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DESCRIPTION OF CORE RECOVERED FROM KOCH-HUTCHINSON TEST WELL NO. 1HF HUTCHINSON, KANSAS

Topical Report RSI-1648

prepared for

Koch Hydrocarbon LP
1910 South Broadacres Road
Hutchinson, Kansas 67501

July 2002

RESPEC

An Integrated Consulting and Services Company

DESCRIPTION OF CORE RECOVERED FROM KOCH-HUTCHINSON TEST WELL NO. 1HF HUTCHINSON, KANSAS

Topical Report RSI-1648

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1.0 INTRODUCTION

Koch Hydrocarbon LP (Koch) owns and operates an underground liquid hydrocarbon storage facility near Hutchinson, Kansas, that includes more than 70 solution-mined caverns. In support of the operation of the Hutchinson facility, Koch elected to perform a geomechanical study. The study was performed to determine (1) the compliance with generally accepted guidelines for liquid hydrocarbons in similar geologic settings and (2) the acceptable operating pressures and existing factor of safety for liquid hydrocarbon storage at the Koch facility.

A key component of this study was the drilling of a dedicated test well. The test well, named Hutchinson Test Well No. 1HF, was drilled to recover rock core for laboratory testing and to obtain additional detailed information on the lithology and properties of the rock surrounding the existing caverns.

Coring began in Hutchinson Test Well No. 1HF in the nonsalt units overlying the Hutchinson salt. This was done to collect core samples of the salt and nonsalt units that form the roof of the existing caverns. The test hole was subsequently drilled through the salt section and terminated in the nonsalt units below. This report describes the coring activities for Hutchinson Test Well No. 1HF and includes a description of the lithology of the core.

Field activities and the core are described in Chapter 2.0, and Chapter 3.0 summarizes the lithology of the core recorded in the field. Cited references are listed in Chapter 4.0. Appendix A is the lithologic description of the core. Appendix B contains a photographic log of the core, and Appendix C contains the field logs of the core. The Schlumberger geophysical logs are provided in Appendices D, E, F, and G.

2.0 FIELD OPERATIONS

All activities completed at the field site are in accordance with the following RESPEC procedures or as modified to meet specific conditions encountered:

- **Test Procedure TP-01**, RSI Standard Procedure for *Sample Acquisition, Storage, and Shipping, Rev. 3.*
- **Test Procedure TP-09**, RSI Standard Procedure for *Logging and Preserving Rock Core at a Field Site, Rev. 1.*

2.1 GENERAL OPERATIONS DESCRIPTION

Core tools were under the direction of Mike L'Orange of Dynatec Drilling, Inc. Pratt Well Services provided site support as needed. The coring assembly was nominally 5 feet in length with an outside diameter of 6 inches. The coring assembly was a double tube with the inner tube rotating on a bearing assembly to minimize damage to the core while drilling. The resulting core was nominally 4 inches in diameter.

The inner core barrel was retrieved through the core rod via a cable that attached onto the inner barrel by means of a stinger assembly. After pulling the inner barrel out of the hole, the inner barrel was laid down on the catwalk. Core was removed from the inner barrel by holding the core barrel at an angle and rapping on the barrel with a hammer. The extracted core was placed directly into wooden core boxes capable of holding one 5-foot-long piece of core.

The core was moved off the catwalk and away from the drill rig, temporarily placed on the ground, and subsequently moved to a heated trailer located on the site for logging. The core was then wiped clean, the pieces reassembled, and two different-colored parallel lines (red on the right and yellow on the left when viewed from the bottom of the core) were scribed on the core to maintain orientation of the pieces. A lithologic description of the core was recorded, depths (relative to ground level) were marked on the core, and photographs of the core were taken. Upon completion of these tasks, the core was placed on polyvinyl chloride (PVC) splints to facilitate handling and to protect the core, enclosed in plastic sleeves, replaced in the core boxes, and lids were nailed onto the core boxes. The core was padded and constrained in the core boxes using foam sheeting.

Prior to shipment, the core was moved to a heated warehouse to prevent freezing. After the completion of field activities, the core boxes were loaded on a heated truck for shipment to the RESPEC offices in Rapid City, South Dakota.

2.2 WELL ACTIVITIES

The well was spudded on January 18, 2002, and drilling proceeded to a depth of 159.5 feet at a diameter of 14 3/4 inches. Conductor pipe (10 3/4-inch-diameter) was set to a depth of 154.4 feet and fully cemented by circulation on January 19, 2002. Pratt Well Services drilled this section of the hole. Pratt rigged down on January 20, 2002.

Dynatec Drilling began rigging up over the precollared hole on January 21, 2002, and began drilling out cement on January 22, 2002. Drilling continued to 270 feet using a 9 7/8-inch-diameter bit. On January 23, 2002, 260.6 feet of 7-inch-diameter casing was set in the hole and cement circulated. It should be noted that regulatory issues dictated the two, closely placed sets of casing. Using a 6 1/4-inch-diameter bit, cement was drilled out and an additional 40 feet of new hole was drilled on January 24, 2002.

Coring activities began late January 24, 2002, when the core point (the top of the first core run) was reached at a depth of 310 feet below ground level. The final core run, Run 118, was recovered on January 27, with the depth of the well at 894 feet. When coring activities were complete, Schlumberger performed a suite of geophysical logs during the afternoon of January 27. These logs are included as appendices to this report. Fracture gradient tests were then performed upon completion of the geophysical logging; these tests were concluded in the early morning of January 28, 2002.

3.0 LITHOLOGIC DESCRIPTION

3.1 GENERAL

The cored section of the well was within the Permian Wellington Formation as described by Walters [1976]. The cored interval includes members of the Sumner Group: Wellington Shale, Hutchinson Salt, and Wellington Shale-Anhydrite. The rotary section of the hole likely penetrated the Nippewalla Group, Ninnescah Shale, and the uppermost part of the Wellington Shale. All these formations are primarily shales similar in character to the Wellington Shale. In fact, the Ninnescah Shale is typically identified only by a transition in the rock color from gray (Wellington Shale) to red (Ninnescah Shale). A detailed description of the core is provided in Appendix A.

The shales encountered by the borehole were quite brittle causing the core to experience numerous fractures during handling. However, core recovery was near 100 percent. Overall, the core was recovered in excellent condition with very little dissolution of the salt.

3.2 WELLINGTON SHALE

From the core point at 310 feet (all depths are given as feet below ground level) to a depth of about 514 feet, the rock consists primarily of shale with minor amounts of anhydrite and very minor dolomite. The anhydrite occurs as lamina and thin beds with frequent nodules. Lamina, in this report, is defined as layers less than 1 centimeter thick; beds are thicker than 1 centimeter. The shale is primarily gray to dark gray and occasionally red. The anhydrite is light gray in color.

Numerous fractures are present throughout the shale. The fractures are commonly subvertical and often filled with gypsum and red anhydrite that is a polymorph after gypsum (i.e., a material with anhydrite mineralogy and a gypsum crystalline structure). The core also contains subhorizontal fractures. These fractures tended to be very narrow and tight with mineralization occurring only as a coating on the fracture surfaces.

3.3 HUTCHINSON SALT MEMBER

The Hutchinson Salt at Hutchinson occurs from a depth of about 514 feet to a depth of about 859 feet. The salt sequence is comprised of alternating beds of shale, salt, and anhydrite. Of this 345-foot-thick salt sequence, a cumulative 245 feet of the interval (71 percent) is salt, 82 feet (24 percent) is shale, and 18 feet (5 percent) is anhydrite.

The salt crystals are generally clear to smoky in color with clay occurring as inclusions and on the crystal interfaces giving the intact core a generally clear to smoky to black color, dark gray being the most typical. Some salt beds are "dirty" containing significant amount of shale. The salt is generally coarse with crystal sizes generally ranging from 0.25 to 1 inch, but crystal size occurrences of 3 to 4 inches were observed in the core. The salt is cohesive and typically well bonded to the shale interbeds. Figure 3-1 shows a stratigraphic column through the Hutchinson Salt at Hutchinson.

3.4 WELLINGTON SHALE-ANHYDRITE

Shale and anhydrite were encountered from 859 feet to the bottom of the cored interval at 894 feet. The shale is typically dark gray with minor anhydrite- and salt-filled fractures. The anhydrite is light gray to white and containing gray shale laminations and masses giving the anhydrite a mottled appearance in part.

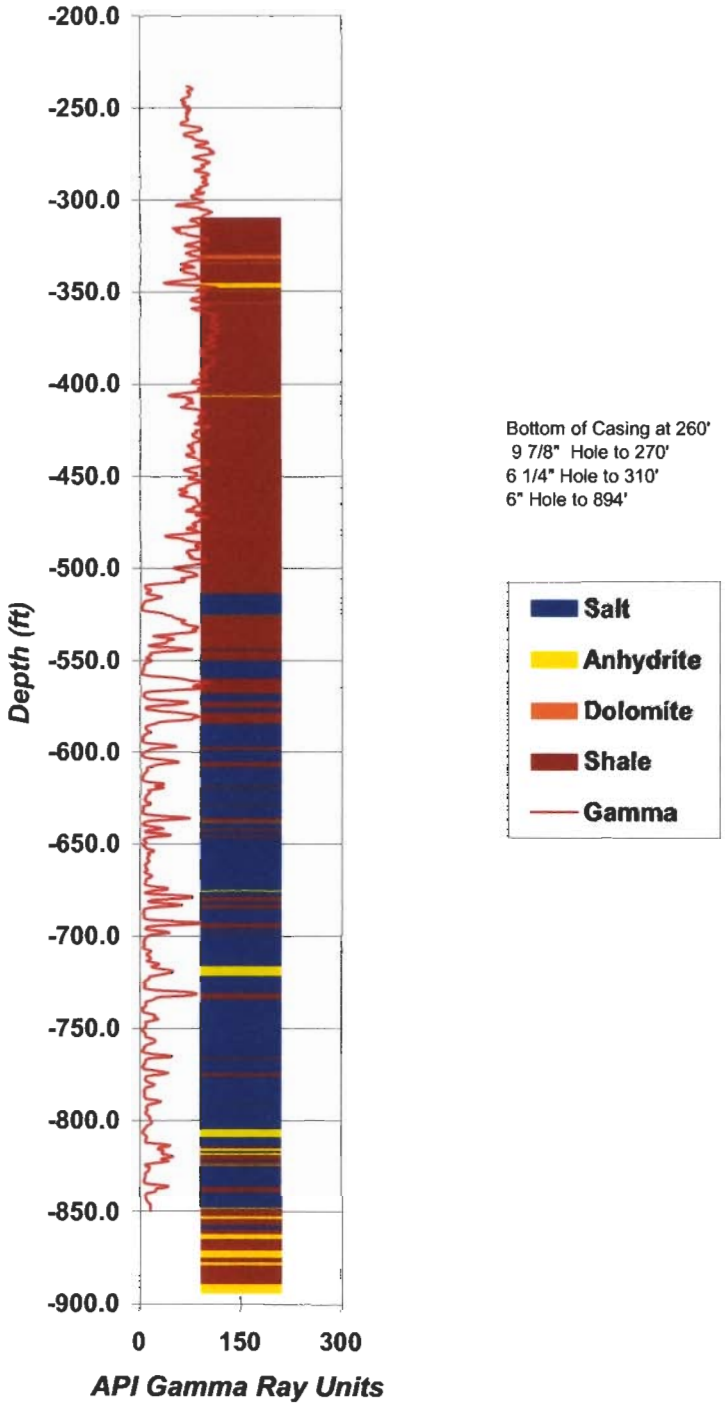


Figure 3-1. Stratigraphic Column and Gamma Ray Trace Through the Cored Section of Hutchinson Test Well No. 1HF.

4.0 REFERENCES

Walters, R. F., 1976. "Land Subsidence in Central Kansas Associated With Rock Salt Dissolution," *Proceedings, Solution Mining Research Institute, Inc.*, June.

APPENDIX A

LITHOLOGIC DESCRIPTION
HUTCHINSON TEST WELL NO. 1HF
HUTCHINSON, KANSAS

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 1 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 1	310.0	315.0	Shale, dark gray with anhydrite and gypsum banding and mottling. Fairly competent. Anhydrite/gypsum banding generally appears as healed fracture infilling.
Run 2	315.0	317.5	Top of run rubbleized. Shale, massive, dark gray with gypsum banding and mottling. Significant anhydrite at base.
	317.5	319.1	Same as above.
	319.1	320.0	Shale, dark gray, with single cross-bedded gypsum filled healed fracture. Bedding more distinct at bottom.
Run 3	320.0	324.5	Shale, dark gray, with light gray shale interbeds. Gypsum filled healed fractures with minor mottling.
	324.5	325.0	0.05' gypsum filled healed fracture in shale at 324.5'. 0.4' massive dolomite interbed to 324.9. Shale at base.
Run 4	325.0	326.1	Shale, dark gray, with anhydrite and gypsum banding and mottling. Banding generally parallel to bedding.
	326.1	330.0	Shale, dark gray, 0.4' anhydrite at 326.2' and at 328.3'. Subhorizontal to subvertical anhydrite and gypsum-filled healed fractures.
Run 5	330.0	332.3	Argillaceous limestone (dolomite?). Generally massive with minor banding
	332.4	334.2	Shale, dark gray, with gypsum banding.
	334.2	335.0	Argillaceous limestone (dolomite?), banded and mottled. [5.3' total in barrel]
Run 6	335.0	340.0	Shale, dark gray, with nodular and interbedded anhydrite. Fiberous anhydrite filled subvertical healed fractures from 336.5' to 337.5'. [4.9' total in barrel]
Run 7	340.0	345.0	Shale, dark gray, with anhydrite. Anhydrite ranging from thin filled subhorizontal to subvertical healed fractures to 4"-diameter nodules. Base of run at approximated 40% anhydrite.
Run 8	345.0	348.0	Anhydrite with gray shale interbeds. Bedding dip horizontal to 20°. Minor vertical, anhydrite-filled healed fractures.
	348.0	349.5	Shale, dark gray, with anhydrite-filled healed fractures.
	349.5	350.0	Anhydrite and gypsum. [5.1' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 2 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 9	350	355	Shale, dark gray, with sub-vertical anhydrite layers and filled healed horizontal to subvertical fractures. Drilling induced damage from 353.1' to 355'. [4.7' total in barrel]
Run 10	355.0	356.2	Rubble from drilling-induced damage. Pieces of dark gray shale and calcareous shale.
	356.2	356.7	Argillaceous limestone (dolomite?). Acid reaction with shavings only. Some drilling-induced damage at the base.
	356.7	360.0	Shale, dark gray, with anhydrite mottling, nodules and fracture infilling. Subhorizontal healed fractures. Gypsum and fiber anhydrite infilling. [5.1' total in barrel]
Run 11	360.0	362.0	Calcareous shale with gypsum filled healed fractures. Section of core very broken.
	362.0	364.5	Shale, dark gray, layered shale with anhydrite mottling. At 363.8' distinct 0.025'-thick fiber anhydrite-filled fracture. [5.5 ft total in barrel]
Run 12	364.5	369.8	Shale, dark gray, with anhydrite banding. [4.2' total in barrel]
Run 13	369.8	374.0	Shale, dark gray, laminar to massive. Greenish to reddish tint from 372'-374'. Anhydrite layering and minor anhydrite- and gypsum-filled subhorizontal fractures. [5.4' total in barrel]
Run 14	374.0	379.0	Shale, dark gray, finely bedded. Reddish color from 377.8' to 378.7'. Minor light gray anhydrite layers. Minor fiber anhydrite- and gypsum-filled subhorizontal to subvertical healed fractures. [5.3' total in barrel]
Run 15	379.0	384.5	Shale, dark gray, with alternating red shale layers. Very minor anhydrite layering and very minor anhydrite-filled healed fractures. [4.5' total in barrel]
Run 16	384.5	385.5	Shale, dark gray. Relatively weak.
	385.5	387.0	Shale, red. Relatively weak. Very minor subvertical fracturing.
	387.0	387.7	Shale, dark gray. Relatively weak.
	387.7	389.5	Shale, red. Relatively weak. [5.4' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 3 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 17	389.5	391.0	Shale, dark gray, with minor subhorizontal and subvertical fiber anhydrite-filled healed fractures. Top of interval rubble.
	391.0	393.5	Shale, red, punky and weak with minor subvertical fiber anhydrite-filled healed fractures.
	393.5	394.2	Shale, dark gray, with minor subhorizontal and subvertical fiber anhydrite-filled healed fractures. [5.6' total in barrel]
Run 18	394.2	395.8	Shale, red, with anhydrite, variegated texture. Very fractured, some fractures anhydrite filled.
	395.8	399.6	Shale, dark gray, very weak with horizontal and subvertical fiber anhydrite-filled healed fractures. [5.5' total in barrel]
Run 19	399.6	404.2	Shale, gray, very weak with anhydrite nodules and gypsum-filled steeply dipping fractures.
	404.2	404.8	Shale, red. [5.3' total in barrel]
Run 20	404.8	405.4	Shale, dark gray.
	405.4	405.7	Anhydrite, clear to opaque, red/orange.
	405.7	406.4	Shale, dark gray, with anhydrite.
	406.4	407.3	Massive light gray anhydrite.
	407.3	409	Shale, dark gray, with high angle fracturing. [3.6' total in barrel]
Run 21	409	411.6	Shale, dark gray, finely bedded. At 409.5' nodular anhydrite with well defined top contact with iron oxide color.
	411.6	414	Shale, light gray, with dark gray shale and anhydrite interbedding. [5.0' total in barrel]
Run 22	414.0	415.8	Shale, gray, with notable absence of vertical fractures.
	415.8	416.2	Shale, red, soft.
	416.2	419.0	Shale, dark gray, with and light gray shale interbeds. Anhydrite nodules at 418.8' [5.1 ft total in barrel]
Run 23	419.0	424.0	Shale, dark gray, with occasional white anhydrite nodules. [5.1' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 4 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 24	424.0	429.0	Shale, dark to medium gray, with anhydrite bedding and nodules. [5.0' total in barrel]
Run 25	429.0	434.0	Shale, dark gray, finely bedded with light gray interbeds. Occasional white anhydrite layering and nodules. [5.1' total in barrel]
Run 26	434.0	438.0	Shale, dark gray, finely bedded with light gray interbeds. Occasional white anhydrite layering and nodules. [3.9' total in barrel]
Run 27	438	443.4	Shale, dark gray, finely bedded with light gray interbeds. Occasional white anhydrite layering and nodules. [5.4' total in barrel]
Run 28	443.4	448.7	Shale, dark gray, finely bedded with light gray interbeds and white anhydrite layering and nodules. [5.3' total in barrel]
Run 29	448.7	454.0	Shale, dark gray, finely bedded with light gray interbeds and white anhydrite layering and nodules up to 0.25' thick. Numerous anhydrite-filled subvertical fractures. [5.3' total in barrel]
Run 30	454.0	459.0	Shale, dark gray, finely bedded with light gray interbeds and white anhydrite layering and nodules. [5.2' total in barrel]
Run 31	459.0	464.0	Shale, dark gray, finely bedded with white anhydrite layering and nodules. [5.0' total in barrel]
Run 32	464.0	469.0	Shale, dark gray, with white anhydrite interbeds and occasional anhydrite nodules. [4.75' total in barrel] Anhydrite-filled subhorizontal to subvertical fractures at 468'. Shale turning greenish at 468'.
Run 33	469.0	474.0	Shale, dark gray, finely bedded with light gray shale interbeds and occasional anhydrite nodules. Gypsum/anhydrite-filled subvertical fractures from 471' to 473'.

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 5 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 34	474.0	479.0	Shale, dark gray, with light gray shale interbeds and irregular anhydrite layering and nodules.
Run 35	479.0	484.0	Shale, dark gray, with irregular anhydrite layering and nodules. Drilling-induced damage from 479' to 450'. From 480' to 481.5 roughly 30% anhydrite. Irregular anhydrite layering dips 30° from 483' to 484'.
Run 36	N/A	N/A	RUN NUMBER 36 SKIPPED
Run 37	484.0	489.0	Shale, dark gray, with light gray shale interbeds. At 486' distinct dark gray blocks of shale suspended in a light gray matrix. Minor filled vertical fractures. [4.9' total in barrel]
Run 38	489.0	494.0	Shale, dark gray, with minor anhydrite. 490' to 491' contains fine vertical fractures orange anhydrite. From 493' to 494' small disseminated clear white crystals may be salt. (First trace of salt).
Run 39	494.0	499.0	Shale, dark gray. Very soft at 495' and 496.5' to 498'. Anhydrite nodules from 498.5' to 499'. Some vertical fractures with salt infilling. [5.2' total in barrel]
Run 40	499.0	504.0	Shale, dark gray, with soft sections. Generally moderately fractured with gypsum and anhydrite infillings. High angle fracture offsets visible at 530'.
Run 41	504.0	509.0	Shale, dark gray, with up to 0.5'-thick anhydrite layers. Possible salt hopper crystals at 508.5'.
Run 42	509.0	509.4	Shale, dark gray, with minor salt.
	509.4	513.6	Salt, gray to dark gray. Max grain size about 0.75" (mostly 0.5").
	513.6	514.0	Salt/Shale mix with crystals to 1". [5.1' in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 6 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 43	514.0	516.5	Salt, dark gray to black. Typical grain size 0.5" to 0.75", some crystals to 1.25".
	516.5	518.2	Salt, with numerous subangular shale and anhydrite fragments up to 2" maximum size. Brecciated appearance.
	518.2	519.0	Salt, dark gray.
Run 44	519.0	521.5	Salt, dark gray to black, with moderate anhydrite. Average grain size about 0.5", maximum to 1.25".
	521.5	524.0	Salt, translucent to clear, with gray bands. Typical grain size about 0.5", maximum to 1".
Run 45	524.0	525.25	Salt, translucent to clear, 0.5" typical grain size.
	525.0	525.75	Anhydrite, salt, shale.
	525.25	529.0	Shale, disturbed with salt-filled fractures and significant anhydrite. Anhydrite bedded and nodular with boudanage texture.
Run 46	529.0	534.0	Shale, medium to dark gray, bedded. Includes anhydrite nodules and salt-filled, steeply dipping fractures.
Run 47	534	537.7	Shale and anhydrite beds. Shale at 536' is soft. Minor salt-filled fractures.
	537.7	539	Salt, medium gray, with shale disseminated throughout.
Run 48	539.0	539.5	Shale.
	539.5	544.0	Salt, dirty, with shale and anhydrite mix. At 543', salt crystal size to 4".
Run 49	544	544.5	Salt, dark gray, and dirty.
	544.5	550.3	Shale, with anhydrite. Salt-filled vertical fractures.
	550.3	549.0	Salt, dirty, with shale. [5.2' total in barrel]
Run 50	549.0	554.0	Salt, dirty, with anhydrite layers and minor shale. [4.7' total in barrel]
Run 51	554.0	557.0	Salt, dirty, with shale and anhydrite. Typical grain size about 0.5", maximum to 1".
	557.0	559.0	Salt, dirty but cleaner than salt immediately above. [5.4' in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 7 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 52	559.0	559.7	Salt, fairly clean.
	559.7	564.0	Shale, with anhydrite- and salt-filled voids and subvertical to subhorizontal fractures.
Run 53	564.0	568.0	Shale, with anhydrite. Soft clay seam at 565'.
	568.0	569.0	Salt, dark gray to black. Typical grain size about 0.5". [5.5' total in barrel]
Run 54	569.0	572.2	Salt, dark gray. Typical grain size 0.5" to 0.75", maximum to 1.5".
	572.2	574	Shale, anhydrite and salt layers with distinct clay seams. [5.0' total in barrel]
Run 55	574.0	575.7	Shale.
	575.7	578.3	Salt, brownish to dark gray.
	578.3	579.0	Shale and salt layers with minor anhydrite and clay seams.
Run 56	579.0	580.5	Shale and salt layers with minor anhydrite and clay seams.
	580.5	584.0	Shale, medium to dark gray, with numerous subvertical to vertical salt-filled fractures. [4.8' total in barrel]
Run 57	584.0	584.5	Shale.
	584.5	589.0	Salt. Very coarse, glassy to 585.5' then dark to medium gray. Shale layer at 585.5'. [4.9' total in barrel]
Run 58	589.0	594.0	Salt, dark gray to black. Typical grain size 0.5" to 1".
Run 59	594.0	597.0	Salt, dark gray. Typical grain size 0.5" to 1".
	597.0	599.0	Shale, gray, with anhydrite and salt. Salt-filled fractures.
Run 60	599.0	604.0	Salt, dark gray. Clay seams from 599' to 600'. [4.75' total in barrel]
Run 61	604.0	605.3	Salt, dark gray.
	605.3	608.0	Shale, medium gray, with dispersed salt crystals and minor anhydrite.
	608.0	609.0	Salt with shale/clay inclusions. Typical grain size about 0.5".

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 8 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 62	609.0	614.0	Salt, dark gray, with clay seams and minor anhydrite in layers. [5.0' total in barrel]
Run 63	614.0	618.2	Salt, gray. Typical grain size 0.5" to 1".
	618.2	618.7	Shale.
	618.7	619.0	Salt, gray. [5.3' total in barrel]
Run 64	619.0	620.5	Salt with clay-filled fractures.
	620.5	621.0	Shale, gray, with anhydrite- and clay-filled fractures.
	621.0	624.0	Salt with very fine to 0.25"-thick clay seams.
Run 65	624.0	628.5	Salt, gray. Appears purer than overlying salt units. Typical grain size about 0.5", maximum to 1".
	628.5	629.0	Shale, gray, with anhydrite. [5.2' total in barrel]
Run 66	629.0	634.0	Salt, gray, with clay seams and occasional anhydrite and shale layers. Fairly uniform crystal size at about 0.5". [4.9' total in barrel]
Run 67	634.0	636.0	Salt, dirty, with shale and anhydrite.
	636.0	638.0	Shale, dark gray, with orange salt and fine anhydrite layers.
	638.0	638.5	Anhydrite, gray to white. Very hard.
	638.5	639.0	Salt, clear to translucent.
Run 68	639.0	642.0	Salt, translucent, orange. Typical grain size about 1". Numerous small-diameter pits (possible dissolution of other minerals). Clay seam at contact with lower shale.
	642.0	643.0	Shale with anhydrite and orange salt.
	643.0	644.0	Salt, gray, dirty.
Run 69	644.0	645.5	Salt, gray, dirty.
	645.5	646.5	Shale with anhydrite and orange salt.
	646.5	649.0	Salt. Typical grain size greater than 1". [5' total in barrel].
Run 70	649.0	654.0	Salt, dark gray to black, with minor clay seams, shale and anhydrite. Minor red/orange mineralization. Coarse grained. [5.2' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 9 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 71	654.0	659.0	Salt, dark gray to black with anhydrite and clay seams. Typical grain size between 0.5" and 1".
Run 72	659.0	664.0	Salt, dark gray opaque to translucent with anhydrite, shale, and clay seams. [5.2' total in barrel]
Run 73	664.0	669.0	Salt, dark gray, fairly dirty. Shale rich at 668.5'. [4.9' total in barrel]
Run 74	669.0	674.0	Salt, dark gray to black with sections reddish orange. Minor clay seams. Typical grain size between ½" and ¾". [5.1' total in barrel].
Run 75	674.0	675.0	Salt, dark gray, dirty.
	675.0	676.0	Shale and anhydrite. Anhydrite section about 0.4' thick.
	676.0	678.7	Salt, dark gray.
	678.7	679.0	Shale, gray.
Run 76	679.0	681.0	Shale, dark gray to black with salt-filled subvertical fractures. Zone about 0.5' thick has brecciated appearance.
	681.0	683.0	Salt, dark gray to black.
	683.0	684.0	Shale with orange brown salt layer and salt-filled fractures.
Run 77	684.0	685.0	Shale, dark gray to black with anhydrite seams and salt-filled fractures.
	685.0	689.0	Salt, gray to light gray. Typical grain size between ½" and 1". [5.1' total in barrel]
Run 78	689.0	693.0	Salt, gray. Typical grain size between ½" and 1".
	693.0	694.0	Shale, dark gray with orange salt. [5.1' total in barrel]
Run 79	694.0	695.5	Shale, dark gray with orange salt grading toward increasing salt content in lower 6". Clay seam at base of section.
	695.5	698.5	Salt, dark gray. Typical grain size between ½" and 1".
	698.5	699.0	Shale, black with red salt. [5.3' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 10 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 80	699.0	704.0	Salt, gray, relatively clean.
Run 81	704.0	709.0	Salt, medium gray to clear and relatively clean. Purity appears better than any in overlying section. Typical grain size between ¾" and 1", maximum to 1½".
Run 82	709.0	714.0	Salt, variable, ranging from clear to opaque and orange-red to dark gray. Typical grain size about 1", maximum about 2". [5.3' total in barrel]
Run 83	714.0	716.0	Salt, gray to orange and fairly clear. Very small pits (less than ¼"), perhaps from brine soluble mineral.
	716.0	719.0	Anhydrite with salt and minor black shale. 4" thick salt layer at 718.5'. [5.1' total in barrel]
Run 84	719.0	722.0	Anhydrite and shale with minor salt.
	722.0	724.0	Salt, with minor clay seams. [4.9' total in barrel]
Run 85	724.0	729.0	Salt, gray, becoming somewhat cleaner with depth. Anhydrite salt mixture between 724' and 725'. At about 728', very coarse crystals with grain sizes up to 4".
Run 86	729.0	731.0	Salt, dark gray to tan, with minor anhydrite.
	731.0	734.0	Shale and anhydrite, with minor salt. Shale/salt mixture at 734'. Fairly weak at 732'. [5.2' total in barrel]
Run 87	734.0	739.0	Salt, dark gray to orange with distinct layering. Typical grain size between ½" and ¾".
Run 88	739.0	744.0	Salt, gray, with minor translucent orange salt. Shale seam at 743.3'. [4.8 total in barrel]
Run 89	744.0	749.0	Salt, dark gray to orange. Anhydrite seam at 745', shale seam at 746'. [4.7' total in barrel]
Run 90	749.0	754.0	Salt, dark gray to black to translucent orange, with minor anhydrite. Possible very minor potash. [5.3' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 11 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 91	754.0	759.0	Salt, orange to dark gray, clean to dirty. Minor clay seams and mixed shale and anhydrite between 757' and 758'. Possible potash mineralization between 755' and 756'. [5.0' total in barrel]
Run 92	759.0	764.0	Salt, orange to dark gray, clear and clean to dirty. Typical grain size between 1" and 1½". 2" shale seam at 759'. Distributed fine anhydrite stringers. [5.1' total in barrel]
Run 93	764.0	765.7	Salt, dark to medium gray, Typical grain size 1" to 1½".
	765.8	766.7	Shale, gray with anhydrite.
	766.7	769.0	Salt, dark gray, dirty. Maximum grain size greater than 2". [5.0' total in barrel]
Run 94	769.0	774.0	Salt, dark gray to glassy. Below 771', salt is very coarse. Typical grain size about 2", maximum to 4". [5.0' total in barrel]
Run 95	774.0	776.0	Shale, with significant anhydrite and salt.
	776.0	779.0	Salt, dirty with minor anhydrite. Typical grain size about 1" to 778' and greater than 2" from 778' to 779'. [5.0' total in barrel]
Run 96	779.0	784.0	Salt, dark gray to brown to clear, with several clay seams distributed. [5.0' total in barrel]
Run 97	784.0	789.0	Salt, medium to dark gray, with minor anhydrite. Typical grain size about 1", maximum to about 2". [4.9' total in barrel]
Run 98	789.0	790.6	Salt, dark gray.
	790.6	791.0	Shale, gray.
	791.0	794.0	Salt, glassy to dark gray, with minor anhydrite. Mixed shale between 791.5 and 793.0. Coarse-grained salt with maximum grain size to 3". [5.4' total in barrel]
Run 99	794.0	799.0	Salt, alternating dark gray/black to clear/translucent. Frequent red-orange salt. Typical grain size ½" to ¾". [4.9' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 12 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 100	799.0	804.0	Salt, gray to orange to white, translucent in sections. Minor anhydrite and clay seams. Typical grain sized between ¾" and 1". [4.7' total in barrel]
Run 101	804.0	804.5	Salt, white to light gray, translucent. Fine grained, typical grain size about ¼".
	804.5	809.0	Anhydrite, medium gray, fine grained, very hard. [5.4' total in barrel]
Run 102	809.0	809.2	Anhydrite, medium gray, fine grained, very hard.
	809.2	814.0	Salt, gray. Minor black shale at base. Typical grain size about 1", maximum to 2". [4.9' total in barrel]
Run 103	814.0	814.3	Salt, gray, with anhydrite.
	814.3	815.0	Shale, dark gray to black.
	815.0	816.9	Anhydrite, white to gray, with shale and salt.
	816.9	817.5	Salt, coarse grained, with anhydrite and shale.
	817.5	819.0	Anhydrite, with minor clay/shale and salt. [5.4' total in barrel]
Run 104	819.0	821.5	Shale matrix with angular anhydrite, brecciated appearance.
	821.5	822.3	Salt, with inclusions and pitted surface. Salt coarse and glassy.
	822.3	824.0	Shale matrix with angular anhydrite, brecciated appearance. [5.0' total in barrel]
Run 105	824.0	824.7	Anhydrite, with minor clay and salt.
	824.7	826.5	Salt, clear and clean. Very coarse, grain size greater than 3". Surface pitting.
	826.5	829.0	Salt, dark gray to black with shale and anhydrite.
Run 106	829.0	834.0	Salt, gray, coarse grained with very minor shale and anhydrite. [4.8' total in barrel]
Run 107	834.0	836.0	Salt, clear and clean. Very coarse, grain size to 4".
	836	839.0	Shale, brecciated appearance, shale/anhydrite salt mixture, soft at 837'. [4.4' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 13 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 108	839.0	844.0	Salt, dark gray to tan, dirty, with occasional shale layers. Grain size ranges from about 1" to 4" (from 842' to 844'). [5.3' total in barrel]
Run 109	844.0	848.0	Salt, gray, with increasing impurities with depth. Typical grain size about 1", maximum to about 2".
	848.3	848.8	Anhydrite, hard.
	848.8	849.0	Shale, black. [5.1' total in barrel]
Run 110	849.0	852.5	Shale, gray to red, with minor salt.
	852.5	854.0	Anhydrite, with shale. Contains a large fibrous salt-filled fracture. [5.4' total in barrel]
Run 111	854.0	857.5	Shale, with anhydrite and minor salt.
	857.5	859.0	Salt, dark gray. Typical grain size between ½" and ¾". [5.4' total in barrel]
Run 112	859.0	859.5	Salt, gray.
	859.5	862.0	Shale with anhydrite.
	862.0	864.0	Anhydrite with shale. [5.0' total in barrel]
Run 113	864.0	865.0	Anhydrite with shale.
	865.0	869.0	Shale, gray-green to brown. Very soft at 866'. Minor anhydrite- and salt-filled fractures. [5.4' total in barrel]
Run 114	869.0	871.0	Shale, dark gray to black, with anhydrite. Very hard to 870'. Minor salt-filled subvertical fractures.
	871.0	874.0	Anhydrite, nodular to massive. Minor shale and very minor salt-filled fractures. [5.0' total in barrel]
Run 115	874.0	875.0	Anhydrite with 3" clay/shale seam.
	875.0	877.3	Shale with fine anhydrite interbeds.
	877.3	879.0	Anhydrite, massive and hard.
Run 116	879.0	884.0	Shale and anhydrite, alternating beds roughly 1' ft thick. [5.0' total in barrel]

Table A-1. Lithologic Description of Hutchinson Test Well No. 1HF, Hutchinson, Kansas (Page 14 of 14)

Core Run	From Depth (ft)	To Depth (ft)	Description
Run 117	884.0	889.0	Shale with anhydrite. [5.0' total in barrel]
Run 118	889.0	894.0	Anhydrite with 1' thick section of shale at 891'.

