RECEIVED
By Carolee.Thompson at 12:53 pm, Apr 22, 2019

Department of Energy

Portsmouth/Paducah Project Office
1017 Majestic Drive, Suite 200
Lexington, Kentucky 40513
(859) 219-4000

APR 2 2 2019

Mr. Jeff Bradford, Program Manager
Four Rivers Nuclear Partnership, LLC
5511 Hobbs Road
Kevil, Kentucky 42053

PPPO-02-5480312-19

Dear Mr. Bradford:

CONTRACT NO. DE-EM0004895: APPROVAL OF DELIVERABLE NO. 87, ANNUAL REVIEW AND UPDATE OF THE WORKER SAFETY AND HEALTH PROGRAM

Reference: Letter from J. Bradford to M. Fultz, "Four Rivers Nuclear Partnership, LLC, Deliverable No. 87— Resubmittal of *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, CP2-HS-2000/FR2," (FRNP-19-2244), dated March 13, 2019

The U.S. Department of Energy (DOE) reviewed the updated Four Rivers Nuclear Partnership, LLC (FRNP) Worker Safety and Health Program (WSHP). DOE approves the WSHP as submitted.

If you have any questions or require additional information, please contact Chris Wagner at (270) 441-6816.

Sincerely,

Robert E. Edwards, III
Manager
Portsmouth/Paducah Project Office

e-copy:
april.ladd@pppo.gov, PPPO
brandy.mitchell@pad.pppo.gov, FRNP
chris.wagner@pppo.gov, PPPO
cory.hicks@pad.pppo.gov, FRNP
daniel.lillard@pppo.gov, PPPO
frnpcorrespondence@pad.pppo.gov, FRNP
jeff.bradford@pad.pppo.gov, FRNP
jennifer.woodard@pppo.gov, PPPO
joel.bradburne@pppo.gov, PPPO
joseph.stanley@pad.pppo.gov, FRNP
karen.testerman@pppo.gov, SMSI
kim.knerr@pppo.gov, PPPO
larry.glover@pad.pppo.gov, FRNP
marcia.fultz@pppo.gov, PPPO
myrna.redfield@pad.pppo.gov, FRNP
norm.sandlin@pad.pppo.gov, FRNP
pad.rmc@pad.pppo.gov, SSI
robert.edwards@pppo.gov, PPPO
roland.chretien@pad.pppo.gov, FRNP
tom.hines@pppo.gov, PPPO

WORKING COPY

VERIF. DATE: _____

INTIALS: _____

CP2-HS-2000/FR2

Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

This document is approved for public release per review by:

FRNP Classification Support — Date: 03/12/19

CP2-HS-2000/FR2

Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

Date Issued—March 2019

U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
FOUR RIVERS NUCLEAR PARTNERSHIP, LLC,
managing the
Deactivation and Remediation Project at the
Paducah Gaseous Diffusion Plant
under Contract DE-EM0004895

THIS PAGE INTENTIONALLY LEFT BLANK

APPROVALS

Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

CP2-HS-2000/FR2

March 2019

Approved by:

Rich Rhoads, Safety and Health Program Manager — Date: 3-11-19

Roland Chretien, Director
Health, Safety, Security, and Quality — Date: 03.11.19

DOE Approval Letter: PPPO-02-5480312-19 Date: 4/22/2019

Effective Date: 5/14/2019
Required Review Date: 3/11/2020

Nuclear Safety Documentation: NA

THIS PAGE INTENTIONALLY LEFT BLANK

REVISION LOG

REVISION NUMBER	DATE	DESCRIPTION OF CHANGES	PAGES AFFECTED
FR0	10/03/2017	Initial Release for FRNP	All
FR1	10/2018	Incorporation of new 10 *CFR* 851 regulations	All
FR2	3/11/2019	Update for annual DOE review.	All

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

ACRONYMS v

DEFINITIONS vii

1. PURPOSE 1

2. SCOPE AND APPLICABILITY 2

3. PROGRAM RESPONSIBILITIES 3
   3.1 PROGRAM MANAGER AND LEADERSHIP TEAM 3
      3.1.1 Functional Managers 4
      3.1.2 Front Line Managers/Supervisors 4
      3.1.3 Facility Managers 4
      3.1.4 Occupational Safety and Health 4
      3.1.5 Worker Rights and Responsibilities 5
      3.1.6 Training 6
      3.1.7 Records Management 7

4. PROGRAM DESCRIPTION 8
   4.1 HAZARD IDENTIFICATION, ASSESSMENT, AND CONTROL 8
      4.1.1 Hazard Baseline 8
      4.1.2 Hazard Identification and Assessment 8
      4.1.3 Hazard Control 9
      4.1.4 Personal Protective Equipment 10
   4.2 COMMONLY ENCOUNTERED HAZARDS AND CONTROLS 10
      4.2.1 Electrical Hazards 10
      4.2.2 Lockout/Tagout of Hazardous Energy Sources 11
      4.2.3 Overhead Power and Communication Lines 11
      4.2.4 Severe Weather 12
      4.2.5 Hoisting and Rigging Operations 12
      4.2.6 Elevated Work/Fall Protection 12
      4.2.7 Excavation, Trenching, and Penetrations 13
      4.2.8 Slip, Trip, and Fall Hazards 13
      4.2.9 Working on or Near Water 14
      4.2.10 Flora/Fauna Hazards and Prevention 14
      4.2.11 Accident Prevention Signs, Tags, Labels, and Barricades 14
      4.2.12 Housekeeping 15
      4.2.13 Drinking Water (Fieldwork Site) 15
      4.2.14 Illumination 15
      4.2.15 Tools 15
      4.2.16 Work Control 16
   4.3 FEEDBACK, CONTINUOUS IMPROVEMENT 17
      4.3.1 Employee Feedback 17
      4.3.2 Employee Involvement 17
      4.3.3 Continuous Improvement 18
      4.3.4 Work Performed By Subcontractors 19
   4.4 CONSTRUCTION SAFETY 19
      4.4.1 Work Performed by Subcontractors 19

4.4.2 Hazard Analysis 20
4.4.3 Inspections and Hazard Abatement 20
4.4.4 Project Worker Safety and Health Program 20
4.5 FIRE PROTECTION 20
4.5.1 Program 20
4.5.2 Program Elements 21
4.6 FIREARMS SAFETY 22
4.7 EXPLOSIVE SAFETY 22
4.8 INDUSTRIAL HYGIENE 22
4.8.1 Goal and Objectives 22
4.8.2 Program Elements 23
4.8.3 Noise 25
4.8.4 Temperature Extremes (Heat and Cold Stresses) 25
4.8.5 Confined Space Entry 26
4.8.6 Dust Control 26
4.8.7 Ergonomics 26
4.8.8 Indoor Air Quality 27
4.8.9 Asbestos and Other Fibrous Materials 27
4.8.10 Biological Monitoring for Industrial Chemicals 28
4.8.11 Inorganic Arsenic, Cadmium, Chromium, and Lead 28
4.8.12 Bloodborne Pathogens 29
4.8.13 Beryllium 29
4.8.14 Laboratory Safety 30
4.9 BIOLOGICAL SAFETY 31
4.10 OCCUPATIONAL MEDICINE PROGRAM 31
4.10.1 Injury/Illness Reporting and Response 33
4.10.2 Emergency Management 33
4.10.3 Pressure Safety 34
4.11 MOTOR VEHICLE SAFETY 35
4.12 INTEGRATION WITH ISMS 36
4.13 ZERO INCIDENTS PROGRAM 36
4.14 PROGRAM UPDATES 36
4.15 NANOTECHNOLOGY 37
4.16 WORKPLACE VIOLENCE PREVENTION 37
4.17 VARIANCES 37

APPENDIX A: IMPLEMENTATION MATRIX A-1

APPENDIX B: ELECTRICAL EQUIPMENT WORKER PROTECTION PREVENTIVE MAINTENANCE SCHEDULE B-1

APPENDIX C: CONSTRUCTION PROJECT SAFETY & HEALTH PLAN CROSSWALK 10 *CFR* 851 ..... C-1

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ACM	asbestos-containing material
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
CBDPP	Chronic Beryllium Disease Prevention Program
CDC	Center for Disease Control
CFR	*Code of Federal Regulations*
CIH	certified industrial hygienist
CSO	cognizant secretarial officer
dBA	decibels on the A-weighted scale
DEAR	U.S. Department of Energy Acquisition Regulation
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DSA	documented safety analysis
EAP	Employee Assistance Program
EPA	U.S. Environmental Protection Agency
ES&H	environment, safety, and health
FHA	fire hazard analysis
FRNP	Four Rivers Nuclear Partnership, LLC
GFCI	ground fault circuit interrupter
HIC	hazard indication checklist
HSS&Q	Health, Safety, Security, & Quality
IAQ	indoor air quality
IBC	Institutional Biosafety Committee
IH	industrial hygiene
ISMS	Integrated Safety Management System
JHA	job hazard analysis
LOTO	lockout/tagout
NCS	nuclear criticality safety
NEA	Negative Exposure Assessment
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
O	Order
OE/LL	operating experience/lessons learned
OSHA	Occupational Safety and Health Administration
PGDP D&R	Paducah Gaseous Diffusion Plant Deactivation and Remediation
PM	program manager
PPE	personal protective equipment
PPPO	Portsmouth/Paducah Project Office
PSS	plant shift superintendent
RM	responsible manager
S&H	safety and health
SME	subject matter expert
TFHA	transitional facility fire hazard analysis
TLV	Threshold Limit Values
TWA	time-weighted average
WSHP	Worker Safety and Health Program

THIS PAGE INTENTIONALLY LEFT BLANK

DEFINITIONS

Affected worker—a worker who would be affected by the granting or denial of a variance or any authorized representative of the worker, such as a collective bargaining agent.

Closure facility—a facility that is nonoperational and is, or is expected to be, permanently closed and/or demolished, or title to which is expected to be transferred to another entity for reuse.

Closure facility hazard—a facility-related condition within a closure facility involving deviations from the technical requirements of 10 *CFR* § 851.23 that would require costly and extensive structural/engineering modifications to be in compliance.

Cognizant Secretarial Officer (CSO)—with respect to a particular situation, the Assistant Secretary, Deputy Administrator, Program Office Director, equivalent U.S. Department of Energy (DOE) official who has primary line management responsibility for a contractor, or any other official to whom the CSO delegates in writing a particular function.

Compliance order—an order issued by the Secretary to a contractor that mandates a remedy, work stoppage, or other action to address a situation that violates, potentially violates, or otherwise is inconsistent with a requirement.

Construction—combination of erection, installation, assembly, demolition, or fabrication activities involved to create a new facility or to alter, add to, rehabilitate, dismantle, or remove an existing facility. It also includes the alteration and repair (including dredging, excavating, and painting) of buildings, structures, or other real property, as well as any construction, demolition, and excavation activities conducted as part of environmental restoration or remediation efforts.

Construction contractor—the lowest tiered contractor with primary responsibility for the execution of all construction work described within a construction procurement or authorization document (for example, construction contract or work order).

Construction manager—the individual or firm responsible to DOE for the supervision and administration of a construction project to ensure compliance with construction project requirements.

Compliance order—an order issued by the Secretary to a contractor that mandates a remedy, work stoppage, or other action to address a situation that violates, potentially violates, or otherwise is inconsistent with a requirement.

Construction project—the full scope of activities required on a construction worksite to fulfill the requirements of the construction procurement or authorization document.

Construction worksite—the area within the limits necessary to perform the work described in the construction procurement or authorization document. It includes the facility being constructed or renovated along with all necessary staging and storage areas, as well as adjacent areas subject to project hazards.

Contractor—any entity, including affiliated entities such as a parent corporation under contract with DOE or a subcontractor at any tier, that has responsibilities for performing work at a DOE site in furtherance of a DOE mission.

Covered workplace—a place at a DOE site where a contractor is responsible for performing work in furtherance of a DOE mission.

DOE—the U.S. Department of Energy, including the National Nuclear Security Administration.

Feasible and appropriate—reasonably achievable within contractual time and monetary constraints.

Hazardous substances—those substances or conditions defined as "hazardous" by the U.S. Environmental Protection Agency and the U.S. Department of Transportation (DOT) and listed under (A) through (D) of this definition, exposure to which results or may result in adverse effects on the health or safety of employees:

(A) Any substance defined under Section 103(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601).

(B) Any biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring.

(C) Any substance listed by the DOT as hazardous materials under 49 *CFR* § 172.101 and appendices.

(D) Hazardous waste means a waste or combination of wastes as defined in 40 *CFR* § 261.3 or those substances defined as hazardous wastes in 49 *CFR* § 171.8.

Occupational Medicine Provider—Occupational medicine provider means the designated site occupational medicine director (SOMD) or the individual providing medical services.

Personal fall arrest system—a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combination of these.

Pressure systems—all pressure vessels, and pressure sources including cryogenics, pneumatic, hydraulic, and vacuum. Vacuum systems should be considered pressure systems due to their potential for catastrophic failure due to backfill pressurization. Associated hardware (for example, gauges and regulators), fittings, piping, pumps, and pressure relief devices are also integral parts of the pressure system.

Safety and health standard—a standard that addresses a workplace hazard by establishing limits, requiring conditions, or prescribing the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe and healthful workplaces.

Subcontractor—any entity, including affiliated entities, such as a parent corporation, or a subcontractor at any tier, that has responsibilities for performing work under a FRNP contract in furtherance of the Paducah Deactivation and Remediation Project.

Supplier—a person or organization that engage in no more than tangential work at FRNP relating to delivery, installation or repair of their products and who do not have service contracts with FRNP or DOE.

Variance—an exception to compliance with some part of a safety and health standard granted by the Under Secretary to FRNP following the process in 10 *CFR* 851 Subpart D.

Vendor—a person or company whose principal product lines are supplies and equipment and who do not have service contracts with Four Rivers Nuclear Partnership, LLC, (FRNP) or DOE.

Visitor—an individual who does not have regular Paducah Site access but has a business reason to granted limited or temporary access.

Worker—an employee of FRNP or subcontractor of any tier working under the FRNP contract to DOE performing work in furtherance of a DOE mission at a covered workplace.

Workplace hazard—a physical, chemical, biological, or safety hazard with any potential to cause illness, injury, or death to a person.

THIS PAGE INTENTIONALLY LEFT BLANK

1. PURPOSE

[10 *CFR* § 851.20(a)(1)]

Four Rivers Nuclear Partnership, LLC, (FRNP) performs deactivation of facilities, preparation of facilities for future demolition, and environmental remediation activities according to the terms and conditions of Contract DE-EM0004895, Paducah Gaseous Diffusion Plant Project Deactivation and Remediation (PGDP D&R), (the Contract) for the U.S. Department of Energy (DOE) at the Paducah Site. FRNP is responsible for ensuring compliance with applicable laws, regulations, regulatory agreements, and requirements, as defined in the Contract.

Policy: It is FRNP's policy to provide a safe and healthy workplace for employees. Safety is FRNP's number one core value and will take precedence over cost and schedule. FRNP is dedicated to the belief that injuries, accidents, and incidents are preventable and is committed to integrating safety into aspects of work planning and execution, as described in the FRNP Integrated Safety Management System (ISMS).

The Worker Safety and Health Program (WSHP) is established to reduce or prevent occupational injuries, illnesses, and accident losses by providing FRNP employees with a safe and healthful workplace. Any issues involving the adherence to this WSHP will be resolved utilizing the Paducah shared site issue resolution process (10 *CFR* § 851.11).

The effective implementation of this FRNP policy necessitates that work activities conducted are directed by a project-wide WSHP, as outlined in this document. Contractual and regulatory requirements applicable to the project and the WSHP are flowed down effectively into implementing documents and FRNP subcontractors' submittal documents that provide the necessary detail for the successful implementation of controls at the work/task level. All FRNP subcontractors are required to implement the requirements of this WSHP. The scope, technical complexity, and risk of the activity determines the applicable federal, state, local, and DOE regulations, work planning process, and field oversight required.

The purpose of this WSHP is to provide workers with an effective program that will reduce or prevent accidental losses, injuries, and illnesses. Implementation of this program demonstrates compliance with 10 *CFR* 851 and other applicable requirements. A 10 *CFR* 851 Implementation Matrix has been included as Appendix A that lists WSHP requirements and the associated FRNP site level implementing document. Additionally, the WSHP will comply with applicable sections of 29 *CFR* 1910, *Occupational Safety and Health Standards, General Industry*, and 29 *CFR* 1926, *Safety and Health Regulations for Construction*, with the understanding in cases where there are differences in interpretation the more protective will be applied to the application or activity.

WORKER SAFETY AND HEALTH PROGRAM AND HAZARDOUS WASTE OPERATIONS INTEGRATION

Implementation of the WSHP, as described below in Section 3, Program Responsibilities, and Section 4, Program Description, also provides the foundation for general safety and health (S&H) management to meet the requirements of 29 *CFR* § 1910.120, *Hazardous Waste Operations and Emergency Response*, specifically to help achieve the S&H program elements delineated in 29 *CFR* § 1910.120(b) and the NOTE TO (b):

- A S&H program designed to identify, evaluate, and control S&H hazards, and provide for emergency response [29 *CFR* § 1910.120(b)(1)].

- An organizational structure that establishes the specific chain of command and specifies the overall authorities, responsibilities, and communication of supervisors and employees [29 *CFR* § 1910.120(b)(2)].

- Comprehensive work plan that addresses the tasks and objectives of operations and the logistics and resources required to reach those tasks and objectives [29 *CFR* § 1910.120(b)(2)].

- Site-specific health and safety plans that derive their bases from the WSHP and address the S&H hazards of each phase of operation and include the requirements and procedures for employee protection [29 *CFR* § 1910.120(b)(2)].

2. SCOPE AND APPLICABILITY

[10 *CFR* § 851.11(A)(3)(i and ii)]

This WSHP describes the methods that FRNP uses at the Paducah Site to implement the requirements of 10 *CFR* 851, and how these requirements are integrated with CP2-HS-1000, *Integrated Safety Management System Effectiveness Review and Performance Objectives, Measures, and Commitment Development and Reporting*. This WSHP is based upon the specific hazards related to the scope of work and associated risk(s). Where necessary, a hazard analysis and/or a subproject level plan also may be developed to address more specific detailed activities or subcontracted work (for example, S&H plan, according to 29 *CFR* § 1910.120, *Hazardous Waste Operations and Emergency Response*).

The S&H requirements described in this WSHP are applicable to work performed by workers at FRNP. Persons entering the Paducah Site in support of FRNP are subject to the requirements of this Program and are held responsible for adhering to the requirements as specified herein. Nothing within the WSHP precludes FRNP from taking any additional protective action that is determined to be needed to protect the safety and health of workers. Furthermore, each individual is responsible for bringing to the attention of management unsafe or unhealthy conditions that he/she observes. FRNP begins to address unsafe or unhealthy conditions immediately upon discovery. FRNP visitors will be briefed on applicable workplace hazards and expectations prior to commencement of their visit in order to protect them and to avert them from creating hazards to FRNP workers.

Subcontractors and their tier subcontractors will comply with the FRNP-approved WSHP, as applicable to the contracted work, as identified in the statement of work, specifications, or other part of their contract. Work is performed by subcontractors according to the DOE Acquisition Regulation (DEAR) 970.5223-1, *Integration of environment, safety, and health into work planning and execution*; 10 *CFR* 851, *Worker Safety and Health Program*; 10 *CFR* 835, *Occupational Radiation Protection*; and applicable federal regulations and site-specific requirements. The FRNP Subcontractor's Safety Requirements Document, Attachment J-1, *Environmental, Health and Safety Requirements for On-Site Work*, is flowed down, along with the WSHP and applicable requirements of the request for proposal and the contract for the scope of contracted work.

Exclusions

Per 10 *CFR* 851, the WSHP does not include the following at FRNP:

- Radiological hazards or nuclear explosives operations to the extent regulated by 10 *CFR* 20, 820, 830, or 835.

- Transportation to or from the DOE site.

