

WP 07-EU1002

Revision 0

Geologic Core Logging

Technical Procedure

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John D. VandeKraats
APPROVED FOR USE

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INTRODUCTION¹

This procedure defines the method used for geologic rock core logging carried out as part of Waste Isolation Pilot Plant (WIPP) site stratigraphic characterization or documentation. The objective of this procedure is to document core descriptions while preventing damage, reduction in scientific value, or loss of identity and/or traceability. The method outlines the logical order in which to proceed with core logging activities and provides for continuity of WIPP stratigraphy descriptions.

Performance of this procedure generates the following record:

- Attachment 1, Core Log

REFERENCES

BASELINE DOCUMENTS

- DOE/WIPP 93-056, Sedimentary Textures, Structures, and Lithofacies in the Salado Formation: A Guide for Recognition, Classification, and Interpretation
- WP 07-1, WIPP Geotechnical Engineering Program Plan
- WP 13-1, Westinghouse [now Washington] TRU Solutions LLC Quality Assurance Program Description

EQUIPMENT

The following forms and materials are used in implementation of this procedure:

- Core Log
- Measuring tape (engineering scale)
- Indelible felt-tip marking pens

PERFORMANCE

1.0 RECOVERY AND HANDLING

CAUTION

Care should be taken at all times while handling core to prevent damage.

- 1.1 Remove core section from core barrel and place in a core tray and/or storage location.
- 1.2 Insert core section place markers (e.g., wood blocks, bags of rubble, etc.) as place markers for unrecovered core and start and stop of core run.
- 1.3 Label core sections with orientation mark (i.e., direction of drilling) and hole footage.

NOTE

Acceptable orientation formats are a continuous line with arrows, parallel solid and dashed lines, or two different color parallel lines. The format used should be the same for the total length of the core.

2.0 CORE LOGGING

- 2.1 Complete the header section of the Core Log (Attachment 1).
 - 2.1.1 Obtain drilling specifications from the cognizant drilling supervisor.
 - 2.1.2 Obtain borehole coordinates from the cognizant surveyor (if applicable).
 - 2.1.3 Establish the unit of measurement that will be used (feet/inches, tenths of feet, meters, etc.).
 - 2.1.4 Complete as many forms as required and (page) number sequentially.
- 2.2 Mark depth of each run with a line across the "Run Number," "Recovered Length," "Rock Quality Designation (RQD)," and "Depth" columns.

NOTE

All information is recorded on Attachment 1.

- 2.3 Record coring run number in "Run Number" column.
- 2.4 Determine percent core recovery as follows:
 - 2.4.1 Divide actual length of core recovered by run advance and multiply the result by 100.
 - 2.4.2 Record in "% Recovered" column.
- 2.5 Determine RQD as follows:
 - 2.5.1 Divide cumulative length of sound rock segments 4 inches (10 centimeters) or greater in length by length of core run and multiply result by 100.
 - 2.5.2 Record in "RQD" column.
- 2.6 Record rock profile using symbols for rock types listed in Attachment 2, Rock Types and Mapping Symbols.

- 2.7 Record the geologic description and any unusual or distinct features. Include, as appropriate, the following information in the "Description" column.
- Rock type
 - Grain/crystal size
 - Minor constituents
 - Bedding
 - Rock structures
- 2.8 Include the following information in "Remarks" column, when applicable:
- Features such as cavities, joints, fractures, separations and faults
 - Samples taken, including type, size and interval
 - Descriptions of drilling activities, including drilling rates and drill responses to changes in lithology, or of core responses to drilling activities, including loss of core
 - Bit wear
 - Grouting

3.0 CORE HANDLING

NOTE

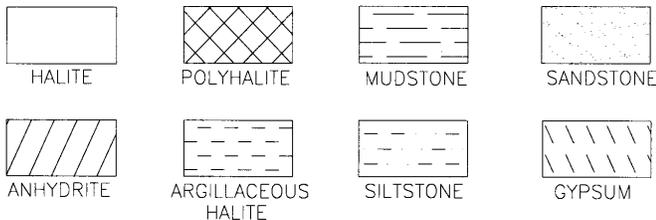
The method for packaging, preservation, and disposition of the core will be determined by the principal investigator or their delegate. The level of protection chosen will depend on the geologic character of the rock and the intended use of the core.

- 3.1 Provide sample preservation and packaging (i.e., moisture content, temperature level control, etc.) in accordance with the principal investigator's direction.
- 3.2 Gently place the core in the core box or tube starting with the shallowest end and progressing downward.
- 3.3 Core blocks should be placed at the ends of each run.

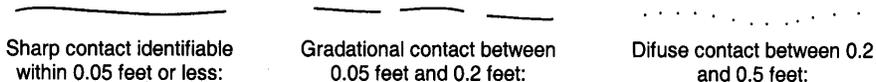
- 3.4 **IF** the run yields a core that is too short to fill the assigned box section or tube,
THEN place spacer blocks in the box section or tube to secure and prevent from scattering.
- 3.5 Mark the top and one side of the core box with the following information:
- Company or project name, or both
 - Drill hole number or location
 - Core box number, in sequence, down the hole
 - Depths to the top and bottom of the core length in the box
- 3.6 Complete a chain-of-custody to transfer the containers to the principal investigator or sample storage facility.

Attachment 2 - Rock Types and Mapping Symbols

Rock types:



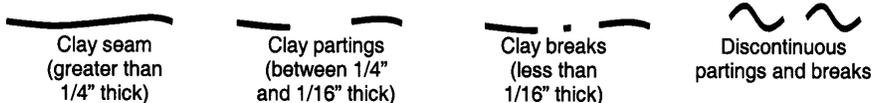
Contacts:



Grain/Crystal Size:

| | | |
|--------------------|--------------------|------------------|
| Coarse Crystalline | Medium Crystalline | Fine Crystalline |
| Greater than 5 mm | 1-5 mm | Less than 1 mm |

Clay Seams:



Other Features:

