MID-AMERICA CONVERSION SERVICES
ATKINS, WESTINGHOUSE & FLUOR

DUF6 Depleted Uranium Hexafluoride Conversion Project

WORKER SAFETY AND HEALTH PROGRAM

Prepared by: Environment, Safety & Health

Approved by: Refer to DUF6 Form 4320

TO BE COMPLETED BY RECORDS MANAGEMENT AND DOCUMENT CONTROL		
PERIODIC REVIEW		
Performed By	Date	Next Review Date

APPROVAL PAGE

Listed below are personnel responsible for the preparation, review, and approval of this plan. Signatures for each have been provided on DUF_6 Form 4320, Document Review & Approval Form.

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DISCLAIMER

REVISION LOG			
Revision	**Effective Date**	**Description of Change**	**Pages Affected**
0	05/22/2017	Initial release by MCS to replace DUF6-BWCS-PLN-074. Updated to reflect MCS contract with DOE and MCS ES&H Policy.	All
1	04/30/2018	Updated DUF6 procedures, policies, and plan numbers and titles to the correct nomenclature, minor editorial, grammatical, and formatting corrections.	All
2	10/09/2019	Incorporate changes due to the implementation of the Technical Amendment to 10 CFR 851 specifically dealing with the use of the 2016 version of the ACGIH TLV booklet, the 2017 version of NFPA 70, and 2015 version of NFPA 70E. Updated the titles/numbers of revised procedures/plans/programs as applicable. Also incorporated changes for the Process Improvement database for CR 19-090 and minor procedure number/title updates. .	All
4	4/21/2021	Updated the current operational based WSHP to also address construction activities. Updated procedure titles and numbering changes as well as minor editorial/typographical corrections and spacing issues in the Attachment B. Responded to DOE's comments from letter PPPO-01-10006431-20.	All
5	10/19/2021	Updated procedures, policies, DOE Orders, and program titles and identifying numbers. Minor editorial and grammatical corrections.	All
6	11/2/2022	Corrected minor editorial/typographical errors, removed references to DUF6-PLN-044 & 045.	All

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ACRONYMS

ALARA	As Low As Reasonably Achievable
ASME	American Society of Mechanical Engineers
CAIRS	Computerized Accident and Incident Reporting System
CFR	Code of Federal Regulations
dBA	Decibels on the A-weight scale
DEAR	Department of Energy Acquisition Regulation
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
DUF4	Depleted Uranium Tetrafluoride
DUF6	Depleted Uranium Hexafluoride
EPHA	Emergency Planning Hazards Analysis
ES&H	Environment, Safety and Health
FP	Fire Protection
GET	General Employee Training
HF	Hydrogen fluoride
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
KOH	Potassium hydroxide
LOTO	Lockout/Tagout
MCS	Mid-America Conversion Services, LLC
MT	Metric Tons
NFPA	National Fire Protection Association
NTS	Nonconformance Tracking System
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
QA	Quality Assurance
PAAA	Price-Anderson Amendments Act
POC	Point of Contract
PPPO	Portsmouth/Paducah Project Office
PORTS	Portsmouth Gaseous Diffusion Plant
PPE	Personal Protective Equipment
PQAP	Project Quality Assurance Plan
Project	DUF6 Conversion Project
SHP	Safety and Health Procedure
SMP	Safety Management Program
STD	Standard
TSR	Technical Safety Requirements
U3O8	Uranium Oxide
UF6	Uranium Hexafluoride
USQ	Unreviewed Safety Question
USW	United Steel Worker
WSHP	Worker Safety and Health Program
WSS	Worker Smart Standards

EXECUTIVE SUMMARY

Mid-America Conversion Services, LLC (MCS) has been selected by the Department of Energy (DOE) for the disposition of depleted uranium hexafluoride (DUF6) stored at two operational sites: Paducah, Kentucky, and Portsmouth, Ohio. DUF6 is a by-product of the uranium enrichment process, which is employed to make uranium suitable for use as fuel for nuclear reactors or in other national security applications.

The primary objectives of the DUF6 Conversion Project (Project) are to operate conversion facilities on DOE property at the Portsmouth and Paducah sites and to assume responsibility for operation of the cylinder storage yards at these two locations. Additionally, the DOE has chosen the DUF6 Project to expand its capabilities in Portsmouth, Ohio to also use a portion of the DUF6 inventory to produce Depleted Uranium Tetrafluoride (DUF4), in a safe and efficient manner.

These conversion facilities will convert the DOE inventory of DUF6 now located at the Paducah and Portsmouth Plants to a stable chemical form acceptable for beneficial use/reuse and/or disposal. In addition, MCS will provide surveillance and maintenance of the DOE inventory of cylinders containing DUF6, low-enriched uranium as uranium hexafluoride, natural assay uranium hexafluoride, and empty and heel cylinders in a safe and environmentally acceptable manner.

Attachments to this document include the implementing document matrix and the "Crosswalk of 10 Code of Federal Regulations 851 Requirements to the DUF6 Project's Implementing Documents."

1 PURPOSE

This Worker Safety and Health Program (WSHP) establishes the framework for Mid-America Conversion Services, LLC's (MCS') Title 10 Code of Federal Regulations Part 851 (10 CFR 851) including the 10 CFR 851 Technical Amendment, Worker Safety and Health Program-compliant worker safety and health program (WSHP). MCS' WSHP reduces or prevents occupational injuries, illnesses and accidental losses by providing a workplace that is free from recognized hazards that cause or have the potential to cause death or serious physical harm to employees.

2 SCOPE

This program has been prepared in accordance with the requirements identified in Contract No. DE-EM0004559 and 10 CFR 851. These requirements are integrated into plans, procedures, policies and other controlling documents, as applicable.

3 INTRODUCTION

This document describes the MCS WSHP. This WSHP integrates safety and health requirements into all phases of activities, while conducting operations in an environmentally sound manner, providing protection to workers, subcontractors, visitors, vendors, and the surrounding community, while fulfilling its mission to the DOE in performance of the DUF6 Conversion Project (Project). The WSHP describes the safety and health management systems employed to ensure that applicable standards and criteria are identified, communicated, and implemented. Assessments of safety and health programs are conducted periodically and identified deficiencies are corrected to ensure worker safety and health.

The objective of this document is to describe a WSHP that will assure a workplace free from recognized hazards that cause, or are likely to cause death, injury, or damage to the environment at the Project sites.

MCS is committed to providing a safe and healthy workplace for employees and to protecting the public and the environment.

This WSHP will be updated whenever a significant change or addition to the program is made. At a minimum, the Environment, Safety, Health and Quality Manager will ensure an annual review is conducted ensuring this document continues to reflect the needs of the Project; and continues to address identified controls, changes, conditions, or workplace safety and health standards directed by DOE, consistent with the requirements of 10 CFR 851 and 48 CFR 970.5204–2, laws, regulations, DOE directives identified in the Contract and associated Contract clauses. Documentation of this review will be either in the form of a letter to the DOE Portsmouth/Paducah Project Office (PPPO) stating that the document was reviewed and no changes were required, or a revised version of the WSHP will be submitted to the DOE PPPO for review and approval in accordance with 10 CFR 851 including the Technical Amendment.

4 PROJECT SCOPE

The mission of the Project is to convert the DOE inventory of DUF6 to a more stable chemical form suitable for beneficial use or disposal.

The Project will convert DOE's existing DUF6 inventory currently located at the Paducah and Portsmouth Gaseous Diffusion Plants to a more stable form (uranium oxide, predominantly U3O8) as well as limited production of DUF4.

The scope of the project includes the operations and maintenance (O&M) of the conversion facilities and surveillance and maintenance of cylinder yard operations. Cylinder yard operations includes management of DOE's inventory of DUF6, low-enriched uranium (LEU) hexafluoride (UF6), natural assay UF6, heel and empty cylinders, and the maintenance of inventory records.

5 SAFETY AND HEALTH METHODOLOGY

This WSHP addresses the safety and health requirements identified in Contract No. DE-EM0004559 and 10 CFR 851, Worker Safety and Health Program. To satisfy these requirements the WSHP utilizes components identified in 10 CFR 830, Nuclear Safety Management, Subpart A - Quality Assurance Requirements and DEAR 952.223-71, Integration of Environment, Safety, and Health into Work Planning and Execution.

Key to the implementation of the WSHP is the understanding that this is an integrated document that includes the cylinder storage yards, conversion facilities, and O&M activities. The WSHP for O&M activities is implemented primarily through the documents identified in DUF6-PLN-003, Project Quality Assurance Plan; DUF6-PLN-011, Cylinder Surveillance and Maintenance Plan; DUF6-PLN-014, Conversion Facilities Operations and Maintenance Plan; DUF6-U-SMP-005, Safety Management Program Description for the DUF6 Conversion Project; and DUF6-PLN-040, Integrated Safety Management System Plan.

This WSHP incorporates a graded approach based upon the severity of the hazards associated with the Project scope of work and risk. The WSHP includes relevant information concerning scope of work, site hazards, and appropriate Project-level plans and procedures. Where necessary, a hazard specific plan may also be required to address more specific work activities. In all cases, the elements of this program shall be flowed down to the lowest sub-tier contractor according to their subcontract language to assure consistency/applicability.

The ISMS process is a key element to the implementation of the WSHP. MCS has developed an ISMS plan in accordance with DOE Policy 450.4A Change 1, Integrated Safety Management Systems Policy; DEAR 952.223-71, Integration of Environment, Safety, and Health into Work Planning and Execution; and, DUF6-PLN-040, Integrated Safety Management System Plan. This document is further discussed in Section 6.

MCS also has a safety management program, DUF6-U-SMP-005, Safety Management Program Description for the DUF6 Conversion Project, developed in accordance with

DOE-STD-3009-94, Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analysis. This document is further discussed in Section 7.

The WSHP and associated implementing documents provide a consistent approach to ensure that applicable requirements are identified and implemented in project documents, hazards are identified and appropriately mitigated, and trained and qualified personnel are utilized to perform the specific work tasks.

If a hazard(s) cannot be eliminated or substituted, then the DUF6 Project's preferred means for minimizing risk to workers is through the use of engineering controls. If engineering controls are determined to be infeasible, then MCS will implement administrative controls, and, of least preference, personal protective equipment (PPE) as necessary. MCS may also select a hazard control approach that integrates all three methods of control in order to reduce risk to workers to an acceptable level. Work controls for work activities will be established based on the process as defined in DUF6-U-GFP-0108, Control of Work.

All persons performing work activities at the Project sites (including employees and subcontractors) are subject to the requirements of this WSHP and will be held responsible for adhering to the requirements as applicable and as specified herein. Each individual is responsible for bringing to the attention of management or their point-of-contact (POC) any unsafe or unhealthy conditions or actions that they observe while on either Project site.

This WSHP and associated implementing documents, when mandated in MCS subcontract documents, eliminates the requirement for an individual subcontractor WSHP plan, which may otherwise be required. MCS documents and safety and health procedures (SHP) deemed applicable to the scope of work to be performed by the subcontractor are contractually flowed down to the subcontractor.

5.1 ENVIRONMENT, SAFETY & HEALTH (ES&H) COMMITMENT

A core value and commitment is to provide a safe and healthy workplace for employees and to protect the public and the environment. ES&H leadership starts at the top: MCS' Board of Directors, Project Manager, and Senior Managers are all responsible for protecting the safety and health of every worker in the organization, including those employed by our subcontractors; visitors; the public; and the environment. Management's commitment to these responsibilities, and their actions, are the cornerstones for setting the culture of accountability, and the expectations for all employees, subcontractors, and their employees. This commitment is described in the Safety Culture Policy, DUF6-POL-048, as well as the Environmental, Safety, and Health Corporate Policy, DUF6-POL-060.

Safe performance of work is a part of every employee performance evaluation performed and is an expectation of employment. The term "safe" includes all aspects of safety including the protection of the environment. DUF6's commitment to all aspects of ES&H is described throughout this document. However, some commitments which focus specially on the protection of the environment are described in DUF6-PLN-118,

Environmental Management System Plan, and it's implementing procedures. Additionally, DUF6 has created a Sustainability Plan, DUF6-PLN-229, which describes the actions and efforts taken to minimize the environmental impact of the Project.

5.2 SAFETY INFRACTION DISCIPLINARY POLICY

MCS believes in a progressive disciplinary approach to ensure equitable and consistent discipline for unsatisfactory conduct in the workplace. The best disciplinary measure is the one that does not have to be enforced and comes from effective leadership, accountability, coaching, and fair supervision. MCS' own best interest lies in ensuring fair treatment of all employees and in making certain that disciplinary actions are prompt, uniform, and impartial. The major purpose of any disciplinary action is to correct the problem, prevent recurrence, and prepare the employee for satisfactory service in the future.

5.3 LESSONS LEARNED, FEEDBACK AND CONTINUOUS IMPROVEMENT

Lessons learned determined to be pertinent to a given scope of work will be reviewed with workers. Lessons learned will be covered in the hazards analysis process, pre-job briefings, and toolbox meetings as applicable. Workers will be encouraged to interact with shared personal experiences during these reviews. Lessons learned will be generated, utilized, and reviewed in accordance with DUF6-U-CPL-0017, Operating Experience Program.

The DUF6 Project utilizes a variety of feedback and continuous improvement methods to evaluate, on an ongoing basis, the adequacy and effectiveness of ESH&Q management processes and to assure continuous improvement.

Feedback and improvement processes may include capture of the firsthand insight of workers during and after work performance. MCS subscribes to the management position that those who do the work know the work best and are in the best position to know the hazards associated with the work, and how to do it more safely, more efficiently, and with less environmental impact. Other feedback and improvement processes include DOE oversight, regulatory oversight, external assessments, management and technical assessments and Quality Assurance (QA) and Contractor Assurance System (CAS) surveillances, lower tier assessments consisting of walkthroughs, oversight, independent assessments, and conduct of operations reviews (self-assessments and job observations), safety culture surveys,, tests and evaluations, worker involvement, safety committee meetings, trend analysis, operational experience, and lessons learned. Specific processes for these feedback and improvement mechanisms are detailed in the appropriate procedures.

Additionally, all employees are empowered to express concerns and provide feedback to managers and supervisors. This empowerment encourages new avenues for continuous improvement in the workplace. One of these is the condition reporting system (DUF6-U-QAP-0005, Issues Management) that is used to not only report safety problems, but also reports lessons learned, and the other avenue is the process improvement database for employee suggestions and conditions or situations that need management

review for program improvements. As appropriate, ESH&Q performance matrices are developed and resulting data reported monthly to DOE. Safety performance measures will be tracked and trended for the entire Project in order to assess performance and allow early intervention to reverse emerging adverse trends. To support continuous improvement, a periodic review of internal and external sources including assessments, nonconformance reports, lessons learned (both complex-wide and internally), Price-Anderson Amendments Act (PAAA), and occurrence reports will be performed, and any applicable information will be provided to appropriate company personnel.

5.4 ASSESSMENT AND SURVEILLANCE

Periodic assessments and surveillances are performed in accordance with DUF6-PLN-130, DUF6 Oversight Plan; DUF6-U-QAP-0012, Independent Assessments; DUF6-U-QAP-0013, Management Assessments; and DUF6-U-SHP-0103, Safety Walkthroughs, to ensure that a safe work environment is provided in compliance with applicable plans and procedures.

5.5 MULTI-CONTRACTOR WORKSITES

Multiple contractors at a covered workplace are required by 10 CFR 851 to coordinate with each other to establish clear roles, responsibilities, and procedures to assure the safety and health of workers at multi-contractor workplaces. MCS coordinates with other DOE prime contractors at both Project work sites to ensure that clear roles, responsibilities, and procedures are established.

MCS may interface with other prime contractors performing work activities such as infrastructure maintenance, remediation activities, or other services. This work is provided by the other prime contractor in accordance with their contract with DOE. While performing these tasks, each prime contractor will utilize their own procedures and work control processes if the activity will be performed within their facility and, as allowed by the MCS work control process and as approved by the Facility Manager, if the activity will be performed on DUF6 Project equipment for which the other prime contractor is responsible as part of their contract with the DOE.

Work in the DUF6 Project controlled facilities will be coordinated with MCS and the performing prime DOE contractor to determine which work control process will be used. Each prime DOE contractor remains accountable for employees and actions performed by those employees, including occupational injuries or illnesses of that contractor's employees.

MCS may also choose to subcontract to other contractors (including other Site DOE Prime Contractors as well as construction/specialty subcontractors) to perform a specified scope of work. In each case, an agreement will be established. Subcontracted work in MCS-controlled facilities will generally be subject to the DUF6 Project work control processes. MCS will develop work packages or procedures for the work, or review and approve the work packages or procedures used by the subcontracted DOE prime contractor.

Given the complexity of working with other contractors and subcontractors on multiple sites, if DUF6 Project workers are exposed to a hazard, it will promptly correct the hazard if it has the authority to do so, or remove its workers from the exposure in a timely manner to adequately protect our employees, and will promptly notify the contractor with the responsibility to correct the hazard.

MCS will contact senior management of any affected contractor when an event occurs that may affect their operations.

MCS will ensure that all of its subcontractors and unescorted visitors are trained to and understand the limitations of the work control process as defined in procedure DUF6-U-GFP-0108, Control of Work. However, certain support companies who may perform work in areas controlled by the DUF6 Project such as utility providers, vendors, and suppliers as defined in DOE Guide 440.1-1B, Change 2, Worker Safety and Health Program for DOE (Including the National Nuclear Security Administration) Federal and Contractor Employees Section 2.3 Contractors, are exempt from the requirements of 10 CFR 851 and the MCS WSHP.

These utility providers, suppliers, and vendors will adhere to Occupational Safety and Health Administration regulations as defined in 29 CFR 1910 and/or 1926, as applicable. MCS will coordinate the 10 CFR 851 exempt company's entry onto the DUF6 Project's controlled areas, provide them a point-of-contact/escort while in DUF6 Project controlled areas, as well as Site General Employee Training (GET). However, the exempt companies will not be required to submit their own WSHP nor adhere to MCS'.

MCS will identify which companies fall under the 10 CFR 851 exemptions and remain vigilant to ensure that their work scope does not change. If it does change, and they become subject to the requirements of 10 CFR 851, then the company will be notified and they will be controlled as identified elsewhere in this WSHP.

5.6 WORKER SAFETY AND HEALTH PROGRAM

5.6.1 Management Responsibilities

5.6.1.1 *Place of Employment Free of Recognized Hazards*

The 10 CFR 851, Worker Safety and Health Program, requires MCS and its subcontractors to provide a place of employment that is free from recognized hazards. This provision is addressed through this program and the MCS ES&H Policy (DUF6-POL-060).

5.6.1.2 *Policies, Goals, and Objectives*

MCS strives to fulfill the commitment to provide a safe and healthful workplace to its employees and subcontractors through the establishment of a project-wide ES&H Policy (DUF6-POL-060). This policy serves as the guiding principles that provide overall direction for the company concerning worker protection and the creation, measurement, and refinement of goals and objectives that contribute to the continuous improvement of worker safety and health. The MCS ES&H Policy establishes high-level commitments to worker safety and health on the Project. The ES&H commitments set forth in this WSHP are

put into practice through the establishment of plans and procedures that ensure compliance with 10 CFR 851.

5.6.1.3 *Integrated Safety Management System*

The approach to integrating ES&H and quality requirements into the processes for planning and conducting work on the Project is conveyed in DUF6-PLN-040, Integrated Safety Management System Plan. See Section 6 for additional information.

5.6.1.4 *Qualified Worker Protection Staff*

MCS seeks to attract, hire, develop, and retain (i.e., "use") qualified worker safety and health staff (e.g., a certified industrial hygienist, or safety professional) to direct and manage the program, and assist project management and line organizations in meeting worker safety and health goals and objectives. MCS will evaluate the hiring of certified professionals and management for positions in order to ensure the quality of the WSHP implementation, as applicable. Although not all staff members who support the WSHP possess professional certifications, all have been selected for their knowledge, experience, and ability to provide outstanding safety and health support to the Project.