- Other DOE contractors who perform services in another contractor's facilities according to the terms and conditions of its respective DOE prime contract, including their own DOE-approved WSHP. Employee day-to-day supervision and safety accountability under their WSHP will remain with the performing contractor unless formally delegated in the work authorization document.

- Vendors, delivery persons, and others who do not have service contracts with FRNP or DOE in furtherance of the PGDP D&R mission. Examples of work that is excluded from the 10 *CFR* 851 rule (as described in DOE G 440.1-1B Chg 1, *Worker Safety and Health Program for DOE [Including the National Nuclear Security Administration] Federal and Contractor Employees)*, because employee health and safety is governed by the employer's Occupational Safety and Health Administration (OSHA)-based program and further governed by the Paducah Site's site access process, includes the following:

  — Portable restrooms and hand washing stations;

  — Document shredding;

  — Vending machines (filling, moving/relocating, and performing maintenance);

  — Personal protective equipment (PPE) vendors (safety shoes, safety glasses);

  — Food vendors;

  — Ice vendor;

  — Deliveries of chemicals, fuel, or equipment (for example, compressed gas cylinder);

  — Copy machine maintenance;

  — Suppliers that engage in no more than tangential work at the Paducah Site related to delivery, installation, or repair of the products provided;

  — Off-site utility providers and emergency services; and

  — Activities performed by PGDP D&R personnel at alternate Emergency Operations Cadre facility located off-site of DOE-owned property.

3. PROGRAM RESPONSIBILITIES

[10 *CFR* § 851.20(A)(3)]

3.1 PROGRAM MANAGER AND LEADERSHIP TEAM

The FRNP program manager (PM) is responsible and accountable to DOE for managing and guiding the company in the safe performance of work under the Contract. As the senior executive for FRNP, the PM has the ultimate responsibility for safe completion of work and leads in establishing the company standards and expectations for work under the FRNP Contract.

The leadership team, which is composed of the PM's direct reports, works together for the safe performance and completion of work. The leadership team is responsible for compliance with applicable requirements, allocation of resources, integration of project execution and support functions, and safe project completion. The leadership team is accountable to the PM for satisfactory safety performance within his/her functional or project areas.

3.1.1 Functional Managers

Functional managers report to the senior leadership team and are responsible for the planning, resource allocation, risk prioritization, and subprogram execution for their areas of responsibility. They either are responsible for mission work execution or for provision of functional area support programs. Functional managers are accountable for planning the suite of activities that make up subprogram elements, securing support resources needed to deliver Contract commitments and schedules, and assuring compliant execution across their areas of responsibility. Support managers are held accountable for flowing down applicable requirements into the functional areas that implement procedures under their purview and for monitoring field deployment for compliance, effectiveness, and efficiency.

3.1.2 Front Line Managers/Supervisors

Front line managers or supervisors are responsible for planning and directing the successful execution of work at the activity level. They are responsible for compliance with applicable WSHP requirements and implementation of ISMS during the execution of work. They are held accountable for ensuring the employees assigned to them have the training and qualifications needed to perform work safely on their projects and evaluating employee performance.

3.1.3 Facility Managers

The facility manager maintains the overall safety and safe operation of the facility. They are responsible for reviewing activities affecting the safe operation of a nuclear facility to ensure that day to day activities are conducted in a safe manner. This is accomplished with the Senior & Nuclear Facility Manager support, and by utilizing the appropriate staff within the Safety Management Programs. The FRNP Nuclear Facility Manager ensures operation of the nuclear facilities is according to approved TSRs.

3.1.4 Occupational Safety and Health

[10 *CFR* § 851.20(a)(2), 10 *CFR* § 851.24]

Occupational safety and health is a functional area represented by the S&H organization within the S&H department in the Health, Safety, Security, and Quality (HSS&Q) organization. The HSS&Q Director reports to the PM and

- Is responsible for S&H, including ISMS management, occupational medicine, nuclear material control and accountability, emergency management and fire/emergency response, quality, training, contractor performance assurance, industrial hygiene (IH), safeguards and security, and radiation protection;

- Interfaces with DOE, the Infrastructure Support Services Contractor, and the Depleted Uranium Hexafluoride Contractor;

- Is responsible for providing direct support to program and project teams throughout the FRNP organization to facilitate integration of S&H activities with work performance;

- Is responsible for providing the support necessary for a safe, secure, and compliant deactivation and remediation mission at the FRNP;

- Has primary responsibility for maintenance, evaluation, and management of ISMS;

- Is responsible for submitting an update of the WSHP to DOE for review and approval whenever a significant change or addition is made;

- Submits annually to DOE either an updated WSHP for approval or a letter stating that no changes are necessary to the current approved WSHP; and

- Incorporates, if notified by DOE, in the WSHP any changes, conditions or workplace S&H 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.

The HSS&Q Director has full responsibility, authority, and accountability for safe and compliant execution of the functions within this organization.

S&H is responsible for the following WSHP activities: assuring that the implementing documents address the applicable requirements; deploying the implementing documents to the execution organizations (for example, training); and evaluating effectiveness routinely. S&H also will perform the required annual review; implement documentation and deployment updates, as needed; and assure that WSHP updates are submitted to the DOE Portsmouth/Paducah Project Office (PPPO) for approval when more than editorial changes occur.

S&H professionals are full-time positions with no collateral duties outside WSHP activities (unless approved by the HSS&Q Director). They interact on a day-to-day basis with FRNP supervisors and managers to support and plan work activities, communicate requirements, correct S&H issues, and sustain continuous improvement initiatives. S&H subject matter experts (SMEs) perform design reviews, program reviews, procedure reviews, work planning reviews, assessments, and interpretation of S&H requirements. The FRNP S&H professional staff includes one or more certified industrial hygienists (CIHs) or certified safety professionals. The S&H Supervisor who directs and manages the WSHP is required to have at least one professional certification.

3.1.5 Worker Rights and Responsibilities

[10 *CFR* § 851.20(b)]

Whether employed by FRNP or a subcontractor, each worker's ability and commitment to execute activities in a safe manner represents the cornerstone of the FRNP safety culture and, as such, workers are responsible for complying with the requirements of this WSHP, the FRNP ISMS, performance documents, and approved work controls. Furthermore, employees have the right and are encouraged to participate in the development of program goals, objectives, and performance measures and in the identification, mitigation, and control of hazards in the workplace. Workers exercise their rights and responsibilities through personal involvement, on official company time, in the safe execution of work. Employees have the right, without fear of reprisal, to the following:

- Access to a copy of DOE worker protection publications, DOE-prescribed standards, FRNP standards and procedures, and limited access to the OSHA Form No. 300 or a copy of the FRNP injury report.

- Access to limited information on recordkeeping log (OSHA Form 300), subject to Freedom of Information Act requirements and restrictions.

- Access to information relevant to the WSHP.

- Copy of the approved WSHP upon written request.

- Receive timely notice to labor organization of WSHP updates and, upon timely request, bargain concerning implementation of the WSHP consistent with federal labor laws.

- Report job-related fatalities, injuries, illnesses, incidents, and hazards; make recommendations about appropriate ways to control those hazards; and be provided prompt response to such reports and recommendations.

- Receive notification from FRNP IH when monitoring results indicate an overexposure to hazardous materials.

- Observe monitoring and measuring of hazardous agents and have access to the results of exposure monitoring.

- Accompany the authorized DOE official(s) as an authorized employee representative, during physical inspection of the workplace for the purpose of aiding the inspection or when no authorized employee representative is available, consultation by the DOE official(s), as appropriate, with employees on matters of worker safety and health.

- Receive results of inspections and accident investigations upon request.

- Decline to perform an assigned task because of a reasonable belief that, under the circumstances, the task poses an imminent risk of serious physical harm or death to the worker coupled with a reasonable belief that there is insufficient time to seek effective redress through normal hazard reporting and abatement procedures.

- Exercise the authority and responsibility to suspend or stop work for perceived threat to the safety and health of themselves, other personnel, the public, or the environment. When these concerns are brought to the attention of supervision and on-site S&H personnel, they then will assess the circumstances surrounding the perceived threat and take appropriate actions to resolve the reported concerns in accord with CP3-HS-2009, *Stop/Suspend Work*. If a subcontractor stops their work activities for perceived threat to its safety and health, work may resume when the subcontractor has resolved the issue, as detailed in CP3-HS-2009.

- The Notification of Employee's Rights, listed above, are implemented through posting of DOE Worker Protection posters, which are located in areas commonly occupied by workers. The poster also informs employees of how to submit concerns or inquiries.

3.1.6 Training

[10 *CFR* § 851.20(a)(2, 5, and 10), 10 *CFR* § 851.20(b), 10 *CFR* § 851.25]

FRNP ensures that employees can perform their work in a safe and healthful manner by committing to providing them training and qualification commensurate with their duties and responsibilities. Training ensures that workers understand their rights and responsibilities, and ensures that employees are informed

of the hazards they may encounter. Front line management has the responsibility to ensure that employees are properly trained and qualified prior to assigning them to perform work.

The process for determining training requirements is defined in the FRNP Training Program. The program details the requirements for determining initial, periodic, and refresher training and the process for evaluating the need for additional or new training requirements.

Training and qualification requirements for positions and access to specific areas are derived through analysis of site, facility, and activity-specific procedures and processes according to DOE Order (O) 426.2, Admin. Chg 1, *Personnel Selection, Training Qualification, and Certification Requirements for DOE Nuclear Facilities*, and CP2-TR-0102, *Four Rivers Nuclear Partnership, LLC. Paducah Deactivation and Remediation Project Training Implementation Matrix,* which is DOE-approved and defines the organization, planning, and administration of the FRNP Training Program and sets forth the responsibility, authority, and methods for conducting training.

3.1.7 Records Management

[10 *CFR* § 851.23(a)(2), 10 *CFR* § 851.26]

Documents are generated and maintained that demonstrate compliance with worker safety and health requirements. These documents are managed according to FRNP-TRANS-0013, *Records Management Plan at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*; CP3-OP-0025, *Document Control Process*; CP2-QA-1000, *Quality Assurance Program Description;* and CP2-OP-1100*, Conduct of Operations Program at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. Examples of documents retained include the following:

- Safety inspections,
- Completion of training,
- Instrumentation and calibration logs,
- IH measurements,
- Accident/incident reports,
- Completed permits,
- Job hazard analyses (JHAs), and
- OSHA 300 Forms.

Recordkeeping for occupational injuries and illnesses complies with the requirements of OSHA 29 *CFR* 1904, *Recording and Reporting Occupational Accidents and Injuries*. Occupational medical records are retained confidentially by the contracted medical provider.

4. PROGRAM DESCRIPTION

4.1 HAZARD IDENTIFICATION, ASSESSMENT, AND CONTROL

[10 *CFR* § 851.21, 10 *CFR* § 851.22]

4.1.1 Hazard Baseline

[10 *CFR* § 851.21]

The analysis of hazards addresses potential risks and vulnerabilities from credible accident scenarios at the facility level in the facility S&H plan, work packages and hazard analyses, including JHAs. The analysis of nuclear facility hazards is captured in the documented safety analysis (DSA), along with the necessary safety management program requirements, technical safety requirements, etc., needed to mitigate and/or manage the hazards. The FRNP nuclear criticality safety (NCS) program (CP2-NS-1000, *Nuclear Criticality Safety Program Description Document at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*) is integrated with ISMS and other safety management systems to assure protection for on-site workers, collocated workers, the public, and the environment. Implementation of the NCS program also is governed by various supporting documents referenced in the DSAs.

Processes used to identify and analyze hazards for work at the Paducah Site are defined in procedures such as CP3-OP-1118, *Facility Management*, and CP3-FP-2006, *Fire Hazard Analysis & Facility Assessments*; CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, and CP3-HS-2004, *Job Hazard Analysis*. Hazards for each task are identified, analyzed, and documented by an integrated multidisciplinary team prior to the task being initiated. All types of hazards are considered, including nuclear, radiological, environmental, chemical, industrial, fire, external events, and construction.

4.1.2 Hazard Identification and Assessment

[10 *CFR* § 851.21]

Hazard identification and assessment for planned work is performed according to CP3-HS-2004, *Job Hazard Analysis*. Once work scope is defined, a planning team that includes personnel assigned to perform the work participates in a table top discussion or a joint work area walkdown to identify existing and potential hazards. After the hazards are identified, the planning team documents the hazard assessment, observations, testing and monitoring results, and then, required controls are incorporated into the appropriate procedures, specifications, design documents, and work control documents. If additional hazards are identified during performance of work, work activities are halted until the hazards are evaluated effectively, removed, or controlled prior to the restart of work activities.

This same approach is applied to work scope such as the following:

- Analyzing designs of new facilities and modifications to existing facilities and equipment;
- Evaluating operations, procedures, and facilities;
- Performing routine jobs;
- Reviewing site safety and health experience information; and
- Considering interactions between workplace hazards and other hazards such as radiological hazards.

According to 10 *CFR* § 851.21(b), FRNP will submit to DOE a list of closure facility hazards and the established controls within 90-days after identifying such hazards. DOE has 90 days to accept the closure facility hazard controls or direct additional actions. Closure facility hazards are defined as those hazards for which the means of control involve deviations from the technical requirements of 10 *CFR* § 851.23 and would require costly and extensive structural/engineering modifications to be in compliance.

4.1.3 Hazard Control

[10 *CFR* § 851.22]

A standard hierarchy of approaches is used by FRNP to select controls to prevent and mitigate hazards. This hierarchy includes, in descending order, elimination of the hazard, substitution to reduce the hazard, utilization of engineered controls, and establishment of administrative controls, before resorting to the use of PPE. The controls are tailored to the work being performed and the associated hazards based on the complexity of the work, the stage of the deactivation process, and the severity of the hazards.

Hazard categorization is performed according to DOE-STD-1027-92, Chg Notice 1, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*. The DSA defines the requirements that need to be implemented to maintain the nuclear safety envelope at FRNP. At the facility level, hazards are analyzed according to potential risks and vulnerabilities from credible accident scenarios according to established nuclear safety procedures, as well as CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, and CP3-HS-2004, *Job Hazard Analysis*. The selection of hazard controls is based on the type of hazard, the magnitude of the hazard, the type of work being performed, and the life cycle of the facility in which the work is being performed.

The FRNP Subcontractor's Safety Requirements Document, Attachment J-1, *Environmental, Health and Safety Requirements for On-Site Work*, is flowed down, along with the WSHP and applicable requirements of the request for proposal and the contract for the scope of contracted work. This includes hazard identification and control using the hierarchy of approaches described above in this section as applicable to the specific scope of contracted work.

A critical element to hazard control by FRNP work teams or subcontractors is the responsible manager (RM) concept. The RM roles and responsibilities appropriate for control of fieldwork will be defined as addressed in CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, which is the approach FRNP will employ for work planning and control. The RM has authority and accountability for a specific body of work from its inception to completion by providing continuity of purpose and understanding throughout the work planning and implementation process. Among the areas of responsibility belonging to the RM is ensuring the overall safety of the workers and the overall safe performance of the work activity, including approval of hazard controls utilized.

Identified environment, safety, and health (ES&H) noncompliant conditions are managed through CP3-QA-3001, *Issues Management.*

The FRNP purchasing system automatically requires HSS&Q management approval, as appropriate, prior to the purchase/order of material and/or services. In some cases, additional reviews and approvals are required for items as defined by specific hazard and/or quality levels. These items may include the following:

- Chemicals, gases, and fuels;
- Pressure systems;
- Radioactive materials;
- Hoisting and rigging equipment; or
- Specialty equipment/rentals.

4.1.4 Personal Protective Equipment

[10 *CFR* § 851.22; 10 *CFR* § 851.23 (3) and (7)]

PPE is provided, used, and maintained according to CP3-HS-2005, *Personal Protective Equipment*, which implements OSHA 29 *CFR* 1910, Subpart I, *Personal Protective Equipment*; and 29 *CFR* 1926, Subpart E, *Personal Protective and Life Saving Equipment*. Work is planned and controlled using CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* and CP3-HS-2004, *Job Hazard Analysis.* Controls, including PPE, are coordinated with S&H and radiation protection personnel and are specified in the appropriate work control document(s). As discussed in Section 4.1.3 above, use of PPE is the least preferred approach to preventing exposure to a hazard.

The PPE for a task is selected based upon the hazards, the scope of work, and the work location. The upgrading or downgrading of PPE and implementation of engineering and/or administrative controls is based on exposure monitoring results, and the change is documented in revisions to the work control and JHA documents.

4.2 COMMONLY ENCOUNTERED HAZARDS AND CONTROLS

4.2.1 Electrical Hazards

[10 *CFR* § 851.23 (3), (7), (13) and (14); 10 *CFR* § 851.24; 10 *CFR* § 851, Appendix A.10]

Electrical hazards present at the Paducah Site include, but are not limited to, undetected live wires, deteriorating wiring insulation, buried power lines, overhead power lines, transformers, electrical generators, and installed electrical equipment.

Work on electrical systems/equipment is performed according to CP3-SM-0019, *Electrical Safety Guidelines*, which implements applicable requirements of the current OSHA standards; National Fire Protection Association (NFPA) 70 (2017); National Electrical Code; and NFPA 70E, Electrical Safety Requirements for Employee Workplaces (2018). Appropriate controls are documented in approved JHAs.

FRNP will follow the electrical safety program that will meet the requirements of our contract but also may implement requirements that are above and beyond the contractual requirements, such as applicable operating experiences/lessons learned (OE/LL), OSHA interpretations, industry newsletters, and newer additions of safety standards (for example, NFPA 70E revisions).

CP3-SM-0019, *Electrical Safety Guidelines*, is FRNP's overall electrical safety guidance document. Whenever there are differences above and beyond NFPA 70E (2018) or other best practices [for example, National Electrical Code, National Electric Safety Code, American National Standards Institute (ANSI), etc.], these differences will be evaluated by the electrical safety SME/Electrical Safety Committee. Once reviewed and discussed, differences will be incorporated in the Electrical Safety Program at the recommendation of the Electrical Safety Program SME/Electrical Safety Committee.

FRNP has developed an Electrical Equipment Worker Protection Preventive Maintenance Schedule. Refer to Appendix B for priority levels, identified equipment, and scheduled completion dates. The Preventive Maintenance, as scheduled, will be completed by FRNP, and a monthly status/progress report of each preventive maintenance activity will be submitted to DOE within seven calendar days after the end of each calendar month.

4.2.2 Lockout/Tagout of Hazardous Energy Sources

[10 *CFR* § 851.23(a)(3) and (7); 10 *CFR* § 851.24; 10 *CFR* § 851, Appendix A.10]

In order to ensure safety of personnel during construction or maintenance activities that may involve the potential for exposure to hazardous energy sources (hydraulics, chemicals, water, electrical, steam, stored energy, and pneumatic), equipment or processes are locked out/tagged out and verified isolated from hazardous energy sources according to CP3-HS-2010, *Instructions for Lockout/Tagout*, which implements 29 *CFR* § 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*, and DOE O 422.1, Admin. Chg 2, *Conduct of Operations*, Attachment 2, *Program Requirements*, 2(i) *Lockout and Tagouts*.

Lockout/tagout (LOTO) applies to all forms of energy, both latent and residual, including electrical, hydraulic, pneumatic, mechanical, chemical, toxic, and other potentially hazardous sources. The LOTO procedure provides instructions for safeguards to be taken to control hazardous energy before the performance of work where unexpected energization, start-up of machines or equipment, or where release of stored energy could cause injury to any personnel during servicing and/or maintenance of machines and equipment, as well as the LOTO of energy sources and the use of LOTO, including permit required, non-permitted, and double valve isolation requirements for systems containing hazardous materials or operating at high temperatures or high pressure.

The determination if a LOTO is required, and if so, what type, is made by the Issuing Authority, the employee who is authorized to prepare and issue the LOTO permit; the service supervisor, the employee who is authorized to accept and release the LOTO permit; and the authorized employee, the employee trained to, and required to follow, the LOTO requirements.

