Federal Operational Readiness Review Assessment at the Savannah River Site Salt Waste Processing Facility

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Office of Enterprise Assessments
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Acronyms

ALARA	As Low As Reasonably Achievable
AMWD	Assistant Manager for Waste Disposition
CAS	Contractor Assurance System
CFR	Code of Federal Regulations
ConOps	Conduct of Operations
CORR	Contractor Operational Readiness Review
CR	Core Requirement
CRAD	Criteria and Review Approach Document
CSE	Cognizant System Engineer
DOE	U.S. Department of Energy
DOE-SR	DOE Savannah River Operations Office
DORR	DOE Operational Readiness Review
EA	Office of Enterprise Assessments
EM	Office of Environmental Management
EM-DAS	Office of Environmental Management Deputy Assistant Secretary
FHA	Fire Hazards Analysis
FPP	Fire Protection Program
IP	Implementation Plan
OFI	Opportunity for Improvement
ORR	Operational Readiness Review
Parsons	Parsons Corporation
POA	Plan of Action
QAP	Quality Assurance Program
RPP	Radiation Protection Program
SAA	Startup Authorization Authority
SHR	System Health Report
SMP	Safety Management Program
SRS	Savannah River Site
SSCs	Structures, Systems, and Components
SWPF	Salt Waste Processing Facility
VSS	Vital Safety System

Federal Operational Readiness Review Assessment
at the Savannah River Site Salt Waste Processing Facility
February 3-13, 2020

Summary

Scope:
This assessment evaluated the effectiveness of the U.S. Department of Energy (DOE) Operational Readiness Review (ORR) process as implemented for the purpose of starting nuclear operations at the Savannah River Site Salt Waste Processing Facility (SWPF), which is operated by Parsons Corporation (Parsons). This assessment focused on the process used by the DOE ORR (DORR) team to independently verify the state of readiness to safely start nuclear operations at SWPF in the selected Core Requirement areas of safety management programs, vital safety system management, procedures, conduct of operations, contractor assurance system, and field element oversight. This assessment also evaluated the adequacy of the DOE Savannah River Operations Office (DOE-SR) oversight of the readiness process implemented by Parsons.

Significant Results for Key Areas of Interest:
Overall, the DORR team effectively evaluated the state of readiness to safely start nuclear operations at SWPF, in accordance with DOE Order 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*. The DORR report concluded that SWPF nuclear operations can safely begin upon closure of any open issues identified prior to the start of the DORR, closure of the pre-start findings identified in the DORR report, and approval of corrective action plans for the post-start findings documented in the DORR report.

Requirements Applicable to DOE Operational Readiness Reviews
The DORR process appropriately followed the requirements of DOE Order 425.1D to enable a thorough evaluation of readiness to safely start nuclear operations at SWPF.

Verification of Selected Core Requirements
For the reviewed Core Requirements, the assessment team found that the DORR team conducted a comprehensive review of the readiness of personnel, procedures, programs, and equipment to safely start nuclear operations at SWPF, in accordance with DOE Order 425.1D. The DORR team effectively conducted a performance-based evaluation through observations of relevant work activities and interviews of the DOE-SR and Parsons personnel. The DORR team identified 13 pre-start findings and 11 post-start findings and concluded that all objectives were met except for the fire protection and radiation protection programs, and part of the maintenance and work control program. Overall, the assessment team concurs with the DORR team conclusions.

DOE Oversight of Contractor Readiness Processes
The DOE-SR oversight of the readiness process implemented by Parsons was adequate and met the requirements of DOE Order 425.1D. The contractor ORR process was appropriately implemented and resulted in an effective review of operational readiness that provided a satisfactory foundation for proceeding with the DORR.

Best Practices and Findings
A best practice was identified regarding the assignment of multiple DORR team members with extensive technical and programmatic experience to the individual review areas with previously noted significant issues, which enabled the DORR team to conduct a very comprehensive review.

No findings or deficiencies were identified during this assessment.

Follow-up Actions:
No follow-up activities were identified.

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1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Nuclear Safety and Environmental Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment of the effectiveness of the Federal (hereafter referred to as DOE) Operational Readiness Review (ORR) at the Savannah River Site (SRS) Salt Waste Processing Facility (SWPF). The purpose of this assessment was to evaluate the performance of the DOE ORR (DORR) to confirm that SWPF, as operated by the facility contractor, Parsons Corporation (Parsons), can safely start nuclear operations. This assessment was conducted on February 3-13, 2020.

