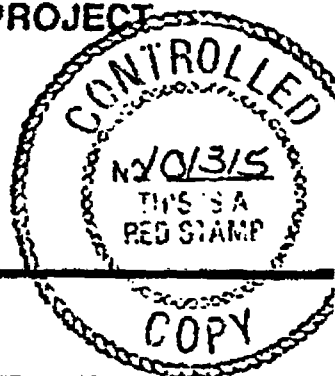


YMP-053-R1  
7/1/92

# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT



## PROCEDURE



Title:

FIELD LOGGING, HANDLING, AND DOCUMENTING BOREHOLE SAMPLES

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Approval: J.R. Dyer	Date: 8/4/93	Approval: N/A	Date:
Approval: N/A	Date:	Concurrence: R.E. Spence	Date: 8/6/93

### REVISION HISTORY

Rev. No.	ICN No.	Effective Date	Description of Revision/ICN
0		08/20/93	Initial Issue - Supersedes BTP-SMF-008, Field Logging, Handling and Documenting Borehole Samples

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### 1.0 PURPOSE

This procedure defines the documentation, handling, lithologic and structural logging, core photography and packaging of Yucca Mountain Site Characterization Project (YMP) borehole samples and specimens at surface-based borehole sites. This procedure implements requirements of the Office of Civilian Radioactive Waste Management *Quality Assurance Requirements and Description* (QARD), DOE/RW-0333P, Supplement II.

### 2.0 APPLICABILITY

This procedure applies to Drilling Support (DS) staff of the Drilling Support and Sample Management Department (DS&SM).

### 3.0 DEFINITIONS

Terms in this procedure are used as defined in the QARD Glossary. The following additional definitions are specific to this procedure.

- 3.1 **Core** - A cylindrical section of rock, or fragment thereof, taken as a sample of the interval penetrated by a core bit and brought to the surface for examination and/or laboratory analysis.
- 3.2 **Core Run** - An attempt to drill and recover a length of core. It is also the core recovered from the barrel after the core run.
- 3.3 **Cuttings** - Chips of rock produced during drilling that are removed from the borehole by circulation of drilling fluids (gas, foam, or liquid).
- 3.4 **Daily Activities Log (DAL)** - A daily, chronological record of activities (using a 24-hour timeclock [0000-2400 hrs]) that occur during drill site operations. The DAL is kept in a paginated, hardbound notebook.
- 3.5 **Drive Core** - Material collected with a drive sampler using brass sleeve(s) as the inner barrel.
- 3.6 **Rubble** - Fragments of core from a single interval, broken in such a manner that reconstruction between individual pieces is impossible.
- 3.7 **Sample Overview Committee (SOC)** - A YMP-level organization composed of:
  - a) one voting member from each of the following organizations:
    - Yucca Mountain Site Characterization Project Office (YMPO),
    - Los Alamos National Laboratory,
    - Lawrence Livermore National Laboratory,

# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

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- Sandia National Laboratories,
  - United States Geological Survey, and
  - Nevada Site Management and Operating Contractor; and
- b) nonvoting, advisory members from:
- Technical and Management Support Services (T&MSS) Contractor,
  - DS&SM, and
  - YMPO Quality Assurance (QA).

A YMPO Regulatory and Site Evaluation Division staff member shall serve as the SOC Chairperson. The SOC is responsible for ensuring that all Affected Organizations and outside organizations are provided with appropriate geologic specimens related to site characterization activities and that representative samples, if required by the YMPO, are retained for archiving. The SOC reviews specimen requests from various Affected Organizations and outside organizations and, based on present and future YMP needs, makes recommendations on specimen allocations. The SOC Chairperson shall be responsible for final approval for distribution.

**3.8 Specimen** - A subsection or portion that has been removed from the original sample. Further splits of specimens are subspecimens.

**3.9 Unique Identifier (ID)** - A designation that sets a documentable object or event apart from similar entities. It may consist of an assigned number, a name, an alpha-numeric designation, or a set of data items that collectively serve to specify the entity. Examples of unique IDs used in this procedure include borehole ID, container ID, sample ID, and specimen ID.

## 4.0 RESPONSIBILITIES

**4.1** The Branch Chief, YMPO Site Investigations Branch, is responsible for the preparation, modification, and approval of this procedure.

