

Revision 0  
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**ACRONYMS**

ATP	acceptance test procedure
BTR	Buyer's Technical Representative
CAP	capital asset project
CAT	construction acceptance test
CD	critical decision
CDR	conceptual design report
CFR	code of federal regulations
CHPRC	CH2M Plateau Remediation Company
COR	code of record
CSA	Capsule Storage Area
CSP	Capsule Storage Pad
CSS	Cask Storage System
D/CV	design/construction verification
DBI	design basis input
DCM	design compliance matrix
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
FAT	factory acceptance test
FDC	functional design criteria
FRD	functions and requirements document
GPR	ground penetrating radar
HVAC	heating, ventilation and air conditioning
IFC	issue for construction
MCSC	Management of Cesium and Strontium Capsules
MSA	Mission Support Alliance
O&M	operations and maintenance
OAT	operational acceptance test
NAC	NAC International, Inc.
RCI	request for clarification or information
SOW	Statement of Work
SSC	structure, system, and component
SLF	Storage, Laydown, and Fabrication
TMS	Temperature Monitoring System
TSC/TSCB	Transportable Storage Canister/TSC Basket
UCS	Universal Capsule Sleeve (component of CSS)
VCC	Vertical Concrete Casks
VCT	Vertical Cask Transporter
W&FMP	Waste & Fuels Management Project
WESF	Waste Encapsulation and Storage Facility

## 1.0 INTRODUCTION / BACKGROUND

### 1.1 Introduction

As a Prime Contractor to the U.S. Department of Energy (DOE), the CH2M HILL Plateau Remediation Company (CHPRC) is focused on safe environmental cleanup of the Central Plateau of the DOE Hanford Site. The CHPRC scope of work includes environmental remediation activities, treatment and disposal of radioactive waste streams, management of spent nuclear fuel, and disposition of nuclear materials and non-reactor nuclear facilities.

This Statement of Work (SOW) is for engineering technical support services to the CHPRC W-135 Project, also referred to as the Management of Cesium and Strontium Capsules (MCSC) Project. The MCSC Project is centered on the Waste Encapsulation and Storage Facility (WESF) which is a Hazard Category 2 non-reactor nuclear facility located adjacent to B Plant in the Hanford 200 East Area. The mission of WESF is the safe and compliant storage of 1,936 cesium and strontium capsules.

The overall objective of the MCSC Project is to transition the capsules from underwater storage in WESF pool cells to a new dry-storage facility for long-term storage pending availability of a permanent disposal option. Major project operational activities will include retrieval of the capsules from the pool cells, packaging of the capsules into a Cask Storage System (CSS), and transfer of the casks to a new Capsule Storage Area (CSA). Major supporting activities to prepare for operations include: procurement of the CSS, design and construction of WESF modifications to accommodate CSS packaging equipment, and design and construction of the new CSA including cask haul path improvements and a contractor storage, laydown and fabrication (SLF) yard.

The engineering technical support services included in this SOW will assist CHPRC: to prepare project documents required for a combined Critical Decision 2 & 3 (CD-2/3) package for DOE approval in compliance with Order 413.4B, *Program and Project Management for the Acquisition of Capital Assets*; to resolve open technical issues; and to provide technical oversight of the CHPRC contractors developing detailed designs for the CSS, WESF Modifications, and CSA works.

### 1.2 Background Information

The following paragraphs provide additional background information on the MCSC Project including the general scope of MCSC Project physical works. Refer to Section 3.0 for a more detailed description of SOW activities.

#### 1.2.1 General

As of January 2017, the 1,936 cesium and strontium capsules stored underwater at WESF contained 91 million curies of radioactivity, representing a significant fraction of the total

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radioactive inventory of the Hanford Site. The WESF is now being operated beyond its original design life. The facility relies on active systems to provide building ventilation, maintain pool cell water levels, and monitor the capsules. These systems are becoming more difficult to operate and maintain as they age, with corresponding increases in costs.

The DOE plan for final disposal of the cesium and strontium capsules originally assumed they would be shipped to a high-level radioactive waste repository. The Yucca Mountain Nuclear Waste Repository, as designated by the Nuclear Waste Policy Act Amendments of 1987, was to be the repository for spent nuclear fuel and other high-level radioactive wastes. However, federal funding for the Yucca Mountain Nuclear Waste Repository ended in 2011, leaving the Hanford Site without a disposal pathway for the capsules.