APPENDIX B

PHOTOGRAPHIC LOG OF THE CORE HUTCHINSON TEST WELL NO. 1HF HUTCHINSON, KANSAS

RSI-1311-02-015

Figure B-1. Core Run 1 — Depth Interval 310.0 to 315.0 Feet.

RSI-1311-02-016

Figure B-2. Core Run 2 — Depth Interval 315.0 to 320.0 Feet.

RSI-1311-02-017

Figure B-3. Core Run 3 — Depth Interval 320.0 to 325.0 Feet.

RSI-1311-02-018

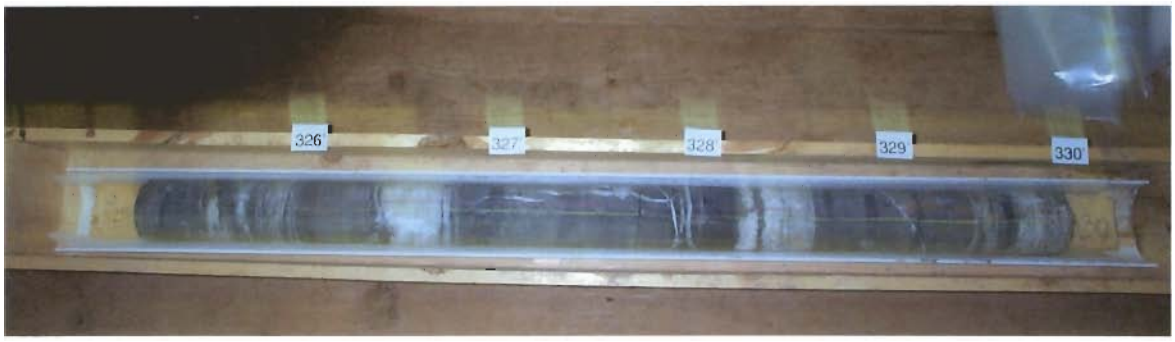


Figure B-4. Core Run 4 — Depth Interval 325.0 to 330.0 Feet.

RSI-1311-02-019

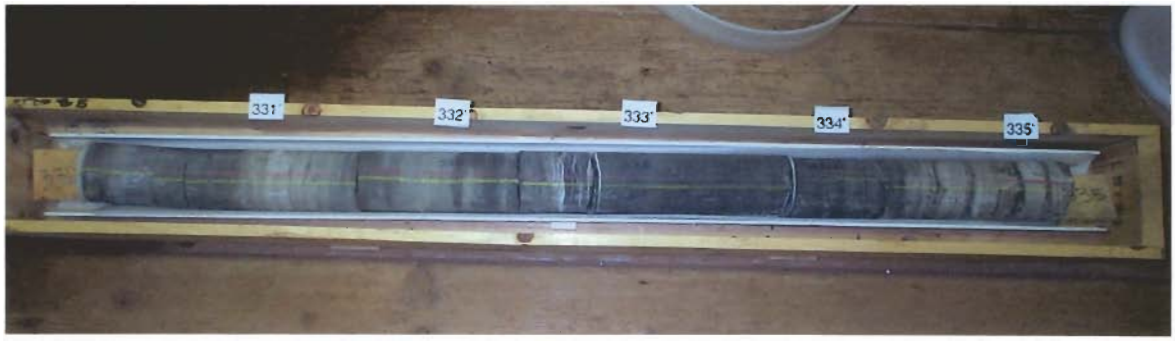


Figure B-5. Core Run 5 — Depth Interval 330.0 to 335.0 Feet.

RSI-1311-02-020

Figure B-6. Core Run 6 — Depth Interval 335.0 to 340.0 Feet.

RSI-1311-02-021

Figure B-7. Core Run 7 — Depth Interval 340.0 to 345.0 Feet.

RSI-1311-02-022

Figure B-8. Core Run 8 — Depth Interval 345.0 to 350.0 Feet.

RSI-1311-02-023

Figure B-9. Core Run 9 — Depth Interval 350.0 to 355.0 Feet.

RSI-1311-02-024

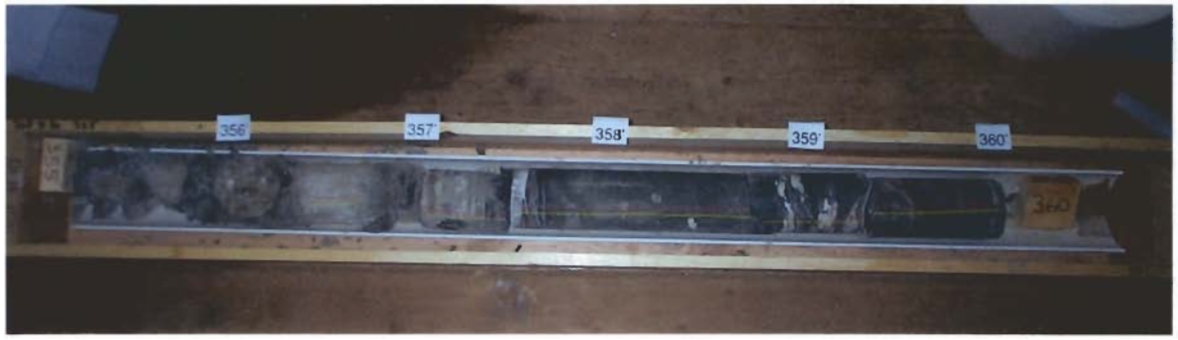


Figure B-10. Core Run 10 — Depth Interval 355.0 to 360.0 Feet.

RSI-1311-02-025

Figure B-11. Core Run 11 — Depth Interval 360.0 to 364.5 Feet.

RSI-1311-02-026

Figure B-12. Core Run 12 — Depth Interval 364.5 to 369.8 Feet.

RSI-1311-02-027

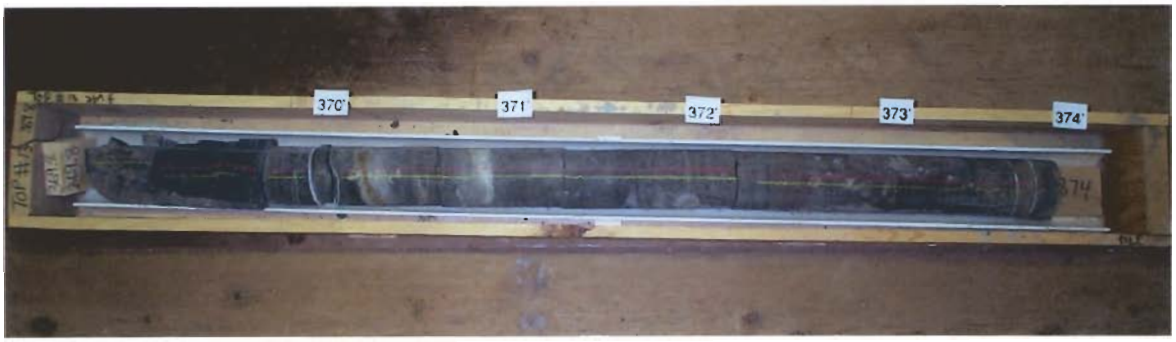


Figure B-13. Core Run 13 — Depth Interval 369.8 to 374.0 Feet.

RSI-1311-02-028

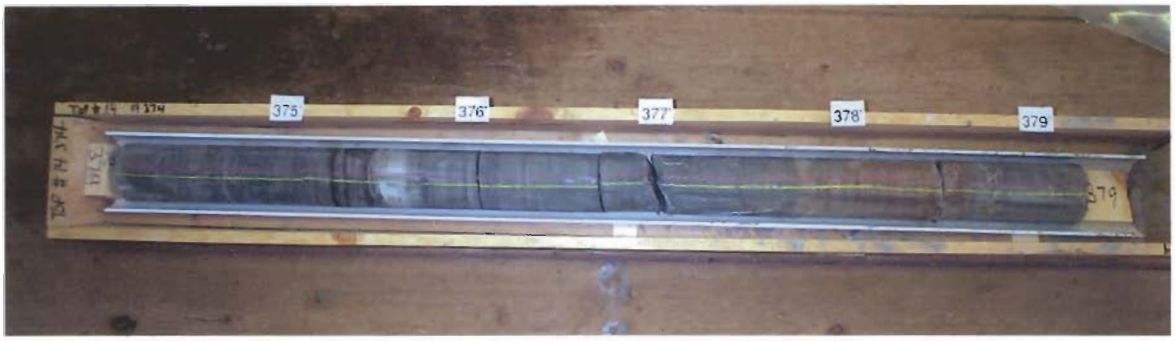


Figure B-14. Core Run 14 — Depth Interval 374.0 to 379.0 Feet.

RSI-1311-02-029

Figure B-15. Core Run 15 — Depth Interval 379.0 to 384.5 Feet.

RSI-1311-02-030

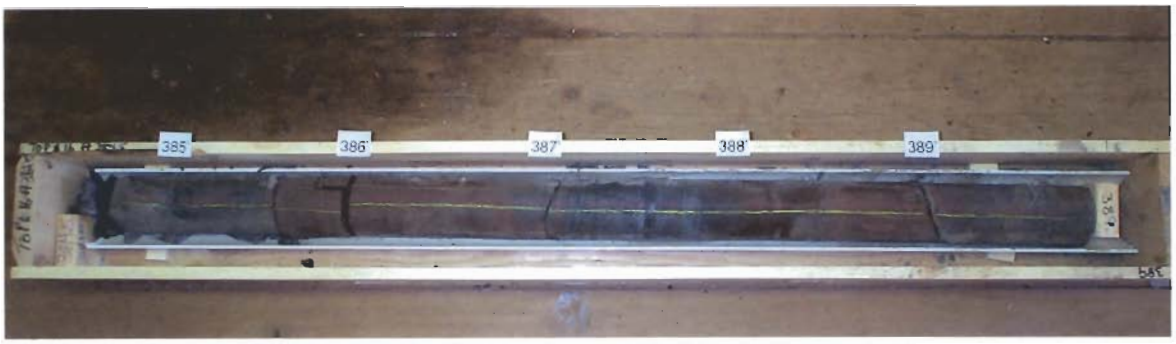


Figure B-16. Core Run 16 — Depth Interval 384.5 to 389.5 Feet.

RSI-1311-02-031

Figure B-17. Core Run 17 — Depth Interval 389.5 to 394.2 Feet.

RSI-1311-02-032

Figure B-18. Core Run 18 — Depth Interval 394.2 to 399.6 Feet.

RSI-1311-02-033

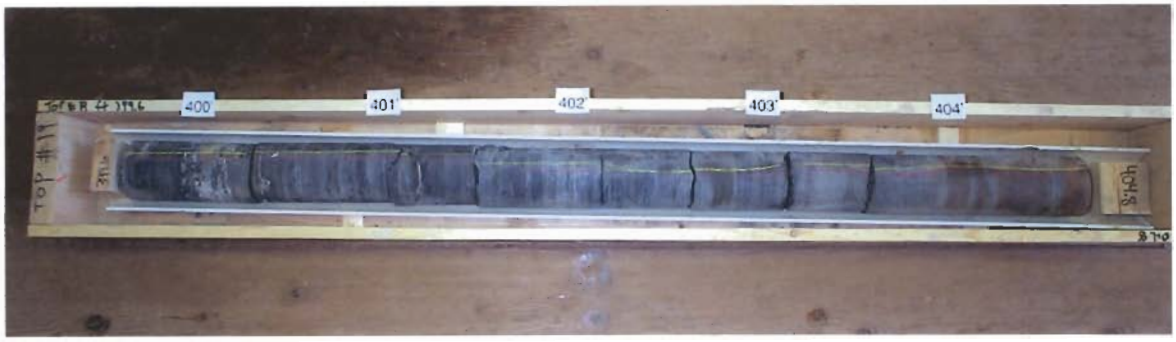


Figure B-19. Core Run 19 — Depth Interval 399.6 to 404.8 Feet.

RSI-1311-02-034

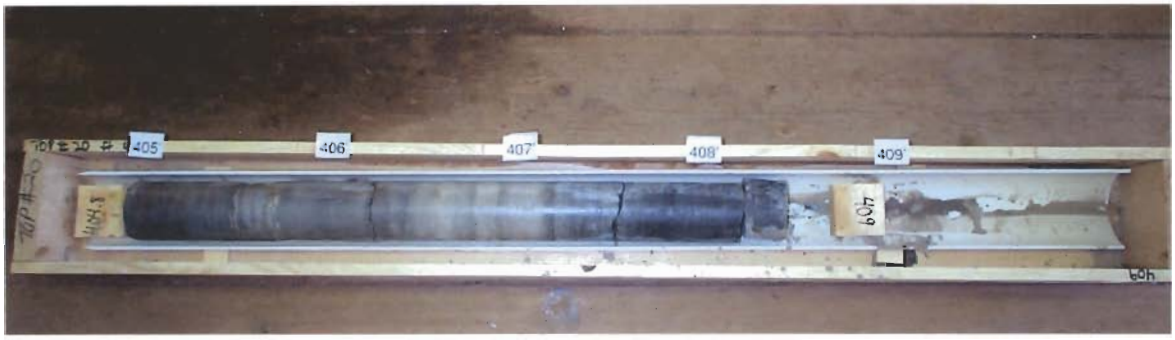


Figure B-20. Core Run 20 — Depth Interval 404.8 to 409.0 Feet.

RSI-1311-02-035

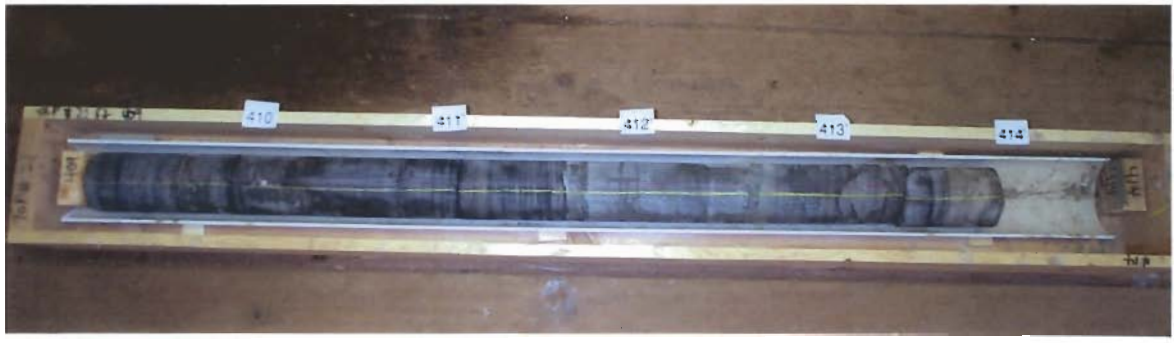


Figure B-21. Core Run 21 — Depth Interval 409.0 to 414.0 Feet.

RSI-1311-02-036

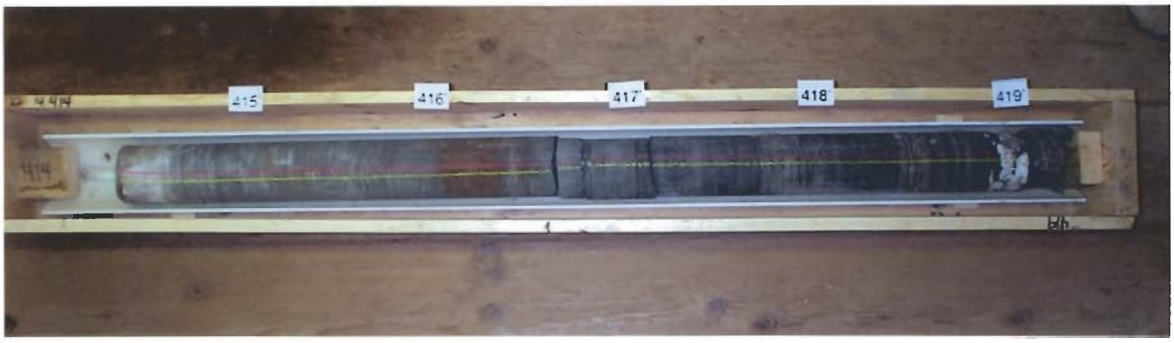


Figure B-22. Core Run 22 — Depth Interval 414.0 to 419.0 Feet.

RSI-1311-02-037

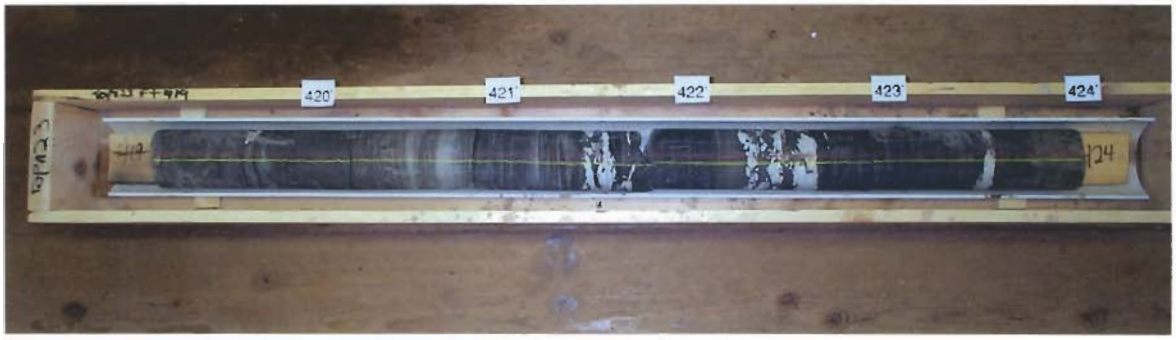


Figure B-23. Core Run 23 — Depth Interval 419.0 to 424.0 Feet.

RSI-1311-02-038

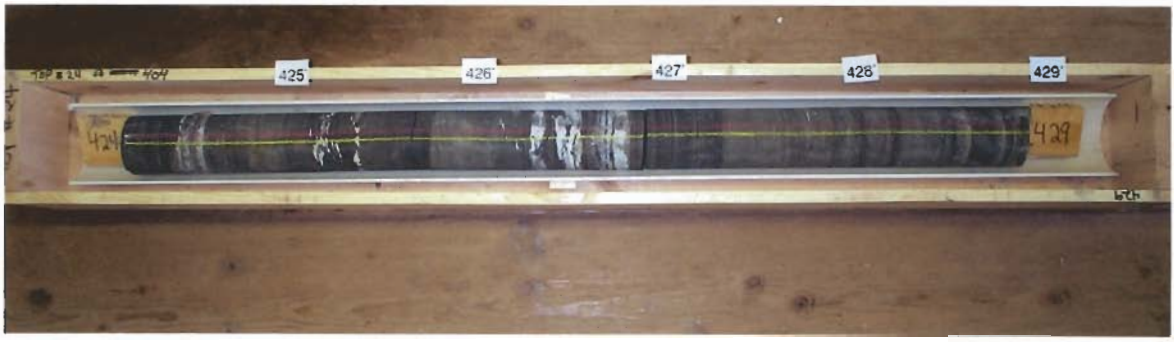


Figure B-24. Core Run 24 — Depth Interval 424.0 to 429.0 Feet.

RSI-1311-02-039

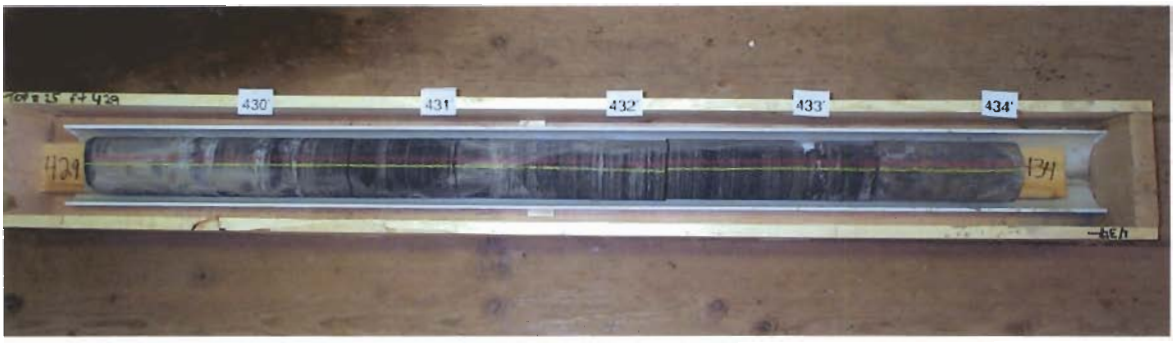


Figure B-25. Core Run 25 — Depth Interval 429.0 to 434.0 Feet.

RSI-1311-02-040

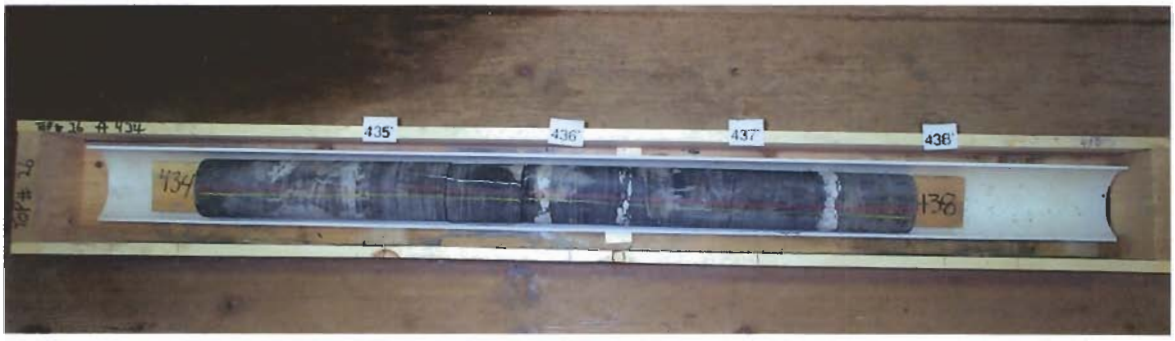


Figure B-26. Core Run 26 — Depth Interval 434.0 to 438.0 Feet.

RSI-1311-02-041

Figure B-27. Core Run 27 — Depth Interval 438.0 to 443.4 Feet.

RSI-1311-02-042

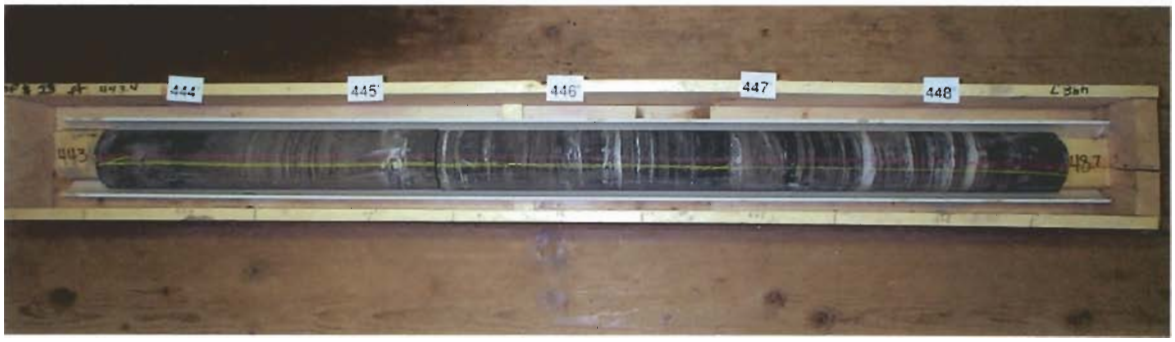


Figure B-28. Core Run 28 — Depth Interval 443.4 to 448.7 Feet.

RSI-1311-02-043

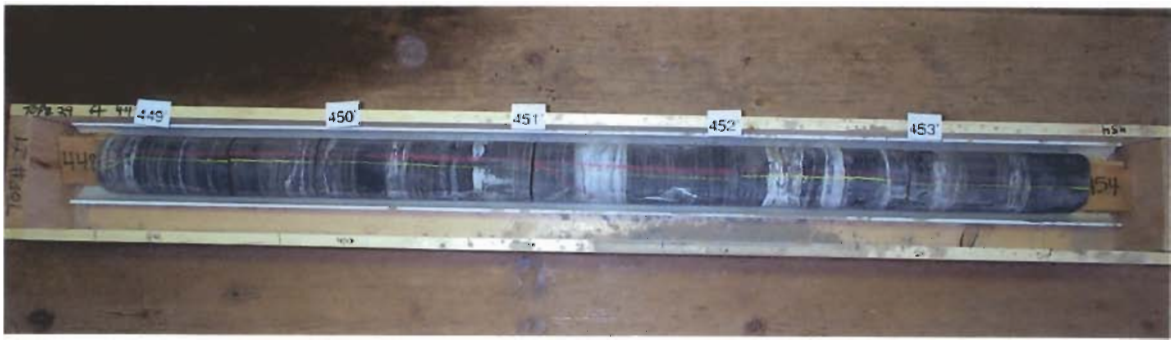


Figure B-29. Core Run 29 — Depth Interval 448.7 to 454.0 Feet.

RSI-1311-02-044

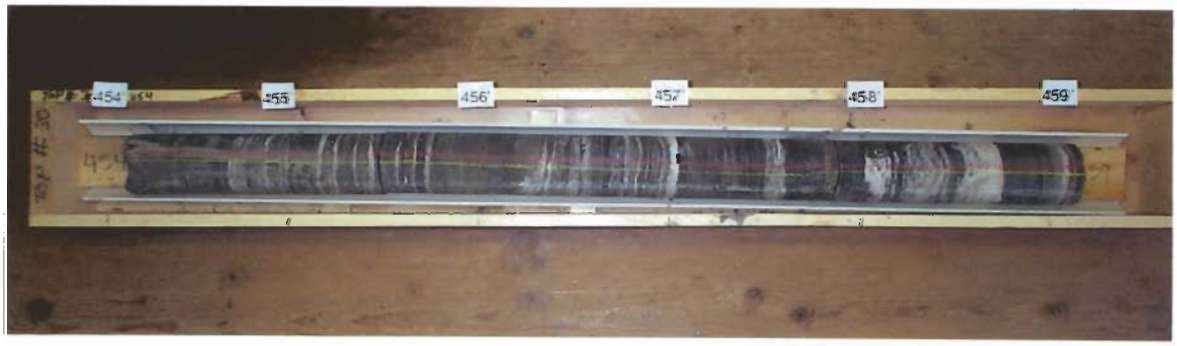


Figure B-30. Core Run 30 — Depth Interval 454.0 to 459.0 Feet.

RSI-1311-02-045

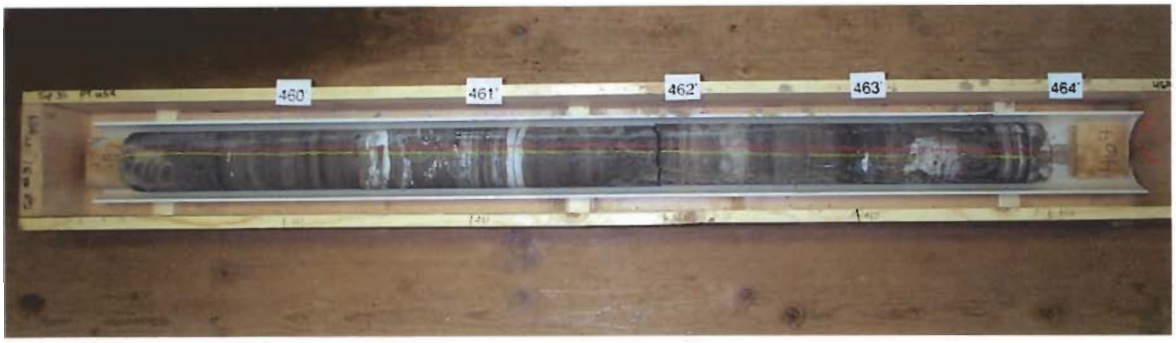


Figure B-31. Core Run 31 — Depth Interval 459.0 to 464.0 Feet.