**4.2** The following YMP positions and organizations are responsible for activities identified in Section 5.0 of this procedure:

The T&MSS DS Staff (includes DS Manager, DS Shift Supervisor, DS Senior Geologist, DS Geologist, and DS Geotechnician)

## 5.0 PROCESS

A brief overview of this process is depicted in the flowchart shown in Attachment 9.1, YLP-SIL2Q-SMF Flowchart. Acronyms used in this procedure are defined in Attachment 9.2, Acronym List, and in the flowchart legend.

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## PROCESS OUTLINE

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### 5.1 INITIAL SAMPLE HANDLING

The T&MSS DS Staff:

- a) maintains the Field Facility Access Log (Exhibit YLP-SII.2Q-SMF.1) according to the instructions on the back of the log;
- b) determines sample type;
- c) if cuttings, proceeds to Subsection 5.8;
- d) if core, takes custody of the core barrel and transports to the logging trailer, ensuring that the core is not switched end-for-end during transport;
- e) extrudes the inner split sleeve and core;
- f) if drive core, proceeds to Subsection 5.9;
- g) carries the inner sleeve into the trailer and places it on a rack;

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- h) opens the sleeve to expose the core; and
- i) fills out the polystyrene foam (foam) run marker with the run number, drill date, borehole ID, run interval, and amount of core cut.

## 5.2 INITIAL PROCESSING OF CORE

The T&MSS DS Staff:

- a) places the marker at the top of the core and places the scale, marked in 0.01 ft intervals annotated with the borehole ID, beside the core;
- b) videotapes the core and completes the Field Photographic Log (Exhibit YLP-SII.2Q-SMF.2) according to the instructions;
- c) fits pieces of core and rubble zones to represent their in situ intervals as nearly as possible;
- d) measures the length of the core to nearest 0.1 ft;
- e) completes the core run marker;
- f) if the length of the core recovered equals the length of the core cut, proceeds to Subsection 5.2i;
- g) if the length of the core recovered is less than the core cut, determines the location of unrecovered core based on rig information, previous experience in similar rock, etc., and proceeds to Subsection 5.2i;
- h) if the length of the core recovered is greater than the length of the core cut, reconciles the interval with the last unrecovered core interval; and
- i) marks core footage marks.

## 5.3 FIELD LOGGING

The T&MSS DS Staff:

- a) logs structural features on the Structural Log (Exhibit YLP-SII.2Q-SMF.3) according to the instructions; and
- b) begins to log lithologic features on the Lithologic Log (Exhibit YLP-SII.2Q-SMF.4).

**NOTE:** If lithological features are observed in sections of the core that would be removed in sampling, they should be logged in accordance with Exhibit YLP-SII.2Q-SMF.4 at time.

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### 5.4 PACKAGING SAMPLES/SPECIMENS

The T&MSS DS Staff:

- a) selects the sample/specimen according to the SOC/Test Planning Package (TPP) instructions in accordance with AP-6.4Q, *Procedure for the Submittal, Review, and Approval of Requests for Geologic Specimens*;
- b) if a sample/specimen is not selected, proceeds to Subsection 5.5;
- c) removes the sample/specimen;
- d) marks all breaks sustained during handling with lines on both sides parallel to the break;
- e) cuts foam marker to the length of the sample/specimen removed;
- f) marks with a temporary sample/specimen designation, and puts foam in place of the sample/specimen;
- g) packages the sample/specimen according to SOC/TPP directions; and
- h) labels the packaging material with a temporary designation.

### 5.5 CORE STAGING

The T&MSS DS Staff:

- a) marks the core with footage continuing depths from the previous run;
- b) when a footage mark falls in a rubble zone, writes the depth on an index card and places appropriately;
- c) places parallel orientation stripes on core, red on right, from top to bottom;
- d) places non-orientation marks (\*) on both sides of a break when orientation stripes cannot be carried across;
- e) marks all artificial breaks sustained during handling with lines on both sides parallel to the break;
- f) fills out any Unrecovered Core Marker and places it at the location of unrecovered core;
- g) fills out the Whole Core Removed (WCR) labels and affixes to the foam markers and the sample/specimen containers; and
- h) photographs the staged core as described in Subsection 5.2.

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### 5.6 REMOVING SPECIMENS AT THE DRILL SITE

The T&MSS DS Staff:

- if there are SOC/TPP instructions for specimen(s) to be released to the Principal Investigator (PI) from the drill site, prepares as in Subsection 5.4;
- if there are no instructions, proceeds to Subsection 5.7;
- completes the Field Specimen Removal Checklist and Contract (Exhibit YLP-SII.2Q-SMF.5) according to the instructions;
- affixes duplicates of the specimen ID label to the contract and the package containing the specimen with reference to WCR;
- fills out the WCR label and affixes to the foam run marker; and
- releases the specimen and the copy of the Field Specimen Removal Checklist and Contract to the PI/designee.

