Project No. RM78-682-B
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Construction Report

Initial Phase-Tailings Management System

White Mesa Uranium Project
Blanding, Utah

Energy Fuels Nuclear Inc.
Denver, Colorado

D'APPOLONIA

CONSULTING ENGINEERS, INC.

February 11, 1982

Project No. RM78-682B

Mr. Harold R. Roberts
Senior Project Engineer
Energy Fuels Nuclear, Inc.
Suite 900
Three Park Central
1515 Arapahoe
Denver, Colorado 80202

Transmittal of
Construction Report
Initial Phase - Tailings Management System
White Mesa Uranium Project
Blanding, Utah

Dear Harold:

Please find enclosed six copies of the final construction report for the Initial Phase of the tailings management system for the White Mesa Uranium project.

Please advise us of any additional copies required and the time schedule for submitting them to the NRC.

The monitoring plan for the Initial Phase of the White Mesa Uranium project will be forthcoming, by the 15th of February.

Very truly yours,

Richard J. Greenwood

Richard J. Greenwood
Assistant Project Engineer

RJG:ms

Enclosures

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Construction Report

Initial Phase - Tailings Management System

D'APPOLONIA

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1.0 INTRODUCTION AND SUMMARY

This report provides a synopsis of the construction monitoring program undertaken at Energy Fuels Nuclear, Inc. (Energy Fuels) White Mesa Uranium project, for the construction of the Initial Phase of the tailings disposal operations. The White Mesa Uranium project, located in southeastern Utah about 6 miles south of the town of Blanding is situated on White Mesa, a relatively flat mesa bounded on the east of Corral Creek and on the west by Westwater Creek.

The design of the dikes and cells, subsurface investigations, specifications, and related information have been presented previously in D'Appolonia Engineer's Report entitled "Tailings Management System" (D'Appolonia, 1979), amendments to the Engineer's Report, and responses to questions from the U.S. Nuclear Regulatory Commission (NRC).

The Initial Phase includes earthfill dikes for Cell 1-Initial (1-I), Cell 1A-Initial (1A-I, east arm of Cell 1-I), Cell 2, and Cell 3, and excavated Cells 1-I and 2. These cells are used to retain uranium tailings in an area southwest of the mill. The dikes were constructed using material excavated from the cell following topsoil removal. A detailed description of the dike fill material, methods of construction, and final as-built conditions are presented in Chapters 2.0 and 3.0 of this report.

Construction of the Initial Phase began on October 4, 1979 and was completed on July 14, 1981. Construction was performed by Energy Fuels. Soils testing for dike fill and construction monitoring was authorized by Energy Fuels and performed by D'Appolonia Consulting Engineers, Inc.

D'Appolonia personnel were on-site for construction monitoring and testing from September 9, 1979 to May 27, 1980 except during winter months when no fill was being placed.

In general, the initital phase of the tailings disposal system was constructed according to design specifications as outlined in the Engineer's Report (D'Appolonia, 1979) and amendments to the report. The operations that were monitored by D'Appolonia are reported herein and elements of as-built construction are shown on the figures presented.

Respectfully submitted,

Richard J. Greenwood
Assistant Project Engineer

Corwin E. Oldweiler
Project Engineer

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Vice President/Project Manager

RJG:CEO:MJT:par
Enclosures

2.0 DIKE CONSTRUCTION

Construction of the Initial Phase of the tailings management system for the White Mesa Uranium Project involved the construction of four earthfill dikes, Cell 1-Initial (1-I), Cell 1A-I (arm of 1-I), Cell 2 and Cell 3 dikes, and two tailings cells, Cell 1-I and Cell 2.

The location of these elements are shown on Figure 1. This section documents the construction methods and procedures for the dike construction, fill density testing and results, laboratory test results on fill samples, and dike foundation investigations and test results. Description of cell construction is presented in Chapter 3.0.

2.1 FOUNDATION PREPARATION

2.1.1 Test Pits

Thirteen test pits were excavated along the centerlines of the four dikes to verify the foundation conditions and specifically to determine the extent and characteristics of the calcareous zone as identified by Chen (1979), and shown on Figure 1. The test pit logs are presented in Appendix A, plan locations, are shown on Figure 1 and cross sectional locations with respect to the dike profiles are shown on Figure 2. Disturbed and undisturbed samples were taken of representative soil layers along with in-place density tests. The sample types and locations and the results of the in-place density tests are presented on the test pit logs.

2.1.2 Laboratory Testing

Laboratory tests were conducted on the test pit samples to determine the soil classification, the amount of calcium carbonate ($CaCO_3$) and its effect on the soil strength when saturated with water or sulfuric acid. The following types of tests were conducted.

- o Grain Size Analysis
  - Sieve
  - Hydrometer

- o Atterberg Limits
- o Percent $CaCO_3$
- o Consolidation-Collapse

The first two tests listed are common classification type tests and were conducted to determine soil types. The results are presented in Figures 3A, 3B, and 3C. These tests show that the soils are mostly ML and CL according to the Unified Soil Classification System (USCS). This information correlates well with information from previous site investigations (Chen 1978, Chen 1979, and Dames and Moore 1978).

Percent $CaCO_3$ tests were conducted to determine a quantitative value for the calcareous materials encountered in the test pits. These tests were conducted by mixing a known weight of soil with a measured volume of hydrochloride acid (with a known concentration) which is sufficient to react and neutralize all the calcium carbonate in the soil. The next step is to add a base (NaOH) to the solution until it becomes neutral (i.e., pH = 7.0). The percentage of calcium originally in the soil (by weight) can be calculated with the weight of soil and volume and concentration of the acid and base known. The results of these tests are given on Table 1 and are discussed in the next paragraph along with the results of the consolidation-collapse tests.

The consolidation-collapse tests were conducted to determine if significant settlement or collapse of the soil structure would occur if it became saturated with sulfuric acid seeping from a possible leak in the cell liner. Tests were also conducted with water to assess the effect of the acid versus the effect of strictly water. The tests were conducted by trimming a sample into the consolidation ring, loading it in the consolidameter with a maximum load of 2.0 or 2.5 tons per square foot, and then saturating the sample with either water or sulfuric acid and recording the change in sample height. This test procedure simulates the field conditions anticipated from loading the foundation material with the earthfill and then saturating. The results of the consolidation-collapse tests are given on Table 1. As shown, the maximum percent collapse or strain measured with saturation was 1.9 percent. Most of

the tests showed less than one percent strain from either water or acid saturation.

Based on the results of these tests, removal of the foundation soil, in general, was not required because castrophic collapse of the soils did not occur during the testing. As discussed in the next section, selected areas in the dike foundations were however excavated to bedrock to remove the highly calcareous soils.

2.1.3 Foundation Excavations

Portions of the foundations for Cell 1-I and Cell 2 dikes were over-excavated to remove the highly calcareous soil deposits. No highly calcareous zones were found in the dike 3 foundation area. These over-excavated zones are shown on the profiles on Figure 2. The soils in these zones were excavated across the entire dike foundation width down to the top of bedrock. The excavated soil was placed in stockpiles and not used for dike construction.

The surface of the bedrock in the over-excavated portions was thoroughly cleaned using scrapers and road-type rotary sweepers. This was done to allow inspection of the rock surface for possible open discontinuities which would require remedial concrete filling prior to earthfill placement.

The cleaned rock surfaces were inspected and approved by an NRC representative on October 18, 1979.

2.2 FILL PLACEMENT

2.2.1 Earthfill Construction

Fill placement was conducted using conventional earthfill construction methods. Material for use in dike construction was obtained from borrow areas within Cells 1-I and 2. The material was typically ripped and wet down inplace to bring it up to the correct moisture content. Scrapers were used to excavate, haul, and spread the material on the fill section in regular

lifts. Each lift was compacted using a tamping sheeps foot self-propelled type compactor to achieve the necessary fill density. The types and numbers of equipment used are given on Table 2.

2.2.2 Fill Placement on Rock Surfaces

Special procedures were utilized for placing the earthfill against the cleaned rock surfaces to enhance good tight contact between the bedrock surface and the compacted earthfill and to fill surface fractures or voids.

The procedure utilized involved the following steps:

- Thoroughly wetting of the cleaned rock surface prior to fill placement.
- Placing a layer of fill, 4 to 6 inches thick (loose measure) and wetting it to a moisture content of 4 to 5 percent above optimum.
- Compacting the fill with overlapping tracks of rubber tired equipment such as loaded scrapers (Caterpillar 637D or equivalent).

This procedure was followed for the initial lift in each of the areas excavated to rock. After the fill was built up above the rock surface, fill placement and compaction procedures required by the construction specifications were followed.

2.2.3 Compaction Control

Control of fill compaction was maintained by daily inspection of fill placement activities and procedures, and by conducting density tests on the compacted fill material. The density tests were conducted using a nuclear gauge (Troxler Model 3411B) and Washington Densometer, which was used as a check on the nuclear gauge.

A summary of fill placement progress by day including general location of fill activity, estimated volume placed, and number of density tests performed is given on Table 3. As shown, the average volume of fill placed per density test ranged from about 600 to 1000 cubic yards.

Compaction criteria used for fill control was based on record samples taken from the borrow area prior to beginning fill placement. Classification tests and Modified Proctor density tests were conducted on the record samples to determine compaction criteria. During fill placement, additional record samples were taken from the fills and classification tests conducted as a check on material uniformity. The results of the record sample testing are given on Tables 4 and 5. The Modified Proctor test results are shown on Figure 4. A maximum dry density of 128 pounds per cubic foot was determined to be the design density based on the initial record sample testing. Subsequent classification and Proctor testing indicated only minor variation in fill material properties; therefore, the 128 pounds per cubic foot density value was used as the design density throughout the project. The optimum water content corresponding to the design density ranged from about 9 to 12 percent. Based on the above results, a dry density of 115 pounds per cubic foot; corresponding to 90 percent of maximum modified proctor density and a range of water content from 8 to 14 percent, corresponding to -1 to +2 percent of optimum water content, was used as the requirement for fill placement, however, latitude in fill material water content was allowed because the nuclear gauge water content was determined to be higher than the oven dry moisture content. This aspect is discussed in more detail in the next section.

Results of the nuclear gauge density tests for each dike are presented on Figures 5 through 8. These figures show each test made, including those which did not pass the density and moisture requirement, and were recompacted or reworked and recompacted. The individual test results, with comments, are given in Appendix B. Figures 5 through 8 show that the majority of the tests passed the compaction criteria and those which did not required remedial work on the fill material.

2.2.4 Quality Assurance

Quality assurance of the compaction control density testing was maintained by conducting density tests on a periodic basis with a Washington Densometer

utilizing a rubber balloon. This independent density test method provided a means to check the accuracy of the nuclear gauge. A density check test was conducted by locating the Washington Densometer in the same location as the nuclear gauge test (avoiding the nuclear gauge probe test hole). Therefore, the two tests were conducted in exactly the same material. The results of Washington Densometer and nuclear gauge check tests are given on Table 6 and plotted on Figure 9. These tests show that the nuclear gauge density test results compared closely with the Washington Densometer.

The moisture content from the nuclear gauge tests were also checked by taking a sample of the fill material tested and placing it in the oven. The comparison of oven dry versus nuclear gauge moisture contents is shown on Figure 10. The least squares line on this figure show that the nuclear gauge moisture contents were about 1 to 2 percent higher than the oven dry moisture contents. The higher nuclear gauge value was accepted for the fill testing with the knowledge that it was higher than the actual value. Therefore, the range of moisture content meeting the compaction criteria was increased by 1 percent and ranged from about 9 to 15 percent.

3.0 CELL CONSTRUCTION

Inspection of cell construction for the Initial Phase of the Tailings Management System involved Cell 1-I and Cell 2. D'Appolonia was involved with only the construction of Cell 2. Items relating to Cell 1-I included in this report are final cell excavation contours and liner test results. Both items were provided by Energy Fuels. The remainder of this section discusses the construction of Cell 2.

3.1 INTRODUCTION

In general, the construction of Cell 2 was performed according to the drawings and specifications as set forth in the Engineer's Report (D'Appolonia, 1979). Variations from these specifications are described herein and drawings of the revised conditions, where appropriate, are included in the appendices.

Construction of Cell 2 began on October 4, 1979 and was completed on May 3, 1980. Major elements of the construction described herein include:

- Topsoil Removal
- Soil Excavation
- Rock Excavation
- Preparation of Liner Bedding
- Installation of Underdrain System
- PVC Liner Installation
- Liner Cover Placement
- Installation of Drain System

Monitoring of the construction operations was authorized by Energy Fuels Nuclear and performed by D'Appolonia. D'Appolonia personnel observed cell construction including topsoil stripping, soil excavation, rock excavation, liner bedding preparation, liner placement, joint seaming and cover placement. The liner related observations were concerned with assessing overall

adequacy of procedures, but did not include inspection of individual liner panels for physical integrity, nor testing field seams for bonding. Supervision and inspection of the liner installation and testing of factory and field seams were performed by B.F. Goodrich of Akron, Ohio.

3.2 TOPSOIL REMOVAL

Removal of topsoil in the cell area shown on Figure 1, was performed by excavating to a depth of approximately 12 inches below the ground surface. Two 637D and one 633D Caterpillar scrapers were utilized to excavate the soil and place it in areas designated for topsoil placement. Signs were placed on the completed topsoil stockpiles for later identification and removal during reclamation procedures.

3.3 SOIL EXCAVATION

Soil from within the cell area was utilized as fill for dike construction and liner cover. Discussion of dike construction and presentation of test results are presented in Chapter 2. Areas containing highly calcareous soils, as shown on Figure 1, were excavated and placed in a separate stockpile area. These calcareous soils comprised only a small percent of the total soil excavated from the cell area.

The material excavated from the cell area and utilized as borrow for the fill construction consisted of mixtures of red sandy silt and highly weathered claystone. Borrow areas used for dike fill within the cells were ripped and prewetted using a D10 Caterpillar and a Allis-Chalmers 31 bulldozer with attached ripper and a Klein K-700 and a Caterpillar Magnum 8000 water truck. Scrapers and dump trucks were used to haul and spread the excavated material on the fill for compaction.

3.4 ROCK EXCAVATION

Excavation of rock began upon completion of soil excavation. The rock consisted of primarily sandstone with localized pockets of weathered claystone. Excavation was performed by ripping the surface of the rock in

successive stages with rippers attached to the D10 and Allis-31 bulldozers. The depth of ripping, in any one stage varied between 0.5 and 3 feet, and continued until the approximate design elevation or ripping of the rock surface was no longer possible. After initial ripping, the material was cross-ripped to reduce the rock size and material greater than about 12 inches was transported by truck to the designated stockpile areas. Size of the rock varied from approximately 6 feet to sand size particles.

The remaining material was track walked with the bulldozers to reduce the particle size to a gravel/sand mixture. This material was then used for the bedding preparation as described in the following section. The large diameter sandstone and some claystone rock was excavated and transported to the stockpile areas for later use in designated rock fill areas.

The final cell contours after completion of excavation are presented on Figure 11 for Cell 2 and Figure 12 for Cell 1-I.

3.5 PREPARATION OF LINER BEDDING

The gravel/sand mixture from the rock excavation operation was used in the preparation of the liner bedding. Caterpillar 825C sheepsfoot compactors were used to crush the bedding material down to the consistancy of a coarse sand.

Final compaction of bedding material was performed with a smooth drum vibratory roller. Gradation of the in-place bedding material is shown on Figure 13. This method was used for both the cell bottom and the excavated and fill slopes of the cell interior. Inspection of the bedding was performed by D'Appolonia, Energy Fuels and B.F. Goodrich representatives. Areas of protruding rock fragments were noted and recompacted or removed by hand. Approval of excavated areas were given prior to liner placement.

3.6 UNDERDRAIN INSTALLATION

The installation of the underdrain system used for collection and detection of leakage below the liner consisted of a:

- Twelve (12) inch thick compacted sand layer on upstream face of the downstream retention dike.
- Three (3) inch diameter PVC slotted pipe installed at toe of sand layer.
- Twenty-four (24) inch diameter Drisco access riser pipe and concrete support foundation.

The sand blanket placed on the upstream face of Cell 2 dike, consisting of gravely sand, was compacted with the smooth drum vibratory voller and in-place density tests were performed on the compacted surface. Three tests were performed on the underdrain material placed and the results are:

- Dry density range -- 114.9 to 113.5, average 114.5 pounds per cubic feet.
- Moisture content range -- 2.0 to 2.8, average 2.4 percent.

The three inch diameter PVC slotted pipe was installed at the toe of the upstream face. At the lowest invert elevation of the drain pipe, at approximately the center of the cell on upstream toe of Dike 2, a tee connection was installed and an extension to the access riser was made. A hole was made in the liner to accomodate the extension and then a seal was made between the PVC pipe and the PVC liner. This was performed at the recommendation of the B.F. Goodrich manufacturer's representative.

Installation of the 24 inch diameter Drisco pipe access riser and concrete support foundation were installed by excavating an area in the rock surface approximately six inches deep with approximate 3:1 side slopes, with the surface prepared according to the methods outlined in Section 3.5. The liner was then placed over the excavated area and made to conform to the excavated surface. A prefabricated concrete pad (support foundation) was placed on the liner and the 24 inch access riser was connected to the pad and held in place

until soil cover material could be placed and compacted to sufficient height to maintain the riser without added support.

3.7 LINER INSTALLATION

Placement of the PVC liner for Cell 2 began on April 8, 1980 and was completed on April 26, 1980, with minor delays due to inclement weather. D'Appolonia personnel were on-site from April 8, 1980 through May 1, 1980, inspecting the fill placement on Cell 3 dike and also observing the installation of the PVC liner. Installation of the PVC liner was performed under the direction and supervision of the liner manufacturer's representative who reported directly to Energy Fuels personnel.

D'Appolonia personnel observed the liner installation for Cell 2 including liner placement and joint seaming. The observations were concerned with assessing overall adequacy of procedures, but did not include inspection of individual panels for physical integrity, nor testing field seams for bonding. These latter procedures were performed by the liner manfacturers representatives.

D'Appolonia personnel conferred with and advised the Energy Fuels' and liner manufacturer's representatives concerning installation methods and procedures. From our observations, the liner for Cell 2 appears to have been installed in accordance with the guideline specifications.

Factory seam tests, quality control tests and field seam tests for the liner used for Cell 2 are presented in Appendix C and Cell 1-I tests are presented in Appendix D.

3.8 COVER PLACEMENT

As previously described, qualifying soil excavated from the cell areas was used as cover for the PVC liner. The cover was placed by creating a temporary ramp at the northwest corner of Cell 2. This ramp, approximately three (3) to four (4) feet thick was used to provide access onto the liner. The cover

material was then transported from the borrow areas (Cell 1-I area used as borrow for Cell 2 cover) across the ramp and spread onto the liner.

The cover material was spread onto the liner by small bulldozers with a progressing pad of soil to protect the liner from damage. Energy Fuels provided personnel to inspect cover placement and to identify any damage to the liner. Areas damaged by the cover placement operation were immediately repaired.

Upon completion of the cover, selected areas were checked for proper depth. Depths varying from 12 to 24 inches were observed.

3.9 INSTALLATION OF DRAIN SYSTEM

The drain system designed to dewater and consolidate the tailing was installed according to the guideline specifications as outlined in the Engineer's Report (D'Appolonia, 1979).

The drain system consisted of:

- Three 3-inch diameter unslotted sections of PVC pipe under the access ramp area connected to,
- 1200 feet of 3-inch diameter slotted PVC pipe with,
- Connecting 1.5 inch diameter slotted lateral drains at 50 feet center to center spacing.

All slotted sections of pipe were covered with a 12-inch thick berm of sandy gravel. This material was identical to that material used for the blanket drain on the Cell 2 slope.

The unslotted sections were attached to a 24-inch diameter Drisco pipe drain access viser, installed in the same manor as the underdrain access riser, and covered with compacted soil and rockfill.

LIST OF REFERENCES

Chen and Associates, Inc., 1978, "Soil Property Study, Earth Lined Tailings Retention Cells, White Mesa Uranium Project, Blanding, Utah", July 18, 1978.

Chen and Associates, Inc., 1979, "Soil Property Study, Proposed Tailings Retention Cells, White Mesa Uranium Project, Blanding, Utah", January 23, 1979.

Dames and Moore, 1978, "Environmental Report, White Mesa Uranium Project, San Juan County, Utah, For Energy Fuels Nuclear, Inc.", January 30, 1978, revised May 15, 1978.

D'Appolonia Consulting Engineers, Inc., 1979, "Engineers Report, Tailings Management System, White Mesa Uranium Project, Blanding, Utah", for Energy Fuels Nuclear, Inc., Denver, Colorado, June 1979.

TABLES

TABLE 1

CONSOLIDATION-COLLAPSE TEST RESULTS

TEST PIT	SAMPLE	DEPTH (FEET)	$CaCO_3$ %	INITIAL γ_d (PCF)	INITIAL w (%)	SATURATING FLUID	STRAIN LOAD (%)	STRAIN SATURATION (%)
1	B1	2.5	1.8	105.4	8.2	H_2SO_4	1.1	0.1
1	B1	3.3	1.8	-	11.7	H_2SO_4	9.6	-
1	B1	3.3	1.8	-	8.7	H_2O	9.3	0.1
1	B2	6.7	1.2	99.6	11.0	H_2SO_4	4.0	1.2
1	B2	6.7	1.2	98.8	8.5	H_2SO_4	5.3	0.5
1	B2	6.7	1.2	98.7	8.3	H_2O	1.6	1.1
3	-	4.5-7	1.2/0.5[1]	124.5	8.0	H_2SO_4	3.3	0.04
3	-	4.5-7	1.2/0.5	122.7	8.0	H_2O	2.0	0.04
4	B1	3.5	3.0	92.0	12.5	H_2SO_4	8.0	0.6
4	B1	3.5	3.0	102.7	11.9	H_2SO_4	1.3	0.1
4	B1	3.5	3.0	99.9	11.7	H_2O	3.1	1.9
4	B3	6.0	-	90.1	7.8	H_2SO_4	8.0	0.1
4	B3	6.0	-	103.4	7.1	H_2O	5.2	0.2
6	1	1.5-3.2	0.2	105.3	4.4	H_2SO_4	5.7	0.3
6	1	1.5-3.2	0.2	104.5	4.4	H_2O	7.0	0.4
6	2	3.5-5.1	0.3	106.8	9.1	H_2SO_4	4.2	0.04
6	2	3.5-5.1	0.3	103.3	9.1	H_2O	5.5	0.04
9	1	1.5-3.3	0.8	105.0	8.4	H_2SO_4	3.0	0.01
9	1	1.5-3.3	0.8	105.8	8.4	H_2O	3.8	0.01
9	2	3.5-5.5	1.2	104.0	7.8	H_2SO_4	2.7	0.0
9	2	3.5-5.5	1.2	102.1	7.8	H_2O	4.8	0.0
11	-	2-4	1.6	101.1	3.0	H_2SO_4	4.6	0.5
11	-	2-4	1.6	100.2	3.0	H_2O	6.3	0.5
12	-	3-4.8	3.2/2.2	-	5.9	H_2SO_4	2.3	0.5
12	-	3-4.8	3.2/2.2	106.5	5.9	H_2O	4.7	0.1

[1]Values noted as X/Y indicate results of two tests.