Recognizing the need for continued safe storage of the capsules at the Hanford Site for an indefinite period, the DOE prepared a *Mission Need Statement for the Management of the Cesium and Strontium Capsules* (DOE/RL-2012-47, Rev 6). The DOE-HQ approved this Mission Need Statement and Critical Decision 0 (CD-0) on November 5, 2015, and established the Management of Cesium and Strontium Capsules (MCSC) Project. The MCSC Project is managed for the DOE Richland Operations Office (RL) by CHPRC under the Plateau Remediation Contract (PRC) (DE-AC06-08RL14788) in accordance with DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*.

The objective of the MCSC Project is to transfer the capsules from current underwater storage at WESF to a new dry-storage facility which will safely and compliantly store the capsules for an extended period. CHPRC-02252 (Revision 3), *Management of the Cesium and Strontium Capsules Project (W-135) Functions and Requirements Document*, identifies the high-level functions and requirements that must be satisfied by the detailed designs supporting the MCSC Project.

In general terms, the MCSC Project involves three interfacing scopes of work to establish readiness for capsule packaging and transfer operations:

- A. *Cask Storage System*. Procure the Cask Storage System (CSS) including ancillary equipment required for loading of the CSS storage package and transfer equipment required for transporting the CSS storage package.
- B. *WESF Modifications*. Design and construct facility modifications as needed to prepare WESF for CSS system deployment and loading operations.
- C. *Capsule Storage Area*. Design and construct a Capsule Storage Area (CSA), associated CSS haul path road improvements, and a separate storage, laydown and fabrication (SLF) area for use by the CSS contractor.

Regarding the CSS (item A above), the CHPRC placed a turnkey contract with NAC International (NAC) for design, fabrication, installation and testing of the CSS and ancillary equipment, and work was initiated in FY2017.

Regarding the WESF Modifications and CSA (items B and C, respectively), pre-design activities and conceptual designs are complete and CHPRC is conducting a separate procurement action to source a contractor to perform the detailed designs.

The following paragraphs further describe the three scopes of work listed above.

### 1.2.2 Cask Storage System (CSS)

CHPRC-02622 (Revision 4), *Cask Storage System (CSS) Functional Design Criteria (Project W-135)*, identifies functional and technical requirements for the structures, systems, and components (SSCs) comprising the CSS. Document 30059-R-02 (Revision A), *NAC Conceptual Design Report for the Management of the Cesium and Strontium Capsules Project (MCSC)*, provides CSS conceptual design information, primarily for the cask system itself. CHPRC has reviewed the CDR and, as of the date of this SOW, NAC is revising the document for submittal as Revision 0. As general information, the primary elements of the CSS include:

- CSS Storage Package
  - Universal Capsule Sleeves (UCS) into which the cesium and strontium capsules are loaded,
  - Transportable Storage Canister (TSC) and associated internal basket (TSCB) into which the UCSs are loaded
  - Vertical Concrete Cask (VCC) to support and protect the TSCB, and to provide radiation shielding.
- CSS Transfer Equipment
  - Vertical Cask Transporter (VCT), a wheeled trailer capable to lift and transport one VCC at a time
  - Motorized tractor (tugger) for towing the VCT.
- CSS Ancillary Equipment
  - Various specialty equipment items to support loading and sealing the CSS Storage Package.

### 1.2.3 WESF Modifications

CHPRC-03011 (Revision 1), *WESF Modifications Functional Design Criteria (Project W-135)*, identifies requirements for SSCs associated with the WESF Modifications scope. CHPRC-03329 (Revision 0), *WESF Modifications (W-135) Conceptual Design Report*, identifies the WESF Modification scope items (see bulleted list below, organized by location within WESF). This list is indicative information only for the Contractor to understand the nature of WESF Modifications to be designed by others and related to which the Contractor will provide technical support to CHPRC. Note that as CSS design development continues, there will likely be corresponding changes to exact scope of WESF Modifications scope.

