOE O 5480.19, Conduct of Operations Requirements for DOE Facilities, implements a proven philosophy for the safe operation of nuclear and non-nuclear facilities.

Nuclear facilities undergo the Unreviewed Safety Question (USQ) process (MP-NSPC-3.2, Unreviewed Safety Question process) before a proposed change to an activity or a new activity is conducted to determine whether it poses the type of change that requires a detailed review in accordance with 10 CFR 830.203. If it does, a further evaluation is performed to determine whether the activity can be accomplished within the established safety basis and if not, DOE approval for the change or new activity is required.

Plan-of-the-Week (POW) meetings are conducted to prepare for the next week's work. Daily operations are directed via the Plan-of-the-Day (POD) meetings conducted every after-noon to discuss the next day's activities and the activities completed during the past 24 hours.

Daily Operations begin with shift turnover and the Daily Plant Meeting where the Plant Shift Manager, Shift Manager, Plant Manager, Operations Manager, Nuclear Facility Manager and representatives from Maintenance, Radiological Controls, ESS&H, Production Managers, Quality, Engineering, Production Planning to discuss any equipment breakdowns that have occurred overnight and determine the priority of the repair and review work authorized by the POD. For emergent work, if a work

request does not exist, the request is initiated and the work is analyzed and planned. A work order is obtained and a work control document (i.e., Request for Permit [RPTW] to Work, Permit to Work [PTW]) is requested from the Safe System Work Control (SSWC) group. Once the work control package is prepared, a job walkdown is performed. If the Nuclear Facility Manager (NFM) deems that the priority of the repair is higher than other maintenance work listed for the day, then the NFM approves the addition of the item to the POD. After a pre-job briefing, the work is authorized to proceed. Upon completion of the work, a post-job meeting provides a forum for feedback on the success of the job and ideas for improving the work in the future. This feedback information is documented in the work package to allow the planner to make the changes. INST-COPS-9.18.2, Permit to Work, specifies the process for conducting, documenting, and incorporating pre-job briefings and for documenting, evaluating, and tracking feedback identified during the performance of work.

Initial use of operation procedures and infrequently (i.e., less than monthly) conducted operational activities controlled by a procedure require pre-job briefings before the work begins to ensure that participants understand the scope of work, hazards, mitigations, and responsibilities. Human performance tools such as the error precursors cards, five-step questioning process cards, and supervisor and employee training in interactive pre-job briefings are provided for enhancing the the briefing process. A pre-job briefing is the final confirmation of readiness before a task is authorized and performed. Post-job reviews are encouraged at all times, but should also be completed for initial use of procedures. The results of post-job reviews will be provided to the NFM and applicable Production Manager.

Regardless of complexity, work activities are undertaken with full understanding by employees that they are individually responsible for their own safety and the safety of others involved in or affected by the activity. Workers are qualified through training and experience to perform the tasks assigned. They understand that they are required to follow established procedures or work control documents for the work being undertaken. They also actively participate in developing and changing the procedures or work control documents. In addition, workers clearly understand that they not only have the right but also the obligation to step back and stop work at any time if they are aware that a potentially unsafe condition exists.

Approved procedures, based on the five core functions of ISMS, guide AMWTP operations. When a change to a work process is needed, or new work scope is identified, the procedure is revised or developed as appropriate. The draft procedure is walked down, and a hazard assessment is performed to identify associated hazards and determine mitigating actions. These hazards and mitigations are captured either as precautions or prerequisites within the procedure or as procedure controls. The procedure then undergoes review by applicable functional support areas including a USQ review, and comments are resolved. Before final approval, the procedure is validated by the Operations Technicians to verify and provide feedback as to its usability and accuracy. After final approval is received, the procedure is issued for use. During operations, if a step in the procedure cannot be completed, the Operations Technicians are trained to step back or stop work and notify supervision. Changes are then initiated and incorporated via the document change request process, and the procedure is reissued for use.

3.5 DOE Interface

DOE-ID provides oversight to, and interfaces with, BBWI to ensure continued excellence in mission execution and adherence to the safety expectations expressed in the AMWTP Contract and the Safety Performance Objectives, Measures, and Commitments (SPOMC). DOE provides overall contract management, project funding, and programmatic oversight. The DOE Contracting Officer and the contracting officer's representative have ultimate authority to direct and change project technical, cost, and schedule baselines to the extent that such authority is not contradicted by the prime contract. The AMWTP General Manager and the management team therefore maintain close and constant interface with DOE officials to ensure timely and efficient completion of the AMWTP work scope. This is accomplished by frequent meetings with the DOE Project Director and facility representatives. DOE

facility representatives conduct assessments of facilities, operations and programs to determine compliance with requirements and maintain operational awareness through day-to-day facility tours and walk-throughs, work observation, document reviews, ongoing interaction with workers and supervisors, and attendance at the POD/POW, job-specific meetings, fact-finding meetings or pre-job briefings. Their presence provides additional level of oversight, contributing observations, and formal reports aimed at operational improvements.

3.6 Site Interface

AMWTP obtains a variety of infrastructure support services from the Idaho Cleanup Project (ICP) and Idaho National Laboratory (INL) contractors. The major services obtained from the ICP contractor, CH2M-WG, Idaho, LLC (CWI) include analytical chemistry, fire water, sanitary sewer, potable water, external dosimetry, internal dosimetry, LLW disposal, TRUPACT shipping support, use of the Integrated Waste Tracking System (IWTS), disposition of excess property. In turn, CWI obtains AMWTP services for characterizing, processing, and shipping contact-handled buried TRU waste from the Radioactive Waste Management Complex (RWMC).

The major services obtained from the INL contractor, Battelle Energy Alliance, LLC (BEA), include electrical power, selected roads and grounds maintenance, landfill utilization, clean soil disposal, emergency response services (including firefighting, emergency operations center, and ambulance services), security, telecommunications, wireless and network infrastructure, evacuation bus, and instrumentation calibration.

The contractors obtain services from each other via a purchase order process and the services are conducted in accordance with the performing contractor's safety program.

Management from all companies routinely meet and coordinate actions and feedback to improve programs. Examples include the meetings on Fire Protection issues and those on the implementation of 10 CFR 851, Worker Safety Program.

3.7 Subcontractor Services

Although the nature of the AMWTP work requires minimal use of subcontractors, BBWI has implemented a program that is fully compliant with the requirements of ISMS.

Subcontractors performing work at the AMWTP generally fall within three categories:

- staff augmentation and professional support services;
- peripheral support, which includes delivery of supplies, pickup of laundry, etc.; and
- those performing hazardous work (defined as a physical work activity or activities such as construction, equipment maintenance, and/or facility repair).

All subcontractors are required to apply ISM core functions and guiding principles in the performance of their work scope. Subcontractor participation in some of BBWI's support programs, e.g., Employee Safety and Improvement Team, People Based Safety, KEYS, Rolling Stock, etc., is applied on a graded approach based on contract scope. BBWI's commitment to safety is extended to its entire workforce including staff augmentation support subcontractors, lower-tier service subcontractors, and their employees through the incorporation of ISM principles and functions in the acquisition process through company-level management procedures as supplemented by specialized guidance documents.

Work performed by subcontractors that is hazardous is governed by mandated processes and correlating procedures and guides. This type of work is performed in accordance with AMWTP's work control process, PD-COPS-9.18. The relationship to ISM core functions are as follows:

- MP-PCMT-15.1, Acquisition of Material and Services, establishes the requirement for the requestor to define the scope of work and identify and analyze any associated environmental, safety, and health requirements or hazards.
- MP-PCMT-15.1, Appendix A, On-Site Service Acquisition, provides a graded approach to tailor safety and health requirements to the proposed work tasks and for identification of specialized work requirements that translate into the controls that prevent/mitigate potential or actual hazards.
- MP-PCMT-15.1, Appendix B, Subcontract Technical Representative Program, provides direction to requestors and Subcontract Technical Representatives (STRs) that before commencement of physical work, a pre-performance meeting is required to confirm readiness and verify that pre-work deliverables have been submitted and approved. Oversight and performance monitoring requirements for STRs are contained in MP-PCMT-15.1, Appendix B, and the STR Handbook.
- MP-PCMT-15.1, Appendix F, Supplier Performance Evaluation Program, , requires an assessment of subcontractor performance. Upon completion of the performance assessment, a briefing is provided to the subcontractor, wherein feedback for improvements is provided.

Requirements rolldown for affected subcontracts is accomplished via the pro forma contract, which incorporates the statement of work, special conditions, and general provisions. The documents are tailored as necessary to reflect actual requirements rather than “boiler plate” language.

AMWTP personnel involved in the acquisition process are trained for their particular roles and responsibilities. Requestors responsible for preparing statements of work for onsite hazardous work must be familiar with applicable procedures. Assistance is provided to requestors by trained Procurement Specialists who have completed topical training and required reading.

The STR is the individual identified in the subcontract as duly authorized for ensuring that subcontractor work activities are maintained within the safety boundaries identified in contractual documents. Specific duties for which the STR is responsible include (but are not limited to):

- Conducting the general pre-job meeting.
- Ensuring that subcontractor work is identified and discussed at POD and POW meetings.
- Verifying specific work packages.
- Ensuring that appropriate Industrial Safety/Industrial Hygiene oversight is provided.
- Maintaining knowledge of lower-tier subcontractors and work being performed.
- Providing advance approval of any physical work performed by subcontractors after normal work hours.

An STR is qualified by possession of a recognized degree, certificate, or professional standing, or is a professional who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to resolve issues related to project field work in a safe, efficient, and contractually timely manner.

Overall program effectiveness is evaluated as part of the Acquisition Services Self-Assessment program. Checklists are used to verify that subcontracts incorporate required clauses and documents, deliverables were received on time and conform to requirements, field oversight was adequate for the work being performed, and a subcontractor performance assessment and feedback review is completed.

3.8 AMWTP Committees and Boards

Committees and boards are key ISMS components that promote the integration of safety across the project and facilities. AMWTP managers at all levels take actions to ensure that employees understand the ISMS and recognize its importance. Management is committed to ensuring that employees understand their responsibility for integrating safety considerations into their work activities. The unified team of all levels of management is also committed to providing the resources and processes that enable safety to be integrated into work processes.

AMWTP has established various forums for soliciting input from all levels of employees and performing oversight of AMWTP operations involving worker safety and protection of the environment. These forums are summarized in the following subsections.

3.8.1 *Board of Managers*

The Board of Managers is a corporate body of senior executives designated by BBWI's parent companies, Bechtel National, Inc. and BWXT Services, Inc. The Board's purpose is to oversee the operations of BBWI to ensure compliance with contractual and LLC requirements. Other duties include review of operating actions, approval of revenue plans and non-reimbursable budgets and legal elements, such as, naming of company officers and defining their rights, powers, and authorities.

The Board normally has meetings three times per year to ensure BBWI management operates the AMWTP in a safe and compliant manner.

Affiliations such as this provides BBWI access and use of corporate resources that help solve any technical, operational, and business issues that may arise.

3.8.2 *Senior Executive Council*

The BBWI Senior Executive Council (SEC) makes strategic, business, operational, policy, and resource decisions and recommendations to support management and operation of the AMWTP. It operates as a single management body to ensure that the guiding principles and policies of ISMS and the Environmental Management System (EMS) are implemented and institutionalized within the AMWTP.

The SEC provides timely, integrated, informed decisions that are well communicated and implemented, focusing on:

- general communications,
- strategic directions and decisions,
- general requirements, initiatives, and policies,
- continuous improvement initiatives,
- financial decisions, and
- corrective actions for significant events.

Measures of SEC success are:

- business plan achievement,
- overall performance,
- employee feedback, and
- favorable results as defined in Section 10.2, Safety Performance Objectives, Measures, and Commitments.

These are developed to be specific, measurable, achievable, realistic, and timely and are derived as appropriate from other formal measures such as those included in the SEC-approved PEP, contract commitments, ISMS performance measures, etc.

The SEC is composed of senior management chaired by the BBWI President and General Manager, and it is formalized by CTR-004, AMWTP Charter for the Senior Executive Council (SEC).

3.8.3 *Employee Safety and Improvement Team*

The AMWTP ESIT structure is designed to promote effective communication and resolution of safety-related issues throughout all levels of the organization. This fosters a sense of ownership of the AMWTP safety and health program by each employee. The ESIT is dedicated to promoting safety, and it empowers personnel at every level to be actively involved in maintaining a safe and healthful workplace. The ESIT recommends actions that increase safety awareness, promote Environmental, Security, Safety and Health (ESS&H), integrate employee involvement, and sustain the safety emphasis that is necessary to achieve the "Zero Accidents and Injuries" objective. As an example, the ESIT has organized a Rolling Stock Committee that works diligently to promote safe operations of skidsteer loaders, backhoes, excavators, mobile cranes, forklifts, and trucks.

The AMWTP management team is dedicated to ensuring that, through the ESIT, all employees are encouraged and empowered to actively care for their safety and the safety of others through involvement in safety programs and initiatives. The management team created a full-time position for an assigned worker to serve as the Chairperson.

To support improved involvement, the ESIT reorganized its structure providing better clarity to individual roles and responsibilities. This revised structure coupled with a supporting ESIT Charter provides the framework for success. Supporting these efforts, management has taken the additional step of designating specific Unit Management Champions. All management has the responsibility to mentor and champion the ESIT Units. By designating specific champions for each unit, the unit chairs have better availability to managers resulting in expanded employee involvement increasing face time in the field, and enhanced situational awareness that will reduce undesirable events.

The charter for the ESIT is formalized in CTR-005, AMWTP Employee Safety and Improvement Team Charter.

3.8.4 *Keeping Everyone and Yourself Safe (KEYS)*

The AMWTP continues to implement asafety observation program named Keeping Everyone and Yourself Safe (KEYS) (Figure 9). The KEYS program, formerly known as the Behavior-Based Safety (BBS) program, is just one measure that AMWTP uses to implement the Integrated Safety Management philosophy through direct employee involvement.

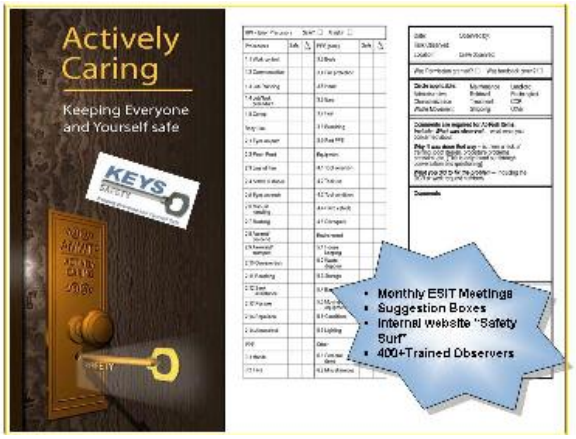


Figure 9. KEYS Program. This vital initiative has dramatically increased employee safety awareness, motivation, and involvement.

The KEYS program is a method of eliciting employee feedback that can help to promote safe work practices. KEYS drop boxes are placed in high-traffic work areas, and employees are encouraged to submit their concerns about any potentially unsafe practices they have observed during the day. The submittals are compiled, reviewed, and recorded by the KEYS sub-committee, which provides responses and reports any actions taken to address the observations.

The KEYS program recognizes work practices are behaviors or observable acts, culture is the set of values and practices that are common to the group, and attitude is an internal guide. Employees play an important role in the safe conduct of business and the rapid identification and correction of issues that could impede safe accomplishment of the project's goals.

Currently, drop boxes are located at various locations around the site and at the Energy Drive Facility. The response from employees in support of KEYS has been overwhelming. Line management is emphasizing the performance of KEYS observations by documenting the number of observations performed on the Daily Production Summary Reports for their area of responsibility. KEYS instruction for new and existing employees is an ongoing training effort.

The results of the KEYS observations are incorporated into workplace safety improvements, Safety Shares, and KEYS reports. Personnel are encouraged to attend monthly ESIT Meetings where KEYS Program status is reported and employee comments and suggestions for the program are encouraged. The KEYS Program is an integral part of AMWTP's success in establishing a positive safety culture.

The KEYS Program is formalized in PD-ESH-02, Keeping Everyone and Yourself Safe (KEYS) Program.

3.8.5 *ALARA Committee*

The ALARA Committee is dedicated to keeping occupational radiation exposures as low as reasonably achievable (ALARA). It is a multi-disciplinary group that provides oversight, adequacy review, direction for improvement in radiological protection, and advises management regarding occupational radiation exposure. The Committee includes managers and workers from operations, technical support functions, and the Radiation Safety Organization. Through radiological engineering, the ALARA Program reports and tracks ALARA goals, and performs ALARA reviews. In addition, the program establishes the process for evaluating the costs and benefits of implementing ALARA protective measures to reduce personnel dose and control radiological contamination.

The AMWTP ALARA Program and Committee are implemented in accordance with MP-RS&C-6.3, ALARA Program.

3.8.6 *Electrical Safety Committee*

The AMWTP Electrical Safety Committee (ESC) provides employees with a competent technical resource for guidance concerning work practice issues and implementation of electrical safety measures. It is responsible for the electrical safety program definition, including ownership of the electrical safety policies, related procedures, and electrical worker qualifications. The Committee directly supports worker safety and initiatives to create a rigorous electrical safety culture. This committee includes workers and representatives from numerous disciplines.

The charter for the ESC is formalized in CTR-006, Electrical Safety Committee Charter.

3.8.7 *Corrective Action Review Board*

The AMWTP Corrective Action Review Board (CARB) is responsible for the evaluation of significant conditions adverse to quality and associated root causes. This review includes an assessment of the effectiveness and adequacy of corrective actions in addressing the underlying causes to prevent recurrence.

The charter for the CARB is formalized in MP-Q&SI-5.10, Corrective Action Review Board Charter.

3.8.8 *Facility Change Group*

The Facility Change Group (FCG) provides oversight, review, and authorization of designated facility modifications primarily that have the potential to impact safety and the AMWTP Authorization Basis. This is accomplished via the Change Control process defined in MP-CD&M-11.1, Change Control, and INST-CD&M-11.1.2, Facility Modification Proposal Preparation. The change control/FMP process is implemented through a graded approach in which proposed modifications are evaluated to determine whether there is a potential to impact safety or the Authorization Basis. If so, the proposed modification is then reviewed by the FCG. This process applies to all proposed facility and permanent plant and/or support structure changes regardless of significance or complexity. Changes to procedures, processes, and physical plant configuration may all be evaluated via the Change Control/FMP process.

The FCG is composed of representatives of all Operational areas and applicable support group functions. The broad background of the groups that compose the FCG ensures that impacts are identified and that changes are assessed for their overall effect rather than just their impacts on individual programs.

The FCG members assess designated FMPs for compliance with applicable standards and requirements from each of the safety management programs. The formalized process documents the process or configuration as currently exists, evaluates the need for the change, and details the elements of the proposed change. The FMP addresses the applicable drawings, procedure modifications, and additional training that the change would require. The FCG either approves the change as proposed or requires additional actions to be completed before the change can be implemented. Based on the magnitude of the actions identified, another FCG meeting may be required. Through the completion of the FMP process, the FCG incorporates all the ISM core functions.

3.8.9 *Conduct of Operations Committee*

The AMWTP Conduct of Operations Committee (COC) has established goals to provide a project-level approach for applying operating standards in accordance with DOE O 5480.19, Conduct of Operations Requirements for DOE Facilities, and Project Conduct of Operations procedures. The goals are to:

- Provide clarification of conduct of operations requirements to ensure consistency and effectiveness
- Standardize processes to improve conduct of operations
- Facilitate completion of Corrective Actions to improve conduct of operations
- Mentor AMWTP personnel with the objective of achieving continuous improvement for conduct of operations at the AMWTP.

The COC is championed by the AMWTP NFM, is chaired by the Conduct of Operations subject matter expert (SME), and is a subcommittee to the ESIT. The COC membership includes representation from the worker level to management, from all operational areas and applicable support organizations.

The charter for the COC is formalized in CTR-002, Charter for the Conduct of Operations Committee.

3.8.10 *HPI Steering Committee*

The goal of the Human Performance Improvement Steering Committee is to promote facility safety and reliability by improving human performance throughout the organization(s). It's function is to:

- Identify and promote human performance behaviors that will improve safety and reliability.
- Serve as a Human Performance Improvement communications vehicle between the various parts of the organization.
- Provide oversight to the Human Performance Improvement program.
- Share human performance operating experience, lessons learned and beneficial practices.
- Assist in establishing priorities for the human performance improvement program.
- Assist in the identification of human performance problems and solutions.
- Form sub-committees; monitor and provide oversight to those sub-committees.
- Review and approve HPI Causal Analyses as requested by Project/Operations or Plant Services Manager.
- Provide Support/Time and resources to implement HPI.
- Responsible to implement the five Year plan.
- Put together a barrier removal team to identify what issues must be fixed and what reporting mechanism will be used to give feed back to the employees.