### 5.7 PREPARATION FOR SHIPMENT TO SAMPLE MANAGEMENT FACILITY

The T&MSS DS Staff:

- places a container fitted with dividers and foam cradles on the core rack, parallel to the core;
- breaks the core as little as possible to fit in container, and marks the breaks as in Subsection 5.4c
- isolates the rubble in lay flat tubing with the top and bottom depths marked on the lay flat tubing
- loads the core, markers, and isolated samples, with top at the lower left corner, bottom at upper right, and loads the samples/specimens into separate containers;
- affixes labels listing borehole ID, container ID, and interval of sample in container to the downhole end of the base and lid of the container and
- secures the container and proceeds to Subsection 5.10.

### 5.8 CUTTINGS HANDLING

5.8.1 The T&MSS DS Staff:

- collects and packages the cuttings according to the instructions from the SOC/TPP/work program or the written directions of the PI;
- marks each package with the borehole ID, date, and depth interval;

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- c) upon completion of drill hole, affixes a permanent label to the video tape with the following information:
  - dates,
  - borehole ID,
  - run number(s),
  - tape number, and
  - total footage interval documented by the tape;
- d) stores the tape in a cool, dark location until transfer;
- e) completes the Shift Drilling Summary (Exhibit YLP-SII.2Q-SMF.6) according to the instructions;
- f) completes the Preliminary Daily Field Borehole Log (Exhibit YLP-SII.2Q-SMF.7) according to instructions; and
- g) completes Lithologic Log (Exhibit YLP-SII.2Q-SMF.4).

### 6.0 SUPPORTING DETAIL

If samples or specimens cannot be packaged in accordance with approved directions, initiate a nonconformance report in accordance with AP-5.27Q, *Control of Nonconforming Items*.