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- WESF Truck Port
  - Structural/Civil
    - Removal of loading dock and stairs located in the truck port
    - Truck port & apron floor reinforcement and surface finishing
    - Roll-up door removal/replacement; drainage upgrades.
  - Mechanical, Piping & Fire Sprinkler System Modifications
    - Relocation of fire protection system piping to increase clearances
    - Removal of unused small diameter piping to increase clearances.
  - Electrical
    - Power for CSS-related equipment.
  - HVAC
    - Relocation of ductwork to increase clearances.
- WESF Canyon
  - Structural/Civil
    - Canyon deck: Remove cover block lifting bales for Cells A-F
    - Canyon deck: Confirm capacity to handle CSS-related loads
    - Canyon crane: Install a camera system for canyon overhead crane.
  - Mechanical
    - Confirm capability of the canyon crane to support CSS loads.
  - Electrical
    - Provide power for CSS-related equipment.
  - Compressed Air
    - Provide compressed air service for CSS-related equipment.
- G Cell
  - Structural/Civil
    - Confirm G Cell floor load capacity to handle CSS-imposed loads
    - Assess impacts of new G Cell cover block on the WESF structure.
  - Mechanical
    - Provide services as needed for CSS-related equipment; including:
      - Automated welding system including UCS up-ender
      - UCS evacuation/helium backfill system
      - Helium mass spectrometer leak detection system.
  - Electrical
    - Provide power as needed for CSS equipment.
  - Process Air
    - Provide process air for CSS equipment.
    - Confirm if new wall nozzle penetrations are required.
  - HVAC
    - Supplemental cooling capability to meet CSS criteria.
- Compressed Air & Specialty Gases: Tubing runs from Service Gallery to the Truck Port and G Cell.

#### 1.2.4 Cask Storage Area (CSA)

CHPRC-02623 (Revision 1), *Capsule Storage Area (CSA) Functional Design Criteria (Project W-135)*, identifies functional and technical requirements for the SSCs / facilities comprising the CSA scope. CHPRC-03328 (Revision 0), *Cask Storage Area (CSA) (W-135) Conceptual Design Report*, identifies the CSA-related scope elements listed below. This list is indicative information only for the Contractor to understand the anticipated nature of CSA works to be designed by others and related to which the Contractor will provide technical support to CHPRC.

- Cask Storage Area (CSA)
  - CSA cask storage pad (CSP)
  - CSA operational pad
  - CSA yard area
  - Security fencing and lighting
  - Temperature monitoring system (TMS) and communications interface including weather-tight enclosure
  - Utilities interface.
- Storage, Laydown and Fabrication (SLF) area
  - SLF fabrication and assembly pad and associated concrete apron area(s)
  - SLF yard area
  - Security fencing, gates and lighting
  - Utilities interfaces.
- Haul path roadway upgrades
  - Roadway widening, repaving, resurfacing at selected locations to accommodate the CSS cask transporter
  - Transitions / ramps connecting existing road network to the WESF truck port, the CSA (CSP & CSA Operational Pad), and the SLF area.

## 2.0 DESCRIPTION OF WORK – GENERAL

The technical support services included in this SOW will assist CHPRC: to prepare project documents required for a combined Critical Decision 2 & 3 (CD-2/3) package for DOE approval in compliance with Order 413.4B, *Program and Project Management for the Acquisition of Capital Assets*; to resolve open technical issues, and to provide technical oversight of the CHPRC contractors developing detailed designs for the CSS, WESF Modifications, and CSA works.

The types of technical support activities and work products anticipated in the performance of this SOW may include but are not limited to the following:

- Review of design basis documents, support for closure of any open issues, and support for any required design basis document revisions
- Support design inputs to MCSC design contractors to enable design completion (e.g., assist CHPRC to respond to requests for clarification or information [RCIs])
- Technical review of CHPRC design contractors' detailed design deliverables for CSS, WESF Mods and CSA works
- Technical support to CHPRC formal design review process including review of design contractors' proposed comment resolutions and assistance for preparation of design review reports
- Technical review of MCSC Project technology readiness documentation
- Technical review of other MCSC-related documents as requested by CHPRC
- Support to CHPRC evaluation and resolution of emergent technical issues
- Technical support to the MCSC Project for coordination with other Hanford organizations to obtain reviews and concurrence that the proposed project footprint is not restricted by utilities or by environmental, cultural resource or other concerns.

The Contractor shall manage the technical support work for the CSS, WESF Modifications and CSA as three separate but related tasks. This aligns with a DOE requirement to track costs separately for these three scope elements.

