

"QA N/A"
WBS 1.2.6.1.1

ESF TEST COORDINATION OFFICE WORK PLAN

PERCHED-WATER TESTING IN THE RAMPS, MTL
DRIFTS, AND ALCOVES

Work Plan ID: WP 92-20B, Rev 08/25/94
(Administrative Only)

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PERCHED-WATER TESTING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

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PERCHED-WATER TESTING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

This work plan (WP) implements and operates within the constraints and requirements established in Test Planning Package (TPP) 92-10, TPP 92-11, TPP 92-12, and TPP 92-14, Job Package (JP) 92-20A, JP 92-20B, JP 92-20C, and JP 92-20E and guides field interactions. Sampling Plan (SP) 92-20C is consistent with this WP and provides further instructions for sampling. SP 92-20C provides a consolidated list of sample selection criteria, expected sample dimensions and sampling frequencies, sample packaging and storage needs, as well as instructions for description of sample orientation and other special instructions and constraints.) This WP will be revised as necessary by the Test Coordination Office (TCO) and changes communicated to all affected participants for concurrence.

This WP is administrative only and has been prepared to facilitate work to be conducted in the field. This plan has been reviewed (1) to assure that it is fully consistent with the controlled requirements basis represented in the TPPs and JPs listed above and (2) to assure that it contains no quality-affecting requirements. The WP does provide a planned method to meet requirements in the TPPs and JPs listed above. Any anticipated deviations from this plan should be brought to the immediate attention of the TCO. The TCO will assure that planned deviations are evaluated to determine if they are consistent with the requirements basis. If so, the TCO will give direction to proceed with the work and document the deviation. If the deviation is not consistent with the requirements basis, work will not proceed until inconsistencies are resolved.

The WP is descriptive in nature and is not a work instruction. No quality-affecting work will be done to this plan. All quality-affecting requirements, instructions, controls, and records are contained in the TPPs and JPs listed above; these documents must be used as the basis for implementation of the quality-affecting portions of this work. All quality-affecting work will be conducted and documented in accordance with approved procedures or scientific notebooks or appropriate provisions of the affected organization's quality program.

The following activities will be performed in support of this test:

1. PROJECT SCHEDULING AND COORDINATION

- 1.1 The U.S. Department of Energy (DOE) Field Test Coordinator (FTC), the TCO, the Civilian Radioactive Waste Management System Management & Operating (CRWMS M&O) Contractor Construction Manager (CM), Reynolds Electrical and Engineering Company, Inc. (REECO) Construction Department Manager (CDM), and the U.S. Geological Survey (USGS) Perched-Water Principal Investigator (PI), or their representative will mutually review and accept the WP and any subsequent TCO revision and will mutually agree upon a tentative schedule, implementation methods, and representative or approval authority for the work described below.

Concurrence:

USGS PI	<u>Daniel J. Soeder</u>	Date	<u>8/24/94</u>
FTC	<u>W. A. Kirdley</u>	Date	<u>8/25/94</u>
TCO	<u>Richard D. Kowal</u>	Date	<u>8/24/94</u>
CM	<u>Michael Kemerer</u>	Date	<u>8/24/94</u>
CDM	<u>M. Kowal</u>	Date	<u>8/24/94</u>

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The TCO Field Test Representative will distribute copies of the signed WP to appropriate individuals in organizations with defined work scope.

2. WATER SAMPLING

This WP is limited to perched-water testing conducted by USGS PIs. The activity is aimed at detecting the occurrence and delineating the lateral and vertical extent of perched-water zones (if encountered) during excavation of the Exploratory Studies Facility (ESF), to identify perching mechanism(s), and to sample the perched water for chemical analysis. Because there is significant uncertainty regarding the likelihood of encountering perched water, the perched-water test is categorized as a "contingency test" and will be conducted when and if perched water is detected. However, any apparently natural water source should be treated as a potentially perched system until an assessment can be made by the USGS to the contrary. Any evidence of hydrologic flow along major structural features or along contacts (whether the water is truly perched or part of a natural and continuous fluid pathway) should be sampled under the perched-water test.