RSI-1311-02-046

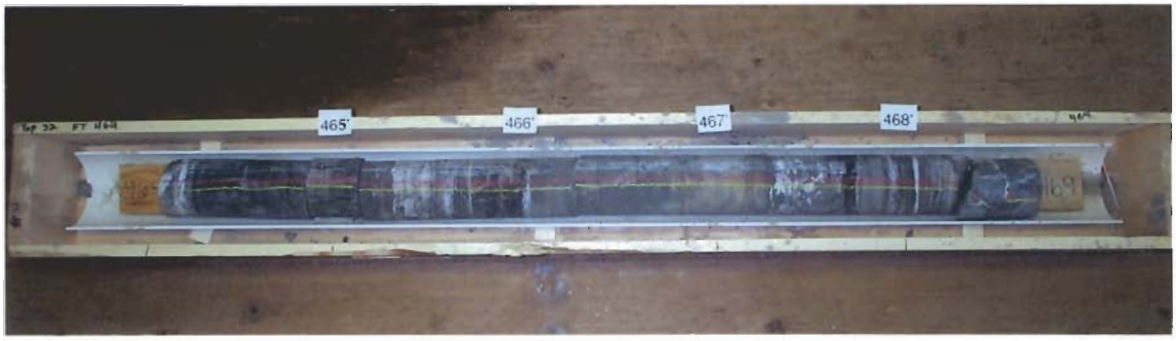


Figure B-32. Core Run 32 — Depth Interval 464.0 to 469.0 Feet.

RSI-1311-02-047

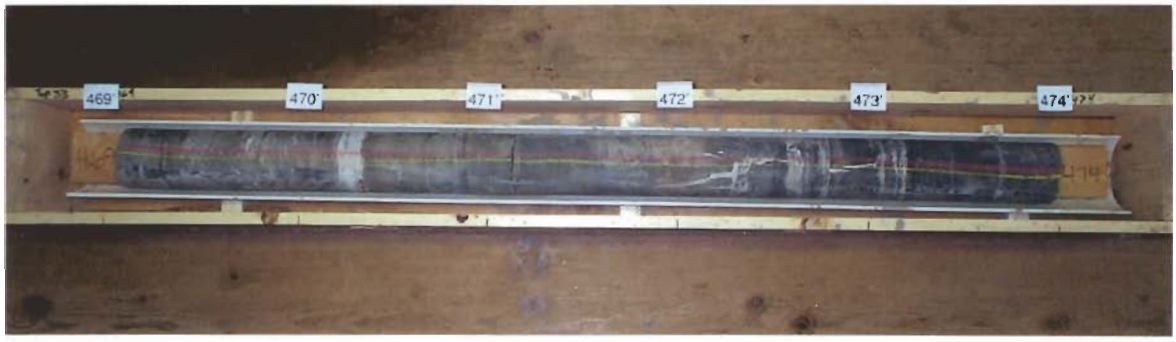


Figure B-33. Core Run 33 — Depth Interval 469.0 to 474.0 Feet.

RSI-1311-02-048

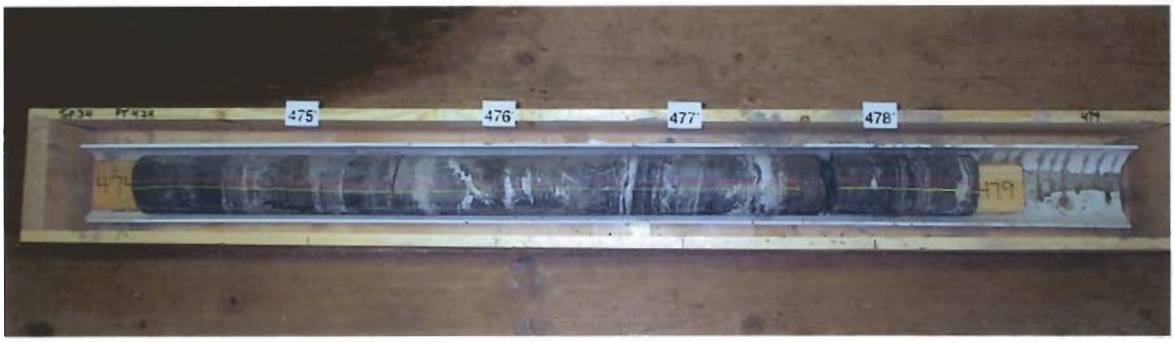


Figure B-34. Core Run 34 — Depth Interval 474.0 to 479.0 Feet.

RSI-1311-02-049

Figure B-35. Core Run 35 — Depth Interval 479.0 to 484.0 Feet.

RSI-1311-02-050

Figure B-36. Core Run 36 — Depth Interval N/A — Run Number 36 Skipped.

RSI-1311-02-051

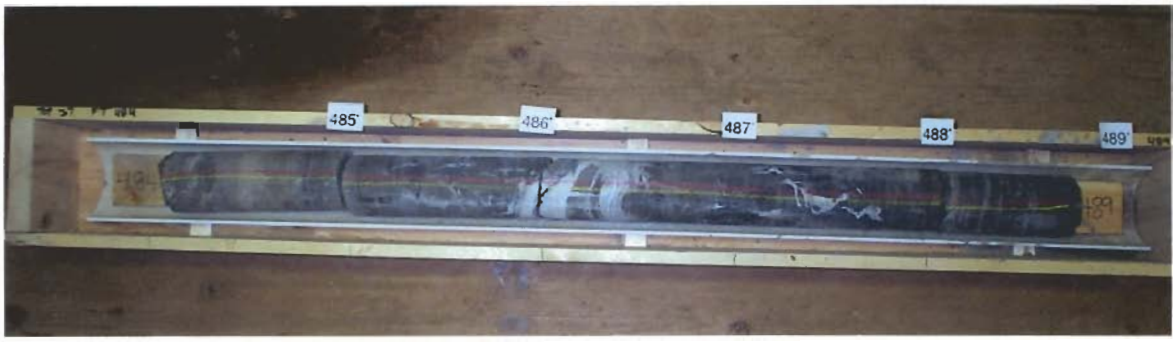


Figure B-37. Core Run 37 — Depth Interval 484.0 to 489.0 Feet.

RSI-1311-02-052

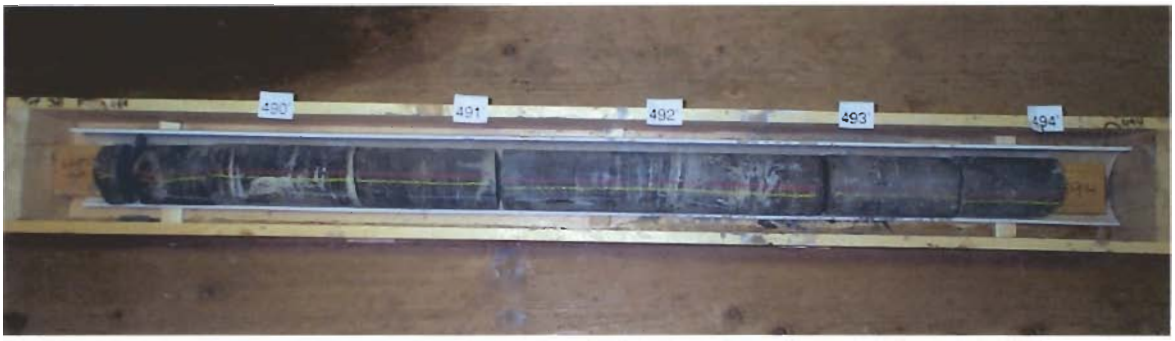


Figure B-38. Core Run 38 — Depth Interval 489.0 to 494.0 Feet.

RSI-1311-02-053

Figure B-39. Core Run 39 — Depth Interval 494.0 to 499.0 Feet.

RSI-1311-02-054

Figure B-40. Core Run 40 — Depth Interval 499.0 to 504.0 Feet.

RSI-1311-02-055

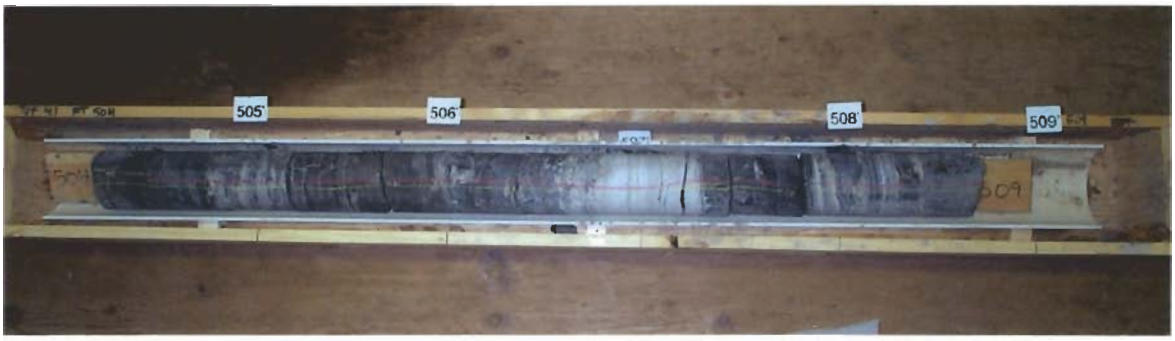


Figure B-41. Core Run 41 — Depth Interval 504.0 to 509.0 Feet.

RSI-1311-02-056

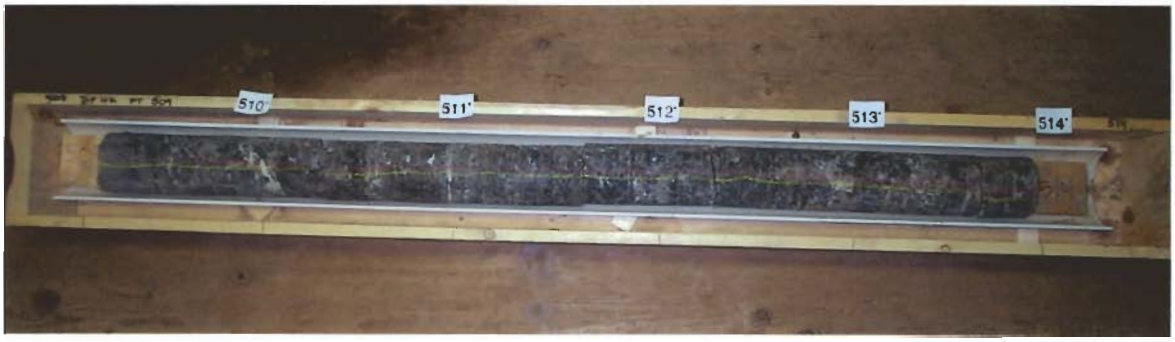


Figure B-42. Core Run 42 — Depth Interval 509.0 to 514.0 Feet.

RSI-1311-02-057

Figure B-43. Core Run 43 — Depth Interval 514.0 to 519.0 Feet.

RSI-1311-02-058

Figure B-44. Core Run 44 — Depth Interval 519.0 to 524.0 Feet.

RSI-1311-02-059

Figure B-45. Core Run 45 — Depth Interval 524.0 to 529.0 Feet.

RSI-1311-02-060

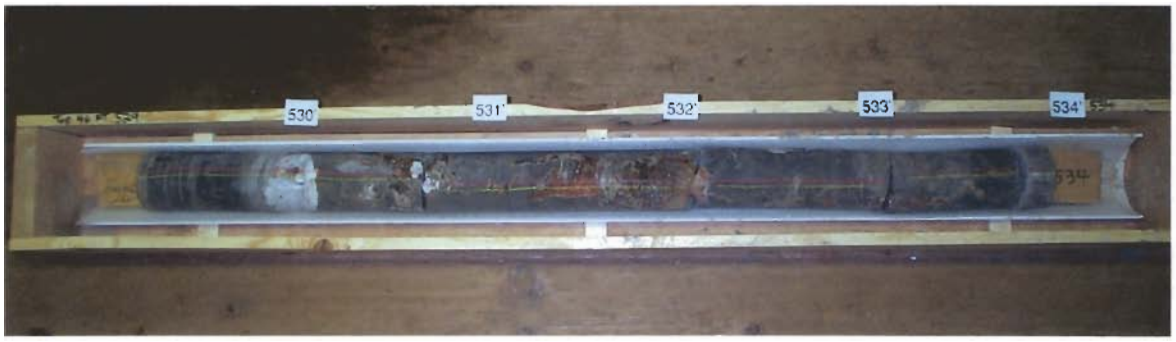


Figure B-46. Core Run 46 — Depth Interval 529.0 to 534.0 Feet.

RSI-1311-02-061

Figure B-47. Core Run 47 — Depth Interval 534.0 to 539.0 Feet.

RSI-1311-02-062

Figure B-48. Core Run 48 — Depth Interval 539.0 to 544.0 Feet.

RSI-1311-02-063

Figure B-49. Core Run 49 — Depth Interval 544.0 to 549.0 Feet.

RSI-1311-02-064

Figure B-50. Core Run 50 — Depth Interval 549.0 to 554.0 Feet.

RSI-1311-02-065

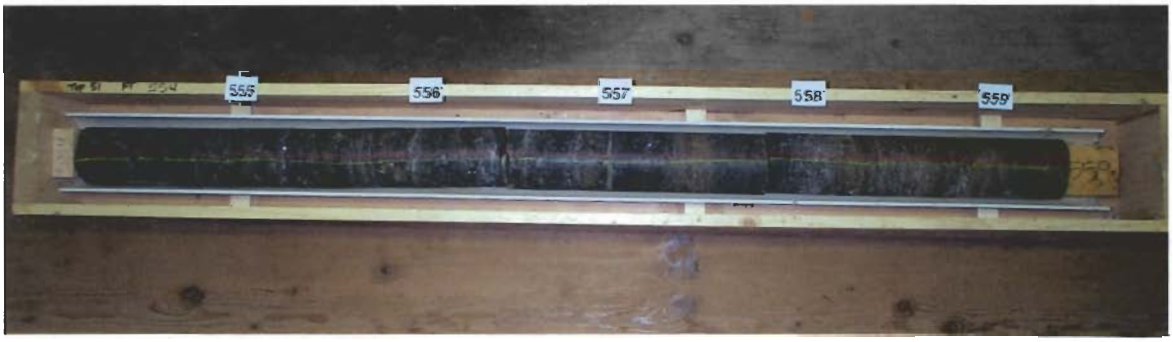


Figure B-51. Core Run 51 — Depth Interval 554.0 to 559.0 Feet.

RSI-1311-02-066

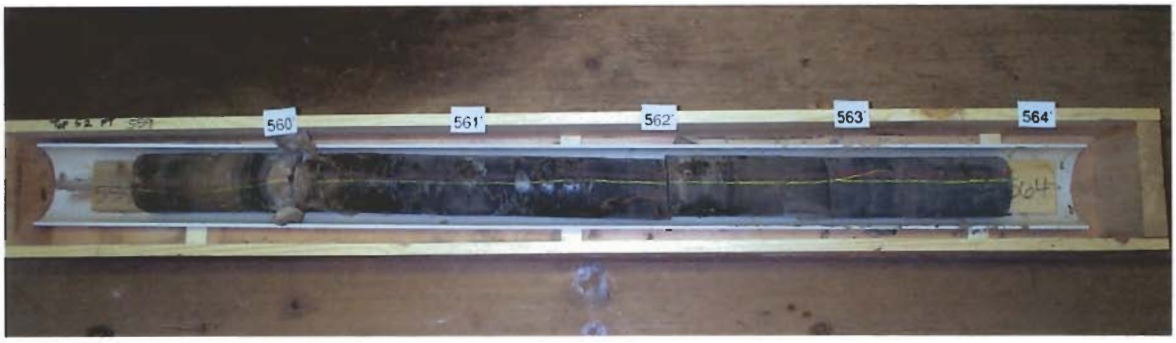


Figure B-52. Core Run 52 — Depth Interval 559.0 to 564.0 Feet.

RSI-1311-02-067

Figure B-53. Core Run 53 — Depth Interval 564.0 to 569.0 Feet.

RSI-1311-02-068

Figure B-54. Core Run 54 — Depth Interval 569.0 to 574.0 Feet.

RSI-1311-02-069

Figure B-55. Core Run 55 — Depth Interval 574.0 to 579.0 Feet.

RSI-1311-02-070

Figure B-56. Core Run 56 — Depth Interval 579.0 to 584.0 Feet.

RSI-1311-02-071

Figure B-57. Core Run 57 — Depth Interval 584.0 to 589.0 Feet.

RSI-1311-02-072

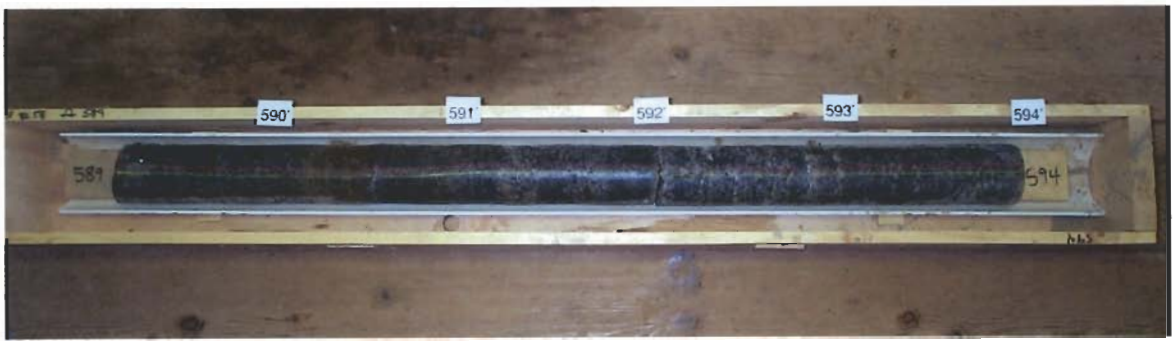


Figure B-58. Core Run 58 — Depth Interval 589.0 to 594.0 Feet.

RSI-1311-02-073

Figure B-59. Core Run 59 — Depth Interval 594.0 to 599.0 Feet.

RSI-1311-02-074

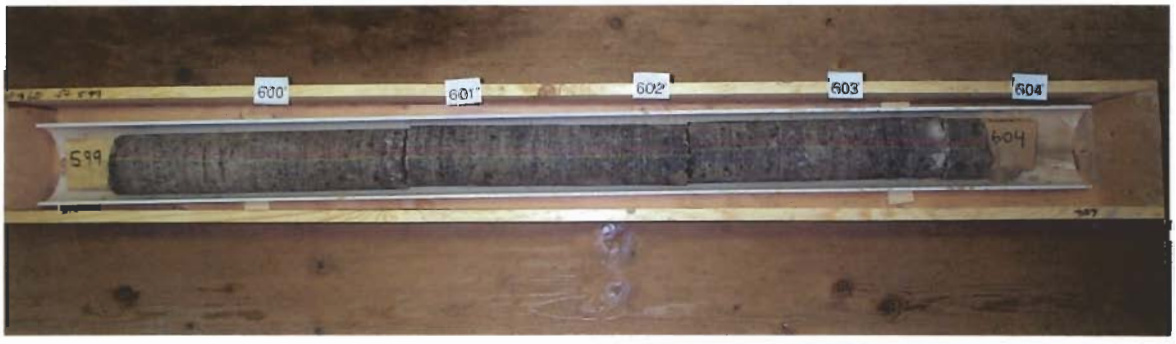


Figure B-60. Core Run 60 — Depth Interval 599.0 to 604.0 Feet.

RSI-1311-02-075

Figure B-61. Core Run 61 — Depth Interval 604.0 to 609.0 Feet.

RSI-1311-02-076

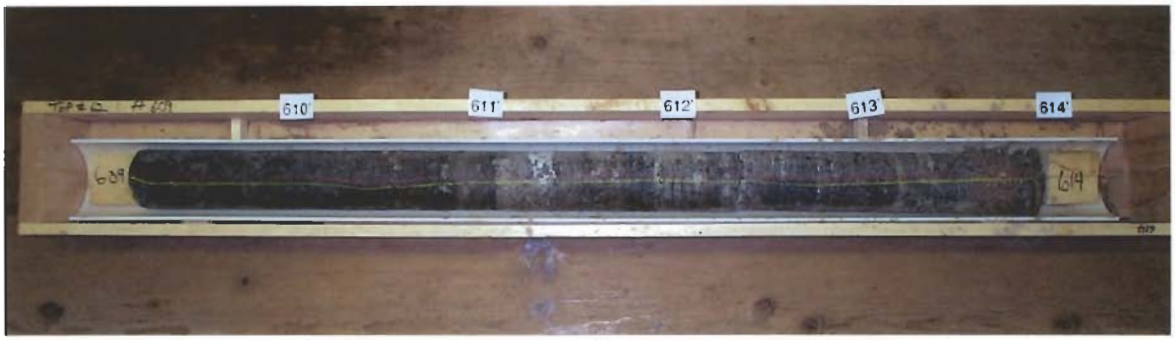


Figure B-62. Core Run 62 — Depth Interval 609.0 to 614.0 Feet.

RSI-1311-02-077

Figure B-63. Core Run 63 — Depth Interval 614.0 to 619.0 Feet.

RSI-1311-02-078

Figure B-64. Core Run 64 — Depth Interval 619.0 to 624.0 Feet.

RSI-1311-02-079

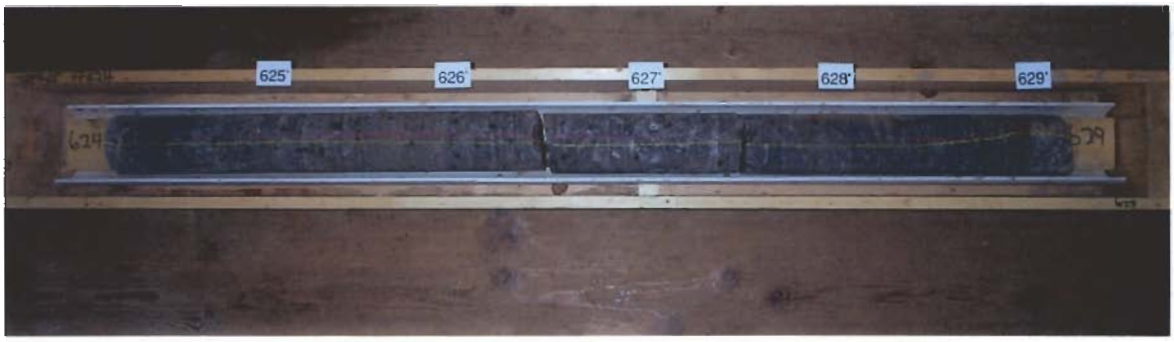


Figure B-65. Core Run 65 — Depth Interval 624.0 to 629.0 Feet.

RSI-1311-02-080

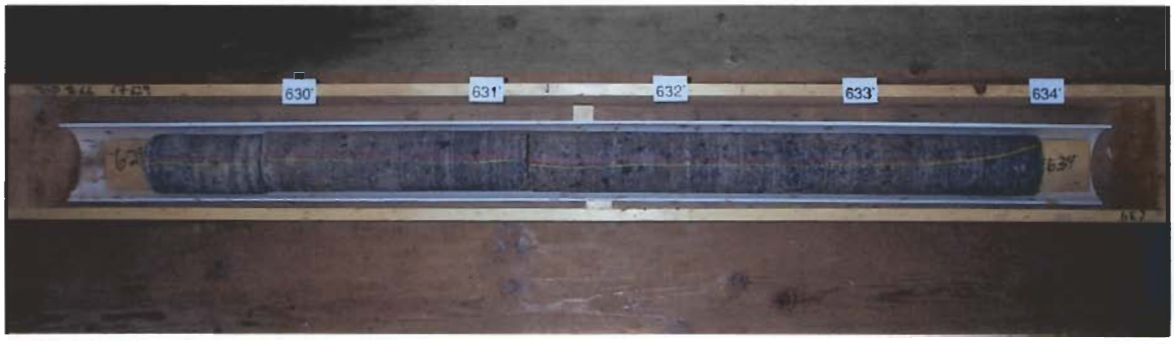


Figure B-66. Core Run 66 — Depth Interval 629.0 to 634.0 Feet.

RSI-1311-02-081

Figure B-67. Core Run 67 — Depth Interval 634.0 to 639.0 Feet.

RSI-1311-02-082

Figure B-68. Core Run 68 — Depth Interval 639.0 to 644.0 Feet.

RSI-1311-02-083

Figure B-69. Core Run 69 — Depth Interval 644.0 to 649.0 Feet.

RSI-1311-02-084

Figure B-70. Core Run 70 — Depth Interval 649.0 to 654.0 Feet.

RSI-1311-02-085

Figure B-71. Core Run 71 — Depth Interval 654.0 to 659.0 Feet.

RSI-1311-02-086

Figure B-72. Core Run 72 — Depth Interval 659.0 to 664.0 Feet.

RSI-1311-02-087

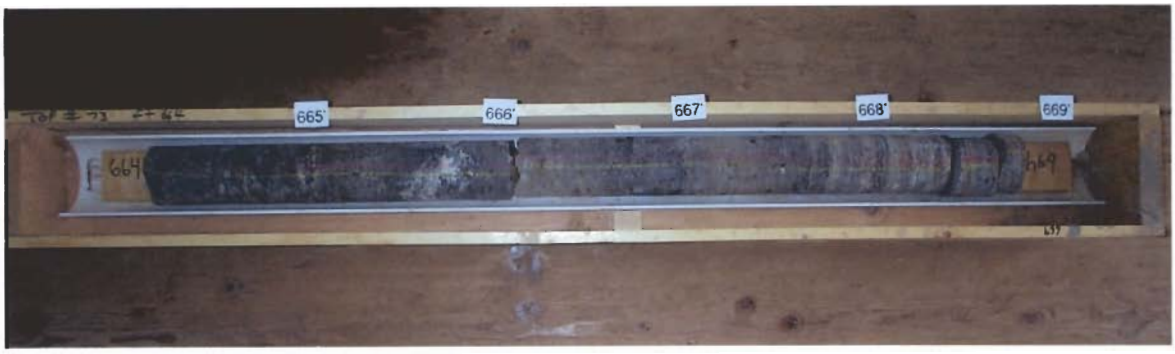


Figure B-73. Core Run 73 — Depth Interval 664.0 to 669.0 Feet.

RSI-1311-02-088

Figure B-74. Core Run 74 — Depth Interval 669.0 to 674.0 Feet.

RSI-1311-02-089

Figure B-75. Core Run 75 — Depth Interval 674.0 to 679.0 Feet.

RSI-1311-02-090

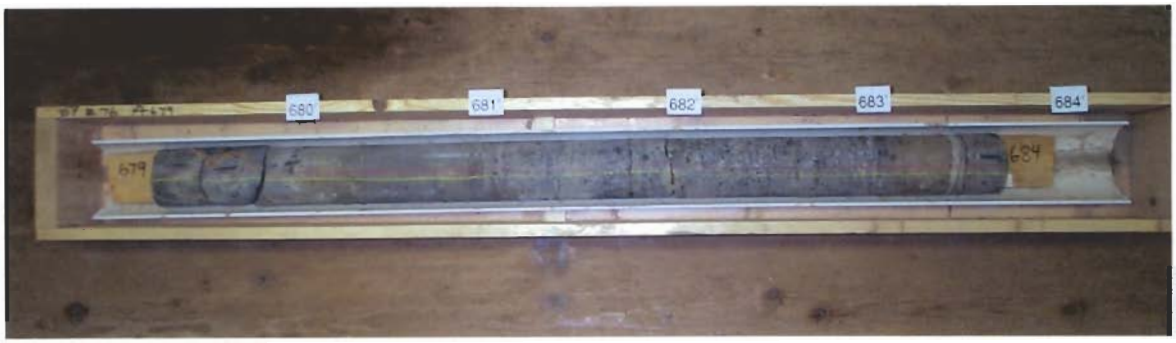


Figure B-76. Core Run 76 — Depth Interval 679.0 to 684.0 Feet.

RSI-1311-02-091

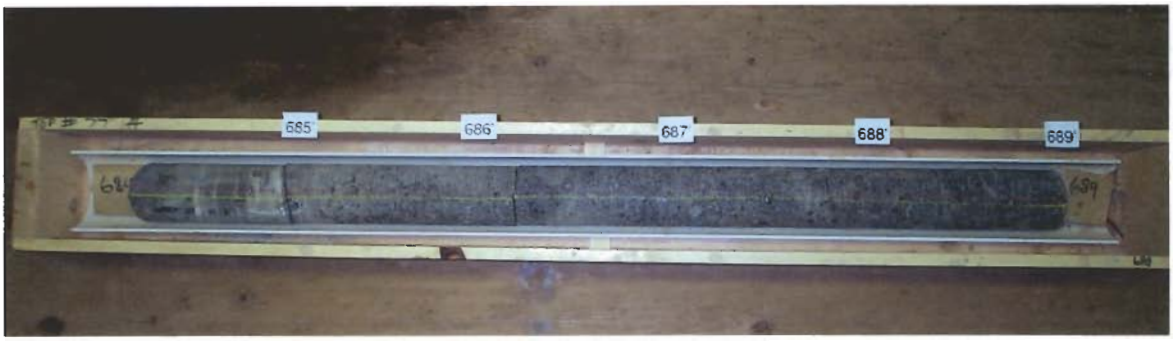


Figure B-77. Core Run 77 — Depth Interval 684.0 to 689.0 Feet.

RSI-1311-02-092

Figure B-78. Core Run 78 — Depth Interval 689.0 to 694.0 Feet.

RSI-1311-02-093

Figure B-79. Core Run 79 — Depth Interval 694.0 to 699.0 Feet.

RSI-1311-02-094

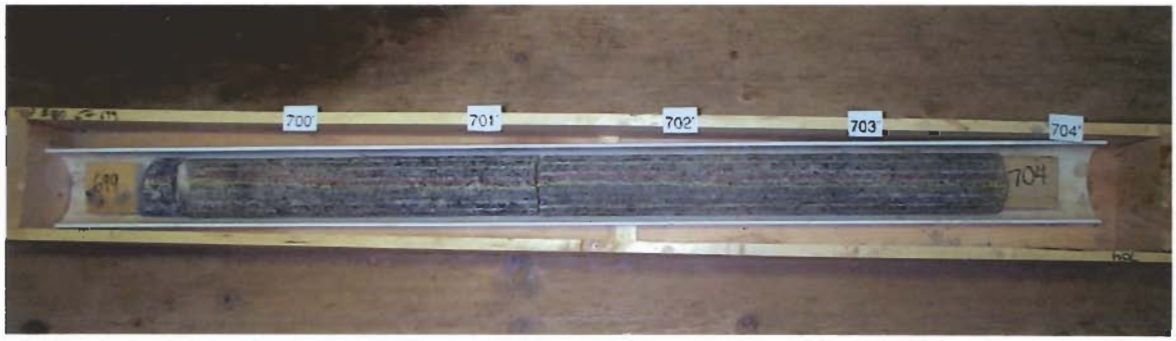


Figure B-80. Core Run 80 — Depth Interval 699.0 to 704.0 Feet.