On an ongoing basis during the Work, the CHPRC BTR will identify specific technical support activities to be performed under each task and agree with the Contractor the associated deliverables, resource requirements and schedule.

### 3.0 DESCRIPTION OF WORK – SPECIFIC

The Consultant shall manage delivery of the work in this SOW as three separate tasks, consistent with the MCSC Project WBS. These tasks are:

- Task 1: Technical Support for Cask Storage System
- Task 2: Technical Support for WESF Modifications
- Task 3: Technical Support for Capsule Storage Area.

The Contractor shall separately report on accomplishments and activities performed, and on schedule and cost performance using this structure. Each task will be independently authorized by CHPRC and the Contractor shall invoice separately for each.

On an ongoing basis during the Work, the CHPRC BTR will identify specific technical support activities to be performed under each task and agree with the Contractor the associated deliverables, resource requirements and schedule.

#### 3.1 Task 1 - Technical Support for Cask Storage System

SOW activities related to the CSS are may include but not be limited to engineering technical *support* to CHPRC in conducting the following:

- Review and confirm of design basis information & documentation; e.g.,
  - Functions & requirements document (FRD)
  - Functional design criteria (FDC)
  - Code of record (COR)
  - Conceptual design report (CDR) design basis information
  - CDR review comments deferred to detailed design.
- Identify, track and facilitate resolution of design basis open items
- Revise FRD, FDC, COR, and other design basis documents as directed
- Evaluate and resolve any potential technical issues that may arise; e.g., such as that related to instances of uncharacterized material observed adhering to the exterior surfaces of some capsules in the pool cells
- Transmit updated design inputs to MCSC design contractors; draft responses to design contractor Requests for Clarification or Information (RCIs)
- Technical review of MCSC technology maturity and technology readiness assessment documentation
- Technical review of CSS preliminary and final detailed design deliverables
- Technical review of other CSS-related documents as requested by CHPRC
- Develop Preliminary Design Review Report and Final Design Review Report.

**3.2 Task 2 – Technical Support for WESF Modifications**

SOW activities related to WESF Modifications may include but not be limited to *support* to CHPRC in conducting the following:

- Review and confirmation of design basis and related documentation; e.g., FRD, FDC, COR, CDR DBI matrix, CDR review comments deferred to detailed design, and relevant CSS design documents
- Identify, track and facilitate resolution of design basis open items
- CHPRC revision of FRD, FDC and COR (or other design basis documents) if required and as directed
- Support transmittal of updated design inputs to MCSC design contractors; draft responses to design contractor Requests for Clarification or Information (RCIs)
- Technical reviews of MCSC-related technology readiness documentation
- Technical reviews of detailed designs (refer tables following for indicative lists of preliminary and final detailed design deliverables)
- Develop of Preliminary Design Review Report and Final Design Review Report
- Facilitate MCSC Project coordination with relevant organizations to obtain review and concurrence that the proposed project footprint (e.g., for CSA works) is not restricted by environmental, cultural resource or other concerns
- Technical review of other MCSC-related documents as requested by CHPRC.

<b>Table 3.2-1: Indicative List of WESF Modifications Preliminary Detailed Design Deliverables (to be prepared by others)</b>	
1	Preliminary Design Report
2	Preliminary FDC compliance matrix
3	Compliance matrix for HVAC modifications
4	Engineering analyses and calculations
5	Radiological shielding calculations
6	Design drawings for construction
7	Construction specifications
8	Equipment lists and data sheets; equipment outline drawings; equipment procurement specifications
9	Long-lead equipment design, procurement, testing, and inspection documents, including vendor cost and schedule estimates

