

"QA N/A"
WBS 1.2.6.1.1

ESF TEST COORDINATION OFFICE WORK PLAN

**CONSOLIDATED SAMPLING IN THE RAMPS,
MTL DRIFTS, AND ALCOVES**

Work Plan ID: WP 92-20C, Rev. 09/07/94
(Administrative Only)

Page 1

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CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

1. PROJECT SCHEDULING AND COORDINATION 3

2. WATER SAMPLING 4

3. EQUIPMENT AND MATERIALS 7

4. SAFETY 7

5. TRAINING 8

6. REPORTING & RECORDS 8

7. VERIFICATION 8

8. WORK PLAN COMPLETION 9

9. CONCURRENCE OF THE COMPLETION OF THE WORK PLAN 9

ATTACHMENT 1 CONSOLIDATED SAMPLING SAMPLE LOCATION 10

ATTACHMENT 2 REQUEST FOR CONSTRUCTION EXCLUSION AREA 11

ATTACHMENT 3 REQUEST FOR WORK ORDER MODIFICATION 12

ATTACHMENT 4 WORK PLAN SAFETY ANALYSIS 14

CONSOLIDATED SAMPLING 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, TPP 92-14, and TPP T-93-2, Job Package (JP) 92-20A, JP 92-20B, JP 92-20C, JP 92-20D, and JP 92-20E, and guides field interactions. Sampling Plan (SP) 92-20C is consistent with this WP and provides further instructions for sampling. This WP will be revised as necessary by the TCO and changes communicated to all affected participants for concurrence.

This plan 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 that are not contained 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.

1. PROJECT SCHEDULING AND COORDINATION

1.1 The U. S. Department of Energy Field Test Coordinator (FTC), the TCO, the Civilian Radioactive Waste Management System Management & Operating Contractor Construction Manager (CM), Reynolds Electrical and Engineering Company, Inc. (REECo) Construction Department Manager (CDM), and the affected Principal Investigators (PIs), or their representatives 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:

PI (LANL)	<u><i>Alan J. Mitchell</i></u>	Date	<u><i>8/7/94</i></u>
PI (LLNL)	<u><i>[Signature]</i></u>	Date	<u><i>8/7/94</i></u>
PI (SNL)	<u><i>A. Raitman</i></u>	Date	<u><i>9/7/94</i></u>
PI (USGS)	<u><i>Daniel J. Soeder</i></u>	Date	<u><i>8/30/94</i></u>
TCO	<u><i>Richard G. Kewal</i></u>	Date	<u><i>8/30/94</i></u>

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

CM	<u><i>Ann O'Connell</i></u>	Date	<u><i>8/30/94</i></u>
CDM	<u><i>M. Howard</i></u>	Date	<u><i>8/30/94</i></u>
FTC	<u><i>W. A. Birdley</i></u>	Date	<u><i>9/7/94</i></u>

2. BULK ROCK, MUCK, TRACERS, FLUIDS, AND MATERIALS (TFM), AND ENVIRONMENTAL SAMPLES

This WP is limited to bulk rock, muck, TFM, and environmental samples collected in the Exploratory Studies Facility (ESF) by either PIs collecting samples for their test(s) or the U.S. Geological Survey/U.S. Bureau of Reclamation (USGS/USBR) geologic mappers under their "Common Sampling" role. All sample collection will be documented in accordance with YAP-SII.4Q and applicable sample collection procedures or scientific notebooks. All bulk rock sample locations will be surveyed and photographed to assure traceability. Unless precluded by safety considerations and as required to protect data/sample quality, sampling will be done prior to application of ground stabilization materials, such as shotcrete or reinforcing fabric, or any other material which would adversely affect sampling. The USGS/USBR geologic mappers (or, as appropriate, the TCO) will witness the collection and documentation of samples, and will direct physical identification of bulk rock sample locations (see Attachment 1), and will assure that all sample locations are photographed and surveyed. (Note: refer to SP 92-20B for water sample collection instructions.)

2.1 SAMPLE SELECTION AND NOTIFICATION

The USGS/USBR geologic mappers will examine exposed rock surfaces during geologic mapping of the ESF and will select locations to be sampled according to written criteria provided by PIs. Through the TCO, USGS/USBR geologic mappers will notify any PIs who prefer to select samples themselves or who wish to be present to observe sampling.

2.2 SAMPLE COLLECTION

2.2.1 PI Bulk Rock Sample Collection

Unless precluded by safety considerations and as necessary to sample, the PI will start collecting bulk rock samples as soon as access is allowed. The PI will examine exposed rock surfaces and will be guided, if requested, by USGS/USBR geologic mappers. The PI will either collect or direct collection of samples and will furnish sample containers. The PI (or, if requested by the PI, the USGS/USBR geologic mappers) will ensure that the sample has been properly identified in accordance with YAP-SII.4Q prior to removal from the sample location. Unless other arrangements have been made, the PI will be responsible for transporting the sample from the tunnel.

