

EXHIBIT B

STATEMENT OF WORK

Title: UCEP Integrated Cooling, Piping, Valve, and Instrumentation Systems

Requisition Number: 0040970

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List of Acronyms

Acronym	Definition
ACM	Asbestos Containing Material
CAP	Contractor Acquired Property
CM	Construction Manager
EPP	Environmentally Preferable Products
ES&H	Environmental Safety and Health
GFE	Government Furnished Equipment
GFP	Government Furnished Property
LAO	Los Alamos Operations at Los Alamos, NM
LO	Livermore Operations at Livermore, CA
M&O	Maintenance and Operation
MSTS	Mission Support and Test Services, LLC
NFO	Nevada Field Office
NLV	North Las Vegas Facility
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
PULSE	Principal Underground Laboratory Subcritical Experimentation
RCM	Radiological Control Manual
RGD	Radiation-Generating Devices
RPP	Radiation Protection Program
RSLA	Remote Sensing Lab at Andrews AFB, Maryland
RSLN	Remote Sensing Lab at Nellis AFB, North Las Vegas, NV
RWP	Radiological Work Permit
SME	Subject Matter Expert
SSSP	Site-Specific Safety Plan
STL	Special Technologies Lab at Santa Barbara, CA
STR	Subcontract Technical Representative

B-1 INTRODUCTION AND BACKGROUND

1. Introduction

The Nevada National Security Sites (NNSS) is a U.S. Department of Energy, National Nuclear Security Administration (NNSA) installation, operated by Mission Support and Test Services, LLC (MSTS or CONTRACTOR), comprising approximately 3,561 square kilometers (1,375 square miles) of federally owned land located in southeastern Nye County, Nevada. Located approximately 105 kilometers (65 miles) northwest of Las Vegas, Nevada, the NNSS is accessed from U.S. Highway 95, which roughly forms the southern boundary of the site.

The MSTS also operates the North Las Vegas Facility (NLV); the Remote Sensing Lab at Nellis AFB, North Las Vegas, NV (RSLN); the Remote Sensing Lab at Andrews AFB, Maryland (RSLA); Special Technologies Lab at Santa Barbara, CA (STL); Livermore Operations at Livermore, CA (LO); and Los Alamos Operations at Los Alamos, NM (LAO).

2. Background

At the Nevada National Security Site (NNSS), the PULSE facility is purpose-built to provide a unique underground experiment test bed for conducting highly sensitive Subcritical Experiments (SCE). The U1a Complex Enhancement Project (UCEP) is a mission-critical initiative involving the precise design, construction, and integration (including specialized mining) of highly custom structures, systems, and components (SSCs) directly required for the installation, precise operation, and continuous maintenance of advanced scientific equipment essential to SCEs. Within this demanding UCEP environment at the PULSE facility, the integrity and operational readiness of its support systems are paramount. These systems, encompassing specialized cooling water distribution units, manifolds, complex piping infrastructures, and highly sensitive specialty valves and instruments, are not standalone components but are critically interdependent. They collectively provide essential information, precise control, and integral overpressure protection, functioning as an integrated system whose seamless performance is non-negotiable for the safety, reliability, and successful execution of SCEs.

B-2 OBJECTIVE

MSTS requires the services of an experienced SUBCONTRACTOR to provide expertise who extends to the intricate demands of the UCEP environment, demonstrating a profound understanding of mission-critical systems. This encompasses for the end-to-end provision of critical components: including the design, procurement, and fabrication of three Cooling Water Distribution Units (CDWUs), nine associated distribution manifolds, and 33 associated Chilled Doors. This also entails providing all necessary specialty valves, flowmeters, level, pressure, differential pressure, and temperature sensors for various UCEP support systems. While MSTS's Project Management Office retains oversight of project controls, the inherent complexities of these interconnected systems, coupled with their critical role within the PULSE facility's SCE mission, necessitate a SUBCONTRACTOR with a proven, system-wide understanding and the capability to manage all facets of this integrated effort, rather than fragmented expertise.

B-3 DESCRIPTION OF WORK

The SUBCONTRACTOR shall provide technically qualified resources that work as a part of a team under the direct oversight of MSTS. SUBCONTRACTOR resources shall be responsible for independently planning, organizing, and performing a wide variety of non-hazardous specialized administrative/technical duties in support of the successful completion of goals and deliverables. Additionally, the SUBCONTRACTOR shall furnish all necessary labor, technical and professional services, supervision, materials, tools, equipment, consumables, and payment of any applicable taxes to perform all operations necessary and required to perform the scope as directed by MSTS.

Unless otherwise approved, the SUBCONTRACTOR shall work in accordance with MSTS subcontract requirements.

The work scope for this activity includes the resources, material and/or equipment necessary to accomplish the following MSTS activities:

i. **Integrated Design and Engineering:**

- a. **Design Integrated Systems:** Design the Cooling Water Distribution Units (CWDUs), associated manifolds, Chilled Doors, and all required connections, including necessary anchoring and lifting fixtures.
- b. **Develop Detailed Documentation:** Develop detailed drawings for each specialty valve and instrument line item (providing both native file and PDF formats).
- c. **Determine Component Requirements:** meticulously determine all components and subcomponents required for each instrument, valve, CWDU, manifold, and Chilled Door, ensuring full compliance with the cited 19-0-20X series, 19-0-102, and 15-0-012 series specifications and datasheets.
- d. **Obtain Approval for Equivalents:** Obtain prior MSTS written approval for any proposed equivalent components or substituted subassemblies to ensure full system compatibility.
- e. **Perform Sizing Calculations:** All sizing calculations, engineering, and design shall be performed and documented in accordance with the 19-0-20X and 19-0-102- specifications.