<b>Table 3.2-1: Indicative List of WESF Modifications Preliminary Detailed Design Deliverables (to be prepared by others)</b>	
10	Testing program-related documents <ul style="list-style-type: none"> <li>• Test Plan (defines overall testing plan for the Work)</li> <li>• Design/Construction Verification (D/CV) documentation                             <ul style="list-style-type: none"> <li>○ Draft D/CV Plan (proposed design/construction verifications)</li> </ul> </li> <li>• Factory acceptance test (FAT) documentation                             <ul style="list-style-type: none"> <li>○ FAT requirements to be incorporated into equipment specifications</li> </ul> </li> <li>• Construction acceptance test (CAT) documentation                             <ul style="list-style-type: none"> <li>○ CAT requirements for inclusion in construction specification or SOW</li> <li>○ Draft CAT plans, specifications and procedures (for use by constructor)</li> </ul> </li> <li>• Acceptance Test Procedure (ATP) documentation                             <ul style="list-style-type: none"> <li>○ ATP requirements for inclusion in construction specification or SOW</li> <li>○ ATP plans, specifications and procedures (for use by CHPRC)</li> </ul> </li> <li>• Operations acceptance test (OAT) documentation                             <ul style="list-style-type: none"> <li>○ Draft OAT plans, specifications and procedures (for use by Operations)</li> </ul> </li> </ul>
11	Project control planning deliverables related to construction phase <ul style="list-style-type: none"> <li>• Construction cost estimate</li> <li>• Construction schedule estimate.</li> </ul>

<b>Table 3.2-2: Indicative List of WESF Modifications Final Detailed Design Deliverables (to be prepared by others)</b>	
1	Final Design Report
2	Final FDC compliance matrix
3	Compliance matrix for HVAC modifications
4	Engineering analyses and calculations
5	Radiological shielding calculations
6	Design drawings for construction
7	Construction specifications
8	Draft submittal registers for construction contracts based on construction specifications and equipment specification requirements
9	Equipment procurement specifications; equipment outline drawings
10	Long-lead equipment design, procurement, testing, and inspection documents, including vendor cost and schedule estimates
11	Testing Program-Related Documents (refer Table 3.2-1, Item 10 for additional notes)
12	Project control deliverables related to construction phase (refer Table 3.2-1, Item 11)
13	Compliance certification that the Final Design complies with the project technical baseline.

### **3.3 Task 3 – Technical Support for Cask Storage Area Works**

The Contractor's technical support activities to CHPRC related to CSA works are expected to include the same types of support activities as listed for WESF Modifications in Section 3.2. Note that the types of detailed design deliverables for CSA works will also be similar to those listed in Section 3.2 (refer Tables 3.2-1 and 3.2-2); however, the CSA physical works are different as described in Section 1.0.

### **3.4 Acceptance Criteria**

The CHPRC BTR or designee will identify specific acceptance criteria applicable to each assigned support activity; however, the following general acceptance criteria are always applicable:

- Design reviews shall be performed with reference to approved design basis documents and any related deviations approved by CHPRC pending revision of affected documents
- Contractor's technical support activities shall be performed in accordance with applicable CHPRC procedures (refer Section 4.4)
- Contractor's technical support work products shall reflect the requirements of applicable CHPRC procedures (refer Section 4.4)
- Any Contractor formal work products requested by the CHPRC BTR shall be reviewed and accepted by CHPRC
- Contractor shall make every effort to complete CHPRC technical support tasks within the time period agreed
- Contractor shall attend and fully support Hanford Site meetings as directed by CHPRC; CHPRC will endeavor to provide at least 24 hour notice for such events
- Contractor shall formally document meetings as directed by the CHPRC BTR.

### **3.5 Organizational Interfaces**

As directed by the BTR, the Contractor may be required to support interfaces with relevant organizations during the performance of SOW technical support activities. These may include:

- CHPRC QA, Environmental and Nuclear Safety
- W-135 CSS Contractor (NAC International)
- W-135 WESF Modifications and CSA Detailed Design Contractor
- CHPRC WESF Operations
- Mission Support Alliance (MSA) roads, rail and utilities organizations
- Hanford Fire Protection
- Hanford Site Security.

### 3.6 Work Not Included

The following work is excluded from this Contract:

- Conceptual design and detailed design
- Nuclear safety analyses and determinations
- Environmental regulatory consulting
- Cultural resource surveys and determinations
- Subsurface investigations (e.g., geotechnical, geophysical, concrete coring)
- Procurement and construction
- Construction management; construction quality control and inspection
- Factory and construction acceptance testing
- Radiological control surveys and oversight for field execution
- Industrial health & safety assessments and oversight for field execution.

### 3.7 Buyer Furnished Materials and Equipment

The Contractor is responsible to furnish all materials and equipment required to complete the activities specified in this SOW, with the exception that CHPRC will provide any special radiological control-related PPE required for walk-downs within the WESF.