The ORR process is intended to provide a high degree of confidence that new and restarted DOE nuclear facility operations will be conducted as intended by the design and safety basis. The ORR focused on confirming the readiness of personnel, procedures, programs, and equipment to safely start nuclear operations at SWPF. The DORR assesses the performance of the contractor ORR (CORR), and includes an independent review in specified review areas. The DORR placed significant emphasis on observations of activities performed by Parsons, such as those related to normal operations, abnormal events, and emergency drills. The EA assessment of the DORR was performed in accordance with the *Plan for the Federal Operational Readiness Review Assessment at the Savannah River Site Salt Waste Processing Facility, January 2020*.

2.0 METHODOLOGY

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*, which is implemented through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. This report uses the terms "best practices, deficiencies, findings, and opportunities for improvement (OFIs)" as defined in DOE Order 227.1A.

As identified in the assessment plan, this EA assessment considered requirements related to DOE Order 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*, as well as the objectives and criteria described in the plan.

Concurrent with the DORR team activities, the assessment team examined key documents, such as system descriptions, work packages, procedures, manuals, analyses, policies, and training and qualification records. The assessment team also observed DORR team member interviews of key personnel responsible for developing and executing the associated programs, observed various operations and support activities, and walked down relevant portions of SWPF. During the conduct of this assessment, any relevant issues identified by the assessment team during document reviews, interviews, or work evolutions were discussed with the DORR team members. The members of the assessment team, the Quality Review Board, and management responsible for this assessment are listed in Appendix A.

There were no items previously identified for follow-up during this assessment.

3.0 RESULTS

3.1 Requirements Applicable to DOE Operational Readiness Reviews

The objective of this portion of the assessment was to verify that the DORR was appropriately implemented to ensure a thorough review of the readiness of personnel, procedures, programs, and equipment to safely start nuclear operations at SWPF.

Per DOE Order 425.1D, the Secretary of Energy, or designee, is the designated Startup Authorization Authority (SAA) responsible for approving the start of nuclear operations. A memorandum for further delegation of the SAA was signed by the Secretary of Energy on July 24, 2017, designating specific senior DOE managers with authorities for different parts of the readiness review process. The Deputy Secretary of Energy is the designated SAA for final approval to proceed with the start of nuclear operations. Because the Deputy Secretary of Energy position is unfilled as of the date of this report, the SAA designation has been further delegated to the Under Secretary of Energy.

Plan of Action

DOE Order 425.1D requires the development of a plan of action (POA) that describes the scope of the DORR, the prerequisites to be met before starting the DORR, and the proposed team leader. Per the SAA delegation of authority, the DOE Office of Environmental Management (EM) Deputy Assistant Secretary (EM-DAS) for Safety, Security and Quality Assurance was designated as the approving official for the SWPF DORR POA. Approved in February 2018, the POA appropriately identified the scope of the DORR, described the prerequisites required to be completed before starting the DORR, and designated a well-qualified EM staff member to be the DORR team leader. The assessment team reviewed the POA and concluded that it provided a satisfactory foundation for planning the DORR process.

DORR Team Qualifications

During the early stages of planning for the DORR, the DORR team leader developed a proposed roster for the DORR team, which was reviewed and approved by the EM-DAS. Due to the complexity of the DORR and the need to review extensive amounts of information, a deputy team leader and a senior advisor position were included. In addition to the DORR team leader, deputy team leader, and senior advisor, the DORR team was comprised of 20 subject matter experts with extensive technical and programmatic experience that spanned the DOE complex, providing the DORR team a diverse range of perspectives that resulted in a comprehensive evaluation of SWPF readiness to safely operate. The DORR team leadership effectively coordinated the team's efforts, appropriately keeping the team's focus on the DORR goals. For the DORR review areas that were previously noted to have significant issues, the DORR team leader assigned multiple DORR team members to conduct a very comprehensive review. **(Best Practice)**

As all team members came from DOE sites outside of SRS, except for one from the National Nuclear Security Administration SRS field office, no potential conflicts of interest were identified. Based on document reviews and interviews, team selection was appropriately based on the desired subject matter expertise, previous assessment experience, and availability. Additionally, DOE line management allowed the team members to fully focus on DORR activities without distractions from other work assignments, which enabled the DORR to be conducted efficiently and effectively.

Implementation Plan

The DORR team appropriately developed the DORR Implementation Plan (IP), in accordance with DOE Order 425.1D, to describe the process to be used for verifying readiness based on the breadth and depth of the review listed in the POA. The IP presents a methodical and well-managed approach to conducting the DORR, with sufficient details for the team's use in conducting and documenting the review. The IP appropriately described the background of SWPF, reiterated the prerequisites for the DORR, and identified the evaluation criteria and review approaches based on the scope. The IP contains 26 criteria and review approach documents (CRADs), which adequately address the 17 Core Requirements (CRs) identified in DOE Order 425.1D. Many of the CRADs listed in the IP overlap multiple CRs, which provided additional assurance that the CRs were being fully evaluated.

Prerequisites for the DORR

Both the POA and IP identified nine prerequisites that were required to be completed, and verified as completed by DOE Savannah River Operations Office (DOE-SR) line management, before starting the DORR. These prerequisites included, but were not limited to, completion of the CORR, categorization of the CORR findings, development of a corrective action plan for resolution of the findings, and completion or verification of other activities leading up to the DORR. DOE-SR developed a Certification and Verification Plan to verify, among other objectives, that the prerequisites identified in the POA and IP were met. The computer system used to administer the Certification and Verification Plan, the Readiness Certification Assurance Process Tracking System (RCAPTS), catalogs the necessary readiness tasks and contains the associated DOE-SR documents relied on to validate the readiness requirements. Although RCAPTS provided an effective methodology for DOE-SR to certify the completion of DORR prerequisites, the DORR team members were unable to access this information prior to arrival on site due to computer security restrictions. Of the DORR team members who were able to use RCAPTS during the onsite portion of the DORR, several found it helpful for informing their review activities. Accessing the DOE-SR documents in advance of the onsite activities would have better prepared DORR team members to perform their review activities (see **OFI-DOE-1**). This issue was captured in the DORR report as a lesson learned for consideration during future DORR activities.

To address another of the DORR prerequisites, DOE-SR completed an assessment of the CORR process, dated January 9, 2020. The results of that assessment appropriately indicated that multiple readiness issues needed to be addressed before proceeding with the DORR. While the more significant issues were appropriately resolved, 17 issues remained open prior to the start of the DORR, which is allowable under DOE Order 425.1D. Contingent upon Parsons developing corrective action plans and establishing firm completion dates for these issues, DOE-SR determined that SWPF was ready to proceed with the DORR.

The assessment team reviewed the DORR prerequisites and the associated actions taken by Parsons and DOE-SR to address them. All of the prerequisites were found to be appropriately addressed. Final authorization to proceed with the DORR was issued by the DOE-SR site manager, who was the designated SAA for this part of the process, with concurrence of the EM-DAS.

DORR Report

The DORR report, issued on February 26, 2020, contained a thorough discussion of the DORR activities. The DORR team concluded that, out of the 26 CRAD objectives, one objective was partially met (maintenance and work control), and three objectives were not met (one from radiation protection and two from fire protection). The DORR team appropriately categorized any issue that represented a systematic failure or noncompliance that would negatively impact safety as a pre-start finding, of which 13 were identified. Other significant issues that represented longer-term concerns or a programmatic deterioration

were categorized as post-start findings, of which 11 were identified. The DORR report concluded that nuclear operations can safely begin upon closure of any open issues identified prior to the start of the DORR, closure of the pre-start findings identified in the DORR report, and approval of corrective action plans for the post-start findings documented in the DORR report. Additionally, the DORR report identified 50 observations for consideration in improving SWPF programs and processes, as well as 7 strengths that highlight unique items that exceed what is required.

The Alpha Finishing Process within SWPF was excluded from the DORR evaluation, which was deemed acceptable by EM and DOE-SR because no immediate need exists to operate this part of the facility for the first few years of operation. The DORR report transmittal memo appropriately captures the exclusion of this process from the DORR conclusions and notes that a future readiness review of this process will be necessary. The DORR report was approved by the DORR team leader and all of the DORR team members, with no dissenting opinions.

Requirements Applicable to DOE Operational Readiness Reviews Conclusions

Overall, the DORR process appropriately followed DOE Order 425.1D to enable a thorough evaluation of readiness to safely start nuclear operations at SWPF.

3.2 Verification of Selected Core Requirements

The objective of this portion of the EA assessment was to independently evaluate a sample of CRs from DOE Order 425.1D to assess whether the DORR team adequately verified the readiness of personnel, procedures, programs, and equipment needed to safely start nuclear operations at SWPF. The following CRs were reviewed:

- CR 1, Selected Safety Management Programs
- CR 7, Vital Safety System Management
- CR 9, Procedures
- CR 12, Conduct of Operations
- CR 14, Contractor Assurance System
- CR 17, Field Element Oversight.