4.2.3 Overhead Power and Communication Lines

[10 *CFR* § 851.23(a)(7)]

The Paducah Site has many overhead power and communication lines that could pose a hazard for the operation of heavy equipment, such as cranes, forklifts, dump trucks (with the bed raised), and aerial work platforms where the possibility of inadvertent contact may exist. Work in proximity to electrical power lines is performed according to applicable procedures, including CP3-SM-0019, *Electrical Safety Guidelines*; CP3-HS-2004, *Job Hazard Analysis*; CP2-SM-1000,*Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*; and CP3-HS-2010, *Instructions for Lockout/Tagout*, if applicable. The following is provided as general guidance:

- A 20-ft minimum clearance between the lines and any part of the crane or 10-ft minimum clearance for other equipment will be maintained from lines that are 50 kV or less. For lines rated over 50 kV, the minimum clearance between the lines and equipment will be the minimum plus 0.4 inch for each kV over 50.

- Line height and equipment measurements will be taken to assure the operators of the affected equipment can maintain the required distances from the lines. The use of spotters, physical barriers, and/or distance markings will be used as necessary.

- If the appropriate clearance cannot be maintained, the power lines will be de-energized and grounded according to CP3-HS-2010, *Instructions for Lockout/Tagout*.

4.2.4 Severe Weather

[10 *CFR* § 851.21(a)]

Due to the nature and scope of work being conducted at the Paducah Project, personnel outdoors potentially may be exposed to adverse weather conditions. A severe weather policy has been developed to provide guidance to personnel performing work outdoors when severe weather is approaching the site. CP3-EP-1009, *Severe Weather Emergencies*, provides response guidance for thunderstorms, tornados, and earthquakes. CP3-HS-2000, *Temperature Extremes*, provides guidance to site personnel exposed to extreme temperatures, whether working inside FRNP facilities or outside. For adverse weather conditions not specifically addressed in the severe weather policy, personnel response guidance is provided by supervision, S&H, and/or the plant shift superintendent (PSS).

4.2.5 Hoisting and Rigging Operations

[10 *CFR* § 851.23(a)(3) and (7)]

The operation and maintenance of hoisting and rigging equipment (i.e., overhead and gantry cranes, mobile cranes, derricks, hoists, rigging devices, forklift trucks, and devices such as wire rope, chain, metal mesh slings, synthetic-web slings, and special below-the-hook attachments and fixtures) are governed by 29 *CFR* 1910, Subpart N, Materials Handling and Storage; 29 *CFR* 1926, Subpart H, *Materials Handling, Storage, Use, and Disposal*; 29 *CFR* 1926 Subpart N, *Helicopters, Hoists, Elevators, and Conveyors*, 29 *CFR* 1926, Subpart C, *Cranes and Derricks in Construction*, and DOE-STD-1090-2011, *Hoisting and Rigging Manual*. FRNP implements these requirements through programs and procedures, including CP3-SM-0051, *Hoisting and Rigging*, and other applicable work control documents such as, pre-job briefs, task work instructions, JHAs, etc.]

4.2.6 Elevated Work/Fall Protection

[10 *CFR* § 851.23(a)(3) and (7)]

CP3-HS-2014, *Fall Prevention and Protection*, describes the requirements and guidance that personnel follow, including the use of fall protection devices that mitigate the effects of a fall or the use of fall prevention practices, equipment, devices, or systems that prevent an employee from experiencing a fall when work is being performed at unprotected heights, or at heights above operating equipment or areas posing risk of serious injury/impalement. This procedure implements the requirements of 29 *CFR* 1910, Subpart D, and 29 *CFR* 1926, Subparts L and M (as applicable).

Fall prevention and/or fall protection is addressed during the planning phase of an activity. A walkdown of the work area is performed to ensure safe access and egress to elevated work areas, and that elevated working surfaces can safely support the employee, tools, and materials. Where feasible, FRNP relies on engineering controls (for example, guardrails) to prevent exposure to fall hazards as opposed to administrative controls or PPE. Exposure to fall hazards is managed by reducing the number of workers exposed, relocating equipment, work sequencing, or by choosing different equipment options (for example, choosing an aerial device rather than a ladder or scaffold).

A personal fall arrest system is required when an employee is on a surface with an unprotected side or edge which is 4 ft**,** or 6 ft during construction work, or more above a lower level and where fixed fall

prevention is not provided. If working from a portable ladder, these same heights and three points-of-contact cannot be maintained according to CP3-HS-2011, *Portable Ladders*, then employees must implement the use of a platform ladder or portable stairway platform, the use of an aerial device according to CP3-HS-2036, *Aerial Devices,* the use of approved scaffolding according to CP3-HS-2015, *Scaffold,* or a personal fall arrest system.

4.2.7 Excavation, Trenching, and Penetrations

[10 *CFR* § 851.23(a)(7); 10 *CFR* § 851.24]

Operations involving excavation or penetration into the earth surface, concrete or pavement, and interior penetrations into building walls, floors, and ceilings are subject to various potential hazards (for example, contact with hazardous or radioactive materials, electrical lines, cave-ins). These operations require that an excavation/penetration permit be obtained before the work is initiated according to CP3-EN-0227, *Trenching, Excavation and Penetration Permit*. Oversight of excavations and penetration activities are performed according to CP3-HS-2016, *Excavation and Penetration*, which implements 29 *CFR* § 1926, Subpart P.

A pre-job briefing is conducted with all personnel involved in the work activities to communicate information on the trenching, excavation, penetration permit; to share information gathered during a walkdown of the work area; and to review the JHA and applicable lessons learned. If the scope of work changes **or** field conditions change that are not covered by the permit or the JHA, work is suspended and the permit, JHA, or work plan is revised and personnel are re-briefed prior to recommencing work. Upon completion of the trench/excavation/applicable penetration, barricades are installed to maintain safe distances from the edge, necessary protective systems (for example, trench box) are installed, and daily inspections and oversight are established and performed.

4.2.8 Slip, Trip, and Fall Hazards

[10 *CFR* § 851.23(a)(3) and (7)]

Roadways, access ways, aisles, stairways, scaffolds, and ladders in FRNP designated work areas are, to the extent possible, kept clean and clear of hoses, extension cords, welding leads, and other obstructions that may cause tripping or other accident hazards. Slipping hazards in designated work areas, such as grease, oil, water, ice, snow, or other liquids, are cleaned up or eliminated on walkways, ladders, scaffolds, or other access ways or work areas. Work instructions and training require personnel to immediately report and clean-up any spills/drips of hazardous materials (for example, oils, greases, lubricants, etc.) If slipping and/or tripping hazards cannot be eliminated completely, the area is barricaded and posted with applicable hazard postings. The requirements for housekeeping are provided in CP2-HS-1007, *General Safety Requirements*, which implements the requirements in 29 *CFR* § 1910.22, *General Requirements*; and 29 *CFR* § 1926.25, *Housekeeping*. Existing efforts and controls put in place by previous contractors will be sustained and considered, along with other relevant operating experiences, to correct or control newly identified slip, trip and fall hazards. Site housekeeping issues impacting areas not managed by FRNP are coordinated with other DOE contractors through direct communication between identified interface points of contacts.

4.2.9 Working on or Near Water

[10 *CFR* § 851.23(a)(7)]

Work on or near waterways, such as ponds, rivers, near or above liquid containing tanks, and water or sewage treatment holding ponds where the potential danger of drowning exists, is performed according to the requirements of CP3-HS-2017, *Safe Work Practices Around Water*, which implements the requirements of 29 *CFR* § 1926.106, *Working Over or Near Water*.

The front line manager, with assistance from the assigned project field safety representative, evaluates and determines if a potential drowning hazard exists for the scope of work to be performed. If so, the manager ensures fall protection equipment, floatation devices, and other safety equipment are made available to work locations where open water hazards are present. A life-saving skiff is provided in the immediate area where employees are working over or adjacent to water. Workers wear approved life jackets. Ring buoys with at least 90 ft of line are provided and readily available for emergency rescue operations. A dedicated attendant (for example, a separate worker), equipped with a functional communication device, remains outside of the drowning hazard area but within sight of the workers who are wearing life jackets in order to contact the emergency services.

4.2.10 Flora/Fauna Hazards and Prevention

[10 *CFR* § 851.21(a)]

Work at FRNP requires working outdoors. Anyone working outdoors will be exposed to the harmful effects of ultraviolet radiation (sunburn) and they could come in contact with stinging and biting insects (for example, wasps, bees, mosquitoes), bird droppings, poisonous plants (for example, poison ivy, poison oak), and venomous snakes and spiders. Common hazards like these are evaluated and documented in a general JHA according to CP3-HS-2004, *Job Hazard Analysis*. According to CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* pre-job briefings are utilized to communicate these hazards and the associated avoidance and mitigation methods to the employees. Controls include good housekeeping practices as described in CP2-HS-1007, *General Safety Requirements*, to ensure debris, trash, and waste materials that are attractive to insects are cleaned to minimize insect nesting. Controls also include reasonable personal measures employees can take to protect themselves, such as the use of sunscreen or long sleeves to prevent sunburn, and avoiding perfumes/colognes that attract insects. Employees are also reminded through seasonal safety campaigns about the hazards associated with working outdoors.

4.2.11 Accident Prevention Signs, Tags, Labels, and Barricades

[10 *CFR* § 851.23(a)(3) and (7)]

As applicable, signs, tags, labels, and barricades are constructed, colored properly, and marked according to CP3-HS-2012, *Construction and Work Zone Barricades and Signs*, which implements OSHA 29 *CFR* 1910, Subpart J, and OSHA 29 *CFR* 1926, Subpart G. Signs are removed promptly when they no longer are needed. Signs are placed conspicuously along with barricades to identify the hazard. FRNP implements the controls necessary to ensure defective tools, materials, and equipment are not used by employees through compliance with CP3-HS-2008, *Accident Prevention/Equipment Control Tags*. Supervisors or designees are required to remove defective tools, materials, or equipment from service immediately by tagging or destroying. Coordination with property management is required before removing items from project site. Stepping over or ducking under barricades is prohibited. These

requirements are implemented according to CP3-HS-2012, *Construction and Work Zone Barricades and Signs*.

4.2.12 Housekeeping

[10 *CFR* § 851.23(a)(3) and (7)]

Front line managers implement good housekeeping practices according to 29 *CFR* § 1926.25, *Housekeeping*, and through FRNP implementing procedures CP2-HS-1007, *General Safety Requirements*, and CP3-FP-2006, *Fire Hazard Analysis & Facility Assessments*, and resulting fire hazard analysis (FHA) facility-specific requirements. Material, scrap, tools and toolboxes, and other equipment are stored in a neat and orderly fashion. Trash and scrap are removed from the work area on a regular basis (for example, at least daily, before the end of each work shift) and are never allowed to accumulate, especially in walkways, under stairs, at the bases and landings of stairs and ladders, and near flammable substances. Walkways and aisles are kept clear at all times, and laydown areas are maintained neat and orderly. Materials are stored on level ground, and the boundaries of laydown areas are identified. Housekeeping status is evaluated on a routine basis by both workers and management.

4.2.13 Drinking Water (Fieldwork Site)

[10 *CFR* § 851.23(a)(3) and (7)]

Potable drinking water and toilet facilities are provided in active work areas, according to CP2-HS-1007, *General Safety Requirements*, which implements 29 *CFR* § 1910.141 and 29 *CFR* § 1926.51. Potable water is provided in all places of employment and is dispensed from tightly closed, sealed, and clean containers or systems. Potable water systems are kept from open or potential cross-connection between with a non-potable water system. Toilet facilities have potable water, washing areas with soap and towels, are ventilated, cleaned on a regular basis, and provided so that a minimum number of facilities are available per an employee ratio specified in CP2-HS-1007. Kentucky drinking-water treatment and distribution is governed under 401 *KAR* Chapter 8.

4.2.14 Illumination

[10 *CFR* § 851.23(a)(7)]

Illumination of work areas and access areas are maintained according to 29 *CFR* § 1926.56. In addition, emergency lighting is maintained to meet requirements of 29 *CFR* 1910, Subpart E; NFPA 101, Revision 2012; and 10 *CFR* 851. Appropriate lighting is provided; and inspections, tests, and surveys are performed according to CP2-HS-1007, *General Safety Requirements*, and CP2-HS-2011, *Illumination Plan.*

4.2.15 Tools

[10 *CFR* § 851.23(a)(3) and (7)]

Tools are used, inspected, and maintained according to the manufacturer's instructions. Steps are taken to ensure the following:

- Tools are maintained in good condition and properly stored when not in use.
- Tools are not altered and are used only for their intended purposes and within the manufacturer's instructions.
- Tool guards are not removed from tools or altered.
- Tools are inspected by the user before each use.
- Electric power tools are double-insulated or equipped with appropriate grounding.
- Power tools are equipped with constant pressure switches that will shut the tool off when the switch is released. These tools also may be equipped with a lock-on control provided so that turnoff can be accomplished by a single motion of the same finger.
- Bench-mounted and floor-mounted tools are secured against movement or displacement.
- Hand tools with cracked, splintered, or taped wooden handles are tagged and taken out of service according to CP3-HS-2008, *Accident Prevention/Equipment Control Tags.*
- Impact tools are free of mushroomed heads and cracks.
- Ground fault circuit interrupters (GFCIs) are used where required by CP3-SM-0019, *Electrical Safety Guidelines*.
- GFCIs are required when employees are outdoors and using cord-and-plug-connected equipment supplied by 125-volt; 15-, 20-, or 30-ampere circuits.

4.2.16 Work Control

[10 *CFR* § 851.21 and 10 *CFR* § 851.22]

FRNP uses two methods to control work to ensure that work is performed safely. Repetitive plant or facility operational activities are performed using standardized procedures. Nonroutine work is performed using work packages developed according to CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky.* FRNP programs and procedures ensure that hazards associated with the work are identified and controlled. The work control process ensures work is performed safely and compliantly.

Work control incorporates this "graded approach," to identify the appropriate level of rigor for work planning and the appropriate level of discipline required in work execution. Authorization to perform work is given according to the requirements in CP3-OP-1118, *Facility Management*, and CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. Facility managers are identified for each facility. They are responsible for approving work in their facilities and for ensuring that hazards associated with the facility operations or other adjacent projects have been factored into the JHAs for the new work scope. The facility manager also is responsible for alerting the supervisors of any adjacent or collocated work activities of the existing hazards and potential creation of new hazards due to any added or modified work scope. The formality and rigor of the authorization process and the extent of documentation and level of approval is based on the hazards and complexity of work to be performed. The authorization and approval process to commence work in a facility or on a project includes careful review of the required documentation,

feedback from the readiness determination, and first-hand awareness and observation of the physical condition of the work site to ensure all necessary preparations and arrangements, such as selected hazard controls, are in place and ready for work to begin.

At the activity level, readiness to begin work is the responsibility of the designated RM and includes a walkdown by a planning team that includes personnel assigned to perform the work. The planning team identifies existing and potential hazards, as described in procedure CP3-HS-2004, *Job Hazard Analysis,* and determines the required equipment and tools. This information is incorporated into the work plan. The daily pre-job brief covers hazards and controls and provides a mechanism for workers to provide additional feedback on the work plan. A pre-job walkdown is performed prior to the performance of nonroutine activities, including maintenance and infrequently performed facility operations. If necessary, the work plan is revised to address changed conditions.

FRNP has identified process improvements to work control in CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. The plan provides the approach and targeted improvement items and areas. The improvements will be based on appropriate graded approach tailored to deactivation projects, and ensure safety management attributes are integrated throughout the process of planning and performing work. The FRNP approach is to have a simple process to the extent practical. A simple process is better understood and retained, results in improved safety and compliance, ensures consistent implementation, and improves overall safety performance.

4.3 FEEDBACK, CONTINUOUS IMPROVEMENT

[10 *CFR* § 851.11(a)(3)(ii); 10 *CFR* § 851.20(a) and (b)]

4.3.1 Employee Feedback

Workers are encouraged to assist in the identification and control of hazards in the workplace and to provide feedback and suggestions for improvement to enhance safety and efficiency. Management seeks worker involvement, feedback, and suggestions through encouraging participation during official time in the following job functions:

- Job planning walkdowns
- Pre-/post-job briefings
- Development and review of JHAs and procedures
- Safety and toolbox meetings
- Pre-Job Brief/Status Log
- Accident/incident investigations
- Employee Safety Council meetings
- Employee/supervisor interactions
- Employee observations

4.3.2 Employee Involvement

Supervisors of fieldwork activities conduct a pre-project briefing safety meeting involving the work crew to review the tasks and the associated hazards; discuss changed conditions that have occurred or could occur that might impact the work or introduce new hazards; discuss other project-related issues, and emphasize general safety topics; and cover S&H program goals, objectives, and performance measures. Pre-Job Brief/Status Logs are implemented daily with attendance documented as well as topics discussed,

employee feedback and suggestions. Employee feedback and suggestions are conveyed to the project's management and if warranted to the organization manager and S&H organization. Responses and actions taken as a result of employee feedback are communicated back to the affected employees utilizing the same forum in which the employee feedback was conveyed to project management.

Supervisors of personnel not performing fieldwork (for example, technical staff, office, clerical) conduct safety meetings periodically using CP1-HS-1001, *Employee Safety Council*. Safety meeting topics include the discussion of project-related issues; emphasize general safety topics; and cover S&H program goals, objectives, and performance measures. Attendance is documented, as are topics discussed and employee feedback and suggestions. Employee feedback and suggestions are conveyed to the organization manager and S&H organization.

Reports of incidents or recommendations are responded to promptly. Employees are responsible for bringing ES&H concerns promptly to the attention of the appropriate manager or supervisor for resolution. Management then is responsible for promptly investigating the concern and implementing corrective action where appropriate. If a satisfactory response is not received, the senior manager for the organization should be contacted, or the S&H PM, or the employee may go directly to the Employee Concerns representative. Reporting and responding to ES&H concerns is accomplished according to CP1-HR-0131, *Employee Concerns.*

Employee feedback and suggestions are collected and reviewed by management. Management performs periodic field evaluations to determine implementation effectiveness utilizing CP3-QA-3010, *Performance Observations*, and other applicable procedures such as CP3-QA-3002, *Operating Experience/Lessons Learned (OE/LL)*; CP3-QA-3001, *Issues Management*; and CP3-HS-2009, *Stop/Suspend Work.*

FRNP routinely communicates to all project personnel the status of performance against S&H program goals, objectives, and performance measures through a variety of means and mediums, including briefings, and solicits employee feedback through this forum as well. CP3-HS-1000, *Integrated Safety Management System Effectiveness Review and Performance Objectives, Measures, and Commitment Development and Reporting,* provides a process for communicating performance status.

4.3.3 Continuous Improvement

[10 *CFR* § 851.11(a)(3)(ii), 10 *CFR* § 851.20(b)(7)]

FRNP uses the following variety of assessment and reporting methods to ensure continuous improvement.

- Self-Assessments
- Management Assessments
- Independent Assessments
- Work Observations
- Incident Reporting
- Occurrence Reporting

These programs track each issue to closure through CP3-QA-3001, *Issues Management.* FRNP conducts performance analysis and trending to identify areas that need improvement and to focus resources.

Lessons learned, from both operating experience and incidents at other sites, are reviewed for potential applicability to FRNP operations and are used to improve program performance and prevent events. Refer to CP3-QA-3002, *Operating Experience/Lessons Learned (OE/LL)*. The OE/LL coordinator assists

employees in searches, as requested, in procedures development, work planning, and training. Employees who use the OE/LL database as part of their roles and responsibilities, such as work planners, review the OE/LLs disseminated for applicability to current or future projects. Ultimately, all employees are responsible to incorporate OE/LL into activities and processes.

The effectiveness of the WSHP is measured objectively. Metrics providing data on the effectiveness of the critical elements of the program are identified, tracked, trended, and reported to management for consideration. The selected metrics are included in the annual set of performance objectives, measures, and commitments for DOE approval.

4.3.4 Work Performed By Subcontractors

Subcontractors and their tier subcontractors will comply with the FRNP approved WSHP, as applicable to the contracted work, as identified in the statement of work, specifications, or other part of their contract. The FRNP Subcontractor's Safety Requirements Document, Attachment J-1, *Environmental, Health and Safety Requirements for On-Site Work*, is flowed down, along with the WSHP and applicable requirements of the request for proposal and the contract for the scope of contracted work.