TABLE 3
SUMMARY OF FILL PLACEMENT

DATE	FILL LOCATION DIKE NO.	FILL LOCATION STATIONS FROM-TO	APPROXIMATE ELEVATION (feet)	FILL VOLUME PLACED (cubic yards)	NUMBER OF FIELD DENSITY TESTS	AVERAGE FILL VOLUME PER DENSITY TEST (yards /test)	CUMULATIVE FILL VOLUME PLACED (cubic yards) DIKE 1	DIKE 2	DIKE 3
10/11/79	2	5+50-6+50	5595	1100	3	367	-	1,100	-
10/12/79	2	5+00-7+00	5598	4320	25	864	-	5,420	-
10/13/79	2	4+50-7+50	5601	4040	4	1010	-	9,460	-
10/14/79	-	-	-	-	-	-	-	-	-
10/15/79	2	4+00-8+00	5604	3540	6	590	-	13,000	-
10/16/79	-	-	-	-	-	-			
10/17/79	1	6+00-8+00	5603	1360	7	194	1,360	-	-
10/18/79	1	6+00-8+00	5609	5817	9	646	7,177	-	-
10/19/79	1	1+00-3+00	5608	2205	3	735	9,382	-	-
10/20/79	-	-	-	-	-	-	-	-	-
10/21/79	-	-	-	-	-	-	-		-
10/22/79	1	10+00-21+00	-	4662	1(2)	4662(2)	14,044	-	-
10/23/79	1	0+00-3+00	5611	5817	10	582	19,861	-	-
	-	13+00-16+00	5590	1806	0	1806(1)	-	14,806	-
10/24/79	1	0+00-15+00	5610	6783	7	969	26,644	-	-
10/25/79	1	10+00-13+00	5605	2646	7	378	29,290	-	-
	2	23+00-28+00	5593	3948	0	3948(1)	-	18,754	-
10/26/79	1	10+00-13+00	5605	273	0	273(1)	29,563	-	-
	2	13+00-16+00	5594	9345	6	1557	-	28,099	-
10/27/79	-	-	-	-	-	-	-	-	-
10/28/79	-	-	-	-	-	-	-	-	-
10/29/79	-	-	-	-	-	-	-	-	-
10/29/79	1	10+00-12+00	5506	1071	2	536	30,634	-	-
	2	13+00-18+00	5593	8253	9	917	-	36,352	-

TABLE 3
(Continued)

DATE	FILL LOCATION DIKE NO.	FILL LOCATION STATIONS FROM-TO	APPROXIMATE ELEVATION (feet)	FILL VOLUME PLACED (cubic yards)	NUMBER OF FIELD DENSITY TESTS	AVERAGE FILL VOLUME PER DENSITY TEST (yards /test)	CUMULATIVE FILL VOLUME PLACED (cubic yards) DIKE 1	DIKE 2	DIKE 3
10/30/79	1	10+00-12+00	5507	1155	2	578	31,789	-	-
	2	13+00-28+00	5595	8232	7	1176	-	44,584	-
10/31/79	1	10+00-19-00	5610	3801	6	634	35,590	-	-
	2	16+00-19+00	5598	5628	4	1407	-	50,212	-
11/1/79	1	14+00-19+00	5615	2457	3	819	38,047	-	-
	2	22+00-27+00	5600	9345	6	1558	-	59,557	-
11/2/79	1	14+00-19+00	5615	3192	2	1596	41,239	-	-
	2	20+00-28+00	5602	10,248	10	1025	-	69,805	-
11/3/79	1	10+00-16+00	-	3591	3	1197	44,830	-	-
	2	12+00-23+00	-	11,004	12	917	-	80,809	-
11/4/79	-	-	-	-	-	-	-	-	-
11/5/79	1	9+00-14+00	5615	2940	4	735	47,770	-	-
	2	13+00-20+00	5602	9324	10	932	-	90,133	-
11/6/79	1	6+00-12+00	5615	3381	4	845	51,151	-	-
	2	12+00-21+00	5603	10,206	11	928	-	100,339	-
11/7/79	1	3+00-10+00	5615	2961	2	1481	54,112	-	-
	2	12+00-28+00	5604	9975	10	998	-	110,314	-
11/8/79	-	-	-	-	-	-	-	-	-
11/9/79	1	2+00-5+00	5613	1995	5	399	56,107	-	-
	2	6+00-8+00	5605	6573	12	548	-	116,887	-
11/10/79	-	-	-	-	-	-	-	-	-
11/11/79	-	-	-	-	-	-	-	-	-
11/12/79	1	1+00-8+00	5615	2163	3	721	58,270	-	-
	2	12+00-27+00	5607	10,290	12	858	-	127,177	-
11/13/79	1	8+00-13+00	5615	1911	3	637	60,181	-	-

TABLE 3
(Continued)

DATE	FILL LOCATION DIKE NO.	FILL LOCATION STATIONS FROM-TO	APPROXIMATE ELEVATION (feet)	FILL VOLUME PLACED (cubic yards)	NUMBER OF FIELD DENSITY TESTS	AVERAGE FILL VOLUME PER DENSITY TEST (yards /test)	CUMULATIVE FILL VOLUME PLACED (cubic yards) DIKE 1	DIKE 2	DIKE 3
	2	12+00-28+00	5610	9555	14	683	-	136,732	-
11/14/79	1	1+00-17+00	5617	4347	6	725	64,528	-	-
	2	3+00-28+00	5612	5166	8	646	-	141,898	-
11/15/79	1	5+00-7+00	5618	1740	3	580	66,268	-	-
	2	7+00-11+00	5610	1820	13	607	-	143,718	-
	3	2+00-5+00	5585	4520	5	904	-	-	4,520
11/16/79	1	8+00-12+00	5619	2040	3	680	68,308	-	-
	2	12+00-18+00	5613	3420	4	855	-	147,138	-
	3	4+00-9+00	5586	5200	6	867	-	-	9,720
11/17/79	1	13+00-17+00	5618	1700	4	425	70,008	-	-
	2	20+00-27+00	5614	2300	5	460	-	149,438	-
	3	4+00-9+00	5586	5440	7	777	-	-	15,160
11/18/79	-	-	-	-	-	-	-	-	-
11/19/79	1	17+00-22+50	5620	1300	3	433	71,308	-	-
	3	5+00-10+00	5688	5500	6	917	-	-	20,660
11/20/79	-	-	-	-	-	-	-	-	-
11/21/79	-	-	-	-	-	-	-	-	-
11/22/79	-	-	-	-	-	-	-	-	-
11/23/79	-	-	-	-	-	-	-	-	-
11/24/79	-	-	-	-	-	-	-	-	-
11/25/79	-	-	-	-	-	-	-	-	-
11/26/79	3	12+00-15+00	-	6520	13	502	-	-	27,180
11/27/79	3	12+00-15+00	-	9240	11	840	-	-	36,420
11/28/79 thru	-	-	-	-	-	-	-	-	-

TABLE 3
(Continued)

DATE	FILL LOCATION DIKE NO.	FILL LOCATION STATIONS FROM-TO	APPROXIMATE ELEVATION (feet)	FILL VOLUME PLACED (cubic yards)	NUMBER OF FIELD DENSITY TESTS	AVERAGE FILL VOLUME PER DENSITY TEST (yards /test)	CUMULATIVE FILL VOLUME PLACED (cubic yards) DIKE 1	DIKE 2	DIKE 3
3/23/80	-	-	-	-	-	-	-	-	-
3/24/80	2	1+00-7+00	5614	N/A	4	N/A	-	15	-
3/25/80	-	-	-	-	-	-	-	-	-
3/26/80	-	-	-	-	-	-	-	-	-
3/27/80	2	10+00-12+00	5614	No Record	6	-	-	~150,000	-
3/28/80 thru 4/8/80	-	-	-	-	-	-	-	-	-
4/9/80	3	21+00-23+00	-	2680	Tested	4/11/80	-	-	39,100
4/10/80	3	21+00-23+00	-	5760	Tested	4/11/80	-	-	44,860
4/11/80	3	21+00-23+00	-	10,540	15	1265	-	-	55,400
4/12/80	3	13+00-24+00	-	14,300	18	794	-	-	69,700
4/13/80	3	10+00-28+00	-	15,960	Tested	4/14/80	-	-	85,660
4/14/80	3	4+00-30+00	-	10,980	19	578	-	-	96,640
4/15/80	3	4+00-30+00	5593-5605	10,620	18	590	-	-	107,260
4/16/80	3	4+00-30+00	5595-5605	11,240	15	749	-	-	118,500
4/17/80	3	4+00-30+00	5595-5605	5900	17	347	-	-	124,400
4/18/80	3	4+00-30+00	5594-5600	9300	14	664	-	-	133,700
4/19/80	3	2+00-29+00	5597	14,820	15	988	-	-	148,520
4/20/80	3	2+00-29+00	5599	5620	4	1405	-	-	154,140
4/21/80	3	2+00-29+00	5601	8620	11	784	-	-	162,760
4/22/80	3	2+00-29+00	5601	7660	16	479	-	-	170,420
4/23/80	3	2+00-29+00	5602	10,080	12	840	-	-	180,500
4/24/80	3	2+00-29+00	5602	3760	6	627	-	-	184,260
4/25/80	3	1+00-21+00	5610-5603	7780	16	486	-	-	192,040

TABLE 3
(Continued)

DATE	FILL LOCATION DIKE NO.	FILL LOCATION STATIONS FROM-TO	APPROXIMATE ELEVATION (feet)	FILL VOLUME PLACED (cubic yards)	NUMBER OF FIELD DENSITY TESTS	AVERAGE FILL VOLUME PER DENSITY TEST (yards /test)	CUMULATIVE FILL VOLUME PLACED (cubic yards) DIKE 1	DIKE 2	DIKE 3
4/26/80	3	4+00-20+00	5610-5605	7140	14	510	-	-	199,180
4/27/80	3	7+00-26+00	5610-5605	7800	17	548	-	-	206,980
4/28/80	3	10+00-30+00	5610-5605	7100	15	473	-	-	214,080
4/29/80	3	20+00-26+00	5608	-	6	-	-	-	-
4/30/80	3	26+00-33+00	5610	-	10	-	-	-	-
5/27/80	1A	4+50-6+00	5606-5610	-	6	-	-	-	-
5/28/80	1A	4+50-7+00	5610-5612	-	10	-	-	-	-
5/29/80	1A	4+00-7+00	5611-5617	-	17	-	-	-	-
5/30/80	1A	1+00-7+00	5617-5619	-	14	-	-	-	-

TABLE 4
FILL RECORD SAMPLE CLASSIFICATION

SAMPLE	DATE TAKEN	STATION	ELEVATION (FEET)	GRAIN SIZE-ACCUMULATIVE % RETAINED ON NO. 40	60	190	200	ATTERBERGS LIMITS (%) PL	LL	PI	USCS CLASS.	MODIFIED PROCTOR DENSITY γ_1 (PCF)	W(%)
P-1-1	10/22/79	-	-	-	-	-	-	-	-	-	-	126.0	10.4
FS-1-1	10/31/79	1+00	5615	3.4	12.6	40.4	49.2	20.4	17.0	NP	ML		
FS-1-2	10/31/79	3+00	5612	3.1	10.7	37.8	46.5	16.6	24.5	8	CL-ML		
FS-1-3	10/31/79	7+00	5610	1.5	7.6	31.3	41.9	17.1	21.3	4	CL-ML		
FS-1-4	10/31/79	11+00	5606	5.8	15.0	40.4	47.4	14.8	21.2	6	CL-ML		
FS-1-5	11/1/79	17+00	5615	4.1	8.8	28.6	37.5	10.5	27.1	17	CL		
FS-1-6	11/1/79	15+00	5614	7.3	12.2	34.8	43.8	16.5	21.8	5	CL-ML		
P-2-1	10/5/79	-	-	7.8	13.0	37.9	45.3	15.7	22.3	7	CL-ML	130.0	9.3
P-2-2	10/8/79	-	-	3.0	18.0	52.8	58.6	NP	16.5	NP	ML	127.8	8.8
P-2-3	10/13/79	-	-	-	-	-	-	NP	25.8	NP	ML	123.6	11.5
P-2-4	10/13/79	-	-	0.4	1.4	13.4	24.6	15.3	23.3	8	CL-ML	124.8	10.8
FS-2-1	10/30/79	13+00	5598	2.3	7.4	29.8	40.8	15.5	22.0	6			
FS-2-2	10/30/79	14+00	5596	1.6	6.7	30.1	39.4	-	-	-	-	-	-
FS-2-3	10/30/79	16+00	5595	2.2	6.6	30.0	37.5	18.1	23.8	6	CL-ML		
FS-2-4	11/2/79	24+00	5595	4.8	8.0	22.5	30.2	16.7	22.7	6	CL-ML		
FS-2-5	11/3/79	20+00	5598.5	2.7	7.0	31.0	41.2	14.0	21.2	7	CL-ML		
FS-2-6	11/6/79	16+00	5604	6.5	11.2	28.8	37.0	14.3	25.1	11	CL		
FS-3-1	11/27/79	14+00	5590	1.8	9.8	29.0	41.4	16.8	19.6	3	CL-ML	127.0	10.2
FS-3-2	4/17/80	10+00	5596	-	-	-	-	-	-	-	-	-	-
FS-3-3	4/18/80	24+00	5596	-	-	-	-	-	-	-	-	-	-
FS-3-4	4/19/80	5+00	5599	-	-	-	-	-	-	-	-	-	-
FS-3-5	4/20/80	20+50	5599	12.9	24.5	43.2	51.7	-	-	-	-	122.0	10.7

TABLE 5
FILL RECORD SAMPLE
CONSOLIDATION - COLLAPSE TEST RESULTS

SAMPLE	DATE TAKEN	STATION	ELEVATION	% $CaCO_3$	INITIAL γ_d (PCF)	INITIAL w (%)	SATURATING H_2O Strain (%) LOAD	SATURATING H_2O Strain (%) SATURATION	FLUID H_2SO_4 STRAIN LOAD	FLUID H_2SO_4 STRAIN SATURATION
FS-1-2	10/31/79	3+00	5612	9.9	119.8	13.1	2.2	0.1	3.7	0.2
P-2-3	10/13/79	-	-	11.5	120.0	12.9	2.2	0.1	2.5	0.1
FS-2-1	10/30/79	13+00	5598	9.2	136.0	13.6	4.0	0.2	2.8	0.4
FS-2-5	11/3/79	20+00	5598.5	8.4	119.7	13.2	2.2	0.2	1.6	0.1

TABLE 6
COMPARISON OF NUCLEAR GAGE AND
WASHINGTON DENSOMETER

TEST NO.	STATION	OFFSET FROM	APPROXIMATE ELEVATION (FT.)	DRY DENSITY (LBS/CU. FT.)	MOISTURE CONTENT (%)	PERCENT OF MAXIMUM DENSITY (%)
1-1024-7	10+50	30S	-	110.1	13.2	86.0
1-1024-7WD	10+50	30S	-	107.3	11.6	83.8
1-1031-4	12+00	40S	5608	115.3	10.7	90.1
1-1031-4WD	12+00	40S	5608	113.1	8.9	
2-1012-2	6+20	20S	-	112.1	14.3	87.6
2-1012-2WD	6+20	20S	-	114.1	13.2	89.1
2-1015-4	-	-	5604	120.1	11.7	93.8
2-1015-4WD	-	-	5604	119.1	10.6	93.0
2-1026-3	-	-	-	112.4	15.5	87.8
2-1026-3WD	-	-	-	114.2	14.3	89.2
2-1030-5	18+00	40S	5594	120.7	11.2	94.3
2-1030-5WD	18+00	40S	5594	119.4	11.0	93.3
2-1102-3	24+00	40N	5601	116.6	13.1	91.0
2-1102-3WD	24+00	40N	5601	114.2	11.6	89.1
2-1106-4	16+00	10S	5604	116.5	11.7	91.0
2-1106-4WD	16+00	10S	5604	116.8	11.8	91.2
3-0417-7	14+00	20S	5596	115.7	12.8	90.4
3-0417-7WD	14+00	20S	5596	119.4	11.6	93.3
3-0421-2A	8+50	0	5600	111.0	15.1	86.7
3-0421-2AWD	8+50	0	5600	116.0	12.9	90.6

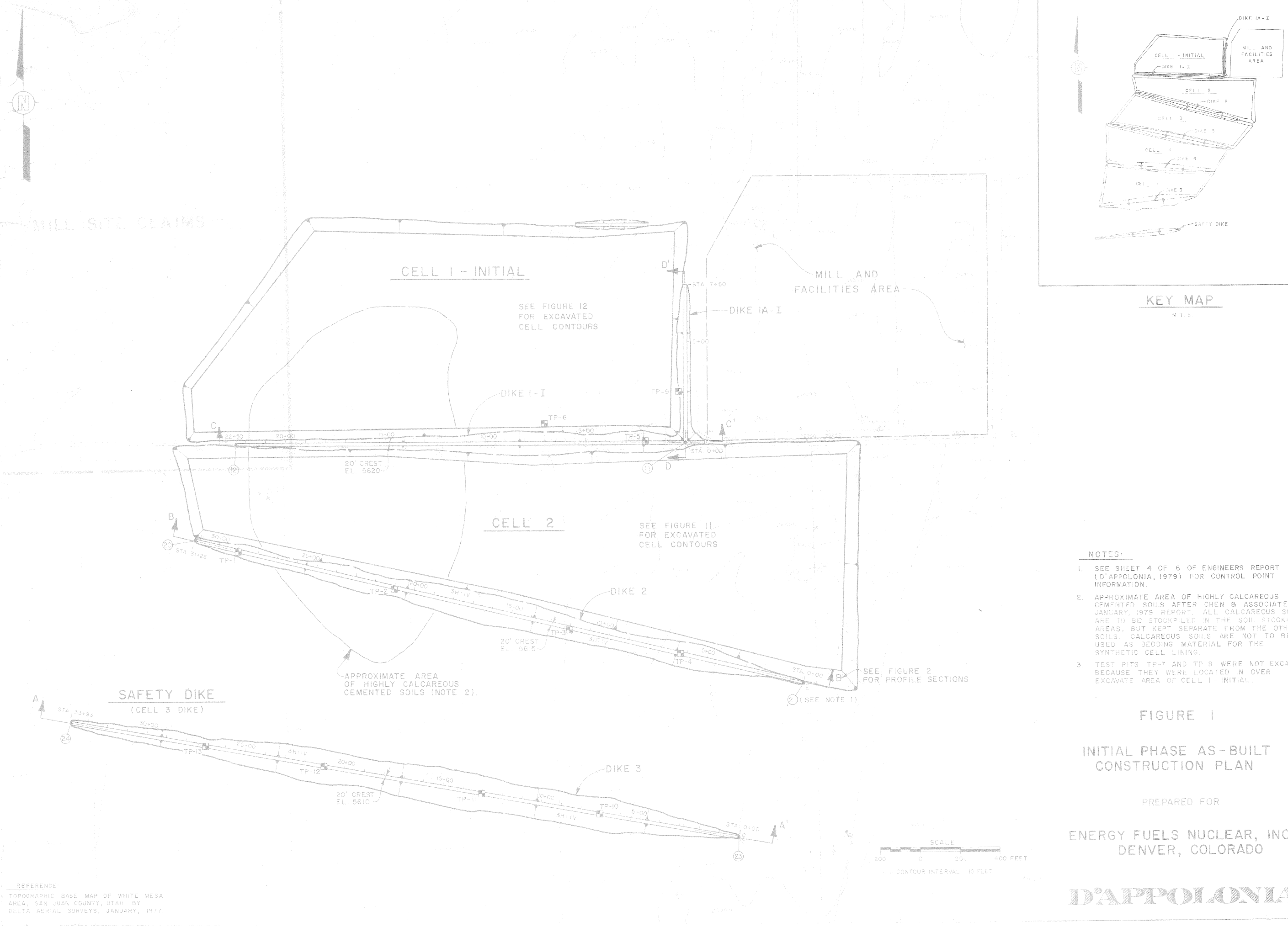
NOTES: Test No. Identification - 2-1012-2WD - Dike - Date - Sample No.;
WD denotes test taken with Washinton Desometer.

FIGURES

DRAWN R. Bricker 9 Feb 82
CHECKED
APPROVED

DRAWING NUMBER RM78-682-E26

MILL SITE CLAIMS



KEY MAP

N.T.S.

NOTES:

1. SEE SHEET 4 OF 16 OF ENGINEERS REPORT (D'APPOLONIA, 1979) FOR CONTROL POINT INFORMATION.
2. APPROXIMATE AREA OF HIGHLY CALCAREOUS CEMENTED SOILS AFTER CHEN & ASSOCIATES JANUARY, 1979 REPORT. ALL CALCAREOUS SOILS ARE TO BE STOCKPILED IN THE SOIL STOCKPILE AREAS, BUT KEPT SEPARATE FROM THE OTHER SOILS. CALCAREOUS SOILS ARE NOT TO BE USED AS BEDDING MATERIAL FOR THE SYNTHETIC CELL LINING.
3. TEST PITS TP-7 AND TP-8 WERE NOT EXCAVATED BECAUSE THEY WERE LOCATED IN OVER EXCAVATE AREA OF CELL 1 - INITIAL.

REFERENCE

TOPOGRAPHIC BASE MAP OF WHITE MESA AREA, SAN JUAN COUNTY, UTAH BY DELTA AERIAL SURVEYS, JANUARY, 1977.

FIGURE 1

INITIAL PHASE AS-BUILT CONSTRUCTION PLAN

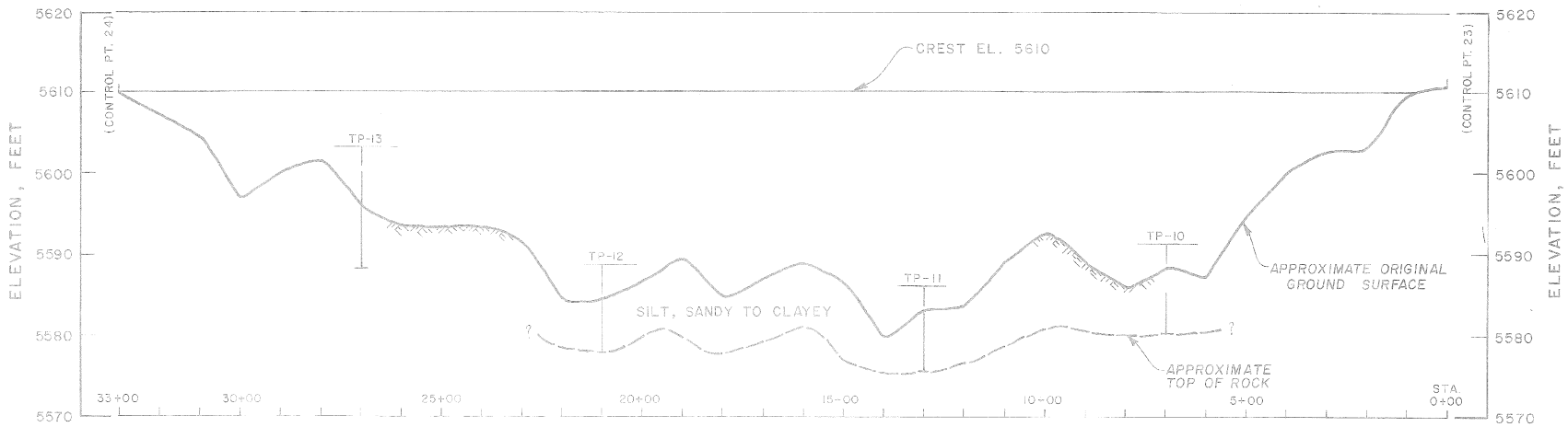
PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