The charter for this committee is formalized in PD-ESH-03, Human Performance Improvement Program, Appendix C.

4.0 Expectations

Management responsibilities, accountability, and employee involvement are essential elements of the ISMS. Line Managers are responsible and accountable for ensuring that work is executed safely and compliantly. BBWI Senior Management is directly responsible for ensuring that work is performed safely, in accordance with ISMS Guiding Principle 1, Line management is Responsible for Safety. Documents that identify project-specific roles and responsibilities also delineate clear and unambiguous lines of authority and define the responsibilities for ensuring that safety is established and maintained at all organizational levels, in accordance with ISMS Guiding Principle 2, Clear Roles and Responsibilities.

Functional Management, Line management, and workers carry out the respective roles and responsibilities to meet the expectations listed in this discussion. Each group is responsible for performing quality work safely, securely, efficiently, and in an environmentally responsible manner. Each group has roles in integrating ISMS functional support and processes and implementing HPI and KEYS Programs.

Roles and Responsibilities are detailed in QAPP-01, Quality Assurance Program, MP-COPS-9.2, Operations Organization, and RPT-PEP-01, AMWTP Project Execution Plan. These rolls and responsibilities then roll into individual program/functional description documents and/or management procedures. From these program/functional documents, roles and responsibilities are further delineated by activity in management procedures and instructions and are personnel specific in employee position descriptions (EPDs).

4.1 Expectations for Senior Management

- Support workers and First Line/Middle Management in meeting expectations through leadership and by providing the necessary resources.
- Actively emphasize that safety and compliance are prerequisites to performing work at the AMWTP.
- Establish the mission, vision, and strategy for organizational services at the AMWTP.
- Actively participate in the resolution of safety and compliance issues and ensure that safety practices are applied consistently within the AMWTP.
- Provide meaningful and consistent support of employee safety programs and positive reinforcement when employees utilize the “Step Back and Stop Work” process. Ensure active support to employees who report safety concerns.
- Assume responsibility and authority to apply “Step Back and Stop Work” for any unsafe acts or conditions or when there is procedural uncertainty or lack of clarity for any task. (This applies to everyone working or visiting the AMWTP.)
- Be Champions for ESIT, HPI, KEYS, and Voluntary Protection Program (VPP)Programs.
- Promote human performance training for employees and supervisors.
- Invest in employees’ futures through mentoring, workforce training, tuition reimbursement, and identification of other corporate career opportunities.
- Be open and honest with employees. Be accessible to employees and communicate often, clearly, and concisely. Actively listen to employees and promptly follow up on concerns.
- Trust employees to make the right decisions.

- Follow through on commitments.
- Establish clear roles and responsibilities commensurate with accountability and authority.
- Actively recognize and reward employees for innovations that improve safety and performance.
- Demonstrate corporate citizenship within the community.
- Hold BBWI managers and staff accountable for performance.

4.2 Expectations for First Line and Middle Management

- Ensure that work is performed in a safe, secure, cost-effective, and compliant manner consistent with customer expectations (Figure 10).
- Ensure effective integration of ESS&H, Quality Assurance (QA), Business Management, and Compliance policies into all work activities.
- Execute assigned plans and budgets while meeting performance objectives.
- Support the ESIT, HPI, KEYS, ISMS, and VPP.

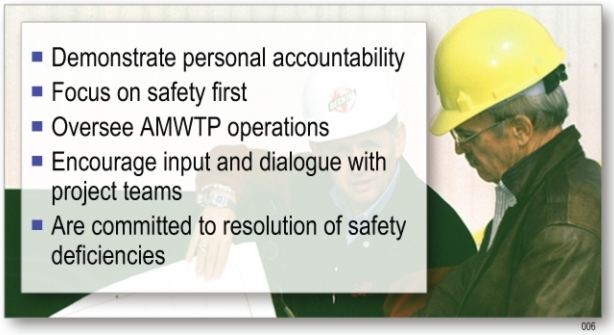


Figure 10. Safe Work Environment.
Our line managers play a visible and active role in the creation of a safe work environment.

- Assume responsibility and authority to apply "Step Back and Stop Work" for any unsafe acts or conditions or when there is procedural uncertainty or lack of clarity for any task. (This applies to everyone working or visiting the AMWTP.)
- Ensure that organizational systems and processes are aligned with other management systems and are deployed consistently across the AMWTP.
- Develop and maintain policies, standards, and procedures.
- Manage and continuously improve systems, processes, and resources to enhance capabilities to meet AMWTP, DOE, and national needs.
- Maintain a strategic relationship with DOE-ID counterparts.
- Ensure organizational alignment, and seek and understand customer feedback as a basis for continuous improvement.
- Establish a work culture aligned with AMWTP business initiatives, missions, visions, and values.
- Perform benchmarking.
- Execute all responsibilities in a professional manner as a representative of management.

- Promote a positive, collaborative work environment.
- Deploy assigned resources effectively in fulfillment of AMWTP's business missions.
- Provide effective and professional management of all staff.
- Demonstrate corporate citizenship within the community.
- Be accountable to AMWTP staff for stewardship, effective management, and deployment of organizational resources.
- Be accountable to AMWTP Management for executing assigned responsibilities within the defined cost, scope, and schedule.
- Be accountable to AMWTP Senior Management for providing cost-effective, compliant, and integrated systems and processes to support the work of the AMWTP.
- Hold BBWI managers and staff accountable for performance.

4.3 Expectations for Workers

- Take safety personally—develop a questioning attitude and participate in the identification and resolution of safety and health issues.
- Assume responsibility and authority to apply "Step Back and Stop Work" for any unsafe acts or conditions or when there is procedural uncertainty or lack of clarity for any task. (This applies to everyone working or visiting the AMWTP.)
- Participate on the ESIT and/or interface with crew members or co-workers who serve on the ESIT.
- Report to work fit for duty and prepared to work: have the proper tools, protective equipment, and attitude, and minimize distractions that could serve as error precursors.
- Participate in the preparation and review of technical procedures, hazards analyses, and work package walkdowns.
- Maintain procedural compliance—follow procedures, directives, and other ISMS Work Control requirements.
- Report any procedures, requirements, or Work Control processes that are in error or lack clarity.
- Use the Issues Management database process to report and track applicable issues.
- Identify and recognize co-workers for safe behavior through the Employee Safety and Improvement Team and managers.
- Provide feedback for improvement, ideas for innovative approaches, and suggestions to streamline processes and eliminate non-value-added activities.
- Know and use the five principles of human performance. (See Section 5.2.2)
- Support and participate in VPP

5.0 Functional Support Areas

At the AMWTP, functional support areas have been assigned to ensure implementation of standards and requirements are maintained consistently and in accordance with ISMS principles. Management organizations provide support to Production/Operations by interpreting and incorporating requirements into project processes and documents ensuring compliance is maintained. Functional support areas are identified in LST-ADMN-01, Functional and Technical Areas, Managers, and Subject Matter Expert List.

Functional support areas include but are not limited to: **Conduct of Operations, Contractor Assurance (includes Operational Experience/Lessons Learned), Criticality Safety, Document Control & Records, Emergency Preparedness, Engineering, Environmental Management**, Finance and Accounting, Hoisting and Rigging, Human Resources/Organization, **Industrial Safety/Industrial Hygiene/Fire Protection (includes Occupational Medical), Information Technology** and Telecommunications, Low-Level Waste Certification, Maintenance and Testing/**Work Control**, Nuclear Facility Startup/Restart, **Nuclear Safety Analysis**, Packaging and Transportation, **Procurement**/Acquisitions/Subcontractor Management, Project Controls, Project Management, Property Management, **Quality Assurance, Radiation Safety, Requirements Management, Safeguards and Security, Systems Engineering, Training and Qualifications**, Off-Site Waste Certification, and TRU Waste Certification. Functional support areas as highlighted above are further described in this section.

These groups ensure work is performed safely (i.e., set the stage for establishing the work priorities, supporting the work performed, performing work safely, and continuously improving the work and support processes [Figure 11]).

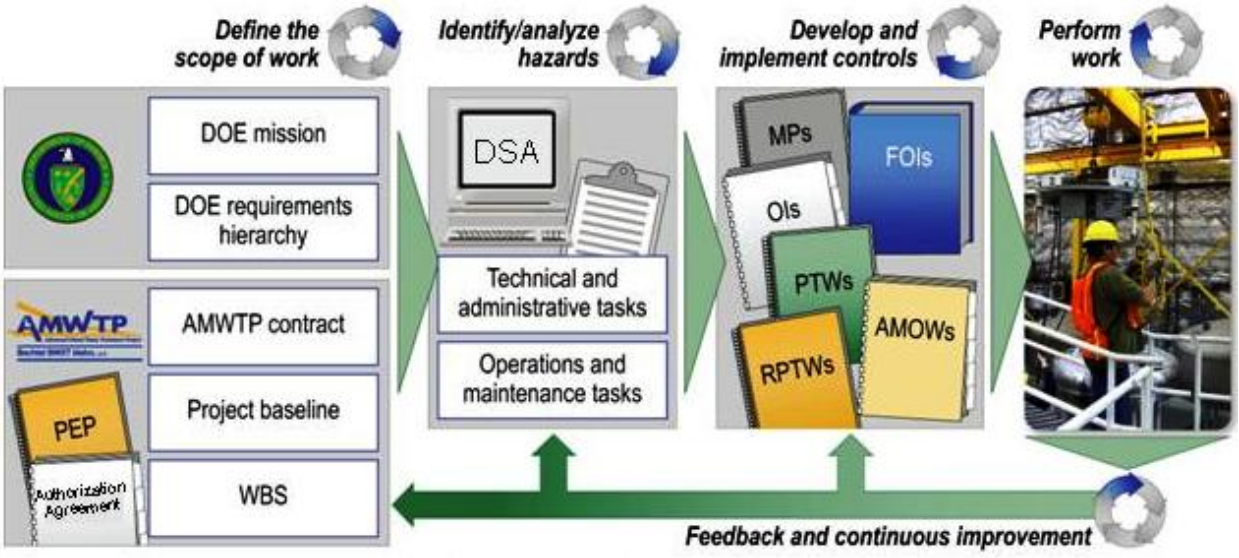


Figure 11. ISMS Process.
The AMWTP ISMS ensures effective foundation and integration of requirements through all activities and establishes a disciplined process for continuous improvement in safety and operations.

5.1 Performing Work Safely

5.1.1 *Work Control*

Work Control is an integral part of daily operations at AMWTP and is an effective tool for preventing accidents by ensuring that no unanalyzed or unauthorized work is performed. Work Control provides a disciplined approach to defining and evaluating the hazards before the performance of work. This is the area where application of ISMS Core Functions and Guiding Principles are the most critical. The Work Control process is built around the ISMS Core Functions and every one of the guiding principles are included within various elements of the process. Work Control is also the area in which many functional support areas and interfacing processes come together to ensure that work is performed safely and efficiently. The SSWC is the central focal point to not only coordinate processes but also ensure that all hazards are mitigated and the proper authorization is received before work is performed. In support of that role, the SSWC assembles all support organizations, managers, supervisors, and most important, the workers who will actually perform the work. This team then performs a pre-job walkdown to discuss the processes and hazards that are involved with the task.

The AMWTP policy is to conduct all operations or operational activities only after an appropriate review has demonstrated that the necessary equipment, personnel, policies, programs, and procedures are ready to start the activity. Authorization of work and operational tasks to ensure safe performance is addressed in AMWTP process description PD-COPS-9.18, Work Control.

LST-COPS-01-IM, Conduct of Operations Implementation Matrix, delineates procedures established for responsibilities, administrative guidelines, and requirements necessary for authorizing and conducting AMWTP facility operations and operational activities in a safe, professional, and compliant manner. The nuclear facility manager approves the operation of all equipment and systems via the POW/POD. The plant shift managers authorize the start of work associated with their areas of responsibility. The shift supervisors release all work to start, within their area of responsibility, and the day-to-day AMWTP operational activities under the direction of the appropriate shift manager.

Work is performed and documented in accordance with the applicable work instruction or procedure as required by management procedure MP-COPS-9.2. Personnel are required to follow the documents as written. If it is discovered that the procedure is in error, the workers stop and resolve the deficiency before resuming the activity. Informal or unapproved deviations, shortcuts, or work-arounds of any kind are not tolerated. The work is not considered complete until the desired outcome is achieved, the documentation is complete, and the work is accepted.

Workers can step back or stop work and contact supervision for various reasons: if there is a change to the defined scope, if new hazards are identified, if environmental conditions create unsafe working conditions, if work cannot be performed per the written work instructions, or if controls defined in the work document are not in place. Workers have the responsibility and authority to step back or stop work at any time if they have a concern regarding the safety or technical correctness of an activity.

AMWTP performs emergent work through the RPTW and PTW process. Emergent work is primarily maintenance and subcontractor activities, but also includes some operational tasks that are not covered by procedure. Emergent work is conducted in accordance with PD-COPS-9.18. This procedure describes the process for performing non-routine, emergent work safely and it includes mechanisms for the control of physical and chemical hazards. As the hazards are identified during the walkdown process, hazard controls are implemented to eliminate or control the hazards. Significant consideration is given to defense-in-depth principles in this type of work due to both the infrequent nature of the work being performed and the increased worker risk employed for non-routine tasks. The Work Control system defines measures and precautions that must be taken to control these hazards so that protection is provided to personnel, the plant equipment, the environment, and the public.

5.2 Setting the Stage to Perform Work Safely

5.2.1 *Requirements Management, Document Control, and Records*

AMWTP must identify and comply with the requirements of applicable federal, state, and local laws and regulations, including DOE regulations. Requirements are continually identified and reviewed for applicability, and when a change to existing requirements occurs, AMWTP communicates impact information to DOE and requests an equitable adjustment if appropriate. Applicable requirements are incorporated into the AMWTP Contract and implemented through company documents containing work instructions to enable end users to complete work in a safe and compliant manner (Figure 12). Any changes to contract requirements may also require changes to both this ISMS description and subsequent ISMS implementation. The Requirements Management Coordinator provides requirements information to the ISMS Lead, functional area managers, functional support area managers and SMEs, who then consider actions or changes to the ISMS based on the impacts of relevant regulatory changes.

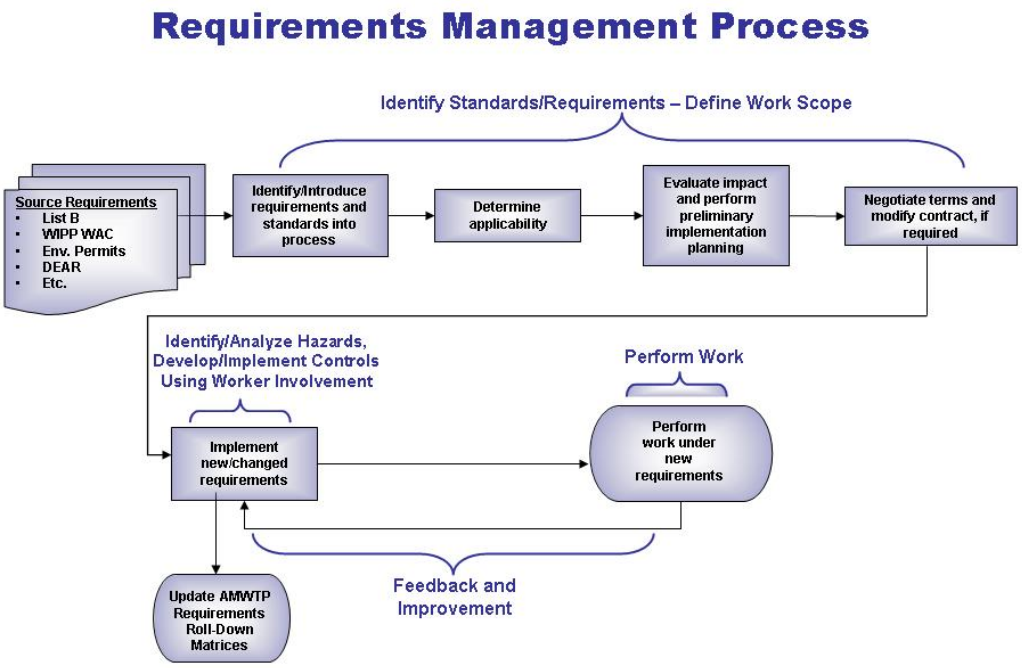


Figure 12. Requirements Management.
We maintain an ongoing process for evaluating requirements, determining impacts on scope, updating work-controlling documents, and verifying that performance is compliant.

MP-ADMN-1.18, Requirements Management, describes both the mechanism by which changes to laws, regulations, and directives are reviewed and the process for maintaining and updating ISMS standards, practices, and controls. This is the process by which AMWTP assesses requirements applicability, tracks applicability rolldown from the source requirements to applicable documents to ensure implementation of requirements. The rolldown of requirements to implementing documents is documented in the AMWTP Requirements Management homepage. These measures ensure that requirements remain current and that affected projects, organizations, and functional areas are informed of applicable changes and implementation measures.

Requirements Management is also responsible for maintaining LST-ADMN-01, which outlines the process for designating SMEs and ensures that those designated are qualified and competent commensurate with their responsibilities for identifying and analyzing requirements and determining impacts.

Document Control systems and processes are established in MP-DOCS-18.4, Document Control, for controlled development, distribution, and use of the documents. The process contains instructions necessary for personnel to safely and correctly perform quality-affecting activities, safety management functions, and assigned responsibilities. This system ensures that work scope is defined, standards and requirements are identified, hazards are analyzed and controlled, and work is performed within established, approved controls. Work processes are thus controlled, and the qualifications, skills, hazard controls, and equipment necessary for performing the work are specified.

The Records Management process promotes the use of standardized methods for the collection and retrieval of record information. It establishes the responsibilities, requirements, and processes for managing and storing records and QA records generated at the AMWTP. In addition to specific requirements cited within the implementing procedure, MP-DOCS-18.2, Records Management, implements requirements from QAPP-01, AMWTP Quality Assurance Program Plan (QAPP).

5.2.2 *Human Performance Improvement*

Human performance is a series of behaviors executed to accomplish specific results on an individual basis. From an organizational basis, Human Performance is the sum of what people are doing and what people have done; the aggregate system of processes, influences, behaviors, and their ultimate results that eventually manifest in the physical plant (i.e. cause and effect). Behaviors are mental and physical efforts to perform a task. Behavior can be both observable and non-observable. Examples of observable behavior are movement or speech and examples of non-observable behavior are perception, emotional-based responses, and decisions not to act or inaction. Thus, human performance, in its simplest form, is a series of behaviors executed to accomplish specific task objectives (results). It is what people say and what people do. Because behavior can commonly be “seen” and “heard” at AMWTP, it can be measured. If it can be measured, it can be changed. Human performance then, is the culmination of behavior plus results. . Although value-added results are important, desired behavior must be the target for improvement at AMWTP. Excellent human performance depends on the alignment of individual and leader behaviors and organizational processes and values. At the AMWTP, human performance is used to enhance the alignment of all areas whether individually, in a leadership role, or as an organization.

The human performance process acknowledges that people are fallible and that they make errors. In fact, even the best people make mistakes. It is human nature to be imprecise. Error is a human action that unintentionally departs from an expected behavior. It is behavior, without malice or forethought. Therefore, it is fair to say that people typically do not make mistakes intentionally. Consequently, the factors provoking error and the prevention of events resulting from error are central themes in human performance and consequently are a large part of why and how AMWTP incorporates human performance into everything it does. Human performance offers the proven ability to provide highly effective tools that can predict specific conditions known to increase error rates. Human performance identifies how multiple defenses can be and are “layered” or built-in to a physical plant’s system so that they can reduce the error rate and/or the consequences associated with human error. Building a layered defense will in turn prevent and/or catch errors before they become significant and it will help a physical plant to recover from errors without suffering undesirable consequences. Human performance refers to this layered structure as “defenses-in-depth.”

All employees act to influence both individual and organizational performance in order to achieve high levels of facility safety and performance (Figure 13).