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

2.2.2 USGS/USBR Bulk Rock Sample Collection

In the absence of PIs, unless precluded by safety considerations, consistent with geologic mapping priorities and as necessary to sample, the USGS/USBR will collect bulk rock samples as soon as access is practicable and in accordance with SP 92-20C. If sampling is not required immediately or if safety considerations constrain the ability to sample, a construction exclusion zone to allow later sampling or testing (See Attachment 2) may be identified by the TCO.

2.2.3 USGS/USBR Muck Collection

Unless precluded by safety considerations and as necessary to sample, the USGS/USBR geologic mappers will collect muck samples as soon as practicable, as safety considerations allow, and in accordance with SP 92-20C. The USGS/USBR geologic mappers will ensure that the sample has been properly identified in accordance with YAP-SII.4Q prior to removal from the sample location. Unless other arrangements have been made, the constructor will assist the scientific community in transporting the sample from the tunnel. Photography and surveying of muck samples is not required.

2.2.4 Natural gels are fragile features which may be observed near the TBM tail shield prior to installation of rock bolts or wall cleaning. If any natural materials are observed which look like a jelly or paste, particularly if oozing out of a fracture or fault zone, the USGS/USBR mappers or the TCO representative should be notified as soon as practicable so that sampling can be arranged. Samples taken will be identified in accordance with YAP-SII.4Q and SP 92-20C and transferred to the Sample Management Facility (SMF) for temporary storage and later shipment to the PI.

2.2.5 Construction (TFM) Materials Collection

2.2.5.1 PIs may request collection of TFM used in construction. Unless precluded by safety considerations, as defined by the PI, and as coordinated through the TCO, the constructor will collect samples of such construction materials. The PI will furnish any sample containers that are not normally available to the constructor and may direct or observe collection of samples. The constructor will ensure that the sample has been properly identified in accordance with YAP-SII.4Q prior to removal from the sample location and (unless other arrangements have been made) will be responsible for transporting the sample from the tunnel. Photography and surveying of TFM sample locations will be done if requested by the TCO. Sample locations will be physically identified and labeled in the field if requested by the TCO.

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

2.2.5.2 Cement cores or drilling rubble (approximately 15 cm [6 in] diameter by 30 cm [12 in] length) from select holes drilled in the pre-cast invert sections to allow emplacement of SNL convergence monitoring pins will be (1) collected by the Constructor, (2) bar-coded by the USGS/USBR mappers in accordance with YAP-SII.4Q and SP 92-20C, and (3) transferred to the SMF for temporary storage and later shipment to the PI. The original YAP-SII.4Q sample collection form will be provided to the SMF. An information copy of the YAP-SII.4Q sample collection form will be provided to R. Kovach, the ESF FTR and to the job package records coordinator (JPRC) Alan Mitchell (LANL, MS 527).

2.2.5.3 When shotcrete is used in the ESF, shotcrete test panels will periodically be made by the Constructor. For PI-selected test panels, the test panel will be bar-coded by the USGS/USBR mappers in accordance with YAP-SII.4Q and SP 92-20C, and transferred to the SMF for temporary storage and later shipment to the Raytheon Services Nevada (RSN) Materials and Test Lab (MTL). A shotcrete core will be taken from the test panel by the MTL, bar-coded by the MTL in accordance with YAP-SII.4Q and SP 92-20C, and transferred to the SMF for temporary storage and later shipment to the PI. If sufficient material is not available to core, an equivalent volume of the test panel shotcrete remnants will be sufficient. The original YAP-SII.4Q sample collection forms (for both the test panel and the shotcrete) will be provided to the SMF. An information copy of the YAP-SII.4Q sample collection form will be provided to R. Kovach, the ESF FTR and to the JPRC Alan Mitchell (LANL, MS 527).

2.2.6 REECo/Science Applications International Corporation (SAIC) Environmental Samples

REECo/SAIC will collect environmental data in order to comply with (non-quality affecting) regulations; regular surveys may be conducted to monitor noise, dust, radon daughter products, nitrogen dioxide, nitrous oxides, sulfur dioxide, hydrogen sulfide, methane, oxygen, carbon monoxide, carbon dioxide, temperature, humidity, pressure, air velocity, and formaldehyde. Also, dry drilling requires monitoring of tracer (generally SF₆) concentrations in the ambient alcove (or tunnel) air. Unless precluded by safety considerations and as necessary to sample, REECo/SAIC will start sampling as soon as access is allowed or drilling begins. Photography and surveying of sample/monitoring locations is required only as directed by the TCO.