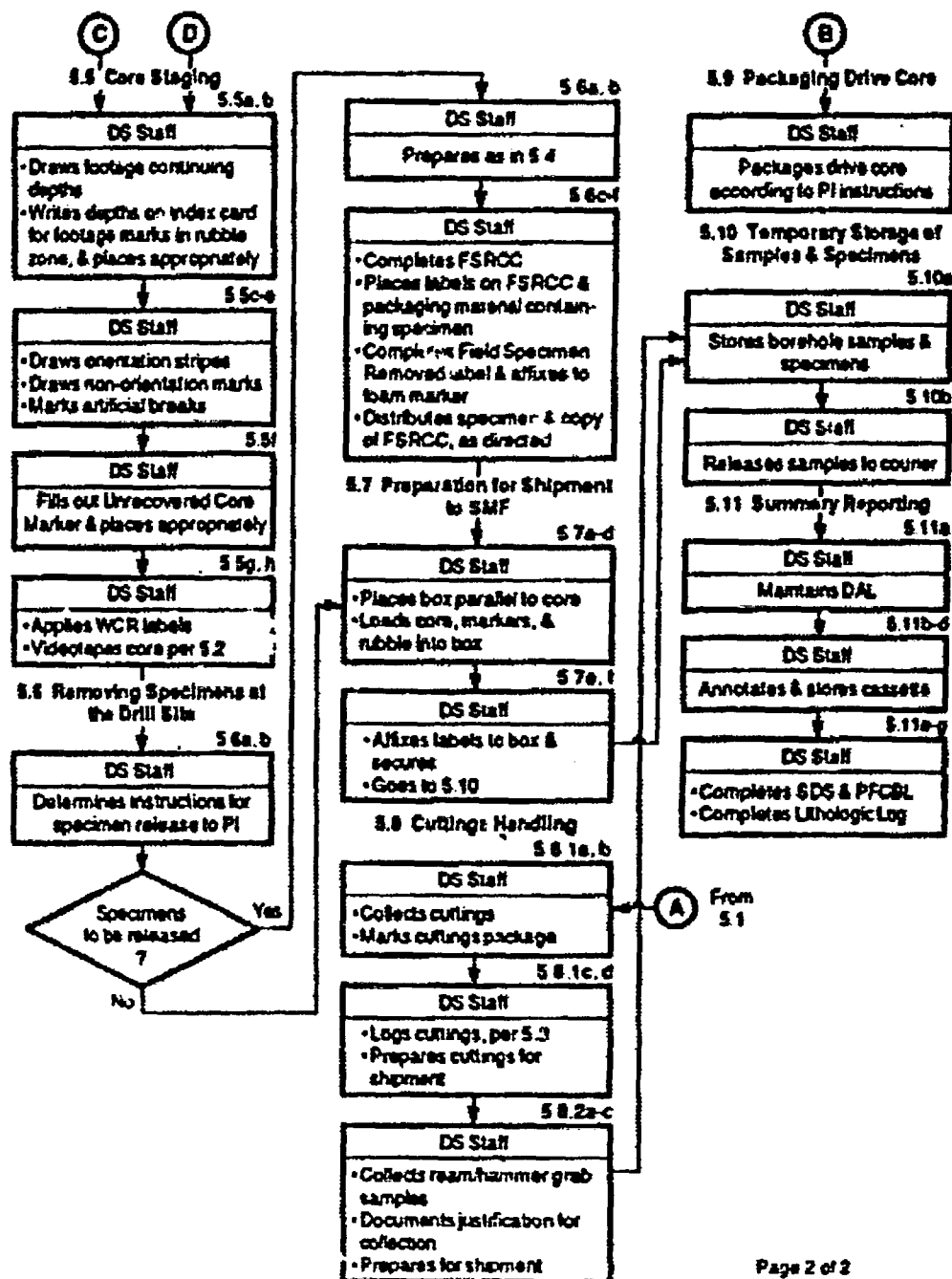
### 7.0 QUALITY ASSURANCE RECORDS

Records or record packages of documentation resulting from implementation of this procedure shall be collected and maintained in accordance with AP-1.18Q, *Records Management: Las Vegas Record Source Responsibilities*. The following are lifetime QA records:

- a) Shift Drilling Summary
- b) Field Specimen Removal Checklist and Contract
- c) Core videotape
- d) PI directions for sample/specimen packaging
- e) Lithologic Log
- f) Structural Log
- g) Preliminary Daily Field Borehole Log



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DAL	Daily Activities Log
DS	Drilling Support
DS&SM	Drilling Support and Sample Management Department
ID	Unique Identifier
N/A	Not Applicable
PI	Principal Investigator
QA	Quality Assurance
QARD	Quality Assurance Requirements and Description
SMF	Sample Management Facility
SOC	Sample Overview Committee
T&MSS	Technical and Management Support Services
TPP	Test Planning Package
WCR	Whole Core Removed
YMP	Yucca Mountain Site Characterization Project
YMPO	Yucca Mountain Site Characterization Project Office

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## YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

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### YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT FIELD FACILITY ACCESS LOG

Borehole ID # \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Shift Start Date \_\_\_\_\_ Shift Time \_\_\_\_\_ (0000 - 2400 clock)

Name		Organization	Purpose of Visit
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		
Print	-----		
Sign	-----		

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### INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT FIELD FACILITY ACCESS LOG YMP-013

#### HEADER INFORMATION

Borehole ID # Unique alphanumeric designation assigned to borehole

Pageation Numbers sequentially assigned to sheets; first blank contains number of that particular sheet; second blank contains total number of sheets completed for the shift

Shift Start Date Date shift starts

Shift Time From / to; using a 24-hour timeclock (0000 - 2400 hrs)

#### COLUMN INFORMATION

Name Name and signature of individual entering the facility; not applicable (N/A) to OS Staff

Organization Organization of individual

Purpose of Visit Brief description of purpose of visit

NOTE: Individuals only need to sign in the first time they enter the facility during the shift.

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### INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT FIELD PHOTOGRAPHIC LOG YMP-014

#### HEADER INFORMATION

Borehole ID# Unique alphanumeric designation for borehole

Cassette # Number sequentially assigned to each cassette; begin new log when starting new cassette

Pagination Numbers sequentially assigned to sheets; first blank contains number of that particular sheet; second blank contains total number of sheets completed for the cassette

Checked by/Date Name of DS Staff and date verifying that information on record is correct

#### COLUMN INFORMATION

Run Number Number of run being videotaped

Run Interval Interval of run being videotaped

Counter Interval Counter interval (from/to) on video camera

Remarks Documentation of any other feature being videotaped, including interesting item in core, drilling activity, etc.

Photographer Photographer's initials and date



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STRUCTURAL LOG  
YMP-011**HEADER INFORMATION**

Borehole ID Unique designation given to borehole.

From/To Top and bottom depths on page from columns 3-7.

Core Size Core diameter/designation (begin new sheet if diameter changes).

Pagination Numbers assigned to sequential sheets, total entered at end of hole.

Drilling Support Staff Signature(s) of geologist(s) and date(s) sheet completed.

Checked by/date Checked for completeness, signed/dated by DS Staff member not directly responsible for completion of form.

**COLUMN INFORMATION** (Note: Blank spaces are intentionally blank)

- (1) Non orientation Depth below which relative orientation could not be extended.
- (2) Bracket /-X Enter "/" at top depth and "X" at bottom depth of runs and intervals of loss or removal, or zones of similar structural features. Never enter "/" and "X" on separate pages.
- (3-7) Depth Enter depth of feature to nearest 0.1 ft; locate fractures at intersection with core axis.
- (8-9) Bracket Code Identity of features bracketed in column 2:  
CR: Core run interval UC: Unrecovered interval  
WC: Whole core removed VI: Void interval (i.e., large cavity or lithophysal zone)  
FL: Fracture length ( $\geq 0.5$  foot) RZ: Rubble zone  
FZ: Interval of similar fractures
- (10-13) Bracket Value Each Bracket has a numeric value:  
CR, UC, WC: Length of interval to nearest 0.1 foot  
VI: Length of void or volume percent of voids in interval  
FL: Length of fracture intercept with core to nearest 0.01 foot  
FZ: Average spacing between fractures to nearest 0.01 foot  
RZ: Average maximum diameter of rubble pieces to nearest 0.01 foot



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- (14) Fracture Origin      Following codes indicate origin of break or fracture:
- N:    Natural; indicated by mineral coatings, evidence of weathering, slickensides, lack of fit across break
  - I:    Indeterminate; origin questionable, rotated so that coatings possibly removed
  - C:    Coring induced; fresh, clean, slightly filling breaks, description not necessary
  - H:    Handing induced; identified on core, description not necessary
  - F:    Foliation planes
- (15-17) Orientation      Azimuth of dip of feature related to orientation stripes (10° intervals, 0-360°).
- (18-19) Dip              Angle between plane normal to core axis and plane of fracture or foliation (core axis assumed vertical except in deviated hole).
- (20-22) Core run description
- (20) Rock hardness; evaluation of resistance to breakage.
  - (21) Rock Weathering; evaluation of rock degradation by mechanical/chemical agents.
  - (22) Fracture Frequency.
- (23-27) Character      Descriptors of individual features according to criteria outlines.
- (28) Mineralization      Two-letter identifier of minerals coating fractures.
- (29) Piece Length      Record only lengths of core 0.33 ft and longer between breaks in same row as bottom break. Length measured between mid-points of fractures.
- (30) Remarks            General observations or notes of special occurrences.

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INSTRUCTIONS FOR PREPARATION OF  
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## AMPLIFICATION OF INSTRUCTIONS

Numeric Descriptor	Category	Criteria
(20)	ROCK HARDNESS	
1	Extremely hard	Cannot be scratched, chipped only with repeated heavy hammer blows.
2	Very hard	Cannot be scratched, broken only with repeated heavy hammer blows.
3	Hard	Scratched with heavy pressure, breaks with heavy hammer blow.
4	Moderately hard	Scratched with light-moderate pressure, breaks with moderate hammer blow.
5	Moderately soft	Grooved (1/6th in.) with moderate heavy pressure, breaks with light hammer blow.
6	Soft	Grooved easily with light pressure, scratched with fingernail, breaks with light-moderate manual pressure.
7	Very soft	Readily gouged with fingernail, breaks with light manual pressure.
(21)	ROCK WEATHERING/ALTERATION	
F	Fresh	Rock and fractures not oxidized or discolored, no separation of grains, change of texture or solutioning.
S	Slightly weathered	Oxidized or discolored fractures and nearby rock, some dull feldspars, no separation of grains, minor leaching.
M	Moderately weathered	Fractures and most of rock oxidized or discolored, partial separation of grains, crystals rusty or cloudy, moderate leaching of soluble minerals.
I	Intensely weathered	Fractures and rock totally oxidized or discolored, extensive clay alteration, leaching complete, grain separation extensive, rock is friable.
O	Decomposed	Grain separation and clay alteration complete.

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## INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT STRUCTURAL LOG YMP-011

### AMPLIFICATION OF INSTRUCTIONS

Descriptor	Category	Criteria
(22)	FRACTURE FREQUENCY	(Excludes mechanical breaks)
U	Unfractured	No fractures in core run.
V	Very slightly	Most pieces longer than 3 ft.
S	Slightly	Core mostly in 1- to 3-ft lengths.
M	Moderately	Mostly in 4-inch to 1-ft lengths.
I	Intensely	Pieces average 1 to 4 inches.
E	Extremely	Recovery mostly chips and fragments.