DUF6 personnel are hired in accordance with DUF6-U-HRP-0001, Human Resources Policy Manual, and DUF6-U-TRN-0001, Training and Qualification.

Subcontractors shall designate in accordance with appropriate contract documents qualified personnel, competent personnel, or other subject matter experts to perform worker protection functions as required by the contracted work scope. Subcontractor personnel in the worker protection roles must have their resumes approved prior to being allowed to fulfill those functions.

5.6.1.5 *Accountability*

MCS's line management is responsible for safety. However, line management must be able to rely upon skilled and readily available support when implementing the WSHP. MCS holds management, staff, and subcontractors accountable for worker safety and health and each has a significant role in implementing this program. It is MCS's expectation that employees and subcontractors will use specified work controls to ensure work is planned to a level that is commensurate with the complexity of the task and that ensures safe work performance. MCS holds employees accountable for adherence to worker safety and health requirements including proper use of prescribed hazard controls. Management communicates expectations of individual roles and responsibilities through new hire orientation, review of work control documents, and observation of daily work activities. These expectations form the basis of employee goals and performance evaluations.

DUF6-U-HRP-0001, Human Resources Policy Manual, establishes the expectations for each employee and his or her supervisor to form an understanding regarding performance expectations based on the employee's roles and responsibilities. Roles define the functions that individuals play in the organization. Responsibilities describe the obligation to do the work required to ensure initiation and/or implementation and/or completion of

an activity. Accountabilities state that personnel will be held accountable for delivering specific results for fulfilling a responsibility for which they have authority to act. See Section 8 for additional information concerning roles and responsibilities as they pertain to the WSHP.

Performance goals and appraisals communicate management and staff responsibilities for safety. However, it is recognized that technical expertise in ES&H disciplines such as industrial hygiene, radiological control, and occupational safety is required to achieve excellent performance. For that reason, qualified ES&H professionals support line management in work planning and verify that work is performed safely. Other ES&H professionals provide independent overview of operations. Organizations performing potentially hazardous work have field-deployed ES&H staff assigned to operations. This staff is available to help with activity planning, hazard analysis, work package and procedure development, address questions or concerns raised by managers or staff, and to help in the performance of management self-assessments.

Similarly, worker protection performance goals and objectives for subcontractors are established and contained in contract documents. Subcontractors are held accountable for worker protection performance through contract provisions that include the option to remove subcontractors' employees or termination of the subcontract.

5.6.1.6 *Worker Involvement*

Worker involvement is a key component to a successful WSHP. Worker involvement, as applicable, occurs for each phase of the Project on an ongoing basis.

MCS implements enhanced worker involvement through our management philosophy of Responsible Empowerment. Responsible Empowerment is defined as having the authority to allocate resources and control how work is done to achieve desired results. Responsible Empowerment of all employees, including subcontractors, is the cornerstone of Project success. For Responsible Empowerment to be effective, MCS must establish individual employee accountability. Employee recognition and acceptance of the philosophy for Responsible Empowerment is facilitated through management approaches and written procedures.

DUF6-U-SHP-0211, Hazard Analysis, is an example of a program that requires worker involvement. MCS utilizes pre-job briefings as identified in DUF6-U-SHP-0211, Hazard Analysis, to provide a mechanism to involve workers in the development of the worker safety and health program goals, objectives, and performance measures, as well as the identification and control of hazards in the workplace.

MCS has established a joint United Steel Workers (USW) and Management Safety Committee, which convenes routinely to discuss and review issues relating to safety. This meeting is also open to the construction subcontractors who are on site during the meetings. The status of open safety suggestions is reviewed at the meeting.

5.6.1.7 *Labor Organizations*

MCS will provide copies of the DOE approved updated WSHP to the appropriate labor organizations. MCS will also make copies available through Documentum to all employees.

Upon request from an affected labor organization, MCS will bargain concerning implementation of the revised WSHP, consistent with the federal labor laws.

5.6.1.8 *Report Events, Hazards, and Concerns*

Workers are encouraged to report, without reprisal, job-related injuries and illnesses, incidents, hazards, and concerns. Workers are encouraged to make recommendations about appropriate ways to control hazards. As a core function of the ISMS Program, feedback and improvement processes emphasize assessments and feedback on the adequacy of controls and the continual improvement of the programs and processes that underpin effective ESH&Q management.

Workers have the right to express concerns related to worker safety and health. The commitment to promoting open communication among all staff (employees and non-employees) and to ensuring the prompt identification, reporting and resolution of concerns is embodied in DUF6-U-SHP-0101, Safety First Program. This procedure establishes the reporting mechanism for employees/subcontractors/visitors, provides a method to report concerns with anonymity, and guarantees a worker's right to report safety matters without reprisal. MCS encourages and expects employees to raise concerns. Employees are encouraged to work within their line organizations toward resolving concerns.

In addition to the mechanisms provided through the safety concerns documents, workers who believe they are being denied the right to report events, hazards, concerns, or who believe they are subject to reprisals for attempting to exercise these rights may file an employee concern using DOE O 442. 1B, Department of Energy Employee Concerns Program. Workers are notified of this right to file a concern with DOE through training and the prominent display of the DOE Worker Protection Poster.

5.6.1.9 *Regular Communications*

MCS is committed to objectively and fully communicating health and safety information to staff, subcontractor personnel, our customers, applicable stakeholders, and the public. Communications about workplace safety and health issues are an important aspect of the WSHP. Plan-of-the-day meetings, Safety First Meetings, work pauses, pre-job briefings, and monthly reports are utilized to communicate ES&H information to employees.

5.6.1.10 *Stop Work Authority*

In accordance with DUF6-U-QAP-0022, Time-Out/Stop Work, all employees, subcontractors, visitors, and vendors have suspend/stop-work authority.

All personnel have the right and responsibility to suspend/stop work if they believe that a situation presents imminent danger to themselves, a fellow worker and/or the environment. Personnel who exercise this right do so without fear of reprisal.

5.6.1.11 *Inform Worker of Rights*

Workers are informed of their safety and health rights and responsibilities through multiple means including training, safety and health information links provided on the MCS homepage, roles and responsibilities identified in performance goals and appraisals, and the posting of the DOE-designed Worker Protection Poster in the workplace where it is accessible to all workers.

5.6.2 **Worker Rights and Responsibilities**

Workers must comply with the requirements of this part, including the worker safety and health program, which are applicable to their own actions and conduct. Workers at a covered workplace have the right, without reprisal, to the following:

5.6.2.1 *Participate in Activities*

MCS is committed to continuous improvement in gaining participation and engagement of all staff. For a detailed discussion of the efforts, see section 5.6.1.6, Worker Involvement.

5.6.2.2 *Access to Information*

MCS is committed to communicating worker safety and health information objectively and effectively. All employees have access to Documentum and WSHP information is maintained by the ES&H department. Additionally, safety, quality and production (SQP) flags will be used to notify workers of events and summaries will be shared to provide timely communications. MCS performance metrics are posted on the intranet homepage.

Ensuring worker access to information relevant to the worker safety and health program is recognized as a critical management responsibility.

MCS guarantees that workers have the right of access to:

1. DOE safety and health publications.
2. The worker safety and health program.
3. The standards, controls and procedures applicable to the covered workplace.
4. The safety and health poster that informs the worker of relevant rights and responsibilities.
5. Limited information on any recordkeeping log (OSHA Form 300).
6. The DOE Form 5484.3, Individual Accident/Incident Report (equivalent to OSHA Form 301) that contains the employee's name as the injured or ill worker.

Authorized representatives may accompany DOE officials assigned to investigate the nature and extent of compliance with worker health and safety requirements. Workers have the right to request and receive results of inspections and accident investigations.

5.6.2.3 *Notified when Monitoring Indicates Overexposure*

Workers are notified of the results of all monitoring, including when monitoring results indicate a worker may have been overexposed to hazardous materials. This is specifically implemented through DUF6-U-SHP-0505, Exposure Assessments (Non-Radiological).

5.6.2.4 *Observe Monitoring*

Employees and subcontractors have the opportunity to observe monitoring or measuring of hazardous materials and have the results of their own exposure monitoring. This is specifically implemented through DUF6-U-SHP-0505, Exposure Assessments (Non-Radiological).

5.6.2.5 *Representative Accompany Inspection*

During any physical inspection conducted by the DOE Director (DOE official to whom the Secretary of Energy assigns authority to investigate the nature and extent of compliance with the requirements of 10 CFR 851. Currently, this function is assigned to the Director of the Office of Price-Anderson Enforcement in the Office of Environment, Safety and Health), an employee representative is notified of the inspection and is welcome to participate and accompany the inspection team.

5.6.2.6 *Request and Receive Results of Inspections and Investigations*

Employees can request and receive the results of inspections and investigations. Employees may contact their manager, supervisor, the ES&H organization or the QA organization to obtain such information.

5.6.2.7 *Express Concerns Related to Worker Safety & Health*

MCS is committed to resolving concerns related to worker safety and health in a timely manner. The programs available to employees are defined in detail in Section 5.6.1.8, Report Events Hazards and Concerns.

5.6.2.8 *Decline to Perform Assigned Task Based on Risk*

All workers have Stop Work Authority. The programs available to employees are defined in detail in Section 5.6.1.10, Stop Work Authority.

5.6.2.9 *Request for Investigation or Inspection*

Any worker or worker representative may request that the DOE Director, as defined in 5.6.2.5 above, initiate an investigation or inspection pertaining to worker safety issues.

5.6.3 **Compliance Order**

If the Secretary of Energy were to issue a compliance order in accordance with 10 CFR 851.4, MCS would review the order and immediately take appropriate mitigative actions.

MCS will review the order and, as allowed by statute, within 15 calendar days of the issuance of the compliance order, may request that the order be rescinded or modified. MCS understands that a request to rescind or modify does not stay the effectiveness of the compliance order unless the Secretary of Energy issues an order to that effect.

A copy of the Compliance Order will be prominently posted, once issued, at or near the location where the violation, potential violation, or inconsistency occurred until it is corrected.

6 INTEGRATED SAFETY MANAGEMENT SYSTEM

While programmatically independent, MCS' WSHP leverages many of the same processes that constitute the ISMS Program established in DUF6-PLN-040, Integrated Safety Management System Plan. MCS has established and maintains a safety and health management system founded on the principles of ISMS that promotes the company's core values and the principles set forth by the DOE. The principles and functions of the ISMS are used to achieve systematic integration of ES&H protection into management and work practices. The direct involvement of both the workers and management begins at the planning stage, continues through the completion of activities, and is critical to the successful implementation of ISMS. The ISMS is applicable and mandatory for all work performed under the MCS contract whether the work is self-performed or subcontracted.

MCS is committed to establishing a safety culture that comprises the elements advocated by the DOE in the principles and functions of the ISMS. MCS and its subcontractors will implement the ISMS core values and principles by ensuring ES&H issues that affect our workers and subcontractors, the public, or the environment, are our primary concern in work execution.

The ISMS five core functions and eight guiding principles identified in DUF6-PLN-040, Integrated Safety Management System Plan, are applicable to MCS, its member organizations, all subcontractor organizations and their sub tiers while performing work in conjunction with the Project. These five core functions and eight guiding principles as identified in DUF6-PLN-040 are:

<u>Five Core Functions</u>

- Define the Scope of Work
- Analyze the Hazards
- Develop and Implement Hazard Controls
- Perform Work within Controls
- Provide Feedback and Continuous Improvement

Eight Guiding Principles

- Line Management Responsibility for Safety
- Clear Roles and Responsibilities
- Competence Commensurate with Responsibilities
- Balanced Priorities
- Identification of Safety Standards and Requirements
- Hazard Controls Tailored to Work Being Performed
- Operations Authorization
- Worker Involvement

DUF6-PLN-040, Integrated Safety Management System Plan, identifies the ISMS process for work performed on the Project. It is also discussed further in Section 7 as it relates to the Safety Management Programs.

MCS assesses its safety culture periodically and the results are documented in a Management Assessment. Safety Culture is described in DUF6-POL-060, Safety Culture.

7 SAFETY MANAGEMENT PROGRAM

DUF6-U-SMP-005, Safety Management Program Descriptions for the DUF6 Conversion Project, provides descriptions of the Safety Management Programs (SMPs) that collectively address the 12 SMP areas addressed in DOE-STD-3009-94, Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analysis, Change Notice 3. The SMP descriptions are written at a level of detail to satisfy the requirement of DOE-STD-3009-94 for documented safety analysis (DSA) for Hazard Category 2 and 3 nuclear facilities.

The purpose of the SMP descriptions document is to present information that is common to the MCS managed facilities and support organizations. It is intended to complement the facility-specific DSAs.

DUF6-U-SMP-005, Safety Management Program Descriptions for the DUF6 Conversion Project, is incorporated by reference into the DSA for each managed facility and is included in the safety basis for that facility. If the facility relies on the programs and details described in the SMP descriptions document, the facility may reference the SMP descriptions in its safety basis documents. The SMP descriptions do not contain facility-specific structural and process descriptions, hazard analyses, accident analyses, functional classifications or technical safety requirements (TSRs). These items are specific to each facility that prepares safety basis documents and are addressed in the facility safety basis documents. In the chapter or chapters of each DSA where SMPs for the facility are to be described, any additional information regarding the specifics of SMP requirements at that facility will be provided. This additional facility-specific information could expand upon or amend the information presented for the respective SMPs in this document.

The unreviewed safety question (USQ) process, as described in DUF6-U-NSP-0002, Unreviewed Safety Question Process, is used to evaluate changes to SMP related documents cited in the SMP description document.

The SMP descriptions have been developed in accordance with the applicable requirements as defined in the MCS contract with DOE and as an integral part of the MCS ISMS. DUF6-PLN-040, Integrated Safety Management System Plan, describes the approach for managing work within the scope of the MCS contract, including the associated safety management systems and SMPs.

The ISMS description, as described in DUF6-PLN-040, Integrated Safety Management System Plan, reflects the approach for integrating safety into all aspects of work planning and execution. MCS applies key processes inherent to the ISMS to measure, maintain, and improve the effectiveness of the ISMS. Standard management processes to ensure competence commensurate with responsibilities, and safety basis upgrades are continuous, ongoing ISMS maintenance processes. The lessons learned process described in procedure DUF6-U-CPL-0017, Operating Experience Program, and DUF6-U-SHP-0101, Safety First Program, provide feedback for improving the system. Trending and reporting safety performance objectives, and performance measures and commitments are tools for measuring system effectiveness.

These processes are coupled with an ongoing assessment program described in DUF6-PLN-003, Project Quality Assurance Plan, which is applied at each level of the organization from the worker at individual activities through the facilities, including subcontractor activities at the site. Assessments are performed in accordance with procedures DUF6-U-QAP-0012, Independent Assessments; DUF6-U-QAP-0013, Management Assessments; and DUF6-U-QAP-0014, Supplier Quality Program Evaluation. SMP subject matter experts also participate in the assessment processes.

The twelve safety management program descriptions addressed in DUF6-U-SMP-005, Safety Management Program Descriptions for the DUF6 Conversion Project, includes:

- Prevention of Inadvertent Criticality
- Radiation Protection
- Hazardous Material Protection
- Radioactive and Hazardous Waste Management
- Initial Testing In-Service Surveillance and Maintenance
- Operational Safety
- Procedures and Training
- Human Factors
- Quality Assurance
- Emergency Preparedness
- Provisions for Decontamination and Decommissioning
- Management, Organization and Institutional Safety Provisions

8 ROLES AND RESPONSIBILITIES

Clear definitions of authorities, roles, and responsibilities related to implementation of the WSHP are defined in the following subsections. The MCS organizational structure is defined and roles and responsibilities are addressed for management, employees, and subcontractors.

8.1 ORGANIZATION STRUCTURE

The organizational structure of the Project has been established to ensure that roles and responsibilities, and reporting relationships are clearly recognized and understood. Roles and responsibilities are also identified in specific job descriptions, plans, and procedures. Additionally, roles and responsibilities for implementation of the WSHP are summarized in Table 1. Roles and Responsibilities for Implementation of WSHP.

For the purposes of this WSHP, senior managers include the direct reports to the President and Project Manager; ES&H management includes the ESH&Q Manager, the site ES&H Managers; and the Functional and Line Managers include each Plant Manager, first line supervision and subcontractor project and line management. In accordance with DUF6-PLN-040, Integrated Safety Management System Plan, each line manager is held accountable for the Project's safety performance through their performance goals and review.

Table 1. Roles and Responsibilities for Implementation of WSHP

Position	Job Description/Responsibility
President and Project Manager	• Adopting and ensuring adherence to policies for ES&H performance • Maintaining a work environment wherein ES&H performance is recognized as a priority by all associates • Ensuring that qualified individuals are assigned to direct and manage the WSHP program • Establishing written policies, goals, and objectives for the WSHP
Senior Managers	• Building awareness by explaining and communicating its commitment to policies and values relative to ES&H performance • Ensuring that activities conform to ES&H related policies, laws, regulations and internal procedural requirements • Ensuring organizational learning is embraced to include training, self-assessments, corrective actions, and benchmarking • Continuously improve processes and systems by establishing, tracking and achieving goals, and incorporating lessons learned

Table 2. (Continued) Roles and Responsibilities for Implementation of WSHP

Position	Job Description/Responsibility

ES&H Management	• Ensuring that ES&H management system requirements/procedures are established, implemented, and maintained in accordance with 10CFR851 including:
	  • Ensuring that processes are in place to involve workers and their elected representatives in the development of the worker safety and health program goals, objectives and performance measures, and in the identification and control of hazards in the workplace
	  • Ensuring that processes are in place to provide workers with information relevant to the worker safety and health program
	  • Ensuring that processes are in place for reporting without reprisal of job-related fatalities, injuries, illnesses, incidents and hazards, and recommendations about appropriate hazard controls
	  • Ensuring that processes are in place to provide for prompt response to upset conditions and abnormal events
	  • Ensuring that processes are in place to provide for regular communication with workers about workplace safety and health
	  • Ensuring that processes are in place to provide for worker stop/suspend work authority for safety related reasons without fear of reprisal
	  • Ensuring that processes are in place to inform workers of their rights and responsibilities by appropriate means including adequate posting of the DOE-designated Worker Safety Poster
	  • Ensuring that environmental protections are included in work planning
	  • Reporting on ES&H performance to management for review and as a basis for improvement of the system

Table 3. (Continued) Roles and Responsibilities for Implementation of WSHP

Position	Job Description/Responsibility

Functional and Line Managers	• Accepting responsibility and accountability for ES&H performance associated with the work performed under their direct supervision, including:
	  • Ensuring that ES&H (including nuclear safety and environmental protection) is integrated into work planning, budgeting, work authorizations/execution, and change control
	  • Ensuring that subordinates operate in strict compliance with the policies and applicable procedural requirements
	  • Making subordinates aware of their roles and responsibilities relative to the ES&H programs, including emergency preparedness and response
	  • Determining and ensuring completion of training requirements for their associates
	  • Controlling processes, including suspension of operations for ES&H reasons
	  • Fostering and maintaining a work environment of open communication, mutual respect and teamwork that encourages free and open expressions of ES&H concerns, encourages a questioning attitude and expression of differing technical opinions
	  • Encouraging conservative risk-informed decision making
	  • Continuously work to provide a clear, well-maintained, and efficient workplace, free of occupational injuries and illnesses

All Associates (including DOE, MCS, subcontracted employees, and visitors)	• Adhering to ES&H related policies, values, and requirements by:
	  • Accepting accountability, within the scope of their responsibilities, for ES&H performance and maintaining awareness of hazards and controls associated with job assignments
	  • Committing to an incident and injury free workplace
	  • Taking responsibility for ES&H improvements
	  • Anticipating and initiating action including suspension of operations to preclude any nonconformance relating to the ES&H management system
	  • Maintaining a questioning attitude while identifying and reporting any ES&H problems
	  • Initiating, recommending, or providing solutions to those problems and verifying the implementation of solutions
	  • Controlling further ES&H program activities related to an area of nonconformance until the deficiency or unsatisfactory condition has been corrected
	  • Encouraging and reinforcing the safe behavior of others
	  • Following approved work practices and procedures

9 HAZARD IDENTIFICATION AND ASSESSMENT

The identification and assessment of hazards takes place prior to performing a work task. Potential hazards are identified and assessed for the defined work-scope to assure that appropriate measures are taken to prevent or mitigate potential exposure to the hazards. Consideration is given for interaction between workplace hazards and other hazards such as radiological hazards. Hazards will also be addressed when selecting or purchasing equipment, products and services.