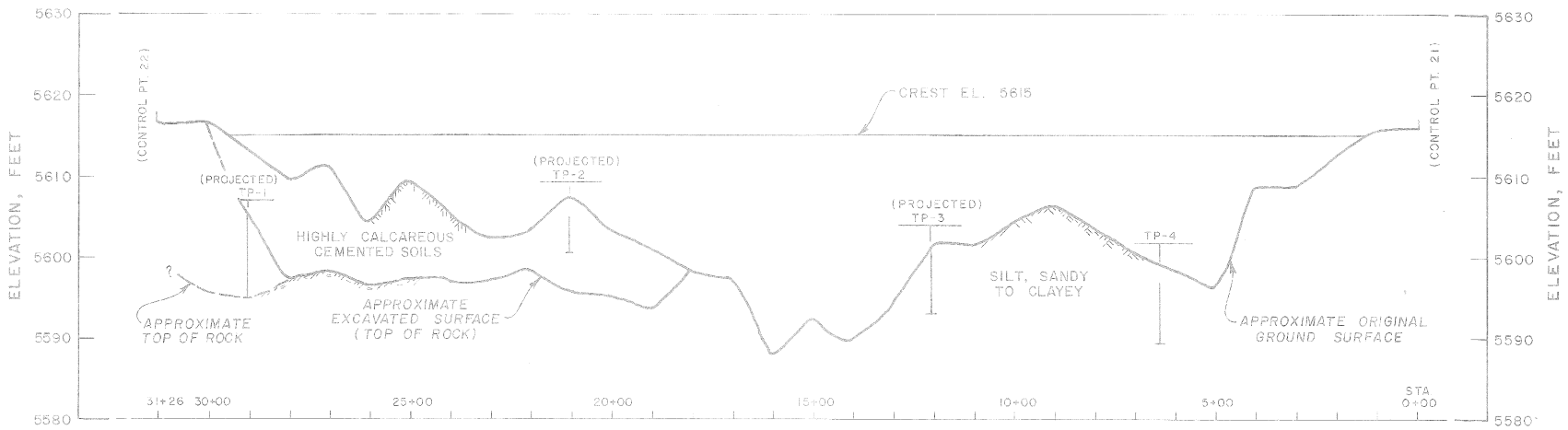
D'APPOLONIA

DRAWN BY	R. Bricker	CHECKED
	10 Feb. 82	APPROVED

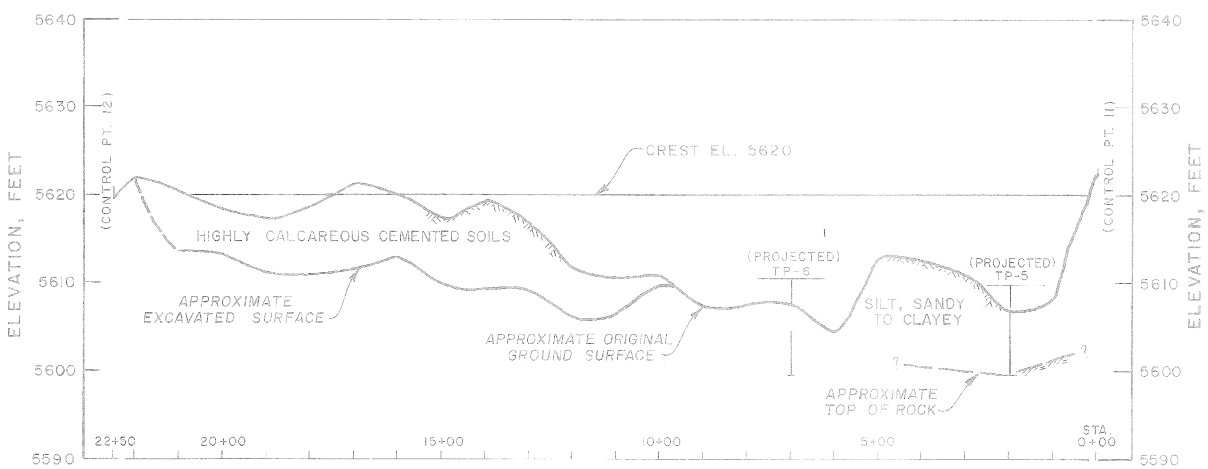
Y	P.J.S.	2-11-82	DRAWING NUMBER RM78-682-E27
Y			



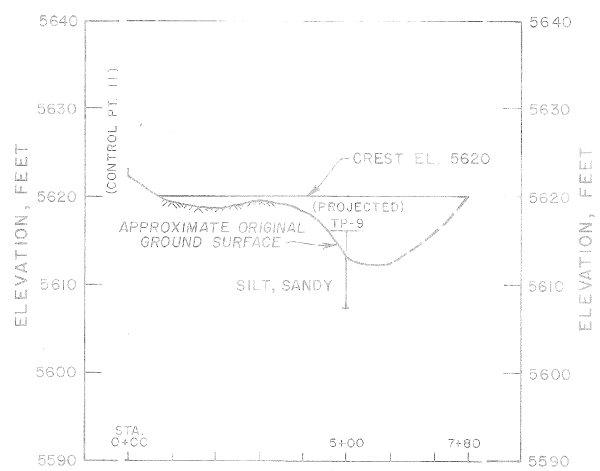
SECTION A-A' CENTERLINE PROFILE - DIKE 3



SECTION B-B' CENTERLINE PROFILE - DIKE 2



SECTION C-C' CENTERLINE PROFILE DIKE 1-I



SECTION D-D'
CENTERLINE PROFILE
DIKE 1A-I

NOTES:

1. FOR PLAN LOCATION OF PROFILE SECTIONS, SEE FIGURE 1.
2. TEST PIT ELEVATIONS WERE ESTIMATED FROM TOPOGRAPHIC MAP.
3. ORIGINAL GROUND SURFACES AND EXCAVATED SURFACES WERE PLOTTED FROM SURVEY NOTES. (PROVIDED BY ENERGY FUELS NUCLEAR, INC.)

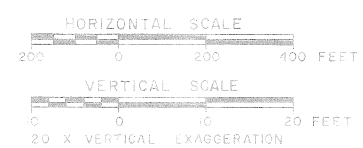


FIGURE 2

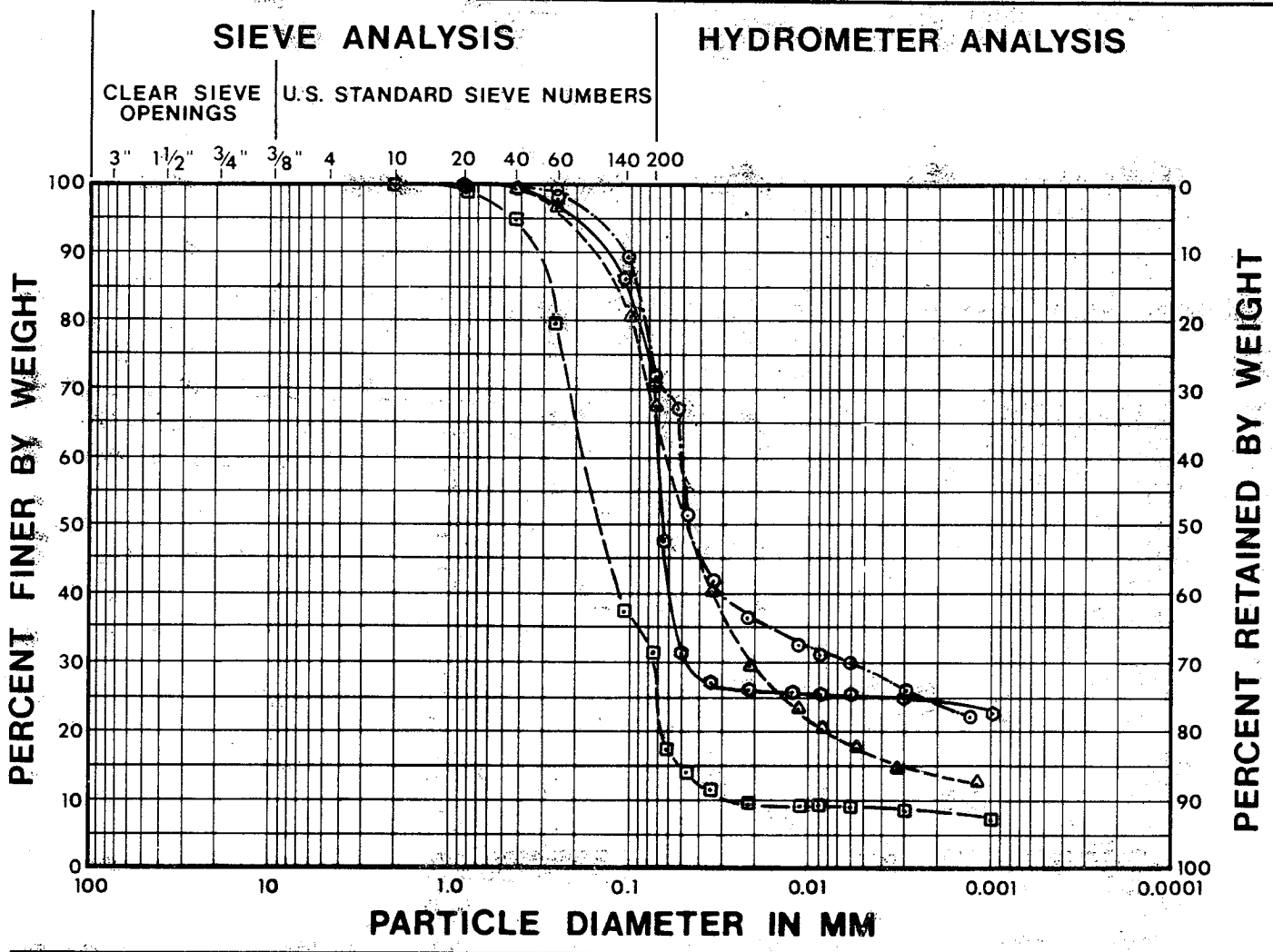
DIKE PROFILES
SECTIONS A-A', B-B',
C-C' AND D-D'

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

D'APPOLONIA

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
J. Rodriguez 2-9-82	WDS	2/10/82	RM78-682-A34



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	TEST PIT	SAMPLE	DEPTH (ft)	SOIL DESCRIPTION	USCS	L.L.	P.L.	W %	$CaCO_3$ %
—⊙—	1	B1	3.3	STIFF RED SILT, SOME SAND AND CLAY, MOIST	ML	18.8	N.P.	11.0	1.8
—⊡—	1	B2	6.0	MED. DENSE RED FINE SAND, SOME SAND & CLAY, MOIST	SC	24.9	17.7	9.6	1.2
—△—	3	ST1	4.5-7.0	STIFF RED SILT AND SAND, SOME CLAY, MOIST	CL-ML	22.3	15.3	8.0	1.2
—⊙—	4	B1	3.5	STIFF RED SILT, SOME SAND AND CLAY	CL	24.1	14.0	12.2	3.1

FIGURE 3-A

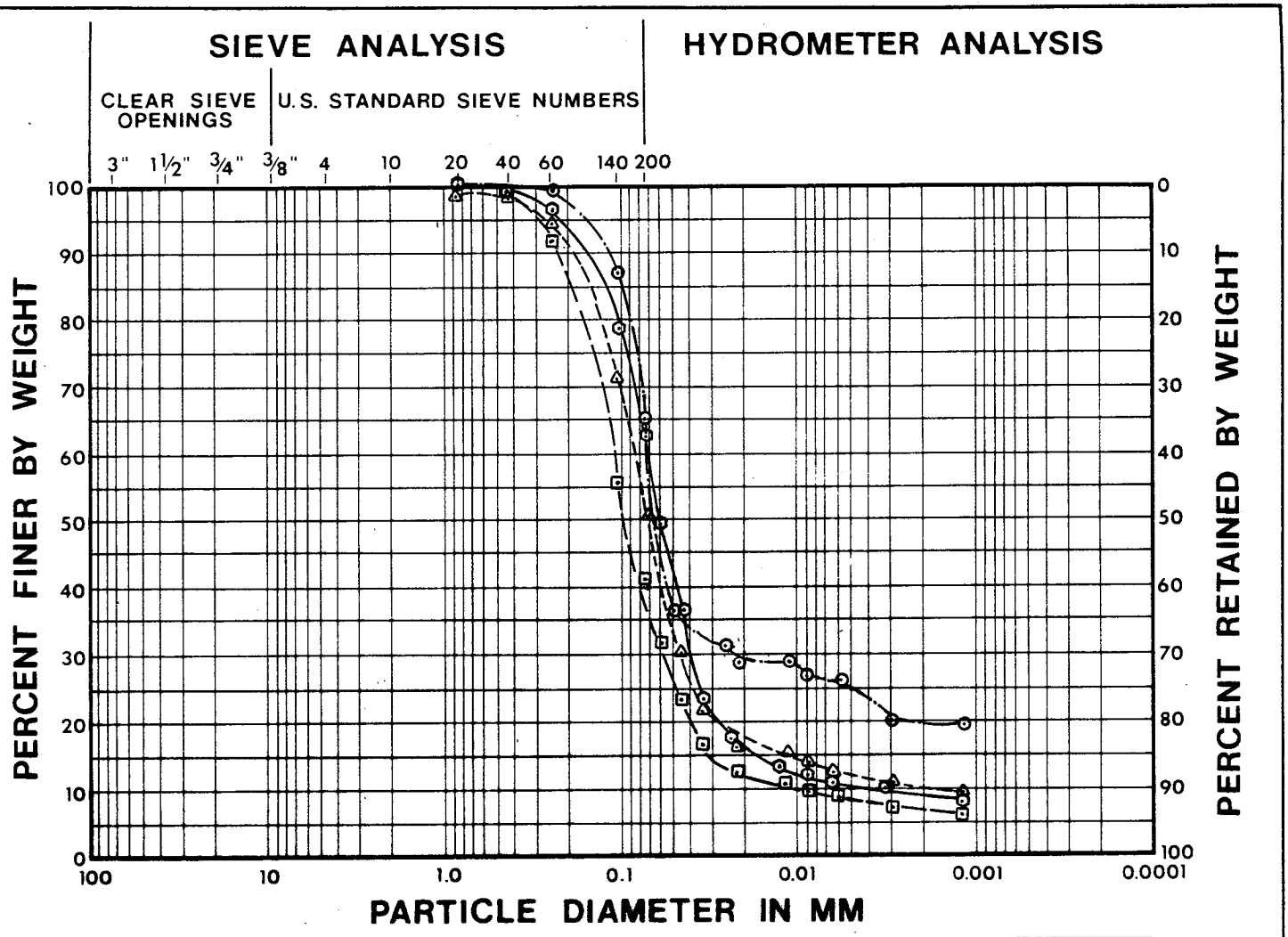
GRAIN SIZE ANALYSES
TEST PIT SAMPLES

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

D'APPOLONIA

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
D. Rodriguez	CEO	MST	RM78-682-A35
2-9-82	2/10/82	2/11/82	



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	TEST PIT	SAMPLE	DEPTH (ft)	SOIL DESCRIPTION	USGS	L. L.	P. L.	W %	CaCO3 %
—⊙—	4	B3	6.0	STIFF LT. GN. SILT AND SAND, SOME CLAY	CL	24.4	17.2	N/A	27.3
				WITH CALCAREOUS LAYERS, MOIST					
—⊡—	6	ST1	1.5-3.2	STIFF RED FINE SAND, SOME SILT AND CLAY MOIST	SM	17.9	17.1	4.4	0.2
—△—	6	ST2	3.5-5.1	STIFF RED FINE SAND AND SILT, SOME CLAY, MOIST	ML	20.7	19.4	9.1	0.3
—⊙—	9	ST1	1.5-3.3	MED. STIFF RED FINE SAND AND SILT, SOME	ML	19.6	N.P.	8.4	0.8
				CLAY, MOIST					

FIGURE 3-B

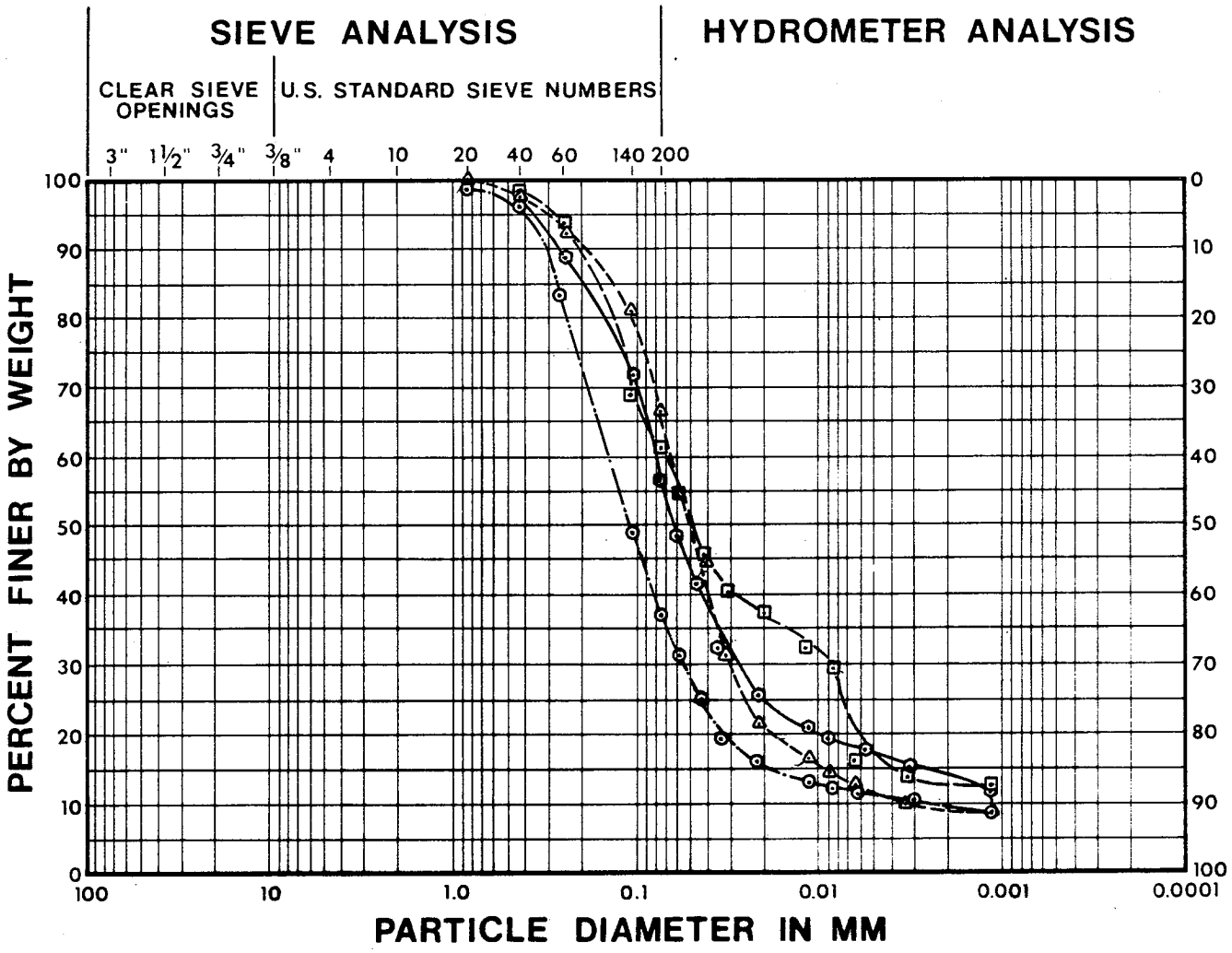
GRAIN SIZE ANALYSES
TEST PIT SAMPLES

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

D'APPOLONIA

DRA BY | 2-9-82 | APPROVED BY | DRA NUMBER



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	TEST PIT	SAMPLE	DEPTH (ft.)	SOIL DESCRIPTION	USGS	L.L.	P.L.	% W	% $CaCO_3$
—⊙—	9	ST2	3.5 - 5.5	MEDIUM STIFF RED F. SAND, SOME SILT & CLAY MOIST	SM	17.2	N.P.	7.8	1.2
—⊡—	10	ST1	3.0 - 5.0	STIFF LIGHT GREEN AND WHITE SILT AND SAND,	CL	26.3	19.1	7.1	21.1
				SOME CLAY, CALCARIOUS, MOIST					
—△—	11	ST1	2.0 - 4.0	V. STIFF RED-BROWN SILT & F. SAND, SOME CLAY, DRY	ML	18.3	NP	3.0	1.6
—⊙—	12	ST1	3.0 - 4.8	STIFF DK. RED SILT AND SAND, SOME CLAY, MOIST	CL-ML	21.2	15.9	5.9	2.2

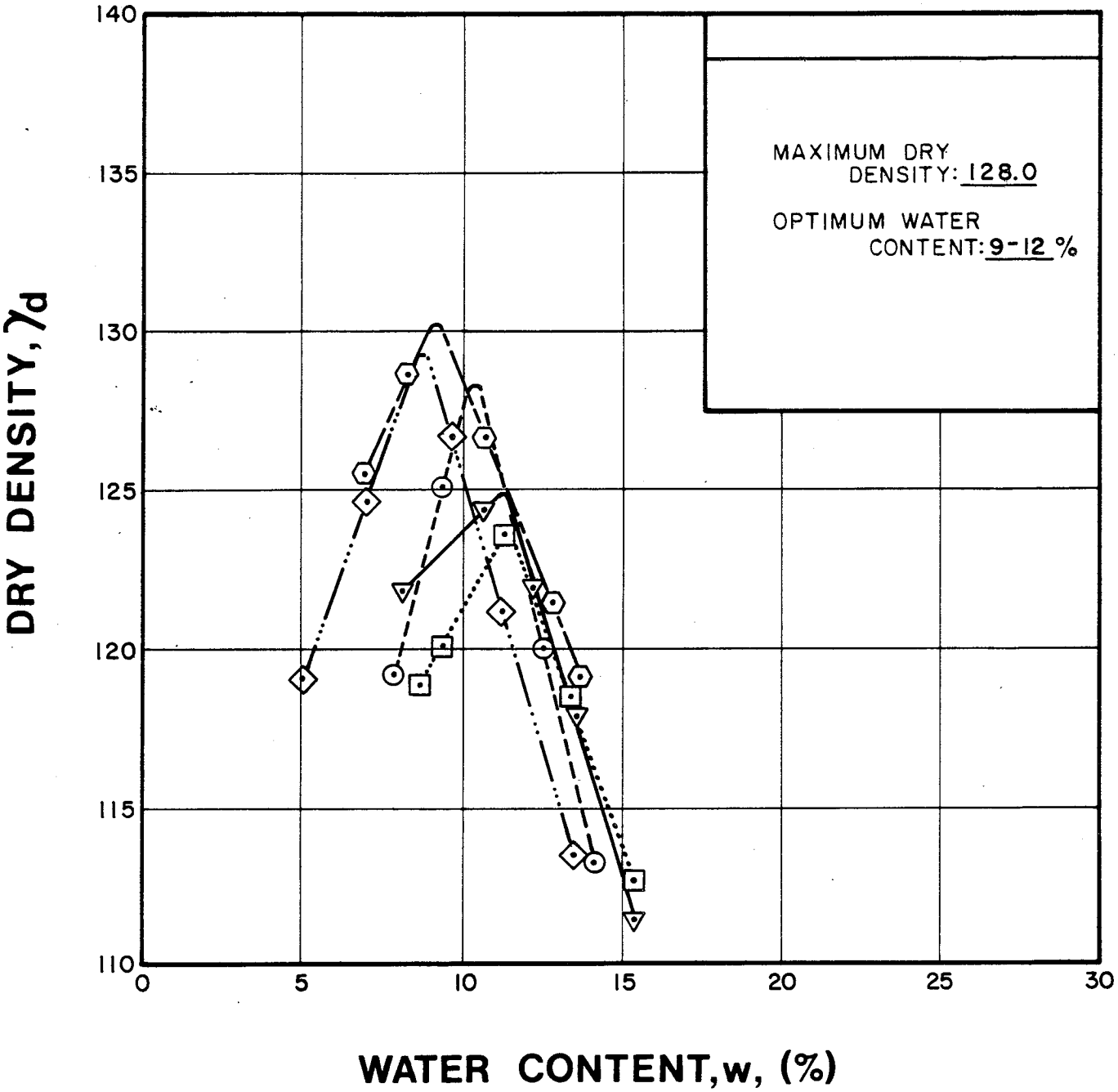
FIGURE 3-C

GRAIN SIZE ANALYSES
TEST PIT SAMPLES

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

D'APPOLONIA



LEGEND

SYMBOLS	SAMPLE NO.
---⊙---	P-1-1
——⊙——	P-2-1
—··◇—··	P-2-2
·····⊡·····	P-2-3
——▽——	P-2-4

FIGURE 4

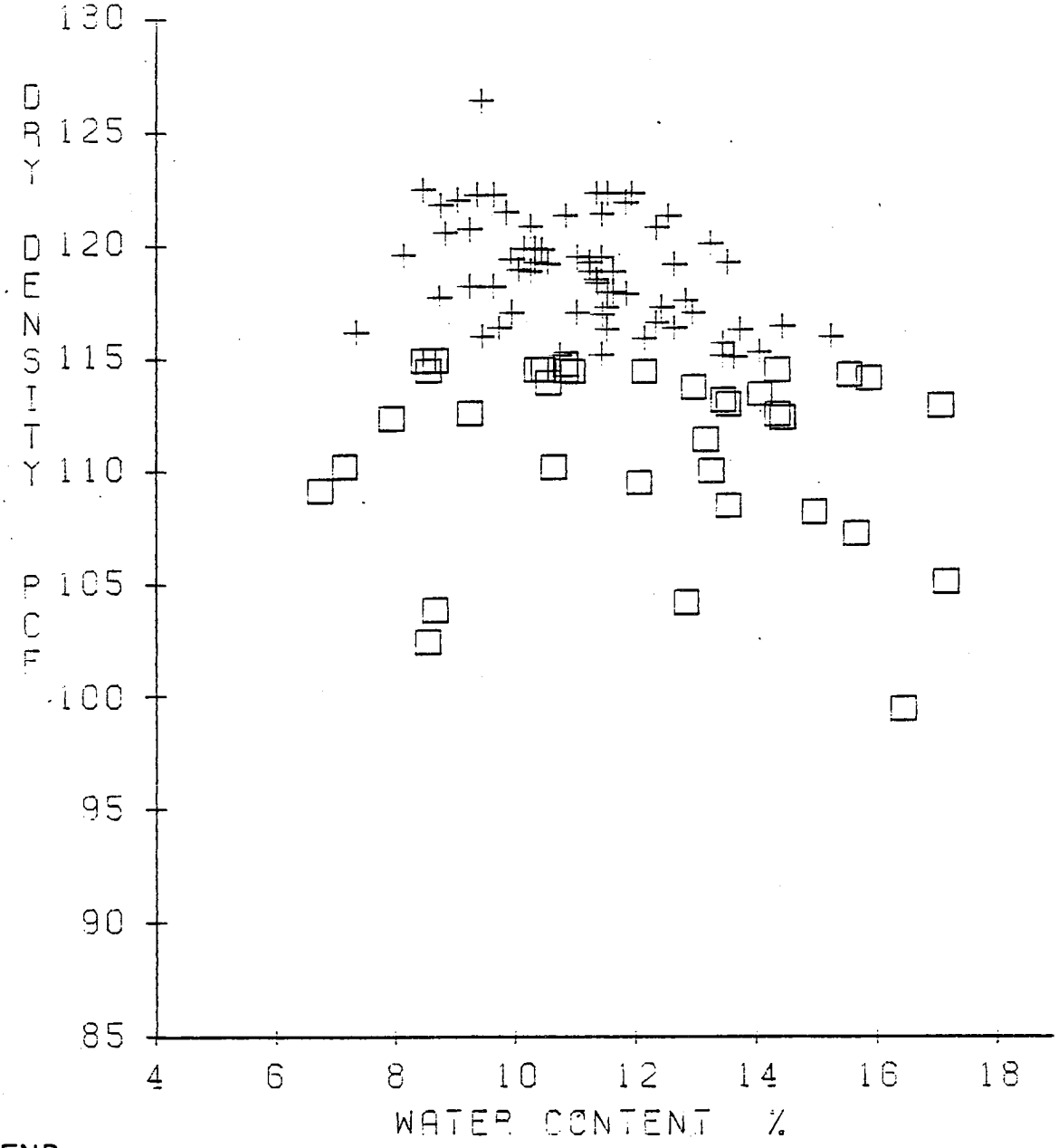
MODIFIED PROCTOR TEST RESULTS

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

D'APPOLONIA

RAW BY K.H HEC BY 2-7-80 APPROVED BY MST RAW NUMBER nM78-002-A1



LEGEND:

+ TESTS PASSING COMPACTION CRITERIA (SEE NOTE 2)

□ TESTS NOT PASSING COMPACTION CRITERIA

NOTES:

1. COMPACTION TESTS PERFORMED WITH TROXLER 3411B NUCLEAR GAUGE, DIRECT TRANSMISSION METHOD.
2. COMPACTION CRITERIA IS A MINIMUM DENSITY OF 115 POUNDS PER CUBIC FOOT AND WATER CONTENT BETWEEN 9 AND 15 PERCENT.