Core Requirement 1: Selected Safety Management Programs

CR 1 requires safety management programs (SMPs) to be implemented that will ensure safe accomplishment of work at SWPF. The assessment team selected 3 of the 10 SMPs listed in DOE Order 425.1D (fire protection, quality assurance, and radiation protection). Many of the CRADs contained in the IP pertained to CR 1, all of which appropriately defined the review objectives, criteria, and approach for this portion of the DORR. The three most closely related CRADs for the selected SMPs were reviewed for this portion of the assessment.

Fire Protection

Under the first of two fire protection CRADs, the DORR review objective was to evaluate the development and implementation of a comprehensive fire protection program (FPP) to ensure that fire safety hazards are identified and adequately analyzed, and that appropriate engineering and administrative controls are identified and implemented to address the identified fire hazards so as to maintain safe operations during the facility life cycle. Parsons established a comprehensive FPP in SWPF document F-PP-J-00001, *Salt Waste Processing Facility Fire Protection Program Plan*.

The FPP, which was reviewed and approved by DOE-SR, appropriately contains information on the design, operations, emergency response, relevant fire hazards, facility assessments, wildland fire, and specific FPP criteria. The DORR team reviewed relevant FPP documentation, including the fire hazards analysis (FHA), fire protection procedures, assessments, inspections/walkthroughs, facility modifications, work packages, and relevant facility logs. The DORR team interviewed SWPF staff, including managers, fire protection engineers, the SRS fire department chief and staff, operators, and other relevant staff. In addition, the DORR team conducted facility walkdowns to observe existing fire hazards and determine whether Parsons is effectively implementing the FPP consistent with the FHA and operational procedures, and to evaluate the adequacy of fire protection personnel staffing levels to satisfy administrative and safety basis requirements.

The DORR evaluation of the FPP determined that the FHA did not fully address the requirements of DOE Order 420.1C, *Facility Safety*. Of most significance, the FHA did not evaluate safety-significant design features for fire and did not comprehensively evaluate life safety with respect to radiological operational impacts that could potentially affect egress from the facility. EA identified a similar issue in an April 2019 assessment of the SWPF FPP. The DORR team appropriately categorized this issue as a pre-start finding, as it was a systematic failure of the FPP. Because of the significance of this finding, the DORR team concluded that the CRAD objective was not met. A corrective action plan to resolve this issue is required to be developed and fully implemented prior to authorizing the start of nuclear operations.

Quality Assurance

Under the first of two quality assurance CRADs, the DORR review objective was to evaluate the development and implementation of a quality assurance program (QAP) with sufficient numbers of qualified personnel to ensure the effective implementation of the program. Parsons established a comprehensive QAP in SWPF document V-QP-J-00001, *Salt Waste Processing Facility Quality Assurance Plan*.

The QAP, which was reviewed and approved by DOE-SR, provides an effective methodology to ensure that operational risks and environmental impacts are minimized, and that safety, reliability, and performance are maximized. The DORR team reviewed relevant QAP documents to ensure that requirements are adequately flowed down into the relevant implementing procedures, and that functions and responsibilities are adequately defined to allow effective execution of the QAP. Further, the DORR team interviewed SWPF management and staff responsible for QAP development, maintenance, and implementation, and observed the implementation of selected QAP activities. Finally, the DORR team appropriately determined that the QAP was adequately evaluated by the CORR.

The DORR review of the QAP was extensive, and determined that the QAP was effectively implemented and meets the requirements of DOE Order 414.1D, *Quality Assurance*. The DORR team identified an issue involving the misclassification of the Basic Process Control System (BPCS) as non-safety software; this misclassification could prevent the BPCS from being properly controlled in accordance with the requirements for safety software. Further, the DORR team determined that Parsons is presently treating the BPCS as safety software but has not classified it as such, even though it meets the definition of safety software per DOE Order 414.1D. The assessment team agrees with the DORR team that Parsons should reclassify and treat the BPCS as safety software. This issue was appropriately categorized as a post-start finding because it is more of a longer-term concern with the classification of the system and not a problem with the QAP as a whole. The DORR identified three additional post-start findings and six observations to consider for improving the QAP. Given that these post-start findings would not impact the safe start of nuclear operations at SWPF, the DORR team concluded that the CRAD objective was met. Corrective action plans to resolve the post-start findings are required to be developed prior to authorizing the start of nuclear operations.

Radiation Protection

Under the radiological protection CRAD, the DORR review objective was to evaluate the development and implementation of a radiation protection program (RPP) with sufficient qualified personnel and adequate facilities and equipment to ensure that radiological work is performed safely and in accordance with As Low As Reasonably Achievable (ALARA) principles. Parsons established a comprehensive RPP in SWPF document S-CIP-J-00004, *Radiation Protection Program for 10 CFR 835 (Occupational Radiation Protection)*.