RSI-1311-02-095

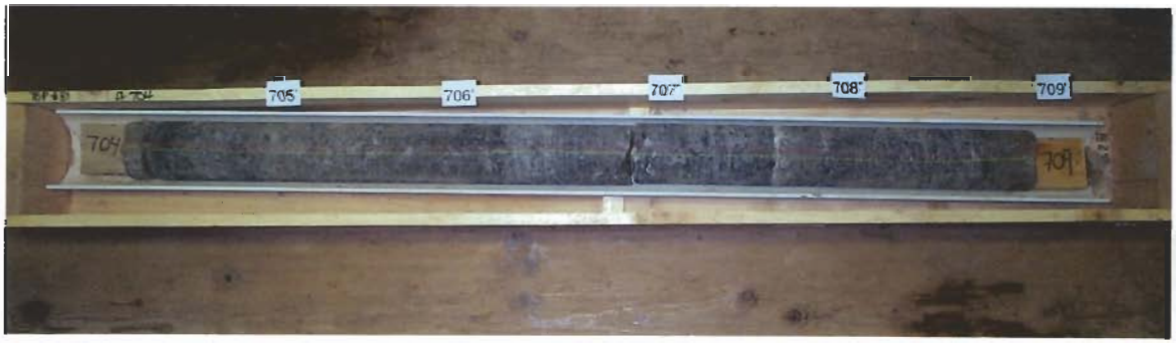


Figure B-81. Core Run 81 — Depth Interval 704.0 to 709.0 Feet.

RSI-1311-02-096

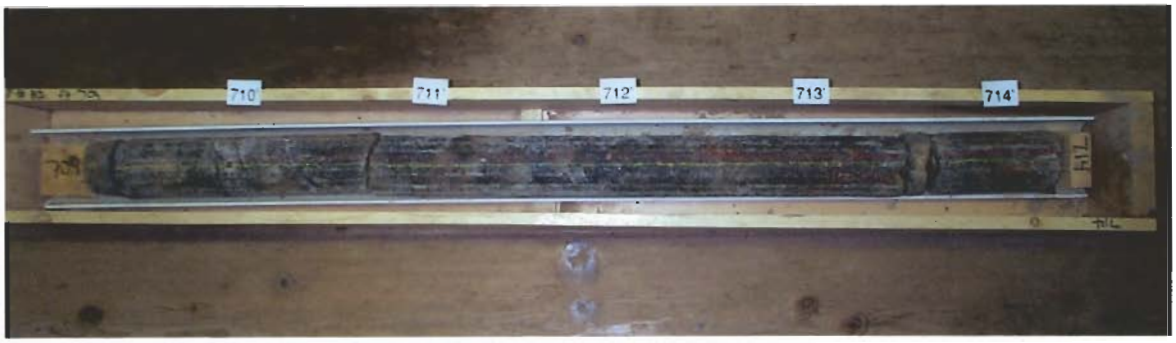


Figure B-82. Core Run 82 — Depth Interval 709.0 to 714.0 Feet.

RSI-1311-02-097

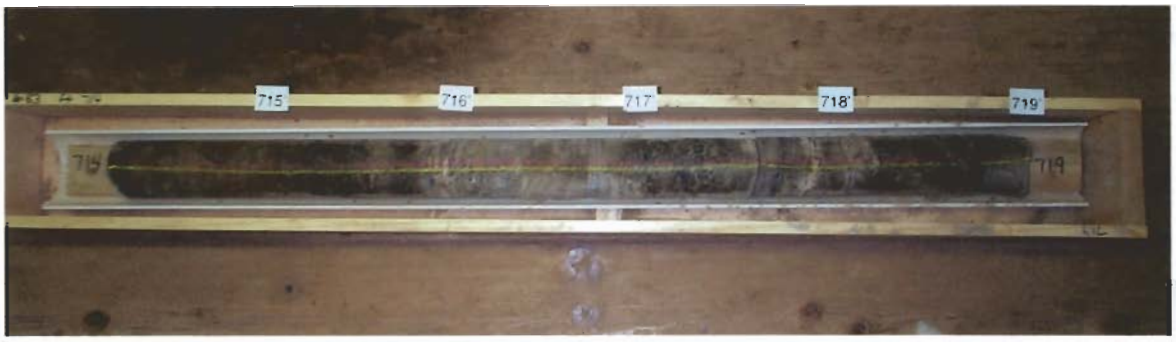


Figure B-83. Core Run 83 — Depth Interval 714.0 to 719.0 Feet.

RSI-1311-02-098

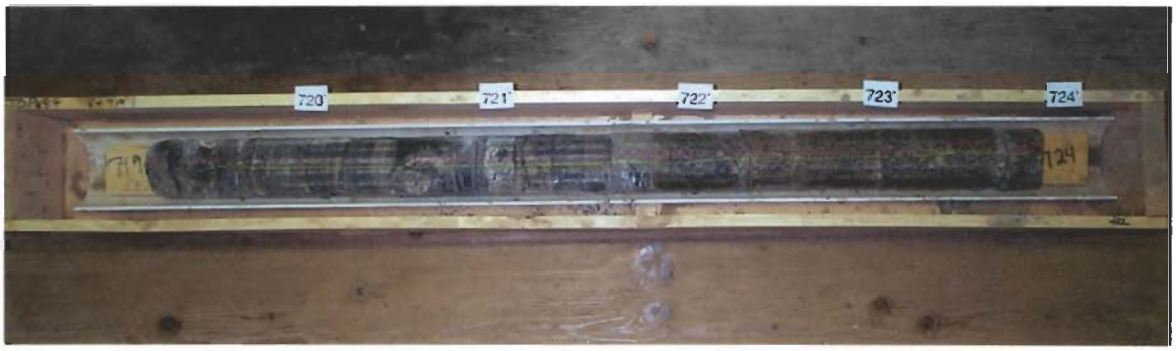


Figure B-84. Core Run 84 — Depth Interval 719.0 to 724.0 Feet.

RSI-1311-02-099

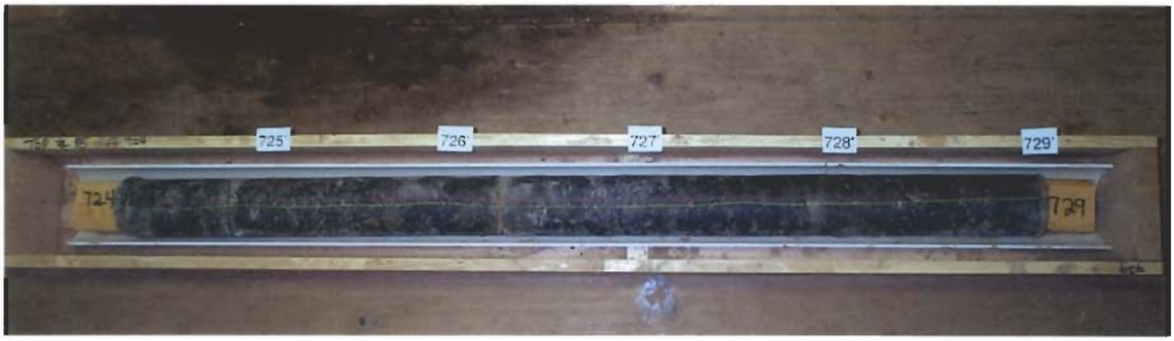


Figure B-85. Core Run 85 — Depth Interval 724.0 to 729.0 Feet.

RSI-1311-02-100

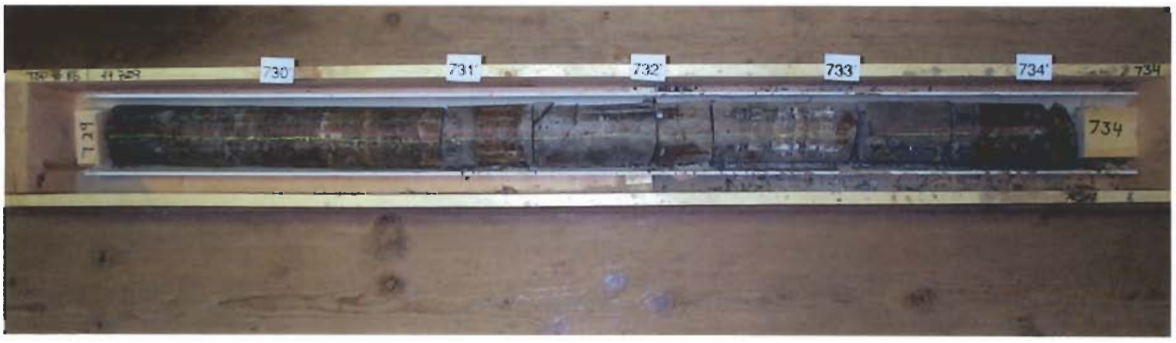


Figure B-86. Core Run 86 — Depth Interval 729.0 to 734.0 Feet.

RSI-1311-02-101

Figure B-87. Core Run 87 — Depth Interval 734.0 to 739.0 Feet.

RSI-1311-02-102

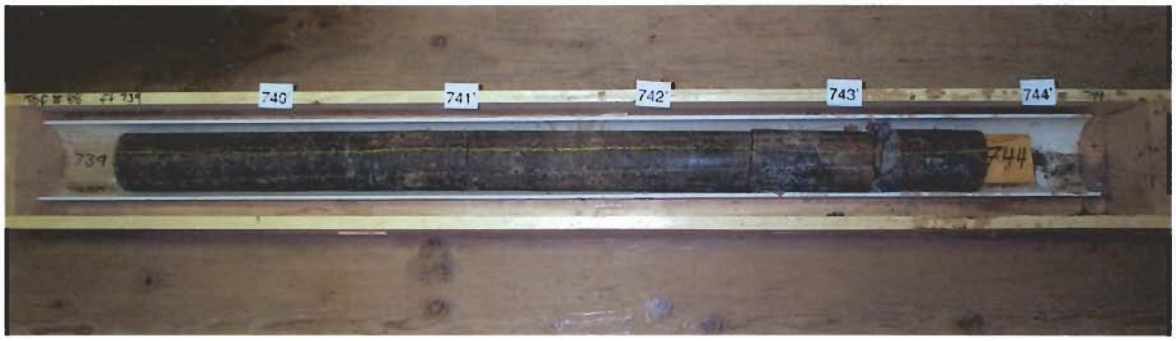


Figure B-88. Core Run 88 — Depth Interval 739.0 to 744.0 Feet.

RSI-1311-02-103

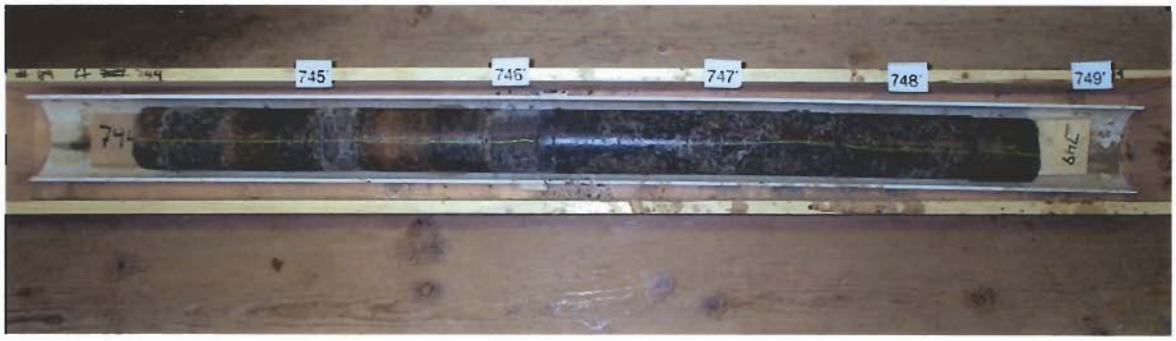


Figure B-89. Core Run 89 — Depth Interval 744.0 to 749.0 Feet.

RSI-1311-02-104

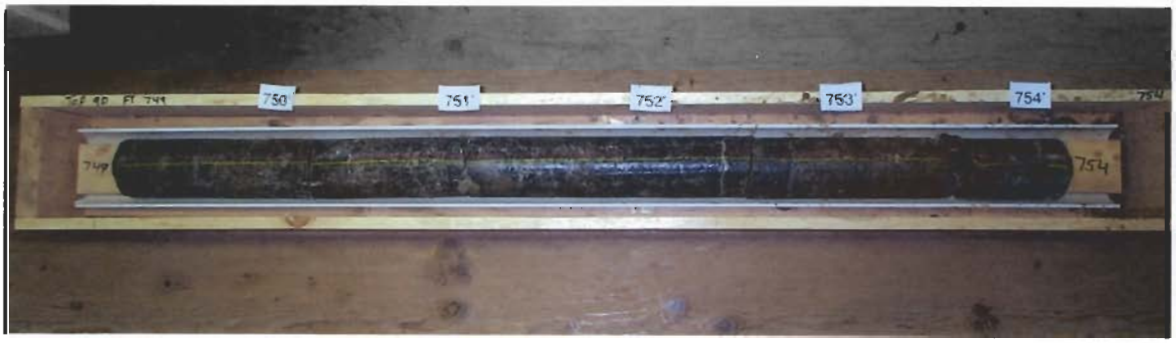


Figure B-90. Core Run 90 — Depth Interval 749.0 to 754.0 Feet.

RSI-1311-02-105

Figure B-91. Core Run 91 — Depth Interval 754.0 to 759.0 Feet.

RSI-1311-02-106

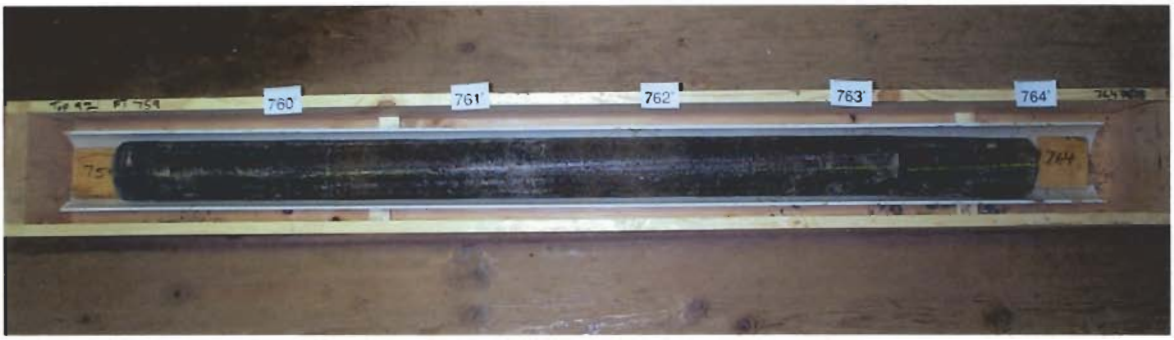


Figure B-92. Core Run 92 — Depth Interval 759.0 to 764.0 Feet.

RSI-1311-02-107

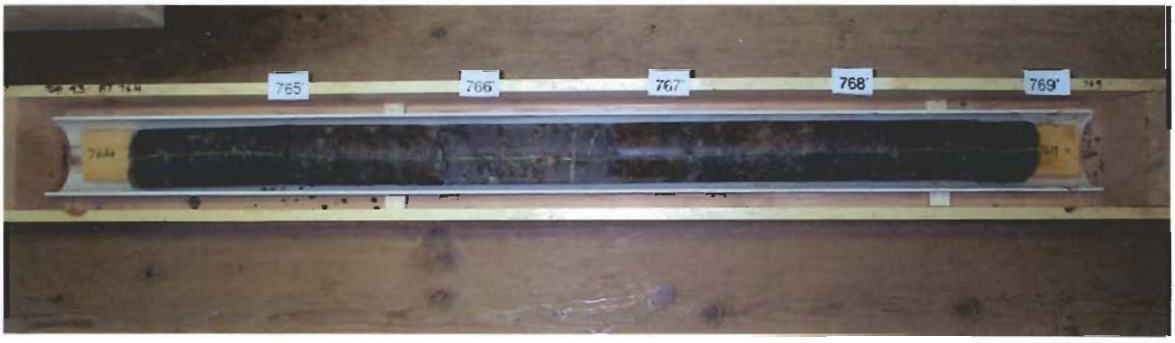


Figure B-93. Core Run 93 — Depth Interval 764.0 to 769.0 Feet.

RSI-1311-02-108

Figure B-94. Core Run 94 — Depth Interval 769.0 to 774.0 Feet.

RSI-1311-02-109

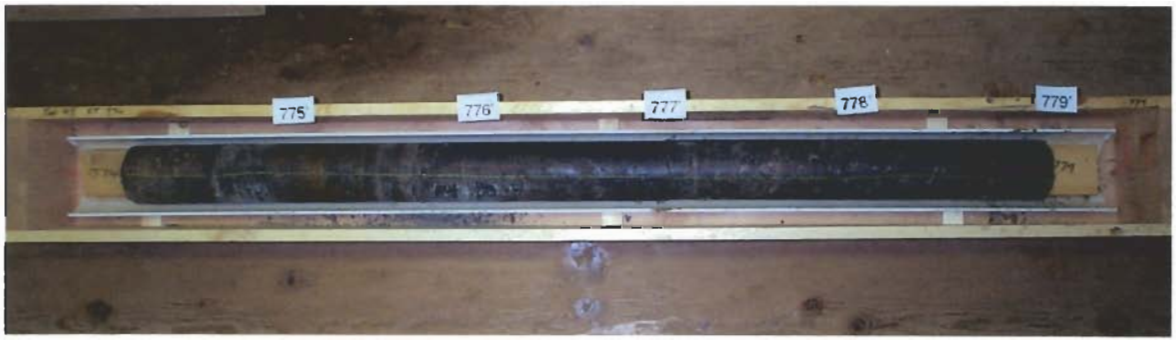


Figure B-95. Core Run 95 — Depth Interval 774.0 to 779.0 Feet.

RSI-1311-02-110

Figure B-96. Core Run 96 — Depth Interval 779.0 to 784.0 Feet.

RSI-1311-02-111

Figure B-97. Core Run 97 — Depth Interval 784.0 to 789.0 Feet.

RSI-1311-02-112

Figure B-98. Core Run 98 — Depth Interval 789.0 to 794.0 Feet.

RSI-1311-02-113

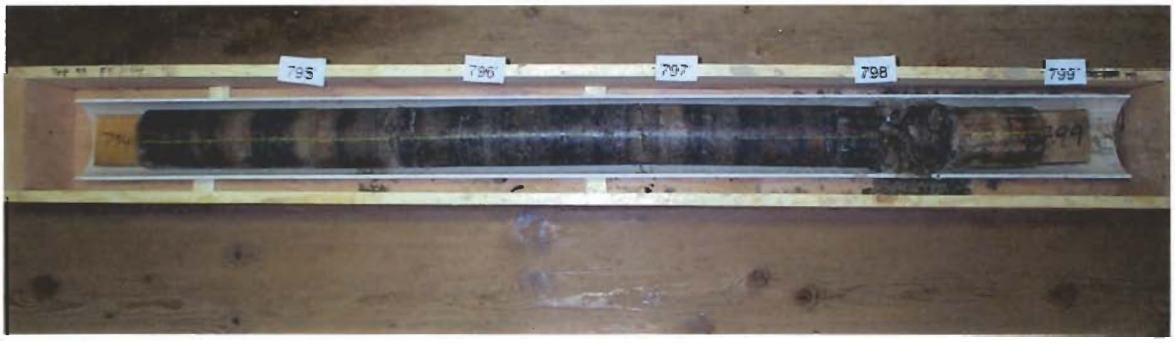


Figure B-99. Core Run 99 — Depth Interval 794.0 to 799.0 Feet.

RSI-1311-02-114

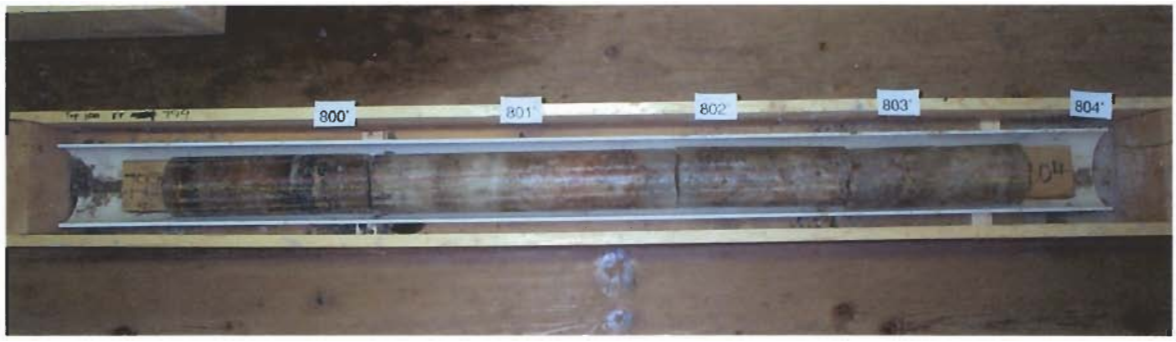


Figure B-100. Core Run 100 — Depth Interval 799.0 to 804.0 Feet.

RSI-1311-02-115

Figure B-101. Core Run 101 — Depth Interval 804.0 to 809.0 Feet.

RSI-1311-02-116

Figure B-102. Core Run 102 — Depth Interval 809.0 to 814.0 Feet.

RSI-1311-02-117

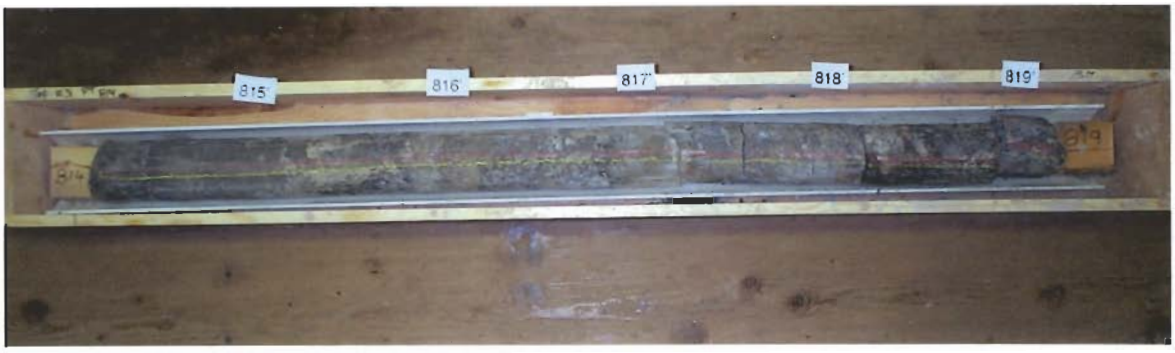


Figure B-103. Core Run 103 — Depth Interval 814.0 to 819.0 Feet.

RSI-1311-02-118

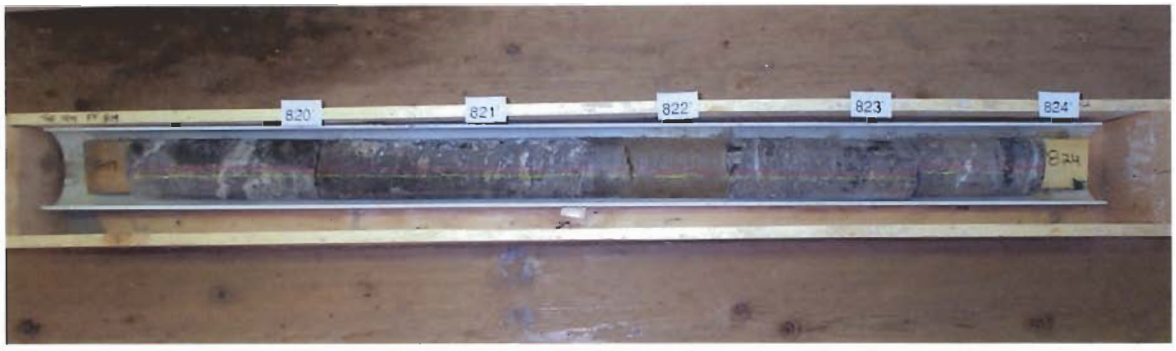


Figure B-104. Core Run 104 — Depth Interval 819.0 to 824.0 Feet.

RSI-1311-02-119

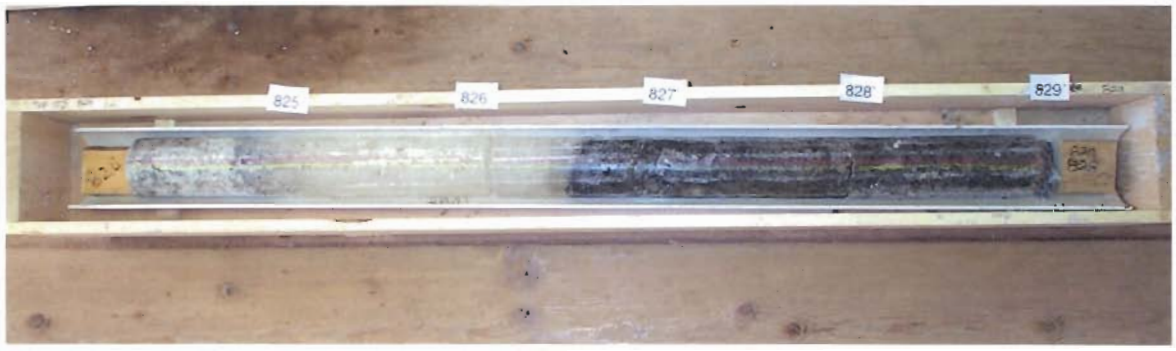


Figure B-105. Core Run 105 — Depth Interval 824.0 to 829.0 Feet.

RSI-1311-02-120

Figure B-106. Core Run 106 — Depth Interval 829.0 to 834.0 Feet.

RSI-1311-02-121

Figure B-107. Core Run 107 — Depth Interval 834.0 to 839.0 Feet.

RSI-1311-02-122

Figure B-108. Core Run 108 — Depth Interval 839.0 to 844.0 Feet.

RSI-1311-02-123

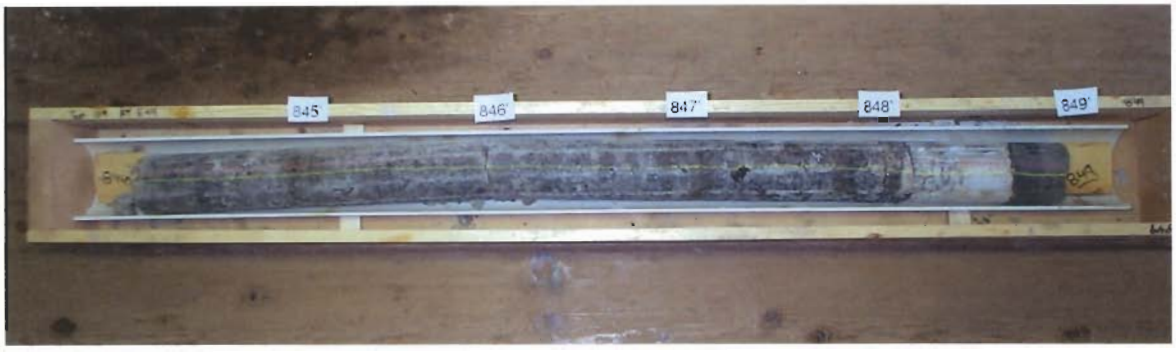


Figure B-109. Core Run 109 — Depth Interval 844.0 to 849.0 Feet.

RSI-1311-02-124

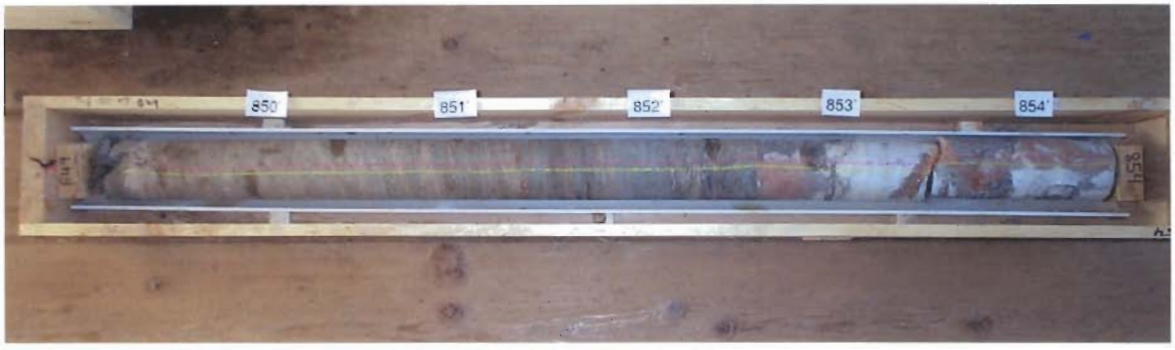


Figure B-110. Core Run 110 — Depth Interval 849.0 to 854.0 Feet.

RSI-1311-02-125

Figure B-111. Core Run 111 — Depth Interval 854.0 to 859.0 Feet.

RSI-1311-02-126

Figure B-112. Core Run 112 — Depth Interval 859.0 to 864.0 Feet.

RSI-1311-02-127

Figure B-113. Core Run 113 — Depth Interval 864.0 to 869.0 Feet.

RSI-1311-02-128

Figure B-114. Core Run 114 — Depth Interval 869.0 to 874.0 Feet.

RSI-1311-02-129

Figure B-115. Core Run 115 — Depth Interval 874.0 to 879.0 Feet.

RSI-1311-02-130

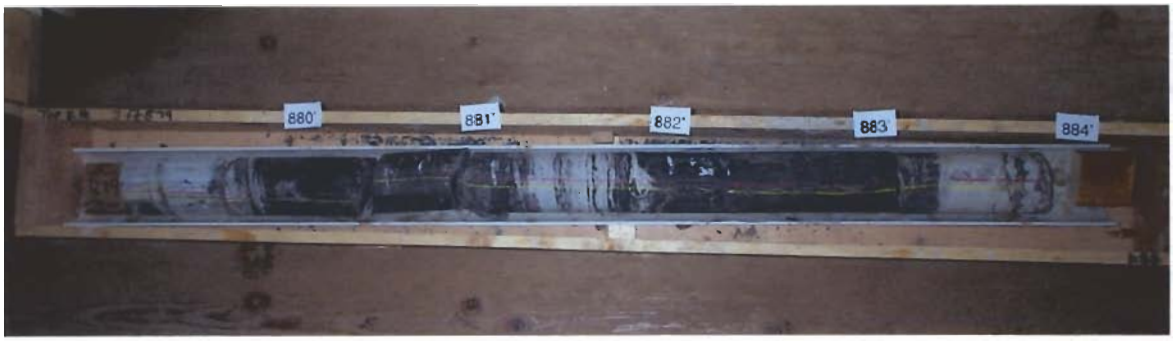


Figure B-116. Core Run 116 — Depth Interval 879.0 to 884.0 Feet.

RSI-1311-02-131

Figure B-117. Core Run 117 — Depth Interval 884.0 to 889.0 Feet.

Figure B-118. Core Run 118 — Depth Interval 889.0 to 894.0 Feet.