FIGURE 5

RESULTS OF DENSITY TESTS ON COMPACTED FILL FOR CELL 1-I DIKE

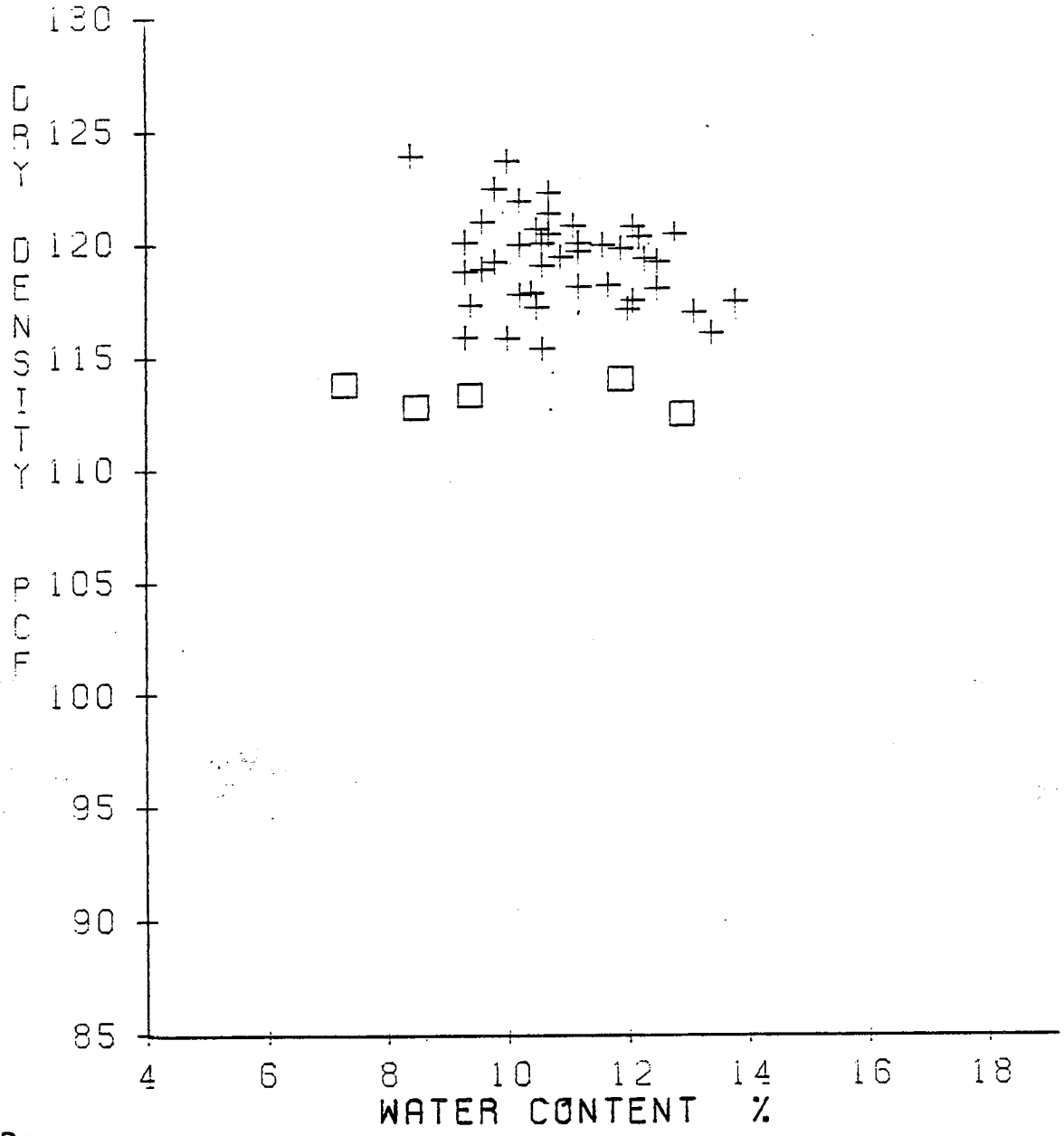
PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

DAMES & MOORE

DRAWING NUMBER RM78-682-A39

DRAWN BY | DATE 2/10/82 | CHECKED BY | APPROVED BY | DATE 2/11/82



LEGEND:

+ TESTS PASSING COMPACTION CRITERIA (SEE NOTE 2)

□ TESTS NOT PASSING COMPACTION CRITERIA

NOTES:

1. COMPACTION TESTS PERFORMED WITH TROXLER 3411B NUCLEAR GAUGE, DIRECT TRANSMISSION METHOD.
2. COMPACTION CRITERIA IS A MINIMUM DENSITY OF 115 POUNDS PER CUBIC FOOT AND WATER CONTENT BETWEEN 9 AND 15 PERCENT.

FIGURE 6

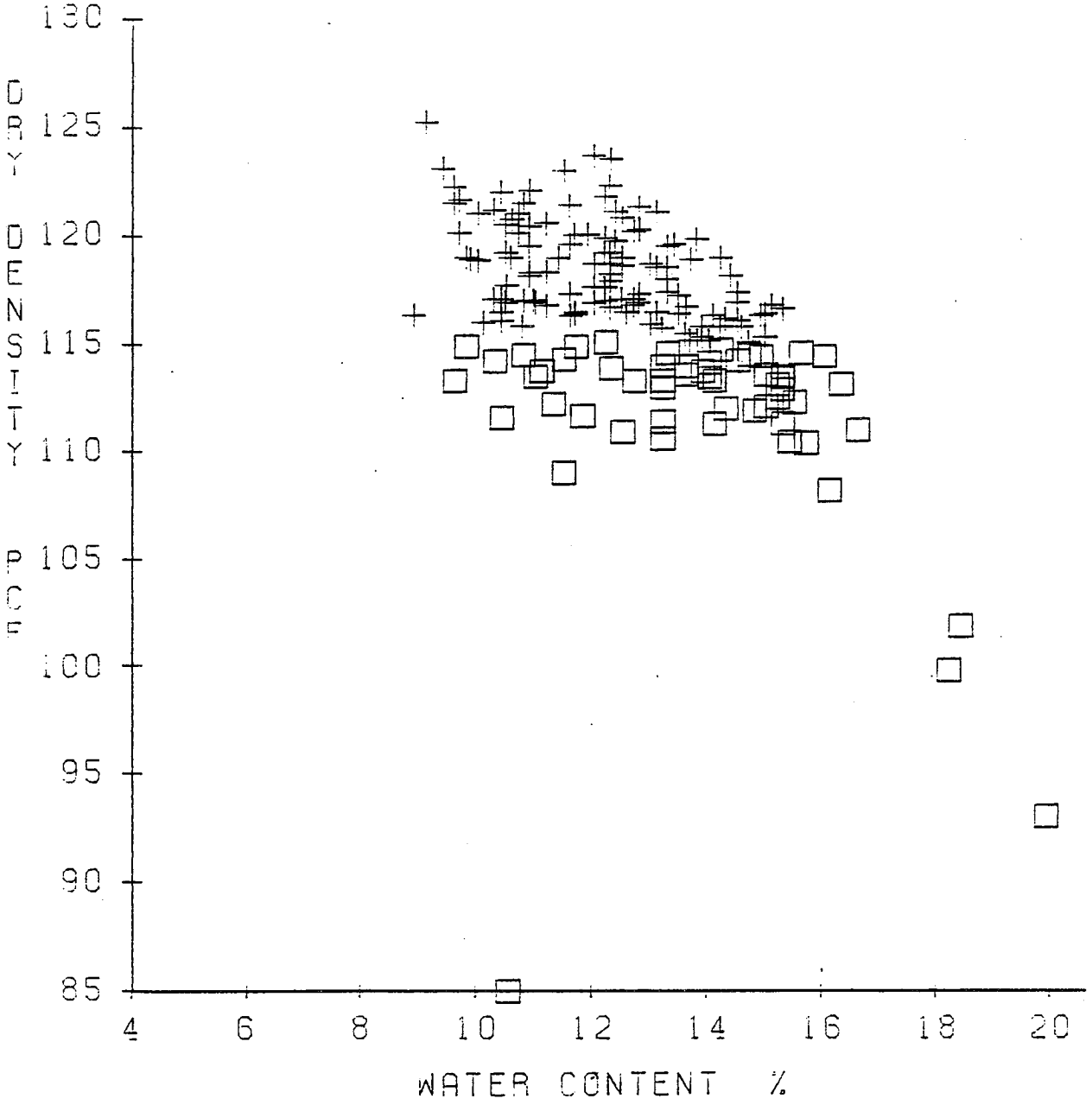
RESULTS OF DENSITY TESTS ON COMPACTED FILL FOR CELL 1A-1 DIKE

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

DAMES & MOORE

DRAWN BY | Date 2/10/82 | CHECKED BY | APPROVED BY | DWG. NO. | REV. NO. | AWM NUMBER



LEGEND:

+ TESTS PASSING COMPACTION CRITERIA (SEE NOTE 2)

□ TESTS NOT PASSING COMPACTION CRITERIA

NOTES:

1. COMPACTION TESTS PERFORMED WITH TROXLER 3411B NUCLEAR GAUGE, DIRECT TRANSMISSION METHOD.
2. COMPACTION CRITERIA IS A MINIMUM DENSITY OF 115 POUNDS PER CUBIC FOOT AND WATER CONTENT BETWEEN 9 AND 15 PERCENT.

FIGURE 7

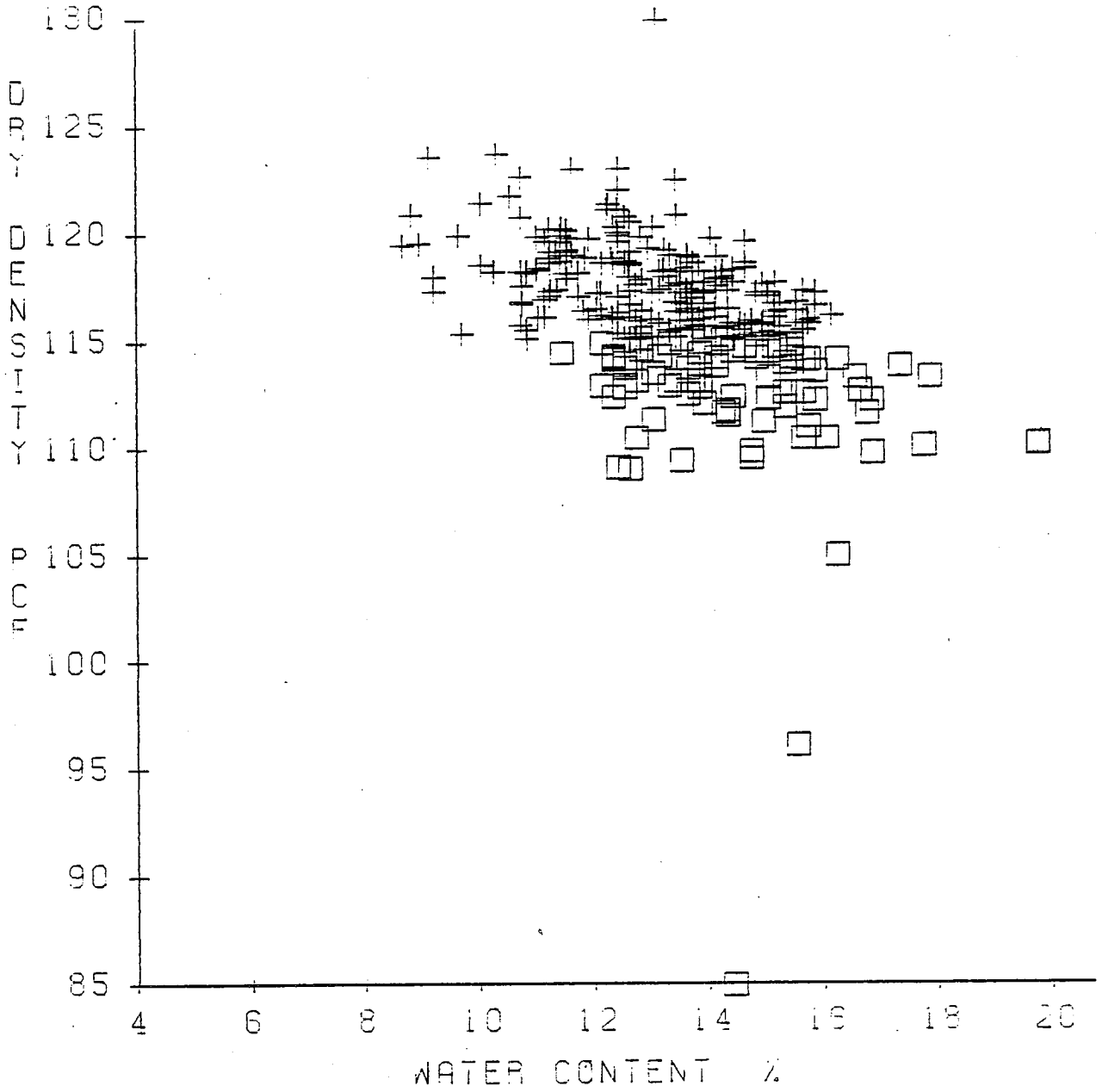
RESULTS OF DENSITY TESTS ON COMPACTED FILL FOR CELL 2 DIKE

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

DAMPOLONIA

DRAWN BY	CHECKED BY	DRAWING NUMBER
D.J. Rodrigues 2/10/82	APPROVED BY	RM78-682-A37



LEGEND:

+ TESTS PASSING COMPACTION CRITERIA (SEE NOTE 2)

□ TESTS NOT PASSING COMPACTION CRITERIA

NOTES:

1. COMPACTION TESTS PERFORMED WITH TROXLER 3411B NUCLEAR GAUGE, DIRECT TRANSMISSION METHOD.
2. COMPACTION CRITERIA IS A MINIMUM DENSITY OF 115 POUNDS PER CUBIC FOOT AND WATER CONTENT BETWEEN 9 AND 15 PERCENT.