### 3.8 Site Conditions and Known Hazards

The Technical Support services specified in this SOW shall be performed off-Site at the Contractor's facility. As required to support its work, the Contractor shall attend meetings and tours/walk-downs at the WESF facility and at exterior areas around WESF (i.e., to support design for the CSA, SLF and haul path improvements).

All Contractor tours and walk-downs shall be approved in advance by the BTR and performed with a CHPRC escort with assistance from Radiological Control as required. Planning for each tour / walk-down shall be performed consistent with CHPRC procedures. In general, Site facility tours are expected to have low radiological risk. The primary hazards to participants are expected to be slips, trips and falls, and struck against, struck by, caught in or between hazards. For outdoor walk-downs, hazards may also include snake and insect bites, and sun/heat/hydration concerns. Specific site conditions and known hazards will be communicated by the BTR or designee prior to the walk-downs.

### 3.9 Site Coordination Requirements

The Contractor shall coordinate any on-Site activities in advance with the CHPRC BTR. The Contractor shall make contact with the BTR or designee when arriving at the facility site. Contractor personnel shall ensure they have received the necessary orientations, safety briefings, and related training prior to touring the site / facility.

#### 4.0 TECHNICAL REQUIREMENTS

The Contractor shall perform the Work in accordance with requirements identified in the following paragraphs.

##### 4.1 Project Documents

Unless otherwise directed in writing by the CHPRC BTR, the Contractor's technical support work products shall be consistent with the following MCSC Project documents which will be provided to the Contractor following award.

###### MCSC Project-Level

- CHPRC-02252 (Revision 3), *Management of the Cesium and Strontium Capsules Project (W-135) Functions and Requirements Document*.

###### Capsule Storage System

- CHPRC-02622 (Revision 4), *Cask Storage System (CSS) Functional Design Criteria (Project W-135)*
- CHPRC-02288 (Revision 1, pending), *Capsule Extended Storage Project (W-135) Code of Record*
- NAC International 30059-R-02, *NAC Conceptual Design Report for the Management of the Cesium and Strontium Capsules Project (NCSC)* [Available to Contractor following award.]

###### WESF Modifications and Capsule Storage Area (CSA)

- CHPRC-02623 (Revision 1), *Capsule Storage Area (CSA) Functional Design Criteria (Project W-135)*
- CHPRC-03011 (Revision 1), *WESF Modifications Functional Design Criteria (Project W-135)*
- CHPRC-03275 (Revision 0) *Capsule Storage Area and WESF Modifications Code of Record (Project W-135)*
- CHPRC-03328 (Revision 0), *Management of the Cesium and Strontium Capsules Project Cask Storage Area (CSA) (W-135) Conceptual Design Report*
- CHPRC-03329 (Revision 0), *WESF Modifications (W-135) Conceptual Design Report*.

**4.2 Design Interfaces**

In the conduct of technical support work under the SOW, the Contractor shall be cognizant of the relevant project design interfaces including but not limited to:

- Physical/system interfaces between the MCSC Project sub-elements (e.g., between CSS SSCs and ancillary equipment, WESF modifications, and the CSA scope including SLF Area and haul path improvements)
- Physical/system interfaces with WESF facility (e.g., with WESF truck port, canyon and G Cell structures; with WESF crane and master-slave manipulator systems; and with WESF electrical power, HVAC, air and compressed gas systems)
- Physical/system interfaces with other relevant Hanford facilities/utilities (e.g., with Hanford Site road, rail and utilities systems).

**4.3 Codes and Standards**

The Contractor shall perform the technical support work (e.g., design reviews) with reference to codes and standards in CHPRC-02288 (Revision 1 pending), *Capsule Extended Storage Project (W-135) Code of Record*; CHPRC-03275 (Revision 0), *Capsule Storage Area and WESF Modifications Code of Record (Project W-135)*; in the FDC documents listed in Section 4.1; and in the CHPRC procedures listed in Section 4.4.

**4.4 CHPRC Procedures**

Technical support services (e.g., document reviews) shall be performed consistent with relevant CHPRC procedures as listed in the table below, latest revision.