A detailed analysis of facility systems and components was conducted (e.g., DSA, fire hazard analysis, ALARA reviews). The process was conducted in accordance with 10 CFR 830, Subpart B, Safety Basis Requirements, and the process safety requirements of 10 CFR 851, Worker Safety and Health.

These analyses are documented and discussed further in DUF6-C-DSA-001, Paducah DUF6 Conversion Facility Documented Safety Analysis, Paducah, Kentucky; DUF6-X-DSA-001, Portsmouth DUF6 Conversion Facility Documented Safety Analysis, Piketon, Ohio; DUF6-C-F-FHA-001, Paducah DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment; DUF6-X-F-FHA-001, Portsmouth DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment; DUF6-C-DSA-003, Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky; DUF6-X-DSA-003, Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Piketon, Ohio, and their supporting documents.

For conversion facility O&M activities, each system or component is further defined to identify the required work steps and to assess those steps to ensure the identification of potential hazards (e.g., chemical, biological, radiological and safety work place hazards) and ultimately the appropriate hazard controls for each. As appropriate, worker exposure monitoring is performed utilizing recognized testing methodologies and accredited/certified laboratories as required.

For routine and non-routine O&M activities, as well as construction type work, hazard identification and assessment will be performed in accordance with DUF6-U-SHP-0211, Hazard Analysis, and work control will be performed in accordance with DUF6-U-GFP-0108, Control of Work.

DOE O 151.1D, Comprehensive Emergency Management System, requires that a hazards assessment be performed for a facility/site or activity when at least one hazardous material requiring additional analysis is identified through the hazardous material screening process conducted as part of the Site All-Hazards Survey (AHS). The Order requires special planning and preparedness for Department of Energy (DOE) emergency management programs that need to respond to emergency events or conditions involving the unplanned release of hazardous materials. The scope and extent are based on facility-specific hazards through a "commensurate with hazards" approach. The first step in the implementation of this approach for hazardous materials is the quantitative analysis of potential emergencies in an Emergency Planning Hazards Assessment (EPHA).

An EPHA involves the application of hazard and accident analysis techniques that provide sufficient detail to assess a spectrum of postulated events or conditions involving the release of hazardous materials and to evaluate the ensuing consequences. Consequence assessment of hazardous material releases provides the means to determine the potential for the need to declare an Alert, Site Area Emergency (SAE), or General Emergency (GE) at the Portsmouth Gaseous Diffusion Plant (PORTS) and is documented in FBP-EM-EPHA-00007, FLUOR-BWXT Portsmouth LLC, Emergency Planning Hazards Assessment for the Decontamination and Decommissioning, Infrastructure Support Services, and Piketon DUF6 Conversion Facilities at the Portsmouth Gaseous Diffusion Plant and CP2-EP-3000, Emergency Planning Hazards Assessment for the U.S. Department of Energy Paducah, Kentucky Site for Paducah.

9.1 DOCUMENT KNOWN CHEMICAL HAZARDS

During operations and maintenance of the DUF6 Conversion Facilities, the primary chemical hazards of concern include natural gas, UF6, uranyl fluoride, U3O8, hydrogen fluoride (HF), hydrogen gas, hydrated lime, liquid nitrogen, and potassium hydroxide (KOH). These hazards are identified and discussed further in DUF6-C-DSA-001, Paducah DUF6 Conversion Facility Documented Safety Analysis, Paducah, Kentucky; DUF6-X-DSA-001, Portsmouth DUF6 Conversion Facility Documented Safety Analysis, Piketon, Ohio; DUF6-C-TSR-002, Technical Safety Requirements for the DUF6 Conversion Facility, Paducah, Kentucky; and DUF6-X-TSR-002, Technical Safety Requirements for the DUF6 Conversion Facility, Piketon, Ohio; DUF6-C-DSA-003, Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky; DUF6-X-DSA-003, Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Piketon, Ohio; and their supporting documents.

Construction type work may also add known chemical hazards of silica, welding fumes, hexavalent chromium, solvents, paints, etc. Occupational exposures to these hazards will be limited and controlled to below the lowest permissible exposure limit per 10 CFR 851.

9.2 KNOWN RADIOLOGICAL HAZARDS

The primary radiological contaminant at both facilities is uranium. Uranium assays will range from depleted (0.2% U-235) to low-enriched (5.25% U-235). In addition, there are trace quantities of americium, neptunium, thorium, technetium, and plutonium.

During O&M of the DUF6 Conversion Facilities, the primary radiological hazards of concern include DUF4, DUF6 and U3O8. These hazards are identified and discussed further in DUF6-C-DSA-001, Paducah DUF6 Conversion Facility Documented Safety Analysis, Paducah, Kentucky; DUF6-X-DSA-001, Portsmouth DUF6 Conversion Facility Documented Safety Analysis, Piketon, Ohio; DUF6-C-DSA-003, Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky; DUF6-X-DSA-003, Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Piketon, Ohio, and their supporting documents.

Based on the total allowed resident radionuclide inventory, the conversion building and all nuclear operations contained within the building and adjacent staging areas will be operated as a Hazard Category 3 nuclear facility. DUF6 does not contain fissionable material in a form and quantity sufficient to pose a potential for nuclear criticality. As such, a nuclear criticality event is not postulated within the conversion process.

The cylinder storage yards will continue to be managed as a Hazard Category 2 nuclear facility. UF6 at various degrees of enrichment or depletion with respect to the U-235 isotope is the primary fissionable material potentially present in quantities and concentration of concern. U-235 is a fissile nuclide that is capable of supporting self-sustaining neutron chain reaction by interaction with thermal (slow) neutrons. The specific criticality safety concerns vary, depending on the quantity and forms of U-235 present in the cylinder storage yards. Criticality concerns will be managed in accordance with DUF6-U-NSP-0003, Nuclear Criticality Safety Process, and its supporting documents. Additionally, the Nuclear Criticality Safety Program for the DUF6 Conversion Project, DUF6-PLN-188, describes the controls used to prevent the potential of a criticality.

All Project activities that have the potential to result in occupational exposure to ionizing radiation will be performed consistent with the provisions identified in DUF6-PLN-007, Radiation Protection Program, and its supporting documents. Additionally, DUF6 has committed to limiting its environmental impact and radiological releases to the environment in the Environmental Radiation Protection Program, DUF6-PLN-216. This Program limits the radiation released to the environment and describes the controls implemented to ensure the minimum amount of impact feasible.

The USQ process as identified in DUF6-U-NSP-0002, Unreviewed Safety Question Process, assures that proposed changes to structures, systems, and components, changes to safety basis documentation, and changes to programs and procedures are consistent with the requirements and commitments established in the facility safety bases or obtain proper DOE review and approval.

10 HAZARD PREVENTION AND ABATEMENT

Once the hazards have been identified and assessed, appropriate preventive or mitigative systems, structures, or components are credited and engineered, and administrative controls are identified and implemented to ensure there is no significant risk to the public, worker, and/or environment.

Controls to mitigate hazards are identified through TSRs and other safety basis documents; regulatory permits, requirements, and agreements; operating procedures; work control documents; hazard analyses and hazard specific permits; and training. Proposed controls shall be adequate to protect workers, other site personnel, the public, and the environment from the consequences of normal operations, accidents, or releases to the environment. When selecting or purchasing equipment, products, and services, MCS will address hazards and appropriate controls in accordance with the hazard control hierarchy below.

The selection of hazard controls is based on the following hierarchy:

1. Elimination or substitution
2. Engineering Controls
3. Work Practices and Administrative Controls (procedures, plans, directives, etc.)
4. Personal Protective Equipment (safety harness, respirator, etc.)

The DSAs and TSRs are the formal documentation of the hazard's categorization and the safety classification for conversion facilities and the cylinder yards, and include a description of the safety management programs used to protect workers and the public (e.g., radiological control and fire protection programs).

Controls are established for both worker and facility safety, and for protecting the public and the environment. ES&H controls for workers are tailored to the specific task/work location. Requirements identified in the TSRs and other safety basis documents and regulatory permits, requirements, and agreements are implemented through equipment/component design, operating procedures, and work control processes. Engineering and administrative controls are put in place where necessary to protect workers, the site, and the environment. DUF6-U-SHP-0211, Hazard Analysis, and DUF6-U-GFP-0108, Control of Work, are the primary documents utilized during operations that document the hazard prevention/abatement process.

For existing hazards identified in the workplace, MCS will:

1. Prioritize and implement abatement actions according to the risk to workers
2. Implement interim protective measures pending final abatement
3. Protect workers from dangerous safety and health conditions

10.1 IMPLEMENTING HAZARD CONTROLS

Based on work to be performed, identified hazards, and method of accomplishment, appropriate tools are utilized to define and implement necessary controls. These controls may include one or more of the following:

- Elimination of Hazards
- Task Work Plans
- Activity Work Packages
- ES&H Plans
- Hazard Assessments
- Inspections and Checklist
- PPE
- Waste Management Plans
- Work Instructions
- Safety Basis Documents
- Signs and Posting
- Training
- Procedures

11 SAFETY AND HEALTH STANDARDS

Section J of DOE Contract DE-EM0004559 contains state and federal regulations and associated permits and authorizations, as well as applicable DOE orders, policies, and standards. MCS will monitor the DOE online database system Directives Homepage–Alerts for changes (additions/deletions) in DOE orders/directives and federal regulations. In addition, state laws and regulations will be monitored for changes. The DUF6 Project describes the process for ensuring that its regulatory permits are maintained in its Regulatory and Permitting Management Plan, DUF6-PLN-002.

When MCS is notified by the DOE contracting officer of a new or revised DOE order or directive that may be applicable to the MCS contract, it will review the change for impact as required in the contract. DOE will be advised of the results of this review within the prescribed time limit. DOE will then determine when the contract will be modified to incorporate the change.

The standards identified in 10 CFR 851.23 cannot be construed as relieving MCS from complying with any additional, specific safety and health requirement that it determines to be necessary to protect the safety and health of workers.

MCS will follow the applicable OSHA Standards (either 29 CFR 1926 for Construction work as well as 29 CFR 1910 for General Industry) as required by 10 CFR 851 and as applicable to the work scope. MCS will identify and control all recognized hazards to ensure personnel safety.

However, MCS may, on occasion, notify the DOE PPPO of its intent to perform work which may technically violate an OSHA standard so long as the violation is considered by OSHA to be "de minimis" and adequate hazard controls are established.

Note:	De minimis violations are violations of standards which have no direct or immediate relationship to safety or health and shall not be included in citations. MCS will notify PPPO of its intent to perform work that contains de minimis violations at least 30 days in advance of the proposed work. MCS would expect the PPPO to 1) object to the proposed de minimis violation, 2) formally approve the proposed de minimis violation, or 3) approve the proposed course of action by lack of response within a 30-day approval window. The inclusion of a process to allow local DOE to approve de minimis OSHA violations, if included in a contractor's WSHP, is described in the 10 CFR 851 Frequently Asked Questions webpage.

Refer to Section 15.3 for the list of standards incorporated by reference in 10 CFR 851.27 and Attachment B for the applicability of standards referenced in 10 CFR 851.

12 FUNCTIONAL AREAS

12.1 CONSTRUCTION SAFETY

The Project performs construction-like activities such as process alterations, equipment repair, and enhancements. MCS controls construction-like activities similarly to routine O&M activities through the established work control/planning and hazards analysis processes.

Additionally, there are specific projects which are construction in nature such as the Depleted Uranium Tetrafluoride Project (DUF4) which are most definitely construction. These Projects will be held to the same rigor and compliance to 10 CFR 851 as the operational points of the Project.

Day-to-day management of construction-like activities are implemented through procedure DUF6-U-PRP-0001, Purchasing Procedure; ensuring that acceptable subcontractors are selected which have relevant safety programs and submittals. Additionally, procedure DUF6-U-PRP-0034, Subcontract Technical Representative (STR), ensures that a knowledgeable and qualified point-of-contact is assigned to manage a subcontractor's performance. Additionally, DUF6 Form 9063, ES&H Special Terms and Conditions, outlines the basic requirements expected of subcontractors in the areas of ESH and QA.

The DUF4 Contractor will be issued copies of the DUF6 WSHP, ISMS Program, and key procedures such as the Hazardous Energy Control Procedure, Confined Space Program, Hot Work, and similar procedures/programs. The DUF4 Contractor will agree to follow these MCS Programs unless specifically exempted, on a case-by-case basis, and only after an MCS review of the contractor's proposed alternative programs. This review is to ensure that the Contractors' proposed programs/procedures are equivalent to MCS' and can efficiently interface with existing MCS Programs.

12.2 FIRE PROTECTION

The requirements of this function are addressed in DUF6-PLN-024, Fire Protection Program Description for the DUF6 Conversion Project, and it's implementing documents. The plan defines the scope, roles and responsibilities, organizational structure, and requirements for implementing fire protection (FP) program activities. The plan also defines the administrative program responsibilities for ensuring that MCS maintains compliance with fire protection requirements when managing or overseeing subcontractors. The plan is intended to implement the Fire Protection Policy, DUF6-POL-003, Fire Protection Statements, and is the framework to guide MCS in systematically implementing a fire protection program.

12.3 EXPLOSIVES SAFETY

This functional area is not applicable under MCS's contracted scope of work.

12.4 PRESSURE SAFETY

During design, applicable codes and standards were identified in the systems requirements documents and the system design description documents. The identified codes and standards were then incorporated into the piping and equipment specifications. DUF6-U-PEP-1316, Pressure Safety Program, has been developed to identify the requirements necessary to implement a pressure safety program.

If national consensus codes are not applicable (because of pressure range, vessel geometry, use of special materials, etc.) measures will be implemented to provide equivalent protection and ensure a level of safety greater than or equal to the level of protection afforded by the American Society of Mechanical Engineers (ASME) or applicable state or local code. These measures include the following:

- Design drawings, sketches, and calculations reviewed and approved by a qualified independent design professional (i.e., professional engineer). Documented organizational peer-review is acceptable.
- Qualified personnel used to perform examinations and inspections of materials, in-process fabrications, non-destructive tests, and acceptance test.
- Documentation, traceability, and accountability maintained for each pressure vessel or system, including descriptions of design, pressure conditions, testing, inspection, operation, repair, and maintenance.

Pressure safety is implemented during cylinder storage yard surveillance and maintenance activities, through DUF6-X-CYP-2521, UF6 Field Cold Pressure Check and Minor Valve Repair, DUF6-C-CYP-2524, Replacement of Non-Fissile UF6 Cylinder Valves and Plugs, and DUF6-C-CYP-2426, Cold Pressure Checks which direct the monitoring of cylinder pressures prior to changing the valve or plug, and prohibits standing in front of a valve or plug being removed.

12.5 FIREARMS SAFETY

This functional area is not applicable under MCS's contracted scope of work.

12.6 INDUSTRIAL HYGIENE

MCS has implemented a comprehensive industrial hygiene program that includes initial or baseline surveys and periodic re-surveys and/or exposure monitoring as appropriate. Application of the graded approach is primarily a function of the magnitude of the hazard that can influence the breadth of the assessment (e.g., larger quantities of material may warrant a wider range of monitoring concerns or new unanticipated hazards may be discovered as work progresses). The magnitude and interaction of the hazard(s) impact the application of the graded approach by influencing the hazardous material training, the hazard analysis, selection of hazard controls, hazardous material monitoring and the instrumentation selected to obtain process information and to conduct personal exposure monitoring and work area sampling.

The primary documents utilized during O&M that implement the industrial hygiene program includes DUF6-U-SHP-0501, Occupational Medicine Program; DUF6-U-SHP-0502, Hearing Conservation Program; DUF6-U-SHP-0504, Respiratory Protection Program; DUF6-U-SHP-0505, Exposure Assessments (Non-Radiological); DUF6-U-SHP-0508, Ergonomics Program; DUF6-U-SHP-0511, Biological Monitoring for Industrial Chemicals; DUF6-U-SHP-0514, Temperatures Extremes; DUF6-U-SHP-0601, Hazard Communications; DUF6-U-SHP-0512, Confined Space Program; and DUF6-U-SHP-0210, Personal Protective Equipment.

12.7 BIOLOGICAL SAFETY

This functional area is not applicable under MCS's contracted scope of work.

12.8 OCCUPATIONAL MEDICINE PROGRAM

12.8.1 **Occupational Health Program**

The requirements for an occupational health program are identified in DUF6-U-SHP-0501, Occupational Medicine Program.

12.8.2 **Occupational Physical Examinations**

According to the requirements of 29 CFR 1910, 29 CFR 1926 and 10 CFR 851, site personnel who meet the criteria listed below must have a physical examination conducted by a board-certified Occupational Medicine physician to determine and document the qualification of the worker to perform work at the Paducah and Portsmouth Sites. Criteria for inclusion in the occupational health program are listed below:

- Employees who are or may be exposed to permissible exposure limits of hazardous substances or health hazards for 30 or more days a year
- Employees who will perform work on an DUF6 operational site for more than 30 days in a 12-month period.

- Employees who wear a respirator for 30 or more days a year
- Members of organized hazardous material teams
- Employees who are injured as a result of overexposure during a site emergency
- Employees who show symptoms of illness that may have resulted from exposure to hazardous substances

The examining physician shall document physical evaluations/examinations through written approval.

12.8.3 **Additional OSHA Specific Medical Monitoring Requirements**

MCS will adhere to the medical monitoring requirements specified in 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances. There may be additional work practices that require implementation of the above referenced medical monitoring requirements.

12.8.4 **Hearing Conservation**

Personnel who may be exposed to noise levels at or above 85 decibels on the A scale (dBA) as an eight-hour time-weighted average without regard to hearing protection devices are required to participate in the hearing conservation program in accordance with DUF6-U-SHP-0502, Hearing Conservation Program.

12.9 MOTOR VEHICLE SAFETY

The requirements of this function are addressed in DUF6-POL-071, Vehicle Safety Policy; DUF6-U-SHP-0102, General Safety Rules; DUF6-U-GFP-0109, Management of Fleet Vehicles; and DUF6-U-SHP-0213, DUF6 Powered Industrial Trucks.

12.10 ELECTRICAL SAFETY

Note:	The DUF6 Project determined that the best method of complying with the 10 CFR 851 Technical Amendment was to use the 2018 version of NFPA 70E vs. the 2015 version described in the Amendment. This was determined to the be most conservative and safest means of providing our employees a workplace free of recognized hazards as well as providing the most value to the DOE.

All electrical work shall be performed in compliance with applicable codes identified in National Fire Protection Association (NFPA) 70 (2017); National Electric Code; NFPA 70E (2018), Standard for Electrical Safety in the Workplace; and OSHA Standards such as 29 CFR 1910 and 29 CFR 1926 as applicable.