According to CP2-QA-3000, *Contractor Performance Assurance Program Description at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* , the FRNP monitors, assesses, evaluates, and reports on the work performed under the Contract, including the work of subcontractors, suppliers and vendors as delineated in the subcontracts or other purchase documents, to ensure work performance meets the applicable requirements for ES&H, including quality assurance, integrated safety management, safeguards and security, cyber security, and emergency management.

Subcontractors also will function within the FRNP ISMS structure and follow other federal, state, local, and DOE regulations applicable to their scope of work.

4.4 CONSTRUCTION SAFETY

[10 *CFR* § 851.24; 10 *CFR* § 851, APPENDIX A.1]

4.4.1 Work Performed by Subcontractors

Construction subcontractors and their tier subcontractors will comply with the FRNP approved WSHP, as applicable to the contracted work, as identified in the statement of work, specifications, or other part of their contract. The FRNP Subcontractor's Safety Requirements Document, Attachment J-1, *Environmental, Health and Safety Requirements for On-Site Work*, is flowed down, along with the WSHP and applicable requirements of the request for proposal and the contract for the scope of contracted work.

According to CP2-QA-3000, *Contractor Performance Assurance Program Description at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, the FRNP monitors, assesses, evaluates, and reports on the work performed under the Contract, including the work of subcontractors, suppliers and vendors as delineated in the subcontracts or other purchase documents, to ensure work performance meets the applicable requirements for ES&H, including quality assurance, integrated safety management, safeguards and security, cyber security, and emergency management.

4.4.2 Hazard Analysis

Construction projects are required by the FRNP Subcontractor's Safety Requirements Document, Attachment J-1, *Environmental, Health and Safety Requirements for On-Site Work*, to prepare JHAs, as defined in CP3-HS-2004, *Job Hazard Analysis*, and have them approved by FRNP prior to commencing work. These analyses are conducted by designated project personnel.

4.4.3 Inspections and Hazard Abatement

During periods of active construction, S&H representatives and supervisors (FRNP and/or subcontractor) observe the work according to CP3-SP-0018, *Subcontractor Oversight*. These individuals provide oversight of the worksite to identify and correct hazards and instances of noncompliance with project S&H requirements. These issues are documented in the work documentation log which is part of the CTR's Vendor work document. If immediate corrective action is not possible or the hazards fall outside the project scope, the S&H representative and/or supervisor suspends or pauses work according to CP3-HS-2009, *Stop/Suspend Work*, notifies affected employees, secures the area, and notifies the FRNP RM. Observations not meeting issues management criteria are tracked by oversight personnel (for example, log books, e-mail, turnover documentation, and other established means) to ensure corrective actions are communicated and resolved.

FRNP or its subcontractor communicates hazards to workers prior to commencing work through safety communication processes such as pre-job briefings, review of the JHA, hazard communication for chemical use, and targeted safety training. Furthermore, individuals involved in the project have the authority and responsibility to suspend/pause or stop work for perceived threat to the safety and health of the workers, other personnel, or the environment.

4.4.4 Project Worker Safety and Health Program

The subcontractor construction manager and/or subcontractor S&H representative is responsible for ensuring implementation of contractually required S&H program documents. They are required to be qualified commensurate with their duties and responsibilities for the preparation of these documents, as well as for conducting work. The construction subcontractor must prepare a written construction project S&H plan to implement at a minimum the requirements of 10 *CFR* 851, Attachment A.1. *Construction Safety*, Section (d), along with any additional items that are identified in the contracted scope of work.

FRNP developed a crosswalk that includes D&R Contractor implementation documents and complies with 10 *CFR* 851 Appendix A.1(d) requirements. Refer to Appendix C, *Construction Project Safety & Health Plan Crosswalk*, for details and associated implementation documents.

4.5 FIRE PROTECTION

[10 *CFR* § 851.24; 10 *CFR* § 851.23(A)(3), (7) AND (12); 10 *CFR* 851, APPENDIX A.2]

4.5.1 Program

The FRNP Fire Protection Program protects workers from fire and related hazards. This is accomplished with the use of facility and site-wide fire protection, fire alarm notification with appropriate egress capabilities, and access to an appropriately trained and equipped fire department. The primary drivers for the program are the NFPA codes and standards and DOE O 420.1C, Chg 2, *Facility Safety*. The Fire Protection Program is described in CP2-FP-2000, *Fire Protection Program Description for the Paducah*

Gaseous Diffusion Plant, Paducah, Kentucky, and CP3-FP-2004*, Fire Protection Program Implementation*.

4.5.2 Program Elements

The elements that make up the FRNP Fire Protection Program are described below.

- **Procedures [10 *CFR* § 851.21]**

  Procedures have been developed to ensure that the FRNP Fire Protection Program is implemented effectively and consistently. This includes control of combustible and flammable liquids, as required by CP2-FP-2002, *Control of Flammable/Combustible Liquids*; NFPA 30—Revision 2015, *Flammable and Combustible Liquids Code*; performance of hot work activities, according to ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes* (2012)*,* which includes the use of fire watches, as required by CP3-FP-2005, *Welding, Burning, and Hot Work*; and NFPA 51B—Revision 2014, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*.

- **Analysis [10 *CFR* § 851.21]**

  FHAs are performed to assess qualitatively the potential for a fire in a facility to ensure that the possibility of injury to people or damage to building, equipment, or the environment is minimized. FHAs are developed and maintained for Category 2 and 3 nuclear facilities. Transitional facility fire hazard analyses (TFHAs) are performed for facilities that are planned to undergo deactivation and remediation. As facilities are deactivated, the FHA or TFHA will be updated to reflect current conditions and controls as required by DOE O 420.1C, Chg 2, *Facility Safety* and DOE-STD-1066-2012, *Fire Protection*.

  FHAs also are developed for significant new facilities and facilities representing unique fire safety risks. CP3-FP-2006, *Fire Hazard Analysis & Facility Assessments*, describes the FHA process in detail. FRNP provides sitewide fire education, fire protection system inspections, testing and maintenance, fire investigations, fire department and emergency response, notifications, special hazard identifications, etc. Fire protection system inspection, testing, and maintenance includes a fire protection system impairment strategy. Fire protection systems in facilities are inspected, tested, and maintained according to applicable National Fire Protection codes and standards.

- **Hardware and Systems [10 *CFR* § 851.22]**

  Most FRNP facilities have fire suppression systems installed and have fire detection equipment and alarms connected to a central monitoring station. FRNP is responsible for maintenance of these systems and performs periodic tests to ensure their operability. As facilities are deactivated, changes may be necessitated in the fire suppression hardware and systems. Proposed changes are evaluated through FHAs/TFHAs and against the DSA. Changes are not implemented until approved and necessary compensatory measures are established. Refer to CP2-FP-2000, *Fire Protection Program Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky.*

- **Apparatus and Equipment [10 *CFR* § 851.22]**

  FRNP operates the on-site fire department. The department maintains firefighting vehicles and associated equipment to contain most fires that could occur on-site. Mutual Aid Agreements and Letters of Agreements with local off-site fire departments and hospitals currently are established for

those events that are beyond the capability of the on-site fire department to address. FRNP maximizes the use of community fire department resources to the extent practical.

- **Personnel [10 *CFR* § 851.25]**

  FRNP fire department personnel are trained and qualified, according to the FRNP Training Program. Training needs are reviewed and the training program modified to meet identified needs as well as applicable requirements as outlined in NFPA 472 and 473, the applicable state fire commission requirements, and DOE O 151.1D. The identification of changes to training for Fire Services personnel comes from the result of drill and exercise feedback, the acquisition of new equipment, or the introduction of new techniques that are identified through ongoing professional development. Training is based on national standard emergency response methodology with site specific training on issues unique to the site. Specific training activities include firefighting, hazardous material response, confined space rescue, emergency medical response, radiological emergencies, and rescue. There is a live fire training facility on-site to augment firefighting training.

4.6 FIREARMS SAFETY

[10 *CFR* § 851.24; 10 *CFR* PART 851, APPENDIX A.5]

FRNP's firearm safety requirements provide for compliance with DOE O 473.3A Chg 1, *Protection Program Operations*; 10 *CFR* § 851.24; and 10 *CFR* 851, Appendix A.5, *Firearms Safety*. FRNP implements the firearm safety requirements through Safeguards & Security Protective Force services procedures.

4.7 EXPLOSIVE SAFETY

[10 *CFR* § 851.24; 10 *CFR* 851, APPENDIX A.3]

FRNP currently does not use explosive material other than small arms ammunition. Small arms ammunition is stored, transported, and used according to CP4-SS-TSOP 11, *Ammunition and Firearms Storage Procedures*. If explosives were to be required, the use, storage, or transportation of explosive material would require coordination with protective force services and affected Safeguards and Security organizations, in compliance with the applicable requirements of 29 *CFR* 1926, Subpart U; NFPA 495, Revision 2013; and specific state, local, and DOE requirements. Where applicable, explosives are maintained according to DOE-STD-1212-2012, *Explosives Safety* through FRNP implementing procedures.

4.8 INDUSTRIAL HYGIENE

[10 *CFR* § 851.24; 10 *CFR* PART 851, APPENDIX A.6]

4.8.1 Goal and Objectives

The goal of the FRNP IH Program is to anticipate, recognize, evaluate, and control environmental factors or stressors in the workplace that may cause sickness, irritation, or impaired health and well-being among workers. The program focuses on the protection of workers from harmful exposures to hazardous materials and wastes, carcinogens, noise, heat and cold stress, and nonionizing radiation (such as

ultraviolet, visible, infrared, radiofrequency, microwave, and static magnetic fields). Occupational exposures to chemical and/or physical agents are restricted to levels below regulated exposure limits. This program and its elements are managed and implemented by qualified IH professionals who meet the FRNP training expectations and conform to applicable DOE Orders, 29 *CFR* 1910 and 1926, and other applicable regulatory standards. IH professionals are qualified based on experience and compliance with the FRNP Training Program. Job performance measures are used to support those qualified to utilize specific IH instrumentation.

The IH requirements are described in CP4-HS-2000, *Industrial Hygiene Sampling*.

4.8.2 Program Elements

The elements of the FRNP IH Program are described below.

- **IH Surveys and Assessments [10 *CFR* § 851.20(b)(3), 10 *CFR* § 851.21(a)(2)]**

  An initial or baseline survey of work areas is conducted whenever a potential hazard is identified as a result of the following:

  — Review of project work plans;
  — Inspection of areas or walkdowns;
  — Review of procedures, plans, and operations;
  — Investigation of complaints of illness or injury; and
  — Employee reports of potential health hazards.

  The initial survey consists of gathering information such as processes involved, chemical/material information, Safety Data Sheets, health hazards and controls, exposure routes, and exposure groups. The initial survey results are incorporated, as appropriate, into the associated JHA, procedure, or other IH assessment document. Based on the initial survey, a health hazard assessment is performed to evaluate and document employee exposures to chemical, physical, and biological agents and ergonomic stressors.

  FRNP ensures the use of exposure limits identified by either the American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (2018 per 10 *CFR* 851), or the OSHA permissible exposure limits listed in 29 *CFR* 1910 and 29 *CFR* 1926. FRNP reviews for adoption more recent publications of the ACGIH guide book when they are more protective. Personnel breathing zone measurements, based on the applicable exposure limit, are performed and documented following recognized sampling methods such as those published by National Institute for Occupational Safety and Health (NIOSH) and OSHA. Employees monitored for exposure levels are informed of monitoring results and their legal rights to their exposure records, according to 29 *CFR* § 1910.1020, *Access to Employee Exposure and Medical Records,* and CP4-HS-2000*, Industrial Hygiene Sampling*. The occupational medical coordinator receives a copy of employee medical results. Other applicable disciplines receive exposure results, according to work activity and craft.

  Follow-up monitoring/resurveys are performed as follows:

— To assess conditions after modifications, which may increase the potential for employee exposure, or the implementation of hazard control measures are completed; or

— At intervals specified in substance specific standards identified in 29 *CFR* 1910 and 1926.

- **IH Hazard Controls [10 *CFR* § 851.22(b)]**

  Hazard controls are the methods used to eliminate or reduce personnel exposure to hazardous agents. Exposures to hazardous chemicals or agents in the workplace are controlled by the application of one or more of the methods listed below. Hazard controls are directed as follows: first, toward eliminating the source of the hazard; second, toward the route or path the potential hazard takes; and third, toward shielding or protecting specific personnel who may be subjected to exposure to the hazard. The hierarchy of controls for hazards is as follows:

  — Elimination or substitution of the hazards where feasible and appropriate;
  — Engineering controls where feasible and appropriate;
  — Work practices and administrative controls that limit worker exposures; or
  — PPE.

- **IH Training [10 *CFR* § 851.25; 10 *CFR* § 851, Attachment A.6]**

  Employees are given training in IH aspects to recognize and protect against potential health hazards according to the FRNP Training Program. FRNP ensures the IHs who manage and implement the IH program are technically qualified through the staffing process to recruit and employ IH personnel based on training, education, experience and overall knowledge, skills, and abilities to perform competent work. On-the-job experience and coaching by senior staff provide the basis for enhancing the skills of IH staff in the recognition and necessary controls for unique hazards that may be encountered at FRNP. IH field staff personnel also receive formal group and one-on-one instruction and consultation from the senior IH staff, including the CIHs at FRNP. This training typically addresses technical details regarding data interpretation, methodology updates, and programmatic changes. This establishes the basis for assuring the IH staff remains technically competent to perform assigned duties. IH senior staff personnel, including CIHs, maintain their professional skills via professional meetings, journals, and interaction with peers in the industry.

- **Respiratory Protection [10 *CFR* § 851.23(a)(3) and (10); 10 *CFR* § 851.24]**

  Only respirators approved by NIOSH are used. Quantitative fit testing using OSHA-specified protocols is required for employees wearing positive- or negative-pressure, tight-fitting face-piece respirators. Workers are not issued a respirator without verification of the worker's training, fit testing, and medical clearance for respirator use. The primary drivers for the program are 29 *CFR* § 1910.134, *Respiratory Protection*, and ANSI Z88.2, *Practices for Respiratory Protection* (2015). The program-implementing document is CP2-HS-2003, *Respiratory Protection Program.*

- **Chemical Safety Management [10 *CFR* § 851.23(a)(3)]**

  Chemical safety management includes the safe management of hazardous chemicals, as defined in the 29 *CFR* § 1910.1200, *Hazard Communication,* substances reportable under 40 *CFR* § 302.4, *Designation of Hazardous Substances*, substances regulated under 29 *CFR* § 1910.119, *Process Safety Management of Highly Hazardous Chemicals*; and the U.S. Environmental Protection Agency

(EPA) Risk Management System Program (40 *CFR* 68). These programs reduce and/or help eliminate the risk of occupational carcinogens. These programs apply to FRNP activities involving the handling, processing, and storing of hazardous materials. The program-implementing documents are CP3-HS-2003, *Hazard Communication*; CP2-HS-2007, *Hazardous Chemical Management Program*; and CP3-HS-2018, *Process Safety Management of Highly Hazardous Chemicals*.

Laboratory safety requirements are covered in CP2-ES-0201, *Laboratory Chemical Hygiene Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, and meet the applicable requirements in 29 *CFR* § 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories*. The plan is part of the total safety and hygiene program for laboratory personnel and applies to operations performed in the laboratories in C-710 and C-709. This plan deals with chemical hygiene and does not address radiation/criticality safety or contamination control measures that are covered by other site-specific documents.

- **Standards [10 *CFR* § 851.27(a)(2)(v); 10 *CFR* § 851.23; 10 *CFR* § 851.24]**

  The program has adopted health standards promulgated by OSHA and ACGIH. IH sampling is performed according to the NIOSH or OSHA methodologies, where possible. Where possible, laboratories performing IH sample analysis are accredited by American Industrial Hygiene Association or National Voluntary Laboratory Accreditation Program. Analytical methods other than NIOSH or OSHA would need to be evaluated by a CIH and/or qualified FRNP IH SME personnel and validated by reviewing the method and the applicable quality control reports from the laboratory.

4.8.3 Noise

[10 *CFR* § 851.23(a)(3)]

The operation of equipment at FRNP can create areas where noise levels exceed 85 decibels on the A weighted scale (dBA). Exposure to excessive noise levels may lead to temporary or permanent hearing loss. Noise level monitoring and postings are according to 29 *CFR* § 1910.95, *Occupational Noise Exposure*. Hearing protection is worn by personnel when noise levels are suspected or shown to exceed 85 dBA 8-hour time-weighted average (TWA) unless a negative exposure assessment (NEA) has been established (NEA means < 85 dBA 8-hour TWA). Areas where noise levels are greater than 85 dBA are posted as "CAUTION Noise Hazard Areas-Hearing Protection Required." The supervisor/foreman ensures compliance with posted warnings. CP2-HS-2002, *Occupational Noise Exposure and Hearing Conservation Program*, meets the requirements of 29 *CFR* § 1910.95, *Occupational Noise Exposure*, and the ACGIH TLV of 85 dBA, as an 8-hour TWA.

4.8.4 Temperature Extremes (Heat and Cold Stresses)

[10 *CFR* § 851.23(a)(9)]

Supervisors are responsible for ensuring that hazards associated with temperature extremes are analyzed, that workers are briefed on the hazard and control methods, and to implement the controls to protect employees. The analysis is conducted as part of the work planning processes defined in CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* and CP3-HS-2004, *Job Hazard Analysis*. CP3-HS-2000*, Temperature Extremes*, details requirements for working in hot and cold environments.

Exposure to hot environments is controlled through the implementation of engineering controls such as air conditioning, fans, shade, or heat shielding, as feasible. Administrative controls that provide

acclimatization periods, formal rest and cooling down breaks, hydration and replenishing of fluids, and physiological monitoring are employed. Cold hazards are mitigated through warming areas, rest and warming up breaks, and the use of cold weather PPE. In both temperature extremes, employees are required to report related symptoms immediately so additional protective measures, up to and including stopping the work activity, can be enacted to protect the employees.

4.8.5 Confined Space Entry

[10 *CFR* § 851.23(a)(3); 10 *CFR* § 851.23(a)(7)]

CP3-HS-2055, *Confined Space*, meets the requirements of 29 *CFR* § 1910.146, *Permit-Required Confined Spaces*, and incorporates applicable requirements from 29 *CFR* 1926 Subpart AA, *Confined Spaces in Construction.* FRNP employs a decision tree methodology based on definitions provided in 29 *CFR* § 1910.146 to classify confined spaces as either "permit-required" or "non-permit-required." When entry of a confined space is necessary, the requirements of CP3-HS-2055 are followed.

Requirements include the designation of entrants, those employees trained and authorized to enter the space to perform work, and the attendant, a trained individual who is stationed outside the confined space to monitor the entrants, stays in communication with the entrants, and never leaves the post until relieved by another attendant. Proper signage, atmospheric testing, mitigation of confined space hazards, including interfacing hazards outside the space (for example, fall hazards), available rescue services, and thorough documentation of testing information and entrant log in and out times, provide the rigor needed to ensure personnel safety.

4.8.6 Dust Control

[10 *CFR* § 851.22]

During activities requiring dust control, water spraying or other FRNP regulatory compliance approved methods (i.e., fixative, negative air machines) authorized in work control are used to suppress dust emissions to the lowest practicable level. Depending on specific work area conditions and restrictions, various types of equipment are used for dust suppression efforts (ranging from water spray tank trucks to handheld garden hoses or garden sprayers). Excessive runoff due to dust control operations is not permitted. Excessive visible emissions of particulate are not permitted. If planned activities involve disturbing known or suspected contaminated soils, the project S&H representative is consulted concerning dust suppression in these areas. Dust control efforts and related limitations and allowances as determined and documented by S&H and environmental compliance representatives through work planning processes defined in CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, and CP3-HS-2004, *Job Hazard Analysis*.