APPENDIX C

FIELD LOGS
HUTCHINSON TEST WELL NO. 1HF
HUTCHINSON, KANSAS

RESPEC

RUN 1

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 310'
BOTTOM CORE INTERVAL 315'
LENGTH CORED INTERVAL 5'

RECOVERY 100+
TIME RECOVERED ~0300
DATE RECOVERED 1/25/07
RUN RQD 100%
LOGGED BY DAS

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GREY SH w/ Anhy/Gyp Cy r/Anhy Gravelly appears to be fracture filling, SME places distinct and well defined. Other location presents a more mottled texture		1	1-1			DARK V Grey Shale w/ Laminin Banding & Mottling. fairly competent
		2				
		3				
		4	1-2			DK V Grey Shale, w/ Heavy Gyp mottling.
		5	1-3			Same as above, gyp mottling at top of piece
		6				

RESPEC

RUN 2

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 315
BOTTOM CORE INTERVAL 320
LENGTH CORED INTERVAL 5'

RECOVERY 100%
TIME RECOVERED ≈0400
DATE RECOVERED 1/25/02
RUN RQD 98%
LOGGED BY DAB

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
Very top of interval rubblized to Gravelly Texture. Could be fall out from Rotary? Intact Section Same as above.		1	2-1		2-	Rubble at top of interval, Could be from rotary
			2-2			2-2 Dark Gray Shale w/ Gypsum Banding & Mottling. Core Very worn at top. Generally Massive
			2-3			2-3 Dark Gray Shale w/ Massive Distinct Gyp filled fractures, and mottling. Syncline Axis at the Base.
		2	2-4		98%	2-4 Same as ABove
		3	2-5			2-5 Dark Gray Sh. — Minor Gyp except for 0.06' thick Gyp filled fracture that cross Bedding. Minor Bedding evident.
		4				
		5	2-6			2-6 Dark Gray shale w/ Minor Bedding
		6				

RESPEC

RUN 3

PAGE 1 of 1

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 320'
BOTTOM CORE INTERVAL 325'
LENGTH CORED INTERVAL 5'

RECOVERY 100%
TIME RECOVERED ~0445
DATE RECOVERED 1/25/02
RUN RQD 92%
LOGGED BY DAG

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
Gen - Dk Gry shale w/ lt gry sh interbeds, Bedding evident in most of core w/ some massive sections. Shale Dolo/LS Section at Core Bottom. Gyp filled fractures		1 2 3 4 5 6	3-1 3-2 3-3 3-4 3-5 3-6 3-7		0 92%	3-1 Dk Gry/lt grey shale bedding w/ gyp filled fractures 3-2 Dk Grey massive sh. at top w/ lighter banding toward base. V. Minor gyp filled fractures at base. 3-3 Dk Grey/lt Grey shale interbeds w gyp filled fracture at top - Minor mottled texture 3-4 Dk Gry, w/ lt grey sh. mottling. Minor interbed of Lt grey shale 3-5 Same as above w/ gyp filled frac. 3-6 0.05' thick gyp frac at top w thin bed of sh. Btm Btm 0.4' Massive Dolo/Dol of LS 3-7 Dk Gry Massive Sh.

dolomite

RESPEC

RUN 4

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 325
BOTTOM CORE INTERVAL 330
LENGTH CORED INTERVAL 5'

RECOVERY 100%
TIME RECOVERED ~515
DATE RECOVERED 11/25/02
RUN RQD 100%
LOGGED BY DAB

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
Dk Gry sh w/ Anhydrite & Gyp. Shale generally massive w/ some bedding Gyp filled fractures both ⊥ & irregularly ⊥ to bedding		1 2 3 4 5 6	4-1 4-2 4-3 4-4 4-5			4-1 Generally massive Dk grey sh w Anhydrite mottling and Anhd Gyp banding. Generally ⊥ to horizontal 4-2 Dk Gry shale w/ 0.6' thk Anhy near top. Sub Vert filled fracs w/ Anh/Gyp filling. 4-3 Dk Gry sh w/ Sub-horiz & Sub Vert frac gyp filled fracs & top & Massive Anhydrite at btm. 4-4 Dk Gry shale w/ 45° Gyp fracture 4-5 Dk Gry Sha at top Sh & Anhy mottling at ~~Anchor~~ Bottom.

RESPEC

RUN 5

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 330
BOTTOM CORE INTERVAL 335
LENGTH CORED INTERVAL 5' [5.3' in barrel]

RECOVERY 100 %
TIME RECOVERED ~ 545
DATE RECOVERED 1/25/02
RUN RQD ~~100~~ 94 %
LOGGED BY DAS

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
Upper and lower portions of section contain Calcareous shale / shaley l.s. [could be dolomatic] Mod. staining / acid reaction w/ shavings. Also massive shale w/ minor gyp banding.		1 2 3 4 5 6	5-1 5-2 5-3 5-4 5-5 5-6 5-7 5-8		100 %	5-1 → 5.54 Limey / Dolomitic shale to Shaley Dolomite/LS. Massive w/ Banding at base 5-3 Drk Gry sh w/ gyp banding 5-6 → 5-7 Massive Drk-Gry sh. Distinct gyp & hair gyp BANDING 5-8 Banded / Mottled Shaley LS / Calcareous Sh.

RESPEC

RUN 6

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 335'
BOTTOM CORE INTERVAL 340'
LENGTH CORED INTERVAL 5' [4.7' in barrel]

RECOVERY 100%
TIME RECOVERED ~6:30
DATE RECOVERED 11/25/02
RUN RQD 100%
LOGGED BY DGS

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
Interbedded Dark Gray Shale & Mottled Anhy/Fiber Anhydrite Dark Gray Nodular Fractures. Anhydrite Banded to Nodular		1 2 3 4 5 6	6-1 6.2 6.3 6-4 6-5 6-6		100%	6-1 Interbedded Gray Sh/ Anhydrite/ Gyp filled fractures. 6-2 Same as Above 6-3 Dark Gray Sh w/ Nodular Anh. at base, Fiber Anhydrite filled Vert fract. 6-4 Dark Gray Shale w/ V Nodular Anhy. 6-5 Dark Gray Sh w/ fiber Anhy Band/ fracture Filling 6-6 Mottled, Nodular Anhy w/ Dark Gray Shale.

RESPEC

RUN #7

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 340'
BOTTOM CORE INTERVAL 345'
LENGTH CORED INTERVAL 5.0'

RECOVERY 100%
TIME RECOVERED 7:30 AM
DATE RECOVERED 1-25-02
RUN RQD 90%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
GRAY SHALE WITH NUMEROUS ANHYDRITE, AS THIN FILLED FRACTURES AND THICKER MOTTLED SECTIONS, SOME ANHYDRITE OF NODULAR APPEARANCE TOWARD BOTTOM.	WHITE / GRAY	1	7-1			7-1 GRAY SHALE, TOP IS MOTTLED WITH LT. GRAY-TO WHITE ANHYDRITE. MIDDLE DEPTH IS CUT BY 2" WIDE ANHYDRITE LAYER, BOTTOM HAS VERTICAL ½" WIDE ANHYDRITE
		2	7-2			7-2 MOSTLY GRAY SHALE WITH PERHAPS 10% CONSISTING OF FINE, WHITE ANHYDRI
	WHITE	3	7-3		90%	7-3 GRAY SHALE WITH 3"-4" MOTTLED WHITE-LT GRAY SECTION AT TOP BOTTOM BREAK IS AT BASE OF ¼" FIBEROUS ANHYDRITE RUNNING NEAR HORIZ
		4	7-4			7-4 GRAY SHALE WITH 3/4" ANHYDRITE NEAR TOP, IRREGULAR. SOME ≤⅛" WIDE ANHYDRITE NEAR BASE
			7-5			7-5 GRAY SHALE WITH TOP BREAK ABOVE FIBEROUS ANHYDRITE, (SOME WITH SLIGHT TAN-COLORATION
	WHITE		7-6			7-6 GRAY SHALE WITH ~40% NODULAR, WHITE-LT. GRAY ANHYDRITE. FEW ¼" X THIN GYPSUM CRYSTALS AT BASE
	BROKEN	5		BROKEN		2" OF BROKEN GRAY SHALE AT BASE WITH FINE <⅛" WIDTH ANHYDRITE
		6				

RESPEC

RUN 8

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 345
BOTTOM CORE INTERVAL 350
LENGTH CORED INTERVAL 5.1'

RECOVERY 100% +
TIME RECOVERED 8 AM
DATE RECOVERED 1-25-02
RUN RQD 102 %
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ANHYDRITE AND GRAY SHALE FINELY BEDDED 345' TO 347.7'			8-1			8-1 ~80-90% ANHYDRITE WITH GRAY SHALE. MOTTLED, FINE LAYERS WITH APPROX 20° DIP AT BASE
		1				
						~70-80% WHITE - LT. GRAY ANHYDRITE
			8-2			8-2 WITH GRAY SHALE. MOSTLY FINE MOTTLED LAYERS. MINOR VERTICAL FRACTURES FILLED W/ ANHYDRITE, WITH SLT ½" VUG WITH TAN-LT ORANGE ANHYDRITE AT 347.8'
		2				
347.7 TO 349.5 IS GRAY SHALE WITH ≤5° SUB-VERTICAL ANHYDRITE FILLED FRACTURES						
		3	8-3		102%	8-3 GRAY SHALE WITH ANGULAR ANHYDRITE FILLED FRACTURES
		4	8-4			8-4 SAME AS ABOVE (GRAY SH)
	A		8-5			8-5 SAME AS ABOVE. HAS GYPSUM COATING ALONG POSSIBLE SLIP SURFACES
	B					SURFACES A & B
		5	8-6			8-6 GYPSUM AND ANHYDRITE
		6				

RESPEC

RUN 9

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 350
BOTTOM CORE INTERVAL 355
LENGTH CORED INTERVAL 4.7' (4.7 IN BARREL)

RECOVERY 4.7
TIME RECOVERED 9 AM
DATE RECOVERED 1-25-02
RUN RQD 552
LOGGED BY

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY GRAY SHALE WITH THIN, MAINLY SUB-HORIZ LAYERING/FRACTURES FILLED IN		1	9,1		55%	9-1 GRAY SHALE WITH ANHYDRITE AS THIN SUB-HORIZ LAYERS AND FILLING IN FRACTURES HORIZ AND SUB-VERTICAL
		2	9,2			9-2 GRAY SHALE WEDGE-SHAPED PIECES
			9,3			9-3 GRAY SHALE
FROM 353,1 TO 355 BROKEN CORE DUE TO DRILLING	RUBBLE BROKEN	3	9,4			9,4 SHALE WITH SOME GYPSUM ¼" THICK x 2" BROKEN, SOME HORIZ FINE LAMINATION EVIDENT
		4				
		5				
		6				

RESPEC

RUN 10

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 355'
BOTTOM CORE INTERVAL 360'
LENGTH CORED INTERVAL 5' [5.1 IN Barrel]

RECOVERY 100%
TIME RECOVERED 9:45
DATE RECOVERED 1/25/02
RUN RQD 76%
LOGGED BY Dan, JCV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
Mainly Gry Shale w/ Anhydrite 6" Calc. Zone at 356'. Rubble at top due to drilling		1	10-1			10-1 Rubble - From Drilling Pieces of calcareous Shale and DK Gry Shale
			10-2			10-2 - LS-Dolo-Anhy? shavings have acid reaction. Lower End ground due to drilling mistake
		2	10-3		76%	10-3 Shale - Anhydrite Mix Mottled w/ Striations Bedding fractures
		3	10-4			10-4 Top 1 inch is Bund of fiber anhydrite filled fractures below Drk Gry Sh.
			10-5			10-5 Massive Dk Gry Shale w/ Anhydrite Nodule
		4	10-6			10-6 Massive shale w/ Nodular anhydrite, 1/8" gyp fracture filling at base
		5	10-7			10-7 Massive shale w/ 1/4" fiber Anhy
		6				

dolo.

RESPEC

RUN 11

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 360
BOTTOM CORE INTERVAL 364.5 MARK
LENGTH CORED INTERVAL 4.5' / 5.5' IN BARREL

RECOVERY 100 % +
TIME RECOVERED ~ 10 AM
DATE RECOVERED 1-25-02
RUN RQD 55%
LOGGED BY JDV / DAB

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY GRAY SHALE, SOME CALCAREOUS AT 360-362'						11-1 ~358-361' VERY BROKEN CALCAREOUS SHALE W/ GYPSUM FILLED FRACTURES (SUB-HORIZ.)
	VERY BROKEN	1	360'			
	BROKEN	2			55%	
	SOLID / BROKEN					
		3	362			11-2 SUB-HORIZ. LAYERED SHALE WITH NODULAR MOTTLED ANHYDRITE AT BASE
		4				11-3 MOSTLY DK GRAY SHALE
		5				
1/4" FIBER ANHYDRITE			363.8			11-4 SHALE WITH 1/4" ANHYDRITE LAYER (FIBER)
			364'			11-5 GRAY SHALE
		6				

RESPEC

RUN 12

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 364.5
BOTTOM CORE INTERVAL 369.8
LENGTH CORED INTERVAL 5.3 (4.2 RECOVERED)

RECOVERY 80%
TIME RECOVERED ~ 10:30 AM
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY JDV / DAB

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SHALE W/ ANHYDRITE BANDING, SOME GYPSUM POSSIBLE		(MIPPED) 12.1				12-1 DK GRAY SHALE ↓
		1				
		12-2 2			100%	12-2 SAME, W/ANHYDRITE
		ANHYDRITE BAND				
		3				
		12-3				12-3 SAME W/ANHYDRITE
		4				
		ANHYDRITE				
			369.8 MARKER			
		5				
		6				

RESPEC

RUN 13

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 369.8
BOTTOM CORE INTERVAL 374.0
LENGTH CORED INTERVAL 4.2 (5.4 IN BBL)

RECOVERY 100% +
TIME RECOVERED 11 AM
DATE RECOVERED 1-25-02
RUN RQD 93%
LOGGED BY DAB / JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY, (NEARLY FLAT LAMINATED) SHALE WITH MINOR SUB-HORIZ. ANTHRACITE & GYPSUM FILLED FRACTURES (≤ 1/4" MAX WIDTH)		1		13-1		13-1 through 13-8 ALL DK. GRAY SHALE LAMINAR TO MASSIVE. SLIGHT GREENISH TO REDDISH TINT IN 372-374' SECTIONS 371-372' IS MOSTLY LT. GRAY-WHITE ANTHRACITE LAYER, SLT. MOTTLED
		← 1/4" GYPSUM		13-2		
				13-3		
				13-4		
		2			93%	
				13-5		
		3				
				13-6		
		4				
		5		13-7		
		← FINE ANTHRACITE		13-8		
		6				

RESPEC

RUN 14

PAGE ____ of ____

CORE BARREL LENGTH _____
CORE DIAMETER _____
TOP CORE INTERVAL 374.0
BOTTOM CORE INTERVAL 379.0
LENGTH CORED INTERVAL 5.0' (5.3 IN BARREL)

RECOVERY 100% +
TIME RECOVERED 11:30 AM
DATE RECOVERED 1-25-02
RUN RQD 96%
LOGGED BY DAB / JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY DARK GRAY SHALE WITH NOTED LAYERS OF LT. GRAY ANHYDRITE		1	14-1		96%	14.1 DARK GRAY SHALE FINELY-BEDDED
		2	14-2			14.2
			14-3			14-3
GYPSUM FILLED FRACTURES		3	14-4			14-4
		4				RED SHALE 377.8-378.7
REDDISH COLORED SH			14-5			14-5
FIBER ANHYDRITE		5				
		6				

RESPEC

RUN 15

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 379
BOTTOM CORE INTERVAL 384.5
LENGTH CORED INTERVAL 5.5 (4.5 IN BBL)

RECOVERY
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 92%
LOGGED BY DAB JON

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SHALE			15-1			MOSTLY GRAY SHALE, VERY LITTLE ANHYDRITE OR PEACH FILLED IN
			15-2			
		1	15-3		92%	379.1 - 381.2 LT. GRAY SHALE - ANHYDRITE
		2	15-4			381.2 - 384.5 RED / GRAY SHALE ALTERNATING LAYERS
		3				
			15-5			
			ANHYDRITE			
		4				
		5				
		6				

RESPEC

RUN 16

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 384.5'
BOTTOM CORE INTERVAL 389.5
LENGTH CORED INTERVAL 5.5 (5.4' IN BGL)

RECOVERY 100%
TIME RECOVERED ____
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY DAB / JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ALTERNATING DARK GRAY & RED SHALES	GRAY	1	16-1			DARK GRAY & RED SHALES, SLIGHTLY SOFTER & WEAKER; NEAR HORIZONTAL
	RED		16-2			SLIGHT INFILLED SUB-VERTICAL FRACTURES
			16-3			
		2				
			16-4		100%	
	GRAY	3				
	RED					
			16-5			
		4				
			16-6			
		5				
		6				

RESPEC

RUN 17

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 389
BOTTOM CORE INTERVAL 394.2
LENGTH CORED INTERVAL 5.6 IN BARREL

RECOVERY 100% +
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 92%
LOGGED BY DAB / JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
GRAY & RED SHALES WITH MINIMAL ANHYDRITE		PIECES	17-1			GRAY & RED SHALES WITH VERTICAL & HORIZONTAL FILLED IN FRACTURES (FIBER ANHYDRITE)
GRAY / RED		1				
		2			92%	RED SHALE VERY PUNKY WITH SUBVERTICAL FRACTURING
			17-2			
PUNKY		3	17-3			
			17-4			
RED / GRAY		4				
		5				
		6				

RESPEC

RUN 18

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 394.2
BOTTOM CORE INTERVAL 399.6
LENGTH CORED INTERVAL 5.4 (5.5 IN BBL)

RECOVERY 100% +
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD N/A*
LOGGED BY DAB - JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY GRAY SHALE, FAIRLY WEAK WITH VERTICAL FRACTURES SOME ANHYDRITE FILLED		SUB-VERT PIECES	18-1			394.4 - 395.8 RED SHALE & ANHYDRITE, VARIGATED
		1	TOO FRACTURED ANY WEAK TO NUMBER PIECES			
						DK. GRAY SHALE, VERY WEAK WITH VERTICAL & HORIZ FRAC ANHYDRITE FILLED FRACTURE CAN BREAK BY HAND
GRAY SHALE EASILY BROKEN *		2			N/A*	
			ANHYDRITE FILLED FRACT			
		3				
		4				
		5				
		6				

RESPEC

RUN 19

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 399.6
BOTTOM CORE INTERVAL 404.8
LENGTH CORED INTERVAL 5.2 (5.25 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY DAB / JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY, MED GRAY AND RED SHALES. ANHYDRITE MOST EVIDENT AT 400.0 WHERE 3" SECTION	ANHYDRITE MISSING	1		TOO WEAK TO NUMBER PIECES		GRAY, VERY WEAK SHALES WITH VERTICAL FRACTURE. CAN BREAK GRAY SHALE PIECES BY HAND
GRAY	FRACTURE FILLED WITH GYPSUM	2				
		3				
		4				
RED SHALE		5				
		6				

RESPEC

RUN 20

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 404.8
BOTTOM CORE INTERVAL 409
LENGTH CORED INTERVAL 4.2' (3.6 IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 94%
LOGGED BY DAB/JLV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY - GRAY SHALE & ANHYDRITE		1 2 3 4 5 6	20-1 20-2 20-3 20-4			SHALE & ANHYDRITE 405.4 - 405.7 ANHYDRITE CLEAR-OPAQUE-RED/ORANGE 405.7 - 406.4 DK. GRAY SHALE ANHYDRITE MIX 406.4 - 407.3 ANHYDRITE LT. GRAY MASSIVE 407.3 - END DK GRAY SH W/ HIGH ANGLE FRACTURES

RESPEC

RUN 21

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 409
BOTTOM CORE INTERVAL 414
LENGTH CORED INTERVAL 5.0 (IN BGL 5.0)

RECOVERY
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY DAB / JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SHALE WITH ANHYDRITE			21-1			409 - 411.5 DARK GRAY FINELY BEDDED, HORIZ. SHALE
		1	21-2			409.5 - 409.6 NODULAR ANHYDRITE WITH WELL-DEFINED TOP CONTACT; IRON OXIDE COLOR POSSIBLE PYRITE
↑ DK GRAY SHALE ↑		2	21-3		100%	
↑ LIGHTER		3				411.6 - 414 PREDOMINATELY LIGHTER GRAY - LT. GRAY SHALE WITH SOME DK. GRAY SHALE AND ANHYDRITE LAMINAE WITHIN
		4	21-4			
		5				
		6				

RESPEC

RUN 22

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 414.0
BOTTOM CORE INTERVAL 419.0
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 952
LOGGED BY DAB / JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY GRAY SHALES WITH SOME ANHYDRITE AS NODULES & VAGUE LAMERING		1	22-1			RELATIVE ABSENCE OF VERTICAL FRACTURING COMPARED TO PREVIOUS SECTION IN MED GRAY SHALES
RED SLT. SOFT		2			952	RED SHALE 415.8 - 416.2
			22-2			GRAY SHALES
		3				
			22-3			DARK GRAY SHALE W/ V. FINE WHITE LAMES
		4				
WHITE ANHYDRITE NODULES		5	23-4			
		6				

RESPEC

RUN 23

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 419.0
BOTTOM CORE INTERVAL 424.0
LENGTH CORED INTERVAL 5' (5.1 IN BBL)

RECOVERY 100% +
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY DAB / JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY HORIZ BEDDED SHALE WITH OCCASIONAL ANHYDRITE SECTION MOSTLY WHITE NODULES (BUT SOME AS SHALE WITH ANHYDRITE CONTENT)		ANHYDRITE NODULES LIGHTER GRAY ANHYDRITE NODULES	23-1 23-2 23-3 23-4 23-5		100%	DARK GRAY SHALE WITH OCCAS. WHITE ANHYDRITE NODULES.

1
2
3
4
5
6

RESPEC

RUN 24

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 424.0
BOTTOM CORE INTERVAL 429.0
LENGTH CORED INTERVAL 5.0 (5.0 IN BGL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK. GRAY SHALE		ANHYDRITE	24-1			GRAY SHALES, DARK TO MED, WITH ANHYDRITE (NODULES & AS % SHALE CONTENT) MOSTLY FINE HORIZ BEDDING.
		1 — ANHYDRITE (WHITE TO LT. ORANGE)				
			24-2			
50% MOSTLY ANHYDRITE NODULES, 50% SHALE		2			100%	
		3	24-3			
		4				
		5				
		6				

RESPEC

RUN 25

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 429.0
BOTTOM CORE INTERVAL 434.0
LENGTH CORED INTERVAL 5' (5.1 IN BBL)

RECOVERY + 100 %
TIME RECOVERED ____
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SHALE, WELL-BEDDED WITH WHITE ANHYDRITE NODULES & FINE LAYERS. HORIZONTAL, FINE LAMINA			25-1			GRAY SHALES WITH ANHYDRITE AS NOTED DARKER GRAY SECTIONS ARE SOFTER THAN LT GRAY LAYERS (SUSPECT HIGHER ANHYDRITE CONTENT IN LIGHTER LAYERS).
		ANHYDRITE 1				
			25-2			
		2	25-3		100%	
		3	25-4			
		ANHYDRITE 4				
			25-5			
		5				
		6				

RESPEC

RUN 26

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 434.0
BOTTOM CORE INTERVAL 438.0
LENGTH CORED INTERVAL 4.0 (3.9 IN BOX)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SHALE AS BEFORE FINELY BEDDED WITH OCCAS LENSES OF ANHYDRITE NODULES,		A 1	26-1		100%	← A = ANHYDRITE IN SKETCHES
		A 2	26-2			
		A 3	26-3			
		A 4				
		5				
		6				

RESPEC

RUN 27

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 438
BOTTOM CORE INTERVAL 443.4
LENGTH CORED INTERVAL 5.4 (5.4 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY SHALE		BROKEN	BY DRILL PRESSURE 27-1			DARK GRAY, FINE BEDDED SHALE WITH OCCAS. ANHYDRITE A = ANHYDRITE VERY LITTLE EVIDENCE OF VERT FRACTURING - CONSISTENT ↓
LT-MED GRAY (MORE ANHYDRITE CONTENT SHALE		A A	27-2			
			27-3		100%	
		A A A A	27-4			
PIECES ? FIT		A	27-5			

RESPEC

RUN 28

PAGE ____ of ____

CORE BARREL LENGTH _____
CORE DIAMETER _____
TOP CORE INTERVAL 443.4
BOTTOM CORE INTERVAL 448.7
LENGTH CORED INTERVAL 5.3 (5.3 ~ BBL)

RECOVERY 100%
TIME RECOVERED _____
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SAME AS BOX 27, DK. GRAY SH. WITH WHITE - LT GRAY ANHYDRITE LAYERS (MOST AS NODULES, SOME AREAS BRECCIATED W/ SHALE			28-1			FINELY LAMERED DK. GRAY SHALE
		1				
		A				
		A 2	28-2		100%	
		A - BRECCIATED				
		3				
		4				
		5				
		6				

RESPEC

RUN 29

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 448.7
BOTTOM CORE INTERVAL 454.0
LENGTH CORED INTERVAL 5.3 (5.3 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100 %
LOGGED BY JOY

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SHALE WITH OLIVE, ANHYDRITE		A	29-1			(SAME AS BOXES 27, 28)
		<	29-2		100%	DK GRAY SHALE, FINELY, HORIZ BEDDED
		1				A = ANHYDRITE
		A	29-3			| = BREAK (CORE PIECE)
		A				
		A 2				
SUB-VERTICAL FRACT FILLED WITH ANHYDRITE		<	29-4			
		A				
		3				
		<	29-5			
		A				
		A				
		4				
		<	29-6			
		A				
		A 5				
		6				

RESPEC

RUN 30

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 454.0
BOTTOM CORE INTERVAL 459.0
LENGTH CORED INTERVAL 5.0' (5.2 IN BBL)

RECOVERY > 100%
TIME RECOVERED
DATE RECOVERED 1-25-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
GRAY SHALES WITH FINELY INTERBEDDED ANHYDRITE-RICH LAYERS & NODULES			30-1		100%	DK GRAY SHALES W/ANHYDRITE NO VERTICAL FRACTURES EVIDENT A = ANHYDRITE
		A				
		1	30-2			
		2				
		A 3				
		A				
		4	30-3			
	A?	A				
	A	A				
		5				
		6				

RESPEC

RUN 31

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 459.0
BOTTOM CORE INTERVAL 464.0
LENGTH CORED INTERVAL 5.0' (5.0 IN BBL)

RECOVERY 100%
TIME RECOVERED ~ 12:15 AM
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JoV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY DARK GRAY SHALE WITH A COUPLE SECTIONS OF ANHYDRITE (A)		1	31-2		100%	AS BEFORE FINELY LAMINATED DK. GRAY SHALE WITH ANHYDRITE NO VERTICAL FRACTURES EVIDENT
	A					
	SMALL NODULES	2				
	A A					
		3	31-2			
		4				
	A					
	A	5				
		6				

RESPEC

RUN 32

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4'
TOP CORE INTERVAL 464.0
BOTTOM CORE INTERVAL 469.0
LENGTH CORED INTERVAL 5.0 (4.75' IN BBL)

RECOVERY ~100%
TIME RECOVERED 12:30 AM
DATE RECOVERED 1-26-02
RUN RQD > 95%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SHALE WITH FINELY INTERBEDDED ANHYDRITE AND OCCAS. ANHYDRITE NODULES		A	32-1			
			32-2			
		1	32-3		>95%	
		A				
		2	32-4			
		3				
SHALE NODULES ANHYDRITE		A				
		A				
FRACTURE A		4	32-5			← 468.3 AT BREAK CAN SEE THIN ORANGE-CLEAR ANHYDRITE FILLED FRACTURES SUB VERTICAL TO SUB-HORIZ. SOME GREENISH SHALE ALONG BREAK WITH SLICKENSIDES APPEARANCE (FIRST GREEN SHALE W/ORANGE ANHYDRITE
		5				
		6				

RESPEC

RUN 33

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 469.0
BOTTOM CORE INTERVAL 474.0
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY > 100%
TIME RECOVERED ~1 AM
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY SHALE W/ANHYDRITE AS BEFORE.		33-1			100%	ANHYDRITE-SHALE BRECCIATED, SHALE NODULES A 1 A - LIGHT GRAY, WHITE 2 33-2 3 FILLED FRACTURES MAY BE GYPSUM IN SPOTS MOST WHITE-ORANGE ANHYDRITE A 4 5 6

↑ MORE SUB-VERTICAL FRACTURES FILLED WITH ANHYDRITE

RESPEC

RUN 34

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 474.0
BOTTOM CORE INTERVAL 479.0
LENGTH CORED INTERVAL 5.0 (4.6 IN BARREL)

RECOVERY ~100%
TIME RECOVERED ~1:30 AM
DATE RECOVERED 1-26-02
RUN RQD 99%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
GRAY SHALE WITH AMMONITE			34-1			DARK GRAY SHALE (AT LAST SEVERAL BOXES) WITH AMMONITE AS SKETCHED MINIMAL VERTICAL FRACTURES AS PREVIOUS, DARKER SHALES (LESS AMMONITE) IS SOFTEST
		1	34-2		99%	
		2				
		3				
		4	34-3			FEW BROKEN PIECES SHALE
		5				
		6				

RESPEC

RUN 35
(NO BOX 36)

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 479.0
BOTTOM CORE INTERVAL 484.0
LENGTH CORED INTERVAL 5.0 (5.75 IN BBL)

RECOVERY > 100%
TIME RECOVERED ~ 2 AM
DATE RECOVERED 1-26-02
RUN RQD 96%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK. GRAY SHALE W/ ANHYDRITE		Broken at top (pressured by drlg)	35-1			DK. GRAY SHALE WITH ANHYDRITE AT LAST BOXES
					VERT. FRACTURE	A = ANHYDRITE
		Broken vertically	35-2			MOST HORIZ, FINE LAYERS
	1		35-3		96%	35-3 FAIRLY HIGH 30-40% ESTIMATED ANHYDRITE W/SHALE
		30% A				
	2					
	3		35-4			
		A				
DARKER ANHYDRITE						
	4	A				
			35-5			
	5	mostly A				ANHYDRITE IN 35-5 483.8 - 484.7 IS DIPPING ~30° FROM HORIZ
		A				
	6					

RESPEC

RUN 37 (#36 skipped)

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 484.0
BOTTOM CORE INTERVAL 489.0
LENGTH CORED INTERVAL 5.0 (4.85 IN BBL)

RECOVERY ~100%
TIME RECOVERED 2:30 AM
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
			37-1			GRAY SHALE W/ ANHYDRITE
	LT GRAY	A GRADES TO DARK GRAY				
		1	37-2			
		2	37-3		100%	
	DK GRAY SHALE BLOCKS IN LT GRAY, FOLDED ANHYDRITE	A THIN ORANGE ANHYDRITE FILLED FRACTURES				
		3				
		A WHITE & ORANGE				
		4	37-4			
		5				
		6				

RESPEC

RUN 38

* FIRST TRACE SALT

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 489.0
BOTTOM CORE INTERVAL 494.0
LENGTH CORED INTERVAL 5.0 (5.3 IN BBL)

RECOVERY > 100%
TIME RECOVERED ~3 AM
DATE RECOVERED 1-26-02
RUN RQD
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
AS PREVIOUS BOX, GRAY SHALE W/ ANHYDRITE,			BROKEN SHALE END OF PIECES TOO BROKEN TO NUMBER			GRAY SHALE WITH ANHYDRITE VERTICAL FRACTURES FILLED WITH LT-GRAY - TO ORANGE ANHYDRITE
FINE VERTICAL FRACTURES W/ORANGE ANHYDRITE						
*						SMALL DISSEMINATED CLEAR-WHITE CRYSTALS LOOK LIKE SALT ✓ <1/16 - 1/8" DIA. SOME ORANGE COLOR

★ SOFTER SHALE
SALT FILLED FRAT

RESPEC

RUN 39

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 494
BOTTOM CORE INTERVAL 499
LENGTH CORED INTERVAL 5.0 (5.2 IN BBL)

RECOVERY > 100%
TIME RECOVERED 3:30 AM
DATE RECOVERED 1-26-02
RUN RQD 80%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
STILL DK GRAY SHALE, BECOMING SOFTER (LESS ANHYDRITE?)			TOO MANY BREAKS TO MEASURE		80%	GRAY, SOFTER SHALES WITH INCREASING SALT CONTENT
SOFT DK GRY SHALE		1				
		2				
MUCH SOFTER DK GRAY SHALE ★		3				APPEARS SALT IS REPLACING (HAS REPLACED) ANHYDRITE AS VERTICAL FRACT. FILL MATL. IS WITH RED-ORANGE ~~ANHYDRITE~~ ANHYDRITE AT CENTER OF FRACTURE ★ 497.5
		4	ORANGE FILLED FRAT.			FAIR NUMBER OF VERTICAL, SALT FRACTURES THIS SECTION
30-40% ANHYDRITE		5				
		6				