2.3 SURVEY & PHOTOGRAPH SAMPLE LOCATION

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

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

2.4 SAMPLE/TEST LOCATION PROTECTION

The Constructor will provide effective means, approved by the TCO (see Attachment 2), to ensure that the completed sample location is physically labeled and identified and that test equipment is protected from damage and tampering.

2.5 SAMPLE/TEST LOCATION OPERATION

The PI will provide special instructions for maintaining access to sample locations for their test to the TCO.

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 3 for a copy of the request for work order modification.

3.1 PI/PARTICIPANT-SUPPLIED EQUIPMENT

The PI will prepare and provide all sample containers to meet non-standard sample packaging needs as described in SP 92-20C. REECo/SAIC are responsible for calibration and maintenance associated with all equipment for environmental sampling.

3.2 CONSTRUCTOR-SUPPLIED EQUIPMENT

The Constructor will provide drilling equipment, utilities, tools, and personnel required to support sampling. Some bulk samples will require hydraulic splitting from the tunnel wall. Short cores (less than 1 meter [3 ft]) may also be taken from the mapping gantry or behind the tunnel boring machine (TBM).

4. SAFETY

4.1 The DOE Yucca Mountain Site Characterization Project Assistant Manager for Environment, Safety, & Health (AMESH) has assigned underground construction and mining safety to the constructor (REECo). 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.

4.2 CONSTRUCTOR SAFETY RESPONSIBILITIES

The Constructor will provide samples and Material Safety Data Sheets of TFM used in the vicinity of the sample location as requested by the PI and coordinated through the TCO.

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

4.3 PARTICIPANT/PI SAFETY RESPONSIBILITIES

There are no plans to take any hazardous or toxic chemicals underground. PIs requiring access to the TBM will coordinate through the TCO. PIs will collect samples with an approved procedure or scientific notebook and will not collect samples without a safety analysis.

4.4 See Attachment 4 for a safety analysis.

5. TRAINING

5.1 All sample collectors will be trained to YAP-SII.4Q. Participants will be responsible for training to any additional internal procedures that are used in sample collection.

6. REPORTING & RECORDS

6.1 The PI for Density and Porosity Characterization (SCPB: 8.3.1.15.1.1.1) requests information copies of Matrix Hydrologic Properties Testing (SCPB: 8.3.1.2.2.3.1) sample analyses.

6.2 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-102.

6.3 The TCO will submit a monthly status report to the FTC and will submit a copy to DRC-102. Copies of appropriate construction exclusion area forms will be attached to the monthly report.

6.4 Participants have requested information copies of environmental monitoring survey results from sensors at fans, alcoves, and on the TBM on a monthly basis as follows:

<u>Participant</u>	<u>Information Requested from REECO/SAIC</u>
SNL	Radon, nitrous oxides, formaldehyde, temperature, and relative humidity
USGS	SF ₆ , temperature, & relative humidity

6.5 Records responsibilities are identified by organization in associated JPs. 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 World Services, Inc. - 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.

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

8. WORK PLAN COMPLETION

8.1 At the conclusion of test activities for this WP, the TCO will release the area to construction (Attachment 3). 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 JPRC that Record Package Turnover 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 _____

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

**ATTACHMENT 1
CONSOLIDATED SAMPLING SAMPLE LOCATION
1 Page**

Consolidated Sampling Sample Location

PI Name: _____

PI Organization: _____

Date Collected: _____ JCI Photo No: YM _____

Sample Location: _____

Geologic Unit : _____

Place SMF
Bar Code
Here

Place SPC Number Here

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

**ATTACHMENT 2
REQUEST FOR CONSTRUCTION EXCLUSION AREA
1 Page**

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:

North 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 _____
ESF TCO FTR _____ Date _____
CM _____ Date _____

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

Affected Organization Test Representative:

Organization _____ Test Rep. _____

Work Plan ID: WP 92-20C
ESF Test Coordination Office
(Administrative Only)

WBS 1.2.6.1.1
"QA N/A"

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

**ATTACHMENT 3
REQUEST FOR WORK ORDER MODIFICATION (INFORMATION COPY)
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/VMSCO
- DOE/YMP
- ESF/TCO-SITE
- ESF/TCO-LV
- PI

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

**ATTACHMENT 4
WORK PLAN SAFETY ANALYSIS
1 Page**

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 work plan 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 work plan WP 92-20C.**
 - G.1 If samples outside constraining hand rails are taken from the decks of the tunnel boring machine, the individual taking the sample must be belted off to an appropriate tie point. If this is not practical, alternate safety measures will be defined and implemented to secure personnel.**
 - G.2 No samples will be taken from a moving conveyor belt.**
 - G.3 For any sample taken from about 1.83 m (6 ft) above the invert, every effort will be made to have mechanical or labor assistance available to prevent injuries associated with loose rock.**
 - G.4. No PI will take samples without a safety plan, especially if sampling requires equipment such as hand drills.**