The RPP appropriately establishes radiation protection standards, limits, and program requirements for protecting individuals from occupational exposures to ionizing radiation resulting from nuclear operations at SWPF. The DORR team reviewed the relevant RPP documentation, including the personnel staffing plans and training and qualification requirements; radiological work permits; procedures (e.g., ALARA, surveying/monitoring requirements, decontamination, personal protective equipment identification, boundary controls, emergency response, bioassays); and relevant assessment reports, including corresponding corrective action plans and closure documentation. Further, the DORR team interviewed SWPF management and staff responsible for implementing the RPP, and observed simulated work and drill response to determine the adequacy of compliance with applicable requirements.

The DORR review of the RPP was comprehensive and concluded that the RPP was inadequate for ensuring radiological protection during nuclear operations. The DORR team identified major issues related to radiological entry control requirements, evaluation and control of radiological hazards in accordance with ALARA principles, inadequate release survey methodology, improper protective clothing doffing techniques, and multiple occurrences of noncompliances with radiological protection procedures. These five issues were appropriately categorized by the DORR as pre-start findings, as they indicated a significant failure to establish and implement an adequate RPP. Because of these findings and five observations to improve performance of the RPP, the DORR team concluded that the CRAD objective was not met. Corrective action plans to resolve these issues are required to be developed and fully implemented prior to authorizing the start of nuclear operations.

In summary, the assessment team independently confirmed that the DORR team conducted an effective review of the sampled SMPs. The assessment team also concurred with the DORR conclusions in this review area, especially the need to address substantial issues with the FPP and RPP.

Core Requirement 7: Vital Safety System Management

For the purpose of the DORR, the term vital safety system (VSS) encompasses all safety-significant structures, systems, and components (SSCs) whose preventive or mitigative function is a major contributor to defense-in-depth and/or worker safety. Under the second of two engineering CRADs, which adequately addresses CR 7, the DORR review objective was to evaluate the SWPF engineering program, which includes the use of cognizant system engineers (CSEs) to ensure that the condition and operability of SSCs are periodically confirmed and maintained.

SWPF document P-ESR-J-00035, *SWPF Cognizant System Engineering Plan*, provides the protocols for implementing the CSE program and includes the functions, responsibilities, and authorities of CSEs, in accordance with DOE Order 420.1C. The CSE plan designates primary and alternate CSEs to each SSC. All primary CSEs have completed the required qualifications, while some of the alternate CSEs have interim qualifications. The DORR team's interviews with CSEs indicated that CSEs possessed detailed knowledge of their assigned SSCs, which was identified as a strength in the DORR report. The DORR team determined that an effective CSE program has been implemented. The DORR team also identified some minor issues with the CSE program, such as CSE training, which was appropriately categorized as

an observation for improvement that SWPF management was already in the process of addressing. The DORR team did not identify any findings in this area.

SWPF document SWPF PP-EN-5035, *System Health Reporting and Operability Assessments*, provides the system health report (SHR) process for conducting periodic reviews of system operability, reliability, and material condition, in accordance with DOE Order 420.1C. The CSEs are required to complete SHRs on a quarterly basis, beginning no later than six months after SWPF operations have commenced. The DORR team noted that several SSCs are already operational for testing purposes, and identified that, out of all the operational SSCs, only the electrical system had a completed SHR. A different type of system evaluation process that uses an SHR checklist was utilized for other operational SSCs, which was inconsistent with established procedures. The DORR team appropriately identified this issue as a post-start finding because it did not represent an overall programmatic failure of the VSS program.

Other aspects of the DORR evaluation in this area included configuration management and preventive maintenance. The DORR team noted that configuration management was very effective as it provided the ability to link any SSC issues with relevant test and work order information. The DORR team also reviewed over 400 preventive maintenance activities and concluded that there were no improper deferrals or other schedule manipulations that would potentially impact the ability of SSCs to effectively perform their safety function. Given that the post-start finding on the SHR process would not impact the safe start of nuclear operations at SWPF, the DORR team concluded that the CRAD objective for review of CR 7 was met.

In summary, the assessment team independently confirmed that the DORR team conducted an effective review of the VSS program. The assessment team concurred with the DORR conclusions in this review area.

Core Requirement 9: Procedures

As procedures are a sub-element of conduct of operations (ConOps), the third of three operations CRADs from the DORR IP was selected for review. Under this CRAD, which adequately addresses CR 9, the DORR review objective was to evaluate whether adequate and correct procedures are available for operating the process systems and utility systems associated with SWPF operations. The governing documents for technical procedures, all of which adequately address DOE Order 422.1, *Conduct of Operations*, include PP-CONOPS-17.1, *Procedure Administration*; PP-CONOPS-17.2, *Procedure Compliance*; and V-SCD-J-00002, *SWPF Procedure Writer's Guide*.

