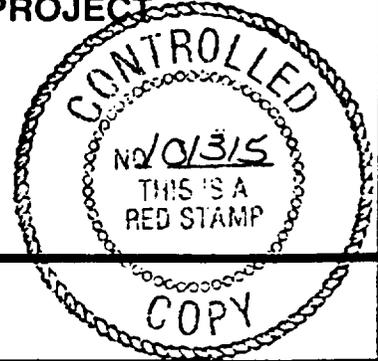


YMP-053-R1
7/1/92

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT



PROCEDURE



Title:

FIELD LOGGING, HANDLING, AND DOCUMENTING BOREHOLE SAMPLES

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

Revision: 0

ICN: 0

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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:

R.E. Spence 8/6/93

REVISION HISTORY

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

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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 core 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,

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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-SII.2Q-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 this 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 YMP 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) videotapes 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:

- a) 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;
- b) if there are no instructions, proceeds to Subsection 5.7;
- c) completes the Field Specimen Removal Checklist and Contract (Exhibit YLP-SII.2Q-SMF.5) according to the instructions;
- d) affixes duplicates of the specimen ID label to the contract and the package containing the specimen with reference to WCR;
- e) fills out the WCR label and affixes to the foam run marker; and
- f) 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:

- a) places a container fitted with dividers and foam cradles on the core rack, parallel to the core;
- b) breaks the core as little as possible to fit in container, and marks the breaks as in Subsection 5.4c;
- c) isolates the rubble in lay flat tubing with the top and bottom depths marked on the lay flat tubing;
- d) 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;
- e) 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
- f) secures the container and proceeds to Subsection 5.10.

5.8 CUTTINGS HANDLING

5.8.1 The T&MSS DS Staff:

- a) collects and packages the cuttings according to the instructions from the SOC/TPP/work program or the written directions of the PI;
- b) 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

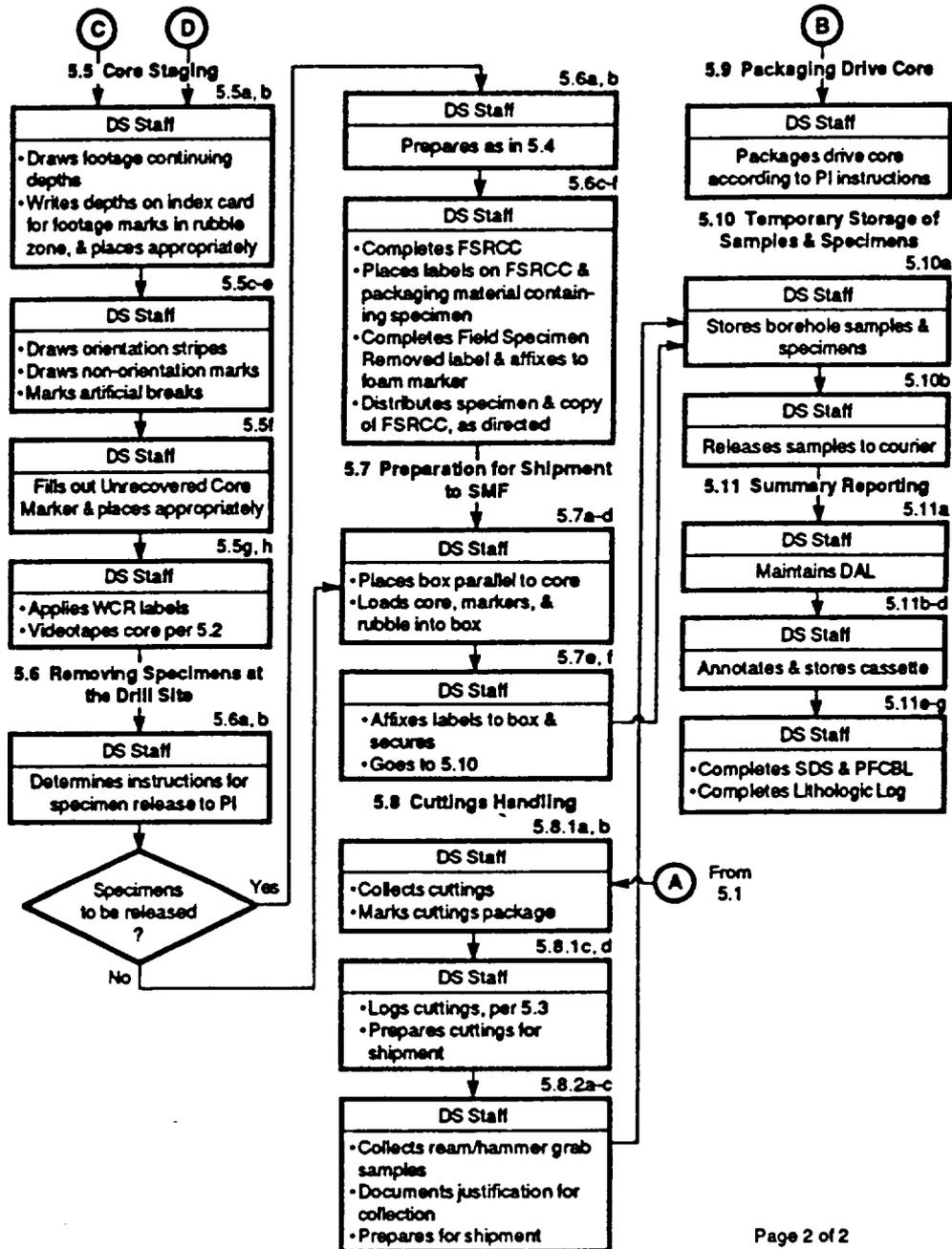
Records or record packages of documentation resulting from implementation of this procedure shall be collected and maintained in accordance with AP-1.18Q, *Records Management: Las Vegas Record Source Responsibilities*. The following are lifetime QA records:

- 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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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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YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
FIELD FACILITY ACCESS LOG

Borehole ID # _____ Page _____ of _____
Shift Start Date _____ Shift Time _____ (0000 - 2400 clock)

Exhibit YLP-SII.2Q-SMF.1

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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

Pagination 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 DS 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

<u>Borehole ID #</u>	Unique alphanumeric designation for borehole
<u>Cassette #</u>	Number sequentially assigned to each cassette; begin new log when starting new cassette
<u>Pagination</u>	Numbers sequentially assigned to sheets; first blank contains number of that particular sheet; second blank contains total number of sheets completed for the cassette
<u>Checked by/Date</u>	Name of DS Staff and date verifying that information on record is correct.

COLUMN INFORMATION

<u>Run Number</u>	Number of run being videotaped
<u>Run Interval</u>	Interval of run being videotaped
<u>Counter Interval</u>	Counter interval (from/to) on video camera
<u>Remarks</u>	Documentation of any other feature being videotaped, including interesting item in core, drilling activity, etc.
<u>Photographer</u>	Photographer's initials and date

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YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT STRUCTURAL LOG

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Page ___ of ___
Date _____

Checked By _____

Core Size _____

From _____ To _____
Dates _____

Borehole ID _____ DS Staff _____

Depth	Bracket		Fracture Orientation	Dip	Core				Fracture	Piece Length	Remarks
	Code	Value			Fract. Origm	Fract. Freq	Planarity	Fract. Freq			
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
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OA
Note: Blank spaces intentionally blank.

INSTRUCTIONS ATTACHED

**INSTRUCTIONS FOR PREPARATION OF
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
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 (≥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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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
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**INSTRUCTIONS FOR PREPARATION OF
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- (14) Fracture Origin Following codes indicate origin of break or fracture:
N: Natural; indicated by mineral coating or evidence of weathering, slickensides, lack of fit across break
I: Indeterminate; origin questionable, rotated so that coatings possibly removed
C: Coring induced; fresh, clean, tightly fitting breaks, description not necessary
H: Handling 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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 STRUCTURAL LOG
 YMP-011
 AMPLIFICATION OF INSTRUCTIONS**

<u>Numeric Descriptor</u>	<u>Category</u>	<u>Criteria</u>
(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 (16th 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.
D	Decomposed	Grain separation and clay alteration complete.