FIGURE 8

RESULTS OF DENSITY TESTS ON COMPACTED FILL FOR CELL 3 DIKE

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

D'APPOLONIA

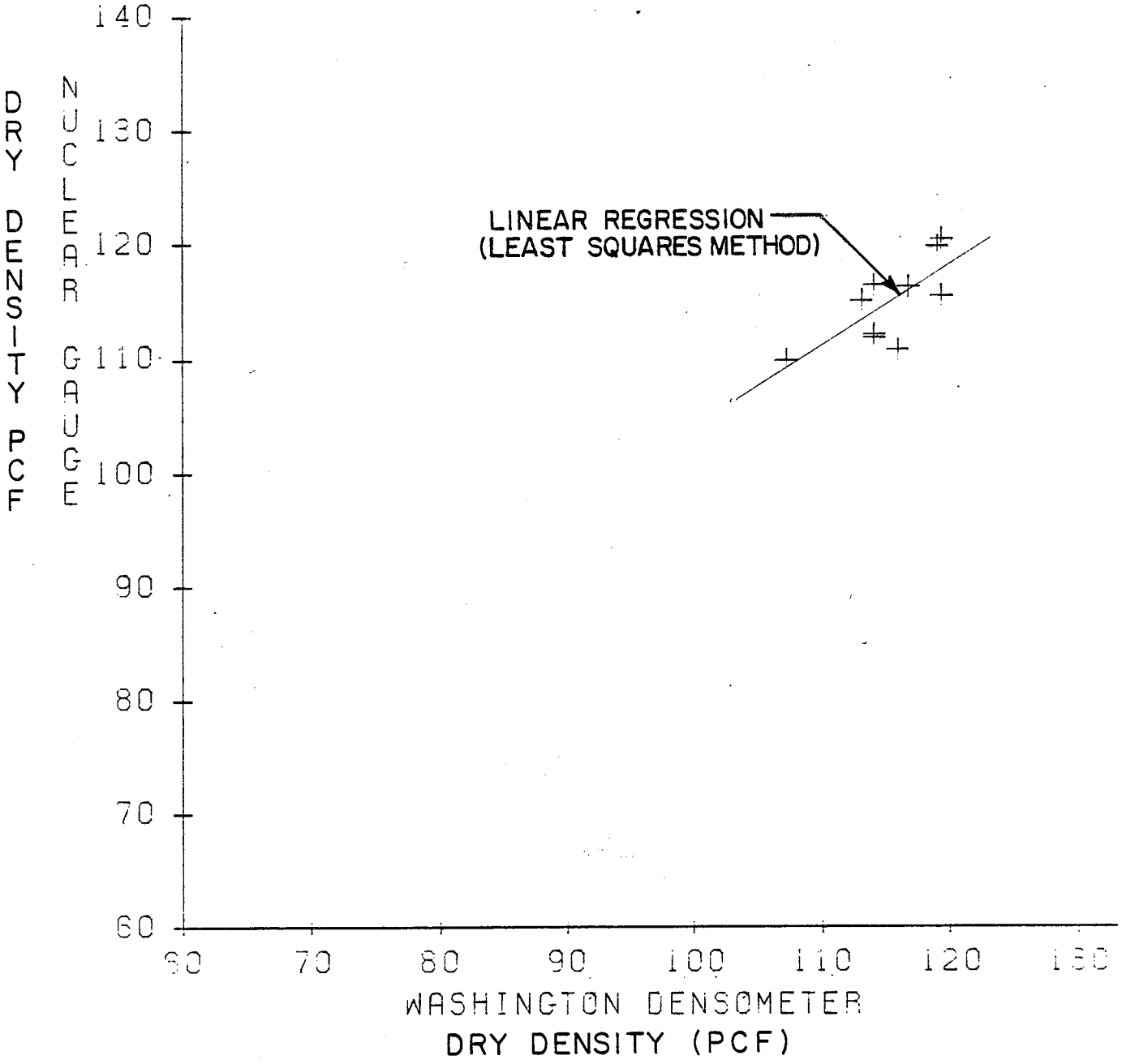


FIGURE 9

COMPARISON DENSITY TEST
WASHINGTON DENSOMETER
VERSUS NUCLEAR GAUGE

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

DAPPOLONIA

DRAWN BY	DATE	CHECKED BY	APPROVED BY	DRAWING NUMBER
	2/9/82			78-002-A3U

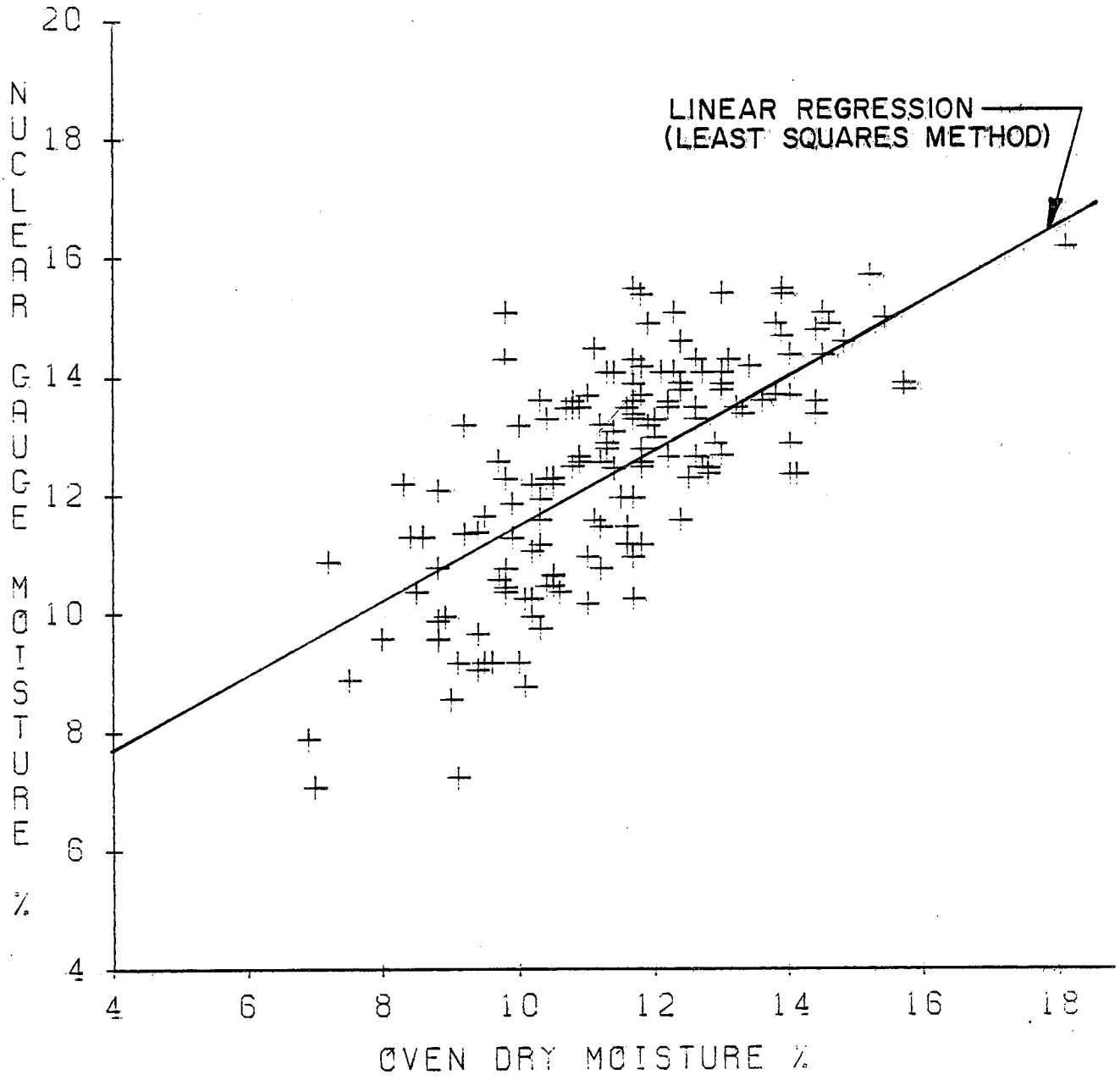


FIGURE 10

WATER CONTENTS
OVEN DRY VERSUS
NUCLEAR GAUGE

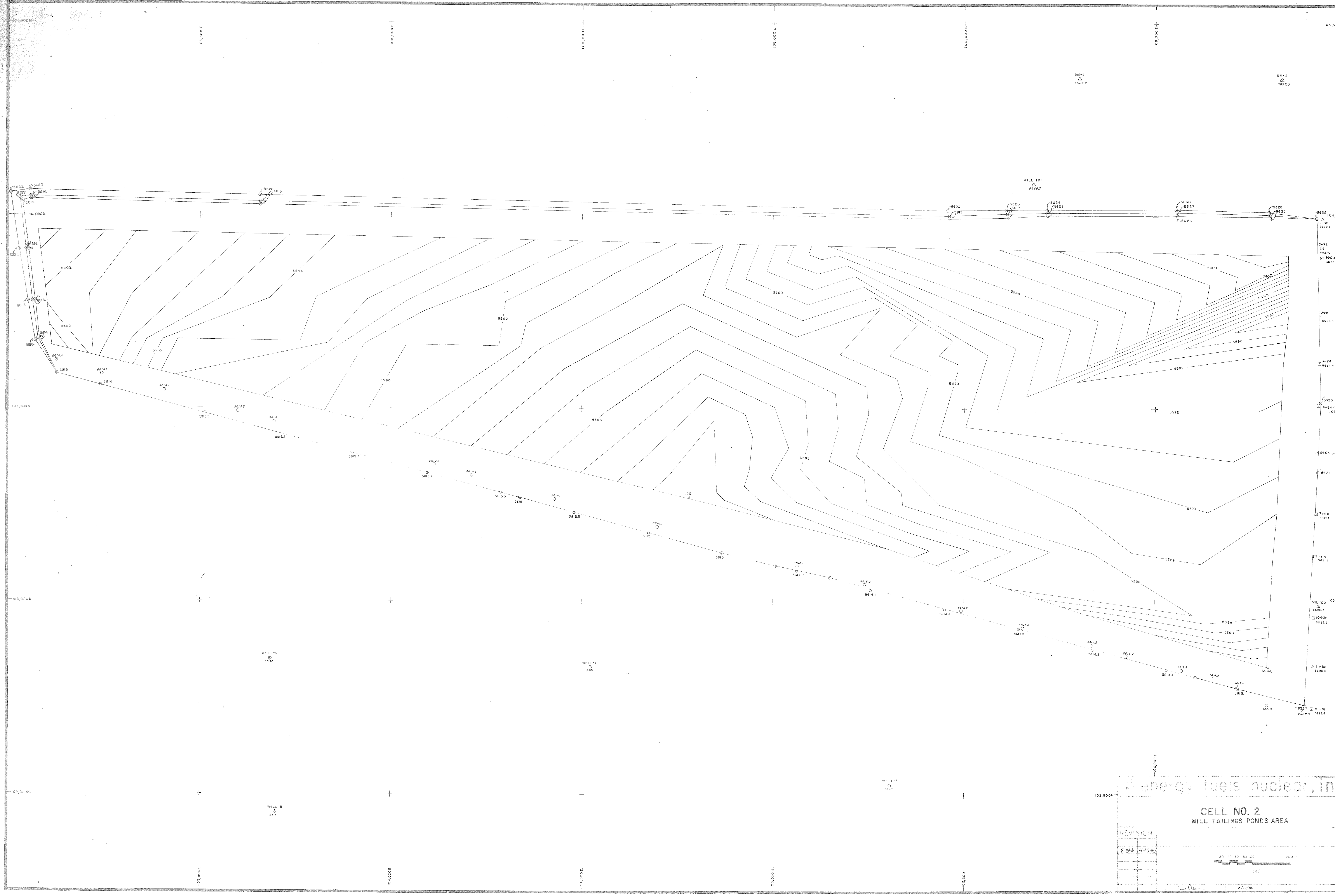
PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

D'APPOLONIA

FIGURE 11

CELL 2 FINAL EXCAVATION CONTOURS


energy fuels nuclear, inc.
CELL NO. 2
MILL TAILINGS PONDS AREA
REVISION
WELL-5
WELL-6
WELL-7
WELL-8
MILL-101
BM-3
BM-4

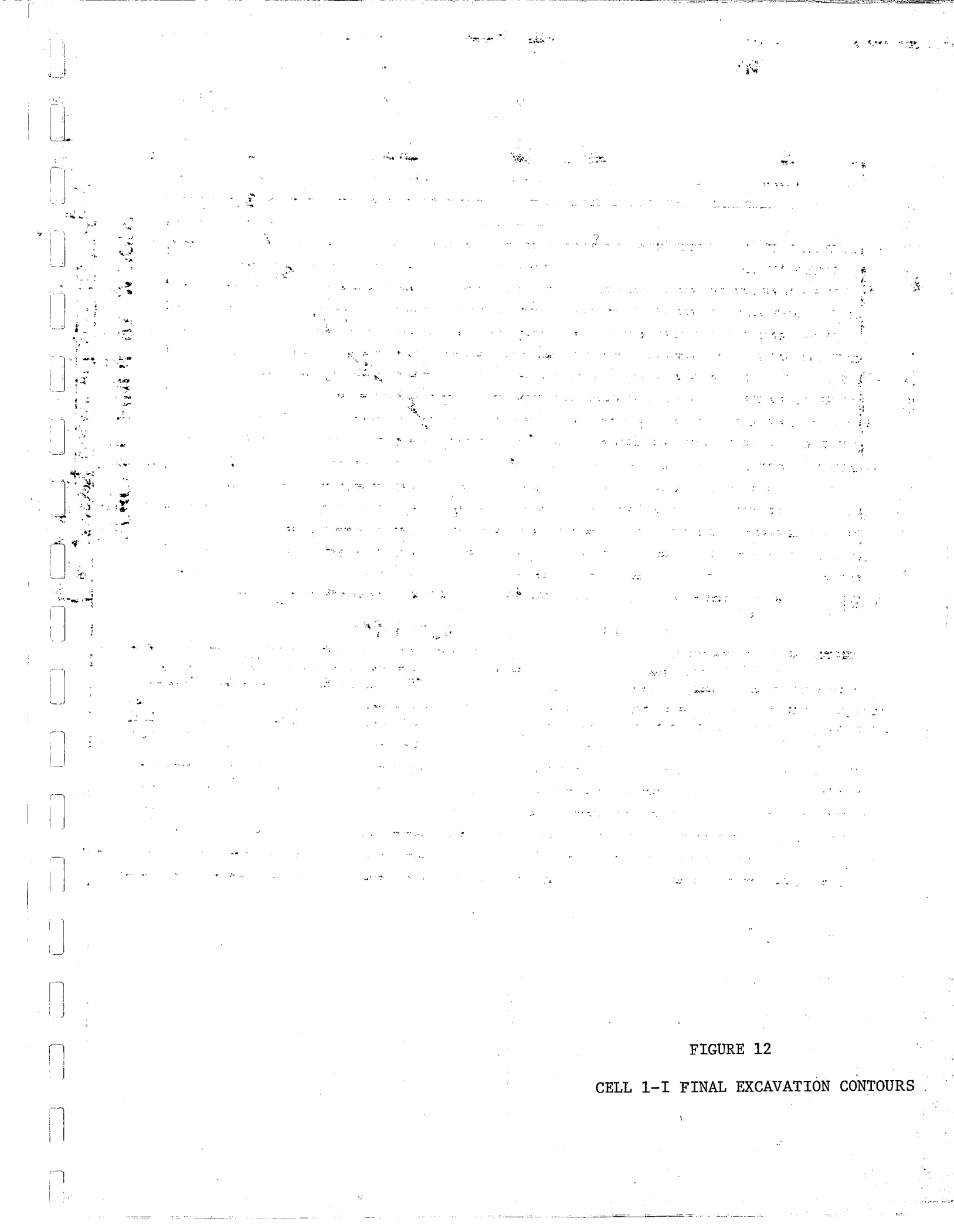
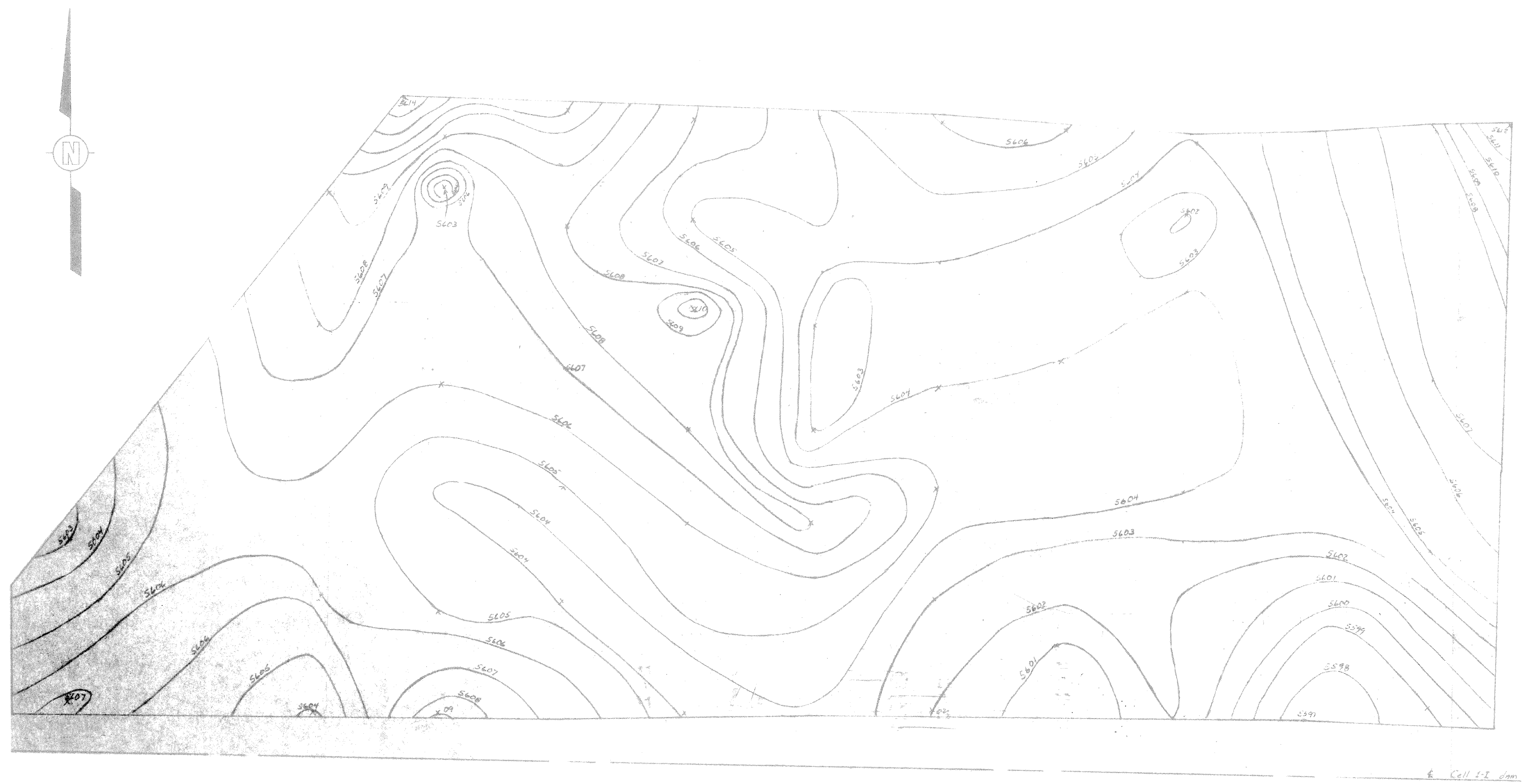


FIGURE 12

CELL 1-I FINAL EXCAVATION CONTOURS



energy fuels nuclear, inc.

REVISION		WHITE MESA PROJECT
Date	By	State Utah County San Juan
		Section ___ Twp ___ Rge ___

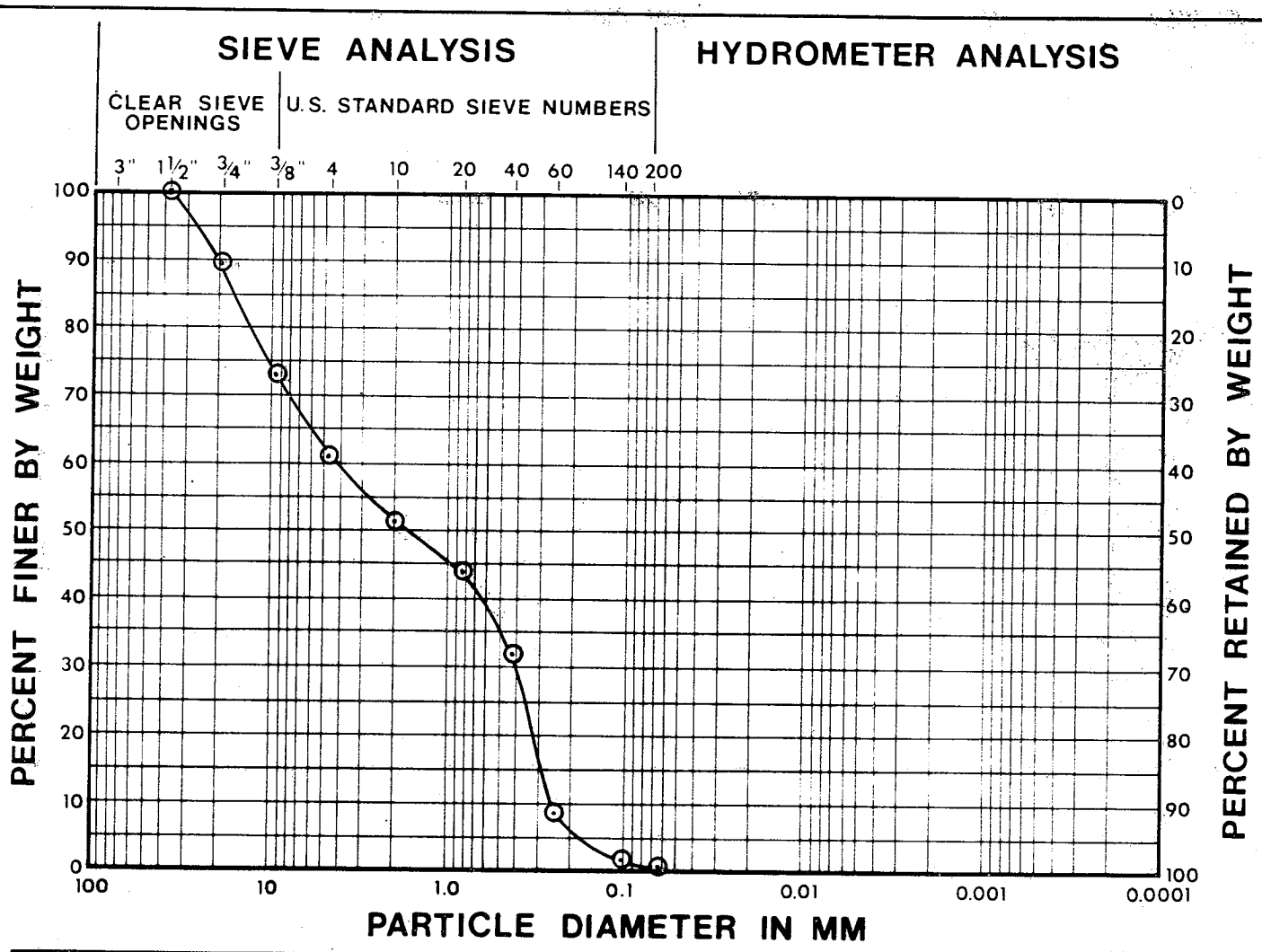
CELL 1-I

REVISED BOTTOM CONTOURS

Scale 1" = 100' Date 12/3/81 Map No

By NBR Sht ___ of ___

DR. BY | DATE 2/10/82 | CHECKED | APPROVED BY | DRAWING NUMBER RM78-682-A41



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	SAMPLE	DEPTH	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W,%
—⊙—	—	—	—	SAND, SOME GRAVEL	SP	0.25	16	—

FIGURE 13

GRAIN SIZE ANALYSIS
BEDDING MATERIAL

PREPARED FOR

ENERGY FUELS NUCLEAR, INC.
DENVER, COLORADO

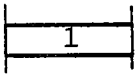
DAMPODONIA

APPENDIX A

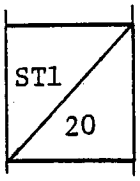
TEST PIT LOGS

LEGEND

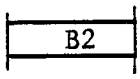
SAMPLE NO.
AND TYPE



Bag Sample From Test Pit Pitwall



3" Undisturbed Tube (Shelby) Sample
(Sample No. / Recovery)



Undisturbed Block Sample

USCS - Unified Soil Classification System
(Capital letters indicate lab test classification; lower case letters indicate visual field classification)

TEST PIT CLASSIFICATION LOG

PROJECT NAME WHITE MESA TEST PIT NO. 1 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5605 FT. DATE 9/13/79

FIELD ENG./GEO. C.E. Oldweiler

LOCATION Sta-29+00 Dike 2; 5' South of centerline

EQUIPMENT USED Backhoe & AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		TOPSOIL, RED SILT, DRY, ROOTS 0.8'	-	
		STIFF RED SILT, some sand and clay, moist, calcareous, strong reaction to HCl.	ML	
	1 B1	4.0' - 3' continuous calcareous layers, 1/2" max. thickness, parallel surface		3.0' Nuclear Gauge γ_d =103.9 pcf w =10.7%
5				
	B2		SC	
	2			7.2' - Nuclear Gauge Density γ_d =104.2 pcf w= 10.7%
10		10.0'		
		LIGHT GREEN SANDSTONE, medium to fine grained, calcareous cemented, moderately weathered 10.5'	NA	Calcareous reaction throughout test pit.
		Bottom of Test Pit		

D'APPOLONIA

TEST PIT CLASSIFICATION LOG

PROJECT NAME WHITE MESA TEST PIT NO. 2 PAGE 1 OF 1

PROJECT NUMBER RM78-682 B APPROX. ELEV. 5605 FT. DATE 9/11/79

FIELD ENG./GEO. C.E. Oldweiler

LOCATION Sta-21+00, Dike 2; 10' South of Centerline

EQUIPMENT USED Backhoe

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		TOPSOIL, RED SILT, dry, roots 1.3'		
	1	Stiff Red, Sandy Silt, Moist, Calcareous, Strong Reaction to HCL.	ML	3.0' -Nuclear Gauge Density γ_d =104.5pct w =11.5%
	2	4.5'		
5		Bottom of Test Pit-Too hard, cannot excavate with equipment		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME WHITE MESA TEST PIT NO. 3 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5602FT. DATE 9/13/79

FIELD ENG./GEO. C.E.Oldweiler

LOCATION Sta 12+00, Dike 2;10' South of Centerline

EQUIPMENT USED Backhoe & AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		TOPSOIL, RED SILT, dry 0.8'		
	1	STIFF RED SILT & CLAY, some Sand, Moist, Calcareous, strong reaction to HCL.	ml	3.0'-Nuclear Gauge Density γ_d =106.4pcf w =14.1%
5	ST1 30 2	5.8'		
		STIFF RED SILT AND SAND, Some Clay, Moist, Calcareous, very strong reaction to HCL, greenish white calcareous deposits.	CL-ML	6.3'-Nuclear Gauge Density γ_d =112.0pcf w =15.7%
	3	9.0'		
		Bottom of Test Pit limit of Equipment		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME WHITE MESA TEST PIT NO. 4 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5595 FT. DATE 9/11/79

FIELD ENG./GEO. C.E.Oodweiler

LOCATION Sta. 6+30, Dike 2; on centerline

EQUIPMENT USED BAckhoe & AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		TOPSOIL, RED SILT, dry 1.0'		
		STIFF RED SILT, Some Sand & Clay, Moist calcareous, strong reaction to HCL, several white nodules of calcium carbonate	CL	
	B1&1			3.5' - Nuclear gauge Density γ_d =103.2pcf w =14.1%
5				
	B2&B3 2		CL	
		7.5'		
		Bottom of Test Pit		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME WHITE MESA TEST PIT NO. 5 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5610 FT. DATE 10/9/79

FIELD ENG./GEO. C.E.Oldweiler

LOCATION Sta-2+00, Dike 1-I; 10' South of centerline

EQUIPMENT USED AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Surface stripped for fill placement 1.0'		
5	1	MEDIUM STIFF RED-BROWN, SILT, some Sand, Slightly moist, Calcareous, Strong Reaction to HCL. 6.3'	sm	
		Bottom of Test Pit-WHITE TO LIGHT YELLOW SAND-STONE, hard, well cemented.		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME WHITE MESA TEST PIT NO. 6 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5604.5 FT DATE 11/7/79

FIELD ENG./GEO. C.E.Oldweiler

LOCATION Sta 7+00,Dike 1-I; 100' North of Centerline

EQUIPMENT USED AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Surface stripped 1.0'		
	ST1 / 20.5	STIFF RED FINE SAND, Some Silt & Clay Moist	SM	
	ST2 / A.5	STIFF RED FINE SAND AND SILT, Some Clay, Moist	ML	
5		5.1'		
		Bottom of Test Pit		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME WHITE MESA TEST PIT NO. 7 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. - DATE -

FIELD ENG./GEO. -

LOCATION -

EQUIPMENT USED -

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Test Pit No. 7, has not excavated because it was located in the over excavated area of Cell 1-I Dike.		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME White Mesa TEST PIT NO. 8 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. -- DATE --

FIELD ENG./GEO. --

LOCATION --

EQUIPMENT USED --

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Test Pit No. 8 was not excavated because it was located in the overexcavated area of Cell 1-I Dike.		