12.10.1 **Electrical Safety Program**

An NFPA 70E (2018) compliant electrical safety program (DUF6-U-SHP-0214, Electrical Safety) has been developed. MCS implemented the electrical safety program that incorporates the elements of NFPA 70E for worker protection through the identification of energized hazards equal to or exceeding 50 volts. The program includes documented

arc flash analyses of energized sources as well as the allowed employee approach boundaries. Maintenance procedure DUF6-U-MNT-0622, Energized Electrical Work, also implements various aspects of electrical safety when it is REQUIRED to work in proximity to exposed energized electrical components operation at or above 50 volts to ground.

12.10.2 Lockout/Tagout of Hazardous Energy Source

All work requiring energy isolation will be subject to the Hazardous Energy Control Program (Lockout/Tagout), DUF6-U-GFP-0216, Control of Hazardous Energy (Lockout/Tagout), in order to establish proper isolation from hazardous energy sources.

13 TRAINING AND INFORMATION

The training and qualification process assures needed skills for the workforce are identified and developed. The process also documents knowledge, experience, abilities and competencies of the workforce for key positions requiring qualification. This process is described in DUF6-PLN-027, Personnel Selection, Training, and Qualification Management Plan. This plan describes how MCS will implement the requirements of DOE Order 426.2, Change 1, Personnel Selection, Training, Qualification and Certification Requirements for DOE Nuclear Facilities. The training and qualification requirements in this program are developed, maintained, and implemented using a graded approach in a standardized, comprehensive manner utilizing the systematic approach to training.

13.1 GENERAL EMPLOYEE TRAINING

MCS employees, subcontractors, and visitors who spend more than 40 hours a year on a Project site are required initially to complete General Employee Training (GET) and thereafter, complete a GET refresher session every 24 months or more frequently in those cases deemed appropriate. GET encompasses the primary functions of the various sites and their responsibility to DOE including emergency reporting, general ES&H topics, and basic radiological awareness, and the hazard communication programs.

Personnel who are exempt from taking GET due to their limited time on site must be escorted. The escort is responsible for ensuring that in the event of an emergency situation, the untrained person knows what actions are necessary.

13.2 NEW HIRE ORIENTATION BRIEFING

In accordance with DUF6-U-HRP-0001, Human Resources Policy Manual, all DUF6 Project Personnel shall be required to attend a new hire orientation briefing prior to initially performing work. Subcontractors, including construction subcontractors, will receive initial orientation briefings as well. The briefing shall highlight the information pertinent to the Project, the implementation of ISMS and 10 CFR 851 requirements, and commitment to ES&H.

13.3 HAZARD COMMUNICATION PROGRAM AND TRAINING

As required in 29 CFR 1910.1200, all personnel having the potential for exposure to hazardous materials shall be trained in the use of the materials, the PPE required, and the emergency procedures associated with the materials they will be expected to use. All personnel shall be trained, be familiar with this plan, and have access to safety data sheets for all materials with which they work. This requirement is implemented in accordance with DUF6-U-SHP-0601, Hazard Communications.

13.4 TASK/HAZARD SPECIFIC TRAINING

Employees (including subcontractor employees) who are assigned to a work task shall review applicable work control documents (i.e., hazard assessments, hazard specific permits/work plans, and operating procedures) before their involvement in the work activity to ensure that they are aware of the actual and potential hazards, and the implementation of any control measures identified during the hazard evaluation.

If a change in condition occurs or new information is discovered, the work control document will be revised to address the change and employees will be trained to the changes.

13.5 PRE-JOB BRIEFING

Pre-job briefings shall be conducted in accordance with DUF6-U-GFP-0108, Control of Work, by each supervisor to summarize planned activities, identify new hazards, or clarify any task or project-related issues pertaining to their crew prior to performing new activities. Pre-job briefings will be repeated as necessary to reinforce applicable hazard control measures and relevant work practices. Affected personnel are required to attend pre-job briefings, which may include but are not limited to the following subjects:

- Safety topic/worker safety issues
- Task-specific PPE and respiratory requirements
- Requirements identified by hazard analyses or other work control documentation
- Procedures and any approved deviations to the prescribed procedures
- Previous lessons learned
- Opportunity for employee feedback

Workers who miss the pre-job meeting will be given a review of pertinent information covered during the meeting (including the safety topic) prior to starting the activity.

13.6 OTHER

Workers who have worker safety and health program responsibilities will receive training and information necessary for them to carry out those responsibilities.

14 RECORDKEEPING AND REPORTING

Requirements for recordkeeping and reporting are identified in DUF6-U-DMP-0002, Document Control and Records Management, and contain specific implementing documents.

MCS shall not conceal nor destroy any information concerning non-compliance or potential noncompliance with the requirements as identified in 10 CFR 851.26(a).

14.1 HAZARD INVENTORY, ASSESSMENT, AND CONTROL RECORDS

MCS will establish and maintain complete and accurate records of all hazard inventory information, hazard assessments, exposure assessments, and exposure controls. Hazard inventory, assessment and control records will be maintained in accordance with topic specific implementing documents.

14.2 EVENT NOTIFICATION COMMUNICATION

In accordance with DUF6-U-SHP-0301, Accident/Incident Reporting, all personnel shall immediately notify the Plant Shift Superintendent – Paducah or the Emergency Response Organization – Portsmouth of emergency conditions. In addition, employees are also instructed to notify their supervisor about an event or condition that adversely affects or may adversely affect DOE, MCS, subcontractor personnel, the public, property, environment, or the DOE mission. This could include an employee injury/illness, any accident, incident, near-miss occurrence, accident precursor that could result in bodily injury/illness or damage to equipment and facilities, potential PAAA noncompliance, environmental release or any other unplanned event that may be a violation of a regulatory requirement, or that may be viewed negatively by the public, MCS, or DOE. In situations where any of the conditions mentioned above occur, the scene may not be changed without prior MCS concurrence and DOE notification unless it is to mitigate an immediate hazard or stop a spill in progress.

Investigations of any events/conditions shall be performed in accordance with DUF6-U-SHP-0301, Accident/Incident Reporting. Initial event reports and other applicable reports (i.e., First Reports of Injury and DOE 5484.3 reports) shall be completed in accordance with DUF6-U-SHP-0301, Accident/Incident Reporting.

MCS will ensure that the work-related injuries and illnesses of its workers and subcontractor workers are recorded and reported accurately and consistent with DOE Order 231.1B Chg. 1, Environmental Safety and Health Reporting. MCS follows procedure DUF6-U-CPL-0104, Computerized Accident and Incident Reporting System (CAIRS) Reporting when generating and reporting applicable injuries and incidents into the DOE CAIRS system. Any subcontractor involved with the event shall provide applicable information to the MCS POC as requested.

14.3 NONCOMPLIANCE REPORTING

Worker safety non-compliances are reported in the DOE Nonconformance Tracking System (NTS) based on established reporting thresholds. A non-compliance that is below an NTS reporting threshold (a non-NTS reportable) will be tracked internally. The PAAA Coordinator makes a determination of reportability in accordance with DUF6-U-CPL-0015, Nuclear Safety and WHSP Noncompliance Reporting. Corrective actions are tracked in accordance with DUF6-U-QAP-0005, Issues Management. Non-compliances are also assessed for reportability in the Occurrence Reporting and Processing System.

The occurrence reporting program is governed by DUF6-U-CPL-0016, Occurrence Notification and Reporting. The occurrence reporting system requires reporting, tracking and trending of occurrences, and development of corrective actions involving industrial and/or facility safety, health, property, operations and/or the environment.

Tracking and trending of accidents, injuries, and illnesses will be performed in accordance with DUF6-U-CPL-0019, Trending. Lessons learned are developed in accordance with DUF6-U-CPL-0017, Operating Experience Program.

14.4 PERIODIC REPORTING

Performance metrics, including ES&H metrics, are established at the beginning of each fiscal year. Once performance metrics are approved by DOE they are reported in the monthly project report and discussed at the monthly status meeting.

MCS tracks, trends, and reports additional lagging and leading performance measures to ensure that safety performance is properly measured. These additional measures are part of the Contractor Assurance System (CAS) metrics. The measures may vary from year-to-year based on the scope of anticipated project activities, DOE, and project management needs. CAS metrics are summarized in Quarterly Trending Analysis Reports which are distributed to DUF6 Management and DOE.

15 SUPPORTING INFORMATION

15.1 REQUIREMENT REFERENCE

Requirement No.	Title
10 CFR 851	*Worker Safety and Health Program*

15.2 SOURCE REFERENCES

Source No.	Title
DE-EM0004559	*DOE Contract No. DE-EM0004559*
10 CFR 830, Subpart A	*Nuclear Safety Management - Quality Assurance Requirements*
10 CFR 830, Subpart B	*Safety Basis Requirements*
DEAR 952.223-71	*Integration of Environment, Safety, and Health into Work Planning and Execution*
DOE O 231.1B Chg. 1	*Environment, Safety and Health Reporting*
DOE O 440.1B Chg. 3	*Worker Protection Program for DOE (including National Nuclear Security Administration) Federal Employees*
DOE-STD-3009-94	*Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analysis*
NFPA 70	*National Electric Code*
NFPA 70E	*Standard for Electrical Safety in the Workplace*
29 CFR 1910	*Occupational Safety and Health Standards*
29 CFR 1926	*Safety and Health Regulations for Construction*
DUF6-PLN-001	*Project Management Plan*
DUF6-PLN-003	*Project Quality Assurance Plan*
DUF6-PLN-007	*Radiation Protection Program*
DUF6-PLN-011	*Cylinder Surveillance and Maintenance Plan*
DUF6-PLN-014	*Conversion Facilities Operations and Maintenance Plan*
DUF6-PLN-015	*Records Management Plan*
DUF6-PLN-024	*Fire Protection Program Description for the DUF_6 Conversion Project*
DUF6-PLN-027	*Personnel Selection, Training, and Qualification Management Plan*
DUF6-PLN-040	*Integrated Safety Management System Plan*
DUF6-PLN-188	*Nuclear Criticality Safety Program for the DUF_6 Conversion Project*
DUF6-PLN-216	*Environmental Radiation Protection Program*
DUF6-POL-048	*Safety Culture*
DUF6-POL-060	*Environment, Safety and Health Policy*
DUF6-POL-071	*Vehicle Safety Policy*
CP2-EP-3000	*Emergency Planning Hazards Assessment for the U.S. Department of Energy Paducah, Kentucky Site*
DUF6-C-DSA-001	*Paducah DUF_6 Conversion Facility Documented Safety Analysis, Paducah, Kentucky*
DUF6-X-DSA-001	*Portsmouth DUF_6 Conversion Facility Documented Safety Analysis, Piketon, Ohio*
FBP-EM-EPHA-00007	*FLUOR-BWXT Portsmouth LLC Emergency Planning Hazards Assessment for the Decontamination and Decommissioning, Infrastructure Support Services, and Piketon DUF_6 Conversion Facilities* at the Portsmouth Gaseous Diffusion Plant
DUF6-C-F-FHA-001	*Paducah DUF_6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment*

Source No.	Title
DUF6-C-F-FHA-002	*Paducah DOE C-745 Cylinder Storage Yards Fire Hazards Analysis and Fire Protection Engineering Assessment*
DUF6-X-F-FHA-001	*Portsmouth DUF_6 Conversion Facility Combined Fire Hazard Analysis and Fire Protection Facility Assessment*
DUF6-X-F-FHA-002	*Portsmouth DOE X-745C & X-745E Cylinder Storage Yards Fire Hazard Analysis and Fire Protection Engineering Assessment*
DUF6-X-F-FHA-003	*Portsmouth DOE X-745G-1Cylinder Storage Yards Fire Hazard Analysis and Fire Protection Engineering Assessment*
DUF6-C-TSR-002	*Technical Safety Requirements for the DUF_6 Conversion Facility, Paducah, Kentucky*
DUF6-C-TSR-004	*Technical Safety Requirements for the DUF_6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky*
DUF6-X-TSR-002	*Technical Safety Requirements for the DUF_6 Conversion Facility, Piketon, Ohio*
DUF6-X-TSR-004	*Technical Safety Requirements for the DUF_6 Conversion Project Cylinder Storage Yards, Piketon, Ohio*
DUF6-X-DSA-003	*Documented Safety Analysis for the DUF_6 Conversion Project Cylinder Storage Yards, Piketon, Ohio*
DUF6-C-DSA-003	*Documented Safety Analysis for the DUF_6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky*
DUF6-U-SMP-005	*Safety Management Program Descriptions for the DUF_6 Conversion Project*
DUF6-U-CPL-0015	*Nuclear Safety and WHSP Noncompliance Reporting*
DUF6-U-CPL-0016	*Occurrence Notification and Reporting*
DUF6-U-CPL-0017	*Operating Experience Program*
DUF6-U-CPL-0019	*Trending*
DUF6-U-DMP-0002	*Records Management Procedure*
DUF6-C-GFP-0107	*Accident Prevention, Equipment, and System Control Tags and Locks*
DUF6-U-GFP-0108	*Control of Work*
DUF6-U-GFP-0109	*Management of Fleet Vehicles*
DUF6-U-HRP-0001	*Human Resources Policy Manual*
DUF6-U-NSP-0002	*Unreviewed Safety Question-Process*
DUF6-U-NSP-0003	*Nuclear Criticality Safety Process*
DUF6-U-PRP-0001	*Purchasing Procedure*
DUF6-U-PRP-0034	*Subcontract Technical Representative (STR)*
DUF6-U-QAP-0005	*Issues Management*
DUF6-U-QAP-0012	*Independent Assessments*
DUF6-U-QAP-0013	*Management Assessments*
DUF6-U-QAP-0014	*Supplier Quality Program Evaluation*
DUF6-U-QAP-0022	*Time-Out/Stop Work*
DUF6-U-SHP-0101	*Safety First Program*
DUF6-U-SHP-0102	*General Safety Rules*
DUF6-U-SHP-0103	*Safety Walkthroughs*
DUF6-U-SHP-0210	*Personal Protective Equipment*
DUF6-U-SHP-0211	*Hazard Analysis*
DUF6-U-SHP-0213	*DUF6 Powered Industrial Trucks*
DUF6-U-SHP-0214	*Electrical Safety*
DUF6-U-SHP-0301	*Accident/Incident Reporting*
DUF6-U-SHP-0501	*Occupational Medicine Program*
DUF6-U-SHP-0502	*Hearing Conservation Program*
DUF6-U-SHP-0504	*Respiratory Protection Program*

Source No.	Title
DUF6-U-SHP-0505	*Exposure Assessments (Non-Radiological)*
DUF6-U-SHP-0508	*Ergonomics Program*
DUF6-U-SHP-0511	*Biological Monitoring for Industrial Chemicals*
DUF6-U-SHP-0512	*Confined Space Program*
DUF6-U-SHP-0514	*Temperatures Extremes*
DUF6-U-SHP-0601	*Hazard Communications*
DUF6-U-TRN-0001	*Training and Qualification*
DUF6-U-GFP-0216	*Control of Hazardous Energy (Lockout/Tagout)*
DUF6-U-SHP 0307	*Development/Maintenance of Hazard Surveys, Emergency Planning Hazard Assessments and Emergency Action Levels*
DUF6 Form 9063	*ESH Special Terms and Conditions*

NOTE: The most current list of document titles and numbers are maintained/available in the Master Index (electronic document management system – Documentum).

15.3 STANDARDS INCORPORATED BY REFERENCE

The following are a list of standards that are incorporated by reference in 10 CFR 851:

NOTE 1: These standards are only applicable to the Project as they relate to the contracted scope of work.

NOTE 2: The DUF6 Project determined that the best method of complying with the 10 CFR 851 Technical Amendment was to use the 2018 version of NFPA 70E vs. the 2015 version described in the Amendment. This was determined to the be most conservative and safest means of providing our employees a workplace free of recognized hazards as well as providing the most value to the DOE.

Identifier	Title
ANSI Z88.2	American National Standard for Respiratory Protection, (2015)
ANSI Z136.1	Safe Use of Lasers, (2014
ANSI Z49.1	Safety in Welding, Cutting, and Allied Processes, Sections 4.3 and E4.3, (2012)
NFPA 70	National Electric Code, (2017)
NFPA 70E	Standard for Electrical Safety in the Workplace, (2015)
ACGIH	Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, (2016)
ASME	Boilers and Pressure Vessel Codes, Section I through XII including applicable Code Cases (b)(1)(i) through (xxxii) (2015)
ASME B31	Pressure Vessels (as identified in ASME B31 codes below :)
ASME B31.1	Power Piping, (2016)
ASME B31.3	Process Piping, (2014)
ASME B31.4	Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids, (2016)
ASME B31.5	Refrigeration Piping and heat Transfer Components, (2016)
ASME B31.8	Gas Transmission and Distribution Piping Systems, (2016)
ASME B31.8S	Managing System Integrity of Gas Pipelines, (2014)
ASME B31.9	Building Services Piping, (2014)
ASME B31G	Manual for Determining Remaining Strength of Corroded Pipelines, (2012)

16 ATTACHMENTS

Attachment A, Implementing Document Matrix

Attachment B, DUF6 Conversion Project Crosswalk of 10 CFR 851 Requirements to MCS Implementing Documents

ATTACHMENT A. IMPLEMENTING DOCUMENT MATRIX

Page 1 of 1

Document No.	Document Title
DUF6-POL-003	*Fire Protection Statement*
DUF6-PLN-001	*Project Management Plan*
DUF6-PLN-003	*Project Quality Assurance Plan*
DUF6-PLN-005	*Waste Management Plan*
DUF6-PLN-007	*Radiation Protection Program*
DUF6-PLN-011	*Cylinder Surveillance and Maintenance Plan*
DUF6-PLN-014	*Conversion Facilities Operations and Maintenance Plan*
DUF6-PLN-015	*Records Management Plan*
DUF6-PLN-024	*Fire Protection Description for the DUF6 Conversion Project*
DUF6-PLN-027	*Personnel Selection, Training, and Qualification Management Plan*
PGDP-SS-PL-007	*Paducah Gaseous Diffusion Plant Site Security Plan*
PMA/PORTS/16-0754	*Portsmouth Gaseous Diffusion Plant Site Security Plan*
DUF6-PLN-040	*Integrated Safety Management System Plan*
CP2-EP-1000	*Paducah Site Emergency Management Plan*
FBP-EM-PL-0026	*Site Emergency Plan*
DUF6-PLN-047	*Sampling and Analysis Plan*
DUF6-POL-060	*Environment, Safety, and Health Policy*
DUF6-POL-071	*Vehicle Safety Policy*
DUF6-U-SMP-005	*Safety Management Program Description for the DUF6 Conversion Project*
DUF6-X-CYP-2520	*Portsmouth UF6 Cylinder Surveillance and Maintenance Program*
DUF6-C-F-FHA-001	*Paducah DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment*
DUF6-C-F-FHA-002	*Paducah DOE C-745 Cylinder Storage Yards Fire Hazards Analysis and Fire Protection Engineering Assessment*
DUF6-C-DSA-001	*Paducah DUF6 Conversion Facility Documented Safety Analysis, Paducah Kentucky*
DUF6-C-TSR-002	*Technical Safety Requirements for the DUF6 Conversion Facility, Paducah, Kentucky*
DUF6-C-TSR-004	*Technical Safety Requirements for the DUF6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky*
DUF6-X-F-FHA-001	*Portsmouth DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment*
DUF6-X-F-FHA-002	*Portsmouth DOE X-745C & X-745E Cylinder Storage Yards Fire Hazards Analysis and Fire Protection Engineering Assessment*
DUF6-X-DSA-001	*Portsmouth DUF6 Conversion Facility Documented Safety Analysis, Piketon, Ohio*
DUF6-X-F-FHA-003	*Portsmouth DOE X-745G-1 Cylinder Storage Yards Fire Hazards Analysis and Fire Protection Engineering Assessment*
DUF6-X-TSR-002	*Technical Safety Requirements for the DUF6 Conversion Facility, Piketon, Ohio*
DUF6-X-TSR-004	*Technical Safety Requirements for the DUF6 Conversion Project Cylinder Storage Yards, Piketon, Ohio*
DUF6-C-DSA-003	*Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky*
DUF6-C-TSR-004	*Technical Safety Requirements for the DUF6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky*

Attachment A. IMPLEMENTING DOCUMENT MATRIX
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Document No.	Document Title
DUF6-X-DSA-003	*Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Piketon, Ohio*
DUF6-X-TSR-004	*Technical Safety Requirements for the DUF6 Conversion Project Cylinder Storage Yards, Piketon, Ohio*
DUF6-U-DMP-0002	*Records Management Procedure*
DUF6-U-PEP-1316	*Pressure Safety Program*
DUF6-U-HRP-0001	*Human Resources Policy Manual*
DUF6-X-CYP-2521	*UF6 Field Cold Pressure Check and Minor Valve Repair*
DUF6-C-CYP-2426	*Cold Pressure Check*
DUF6-C-CYP-2524	*Replacement of Non-Fissile UF6 Cylinder Valves and Plugs*
DUF6-C-GFP-0107	*Accident Prevention, Equipment, and System Control Tags and Locks*
DUF6-X-GFP-0107	*Administrative-Control and Defective-Equipment Tags*
DUF6-U-GFP-0015	*Technical Procedure Development*
DUF6-U-GFP-0108	*Control of Work*
DUF6-U-GFP-0109	*Management of Fleet Vehicles*
DUF6-U-QAP-0005	*Issues Management*
DUF6-U-QAP-0012	*Independent Assessments*
DUF6-U-QAP-0013	*Management Assessments*
DUF6-U-QAP-0014	*Supplier Quality Program Evaluation*
DUF6-U-QAP-0022	*Time-Out/Stop Work*
DUF6-U-CPL-0015	*Nuclear Safety and WSHP Noncompliance Reporting*
DUF6-U-CPL-0016	*Occurrence Notification and Reporting*
DUF6-U-CPL-0017	*Operating Experience Program*
DUF6-U-CPL-0018	*Root Cause Analysis*
DUF6-U-CPL-0019	*Trending*
DUF6-U-CPL-0104	*Computerized Accident and Incident Reporting System (CAIRS) Reporting Procedure*
DUF6-U-GFP-0216	*Control of Hazardous Energy (Lockout/Tagout)*
DUF6-U-SHP-0101	*Safety First Program*
DUF6-U-SHP-0102	*General Safety Rules*
DUF6-U-SHP-0103	*Safety Walkthroughs*
DUF6-U-SHP-0307	*Development/Maintenance of Hazards Surveys, Emergency Planning Hazards Assessments, and Emergency Action Levels*
DUF6-U-SHP-0204	*Fall Protection*
DUF6-U-SHP-0208	*Safety Signs, Tags, and Barriers*
DUF6-U-SHP-0210	*Personal Protective Equipment*
DUF6-U-SHP-0211	*Hazard Analysis*
DUF6-U-SHP-0213	*DUF6 Powered Industrial Trucks*
DUF6-U-SHP-0214	*Electrical Safety*
DUF6-U-SHP-0301	*Accident/Incident Reporting*
DUF6-U-SHP-0501	*Occupational Medicine Program*
DUF6-U-SHP-0502	*Hearing Conservation Program*
DUF6-U-SHP-0504	*Respiratory Protection Program*
DUF6-U-SHP-0505	*Exposure Assessments (Non-Radiological)*
DUF6-U-SHP-0508	*Ergonomics Program*
DUF6-U-SHP-0511	*Biological Monitoring for Industrial Chemicals*

Attachment A. IMPLEMENTING DOCUMENT MATRIX
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Document No.	Document Title
DUF6-U-SHP-0512	*Confined Space Program*
DUF6-U-SHP-0514	*Temperatures Extremes*
DUF6-U-SHP-0601	*Hazard Communications*
DUF6-U-SHP-0801	*Hot Work*
DUF6-U-PRP-0001	*Purchasing Procedure*
DUF6-U-PRP-0034	*Subcontract Technical Representative (STR)*
DUF6-U-FPP-0803	*Fire Prevention and Good Housekeeping Practices*

NOTE: The most current list of document titles and numbers are maintained/available in the Master Index (electronic document management system – Controlled Document Index). This list of document titles and numbers identified in Attachment B is a representation of WSHP implementing documents, but is not intended to be an all-inclusive list.

ATTACHMENT B. DUF6 CONVERSION PROJECT CROSSWALK OF 10 CFR 851 REQUIREMENTS TO MCS IMPLEMENTING DOCUMENTS

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.10	**General Requirements**		
851.10(a)	With respect to a covered workplace for which a contractor is responsible, the contractor must: (1) Provide a place of employment that is free from recognized hazards that are causing or have the potential to cause death or serious physical harm to workers; and (2) Ensure that work is performed in accordance with: (2)(i) All applicable requirements of this part; and (2)(ii) With the worker safety and health program for that workplace.	Yes	• DUF6-POL-048, *Safety Culture* • DUF6-POL-060, *DUF6 Environment, Safety, and Health Policy* • DUF6-PLN-074, *Worker Safety and Health Program* – Executive Summary • DUF6-PLN-040, *Integrated Safety Management System Plan ES&H Policy Statement* • DUF6-POL-003, *Fire Protection Statement*
851.10(b)	The written worker safety and health program must describe how the contractor complies with the:		See Below
	(1) Requirements set forth in Subpart C of this part that are applicable to the hazards associated with the contractor's scope of work; and	Yes	• WSHP, general and Attachment A
	(2) Any compliance order issued by the Secretary pursuant to § 851.4.	Yes	• WSHP, Section 5.6.3
851.11	**Development and Approval of the Worker Safety and Health Program**		
851.11(a)	*Preparation and submission of worker safety and health program*. By February 26, 2007, contractors must submit to the appropriate Head of DOE Field Element for approval a written worker safety and health program that provides the methods for implementing the requirements of Subpart C of this part.	Yes	• WSHP • DUF6-PLN-040, *Integrated Safety Management System Plan*
851.11(a)	(1) If a contractor is responsible for more than one covered workplace at a DOE site, the contractor must establish and maintain a single worker safety and health program for the covered workplaces for which the contractor is responsible.	Yes	• WSHP
851.11(a)	(2) If more than one contractor is responsible for covered workplaces, each contractor must:	Yes	• WSHP, Section 5.5
851.11(a)	(2)(i) Establish and maintain a worker safety and health program for the workplaces for which the contractor is responsible; and	Yes	• WSHP, Section 5.5

Attachment B. DUF6 CONVERSION PROJECT CROSSWALK OF 10 CFR 851 REQUIREMENTS TO MCS IMPLEMENTING DOCUMENTS
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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.11	**Development and Approval of the Worker Safety and Health Program**		
851.11(a)	(2)(ii) Coordinate with the other contractors responsible for work at the covered workplaces to ensure that there are clear roles, responsibilities, and procedures to ensure the safety and health of workers at multi-contractor workplaces.	Yes	• WSHP, Section 5.5
851.11(a)	(3) The worker safety and health program must describe how the contractor will:		See below
851.11(a)	(3)(i) Comply with the requirements set forth in Subpart C of this part that are applicable to the covered workplace, including the methods for implementing those requirements; and	Yes	• WSHP, general • DUF6-PLN-040, *Integrated Safety Management System Plan*
851.11(a)	(3)(ii) Integrate the requirements set forth in Subpart C of this part that are applicable to a covered workplace with other related site-specific worker protection activities and with the integrated safety management system.	Yes	• WSHP, general • DUF6-PLN-040, *Integrated Safety Management System Plan*
851.11(b)	*DOE evaluation and approval.* The Head of DOE Field Element must complete a review and provide written approval of the contractor's worker safety and health program, within 90 days of receiving the document. The worker safety and health program and any updates are deemed approved 90 days after submission if they are not specifically approved or rejected by DOE earlier.	Yes	• The Project submitted its Workers Safety and Health Plan prior to the May 25, 2007 initial deadline and has submitted its updates to DOE for review thereafter as required
851.11(b)	(1) Beginning May 25, 2007, no work may be performed at a covered workplace unless an approved worker safety and health program is in place for the workplace.	Yes	• NA
851.11(b)	(2) Contractors must send a copy of the approved program to the Assistant Secretary for Environment, Safety and Health.	Yes	• NA, will be sent upon approval.
851.11(b)	(3) Contractors must furnish a copy of the approved worker safety and health program, upon written request, to the affected workers or their designated representatives.	Yes	• NA will be sent upon approval and request.

Attachment B. DUF6 CONVERSION PROJECT CROSSWALK OF 10 CFR 851 REQUIREMENTS TO MCS IMPLEMENTING DOCUMENTS
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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.11	**Development and Approval of the Worker Safety and Health Program**		
851.11(c)	Updates. (1) Contractors must submit an update of the worker safety and health program to the appropriate Head of DOE Field Element, for review and approval whenever a significant change or addition to the program is made, or a change in contractors occurs. (2) Contractors must submit annually to DOE either an updated worker safety and health program for approval or a letter stating that no changes are necessary in the currently approved worker safety and health program. (3) Contactors must incorporate in the worker safety and health program any changes, conditions, or workplace safety and health standards directed by DOE consistent with the requirements of this part and DEAR 970.5204–2, Laws, Regulations and DOE Directives (December 2000) and associated contract clauses.	Yes	• WSHP, Introduction
851.11(d)	*Labor Organizations.* If a contractor employs or supervises workers who are represented for collective bargaining by a labor organization, the contractor must: (1) Give the labor organization timely notice of the development and implementation of the worker safety and health program and any updates thereto; and	Yes	• WSHP, Section 5.6.1.7
851.11(d)	(2) Upon timely request, bargain concerning implementation of this part, consistent with the Federal labor laws.	Yes	• WSHP, Section 5.6.1.7
851.12	**Implementation**		
851.12(a)	Contractors must implement the requirements of this part.	Yes	• WSHP, Introduction
851.12(b)	Nothing in this part precludes a contractor from taking any additional protective action that is determined to be necessary to protect the safety and health of workers.	Yes	• WSHP, Section 11
851.13	**Compliance**		
851.13(a)	Contractors must achieve compliance with all the requirements of Subpart C of this part, and their approved worker safety and health program no later than May 25, 2007. Contractors may be required to comply contractually with the requirements of this rule before February 9, 2007.	Yes	• WSHP, Introduction

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851.13	**Compliance**		
851.13(b)	In the event a contractor has established a written safety and health program, an Integrated Safety Management System (ISMS) description pursuant to the DEAR Clause, or an approved Work Smart Standards (WSS) process before the date of issuance of the final rule, the Contractor may use that program, description, or process as the worker safety and health program required by this part if the appropriate Head of the DOE Field Element approves such use on the basis of written documentation provided by the contractor that identifies the specific portions of the program, description, or process, including any additional requirements or implementation methods to be added to the existing program, description, or process, that satisfy the requirements of this part and that provide a workplace as safe and healthful as would be provided by the requirements of this part.	Yes	• NA, MCS developed a WSHP
851.13(c)	Nothing in this part shall be construed to limit or otherwise affect contractual obligations of a contractor to comply with contractual requirements that are not inconsistent with the requirements of this part.	Yes	• WSHP, Section 10
851.20	**Management Responsibilities and Worker Rights and Responsibilities**		
851.20(a)	*Management responsibilities*. Contractors are responsible for the safety and health of their workforce and must ensure that contractor management at a covered workplace:	Yes	See below
851.20(a)(1)	Establish written policy, goals, and objectives for the worker safety and health program;	Yes	• WSHP, Section 5.6.1.2 • DUF6-PLN-040, *Integrated Safety Management System Plan* • ES&H Policy Statement • DUF6-POL-003, *Fire Protection Statement*
851.20(a)(2)	Use qualified worker safety and health staff (e.g., a certified industrial hygienist, or safety professional) to direct and manage the program;	Yes	• WSHP, Section 5.6.1.4 • DUF6-U-TRN-0001, *Training and Qualification* • ESH Special Terms and Conditions, *DUF6 Form 9063*, regarding Subcontractor ESH Representative.
851.20(a)(3)	Assign worker safety and health program responsibilities, evaluate personnel performance, and hold personnel accountable for worker safety and health performance;	Yes	• WSHP, Section 5.6.1.5 • DUF6-PLN-040, *Integrated Safety Management System Plan* • DUF6-U-HRP-0001, *Human Resources Policy Manual* • ESH Special Terms and Conditions, *DUF6 Form 9063*

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.20	**Management Responsibilities and Worker Rights and Responsibilities**		
851.20(a)(4)	Provide mechanisms to involve workers and their elected representatives in the development of the worker safety and health program goals, objectives, and performance measures and in the identification and control of hazards in the workplace;	Yes	• WSHP, Section 5.6.1.6 • DUF6-PLN-040, *Integrated Safety Management System Plan* • DUF6-U-SHP-0211, *Hazard Analysis*
851.20(a)(5)	Provide workers with access to information relevant to the worker safety and health program;	Yes	• WSHP, Section 5.6.2.2 • Documentum does and will contain information relevant to the WSHP
851.20(a)(6)	Establish procedures for workers to report without reprisal job-related fatalities, injuries, illnesses, incidents, and hazards and make recommendations about appropriate ways to control those hazards;	Yes	• WSHP, Section 5.6.1.8 • DUF6-PLN-040, *Integrated Safety Management System Plan* • DUF6-U-SHP-0101, *Safety First Program* • DUF6-U-SHP-0102, *General Safety Rules*
851.20(a)(7)	Provide for prompt response to such reports and recommendations;	Yes	• WSHP, Section 5.6.1.8 • DUF6-U-SHP-0101, *Safety First Program*
851.20(a)(8)	Provide for regular communication with workers about workplace safety and health matters;	Yes	• WSHP, Section 5.6.1.9 • DUF6-U-SHP-0211, Hazard Analysis, • DUF6-U-HRP-0001, Human Resources Policy Manual • DUF6-POL-048, Safety Culture • DUF6-PLN-001, Project Management Plan, requires monthly progress reports to DOE that includes ES&H. Report is available through Documentum.
851.20(a)(9)	Establish procedures to permit workers to stop work or decline to perform an assigned task because of a reasonable belief that the task poses an imminent risk of death, serious physical harm, or other serious hazard to workers, in circumstances where the workers believe there is insufficient time to utilize normal hazard reporting and abatement procedures; and	Yes	• WSHP, Section 5.6.10 • DUF6-U-QAP-0022, *Time-Out/Stop Work*
851.20(a)(10)	Inform workers of their rights and responsibility by appropriate means, including posting the DOE-designated Worker Protection Poster in the workplace where it is accessible to all workers.	Yes	• Job Site Posters and Initial Orientation • WSHP, Section 5.6.1.11 • DUF6-U-HRP-0001, *Human Resources Policy Manual*
851.20(b)	Worker rights and responsibilities. Workers must comply with the requirements of this part, including the worker safety and health program, which are applicable to their own actions and conduct. Workers at a covered workplace have the right, without reprisal, to:	Yes	• WSHP, Section 5.6.2
851.20(b)(1)	Participate in activities described in this section on official time.	Yes	• WSHP, Section 5.6.1.6

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.20	**Management Responsibilities and Worker Rights and Responsibilities**		
851.20(b)(2)	Have access to: (i) DOE safety and health publications; (ii) The worker safety and health program for the workplace; (iii) The standards, controls, and procedures applicable to the covered workplace; (iv) The safety and health poster that informs the worker of relevant rights and responsibilities; Limited information on any recordkeeping log (OSHA Form 300). Access is subject to Freedom of Information Act requirements and restrictions; and (v) The DOE Form 5484.3 (the DOE equivalent to OSHA Form 301) that contains the employee's name as the injured or ill worker;	Yes	• WSHP, Section 5.6.2.2
851.20(b)(3)	Be notified when monitoring results indicate the worker was overexposed to hazardous materials;	Yes	• WSHP, Section 5.6.2.3 • DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.20(b)(4)	Observe monitoring or measuring of hazardous agents and have the results of their own exposure monitoring;	Yes	• WSHP, Section 5.6.2.4 • DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.20(b)(5)	Have a representative authorized by employees accompany the Director or his authorized personnel during the physical inspection of the workplace for the purpose of aiding the inspection. When no authorized employee representative is available, the Director or his authorized representative must consult, as appropriate, with employees on matters of worker safety and health;	Yes	• WSHP, Section 5.6.2.5
851.20(b)(6)	Request and receive results of inspections and accident investigations;	Yes	• WSHP, Section 5.6.2.6 • DUF6-U-SHP-0211, *Hazard Analysis*
851.20(b)(7)	Express concerns related to worker safety and health;	Yes	• WSHP, Section 5.6.2.7 • DUF6-POL-060, Environment, Safety, and Health Policy • DUF6-POL-048, Safety Culture • DUF6-PLN-040, Integrated Safety Management System Plan • DUF6-U-SHP-0101, Safety First Program

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.20	**Management Responsibilities and Worker Rights and Responsibilities**		
851.20(b)(8)	Decline to perform an assigned task because of a reasonable belief that, under the circumstances, the task poses an imminent risk of death or serious physical harm to the worker coupled with a reasonable belief that there is insufficient time to seek effective redress through normal hazard reporting and abatement procedures; and	Yes	• WSHP, Sections 5.6.1.10 and 5.6.2.8 • DUF6-PLN-040, *Integrated Safety Management System Plan* • DUF6-U-SHP-0102, *General Safety Rules* • DUF6-U-SHP-0211, *Hazard Analysis*
851.20(b)(9)	Stop work when the worker discovers employee exposures to imminently dangerous conditions or other serious hazards; provided that any stop work authority must be exercised in a justifiable and responsible manner in accordance with procedures established in the approved worker safety and health program.	Yes	• WSHP, Sections 5.6.1.10 and 5.6.2.8 • DUF6-U-QAP-0022, *Time-Out/Stop Work*
851.21	**Hazard Identification and Assessment**		
851.21(a)	Contractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers' injury and illness. Procedures must include methods to:	Yes	• WSHP, Section 9 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0015, *Technical Procedure Development*
851.21(a)(1)	Assess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring;	Yes	• WSHP, Section 9 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.21(a)(2)	Document assessment for chemical, physical, biological, and safety workplace hazards using recognized exposure assessment and testing methodologies and using of accredited and certified laboratories;	Yes	• WSHP, Section 9 • DUF6-U-SHP-0211 *Hazard Analysis* • DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.21(a)(3)	Record observations, testing and monitoring results;	Yes	• WSHP, Section 9 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.21(a)(4)	Analyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards;	Yes	• WSHP, Section 9

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851.21	**Hazard Identification and Assessment**		
851.21(a)(5)	Evaluate operations, procedures, and facilities to identify workplace hazards	Yes	• WSHP, Section 9 • DUF6-C-DSA-001, *Paducah DUF6 Conversion Facility Documented Safety Analysis, Paducah, Kentucky* • DUF6-X-DSA-001, *Portsmouth DUF6 Conversion Facility Documented Safety Analysis, Piketon, Ohio* • DUF6-C-F-FHA-001, Paducah DUF6 *Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment* • DUF6-X-F-FHA-001, *Portsmouth DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment* • DUF6-X/C-SHP-0307, *Development/Maintenance of Hazards Surveys, Emergency Planning Hazards Assessments, and Emergency Action Levels* • CP2-EP-3000, *Emergency Planning Hazards Assessment for the U.S. Department of Energy Paducah, Kentucky Site for the DOE C-745 Cylinder Storage Yards* • FBP-EM-EPHA-00007, FLUOR-BWXT *Portsmouth LLC Emergency Planning Hazards Assessment for the Decontamination and Decommissioning, Infrastructure Support Services, and Piketon DUF6 Conversion Facilities at the Portsmouth Gaseous Diffusion Plant* • DUF6-U-SHP-0211, *Hazard Analysis*
851.21(a)(6)	Perform routine job activity-level hazard analyses;	Yes	• WSHP, Section 9 • DUF6-U-SHP-0211, *Hazard Analysis*
851.21(a)(7)	Review site safety and health experience information; and	Yes	• WSHP, Section 9 • DUF6-U-CLP-0016, *Occurrence Notification and Reporting* • DUF6-U-CLP-0017, *Operating Experience Program*
851.21(a)(8)	Consider interaction between workplace hazards and other hazards such as radiological hazards.	Yes	• WSHP, Section 9 • DUF6-U-GFP-0108, *Control of Work* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-PLN-216, *Environmental Radiation Protection Program* • DUF6-PLN-007, *Radiation Protection Program*