ii. **Comprehensive Procurement:**

- a. **Procure System Components:** Procure all necessary components, subcomponents, and materials for the CWDUs, manifolds, and Chilled Doors.
- b. **Procure Instrumentation Components:** Procure all necessary components and subcomponents for each specialty instrument and valve, including one extra set of any gaskets, O-rings, or other software required for assembly.
- c. **Procure Software:** Procure any required set-up computer programs or software for each affected instrument, valve, and CWDU.

iii. **Specialized Fabrication, Assembly, and Setup:**

- a. **Fabricate and Assemble Systems:** Fabricate and assemble all CWDUs, manifolds, and Chilled Doors.
- b. **Assemble Instrumentation:** Assemble each specialty instrument and valve, providing clear documentation of the major assembly steps.
- c. **Configure and Align:** Set up and align all instruments and valves precisely to their data sheet specifications and document the final setup configuration.

iv. **Rigorous Testing, Documentation, and Quality Control:**

- a. **Conduct Inspections and Tests:** Conduct all specified inspections and functional (shop) tests in accordance with Specifications 15-0-012, 19-0-102, and the 19-0-20X series to ensure proper operation of all components prior to shipment.
- b. **Document Software:** Document all software and firmware versions and, where possible, provide complete archive versions to MSTS.
- c. **Provide Submittals:** Provide all specified submittals as detailed in Specifications 15-0-012, 19-0-102, and the Submittal Register.
- d. **Label Components:** Label each instrument, valve, and major component as specified.

v. **Packaging, Shipping, and On-Site Support:**

- a. **Package for Shipment:** Upon successful testing and approval, package all instruments, valves, CWDUs, manifolds, Chilled Doors, and extra sets of gaskets, O-rings, or other software for shipment.
- b. **Ship to NNSS:** Ship all items to the NNSS, ensuring full compliance with the packaging and shipping requirements of Specification 15-0-012 (Section 1.6), 19-0-102, and the 19-0-20X series of

specifications (Section 1.4).

- c. **Provide Technical Advisory Support:** As requested by the CONTRACTOR, provide onsite technical advisory support to the MSTS installation team. This expert support is limited to verbal direction and guidance to ensure proper integration; it does not include physical "hands-on" installation work.

1. Task(s)

A. Design, Procurement, Fabrication, and Delivery of Critical Systems and Components:

- a. **Cooling Water Distribution Units (CWDUs):** Provide three (3) floor-mounted CWDUs, each comprising a heat exchanger, expansion tank, circulation pumps, internal piping, valves, associated instrumentation (control valves, relief valves, pressure and temperature sensors), and a control system. These CWDUs shall form complete, self-contained operating packages meeting all requirements of Specification 15-0-012 and 19-0-102, including but not limited to design, materials, fabrication, quality assurance, submittals, inspection, testing, documentation, and shipping requirements, with the intent that these CWDUs are commercially available pre-designed units. For each CWDU, the SUBCONTRACTOR shall confirm all design requirements and constraints, develop and obtain CONTRACTOR (MSTS) approval for final designs, procure all necessary assemblies/components/subcomponents, and acquire any required set-up computer programs/software. This process shall be formally documented through design submittal and approval records.
- b. **Cooling Water Manifolds and Chilled Doors:** Provide nine (9) commercially available manifolds (also called distribution headers), with internal piping, valves, and fittings that meet referenced specifications, P&IDs, and drawings. Provide a total of thirty-three (33) associated commercially available Chilled Doors (including MCD-M4-42U600-3, 42U600/3, Cools 7-14 KW, FULL PLC LOGIC/CTRL, BOTTOM FEED, and MCD-M4-42U600, 42U600/3, Cools 7-14 KW, FULL PLC LOGIC/CTRL, TOP FEED models, specific quantities as detailed in referenced specifications), each with internal piping and fittings that meet referenced specifications, P&IDs, and drawings. This includes providing thirty-three (33) MCD-IP: MOTIVAIR CHILLED DOOR AND CDU BACNET IP COMMUNICATION DEVICE, thirty-three (33): MOTIVAIR CHILLED DOOR A/B POWER FEED, C14 PLUG TYPE, twenty-two (22) MCD-PRESSURE: MOTIVAIR CHILLED DOOR PRESSURE CONTROL, and two (2) MCD-M4-M12-PARTS: MOTIVAIR SPARE PARTS FOR CHILLED DOOR MODELS M4-M12 (including 1 fan, 2 probes, 1 PCO display, and 1 valve). For these components, the SUBCONTRACTOR shall confirm all applicable design requirements and constraints, develop designs for any required integration elements, obtain CONTRACTOR approval for all designs, procure all necessary assemblies/components/subcomponents, and acquire any required set-up computer programs/software. This entire process shall be thoroughly documented.
- c. **Specialty Valves and Instrumentation:** Provide a comprehensive suite of specialty valves, flowmeters, level, pressure, differential pressure, and temperature sensors for various UCEP support systems, as identified by series numbers 01889-19-MAS-003 through -010. This involves determining the components/subassemblies required for each instrument/valve (or approved equivalent) from the datasheets, procuring all necessary items (including one extra set of any gaskets, O-rings, or other software required for assembly), procuring any required set-up computer programs/software for each affected instrument/valve, assembling, setting up/aligning instruments/valves to data sheet specifications, and performing functional shop testing. The SUBCONTRACTOR shall ensure all software firmware versions are documented and, where available, provide archive versions. The SUBCONTRACTOR shall confirm all design requirements and constraints, develop and obtain CONTRACTOR approval for designs, procure all necessary assemblies/components/subcomponents for each instrument/valve, and acquire any required set-up computer programs/software. This shall be

evidenced through comprehensive documentation including design validation reports and procurement records.