D'APPOLONIA

TEST PIT CLASSIFICATION LOG

PROJECT NAME White Mesa TEST PIT NO. 9 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5613 Feet DATE 11/7/79

FIELD ENG./GEO. C.E. Oldweiler

LOCATION Sta. 2+50, Dike 1A-I; 30' west of centerline

EQUIPMENT USED AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Surface stripped 1.0		
	ST1 21	MEDUIUM STIFF, RED FINE SAND AND SILT, some clay, moist	ML	
5	ST2 24	MEDIUM STIFF RED FINE SAND, some silt and clay, moist 5.5	SM	
		Bottom of Test Pit		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME White Mesa TEST PIT NO. 10 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5585 feet DATE 9/25/79

FIELD ENG./GEO. C.E. Oldweiler

LOCATION Sta. 7+00, Dike 3; on centerline

EQUIPMENT USED AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Surface stripped for fill placement 1.0'		
		STIFF RED-BROWN SILT AND SAND, moist	ML	Nuclear Gauge Densities 2'- γ_d=93.7 pcf w=10.1% 3'- γ_d=105.9 pcf w=11.6%
5	ST1 / B1 / 24	STIFF LIGHT GREEN AND WHITE SILTE AND SAND, moist, calcareous 5.0'	CL	
		Bottom of Test Pit - White to light yellow sandstone, well eemented, hard		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME White Mesa TEST PIT NO. 11 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5583 feet DATE 9/25/79

FIELD ENG./GEO. C.E. Oldweiler

LOCATION Sta. 13+00, Dike 3; on centerline

EQUIPMENT USED AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
NOT ENCOUNTERED		X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Stripped for fill placement 1.0'		
	1 ST1 24	VERY STIFF RED-BROWN SILT AND FINE SAND, some clay, dry 4.6'	ML	Nuclear Gauge Densities 2'- γ_d=97.0 pcf w=3.9% 5'- γ_d=104.0 pcf w=5.0%
5	2	STIFF DARK RED SILT, some clay, moist, calcareous 6.2'	ml	
	3	STIFF BROWN SILT AND SAND, moist, calcareous 7.3'	sm	
		Bottom of Test Pit - White to light yellow sandstone, hard		

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TEST PIT CLASSIFICATION LOG

PROJECT NAME White Mesa TEST PIT NO. 12 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5584 feet DATE 9/25/79

FIELD ENG./GEO. C.E. Oldweiler

LOCATION Sta. 21+00, Dike 3; on centerline

EQUIPMENT USED AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Stripped for fill placement 1.0'		
		STIFF TO VERY STIFF RED-BROWN AND FINE SAND, some clay, dry, non-calcareous 3.7'	ml	Nuclear Gauge Densities 2'- ɣd=95.8 pcf w=3.3% 3-1/2- ɣd=106.7 pcf w=5.4%
5	ST1 / 22	STIFF DARK RED SILT, some clay and fine sand, moist, calcareous 4.9'	ml	
		STIFF RED-BROWN SILT AND SAND, moist, calcareous 6.2'	sm	
		Bottom of Test Pit - BROWN TO LIGHT YELLOW SANDSTONE, hard, well centered, non-calcareous		

D'APPOLONIA

TEST PIT CLASSIFICATION LOG

PROJECT NAME White Mesa TEST PIT NO. 13 PAGE 1 OF 1

PROJECT NUMBER RM78-682B APPROX. ELEV. 5600 feet DATE 9/25/79

FIELD ENG./GEO. C.E. Oldweiler

LOCATION Sta. 27+00, Dike 3; on centerline

EQUIPMENT USED AC-31 Bulldozer

GROUNDWATER LEVEL DATA		
DATE	ACTUAL TIME	DEPTH
	NOT ENCOUNTERED	X

DEPTH (FT)	SAMPLE NO. AND TYPE	DESCRIPTION	U.S.C.S. SYMBOL	REMARKS
		Stripped for fill placement 1.0'		
		VERY STIFF RED-BROWN SILT, some clay, dry, blocky 2.8'	ml	
		STIFF RED-BROWN SILT, some fines and moist, calcareous	ml	Nuclear Gauge Densities 3'- γ_d=101.1 pcf w=6.0% 7'- γ_d=106.3 pcf w=7.5%
5	1	7.3'		
	2	VERY STIFF RED-BROWN SILT, some clay, moist, calcareous, mottled white	ml	
10		12.0'		
		Bottom of Test Pit - Limit of equipment and test pit size		

D'APPOLONIA

APPENDIX B

DENSITY TEST RECORDS

TABLE B.1

DENSITY TEST RECORD - DIKE 1-I

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
1-1017-1	6+80	30S	5606	112.7	NA	NA	Natural ground removed
1-1017-2	7+25	N TOE	5605	104.0	8.6	81.2	& recompacted. See tests
1-1017-3	7+00	0	5605	102.5	8.5	80.0	1-1017-7 & 1-1018-1
1-1017-4	7+25	N TOE	5605	117.8	8.7	92.0	
1-1017-5	7+00	0	5605	104.3	12.8	81.4	Removed & recompacted. See
1-1017-6	7+00	10S	5605	108.6	13.5	84.8	See tests 1-1017-7 & 1-1018-2
1-1017-7	7+00	30S	5605	112.4	7.9	87.8	Same as 1-1017-3
1-1018-1	7+50	0	5606	115.2	13.6	90.0	
1-1018-2	6+50	0	5606	115.3	11.4	90.1	
1-1018-3	6+80	20N	5607	111.5	13.1	87.1	Red 'very' sandy silt - ok
1-1018-4	6+25	20S	5607	119.9	10.4	93.6	
1-1018-5	7+00	10S	5607	116.4	11.5	90.9	
1-1018-6	7+75	10S	5608	126.5	9.4	98.8	
1-1018-7	7+75	40S	5608	122.0	11.8	95.3	
1-1019-1	6+50	25N	5609	119.5	9.9	93.3	Taken on bladed surface, same
1-1019-2	6+50	35S	5609	110.3	7.1	86.2	surface drying & disturbance
1-1019-3	2+00	50S	5607	113.8	12.9	88.9	
1-1019-4	2+00	40S	5607	114.5	10.9	89.4	
1-1019-5	2+50	0	5607	119.6	11.4	93.4	
1-1022-1	2+75	20N	--	119.0	11.6	93.0	
1-1023-1	2+50	20N	5609	114.5	12.1	89.5	
1-1023-2	2+50	20S	5609	117.2	11.0	91.5	
1-1023-3	1+50	20N	5612	117.7	12.8	91.9	
1-1023-4	1+25	40S	5612	112.5	14.4	87.9	Recompacted
1-1023-5	1+25	30S	5612	114.4	15.5	89.3	
1-1023-6	2+00	0	5610	115.3	13.4	90.0	
1-1023-7	2+50	30S	5610	113.5	14.0	88.6	Recompacted
1-1023-8	2+50	10S	5610	117.4	11.5	91.7	
1-1023-9	1+75	40S	5611	118.1	11.6	92.2	
1-1023-10	1+75	20S	5611	116.3	7.3	90.8	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.1
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
1-1024-1	0+50	10S	5614	114.2	15.8	89.2	
1-1024-2	1+50	0	5614	116.1	15.2	90.7	
1-1024-3	2+50	10S	5613	110.3	10.6	86.1	Ripped, wetted, and
1-1024-4	2+50	5S	5613	115.0	8.4	89.8	recompacted
1-1024-5	6+00	0	5610	115.4	14.0	90.1	
1-1024-6	7+00	40S	5610	113.1	13.5	88.3	Recompacted
1-1024-7	10+50	30S	--	110.1	13.2	86.0	Recompacted
1-1025-1	11+00	20S	5605	109.6	12.0	85.6	Soil too wet; removed
1-1025-2	11+00	10N	5605	109.2	6.7	85.3	and mixed with yellowish
1-1025-3	11+00	20N	5605	108.3	14.9	84.6	tan weathered shale
1-1025-4	12+50	0	5607	113.0	17.0	88.2	and compacted
1-1025-5	11+00	20N	5605	99.6	16.4	77.8	in dike 2
1-1025-6	11+00	20S	5604	105.2	17.1	82.2	
1-1025-7	11+50	40S	5603	117.2	12.9	91.5	Recompacted
1-1029-1	11+50	--	5607	107.3	15.6	83.7	Removed
1-1029-2	10+50	--	5607	112.6	14.3	87.9	Removed
1-1030-1	12+50	15S	5608	113.2	13.4	88.4	Recompacted
1-1030-2	11+50	15S	5609	118.3	9.2	92.4	
1-1031-1	10+50	30N	5609	120.7	8.8	94.2	
1-1031-2	11+50	10N	5609	114.0	10.5	89.0	
1-1031-3	12+50	20S	5609	114.5	10.8	89.4	
1-1031-4	12+00	40S	5608	115.3	10.7	90.1	
1-1031-5	16+00	0	5613	115.8	13.4	90.5	
1-1031-6	18+00	0	5614	115.0	8.6	89.8	
1-1101-1	17+50	25S	5615	120.0	10.3	93.7	
1-1101-2	16+50	25S	5615	120.8	9.2	94.4	
1-1101-3	15+00	25S	5614	118.3	9.6	92.4	
1-1102-1	13+00	20N	5615	121.5	11.4	94.9	
1-1102-2	17+80	0	5615	121.4	12.5	94.8	
1-1103-1	12+00	20S	5610.5	119.0	10.2	93.0	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence

(2) Optimum Density is 128.0 pcf.

TABLE B.1
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
1-1103-2	13+50	10N	5612	121.0	10.2	94.5	
1-1103-3	15+00	0	5615.5	118.6	11.3	92.6	
1-1105-1	12+90	20S	5614	119.7	8.1	93.5	
1-1105-2	11+00	10N	5613.5	119.4	10.3	93.3	
1-1105-3	9+90	10S	5616	116.7	12.3	91.1	
1-1105-4	9+00	10S	5611	119.4	11.2	93.3	
1-1106-1	7+00	0	5615	116.4	13.7	90.9	
1-1106-2	7+00	10N	5615	119.3	10.5	93.2	
1-1106-3	6+00	10S	5615	120.2	13.2	93.8	
1-1106-4	10+00	0	5615	119.4	13.5	93.3	
1-1107-1	8+00	10N	5612	116.5	9.7	91.0	
1-1107-2	5+00	10S	5613	117.4	12.4	91.7	
1-1109-1	3+00	10S	5612	116.0	12.1	90.6	
1-1109-2	5+00	10N	5613	122.3	9.3	95.5	
1-1109-3	2+00	10N	5614	118.0	11.8	92.1	
1-1109-4	4+00	10S	5615	121.4	10.8	94.8	
1-1109-5	5+00	0	5614	121.6	9.8	95.0	
1-1112-1	2+00	10N	5616	116.1	9.4	90.7	
1-1112-2	3+00	10N	5617	119.6	11.0	93.4	
1-1112-3	8+00	10N	5614	122.4	11.3	95.6	
1-1113-1	9+00	20S	5615	118.1	11.5	92.2	
1-1113-2	12+00	20N	5615	122.4	11.9	95.6	
1-1113-3	10+00	10S	5616	119.1	10.0	93.0	
1-1114-1	1+00	10S	5618	121.9	8.7	95.2	
1-1114-2	3+00	10S	5618	122.4	11.5	95.6	
1-1114-3	2+00	0	5619	117.2	9.9	91.5	
1-1114-4	20+00	5S	5616	116.6	14.4	91.1	
1-1114-5	18+00	10N	5616	120.9	12.3	94.4	
1-1114-6	17+00	10S	5616	122.3	9.6	95.5	
1-1115-1	5+00	0	5617	122.6	8.4	95.7	

[1]Number Designation - 2-1030-1 -- Dike - Date - Sequence.

[2]Optimum Density is 128.0 pcf.

TABLE B.1
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
1-1115-2	6+00	0	5618	114.6	10.3	89.5	OK
1-1115-3	6+50	0	5618	114.6	10.4	89.5	OK
1-1116-1	8+00	0	5619	119.3	12.6	93.2	
1-1116-2	9+00	10S	5619	114.8	10.8	89.6	OK
1-1116-3	11+00	0	5618	117.1	11.4	91.5	
1-1117-1	13+50	5N	5618	122.1	9.0	95.4	
1-1117-2	15+00	0	5618	114.6	14.3	89.5	OK
1-1117-3	15+00	5S	5618	119.0	11.2	93.0	
1-1117-4	16+00	5N	5618	114.5	8.5	89.5	Added required moisture and recompacted.
1-1119-1	18+00	15S	5618	120.0	10.1	93.7	
1-1119-2	19+50	0	5620	116.5	12.6	91.0	
1-1119-3	21+00	5N	5618	118.5	11.3	92.5	

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.2

DENSITY TEST RECORD - DIKE 1A-I

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
1A-0527-1	5+25	10W	5606	113.5	9.4	88.9	Retested
1A-0527-2	5+25	10W	5606	117.9	10.4	92.1	Retest of 1A-0527-1
1A-0527-3	5+50	30E	5608	116.0	9.3	90.6	
1A-0527-4	4+50	50E	5609	124.0	8.4	96.8	
1A-0527-5	6+00	20W	5609	121.0	12.1	94.5	
1A-0527-6	5+00	30E	5610	120.8	10.5	94.4	
1A-0528-1	4+50	25W	5611	117.5	9.4	91.6	
1A-0528-2	5+00	30E	5611	120.6	10.7	94.2	
1A-0528-3	6+00	25W	5610	122.6	9.8	95.8	
1A-0528-4	5+00	0	5611	117.4	10.5	91.7	
1A-0528-5	7+00	0	5610	113.0	8.5	88.3	Retested
1A-0528-6	7+00	0	5610	117.3	12.0	91.6	Retest of 1A-0528-5
1A-0528-7	4+50	20W	5612	120.0	11.9	93.7	
1A-0528-8	5+50	15E	5612	117.9	10.2	92.1	
1A-0528-9	7+00	5E	5611	114.0	7.3	89.0	
1A-0528-10	7+00	5E	5611	118.9	9.3	92.9	Retest of 1A-0528-9
1A-0529-1	4+00	5W	5614	120.2	9.3	93.9	
1A-0529-2	5+00	0	5614	120.2	11.2	96.3	
1A-0529-3	6+00	10E	5613	120.1	11.6	93.8	
1A-0529-4	7+00	0	5611	120.6	12.8	94.2	
1A-0529-5	6+00	15W	5614	112.7	12.9	88.0	Retested
1A-0529-6	5+00	15E	5614	119.4	9.8	93.3	
1A-0529-7	6+00	15W	5614	118.3	11.2	92.4	Retest of 1A-0529-5
1A-0529-8	4+30	10W	5615	119.2	10.6	93.1	
1A-0529-9	7+00	10E	5615	121.1	9.6	94.5	
1A-0529-10	6+00	0	5616	121.5	10.7	94.9	
1A-0529-11	5+00	5W	5616	119.1	9.6	93.1	
1A-0529-12	4+00	10W	5616	119.5	12.3	93.3	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.2
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
1A-0529-13	7+00	0	5616	114.2	11.9	89.2	Retested
1A-0529-14	7+00	0	5616	120.4	10.2	93.8	Retest of 1A-0529-13
1A-0529-15	6+00	10E	5616	122.4	10.7	95.6	
1A-0529-16	5+00	15W	5617	115.6	10.6	90.3	
1A-0529-17	4+00	5W	5617	116.0	10.0	90.6	
1A-0530-1	4+25	0	5618	122.0	10.2	95.3	
1A-0530-2	5+00	5W	5618	120.2	10.6	93.9	
1A-0530-3	6+00	5E	5617	119.6	10.9	93.4	
1A-0530-4	7+00	0	5617	118.2	12.5	92.3	
1A-0530-5	4+00	10E	5619	116.3	13.4	90.8	
1A-0530-6	5+00	0	5619	117.2	13.1	91.6	
1A-0530-7	6+00	5W	5617	117.6	13.8	91.8	
1A-0530-8	7+00	0	5619	119.4	12.5	93.2	
1A-0530-9	6+00	0	5619	121.0	11.1	94.5	
1A-0530-10	5+00	0	5619	119.8	11.2	93.5	
1A-0530-11	4+00	0	5619	123.8	10.0	96.7	
1A-0530-12	3+00	0	5619	120.5	12.2	94.1	
1A-0530-13	2+00	0	5619	118.4	11.7	92.5	
1A-0530-14	1+00	0	5619	117.7	12.1	91.9	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.3
DENSITY TEST RECORD - DIKE 2

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-1010-1	6+00	20S	-	93.1	19.9	72.0	Removed
2-1010-2	6+00	20S	-	101.9	18.4	79.6	Removed
2-1010-3	6+00	20S	-	99.9	18.2	78.0	Removed
2-1011-1	6+00	0	5596	111.3	14.1	87.0	Removed
2-1011-2	6+20	0	5596	112.2	15.0	87.7	Removed
2-1011-3	6+00	0	5597	113.8	11.1	88.9	Removed
2-1012-1	5+80	30N	5598	115.9	10.8	90.5	
2-1012-2	6+20	20S	-	112.1	14.3	87.6	Removed
2-1012-3	6+80	20N	-	114.6	14.7	89.5	
2-1012-4	6+00	40N	-	108.3	16.1	84.6	Retested
2-1012-5	6+00	40S	-	117.1	11.0	91.4	
2-1013-1	6+00	40N	5600	119.9	13.8	93.6	Retest of 2-1012-4
2-1013-2	6+90	0	-	114.6	10.8	89.5	
2-1013-3	6+40	20S	5601	115.3	13.7	90.1	
2-1013-4	5+00	10N	-	117.0	10.5	91.4	
2-1015-1	7+50	10S	5602.5	113.6	14.3	88.7	Retested
2-1015-2	7+50	10S	5602.5	115.9	14.6	90.5	Retest of 2-1015-1
2-1015-3	4+90	10N	5603	116.9	12.7	90.7	
2-1015-4	5+70	20N	5604	120.1	11.7	93.8	
2-1015-4	5+70	20N	5604	119.1	10.6	93.0	
2-1015-5	5+20	20N	5604	110.6	15.4	86.4	Removed
2-1015-6	5+20	20N	5604	116.6	12.6	91.1	
2-1026-1	15+00	0	5591	115.2	14.7	90.0	
2-1026-2	15+50	40N	5591	114.5	14.9	89.4	OK
2-1026-3	14+00	30N	5592	112.4	15.5	87.8	Recompacted-See test 2-1026-4

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.3
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-1026-4	14+00	25N	5592*	113.0	15.3	88.3	
2-1026-5	16+00	20N	5591	111.1	16.6	86.8	Removed and recompacted-see 2-1026-6
2-1026-6	16+00	25N	5590	114.8	14.2	89.1	
2-1029-1	13+00	60S	5594	116.8	13.6	91.1	
2-1029-2	14+00	50S	5593	111.4	15.3	86.9	Recompacted-See 2-1029-9
2-1029-3	15+00	30S	5592	113.7	15.0	88.7	Recompacted
2-1029-4	18+00	60S	5591	116.4	8.9	90.9	
2-1029-5	16+50	60S	5591	115.9	13.9	90.5	
2-1029-6	14+00	40N	5594.5	113.2	15.2	88.4	Removed and recompacted-see 2-1029-8
2-1029-7	15+00	20N	5594	110.7	13.2	86.4	Recompacted-see 2-1029-8
2-1029-8	15+00	0	5594	116.9	15.1	91.3	
2-1029-9	14+00	50N	5595	115.8	13.2	90.4	
2-1030-1	13+00	50N	2' above G.S.	120.6	10.5	94.2	Hole disturbed removing ROP
2-1030-2	14+00	40N	5598	121.5	11.6	94.9	
2-1030-3	15+00	0	5595	119.0	9.9	92.9	
2-1030-3A	15+00	0	5595	115.0	10.3	89.8	OK
2-1030-4	16+00	30S	5594	115.4	13.9	90.1	
2-1030-5	18+00	40S	5594	120.7	11.2	94.3	
2-1030-6	27+00	0	5600	113.1	13.2	88.3	OK
2-1030-7	26+00	20D	5599	113.8	13.9	88.8	OK
2-1031-1	17+00	40S	5596	111.0	12.5	86.7	Recompacted-see 2-1031-4
2-1031-2	18+00	20S	5596	117.2	10.3	91.5	
2-1031-3	19+00	20N	5596	116.4	14.1	90.9	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.3
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-1031-4	17+50	30S	5596	Nuclear gage battery dead			
2-1101-1	25+00	30S	5599	119.3	10.5	93.2	
2-1101-2	24+00	0	5600	119.3	12.2	93.2	
2-1101-3	23+00	10S	5600	122.4	12.3	95.6	
2-1101-4	25+50	20S	5600	119.6	10.9	93.4	
2-1101-5	22+00	10N	5600	121.3	10.3	94.8	
2-1101-6	23+50	20S	5600	117.2	12.5	91.5	
2-1102-1	23+00	30S	5600	113.7	13.6	88.8	Recompacted
2-1102-2	25+00	40S	5602	118.1	13.3	92.2	
2-1102-3	24+00	40N	5601	116.6	13.1	91.0	
2-1102-4	27+20	20S	5602	114.3	10.3	89.2	Required additional compaction stop filling in this area
2-1102-5	27+00	10N	5602	113.6	11.0	88.7	
2-1102-6	27+00	10S	5602	122.1	10.4	95.4	
2-1102-7	21+00	0	5602	121.2	13.1	94.7	
2-1102-8	22+00	20S	5602	119.1	11.4	93.1	
2-1102-9	26+00	10N	5604	115.3	14.0	90.0	
2-1102-10	23+00	30N	5603	112.3	11.3	87.7	Recompacted
2-1102-11	25+00	20N	5604	115.4	15.0	90.2	
2-1103-1	15+00	20N	5598	113.5	14.0	88.6	Recompacted
2-1103-2	16+00	10S	5598	117.4	11.6	91.7	
2-1103-3	13+50	10S	5598	118.6	13.1	92.6	
2-1103-4	17+00	20N	5600	115.9	14.2	90.5	
2-1103-5	14+00	0	5599	119.7	11.6	93.5	
2-1103-6	15+00	10S	5599	117.7	12.2	91.9	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.3
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-1103-7	21+00	30N	5602	113.4	14.1	88.6	Recompacted
2-1103-8	23+00	10N	5603	113.4	13.2	88.5	Recompacted
2-1103-9	20+00	20S	5601	118.2	10.9	92.4	
2-1103-10	18+10	10S	5602	116.6	10.4	91.1	
2-1103-11	19+00	30N	5602	114.5	16.0	89.4	Recompacted
2-1103-12	20+50	20N	5601	117.0	12.8	91.4	
2-1105-1	16+00	20S	5599	111.7	10.4	87.3	Rework, inc. moist. Recompacted
2-1105-2	16+00	20S	5600	116.9	11.2	91.3	
2-1105-3	17+00	20N	5601	118.6	13.3	92.7	
2-1105-4	14+00	0	5600	117.3	13.5	91.6	
2-1105-5	13+10	25N	5601	115.6	13.6	90.3	
2-1105-6	17+50	10N	5602	117.0	14.5	91.4	
2-1105-7	16+00	20N	5601	115.0	11.7	89.8	OK
2-1105-8	14+50	20S	5601	114.1	13.6	89.1	OK
2-1105-9	18+50	0	5602	116.5	15.0	91.0	
2-1105-10	21+00	30S	5603	118.8	13.0	92.8	
2-1106-1	19+00	10S	5598	114.0	12.3	89.0	OK
2-1106-2	17+00	0	5603	118.3	12.3	92.4	
2-1106-3	14+10	10N	5603	113.4	12.7	88.5	Recompacted
2-1106-4	16+00	10S	5604	116.5	11.7	91.0	
2-1106-5	12+20	20S	5603	116.6	11.7	91.0	
2-1106-6	13+00	20N	5603	114.2	14.0	89.2	OK
2-1106-7	17+00	20S	5604	119.3	12.3	93.2	
2-1106-8	18+00	10N	5602	119.8	12.4	93.6	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.3
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-1106-9	19+50	10S	5601	116.3	14.3	90.8	
2-1106-10	16+00	10N	5605	117.7	12.0	91.9	
2-1106-11	15+00	20N	5604	118.4	11.2	92.4	
2-1107-1	13+00	20N	5604	117.7	12.2	92.0	
2-1107-2	21+00	20S	5604	117.2	10.4	91.6	
2-1107-3	17+00	20N	5605	120.5	10.9	94.1	
2-1107-4	28+00	10N	5605	109.1	11.5	85.2	Recompacted-see 2-1107-5
2-1107-5	28+00	0	5605	113.4	9.6	88.5	Recompacted-no retest
2-1107-6	24+00	20N	5605	120.2	9.7	93.9	
2-1107-7	21+00	10N	5605	117.2	12.7	91.5	
2-1107-8	22+00	20S	5605	114.7	15.6	89.6	
2-1107-9	20+00	10S	5605	115.3	13.8	90.1	
2-1107-10	19+00	30S	5605	117.1	12.2	91.5	
2-1109-1	6+00	10S	5604	118.2	14.4	92.3	
2-1109-2	7+60	10N	5605	113.2	16.3	88.4	Recompacted-too wet See Retest 2-1109-3
2-1109-3	7+10	10N	5604	119.1	14.2	93.0	Retest of 2-1109-2
2-1109-4	8+00	10N	5603	121.4	12.8	94.8	
2-1109-5	6+00	0	5604	123.8	12.0	96.7	
2-1109-6	5+00	10S	5607	119.6	13.3	93.4	
2-1109-7	8+75	10S	5605	121.9	12.2	95.2	
2-1109-8	7+50	20S	5605	116.4	11.6	90.9	
2-1109-9	5+00	20N	5608	119.7	13.4	93.9	
2-1109-10	6+00	10N	5606	121.7	9.7	95.0	
2-1109-11	4+50	10N	5608	118.7	12.5	92.7	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.3
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-1109-12	8+00	10S	5607	122.2	10.9	95.4	
2-1112-1	12+50	20N	5607	122.3	9.6	95.5	
2-1112-2	14+00	20N	5607	118.4	10.9	92.5	
2-1112-3	15+50	20N	5607	120.2	10.7	93.9	
2-1112-4	27+00	10N	5607	116.8	12.3	91.3	
2-1112-5	23+00	30N	5606	116.5	13.5	91.0	
2-1112-6	18+00	20N	5607	118.0	12.3	92.2	
2-1112-7	17+00	10S	5607	117.5	13.3	91.8	
2-1112-8	20+00	0	5607	120.4	12.8	94.0	
2-1112-9	23+00	20N	5607	117.0	12.0	91.4	
2-1112-10	21+00	20S	5607	120.3	12.7	94.0	
2-1112-11	22+00	10N	5607	121.2	12.4	94.6	
2-1112-12	19+00	20S	5607	125.3	9.1	97.8	
2-1113-1	13+00	15S	5610	117.5	14.5	91.8	
2-1113-2	15+00	15S	5610	116.1	10.1	90.7	
2-1113-3	19+00	15S	5609	120.0	12.2	93.7	
2-1113-4	24+00	15S	5610	117.4	12.8	91.7	
2-1113-5	26+00	15S	5610	110.5	15.7	86.3	Recompacted-see 2-1113-7
2-1113-6	25+75	15S	5610	111.5	13.2	87.1	See 2-1113-7
2-1113-7	26+00	15S	5610	121.6	9.6	95.0	Retest of 2-1113-5 and 2-1113-6
2-1113-8	19+00	10N	5610	112.0	14.8	87.5	Recompacted and retested
2-1113-9	17+00	10S	5610	114.7	13.3	89.6	OK
2-1113-10	19+00	10S	5610	119.0	13.7	93.0	Retest of 2-1113-8
2-1113-11	20+00	10N	5610	120.9	12.5	94.4	

(1) Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2) Optimum Density is 128.0 pcf.