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851.21	**Hazard Identification and Assessment**		
851.21(b)	Contractors must submit to the Head of DOE Field Element a list of closure facility hazards and the established controls within 90 days after identifying such hazards.	No	• NA
	The Head of DOE Field Element, with concurrence by the Cognizant Secretarial Officer, has 90 days to accept the closure facility hazard controls or direct additional actions to either: (1) Achieve technical compliance; or (2) Provide additional controls to protect the workers.	No	• NA
851.21(c)	Contractors must perform the activities identified in paragraph (a) of this section, initially to obtain baseline information and as often thereafter as necessary to ensure compliance with the requirements in this Subpart.	Yes	• DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work*
851.22	**Hazard prevention and abatement**		
851.22(a)	Contractors must establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner.	Yes	• WSHP, Section 10 • DUF6-PLN-040, *Integrated Safety Management System Plan* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work* • DUF6-X-DSA-001, *Portsmouth DUF6 Conversion Facility Documented Safety Analysis, Piketon, Ohio* • DUF6-C-F-FHA-001, *Paducah DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment* • DUF6-X-F-FHA-001, *Portsmouth DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Engineering Assessment* • DUF6-X/C-SHP-0307, *Development/Maintenance of Hazards Surveys, Emergency Planning Hazards Assessments, and Emergency Action Levels* • CP2-EP-3000, *Emergency Planning Hazards Assessment for the U.S. Department of Energy Paducah, Kentucky Site for the DOE C-745 Cylinder Storage Yards* • FBP-EM-EPHA-00007, *FLUOR-BWXT Portsmouth LLC Emergency Planning Hazards Assessment for the Decontamination and Decommissioning, Infrastructure Support Services, and Piketon DUF6 Conversion Facilities at the Portsmouth Gaseous Diffusion Plant*

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851.22	**Hazard Prevention and Abatement**		
851.22(a) (cont.)			• DUF6-X-DSA-001, *Portsmouth DUF6 Conversion Facility Documented Safety Analysis, Piketon, Ohio* • DUF6-C-F-FHA-001, *Paducah DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Facility Assessment* • DUF6-X-F-FHA-001, *Portsmouth DUF6 Conversion Facility Combined Fire Hazards Analysis and Fire Protection Engineering Assessment* • DUF6-X/C-SHP-0307, *Development/Maintenance of Hazards Surveys, Emergency Planning Hazards Assessments, and Emergency Action Levels* • CP2-EP-3000, *Emergency Planning Hazards Assessment for the U.S. Department of Energy Paducah, Kentucky Site for the DOE C-745 Cylinder Storage Yards* • FBP-EM-EPHA-00007, *FLUOR-BWXT Portsmouth LLC Emergency Planning Hazards Assessment for the Decontamination and Decommissioning, Infrastructure Support Services, and Piketon DUF6 Conversion Facilities at the Portsmouth Gaseous Diffusion Plant* • DUF6-X-DSA-003, *Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Piketon, Ohio* • DUF6-C-DSA-003, *Documented Safety Analysis for the DUF6 Conversion Project Cylinder Storage Yards, Paducah, Kentucky* • DUF6-X-TSR-002, *Technical Safety Requirements for the DUF6 Conversion Facility, Piketon, Ohio* • DUF6-C-TSR-002, *Technical Safety Requirements for the DUF6 Conversion Facility, Paducah Kentucky* • DUF6-X-TSR-004, *Technical Safety Requirements for the Department of Energy X-745C, X745E, and X-745G-1 UF6 Cylinder Storage Yards, Piketon, Ohio* • DUF6-C-TSR-004, *Technical Safety Requirements for the DUF6 Conversion Project Cylinder Storage Yards, Paducah Kentucky*

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851.22	**Hazard Prevention and Abatement**		
851.22(a)(1)	For hazards identified either in the facility design or during the development of procedures, controls must be incorporated in the appropriate facility design or procedure.	Yes	• DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0015, *Technical Procedure Development*
851.22(a)(2)	For existing hazards identified in the workplace, contractors must: (iii) Prioritize and implement abatement actions according to the risk to workers; (iv) Implement interim protective measures pending final abatement; and (v) Protect workers from dangerous safety and health conditions;	Yes	• WSHP, Section 10 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work*
851.22(b)	Contractors must select hazard controls based on the following hierarchy: (1) Elimination or substitution of the hazards where feasible and appropriate; (2) Engineering controls where feasible and appropriate; (3) Work practices and administrative controls that limit worker exposures; and (4) Personal protective equipment.	Yes	• WSHP, Section 10 • DUF6-POL-060, *Environment, Safety, and Health Policy* • DUF6-POL-048, *Safety Culture* • DUF6-PLN-040, *Integrated Safety Management System Plan*
851.22(c)	Contractors must address hazards when selecting or purchasing equipment, products, and services.	Yes	• WSHP, Section 10 • DUF6-U-PRP-0001, *Purchasing Procedure* • DUF6-U-SHP-0601, *Hazard Communications* • DUF6-PLN-040, *Integrated Safety Management System Plan*
851.23	**Safety and Health Standards**		
851.23(a)	Contractors must comply with the following safety and health standards that are applicable to the hazards at their covered workplace:	Yes	• WSHP, Section 11 and Attachment A • DOE Contract No. DE-EM0004559
851.23(a)(1)	Title 10 Code of Federal Regulations (CFR) 850, "Chronic Beryllium Disease Prevention Program."	Yes	• MCS does not have a Beryllium Program since it has no source of beryllium exposure. However, MCS may have employees addressed by 10 CFR 850. These employees are covered by the Site contractor which implements the Beryllium Program for DOE – Portsmouth does not have one presently but Paducah has the *Four Rivers Nuclear Partnership Chronic Beryllium Disease Prevention Program* (CBDPP), CP2-HS-2001.

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851.23	**Safety and Health Standards**		
851.23(a)(2)	Title 29 CFR, Parts 1904.4 through 1904.11, 1904.29 through 1904.33 and 1904.46, ''Recording and Reporting Occupational Injuries and Illnesses.''	Yes	• WSHP, Section 11 and Attachment A • DUF6-U-SHP-0301, *Accident/Incident Reporting*
851.23(a)(3)	Title 29 CFR, Part 1910, ''Occupational Safety and Health Standards,'' excluding 29 CFR 1910.1096, ''Ionizing Radiation.'', and 29 CFR 1910.1000, "Beryllium"	Yes	• DUF6-PLN-040, *Integrated Safety Management System Plan*
851.23(a)(4)	29 CFR 1915, "Shipyard Employment."	No	• Standard is not applicable to MCS
851.23(a)(5)	29 CFR 1917, "Marine Terminals."	No	• Standard is not applicable to MCS
851.23(a)(6)	29 CFR 1918, "Safety and Health Regulations for Longshoring."	No	• Standard is not applicable to MCS
851.23(a)(7)	29 CFR 1926, "Safety and Health Regulations for Construction."	Yes	• WSHP, Attachment A
851.23(a)(8)	29 CFR 1928, "Occupational Safety and Health Standards for Agriculture."	No	• Standard is not applicable to MCS.
851.23(a)(9)	American Conference of Governmental Industrial Hygienists (ACGIH), ''Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices,'' (2016) (incorporated by reference, see § 851.27) when the ACGIH Threshold Limit Values (TLVs) are lower (more protective) than permissible exposure limits in 29 CFR 1910. When the ACGIH TLVs are used as exposure limits, contractors must nonetheless comply with the other provisions of any applicable expanded health standard found in 29 CFR 1910.	Yes	• WSHP, Section 15.3 and Attachment A • DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.23(a)(10)	American National Standards Institute (ANSI) Z88.2, ''American National Standard for Respiratory Protection,'' (2015) (incorporated by reference, see § 851.27).	Yes	• WSHP, Section 15.3 and Attachment A • DUF6-U-SHP-0504, *Respiratory Protection Program*
851.23(a)(11)	ANSI Z136.1, ''Safe Use of Lasers,'' (2014) (incorporated by reference, see § 851.27).	Yes	• DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.23(a) (12)	ANSI Z49.1, "Safety in Welding, Cutting and Allied Processes" section 4.3 and E4.3 (2012) (incorporated by reference, see § 851.27).	Yes	• DUF6-U-SHP-0801, *Hot Work*
851.23(a)(13)	National Fire Protection Association (NFPA) 70, ''National Electrical Code,'' (2017) (incorporated by reference, see § 851.27).	Yes	• In Electrical Installation Specification
851.23(a)(14)	NFPA 70E, ''Standard for Electrical Safety in the Workplace,'' (2015) (incorporated by reference, see § 851.27). **Note**: DUF6 Project is upgrading to NFPA 70E (2018) as a best management practice to maximize efficiency and value to the DOE.	Yes	• DUF6-U-SHP-0214, *Electrical Safety*

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851.23	**Safety and Health Standards**		
851.23(b)	Nothing in this part must be construed as relieving a contractor from complying with any additional specific safety and health requirement that it determines to be necessary to protect the safety and health of workers.	Yes	• WSHP, Section 11
851.24	**Functional Areas**		
851.24(a)	Contractors must have a structured approach to their worker safety and health program which at a minimum, include provisions for the following applicable functional areas in their worker safety and health program: construction safety; fire protection; firearms safety; explosives safety; pressure safety; electrical safety; industrial hygiene; occupational medicine; biological safety; and motor vehicle safety.	Yes	• WSHP, Section 12
851.24(b)	In implementing the structured approach required by paragraph (a) of this section, contractors must comply with the applicable standards and provisions in Appendix A of this part, entitled ''Worker Safety and Health Functional Areas.''	Yes	• WSHP, Section 12
851.25	**Training Information**		
851.25(a)	Contractors must develop and implement a worker safety and health training and information program to ensure that all workers exposed or potentially exposed to hazards are provided with the training and information on that hazard in order to perform their duties in a safe and healthful manner.	Yes	• WSHP, Section 13 • DUF6-PLN-027, *Personnel Selection, Training, and Qualification Management Plan* • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-U-SHP-0601, *Hazard Communications*
851.25(b)	The contractor must provide:	Yes	See below:
851.25(b)(1)	Training and information for new workers, before or at the time of initial assignment to a job involving exposure to a hazard;	Yes	• WSHP, Sections 13.2, 13.3, and 13.4 • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-U-SHP-0211, *Hazard Analysis*
851.25(b)(2)	Periodic training as often as necessary to ensure that workers are adequately trained and informed; and	Yes	• WSHP, Sections 13.2, 13.3, and 13.4 • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-U-SHP-0211, *Hazard Analysis*
851.25(b)(3)	Additional training when safety and health information or a change in workplace conditions indicates that a new or increased hazard exists.	Yes	• WSHP, Sections 13.2, 13.3, and 13.4 • DUF6-U-SHP-0211, *Hazard Analysis*
851.25(c)	Contractors must provide training and information to workers who have worker safety and health program responsibilities that is necessary for them to carry out those responsibilities.	Yes	• WSHP, Section 13.6 • DUF6-PLN-027, *Personnel Selection, Training, and Qualification Plan* • DUF6-U-TRN-0001, *Training and Qualification*

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851.26	**Recordkeeping and Reporting**		
851.26(a)	*Recordkeeping*. Contractors must:		See below:
851.26(a)(1)	Establish and maintain complete and accurate records of all hazard inventory information, hazard assessments, exposure measurements, and exposure controls.	Yes	• WSHP, Sections 14.1 • DUF6-U-DMP-0002, *Records Management Procedure* • DUF6-U-SHP-0211, *Hazard Analysis*
851.26(a)(2)	Ensure that the work-related injuries and illnesses of its workers and subcontractor workers are recorded and reported accurately and consistent with DOE reporting directives.	Yes	• WSHP, Sections 14.2 • DUF6-U-SHP-0301, *Accident/Incident Reporting*
851.26(a)(3)	Comply with the applicable to occupational injury and illness recordkeeping and reporting workplace safety and health standards in § 851.23 of this part at their site, unless otherwise directed by DOE.	Yes	• WSHP, Sections 14.2 • DUF6-U-SHP-0301, *Accident/Incident Reporting*
851.26(a)(4)	Not conceal nor destroy any information concerning non-compliance or potential noncompliance with the requirements of this part.	Yes	• WSHP, Section 14
851.26(b)	*Reporting and investigation*. Contractors must:		See below:
851.26(b)(1)	Report and investigate accidents, injuries and illnesses; and	Yes	• WSHP, Sections 14.2 • DUF6-U-SHP-0301, *Accident/Incident Reporting*
851.26(b)(2)	Analyze related data for trends and lessons learned.	Yes	• WSHP, Sections 14.3 • DUF6-U-CPL-0017, *Operating Experience Program* • DUF6-U-CPL-0019, *Trending* • DUF6-U-CPL-0018, *Root Cause Analysis*

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.27	**Reference Sources**		
851.27(a)	*Materials incorporated by reference.* (a) General. We incorporate by reference the following standards into part 851. The material has been approved for incorporation by the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. Any subsequent amendment to a standard by the standard-setting organization will not affect the DOE regulations unless and until amended by DOE. Material is incorporated as it exists on the date of the approval. To use a subsequent amendment to a standard, DOE must publish a document in the Federal Register and the material must be available to the public. All approved material is available for inspection at the U.S. Department of Energy, Office of Environment, Health, Safety and Security, Office of Worker Safety and Health Policy, 1000 Independence Ave. SW, Washington, DC 20585. 301-903-6061. The material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to: www.archives.gov/federal- register/cfr/ibr-locations.html. Standards can be obtained from the sources listed below.	Yes	• WSHP, Attachment A
851.27(b)	b) ACGIH. American Conference of Governmental Industrial Hygienist, 1330 Kemper Meadow Drive, Cincinnati, OH 45240. Telephone number: 513–742–2020, or go to: *http://www.acgih.org.*		See below
851.27(b)(1)	(1) ACGIH, *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*, 2016; IBR approved for § 851.23.	Yes	• WSHP, Sections 15.3 and Attachment A • DUF6-U-SHP-0504, *Respiratory Protection Program* • DUF6-U-SHP-0505, *Exposure Assessment (Non-Radiological)*
851.27(b)	(1) American National Standards Institute (ANSI) Z88.2, "American National Standard Practices for Respiratory Protection," (1992).	Yes	• WSHP, Sections 15.3 and Attachment A • DUF6-U-SHP-0504, *Respiratory Protection Program*
851.27(b)	(2) ANSI Z136.1, "Safe Use of Lasers," (2000).	Yes	• WSHP, Sections 15.3 and Attachment A
851.27(b)	(3) ANSI Z49.1, "Safety in Welding, Cutting and Allied Processes," (1999).	Yes	• WSHP, Sections 15.3 and Attachment A • DUF6-SHP-0801, *Hot Work*
851.27(b)	(4) National Fire Protection Association (NFPA) 70, "National Electrical Code," (2017).	Yes	• WSHP, Sections 15.3 • In Electrical Installation Specification
851.27(b)	(5) NFPA 70E, "Electrical Safety in the Workplace," (2018).	Yes	• WSHP, Sections 15.3 and Attachment A • DUF6-U-SHP-0214, *Electrical Safety*

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.27	**Reference Sources**		
851.27(b)	(6) American Conference of Governmental Industrial Hygienists, "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices," (2016).	Yes	• WSHP, Sections 15.3 and Attachment A • DUF6-U-SHP-0505, *Exposure Assessments (Non-Radiological)*
851.27(b)(2)	(2) Reserved	Yes	• NA
851.27(c)	(c) *ANSI*. American National Standards Institute, 1899 L Street NW, 11th Floor, Washington, DC 20036. Telephone number: 202–293–8020, or go to: *http://www.ansi.org*.	Yes	• WSHP, Attachment A
851.27(c)(1)	(1) ANSI Z49.1–2012, *American National Standard Safety in Welding, Cutting and Allied Processes*, sections 4.3 and E4.3, ANSI approved March 9, 2012, IBR approved for § 851.23.	Yes	• WSHP, Sections 15.3 and Attachment A • DUF6-SHP-0801, *Hot Work*
851.27(c)(2)	(2) ANSI/ASSE Z88.2–2015, *American National Standard Practices for Respiratory Protection,* ANSI approved March 4, 2015, IBR approved for § 851.23.	Yes	• WSHP, Sections 15.3 and Attachment A • DUF6-U-SHP-0504, *Respiratory Protection Program* • DUF6-U-SHP-0501, *Occupational Medicine Program*
851.27(c)(3)	(3) ANSI Z136.1–2014, American National Standard for Safe Use of Lasers, ANSI approved December 10, 2013, IBR approved for § 851.23.	Yes	• DUF6-U-SHP-0211, *Hazard Analysis* including Form DUF6-U-SHP-0211-F03, *Hazard Controls Identification Checklist*
851.27(d)	(d) *ASME*. American Society of Mechanical Engineers, P.O. Box 2300, Fairfield, NJ 07007. Telephone: 800–843–2763, or go to: http://www.asme.org.	Yes	See Below
851.27(d)(1)	(d)(1) ASME Boilers and Pressure Vessel Codes (BPVC) as follows:	Yes	• DUF6 will be operators only not designers.
851.27(d)(1)(i)	(i) BPVC.I-2015, *Section I-Rules for Construction of Power Boilers*, 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(ii)	(ii) BPVC.II.A-2015, *Section II-Materials, Part A-Ferrous Material Specifications* (Beginning to SA-450), 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(iii)	(iii) BPVC.II.A-2015, *Section II-Materials, Part A-Ferrous Material Specifications* (SA-451 to End), 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(iv)	(iv) BPVC.II.B-2015, *Section II-Materials, Part B-Nonferrous Material Specifications,* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(v)	(v) BPVC.II.C-2015, *Section II-Materials, Part C-Specification for Welding Rods; Electrodes, and Filler Metals*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	Yes	• Contained in pipe specification
851.27(d)(1)(vi)	(vi) BPVC.II.D.C-2015, *Section II-Materials, Part D-Properties* (Customary); 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety	No	• Standard is not applicable to MCS