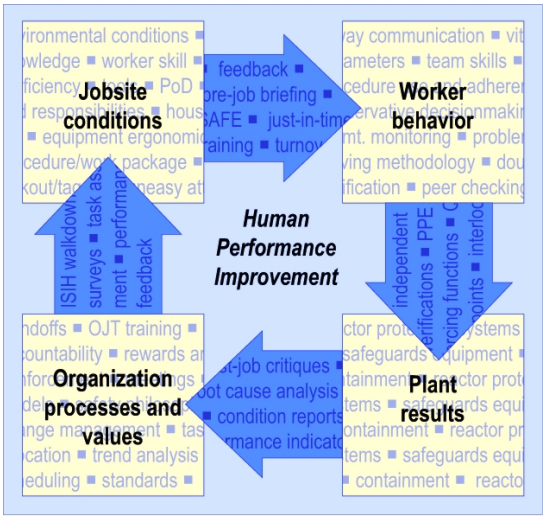


Figure 13. Human Performance Improvement. Our human performance initiatives provide additional tools and defenses by focusing on correcting issues that are identified as precursors to compliance, safety, and quality issues.

Through HPI behaviors, AMWTP employees will:

- facilitate open communication,
- promote teamwork to eliminate situations conducive to errors and strengthen defenses,
- search for and eliminate organizational weaknesses that create conditions for error, and
- reinforce desired job-site behaviors.

In addition, excellence in human performance becomes more prevalent as the working culture changes and employees embrace the following guiding principles:

1. People are fallible and even the best people make mistakes.
2. Situations conducive to error are predictable, manageable, and preventable.
3. Individual behavior is influenced by organizational processes and values.
4. People achieve high levels of performance largely because of the encouragement and reinforcement received from leaders, peers, and subordinates.
5. Events can be avoided through an understanding of the reasons mistakes occur and application of the lessons learned from past events (or errors).

The ultimate goal of human performance at the AMWTP can be captured in the following formula (Figure 14):

RE + MD = ØE

Figure 14. Reducing Error and Managing Defenses leads to Zero Events.
Requirements are connected with work planning and implementation process.

The AMWTP is actively engaged in the HPI process and during the last year has accomplished the following:

- Trained line management in the principles of Interactive Pre-Job Briefings,
- Trained employees and line management on Error Precursors and how to identify them during job walk-downs, pre-job briefs, and post-job reviews
- Incorporated HPI principles and questions into the KEYS program
- Supported Fact Findings by providing a structured process of inquiry to assist in identifying human performance error
- Trained approximately 95% of the AMWTP workforce in the 10-hour HPI Fundamentals course.

The HPI Program document is formalized in PD-ESH-03, Human Performance Improvement Program.

5.2.2.1 HPI Five-Year Plan

BBWI has developed a five year plan based on an INL sitewide format in support of a consistent sitewide HPI program. The five-year plan includes the incorporation of a combination of tools and processes that integrate the individual, organization, and leadership to create a workplace free of undesirable events. The plan will allow for continuous improvement and focus on Target Zero.

HPI is a crucial element of ISMS, based on a combination of manager and employee commitment. It involves designating a HPI Sponsor who directs the HPI process. The plan also identifies a process that assists Coordinators in establishing roles and responsibilities. The HPI Steering Committee and Charter identifies the duties and functions of the team. The team will have the opportunity to receive additional training in both HPI Fundamentals and HPI Investigating. Once complete, they will then be recognized as HPI mentors and will play a more present and active role in safety improvements and be integral in identifying key areas for mitigation.

The HPI process is disseminated to employees using numerous types of media. The HPI process may also be incorporated into the Human Resources Department and used as a tool to assist management in employee concerns. The HPI process is evaluated using internal and external personnel. Implementing the HPI Five-Year Plan helps to instill in all AMWTP employees the concepts and expectations integral to successful work performance. It will also enhance ISMS by creating a positive AMWTP safety culture.

5.2.3 *Voluntary Protection Program*

The VPP is a process that defines an integrated and structured approach to help achieve our goals of working more safely and compliantly. The VPP Program has been adopted by the DOE. It is designed to provide companies with a mechanism for demonstrating excellence in worker safety and health (S&H). The DOE VPP is a recognition process for worksites with successful comprehensive S&H programs and active employee participate.

In addition to supporting a safe and compliant work environment, AMWTP is intent on achieving VPP STAR status during this contract period. To achieve recognition of our program and employee involvement excellence, we will form a subcommittee of the ESIT to help evaluate programs and processes, frame the VPP application, institute employee awareness tools and activities to help ensure success, and further refine our programs and processes to ensure excellence while creating and maintaining a safe compliant work environment.

5.2.4 *Training and Qualification*

Training is essential for the success of the BBWI ISMS. PD-RTQP-01 describes the process used by BBWI for compliant, effective, efficient, and safe training. In addition, training is an integral sub-element of other functional support areas and their overall success. In other words, training is both a horizontal and vertical cross-cutting element of an effective and safe ISMS.

Line management is responsible for maintaining competence commensurate with responsibility (CCR), which includes position-specific training as necessary for AMWTP employees. Additionally, managers are responsible for ensuring employee participation in training and maintenance of qualifications necessary for CCR. Line management is supported in meeting CCR responsibilities by the BBWI Training Organization, the Project training programs, and overall training administration support (e.g., training database, new-hire orientation, vendor training, etc.). Line management retains ownership and responsibility for the training and qualification process and is supported by the training programs and organization.

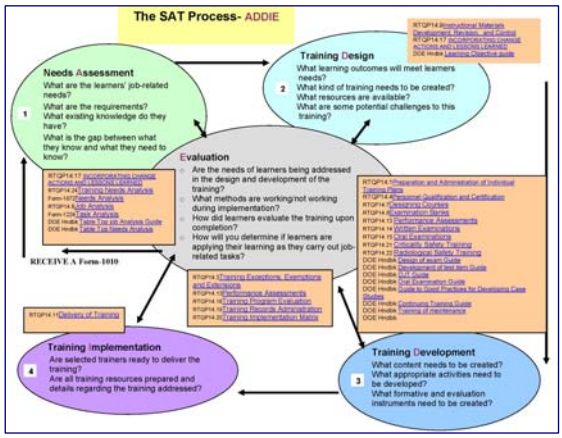


Figure 15. Competence Commensurate with Responsibility.
The AMWTP array of training programs ensures that all workers are qualified for their roles and responsibilities.

The five-phased training process, called the Systematic Approach to Training (SAT), includes analysis, design, development, implementation, and evaluation phases. PD-RTQP-01 outlines the implementation of this process for BBWI. This closed-loop process drives dynamic, constant improvement while establishing discipline, predictability, and repeatability for developing and implementing compliant, effective, and safe training. (Figure 15)

5.2.5 *Waste Programs/TRU Programs*

Waste Programs supports AMWTP ISMS objectives by providing compliant waste disposition planning; offsite waste stream data review, acceptance, and approval; and validation and certification of Acceptable Knowledge and characterization data for all AMWTP Waste Management activities. Waste Programs ensures the compliant disposition of TRU, MLLW, and LLW. In particular, Waste Programs participates in waste characterization activities that assist in the identification, analysis, and categorization of chemical and radiological hazards commingled within the various waste matrices.

Waste Programs works with Operations on process efficiency improvements which will likely result in reduced exposure to hazards such as minimizing the number of required container moves. Waste Programs also works with Operations to review historical and Acceptable Knowledge (AK) information to determine potential hazards presented by the waste that will be retrieved and processed.

Work is performed in accordance with WIPP approved procedures that have been developed to ensure the identified hazards associated with waste destined for emplacement conforms to the WIPP contact handled documented safety analysis and the associated WIPP technical safety requirements. Performing work within these controls ensures the safety of workers, the public, and the environment in regards to the hazards posed during waste handling, waste shipping, WIPP receiving, and emplacement operations at the WIPP.

The AMWTP ensures that WIPP disposal criteria are met through adherence to the defined scope of work of validation, verification, and certification process stipulated in the WIPP Hazardous Waste Facility Permit. These actions ensure that the primary DOE directives for the compliance management of Contact-Handled TRU Waste are met in a manner that protects human health, safety, and the environment. To meet this DOE safety objective, TRU Programs implements WIPP source requirements documents for Waste Sampling and Analysis, Transportation, and QA Programs. Implementation of these requirements ensures that waste accepted for emplacement conforms to the WIPP Contact-Handled documented Safety Analysis and the associated WIPP Technical Safety Requirements (TSRs). The Certification Plan (MP-TRUW-8.1, Certification Plan for INL Transuranic Waste) summarizes the AMWTP methods and procedures for certifying defense-generated waste is compliant with waste acceptance criteria applicable to Contact-Handled TRU waste transported for disposal at WIPP. Waste streams other than TRU are processed independently by the MLLW and LLW Programs within Waste Programs for disposition at other facilities.

Waste Programs works with operations to ensure that all waste is properly characterized in compliance with AMWTP Hazardous Waste Management Act/Resource Conservation and Recovery Act (HWMA/RCRA) permit requirements as well as the receiving facility waste analysis and waste acceptance requirements. The responsibilities and interface between Waste Programs and Plant Operations are depicted in the PEP. TRU Programs personnel support operations and other AMWTP organizations via Site Project Office direction and guidance to ensure compliance with WIPP requirements. The TRU Programs Site Project Office is the primary point of contact for interaction with WIPP, the CBFO, and EPA regarding all WIPP-related compliance activities.

5.2.6 *Nuclear Safety Analysis Process*

To protect the health and safety of workers and the public and maintain regulatory compliance, the nuclear safety analysis process ensures that the hazards associated with nuclear materials are identified, analyzed, and categorized; that the controls to prevent and mitigate hazards are identified; that the safety envelope is established; and that the required controls are implemented. As conditions change, information is fed back into the nuclear safety analysis process for evaluation to ensure that controls remain adequate and that opportunities for improvement are properly evaluated and actions taken, including a review of the scope of work as required (e.g. Forms-1291, -1064, -1165).

To this end, the ISMS Core Functions are embedded in the Nuclear Safety Analysis process, which is used for defining the Safety Basis and commitments for design, construction, and operations. The process also provides a uniform current reference on facility safety with which to plan, budget, and manage nuclear operations. In addition, the organization strategy, plant management approach, and work scope locations enable Nuclear Safety to be engaged in preconceptual discussions to ensure the DSA, and worker safety from the criticality and Nuclear Safety vantage points, are evaluated before design efforts begin.

Nuclear Safety requirements contained in 10 CFR 830 are directly implemented via the DOE-approved DSA and associated TSRs. RPT-DSA-01-IM, AMWTP Safety Basis Implementation Matrix, provides evidence that the Safety Basis requirements are implemented through operating documents (e.g., procedures, maintenance instructions), thereby ensuring that work is performed within the required controls. This matrix can be found on the Requirements Management homepage.

5.2.6.1 Requirements

In accordance with 10 CFR 830.204(a), Documented Safety Analysis, DOE approves the methodology to be used for DSA development. The TSRs for the AMWTP, derived as part of the Safety Analysis process, include Operational controls and mitigative measures to limit exposure to workers, the public, and the environment and provide bounding requirements for the basis of the Operations Authorization.

5.2.6.2 AMWTP Safety Basis

In accordance with 10 CFR 830.202, Safety Basis, BBWI is responsible for establishing and maintaining the AMWTP Safety Basis. The term “Safety Basis” includes the DSA (RPT-DSA-02, AMWTP Documented Safety Analysis) and hazard controls (RPT-TSR-03, Technical Safety Requirements) that provide reasonable assurance that a DOE Nuclear Facility can be operated safely in a manner that adequately protects workers, the public, and the environment. Additional documents that comprise the AMWTP Safety Basis are Changes, Conditions, or Hazard Controls directed by DOE (such as the Safety Evaluation Report) and USQ Screens and Determinations. The Safety Basis provides condition descriptions safe boundaries, and hazard controls that when implemented provide the basis for ensuring safety. The AMWTP Safety Basis documentation is reviewed annually and updated as necessary to ensure that the information remains current as the facility changes or is modified and to provide feedback for continuous improvement.

5.2.6.3 Nuclear Criticality Safety

The Nuclear Criticality Safety program, described in PD-NFCS-01, Nuclear Safety Program Description, ensures that sufficient controls are in place to adequately reduce the potential for an inadvertent criticality as a result of retrieving and characterizing waste, transporting waste within the AMWTP, processing/treating waste, and loading the product for transport from the INL. Because of the large volume of waste, the total quantity of fissile material being handled is significantly greater than that necessary for a critical mass. Thus, criticality analyses have been performed and appropriate controls defined to ensure that a criticality is extremely unlikely under normal conditions and potential contingency conditions. To establish the basis of Criticality Safety for AMWTP operations, Criticality Safety Analyses (CSAs) are developed and maintained. The CSAs list the operational requirements necessary to prevent a criticality.

DOE O 420.1B, Facility Safety, provides requirements for the Criticality Safety program.

Once the Nuclear Criticality program requirements are established, they are implemented through program procedures (e.g., MP-COPS-9.35, AMWTP Requirement Change Implementation). The procedures implement nuclear CSAs with the appropriate review and approval. Procedures also guide the control of analysis software important to criticality and nuclear safety, including verification and validation. This process ensures that work can be performed safely and within established controls.

5.2.6.4 Technical Safety Requirements

As required by 10 CFR 830.205(a), Technical Safety Requirements, TSRs are derived from the DSA. These requirements define the condition descriptions, safe boundaries, and the management/administrative or engineered controls necessary to safely operate a nuclear facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive or chemical materials or from radiation exposures (e.g., from an inadvertent criticality).

The TSR-mandated Safety Management Programs at the AMWTP are designated to ensure that their importance is recognized and that they receive commensurate attention and control. Significant Safety Management Programs are those whose absence or programmatic failure might lead to substantial consequences; they require an increased level of control and thus are included as part of the administrative controls in the TSRs.

5.2.6.5 Unreviewed Safety Question Process

BBWI is responsible for establishing, implementing, and taking actions consistent with a USQ process that meets the requirements of 10 CFR 830.203, Unreviewed Safety Question process. The concept of the USQ process was established to allow physical, software, and procedural changes and to conduct tests and experiments without prior DOE approval, as long as these changes do not explicitly or implicitly affect the Facility Safety Basis. The USQ process provides the flexibility needed to conduct day-to-day operations. Issues with a potential impact on the Safety Basis are brought to the attention of management and regulators to maintain the proper safety focus. The USQ process provides a feedback mechanism for Nuclear Safety Analysis to ensure that changing conditions, including scope of work changes, are identified and to ensure that:

- the associated hazards are identified, analyzed, and categorized;
- the controls to prevent and mitigate hazards are identified;
- the safety envelope is established; and
- the required controls are implemented.

5.2.6.6 Natural Phenomena Hazards Assessment

The AMWTP is designed, constructed, and operated so that the general public, workers, and the environment are protected from the impacts of natural phenomena hazards. The AMWTP implementation of requirements for natural phenomena hazards mitigation conforms to DOE O 420.1B, Facility Safety, and associated sub-tier documents such as DOE G 420.1-2, Guide for the Mitigation of Natural Phenomena Hazards for DOE Nuclear Facilities and Nonnuclear Facilities, which address all natural phenomena hazards (such as seismic, wind, flood, and lightning). Where no specific requirements or guidance are specified in DOE O 420.1B or DOE G 420.1-2, model building codes such as the Uniform Building Code are used. The series of DOE standards that address natural phenomena hazards (DOE-STD-1020 through 1027) are used as guidance for analyzing natural phenomena hazards in the AMWTP DSA.

The AMWTP DSA provides analysis of the ability of SSCs, proposed operations, and personnel to perform their intended safety functions under the effects of adverse natural phenomena. The evaluation of the AMWTP facilities to withstand natural phenomena is based on an assessment of the likelihood of future occurrences. The natural phenomena hazard analysis is conducted with a graded approach and all types of natural phenomena hazards are considered in site planning.

5.3 Supporting the Work

5.3.1 *Conduct of Operations*

Because the safety of employees and the protection of the public and the environment are the highest value in the successful operation of the AMWTP, a culture of safety has been implemented through the Conduct of Operations Program. The safety culture supporting this value is discussed in MP-COPS-9.2. This document illustrates that the safety culture firmly establishes the priority of safety above all other aspects of operations and production, and that this culture is integrated into the AMWTP organization management philosophy, processes, plans, and day-to-day operations.

The Conduct of Operations Program ensures that facility operations is managed, organized, and conducted in a manner that results in a high level of performance and therefore contributes to safe and reliable operations. The program consists of project procedures that are based on DOE Order 5480.19, Conduct of Operations for DOE Facilities, and governs facility and activity operations. LST-COPS-01-IM, documents the applicability of DOE Order 5480.19 as the DOE requirements are related to AMWTP operations. This document is applicable to all activities associated with AMWTP operations, including storage, retrieval, characterization, treatment, and shipping. This document also identifies the AMWTP implementing procedures for all DOE requirements related to Conduct of Operations.

Operations line managers implement the philosophy behind the conduct of operations requirements by establishing clear and concise roles and responsibilities and expectations. Management and leadership expectations, along with the conduct of operations procedures described in MP-COPS-9.2 enhance the AMWTP safety culture and lend to the operating efficiency of the facility.

BBWI has established a COC consisting of a core group of experts from the operations organizations, from the technician to management (NFM, Plant Shift Managers (PSM), Shift Supervisors (SS), the CoO SME, operations technicians, maintenance personnel) to review each conduct of operations chapter on a required periodic basis. After the review, changes are incorporated as needed, and then the core group mentors crew members on the chapter. The core group meets regularly to review and provide feedback on how well personnel understand the principles of conduct of operations and to promote improvements.

5.3.2 *Engineering*

AMWTP Engineering comprises two primary work groups, Design Engineering and System Engineering. Through a combination of these groups, AMWTP Engineering provides engineering support to operations, maintenance, and construction activities to provide technically solid design and analysis, configuration management, and repair and outage planning.

5.3.2.1 Design Engineering

Design Engineering provides engineering design, analysis, and drafting resources in support of continued operations and plant upgrades. The Design Engineering Organization is structured so as to be flexible in providing support as either Plant Engineering or Plant Capital Projects. The Plant Engineering group will provide a design and analysis capability in support of day-to-day operations, to include small scale plant modifications. Plant Capital Projects will provide support to the larger scale capital improvement projects. Coordination of the assignment of resources to these efforts will be performed in conjunction with the Project Management function.

Through application of the ISMS Core Functions and Guiding Principles, the design process is executed in a manner that ensures the safety of the workers, the public, and the environment. AMWTP Engineering procedures that contain ISMS implementation elements include MP-CD&M-11.1; INST-CD&M-11.1.2; and MP-CD&M-11.3, Design Control. ISMS elements apply across the design process and include:

- identification of design requirements and scope of work,
- identification and analysis of potential hazards,
- development of control strategies to prevent or mitigate the hazards,
- development of the design incorporating the control strategies,
- reviews of the design.

5.3.2.2 System Engineering

The AMWTP has implemented a System Engineering Program in accordance with DOE O 420.1B. The System Engineering Program is defined in PLN-CD&M-001, System Engineer Program. AMWTP qualifies Cognizant System Engineers (CSEs) and assigns them to AMWTPSSC that are considered to have a potential to impact safety. The primary duties of the CSEs are:

- assume responsibility for the configuration management of their assigned SSCs,
- maintain overall ownership and cognizance of their assigned SSCs,
- be responsible for System Engineering support to operations and maintenance for their assigned SSCs,
- assess key system parameters and evaluate system performance.

The CSE function provides daily support to operations and maintenance. The ISMS implementation elements involving the CSEs are integrated into the operations, maintenance, procurement, and QA procedures; the engineering procedures discussed above; INST-CD&M-11.1.3, Approved Equivalent Parts; and MP-CD&M-11.8, Equipment and Process Tests and Investigations.

5.3.2.3 Plant Automation/Information Technology

The role of the Plant Automation (PA) Organization is to integrate and strategically deploy technology (automation) solutions to meet project requirements throughout AMWTP. The PA Organization provides oversight, planning, and management for existing and new technologies. The organization includes the strategic planning and deployment of Plant Automation components and general Information Technology (IT) activities necessary to develop, support, and maintain Plant Operation Automation, Administrative, and Business Systems. Plant Automation & Information Technology organization is comprised of five sub-organizations; Integrated Control System, Data Management System, IT Infrastructure, Business Systems, and Cyber Security. MP-CD&M-11.2, Software Quality Assurance, provides direction for software control and configuration management for software that is important to waste characterization and certification activities.

5.3.3 *Environmental Management*

The EMS is designed to implement environmental protection, compliance, pollution protection, waste minimization, and continuous improvement into work planning and execution. The environmental policy incorporates these principles for application at AMWTP.

The AMWTP EMS embodies the five core elements of ISO 14001, EMS Standard. These are Policy, Planning, Implementation and Operation, Checking and Corrective Action, and Management Review. These parallel and complement the five core functions of ISMS.