2.1 WATER DETECTION AND NOTIFICATION

Construction personnel may detect an apparently natural water source prior to installation of rockbolts at the Tunnel Boring Machine (TBM) tail shield or during alcove construction. USGS/USBR geologic mappers may observe water influx at the mapping platform or during alcove mapping. Any apparently natural source of water (whether free-flowing or a damp, highly saturated zone) should be brought to the attention of the TCO as soon as practicable. The TCO will notify the PI, USGS Testing Coordinator, and USGS/U.S. Bureau of Reclamation (USBR) mappers (if possible) of the water occurrence.

2.2 WATER ZONE EVALUATION

The TCO, USGS representative or PI, and USGS/USBR geologic mappers (as available) will examine the water occurrence, consider construction impacts, and determine the need to sample. Unless precluded by safety considerations and as necessary to sample, the TCO will (1) direct the Constructor to stop any work that could adversely affect the ability to sample and (2) will coordinate sampling. If a sample location is identified, either for immediate sampling or for later sampling, a construction exclusion zone (see Attachment 1) will be identified by the TCO and provided to the Constructor for action. The Constructor will make distribution of the signed construction exclusion zone form as indicated on Attachment 1.

2.3 BULK WATER SAMPLE COLLECTION

In the absence of the PI and when samples are needed, the TCO will coordinate collection of water in bulk containers for later analysis. Bulk containers provided by the PI will be filled with water as directed by the USGS/USBR mappers or TCO, labeled in accordance with YAP-SII.4Q, removed from the sample location, and refrigerated (or stored in a cool location) until transfer to the PI or USGS FTC for further handling. Field pH, temperature, and estimated flow rates will be obtained and documented as directed by the PI's field notebook.

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2.4 PI SAMPLE COLLECTION

The PI will direct, participate in, and witness the collection of any additional water samples. The PI will be responsible for the sample collected and will ensure that the sample has been properly identified in accordance with YAP-SII.4Q prior to removal from the sample location. Additional test activities with needs for perched water samples are identified in SP 92-20C; samples for these activities will be collected if sufficient water exists to meet USGS needs and in accordance with approved sample collection procedures.

2.5 SURVEY & PHOTOGRAPH SAMPLE LOCATION

The TCO will ensure that all sample locations and exclusion areas are surveyed from the nearest established survey station using standard survey methods consistent with ESF policies (Class II), that survey locations have been recorded, that sample locations are photographed, and that all sample locations are physically identified and labeled in the field.

2.6 SAMPLE/TEST LOCATION PROTECTION

The Constructor will provide effective means (see Attachment 1), approved by the TCO, to ensure that 1) the completed sample location is physically labeled and identified prior to the end of the shift during which the construction exclusion area is identified and 2) that test equipment is protected from damage and tampering. (Protection of the site may require construction of small niches, approximately 1m x 1m x 0.5m (3.3 ft x 3.3 ft x1.6 ft) in size, or other measures which will be specified at the time a test location is identified.)

2.7 SAMPLE/TEST LOCATION OPERATION

The USGS FTC will ensure that the completed water testing facility (if required) is functioning to the satisfaction of the PI.

3. EQUIPMENT & MATERIALS

The TCO has been delegated authority to request work order modification for activities that fall within the approved scope of this activity as defined by the JP. See Attachment 2 for a copy of the request for work order modification.

3.1 PI/PARTICIPANT-SUPPLIED EQUIPMENT

The PI will prepare and provide all sample collection equipment. In addition, the PI will furnish all test equipment that will be operated at the sampling site and will be responsible for test equipment calibration and maintenance. Test equipment includes: thermometer, pH meter, bulk water (19 liters [5-gallon] containers, adsorbent pads, sample containers used by the PI. Packers, pumps, and data loggers may be required depending on the nature of the water occurrence.