- d. **Ancillary Components:** Provide all CWDU-associated electrical, instrumentation, electronic components, wiring, Programmable Logic Controller (PLC) control systems, Variable Frequency Drives (VFD), junction boxes, and all interconnecting hoses and fittings (Simple connections for the piping (designed, procured, and installed by others) between the CWDUs and the manifolds and the manifolds and their cooling loads. Final lengths to be determined in engineering submittals, but not to exceed 1,000 feet overall length). Refer to 19-0-102 for Instrumentation and Control Requirements for Packaged Equipment. For all ancillary components, the SUBCONTRACTOR shall confirm design requirements and constraints, develop and obtain CONTRACTOR approval for designs, procure all necessary assemblies/components/subcomponents, and acquire any required set-up computer programs/software. Formal documentation of these steps, including relevant submittals and approval records, is required.
- i. **Assembly and Packaging:** Assemble CWDUs and associated systems into installation packages, and label each component as specified. Package all instruments/valves as specified, ensuring all components are labeled according to requirements. Refer to 19-0-102 for Instrumentation and Control Requirements for Packaged Equipment.
- ii. **Shipping and Spares:** Ship all packaged components to MSTS in accordance with Section 1.6 of 15-0-012, 19-0-102, and Section 1.4 of the 19-0-20X series of data sheet/specifications. Also, provide all equipment for site installation and component testing and any replacement parts for one year of service including seals, belts and any other part called out for repair or replacement in the MANUFACTURER's Operations and Maintenance (O&M) manual.

2. Acceptance Criteria

Work products and services provided shall meet all applicable MSTS procedures for control and review of work products and pertinent regulatory requirements, as required by this subcontract and incorporated provisions.

Further specific Acceptance Criteria applicable to this scope includes

Component and System Acceptance

Material and Component Quality: All delivered systems, components (including CWDUs, manifolds, Chilled Doors, instruments, and valves), and materials must be verifiably new, free of fabrication defects, and show no visible shipping damage upon delivery.

Compliance with Specifications: All work, components, and materials must be performed and provided to the standards cited in the applicable 19-0-102, 19-0-20X series, 15-0-012, and 16-0-005 specifications and data sheets. The SUBCONTRACTOR shall comply with either the ISO or SAE quality standard as specified, but not both.

Successful Factory and Shop Testing: All required factory acceptance tests (FAT) for CWDUs and functional shop tests for specialty instruments and valves must be successfully completed and documented, demonstrating full operational capability prior to shipment.

Documentation and Submittal Acceptance

Complete Submittal Package: All submittals required by the Submittal Register and Section 1.3 of all 19-0-20X series, 19-0-102, and 15-0-012 specifications must be provided, reviewed, and approved by MSTS.

Comprehensive Equipment Documentation: All furnished equipment must be accompanied by comprehensive documentation, including approved final design drawings, calculations, manufacturer's Operation & Maintenance (O&M) manuals, technical specifications, and all quality inspection and test reports.

Design Milestone Approval: The 60%, 90%, and 100% Preliminary Design Reports must meet all technical and formatting requirements stipulated in Specification 15-0-012 and this SOW and receive final approval from MSTS.

Installation Support Acceptance:

Support: The SUBCONTRACTOR shall have provided qualified engineering and technical advisory support for the installation of all delivered equipment, as requested by the CONTRACTOR.

B-4 PERSONNEL REQUIREMENTS

1. Training

The SUBCONTRACTOR and its personnel will be required to attend the following site-specific training in the course of this work scope.

NOTE: Site access may be delayed until training is complete or renewed. The SUBCONTRACTOR shall contact the Subcontract Technical Representative (STR) to coordinate scheduling of training. See Section B-6, item 4, *Badging*.

DESCRIPTION	DURATION	FREQUENCY
NNSS Site Access Safety Orientation (1E00W102)	0.5 Hours	One time only

The SUBCONTRACTOR shall maintain training records for their personnel and ensure all required training is completed prior to start of work. Additionally, as soon as practical after award, the SUBCONTRACTOR shall submit a badge request for personnel required under the various releases so that they may be scheduled for training and medical evaluation so that crews will be eligible for work on site.

2. Qualifications, Licensing and Certifications

The SUBCONTRACTOR shall ensure that its personnel meet and maintain the appropriate training, qualifications, licensing, and certification requirements to perform the work as specified in this Statement of Work (SOW). The SUBCONTRACTOR shall provide appropriately trained and qualified staff to perform the type of work in accordance with the specifications, exhibits, and other documents, which are made by reference, and part of this SOW. Additionally, the SUBCONTRACTOR shall perform work in accordance with the specifications, exhibits, and other documents, which are made by reference, and are a part of the SOW.

In order to determine if the SUBCONTRACTOR is qualified to perform the scope of work as outlined, the SUBCONTRACTOR must have the following qualifications:

- SUBCONTRACTOR shall have a minimum of ten (10) years of experience with design and build of this type of work.

3. Key Personnel Qualifications

The Subcontractor shall submit a resume along with any documented applicable qualifications/certifications for approval prior to the Subcontractor being authorized to proceed with work. The Subcontractor shall submit for approval any changes in the Key Personnel representative assignments for approval.

Required two years' experience with NNSA sites or other Federal Government subcontracting. Ten years' experience with complex chilled water systems.

B-5 TECHNICAL REQUIREMENTS

The SUBCONTRACTOR shall perform in accordance with the terms and conditions of this contract, MSTS internal policies and procedures, and quality assurance provisions, including safety programs, laws, orders, permits, rules, confidentiality of information and intellectual property safeguards. In addition, the SUBCONTRACTOR shall perform work in accordance with the national codes, specifications, drawings, exhibits, and other documents, which by reference are made a part of the SOW.