Figure 16. Environmental Work Process.
We use ISO 14001 to help integrate regulatory strategies into our technical work to ensure protection of the environment.

Consistent with the requirements of DOE O 450.1, Chg 2, Environmental Protection Program, the EMS is fully integrated into the ISMS (Figure 16).The order implements sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by DOE operations. As specified by the Order, BBWI has incorporated relevant and appropriate environmental requirements into the EMS from existing statutes, regulations, permits, and policies. The implementation of DOE Order 450.1, Chg 2 into AMWTP operations is documented on the AMWTP ISMS Requirements Management homepage.

PD-EC&P-01, Environmental Management System Program Description, provides clear direction on how BBWI will perform work on the AMWTP in a way that is protective of the environment. The policy and requirements provide decision makers with guidance when considering the environmental impacts associated with planned work scope and the core functions of ISMS. Three areas are emphasized in the program description:

- compliance with regulations,
- waste minimization/pollution prevention activities, and
- BBWI's commitment to continuous improvement.

The BBWI planning process utilizes several tools in defining work scope to ensure that work performed by BBWI protects human health and the environment. This planning process includes mitigating or minimizing impacts to the worker and the environment during operations; minimizing waste generation; and maintaining compliance with environmental requirements. This process is embedded in the development of procedures, instructions, AMOWs, and PTWs.

Implementation of an effective EMS requires development and execution of processes and operational controls that are protective of the environment. Work performed at the AMWTP is governed by written procedures that incorporate environmental requirements. Environmental permits approved by the State of Idaho mandate that protective measures be designed into the construction of facilities and that work processes comply with certain standards. The roll down of these requirements has been documented in implementing matrices, incorporated into work procedures, and documented on the AMWTP ISMS Requirements Management homepage. The EMS also includes direct involvement of environmental personnel in the development of working documents (procedures, PTWs, etc.) to provide appropriate environmental controls. Training Programs—including classroom training, required reading, and informal briefings—increase employee awareness of the importance of compliance with the procedures and the significance of the environmental impacts associated with their work.

The check and review process is an integral part of the BBWI EMS that is used to evaluate the effectiveness of the overall program. The check and review tools include surveillances, formal and informal self-assessments, management reviews, metrics, and trending. Environmental personnel also perform inspections that provide direct oversight to ensure that work is being performed within the controls of the procedures, instructions, and PTWs. In addition, measuring and monitoring equipment used to assess environmental conditions is routinely calibrated according to specified schedules and procedures.

BBWI is committed to continuous improvement through employee feedback. Procedures have been developed to communicate lessons learned within the AMWTP and throughout the DOE Complex. The implementation of HPI provides education and tools that significantly strengthen the Lessons Learned Program among all employees. Feedback from actual Operational events is provided daily to operations based on inspections and other oversight activities performed by the Environmental Organization. In addition, the Environmental Organization is directly involved in each update and change to procedures and instructions through the review requirements of MP-DOCS-18.4 which mandates Environmental review and approval of all controlled documents. The value of this program is to share and use knowledge derived from experience to promote the recurrence of desirable outcomes and preclude the recurrence of undesirable outcomes.

The entire Environmental Program is designed around the core functions of ISMS. Environmental permits are structured to provide for the appropriate scope of work, hazard identification and mitigation, and monitoring of work performance. Feedback mechanisms allow the continuous improvement of work processes and positive changes to the permits. The duties, responsibilities, and performance standards of the Environmental personnel are established to ensure that the core functions of the ISMS and the EMS are met.

5.3.4 *Radiological Controls*

The AMWTP Radiation Protection Program (RPP) is described in PD-RS&C-01, Radiation Protection Program, and in MP-RS&C-6.3, ALARA. The RPP identifies and implements requirements for the radiation protection standards and limits for protecting AMWTP workers and the public from ionizing radiation. Together these documents implement programs that reduce, control, and maintain radiation exposures as far below the applicable controlling limits of 10 CFR 835 and the AMWTP RPP as is reasonably achievable. Implementing procedures and instructions defined in the RPP, roll down necessary radiation protection requirements (e.g., using dosimeters, radiation detection instrumentation checks and calibrations, etc.).

The AMWTP Radiological Controls Organization provides relevant support to all areas of the AMWTP and is accountable to the AMWTP Radiological Controls Manager. Radiological Support Managers and Radiological Shift Team Leads (RSTLs) provide support to their assigned areas. This structure facilitates hazards identification and provides for consistent control and implementation of requirements based on work activities identified by the operating organizations. The Radiological Support Managers coordinate the continuous support provided by rotating shift professionals for routine and emergent work activities.

AMWTP utilizes the ALARA Program to implement hazard controls and maintain radiation protection excellence. The ALARA Program incorporates employee involvement through reviews conducted by the ALARA Committee.

ALARA is first addressed through engineered controls such as confinement, ventilation, and remote handling. Administrative controls and personal protective equipment (PPE) are applied after implementation of engineering controls. The engineered controls features and administrative controls are a means of balancing the risks of radiation exposure against the authorized activity. During the work planning process, an integrated approach incorporates worker involvement to ensure that all occupational hazards are appropriately considered and that the ALARA process is followed.

Radiological Control instruction requirements are incorporated into AMOWs, management procedures, and facility operating instructions. These requirements are also incorporated into emergent work control documents such as the PTWs. Both routine and emergent work activities utilize the ALARA process. All of these documents include formal plans and measures for applying the ALARA process to control occupational radiation exposure.

Lessons Learned are an active part of the RPP and are documented, institutionalized for continuous improvement, and considered in planning and executing future activities in order to further RPP goals. To ensure that RPP requirements are current, meaningful, and effectively implemented at the working level, RPP job performance is monitored through management assessments, which are conducted in accordance with MP-M&IA 17.1, Management Assessments.

At the working level, AMWTP personnel are trained and responsible for achieving and maintaining compliance with the RPP. Individuals responsible for developing and implementing the measures necessary to ensure compliance have the appropriate education, training, and skills.

5.3.5 *Industrial Safety/Industrial Hygiene*

The Industrial Safety/Industrial Hygiene (ISIH) program described in PD-ISIH-01 provides line management with the infrastructure supporting the goal of zero accidents through ISMS implementation. The ISIH organization is defined as a safety management program under the DSA providing defense in depth for mitigating operational hazards. The DSA defines ISIH responsibilities at the highest level in regard to compliance with 29 CFR 1910 (Occupational Safety and Health Administration [OSHA]) and 10 CFR 851, Worker Safety and Health Programs. The DSA defines the scope of the work to be

performed, and the ISIH Safety Management Program (SMP) provides defense in depth to the analyzed hazards and the engineered controls.

ISIH Hazards and Controls from the SMP are implemented into the Work Control process through ISIH management procedures (MPs) and instructions. ISIH MPs establish requirements that are incorporated in facility operating instructions, operating instructions, AMOWs, and PTWs. The ISIH Organization ensures that effective ISMS implementation is achieved through support of Line management in eliminating or reducing potential exposures to physical and chemical hazards through safety reviews of new, revised, and emergent operations and maintenance activities. ISIH support is provided to facility operations and non-facility operations by a matrixed ISIH Manager embedded in the organization. This structure facilitates hazards identification and provides for consistent control and implementation of requirements based on work activities identified by the operating organizations. The matrixed manager coordinates the continuous support provided by rotating shift professionals for routine and emergent work activities.

As a support organization to operations, rotating shift ISIH personnel participate in work planning, work performance, and reviews. These reviews are conducted in accordance with established line management procedures and processes to ensure the integration of ISIH recognition, evaluation, and control of hazards from operations and maintenance activities.

Independent inspections of workplaces and activities are conducted routinely to ensure that hazards are controlled in accordance with requirements. This feedback is accomplished informally by the dedicated shift ISIH personnel and formally through the Management Assessment Program.

The Occupational Medical Program (OMP) is integrated into the ISIH Organization. The OMP implements the elements of 10 CFR 851, Worker Safety and Health Programs, and 29 CFR requirements through the daily provision of services to AMWTP personnel. The OMP administers both OSHA record keeping and the exposure monitoring database. This arrangement allows the Medical Management Coordinator to be involved in assessing potential hazards and exposures and providing feedback to the workers via field walk-throughs.

5.3.6 *Fire Protection*

The AMWTP Fire Protection Program (FPP), described in PD-ISIH-01, is aimed at recognizing, evaluating, preventing, and controlling fire hazards in the workplace; minimizing fire losses; and ensuring that Life Safety is in compliance with current National Fire Protection Association standards. The FPP is defined as a Safety Management Program in the DSA and is integrated at the earliest planning stages for new and revised work scope.

DOE O 420.1B, Facility Safety, is the governing document for the Fire Protection requirements.

The responsibility for establishing the AMWTP FPP and supporting implementation by Line management resides in the ESS&H Organization. Professional Fire Protection Engineering services such as Fire Hazard Analysis, Fire Safety Analysis, and Abbreviated Fire Assessments are provided by the ESS&H Organization. Direction for line management implementation of Fire Protection requirements is given in specific Fire Hazard Analysis, Fire Safety Analysis, and Abbreviated Fire Assessment documents. Life Safety Code requirements are provided by the ESS&H Fire Protection Engineer and are implemented through both operations line management and the engineering and maintenance organization. Inspection of physical fire protection systems, impairments, and maintenance are the responsibility of Engineering and Maintenance as outlined by the AMWTP FPP. The AMWTP FPP is currently implemented through company procedures for Fire Protection and Fire Prevention.

5.3.7 *10 CFR 851, Worker Safety and Health Programs*

The AMWTP Worker Safety and Health Program (WSHP) description document (PD-ISIH-06) establishes the requirements for the WSHP and identifies the elements, methods, and processes by which AMWTP implements federal and state laws, regulations, standards, and DOE directives applicable to safety and health and required by the AMWTP prime contract (AC07-99ID-13727). It complies with 10 CFR 851, Worker Safety and Health Program, that codifies DOE's WSHP requirements that were originally established in DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees.

The WSHP supports the BBWI commitment to ensure that each worker is provided with a safe and healthy work environment. It incorporates ISMS principles and functions into management and work practices at all levels so that activities conducted at AMWTP are accomplished while protecting the worker, the public, and the environment. In short, we will never compromise safety for production. If work cannot be performed safely, we will step back/stop work and not proceed until consensus is reached on a safe path forward.

The WSHP program requirements are incorporated into management procedures and work instructions. Issues affecting implementation of the WSHP are identified, screened, and analyzed for individual and collective significance through the AMWTP Contractor Assurance program. This formalized program ensure that safety related events, assessments, observations, accidents and injury reports and other inputs are being tracked and trended to evaluate safety significance and to provide a basis for leading indicators and feedback to Safety Management Program owners in their respective areas of responsibility. Further analysis of the data ensures identification of issues and/or precursor indications associated with 10 CFR 851 requirements that could compromise the effectiveness of the program, allows for early and proactive corrective actions, and provides a basis for feedback to Safety Management Program owners in their respective areas of responsibility.

BBWI's annual update of its WSHP was approved by DOE-ID on July 17th 2008. To date, greater than 100 events/conditions have been tracked within the 851 tracking/trending database. These events are categorized per the significance analysis process, and based on significance, assigned a risk category level per MP-ISIH-2.56, 851 Compliance Tracking and Trending. Adverse conditions that are identified as a result of the significance analysis are reported in the AMWTP issues management system (Trackwise) for corrective action, evaluated for reporting in the Occurrence Reporting and Processing System (ORPS), and evaluated and screened for Price Anderson Amendment Act (PAAA) implications.

5.3.8 *Emergency Preparedness*

The AMWTP Emergency Preparedness Program includes requirements of DOE Order 151.1C, Comprehensive Emergency Management System, as well as those associated regulations issued by other government agencies. This plan implements appropriate portions of 29 CFR, 40 CFR 264-265, the AMWTP HWMA/RCRA Storage Permit, AMWTP HWMA/RCRA Treatment Permit, and the AMWTP HWMA/RCRA TSA IS document. The technical basis for this plan is RPT-DSA-02.

The AMWTP Emergency Plan/RCRA Contingency Plan (MP-EP&C-12.1) is the primary component in defining and directing the AMWTP Emergency Planning Program. This plan supplements the INL Emergency Plan/RCRA Contingency Plan, otherwise known as the INL Base Plan, by supplying facility-specific information for the AMWTP. The AMWTP Emergency Plan/RCRA Contingency Plan provides the overall process to respond to and mitigate the consequences of operational emergencies as well as other events that require activation of the Contingency Plan for RCRA-Permitted Facilities.

The provisions of the AMWTP Emergency Plan/RCRA Contingency Plan are implemented when events are declared as operational emergencies. As defined in the plan, these emergencies include fire, explosion, natural phenomena, and unplanned significant releases that threaten human health or the

environment. Implementation is accomplished through the establishment of an Emergency Response Organization and Emergency Planning and Coordination procedures where roles and responsibilities are further defined.

The competency of the individuals in these positions is monitored through the performance of emergency drills and table-top discussions as outlined in the AMWTP Drill Program. The intent of the Drill Program is to foster an awareness of abnormal and emergency conditions and to reinforce proper Conduct of Operations principles. It also provides management with a tool to evaluate the overall ability of all AMWTP personnel to perform in abnormal and emergency conditions.

5.3.9 *Safeguards and Security*

Ensuring the security of INL has always been an important priority. In the wake of the September 11, 2001 attacks against our nation, the need for effective security programs is more important than ever. Integrated Safeguards and Security Management (ISSM) is one of the primary tools used to enhance the effectiveness of our Security Program and help us accomplish our missions securely.

ISSM systematically integrates Safeguards and Security into management and work practices at all levels of the company. It provides a formal organized process for planning, performing, assessing, and improving the secure conduct of work in accordance with risk-based protection strategies.

ISSM utilizes the same fundamental guiding principles and core functions as ISMS with a focus on the management of security threats and risks. DOE directives, along with security plans, specify program requirements that address protection program management, personnel security, classified matter protection and control, information security, physical security systems, protective force, safeguards and nuclear materials control and accountability, and cyber security. ISSM implementation leverages the infrastructure and processes that support the ISMS to reduce the impact to company resources and operations.

Management leadership and active employee involvement in applying Security controls and requirements to our work are essential to the security of our facilities and operations.

PLN-SCTY-003, Safeguards and Security Management Plan, describes the Safeguards and Security Program.

5.3.10 *Procurement/Warehousing Services*

BBWI implements procurement quality assurance requirements for material and services as required by the QAPP to ensure that procured material and services meet or exceed established standards in preparation to support performance of work within established controls. Materials and services (reference Section 3.7, Subcontractor Services) are acquired by trained and qualified Procurement staff. Material is received by warehouse personnel who perform a receipt inspection function to verify that it meets the stipulated purchase order requirements. Upon acceptance, material is either stored in a warehouse facility for future use or delivered to the worksite to support production.

5.4 Continuously Improving Work

5.4.1 *Quality Assurance*

BBWI has established and implemented management processes to ensure compliance with contractual requirements and to monitor the efficiency and effectiveness of project performance in the safe and compliant conduct of work. These processes provide for the systematic identification and resolution of program and performance deficiencies to promote continuous improvement and feedback through assessments and employee involvement programs, evaluation and analysis of issues, risk

determination and prioritization, formal methods and procedures for reporting deficiencies to responsible management, documented corrective and preventive actions, and sharing of Lessons Learned across all aspects of operations.

The Contractor Assurance Program Description (PD-Q&SI-01), Quality Assurance Program Plan (QAPP-01), and other AMWTP programs work hand-in-hand with ISMS Guiding Principles and Core Functions to establish the assurance processes essential to safe AMWTP operations and the achievement of mission-critical objectives, and to promote feedback and continuous improvement.

Line management is responsible for:

- ensuring safe and compliant work performance at all organizational levels,
- developing and implementing qualification and training programs,
- implementing processes to assess work activities; encourage and solicit employee feedback; and detect, correct, and prevent problems in the performance of safe and compliant work,
- implementing processes to develop, approve, use, and revise Work Control documents.

All AMWTP employees are responsible for:

- conducting work using approved instructions and procedures,
- identifying and reporting unsafe work conditions or quality problems.

The AMWTP QA Manager is responsible for:

- scheduling and performing independent QA Assessments,
- monitoring QA Program effectiveness and identifying potential adverse trends.

5.4.2 *Performance Assurance*

Assurance processes are implemented through assessment programs, evaluation and analysis of performance data and events, formal methods and procedures to report deficiencies to responsible management, documented corrective and preventive actions, and sharing of Lessons Learned across all aspects of operations. These programs and processes are extensively described in Section 7.10 and in PD-Q&SI-01. They include:

- Management Assessments,
- Independent Assessments,
- QA Surveillances,
- processes for evaluating and resolving Noncompliances,
- Lessons Learned,
- Senior Supervisor Watch,
- Fact Finding,
- Performance Measures.

Collectively, these implementing processes establish rigorous feedback and continuous improvement to effectively and efficiently monitor performance of work conducted at the AMWTP, including work performed by AMWTP subcontractors (Figure 17).

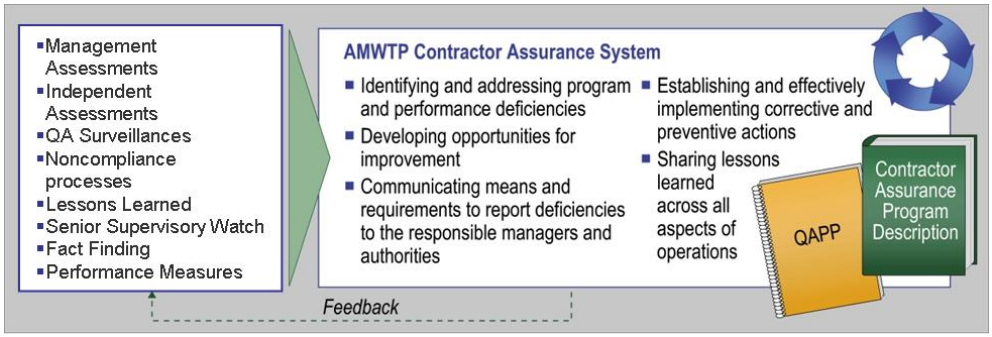


Figure 17. Contractor Assurance System.
This system provides processes for effective communication, resolution, and prevention of safety issues, and it establishes a mechanism for continuous improvement at all levels of the organization.

6.0 Project/Financial Management

The AMWTP President and General Manager leads the project team in planning, organizing, integrating, aligning, measuring, controlling operations, support functions, services, and other resources to successfully execute the project scope in accordance with contractual commitments and to meet or exceed customer expectations.

To achieve project goals and objectives, BBWI implements the best practices of Project Management tailored to AMWTP requirements.

BBWI has implemented the principles of DOE M 413.3-1, Project Management for the Acquisition of Capital Assets, except for the critical decision (CD) process, which is not applicable to the AMWTP because it is an operating facility. Baselines to achieve contractual goals been developed to manage and control the Project technical requirements, cost, and schedule. These baselines are under configuration control and may be modified only through a formal change control process. External commitments and enforceable milestones are monitored, controlled, and reported through completion. Timely communications ensure that project stake-holders, including AMWTP employees, are aware of project objectives, status, and issues that require appropriate attention for project success. A Risk Management Plan, contained in the PEP, has been developed and maintained to document the process used to manage and mitigate project risks.

6.1 Management of Baselines

The AMWTP Contract Baseline comprises the scope, schedule, and budget cost required to define the work scope and establish the priorities for accomplishing the technical requirements of the BBWI contract for the period May 1, 2008, through September 30, 2009. Baseline Management ensures that these aspects of the project are clearly defined, controlled, and managed to ensure that contract deliverables fulfill technical, operational, and safety requirements of the project (Figure 18).

The Cost and Schedule Baselines and Earned Value Systems are the basis for measuring project performance. Changes to the Cost and Schedule Baselines due to revised technical requirements or external factors beyond BBWI's control are identified, evaluated, and submitted to DOE-ID for approval.

Figure 18. Baseline Management.
The principles of ISMS are embodied in our approach to baseline management; it's how we do business.

6.2 Technical Baseline Control

The Technical Baseline is specified in the contract for management and operation of the AMWTP. The work scope required to accomplish the technical requirements of the contract is managed through the AMWTP WBS, which captures all work elements necessary to execute the project scope. Each control account has a Control Account Manager who is responsible for the scope, schedule, and cost (as discussed further in PEP Appendix D–Responsibility Assignment Matrix).