TABLE B.3
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-1113-12	21+00	0	5611	123.1	11.5	96.1	
2-1113-13	22+00	10N	5611	121.1	10.7	94.6	
2-1113-14	24+00	0	5611	121.1	10.0	94.6	
2-1114-1	13+50	15S	5611	116.2	10.4	90.7	
2-1114-2	16+00	15S	5612	111.8	11.8	87.3	Recompacted-see 2-1114-3
2-1114-3	16+00	15S	5612	114.4	11.5	89.3	Recompacted-no retest
2-1114-4	4+00	0	5613	119.1	9.8	93.0	
2-1114-5	6+00	10S	5613	117.8	10.5	92.0	
2-1114-6	28+00	0	5612	116.4	14.9	90.9	
2-1114-7	22+00	10N	5612	121.6	10.8	95.0	
2-1114-8	24+00	10S	5612	123.2	9.4	96.2	
2-1115-1	9+00	10S	5610	118.9	10.0	92.9	
2-1115-2	8+00	0	5612	119.1	12.5	93.0	
2-1115-3	10+00	10N	5610	116.2	14.5	90.8	
2-1116-1	12+00	10N	5613	115.0	9.8	89.8	OK
2-1116-2	13+00	10N	5613	120.1	11.9	93.8	
2-1116-3	15+00	0	5614	116.0	13.0	90.6	
2-1116-4	17+50	10S	5612	114.1	12.3	89.1	OK
2-1117-1	21+00	5S	5614	118.8	12.0	92.8	
2-1117-2	23+00	0	5614	117.0	11.0	91.4	
2-1117-3	28+00	10N	5613	115.1	12.2	89.9	OK
2-1117-4	25+00	5S	5615	117.1	10.8	91.5	
2-1117-5	26+50	0	5614	120.8	10.6	94.4	
2-0324-1	1+00	0	5614	118.8	12.3	92.8	
2-0324-2	4+00	0	5615	120.4	12.8	94.0	

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.3
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
2-0324-3	7+00	0	5613	123.6	12.3	96.5	
2-0324-4	7+00	0	5614	116.7	15.3	91.2	
2-0327-1	10+00	0	5612	112.6	15.2	88.0	Recompacted
2-0327-2	10+00	0	5612	114.3	14.5	89.3	Recompacted
2-0327-3	10+50	10S	5614	113.5	15.3	88.7	Recompacted

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4

DENSITY TEST RECORD - DIKE 3

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-1115-1	7+00	30S	5585	120.0	11.4	93.7	
3-1115-2	5+00	20N	5590	109.9	16.8	N/A	Existing G.S.
3-1115-3	6+50	30N	5585	118.9	12.3	92.9	
3-1115-4	8+00	10S	5585	119.9	11.0	93.6	
3-1115-5	5+00	20N	5590	105.1	16.2	N/A	Existing G.S.
3-1116-1	8+00	30N	5586	115.2	12.7	90.0	
3-1116-2	4+50	10N	5584	118.1	9.2	92.3	
3-1116-3	4+50	20N	5585	118.8	11.4	92.8	
3-1116-4	6+00	20S	5586	123.6	9.1	96.6	
3-1116-5	7+00	30N	5585	117.4	9.2	91.7	
3-1116-6	9+00	20S	5585	115.4	9.7	90.1	
3-1117-1	4+25	10S	5586	123.8	10.3	96.7	
3-1117-2	5+00	10S	5586	118.1	12.6	92.3	
3-1117-3	5+50	20S	5587	117.1	13.6	91.4	
3-1117-4	6+00	20N	5587	119.8	11.9	93.5	
3-1117-5	7+00	10S	5586	121.5	10.0	94.9	
3-1117-6	8+00	10N	5586	116.5	11.8	91.0	
3-1117-7	9+00	20S	5586	118.4	11.0	92.5	
3-1119-1	6+00	20S	5587	122.7	10.7	95.9	
3-1119-2	7+00	30N	5588	116.1	11.9	90.7	
3-1119-3	5+00	30S	5587	120.2	11.2	93.9	
3-1119-4	5+50	30N	5587	114.6	14.4	89.5	
3-1119-5	8+50	60S	5589	117.3	13.9	91.6	
3-1119-6	9+50	30N		120.1	12.4	93.8	
3-1126-1	4+50	40S		85.0	14.4	N/A	Existing G.S.
3-1126-2	13+50	40S	5583	111.7	14.2	87.3	Recompacted - See 3-1126-7
3-1126-3	12+50	40S		116.1	13.0	90.7	
3-1126-4	12+50	0		109.6	14.7	85.6	See 3-1126-8
3-1126-5	3+50	0		116.9	13.4	91.3	

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-1126-6	4+50	0		96.2	15.5	N/A	Existing G.S.
3-1126-7	13+50	40S		120.8	10.7	94.4	Retest of 3-1126-2
3-1126-8	12+50	0		121.2	12.2	94.7	Retest of 3-1126-4
3-1126-9	13+00	30S		119.9	12.8	93.7	
3-1126-10	13+50	10N		119.1	11.6	93.0	
3-1126-11	13+80	30S		119.7	11.4	93.5	
3-1126-12	12+50	20N		118.2	11.5	92.3	
3-1126-13	13+50	0		121.0	8.8	94.5	
3-1127-1	14+00	50N		109.1	12.4	N/A	Existing G.S.
3-1127-2	14+00	50S		114.7	12.8	89.6	
3-1127-3	13+00	50S		118.7	12.8	92.7	
3-1127-4	12+75	30S		119.1	11.3	93.0	
3-1127-5	14+00	10N		118.9	11.2	92.9	
3-1127-6	15+00	40N		123.1	11.6	96.1	
3-1127-7	13+00	30N		118.3	10.7	92.4	
3-1127-8	14+00	30N		118.6	10.0	92.6	
3-1127-9	12+00	10N		117.1	13.7	91.5	
3-1127-10	15+00	30S		115.8	10.7	90.5	
3-1127-11	13+50	20S		117.3	12.1	91.6	
3-0411-1	13+00	60N		114.9	15.4	89.7	OK
3-0411-2	14+00	50S		114.8	15.1	89.7	OK
3-0411-3	21+00	--		118.4	13.2	92.5	
3-0411-4	17+50	10N		118.5	11.0	92.6	
3-0411-5	16+00	50S		118.1	13.2	92.3	
3-0411-6	21+00	--		122.6	13.4	95.8	
3-0411-7	21+00	--		121.2	12.4	94.6	
3-0411-8	15+00	30N		116.1	15.7	90.7	
3-0411-9	18+00	20S		115.4	12.8	90.2	
3-0411-10	23+00	40N		119.8	14.0	93.6	
3-0411-11	22+00	10N		115.6	14.5	90.3	

[1]Number Designation - 2-1030-1 -- Dike - Date - Sequence.

[2]Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0411-12	21+00	0		112.3	15.8	87.7	Retested See 3-0411-15
3-0411-13	20+00	20S		115.7	14.3	90.4	
3-0411-14	21+00	0		112.4	15.0	87.7	Retested See 3-0411-15
3-0411-15	21+00	0		116.5	13.9	91.0	
3-0412-1	20+00	30N		11.7	16.7	87.3	Retested See 3-0412-11
3-0412-2	21+00	20N		116.2	14.1	90.8	
3-0412-3	22+00	20S		116.4	15.1	90.9	
3-0412-4	20+00	30N		114.2	16.2	89.2	Retested See 3-0412-11
3-0412-5	20+00	25N		113.4	15.0	88.6	Retested See 3-0412-11
3-0412-6	21+50	20S		112.7	15.6	88.1	Retested See 3-0412-10
3-0412-7	22+50	30N		114.8	14.6	89.6	Retested See 3-0412-9
3-0412-8	23+50	10S		115.3	13.0	90.1	
3-0412-9	22+50	25N		118.1	14.2	92.2	Retest of 3-0412-7
3-0412-10	21+50	15S		116.4	13.7	90.9	Retest of 3-0412-6
3-0412-11	20+00	20N		117.5	13.6	91.7	Retest of 3-0412-1, 4&5
3-0412-12	16+00	10S		117.7	12.7	91.9	
3-0412-13	13+50	0	5590	114.5	13.8	89.4	Retested See 3-0412-14
3-0412-14	13+50	0	5590	117.9	14.2	92.1	Retest of 3-0412-13
3-0412-15	22+00	20S	5589	117.2	14.8	91.5	
3-0412-16	24+00	10N	5591	119.1	13.6	93.0	
3-0412-17	17+00	20S	5589	117.6	13.3	91.8	
3-0412-18	20+50	30S	6591	115.6	13.7	90.3	
3-0414-1	19+50	30S	5592	114.6	15.0	89.5	N.G.
3-0414-2	27+00	20S	5599	115.1	14.2	89.9	
3-0414-3	12+00	40S	5594	115.8	14.9	90.5	
3-0414-4	14+00	40S	5594	114.1	15.3	89.1	Retested See 3-0414-5
3-0414-5	14+00	40S	5594	116.0	14.7	90.6	Retest of 3-0414-4
3-0414-6	28+00	30S	5599	113.4	17.8	88.6	Retested See 3-0414-11
3-0414-7	14+00	40S	5593	117.3	15.0	91.6	
3-0414-8	5+00	20S	5597	114.7	15.4	89.6	Retested See 3-0414-13

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0414-9	7+00	20N	5596	114.3	14.8	89.3	Retested See 3-0414-17
3-0414-10	21+00	40S	5591	115.0	13.3	89.8	
3-0414-11	28+00	25S	5594	116.8	13.9	91.3	Retest of 3-0414-6
3-0414-12	24+00	20N	5593	114.2	15.7	89.2	Retested See 3-0414-15
3-0414-13	5+00	20S	5597	116.0	12.7	90.6	Retest of 3-0414-8
3-0414-14	7+00	20N	5596	114.4	12.3	89.4	Retested See 3-0414-17
3-0414-15	24+00	20N	5593	115.3	14.3	90.0	Retest of 3-0414-12
3-0414-16	21+00	20S	5591	115.5	14.9	90.2	
3-0414-17	7+00	20N	5596	116.6	12.0	91.1	Retest of 3-0414-14 and 3-0414-9
3-0414-18	15+00	30S	5594	117.7	13.5	91.9	
3-0414-19	17+00	10S	5592	115.8	14.9	90.4	
3-0415-1	4+00	30N	5600	117.0	11.1	91.4	
3-0415-2	7+00	30S	5595	116.2	12.3	90.8	
3-0415-3	10+00	20N	5596	117.2	11.2	91.5	
3-0415-4	14+00	20S	5595	112.2	13.9	87.6	Retested See 3-0415-7
3-0415-5	14+00	15S	5595	114.1	12.5	89.1	Retested See 3-0415-7
3-0415-6	17+00	0	5592	116.4	13.5	90.9	
3-0415-7	14+00	20S	5595	115.0	12.1	89.8	Retest of 3-0415-3 and 3-0415-4
3-0415-8	17+00	20S	5593	115.7	13.7	90.4	
3-0415-9	20+00	20S	5593	115.6	13.3	90.3	
3-0415-10	22+00	10N	5594	116.9	13.4	91.3	
3-0415-11	25+00	30N	5596	120.3	11.4	94.0	
3-0415-12	27+00	25N	5600	111.4	13.0	87.0	Retested See 3-0415-13
3-0415-13	27+00	25N	5600	120.2	11.5	93.8	Retest of 3-0415-12
3-0415-14	29+00	0	5601	118.0	14.1	92.1	
3-0415-15	32+50	0	5605	115.6	10.8	90.3	
3-0415-16	6+00	20S	5597	116.0	13.5	90.6	
3-0415-17	8+00	10S	5595	113.8	13.6	88.9	Retested
3-0415-18	12+00	20S	5595	114.2	12.3	89.2	Retested
3-0416-1	12+00	10S	5595	113.0	12.1	88.3	Retested

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0416-2	21+00	30S	5595	110.6	12.7	86.4	Retested See 3-0416-4
3-0416-3	24+00	30N	5596	113.8	12.5	88.9	Retested See 3-0416-5
3-0416-4	21+00	30S	5595	115.6	13.3	90.3	Retest of 3-0416-2
3-0416-5	24+00	30N	5596	115.3	13.4	90.0	Retest of 3-0416-3
3-0416-6	12+00	10S	5595	118.3	13.8	92.4	Retest of 3-0416-1 and 3-0416-17
3-0416-7	22+00	10S	5595	114.4	13.1	89.3	
3-0416-8	24+50	30N	5596	116.3	12.1	90.8	
3-0416-9	24+00	10S	5596	119.2	11.2	93.1	
3-0416-10	20+00	10S	5595	115.6	13.3	90.3	
3-0416-11	16+00	20N	5595	118.6	12.6	92.7	
3-0416-12	14+00	25N	5595	118.9	11.2	92.8	
3-0416-13	12+00	20S	5595	114.5	11.4	89.4	Retested
3-0416-14	10+00	30S	5595	117.3	13.0	91.6	
3-0416-15	12+00	20S	5595	118.7	11.2	92.7	Retest 3-0416-13
3-0417-1	28+50	20S	5603	112.6	13.6	88.0	Retested
3-0417-2	28+50	15S	5603	113.2	13.4	88.4	Retested
3-0417-3	4+00	20S	5600	114.3	12.3	89.3	Retested
3-0417-4	6+00	20N	5598	112.9	12.5	88.2	Retested
3-0417-5	28+50	20S	5603	115.7	13.9	90.3	Retest of 3-0417-1 and 3-0417-2
3-0417-6	14+00	20S	5596	114.6	14.8	89.5	Retested
3-0417-7	14+00	20S	5596	115.7	12.8	90.4	Retest of 3-0417-6
3-0417-8	4+00	20S	5603	111.6	14.3	87.2	Retested
3-0417-9	6+00	20N	5598	117.7	14.9	91.9	
3-0417-10	5+00	20S	5595	113.0	13.3	88.3	Retested
3-0417-11	12+00	10N	5595	110.0	14.7	85.9	Retested
3-0417-12	15+00	20S	5595	112.7	15.3	88.0	Retested
3-0417-13	11+00	10N	5595	113.6	13.0	88.8	Retested
3-0417-14	15+00	20S	5595	115.2	12.5	90.0	Retest of 3-0417-12
3-0417-15	18+00	20S	5595	109.1	12.6	85.2	Retested

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0417-16	12+00	20N	5595	111.9	14.3	87.4	Restested
3-0417-17	18+00	20S	5595	112.0	15.3	87.5	Restested
3-0418-1	12+00	15N	5595	115.4	15.1	90.1	Retest of 3-0417-11, 13 and
3-0418-2	4+00	20S	5603	118.3	13.1	92.4	Retest of 3-0417-8
3-0418-3	5+00	20S	5595	119.2	11.5	93.1	Retest of 3-0417-10
3-0418-4	23+00	20N	5597	116.2	11.1	90.7	
3-0418-5	18+00	2-S	5595	116.8	15.1	91.2	Retest of 3-0417-14 and 17
3-0418-6	27+00	20N	5600	131.0	12.9	102.3	
3-0418-7	31+00	20S	5605	134.9	11.5	105.4	
3-0418-8	33+00	10S	5609	138.8	10.7	108.4	
3-0418-9	10+50	20S	5595	137.3	12.7	107.2	
3-0418-10	17+00	20N	5595	116.2	12.6	90.8	
3-0418-11	14+00	20S	5594	115.1	13.5	89.9	
3-0418-12	20+00	20N	5594	111.1	15.7	86.8	Retested
3-0418-13	14+00	20S	5594	113.2	13.7	88.4	Retested
3-0418-14	14+00	20S	5594	118.7	12.1	92.7	Retest of 3-0418-13
3-0419-1	20+00	20N	5594	115.9	13.1	90.6	Retest of 3-0418-12
3-0419-2	8+00	0	5599	116.6	14.1	91.1	
3-0419-3	10+00	20N	5599	119.2	12.6	93.1	
3-0419-4	13+00	25S	5597	119.3	13.2	93.2	
3-0419-5	19+00	30S	5595	121.8	10.5	95.1	
3-0419-6	18+80	15S	5595	118.2	10.8	92.3	
3-0419-7	28+00	10N	5603	115.4	12.4	90.1	
3-0419-8	26+00	10S	5600	116.9	10.7	91.3	
3-0419-9	23+00	25S	5598	116.1	13.8	90.7	
3-0419-10	21+00	10S	5598	117.4	14.3	91.7	
3-0419-11	19+00	20N	5597	118.2	11.7	92.3	
3-0419-12	17+00	20S	5595	116.5	15.1	91.0	
3-0419-13	15+00	25N	5598	118.6	12.5	92.6	
3-0419-14	11+00	20S	5597	122.1	12.4	95.3	

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0419-15	13+00	20N	5598	117.8	13.9	92.0	
3-0420-1	25+00	10N	5600	117.6	10.7	91.8	
3-0420-2	20+50	30S	5599	117.3	13.6	91.6	
3-0420-3	6+00	20S	5600	116.0	13.7	90.6	
3-0420-4	11+00	15N	5598	123.1	12.4	96.1	
3-0420-4A	11+00	15N	5598	120.9	13.4	94.4	
3-0421-1	5+00	15S	5606	118.4	14.4	92.5	
3-0421-2	8+50	0	5600	113.9	14.1	89.0	Retested
3-0421-3	8+50	0	5600	117.3	13.5	91.6	Retest of 3-0421-2
3-0421-4	14+00	10S	5600	113.2	12.7	88.4	Retested
3-0421-5	16+00	0	5599	116.1	12.3	90.7	
3-0421-6	24+00	0	5602	118.9	11.8	92.9	
3-0421-7	14+00	10S	5600	115.4	14.7	90.1	Retest of 3-0421-4
3-0421-8	12+00	20N	5599	117.9	14.1	92.1	
3-0421-9	15+00	20S	5599	116.6	13.6	91.1	
3-0421-10	18+00	20N	5599	120.0	9.6	93.7	
3-0422-1	17+00	15S	5599	119.8	11.5	93.6	
3-0422-2	20+00	20S	5599	121.4	12.2	94.9	
3-0422-3	22+50	0	5600	112.8	16.6	88.1	Retested
3-0422-4	22+50	0	5600	115.6	15.6	90.3	Retest of 3-0422-3
3-0422-5	15+75	-	5600	119.7	12.4	93.5	
3-0422-6	27+00	0	5602	116.9	15.5	91.3	
3-0422-7	23+00	10S	5602	110.3	19.7	86.2	Retested
3-0422-8	5+00	20S	5602	117.3	14.8	91.6	
3-0422-9	23+00	10S	5602	117.4	15.6	91.7	Retest of 3-0422-7
3-0422-10	26+00	20S	5602	115.9	14.9	90.5	
3-0422-11	24+00	20N	5602	116.2	11.0	90.7	
3-0422-12	21+00	20S	5600	110.2	17.7	86.0	Retested
3-0422-13	21+00	20S	5600	110.6	16.0	86.4	Retested
3-0422-14	23+00	20S	5602	116.2	15.1	90.7	

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0422-15	20+00	10S	5600	120.0	12.4	93.7	
3-0422-16	21+00	20S	5600	112.5	14.4	87.9	Retested
3-0423-1	3+00	0	5603	113.4	16.5	88.6	Retested
3-0423-2	10+00	20N	5600	117.9	14.1	92.1	
3-0423-3	3+00	0	5603	116.6	13.6	91.1	Retest of 3-0423-1
3-0423-4	21+00	20S	5600	115.9	14.9	90.5	Retest of 3-0422-16, 13 and
3-0423-5	15+00	20N	5600	115.6	15.6	90.3	
3-0423-6	13+00	10S	5601	116.9	15.5	91.3	
3-0423-7	7+00	0	5603	110.3	19.7	86.2	Retested
3-0423-9	7+00	0	5603	112.8	16.6	88.1	Retested
3-0423-8	17+00	0	5601	121.4	12.2	94.9	
3-0423-10	12+00	20N	5601	116.9	15.5	91.3	
3-0423-11	7+00	0	5603	115.6	15.6	90.3	Retest of 3-0423-7 and 9
3-0423-12	24+00	20S	5600	117.9	14.1	92.1	
3-0424-1	29+00	10S	5601	110.3	19.7	86.2	N.G. (Excavated topsoil)
3-0424-2	8+00	20S	5600	116.5	15.5	91.0	
3-0424-3	12+00	20N	5601	112.8	16.6	88.1	Retested
3-0424-4	15+00	0	5595	118.8	12.5	92.8	
3-0424-5	12+00	20N	5601	116.3	16.1	90.9	
3-0424-6	5+00	10N	5603	116.5	12.8	91.0	
3-0425-1	3+50	5S	5607	113.9	17.3	88.9	Retested
3-0425-2	3+50	5S	5607	115.9	15.7	90.5	Retest of 3-0425-1
3-0425-3	8+00	10S	5607	119.1	13.3	93.0	
3-0425-4	3+00	5N	5609	114.2	15.6	89.2	Retested
3-0425-5	1+00	0	5610	115.9	15.5	90.5	
3-0425-6	3+00	5N	5610	115.3	12.7	90.1	Retest of 3-0425-4
3-0425-7	5+00	5S	5609	110.6	15.6	86.4	Retested
3-0425-8	5+00	5S	5609	112.3	16.8	87.7	Retested
3-0425-9	5+00	5S	5609	113.7	15.8	88.8	Retested
3-0425-10	15+00	10N	5603	117.8	14.4	92.0	

[1]Number Designation - 2-1030-1 -- Dike - Date - Sequence.

[2]Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0425-11	17+00	10S	5603	115.7	15.2	90.4	
3-0425-12	18+00	10N	5604	116.6	14.3	91.0	
3-0425-13	20+00	10N	5604	115.2	14.4	90.0	
3-0425-14	22+00	10S	5603	120.6	12.6	94.2	
3-0425-15	16+00	10N	5603	117.2	15.0	91.6	
3-0425-16	21+00	10S	5603	115.3	15.0	90.1	
3-0426-1	6+00	10N	5609	115.9	14.3	90.5	
3-0426-2	5+00	0	5609	116.0	15.6	90.6	Retest of 3-0425-9
3-0426-3	8+00	0	5606	118.5	14.6	92.6	
3-0426-4	7+00	10S	5606	115.2	12.6	90.0	
3-0426-5	8+00	0	5608	119.7	11.1	93.5	
3-0426-6	10+00	5S	5605	120.8	12.5	94.3	
3-0426-7	10+00	0	5606	117.4	12.6	91.7	
3-0426-8	13+00	10N	5606	119.7	14.6	93.5	
3-0426-9	16+00	10S	5606	119.0	14.1	93.0	
3-0426-10	19+00	0	5605	117.8	15.1	92.0	
3-0426-11	17+00	10S	5606	118.5	13.5	92.5	
3-0426-12	14+00	10N	5606	116.8	13.5	91.2	
3-0426-13	15+00	10N	5606	118.7	14.6	92.7	
3-0426-14	18+00	10S	5606	116.8	15.2	91.2	
3-0427-1	7+50	10S	5609	119.3	11.5	93.2	
3-0427-2	10+00	5N	5607	117.4	11.2	91.7	
3-0427-3	12+00	5S	5607	112.5	12.3	87.9	Retested
3-0427-4	12+00	5S	5607	116.4	12.4	90.9	Retest of 3-0427-4
3-0427-5	14+00	5S	5607	117.4	13.9	91.7	
3-0427-6	18+00	10N	5608	118.7	12.3	92.7	
3-0427-7	13+00	0	5609	116.8	10.7	91.3	
3-0427-8	10+00	5S	5610	119.6	8.9	93.5	
3-0427-9	17+00	10S	5608	117.8	13.7	92.0	
3-0427-10	19+00	0	5606	116.7	15.8	91.1	

(1)Number Designation - 2-1030-1 -- Dike - Date - Sequence.