RESPEC

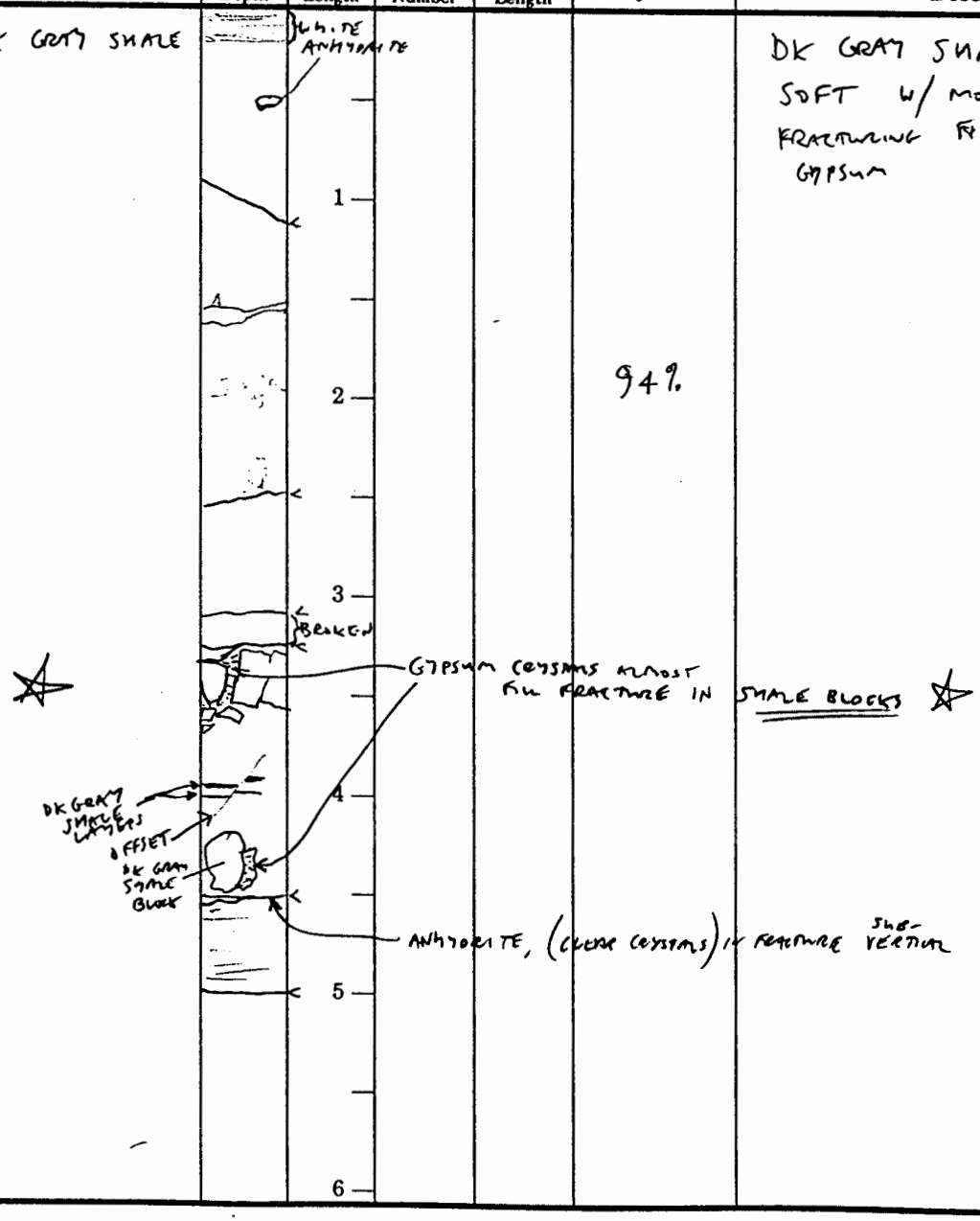
RUN 40

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 499
BOTTOM CORE INTERVAL 504
LENGTH CORED INTERVAL 5' (5.0 IN BBL)

RECOVERY 100%
TIME RECOVERED ~ 4 AM
DATE RECOVERED 1-26-01
RUN RQD 94%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY SHALE					94%	DK GRAY SHALE, SOME SOFT W/ MODERATE VERTICAL FRACTURING FILLED W/ ANHYDRITE, GYPSUM



☆ POSSIBLE HOPPER

RESPEC

RUN 41

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 504
BOTTOM CORE INTERVAL 509
LENGTH CORED INTERVAL 5' (4.8 IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
		ORANGE	FILLED FRACTURE			DARK GRAY SHALE WITH ANHYDRITE LAMERIN
		MOST ANHYDRITE (~50%)				VERTICAL FILLED FRACTURES W/ RED-ORANGE CLAY (MOSTLY SALT) (MOST FRACTURES ARE < 1/4" THICK)
		1			100%	A: ANHYDRITE
		2				
		WHITE-LT GRAY ANHYDRITE				
		3				
		4				
☆		POSSIBLE HOPPER CRYSTAL (SALT) 3/4				
		5				
		6				

★ SHALE/SALT CHANGE AT 509.3

RESPEC

RUN 42

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 509
BOTTOM CORE INTERVAL 514
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
★ DK GRAY SHALE CHANGING QUICKLY TO DARK GRAY MED-GRAIN (MOSTLY ½") SALT CRYSTALS	SHALE / SALT	1 2 3 4 5 6			100%	SHALE W/ SOME SALT GRAY-DK GRAY SALT MAX GRAIN SIZE ~ 3/4" (MOST ½") SALT WITH SHALE (SALT CRYSTAL SIZE ½-1")
SHALE / SALT MIX W/ SALT GRAIN TO 1"	SHALE					

RESPEC

RUN 43

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 514.0
BOTTOM CORE INTERVAL 519.0
LENGTH CORED INTERVAL 5.0 (5.4 IN BBL)

RECOVERY > 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
		1	43-1			DARK GRAY-(BLACK) SALT 1/2-3/4" GRAIN SIZE W/ SOME CRYSTALS TO 1 1/4" TO ~ 516 1/2'
		2	43-2		100%	
		3				BRECCIATED SALT WITH NUMEROUS DK. GRAY SHALE SUB-ANGULAR FRAGMENTS & PIECES ~ 2" MAX SIZE SOME ANHYDRITE ALSO
		4	43-3			518.2 ↓ DK GRAY SALT
		5				
		6				

RESPEC

RUN 44

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 519.0
BOTTOM CORE INTERVAL 524.0
LENGTH CORED INTERVAL 5.0 (5.3 IN BGL)

RECOVERY >100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT V. DK-BLACK TO ~521.5 THEN CLEAR-OPAQUE BELOW 521.5 TO 524.3 SHALE STREAK		0 A 1 2 A 3 V. LT. GRAY SALT V LT GRAY SALT 4 5 6	44-1 44-2 44-3 44-4 44-5 44-6		100%	44-1 SALT (BLACK - DK GRAY) MED-GRAIN WITH MODERATE DK GRAY - LT GRAY ANHYDRITE, (MINIMAL SHALE IF ANY) A = ANHYDRITE, (WHITE TO LT. GRAY) SALT AVG. GRAIN SIZE ~1/2" OCCAS. MAX 1 1/4" JUST BELOW ANHYDRITE STRINGERS SALT 1/2" GRAIN (TO UP TO 1") IS MORE OPAQUE - CLEAR (NOT NEARLY AS DARK AS SALT ABOVE)

RESPEC

RUN 45

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 524
BOTTOM CORE INTERVAL 529
LENGTH CORED INTERVAL 5.0' (4.9 IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
1' SALT, THEN THIN GRAY ANHYDRITE, THEN 3" THICK SALT THEN 6" GRAY SHALE FOLLOWED BY THICK ZONE OF DISTURBED		SALT	45-1		100%	GOOD SALT CLEAR-OPAQUE 1/2" AVG. GRAIN
BLACK - V. DK GRAY SALT		1	45-2			GRAY ANHYDRITE
		SHALE, GRAY	45-3			
		2	ANHYDRITE 45-4			
			LT. GRAY ANHYDRITE BOUDINAGE			
LT. GRAY ANHYDRITE				ORANGE INFILLED FRACTURES V. SMALL		
ORANGE-RED		3				DISTURBED ZONE WITH MED-LIGHT GRAY SHALE WITH FINE, ORANGE-RED SALT FILLED FRACTURES/JOINTS ALSO WITH NUMEROUS WHITE-LT. GRAY ANHYDRITE NODULES IN BOUDINAGE AT 526.5' & 527.6
			45-5			
LT. GRAY-WHITE		4				
			MOSTLY LT-MED GRAY SHALE TO TAN			
		5				
		6				

RESPEC

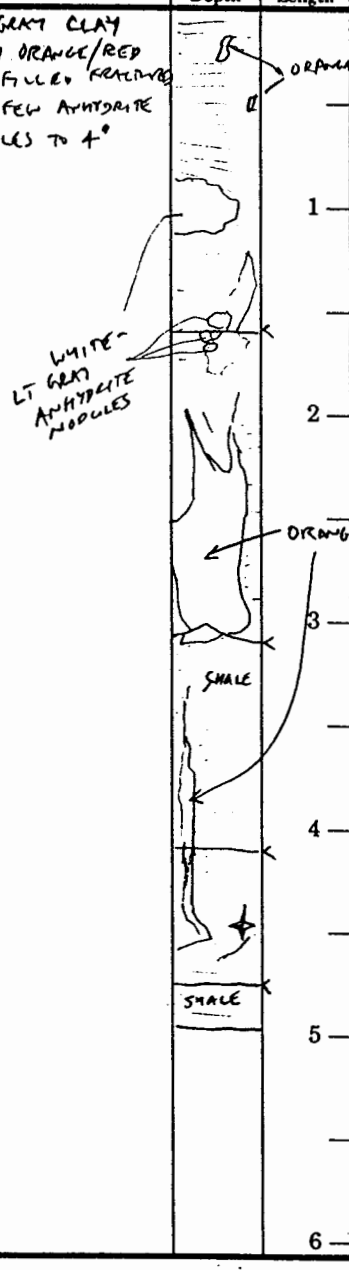
RUN 46

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 529.0
BOTTOM CORE INTERVAL 534.0
LENGTH CORED INTERVAL 5.0 (4.95 IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 98%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK MED GRAY CLAY WITH ORANGE/RED SALT FILLED FRACTURES AND FEW ANHYDRITE NODULES TO 4"					98%	MED-DARK GRAY CLAY, W/ THIN HORIZ BEDDING.



RESPEC

RUN 47

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 534
BOTTOM CORE INTERVAL 539
LENGTH CORED INTERVAL 5.0' (5.1 IN BBL)

RECOVERY 100 %
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100 2
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ALTERNATING SHALE & ANHYDRITE BEDS, WITH OCCAS ANHYDRITE NODULES. FEW SMALL ORANGE SALT FILED FRACTURES SHALE MED-SOFT SHALE & ANHYDRITE 60% SHALE & 40% ANHYDRITE MOSTLY ANHYDRITE SHALE 537.7 SALT MED-GRAY SALT W/ CLAY DISSEMINATED THROUGHOUT SALT SALT		1 2 3 4 5 6			100%	MOSTLY SHALE & ANHYDRITE TO 537.7 THEN SALT W/ SHALE/CLAY FLECKS TO 539'

RESPEC

RUN 48

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 539.0
BOTTOM CORE INTERVAL 544.0
LENGTH CORED INTERVAL 5.0 (5.0 IN BBL)

RECOVERY 100 %
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MIX OF DK GRAY CLAY, SALT, AND ANHYDRITE	CLAY	1 2 3 4 5 6			100%	DIRTY SALT MIX SALT MAY BE HOPPER CRYSTALS AT ~540.8, 542.7 IN SHALE SALT CRYSTAL SIZE MOSTLY 1/2" COLOR FROM CLEAR–DK GRAY TO ORANGE/RED TINT. EXTRA COARSE GRAIN (GLASSY) TO 3"–4"

MIX
MOSTLY SALT
MIX
MOSTLY SALT
W/SHALE

RESPEC

RUN 49

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 544
BOTTOM CORE INTERVAL 549,
LENGTH CORED INTERVAL 5.0' (5.2' IN BBL)

RECOVERY > 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
V DARK GRAY DIRTY SALT	SALT					MOSTLY SALT BUT POOR QUALITY.
CLAY MIX W/ ANHYDRITE & RED SALT IN SUB-VERTICAL FRACTURES	CLAY MIX W/	1			100%	
		2				
VERY DIRTY SALT W/ CLAY		3				
		4				
		5				
		6				

RESPEC

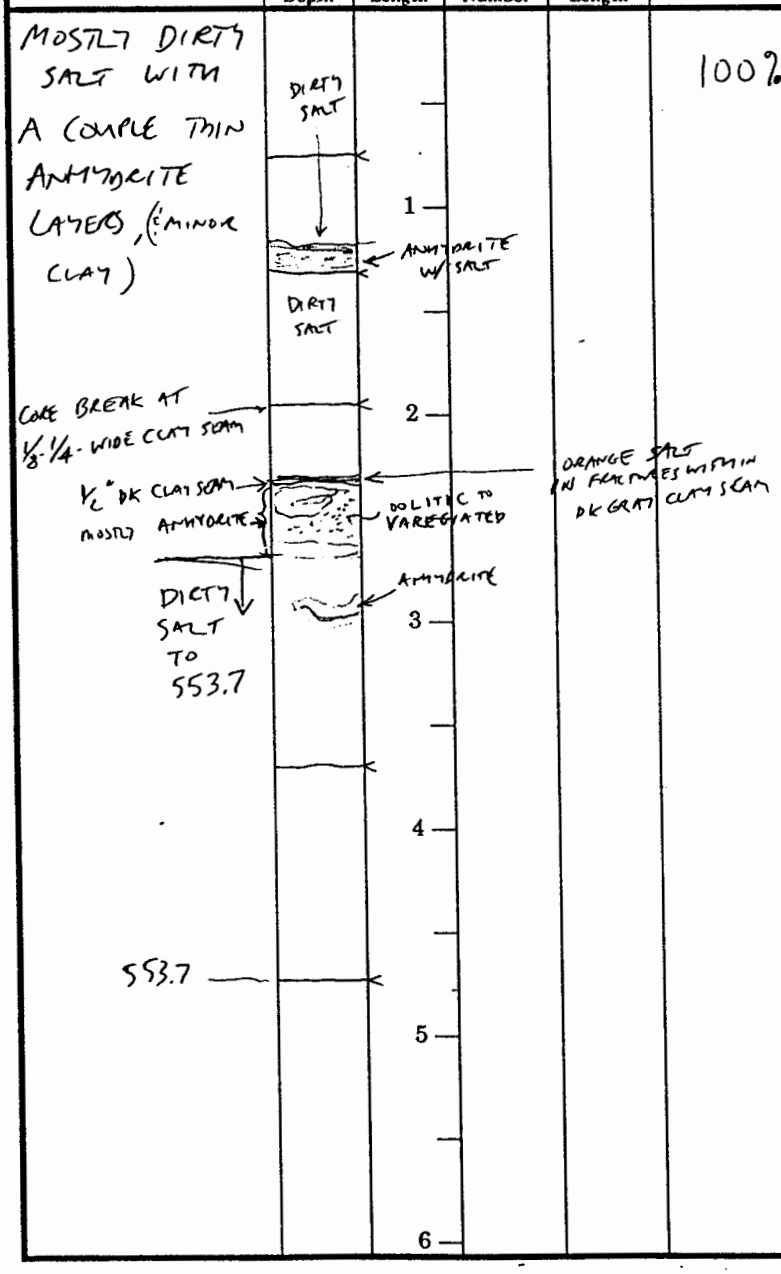
RUN 50

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 549
BOTTOM CORE INTERVAL 554
LENGTH CORED INTERVAL 5.0' (4.7 IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY DIRTY SALT WITH A COUPLE THIN ANHYDRITE LAYERS (MINOR CLAY)					100%	SEE SKETCH



k = BREAK IN CORE

RESPEC

RUN 51

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 554
BOTTOM CORE INTERVAL 559
LENGTH CORED INTERVAL 5' (5.4 in Borehole)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV/DAS

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
Mostly Dirty Salt w Hard, Sh/Ank @ 557' AHo Tends to Clean toward Hole Bottom. Alternating BANDS OF Light		FRACTURE? 1 2 3 4 5 6			100%	DIRTY SALT WITH DARK CLAY AND ANHYDRITE, POORLY DEFINED (AVERAGE CRYSTAL SIZE 1/2" WITH SOME TO 1" LAYERS ABOVE ~ 456.7' BELOW THAT, LAYERS ARE MORE CONSISTENT LIGHT-DARK VERTICALLY AND NOT AS JUMBLED/VARIABLE HORIZONTALLY SALT BETTER TOWARDS BOTTOM BELOW CLAY SEAM

Seam

CLEANER SALT

RESPEC

RUN 52

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 559
BOTTOM CORE INTERVAL 564
LENGTH CORED INTERVAL 5.0 (4.85' IN OBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 92%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
0.7' SALT, THEN GRADING QUICKLY TO >95% SHALE	SALT					SALT, FAIRLY CLEAN ABOVE CLAY & ANHYDRITE SEAM/CONTACT
LT. GRAY ANHYDRITE; TAN CLAY	BROKEN	1	CLAY		92%	
	SALT & CLAY MIX					SALT NEARLY GONE BELOW HERE
	SALT IN CLAY	2				
ANHYDRITE	RED-BROWN SALT					
NUMEROUS ORANGE-RED SALT FILLED VERTICAL FRACTURES		3				
		4				
SMALL SALT PIECES WITHIN SHALE		5				
		6				

RESPEC

RUN 53

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 564
BOTTOM CORE INTERVAL 569
LENGTH CORED INTERVAL 5.0 (5.45' IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 92?
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SHALE, MOSTLY CLEAN TO 565' ANHYDRITE, SOFT CLAY SEAM 565 TO 565.6' THEN BACK INTO CLAY TO 568.0 SALT 568 - 569.4 (BASE GAS RUN)		BROKEN CORE ORANGE/RED SALT A1 MED GRAY CLAY, SOFT MOSTLY ANHYDRITE ORANGE RED SALT 2 3 4 5 6			92%	A = ANHYDRITE MOSTLY MED-DK GRAY CLAY, FINE/WELL LAMERED - 566 - 567 APPARENT DIP OF 8-10° FROM HORIZ
TRANSITION SHALE TO SALT						ANHYDRITE, WITH SEVERAL 1/8" CLAY SEAMS AND SALT DK. GRAY. BLACK SALT 3/8 - 1/2" GRAIN

RESPEC

RUN 54

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 569
BOTTOM CORE INTERVAL 574
LENGTH CORED INTERVAL 5.0 (4.95 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY SALT 569 - 572.2					100%	DK GRAY – CLEAR SALT ½ – ¾" GRAIN (MAX ~ 1½" GRAIN)
572.2 TO 573.9 ALTERNATING LAYERS OF SALT, CLAY SEAMS, ANHYDRITE AND SHALE		1				DK GRAY SALT
		2				
		3				
MED - GRAY SEAMS OF CLAY HAVE WHITE ANHYDRITE & WHITE SALT AROUND THEM						V. DK GRAY TO BLACK SALT LAYER WITH 1-2 mm POSSIBLE SOLUTION POCKETS (POSSIBLE DRLG. FLUID DISSOLUTION OF KCl GRAINS)
BREAK AT MED-GRAY CLAY SEAM ≤ ½" WIDE		4				A + SALT
SHALE						
SALT						← BROWNISH-RED SALT LAYER ~ 1½" WIDE
SHALE		5				
		6				

CLAY SEAMS POSSIBLE DISSOL

RESPEC

RUN 55

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 574
BOTTOM CORE INTERVAL 579
LENGTH CORED INTERVAL 5.0

RECOVERY > 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 95%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
CLAY/SHALE 574.0 - 575.7 SALT BRownish - DK GRAY 575.7 - 578.3 CLAY SEAMS, SALT ANHYDRITE LAYERS RED-BROWN SALT SALT V. DK GRAY- ~ 1/2" GRAIN MAX ≥ 1" SIZE SALT THIN CLAY SALT ANHYDRITE MED-LT GRAY CLAY SEAM ≤ 1/2" WIDE DIRTY SALT MED GRAY CLAY DIRTY SALT W/ANHYDRITE MED-DK GRAY SHALE ORANGE-RED SALT	1 2 3 4 5 6			1 MM SIZED SEVERAL POSSIBLE DISSOLUTION POCKETS POSSIBLE KCL	95%	SALT / SHALE SEQUENCE

RESPEC

RUN 56

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 579
BOTTOM CORE INTERVAL 584
LENGTH CORED INTERVAL 5.0 (4.75 IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-2002
RUN RQD 95%
LOGGED BY

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT / SHALE SEQUENCES		GRAY SHALE SALT			95%	SALT / SHALE SERIES A = ANHYDRITE
RED-MAUVE SALT		1				
SALT		A				
SHALE RED-GRAY		A				
RED-ORANGE SALT VERY FRACTS		2				SHALE, FINE HORIZ BEDDING VERY CLEAR W/ SUB-VERTICAL & VERTICAL SALT FILLED FRACTS.
SHALE W/ NUMEROUS ORANGE-RED SALT FILLED FRACTURES		3				
			SHALE	DARKER BROWN MIX? DK-MED GRAY		
		4				
		5				
		6				

RESPEC

RUN 57

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 584
BOTTOM CORE INTERVAL 589
LENGTH CORED INTERVAL 5.0 (4.9 IN BBL)

RECOVERY ~100
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100 2
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY SALT W/ 2 CLAY / SHALE SECTIONS 584.0 - 584.3 AND 585.3 - 585.8		SHALE	57-1			SHALE W/ ANHYDRITE NODULES ORANGE/RED SALT IN FRACTURES
	SALT	- CONTACT SHARP			100%	SALT XX-COARSE GLASSY TO V. LT-ORANGE/TAN
	XC	1				
		SALT ('DIRTY') W/ ANHYDRITE				
		SHALE				
MED-DK GRAY SALT			57-2			MED DK GRAY, SALT
		2				NUMEROUS CLAY INCLUSIONS THROUGHOUT
		3				CHECK FOR KCL DISSOLVED FROM OUTER SIDES OF CORE
			57-3			CLEANER SALT, LESS CLAY
		4				
		5				
		6				

RESPEC

RUN 58

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 589
BOTTOM CORE INTERVAL 594
LENGTH CORED INTERVAL 5.0 (4.95 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK-GRAY-TO BLACK DIRTY SALT ↓		1	58-1		100%	SALT MED-COARSE GRAINS ½-1" AVG VERY SLIGHT LT-DARK BANDING BUT OVERALL IS QUITE DK GRAY-BLACK
		2				CLAY W/ ANHYDRITE
		A				
		3	58-2			
		4				DK GRAY-BLACK CLAY W/ WHITE-LT GRAY ANHYDRITE
		5				
		6				

RESPEC

RUN 59

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 594
BOTTOM CORE INTERVAL 599
LENGTH CORED INTERVAL 5.0 (5.4 IN BBL)

RECOVERY > 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DIRTY SALT W/ MED. GRAY SHALE						SALT 1/2 - 1" (MAX > 2") GRAIN
		1			100%	
		2				
	DK GRAY SALT	3				POSSIBLE DISSOLUTION OF GRAINS TO 3 - 4 MM DIA
	SALT ORANGE					A AT CONTACT
GRAY SHALE W/ ORANGE SALT IN FRACS		4				
ANHYDRITE/CLAY						
SALT ANHYDRITE CLAY MIX		5				
		6				

RESPEC

RUN 60

PAGE ____ of ____

CORE BARREL LENGTH 5.0'
CORE DIAMETER 4"
TOP CORE INTERVAL 599
BOTTOM CORE INTERVAL 604
LENGTH CORED INTERVAL 5.0 (4.75' IN BGL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY FAIRLY CONSISTENT SALT		GRAY CLAY SEAMS <1/4" WIDE				DK GRAY, FAIRLY UNIFORM SALT, SOME LAYERING CLAY INCLUSIONS
		1				
		2				
		3				} ANY INCREASE THIS AREA ?
		4				
		← BROKE TO LOOK FOR DISSOLVED MINERALIZATION				
		5				
		6				

* SALT CRYSTAL SHAPES IN SHALE

RESPEC

RUN 61

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 604
BOTTOM CORE INTERVAL ____
LENGTH CORED INTERVAL 5.0 (IN BBL)

RECOVERY ____
TIME RECOVERED ____
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK. GRAY SALT, THEN GRAY SHALE W/ NUMEROUS SALT INFILLED CRYSTAL FORMS TO ~607'. 607-607.9 IS ANHYDRITE, SHALE, (WITH SALT CRYSTALLIZATION IN SHALE)	SALT	1	61-1		100%	DIRTY SALT, SHALE, ANHYDRITE SHALE, SALT SEQUENCE SALT IS 1" GRAIN SIZE (MAX > 1½")
		2	MED GRAY SHALE	W/ NUMEROUS SALT		CRYSTAL FORMS (CHEVRONS, ETC) TO 1½"
		3	61-2			
			61-3			
	A					
	CLAY	4	W/ SALT	CRYSTALS ½-⅜"		
DIRTY SALT WITH NUMEROUS CLAY INCLUSIONS	SALT		61-4			MED GRAIN ≤½ SALT CLAY INCLUSIONS NUMEROUS
		5				
		6				

RESPEC

RUN 62

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 609
BOTTOM CORE INTERVAL 614
LENGTH CORED INTERVAL 5.0 5.0 IN BBL

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 99%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DIRTY, DK. GRAY SALT			62-1		99%	COARSE, DIRTY SALT W/ CLAY & ANHYDRITE. GRAIN SIZE ca 1/2"-3/4" AVG. (MAX 2")
		1				
	ALL —	A				
		2				MOSTLY ANHYDRITE
		3				
≤1/8" WIDE, DK GRAY CLAY SEAM)			62-2			
		4				
SALT, CLEAR TO ORANGE W/ POSSIBLE KCL						CLEAR-ORANGE SALT
SLT. BROKEN SALT			ANHYDRITE			
		5				
		6				

RESPEC

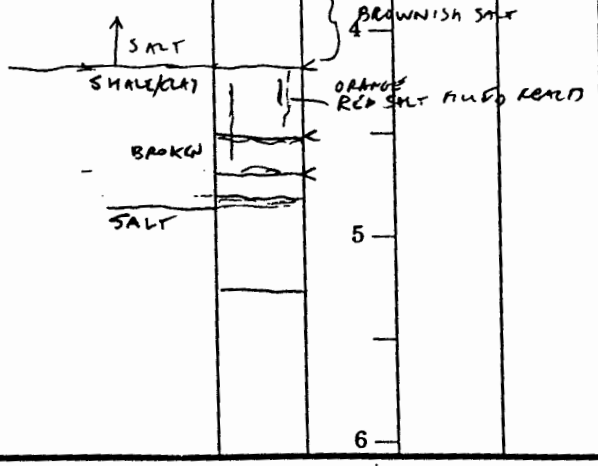
RUN 63

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 614'
BOTTOM CORE INTERVAL 619'
LENGTH CORED INTERVAL 5.0 (5.3 IN BBL)

RECOVERY
TIME RECOVERED
DATE RECOVERED 1-26-2002
RUN RQD 90%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT TO ~618.2' THEN 0.6' SHALE BOULE GOING BACK TO SALT		1 2 3 A 4 5 6			90%	COARSE (½-1" AVG) SALT GRAY TO OPAQUE



RESPEC

RUN 64

PAGE ____ of ____

CORE BARREL LENGTH 5.0'
CORE DIAMETER 4"
TOP CORE INTERVAL 619
BOTTOM CORE INTERVAL 624
LENGTH CORED INTERVAL 5.0 (4.75' IN BGL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 95%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT WITH SHALE, GRAY CLAY FILLED FRACTURES/ IN UPPER 1.4'					95%	
DISSOLVED ~1/2" HOLES		1				
SHALE WITH ORANGE SALT IN VERT. FRACTS.						A: WHITE - VLT GRAY ANHYDRITE
ORANGE SALT IN FRACTS.						
A		2				
SALT						
V. THIN CLAY SEAM						
		3				
XC SALT		4	—			SOME POSSIBLE DISSOLUTION OF MORE SOLUBLE GRAINS (KCL?)
½" CLAY						
2 GRAY CLAY SEAMS ~1/4" WIDE						
		5				
		6				

RESPEC

RUN 65

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 624
BOTTOM CORE INTERVAL 629
LENGTH CORED INTERVAL 5.0 5.2 IN BBL

RECOVERY 100 %
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100 %
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
GRAY SALT (FAIRLY PURE? COMPARED TO PREVIOUS) GRAY - OPAQUE. FEWER CLAY & ANHYDRITE LAYERS		MINE	GRAY SHALE		100%	SALT GRAIN SIZE MOSTLY 1/2" RANGE MAX SIZE ~ 1", FAIRLY HARD.
GRAY CLAY W/ WHITE & GRAY ANHYDRITE						

RESPEC

RUN 66

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 629
BOTTOM CORE INTERVAL 634
LENGTH CORED INTERVAL 5.0 (4.9 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JoV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY GRAY SALT WITH THIN OCCAS. SHALE OR ANHYDRITE LAYERS, MODERATE ANHYDRITE DISSEMINATED THROUGH MOST OF SECTION		DIRTY SALT WITH ANHYDRITE & CLAY			100%	SALT GRAIN SIZE IS MOSTLY 3/8 - 1/2" MAX 3/4"? PRETTY UNIFORM - FAIR NUMBER OF POSSIBLE DISSOLUTION HOLES LARGEST 3/16" AT 631.3' (SEE ↑ ON BOX EDGE)
		GRAY CLAY				
		← LT GRAY CLAY				< 1/4" WIDE AT BREAK
		1				
		2				
		3				
		V. FINE CLAY				
		4				
		5				
		6				

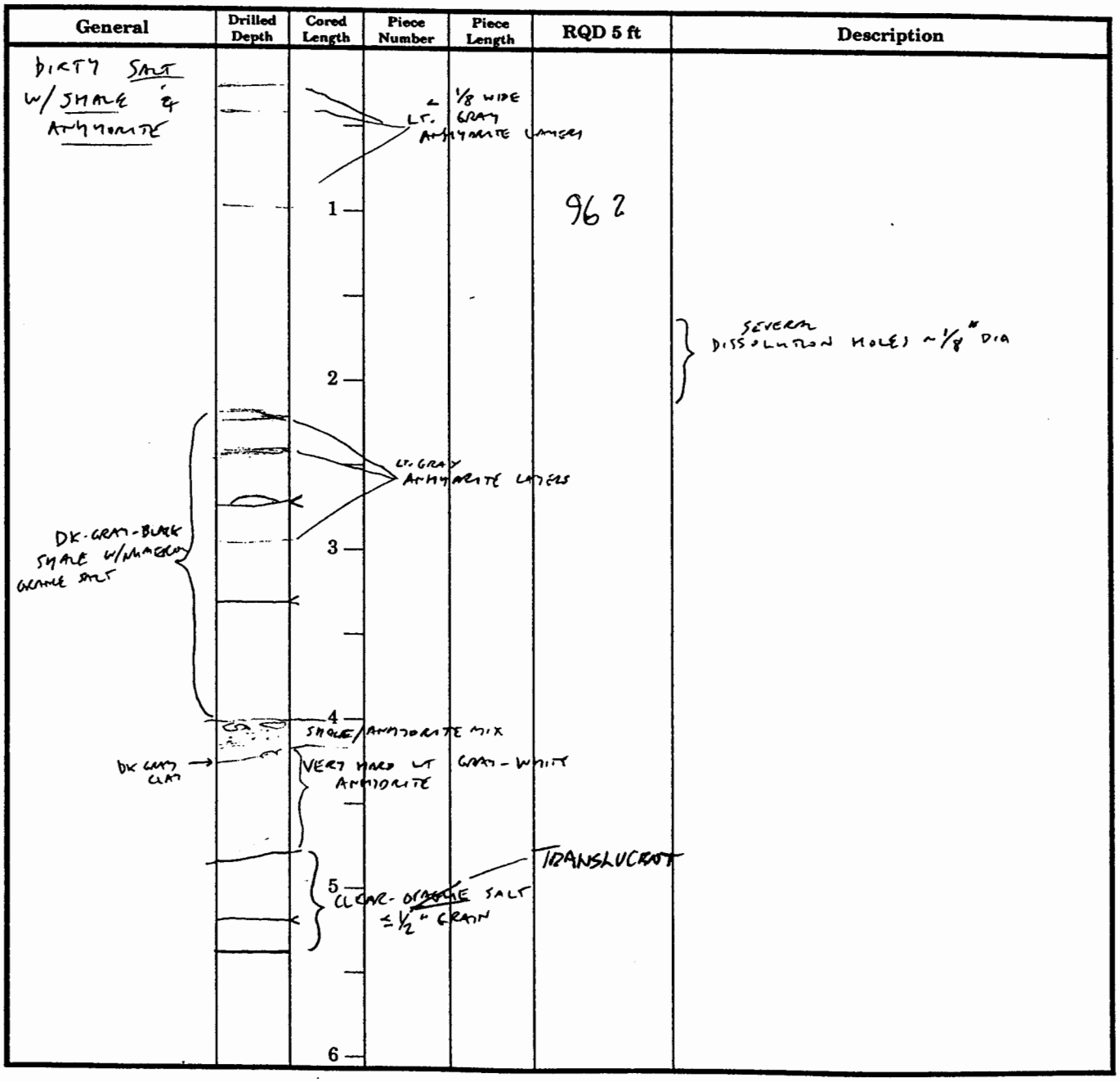
RESPEC

RUN 67

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 634
BOTTOM CORE INTERVAL 639
LENGTH CORED INTERVAL 5.0' (5.3' IN BSL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 96%
LOGGED BY JOV



RESPEC

RUN 68

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 639
BOTTOM CORE INTERVAL 644
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 96%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
CLEAR/OPAQUE TO ORANGE SALT DOWN TO CLAY CONTACT AT 642.2'			68-1	4.9'!		
	SALT	1				OPAQUE - ORANGE SALT HAS FAIR NUMBER OF POSSIBLE DISSOLUT POCKETS OR HOLES ALL ≤ 1/8" DIA
						SALT ~ 1" GRAIN MAX ≥ 1½
THEN CLAY, ANHYDRITE SALT MIX TO 643.2'						
		2				SALT WITH LT. ORANGE COLOR POSSIBLE HCL INCLUSIONS (<1/8" (5mm))
DK GRAY - OPAQUE SALT TO 644						
		3				
						GRAY SHALE W/ ANHYDRITE & ORANGE SALT
		4				
DIRTY SALT W/ ANHYDRITE GETS CLEANER ↓						
		5	68-2			1" GRAIN SIZE GRAY - CLEAR
PROBABLY BROKE AT END OF RUN, PIECE TOO LONG						
		6				

RESPEC

RUN 69

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 644
BOTTOM CORE INTERVAL 649
LENGTH CORED INTERVAL 5.0

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DIRTY SALT WITH ANHYDRITE & SHALE LAYERS THEN BACK TO SALT			DIRTY SALT		100%	V. DK GRAY - BLACK SALT
SHALE WITH ORANGE SALT & ANHYDRITE						
DOLITIC ANHYDRITE WHITE - LT. GRAY V. HARD						½" GRAY, SOFT SHALE AT BASE
XC >1" GRAIN SALT SLT. VUGGY			V. FINE, WHITE ANHYDRITE			MAX GRAIN SIZE >1½"?