<b>CHPRC Engineering Program Procedures</b>	
<b>Document Number</b>	<b>Title</b>
PRC-GD-EN-40256	Engineering Codes & Standards
PRC-PRO-EN-097	Engineering Design and Evaluation (Natural Phenomena Hazard)
PRC-PRO-EN-286	Testing of Equipment and Systems
PRC-PRO-EN-2001	Facility Modification Package Process
PRC-PRO-EN-20050	Engineering Configuration Management
PRC-PRO-EN-440	Engineering Documentation Preparation and Control
PRC-PRO-EN-8016	Design Change Notice Process
PRC-PRO-EN-8017	As-Built Verification Process
PRC-PRO-EN-8336	Design Verification
PRC-PRO-EN-40264	Formal Design Review
PRC-PRO-EN-40447	Electrical Equipment Approval and Acceptance
PRC-STD-EN-40254	Functional Requirements Document
PRC-STD-EN-40255	Functional Design Criteria

<b>CHPRC Engineering Program Procedures</b>	
<b>Document Number</b>	<b>Title</b>
PRC-STD-EN-40258	Preliminary/Final Design Report
PRC-STD-EN-40259	Engineering Calculations
PRC-PRO-EN-40271	Engineering Design Process
PRC-STD-EN-40279	Engineering Drawing Standards
PRC-STD-EN-40280	Engineering Specifications
PRC-STD-EN-40281	Engineering Test Documentation
PRC-STD-EN-40451	Manufacturer’s Recommendations for Equipment

**4.5 Work Location / Access Requirements**

The primary work location for the technical support activities specified in this SOW shall be at the Contractor’s offsite offices, which shall be located in the Tri-Cities area. Contractor personnel will also participate in occasional site tours, walk-downs, and meetings at the Hanford Site as required to support the Work. The Contractor will coordinate attendance at such forums with the CHPRC BTR. Refer also Section 3.8, *Site Conditions and Known Hazards*, and Section 5.3, *Security and Badging Requirements*.

**5.0 PERSONNEL REQUIREMENTS**

**5.1 Training and Qualification (General)**

- A. The Contractor shall provide appropriately trained and qualified staff to perform the technical support for the project works described in this SOW.
- B. The Contractor shall provide any required job-specific training with the exception of training that is offered only by the Hanford Site.
- C. CHPRC will provide Contractor staff with CHPRC General Employee Training as required for Hanford Site access, and with safety indoctrination and other facility-specific training as required for access to the WESF facility.
- D. Contractor’s staff shall complete required training prior to work.

**5.2 Personnel Qualifications (Position-Specific)**

The technical support services specified in this SOW require that the Contractor be able to provide staff with appropriate qualifications and experience in the relevant technical disciplines (e.g., civil, structural, mechanical, electrical). CHPRC’s minimum expectations for key staff positions are specified below. Resumes shall be submitted with the Technical Proposal demonstrating these qualifications. Roles may be combined (or divided) as applicable depending on Contractor’s proposed staffing.

**TITLE: Technical Support Services for W-135 Project**

<b>Labor Category</b>	<b>Experience Level/Qualifications</b>
Project Manager	Responsible for management and execution of assigned project(s) in accordance with the requirements of the contract between the contractor, the Buyer and the contractor's operating policies and principles. Responsible for execution of the work in accordance with the quality standards and requirements specified for the project. Minimum Qualifications: Bachelors Degree in Engineering or an equivalence of education and experience and 10 or more years related experience.
Principal Engineer <ul style="list-style-type: none"> <li>• Electrical</li> <li>• Mechanical</li> <li>• Structural</li> </ul>	Provides technical direction to assigned engineers. Independently applies advanced engineering techniques and analyses for problems and methods. Has extensive experience in general engineering. Minimum Qualifications: Bachelors of Science (BS) degree in Engineering discipline or an equivalence of education and experience PLUS 15 or more years engineering experience at a nuclear facility or Navy Nuclear power.
Senior Engineer <ul style="list-style-type: none"> <li>• Electrical</li> <li>• Mechanical</li> <li>• Structural</li> </ul>	When assigned, may direct the work of other Senior Engineers and Engineers. Under general supervision, does all conventional design engineering and analysis. Plans and conducts independent evaluation, selection, and adaptation of engineering techniques, procedures, and criteria. Minimum Qualifications: BS degree in Engineering discipline or an equivalence of education and experience PLUS 10 to 14 years engineering experience at a nuclear facility or Navy Nuclear power.
Advanced Engineer <ul style="list-style-type: none"> <li>• Mechanical</li> </ul>	Under general supervision, evaluates, selects, and applies standard engineering techniques, procedures, and criteria. Minimum Qualifications: BS degree in Engineering discipline or an equivalence of education and experience PLUS 5 to 9 years engineering experience at a nuclear facility or Navy Nuclear power.
Designer/CAD Technician	Experienced and proficient in producing AutoCAD drawings, drawing changes (e.g. ECN's), field walk-downs to obtain dimensions and equipment layout. Responsible for limited equipment and product research to produce equipment arrangements and designs, mechanical connections, and electrical power connections under the direction of design engineers. Minimum Qualifications: 2 year AA degree or an equivalence of education and experience, minimum of 5 to 11 years experience or equivalent technical/trade school degree or additional progressive experience.
Technical Writer/Editor	Researches, writes, edits and proofreads technical data for use in documents or sections of documents such as manuals, procedures and specification. Ensures technical documentation is accurate, complete, meets editorial and government specification and adheres to standards for quality, graphics, coverage, format and style. Minimum Qualifications: Bachelors degree in an applicable technical field or an equivalence of education and experience and 2 years related experience or an equivalent combination of education and experience.
Clerk/Administrative Assistant	Handles with minimum supervision and technical assistance standard clerical work related directly to the assigned subcontract release. Activities typically performed include typing, report preparation, and record-keeping. Minimum Qualifications: Graduation from high school and 2 years clerical experience.