Inspection of the work required by governmental agencies shall be arranged by the STR. The SUBCONTRACTOR shall request inspections through the STR, after the work is ready for inspection.

1. Specifications

SPEC NUMBER	TITLE	REV	PAGES
13-0-360	Specification for Grouting Equipment and Structural Supports	0	18
13-0-511	Erection of Structural Steel and Miscellaneous Metals	0	26
15-0-012	CWDU and Manifolds Specification	0	33
16-0-001	Piping Material Specification	4	24
16-0-002	Piping Protective Coatings Specification	3	27
16-0-003	Valve Specification	2	23
16-0-004	Shop Piping Specification	0	23
16-0-005	Field Fabrication Specification	1	41
16-0-006	Pipe Welding Specification	0	19
16-0-007	Thermal Insulation Specification	0	40
16-0-008	Pipe, Fittings, and Flanges Specification	0	17
16-0-009	Pipe Supports Specification	1	21
17-0-107	Variable Frequency Drive Specification	0	30
17-0-110	Low Voltage Motor Specification	0	29
17-0-400	Electrical Requirements for Packaged Mechanical Equipment	0	30
19-0-102	Instrumentation and Control Requirements for Packaged Equipment	0	54
19-0-202	Control Valves Datasheets	0	47
19-0-203	On-Off Valve Datasheets	0	52
19-0-204	Pressure Relief Valves Datasheets	0	51
19-0-205	Pressure, Differential Pressure, Level and Temperature Transmitters Datasheets	0	116
19-0-206	Vortex Flowmeters Datasheets	0	49
19-0-207	Pressure Gauges Datasheets	0	16
19-0-208	Leak Detector Switches Datasheets	0	30
19-0-214	Control Narrative Process Utility Systems	0	50
21-0-001	Site Conditions Specification	0	10
01889-19-MAS-003	On-Off (Gate) Valves (MOV) MAS	0	3
01889-19-MAS-004	Pressure Relief Valves MAS	0	3
01889-19-MAS-005	Thermal Relief Valves MAS	0	3

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01889-19-MAS-006	Pressure, DP, Level, Temp Transmitters MAS	0	7
01889-19-MAS-007	Vortex Flowmeters MAS	0	3
01889-19-MAS-008	Pressure Gauges MAS	0	3
01889-19-MAS-009	Leak Detectors MAS	0	3
01889-19-MAS-010	Control Valves (MOV) MAS	0	3

2. Drawings

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01889-21-RPT-003	System Description for the U1A ECSE Chilled Water (ECW) System	0	17
01889-21-RPT-005	System Description for the U1A Service Air System (SA)	0	11
<u>Piping and Instrumentation Diagrams</u>			
01889-DA-6200A	U1a Complex - UCEP Subproject 020 Service Air System Process Flow Diagram	0	1
01889-DA-6200B	U1a Complex - UCEP Subproject 020 Service Air System Mass & Energy Balance Process Flow Diagram	0	1
01889-DA-6214	UCEP Service Air Compressors and Wet Air Receiver	0	1
01889-DA-6215	UCEP Service Air Filter Dryer Package and Service Air Receiver	0	1
01889-DA-6216	UCEP Service Air Supply Header	0	1
01889-DG-6201	U1a COMPLEX UCEP - SUBPROJECT 020 GAS MANAGEMENT SYSTEM VCS AND PFGC	1	1
01889-DG-6200	U1a Complex - UCEP Subproject 020 Gas Management System - Post Execution Vacuum Cart Piping & Instrumentation Diagram	1	1
01889-DW-6201	UCEP Common Cooling Water Pumps	0	1
01889-DW-6202	UCEP CWS3 Heat Exchanger	1	1
01889-DW-6203	UCEP CWS3 Supply Return Headers	1	1
01889-DW-6204	UCEP CWS4 Pump	0	1
01889-DW-6205	UCEP CWS4 Heat Exchanger	1	1
01889-DW-6206	UCEP CWS4 Filter	0	1

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01889-DW-6209	UCEP CWS1 Heat Exchanger	0	1
01889-DW-6210	UCEP CWS1 Supply Return Headers	1	1
01889-DW-6212	UCEP CWS2 Heat Exchanger	0	1
01889-DW-6213	UCEP CWS2 Supply/Return Headers	1	1
01889-DW-6220	UCEP ECSE Chilled Water Supply Return Headers	1	1
01889-DW-6221	UCEP Secondary Cooling Water - ECSE Area Server Racks	0	1
01889-DW-6222	UCEP Secondary Cooling Water - Zero Room	1	1
01889-DW-6223	UCEP Secondary Cooling Water - NDSE and SCE Room	0	1
01889-DW-6224	UCEP Secondary Cooling Water - Manifold and Valve Table	0	1
04618-DA-6246	Service Air ASD Header	0	1
04618-DW-6240	CWS1 ASD Headers	1A	1
04618-DW-6241	CWS1 ASD Connection Details	1A	1
04618-DW-6242	CWS2 East ASD Headers	1A	1
04618-DW-6244	CWS4 East ASD Headers	1A	1
04618-DW-6247	<i>CWS2 East ASD Connection Details Sheet 1</i>	1A	1
04618-DW-6248	CWS2 East ASD Connection Sheet Details 2	1A	1
04618-DW-6249	CWS4 East ASD Connection Details Sheet 1	1A	1
04618-DW-6250	CWS4 East ASD Connection Details Sheet 2	1A	1
01889-GI-0200	U1a Complex - UCEP Subproject 020 UCEP Process and HVAC Drawing List	0	1
01889-GI-0201	Symbols - UCEP P&ID Equipment and Piping	0	1
01889-GI-0202	Symbols - UCEP P&ID Instrument Symbols & Valve Details	0	1
01889-GI-0203	Legend - UCEP P&ID Tagging, Legends and Acronyms	0	1
01889-GI-0204	UCEP P&ID Control Valve Detail Legend	0	1
04618-GI-0211	P&ID Equipment and Piping - Symbols and Legend	0	1
04618-GI-0212	P&ID Equipment Symbols & Valve Details - Symbols and Legend	0	1
04618-GI-0213	P&ID Tagging, Legends & Acronyms - Symbols and Legend	0	1