Exhibit YLP-S11.2Q-SMF.3 - Structural Log (continued)

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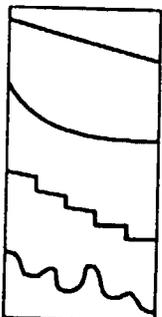
INSTRUCTIONS FOR PREPARATION OF
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AMPLIFICATION OF INSTRUCTIONS

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

<u>Numeric Descriptor</u>	<u>Category</u>	<u>Criteria</u>
(24) FRACTURE ROUGHNESS		
P	Polished	Slickensided, 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)

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

AMPLIFICATION OF INSTRUCTIONS

<u>Numeric Descriptor</u>	<u>Category</u>	<u>Criteria</u>	
(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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FIELD LOGGING, HANDLING, AND DOCUMENTING
BOREHOLE SAMPLES

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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)
Pagination	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 (<u>N</u> on, <u>P</u> artial, <u>M</u> oderate, <u>D</u> ense, or combinations) |
| 3. | Crystallization | <u>V</u> itric, <u>D</u> evitrified, <u>M</u> atrix devitrified, <u>S</u> pherulitic, <u>V</u> apor- <u>P</u> hase, <u>Z</u> eoitized |
| 4-6. | Lithophysae | 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
12. Note accessories (Sphene, Magnetite, etc.)
13. Estimate ratio of felsic to mafic minerals
14. Estimate proportions of sanidine/plagioclase/quartz
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
Describe lithologic units in following order: (Unit, Type, Color, Welding, <u>C</u> rystallization)
Summarize in order: pumice, lithics, phenocrysts, lithophysae |

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT -PROCEDURE

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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 () _____ (FTS) _____ Courier _____					
By _____ Date _____ Borehole ID _____ Date Specimen Removal Request was approved _____					
SPECIMEN INFORMATION		CHECKLIST			
Specimen Number	Altoast?	Interval Removed Date Created	Foam Mkr?	Mkd/ Tag?	Plgd? Desc.
SPECIMEN TRANSFER					
Person Releasing Custody: _____ Date/Time _____			Person Accepting Custody: _____ Date/Time _____		
Mr Mrs Only	Checked By _____ Date _____				

INSTRUCTIONS ATTACHED

Exhibit YLP-SII.2Q-SMF.5

**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
FIELD SPECIMEN REMOVAL CHECKLIST AND CONTRACT
YMP-010**

HEADER INFORMATION

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

SPECIMEN/CHECKLIST INFORMATION:

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

SPECIMEN TRANSFER

Person Releasing Custody Name of DS Staff/date/time of release of specimens
Person Accepting Custody Person's signature/date/time of receipt of specimens

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PROCEDURE

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BOREHOLE SAMPLES

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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

Pagination 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 changeouts; 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 ft)

Run number

Interval Depth interval of run

Cut 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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YMP-150-R0 8/20/93		YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT PRELIMINARY DAILY FIELD BOREHOLE LOG				Hole # _____ Page of _____	
DATES, CORE RUNS, UNREC. CORE	BIT #	DRILLING RATE (F/HR)		FRAC FREQ (/5 FT)		DEPTH GRAPHIC LOG	LITHOLOGY/REMARKS
		0	20	0	50		
		10	20	0	50	0	
		70	120	50	100	30	
						36	
						40	
						45	
						50	
						55	
						60	
						65	TOTAL DEPTH:
TOTAL DRIVE CORE: TOTAL ROTARY DRILLED: TOTAL CORE: TOTAL CORE RECOVERED: PERCENT CORE RECOVERED:							
Bit Information Supplied by RSM: <div style="border: 1px solid black; height: 20px; width: 100%;"></div>							

Exhibit YLP-SII.2Q-SMF.7

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 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

SC 6.1

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

I-346134
BMY

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.

8-23-93

Dyer
LUNG WALLACE
WILLIAMS
DULLIVAN
STUCKER
WATSON
TYNAN
HABTEL
LUBO C-SAFC
6/24/93
GRR
SMITH
SHANON

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