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.27	**Reference Sources**		
851.27(d)(1)(vii)	(vii) BPVC.II.D.M-2015, *Section II- Materials, Part D-Properties* (Metric); 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(viii)	(viii) BPVC.III.A–2015, *Section III - Rules for Construction of Nuclear Facility Components, Appendices*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(ix)	(ix) BPVC.III.1.NB–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division I - Subsection NB, Class 1 Components*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(x)	(x) BPVC.III.1.NC–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division I - Subsection NC, Class 2 Components;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety	No	• Standard is not applicable to MCS
851.27(d)(1)(xi)	(xi) BPVC.III.1.ND–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division I - Subsection ND, Class 3 Components;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety; (8)(vii) B31.8S—2001—Managing System Integrity of Gas Pipelines;	No	• Standard is not applicable to MCS
851.27(d)(1)(xii)	(xii) BPVC.III.1.NE–2015, *Section III- Rules for Construction of Nuclear Facility Components, Division I - Subsection NE, Class MC Components*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety	No	• Standard is not applicable to MCS
851.27(d)(1)(xiii)	(xiii) BPVC.III.1.NF–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division I - Subsection NF, Supports*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety	No	• Standard is not applicable to MCS
851.27(d)(1)(xiv)	(xiv) BPVC.III.1.NG-2015, *Section III-Rules for Construction of Nuclear Facility Components, Division I-Subsection NG, Core Support Structures*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xv)	(xv) BPVC.III.1.NH–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division I - Subsection NH, Class 1 Components in Elevated Temperature Service*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.27	**Reference Sources**		
851.27(d)(1)(xvi)	(xvi) BPVC.III.NCA–2015, *Section III - Rules for Construction of Nuclear Facility; Components, Subsection NCA, General Requirements for Division 1 and Division 2*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety	No	• Standard is not applicable to MCS
851.27(d)(1)(xvii)	(xvii) BPVC.III.2–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division 2, Code for Concrete Containments;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xviii)	(xviii) BPVC.III.3–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division 3, Containments for Transportation and Storage of Spent Nuclear Fuel and High-Level Radioactive Material and Waste;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xix)	(xix)) BPVC.III.5–2015, *Section III - Rules for Construction of Nuclear Facility Components, Division 5, High Temperature Reactors*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xx)	(xx) BPVC.IV–2015, *Section IV, Rules for Construction of Heating Boilers; 2015 edition*, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xxii)	(xxii) BPVC.VI–2015, *Section VI, Recommended Rules for the Care and Operation of Heating Boilers; 2015 edition*, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	Yes	• DUF6-U-PEP-1316, Pressure Safety Program • WSHP, Section 12.4
851.27(d)(1)(xxiii)	(xxiii) BPVC.VII–2015, *Section VII, Recommended Guidelines for the Care of Power Boilers*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xxiv)	(xxiv) BPVC.VIII.1–2015*, Section VIII—Rules for Construction of Pressure Vessels, Division 1;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	Yes	• DUF6-U-PEP-1316, Pressure Safety Program • WSHP, Section 12.4
851.27(d)(1)(xxv)	(xxv) BPVC.VIII.2–2015, *Section VIII - Rules for Construction of Pressure Vessels, Division 2, Alternative Rules*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xxvi)	(xxvi) BPVC.VIII.3–2015, *Section VIII - Rules for Construction of Pressure Vessels, Division 3, Alternative Rules for Construction of High-Pressure Vessels*; 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.27	**Reference Sources**		
851.27(d)(1)(xxvii)	(xxvii) BPVC.IX–2015, *Section IX - Welding, Brazing and Fusing Qualifications, Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xxviii)	(xxviii) BPVC.X–2015, *Section X, Fiber - Reinforced Plastic Pressure Vessels;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xxvix)	(xxix) BPVC.XI–2015, *Section XI, Rules for In-service Inspection of Nuclear Power Plant Components;* 2015 edition, issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xxx)	(xxx) BPVC.XII–2015, *Section XII, Rules for Construction and Continued Service of Transport Tanks; issued July 1*, 2015; IBR approved for appendix A, section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(1)(xxxi)	(xxxi) BPVC.CC.BPV–2015, *Code Cases, Boilers and Pressure Vessels; 2015 edition,* issued July 1, 2015; IBR approved for appendix A, section 4, Pressure Safety; and	No	• Standard is not applicable to MCS
851.27(d)(1)(xxxii)	(xxxii) BPVC.CC.NC–2015, *Code Cases, Nuclear Components*; issued July 1, 2015, IBR approved for appendix A, section 4, Pressure Safety.	No	• Standard is not applicable to MCS
851.27(d)(2)	(2) ASME B31 codes for pressure piping as follows:	Yes	See below
851.27(d)(2)(i)	(i) B31.1–2016, *Power Piping, ASME Code for Pressure Piping*, B31, issued June 30, 2016; IBR approved for appendix A, Section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(2)(ii)	(ii) B31.3–2014, *Process Piping, ASME Code for Pressure Piping*, B31, issued February 27, 2015; IBR approved for appendix A, Section 4, Pressure Safety;	Yes	• DUF6-U-PEP-1316, *Pressure Safety Program* • WSHP, Section 12.4 • Piping Specification
851.27(d)(2)(iii)	(iii) B31.4–2016, *Pipeline Transportation Systems for Liquids and Slurries, ASME Code for Pressure Piping,* B31, issued March 31, 2016; IBR approved for appendix A, Section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(2)(iv)	(iv) B31.5–2016, *Refrigeration Piping and Heat Transfer Components, ASME Code for Pressure Piping*, B31, issued June 29, 2016; IBR approved for appendix A, Section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(2)(v)	(v) B31.8–2016, *Gas Transmission and Distribution Piping Systems, ASME Code for Pressure Piping*, B31, issued September 30, 2014; IBR approved for appendix A, Section 4, Pressure Safety;	No	• Standard is not applicable to MCS

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Section Number	Section Title/Description of General Requirements	Applicable	MCS Implementing Documents
851.27	**Reference Sources**		
851.27(d)(2)(vi)	(vi) B31.8S–2014, *Managing System Integrity of Gas Pipelines, ASME Code for Pressure Piping*, B31, Supplement to ASME B31.8, issued September 30, 2014; IBR approved for appendix A, Section 4, Pressure Safety;	No	• Standard is not applicable to MCS
851.27(d)(2)(vii)	(vii) B31.9–2014, *Building Services Piping, ASME Code for Pressure Piping,* B31, issued April 28, 2014; IBR approved for appendix A, Section 4, Pressure Safety; and	No	• Standard is not applicable to MCS
851.27(d)(2)(viii)	(viii) B31G–2012, *Manual for Determining the Remaining Strength of Corroded Pipelines, Supplement to ASME B31 Code for Pressure Piping*, issued October 24, 2012; IBR approved for appendix A, Section 4, Pressure Safety.	No	• Standard is not applicable to MCS
851.27(e)	(e) NFPA. The National Fire Protection Association, One Batterymarch Park, Quincy, MA 02169. Telephone: 617-984-7423, or go to: http://www.nfpa.org.	Yes	See below
851.27(e)(1)	1) NFPA 70, *National Electric Code*, (2017), issued August 4, 2016; IBR approved for § 851.23; and	Yes	See below
851.27(e)(2)	(2) NFPA 70E, *Standard for Electrical Safety in the Workplace*, (2015 edition) issued July 14, 2014; IBR approved for § 851.23.	Yes	See below
Appendix A	**General Requirements Worker Safety and Health Functional Areas**		
Appendix A-1	**Construction Safety**		
App A.1(a)	For each separately definable construction activity (e.g., excavations, foundations, structural steel, roofing) the construction contractor must:	Yes	See below
App A.1(a)	(1) Prepare and have approved by the construction manager an activity hazard analysis prior to commencement of affected work. Such analyses must:	Yes	• WSHP, Section 12.1 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work* • DUF6-U-PRP-0001, *Purchasing Procedure* • DUF6-U-PRP-0034, *Subcontract Technical Representative (STR)* • DUF6 Form 9063, *ESH Special Terms and Conditions*
App A.1(a)	(1)(i) Identify foreseeable hazards and planned protective measures;	Yes	• WSHP, Section 12.1 • DUF6-U-SHP-0102, *General Safety Rules* • DUF6-U-SHP-0210, *Personal Protective Equipment* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work*

Appendix A-1	Construction Safety		
App A.1(a)	(1)(ii) Address further hazards revealed by supplemental site information (e.g., site characterization data, as-built drawings) provided by the construction manager;	Yes	• WSHP, Section 12.1 • DUF6-U-QAP-0022, *Time Out/Stop Work* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work*
App A.1(a)	(1)(iii) Provide drawings and/or other documentation of protective measures for which applicable Occupational Safety and Health Administration (OSHA) standards require preparation by a Professional engineer or other qualified professional, and	Yes	• WSHP, Section 12.1 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work* • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-PLN-027, *Personnel Selection, Training, and Qualification Management Plan*
App A.1(a)	(1)(iv) Identify competent persons required for workplace inspections of the construction activity, where required by OSHA standards.	Yes	• WSHP, Section 12.1 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work* • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-PLN-027, *Personnel Selection, Training, and Qualification Management Plan*
App A.1(a)	(2) Ensure workers are aware of foreseeable hazards and the protective measures described within the activity analysis prior to beginning work on the affected activity.	Yes	• WSHP, Section 12.1 • DUF6-POL-060, *Environment, Safety, and Health Policy* • DUF6-POL-048, *Safety Culture* • DUF6-U-SHP-0102, *General Safety Rules* • DUF6-U-SHP-0210, *Personal Protective Equipment* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work*
App A.1(a)	(3) Require that workers acknowledge being informed of the hazards and protective measures associated with assigned work activities. Those workers failing to utilize appropriate protective measures must be subject to the construction contractor's disciplinary process.	Yes	• WSHP, Section 12.1 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work* • DUF6-U-SHP-0102, *General Safety Rules*
App A.1(b)	During periods of active construction (i.e., excluding weekends, weather delays, or other periods of work inactivity), the construction contractor must have a designated representative on the construction worksite who is knowledgeable of the Project's hazards and has full authority to act on behalf of the construction contractor. The contractor's designated representative must make frequent and regular inspections of the construction worksite to identify and correct any instances of noncompliance with project safety and health requirements.	Yes	• WSHP, Section 12.1 • DUF6-U-SHP-0103, *Safety Walkthroughs* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work* • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-PLN-027, *Personnel Selection, Training, and Qualification Management Plan* • DUF6-U-PRP-0001, *Purchasing Procedure* • DUF6-U-PRP-0034, *Subcontract Technical Representative* (STR) • DUF6 Form 9063, *ESH Special Terms and Conditions*

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Appendix A-1	**Construction Safety**		
App A.1(c)	Workers must be instructed to report to the construction contractor's designated representative, hazards not previously identified or evaluated. If immediate corrective action is not possible or the hazard falls outside of project scope, the construction contractor must immediately notify affected workers, post appropriate warning signs, implement needed interim control measures, and notify the construction manager of the action taken. The contractor or the designated representative must stop work in the affected area until appropriate protective measures are established.	Yes	• WSHP, Section 12.1 • DUF6-POL-060, *Environment, Safety, and Health Policy* • DUF6-POL-048, *Safety Culture* • DUF6-U-QAP-0022, *Time-Out/Stop Work* • DUF6-U-SHP-0102, *General Safety Rules* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-SHP-0301, *Accident/Incident Reporting* • DUF6-C-GFP-0107, *Accident Prevention, Equipment, and System Control Tags and Locks* • DUF6-X-GFP-0107, *Administrative-Control and Defective-Equipment Tags* • DUF6-U-SHP-0208, *Safety Signs, Tags, and Barriers* • DUF6-U-GFP-0108, *Control of Work*
App A.1(d)	The construction contractor must prepare a written construction Project safety and health plan to implement the requirements of this section and obtain approval of the plan by the construction manager prior to commencement of any work covered by the plan. In the plan, the contractor must designate the individual(s) responsible for on-site implementation of the plan, specify qualifications for those individuals, and provide a list of those project activities for which subsequent hazard analyses are to be performed. The level of detail within the construction project safety and health plan should be commensurate with the size, complexity and risk level of the construction project. The content of this plan need not duplicate those provisions that were previously submitted and approved as required by § 851.11.	Yes	• WSHP, Section 12.1 • DUF6-U-SHP-0103, *Safety Walkthroughs* • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-GFP-0108, *Control of Work* • DUF6-U-PRP-0001, *Purchasing Procedure* • DUF6-U-PRP-0034, *Subcontract Technical Representative (STR)* • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-PLN-027, *Personnel Selection, Training, and Qualification Management Plan* • DUF6 Form 9063, *ESH Special Terms and Conditions*
Appendix A-2	**Fire Protection**		
App A.2(a)	Contractors must implement a comprehensive fire safety and emergency response program to protect workers commensurate with the nature of the work that is performed. This includes appropriate facility and site-wide fire protection, fire alarm notification and egress features, and access to a fully staffed, trained, and equipped emergency response organization that is capable of responding in a timely and effective manner to site emergencies.	Yes	• WSHP, Section 12.2 • DUF6-PLN-024, *Fire Protection Program Description for the DUF6 Conversion Project* • DUF6-U-FPP-0803, *Fire Prevention and Good Housekeeping* • DUF6-U-FPP-0810, *Conversion Facility Control of Combustibles*
App A.2(b)	An acceptable fire protection program must include those fire protection criteria and procedures, analyses, hardware apparatus and equipment, and personnel that would comprehensively ensure that the objective in paragraph 2(a). This includes meeting applicable building codes and National Fire Protection Association codes and standards.	Yes	• WSHP, Section 12.2 • DUF6-PLN-024, *Fire Protection Program Description for the DUF6 Conversion Project*

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Appendix A-3	**Explosives Safety**		
App A.3(a)	Contractors responsible for the use of explosive materials must establish and implement a comprehensive explosives safety program.	No	• Standard is not applicable to MCS
App A.3(b)	(b) Contractors must comply with the policy and requirements specified in the appropriate explosives safety technical standard.	No	• Standard is not applicable to MCS
App A.3(b)	(b) Contractors must comply with the policy and requirements specified in the appropriate explosives safety technical standard.	No	• Standard is not applicable to MCS
App A.3(c)	Contractors must determine the applicability of the explosive's safety directive requirements to research and development laboratory type operations consistent with the DOE level of protection criteria described in the explosives safety directive.	No	• Standard is not applicable to MCS
Appendix A-4	**Pressure Safety**		
App A.4(a)	Contractors must establish safety policies and procedures to ensure that pressure systems are designed, fabricated, tested, inspected, maintained, repaired, and operated by trained and qualified personnel in accordance with applicable and sound engineering principles.	Yes	• WSHP, Section 12.4 • DUF6-X-CYP-2521, *UF6 Field Cold Pressure Check and Minor Valve Repair* • DUF6-C-CYP-2426, *Cold Pressure Check* • DUF6-C-CYP-2524, *Replacement of Non-Fissile UF6 Cylinder Valves and Plugs* • DUF6-U-PEP-1316, *Pressure Safety Program*
App A.4(b)	Contractors must ensure that all pressure vessels, boilers, air receivers, and supporting piping systems conform to:	Yes	• WSHP, Section 12.4 • DUF6-PLN-003, Project Quality Assurance Plan • DUF6-U-PEP-1316, Pressure Safety Program
App A.4(b)(1)	(1) The applicable American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC) including applicable Code Cases as indicated in paragraphs (b)(1)(i) through (xxxii) of this section:	Yes	• WSHP, Section 12.4 and Attachment A • Piping Specifications • DUF6-U-PEP-1316, *Pressure Safety Program*
App A.4(b)(1)(i)	(i) BPVC.I-2015, *Section I-Rules for Construction of Power Boilers* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(ii)	(ii) BPVC.II. A-2015, *Section II-Materials, Part A-Ferrous Material Specifications* (Beginning to SA–450) (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(iii)	((iii) BPVC.II.A–2015, *Section II—Materials, Part A—Ferrous Material Specifications (*SA– 451 to End) (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(iv)	(iv) BPVC.II.B–2015, *Section II—Materials, Part B—Nonferrous Material Specifications* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS

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App A.4(b)(1)(v)	(v) BPVC.II.C-2015, *Section II-Materials, Part C-Specification for Welding Rods; Electrodes, and Filler Metals* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(vi)	(vi) BPVC.II.D.C-2015, *Section II- Materials, Part D-Properties* (Customary) (incorporated by reference, see § 851.27	No	• Standard is not applicable to MCS
App A.4(b)(1)(vii)	(vii) BPVC.II.D.M-2015, *Section II-Materials, Part D-Properties* (Metric) (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(viii)	(viii) BPVC.III.A-2015, *Section III-Rules for Construction of Nuclear Facility Components, Appendices* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(ix)	(ix) BPVC.III.1.NB–2015, *Section III—Rules for Construction of Nuclear Facility Components, Division I—Subsection NB, Class 1 Components* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(x)	(x) BPVC.III.1.NC–2015, *Section III—Rules for Construction of Nuclear Facility Components, Division I—Subsection NC, Class 2 Components* (incorporated by reference, see § 851.27	No	• Standard is not applicable to MCS
App A.4(b)(1)(xi)	(xi) BPVC.III.1.ND–2015, Section III—*Rules for Construction of Nuclear Facility Components, Division I—Subsection ND, Class 3 Components* (incorporated by reference, see § 851.27)	No	• Standard is not applicable to MCS
App A.4(b)(1)(xii)	(xii) BPVC.III.1.NE–2015, *Section III—Rules for Construction of Nuclear Facility Components, Division I—Subsection NE, Class MC Components* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xiii)	(xiii) BPVC.III.1.NF-2015, *Section III -Rules for Construction of Nuclear Facility Components, Division I Subsection NF, Supports* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xiv)	(xiv) BPVC.III.1.NG–2015, *Section III-Rules for Construction of Nuclear Facility Components, Division I—Subsection NG, Core Support Structures* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xv)	(xv) BPVC.III.1. NH–2015, *Section III -Rules for Construction of Nuclear Facility Components, Division I—Subsection NH, Class 1 Components in Elevated Temperature Service* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xvi)	(xvi) BPVC.III.NCA-2015, *Section III - Rules for Construction of Nuclear Facility; Components, Subsection NCA, General Requirements for Division 1 and Division 2* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xvii)	(xvii) BPVC.III.2–2015, *Section III-Rules for Construction of Nuclear Facility Components, Division 2, Code for Concrete Containments* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS

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App A.4(b)(1)(xviii)	(xviii) BPVC.III.3-2015, *Section III-Rules for Construction of Nuclear Facility Components, Division 3, Containment for Transportation and Storage of Spent Nuclear Fuel and High-Level Radioactive Material and Waste* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xix)	(xix) BPVC.III.5-2015, *Section III-Rules for Construction of Nuclear Facility Components, Division 5, High Temperature Reactors* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xx)	(xx) BPVC.IV-2015, *Section IV, Rules for Construction of Heating Boilers* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxi)	(xxi) BPVC.V-2015, *Section V, Nondestructive Examination* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxii)	(xxii) BPVC.VI–2015, *Section VI, Recommended Rules for the Care and Operation of Heating Boilers* (incorporated by reference, see § 851.27);	Yes	• DUF6-U-PEP-1316, *Pressure Safety Program*
App A.4(b)(1)(xxiii)	(xxiii) BPVC.VII–2015, *Section VII, Recommended Guidelines for the Care of Power Boilers* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxiv)	(xxiv) BPVC.VIII.1–2015, *Section VIII-Rules for Construction of Pressure Vessels, Division 1* (incorporated by reference, see § 851.27);	Yes	• DUF6-U-PEP-1316, *Pressure Safety Program*
App A.4(b)(1)(xxv)	(xxv) BPVC.VIII.2–2015, *Section VIII-Rules for Construction of Pressure Vessels, Division 2, Alternative Rules* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxvi)	(xxvi) BPVC.VIII.3–2015, *Section VIII-Rules for Construction of Pressure Vessels, Division 3, Alternative Rules for Construction of High-Pressure Vessels* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxvii)	(xxvii) BPVC.IX–2015, *Section IX-Welding, Brazing and Fusing Qualifications, Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxviii)	(xxviii) BPVC.X–2015, *Section X, Fiber-Reinforced Plastic Pressure Vessels* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxix)	(xxix) BPVC.XI–2015, *Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxx)	(xxx) BPVC.XII–2015, *Section XII, Rules for Construction and Continued Service of Transport Tanks* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS

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App A.4(b)(1)(xxxi)	(xxxi) BPVC.CC.BPV–2015, *Code Cases, Boilers and Pressure Vessels* (incorporated by reference, see § 851.27); and	No	• Standard is not applicable to MCS
App A.4(b)(1)(xxxii)	(xxxii) BPVC.CC.NC–2015, *Code Cases, Nuclear Components* (incorporated by reference, see § 851.27).	No	• Standard is not applicable to MCS
App A.4(b)(2)	(2) The applicable ASME B31 code for pressure piping as indicated in this paragraph; and or as indicated in paragraph (b)(3) of this section:	No	• Standard is not applicable to MCS
App A.4(b)(2)(i)	(i) B31.1–2016, *Power Piping* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(2)(ii)	(ii) B31.3–2014, *Process Piping* (incorporated by reference, see § 851.27);	Yes	• WSHP, Section 15.3 and Attachment A • Piping Specifications • DUF6-U-PEP-1316, *Pressure Safety Program*
App A.4(b)(2)(iii)	(iii) B31.4–2016, *Pipeline Transportation Systems for Liquids and Slurries* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(2)(iv)	(iv) B31.5–2016, *Refrigeration Piping and Heat Transfer Components* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(2)(v)	(v) B31.8–2016, *Gas Transmission and Distribution Piping Systems* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(2)(vi)	(vi) B31.8S–2014, *Managing System Integrity of Gas Pipelines* (incorporated by reference, see § 851.27);	No	• Standard is not applicable to MCS
App A.4(b)(2)(vii)	(vii) B31.9–2014, *Building Services Piping* (incorporated by reference, see § 851.27); and	No	• Standard is not applicable to MCS
App A.4(b)(2)(viii)	(viii) B31G–2012, *Manual for Determining the Remaining Strength of Corroded Pipelines* (incorporated by reference, see § 851.27).	No	• Standard is not applicable to MCS

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Appendix A-4	**Pressure Safety**		
App A.4(c)	When national consensus codes are not applicable (because of pressure range, vessel geometry, use of special materials, etc.), contractors must implement measures to provide equivalent protection and ensure a level of safety greater than or equal to the level of protection afforded by the ASME or applicable state or local code. Measures must include the following: (1) Design drawings, sketches, and calculations must be reviewed and approved by a qualified independent design professional (i.e., professional engineer). Documented organizational peer review is acceptable. 2) Qualified personnel must be used to perform examinations and inspections of materials, in-process fabrications, nondestructive tests, and acceptance test. (3) Documentation, traceability, and accountability must be maintained for each pressure vessel or system, including descriptions of design, pressure conditions, testing, inspection, operation, repair, and maintenance.	Yes	• DUF6-U-PEP-1316, Pressure Safety Program
Appendix A-5	**Firearms Safety**		
App A.5(a)	A contractor engaged in DOE activities involving the use of firearms must establish firearms safety policies and procedures for security operation, and training to ensure proper accident prevention controls are in place. (1) Written procedures must address firearms safety, engineering and administrative controls, as well as personal protective equipment requirements. (2) As a minimum, procedures must be established for: (i) Storage, handling, cleaning, inventory, and maintenance of firearms and associated ammunition; (ii) Activities such as loading, unloading, and exchanging firearms. These procedures must address use of bullet containment devices and those techniques to be used when no bullet containment device is available; (iii) Use and storage of pyrotechnics, explosives, and/or explosive projectiles; (iv) Handling misfires and unauthorized discharges; (v) Live fire training, qualification, and evaluation activities; (vi) Training and exercises using engagement simulation systems; (vii) Medical response at firearms training facilities; and (viii) Use of firing ranges by personnel other than DOE or DOE contractor protective forces personnel.	No	• Standard is not applicable to MCS

Appendix A-5	**Firearms Safety**		
App A.5(b)	Contractors must ensure that personnel responsible for the direction and operation of the firearms safety program are professionally qualified and have sufficient time and authority to implement the procedures under this section.	No	• Standard is not applicable to MCS
App A.5(c)	Contractors must ensure that firearms instructors and armorers have been certified by the Safeguards and Security National Training Center to conduct the level of activity provided. Personnel must not be allowed to conduct activities for which they have not been certified.	No	• Standard is not applicable to MCS
App A.5(d)	Contractors must conduct formal appraisals assessing implementation of procedures, personnel responsibilities, and duty assignments to ensure overall policy objectives and performance criteria are being met by qualified personnel.	No	• Standard is not applicable to MCS
App A.5(e)	Contractors must implement procedures related to firearms training, live fire range safety, qualification, and evaluation activities, including procedures requiring that: (1) Personnel must successfully complete initial firearms safety training before being issued any firearms. Authorization to remain in armed status will continue only if the employee demonstrates the technical and practical knowledge of firearms safety semiannually; (2) Authorized armed personnel must demonstrate through documented limited scope performance tests both technical and practical knowledge of firearms handling and safety on a semi-annual basis; 3) All firearms training lesson plans must incorporate safety for all aspects of firearms training task performance standards. The lesson plans must follow the standards set forth by the Safeguards and Security Central Training Academy's standard training programs; (4) Firearms safety briefings must immediately precede training, qualifications, and evaluation activities involving live fire and/or engagement simulation systems; (5) A safety analysis approved by the Head of DOE Field Element must be developed for the facilities and operation of each live fire range prior to implementation of any new training, qualification, or evaluation activity. Results of these analyses must be incorporated into procedures, lesson plans, exercise plans, and limited scope performance tests;	No	• Standard is not applicable to MCS

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Appendix A-5	**Firearms Safety**		
App A.5(e) Continued	(6) Firing range safety procedures must be conspicuously posted at all range facilities; and (7) Live fire ranges, approved by the Head of DOE Field Element, must be properly sited to protect personnel on the range, as well as personnel and property not associated with the range.	No	• Standard is not applicable to MCS
App A.5(f)	Contractors must ensure that the transportation, handling, placarding, and storage of munitions conform to the applicable DOE requirements.	No	• Standard is not applicable to MCS
Appendix A-6	**Industrial Hygiene**		
App A.6	Contractors must implement a comprehensive industrial hygiene program that includes at least the following elements:	Yes	• WSHP, Section 12.6 • DUF6-POL-060, *Environment, Safety, and Health Policy* • DUF6-POL-048, *Safety Culture* • DUF6-U-SHP-0501, *Occupational Medicine Program* • DUF6-U-SHP-0502, *Hearing Conservation Program* • DUF6-U-SHP-0504, *Respiratory Protection Program* • DUF6-U-SHP-0505, *Exposure Assessments* (Non-Radiological) • DUF6--U-SHP-0508, *Ergonomics Program* • DUF6-U-SHP-0511, *Biological Monitoring for Industrial Chemicals* • DUF6-U-SHP-0514, *Temperatures Extremes* • DUF6-U-SHP-0601, *Hazard Communications* • DUF6-U-SHP-0210, *Personal Protective Equipment*
App A.6(a)	Initial or baseline surveys and periodic resurveys and/or exposure monitoring as appropriate of all work areas or operations to identify and evaluate potential worker health risks;	Yes	• WSHP, Section 12.6 • DUF6-U-SHP-0505, *Exposure Assessments* (Non-Radiological)
App A.6(b)	Coordination with planning and design personnel to anticipate and control health hazards that proposed facilities and operations would introduce;	Yes	• DUF6-U-PEP-1110, *Operations Design Change Control*
App A.6(c)	Coordination with cognizant occupational medical, environmental, health physics, and work planning professionals;	Yes	• WSHP, Section 12.6 • DUF6-U-SHP-0211, *Hazard Analysis* • DUF6-U-SHP-0501, *Occupational Medicine Program* • DUF6-U-SHP-0505, *Exposure Assessments* (Non-Radiological)
App A.6(d)	Policies and procedures to mitigate the risk from identified and potential occupational carcinogens;	Yes	• WSHP, Section 12.6 • DUF6-U-SHP-0601, *Hazard Communications*
App A.6(e)	Professionally and technically qualified industrial hygienists to manage and implement the industrial hygiene program; and	Yes	• WSHP, Section 12.6 and 5.6 • DUF6-U-TRN-0001, *Training and Qualification* • DUF6-U-SHP-0505, *Exposure Assessments* (Non-Radiological)

Appendix A-6	**Industrial Hygiene**		
App A.6(f)	Use of respiratory protection equipment tested under the DOE Respirator Acceptance Program for Supplied-Air Suits when the National Institute for Occupational Safety and Health-approved respiratory protection does not exist for DOE tasks that require such equipment. For security operations military type masks for respiratory protection by security personnel is acceptable.	No	• Not applicable since MCS only anticipates the use of supplied-air suits that have been approved by the National Institute for Occupational Safety and Health, if such suits become necessary.
Appendix A-7	**Biological Safety**		
App A.7(a)	*Contractors must establish and implement a biological safety program that:* (1) Establishes an Institutional Biosafety Committee (IBC) or equivalent. The IBC must: (i) Review any work with biological etiologic agents for compliance with applicable Center for Disease Control (CDC), National Institutes of Health (NIH), World Health Organization (WHO), United States Department of Agriculture Animal and Plant Health Inspection Service (USDA/APHIS), and other international, Federal, state, and local guidelines and assess the containment level, facilities, procedures, practices, and training and expertise of personnel; and (ii) Review the site's security, safeguards, and emergency management plans and procedures to ensure they adequately consider work involving biological etiologic agents. (2) Maintains an inventory and status of biological etiologic agents, and provide to the responsible field and area office, through the laboratory IBC (or its equivalent), an annual status report describing the status and inventory of biological etiologic agents and the biological safety program. (3) Provides for submission to the appropriate Head of DOE Field Element, for review and concurrence before transmittal to the Federal Select Agent Program, each Laboratory Registration/Select Agent Program registration application package (APHIS/ CDC Form 1, Application for Registration for Possession, Use, and Transfer of Select Agents and Toxins) requesting registration of (or amendment to a previously approved registration) a laboratory facility for the purpose of possessing, using, or transferring biological select agents and/or toxins.	No	• Standard is not applicable to MCS

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Appendix A-7	**Biological Safety**		
App A.7(a) Continued	(4) Provides for submission to the appropriate Head of DOE Field Element, a copy of each APHIS/CDC Form 2, Request to Transfer Select Agents and Toxins, upon initial submission of APHIS/CDC Form 2 to a vendor or other supplier requesting or ordering a biological select agent or toxin for transfer, receipt, and handling in the registered facility; and submission to the appropriate Head of DOE Field Element the completed copy of the APHIS/CDC Form 2, documenting final disposition and/or destruction of the select agent or toxin, within 10 days of completion of the APHIS/CDC Form 2. (5) Confirms that the site safeguards and security plans and emergency management programs address biological etiologic agents, with particular emphasis on biological select agents. (6) Establishes an immunization policy for personnel working with biological etiologic agents based on the evaluation of risk and benefit of immunization.	No	• Standard is not applicable to MCS
App A.7(b)	[Reserved]		NA
Appendix A-8	**Occupational Medicine Program**		
App A.8(a)	Contractors must establish and provide comprehensive Occupational Medicine Program services to workers employed at a covered work place who: (1) Work on a DOE site for more than 30 days in a 12-month period; or (2) Are enrolled for any length of time in a medical or exposure-monitoring program required by this rule and/or any other applicable Federal, State or local regulation, or other obligation.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, *Occupational Medicine Program*
App A.8(b)	The occupational medicine services must be under the direction of a graduate of a school of medicine or osteopathy who is licensed for the practice of medicine in the state in which the site is located.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, *Occupational Medicine Program*
App A.8(c)	Occupational medical physicians, occupational health nurses, physician's assistants, nurse practitioners, psychologists, employee assistance counselors, and other occupational health personnel providing occupational medicine services must be licensed, registered, or certified as required by Federal or State law where employed.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, *Occupational Medicine Program*

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Appendix A-8	Occupational Medicine Program		
App A.8(d)	Contractors must provide the occupational medicine providers access to hazard information by promoting its communication, coordination, and sharing among operating and environment, safety, and health protection organizations. (1) Contractors must provide the occupational medicine providers with access to information on the following: (1)(i) Current information about actual or potential work-related site hazards (chemical, radiological, physical, biological, or ergonomic); (1)(ii) Employee job-task and hazard analysis information, including essential job functions; (1)(iii) Actual or potential work-site exposures of each employee; and (1)(iv) Personnel actions resulting in a change of job functions, hazards or exposures.	Yes	• WSHP, Section 12.8 • DUF6-POL-060, *Environment, Safety, and Health Policy* • DUF6-POL-048, *Safety Culture* • DUF6-PLN-007, *Radiation Protection Program* • DUF6-PLN-216, *Environmental Radiation Protection Program* • DUF6-U-SHP-0501, *Occupational Medicine Program*
App A.8(d)	(2) Contractors must notify the occupational medicine providers when an employee has been absent because of an injury or illness for more than 5 consecutive workdays (or an equivalent time period for those individuals on an alternative work schedule);	Yes	• DUF6-U-SHP-0501, *Occupational Medicine Program*
App A.8(d)	(3) Contractors must provide the occupational medicine provider information on, and the opportunity to participate in, worker safety and health team meetings and committees;	Yes	• DUF6-U-SHP-0501, *Occupational Medicine Program*
App A.8(d)	(4) Contractors must provide occupational medicine providers access to the workplace for evaluation of job conditions and issues relating to workers' health.	Yes	• DUF6-U-SHP-0501, *Occupational Medicine Program*
App A.8(e)	A designated occupational medicine provider must: (1) Plan and implement the occupation medicine services; and (2) Participate in worker protection teams to build and maintain necessary partnerships among workers, their representatives, managers, and safety and health protection specialists in establishing and maintaining a safe and healthful workplace.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program

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Appendix A-8	Occupational Medicine Program		
App A.8(f)	A record, containing any medical, health history, exposure history, and demographic data collected for the occupational medicine purposes, must be developed and maintained for each employee for whom medical services are provided. All occupational medical records must be maintained in accordance with Executive Order 13335, Incentives for the Use of Health Information Technology. (1) Employee medical, psychological, and employee assistance program (EAP) records must be kept confidential, protected from unauthorized access, and stored under conditions that ensure their long-term preservation. Psychological records must be maintained separately from medical records and in the custody the designated psychologist in accordance with 10 CFR 712.38(b) (2). (2) Access to these records must be provided in accordance with DOE regulations implementing the Privacy Act and the Energy Employees Occupational Illness Compensation Program Act.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(g)	The occupational medicine services provider must determine the content of the worker health evaluations, which must be conducted under the direction of a licensed physician, in accordance with current sound and acceptable medical practices and all pertinent statutory and regulatory requirements, such as the Americans with Disabilities Act. (1) Workers must be informed of the purpose and nature of the medical evaluations and tests offered by the occupational medicine provider. (1)(i) The purpose, nature and results of evaluations and tests must be clearly communicated verbally and in writing to each worker provided testing; (1)(ii) The communication must be documented in the worker's medical record; and (2) The following health evaluations must be conducted when determined necessary by the occupational medicine provider for providing initial and continuing assessment of employee fitness for duty.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program

Appendix A-8	Occupational Medicine Program		
App A.8(g) Continued	(2)(i) At the time of employment entrance or transfer to a job with new functions and hazards, a medical placement evaluation of the individual's general health and physical and psychological capacity to perform work will establish a baseline record of physical condition and assure fitness for duty. (2)(ii) Periodic, hazard-based medical monitoring or qualification-based fitness for duty evaluations required by regulations and standards, or as recommended by the occupational medicine services provider, will be provided on the frequency required. (2)(iii) Diagnostic examinations will evaluate employee's injuries and illnesses to determine work-relatedness, the applicability of medical restrictions, and referral for definitive care, as appropriate. (2)(iv) After a work-related injury or illness or an absence due to any injury or illness lasting 5 or more consecutive workdays (or an equivalent time period for those individuals on an alternative work schedule), a return to work evaluation will determine the individual's physical and psychological capacity to perform work and return to duty. (2)(v) At the time of separation from employment, individuals shall be offered a general health evaluation to establish a record of physical condition.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(h)	The occupational medicine provider must monitor ill and injured workers to facilitate their rehabilitation and safe return to work and to minimize lost time and its associated costs. (1) The occupational medicine provider must place an individual under medical restrictions when health evaluations indicate that the worker should not perform certain job tasks. The occupational medicine provider must notify the worker and contractor management when employee work restrictions are imposed or removed.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A8(i)	Occupational medicine provider physician and medical staff must, on a timely basis, communicate results of health evaluations to management and safety and health protection specialists to facilitate the mitigation of worksite hazards.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(j)	The occupational medicine provider must include measures to identify and manage the principal preventable causes of premature morbidity and mortality affecting worker health and productivity.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(j)	(1) The contractor must include programs to prevent and manage these causes of morbidity when evaluations demonstrate their cost effectiveness.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program

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Appendix A-8	**Occupational Medicine Program**		
App A.8(j)	(2) Contractors must make available to the occupational medicine provider appropriate access to information from health, disability, and other insurance plans (de-identified as necessary) in order to facilitate this process.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(k)	The occupational medicine services provider must review and approve the medical and behavioral aspects of employee counseling and health promotional programs, including the following types:	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(k)	(1) Contractor-sponsored or contractor supported EAPs;	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(k)	(2) Contractor-sponsored or contractor supported alcohol and other substance abuse rehabilitation programs; and	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(k)	(3) Contractor-sponsored or contractor supported wellness programs.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(k)	(4) The occupational medicine services provider must review the medical aspects of immunization programs, blood-borne pathogens programs, and bio-hazardous waste programs to evaluate their conformance to applicable guidelines.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
App A.8(k)	(5) The occupational medicine services provider must develop and periodically review medical emergency response procedures included in site emergency and disaster preparedness plans. The medical emergency responses must be integrated with nearby community emergency and disaster plans.	Yes	• WSHP, Section 12.8 • DUF6-U-SHP-0501, Occupational Medicine Program
Appendix A-9	**Motor Vehicle Safety**		
App A.9(a)	Contractors must implement a motor vehicle safety program to protect the safety and health of all drivers and passengers in Government-owned or -leased motor vehicles and powered industrial equipment (i.e., fork trucks, tractors, platform lift trucks, and other similar specialized equipment powered by an electric motor or an internal combustion engine).	Yes	• WSHP, Section 12.9 • DUF6-U-SHP-0102, *General Safety Rules* • DUF6-U-GFP-0109, *Management of Fleet Vehicles* • DUF6-U-SHP-0213, *DUF6 Powered Industrial Trucks*
App A.9(b)	The contractor must tailor the motor vehicle safety program to the individual DOE site or facility, based on an analysis of the needs of that particular site or facility.	Yes	• WSHP, Section 12.9 • DUF6-U-SHP-0102, *General Safety Rules* • DUF6-U-GFP-0109, *Management of Fleet Vehicles* • DUF6 -POL-071, *Vehicle Safety Policy*

Appendix A-9	**Motor Vehicle Safety**		
App A.9(c)	The motor vehicle safety program must address, as applicable to the contractor's operations: (1) Minimum licensing requirements (including appropriate testing and medical qualification) for personnel operating motor vehicles and powered industrial equipment; (2) Requirements for the use of seat belts and provision of other safety devices; (3) Training for specialty vehicle operators; (4) Requirements for motor vehicle maintenance and inspection; (5) Uniform traffic and pedestrian control devices and road signs; (6) On-site speed limits and other traffic rules; (7) Awareness campaigns and incentive programs to encourage safe driving; and (8) Enforcement provisions	Yes	• WSHP, Section 12.9 • DUF6-U-SHP-0102, *General Safety Rules* • DUF6-U-GFP-0109, *Management of Fleet Vehicles* • DUF6-U-SHP-0213, *DUF6Powered Industrial Trucks* • DUF6-POL-071, *Vehicle Safety Policy*
Appendix A-10	**Electrical Safety**		
App A.10	Contractors must implement a comprehensive electrical safety program appropriate for activities at their site. This program must meet the applicable electrical safety code and standards referenced in 851.23.	Yes	• WSHP, Section 12.10 • DUF6-U-SHP-0214, *Electrical Safety* • DUF6-U-GFP-0216, *Control of Hazardous Energy (Lockout/Tagout)*
Appendix A-11	**Nanotechnology Safety**		
	Reserved	No	• NA
Appendix A-12	**Workplace Violence Prevention**		
	Reserved	No	• NA

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