**5.3 Personnel Security and Badging Requirements**

- A. For any on-site tour, a CHPRC-issued security identification badge is required for general site access. At least two working days prior to an approved site visit, the Contractor shall provide a completed Security Badge Request Form to the BTR for each person to be involved. The Security Badge Request Form is available for download from:

<http://chprc.hanford.gov/page.cfm/submittalsformsdocs>

Escorted Visitor Accountability Badges will be provided while touring the facilities as approved by the BTR.

- B. Contractor employees entering the Hanford Site will be required to submit to vehicle searches and shall not carry or transport prohibited articles.

**5.4 Personnel Site Access and Work Hours**

- A. The standard work hours for CHPRC personnel are between 6:00 AM and 4:30 PM, Monday through Thursday. Meetings with CHPRC and site access will be scheduled for standard work hours.
- B. The Contractor will have access to the job site based on the terms of the Contract.

## 6.0 ENVIRONMENTAL, SAFETY, HEALTH AND QUALITY REQUIREMENTS

As specified in the Contract General Conditions, the Contractor shall comply with and assist CHPRC in complying with environmental, safety, health, and quality (ESH&Q) requirements of applicable laws, regulations and directives. The Contractor shall perform work safely, in a manner that protects employees, the public, and the environment. The Contractor shall comply with the applicable elements PRC-MP-QA-599, *Quality Assurance Program*, and CHPRC's implementing procedures.

## 7.0 MEETINGS

The Contractor shall participate in a contract kickoff meeting, in quarterly performance review meetings, and any ad hoc contract management-related meetings as requested by CHPRC. The Contractor shall also participate in technical meetings and workshops as directed by the BTR in order to advance the project. Related to such meetings and workshops, the Contractor may be directed to prepare agendas, give presentations, support action tracking for technical issues, and prepare meeting minutes.

## 8.0 DELIVERABLES, MILESTONES, PROJECT CONTROLS, AND PERFORMANCE SCHEDULE REQUIREMENTS

### 8.1 Deliverables & Milestones

This SOW is for general technical support services to be directed by the CHPRC BTR on an ongoing basis to address evolving project needs. These services will result in various work products which will serve as inputs to deliverables prepared by CHPRC. The SOW does not pre-define formal Contractor written deliverables or performance milestones.

### 8.2 Project Controls

The Contractor shall submit the following project control deliverables:

*Monthly Status Reports.* The Contractor shall submit monthly performance reports. Specific report organization and content will be confirmed by the BTR after award. However, the Contractor should expect the status report may include: activities and achievements during the past month; cost performance data including actual cost of work performed (ACWP) and estimate at completion (EAC); and any identified issues / opportunities.

*Monthly Accruals.* The Contractor shall submit to CHPRC its cost accrual forecast for each month by the 15<sup>th</sup> of that month.

### 8.3 Performance Schedule

This release will be effective from the Contract Notice of Award through September 30, 2018, with an option to extend beyond this date based on project requirements.