6.3 Cost and Schedule Baseline Control

The approved Control Schedule (WBS Level 4) is the Project Baseline Schedule and provides the basis for the time phasing of the Project's overall budget. The Baseline Schedule is an integrated schedule, organized by the Project WBS, which depicts the operational and support activities required to perform the overall scope of work for the AMWTP. In conjunction with the schedule, the production-planning model establishes the baseline production quantity metrics for retrieval, characterization, treatment, waste certification, and shipping. These metrics are the basis for project schedule performance measurement.

The approved AMWTP Control Account Plans provide the definitive cost estimates to complete the project scope of work. These estimates provide the basis for the Project's overall cost performance measurement. The Cost Baseline is established at the level at which the Project collects actual costs.

6.4 Cost, Schedule, and Milestone Performance

Schedule Variance (SV), Cost Variance (CV), Schedule Performance Index (SPI), and Cost Performance Index (CPI) are the key feedback indicators used to manage financial and schedule performance.

Performing routine analysis of the status of activities relating to production performance indicators will also provide objective schedule performance criteria.

This fundamental cost and schedule performance approach, coupled with weekly and monthly production performance indicators (i.e., retrieval, characterization, treatment, certification, and shipping), will provide the suite of tools necessary to manage scope, schedule, and cost on the AMWTP (Figure 19).

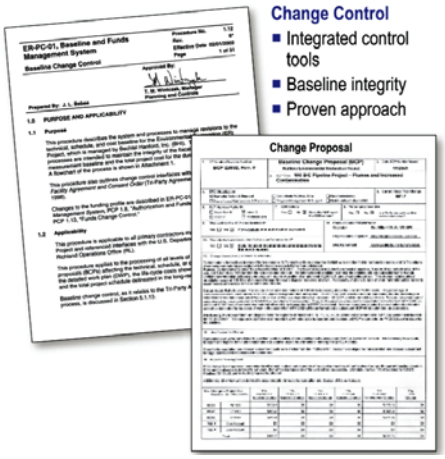


Figure 19. Change Control.
Our change control approach is integrated with a suite of management tools to ensure that there are no surprises.

6.5 Production Model

The Production Model establishes the schedule requirements to ensure sufficient project throughput to maintain the defined shipping schedule. Weekly production targets for retrieval, characterization, treatment, certification, and shipping are established to track and manage progress towards the project ship and/or certify and retrieval milestones. The Production Model is discussed in Section 5 of the PEP.

6.6 Performance Metrics

BBWI uses an operations performance metric methodology to measure, track, and evaluate execution against the Project Baseline. Each major WBS element has a key metric that describes the flow of waste through the major AMWTP processes. Tying these performance metrics to actual waste process flow values (instead of procedural progress or milestones) yields a useful indication of progress relative to the baseline and is valuable for analyzing variances between these processes and potential impacts on downstream operations. Performance Metrics are also discussed in Section 5 of the PEP.

6.7 Earned Value Management System

An earned value management system (EVMS) effectively integrates the work scope, schedule, and cost objectives and establishes a baseline plan for performance management during the execution of the project. Further, it provides a feedback mechanism for problem identification, corrective actions, and management planning.

The basic elements of the EVMS are:

- Define and plan all work scope for the AMWTP through contract completion.
- Integrate project work scope, schedule, and cost objectives into a baseline plan against which accomplishments may be measured.
- Objectively assess accomplishments at the work package level.
- Analyze variances from the plan and forecast impacts.
- Provide data to management for decision making and implementation of necessary recovery actions if applicable.
- Prepare and deliver status reports to DOE-ID.

BBWI's EVMS is outlined in MP-ADMN-1.26, Earned Value Management System (EVMS) Procedure.

6.8 Financial Operations

Financial operations provides the required financial system and processes to enable management to make sound financial and business decisions in accomplishment of AMWTP goals. AMWTP uses the Deltek Costpoint Business System, which includes fully integrated modules for electronic time reporting, finance, procurement, human resources, and payroll. The system and processes also provide the capability to report financial status and balances into the DOE Standard Tracking and Reporting System, thus meeting the DOE requirements for financial reporting as an integrated DOE contractor.

The financial system and associated processes provide the required financial policies, procedures, practices, and processing capability for all accounting functions and transactions. The financial systems and processes are focused on providing effective and efficient operations that meet contractual requirements.

7.0 Integration of Safety Into Work

7.1 Overview

This section describes the implementation and integration of the ISMS guiding principles and core functions into the AMWTP work scope (Figure 20). The AMWTP has chosen to add an eighth guiding principle, Employee Involvement, to emphasize the importance of this element to the successful implementation of ISM. The following sections briefly discuss the mechanisms for implementing the principles and functions of ISMS. This discussion does not list every procedure containing mechanisms that implement ISMS elements, but it does identify the higher-level documents that integrate safety into work planning and execution. A comprehensive listing of all procedures is available from AMWTP Document Control and on the AMWTP internal webpage.

Figure 20. AMWTP Implementation of ISM Principles.
We apply proven mechanisms to integrate ISM throughout all project activities.

Documents identified as AMWTP policies, plans, procedures, reports, and instructions implement requirements to ensure the integration of ISMS Guiding Principles and Core Functions into work activities. The PEP is the top-level plan that describes how AMWTP conducts its business and meets customer expectations consistent with the AMWTP Contract. The PEP identifies and includes the AMWTP approach to Cost and Schedule Baseline Management, Risk Management, Performance Measurement, Earned Value Management, Baseline Change Control, Resource-Loaded Schedule Development with Associated WBS, and Project Reporting.

The ISMS Guiding Principles govern all AMWTP activities for accomplishing the scope of work identified in the AMWTP Contract. The five core functions provide a distinct, phased approach in the continuing cycle of conducting work safely. Activities include the development of implementing documents and planning, conducting, and assessing work.

Institutionalization of these guiding principles and core functions ensures that workers are focused on safety and environmental protection, that they understand their assignments, and that they are involved in and capable of carrying out the core safety management functions. Line management direction and ownership, worker input and support, and formalized Work Control processes ensure ISMS success. The new implementation of HPI will enhance these existing processes.

7.2 Objective: Performing Work Safely

The objective of ISM is to perform work safely and in an environmentally responsible manner. Performing work safely and protecting the environment start at the policy level and are promulgated through implementing mechanisms that govern specific work activities. Line management is responsible for implementing an effective safety management system and providing the resources and empowerment for a strong, employee-involved safety culture.

The processes and elements of ISMS described in this document are enhanced through employee involvement. Trained and qualified workers who perform the tasks are involved in the planning, hazard analysis, procedure development, and performance improvement/feedback process as appropriate. Consistent with the tenets of a work environment committed to safety, workers are empowered with "step back and stop work" authority when they have a safety, quality, or compliance concern. Any worker who discovers a condition or practice that creates or could create a danger to a worker, the public, or the environment, has the authority and obligation to discontinue the activity and report the condition without fear of reprisal. Additionally, workers are involved in a zero-accidents approach, which consists of involvement in committees, safety incentive programs, ESS&H leading indicators, the KEYS Team, and the fostering of human performance principles and tools. To complete the cycle, workers provide pre- and post-job feedback comments and lessons learned.

7.3 Guiding Principle 1—Line Management Responsibility for Safety

Work at the AMWTP has always required a high level of safety awareness. AMWTP management support and guidance, combined with employee empowerment, have escalated employee safety awareness and employee involvement. Through aggressive ISMS implementation and the initiation of HPI, employee dedication to safety will continue to strengthen and improve.

From the AMWTP General Manager to the front-line worker, the AMWTP workforce understands and accepts their safety responsibilities inherent in accomplishing the AMWTP mission. Line managers have a clear understanding of work activities, performance objectives, and the optimal means of safely conducting work while accomplishing performance objectives. Executive and senior managers are the leading advocates of safety and demonstrate their commitment in both word and action. Organization leaders periodically take steps to reinforce safety, including personal visits and walkthroughs, to verify that their expectations are being met; they also practice visible leadership in the field through coaching, mentoring, and reinforcing standards and positive behaviors. Deviations from expectations are corrected promptly.

Line management is responsible and accountable for the safety of work involving industrial and radiological hazards associated with design, construction, testing, maintenance, and operations. This includes work associated with routine operations in areas under their control such as Maintenance activities, Treatment operations, Retrieval operations, Shipping operations, Storage operations, Characterization operations, Security, Fire Protection tasks, and other routine tasks.

Line management maintains awareness of key performance indicators related to safe work accomplishment; managers watch carefully for adverse trends or indications and take prompt action to understand and correct adverse trends and anomalies. Leaders throughout the organization demonstrate safety leadership by maintaining direct involvement in continuous learning and by setting an example for those they influence to follow on topics related to technical understanding and safety improvement. Managers and supervisors are skilled in responding to employee questions in an open, honest manner. They encourage reporting of safety issues, errors, and situations conducive to error. They do not discipline employees for reporting errors. They encourage a vigorous, questioning attitude toward safety as well as constructive dialogues and discussions on safety matters.

To ensure the safety of the workers, managers are responsible for providing policies and procedures in support of work for their areas. The expectations for management responsibility for safety are outlined in GDE-10, AMWTP Employee Handbook. This document describes the requirement that line management is responsible and authorized to take active and responsible leadership in the implementation of the AMWTP Safety and Health Program.

7.4 Guiding Principle 2—Clear Roles and Responsibilities

Clear and unambiguous lines of authority and responsibility are established and maintained at the organizational level. This principle underlies the organizational structure. In conjunction with implementing mechanisms, the adoption of a detailed organizational structure is the foundation for establishing clear roles and responsibilities. Job function roles and responsibilities are outlined in QAPP-01, Advanced Mixed Waste Treatment Project Quality Assurance Program Plan, and RPT-PEP-01, Project Execution Plan which roll into individual AMWTP employee responsibilities found in Employee Position Descriptions.

Operations organization and management roles, responsibilities, and expectations which establishes the roles, responsibilities, administrative guidelines, and requirements are described in MP-COPS-9.2, necessary for conducting AMWTP facility operations and operational activities in a safe, professional, and compliant manner.

Clear roles and responsibilities for work activities are outlined in the AMWTP suite of MPs and work instructions (INSTs). In order to contribute to the safe and efficient operation of the AMWTP, MPs are developed to describe the programmatic execution of the rolldown of requirements from laws, regulations, DOE orders and standards, company objectives, and project policies. These procedures establish the methods for implementing and integrating requirements as well as providing a standard for conducting business. MP-DOCS-18.3, Developing Management Procedures, describes the process for developing an MP and specifically requires the MP to identify the performer's roles and responsibilities.

Unlike a management procedure, INSTs are written and approved for activities that require specific direction for operating and maintaining systems and equipment. This in-turn ensures the facility is maintained within its design basis and supports safe and reliable operation of the facility while ensuring environmental, safety, health, and quality compliance.

INSTs give directions for performing hands-on technical tasks at the "how-to-do" level. They detail how to accomplish technical tasks, including operating, testing, and maintaining equipment and operating systems. They also describe the processes to be followed to ensure various task functions are effectively integrated and all applicable requirements are appropriately implemented. MP-DOCS-18.1, Developing Written Work Instructions, requires each work instruction to specify the roles and responsibilities of all individuals (identified by job title) who perform the actions detailed in the instruction. INSTs include (but are not limited to) OIs, facility operating instructions (FOIs), Abnormal Operating Instructions (AOIs), emergency instructions, surveillance and test instructions, and maintenance instructions.

7.5 Guiding Principle 3—Competence Commensurate with Responsibility

BBWI is committed to ensuring that the workforce is fully competent to a level that is commensurate with their responsibilities. CCR is established through the integrated efforts of line management and several functional areas, including Human Resources and Training. BBWI workers undergo a process by which they are selected for a specific job by use of an associated Job Description (JD). Once selected, an individual specific EPD and Individual Training Plan (ITP) is developed by the supervisor. The EPD, ITP, and qualification packages or checklists define all the requirements an employee must complete to be fully qualified for their position. The tiered approach to training used at AMWTP to achieve CCR is diagramed in Figure 21 and described below.

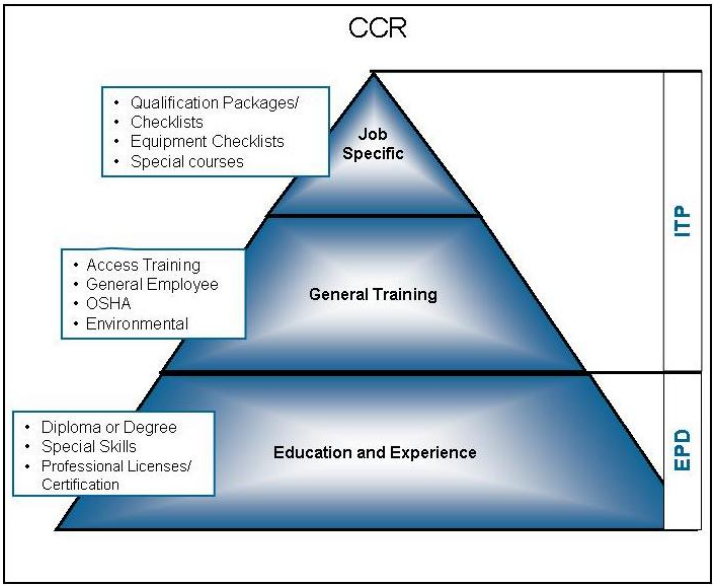


Figure 21. CCR Pyramid.
The AMWTP array of training programs ensures that all workers are qualified for their roles and responsibilities.

The EPD helps define clear roles and responsibilities in terms of duties and reporting relationships and clearly states the education and experience required. Entry-level requirements which include minimum qualification (education and experience), licenses or certifications, or special training or skills for the specific job are listed on the EPD. On the EPD the supervisor verifies that the employee has the appropriate education and experience to fill the position.

Line management, as part of their responsibility for employee safety and CCR, determines the training required for each employee, and this is reflected in the ITP. Based on the employee's previous training, education and experience and the duties for the position as listed on the EPD, the supervisor identifies the legally required and general training the employee needs. The supervisor can then determine what additional training and formal qualification packages and checklists the employee needs for their specific job and lists them on the ITP. The employee must complete the training and qualifications listed on the ITP to be fully qualified to perform the duties of their position. When the training is completed, the supervisor reviews the ITP with the employee and verifies that the employee is fully competent to perform the responsibilities of the assigned position.

Additionally, line management provides oversight of worker performance, which includes day-to-day work performance assessment and annual performance appraisals. Development needs (including training in support of new job assignments or for positions of greater responsibility) are identified on an ongoing basis, and additional training needs identified through performance reviews or other input (e.g., lessons learned, occurrence reporting process, issues management, etc.) are added to the ITP. Feedback and improvement mechanisms also exist to improve training programs and their implementation. Some examples of this feedback include student course evaluations, self-assessment results, drills and exercises, DOE assessments, etc.

7.5.1 *Development of Training*

Training is a significant element of CCR; the complete process is described in PD-RTQP-01. A SAT is used to ensure training is developed to improve performance.

The five-phased SAT process includes the analysis, design, development, implementation, and evaluation phases. This closed-loop process drives dynamic, constant improvement while establishing discipline, predictability, and repeatability for developing and implementing compliant, cost-effective, and safe training that produces the competence required to perform work safely.

7.5.2 *Performing Work*

Trained workers perform work as assigned by their supervisors in accordance with approved AMWTP procedures and work documents. Prior to assigning workers to a task, the supervisor verifies that the workers are properly trained and currently qualified. Workers clearly understand that they not only have the right but also the obligation to stop work or safely step back any time they become aware of a potentially unsafe condition. This supports the CCR guiding principle by providing workers with the responsibility to stop performing actions for which they are not trained or qualified.

7.5.3 *Feedback and Improvement*

Robust feedback and improvement are inherent in the SAT process. There are several aspects of feedback and improvement that support CCR. The information can originate from employee performance appraisals, lessons learned, line management feedback, performance indicators and metrics, accident/injury rates, management and independent assessments, student feedback, and event analysis. As a result of this dynamic training process, CCR undergoes continuous improvement through constant monitoring and adjustment of worker performance, training program effectiveness, entry-level and job code requirements.

7.6 Core Function 1—Define the Scope of Work Guiding Principle 4—Balanced Priorities

A well defined scope of work for BBWI is crucial to the success of ISMS because it:

- is the foundation for the budget formulation allocation process to determine key ESS&H resources;
- sets the stage for the scope and depth of Hazards Identification, Analysis, and Work Controls; and
- is the primary factor in establishing expectations and accountability.

The project-level work scope is defined in the AMWTP Contract. The contract baseline comprises the scope, schedule, and cost necessary to accomplish the technical requirements of the contract. Baseline management is conducted as required by procedure MP-ADMN-1.27, Baseline Change Control, to ensure these aspects of the project are clearly defined, controlled, and managed so contract deliverables support technical, operational, and safety requirements. Changes to the cost and schedule baselines due to revised technical requirements or external factors beyond the control of the AMWTP will be identified, evaluated, and submitted to DOE-ID for approval. The technical baseline is specified by the AMWTP Contract for management and operation of the AMWTP. The work scope required to accomplish the technical requirements of the contract is managed through the AMWTP WBS, which captures all work elements.

The AMWTP has implemented a Baseline Trend Program as described in MP-ADMN-1.28, Baseline Trend Program. This program:

- provides the AMWTP Team and Senior Management with early identification of potential changes;
- assists in identification, understanding, and control of the consequences of any changes;
- ensures that a change to a schedule, performance metric, or cost baseline will not impact effective environmental protection, safety, and health;
- documents the impacts of the change to the approved baseline;
- ensures that each change is evaluated, reviewed, and addressed at the proper management level; and
- documents the justification, impacts, and approvals of changes.

Before project-level work is performed, the Project Scope is identified, planned, prioritized, and authorized. The AMWTP Project Prioritization process uses a nominal technique described in management procedure MP-CD&M-11.4, Project Management, to balance priorities based on the Project's ability to mitigate risk to the public, environment, worker, and to enhance quality, production, and cost effectiveness (Figure 22). The specific process for project prioritization for the AMWTP Projects is described in INST-CD&M-11.4.4, Project Prioritization.

The facility-level work scope required to execute the project work scope is defined during the development of the AMWTP POW and POD, which are reviewed and approved by the NFM and the Production Managers. The POW includes all project operations, maintenance, and training activities planned for a given week. The POD ensures coordination of resources at the working level and prioritization of work activities to a common set of objectives. The POD meeting involves all appropriate operational and support personnel.

The activity-level work scope is defined in the appropriate activity process instructions (OIs or FOIs). Activities requiring a PTW or RPTW are defined during the development of the appropriate work orders, as described in MP-CMNT-10.19, Computerized Maintenance Management System. Changes to the scope of work authorized for a PTW or RPTW are controlled in accordance with INST-COPS-9.18.2.

Figure 22. Task Prioritization.
Our work planning process balances priorities to ensure that project objectives are accomplished and risks are minimized and mitigated.

Work requests that have immediate impact on the health and safety of personnel are processed rapidly. Work requests that have equipment impacts are evaluated and prioritized based on the need to protect equipment and workers and to stay in compliance with the established safety basis and operating requirements for the facility.

For maintenance-level tasks, AMWTP uses a commercial-off-the-shelf client-server application, which provides a platform for users to prioritize tasks, assign work, and trend equipment failures to

implement appropriate preventive/predictive maintenance measures. This computerized maintenance management system (CMMS) is also utilized to record equipment history, to schedule and control maintenance activities, and to control databases of plant equipment and spare parts. The CMMS is described in MP-CMNT-10.19.

7.7 Guiding Principle 5—Identification of Safety Standards and Requirements

A fundamental element of the AMWTP ISMS is the identification of applicable standards and requirements. The AMWTP applies a systematic process to identify both the mandatory and the applicable laws, regulations, court or consent orders, and DOE directives used to define the requirement envelope for the AMWTP (Figure 23).