### (23) FRACTURE PLANARITY

P	Planar
C	Curved
S	Stepped
I	Irregular



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### AMPLIFICATION OF INSTRUCTIONS

Numeric Descriptor	Category	Criteria
(24)	FRACTURE ROUGHNESS	
P	Polished	Stickensided, extremely smooth and shiny.
S	Smooth	No asperities, smooth to touch.
M	Slight to moderate	Asperities visible to clearly visible, surface feels rough, abrasive.
R	Rough	Large, angular irregularities on fracture surface.
V	Very rough	Near-normal steps and ridges occur on the fracture surface.
(25)	FRACTURE FILLING	
C	Clean	No film or coating.
S	Very thin	Surface sheen.
T	Thin	<0.01 foot.
M	Moderately thick	0.01 to 0.03 foot.
V	Very thick	0.03 to 0.1 foot.
E	Extremely thick	>0.1 foot (record actual)

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## INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT STRUCTURAL LOG YMP-011

### AMPLIFICATION OF INSTRUCTIONS

Numeric Descriptor	Category	Criteria
(26) FRACTURE HEALING		
Blank	None	Not healed or recemented.
P	Partial	Less than 50 percent healed, recemented.
M	Moderate	More than 50 percent healed, recemented, less hard than whole rock.
T	Total	Completely healed, recemented, at least as hard as whole rock.
(27) FRACTURE MOISTURE		
D		Fracture tight or densely filled, core dry.
P		Fracture is dry, but waterflow appears possible.
F		Fracture is dry but shows evidence of previous flow.
S		Fracture filling or core is damp but no free water.
W		Fracture shows evidence of free water or core saturated.
(28) FRACTURE MINERALIZATION		
<u>Specialized</u>		<u>Generalized</u>
Ca	Calcite	WC White, Crystalline
Cl	Clay	WN White, Non-crystalline
Fe	Iron Oxides	BC Black, Crystalline
Mn	Manganese	BD Black, Dendritic
Si	Silica	TD Brown, Dendritic
VP	Vapor Phase	TC Tan, Crystalline

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## INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT LITHOLOGIC LOG YMP-009

### HEADER INFORMATION

Borehole ID	Alphanumeric designation given to borehole
Sample type	Core or cuttings
From/to	Top and bottom depths on page (from column 1)
Page/ation	Individual page number and total number of pages at end of hole
Logged by	DS staff signature(s) and date(s)
Checked by/date	DS staff other than logger, check for completeness, sign and date

### COLUMN INFORMATION

The following alphanumeric data should be recorded at regular or specified intervals, at observed changes in rock characteristics and where special features are observed. Colors should be described by Munsell designations.

- |        |                 |   |
|--------|-----------------|---|
| 1.     | Depth           | Selected depth notation (feet below surface). Depths of special features noted also.  |
| 2.     | Welding         | Notation of degree of welding (Non, Partial, Moderate, Dense, or combinations)  |
| 3.     | Crystallization | Vitric, Devitrified, Matrix devitrified, Spherulitic, Vapor-Phase, Zeolitized   |
| 4-6.   | Lithophyses     | Estimate volume percentage, size (measure approximately [in mm] the long and short axis of the largest lithophysal cavity), note mineralization (see YMP-011 #28 for examples).   |
| 7,8.   | Lithics         | Estimate percentage, describe lithology, size (measure approximately [in mm] the long and short axis of the largest lithic fragment), color, etc.   |
| 9,10.  | Pumice          | Estimate percentage, describe size (measure approximately [in mm] the long and short axis of the largest pumice clast), color, phenocrysts, etc.  |
| 11-15. | Phenocrysts     | 11. Estimate percentage<br>12. Note accessories (Sphene, Magnetite, etc.)<br>13. Estimate ratio of felsic to mafic minerals<br>14. Estimate proportions of sanidine/plagioclase/quartz<br>15. Estimate proportions of biotite/pyroxene/hornblende                 |
| 16,17. | Matrix          | Estimate percentage, describe color(s), grain size, etc.  |
| 18.    | Description     | Contact depths, stratigraphic designations, lithologic descriptions, special observations, remarks<br>Describe lithologic units in following order: (Unit Type, Color, Welding, Crystallization)<br>Summarize in order: pumice, lithics, phenocrysts, lithophyses |

YMP-053-R1  
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# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