Appropriate requirements are established for procedure use, including procedure types, place-keeping, work pause, turnover, and verbatim compliance. Suitable guidance is also provided on the development and formatting of procedures. SWPF Policy PS-04, *Project Manager Policy on Conduct of Business*, reinforces the worker's responsibility to comply with procedures, stop work when faced with uncertainty, and pursue corrective action when necessary. These documents establish a reasonable framework for technical procedure development, maintenance, and use.

The DORR team's review of this area consisted of work observations and interviews with cognizant personnel. The DORR team observed that operators were knowledgeable in procedure use and familiar with procedure content during demonstrations of operations in the plant and waste transfer activities in the simulator. Personnel followed specific, detailed procedures while performing work, and were proficient in repeat-back communications and use of the circle-slash method for place-keeping. Work was appropriately stopped during a demonstration of the mode change checklist to clarify a step through the immediate procedure change process. Operations procedures contained independent verification processes such as peer reviews, second-person verification, and dual verification. However, apart from

valve lineup procedures, few of the independent verification processes completely used the concept of separation of time and location, which does not meet the guidelines for independent verification. Additionally, procedures did not adequately describe the use of dual and second-person verification for specified operational processes. This issue was appropriately categorized as a post-start finding because it did not represent an overall programmatic failure with the use of procedures. Given that this post-start finding would not impact the safe start of nuclear operations at SWPF, the DORR team concluded that the CRAD objective for review of CR 9 was met.

In summary, the assessment team independently confirmed that the DORR team conducted an effective review of the adequacy and accuracy of procedures. The assessment team concurred with the DORR conclusions in this review area.

Core Requirement 12: Conduct of Operations

Under the second of three operations CRADs, which addresses CR 12, the objective of the DORR review was to evaluate the formality and discipline of operations to ensure that work is conducted safely and that programs are in place to maintain this formality and discipline. SWPF document SWPF-CONOPS-MATRIX-001, *Conduct of Operations Matrix*, provides the programs and procedures to establish an effective ConOps program in accordance with DOE Order 422.1.

The ConOps program was reviewed and approved by DOE-SR. SWPF document P-CMP-J-00001, *SWPF Conduct of Operations Manual*, lists 28 implementing procedures to address all elements of DOE Order 422.1. The DORR review of this area focused on a subset of required ConOps program elements, including logkeeping, timely orders, labeling, operator aids, lockout/tagout, turnover and assumption of responsibilities, and fact findings. The assessment team determined that this selection of ConOps elements provided a representative example of the effectiveness of the ConOps program.

The DORR team's review of this area consisted of observations of personnel performing several tasks, including system lineups, simulated liquid waste transfers, process startup and shutdowns, emergency response activities, and pre-job and post-job briefs. The DORR team also interviewed cognizant personnel and reviewed ConOps-related documents and implementing procedures. The SWPF facility manager and operations personnel were found to have a strong background knowledge in effective ConOps implementation and have effectively focused on building a robust ConOps culture to ensure safe operations. The DORR team also observed multiple pre-job and post-job briefs and found them to be appropriate in content and effectiveness, as well as highly interactive; all participating personnel understood their roles in the process. The use of three-way communications was integral to the successful conduct of these briefings. Shift turnovers were conducted in a similar manner, and the DORR team identified the effective conduct of these turnovers as a strength in the DORR report. However, the DORR team identified an issue where several of the operator aids posted throughout SWPF were not consistent with the associated procedure, such that postings did not have a clear derivation and technical evaluation, and were inappropriately used as hazard warnings. The DORR team appropriately identified this issue as a post-start finding because it did not represent an overall programmatic failure of the ConOps program. Given that this post-start finding would not impact the safe start of nuclear operations at SWPF, the DORR team concluded that the CRAD objective for review of CR 12 was met.

In summary, the assessment team independently confirmed that the DORR team conducted an effective review of the formality and discipline of SWPF operations to ensure that work is conducted safely and that programs are in place to maintain this formality and discipline. The assessment team concurred with the DORR conclusions in this review area.

Core Requirement 14: Contractor Assurance System

Under the second of two quality assurance CRADs, which addresses CR 14, the objective of the DORR review was to evaluate the implementation of a contractor assurance system (CAS) that will effectively identify, evaluate, and resolve deficiencies and recommendations made by contractor line management, independent contractors, and external audit and assessment groups. SWPF document P-SD-J-00001, *Contractor Assurance System Program Description*, establishes the responsibilities and accountabilities to ensure that the operation of SWPF is being performed safely, securely, and in compliance with all requirements.