1 2 3 4 5 6

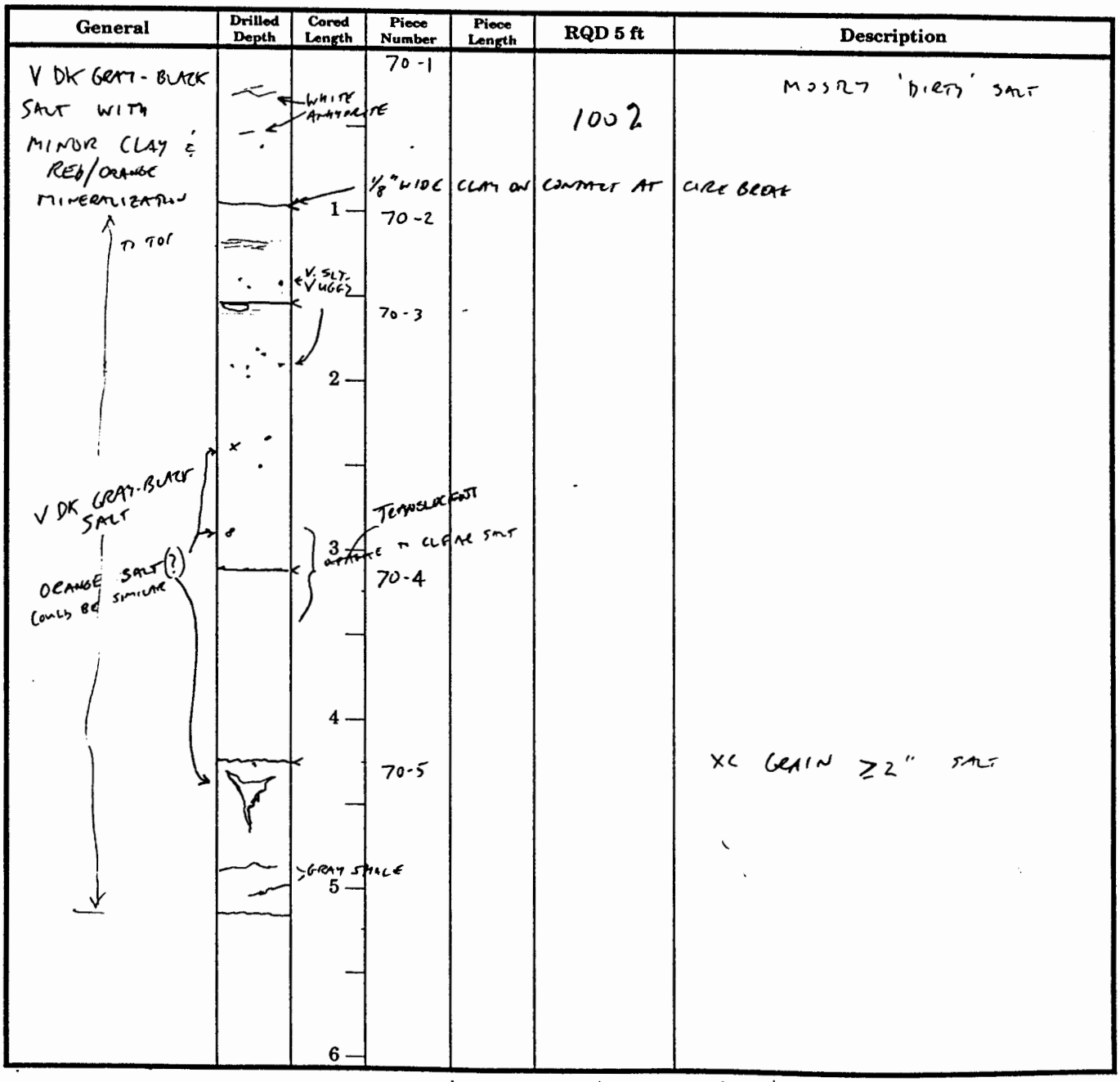
RESPEC

RUN 70

PAGE ____ of ____

CORE BARREL LENGTH 5.0'
CORE DIAMETER 4"
TOP CORE INTERVAL 649
BOTTOM CORE INTERVAL 654
LENGTH CORED INTERVAL 5.0 (5.15 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV



RESPEC

RUN 71

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 654
BOTTOM CORE INTERVAL 659
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DIRTY DK GRAY-BLACK SALT WITH ANHYDRITE & CLAY SEAMS AS NOTED	AK	– ORANGE SALT – BLACK CLAY – BREAK ON 1/8" CLAY SEAM } ANHYDRITE, HARD GRAY SHALE & ANHYDRITE		1/8" CLAY SEAM	100%	SALT ½ - 1" GRAIN
DIRTY SALT EXCEPT AS NOTED						
WHITE ANHYDRITE						
3/4" BLACK CLAY						
WHITE ANHYDRITE						

RESPEC

RUN 72

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 659
BOTTOM CORE INTERVAL 664
LENGTH CORED INTERVAL 5.0 (5.2 IN BSL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY TO TRANSLUCENT SALT WITH ANHYDRITE (LAYERS/INCLUSIONS) AND SHALE/CLAY			72-1		100%	SEE SKETCH
			BLACK CLAY			
			WHITE ANHYDRITE			
		1	DISSOLVED(?) HOLES ~1/8"			
		2	72-2			
			WHITE ANHYDRITE FILLED IN SALT GRAIN BOUNDARIES			
		3	72-3			
CONSENS		4	MORE ANHYDRITE			
1" ANG GRAIN SIZE & CLEARER GRAINS		5	72-4			
		6				

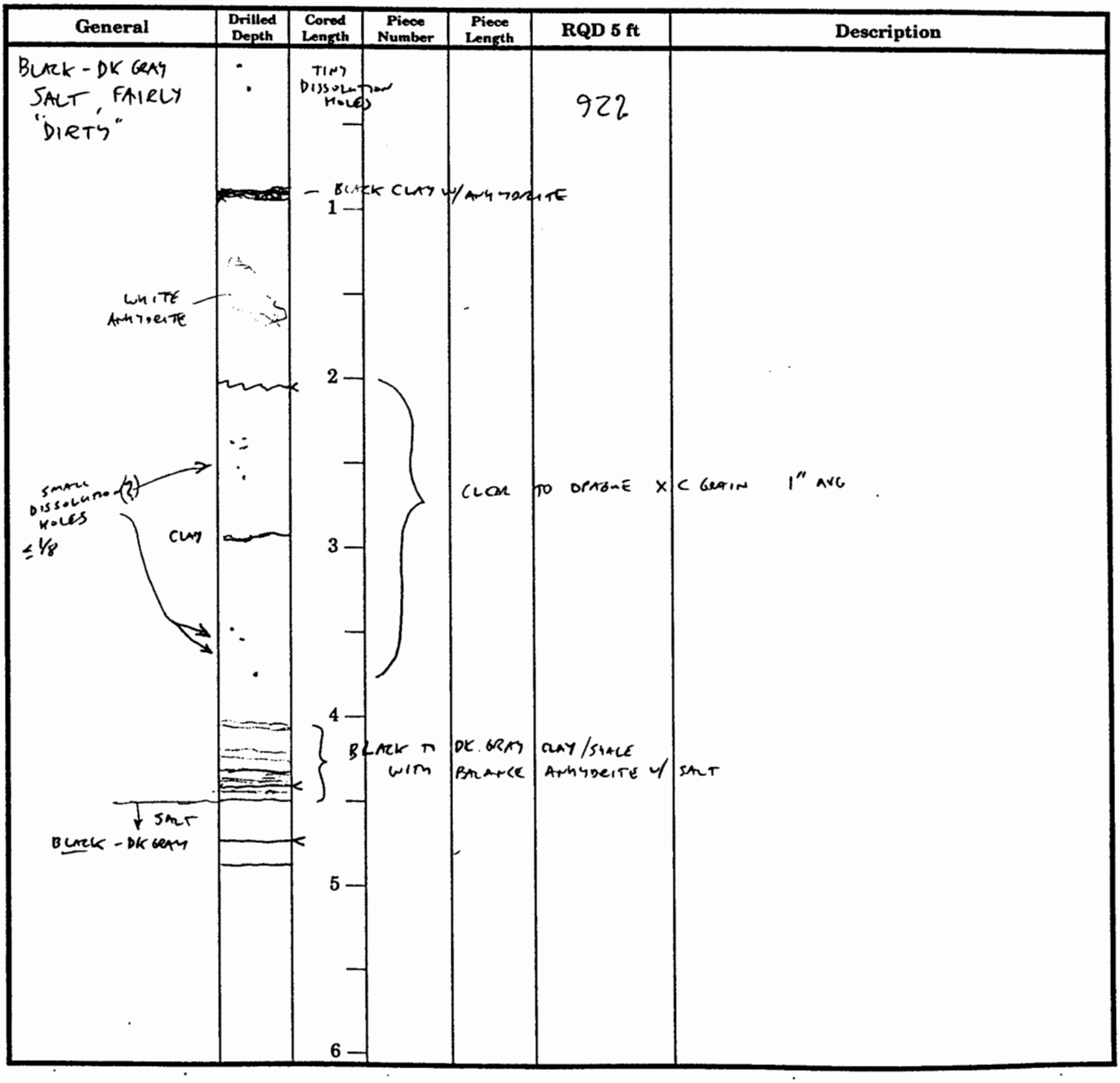
RESPEC

RUN 73

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 664
BOTTOM CORE INTERVAL 669
LENGTH CORED INTERVAL 5.0 (4.9 IN BBL)

RECOVERY ~ 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 92%
LOGGED BY JOV



RESPEC

RUN 74

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 669
BOTTOM CORE INTERVAL 674
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
V. DK GRAY TO REDDISH-ORANGE SALT. CLAY SEAMS V. FEW & THIN, SOME ANHYDRITE		CLAY			100%	NEARLY ALL BLACK - V. DK GRAY, DIRTY SALT ½-¾" GRAIN MAX SIZE ?
		1				
RED/ORANGE SALT		2				
		FINE	BLACK CLAY ⅛" WIDE			
		3				
		4				
		5				
		6				

RESPEC

RUN 75

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 674
BOTTOM CORE INTERVAL 679
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT, DIRTY	SALT		75-1		100%	
	SALT	GRAY CLAY				
		RED-ORANGE SALT.				
ANHYDRITE		1				
		MASSIVE TAN - GRAY ANHYDRITE				
	AC					
BLACK SHALE		2	75-2			
SALT						
		3				
		4	75-3			
SHALE						
ORANGE SALT		GRAY SHALE 5				
		6				

RESPEC

RUN 76

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 679
BOTTOM CORE INTERVAL 684
LENGTH CORED INTERVAL 5.0 (IN BBL)

RECOVERY
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 95%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ORANGE-RED SALT					95%	BLACK SHALE W/ RED/ORANGE SALT FILLED FRACTS
GRAY-BLACK SHALE W/ RED SALT "NEAR BRECCIATED"		1				
DK GRAY-BLACK SALT		2				
SALT						FINE GRAY CLAY SEAM 1/8" WIDE
		3				
SAME → SLT. ORANGE-BROWN SALT		4				
BLACK CLAY W/ O.-R. SALT IN FRACTURES						CLAY & ANHYDRITE JUST ABOVE CORE BREAK
		5				
		6				

RESPEC

RUN 77

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 684'
BOTTOM CORE INTERVAL 689
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
BLACK - V DK GRAY SHALE W/ANTHRACITE IN SEAMS & NODULES		ORANGE/RED SALT IN FRACT.			100%	
		BREAK IN BARREL				
QUICKLY GRADES TO GRAY TO LT. GRAY SALT		BLACK CLAY				
1/2 - 1" ESTIMATED AVG GRAIN SIZE		1 2 3 4 5 6				

RESPEC

RUN 78

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 689
BOTTOM CORE INTERVAL 694
LENGTH CORED INTERVAL 5.0' (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MED-DK GRAY SALT TO 693.1, THEN DK GRAY-BLACK SHALE W/ GRAVEL SALT IN FRACTURES		1 2 3 4 5 6			100%	AVG GRAIN SIZE ½-1" MAX 1½

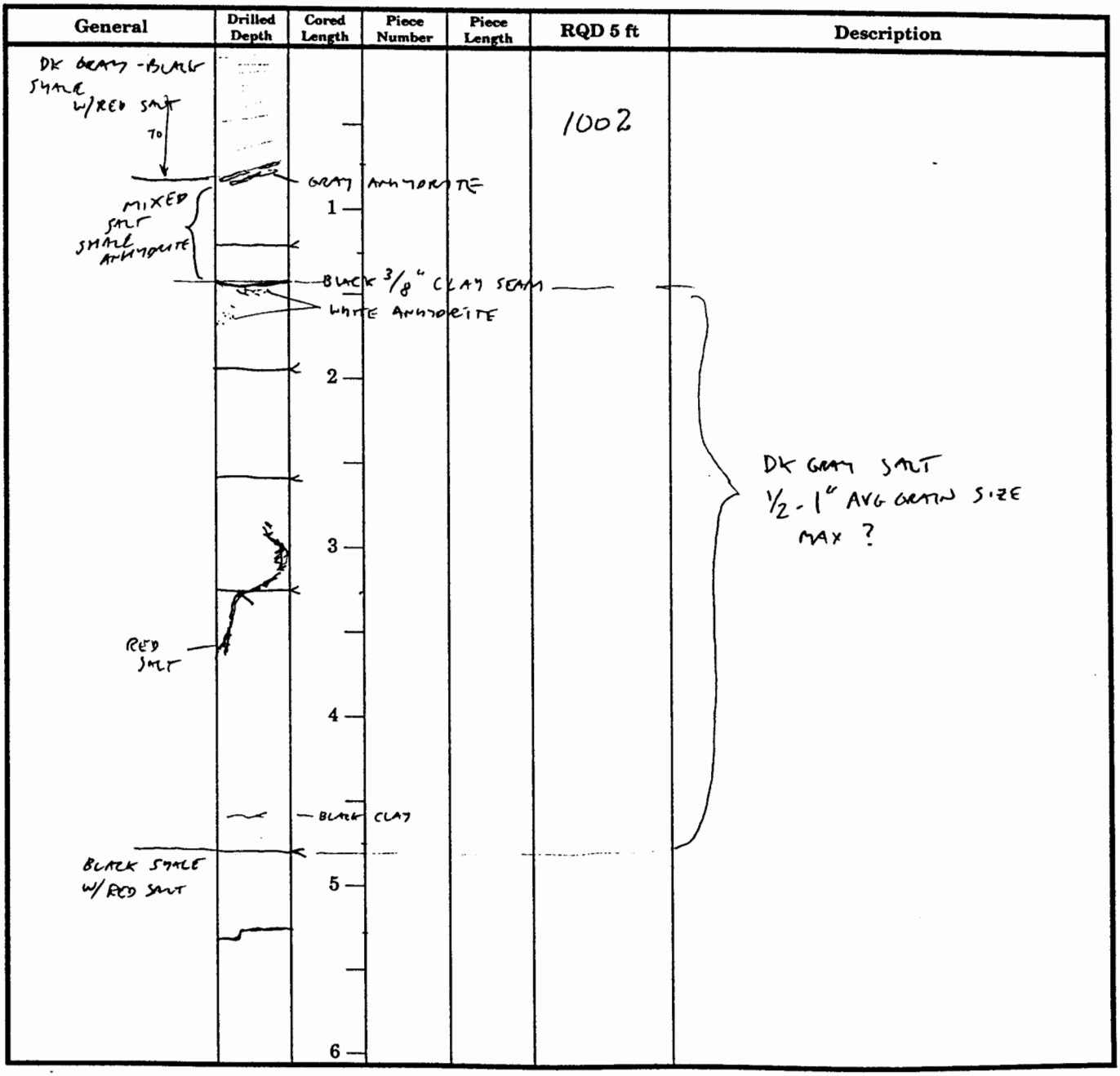
RESPEC

RUN 79

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 694
BOTTOM CORE INTERVAL 699
LENGTH CORED INTERVAL 5.0 (5.3 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV



RESPEC

RUN 80

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 699
BOTTOM CORE INTERVAL 704
LENGTH CORED INTERVAL 5.0' (4.8 IN BBL)

RECOVERY ~100%
TIME RECOVERED)
DATE RECOVERED 1-26-02
RUN RQD 95%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ALMOST ALL SALT! ↓ ALL SALT BETTER QUALITY COMPARATIVELY V. LITTLE EVIDENT CLAY/ANHYD. (NO SEAMS/LAYERS)		BLACK-DK GRAY CLAY W/ WHITE ANHYDRITE NODULES			95%	DRILLING LEFT 3/8" VERTICAL SCRAPES IN CORE THIS 5' BARREL RUN

RESPEC

RUN 81

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 704
BOTTOM CORE INTERVAL 709
LENGTH CORED INTERVAL 5.0 (5.0 IN BBL.)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-0
RUN RQD 97%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ALL SALT, FROM CLEAR-TO MED GRAY BETTER PURITY THAN ANY PREVIOUS BOXES >90-95%		1 2 3 4 5 6	SLIGHTLY MORE ANHYDRITE POSSIBLE DISSOLUTION HOLE 3/16" LT GRAY, ANE ANHYDRITE LAYER 1/2 - 5/8" WIDE		97%	X- COARSE GRAINED SALT, (MOSTLY CLEAR BUT CLAY/ANHYDRITE MAKES IT LOOK DARK GRAY) DK GRAY GRAIN SIZE AVG 3/4 - 1" MAX > 1 1/2"

RESPEC

RUN 82

PAGE ____ of ____

CORE BARREL LENGTH 5.0
CORE DIAMETER 4"
TOP CORE INTERVAL 709'
BOTTOM CORE INTERVAL 714'
LENGTH CORED INTERVAL 5.0' (5.3 IN BBL)

RECOVERY 100%+
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 92%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT WITH FEW MINOR CLAY SEAMS					92%	SALT (VARIABLE CLEAR, TRANSLUCENT DK. GRAY. TO ORANGE-RED) AVG GRAIN SIZE ~ 1" MAX ~ 2" OR LARGER
		1				BLACK CLAY W/ANHYDRITE FINE WHITE ALONG CLAY, & GRAY
		2				
		3				
		4				
		5				
		6				

RESPEC

RUN 83

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 714
BOTTOM CORE INTERVAL 719
LENGTH CORED INTERVAL 5.0 5.1 ft BGL

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT / ANHYDRITE LAYERS					100%	MOSTLY SALT WITH V. SMALL <1/4" LIKELY KCl OR OTHER BRINE SOLUBLE MINERAL THIS SECTION LEFT PITTING IN SPOTS, 1 WITH UNKNOWN CRYSTAL
SALT GLEAR - GREY-ORANGE		1				
CRACK (CORE NOT APART YET)						
MOSTLY ANHYDRITE W/ MINOR BLACK SHALE & TRACE SALT		2				
		3				
SALT RED-ORANGE		4				
ANHYDRITE & SALT		5				
		6				

RESPEC

RUN 84

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 719
BOTTOM CORE INTERVAL 724
LENGTH CORED INTERVAL 5.0 (4.9' IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 92%
LOGGED BY JBV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ANHYDRITE & CLAY W/SOME SALT			WHITE-LT GRAY ANHYDRITE		92%	
		1				
		2				
ORANGE-GRAY SALT / CLAY / ANHYD. SALT		3				SALT W/ MINOR CLAY SEAMS ½" - 1"
		4	THIN GRAY CLAY SEAM ⅛"			
		5				
		6				

XX-MA COARSE, GLASSY w/ FRACTURED CLEAV

RESPEC

RUN 85

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 724
BOTTOM CORE INTERVAL 729
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 98%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
INCREASING SALT CONTENT 724-725	SALT / ANHYDRITE CLAY				98%	724-725 MOSTLY ANHYDRITE, SHALE, AND SOME SALT
	BLACK AVG CLAY					MOSTLY SALT BUT 'DIRTY' BUT GETTING BETTER W/ DEPTH
	SALT	1				
		2				MODERATE SURFACE DISSOLUTION
		3				
☆		4				XXC SALT GLASSY > 3-4" GRAIN // FRACTURES ALONG CLEAVAGE PLANES
	ANHYDRITE	5				
		6				

Box #'s
(SOK)

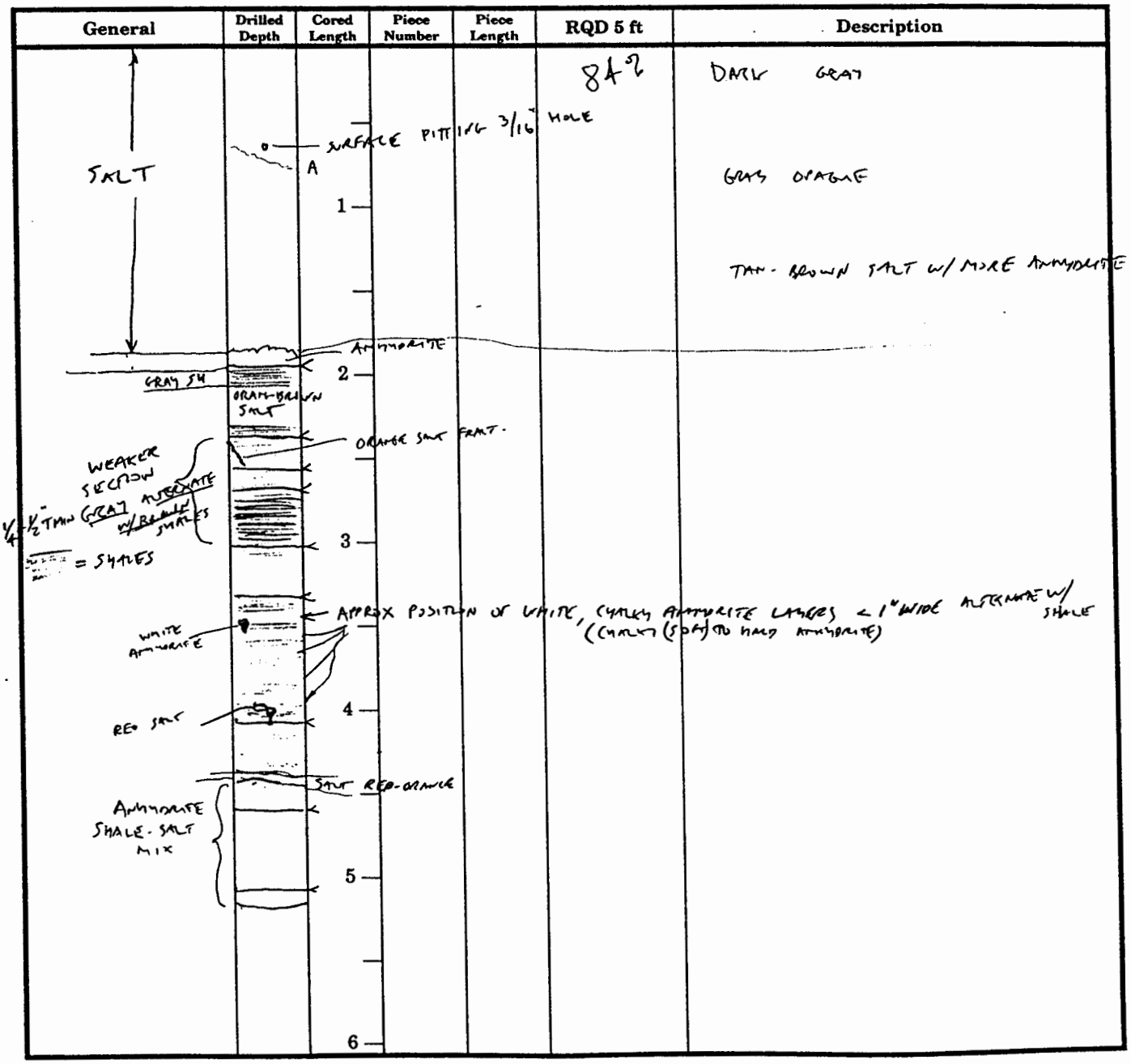
RESPEC

RUN 86

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 729
BOTTOM CORE INTERVAL 734
LENGTH CORED INTERVAL 5.0 (5.2 IN BOX)

RECOVERY 100
TIME RECOVERED
DATE RECOVERED 1-28-02
RUN RQD 842
LOGGED BY JOV



RESPEC

RUN 87

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 734
BOTTOM CORE INTERVAL 739
LENGTH CORED INTERVAL 5.0 (IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 90%
LOGGED BY JOY

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SALT WITH MOD-A		CLAY AT TOP			90%	FAIRLY WELL-BEDDED SALT
		1				
		A W/RED SALT				A = ANHYDRITE
SALT (LAMINAR EVIDENT)						
		2				
		DK LT DK LT DK				LT LIGHT SALT LAYER DK DARK " "
		3				
		DK DK				
SALT WITH MORE ANHYDRITE		4				1/2-3/4" GRAIN AVG
DARK HIGH CLAY/A CONTENT (DISSEMINATED RED RATHER THAN LAYERED)		5				
		6				

RESPEC

RUN 88

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 739
BOTTOM CORE INTERVAL 744
LENGTH CORED INTERVAL 5.0 (4.8' IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 99%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY GRAY TO SLT. TRANSLUCENT COARSE-MED GRAINED SALT	SALT ↓	1 2 3 4 5 6			99%	ORANGE SALT BROKEN ½" WIDE GRAY SHALE W/ ORANGE SALT IN FRACTS.