Procedure No.: YLP-SII.2Q-SMF  
FIELD LOGGING, HANDLING, AND DOCUMENTING  
BOREHOLE SAMPLES

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
YMP-010-R1  
6/1/92

## YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT FIELD SPECIMEN REMOVAL CHECKLIST AND CONTRACT

Recipient \_\_\_\_\_ Address \_\_\_\_\_  
Organization \_\_\_\_\_  
Telephone ( ) \_\_\_\_\_ (FIS) \_\_\_\_\_  
Courier \_\_\_\_\_

By \_\_\_\_\_ Date \_\_\_\_\_ Borehole ID \_\_\_\_\_  
Date Specimen Removal Request was approved \_\_\_\_\_

SPECIMEN INFORMATION			CHECKLIST		
Specimen Number	Interval Removed	Date Created	Form Mg?	Mkd/ Tag?	Pkgd? Desc.

SPECIMEN TRANSFER	
Person Releasing Custody _____	Person Accepting Custody _____
Date/Time _____	Date/Time _____
Checked By  _____	Date _____

INSTRUCTIONS ATTACHED

Exhibit YLP-SII.2Q-SMF 8

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## YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

Procedure No.: YLP-SII.2Q-SMF

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### INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT FIELD SPECIMEN REMOVAL CHECKLIST AND CONTRACT YMP-010

#### HEADER INFORMATION

<u>Recipient</u>	Person accepting custody of field specimens
<u>Address</u>	Recipient's address
<u>Organization</u>	Recipient's organization
<u>Telephone</u>	Recipient's telephone number; also FTS
<u>Carrier</u>	Person accepting specimen
<u>By/Date</u>	DS Staff determining authorization for removing specimens
<u>Borehole ID</u>	Alphanumeric designation assigned to borehole

#### SPECIMEN/CHECKLIST INFORMATION:

<u>Specimen Number</u>	Write number in space; check "Affixed?" column when label with duplicate number affixed to specimen and/or container
<u>Interval Removed/ Date Created</u>	Record interval removed and date created
<u>Foam Marker?</u>	Check when a labeled Whole Core Removed marker has been placed in core tray
<u>Marked Tag?</u>	Check when specimen has been properly identified
<u>Packaged? Description</u>	Place footages on packaging; include description of packaging material

#### SPECIMEN TRANSFER

<u>Person Releasing Custody</u>	Name of DS Staff/date/time of release of specimens
<u>Person Accepting Custody</u>	Per. on's signature/date/time of receipt of specimens



# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

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YMC-412-R2 8/20/93		<b>YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT SHIFT DRILLING SUMMARY</b>				
Borehole ID _____	Drilled Interval _____	Page _____ of _____				
Shift Start Date _____	Shift Time _____	(0000 - 2400 clock)				
Completed By _____	Date _____	Checked By _____	Date _____			
<b>SUMMARY OF ACTIVITIES</b> _____ _____ _____ _____ _____ _____ _____						
<b>GEOLOGIC INFORMATION</b> _____ _____						
<b>RESOLUTION</b> _____ _____						
* E-Core of run # _____ was backed to _____ of run # _____ and _____ of run # _____						
<b>RUN INFORMATION</b>						
#	H/VL	CUT	RCVRD	UNRCVRD	UNRCVD INT	% REC
<b>DAILY TOTAL</b>						
<b>CUMULATIVE TOTAL</b>						

Exhibit YLP-S1120-SMF

YMP-053-R1  
7/1/92

## YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

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### INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT SHIFT DRILLING SUMMARY YMP-012

#### HEADER INFORMATION

Borehole ID# Unique alphanumeric designation assigned to each borehole

Drilled Interval Total interval drilled during shift

Page/Total Number sequentially assigned to sheets; first blank contains number of that particular sheet; second blank contains total number of sheets for the shift

Shift Start Date Date of beginning of shift

Shift Time Expressed in 24-hour timeclock (0000 - 2400 hrs)

Completed by/Date Name of DS Staff

Checked by/Date Name of DS Staff not directly responsible for completion of form

#### SUMMARY OF ACTIVITIES

Summary of shift activities may include: drilling, testing, logging, or standby activities; equipment breakdown; unusual features or occurrences encountered; rig changes; inspections.

#### GEOLOGIC INFORMATION

Provide gross lithologic description and structural information.  
\* Resolution: If E (Extra) core is encountered, complete as necessary.