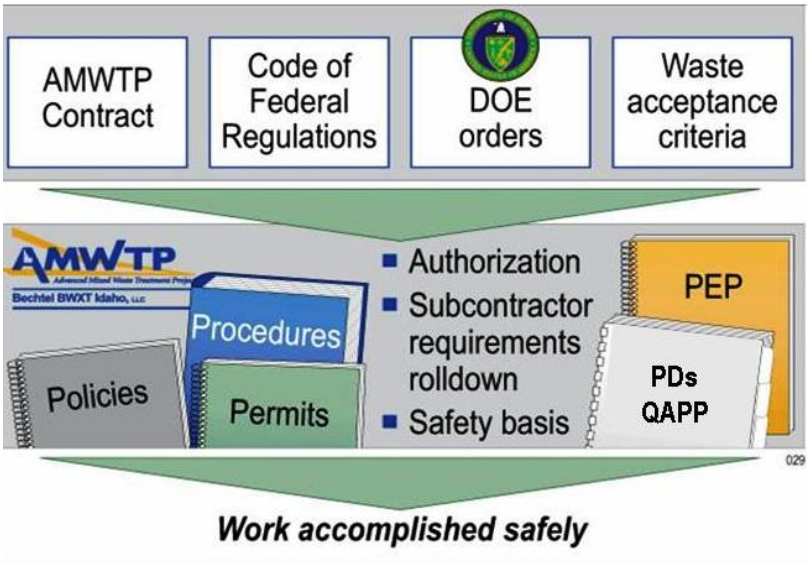


Figure 23. Requirements Identification and Implementation. The AMWTP applies a rigorous program for identifying, evaluating and integrating applicable requirements.

Requirements include documents that are applicable and mandatory (required by statute, court order, or contract) and documents that are applicable but not mandatory. Both sets of documents were used for guidance during the development of the sub-tier AMWTP documents.

Included in the requirements applicable to AMWTP are the INL Site standards that apply to areas where consistency with certain INL practices, warning, and notifications is warranted (e.g., emergency signals). The specific implementing mechanism for all mandatory requirements, including List B, is identified in multiple requirement implementation matrices.

All matrices are pulled together into the Requirements Management homepage.

The Requirements Management Process is described in MP-ADMN-1.18.

7.8 Core Function 2—Analyzing the Hazards
Core Function 3—Develop and Implement Hazard Controls
Guiding Principle 6—Hazard Controls Tailored to Work Being Performed

The project- and facility-level hazards associated with the AMWTP were identified, analyzed, and categorized in the safety analysis process, which began with the preliminary hazard assessment. The identified Project-level hazards are described in RPT-DSA-02. In accordance with 10 CFR 830.204, the hazard analysis considered internal events, external events, and natural phenomena events that can cause the uncontrolled release of radioactive or hazardous materials and can affect the public, workers, or environment. Single and multiple failures (e.g., as a result of equipment and human errors) and common-cause failures were considered potential accident initiators. The hazard analysis for the AMWTP operations and facilities was a systematic and predominantly qualitative evaluation of the spectrum of risks to the public, workers, and the environment (Figure 24).

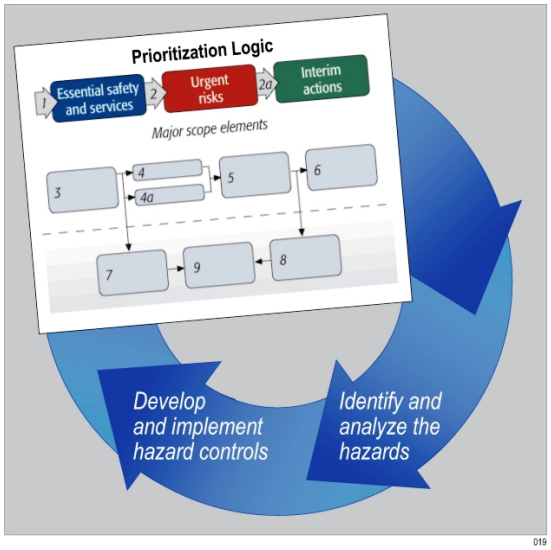


Figure 24. Work Prioritization.
Consideration of hazards and risks is an attribute of ISMS and a critical factor for work prioritization.

The hazard analysis consisted of the following activities:

- *Hazard Identification*—This process provides information used to identify potential accident scenarios resulting in the uncontrolled release of material. This hazard identification supports the hazard categorization of the facility.
- *Hazard Evaluation*—This process identifies potential accidents and qualitatively assesses them for frequency of occurrence and severity of consequence.
- *Hazard Classification*—The hazard category of the AMWTP operations and facilities is determined on the basis of the radiological and toxicological consequences of accidents. The categorization provides the basis for a graded approach to the Integrated Safety Management of the facility.

Barriers and/or controls against hazards take a variety of forms. The hierarchy of controls (engineering, administrative, and PPE controls) approach outlined in 10 CFR 851, Worker Safety and Health Programs, establishes the controls to be used and is applied in a risk-based manner to provide protection or defense in depth. Hazards are controlled through proven control strategies such as passive confinement boundaries. These were specified early in the project design through Hazard and Operability (HAZOP) studies and are included as mitigative features in the DSA. Administrative controls are used throughout the project. For example the Radiological Safety Program requires the use of controlled postings to restrict access to areas where additional training or specific work control measures are required.

Hazard controls are documented in INST-COPS-9.18.4, Hazard Assessment, for facility and process hazards. This document provides a starting point for additional hazard analysis and resulting controls for routine and emergent work as described later in this section.

Project-level hazards are controlled using defense-in-depth measures as defined in the authorization basis. Project-level hazard controls to prevent or mitigate accidents—especially high-consequence events with unacceptable consequences—have been developed through the Hazard and Accident Analysis performed during DSA development. Controls include the installation, operation, testing, and control of equipment important to safety and the implementation of related TSRs. Layers of defense against the release of hazardous materials are developed so that no one layer by itself is relied upon to provide total defense. For example, automatically actuated systems, alarms, or both, prompt Operations Technicians to manually correct the abnormal situation before an event progresses toward a more serious condition. Passive features such as double containment for waste, confinement cells for processes, atmospheric protection systems, physical controls, monitoring, and action levels provide additional control in accordance with PD-RS&C-01.

Confinement and safety support systems such as early detection systems for fire and radiological and hazardous materials are used extensively to provide engineered controls to the workers, the environment, and the public. The Safety Basis provides the overall engineered hazard controls for the Project and, with the identified Safety Management Programs, establishes a high-level hazard analysis for the overall project scope. The Safety Basis Management process is maintained in accordance with MP-NSPC-3.4, Safety Basis Maintenance.

AMWTP has a unique advantage, due to its single mission, for focused hazard analysis on routine and non-routine tasks. Controls are implemented through the field application of formal documents developed within the Work Control process. After hazards are identified, controls are developed based on industry, DOE, and operational experience. The controls are applied through an approved Safety Basis, approved procedures/instructions, and approved emergent work documents (RPTW/PTW). Each of these processes utilizes worker involvement and a team of support personnel to discuss and agree on the hazard controls to be used. All routine and non-routine portions of the Hazard Analysis process use Lessons Learned to provide feedback for continuous improvement.

7.8.1.1 Hazard Analysis and Controls for Routine Tasks

As a single-mission production project, AMWTP has many routine tasks. These tasks have undergone extensive hazard analyses and are included in INSTs. The Hazard Identification process flows down from the DSA to INST-COPS-9.18.4. The Hazard Assessment procedure provides for the identification of hazards using operations personnel and the Safety Management Program owners to identify hazards for all facility operation or building processes. As reviews are conducted, the results are added to the procedure. The Hazard Assessment procedure then provides a list of hazards that are used as a guide by procedure writers in preparing or revising instructions.

Line management is responsible for conducting Hazard Assessments and implementing controls. Teams are assembled with experienced Operation Technicians, support organization personnel, and other specialists as needed. These teams conduct walkdowns, review existing procedures, review Lessons Learned, and review corrective actions to identify hazards associated with routine tasks.

DOE, Industry, and Project experience is used for selecting Engineering, Administrative, and PPE Controls. The controls are then integrated into approved procedures and work instructions in accordance with MP-DOCS-18.4. The procedures and work instructions receive extensive review, and if applicable, are validated by operations personnel and the Safety Management Program owners to ensure the controls remain in place.

Routine, repetitive tasks with unchanging conditions and predictable hazards are often controlled by an AMOW. While an AMOW does not replace instructions and procedures, it does provide Hazard Analysis and Control for routine and specific tasks. AMOWs are developed utilizing the work involvement and team approach that is applied for developing procedures. Engineering controls are applied in the AMOW through a reference to applicable procedures. An AMOW generally describes

hazards and mitigative measures for tasks related to facility access or for a specific task with repetitive general conditions. The process for developing and implementing the AMOW is described in INST-COPS-9.18.1, Approved Method of Work. Hazard controls are updated in AMOWs using worker involvement and a team approach based on Lessons Learned, process improvements, and KEYS observations. AMOWs are also updated as processes or conditions change, or at least annually as specified by procedure INST-COPS-9.18.1.

The annual AMOW review requires input from management program groups. Feedback is also received from Operation Technicians, Radiological Technicians, and professional staff. Lessons Learned are also used extensively as a feedback mechanism to continuously improve procedures.

7.8.1.2 Hazard Analysis and Controls for Emergent Work

As a complex facility providing mission and infrastructure support, AMWTP performs a significant amount of emergent work. Emergent work consists primarily of maintenance and sub-contractor activities but also includes some operational tasks that are not covered by procedures. Emergent work is conducted in accordance with PD-COPS-9.18. This procedure describes the process for performing non-routine, emergent work safely, and it includes mechanisms for identifying physical and chemical hazards.

Hazard Analysis in the Work Control process is implemented through a suite of documents that provide instructions for emergent work tasks. These documents include INST-COPS-9.18.1, and INST-COPS-9.18.2, which provide guidance for identifying hazards in conjunction with INST-COPS-9.18.4 which documents general facility and process hazards.

For all facility operations and maintenance work, a specific Hazard Analysis is required to identify chemical and physical hazards and the engineering, administrative, work practices, and or PPE methods needed to limit physical hazards and hazardous exposures to acceptable levels. These hazard analyses are performed by experienced teams consisting of SSWC, Operations Technicians, and applicable Support Organization personnel. All potential or actual hazards associated with the planned activities are identified and analyzed to ascertain the physical, chemical, radiological, and other conditions that may present a hazard. Walkdowns are performed, and the results are incorporated into an RPTW or PTW that identifies the controls used to mitigate or eliminate the hazards. An RPTW is used for low-hazard work that does not involve complex hazards or mitigative measures. For higher-hazard work, the PTW uses and references hazards and controls from applicable procedures, instructions, and the AMOW. The strength of the PTW System is that the walkdown is almost always performed immediately before the work and is performed by personnel who will perform and support the task. The criteria for performing work under an RPTW or PTW are listed in PD-COPS-9.18. After completion of the PTW activity, the closure of the permit includes a post-job review, which incorporates feedback so that the process or task can be improved.

7.8.2 *Guiding Principle 7—Operations Authorization Core Function 4—Perform Work Within Controls*

The AMWTP Contract gives BBWI the authority to plan and conduct work at the AMWTP. Plans are developed for the project, facility, and Activity Work Scope that ensure the consistent application of the ISMS Core Functions and Guiding Principles. Hazards associated with the work are reviewed and communicated, controls are verified, step back and stop work authority and responsibility are understood, and readiness to perform the work is confirmed before the work is started.

Before work begins, job briefings are conducted to ensure workers understand the hazards in the work area, the controls provided to protect them from the hazards, and the fact that the controls will remain in effect as long as the associated hazards are present. Also, the briefing ensures all workers understand their responsibilities related to the work activity, including required records, forms, information, and other documentation that must be completed. Additionally, the briefing reinforces each worker's confidence that co-workers are knowledgeable and prepared. The briefing also addresses applicable procedures and instructions, critical job steps, warnings and precautions, situations conducive to error, expected outcomes, lessons learned, responses to unexpected outcomes including emergency conditions (emergency communications and contingency or compensatory actions), and relevant operating experience. Last, the briefing enables workers to ask questions or to voice concerns regarding work conditions.

Operational activities are authorized by the AMWTP operations organization as described in MP-COPS-9.2, Operating Organization Administration. The NFM approves the operation of all equipment and systems via the POW/POD. The Shift Managers releases the work to start on Class I Safety Significant Components and on all work to be performed using a PTW or a RPTW associated with their areas of responsibility. The STL authorizes the day-to-day AMWTP operational activities under the direction of the appropriate Shift Manager.

7.8.3 *Work Control*

Work Control is an integral part of daily operations at AMWTP and is an effective tool for preventing accidents by ensuring no unanalyzed or unauthorized work is performed. Work Control provides a disciplined approach to defining and evaluating the hazards before the performance of work. This is the area where application of ISMS Core Functions and Guiding Principles are the most critical. The Work Control process is built around the ISMS Core Functions, and every one of the guiding principles is included within various elements of the process.

Work Control is also the area in which many functional groups and interfacing processes come together to ensure work is performed safely and efficiently. The Safe SSWC is the central focal point to not only coordinate processes but also ensure all hazards are mitigated and the proper authorization is received before work is performed. In support of that role, the SSWC assembles all Support Organizations, Managers, Supervisors, and most important, the workers who will actually perform the work. This team then performs a pre-job walkdown to discuss the processes and hazards that are involved with the task.

Work control at AMWTP is applicable to activities, including operations, maintenance, and operations exempt activities. The work is performed by following written instructions in either a procedure or other work control document. The AMWTP Work Control process includes mechanisms for planning and coordinating daily work activities, and it ensures that hazards associated with the work are identified, analyzed, and controlled. The Work Control process defines measures and precautions that must be taken to eliminate or control these hazards to minimize risks to personnel, plant equipment, and the environment.

Operational activities are authorized through the AMWTP operations organization. The Operations Organization structure, described in LST-COPS-01-IM and MP-COPS-9.2, delineates procedures established for responsibilities, administrative guidelines, and requirements necessary for authorizing and conducting AMWTP facility operations and operational activities in a safe, professional, and compliant manner. OIs, FOIs, AMOWs, RPTWs or PTWs, Work Orders, Maintenance Instructions, Method Statements, and Job Plans are examples of documents that use the Work Control process. Work is performed and documented in accordance with the applicable work instruction or procedure as required by management procedure MP-COPS-9.2.

7.8.3.1 Operating Instruction or Facility Operating Instruction

An OI or FOI is a Work Control document that directs the step-by-step execution of operational activity. These instructions describe the processes to be followed to ensure various task functions are effectively integrated and all applicable requirements are appropriately implemented, including the necessary precautions and limitations, hazard mitigations, roles and responsibilities, and prerequisites. OIs and FOIs are developed in accordance with MP-DOCS-18.1.

7.8.3.2 Approved Method of Work

An AMOW is a Work Control Permit prepared to control routine maintenance work and operational tasks when the conditions are known and will remain constant over a long period. An AMOW may also be generated to address a specific task with individual conditions such as repetitive routine maintenance tasks or it may be generic to address multiple tasks that have the same or similar conditions.

The AMOW is developed by the SSWC using existing Hazard Identification and Control information coupled with a review of applicable work scope. The AMOW lists the Radiological and Non-Radiological Hazards and Mitigations pertaining to the area, all applicable procedures or instructions such as the associated OIs or FOIs that are used to control the work within the area, required PPE, training requirements, and respiratory protection requirements. Personnel who perform work within an area described on an authorized AMOW must read and sign the document to indicate they understand the requirements and information related to the work area. AMOWs are developed in accordance with INST-COPS-9.18.1.

7.8.3.3 Request for Permit to Work or a Permit to Work

RPTWs and PTWs are Work Control Permits prepared for work activities not covered by an operating instruction (OI or FOI) or determined to be non-routine maintenance work. RPTWs and PTWs are compilations of information about a proposed task that assure workers and supervisors the task can be completed safely. A PTW requires more detailed planning and implementation of controls than a RPTW. RPTWs and PTWs are developed in accordance with INST-COPS-9.18.2.

A graded approach is used for each of the work control documents. The rigor associated with work planning and control is dependent on the job-specific work scope, hazards associated with the job, the facility where the job will be performed, and other factors that must be considered in tailoring work controls to the associated hazards. Some tasks do not require detailed instructions and may be performed safely by skilled personnel who are trained in appropriate work practices. Other tasks require a formally documented system of permits (e.g., Confined Space Permits, Electrical Permits, etc.) and other specific instructions and documents. In each case, some or all of the referenced forms of work control documents are utilized to create a standardized Work Control approach and provide assurance work will be performed safely.

All Operational and Maintenance activities must be evaluated by a documented Hazard Assessment process to determine the appropriate method of hazard control. If it is determined that an activity could lead to personnel injury or property damage, then the activity must have an appropriate hazard control set identified and incorporated into the work instructions to support safe performance of the work. Hazard assessments are performed in accordance with INST-COPS-9.18.4. Ensuring hazards are analyzed and proper controls are established to support the work is among the fundamental objectives of ISMS.

7.8.3.4 Control of Operational Tasks

The control of work associated with operational tasks is accomplished through written instructions in either a procedure or other work control documents. All operational tasks are planned and approved on the POW/POD. The direct, step-by-step execution of the operational activity is controlled with an approved OI or FOI. An AMOW is also used in conjunction with the OI or FOI. The AMOW provides information related to the specific building or area where the work is to be performed and requires review by SSWC, Radiological Protection personnel, ISIH personnel, and the operations Shift Manager.

Once identified on the POW/POD, operational activities are specifically authorized for accomplishment through the operations organization chain of command, which includes the Production Manager, the PSM, and ultimately the SS. Before the start of operational activities, the SS and PSM conduct a pre-job briefing, at which time the task is reviewed and discussed to ensure all workers understand the necessary hazards, mitigations, and procedures and permits to be used to conduct the work

7.8.3.5 Control of Maintenance Work

Like operational tasks, maintenance work is also accomplished through multiple interrelated mechanisms. All preventive or corrective maintenance tasks and implementation of modifications require the preparation and authorization of an RPTW or a PTW. All RPTWs and PTWs are controlled and issued by SSWC personnel.

The requestor of a specific task initiates the process by submitting a Work Request into the Project's CMMS. This initiation identifies and provides information about the requested task to the Maintenance Planning Organization. The requested work is screened to ensure it is not a duplicate, and it is assigned a priority, depending on its importance to the mission, impact to safety or the environment, other factors, and in accordance with MP-CMNT-10.1, Maintenance Management. Based on priority and available resources, the work scope is defined and planned by Maintenance Planning personnel with input from appropriate support functions. A Work Order describes the task to be carried out at a technical level; it is not an authorization to perform work. All Work Orders are filed against a particular system and/or component to allow feedback and trending of work within the CMMS. If the System Engineer judges the work to be very technical, then another document such as a maintenance instruction, method statement, or job plan may be prepared. If one of these documents is developed, it is attached to the Work Order.

Preventive maintenance tasks that are considered within the skill of the craft and that can be completed with no additional details are automatically generated by the CMMS. Every planned preventive maintenance activity within the CMMS has been individually analyzed using the processes identified in INST-CMNT 10.1.1, Maintenance Analysis Program. This process results in a unique planning sheet for each AMWTP asset.

Facility modifications are very broad and may include any change or experiment to the plant; a process or the plant's mode of operation (including software and documentation); any significant change to equipment; and any change which may affect radiological, environmental, or industrial safety conditions. Modifications follow a very detailed planning and authorization process described in INST-CD&M-11.1.2.

Regardless of the document used to detail the step-by-step maintenance activity, the document must be accompanied by an authorized RPTW or PTW before the work can commence. Figure 25, AMWTP Work Control process, is a flowchart that depicts the Work Control processes addressed in PD-COPS-9.18.

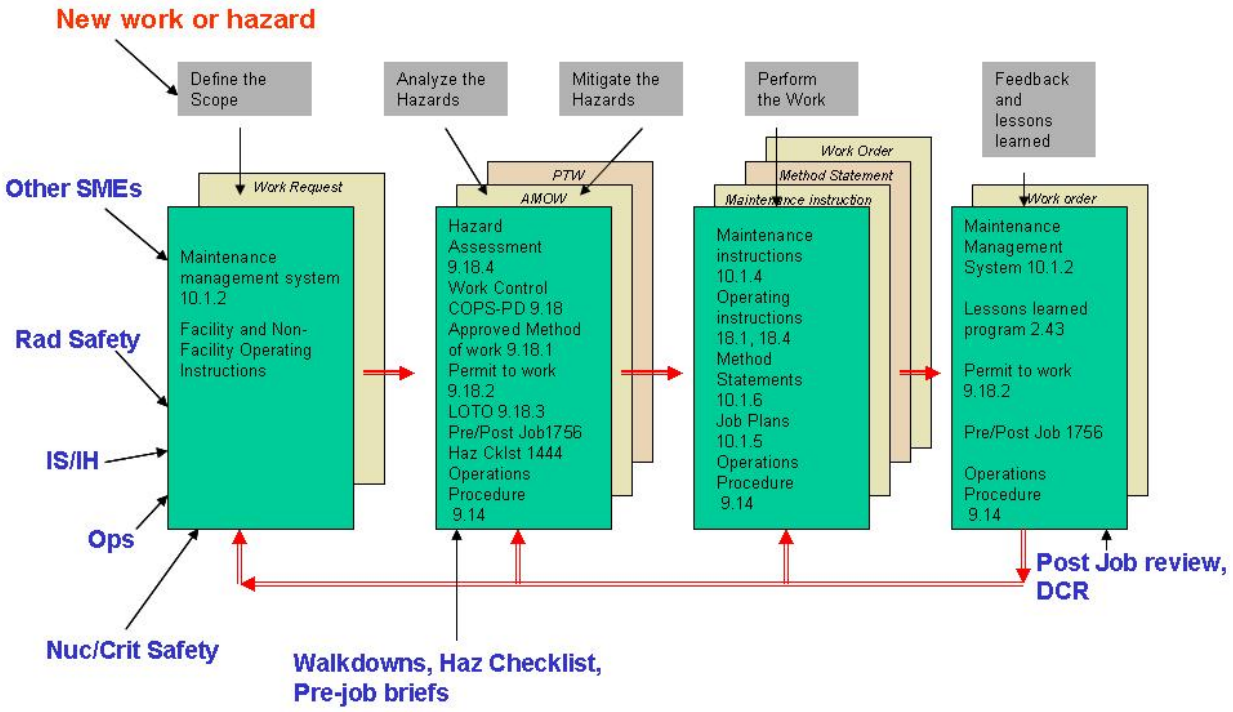


Figure 25. AMWTP Work Control Process.
This process helps to ensure that all work is properly planned, permitted, performed and documented.