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3.2 CONSTRUCTOR-SUPPLIED EQUIPMENT

The Constructor will provide drilling equipment, utilities, tools, and personnel required to support sampling. Because this is a contingency test and large water volumes are not anticipated in the north ramp, capability on the TBM (and alcoves) is needed only to collect water samples. Any further requirements, such as for drilling, will be defined by the PI, TCO, and CM if and when the need arises.

4. SAFETY

4.1 CONSTRUCTOR SAFETY RESPONSIBILITIES

The Constructor will provide samples and MSDS sheets of tracers, fluids, and materials used in the vicinity of the sample location as requested by the PI and coordinated through the TCO.

4.2 PARTICIPANT/PI SAFETY RESPONSIBILITIES

There are no plans to take any hazardous or toxic chemicals underground. Chemical analysis will be conducted by the USGS outside the ESF at a USGS facility.

Pis requiring access to the TBM will coordinate through the TCO.

4.3 The DOE YMSCO Assistant Manager for Environment, Safety and Health, (AMESH) has assigned underground construction and mining safety to the Constructor (Reynolds Electrical and Engineering Company, Inc.). The TCO recognizes and endorsed this action. The TCO will, as required, coordinate planned scientific activities to comply with the Constructors concerns for safety and perform/direct these scientific activities to proceed after full consultation with the Constructor as to safety status.

4.4 Safety responsibilities are identified in the "Work Plan Safety Analysis," Attachment 3.

5. TRAINING

5.1 All sample collectors will be trained to (USGS) HP-260, YAP-SII.4Q, and any other applicable participant procedures. Hands-on training will be provided by the pertinent participant's organization to assure that samplers (including TCO and USBR/USGS) are operationally ready to sample any water that is observed.

6. REPORTING & RECORDS

6.1 The TCO will submit a weekly activity report to the FTC. The report will include the conditions that affect data gathering and will be submitted to DRC-096.

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- 6.2 The TCO will submit a monthly status report to the FTC and will submit a copy to DRC-096. Copies of appropriate construction exclusion area forms will be attached to the monthly report.
- 6.3 Records responsibilities are identified by organization in associated JP. Organizations with responsibilities in this WP should refer to the JP to determine their records responsibilities. Assuming that samples are collected and that no drilling is required, records for this test should include: A) RSN - survey data, notes, and plots; B) REECo - construction exclusion area forms; C) Johnson Controls - photo mission records; and D) SAIC/SMF - sample collection reports.

7. VERIFICATION

No independent verification is required at this time. Photography and survey of sample locations provide adequate traceability for sample collection.

8. WORK PLAN COMPLETION

- 8.1 At the conclusion of test activities for this WP, the TCO will release the area to construction (Attachment 1). The TCO will also submit a close out report which will include a description of any sample locations, along with special instructions for the Constructor for long-term protection of the location and equipment, as necessary.
- 8.2 Concurrence from the Job Package Records Coordinator (JPRC) that Record Package Turn-over Requirements have been met.

JPRC _____ Date _____

9. CONCURRENCE OF THE COMPLETION OF THE WORK PLAN

9.1 PI or Designee _____ Date _____

9.2 TCO _____ Date _____

9.3 FTC _____ Date _____

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ATTACHMENT 1

REQUEST FOR CONSTRUCTION EXCLUSION AREA

2 Pages

REQUEST FOR CONSTRUCTION EXCLUSION AREA

A. REQUEST FOR CONSTRUCTION EXCLUSION AREA (date: ___ / ___ / ___)

The following areas are required for testing or sampling and should be protected from potential construction damage during the defined testing duration:

Ramp: Right Rib ___ Left Rib ___ Back ___
(or) Alcove # ___: Right Rib ___ Left Rib ___ Back ___ Face ___

From: Construction Station (CS) _____ to CS _____

Anticipated duration of testing from: date: ___ / ___ / ___ to date: ___ / ___ / ___

Test Equipment or sample location to be Protected: _____

The Constructor is requested to provide effective means, approved by the TCO, to ensure that the completed sample location is physically labeled and identified and that test equipment is protected from damage and tampering. In addition: _____