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01889-M-4201	U1a UNDERGROUND - U1a.104/108 EQUIPMENT ARRANGEMENT	0	1
01889-M-4202	U1a.102 EQUIPMENT ARRANGEMENT	0	1
01889-M-4203	U1a.100 AND 103 EQUIPMENT ARRANGEMENT	0	1
01889-M-4204	U1a.100 AND ZERO ROOM EQUIPMENT ARRANGEMENT	1	1
01889-M-4205	U1a.102D and 106B EQUIPMENT ARRANGEMENT	0	1
<u>Piping Plans and Sections</u>			
01889-M-1003	Utility Manifold Plan	0	1
01889-M-4300	U1a Chilled and Cooling Water System - Overall Piping Plan	0	1
01889-M-4301	Piping Plan - Underground - U1a.108	0	1
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01889-M-4303	Piping Plan - Underground - U1a.108	0	1
01889-M-4304	Piping Plan - Underground - U1a.108	0	1
01889-M-4305	Piping Plan - Underground - U1a.108	0	1
01889-M-4306	Piping Plan - Underground - U1a.102,108.	2	1
01889-M-4308	U1a.102 PIPING PLAN - UPPER	1	1
01889-M-4309	Piping Plan - Underground - U1a.102 - Upper	1	1
01889-M-4310	Piping Plan - Underground - U1a.102 and U1j Utility Shaft - Upper	1	1
01889-M-4311	Piping Plan - Underground - U1a.102 - Upper	1	1
01889-M-4312	Piping Plan - Underground - U1a.102 - Upper	1	1
01889-M-4313	Piping Plan - Underground - U1a.102,102D	3	1
01889-M-4314	Piping Plan - Underground - U1a.102	3	1
01889-M-4315	Piping Plan - Underground - U1a.100/102	3	1
01889-M-4316	Piping Plan - Underground - U1a.100	2	1
01889-M-4317	Piping Plan - Underground - U1a.100	1	1
01889-M-4318	Piping Plan - Underground - U1a.100	2	1
01889-M-4319	Piping Plan - Underground - U1a.100 (Zero Room)	0	1
01889-M-4320	Piping Plan - Underground - U1a.100 (Zero Room)	1	1
01889-M-4321	Piping Plan - Underground - U1a.102 - Lower	1	1
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01889-M-4325	Piping Plan - Underground - U1a.102 - Lower	1	1
01889-M-4326	Piping Plan - Underground - U1a.108	0	1
01889-M-4327	Piping Plan - Underground - U1a.108	1	1
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01889-M-4331	Piping Plan - Underground - U1a.103	1	1
01889-M-4350	PIPING SECTION - U1a.108	0	1
01889-M-4351	PIPING SECTION - U1a.104,108	1	1
01889-M-4352	PIPING SECTION - U1j. BORE HOLE	0	1
01889-M-4353	PIPING SECTION - U1a.102	0	1
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01889-M-4355	PIPING SECTION - U1a.102	0	1
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01889-M-5281	Underground - U1a.104,108 - Tie Point Plot Plan	0	1
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04618-P-4400	CWS1 - PIPING PLAN	1	1
04618-P-4401	CWS BRANCH SECTIONS	1	1
04618-P-4402	U1a. 104 SOUTH CWS PLAN	2	1
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04618-P-4404	SOUTH CWS SECTIONS	1	1
04618-P-4405	SOUTH CWS SECTIONS	2	1
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<u>Lists</u>			
01889-16-LST-001	Line List	1	8
01889-16-LST-002	Valve List	3	32
01889-16-LST-003	Piping Specialty Item List	1	4

DRAWING NUMBER	TITLE	REV	PAGES
01889-16-LST-005	SUBSURFACE SA ISOMETRIC LIST	2	4
01889-16-LST-006	SUBSURFACE ECW ISOMETRIC LIST	4	6
01889-16-LST-007	U1a Complex - UCEP Subproject 020 - Subsurface CCW Isometric List	8	17
01889-16-LST-008	U1a Complex - UCEP Subproject 020 - Subsurface CWS4 Isometric List	4	6
01889-16-LST-009	Sub Surface Compressed Air List	0	3
01889-16-LST-010	Subsurface UW Isometric List	0	3
04618-16-LST-001	Piping Line List	1	16
<u>ARCHITECTURAL</u>			
01889-A-0200	U1a Complex Plan Equipment Arrangement Key Plan	1	1
01889-A-0201	Plot Plan	1	1
01889-A-0202	Key Plan	1	1
01889-A-1201	GA Drift Overall Floor Plan	0	1
04618-A-0300	U1a. 104 - SOUTH PIPING PLAN	2	1
04618-A-0301	U1a. 104 - NORTH PIPING PLAN	1	1
04618-A-0302	TIE POINT DRAWING	1	1
04618-A-0303	SA NORTH PLANS	1	1
Design Criteria Document			
01889-DCD-04	Fluid and Gas Systems Design Criteria Document	2	17

B-6 PLACE OF PERFORMANCE

1. Delivery Location

Delivery location will be Nevada National Security Site Receiving Warehouse 160 Mercury, NV 89023

2. Work Location

Work will be performed at Subcontractor's facility (type in address):

SUBCONTRACTOR to specify facility address upon award.