4.8.7 Ergonomics

[10 *CFR* § 851.21; 10 *CFR* § 851.22]

Measures are provided for protecting personnel, who by interacting with their working environment, may have the potential for musculoskeletal hazards, such as incorrect lifting of heavy loads, equipment vibrations, improper body positioning, negotiation of physical obstacles. Guidance for preventing musculoskeletal disorders is detailed in the CP3-HS-2030, *Ergonomic Applications,* which incorporates sound ergonomic work practices and guidelines from the NIOSH Ergonomic Guidelines for Manual Material Handling.

Job tasks with ergonomic hazards are evaluated and can be documented by completing the *Ergonomic Evaluation Sheet* (CP3-HS-2030-F01) identified in CP3-HS-2030. Activities with ergonomic risk factors are controlled through the implementation of engineering controls and/or administrative controls. Engineering controls include altering the work station, adjusting the height of the work station, establishing an automated means of manipulating parts/equipment instead of manual manipulation, or using ergonomically designed tools or equipment. Where engineering controls are not feasible, FRNP utilizes administrative controls. Administrative controls include work/rest cycles, work shifts, production quotas, employee training, and policies and procedures, such as adhering to a maximum lifting load of 50 lb for all personnel expected to perform any lifting. Controls are reevaluated as needed to ensure their continued effectiveness.

4.8.8 Indoor Air Quality

[10 *CFR* § 851.21, 10 *CFR* § 851.22]

FRNP utilizes a process for preventing indoor air quality (IAQ) problems through measurement, investigation, correction and prevention. Various factors, such as chemical contaminants, carbon dioxide levels, humidity, and microbiological organisms, influence the quality of breathing air. Biological organisms, such as molds, mildew, other fungi, and spores, thrive in moist and stagnant environments. FRNP industrial hygienists perform air quality evaluations, as required in the CP3-HS-2033, *Indoor Air Quality*.

Identified IAQ issues or symptoms, or those reported by completing CP3-HS-2033-F01, *Occupant Interview/Complaint Form*, are evaluated by IH. An IAQ profile is developed for the offending facility to identify facility layout, design problems or changes, ventilation system details, and results of walkdowns. Representatives of engineering and facility management are consulted as appropriate. Implementation of recommended mitigation strategies, such as introduction and distribution of ventilation air, control of airborne contaminants and pollutant pathways, and maintenance of acceptable temperature and relative humidity, improve IAQ for facility occupants. Prevention methods are also employed, such as routine preventative maintenance on ventilation systems and integrating IAQ considerations into new construction and project designs.

4.8.9 Asbestos and Other Fibrous Materials

[10 *CFR* § 851.23(a)(3); 10 *CFR* § 851.23(a)(7)]

Based on the historical widespread use of asbestos in insulation and other building materials, asbestos-containing material (ACM) may be encountered frequently during work activities. Activities dealing with ACM are controlled by processes defined in CP2-HS-2040, *Asbestos Controls Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, which complies with 29 *CFR* § 1926.1101, *Asbestos*; EPA guidelines; and 401 *KAR* Chapter 58.

When ACM is suspected, or the ACM appears to be friable (such as, material, when dry, that may be crumbled, pulverized, or reduced to powder by hand) or disturbed so that visible debris has been generated, the PSS is notified. The PSS then makes the proper notifications to responsible personnel. The facility manager/PM ensures spills involving thermal system insulation or surfacing materials are posted using perimeter barrier, flagging, and posting. Preventative measures and hazard controls instituted by FRNP to ensure worker safety include the following:

- Assume that uncharacterized insulation and suspect building materials contain asbestos until verified by sampling and analysis.

- Prohibit disturbing activities around or on ACM or suspected ACM.
- Conduct annual asbestos training for abatement workers, supervisors, project designers, and building inspectors.
- Perform ACM cleanup and abatement activities by Activity Level Work Control Documents, per CP2-HS-2040.

4.8.10 Biological Monitoring for Industrial Chemicals

[10 *CFR* § 851.20(a)(4), 10 *CFR* § 851.24]

Biological monitoring provides a tool for assessing a worker's potential exposure to chemical substances and for determining the effectiveness of PPE and controls. CP2-HS-2014, *Biological Monitoring for Industrial Chemicals,* provides the details of this program. The applicability of biological monitoring is determined based on criteria including the chemical substances present in the workplace, the duration of exposure, and regulatory requirements. The applicability is determined from a hazard review process including pre-task analysis and/or hazard analysis as defined and detailed in CP3-SH-2004, *Job Hazard Analyses*, using a multidisciplinary team.

Occupational health professionals working with occupational safety and IH professionals identify work activities that require biological monitoring and/or specific tasks/operations that will require individuals to submit chemical bioassay samples in order to establish baseline levels prior to work assignments. The results of biological monitoring are reviewed and evaluated using ACGIH *Adopted Biological Exposure Determinants*, exposure limits in 29 *CFR* 1910 and 29 *CFR* 1926, or other appropriate standards. Individuals are removed from further potential exposure to a chemical substance whenever necessitated by the results of biological monitoring or the recommendations of an examining physician. Exposures above biological exposure determinants are investigated to understand the source and prevent recurrence.

4.8.11 Inorganic Arsenic, Cadmium, Chromium, and Lead

[10 *CFR* § 851.23(a)(7)]

Inorganic arsenic, cadmium, chromium and lead can be found in paints. Painted surfaces should be suspected of containing these hazardous materials. Work activities that involve the potential for reducing paint to breathable-size particles or vaporized paint are evaluated on a case-by-case basis. Appropriate controls and protective measures are specified in a JHA, procedure, or other work control documentation developed for the activity. IH uses an exposure control plan or an IH work permit. Both documents employ a systematic approach to specify the collection and analysis of exposure determinants such as work tasks; magnitude, frequency, variability, duration, and route of exposure; and the linkage of the resulting exposure profiles of individuals and similarly exposed groups for the purposes of risk management and health surveillance. In addition, these documents are used to provide recommended S&H hazard controls to be employed during the work activity to protect employees.

Activities involving inorganic arsenic, cadmium, chromium, and lead adhere to the following requirements: 29 *CFR* § 1926.1118, *Inorganic Arsenic*; 29 *CFR* § 1926.1127, *Cadmium*; 29 *CFR* § 1926.1126, *Chromium*; and 29 *CFR* § 1926.62, *Lead*. Implementing procedures that govern occupational exposures to these substances are CP3-HS-2034, *Lead and Inorganic Arsenic,* and CP3-HS-2035, *Chromium (VI) and Cadmium Protection*.

4.8.12 Bloodborne Pathogens

[10 *CFR* § 851.23(a)(3)]

The requirements of 29 *CFR* § 1910.1030, *Bloodborne Pathogens,* are implemented by CP2-HS-4001, *Bloodborne Pathogens and Other Potentially Infectious Material Exposure Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. This document defines the measures for protecting personnel who have the potential for occupational exposure to bloodborne pathogens. Individuals, who come in contact with blood or other potentially infectious material, either accidentally or as a result of his/her occupation, have the potential for exposure to bloodborne pathogens. Individuals who come in contact with blood or other potentially infectious material should report the incident to the project S&H representative or occupational medicine coordinator for evaluation and to effect appropriate medical treatment.

Employees with a potential for occupational exposure to bloodborne pathogens are trained at the time of initial assignment and when assigned tasks are modified to understand transmission and symptoms of bloodborne diseases, how to recognize tasks that have potential exposure to blood or infectious material, how to prevent exposure using universal precautions and the proper use and handling of PPE, disposal protocols, appropriate actions to take in an emergency involving potential bloodborne pathogens, and information regarding the hepatitis B vaccine and an opportunity to receive or decline it.

Additional aspects of CP2-HS-4001, *Bloodborne Pathogens and Other Potentially Infectious Material Exposure Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* include the following:

- Roles and responsibilities of supervisors, employees, S&H representatives, and the occupational medical provider;
- Warning label requirements;
- Precautions for handling waste;
- Limitations to protect employees susceptible to bloodborne disease infections; and
- Interfaces with other processes, such as CP3-OP-2024*, Initial Incident/Event Reporting,* which are used to report bloodborne pathogen related issues and govern related investigations; appropriate actions to take in an emergency involving potential bloodborne pathogens per CP3-EP-1011, *Medical Emergencies.*

4.8.13 Beryllium

[10 *CFR* § 851.23(a)(1)]

Work activities involving beryllium are performed in compliance with 10 *CFR* § 850, *Chronic Beryllium Disease Prevention Program* (CBDPP), which is incorporated in CP2-HS-2001, *Site Chronic Beryllium Disease Prevention Program*. The CBDPP provides requirements and guidance for a systematic approach to the protection of individuals from exposure to beryllium. Potential exposure to beryllium is limited to legacy contamination, dust, and debris. Work activities that may encounter potential exposure to beryllium typically are limited to surveillance and maintenance tasks, D&R tasks in legacy contamination areas, and incidental clean-up operations in facilities where beryllium has been documented to be, or had been, present.

FRNP appoints an IH to serve as the Beryllium Program SME, who provides oversight of CBDPP implementation and has several duties identified in the CBDPP, including but not limited to the following:

- Reviews and approves work activity plans and procedures with controls and tasks governed by the CBDPP.
- Performs periodic program assessments to evaluate performance and compliance with CBDPP.
- Maintains a baseline inventory of the locations of beryllium contamination, including beryllium controlled areas, beryllium regulated areas, and beryllium activities, in a central, shared document folder where it will be readily accessible.
- Ensures that the IH hazard assessment and the project work activity plan describe in detail the methods of compliance to be used in controlling exposures within applicable exposure limits. Identifies workers exposed or potentially exposed to beryllium contamination, and keeps a log of such individuals in the site Beryllium-Associated Worker Registry.

A hazard assessment addressing all elements of 10 *CFR* 850 beryllium regulation must be conducted prior to the beginning of each work activity the activity is planned for an area that has been determined to have beryllium contamination present or meets criteria listed in the CBDPP for beryllium regulated or controlled areas. The hazard assessment is developed by a team comprised of representatives from those performing the work, including supervision, workers, and S&H personnel and includes, where available, the analysis of existing conditions, exposure data, and the exposure potential of planned activities and controls.

If analysis shows the airborne concentration of beryllium greater than the occupational exposure limit listed in the CBDPP, then specific actions are taken that include periodic exposure monitoring, exposure reduction and minimization, establishment of regulated areas, hygiene facilities and practices, use of respiratory protection and protective clothing, and warning signs and labels.

FRNP manages the CBDPP for all site contractors. Laboratory operations involving beryllium that fall within the scope of 29 *CFR* § 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories,* are excluded from the scope of the CBDPP.

4.8.14 Laboratory Safety

Laboratory safety is addressed in CP2-ES-0201, *Laboratory Chemical Hygiene Plan,* which complies with the applicable laboratory requirements of 29 *CFR* § 1910.1200, *Hazard Communication*, including chemical labeling, maintaining and providing safety data sheets, and ensuring laboratory employees are provided information and training of hazardous chemicals. The plan is reviewed annually and deals with chemical hygiene and does not address radiation/criticality safety or contamination control measures that are covered by other site specific documents. The plan addresses the following:

- Laboratory cleanliness expectations, including the separation of the laboratory area from areas where there is consumption and storage of food and drinks or the application of cosmetics, soaps, and lotion.
- Emergency actions, including reporting expectations for incidents; protocols for ingestion of chemicals or eye/skin contact with chemicals; chemical spill and water leak response; and system shut-off steps.

- Engineering and administrative safety systems such as lab hood ventilation, safety showers, eyewash stations, fire extinguishers, and safe handling guidance.

- Direction on application of chemical exposure limits, employee IH monitoring, and the use of protective equipment and clothing.

- Chemical storage and disposal.

4.9 BIOLOGICAL SAFETY

[10 *CFR* 851, APPENDIX A.7]

No etiologic biological agents are used under the FRNP scope of work; therefore, this section is not applicable to FRNP self-performed or subcontracted operations.

4.10 OCCUPATIONAL MEDICINE PROGRAM

[10 *CFR* § 851.26(A)(3); 10 *CFR* § 851.24; 10 *CFR* 851, APPENDIX A.8]

FRNP provides occupational medicine services as a basic worker protection requirement that provides comprehensive occupational health services to FRNP employees. CP3-HS-4002, *Implementation of the Occupational Medicine Program*, complies with 10 *CFR* 851, *Worker Safety and Health Program*; 10 *CFR* 1046, *Medical, Physical Readiness, Training, and Access Authorization Standards for Protective Force Personnel*; 29 *CFR* 1910, *Occupational Safety and Health Standards*; and 29 *CFR* 1926, S*afety and Health Standards for Construction*, with emphasis on prevention, early detection, and treatment of occupational related injuries and illnesses. The program is reviewed and updated annually and is implemented through multiple procedures.

CP3-HS-4002, *Implementation of the Occupational Medicine Program*, is applicable to personnel who will or have worked at FRNP facilities or work areas for more than 30 days within any 12-month period, or are enrolled in an OSHA or other regulatory required medical surveillance or exposure control program. The site medical director is a graduate of a school of medicine or osteopathy and licensed to practice in the Commonwealth of Kentucky. The occupational medicine service provider ensures nurses, physician assistants, medical assistants, technicians, and other occupational health personnel providing medical services are licensed, registered, or certified as required by federal or Kentucky law.

The occupational medicine services are designed to do the following:

- Identify work-related or worksite hazards and possible health risks to employees;

- Assure individuals are medically qualified to perform assigned work tasks;

- Minimize occupational injuries or illnesses by providing a place of employment free from recognized hazards;

- Provide initial treatment of non-life threatening occupational injuries or illnesses experienced due to work activities;

- Provide reasonable accommodations for occupational/nonoccupational injuries or illnesses to the extent necessary to prevent loss of time from work; and

- Provide counseling, health education, and/or wellness programs aimed at maintaining the highest level of worker health.

According to CP3-HS-4002, *Implementation of the Occupational Medicine Program*, employee health evaluations are completed for the purpose of providing initial and continuing assessment of employee fitness for duty (i.e., the worker's ability to safely perform assigned duties). The evaluations are conducted at the time of initial employment and separation, following a work-related injury or illness, to evaluate both work- and nonwork-related illnesses and injuries to facilitate rehabilitation and safe return to work, when employees transfer to a job with new functions and hazards, when there is a concern regarding an employee's fitness, or when determined necessary by the occupational medicine provider.

Another aspect of the program is devoted to identifying, preventing or managing, and monitoring the causes of premature morbidity to the extent that they are cost-effective, as well as the development of other wellness programs.

The occupational medicine services facilitate compliance with requirements found in 29 *CFR* § 1910.95, *Noise*; 29 *CFR* § 1910.120, *Hazardous Waste Operations and Emergency Response*; 29 *CFR* § 1910.134, *Respiratory Protection*; 29 *CFR* 1910 Subpart Z, *Toxic and Hazardous Substances*; 29 *CFR* 1926, Subpart D, *Occupational Health and Environmental Control*; 29 *CFR* § 1926.103, *Respiratory Protection*; and 29 *CFR* 1926, Subpart Z, *Toxic and Hazardous Substances*, that either require medical qualification examinations or medical monitoring when specific activities are being performed or specified hazards or exposures are encountered. In order for the medical surveillance program to be effective, employee exposure results and JHAs are provided to the occupational medicine director.

Disclosure of personalized data is made upon that individual worker's request or according to legal requirements. Nonpersonalized data may be used in research and in the assessment of the occupational medicine services. Upon request by a worker to the medical director, a copy of that worker's medical records is provided to that worker or the worker's private physician, if so requested, according to 10 *CFR* 1008, *Privacy Act*. Applicable records generated or received as a result of this program are managed according to FRNP records management and document control requirements, which include FRNP-TRANS-0013, *Records Management Plan*; CP3-OP-0025, *Document Control Process*; and CP1-HR-0123, *Release of Employee Information*.

Pre-employment, post-accident, random, and reasonable suspicion drug and alcohol testing procedures are conducted according to CP2-HR-0125, *Workplace Substance Abuse* Program *for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, to ensure personnel report for work and remain at work in a condition fit to perform assigned duties safely. Grounds for conducting reasonable suspicion testing include, but are not limited to, personal observations concerning the appearance, behavior, speech, or performance of the employee; violation of safety rules; or other physical, circumstantial indicators of impairment. Implementation of the substance abuse program meets the requirements of 10 *CFR* 707, *Workplace Substance Abuse Program*; and 49 U.S.C. Part 40, *Procedures for Transportation, Workforce Drug and Alcohol Testing Procedures*.

4.10.1 Injury/Illness Reporting and Response

[10 *CFR* § 851.26(a)(2) and (b); 10 *CFR* § 851.20(a)(6) and (a)(7)]

Work-related injuries or illnesses to project personnel, and subcontractors, regardless of how minor, are reported immediately to their supervision and assigned S&H representative. CP3-HS-4002*, Implementation of the Occupational Medicine Program*, CP3-OP-2024, *Initial Incident/Event Reporting*, and CP3-QA-3008*, Fact Finding,* provide direction for reporting, investigating, and managing injuries, illnesses, and accidents. Employees who become injured or ill as a result of a work-related exposure or event and seek off-site medical treatment provide FRNP Human Resources and its supervision with a physician's release prior to returning to work according to CP3-HR-0101, *Return to Work*. Employees who have a non-work related injury or illness must be evaluated by FRNP occupational medicine services to ensure work activities will not exacerbate the injury and/or the injury prevents the employees from performing work safely. Work restrictions imposed by the supervisor are based on the medical limitations determined by a treating physician.

Emergency medical services are provided by the contracted medical provider and FRNP on-site fire department for response and treatment. Nonemergency injuries or illnesses are treated by FRNP's contracted medical provider. FRNP or subcontractor employees receiving treatment for work-related injury or illness off-site will be accompanied by their supervisor, whenever feasible. A FRNP S&H representative will assist, as appropriate.

4.10.2 Emergency Management

[10 *CFR* § 851.24]

The emergency management program ensures that emergency events are responded to in a manner that protects the S&H of employees, the public, and the environment. The FRNP emergency management process is described in CP2-EP-1000, *Paducah Site Emergency Management Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, and CP2-EP-1001, *Emergency Management Program*, and creates an integrated and comprehensive emergency management system to ensure the following:

- FRNP employees can respond effectively and efficiently to emergencies of any severity to ensure the consequences of all emergencies are minimized, and appropriate response measures are taken to protect the safety and health of all workers and the public, protect the environment, and protect national security;

- Emergencies are recognized, categorized, classified promptly, as necessary, and parameters associated with the emergency are monitored to detect changed or degraded conditions;

- Emergencies are reported and notifications are made promptly and accurately, and effective initial and ongoing communications are made to personnel and the public;

- Reentry activities are properly and safely accomplished as outlined in safety plans, and recovery and post-emergency activities commence properly; and

- Recovery to normal work activities is well planned in advance of terminating from an emergency.

The emergency management program plan incorporates Operational Emergency Hazardous Material Program considerations, as given in DOE O 151.1D, *Comprehensive Emergency Management System*. The plan generally follows the recommended format and content provided in DOE G 151.1-3,

Programmatic Elements. The plan ensures hazards at the Paducah Site are identified, screened, and assessed, as applicable; and that proper response actions are defined, documented, trained, drilled, and exercised. The plan also ensures personnel are prepared for accidents and other emergencies and ensures prompt, orderly, and effective response actions are taken to assess and mitigate the consequences of such accidents and emergencies and to protect the safety and health of the public, workers, and the environment. The plan designates roles and responsibilities and procedures applicable to an accident or emergency and incorporates elements of the Contractor Requirements Document in DOE O 151.1D.

FRNP works to an exemption for two-level (Site Area Emergency and Alert) emergency classification (versus a three-level required by DOE O 151.1D). Per the Contract, FRNP will modify the emergency management program to come into full compliance with the three levels required by DOE O 151.1D, eliminating the exemption 24 months after FRNP commences work at the Paducah Site.