Concurrence:
PI _____ Date _____
TCO FTR _____ Date _____
CM _____ Date _____

Distribution: TCO Project Engineer, EES-13/LV, MS 527
TCO Field Test Representative, EES-13/FOC, MS 735
TCO Records Coordinator, EES-13/LV, MS 527
Field Test Coordinator, YMSCO, MS 717

Affected Organization Test Representative:

Organization _____ Test Rep. _____

Work Plan ID: WP 92-20B
ESF Test Coordination Office
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ATTACHMENT 2

REQUEST FOR WORK ORDER MODIFICATION

2 Pages



Reynolds Electrical & Engineering Co., Inc.
YUCCA MOUNTAIN PROJECT
REQUEST FOR WORK ORDER MODIFICATION

Date: _____ Station No.: _____

Work Order No.: _____ Work Order Modification No.: _____

To: REECo YMP Project Control Department

From: _____
REQUESTOR ORG.

Detail Scope of Work:

Attachment/Reference Documents:

Estimated By: _____ Date: _____

LABOR	MATERIAL	EQUIPMENT	OTHER	TOTAL

 DOE Representative Date CLD Representative Date

- Check for Distribution:
- REECo YMP
 - REECo YMP Construction Department
 - REECo YMP Drilling Department
 - REECo YMP P.P. & B.

- DOE/YMSCO
- DOE/YMP _____
- ESF/TCO-SITE _____
- ESF/TCO-LV _____
- PI

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ATTACHMENT 3

PERCHED-WATER SAFETY ANALYSIS

2 Pages

**PERCHED-WATER TESTING
WORK PLAN SAFETY ANALYSIS**

- A. References**
- A.1** DOE Order 5481.1B, Para 4,C
 - A.2** Preliminary Safety Analysis Report (PSAR) YMP/92-37
 - A.3** Project Training - General Employee Training, General Employee Radiological Training, General Underground Training, and First Aid (Red Cross)
 - A.4** O.S.H.A. Hazard Communication 10 CFR 1910, Latest Rev.
 - A.5** YAP—, "Exploratory Studies Facility (ESF) Access Control"
- B.** All Field Personnel will be trained as cited in reference A.3, and will remain current by attending appropriate refresher courses.
- C.** All work described in the WP can and will be accomplished using normal underground construction practices for which no safety analysis is required as cited in reference A.1 (exclusion).
- D.** All field personnel will be equipped with personal safety gear. This includes but is not limited to; hard hat, safety glasses, hard toed shoes, hearing protection, safety belts and lanyards, and a self-rescuer. Training in their use will be per reference A.3 and the safety standards of the appropriate participants.
- E.** The PIs do not anticipate the use of hazardous materials that are covered by reference A.4.
- F.** Access to the tunnel boring machine for scientific personnel will be controlled by the Test Coordination Office as cited in reference A.5.
- G.** The basis for the field activity covered by this Safety Analysis is the Administrative WP 92-20B.
- G.1** Nothing derived thus far from the SCPB indicates that any unusual amount or occurrence sequence of perched water will be encountered in the Exploratory Studies Facility (ESF). Should perched water be encountered, field decisions will be made by the TCO and PIs as to sampling sequence, flow relief techniques, capping with shotcrete, plugging with grout injections, or installing pump lines to move surpluses to the surface (portal).
 - G.2** Should additional procedures/tests be required or desired, this safety analysis will be modified as required to become task specific. Certain basic criteria, however, will apply.
 - G.2.1** If pressure transducers are deemed necessary to monitor potential pressure buildup (hydrological) then manual or automatic relief valves with mechanical gauges will be installed as a safety measure.
 - G.2.2** Any piping/casing installed by grouting or rock bolting will be pull tested to 150% of anticipated load and be of sufficient pressure rating (ANSI STD) to resist burst pressures imposed by the relief valves.
- H.** When testers are in the underground, they are under the jurisdiction of the TBM operations safety program.