For any work performed on the NNSS site or in an MSTs controlled facility, the provision of the On-Site services shall apply to this subcontract.

Work performed outside normal operating hours shall be coordinated and/or approved through the STR and/or the Procurement Specialist prior to performing the work.

3. Site Access and Work Hours

MSTS personnel at the NNSS work a standard 4/10 schedule. The standard work week consists of ten (10) hours of work between 6:00 a.m. and 4:30 p.m. with one-half hour designated as an unpaid period for lunch, Monday through Thursday.

Onsite work required to be performed outside normal operating hours shall be coordinated and/or approved through the STR and/or the Procurement Specialist prior to performing work.

MSTS observes ten (10) Federal Holidays per year and four (4) weeks of non-productive time in December/January. The four (4) weeks of nonproductive time includes two (2) weeks of craft furlough days (end of calendar year holiday period) and two (2) weeks of block training at the PULSE facility. In addition, the facility may experience additional outages or unavailability on average of approximately forty (40) non-productive days per fiscal year for PULSE.

4. Badging

Any onsite work shall be coordinated with the STR in accordance with the SOW and site-specific training requirements. The SUBCONTRACTOR shall wear a MSTS issued security badge identifying themselves. The SUBCONTRACTOR shall wear a Contractor issued security badge identifying themselves. A minimum of two (2) working days advance notice is needed for site badging. SUBCONTRACTOR employees shall be required to submit to vehicle searches and not personally carry or transport certain prohibited articles ([ProhibitedControlledArticlesPolicy.pdf](#)).

B-7 CLEARANCE REQUIREMENTS

The following access authorization or clearance requirements are required.

1) Check all that apply:

- ☒ No security clearance; unclassified work
- ☐ DOE L
- ☐ DOE Q
- ☐ HSPD-12 PIV Credential

2) If applicable, add any or all parts of the following statement security qualifications:

- ☐ The SUBCONTRACTOR shall have the ability to obtain a U.S. Department of Energy (DOE) facility security clearance and have personnel capable of obtaining a Q-type or L-type security clearance.
- ☐ Q- or L-type security clearance is required for all SUBCONTRACTOR personnel having access to classified information or special nuclear material when performing such work.
- ☐ A corresponding level of security clearance from another federal agency may be applicable if approved by the MSTS and DOE.
- ☒ N/A

B-8 SPECIAL REQUIREMENTS

1. Government Assets

Use of Government Vehicles

- | | |
|-------------------------------------|---|
| ☒ | There is NO anticipated need for any SUBCONTRACTOR employees to use a Government-furnished vehicle in the performance of this SOW. The SUBCONTRACTOR's employees, therefore, are specifically prohibited from driving any Government-furnished vehicles under the performance of this SOW unless this SOW is formally modified by the parties and the employee(s) will present a valid driver's license to the STR for review. |
| ☐ | One or more SUBCONTRACTOR employees will have access to Government-furnished vehicles while performing this SOW. |

Government Property

- | | |
|-------------------------------------|---|
| ☒ | Government Property NOT anticipated to be furnished to or acquired by the SUBCONTRACTOR under this SOW. |
| ☐ | Pursuant to Federal Acquisition Regulation (FAR) 52.245.1 – Government Property, the following Government-owned property will be furnished to the SUBCONTRACTOR. The SUBCONTRACTOR shall be responsible for managing the Government-Furnished Property (GFP) below and/or Contractor-Acquired Property (CAP) as required in accordance with FAR 52.245-1. A list of the property to be furnished to the SUBCONTRACTOR can be found in Appendix Choose an item, along with any special technical and/or handling instructions. |

2. Quality Assurance (QA)

The work as described has been identified to be.

- | | |
|--------------------------|--|
| ☐ | <p>SAFETY CLASS/SAFETY SIGNIFICANT SERVICES AND/OR COMMODITIES (NUCLEAR/RADIOLOGICAL)</p> <p>This PO is related to items or services used in support of the nuclear and/or radiological mission(s) of the Nevada National Security Site, therefore:</p> <p>The SUBCONTRACTOR shall implement and maintain a Quality Assurance (QA) program in accordance with at least one the following quality assurance criteria and requirements:</p> <ul style="list-style-type: none"> ASME NQA-1 (2015) quality assurance requirements for nuclear facility applications ASME NQA-1 (2008 with 2009 addenda) quality assurance requirements for nuclear facility applications Equivalent program authorized in writing by the contractor's quality assurance organization <p>In addition, the SUBCONTRACTOR shall be responsible for:</p> <p>Price Anderson Amendments Act (PAAA)</p> <p>The item or service identified in the purchase order agreement is being procured by a contractor to the Department of Energy (DOE)/National Nuclear Security Administration (NNSA). This item or service is intended to be used in the performance of activities that (1) prevent or mitigate radiological or harm to the worker, the public or the environment or (2) provide a healthful and safe workplace for DOE/NNSA contractor personnel. Therefore, the SUBCONTRACTOR is responsible for assuring that the items or</p> |
|--------------------------|--|

	services provided under this purchase agreement meet the stated requirements.
☒	<u>GENERAL SERVICES AND/OR COMMODITIES</u> This subcontract is for items or services that support the mission(s) of the Nevada National Security Sites, therefore: SUSPECT/COUNTERFEIT ITEMS REQUIREMENTS: The SUBCONTRACTOR will take positive measures to ensure that only new, unused equipment/material from acceptable sources is provided under this subcontract. Notwithstanding any other provisions of this subcontract, should any suspect/counterfeit items or components be found within or on this equipment during contractor receipt inspection, SUBCONTRACTOR shall, at its expense, promptly replace such items or components. These requirements shall be flowed down to all levels of subcontractors as they pertain to this procurement activity.