RESPEC

RUN 89

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 744
BOTTOM CORE INTERVAL 749 (MISMARKED AS 747')
LENGTH CORED INTERVAL 5.0' (4.66 IN BBL)

RECOVERY ~100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
LAYERED SALT WITH 3" OF ANHYDRITE AT ~745	SALT	ANHYDRITE W/ SALT			100%	
4" DK GRAY CLAY AT ~746	SALT	1				
		ORANGE				
	SALT	DK. GRAY				
BLACK SHALE W/ V. FINE WHITE ANHY. LAMINAE		2				DK. GRAY SALT W/ ANHYDRITE (WHITE-LT GR FILLING IN BETWEEN GRAINS
		3				
		4				
		5				
		6				

RESPEC

RUN 90

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 749
BOTTOM CORE INTERVAL 754
LENGTH CORED INTERVAL 5.0 (5.25 IN BBL)

RECOVERY > 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 922 + PROBABLE HAMMER BREAKAGE AT 753.6
LOGGED BY JVV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SALT WITH					922+	DK. GRAY TO BLACK SALT W/ WHITE ANHYDRITE BETWEEN GRAINS IN MANY PLACES, INFILLED FRACTURES BETWEEN GRAINS
WHITE A WIDE 1/4" ANHYDRITE CONTACTS <1/8" THICK					A = ANHYDRITE	TRANSLUCENT CLEAR ~~GRAY~~ SALT WITH ORANGE & BLACK INCLUSIONS PO 753.1 COLORATION PROBABLE KCL PITTING 753.5
SOFT					@ 753.6 BROKEN W/HAMMER?	DK GRAY SALT W ANHYDRITE & RED SALT / POSSIBLE KCL

RESPEC

RUN 91

PAGE ____ of ____

CORE BARREL LENGTH 5.0'
CORE DIAMETER 4"
TOP CORE INTERVAL 754
BOTTOM CORE INTERVAL 759
LENGTH CORED INTERVAL 5.0 (5.0 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
SALT (CLEAR TO RED-ORANGE-TO GRAY) TO ~756.9					100%	SALT W/ LIKELY RED-ORANGE POTASH MINERALIZATION @755' AND 756' ORANGE NOT ALL SALT & KCL - CHECK IN LAB? DISSOLVED (?) PITTING
RED-ORANGE SALT		1				
		2				
BLACK SHALE		3				V. FINE CLAY CONTENT 1/16" WIDE
A A DIRTY SALT						
						WHITE A NODULES <1/4" DIA
GRAYER QUICKLY BACK TO DK GRAY SALT		4				
		5				
		6				

| = BREAK IN CORE, (PIECE END)

RESPEC

RUN 92

(CORE HAS SCRAPE MARKS VERTICALLY FROM CORE BARREL)

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 759
BOTTOM CORE INTERVAL 764
LENGTH CORED INTERVAL 5.0 (5.1 IN BBL)

RECOVERY 100%
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 96%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
2" BLACK SHALE THEN DK GRAY / TO CLEAR/ORANGE SALT (WIDELY BANDED) ↑ SALT		1 FINE A (WHITE)			96%	BLACK SHALE W/ V. FINE WHITE LAMELLAE (HORIZ)
CLEAR SALT						
DK GRAY SALT MORE ANHYDRITE		DK GRAY 2				1" - 1½" AVG GRAIN MAX > 2" ?
CLEAR		3				
DK GRAY SALT		4				
ORANGE CLEAR SALT		5				
		6				

RESPEC

RUN 93

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 764
BOTTOM CORE INTERVAL ~~771~~ 769
LENGTH CORED INTERVAL 5.0 (5.0 IN BSL)

RECOVERY 100% -
TIME RECOVERED
DATE RECOVERED 1-26-02
RUN RQD 95%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY SALT WITH ABOUT 0.9' OF GRAY SHALE AT ABOUT 765.8 - 766.7 THEN DIRTY GRAY-BROWN SALT W/ MODERATE ANHYDRITE		1			95%	DK GRAY - MED GRAY SALT 1 - 1½" AVG GRAIN
		2				GRAY SHALE w/ RED SALT IN FRACTURES, WITH SOME WHITE, 1/8 - 3/16" THICK ANHYDRITE BOUDINAGE AT 766.0'
		3				DIRTY DK GRAY - BROWN SALT SOME GRAIN TO >2"
		4				
		5				MINOR SURFACE PITTING
		6				

RESPEC

RUN 94

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 769
BOTTOM CORE INTERVAL 774
LENGTH CORED INTERVAL 5.0 (5.0 IN NBL)

RECOVERY 100%
TIME RECOVERED ~ 11:30 PM
DATE RECOVERED 1-26-02
RUN RQD 92%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
WIDE LAYERS OF DK GRAY TO GLASSY SALT		1 2 3 4 5 6	CORE PIECES BROKEN		92%	(NO ANHYDRITE OR SHALE SEAMS LAYERS) VERY COARSE BELOW ~ 771' AVG 2" GRAIN MAX ~ 4" POSSIBLE WEAKER STRENGTH BETWEEN GRAINS 771 - 774 MORE FRIABLE

RESPEC

RUN 95

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 774'
BOTTOM CORE INTERVAL 779'
LENGTH CORED INTERVAL 5.0 (5.05 IN KSL)

RECOVERY 100%
TIME RECOVERED ~ 12:15 AM
DATE RECOVERED 1-27-02
RUN RQD 92%+
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DK GRAY SALT WITH A COUPLE BEDS OF BLACK SHALE					92%	TRANSLUCENT SALT AS ABOVE LOG
						ANHYDRITE
		BLACK SHALE				
			ANHYDRITE			
		1				
BROWN SALT DK GRAY		SALT				
BLACK SHALE						
		A				
BLACK CLAY W/ ANHYDRITE		RED SALT	IN VERT	PLANE.		
		2				
DIRTY SALT						1" ? GRAIN AVG
		3				
A						
		4				
MINERAL SURFACE PITTING DISSOLUTION? COARSER GRAIN >2"						> 2" GRAIN AVG
		5				
		6				

RESPEC

RUN 96

SALT VERTICAL SCRAPES FROM CORE BARREL

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 779
BOTTOM CORE INTERVAL 784
LENGTH CORED INTERVAL 5.0 5.0 IN BGL

RECOVERY 100%
TIME RECOVERED 12:30 AM (ESTIM.)
DATE RECOVERED 1-27-02
RUN RQD 952
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK GRAY TO BROWN TO CLEAR SALT WITH SEVERAL VISIBLE CLAY SEAMS AS NOTED	DIRTY SALT				952	
		C	BLACK CLAY	<1/4" WIDE		BLACK CLAY SEAMS AT "C"
	SALT					DIRTY DK. GRAY-BLACK SALT W/ ANHYDRITE & CLAY
		1				
	XXC					SALT - MASSIVE CLEAR XXC CRYSTALS > 2"
	SALT					
		2				
-C →			RED SALT W/ BLACK CLAY			
	SALT					
CLAY SEAM BLACK 1/2" W RED SALT IN FRACTS - C →						
		3				
	SALT					
-C						
-C						
	DK GRAY-BLACK SALT	4	CLAY LAYERS			
		5				
		6				

RESPEC

RUN 97

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 784
BOTTOM CORE INTERVAL 789
LENGTH CORED INTERVAL 4.9 IN BBL

RECOVERY ~100%
TIME RECOVERED 12:45 AM
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
DARK TO MED GRAY SALT (LAYERED) MINIMAL ANHYDRITE LAYERS EVIDENT - ONLY V. THIN WHITE-LT. GRAY AS NOTED		A ~1"	WIDE		100%	AS SKETCH
		A 1	< 1/8"			COARSE GRAIN ~ 1" AVG. MAX. ~>2"
		2				
		A 3	WHITE - LT. GRAY		w/SALT	
SALT						
SALT BANDED DK-LT		4				
		DARK GRAY SALT				
		5				
		6				

RESPEC

RUN 98

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 789
BOTTOM CORE INTERVAL 794'
LENGTH CORED INTERVAL 5.0 (5.4 IN BOL)

RECOVERY > 100%
TIME RECOVERED ~ 1 AM
DATE RECOVERED 1-27-02
RUN RQD 952
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
LAYERS OF DK GRAY SALT MOSTLY; WITH: ~5" OF GRAY SHALE ~790.6–791.0		1			952	COARSE, DK. GRAY SALT W/ ANHYDRITE.
XC SALT WITH 1½" ANGULAR CLAY PIECES 792–792.9		2				RED SALT
		3				BLACK CLAY WITH SALT
BLACK CLAY		4				XXC GLASSY SALT >3" GRAIN
DIRTY, DK GRAY–GRAY SALT SOME (ORANGE)		5				
		6				

RESPEC

RUN 99

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 794
BOTTOM CORE INTERVAL 799
LENGTH CORED INTERVAL 5.0 (4.9 IN BBL)

RECOVERY ~100%
TIME RECOVERED 1:15 AM
DATE RECOVERED 1-27-02
RUN RQD 882
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
WELL-LAYERED SALT SEQUENCE ALTERNATING DK GRAY-BLACK TO TRANSLUCENT CLEAR-~~OPAQUE~~					882	TRANSLUCENT CLEAR-~~OPAQUE~~ LAYERS COMMON FREQUENT ORANGE-RED SALT (COULD BE NON KCl POTASH MINERAL, BUT IS NOT DISSOLVED OUT BY BRINE)
SALT DARKER W/ WHITE, FINE ANHYDRITE						
CLEAR SALT						
XC GLASSY SALT						
RED						
BROKEN PIECES						
RED						MOST 1/2-3/4" GRAIN SIZE NEAR BOTTOM

1 2 3 4 5 6

RESPEC

RUN 100

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 799'
BOTTOM CORE INTERVAL 804
LENGTH CORED INTERVAL 5.0 (4.7 IN BBL)

RECOVERY ~ 100 %
TIME RECOVERED ~ 1:15 AM
DATE RECOVERED 1-27-02
RUN RQD 100 %
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
WHITE TO LT. ORANGE SALT LAYERS, BELOW THIN LIGHT GRAY CLAY LAYER	ORANGE SALT; GRAY-LT. GRAY ANHYDRITE W/ SALT; ORANGE SALT	0 ORANGE; 1 SLT ORANGE SALT; 2; 3; 4; 5; 6			100 %	3/4 - 1" AVG GRAIN; POSSIBLE POTASH MINERALS. (NO OR MINIMAL DISSOLUTION BY BRINE ON OUTSIDE CORE SURFACES)
MOSTLY TRANSLUCENT V. LT TAN/ORANGE SALT	ORANGE SALT					

RESPEC

RUN 101

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 804
BOTTOM CORE INTERVAL 809
LENGTH CORED INTERVAL 5.0 (5.3 IN BBL)

RECOVERY > 100%
TIME RECOVERED 1:30 AM ?
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
WHITE-TRANSLUCENT TO LT. GRAY SALT					100%	HORIZ. BEDDED SALT MOST. CLEAR-TRANSLUCENT-WHITE
FINER GRAINED SALT		V. LT. ORANGE SALT				
		1				
		V. LT. ORANGE SALT				
		2				
		V. LT. GRAY SALT LAYER				
						1/4" AVG. GRAIN SIZE SALT MORE FRIABLE
		3 GRAY SALT LAYER				
		4				
MASSIVE MED. GRAY ANHYDRITE V. FINE GRAINED & HARD! HORIZ LAMINATION EVIDENT		5				MASSIVE ANHYDRITE AT BASE OF RUN WHEN BROKEN IS MED GRAY BUT CORED SURFACE LOOKS WHITE ∴ SOME WHITE ANHYDRITE (NOT FINE/THIN LAYERS) GENERALLY NOTED IN PREVIOUS DESCRIPTIONS MIGHT BE DARKER (MED GRAY) WHEN AT CLEAN BREAK
		6				

RESPEC

RUN 102

PAGE ____ of ____

CORE BARREL LENGTH 5.0
CORE DIAMETER 4"
TOP CORE INTERVAL 809
BOTTOM CORE INTERVAL 814
LENGTH CORED INTERVAL 5.0 (4.9 IN BBL)

RECOVERY ~100%
TIME RECOVERED 1:45
DATE RECOVERED 1-27-01
RUN RQD 98%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
A		} CONTINUED MED. GRAY ANHYDRITE LAYER				
GRAY SALT	GRAY SALT				98%	
	A	1				COARSE GRAIN 1" AVG >2" MAX
		2				
		3				
		4				MODERATE + SURFACE PITTING MAY BE CLAY OR OTHER POTASH MINERALS DISSOLVED BY BRINE IN THIS RUN
SALT W/ BLACK CLAY CONTENT	*	5				* I BROKE TO CHECK NATURE OF INCLUSIONS V. FINE WHITE CRYSTALLINE "MUSH" THIS IS NOT KCl, NOT SALT COULD SEE BUBBLE INCLUSIONS NOT FLUID FILLED
		6				

RESPEC

RUN 103

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 814
BOTTOM CORE INTERVAL 819
LENGTH CORED INTERVAL 5.0 (5.4 in BBL)

RECOVERY 100%
TIME RECOVERED 2:30 AM
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ANHYDRITE / SALT / MINOR CLAY MIX		A + GRAY SALT			100%	MIX (see sketch)
		DK GRAY-BLACK		CLAY w/ RED SALT IN SMALL FRAGS		
WHITE-GRAY A W/SOME CLAY & SALT		CLAY				A = ANHYDRITE
XL GLASSY SALT ORANGE						
ANHYDRITE, CLAY w/ SOME SALT						

1 2 3 4 5 6

RESPEC

RUN 104

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 819
BOTTOM CORE INTERVAL 824
LENGTH CORED INTERVAL 5.0 5.0 IN BGL

RECOVERY 1007
TIME RECOVERED 3 AM
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MIXTURE CONTINUES OF ANHYDRITE, SALT, SHALE	X-C SALT	A	BLACK CLAY/SHALE		100%	
						ROCK MIX
		1	BRECCIATED MOSTLY ANHYDRITE/CLAY			ANGULAR CHUNKS IN CLAY 'MATRIX' MIX W/ ORANGE PIECES
		2				
						SALT W/ NUMERALS INCLUSIONS & PITTED SURFACE TO ~1/4" MOST < 1/2" (NOT FLUID)
SALT XC GLASSY		3				
AS ABOVE BRECCIATED ROCK MIX		4				
	SALT					SOME PITTING (UNDER 1/4") IN SALT
		5				
		6				

RESPEC

RUN 105

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 824
BOTTOM CORE INTERVAL 829
LENGTH CORED INTERVAL 5.0 (5.1 IN BAL)

RECOVERY 100%
TIME RECOVERED 4 AM
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JOV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ANHYDRITE, THEN SALT, THEN		WHITE, MODERATE ANHYDRITE W/ MINOR				CLAY & SALT (AT 824' TOP ONLY)
	SALT CLEAR	1			100%	XXC GRAIN >3" SALT W/ LARGER INCLUSIONS TO ~ 3/8 - 1/2" SIZE, (SURFACE PITTING)
		2				
		3	GRAY SALT	IN SAMPLE		SALT MIX WITH BLACK CLAY & SOME ANHYDRITE MODERATE PITTING FROM INCLUSIONS
		4				
		5				
		6				

RESPEC

RUN 106

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 829
BOTTOM CORE INTERVAL 834
LENGTH CORED INTERVAL 5.0 (4.8 IN BBL)

RECOVERY ~100%
TIME RECOVERED 4:30 AM
DATE RECOVERED 1-27-02
RUN RQD 90%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
XC GRAINED GRAY, MASSIVE SALT MINIMAL ANHYDRITE & CLAY VERY THIN CLAY/ANHYDRITE? BLACK CLAY		1 2 3 4 5 6			90%	CONSISTENT SALT SOME SURFACE PITTING (INCLUSIONS) AVG. GRAIN > 1" MAX > 3"

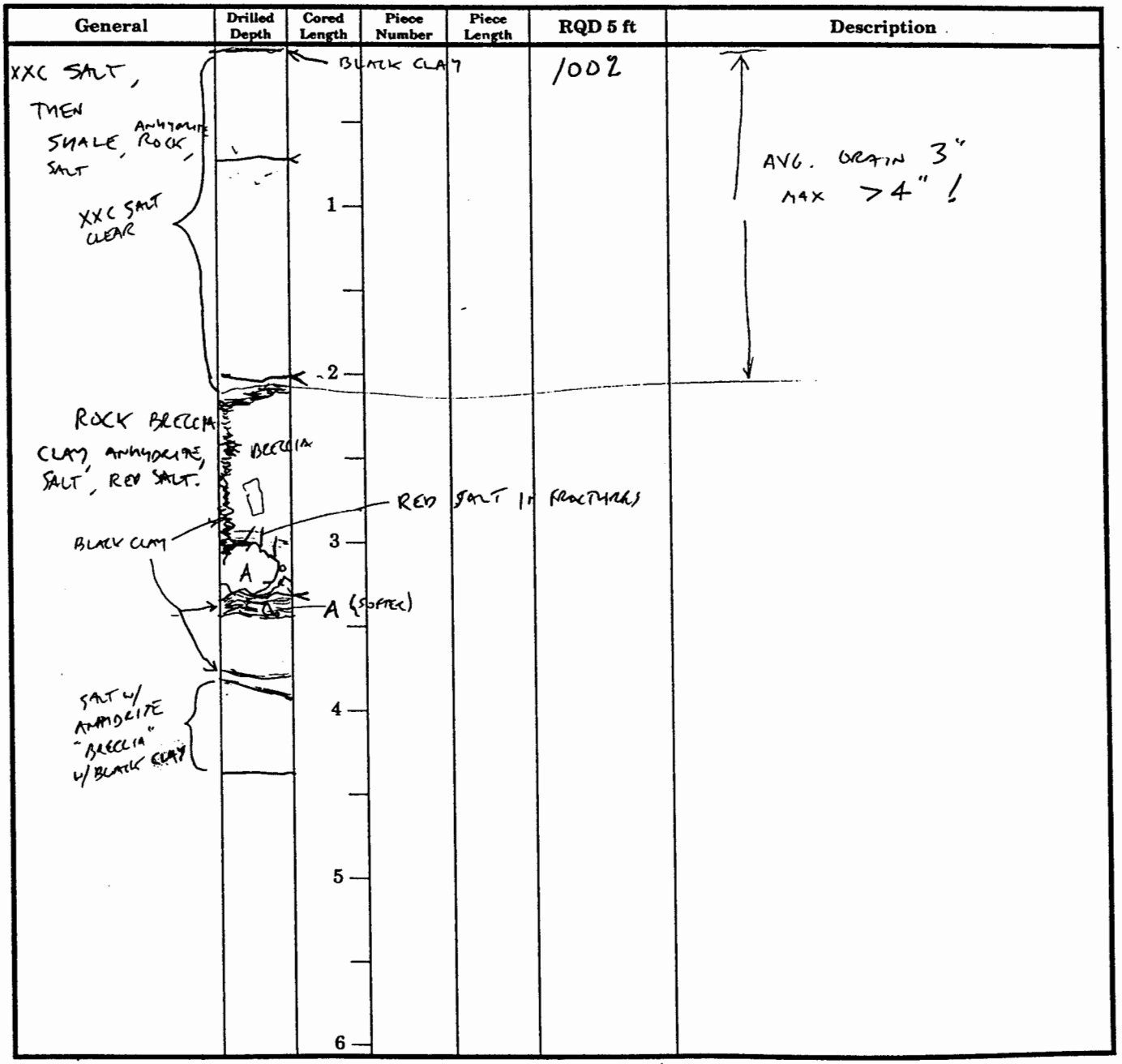
RESPEC

RUN 107

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 834
BOTTOM CORE INTERVAL 839
LENGTH CORED INTERVAL 5.0 (4.4 IN BBL)

RECOVERY ~ ~ 100%
TIME RECOVERED 5 AM ?
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JBV



RESPEC

RUN 108

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 839
BOTTOM CORE INTERVAL 844
LENGTH CORED INTERVAL 5.0 (5.25' IN BBL)

RECOVERY 100%
TIME RECOVERED 7 AM ✓
DATE RECOVERED 1-27-02
RUN RQD 86%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
GRAY SALT WITH OCCAS. CLAY LAYER (AS NOTED)	DIRTY GRAY SALT W/ ANHYDRITE				86%	MED GRAY - DIAGLE SALT
(BROKEN) BLACK SHALE W/RED SALT		1				
	SALT + A					SALT/ANHYDRITE MIX
THIN BLACK CLAY LAYERS	SALT + A					
						(HALITE SHALE)
		2				
				XC COARSE		X-COARSE SALT W/ OCCAS BLACK CLAY FLECKS W/ INCLUSIONS & MODERATE SURFACE PITTING IN MOSTLY 842.8-844.2 AVG GRAIN >1" MAX ≥4" IN LAST 1½'
		3				
CORE BROKEN						
				XVC COARSER ↓		
		4				
		5				
		6				

RESPEC

RUN 109'

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 844
BOTTOM CORE INTERVAL 849
LENGTH CORED INTERVAL 5.0 5.1 IN BGL

RECOVERY 100%
TIME RECOVERED 7:30 AM
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
CONSISTENT GRAY, E-XC GRAIN SALT					100%	GRAY SALT AVG. GRAIN 1" MAX 1½-2" (?)
↓ INCREASING ANHYDRITE						↓ INCREASING IMPURITIES
BLACK CLAY						
ANHYDRITE, GRAY JUMBLED NODULES SOME ANGULAR PIECES W/CLAY & SALT						
						MASSIVE WHITE-CREAM ANHYDRITE, HARD
BLACK SHALE W/FINE WHITE BEDDING						
						ORANGE SALT

= (CORE BREAK THIS PAGE ONLY)

RESPEC

RUN 110 ☆

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 849
BOTTOM CORE INTERVAL 854
LENGTH CORED INTERVAL 5.0 (5.4 IN BBL)

RECOVERY > 100
TIME RECOVERED 8:00 AM
DATE RECOVERED 1-27-02
RUN RQD 100 %
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
LEAVING SALT SECTION(?) GETTING INTO SUB. SALT CLAY W/ RED FIBEROUS SALT FILLING IN FRACTURES		BROKEN PIECES OF CORE MEAR END			100 %	
		1				THIN < ¼", LAYERED GRAY SHALE AND ORANGE SALT
		2				
RED SALT						
		3				
BLACK CLAY		4				AT 853.5'. ☆ BEAUTIFUL EXAMPLE OF 4" LONG, ORANGE FIBEROUS, SALT FILLED FRACTURE!
4" LONG			ANHYDRITE IN THIS SECTION IS FINE-GRAINED MASSIVE GRAY & HARD			
BLACK SHALE		A + CLAY BRECCIA				A = ANHYDRITE
		5				
r > = ORANGE FIBEROUS SALT						
		6				

RESPEC

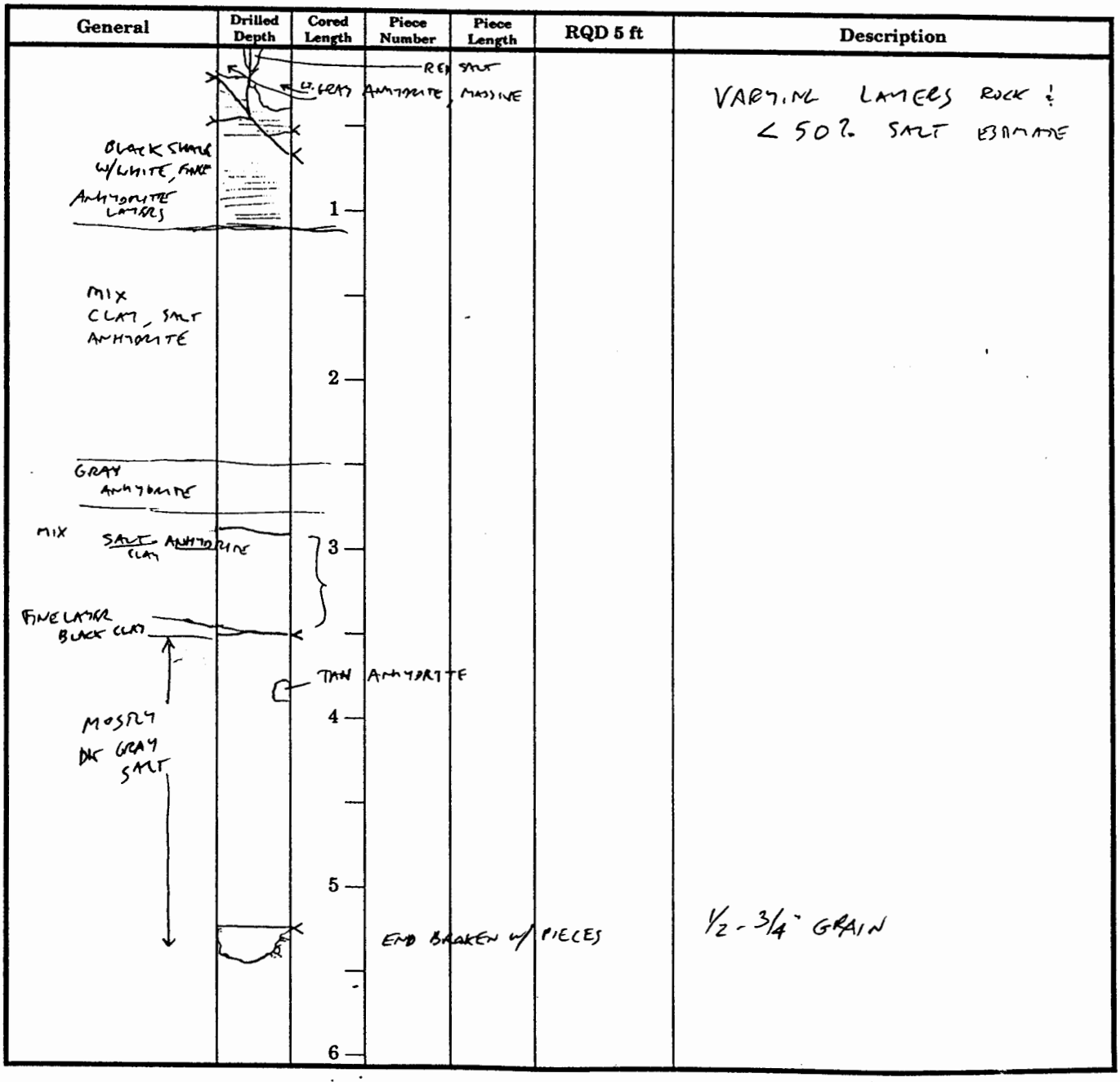
RUN 111

VERTICAL SCRAPING FROM CORE BARREL BAD THIS RUN

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 854
BOTTOM CORE INTERVAL 859
LENGTH CORED INTERVAL 5.0 (5.4 IN BBL)

RECOVERY 100
TIME RECOVERED 8:30 AM
DATE RECOVERED 1-27-02
RUN RQD 88%
LOGGED BY JDV



RESPEC

RUN 1/2

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 859'
BOTTOM CORE INTERVAL 864
LENGTH CORED INTERVAL 5.0' (4.95 IN BBL)

RECOVERY 100%
TIME RECOVERED 9 AM
DATE RECOVERED 1-27-02
RUN RQD 100% ✓
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
LAST SALT BED GRAY MOSTLY ANHYD. W/ THIN BLACK SHALE INTERBEDS FINE BEDDED BLACK SHALE W/ V. THIN WHITE ANHYDRITE LAMINAE SOME RED SALT IN VOID FILLS GRAY A SHALE W/ WHITE-LT GRAY ANHYDRITE W/ BLACK SHALE MOSTLY ANHYDRITE W/BLACK SHALE		1 RED SALT 2 3 4 MOST A 5 6			100%	

RESPEC

RUN 1/3

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 864
BOTTOM CORE INTERVAL 869
LENGTH CORED INTERVAL 5.0 4.95 IN BBL

RECOVERY ~100 %
TIME RECOVERED 10:40 AM
DATE RECOVERED 1-27-02
RUN RQD 95
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
ANHYDRITE SOME BLACK CLAY						
RED SILT		1				
A						
SOFT SHALE/CLAY		2			CAN BREAK BY HAND	
MOSTLY SHALE GRAY-GREEN TO BROWN	4					
BROWNISH RED SHALE		3				
RED FRIABLE SAND		4				
		5				
		6				

RESPEC

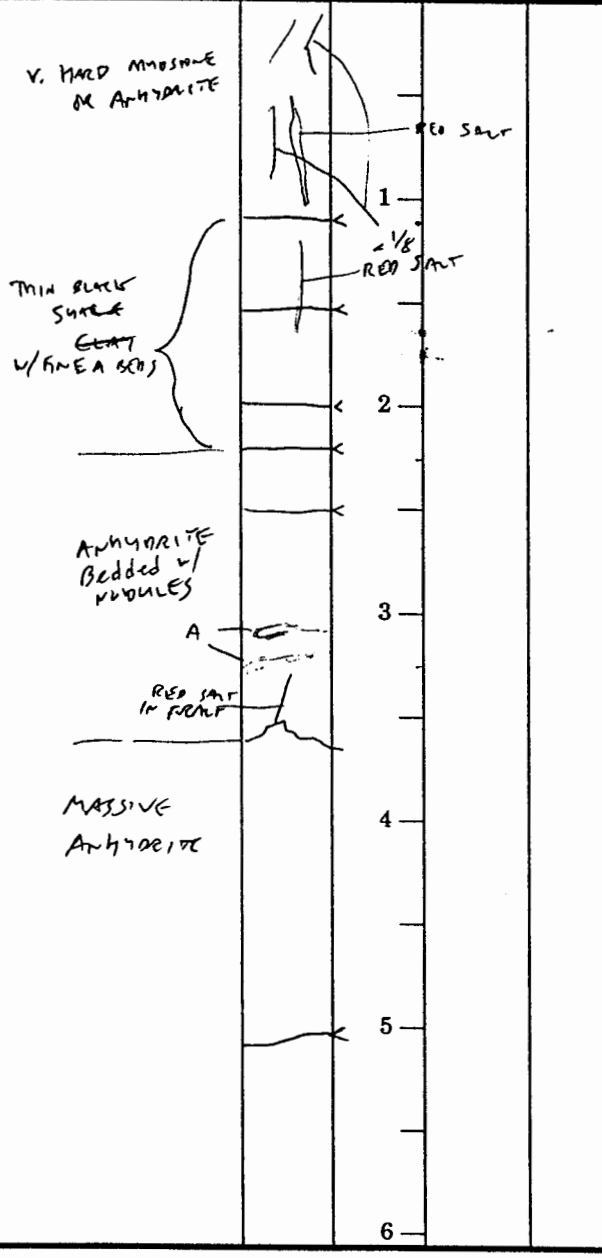
RUN 114

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 869
BOTTOM CORE INTERVAL 874
LENGTH CORED INTERVAL 5.0 5.0 631

RECOVERY 100
TIME RECOVERED 11 AM
DATE RECOVERED 1-27-02
RUN RQD 952
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
					952	



RESPEC

RUN 1/5

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 874
BOTTOM CORE INTERVAL 879
LENGTH CORED INTERVAL 5.0 (IN BGL)

RECOVERY 100
TIME RECOVERED 11:30 AM
DATE RECOVERED 1-27-02
RUN RQD 972
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
	A				972	
	CLAY					
	A					
FINE BEDDED CLAY AS BEFORE W/FINE A LAYERS		1				
		2				
		3				
ANHYDRITE HARD ALMOST MASSIVE TO MASSIVE	A	4				
		5				
		6				

RESPEC

RUN 116

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 879
BOTTOM CORE INTERVAL 884
LENGTH CORED INTERVAL 5.0 (5.0 IN BGL)

RECOVERY 100
TIME RECOVERED 12 NOON
DATE RECOVERED 1-27-02
RUN RQD 100%
LOGGED BY JBV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
					100%	

ANHYDRITE

BLACK SHALE ~~CLAYS~~

NOT MUCH ANHYD... LAMERINE

MOSTLY ANHYDRITE W/ SOME CLAY

BLACK SHALE W/ SOME ANHYD.

MASSIVE ANHYDRITE

1
2
3
4
5
6

RESPEC

RUN 117

PAGE ____ of ____

CORE BARREL LENGTH 5'
CORE DIAMETER 4"
TOP CORE INTERVAL 884
BOTTOM CORE INTERVAL 889
LENGTH CORED INTERVAL 5.0 5.0 IN BBL

RECOVERY 100%
TIME RECOVERED 12:30 PM
DATE RECOVERED 1-27-02
RUN RQD 80%
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
BLACK SHALE & ANHYDRITE					80%	
MOSTLY ANHYDRITE LT GRAY						
SHALE & ANHYDRITE						
BLACK CLAY W/ANHYDRITE						

1
2
3
4
5
6

RESPEC

RUN 118

CORE BARREL LENGTH 5.0
CORE DIAMETER 4"
TOP CORE INTERVAL 889
BOTTOM CORE INTERVAL 894 END OF CORE
LENGTH CORED INTERVAL 5.0

RECOVERY 100%
TIME RECOVERED 1 PM
DATE RECOVERED 1-27-02
RUN RQD
LOGGED BY JDV

General	Drilled Depth	Cored Length	Piece Number	Piece Length	RQD 5 ft	Description
MOSTLY MASSIVE MOTTLED AND LAMINATED ANHYDRITE	DARK / LT. GRAY	1 2 3 4 5 6	LT. GRAY MASSIVE LAMINATED ANHYDRITE			FOOTAGES APPROXIMATE (GETTING TOO DARK)
HARD, BLACK SHALE						
ANHYDRITE						
FINE LAMINATIONS						
BOUDINAGED						
END HOLE						

APPENDIX D

SCHLUMBERGER LOG
DIPOLE SONIC
PROCESSED DATA

APPENDIX E

SCHLUMBERGER LOG
COMPENSATED NEUTRON/LITHO-DENSITY

APPENDIX F

SCHLUMBERGER LOG
ARRAY LATEROLOG/GAMMA RAY

APPENDIX G

SCHLUMBERGER LOG
DIPOLE SONIC/GAMMA RAY