#### RUN INFORMATION (Note: Record all amounts to nearest 0.1 g)

R Run number

Interval Depth interval of run

Est Footage cut during run

Recovered Recovered footage

Unrecovered Unrecovered footage

Unrecovered Interval Depth of each unrecovered interval of core

% Recovered Percent of core recovered from run

Daily Total Daily totals of "cut," "recovered," and "unrecovered" columns; calculate % recovery

Cumulative Total Cumulative totals of "cut," "recovered," and "unrecovered" columns; calculate % recovery

YMP-053-R1  
7/1/92

# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

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BOREHOLE SAMPLES

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YMP-150-R0 8/20/93		YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PRELIMINARY DAILY FIELD BOREHOLE LOG						
DATE CORE RUNS UNREC. CORE	BITE	DRILLING RATE (ft/hr)			FRAC FREQ (/5 ft)		DEPTH GRAPHIC LOG	Hole # _____ Date _____ Completed By _____ LITHOLOGY/REMARKS
		0	10	20	0	50		
		30	70	120	50	100		
							30	
							35	
							40	
							45	
							50	
							55	
							60	
							65	
							70	
							75	
							80	
							85	
							90	
							95	
							100	
TOTAL DEPTH:								
TOTAL DRIVE CORE: TOTAL ROTARY DRILLED: TOTAL CORE: TOTAL CORE RECOVERED: PERCENT CORE RECOVERED:								
Bit Information Supplied By RSM: Bit Information								

Exhibit YLP-SII.2Q-SMF.7

# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

Procedure No.: YLP-SII.2Q-SMF  
FIELD LOGGING, HANDLING, AND DOCUMENTING  
BOREHOLE SAMPLES

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## INSTRUCTIONS FOR PREPARATION OF YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PRELIMINARY DAILY BOREHOLE LOG YMP-159

### HEADER INFORMATION

Borehole ID	Unique designation assigned to borehole
Study Plan Number	From Job Package
Core Size	Core diameter or designation
Drill Dates	Beginning and ending dates of drilling
Ground Elevation	Note whether surveyed or estimated
Coordinates	North and east State Plane (estimated or surveyed)
Total Depth	Final drilled borehole depth
Angle and Bearing	Angle from vertical and bearing

### COLUMN INFORMATION

(1) Dates	Day/month below solid line across column
Core Runs	Sequential run number below short line on left side
Loss	Black rectangle at left side of column
Bit Number	RSN or other identifier below short line at right
(2) Drilling Rate	Penetration rate (ft/hr) for core run
(3) Frac Frequency	Number of fractures per five-foot interval
(4) Depth	Selected interval - feet per inch
Graphic Log	Symbolic lithology and welding
(5) Page	Sequential page number
Lithology/Remarks	Descriptive lithology, hydrology, formation tops, drilling occurrences. Daily total core recovered/cut/percentage

### FOOTER INFORMATION

Add total footage drive core cut, total footage rotary drilled, total footage core, total footage core recovered, and percentage.

List bit information.

**Sandia National Laboratories**

Albuquerque New Mexico 87185

**AUG 23 1993**

**WBS 1.2.3.2.6  
QA: QA**

**J. Russell Dyer, Director  
Regulatory & Site Evaluation Division  
U.S. Department of Energy  
Yucca Mountain Site Characterization Project Office  
P O Box 98608  
Las Vegas, NV 89193-8608**

**Dear Russ:**

**Subject: Criteria for Boreholes NRG-8a, NRG-8b, and NRG-8c**

Three shallow boreholes are required to determine the depth of the alluvium between the existing boreholes NRG-2 and NRG-3. Approximate locations for these boreholes have been identified and staked in the field. Exact locations should be established by survey per the following instructions:

NRG-8a is located 50 feet north of the ramp alignment on a perpendicular line between the ramp and borehole RF-8.

NRG-8b is located 100 feet west of NRG-8a and 50 feet north of the ramp alignment.

NRG-8c is located 200 feet west of NRG-8a and 50 feet north of the ramp alignment.

The holes should be drilled and cored from the surface to approximately 50 feet depth or until the underlying rock unit is penetrated for one core run. Core size should be HQ. NRG-8a should be drilled first and the determination to drill NRG-8b and NRG-8c will be made by the PI.

If you require any additional information regarding this matter you may contact me at (505) 844-9160 or David Kessel at (702) 794-1900.

Sincerely,

  
L E Shephard, Manager  
YMP Management Department

LES:6302:dk

Copy to:

YMP D.R. Williams

YMP T.J. Sullivan

6302 D.S. Kessel

6302 90/1.2.3.2.6.2/MGMT/1.2/QA

6302 YMP CRF