B-9 ENVIRONMENTALLY PREFERABLE PRODUCTS

MSTS is required by the U.S. Department of Energy to purchase Environmentally Preferable Products (EPP) (also known as green or sustainable purchasing) and are also required to flow those procurement requirements to their SUBCONTRACTOR. When designing materials and/or supplying materials to be used onsite as part of a subcontract SOW, those materials must meet these same requirements.

The following is a list of EPP types that must be used if they are available:

- **Products with Recycled Content.** MSTS supports efforts that reduce or eliminate environmental hazards, conserve environmental resources, minimize life-cycle cost and liabilities. Towards the end, the acquisition cycle is viewed as an important key in understanding what is brought onto the Site as well as identifying what can be reused/recycled. Focus is directed on recycled-content, biobased-content, ozone-depleting substances, and other environmental impacts. Specific additional clauses are included in this solicitation that address potential requirements and preferences based on the nature of the item being considered for purchase.
- **Water Efficient Plumbing Products.** When purchasing commercially available, off-the-shelf water consuming products, products must meet EPA's WaterSense standards (<http://www.epa.gov/watersense>).
- **Non-Toxic or Less Toxic Alternatives**
- **Green Certified Products.** (e.g., Design for Environment, Green Seal)
- **Bio-Based Products.** MSTS will give preference to acquiring Department of Agriculture designated biobased products. For more information to this program, see www.biopreferred.gov.
- **Energy Efficient Products.**
 - EPA Energy Star® When purchasing commercially available, off-the-shelf energy-consuming products, products must be Energy Star rated (www.energystar.gov).
 - Federal Energy Management Program designated products, When purchasing commercially available, off-the-shelf energy-consuming products, products must use no more than one watt of standby power as defined and measured by International Electrotechnical Commission (IEC) code

62301 or otherwise met [FEMP specifications](#) for low standby power consumption. If FEMP has not specified a standby power level for a product category, the item shall be the lowest standby power consumption available.

- **Energy Efficient Electronics.** When purchasing the following products, EPEAT ratings will apply:
 - Desktop and Notebook Computers – must meet the EPEAT silver rating or higher
 - Displays, Monitors, Integrated Desktop Computers, Workstation Desktops, Thin Client, Workstation Notebooks, and/or Tablet Notebooks – must meet the EPEAT silver rating or higher
 - Fax Machines, Multifunction Devices, and Printers – must meet the EPEAT bronze rating or higher
 - Copiers and Digital Duplicators – must meet the EPEAT silver rating or higher
- **Reuse of Leased IT Electronic Equipment** In accordance with DOE Order 436.1, Departmental Sustainability, MSTS is striving to reduce or eliminate environmental hazards, conserve environmental resources, minimize life-cycle cost and maximize operational sustainability through the incorporation of electronics stewardship practices thereby minimizing the economic and environmental impacts of managing toxic by-products and hazardous wastes generated in the conduct of site activities. Therefore, MSTS requires that at the end of the lease period, the equipment is to be reused, refurbished, donated, or recycled using environmentally sound management practices.

B-10 MEETINGS

After subcontract award, a Subcontract Kickoff Meeting may be requested, which may be a conference call, an internet meeting, or a meeting to be held at MSTS. The time, date, and agenda for the meeting will be provided to the SUBCONTRACTOR by MSTS.

The SUBCONTRACTOR shall interface with various MSTS (and other) organizations through MSTS' Procurement Specialist (or designated Subcontract Technical Representative (STR) for in-scope work), as required, or at points and frequency determined by the Procurement Specialist.

MSTS will issue meeting notices and prepare an agenda and minutes for each meeting addressed in this Section. When applicable, minutes will identify action items, assigned actioner, and due dates.

The purpose of the meetings is the exchange of work-related information. The person or persons designated by the SUBCONTRACTOR to attend all meetings shall have all required authority to make decisions and commit SUBCONTRACTOR to technical decisions made during meetings.

FREQUENCY	DURATION	TITLE	DESCRIPTION / PURPOSE
One-time	2 hours	Post Award Kick-OFF meeting	Sub-contract meet/greet with Subcontractor
One-time	4 hours	Schedule Meeting	Review schedule
Weekly	1 hour	Status	Sub-contract status meeting with MSTS representatives (PM, Eng, STR, PR)
TBD	TBD	Design Review Mtg	Review submitted design

B-11 SUBMITTALS

If the SOW requires the submittal of SUBCONTRACTOR Information, the following apply:

- The following items shall be submitted to the submittal e-mail address(es) as indicated on Appendix A , *Submittal Register*, identifies deliverables due during the execution of this subcontract and the recipient.
- The SUBCONTRACTOR shall include the Procurement Specialist and STR on the transmittal.
- Subcontractor information shall be submitted in either hard copy or electronic format (If electronic, it must be viewable using either Microsoft® Windows®, Microsoft® Office, or Adobe® Acrobat® software).
- Submittals should consist of any information, documentation, data, etc. which will require review/approval or used as verification or acceptance of work completed.

B-12 DELIVERABLES

1. Component-Specific Technical Deliverables

The following technical data packages are required for their respective component groups.

A. Cooling Water Distribution Units (CWDUs) and Manifolds:

- i. **Design and Engineering Data:**
 1. All design reports (60%, 90%, 100% Preliminary Design) as specified in Section B-3.
- ii. **Quality and Manufacturing Data:**
 1. Comprehensive Inspection and Test Plan (ITP), including Factory Acceptance Test (FAT) procedures for the CWDUs.
- iii. **Component and Material Data:**
 1. Manufacturer's Operation & Maintenance (O&M) Manuals for all furnished equipment.
- iv. **Certification and Test Reports:**
 1. Final FAT and inspection reports.
 2. All required certifications and test reporting as specified in the "Description of Work."