4.10.3 Pressure Safety

[10 *CFR* § 851.24; 10 *CFR* 851, APPENDIX A.4]

FRNP ensures that pressure systems are designed, fabricated, procured, tested, inspected, maintained, repaired, and operated by qualified personnel according to sound engineering principles. FRNP complies with applicable standards established by the American Society of Mechanical Engineers (ASME) codes for pressure vessels, boilers, air receivers, and supporting piping systems as well as applicable OSHA 29 *CFR* 1910 and/or 29 *CFR* 1926 standards; Compressed Gas Association pamphlets; NFPA 55—Revision 2013, *Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks*, 2003 Edition; and applicable portions of mandated DOE Orders relating to maintenance and operation of pressure vessels.

Paducah Site pressure safety requirements are contained in CP2-EN-0313, *Pressure Safety*. Requirements, including pressure and temperature limits, are delineated for boilers and piping systems, such as power piping, process piping, pipeline transportation systems for liquid hydrocarbons and other liquids, refrigeration piping and heat transfer components, and building services piping. Code requirements are provided for fittings, valves, gauges, pressure relief valves, pumps, and pressure retaining hardware. Compliance with welding, brazing or soldering requirements on pressure systems, piping and components are covered in the procedure, including welder qualifications and requirements for inspection, examination, and testing of the welded joint.

The procedure requires all pressure vessels, boilers, air receivers, and supporting piping systems to conform to the applicable codes or standards in place at time of installation or significant modification. Codes or standards include these:

- ASME Design and Construction of Boiler, Air Receivers, and Pressure Vessels
- ANSI/ASME B.31 Piping Code
- National Board Inspection Code NB-23
- DOT, 49 *CFR* 100–199

Strictest applicable state and local codes implementing measures, as described in the procedure, must be established if national consensus codes are not applicable, to provide equivalent protection and ensure safety equal to or superior to the intent of the ASME code.

4.11 MOTOR VEHICLE SAFETY

[10 *CFR* § 851.24; 10 *CFR* 851, APPENDIX A.9]

The FRNP motor vehicle safety program is implemented through CP3-PR-2002*, Use of Government Vehicles*, and is designed to protect the safety and health of drivers and passengers in government-owned or leased motor vehicles, utility vehicles/golf carts. Requirements for commercial vehicle operations are implemented through CP3-WM-3030, *Commercial Motor Vehicle Operations*.

FRNP drivers are authorized to operate a government motor vehicle on official company business. Training is required for operation of certain motor vehicles and is conducted according to the FRNP training program. When required, employee health evaluations are completed according to CP3-HS-4002, *Implementation of the Occupational Medicine Program*, to ensure employees are fit for duty (such as, the worker's ability to safely perform assigned duties, including vehicle operation).

Motor vehicle and golf/utility cart operators are required to adhere to FRNP procedures, government regulations, Kentucky state laws, local laws, and other regulations, as applicable. Motor vehicle and golf/utility cart operators must have a valid state driver's license, report changes of license status (for example, suspension), properly utilize seat belts, and ensure passenger(s) utilize seat belts. Operators must ensure they drive free of distraction (for example, cell phone use, two-way radio, eating, drinking, or any other activity which may be distracting). Use of manual text-based communication (for example, text message, instant message, e-mail) while operating a motor vehicle or golf/utility cart is prohibited. Motor vehicle operators comply with Kentucky traffic laws and DOE Site requirements, including posted speed limits, obey traffic signs, and yield to pedestrians at all times. Bicycle and golf/utility operators are subject to the same traffic rules as motor vehicles. Smoking and the use of smokeless tobacco products, including the use of e-cigarettes, is prohibited in both government-owned and leased passenger vehicles.

Vehicle inspections are performed, as needed, according to CP3-PR-2002*, Use of Government Vehicles*, to ensure the motor vehicle or golf/utility cart meets minimum safety requirements (for example, tires, wipers, directional signals, headlights, tail lights, and brake lights, safety backup alarm). Defective equipment is reported immediately to the appropriate supervisor and garage and documented form PR-F-0007, *Motor Vehicle Inspection and Mileage Record*. If the deficiency renders the vehicle unsafe to drive, the vehicle is removed from service until repairs have been made.

Motor vehicle or golf cart accidents are reported promptly to supervision who reports to the PSS and the responsible safety representative according to CP3-OP-2024, *Initial Incident/Event Reporting*, and CP3-PR-2002, *Use of Government Vehicles*. Motor vehicle accidents occurring off-site are reported to the appropriate law enforcement agency before meeting the FRNP requirements.

Employees are reminded of safe vehicle operation expectations and seasonal or task specific hazards that potentially impact safe driving through safety awareness campaigns and pre-job briefings. Drivers/operators who do not comply with company rules for motor vehicle operation, golf/utility cart operation, or the requirements of CP3-PR-2002*, Use of Government Vehicles*, are subject to disciplinary action, as defined in procedure CP1-HR-0112, *Employee Discipline* (may include revocation of driving privilege up to or including termination).

All personnel are responsible for the orderly traffic control on-site and off-site while working. Traffic control measures on-site must adhere to CP2-WM-0661, *Four Rivers Nuclear Partnership, LLC, Paducah Deactivation and Remediation Project Transportation Safety Document for On-site Transport.* Traffic control measures off-site must adhere to applicable OSHA standards and local, state, and DOT regulations. Traffic warning signs and/or flaggers are used, as necessary, to protect personnel and/or the

general public. If crossing public roadways is necessary to perform work, both warning signs and flagger personnel are used, and the personnel must be highway flagger trained (Module 40281). Speed limits are imposed, as conditions dictate.

4.12 INTEGRATION WITH ISMS

[10 *CFR* § 851.11(A)(3)(ii)]

FRNP has an approved ISMS, as described in CP2-HS-1000, *Integrated Safety Management System Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, which describes how environment, safety, health, and quality are integrated into the work planning and execution for FRNP's scope of work. FRNP is committed to implementing ISMS that promotes the company's core values of providing a safe and healthy workplace for employees. The incorporation of the ISMS guiding principles and core functions during the planning and execution of work activities supports worker protection at FRNP and is consistent with the WSHP. A key component to the successful implementation of ISMS is integration of the WSHP during the planning, execution, and completion stages of work activities as described throughout this document.

- A commitment to management leadership and employee involvement in S&H programs, goals, and accountability.
- Comprehensive approach to identify, analyze, and control hazards in a risk-based manner, respond promptly and safely to incidents, and are medically qualified and fit.
- Ensure personnel receive and implement S&H training, including hazard recognition, safe use and maintenance of tools and equipment, and emergency management.

4.13 ZERO INCIDENTS PROGRAM

FRNP is committed to achieving a culture of Target Zero for incidents. This commitment is based on the premise that all incidents (and resulting accidents) are preventable by effective work planning, use of qualified personnel, commitment to operational formality, instilling a questioning attitude in the workforce, and use of operational experience to continuously improve. The Target Zero philosophy focuses on not only decreasing incidents/accidents, but on eliminating them. CP1-HS-1000, *Health and Safety Policy*, reinforces this commitment, while the FRNP WSHP incorporates several proven techniques (including training, pre-job planning, and assessments) to support achievement of the Target Zero goal.

4.14 PROGRAM UPDATES

An updated WSHP is submitted to DOE annually for approval, or a letter is submitted stating that no changes are necessary in the current program.

Whenever a significant change or addition to the program is made, an update of the WSHP is submitted to the DOE for approval. The determination of whether a change is significant and an update is warranted is based on whether the change is needed to ensure the program accurately reflects actual workplace activities, related hazards and controls, and approved major program roles and responsibilities. A change is submitted to DOE if a hazard associated with a change in the worksite or processes, or newly recognized hazards, is not controlled effectively by the measures in the currently approved WSHP.

The labor organization is given timely notice of the development and implementation of the WSHP and any updates thereto.

4.15 NANOTECHNOLOGY

[10 *CFR* 851, APPENDIX A.11]

This section is not applicable for FRNP scope of work.

4.16 WORKPLACE VIOLENCE PREVENTION

[10 *CFR* 851, APPENDIX A.12]

FRNP is committed to the following:

- Providing a safe environment for employees, subcontractors, and visitors.
- Providing appropriate resources to prevent adverse behaviors from occurring on-site, maintaining personnel to assess and address behaviors and incidents, and assisting employees who have been adversely affected by such behaviors on or off-site; and
- Taking timely, corrective action to address such behavior.

Personnel promptly report actual and/or potential acts of violence to management and cooperate fully in investigations/assessments of allegations of workplace violence. FRNP's commitment and expectations are described in the CP1-HR-0107, *Anti-Violence Policy*.

4.17 VARIANCES

The procedure for obtaining a variance is described in Subpart D of 10 *CFR* 851. Any request for variances is coordinated with the DOE PPPO prior to filing a formal variance request to gain a preliminary opinion of the likelihood the request will be granted and the supporting material that would be needed.

Relief from technical compliance with certain codes and standards may be available within the code or standard, in which case a variance may not be needed. Certain codes and standards provide implementation flexibility in the form of the following:

- Equivalency provisions that exist in the applicable codes and standards and are approved by the authorized individual(s) can be exercised in implementing the WSHP. Some equivalency processes can permit the use of alternate methods where such methods provide equivalent protection.
- Acceptability of the code that was in effect at the time a facility or item of equipment was designed and constructed (referred to as the Code of Record) rather than the current code. Code of Record provisions that exist in the codes and standards that are explicitly referenced in 10 *CFR* § 851.27(b) are considered part of 10 *CFR* 851 and can be exercised in implementing the WSHP.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

IMPLEMENTATION MATRIX

THIS PAGE INTENTIONALLY LEFT BLANK

10 *CFR* 851 Requirement	Implementing Document or Comment
Subpart B—Program Requirements	No document or comment is applicable (N/A)
§ 851.10 General requirements.	N/A
(a) With respect to a covered workplace for which a contractor is responsible, the contractor must:	N/A
(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	CP1-HS-1000, *Health and Safety Policy*
(2) Ensure that work is performed according to:	N/A
(i) All applicable requirements of this part; and	CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP2-OP-1100, *Conduct of Operations Program* CP3-OP-3003, *Standards and Requirements Management* CP2-HS-1007, *General Safety Requirements*
(ii) With the Worker Safety and Health (WSHP) for that workplace.	CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP2-OP-1100, *Conduct of Operations Program at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-OP-3003, *Standards and Requirements Management* CP2-HS-1007, *General Safety Requirements*
(b) The written WSHP must describe how the contractor complies with the:	N/A
(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	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* Appendix
(2) Any compliance order issued by the Secretary pursuant to Section 51.4.	CP3-QA-3004, *Evaluation and Reporting of Potential PAAA/WSH Noncompliances*

10 *CFR* 851 Requirement	Implementing Document or Comment
§ 851.11 Development and approval of the worker safety and health program.	N/A
(a) *Preparation and submission of worker safety and health program.*	N/A
By February 26, 2007, contractors must submit to the appropriate Head of U.S. Department of Energy (DOE) Field Element for approval a written WSHP that provides the methods for implementing the requirements of Subpart C of this part.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* Appendix
(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 (S&H) program for the covered workplaces for which the contractor is responsible.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(2) If more than one contractor is responsible for covered workplaces, each contractor must:	N/A
(i) Establish and maintain a WSHP for the workplaces for which the contractor is responsible; and	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(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.	CP2-HS-1000, *Integrated Safety Management System Description* CP2-ES-0101, *Environmental Management System* CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-SI-0001, *Site Interface*
(3) The WSHP must describe how the contractor will:	N/A
(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	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* Appendix
(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 (ISMS).	CP2-HS-2000, *Worker Safety and Health Program,* Appendix CP2-HS-1000, *Integrated Safety Management System Description* CP2-ES-0101, *Environmental Management System* CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-SI-0001, *Site Interface*
(b) *DOE evaluation and approval.*	N/A
The Head of DOE Field Element must complete a review and provide written approval of the contractor's WSHP, within 90 days of receiving the document. The WSHP and any updates are deemed approved 90 days after submission if they are not specifically approved or rejected by DOE earlier.	N/A
(1) Beginning May 25, 2007, no work may be performed at a covered workplace unless an approved WSHP is in place for the workplace.	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
(2) Contractors must send a copy of the approved program to the Assistant Secretary for Environment, Safety, and Health (ES&H).	N/A
(3) Contractors must furnish a copy of the approved WSHP, upon written request, to the affected workers or their designated representatives.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(c) *Updates.*	N/A
(1) Contractors must submit an update of the WSHP 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.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(2) Contractors must submit annually to DOE either an updated WSHP for approval or a letter stating that no changes are necessary in the currently approved WSHP.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(3) Contactors must incorporate in the WSHP any changes, conditions, or workplace S&H standards directed by DOE consistent with the requirements of this part and DOE Acquisition Regulation (DEAR) 970.5204-2, Laws, Regulations and DOE Directives (December 2000) and associated contract clauses.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-OP-3003, *Standards and Requirements Management*
(d) Labor Organizations.	N/A
If a contractor employs or supervises workers who are represented for collective bargaining by a labor organization, the contractor must:	N/A
(1) Give the labor organization timely notice of the development and implementation of the WSHP and any updates thereto;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(2) Upon timely request, bargain concerning implementation of this part, consistent with the Federal labor laws.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP1-HR-0131, *Employee Concerns* CP1-HR-0147, *Differing Professional Opinions*
§ 851.12 Implementation	N/A
(a) Contractors must implement the requirements of this part.	CP2-HS-2000, *Worker Safety and Health Program,* Appendix
(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.	CP1-HR-0131, *Employee Concerns* CP1-HR-0147, *Differing Professional Opinions* CP2-HS-2000, *Worker Safety and Health Program*
§ 851.13 Compliance	N/A
(a) Contractors must achieve compliance with all the requirements of Subpart C of this part, and their approved WSHP no later than May 25, 2007. Contractors may be required to comply contractually with the requirements of this rule before May 25, 2007.	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
(b) In the event a contractor has established a written S&H program, an ISMS description pursuant to the DEAR Clause, or an approved Work Smart Standards process before the date of issuance of the final rule, the Contractor may use that program, description, or process as the WSHP 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.	N/A
(c) Nothing in this part will 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.	N/A
Subpart C—Specific Program Requirements	N/A
§ 851.20 Management responsibilities and worker rights and responsibilities.	N/A
(a) *Management responsibilities.*	N/A
Contractors are responsible for the safety and health of their workforce and must ensure that contractor management at a covered workplace:	CP1-HS-1000, *Health and Safety Policy*
(1) Establish written policy, goals, and objectives for the WSHP;	CP2-HS-1000, *Integrated Safety Management System Description* CP3-HS-1000, *Integrated Safety Management System Effectiveness Review and Performance Objectives, Measures, and Commitment Development and Reporting*
(2) Use qualified worker safety and health staff (for example, a Certified Industrial Hygienist, or safety professional) to direct and manage the program;	CP2-HS-1000, *Integrated Safety Management System Description* CP2-TR-0100, *Training Program* CP2-TR-0102, *Training Implementation Matrix* CP2-HS-2000, *Worker Safety & Health Program*, Section 3.1.4
(3) Assign WSHP responsibilities, evaluate personnel performance, and hold personnel accountable for worker safety and health performance;	CP1-HS-1000, *Health and Safety Policy* CP2-HS-1000, *Integrated Safety Management System Description* CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP1-HR-0115, *Performance Management* CP3-SP-0018, *Subcontractor Oversight*

10 *CFR* 851 Requirement	Implementing Document or Comment
(4) Provide mechanisms to involve workers and their elected representatives in the development of the WSHP goals, objectives, and performance measures and in the identification and control of hazards in the workplace;	CP1-HS-1000, *Health and Safety Policy* CP1-HS-1001, *Employee Safety Council* CP2-HS-1000, *Integrated Safety Management System Description* CP3-HS-2004, *Job Hazard Analysis* CP1-HR-0131, *Employee Concerns* CP1-HR-0147, *Differing Professional Opinions* CP3-OP-2024, *Initial Incident/Event Reporting* CP3-QA-3008, *Fact Finding* CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-OP-0002, *Developing and Maintaining Performance Documents* CP3-QA-3001, *Issues Management* CP3-QA-3010, *Performance Observations*
(5) Provide workers with access to information relevant to the WSHP;	CP1-HS-1000, *Health and Safety Policy* CP1-HS-1001, *Employee Safety Council* CP2-HS-2000, *Worker Safety and Health Program*

10 *CFR* 851 Requirement	Implementing Document or Comment
(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;	CP1-HR-0105, *Open Door Policy* CP1-HR-0131, *Employee Concerns* CP1-HR-0147, *Differing Professional Opinions* CP2-HS-1000, *Integrated Safety Management System Description* CP3-HS-2009, *Stop/Suspend Work* CP3-OP-2024, *Initial Incident/Event Reporting* CP3-QA-3001, *Issues Management*
(7) Provide for prompt response to such reports and recommendations;	CP1-HR-0131, *Employee Concerns* CP3-HS-2009, *Stop/Suspend Work* CP3-OP-2024, *Initial Incident/Event Reporting* CP3-QA-3001, *Issues Management*
(8) Provide for regular communication with workers about workplace safety and health matters;	CP1-HS-1000, *Health and Safety Policy* CP1-HS-1001, *Employee Safety Council* CP2-HS-1000, *Integrated Safety Management System Description* CP3-SM-1102, *Activity Level Work Execution and Closeout*
(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	CP3-HS-2009, *Stop/Suspend Work*
(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.	CP2-HS-2000, *Worker Safety and Health Program,* Section 3.1.5 CP2-TS-1000, *Roles, Responsibilities, Authorities, and Accountabilities (R2A2)*
(b) Worker rights and responsibilities.	N/A
Workers must comply with the requirements of this part, including the WSHP, which are applicable to their own actions and conduct.	CP2-HS-2000, *Worker Safety & Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
Workers at a covered workplace have the right, without reprisal, to*:*	N/A
(1) Participate in activities described in this section on official time;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(2) Have access to*:*	N/A
(i) DOE S&H publications;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*

10 *CFR* 851 Requirement	Implementing Document or Comment
(ii) The WSHP for the covered workplace;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(iii) The standards, controls, and procedures applicable to the covered workplace;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(iv) The S&H poster that informs the worker of relevant rights and responsibilities;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(v) Limited information on any recordkeeping log (OSHA Form 300). Access is subject to Freedom of Information Act requirements and restrictions;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(vi) The DOE Form 5484.3 (the DOE equivalent to OSHA Form 301) that contains the employee's name as the injured or ill worker;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(3) Be notified when monitoring results indicate the worker was overexposed to hazardous materials;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP4-HS-2000, *Industrial Hygiene Sampling* CP2-HS-2014, *Biological Monitoring for Industrial Chemicals*
(4) Observe monitoring or measuring of hazardous agents and have the results of their own exposure monitoring;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(5) A representative authorized by employees may accompany the Director or his authorized personnel during the physical inspection of the workplace for 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;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(6) Request and receive results of inspections and accident investigations;	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(7) Express concerns related to worker safety and health;	CP1-HS-1000, *Health and Safety Policy* CP1-HR-0131, *Employee Concerns* CP1-HR-0147, *Differing Professional Opinions* CP3-HS-2009, *Stop/Suspend Work* CP3-SM-1102, *Activity Level Work Execution and Closeout* CP3-QA-3001, *Issues Management*