The CAS program was reviewed and approved by DOE-SR, and effectively addresses DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*. Elements established in the CAS program include assignment of programmatic responsibility, validation of requirements implementation, integrated assessments, issues management and reporting, timely and appropriate communications, and personnel feedback and process improvement.

The DORR team conducted thorough interviews of the staff responsible for implementing the CAS program. The DORR team also conducted a detailed review of the oversight activities conducted by the SWPF quality assurance manager, which provided assurance that the CAS program was being effectively implemented. During the review of assessment records, the DORR team noted that not all SWPF organizations are performing management assessments or observations as required by DOE Order 414.1D. This issue was appropriately categorized as a post-start finding, as it was not a widespread issue and did not indicate an overall programmatic failure of the CAS program. Additionally, the DORR team identified an issue where some condition reports did not have an extent-of-condition evaluation performed as required by DOE Order 414.1D, which was also appropriately categorized by the DORR team as a post-start finding. Given that these post-start findings would not impact the safe start of nuclear operations at SWPF, the DORR team concluded that the CRAD objective for review of CR 14 was met.

In summary, the assessment team independently confirmed that the DORR team conducted an effective review of the CAS program and associated implementation of an adequate feedback and improvement process. The assessment team concurred with the DORR conclusions in this review area.

Core Requirement 17: Field Element Oversight

Under the second of two DOE CRADs, which addresses CR 17, the objective of the DORR review was to evaluate the adequacy of DOE-SR's programs for oversight of SWPF operations, covering areas such as occurrence reporting, Facility Representatives, corrective actions, safety system oversight, and quality assurance. An annual assessment plan for oversight of SWPF operations has been developed and implemented in accordance with DOE-SR document SRM 226.1.1G, *Integrated Performance Assurance Manual*.

DOE-SR has implemented a transition plan for transfer of field element oversight responsibilities to DOE-SR's existing line management for liquid waste operations. The DOE-SR Facility Representatives and Facility Engineers for SWPF, including safety system oversight, have completed transition to the DOE-SR Assistant Manager for Waste Disposition (AMWD) organization. The DOE-SR SWPF Project Office maintains responsibility for the remaining activities necessary to complete the project, and when final approval to start operations is obtained, AMWD will be responsible for all aspects of SWPF. DOE-SR document SRM 300.1.1B, *Functions, Responsibilities and Authorities Procedure*, appropriately establishes requirements for lines of responsibility, relevant authorities, and appropriate accountabilities in accordance with DOE Policy 450.4A, *Integrated Safety Management Policy*.

The DORR team member assigned to this area reviewed a wide range of DOE-SR documents and interviewed all applicable DOE-SR personnel. The interviews with each of the Facility Representatives were very detailed and included a walkdown of various areas of SWPF. During these interviews, the DORR team noted that the Facility Representatives' level of knowledge on SSCs should be improved, which was appropriately categorized as an observation in the DORR report. Interviews with AMWD management responsible for implementing the DOE-SR oversight program showed a clear expectation for implementing an effective oversight program to ensure that all aspects of nuclear-related work are conducted with the highest standards of quality and safety. As an example of the detailed oversight program, AMWD developed an assessment plan for the start of nuclear operations to ensure that activities performed during the startup period are conducted safely. The plan calls for the 24/7 presence of DOE-SR oversight personnel during the first few weeks of nuclear operations at SWPF.

The DORR team identified an issue with the DOE-SR technical qualification program, where the performance of continuing training activities for Senior Technical Safety Managers was not being adequately documented as required by DOE Order 426.1A, *Federal Technical Capability Program*. This issue was appropriately categorized as a post-start finding because it did not indicate an overall programmatic failure of the DOE-SR oversight program. Additionally, the DORR team noted that DOE-SR has not assigned staff members with qualifications in the quality assurance functional area to conduct oversight of the SWPF QAP. This issue was appropriately categorized as an observation because other DOE-SR oversight personnel can provide a marginal level of oversight in this functional area. Given that this post-start finding would not impact the safe start of nuclear operations at SWPF, the DORR team concluded that the CRAD objective for review of CR 17 was met.

In summary, the assessment team independently confirmed that the DORR team conducted an effective review of the DOE-SR oversight program. The assessment team concurred with the DORR conclusions in this review area.