B. Specialty Valves and Instrumentation:

- i. **Engineering and Design Data:**
 1. All relevant design and sizing Calculations.
 2. Drawings, including General Arrangement, Pneumatic Schematics, and Wiring Terminations.
- ii. **Quality and Manufacturing Data:**
 1. Quality Assurance (QA) Manual.
 2. Welding Procedures and associated Personnel Qualifications (if applicable).
 3. A comprehensive Inspection and Test Plan (ITP), including Factory Acceptance Test (FAT) procedures.
- iii. **Component and Material Data:**
 1. Manufacturer Data Sheets for all subcomponents (e.g., Valve Body and Bonnet, Actuator, Positioner, Position Feedback, Gaskets/Seals, All Adapters).
 2. Certified Material Test Reports (CMTRs).
- iv. **Certification and Test Reports:**

1. Certificates of Conformance for all components.
2. Certificate of Calibration for all instrumentation.
3. Final FAT and inspection reports.
4. Sound Pressure Level test data, if applicable.

2. Final Project and Closeout Deliverables

- i. **Punch List Support:** The SUBCONTRACTOR shall actively participate in the project turnover process by assisting the Subcontract Technical Representative (STR) and Construction Manager (CM) in developing and completing the final project punch list. The SUBCONTRACTOR must notify the STR and CM no later than one (1) day after completing any assigned punch list item(s).

B-13 APPENDIX

APPENDIX NUMBER	TITLE	REV	PAGES
Appendix A	Submittal Register	Rev 0	5

The SUBCONTRACTOR shall meet the required schedule and provide the documents specified in accordance with the following submittals.

APPENDIX A SUBMITTAL REGISTER

Section A: Purchase Order/Subcontract Information					
Subcontractor Name: TBD			SOW Title: UCEP Integrated Cooling, Piping, Valve, and Instrumentation Systems		
Purchase Order and Release Number: TBD			Requisition Number: REQ-0040970		
Section B: Submittal Delivery Requirement					
Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; ClarkVL@nv.doe.gov and Subcontract Technical Representative; thompsCD@nv.doe.gov					
Section C: Submittal Requirement Details					
NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
001.	Subcontract Schedule	Exhibit B-1,4.i, Exhibit B-1,4.iv, & B-4B-12-1a	No later than 10 calendar days from date of award, updated biweekly	Proc Spec	Prior to the start of work
002.	General Assembly and Fabrication Drawings	Section 1.5 Specification 15-0-012	Per Specification 15-0-012 timelines	STR	
003.	Component Cutsheets	Section 1.5 Specification 15-0-012	Per Specification 15-0-012 timelines	STR	
004.	Calculations	Section 1.5 Specification 15-0-012	Per Specification 15-0-012 timelines	STR	
005.	CMTRs	Section 1.5 Specification 15-0-012	Per Specification 15-0-012 timelines	STR ENG	
006.	Test Reports	Section 1.5 Specification 15-0-012	Per Specification 15-0-012 timelines	STR ENG	

APPENDIX A SUBMITTAL REGISTER

Section A: Purchase Order/Subcontract Information

Subcontractor Name:	<i>TBD</i>	SOW Title:	UCEP Integrated Cooling, Piping, Valve, and Instrumentation Systems
Purchase Order and Release Number:	<i>TBD</i>	Requisition Number:	<i>REQ-0040970</i>

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: *Procurement Specialist; ClarkVL@nv.doe.gov and Subcontract Technical Representative; thompsCD@nv.doe.gov*

Section C: Submittal Requirement Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
007.	O&M Manuals	<i>Section 1.5 Specification 15-0-012</i>	Per Specification 15-0-012 timelines	STR ENG	
008.	Spare Parts Lists	<i>Section 1.5 Specification 15-0-012</i>	Per Specification 15-0-012 timelines	STR ENG	
009.	Warranties	<i>Section 1.5 Specification 15-0-012</i>	Per Specification 15-0-012 timelines	STR ENG	
010.	As-Built Drawings	<i>Section 1.5 Specification 15-0-012</i>	Per Specification 15-0-012 timelines	STR ENG	
011.	Certificate of Conformance	<i>Section 1.5 Specification 15-0-012</i>	Per Specification 15-0-012 timelines	STR ENG	
012.	Rolling Action Item Log	<i>Exhibit B-1, 4.ii</i>	Per approved SUBCONTRACTOR Schedule	STR	
013.	Test Plans	<i>Exhibit B-3, 2.iii</i>	IAW Project Schedule	STR ProcRep	

APPENDIX A SUBMITTAL REGISTER

Section A: Purchase Order/Subcontract Information

Subcontractor Name:	<i>TBD</i>	SOW Title:	UCEP Integrated Cooling, Piping, Valve, and Instrumentation Systems
Purchase Order and Release Number:	<i>TBD</i>	Requisition Number:	<i>REQ-0040970</i>

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: *Procurement Specialist; ClarkVL@nv.doe.gov and Subcontract Technical Representative; thompsCD@nv.doe.gov*

Section C: Submittal Requirement Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
014.	Test Procedures	<i>Exhibit B-3, 2.iii</i>	IAW Project Schedule	STR ProcRep	
015.	Quality Control Inspection Report (or acceptable alternative)	Exhibit B-1, 3.i	IAW Project Schedule	STR ProcRep	
016.	Close-out Documentation	Exhibit B-1, 4.ii & Exhibit B-12	IAW Project Schedule	STR ProcRep	

NLT = No Later Than

NTP = Notice to Proceed

TLO = Transmittal Letter Only