A Work Order is used to assist in classification of the work and preparation of the necessary RPTW or PTW. If the work to be performed is determined by the SSWC to meet the criteria for minor maintenance as described in INST-COPS-9.18.2, the work can be initiated with an RPTW. If the minor maintenance requirements are not met, the SSWC issues a PTW, which requires more detailed planning and implementation of controls.

If the work can be completed with an RPTW, the SSWC verifies that the work is approved on the POW/POD, obtains authorization from the Plant Shift Manager to conduct the work, and sends the original RPTW with the worker who receives release of work from the Shift Supervisor to accomplish the task. If the task cannot be authorized for work using an RPTW, the SSWC will complete a PTW.

The PTW includes a description of the work and an associated AMOW. Additional materials that may be associated with the PTW as part of the maintenance task include a Lockout/Tagout (LO/TO), Work Order, maintenance instructions, Method Statement, Work Order, Test Plan, Facility Modification Proposal (FMP), reference drawings, required permits, Hazards Assessment with Associated Controls, radiological precautions, respiratory requirements, ALARA Job Review, PPE requirements, required dosimetry, contamination and radiation levels, and other information related to the task to be performed.

Following review and acceptance of the PTW by Radiological and ISIH representatives the SSWC validates the PTW by ensuring the job hazards are adequately addressed. The SSWC then obtains any additional permits, such as LO/TO, ensures that training requirements are met, verifies the work is authorized on the POW/POD, and obtains authorization from operations management (i.e., the NFM or PSM) to conduct the work. With operations authorization to commence work, the SSWC ensures completion of any necessary LO/TO, if required, and only then authorizes field work to commence by signing the PTW.

7.8.3.6 Control of Operations Exempt Activities

Operations exempt activities are tasks that can be performed safely based on the qualification of the person performing them and whether the tasks create a hazard to others in the work area. Operations exempt activities do not require any additional formal work control documents. Activities that may fall under this exempt status are analyzed on a case-by-case basis by the SSWC and operations line management.

Although operations exempt tasks do not require formal documents for authorization, personnel performing these tasks must adhere to any authorized AMOW that is applicable to the work location, in addition to general employee training requirements such as hazardous worker Training, radiological training, etc. Operations exempt activities are described in PD-COPS-9.18.

7.8.3.7 Control of Other Work

Other tasks associated with accomplishment of the AMWTP mission include WIPP-related data validation and verification activities, administrative work, and other limited tasks such as routine housekeeping, which require no specific or formal Work Control other than normally expected approval and supervision. Procedures for this type of work activity include procedures, instructions, plans, reports, and other approved documents.

7.8.3.8 Pre-Job/Post-Job Briefing

Before starting field work, the Job Supervisor or SSWC conducts a pre-job briefing to discuss the job and work control permit with the affected workers and ensure they understand the scope of the job, the hazards involved, and the precautions, limitations, hold points, etc. required to safely complete the work. After the workers confirm their understanding of the task, the hazards, precautions, and the additional requirements of any related documents, after verification that they are current in all required training for the tasks to be performed, and after acceptance of the identified LO/TO boundaries, the supervisor directs the workers to commence the task. The necessary actions for completion of the task, closeout of the work control permit, and associated post-job briefings are contained in INST-COPS-9.18.2.

7.9 Guiding Principle 8—Employee Involvement

Figure 26. Our Workers Are Involved.
Worker involvement is key to the success of the ISMS and ensures that all employees and subcontractors meet AMWTP safety standards.

Because the fundamental tenet of the AMWTP safety culture is employee involvement, AMWTP Management has included employee involvement as an additional guiding principle to stress its importance to an effective ISM Program (Figure 26).

AMWTP recognizes employees are the most important resource and every employee wants to be productive and perform his or her work safely. Protecting each employee's safety and health is the primary responsibility of the AMWTP. Safety and health are not just a priority but also a core value in the AMWTP workplace.

An element of the safety culture is the empowerment of each employee through the Step Back and Stop Work authority granted and required through contractual provisions. AMWTP includes Step Back and Stop Work as both an authority and expectation of every individual who identifies safety issues during activities. Workers are directed to always pause for safety when in doubt to ensure all personnel are aware of what is taking place. Employees are empowered to step back or stop work through MP-COPS-9.31, Step Back and Stop Work Authority, MP-ADMN-1.8, AMWTP Employees Concern Program, and through GDE-10, AMWTP Employee Handbook..

The AMWTP Management Team is fully dedicated to ensuring the ESIT empowers employee leadership and involvement in safety programs and initiatives. Additional areas of focus include continuing to train on, implement, actively support, and develop the KEYS (behavior-based safety) program, integrate appropriate aspects of HPI into the KEYS Program, and monitor and communicate safety performance and leading indicator trends throughout the project.

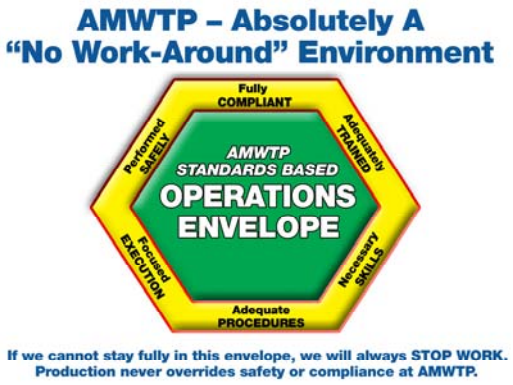


Figure 27. Step Back and Stop Work Authority. The AMWTP is a "no-workaround" environment, and all employees are obligated to step back or stop work for an unsafe condition.

An established AMWTP Safety Value Statement reinforces the employee involvement principle of the AMWTP ISMS. This statement provides a safety value baseline for each employee to incorporate into his or her professional value system. This statement encourages employees to actively care for their safety and the safety of others by:

- reporting unsafe conditions to their managers,
- participating in the safety and health program on a daily basis, and
- immediately stepping back and stopping unsafe work activities.

In addition, safety is woven into every activity through the inclusion of workers in activities such as work planning, pre- and post-job briefs, Hazard Analysis, procedure development, and Safety Management processes.

Improvements in this area will be made with the rollout of the HPI Five-Year Implementation Plan. Employees have a key role in error-reduction techniques and in maintaining the integrity of defenses. The AMWTP safety culture, dealing with the involvement of workers in all aspects of the AMWTP, is described in GDE-10, AMWTP Employee Handbook. Other implementing documents describing employee involvement include:

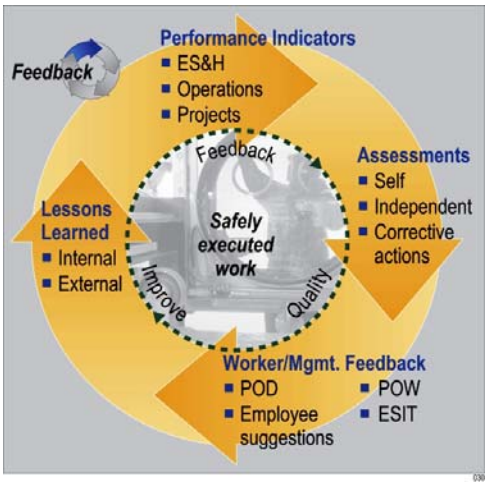
- MP-COPS-9.29, Workers Rights and Responsibilities,
- PD-ESH-02, Keeping Everyone and Yourself Safe (KEYS) Program. (formerly the behavior-based safety program),
- CTR-005, AMWTP Employee Safety and Improvement Team Charter
- POL-003, BBWI Injury-Free Workplace Policy.

7.10 Core Function 5—Feedback and Continuous Improvement

The Contractor Assurance System, which is described in PD-Q&SI-01, consists of management procedures and processes established by the AMWTP QAPP and implemented for all AMWTP Programs. The QAPP is integrated with the criteria and principles of ISM. Together, the processes described in the AMWTP QAPP and the ISMS address the criteria for an integrated, comprehensive AMWTP Contractor Assurance System. The AMWTP Contractor Assurance System includes processes for:

- identifying and addressing program and performance deficiencies,
- developing opportunities for improvement,
- communicating means and requirements to report deficiencies to the responsible managers and authorities,
- establishing and effectively implementing corrective and preventive actions, and
- sharing Lessons Learned across all aspects of operations.

These processes include Assessment Programs; Event Reporting and Analysis; worker feedback mechanisms; Issues Management, including Causal Analysis; identification of Corrective Actions; tracking, monitoring, and closure of Corrective Actions and effectiveness verification; communication of Lessons Learned; and establishment of performance measures. Collectively, these implementing processes establish rigorous feedback and continuous improvement, to effectively and efficiently monitor and manage work conducted at AMWTP, including work performed by AMWTP subcontractors.



Feedback and improvement occur on a continuing basis at all stages of work performance (Figure 28). Feedback and improvement happen at the Company/Site level; the Project, sub-project, and facility levels; and the activity level. Additional feedback is gathered for analysis through various reporting systems and communication mechanisms. Feedback ensures safe performance of work by taking advantage of experience. All involved personnel, employees and subcontract employees, are encouraged to participate.

The HPI process has been integrated to improve accident investigation and process analysis in order to identify system weaknesses and address them with appropriate corrective actions.

Figure 28. Feedback/Improvement Cycle.
Feedback is provided through many sources, ensuring opportunities for continuous improvement.

Six Sigma Program improvements include implementation of process management systems for core business processes and key support organizations. This process management tool includes process mapping, clarification of customer requirements and expectations, and establishment and monitoring of metrics to identify areas where improvement is needed.

Six Sigma process improvement projects are expected to realize cost savings through streamlining of processes, elimination of non-value-added activities, and reduction of defects and rework.

7.10.1 *Employee Feedback*

The AMWTP has established and implemented programs and Work Control processes to solicit and promote feedback from employees and experience gained from work activities:

- *Safety Committees and Sub-Committees*: As discussed in PD-Q&SI-01, the AMWTP safety committee and sub-committees are recognized as formal employee feedback programs and elements of the Contractor Assurance Program. Implementation of these committees is structured to provide the quickest possible resolution of safety issues at the lowest possible level in the organization and to determine safety needs, deficiencies, improvements, and suggestions. The ESIT also serves as one of many ways for employees to express concerns or ideas for improvement.
- *Pre-Job Briefings and Post-Job Briefings*: These meetings are described in PD-COPS-9.18. They provide a means for feedback to ensure that lessons learned (adverse events) and process improvements (good work practices) are incorporated into the work planning process.
- *KEYS Program*: KEYS provides workers with a process for performing routine behavioral observations and identifying both safe and potentially at-risk behaviors as described in PD-ESH-02.
- *Employee Concerns*: This program, described in MP-ADMN-1.8, is designed to encourage open communication and ensure that employees can raise issues without fear of reprisal. All employees (including supervisory personnel) are encouraged to report employee concerns and issues first through their management chain. If that channel fails to resolve the issues, or if the employee is not comfortable, he or she can report the issue to the employee concerns hotline. Specific concerns may be related to (but are not limited to) environmental, safety, and health; suspected violations of law, regulation, company policy, or standards of business conduct; and issues of fair treatment. Depending upon their nature, some issues may be delegated to the appropriate SME for resolution.

Worker feedback is actively solicited to identify potential performance enhancements. After work is performed, the work group evaluates the safety of the work, identifying controls that worked and the controls that could be improved. Vital to the success of the day-to-day Safety and Health Program are the incorporation of the Lessons Learned Program, the occurrence reporting and corrective action process, and improvements made in response to audits, as implemented through ISMS and the AMWTP Work Control process.

Additionally, at the completion of an infrequent or particularly complex task, or if conditions were encountered that were not identified at the onset of work, a more rigorous job debriefing is held to ensure that workers are consulted and to provide feedback to update INST-COPS-9.18.4. Additionally, information that could be used to improve future work packages (e.g., additional tools required, material to be pre-staged, work sequence changes, etc.) is forwarded to the appropriate organization.

7.10.2 *Assessment*

Senior management sponsors the AMWTP Assessment Programs, which are key elements of the AMWTP QA Program and Contractor Assurance System. Clear roles and responsibilities for execution of the program are identified in implementing documents. Management is responsible for assessment program development and oversight and for ensuring that assessments are effectively planned, scheduled, and performed.

During the performance of assessments, issues are identified, documented, and addressed in accordance with MP-M&IA-17.1, Management Assessment. The effectiveness of the integrated assessment process is measured by analyzing the performance of assessments, assessment results, and the execution of the overall process. Inspections, surveillances, and management reviews are usually performed to support specific assessment requirements and commitments. In most cases, the assessments

are performed by the organizations that have the primary responsibility for the activities being assessed. On some occasions, the assessments may be performed by independent organizations. They may also support BBWI's initiatives for worker involvement when workers knowledgeable in the areas they are assessing are assigned to perform them.

The Independent Assessment Program provides for a comprehensive schedule of QA Audits and Surveillances to verify compliance with requirements, determine the effectiveness and adequacy of processes, and identify opportunities for improvement. It provides feedback into the Integrated Assessment Program and Issues Management Program.

Internal audits are used to periodically examine Company operations, in accordance with an approved risk assessment, to ensure that they are systematically controlled, operating effectively, and meeting Corporate/Company objectives.

QAPP-01, Quality Assurance Program Plan, identifies requirements and responsibilities for establishing and performing Management and Independent Assessments.

The following documents implement the Assessment Program:

- MP-M&IA-17.1, Management Assessment, defines the process for performing Management Assessments and management reviews of activities, operations, and facilities. Management Assessments and Reviews are performed to support the Company goals for operational excellence and ISM and to promote continuous improvement within each manager's organization.

- MP-M&IA-17.2, Independent Assessments, provides instructions for performing Independent Assessments to verify that performance criteria have been met and to determine the adequacy and effectiveness of programs and management systems.

- MP-COPS-9.27, Management Self Assessment for Readiness, provides direction to confirm that an activity is ready to resume or commence unrestricted operations for a defined scope of work.

- MP-M&IA-17.3, Quality Assurance Surveillance, defines the process for conducting and documenting QA Surveillances.

The electronic database provides the means to report deficiencies to the responsible management, identify the causes determined by analysis, identify and track corrective actions, and document implementation and closure. It also captures annual updates to safety performance objectives, measures, and commitments.

7.10.3 *Issues Management*

An Issues Management Program ensures that issues with a reasonable potential to cause adverse operational, environmental, safety and health, or QA consequences are documented and resolved in an effective and timely manner. Items, services, and processes that do not meet established requirements are controlled and corrected using a graded approach based on the significance of the issue and the importance of the work affected.

This program is designed to provide an integrated process that enables management to understand and prioritize the correction of issues based on risk significance. These issues may be facility specific, site-wide, or programmatic and may be identified by external agencies, Independent Assessments, Management Assessments, inspections, surveillances, and employees during the conduct of work. Issues may be identified during any phase of a project, sub-project, or facility life cycle. The program also provides for ensuring that adequate corrective actions are implemented to prevent recurrence of undesirable events or conditions through appropriate causal analysis, corrective action, verification and follow-up (Figure 29).

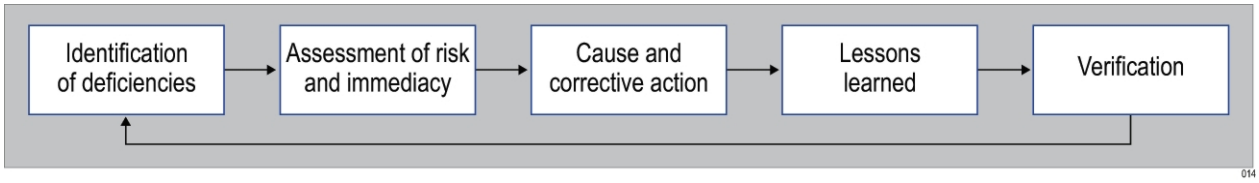


Figure 29. Resolution of Deficiencies.
We consistently apply a well-defined deficiency resolution process that ensures all issues are addressed quickly and cost effectively.

The use of an issues management database is established in the AMWTP QAPP, implementing management procedures, and work instructions. Program and performance deficiencies, regardless of their source, are captured to ensure that issues are documented, evaluated, tracked, and resolved. Structured elements of the program as specified in implementing procedures and documented in the issues management database include:

- determination of risk and establishment of the significance and prioritization of deficiencies;
- evaluation of the scope and extent of condition;
- evaluation to determine event reportability;
- identification of causes for conditions using a graded approach based on risk;
- identification, documentation, review, and approval of remedial, corrective, and preventive actions based on analyses to correct the conditions and prevent recurrence;
- identification and notification of the organizational management responsible for implementing corrective actions;
- establishment of corrective action completion milestones with consideration of significance and risk;
- tracking of progress and notification mechanisms so that responsible individuals and managers can ensure timely completion of actions and resolution of issues;
- documented verification of corrective action completion;
- validation through follow-up surveillance, assessment, and management reviews to determine that corrective actions are effectively implemented and have achieved the intended purpose (Figure 30);
- measures to ensure that individuals and organizations are accountable for the performance of their assigned responsibilities.

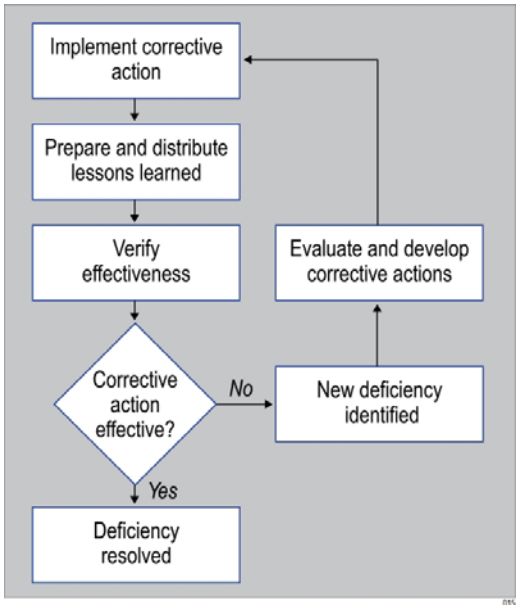


Figure 30. Corrective Action Effectiveness.
We evaluate the effectiveness of corrective actions and implement further changes as required to ensure safe, compliant operations.

Several management procedures guide implementation of the Issues Management Program:

- MP-COPS-9.6, Occurrence Reporting, provides a system for identifying, categorizing, and investigating abnormal events and disseminating written reports about the events to the appropriate management levels and to DOE. It also provides a consistent process for determining causal factors, identifying appropriate actions, analyzing events to disclose adverse trends, and communicating this information to the appropriate management levels.
- MP-Q&SI-5.4, Identification of Nonconforming Conditions, establishes the process for the identification, documentation, evaluation, control, and disposition of items (e.g., hardware, material, or data) that do not conform to specified requirements in order to prevent their inadvertent installation or use.
- MP-Q&SI-5.2, Price Anderson Amendment Act Reporting, establishes the process for identifying, evaluating, reporting, and correcting potential noncompliances with DOE Price Anderson Amendments Act (PAAA) regulations and associated corrective actions. It is consistent with the DOE operational procedure titled Identifying, Reporting, and Tracking Nuclear Safety Noncompliances under the Price-Anderson Amendments Act of 1988.
- MP-Q&SI-5.3, Corrective Action, identifies conditions adverse to quality and events requiring Occurrence Reporting and Processing System (ORPS) reporting. These items are documented in the Issues Management database in accordance with the AMWTP Corrective Action Program requirements for evaluation and corrective actions. Additionally, the Corrective Action Review Board (CARB) Senior Management Committee is charted by MP-Q&SI-5.10 and is responsible for evaluating the effectiveness of corrective actions implemented to resolve significant issues and for overseeing the corrective action process.