10 *CFR* 851 Requirement	Implementing Document or Comment
(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	CP2-HS-2000, *Worker Safety and Health Program* CP3-HS-2009, *Stop/Suspend Work*
(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 according to procedures established in the approved WSHP.	CP1-HS-1000, *Health and Safety Policy* CP1-HR-0131, *Employee Concerns* CP3-SM-1102, *Activity Level Work Execution and Closeout* CP3-HS-2009, *Stop/Suspend Work*
§ 851.21 Hazard identification and assessment	N/A
(a) Contractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness.	CP3-HS-2004, *Job Hazard Analysis* CP3-SM-1102, *Activity Level Work Execution and Closeout*
Procedures must include methods to:	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
(1) Assess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring;	CP2-HS-2007, *Hazardous Chemical Management Program* CP2-HS-2014, *Biological Monitoring for Industrial Chemicals* CP3-HS-2003, *Hazard Communication* CP3-HS-2004, *Job Hazard Analysis* CP3-HS-2018, *Process Safety Management of Highly Hazardous Chemicals* CP2-HS-2040, *Asbestos Control Program* CP3-HS-2033, *Indoor Air Quality* CP3-HS-2034, *Lead and Inorganic Arsenic* CP3-HS-2035, *Chromium (VI) and Cadmium Protection* CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-HS-2000, *Temperature Extremes* CP3-HS-2011, *Portable Ladders* CP3-HS-2014, *Fall Prevention and Protection* CP3-HS-2036, *Aerial Devices* CP3-HS-2015, *Scaffold* CP3-HS-2016, *Excavation and Penetration* CP2-HS-1007, *General Safety Requirements* CP3-HS-2017, *Safe Work Practices Around Water* CP2-ES-0201, *Laboratory Chemical Hygiene Plan* CP2-HS-2002, *Occupational Noise Exposure and Hearing Conservation Program* CP3-HS-2055, *Confined Space* CP3-HS-2030, *Ergonomics Applications* CP3-HS-2033, *Indoor Air Quality* CP2-HS-2014, *Biological Monitoring for Industrial Chemicals Program* CP4-HS-2000, *Industrial Hygiene Sampling*

10 *CFR* 851 Requirement	Implementing Document or Comment
(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;	CP2-HS-2014, *Biological Monitoring for Industrial Chemicals* CP3-HS-2003, *Hazard Communication* CP3-HS-2018, *Process Safety Management of Highly Hazardous Chemicals* CP2-HS-2040, *Asbestos Control Program* CP3-HS-2034, *Lead and Inorganic Arsenic* CP3-HS-2035, *Chromium (VI) and Cadmium Protection* CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-HS-2000, *Temperature Extremes* CP3-HS-2011, *Portable Ladders* CP3-HS-2014, *Fall Prevention and Protection* CP3-HS-2036, *Aerial Devices* CP3-HS-2015, *Scaffold* CP3-HS-2016, *Excavation and Penetration* CP2-HS-1007, *General Safety Requirements* CP3-HS-2017, *Safe Work Practices Around Water* CP2-ES-0201, *Laboratory Chemical Hygiene Plan* CP2-HS-2002, *Occupational Noise Exposure and Hearing Conservation Program* CP3-HS-2055, *Confined Space* CP3-HS-2030, *Ergonomics Applications* CP3-HS-2033, *Indoor Air Quality* CP2-HS-2014, *Biological Monitoring for Industrial Chemicals Program* CP4-HS-2000, *Industrial Hygiene Sampling*

10 *CFR* 851 Requirement	Implementing Document or Comment
(3) Record observations, testing and monitoring results;	CP2-HS-2014, *Biological Monitoring for Industrial Chemicals* CP3-HS-2003, *Hazard Communication* CP3-HS-2018, *Process Safety Management of Highly Hazardous Chemicals* CP3-SM-2026, *Asbestos Control* CP2-HS-2040, *Asbestos Control Program* CP3-HS-2034, *Lead and Inorganic Arsenic* CP3-HS-2035, *Chromium (VI) and Cadmium Protection* CP3-HS-2000, *Temperature Extremes* CP3-HS-2011, *Portable Ladders* CP3-HS-2014, *Fall Prevention and Protection* CP3-HS-2036, *Aerial Devices* CP3-HS-2015, *Scaffold* CP3-HS-2016, *Excavation and Penetration* CP2-HS-1007, *General Safety Requirements* CP2-ES-0201, *Laboratory Chemical Hygiene Plan* CP2-HS-2002, *Occupational Noise Exposure and Hearing Conservation Program* CP3-HS-2055, *Confined Space* CP3-HS-2030, *Ergonomics Applications* CP3-HS-2033, *Indoor Air Quality* CP2-HS-2014, *Biological Monitoring for Industrial Chemicals Program* CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP4-HS-2000, *Industrial Hygiene Sampling* CP3-QA-3001, *Issues Management* CP3-QA-3010, *Performance Observations*
(4) Analyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards;	CP2-EN-0201, *Configuration Management Program Description* CP3-EN-0213, *Design Analysis and Calculations* CP3-HS-2004, *Job Hazard Analysis* CP2-HS-2000, *Worker Safety and Health Program* CP3-OP-1118, *Facility Management* CP3-FP-2006, *Fire Hazard Analysis & Facility Assessments*

10 *CFR* 851 Requirement	Implementing Document or Comment
(5) Evaluate operations, procedures, and facilities to identify workplace hazards;	CP3-HS-2004, *Job Hazard Analysis* CP2-HS-2000, *Worker Safety and Health Program*, CP3-OP-1118, *Facility Management* CP3-FP-2006, Fire Hazard Analysis & Facility Assessments
(6) Perform routine job activity-level hazard analyses;	CP3-HS-2004, *Job Hazard Analysis* *CP3-SM-1101, Work Package Development*CP2-HS-2000, *Worker Safety and Health Program*
(7) Review site safety and health experience information; and	CP3-HS-1000, *Integrated Safety Management System Effectiveness Review and Performance Objectives, Measures, and Commitment Development and Reporting* CP2-HS-2000, *Worker Safety and Health Program*,
(8) Consider interaction between workplace hazards and other hazards such as radiological hazards.	CP3-HS-2004, *Job Hazard Analysis* CP2-HS-2000, *Worker Safety and Health Program*
(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.	CP2-HS-2000, *Worker Safety and Health Program*
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.	N/A
(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.	CP2-HS-2000*, Worker Safety and Health Program,* CP3-HS-2004, *Job Hazard Analysis*, Section 5.6 CP2-FP-2000, *Fire Protection Program Description*
§ 851.22 Hazard prevention and abatement	N/A
(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.	CP3-HS-2004, *Job Hazard Analysis* CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(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.	CP3-HS-2004, *Job Hazard Analysis* CP2-EN-0201, *Configuration Management Program Description* CP3-EN-0213, *Design Analysis and Calculations* CP3-OP-0002, *Developing and Maintaining Performance Documents*
(2) For existing hazards identified in the workplace, contractors must:	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
(i) Prioritize and implement abatement actions according to the risk to workers;	CP3-HS-2004, *Job Hazard Analysis* CP2-HS-2000, *Worker Safety and Health Program*,
(ii) Implement interim protective measures pending final abatement; and	CP3-HS-2004, *Job Hazard Analysis* CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
(iii) Protect workers from dangerous S&H conditions;	CP3-HS-2004, *Job Hazard Analysis* CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-EP-1009, *Severe Weather Emergency*
(b) Contractors must select hazard controls based on the following hierarchy:	N/A
(1) Elimination or substitution of the hazards where feasible and appropriate;	CP3-HS-2004, *Job Hazard Analysis*
(2) Engineering controls where feasible and appropriate;	CP3-HS-2004, *Job Hazard Analysis*
(3) Work practices and administrative controls that limit worker exposures; and	CP3-HS-2004, *Job Hazard Analysis*
(4) Personal Protective Equipment (PPE).	CP3-HS-2004, *Job Hazard Analysis* CP3-HS-2005, *Personal Protective Equipment*
(c) Contractors must address hazards when selecting or purchasing equipment, products, and services.	CP3-HS-2004, *Job Hazard Analysis* CP3-CP-0001, *Request for Purchase* CP3-CP-0002, *Acquisition Management* CP3-CP-0005, *Preparation of Request for Proposal* Attachment J-1 to Request for Proposal, *Environmental, Health, and Safety Requirements for On-Site Work*
§ 851.23 Safety and health standards	N/A
(a) Contractors must comply with the following S&H standards that are applicable to the hazards at their covered workplace:	N/A
(1) Title 10 *CFR* § 850, *Chronic Beryllium Disease Prevention Program*.	CP2-HS-2001, *Chronic Beryllium Disease Prevention Program*
(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*.	CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-OP-2024, *Initial Incident/Event Reporting* CP3-QA-3005, *Occurrence Reporting* CP3-QA-3008, *Fact Finding*
(3) Title 29 *CFR*, Part 1910, *Occupational Safety and Health Standards*, excluding 29 *CFR* Part 1910. 1096, *Ionizing Radiation*.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(4) Title 29 *CFR*, Part 1915, *Shipyard Employment*.	N/A
(5) Title 29 *CFR,* Part 1917, *Marine Terminals*.	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
(6) Title 29 *CFR*, Part 1918, *Safety and Health Regulations for Longshoring*.	N/A
(7) Title 29 *CFR,* Part 1926, *Safety and Health Regulations for Construction*.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(8) Title 29 *CFR*, Part 1928, *Occupational Safety and Health Standards for Agriculture*.	N/A
(9) The American Conference of Governmental Industrial Hygienists (ACGIH), threshold limit values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices, (2018) (incorporated by reference, see § 851.27) when the ACGIH TLVs are lower (more protective) than permissible exposure limits in 29 *CFR* Part 1910 for general industry and/or part 1926 for construction. 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* Part 1910 and/or part 1926.	CP4-HS-2000, *Industrial Hygiene Sampling* [Four Rivers Nuclear Partnership, LLC, (FRNP) reviews for adoption more recent publications of the ACGIH guide book when they are more protective.]
(10) American National Standards Institue (ANSI) Z88.2, *American National Standard Practices for Respiratory Protection*, (2015) (incorporated by reference see § 851.27).	CP2-HS-2003, *Respiratory Protection Program*
(11) ANSI Z136.1, *Safe Use of Lasers*, (2014) (incorporated by reference see § 851.27).	N/A
(12) ANSI Z49.1, *Safety in Welding, Cutting and Allied Processes*, sections 4.3 and E4.3 (2012) (incorporated by reference see § 851.27).	CP3-FP-2005, *Welding, Burning, and Hotwork*
(13) NFPA 70, *National Electrical Code*, (2017) (incorporated by reference see § 851.27).	CP3-SM-0019, *Electrical Safety Guidelines*
(14) NFPA 70E, *Standard for Electrical Safety in the Workplace* (2018) (incorporated by reference see § 851.27).	CP3-SM-0019, *Electrical Safety Guidelines* CP3-SM-0052, *Energized Electrical Work Permit* CP3-HS-2010, *Instructions for Lockout/Tagout*
(b) Nothing in this part must be construed as relieving a contractor from complying with any additional specific S&H requirement that it determines to be necessary to protect the safety and health of workers.	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
§ 851.24 Functional areas.	N/A
(a) Contractors must have a structured approach to their WSHP which at a minimum, include provisions for the following applicable functional areas in their WSHP: construction safety; fire protection; firearms safety; explosives safety; pressure safety; electrical safety; industrial hygiene (IH); occupational medicine; biological safety; and motor vehicle safety.	Attachment J-1 to Request for Proposal, *Environmental, Health, and Safety Requirements for On-Site Work* CP3-HS-2004, *Job Hazard Analysis* CP2-FP-2000, *Fire Protection Program Description* CP3-FP-2004, *Fire Protection Program* CP4-SS-TSOP 11, A*mmunition and Firearms Storage Procedures* CP4-SS-TSOP 3, *Firearms, Ammunition and Safety Procedures* CP2-EN-0313*, Pressure Safety* CP3-SM-0019*, Electrical Safety Guidelines* CP4-HS-2000, *Industrial Hygiene Sampling* CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP2-HS-2014, *Biological Monitoring for Industrial Chemicals* CP3-PR-2002, *Use of Government Vehicles*
(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*.	CP2-HS-2000, *Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* Appendix
§ 851.25 Training and information.	N/A
(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.	CP2-TR-0100, *Training Program*
(b) The contractor must provide:	N/A
(1) Training and information for new workers, before or at the time of initial assignment to a job involving exposure to a hazard;	CP2-TR-0100, *Training Program* CP3-HS-2003, *Hazard Communication*
(2) Periodic training as often as necessary to ensure that workers are adequately trained and informed; and	CP2-TR-0100, *Training Program*
(3) Additional training when S&H information or a change in workplace conditions indicates that a new or increased hazard exists.	CP2-TR-0100, *Training Program* CP3-HS-2003, *Hazard Communication*
(c) Contractors must provide training and information to workers who have WSHP responsibilities that is necessary for them to carry out those responsibilities.	CP2-TR-0100, *Training Program* CP3-HS-2003*, Hazard Communication*
§ 851.26 Recordkeeping and reporting.	N/A
(a) *Recordkeeping.*	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
Contractors must:	N/A
(1) Establish and maintain complete and accurate records of all hazard inventory information, hazard assessments, exposure measurements, and exposure controls.	FRNP-TRANS-0013, *Records Management Plan* CP3-RD-0010, *Records Management Process* CP3-RD-0014, *Records Identification and File Plan Creation and Maintenance* CP3-HS-2004, *Job Hazard Analysis* CP4-HS-2000, *Industrial Hygiene Sampling* CP3-OP-0025, *Document Control Process* CP2-QA-1000, *Quality Assurance Program Description* CP2-OP-1100, *Conduct of Operations Program*
(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.	FRNP-TRANS-0013, *Records Management Plan* CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-OP-2024, *Initial Incident/Event Reporting*
(3) Comply with the applicable occupational injury and illness recordkeeping and reporting workplace S&H standards in §851.23 of this part at their site, unless otherwise directed by DOE.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(4) Not conceal nor destroy any information concerning non-compliance or potential noncompliance with the requirements of this part.	CP3-OP-2024, *Initial Incident/Event Reporting* CP3-QA-3005, *Occurrence Reporting* CP3-QA-3008, *Fact Finding* CP1-HR-0121, *Code of Business Conduct and Ethics* CP3-OP-0025, *Document Control Process* CP2-QA-1000, *Quality Assurance Program Description* CP2-OP-1100, *Conduct of Operations Program*
(*b) Reporting and investigation.*	N/A
Contractors must:	N/A
(1) Report and investigate accidents, injuries and illness; and	CP3-OP-2024, *Initial Incident/Event Reporting* CP3-QA-3007, *Issue Investigation and Causal Analysis* CP3-QA-3008, *Fact Finding* CP3-QA-3005, *Occurrence Reporting*
(2) Analyze related data for trends and lessons learned.	CP3-OP-2024, *Initial Incident/Event Reporting* CP3-QA-3009, *Trend Analysis* CP3-QA-3002, *Operating Experience/Lessons Learned* CP3-QA-3005, *Occurrence Reporting*

10 *CFR* 851 Requirement	Implementing Document or Comment
§ 851.27 Reference sources	**N/A**
(a) Standards incorporated by the Director of the Federal Register by reference.	The FRNP WSHP Program has adopted health standards promulgated by OSHA and ACGIH, IH sampling is performed according to the National Institute for Occupational Safety and Health (NIOSH) or OSHA methodologies, where possible. Where possible, laboratories performing IH sample analysis are accredited by the American Industrial Hygiene Association or National Voluntary Laboratory Accreditation Program.
(b) ACGIH	
(c) ANSI	
(d) American Society of Mechanical Engineers (ASME)	
(1) ASME Boilers and Pressure Vessel Codes (BPVC)	
(2) ASME B31 Codes for Pressure Piping	
(e) National Fire Protection Association (NFPA)	
(1) NFPA 70, National Electric Code, 2017	
(2) NFRA 70E, Standards for Electrical Safety in the Workplace.	
Appendix A to Part 851—Worker Safety and Health Functional Areas	N/A
This appendix establishes the mandatory requirements for implementing the applicable functional areas required by § 851.24.	N/A
1. Construction Safety	N/A
(a) For each separately definable construction activity (for example, excavations, foundations, structural steel, roofing) the construction contractor must:	N/A
(1) Prepare and have approved by the construction manager an activity hazard analysis prior to commencement of affected work.	CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-HS-2004, *Job Hazard Analysis*
Such analyses must:	N/A
(i) Identify foreseeable hazards and planned protective measures;	CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-HS-2004, *Job Hazard Analysis*
(ii) Address further hazards revealed by supplemental site information (for example, site characterization data, as-built drawings) provided by the construction manager;	CP3-HS-2004, *Job Hazard Analysis*
(iii) Provide drawings and/or other documentation of protective measures for which applicable OSHA standards require preparation by a Professional Engineer or other qualified professional, and	CP3-HS-2004, *Job Hazard Analysis* CP2-EN-0201, *Configuration Management Program Description*
(iv) Identify competent persons required for workplace inspections of the construction activity, where required by OSHA standards.	CP3-HS-2025, *Competent Person Program*

10 *CFR* 851 Requirement	Implementing Document or Comment
(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.	CP3-SM-1102, *Activity Level Work Execution and Closeout* CP2-SM-1000, Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky CP3-HS-2004, *Job Hazard Analysis* CP3-HS-2012*, Construction and Work Zone Barricades and Signs*
(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.	CP3-SM-1102, *Activity Level Work Execution and Closeout* CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-HS-2004, *Job Hazard Analysis* CP1-HR-0112, *Employee Discipline*
(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 S&H requirements.	CP3-OI-0007, *Contract Technical Representative* CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* *Level Work Execution and Closeout* CP3-HS-2004*, Job Hazard Analysis*
(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.	CP3-SM-1102, *Activity Level Work Execution and Closeout* CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* CP3-HS-2009, *Stop/Suspend Work*

10 *CFR* 851 Requirement	Implementing Document or Comment
(d) The construction contractor must prepare a written construction project S&H 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 S&H 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 10 *CFR* § 851.11.	CP2-SM-1000, *Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* Attachment J-1 to Request for Proposal, *Environmental, Health, and Safety Requirements for On-Site Work* CP2-HS-2000*, Worker Safety & Health Program*

10 *CFR* 851 Requirement	Implementing Document or Comment
2. Fire Protection	N/A
(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.	CP2-FP-2000, *Fire Protection Program Description* CP3-FP-2004, *Fire Protection Program* CP2-EP-1001, *Emergency Management Program* CP2-EP-1000*, Paducah Site Emergency Management Plan* CP3-FP-2032, *Means of Egress*
(b) An acceptable fire protection program must include those fire protection criteria and procedures, analyses, hardware and systems, apparatus and equipment, and personnel that would comprehensively ensure that the objective in paragraph 2(a) of this section is met. This includes meeting applicable building codes and NFPA codes and standards.	CP2-FP-2000, *Fire Protection Program Description* CP3-FP-2004, *Fire Protection Program* CP3-FP-2006, *Fire Hazard Analysis and Facility Assessments* CP3-FP-2031, *Control of Combustible Material and Ignition Source*
3. Explosives Safety	N/A
(a) Contractors responsible for the use of explosive materials must establish and implement a comprehensive explosives safety program.	CP2-HS-2000, *Worker Safety and Health Program*
(b) Contractors must comply with the policy and requirements specified in the appropriate explosives safety technical standard.	CP2-HS-2000, *Worker Safety and Health Program* CP4-SS-TSOP 11*, Ammunition and Firearms Storage Procedures* CP4-SS-SGO V, *Use of Force and Rules of Engagement*
(c) Contractors must determine the applicability of the explosives safety directive requirements to research and development laboratory type operations consistent with the DOE level of protection criteria described in the explosives safety directive.	N/A
4. Pressure Safety	N/A
(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 according to applicable and sound engineering principles.	CP2-EN-0313, *Pressure Safety*
(b) Contractors must ensure that all pressure vessels, boilers, air receivers, and supporting piping systems conform to:	N/A
(1) The applicable ASME Boilers and Pressure Vessel Code (2015); sections I through section XII including applicable Code Cases (incorporated by reference, see 10 *CFR* § 851.27).	CP2-EN-0313, *Pressure Safety*
(2) The applicable ASME B.31 (Code for Pressure Piping) standards; and or;	CP2-EN-0313, *Pressure Safety*
(3) The strictest applicable state and local codes.	CP2-EN-0313, *Pressure Safety*