Verification of Selected Core Requirements Conclusions

For the reviewed CRs, the assessment team found that the DORR team conducted a comprehensive review of the readiness of personnel, procedures, programs, and equipment to safely start nuclear operations at SWPF, in accordance with DOE Order 425.1D. The DORR team effectively conducted a performance-based evaluation through observations of relevant work activities and interviews of the DOE-SR and SWPF personnel. Overall, the assessment team concurs with the DORR team conclusions.

3.3 DOE Oversight of the Process for Verifying Readiness to Start Nuclear Operations at SWPF

The objective of this portion of the assessment was to verify that DOE-SR has performed sufficient oversight of the process implemented by Parsons for verifying readiness to start nuclear operations at SWPF.

The requirements in DOE Order 425.1D, Attachment 1, are incorporated in SWPF procedure DP-RR-8200, *Readiness Review Level Determination and Startup Notification Report*, and procedure DP-RR-8201, *Conduct of Readiness Reviews*. These procedures, which were reviewed and approved by DOE-SR, adequately outline the process implemented by Parsons to ensure readiness for starting nuclear operations. An assessment conducted by DOE-SR appropriately determined that Parsons had adequately implemented the requirements of DOE Order 425.1D, including the submittal of startup notification reports on a semiannual basis in accordance with EM policy.

DOE Order 425.1D requires a CORR to be performed prior to the DORR because SWPF is a hazard category 2 nuclear facility. The purpose of the CORR is to provide a high degree of confidence that facility operations will be conducted as intended by the design and safety basis. The CORR follows the same protocol as the DORR and is based on records review, observation of equipment and operations, and interviews with relevant personnel. Before the DORR can proceed, corrective action plans must be developed to resolve any identified issues from the CORR.

The CORR POA appropriately specified a full-scope review of all areas identified in DOE Order 425.1D, and also identified the necessary prerequisites, the proposed CORR team leader, and the proposed CORR schedule. The CORR POA was properly reviewed and approved by the DOE-SR site manager, who was the designated SAA for this part of the readiness process. The CORR IP appropriately provided more specifics on the conduct of the CORR, including identification of team members. The CORR team consisted of 17 individuals, including the team leader, with specialized experience in assigned review areas and no potential conflicts of interest. The CORR team was suitable for a review of this scope.

The CORR was conducted over a period of two weeks in November 2019 and evaluated safety-significant SSCs, operations and operations support personnel and procedures, and SMPs germane to operations with contaminated salt waste. The CORR team reviewed more than 900 documents, interviewed more than 200 personnel, and observed more than 100 work evolutions. The CORR team identified 6 pre-start findings and 4 post-start findings, and concluded that 17 of 21 CORR objectives were met. The assessment team independently confirmed that the CORR report adequately documented the results of this review.

DOE Oversight of the Process for Verifying Readiness to Start Nuclear Operations at SWPF Conclusions

Overall, DOE-SR conducted adequate oversight of the readiness process implemented by Parsons, which met the requirements of DOE Order 425.1D. The CORR process was appropriately implemented and resulted in an effective review of operational readiness that provided a satisfactory foundation for proceeding with the DORR.

4.0 BEST PRACTICES

Best practices are safety-related practices, techniques, processes, or program attributes observed during an assessment that may merit consideration by other DOE and contractor organizations for implementation. The following best practice was identified as part of this assessment.

- The DORR team was able to conduct a very comprehensive review by assigning multiple DORR team members with extensive technical and programmatic experience to the individual review areas in which significant issues had been previously noted.

5.0 FINDINGS

There were no findings identified as part of this assessment.

6.0 DEFICIENCIES

There were no deficiencies identified as part of this assessment.

7.0 OPPORTUNITIES FOR IMPROVEMENT

The assessment team identified one OFI to assist cognizant managers in improving programs and operations. While OFIs may identify potential solutions to findings and deficiencies identified in assessment reports, they may also address other conditions observed during the assessment process. These OFIs are offered only as recommendations for line management consideration; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to issues identified during the assessment.

The OFI applies to DOE Savannah River Operations Office for consideration during future DORR activities.

OFI-DOE-1: Consider arranging offsite access to all readiness documents to enable DORR team members to be better prepared for their onsite review activities.

Appendix A
Supplemental Information

Dates of Assessment

Onsite Assessment: February 3-13, 2020

Office of Enterprise Assessments (EA) Management

Nathan H. Martin, Director, Office of Enterprise Assessments
April G. Stephenson, Deputy Director, Office of Enterprise Assessments
Thomas R. Staker, Director, Office of Environment, Safety and Health Assessments
Kevin G. Kilp, Deputy Director, Office of Environment, Safety and Health Assessments
Kevin M. Witt, Acting Director, Office of Nuclear Safety and Environmental Assessments
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Quality Review Board

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