7.10.4 *Lessons Learned*

As part of AMWTP's Operating Experience program, internal Lessons Learned is used to communicate and document AMWTP and DOE Complex lessons learned. This program facilitates the dissemination and use of knowledge derived from experience to promote the adoption of good work practices and prevent the recurrence of adverse events.

AMWTP Lessons Learned are derived from employee feedback, the ORPS, Fact-Finding Reports, Corrective Actions, and other relevant information sources. They are formatted and processed in accordance with the AMWTP Lessons Learned procedure and DOE-STD-7501-99, DOE Corporate Lessons Learned Program. AMWTP Lessons Learned and those generated by the DOE Complex are disseminated electronically. Personnel are routinely encouraged to initiate Lessons Learned, to contact the Lessons Learned Coordinator for information to share with their organizations, and to begin staff meetings with a Lessons Learned Safety Share.

The Lessons Learned Program is formalized in MP-ISIH-2.43 Lessons Learned.

7.10.5 *Performance Measurement, Analysis, and Reporting*

As described in RPT-Q&SI-02, AMWTP Trend Analysis, and MP-COPS-9.6, managers review trend data to identify patterns of recurring problems or events and determine where to apply resources to ensure compliance with regulatory and contractual requirements. These reviews include evaluations of the effectiveness of identified corrective actions, areas of weakness requiring action to prevent adverse conditions, and identification of lessons learned from these reviews. Guidelines are provided on the effective use of information from trends in Corrective Action databases. Continuous improvement activities include process mapping, clarification of customer requirements and expectations, and establishment and monitoring of metrics to identify areas where improvements are needed. Operations and maintenance performance and trends are recorded, analyzed, and reported. This information is continually evaluated by AMWTP Management to identify areas where improvements are needed.

Comprehensive assessments and surveillances are a key part of contractor assurance and a significant contribution to an effective continuous improvement process. Assessments and surveillances are conducted to evaluate AMWTP work performance, including the work of subcontractors. AMWTP Management personnel and QA personnel plan, schedule, and conduct performance- and compliance-based Management Assessments, Independent Assessments, and QA Surveillances of AMWTP Organizations to confirm efficient and compliant implementation of AMWTP Programs.

In addition, the BBWI Corporate Quality Manager conducts Independent Management Assessments of the QA Program, and AMWTP Management personnel conduct Management Assessments to identify and correct problems that hinder their organization from achieving its objectives, as well as to improve processes, systems, and products. Management Assessments are conducted in accordance with MP-M&IA-17.1. Problems or the potential for adverse conditions identified from these assessment and surveillance activities are reported in the Issues Management database for evaluation and management of the issues.

7.10.6 *Operational Oversight*

BBWI implemented an Operational Oversight Program to promote management presence in the workplace as a fundamental demonstration of the company's values of safety, integrity, teamwork, productivity, and results. The program enhances management understanding of workplace issues, increases management visibility and access to the workforce, provides on-the-spot coaching and mentoring, and promotes the implementation of the ISMS. The program encompasses three levels of oversight: 1) Senior Supervisory Watch (SSW) for general oversight; 2) Line Supervisory Watch (LSW)

for focused oversight; and 3) Management Workplace Visits. The Operational Oversight Program is formalized in CTR-001, Charter for Operational Oversight.

Management workplace visits are conducted either through individual manager workplace visits and observation of evolutions or through weekly management-led workplace visits by work observation teams conducted in accordance with CTR-008, Plant Operations Walkdown for Excellence and Reliability. Work observation teams generally consist of a Manager, an SME, and a worker.

7.10.7 *Facility Modification Proposal*

The FMP process is a key component of the feedback loop and provides a formalized mechanism for continuous improvement while maintaining proper operations authorization. This is implemented in INST-CD&M-11.1.2.

7.10.8 *Fact Findings*

Fact Findings are an effective management tool to prevent recurrence of an event or to promote operational excellence. The Fact-Finding process may be used for abnormal events, near misses, at the satisfactory conclusion of a new or unusual operation, or when otherwise determined necessary.

- INST-COPS-9.6.1, Fact Finding Procedure. This procedure provides a consistent method of performing fact findings, event reconstruction, and event evaluation.
- MP-Q&SI-5.1, Investigation and Root Cause Analysis. The process described in this procedure may be used to identify causal factors and corrective actions.

8.0 ISMS Communications

All levels of AMWTP Management are aware that aggressive mission and production goals must complement, and never supersede, BBWI's commitment to safety and compliance. To ensure a balanced approach, the importance of our safety commitment is consistently communicated through several means.

The most desirable form of communication for BBWI employees and management is face-to-face dialogue. This takes place daily at shift turnover and POD Meetings, weekly at staff and project POW Meetings, and periodically at All-Hands Meetings. To emphasize the importance of safety, all meetings typically start with a Safety Share, where one of the meeting participants describes an incident involving an unsafe situation—either on or off the job—and discusses precautions and mitigating actions. The intent is to Share Safety Lessons with co-workers to create awareness and prevent similar occurrences.

The Safety Toolbox is a publication focused on safe work activities. The Safety Toolbox is best described as a written safety share. An unsafe situation or incident and suggested mitigating actions are described in the Safety Toolbox, which is typically posted in break rooms and other areas where employees have a moment to read the one-page document.

BBWI employs various types of electronic communications to provide a wide range of project-specific and community-related information to employees. AMWTP Project Notes is a daily electronic bulletin for general project updates and safety information. Project Notes has proven to be an efficient vehicle for rapid notification of safety issues, incidents, and Lessons Learned. Distribution of Project Notes is selective, depending on the message, and can be sent to managers and supervisors only or to all employees. For special announcements such as important safety-related activities or findings, a Project Notes Bulletin can be sent. This medium is designed as an email, but it can easily be printed and distributed to employees who may not have full-time access to a computer.

Various other forums are also used for conveying safety information. Electronic monitors are located throughout the site, primarily in break rooms where employees have time to watch scrolling messages during lunch. The bi-monthly AMWTP Employee News contains a safety column. Other venues available to employees to raise safety-related issues include a Question and Answer Forum on the Project's Intranet homepage and process improvement/safety issue suggestion boxes. When an unsafe condition is discovered and needs to be communicated immediately, BBWI relies on a FLASH or Immediate Notification email system. Within moments after the detection of an unsafe situation such as an improper operating condition, faulty equipment, or an inspection finding, a notification can be sent to all managers. When applicable, this message also contains suggestions or procedures for mitigating the situation. When it is determined that the information is pertinent to the INL as a whole, the FLASH system is used to disseminate the information more widely.

Finally, in post-safety situations the development and communication of Lessons Learned information are encouraged as a part of each employee's job. Lessons Learned information is received, reviewed, and, if applicable, placed on the Intranet (Lessons Learned) database. Searches of existing Lessons Learned information and submittal of new information can both be performed via this database. Lessons learned are routinely communicated to employees and management through various additional methods. For example, emails targeted to specific types of jobs are sent with links to the original reports, and information is frequently disseminated that provides links to Lessons Learned compiled from around the DOE Complex and industries.

9.0 Maintaining an Approved ISMS

The provisions of 48 CFR 970.5223-1 require DOE and contractor actions to continuously maintain the integrity of the ISMS and to generate revisions as scheduled by the Contracting Officer. BBWI and DOE-ID are responsible for ensuring that the approved ISMS Description, PD-ISM-01, is controlled by an effective feedback and improvement process so that it remains current.

The intent of keeping ISMS current is to ensure that work continues to be conducted efficiently and in a manner that protects the health and safety of the workers, the public, and the environment. To meet this intent, compliance with current requirements and maintenance of the Safety Authorization Basis and Worker Protection Programs must remain up to date and effective. The Contractor Assurance Program feedback and continuous improvement processes are used to ensure that these aspects of the system receive structured review and analysis providing ongoing system maintenance and process improvement.

9.1 ISMS Maintenance

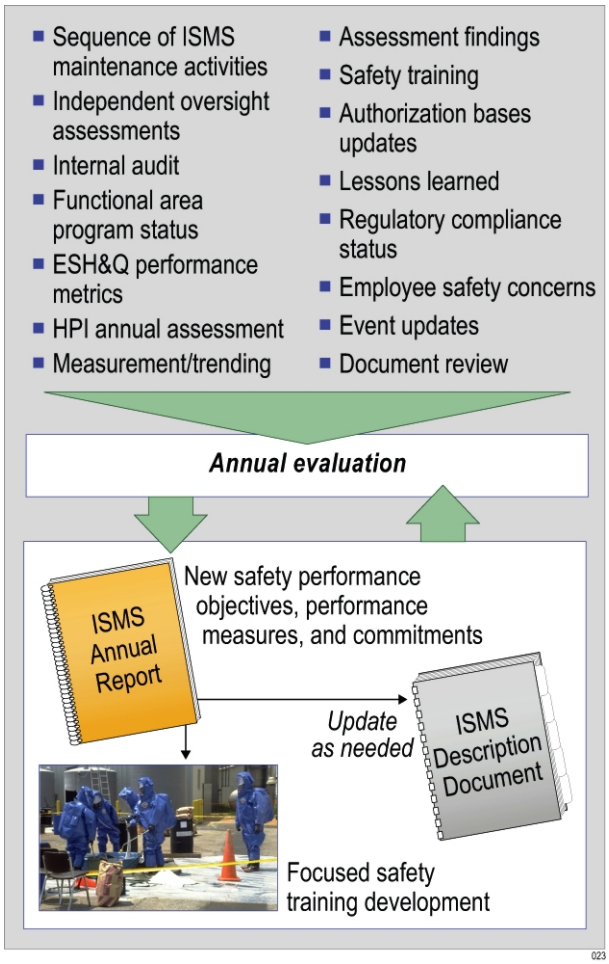


Figure 31. ISMS Maintenance Activities.
We implement both periodic and continuous processes of evaluation and revision to ensure that the ISMS is comprehensive, current, compliant and effective.

Overall responsibility for maintaining the ISMS resides with the BBWI President and General Manager. BBWI applies key processes inherent in the ISMS infrastructure to maintain and improve the effectiveness of ISM throughout the year. Requirements management, CCR, and authorization bases upgrades are processes that maintain the ISMS and are carried out continuously.

The Corporate Operating Experience/Lessons Learned process offers an additional mechanism to provide feedback for improving the system. Assessments, trending, and reporting of safety performance objectives, performance measures, and commitments are the tools for measuring system effectiveness.

Using assessment results and other data from the processes identified above, an annual evaluation is conducted to determine the status of implementation, integration, and effectiveness of the ISMS. Annual evaluation activities include assessments of the Company's functional support programs, described in Sections 6, 7 and 8 of this document; key ISMS processes and associated implementing documents; ESS& H and QA performance; and potential system impacts (Figure 31).

The ISMS Description Document will be updated as needed based on the results of the evaluation process. The results of the evaluation process are documented and used to improve the overall ISMS. The evaluation report summarizes the results, including:

- actions taken to evaluate system effectiveness,
- status of functional area programs,
- status of key ISMS processes and associated implementing documents,
- ESS&H QA performance since the last evaluation,
- progress in achieving safety performance objectives,
- success in completing safety performance commitments,
- resolution of issues from previous ISMS evaluations,
- assessment findings,
- any events that have occurred,
- Lessons Learned,
- status of regulatory compliance,
- any employee safety concerns,
- impacts from any significant changes in organization, budget, processes, activities, etc.

The SEC will review the results of the annual evaluation and assign responsibilities for taking actions to address all the identified issues, areas needing improvement, training needs, and performance commitments.

9.2 Safety Performance Objectives, Measures, and Commitments

The SPOMC is revised and submitted to DOE for review and approval annually as part of the annual ISMS evaluation requirement. The indicators are aligned around the AMWTP mission and goals, and developed from results of the annual ISM maintenance and Contractor Assurance assessment processes, to provide meaningful measurements of efficient, compliant, and safe production operations. All indicators utilize worker involvement and are reflected by leading metrics using KEYS and the ESIT.

The indicators reported are a direct reflection of the key ISM element of performing work within the controls. Industrial, environmental, and radiological safety events are tracked and analyzed on a predetermined reporting schedule to help identify trends in support of continuous improvement.

- The AMWTP SPOMC objectives and commitments are set annually with DOE-ID.

Appendix A
AMWTP Primary Project Management Implementing Documents and Procedures

Guiding Principles/Core Functions	Implementing Documents
Guiding Principle #1 Line Management Responsibility for Safety	CTR-004, AMWTP Charter for the Senior Executive Council (SEC) CTR-010, Charter for Operations Review Board GDE-10, AMWTP Employee Handbook LST-ADMN-01, Functional and Technical Areas, Managers, and Subject Matter Expert (SME) List RPT-PEP-01, AMWTP Project Execution Plan
Guiding Principle #2 Clear Roles and Responsibilities	CTR-004, AMWTP Charter for the Senior Executive Council (SEC) GDE-10, AMWTP Employee Handbook MP-ADMN-1.6, AMWTP Recruitment, Selection, and Hiring of Personnel MP-ADMN-1.19, AMWTP Organization Charts MP-COPS-9.2, Operations Organization Administration MP-DOCS-18.1, Developing Written Work Instructions MP-DOCS-18.3, Developing Management Procedures QAPP-01, Advanced Mixed Waste Treatment Project Quality Assurance Program Plan RPT-PEP-01, AMWTP Project Execution Plan
Guiding Principle #3 Competence Commensurate with Responsibility	PD-RTQP-01, Training Program Description LST-RTQP-01-IM, Training Requirements Matrix MP-RTQP-14.20, Training Implementation Matrix
Core Function #1 Define the Scope of Work Guiding Principle #4 Balanced Priorities	MP-RS&C-6.3, ALARA Program RPT-PEP-01, AMWTP Project Execution Plan CTR-004, AMWTP Charter for the Senior Executive Council (SEC) CTR-010, Charter for Operations Review Board MP-ADMN-1.26, Earned Value Management System (EVMS) Procedure MP-ADMN-1.27, Baseline Change Control MP-ADMN-1.28, Baseline Trend Program MP-TRUW-8.1, Certification Plan for INL Transuranic Waste MP-CD&M-11.1, Change Control INST-CD&M-11.1.2, Facility Modification Proposal Preparation MP-CD&M-11.2, Software Quality Assurance MP-CD&M-11.8, Equipment and Process Tests and Investigations MP-CD&M-11.4, Project Management MP-CD&M-11.3, Design Control INST-CD&M-11.4.4, Project Prioritization PD-COPS-9.18, Work Control INST-COPS-9.18.2, Permit to Work MP-PCMT-15.1, Acquisition of Material and Services MP-CMNT-10.1, Maintenance Management INST-CMNT-10.1.1, Maintenance Analysis Program MP-CMNT-10.19, Computerized Maintenance Management System
Guiding Principle #5 Identification of Safety Standards and Requirements	CTR-004, AMWTP Charter for the Senior Executive Council (SEC) LST-DOCS-01-IM, AMWTP List B Requirements Implementation Matrix MP-ADMN-1.18, Requirements Management PD-EC&P-01, Environmental Management System Program Description RPT-DSA-01-IM, AMWTP Safety Basis Implementation Matrix for AMWTP-RPT-DSA-02 Revision 4 and AMWTP-RPT-TSR-03 Revision 6 RPT-DSA-02, AMWTP Documented Safety Analysis

Guiding Principles/Core Functions	Implementing Documents
Core Function #2 Analyzing the Hazards Core Function #3 Develop and Implement Hazard Controls Guiding Principle #6 Hazard Controls Tailored to Work Being Performed	CTR-002, Charter for the Conduct of Operations Committee CTR-006, Electrical Safety Committee Charter CTR-010, Charter for Operations Review Board INST-CD&M-11.1.2, Facility Modification Proposal Preparation INST-CD&M-11.1.3, Approved Equivalent Parts INST-COPS-9.18.1, Approved Method of Work INST-COPS-9.18.2, Permit to Work INST-COPS-9.18.3, Lockout/Tagout INST-COPS-9.18.4, Hazard Assessment MP-CD&M-11.1, Change Control MP-CD&M-11.3, Design Control MP-CD&M-11.8, Equipment and Process Tests and Investigations MP-DOCS-18.4, Document Control MP-EP&C-12.1, AMWTP Emergency Plan/RCRA Contingency Plan MP-ISIH-2.49, Fire Protection Program MP-PCMT-15.1, Acquisition of Materials and Services MP-NSPC-3.4, Safety Basis Maintenance PD-COPS-9.18, Work Control PD-EC&P-01, Environmental Management System Program Description PD-ESH-02, Keeping Everyone and Yourself Safe (KEYS) Program PD-ESH-03, Human Performance Improvement Program PD-ISIH-01, Industrial Safety/Industrial Hygiene Program Description PD-ISIH-06, Worker Safety and Health Program PD-NFCS-01, Nuclear and Criticality Safety Program Description PD-RS&C-01, Radiation Protection Program PLN-SCTY-003, Safeguards and Security Management Plan RPT-DSA-02, AMWTP Documented Safety Analysis RPT-TSR-03, Technical Safety Analysis
Guiding Principle #7 Operations Authorization Core Function #4 Perform Work Within Controls	MP-COPS-9.16, Conduct of Operations Startup and Restart of Nuclear Facilities LST-COPS-01-IM, Conduct of Operations Implementation Matrix MP-CD&M-11.1, Change Control INST-CD&M-11.1.2, Facility Modification Proposal Preparation MP-CD&M-11.8, Equipment and Process Tests and Investigations MP-NSPC-3.2, Unreviewed Safety Question Process PD-COPS-9.18, Work Control MP-RS&C-6.3, ALARA Program PD-ESH-03, Human Performance Improvement Program CTR-010, Charter for Operations Review Board CTR-004, AMWTP Charter for the Senior Executive Council (SEC) CTR-002, Charter for the Conduct of Operations Committee
Guiding Principle #8 Employee Involvement	MP-COPS-9.29, Workers Rights and Responsibilities GDE-10, AMWTP Employee Handbook CTR-005, AMWTP Employee Safety and Improvement Team Charter CTR-006, Electrical Safety Committee Charter CTR-002, Charter for the Conduct of Operations Committee PD-ESH-02, Keeping Everyone and Yourself Safe (KEYS) Program MP-COPS-9.31, Step Back and Stop Work Authority MP-RS&C-6.3, ALARA Program PD-RS&C-01, Radiation Protection Program PD-ESH-03, Human Performance Improvement Program POL-003, BBWI Injury-Free Workplace Policy

Guiding Principles/Core Functions	Implementing Documents
Core Function #5 Feedback and Continuous Improvement	MP-RS&C-6.1, Radiological Assessment Program PD-Q&SI-01, Contractor Assurance Program Description CTR-004, AMWTP Charter for the Senior Executive Council (SEC) CTR-005, AMWTP Employee Safety and Improvement Team Charter PD-COPS-9.18, Work Control Program Description PD-ESH-02, Keeping Everyone and Yourself Safe (KEYS) Program MP-ADMN-1.8, AMWTP Employee Concerns Program INST-COPS-9.18.4, Hazard Assessment MP-CD&M-11.1, Change Control INST-CD&M-11.1.2, Facility Modification Proposal Preparation MP-CD&M-11.8, Equipment and Process Tests and Investigations MP-M&IA-17.1, Management Assessment MP-M&IA-17.2, Independent Assessment MP-COPS-9.27, Management Self Assessment for Readiness QAPP-01, Quality Assurance Program Plan MP-M&IA-17.3 Quality Assurance Surveillance MP-COPS-9.6, Occurrence Reporting MP-Q&SI-5.4, Identification of Nonconforming Conditions MP-Q&SI-5.2, Price Anderson Amendment Act Reporting MP-Q&SI-5.3, Corrective Action MP-Q&SI-5.10, Corrective Action Review Board Charter MP-ISIH-2.43, Operating Experience/Lessons Learned CTR-001, Charter for Operational Oversight CTR-002, Charter for the Conduct of Operations Committee INST-COPS-9.6.1, Fact Finding Procedures Being Superseded by MP-PCMT-15.1 MP-Q&SI-5.1, Investigation and Root Cause Analysis