10 *CFR* 851 Requirement	Implementing Document or Comment
(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.	CP2-EN-0313, *Pressure Safety*
Measures must include the following:	N/A
(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.	CP2-EN-0313, *Pressure Safety*
(2) Qualified personnel must be used to perform examinations and inspections of materials, in-process fabrications, nondestructive tests, and acceptance test.	CP2-EN-0313, *Pressure Safety*
(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.	CP2-EN-0313, *Pressure Safety*
5. Firearms Safety	N/A
(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.	CP4-SS-TSOP 3, *Firearms, Ammunition, and Safety Procedures* CP4-SS-SGO 1, *Duty Standards* CP4-SS-TSOP 7, *Indoor Range Operations*
(1) Written procedures must address firearms safety, engineering and administrative controls, as well as PPE requirements.	CP4-SS-TSOP 3, *Firearms, Ammunition, and Safety Procedures* CP4-SS-SGO 1, *Duty Standards* CP4-SS-TSOP 7, *Indoor Range Operations*
(2) As a minimum, procedures must be established for:	N/A
(i) Storage, handling, cleaning, inventory, and maintenance of firearms and associated ammunition;	CP4-SS-TSOP 5, *Weapons Cleaning* CP4-SS-PFAP, *Armorer Procedure*
(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;	CP4-SS-SGO 1, *Duty Standards* CP4-SS-TSOP 7, *Indoor Range Operations*
(iii) Use and storage of pyrotechnics, explosives, and/or explosive projectiles;	CP4-SS-TSOP 3, *Firearms, Ammunition, and Safety Procedures*
(iv) Handling misfires, duds, and unauthorized discharges;	CP4-SS-TSOP 6, *Duds, Damaged and Unusable Ammunition* CP4-SS-TSOP 7, *Indoor Range Operations*
(v) Live fire training, qualification, and evaluation activities;	CP4-SS-TSOP 7, *Indoor Range Operations*
(vi) Training and exercises using engagement simulation systems;	CP4-SS-TSOP 3, *Firearms, Ammunition, and Safety Procedures* CP4-SS-FOFM, *Force-on-Force Exercise Manual*
(vii) Medical response at firearms training facilities; and	CP4-SS-TSOP 7, *Indoor Range Operations*

10 *CFR* 851 Requirement	Implementing Document or Comment
(viii) Use of firing ranges by personnel other than DOE or DOE contractor protective forces personnel.	CP4-SS-TSOP 7, *Indoor Range Operations* CP4-SS-IRRA, *C-202 Indoor Live Fire Range Risk Analysis*
(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.	CP4-SS-TSOP 7*, Indoor Range Operations* CP4-SS-TSOP 4, *Instructor Recertification*
(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.	CP4-SS-TSOP 7, *Indoor Range Operations* CP4-SS-TSOP 4, *Instructor Recertification* CP4-SS-PFAP, *Armorer Procedure*
(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.	CP4-SS-PFSA, *PGDP Safeguards & Security Self-Assessment Program*
(e) Contractors must implement procedures related to firearms training, live fire range safety, qualification, and evaluation activities, including procedures requiring that:	CP4-SS-TSOP 3, *Firearms, Ammunition, and Safety Procedures*
(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;	CP4-SS-SOP 10, *Weapons Authorization Credential Submittal*
(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;	CP4-SS-TSOP 7, *Indoor Range Operations* CP4-SS-TSOP 12, *Remedial Firearms/Weapons Training Program*
(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;	CP4-SS-TSOP 7*, Indoor Range Operations*
(4) Firearms safety briefings must immediately precede training, qualifications, and evaluation activities involving live fire and/or engagement simulation systems;	CP4-SS-TSOP 7, *Indoor Range Operations*
(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;	CP4-SS-IRRA, *C-202 Indoor Live Fire Range Risk Analysis*
(6) Firing range safety procedures must be conspicuously posted at all range facilities; and	CP4-SS-TSOP 7, *Indoor Range Operations* CP4-SS-IRRA, *C-202 Indoor Live Fire Range Risk Analysis*
(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.	CP4-SS-TSOP 7, *Indoor Range Operations* CP4-SS-IRRA, *C-202 Indoor Live Fire Range Risk Analysis*
(f) Contractors must ensure that the transportation, handling, placarding, and storage of munitions conform to the applicable DOE requirements.	CP4-SS-TSOP 1, *PF Transportation and Shipping of Weapons and Ammunition* CP4-SS-TSOP 3*, Firearms, Ammunition, and Safety Procedures*

10 *CFR* 851 Requirement	Implementing Document or Comment
6. Industrial Hygiene	N/A
Contractors must implement a comprehensive IH program that includes at least the following elements:	N/A
(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;	CP4-HS-2000, *Industrial Hygiene Sampling*
(b) Coordination with planning and design personnel to anticipate and control health hazards that proposed facilities and operations would introduce;	CP3-HS-2004, *Job Hazard Analysis* CP2-EN-0201, *Configuration Management Program Description*
(c) Coordination with cognizant occupational medical, environmental, health physics, and work planning professionals;	CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-HS-2004, *Job Hazard Analysis*
(d) Policies and procedures to mitigate the risk from identified and potential occupational carcinogens;	CP3-HS-2004, *Job Hazard Analysis* CP3-HS-2003 *Hazard Communication*
(e) Professionally and technically qualified industrial hygienists to manage and implement the IH program; and	CP2-TR-0100, *Training Program*
(f) Use of respiratory protection equipment tested under the DOE Respirator Acceptance Program for Supplied-Air Suits when NIOSH-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.	N/A
7. Biological Safety	N/A
(a) Contractors must establish and implement a biological safety program that:	CP2-HS-2000, *Worker Safety and Health Program,*
(1) Establishes an Institutional Biosafety Committee (IBC) or equivalent.	N/A—FRNP does not use etiologic biological agents.
The IBC must:	N/A—FRNP does not use etiologic biological agents.
(i) Review any work with biological etiologic agents for compliance with applicable Center for Disease Control (CDC), National Institutes of Health, World Health Organization, and other international, Federal, state, and local guidelines and assess the containment level, facilities, procedures, practices, and training and expertise of personnel; and	N/A—FRNP does not use etiologic biological agents.
(ii) Review the site's security, safeguards, and emergency management plans and procedures to ensure they adequately consider work involving biological etiologic agents.	N/A—FRNP does not use etiologic biological 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.	N/A—FRNP does not use etiologic biological agents.

10 *CFR* 851 Requirement	Implementing Document or Comment
(3) Provides for submission to the appropriate Head of DOE Field Element, for review and concurrence before transmittal to the CDC, each Laboratory Registration/Select Agent Program registration application package requesting registration of a laboratory facility for the purpose of transferring, receiving, or handling biological select agents.	N/A—FRNP does not use etiologic biological agents.
(4) Provides for submission to the appropriate Head of DOE Field Element, a copy of each CDC Form EA-101, Transfer of Select Agents, upon initial submission of the Form EA-101 to a vendor or other supplier requesting or ordering a biological select agent for transfer, receipt, and handling in the registered facility. Submit to the appropriate Head of DOE Field Element the completed copy of the Form EA-101, documenting final disposition and/or destruction of the select agent, within 10 days of completion of the Form EA-1 01.	N/A—FRNP does not use etiologic biological agents.
(5) Confirms that the site safeguards and security plans and emergency management programs address biological etiologic agents, with particular emphasis on biological select agents.	N/A—FRNP does not use etiologic biological agents.
(6) Establishes an immunization policy for personnel working with biological etiologic agents based on the evaluation of risk and benefit of immunization.	N/A—FRNP does not use etiologic biological agents.
8. Occupational Medicine	N/A
(a) Contractors must establish and provide comprehensive occupational medicine services to workers employed at a covered work place who:	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(1) Work on a DOE site for more than 30 days in a 12-month period; or	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(b) The occupational medicine services must be under the direction of a graduate of a school of medicine or osteopathy and licensed for the practice of medicine in the state in which the site is located.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(d) Contractors must provide the occupational medicine providers access to hazard information by promoting its communication, coordination, and sharing among operating and ES&H protection organizations.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(1) Contractors must provide the occupational medicine providers with access to information on the following:	N/A
(i) Current information about actual or potential work-related site hazards (chemical, radiological, physical, biological, or ergonomic);	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(ii) Employee job-task and hazard analysis information, including essential job functions;	CP3-HS-4002, *Implementation of the Occupational Medicine Program*

10 *CFR* 851 Requirement	Implementing Document or Comment
(iii) Actual or potential work-site exposures of each employee; and	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(iv) Personnel actions resulting in a change of job functions, hazards, or exposures.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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);	CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-HR-0101, *Return to Work*
(3) Contractors must provide the occupational medicine provider information on, and the opportunity to participate in, worker safety and health team meetings and committees;	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(4) Contractors must provide occupational medicine providers access to the workplace for evaluation of job conditions and issues relating to workers' health.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(e) A designated occupational medicine provider must:	N/A
(1) Plan and implement the occupation medicine services; and	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(2) Participate in worker protection teams to build and maintain necessary partnerships among workers, their representatives, managers, and S&H protection specialists in establishing and maintaining a safe and healthful workplace.	CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP1-HS-1001, *Employee Safety Council*
(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 according to Executive Order 13335, *Incentives for the Use of Health Information Technology.*	CP3-HS-4002, *Implementation of the Occupational Medicine Program* FRNP-TRANS-0013, *Records Management Plan*
(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 according to 10 *CFR* § 712.38(b)(2).	CP3-HS-4002, *Implementation of the Occupational Medicine Program* FRNP-TRANS-0013, *Records Management Plan* CP1-HR-0123, *Release of Employee Information*
(2) Access to these records must be provided according to DOE regulations implementing the Privacy Act and the Energy Employees Occupational Illness Compensation Program Act.	CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP1-HR-0123, *Release of Employee Information*
(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, according to current sound and acceptable medical practices and all pertinent statutory and regulatory requirements, such as the Americans with Disabilities Act.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(1) Workers must be informed of the purpose and nature of the medical evaluations and tests offered by the occupational medicine provider.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(i) The purpose, nature and results of evaluations and tests must be clearly communicated verbally and in writing to each worker provided testing;	CP3-HS-4002, *Implementation of the Occupational Medicine Program*

10 *CFR* 851 Requirement	Implementing Document or Comment
(ii) The communication must be documented in the worker's medical record; and	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(2) The following health evaluations must be conducted when determined necessary by the occupational medicine provider for the purpose of providing initial and continuing assessment of employee fitness for duty.	N/A
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP3-HR-0101, *Return to Work*
(v) At the time of separation from employment, individuals will be offered a general health evaluation to establish a record of physical condition.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(i) Occupational medicine provider physician and medical staff must, on a timely basis, communicate results of health evaluations to management and S&H protection specialists to facilitate the mitigation of worksite hazards.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(1) The contractor must include programs to prevent and manage these causes of morbidity when evaluations demonstrate their cost effectiveness.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*

10 *CFR* 851 Requirement	Implementing Document or Comment
(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:	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(1) Contractor-sponsored or contractor-supported EAPs;	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(2) Contractor-sponsored or contractor-supported alcohol and other substance abuse rehabilitation programs; and	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(3) Contractor-sponsored or contractor-supported wellness programs.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(4) The occupational medicine services provider must review the medical aspects of immunization programs, bloodborne pathogens programs, and bio-hazardous waste programs to evaluate their conformance to applicable guidelines.	CP3-HS-4002, *Implementation of the Occupational Medicine Program* CP2-HS-4001, *Bloodborne Pathogens Exposure Control Plan*
(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.	CP3-HS-4002, *Implementation of the Occupational Medicine Program*
9. Motor Vehicle Safety	N/A
(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).	CP3-PR-2002, *Use of Government Vehicles* CP3-WM-3030, *Commercial Motor Vehicle Operations* CP3-SM-0051, *Hoisting and Rigging* CP3-SM-0054, *Mobile Construction Equipment* CP3-SM-0020, *Administrative Controls for Powered Industrial Trucks* CP3-HS-2036, *Aerial Devices*
(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.	CP3-PR-2002, *Use of Government Vehicles* CP3-WM-3030, *Commercial Motor Vehicle Operations* CP3-SM-0051, *Hoisting and Rigging* CP3-SM-0054, *Mobile Construction Equipment* CP3-SM-0020, *Administrative Controls for Powered Industrial Trucks* CP3-HS-2036, *Aerial Devices*
(c) The motor vehicle safety program must address, as applicable to the contractor's operations:	N/A

10 *CFR* 851 Requirement	Implementing Document or Comment
(1) Minimum licensing requirements (including appropriate testing and medical qualification) for personnel operating motor vehicles and powered industrial equipment;	CP3-PR-2002, *Use of Government Vehicles* CP3-WM-3030, *Commercial Motor Vehicle Operations* CP3-SM-0051, *Hoisting and Rigging* CP3-SM-0054, *Mobile Construction Equipment* CP3-SM-0020, *Administrative Controls for Powered Industrial Trucks* CP3-HS-2036, *Aerial Devices* CP3-HS-4002, *Implementation of the Occupational Medicine Program*
(2) Requirements for the use of seat belts and provision of other safety devices;	CP3-PR-2002, *Use of Government Vehicles* CP3-WM-3030*, Commercial Motor Vehicle Operations* CP3-SM-0020*, Administrative Controls for Powered Industrial Trucks* CP2-HS-1007, *General Safety Requirements* CP3-HS-2036, *Aerial Devices*
(3) Training for specialty vehicle operators;	CP3-PR-2002, *Use of Government Vehicles* CP3-WM-3030, *Commercial Motor Vehicle Operations* CP3-SM-0051, *Hoisting and Rigging* CP3-SM-0054, *Mobile Construction Equipment* CP3-SM-0020, *Administrative Controls for Powered Industrial Trucks* CP3-HS-2036, *Aerial Devices*
(4) Requirements for motor vehicle maintenance and inspection; equivalent;	CP3-PR-2002, *Use of Government Vehicles* CP3-WM-3030, *Commercial Motor Vehicle Operations* CP3-SM-0051, *Hoisting and Rigging* CP3-SM-0054, *Mobile Construction Equipment* CP3-SM-0020, *Administrative Controls for Powered Industrial Trucks* CP3-HS-2036, *Aerial Devices*
(5) Uniform traffic and pedestrian control devices and road signs;	CP3-PR-2002, *Use of Government Vehicles* CP3-WM-3030, *Commercial Motor Vehicle Operations*
(6) On-site speed limits and other traffic rules;	CP3-PR-2002, *Use of Government Vehicles* CP2-HS-1007, *General Safety Requirements*
(7) Awareness campaigns and incentive programs to encourage safe driving; and	CP3-PR-2002, *Use of Government Vehicles* CP2-HS-1007, *General Safety Requirements*

10 *CFR* 851 Requirement	Implementing Document or Comment
(8) Enforcement provisions.	CP3-PR-2002, *Use of Government Vehicles* CP2-HS-1007, *General Safety Requirements* CP1-HR-0112, *Employee Discipline*
10. Electrical Safety	N/A
Contractors must implement a comprehensive electrical safety program appropriate for the activities at their site. This program must meet the applicable electrical safety codes and standards referenced in § 851.23.	CP3-SM-0019, *Electrical Safety Guidelines* CP3-SM-0052, *Energized Electrical Work Permit* CP2-HS-1007, *General Safety Requirements* CP3-HS-2010, *Instructions for Lockout/Tagout*
11. Nanotechnology Safety	N/A
The Department has chosen to reserve this section since policy and procedures for nanotechnology safety are currently being developed. Once these policies and procedures have been approved, the rule will be amended to include them through a rulemaking consistent with the Administrative Procedure Act.	N/A
12. Workplace Violence Prevention	N/A
The Department has chosen to reserve this section since the policy and procedures for workplace violence prevention are currently being developed. Once these policies and procedures have been approved, the rule will be amended to include them through a rulemaking consistent with the Administrative Procedure Act.	CP1-HR-0107, *Anti-Violence Policy* CP1-HR-0131, *Employee Concerns*

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

ELECTRICAL EQUIPMENT WORKER PROTECTION PREVENTIVE MAINTENANCE SCHEDULE

THIS PAGE INTENTIONALLY LEFT BLANK

ELECTRICAL EQUIPMENT WORKER PROTECTION PREVENTIVE MAINTENANCE SCHEDULE

Priority Level	Equipment	Scheduled Date of Completion
Priority 1	Transformer Secondary breaker and Tie-Breaker	July 23, 2020*
Priority 2	Control Center Breakers	September 23, 2021*
Priority 3	Receptacle Breakers	TBD**
Priority 4	Substation Primary Over-Current Relays	TBD**
Priority 5	Switchyard Equipment	TBD**
Priority 6	Other Control Center Breakers	TBD**
Priority 7	Normal/Alternate/Backup Lighting Breakers	TBD**

*These are submitted dates but are subject to change and will be submitted through the monthly update and annually in the WSHP submittal.

Scheduled completion dates will be updated as indicated in the ISMS SCAQ-03, actions 5B and will be submitted to DOE by May 17, 2019. TBD dates will be reflected in annual WSHP updates.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

CONSTRUCTION PROJECT SAFETY & HEALTH PLAN CROSSWALK
10 CFR 851

THIS PAGE INTENTIONALLY LEFT BLANK

Construction Project Safety & Health Plan Crosswalk 10 CFR 851

	10 CFR 851 Appendix A.1 (d) Requirements	D&R Contractor's Implementation Documents
1	Identify foreseeable hazards and planned protective measures	Hazard Identification Checklist (HIC) CP2-HS-2004, *Job Hazard Analysis*
2	Address further hazards revealed by supplemental site information (for example, site characterization data, as-built drawings) provided by the Deactivation Manager.	Work Package/Work Control process CP3-SM-1101, *Work Package Development*
3	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	Engineering Approval documents, Job Hazard Analysis (JHA), Industrial Hygiene Work Permit (IHWP), and Implementation Program Documents flowed into work control documents.
4	Identify competent persons required for workplace inspections of the construction activity, where required by OSHA standards	D&R Contractor Competent Persons are listed in the Subject Manager Expert document. Management assigns designated personnel to projects/workplace inspections where competence is commensurate with responsibility.
5	Ensure workers are aware of foreseeable hazards and the protective measures described within the activity analysis prior to beginning work on the affected activity	Workers are integrated in the Hazard Analysis process and are briefed and sign Work Control Packages prior to work commencement per CP3-SM-1101*, Work Package Development.* Workers are also involved in the development of job walkdowns, HICs, and JHAs.
6	Require workers to 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	CP3-HS-2004, *Job Hazards Analysis* CP1-HR-0112, *Employee Discipline* CP3-SM-1101, *Pre-Job Brief/Status Log*
7	During periods of active construction (that is, 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 instance of noncompliance with project safety and health (S&H) requirements.	Designated Representative: Facility Area Managers, Plant Shift Superintendents, and Supervisors are the primary Point of Contact; however, all site employees have been trained and are knowledgeable of the D&R Contractor's Stop/Suspend Work Authority Policy.
8	Workers must be instructed to report hazards not previously identified or evaluated to the construction contractor's designated representative. If immediate corrective action is not possible or the hazard falls outside of the project's scope, the construction contractor must immediately notify affected workers, post appropriate warning signs, implement needed interim control measures, and notify the Deactivation Manager of the action taken. The contractor, or the designated representative, must stop/suspend work in the affected area until appropriate protective measures are established.	All site employees have been instructed and are knowledgeable of the D&R Contractor's Stop/Suspend Work Authority Policy through training. Craft personnel are integrated into the HIC process to assist communicating potential hazards not previously identified.
9	The construction contractor must prepare a written construction project S&H plan to implement the requirements of this section and obtain approval of the plan by the Deactivation 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 S&H 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 10 CFR § 851.11.	Projects are evaluated through the Work Control and Work Package Process and are comprised of various documents that satisfy the intent of the Construction Health and Safety Plan (such as, Project HASP, WSHP, etc.) without duplicating previously submitted/approved documents, as required 10 CFR by § 851.11.

The above Construction Project Safety & Health Plan Crosswalk 10 CFR 851 has been reviewed by the D&R HSS&Q Organization and approvals for the requirements listed and associated D&R Implementation documents are obtained through the Contractor's Work Control and Document Control processes for all planned tasks prior to work commencing.

THIS PAGE INTENTIONALLY LEFT BLANK