(2)Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0427-11	21+00	10N	5605	119.4	12.9	93.3	
3-0427-12	26+00	10S	5606	117.3	15.8	91.6	
3-0427-13	24+00	10S	5606	114.3	15.4	89.3	Retested
3-0427-14	22+00	10N	5605	115.9	14.5	90.5	
3-0427-15	24+00	10S	5606	115.8	13.7	90.4	Retest of 3-0427-13
3-0427-16	25+00	10S	5606	118.3	14.2	92.4	
3-0427-17	20+00	10N	5606	115.8	14.6	90.5	
3-0428-1	21+00	10S	5607	117.6	14.1	91.9	
3-0428-2	16+00	10N	5608	117.5	13.1	91.8	
3-0428-3	14+00	5S	5610	114.3	14.1	89.3	Retested
3-0428-4	14+00	5S	5610	119.5	8.6	93.4	Retest of 3-0428-3
3-0428-5	18+00	10S	5608	118.3	10.8	92.4	
3-0428-6	12+00	0	5610	115.2	13.9	90.0	
3-0428-7	19+00	10N	5610	115.2	10.8	90.0	
3-0428-8	22+00	5S	5607	118.7	13.7	92.7	
3-0428-9	24+00	0	5606	120.4	12.3	94.0	
3-0428-10	26+00	5N	5605	117.3	12.0	91.6	
3-0428-11	28+00	10S	5605	109.5	13.5	85.5	Retested
3-0428-12	28+00	10S	5605	115.3	14.6	90.0	Retest of 3-0428-11
3-0428-13	23+00	10S	5607	117.9	12.8	92.1	
3-0428-14	20+00	10N	5606	118.8	12.5	92.8	
3-0428-15	27+00	10N	5605	117.2	11.7	91.5	
3-0429-1	29+00	5N	5608	117.2	12.4	91.5	
3-10429-2	24+00	5S	5608	111.3	14.9	86.9	Retested
3-0429-3	22+00	10S	5608	115.3	14.1	90.0	
3-0429-4	24+00	10S	5608	112.9	13.8	88.2	Retest of 3-0429-2
3-0429-5	24+00	10S	5608	116.8	12.6	91.2	Retest of 3-0429-4
3-0429-6	26+00	10S	5608	116.0	14.7	90.0	
3-0430-1	27+00	5N	5608	118.3	10.2	92.4	
3-0430-2	26+00	5S	5610	114.0	13.8	89.0	Retested

[1]Number Designation - 2-1030-1 -- Dike - Date - Sequence.

[2]Optimum Density is 128.0 pcf.

TABLE B.4
(Continued)

TEST[1] NUMBER	STATION	OFFSET FROM CENTERLINE	APPROXIMATE ELEVATION (FT)	DRY DENSITY (LBS/CU.FT)	MOISTURE CONTENT (%)	PERCENT[2] OF MAXIMUM DRY DENSITY (%)	COMMENTS
3-0430-3	21+00	5S	5608	118.0	11.5	92.2	
3-0430-4	26+00	5S	5610	117.8	13.4	92.0	Retest of 3-0430-2
3-0430-5	26+80	5S	5610	118.7	12.6	92.7	
3-0430-6	27+00	5N	5610	120.4	13.0	94.1	
3-0430-7	29+00	0	5610	118.3	13.4	92.4	
3-0430-8	31+50	5S	5610	116.5	13.4	91.0	
3-0430-9	33+00	0	5610	117.5	11.3	91.8	
3-0430-10	30+00	5N	5610	119.0	13.6	93.0	

[1]Number Designation - 2-1030-1 -- Dike - Date - Sequence.

[2]Optimum Density is 128.0 pcf.

APPENDIX C

PVC LINER TEST DATA CELL 2

BFGoodrich

The BFGoodrich Company
Engineered Products Group
500 South Main Street
Akron, Ohio 44318

Address Reply To:
Dept. 1914
Bldg. WHB-3

RECEIVED

July 10, 1980

Mr. Harold Roberts
Energy Fuels Nuclear, Inc.
3 Park Central, Suite 900
Denver, CO 80202

Dear Mr. Roberts:

RE: LABORATORY TEST REPORTS/BLANDING, UTAH PROJECT

Please find the enclosed lab testing reports for the 30-mil PVC lining material being installed at the Blanding, Utah site. The enclosed reports include: (1) Factory Seam Tests for blankets 061 thru 216, (2) Field Seam Tests for all blankets installed in Cell II, and (3) Quality Control Tests for 2,250,000 sq. ft. of calendered roll goods.

Per our conversations in late May 1980, 148 blankets were required to line Cell II and 10 blankets remain on site for installation in Cell I. The original estimate for lining requirements in Cell I was 2,407,000 sq. ft. or 119 blankets. In total, based on this estimate, your order will require 5,408,500 sq. ft. or 121,500 sq. ft. more than the original amount on P.O. No. B-1329.

If you are in agreement with the above, please make arrangements to have a change order issued to us at your earliest convenience. If you have any questions, please contact me. Thank you.

Very truly yours,

Creighton T. Marcott
Product Specialist
Environmental Products

kh
Enclosure
cc: K. J. Gray
J. E. Simbeck
R. Ward

BFGoodrich

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 271181 Representing 271169-271200
Blanket Number: 005

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 $\pm$.003	.030-.031	Gauge
Specific Gravity		-	1.26	
Tensile Strength, psi	L	2300 Min.	2615	ASTM D882
	T	2300 Min.	3545	
% Modulus, psi	L	1350 Average	1332	ASTM D882
	T	1350 Average	1215	
Ultimate Elongation, %	L	300 Min.	480	ASTM D882
	T	300 Min.	530	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D882
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	431	ASTM D1004
	T	300 Min.	394	
Water Extraction, %		.30 Max.	+0.14	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.67	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	2 Failures	ASTM D1790
Hardness, Shore A		94 Average	92	ASTM D2240
Dimensional Stability, %	L	-	-2.8	ASTM D1204 (212°F/1 Hr.)
	T	-	+1.3	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of February 1980.

Notary Public

BFGoodrich

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 271265 Representing 271243-271284
Blanket Number: 010

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0296-.0302	Gauge
Specific Gravity		-	1.27	
Tensile Strength, psi	L	2300 Min.	2715	ASTM D882
	T	2300 Min.	2635	
100% Modulus, psi	L	1350 Average	1330	ASTM D882
	T	1350 Average	1240	
Ultimate Elongation, %	L	300 Min.	525	ASTM D882
	T	300 Min.	560	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	418	ASTM D1004
	T	300 Min.	428	
Water Extraction, %		.30 Max.	+0.09	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.62	ASTM D1203
Impact Cold Crack, -20 °F		5 Failures/10 Max.	3 Failures	ASTM D1790
Hardness, Shore A		94 Average	93	ASTM D2240
Dimensional Stability, %	L	-	-2.4	ASTM D1204 (212°F/1 Hr.)
	T	-	+1.1	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of February 1980.

Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth
My Comm. Expires Aug. 31, 1982

BFGoodrich

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 271223 Representing 271201-271242
Blanket Number: 027

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0307-.0312	Gauge
Specific Gravity		-	1.25	
Tensile Strength, psi	L	2300 Min.	2595	ASTM D882
	T	2300 Min.	2490	
100% Modulus, psi	L	1350 Average	1285	ASTM D882
	T	1350 Average	1210	
Ultimate Elongation, %	L	300 Min.	505	ASTM D882
	T	300 Min.	550	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	413	ASTM D1004
	T	300 Min.	421	
Water Extraction, %		.30 Max.	+0.08	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.58	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	2 Failures	ASTM D1790
Hardness, Shore A		94 Average	92	ASTM D2240
Dimensional Stability, %	L	-	-2.2	ASTM D1204 (212°F/1 Hr.)
	T	-	+1.0	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of February 1980.

Notary Public in and for said County

Mary M. Farnsworth

BFGoodrich

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 271307 Representing 271285-271326
Blanket Number: 047

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ± .003	.0309-.0313	Gauge
Specific Gravity		-	1.26	
Tensile Strength, psi	L	2300 Min.	2915	ASTM D882
	T	2300 Min.	2830	
100% Modulus, psi	L	1350 Average	1415	ASTM D882
	T	1350 Average	1340	
Ultimate Elongation, %	L	300 Min.	550	ASTM D882
	T	300 Min.	585	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	411	ASTM D1004
	T	300 Min.	429	
Water Extraction, %		.30 Max.	+0.09	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.66	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	5 Failures	ASTM D1790
Hardness, Shore A		94 Average	93	ASTM D2240
Dimensional Stability, %	L	-	-2.0	ASTM D1204 (212°F/1 Hr.)
	T	-	+1.0	

Thomas R. Ward
Sr. Product Engineer

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Mary M. Farnsworth

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373-6611

February 22, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 271349 Representing 271327-271368
Blanket Number: 065

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 +.003 -.003	.0296-.0304	Gauge
Specific Gravity		-	1.27	
Tensile Strength, psi	L	2300 Min.	2785	ASTM D882
	T	2300 Min.	2785	
100% Modulus, psi	L	1350 Average	1445	ASTM D882
	T	1350 Average	1345	
Ultimate Elongation, %	L	300 Min.	475	ASTM D882
	T	300 Min.	565	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	425	ASTM D1004
	T	300 Min.	375	
Water Extraction, %		.30 Max.	+0.10	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.69	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	4 Failures	ASTM D1790
Hardness, Shore A		94 Average	93	ASTM D2240
Dimensional Stability, %	L	-	-2.4	ASTM D1204 (212°F/1 Hr.)
	T	-	+1.0	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 22nd day of February 1980.

Notary Public in and for said County

Mary M. Farnsworth

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373-6611

April 30, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 271391 Representing 271369-271406 & 201767-201770
Blanket Number: 035

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ± .003	.0280-.0292	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2857	ASTM D882
	T	2300 Min.	2581	
100% Modulus, psi	L	1350 Average	1354	ASTM D882
	T	1350 Average	1104	
Ultimate Elongation, %	L	300 Min.	475	ASTM D882
	T	300 Min.	535	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	351	ASTM D1004
	T	300 Min.	369	
Water Extraction, %		.30 Max.	+0.14	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.55	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	0 Failures	ASTM D1790
Hardness, Shore A		94 Average	91	ASTM D2240
Dimensional Stability, %	L		-2.6	ASTM D1204 (212°F/1 Hr.)
	T		+0.9	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 30th day of April, 1980.

Notary Public in and for said County

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Oak Grove
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373-6611

April 30, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3530-92-4 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 263412 Representing 263393-263414
Blanket Number: 067

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ± .003	.0302-.0306	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2818	ASTM D882
	T	2300 Min.	2623	
100% Modulus, psi	L	1350 Average	1437	ASTM D882
	T	1350 Average	1614	
Ultimate Elongation, %	L	300 Min.	525	ASTM D882
	T	300 Min.	370	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	415	ASTM D1004
	T	300 Min.	422	
Water Extraction, %		.30 Max.	+0.14	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.37	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	1 Failure	ASTM D1790
Hardness, Shore A		94 Average	94	ASTM D2240
Dimensional Stability, %	L		-4.4	ASTM D1204 (212°F/1 Hr.)
	T		+1.8	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 30th day of April, 1980.

Mary M. Hammond
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April 30, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 282917 Representing 282891-282932
Blanket Number: 073

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ± .003	.0278-.0294	Gauge
Specific Gravity			1.27	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	3188	ASTM D882
	T	2300 Min.	2968	
100% Modulus, psi	L	1350 Average	1520	ASTM D882
	T	1350 Average	1400	
Ultimate Elongation, %	L	300 Min.	483	ASTM D882
	T	300 Min.	487	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	395	ASTM D1004
	T	300 Min.	412	
Water Extraction, %		.30 Max.	+0.15	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.48	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	2 Failures	ASTM D1790
Hardness, Shore A		94 Average	94	ASTM D2240
Dimensional Stability, %	L		-1.6	ASTM D1204 (212°F/1 Hr.)
	T		+0.7	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 30th day of April, 1980.

Mary M. Farnsworth

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373-6611

April 30, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 284049 Representing 282933-282938 & 284036-284071
Blanket Number: 94

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 $\pm$.003	.0299-.0306	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2836	ASTM D882
	T	2300 Min.	2715	
100% Modulus, psi	L	1350 Average	1285	ASTM D882
	T	1350 Average	1165	
Ultimate Elongation, %	L	300 Min.	560	ASTM D882
	T	300 Min.	600	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	423	ASTM D1004
	T	300 Min.	396	
Water Extraction, %		.30 Max.	+0.13	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.67	ASTM D1203
Low Temp. Impact Cold Crack, -20°F		5 Failures/10 Max.	0 Failures	ASTM D1790
Hardness, Shore A		94 Average	91	ASTM D2240
Dimensional Stability, %	L		-2.8	ASTM D1204 (212°F/1 Hr.)
	T		+1.1	

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 30th day of April, 1980.

Mary M. Farnsworth
Notary Public in and for said County

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373-6611

April 30, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 282857 Representing 201771-201772 & 282851-282890
Blanket Number: 109

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0287-.0295	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2822	ASTM D882
	T	2300 Min.	2960	
100% Modulus, psi	L	1350 Average	1454	ASTM D882
	T	1350 Average	1356	
Ultimate Elongation, %	L	300 Min.	435	ASTM D882
	T	300 Min.	500	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	412	ASTM D1004
	T	300 Min.	393	
Water Extraction, %		.30 Max.	+0.15	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.69	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	5 Failures	ASTM D1790
Hardness, Shore A		94 Average	94	ASTM D2240
Dimensional Stability, %	L		-1.8	ASTM D1204 (212°F/1 Hr.)
	T		+0.7	

Thomas R. Ward
Sr. Product Engineer

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Mary P. Farnsworth
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373-6611

May 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 281831 representing 281822-281850 and 286279-286290
Blanket Number: 145 and 146

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ± .003	.0295-.0306	Gauge
Specific Gravity			1.25	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2841	ASTM D882
	L	2300 Min.	2461	
100% Modulus, psi	L	1350 Average	1231	ASTM D882
	T	1350 Average	1147	
Ultimate Elongation, %	L	300 Min.	590	ASTM D882
	T	300 Min.	580	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	390	ASTM D1004
	T	300 Min.	391	
Water Extraction, %		.30 Max.	+0.17	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.53	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	2 Failures	ASTM D1790
Hardness, Shore A		94 Average	93	ASTM D2240
Dimensional Stability, %	L		-2.0	ASTM D1204 (212°F/1 Hr.)
	T		+1.0	

BFGoodrich Company
Fabricated Polymer Products
Thomas R. Ward
Thomas R. Ward
Sr. Product Engineer

E STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of May 1980.

Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth

BF

The BFGoodrich Company
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Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

May 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 286303 representing 286291-286332
Blanket Number: 174

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0306-.0310	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2797	ASTM D882
	T	2300 Min.	2489	
10% Modulus, psi	L	1350 Average	1058	ASTM D882
	T	1350 Average	989	
Ultimate Elongation, %	L	300 Min.	635	ASTM D882
	T	300 Min.	617	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	391	ASTM D1004
	T	300 Min.	338	
Water Extraction, %		.30 Max.	+0.16	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.62	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	0 Failures	ASTM D1790
Hardness, Shore A		94 Average	91	ASTM D2240
Dimensional Stability, %	L		-2.5	ASTM D1204 (212°F/1 Hr.)
	T		+1.3	

BFGoodrich Company
Fabricated Polymer Products

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

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Mary M. Fennewald
Notary Public in and for said County

BF

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Marietta, Ohio 45750
373-6611

May 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet
Customer : Energy Fuels Nuclear
Roll Number : 281789 representing 281780-281821
Blanket Number: 194 and 195

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0308-.0317	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2951	ASTM D882
	T	2300 Min.	2538	
100% Modulus, psi	L	1350 Average	1323	ASTM D882
	T	1350 Average	1242	
Ultimate Elongation, %	L	300 Min.	607	ASTM D882
	T	300 Min.	553	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	385	ASTM D1004
	T	300 Min.	408	
Water Extraction, %		.30 Max.	+0.18	ASTM D1239 (24 Hrs. at 23°C
Volatility, %		.70 Max.	0.66	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	5 Failures	ASTM D1790
Hardness, Shore A		94 Average	94	ASTM D2240
Dimensional Stability, %	L		-1.5	ASTM D1204 (212°F/1 Hr.)
	T		+0.5	

BFGoodrich Company
Fabricated Polymer Products
Thomas R Ward
Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of May 1980.

Mary M Farnworth

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May 19, 1980

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 286344 representing 286333-286349 and 287456-287480
Blanket Number: 200

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0304-.0307	Gauge
Specific Gravity			1.25	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2657	ASTM D882
	T	2300 Min.	2565	
100% Modulus, psi	L	1350 Average	1133	ASTM D882
	T	1350 Average	1065	
Ultimate Elongation, %	L	300 Min.	580	ASTM D882
	T	300 Min.	628	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	359	ASTM D1004
	T	300 Min.	383	
Water Extraction, %		.30 Max.	+0.16	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.54	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	0 Failures	ASTM D1790
Hardness, Shore A		94 Average	94	ASTM D2240
Dimensional Stability, %	L		-2.0	ASTM D1204 (212°F/1 Hr.)
	T		+0.5	

BFGoodrich Company
Fabricated Polymer Products

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of May 1980.

Mary M. Farnsworth

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Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 19, 1980

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets (135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength[1]	Seam Strength[1]	Percentage
001-012	96.5	77.0	
	96.0	73.0	
	87.0	76.5	
	92.5	75.5	
	95.0	77.0	
Average	93.4	75.8	81.2
013-024	94.5	77.0	
	89.5	77.0	
	91.0	78.5	
	87.5	78.0	
	87.5	77.5	
Average	90.0	77.6	86.2
025-036	94.5	76.0	
	94.0	76.5	
	95.0	76.5	
	89.0	78.0	
	90.5	76.0	
Average	92.6	76.6	82.7
037-048	88.0	70.0	
	87.0	73.0	
	89.5	72.5	
	89.0	74.0	
	90.5	73.0	
Average	88.8	72.5	81.6

[1] Testing in accordance with ASTM D882

(continued)

BFGoodrich

The BFGoodrich Company
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Oak Grove
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373-6611

February 19, 1980

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets (135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength[1]	Seam Strength[1]	Percentage
049-060	84.4	76.2	
	93.0	78.0	
	90.5	78.0	
	90.0	71.8	
	89.0	78.4	
Average	85.6	76.5	85.6

[1] Testing in accordance with ASTM D882

BFGoodrich Company
Fabricated Polymer Products

Thomas Richard Ward

TRW:mbf

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of February 1980.

Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth
My Comm. Expires August 31, 1982

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

April 30, 1982

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets (135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength(#)	Seam Strength(#)	Percentage
061-072	68.0	54.8	
	67.5	53.0	
	68.5	52.4	
	68.0	60.4	
	69.8	53.6	
Average	68.4	54.8	80.1
073-084	79.0	67.2	
	83.8	67.0	
	80.2	63.2	
	72.4	61.4	
	80.0	63.0	
Average	79.1	64.4	81.4
085-096	82.8	68.4	
	84.2	68.5	
	85.8	68.8	
	80.6	69.0	
	83.6	70.0	
Average	83.4	68.9	82.6
097-108	85.0	65.2	
	86.2	65.0	
	83.0	70.0	
	84.5	68.2	
	78.8	67.0	
Average	83.5	67.1	80.4

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April 30, 1980

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets (135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength(#)	Seam Strength(#)	Percentage
109-120	79.8	61.8	
	81.6	68.2	
	83.0	65.0	
	79.2	67.5	
	83.8	68.2	
Average	81.5	66.1	81.1
121-132	79.0	64.5	
	73.8	60.0	
	71.8	61.8	
	76.5	61.0	
	78.5	60.5	
Average	75.9	61.6	81.2
133-144	76.2	64.6	
	78.2	66.0	
	78.8	67.6	
	77.8	64.2	
	78.0	68.8	
Average	78.0	66.2	84.9

Thomas R. Ward
Sr. Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 30th day of April, 1980.

Notary Public in and for said County

BF

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

May 30, 1980

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets (135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength(#)	Seam Strength(#)	Percentage
145-156	72.2	60.0	
	70.2	64.0	
	72.4	63.8	
	70.0	60.4	
	70.0	61.8	
Average	71.0	62.0	87.3
157-168	75.8	63.5	
	72.0	60.2	
	76.5	60.5	
	77.0	59.2	
	76.0	60.2	
Average	75.5	60.7	80.4
169-180	76.0	65.0	
	78.5	63.2	
	80.0	65.8	
	79.0	64.2	
	71.5	60.0	
Average	77.0	63.6	82.6
181-192	69.4	62.0	
	78.5	58.8	
	73.5	59.0	
	76.2	61.8	
	77.2	59.8	
Average	75.0	60.3	80.4

(continued)

BF

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

May 30, 1980

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets (135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength(#)	Seam Strength(#)	Percentage
193-204	75.2	60.0	
	74.8	61.8	
	73.0	59.8	
	70.2	60.2	
	76.2	60.5	
Average	73.9	60.5	81.9
205-216	79.8	63.8	
	81.0	64.0	
	77.5	60.5	
	80.0	69.5	
	77.0	67.0	
Average	79.1	65.0	82.2

BFGoodrich Company
Fabricated Polymer Products

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 30th day of May 1980.

Notary Public in and for said County

Mary M. Farnsworth
My Comm. Expires August 31, 1982

BF

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

May 19, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Production Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
A	80.2	73.0	
	80.0	73.0	
	78.2	72.2	
	78.0	69.5	
	79.0	73.8	
Average	79.1	72.3	91.4
B	74.0	65.0	
	77.0	65.0	
	77.5	61.8	
	73.8	64.0	
	79.0	64.2	
Average	76.3	64.0	83.9
C	79.5	69.0	
	75.0	62.5	
	77.8	60.5	
	75.8	61.0	
	76.0	64.0	
Average	76.8	63.4	82.6

(continued)

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

May 19, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
D	77.0	58.0	
	70.5	65.8	
	69.5	67.8	
	72.5	61.0	
	68.0	64.0	
Average	71.5	63.3	88.5

BFGoodrich Company
Fabricated Polymer Products

Thomas R. Ward

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 19th day of May 1980.

Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth
My Comm. Expires August 31, 1982

BF

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

June 4, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
E	87.8	67.5	
	89.0	74.0	
	86.0	72.0	
	87.0	70.2	
	86.0	68.0	
Average	87.2	70.3	80.6
F	75.0	70.0	
	77.0	75.0	
	76.8	76.2	
	76.8	72.0	
	74.8	78.5	
Average	76.1	74.3	97.6
G	89.0	69.5	
	82.0	71.5	
	83.8	71.5	
	82.2	76.0	
	87.0	76.0	
Average	84.9	72.9	85.9
H	82.0	73.2	
	81.8	72.8	
	75.8	74.6	
	79.5	73.4	
	81.0	72.2	
Average	79.9	73.2	91.6
I	83.0	64.5	
	86.0	66.0	
	88.0	74.5	
	85.5	72.0	
	87.5	67.5	
Average	86.0	68.9	80.1

(continued)

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

June 4, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-4
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample		Material Strength(#)	Seam Strength(#)	Percentage
J		78.0	68.5	
		75.0	68.5	
		79.5	72.5	
		83.0	73.5	
		84.0	76.0	
	Average	79.9	71.8	89.9
K		81.0	69.5	
		85.0	78.0	
		82.5	75.0	
		85.0	77.5	
		83.5	77.0	
	Average	83.4	75.4	90.4
L		79.5	67.5	
		80.0	68.0	
		78.0	73.0	
		73.5	66.0	
		80.0	67.0	
	Average	78.2	68.4	87.3
M		77.0	65.5	
		74.0	67.0	
		72.0	65.5	
		75.0	63.0	
		73.0	67.0	
	Average	74.2	65.6	88.4
N		70.0	73.0	
		77.5	71.0	
		75.5	71.5	
		75.0	72.0	
		75.5	71.5	
	Average	74.7	71.8	96.1

(continued)

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

June 4, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-4
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample		Material Strength(#)	Seam Strength(#)	Percentage
O		86.5	72.5	
		72.0	72.5	
		81.0	73.0	
		78.0	67.5	
		87.0	76.5	
	Average	80.9	72.4	89.5
P		82.0	74.0	
		79.5	75.0	
		83.0	75.5	
		81.0	75.5	
		76.5	75.0	
	Average	80.4	75.0	93.3
Q		78.0	74.0	
		83.0	75.5	
		79.5	77.8	
		71.0	73.0	
		84.0	74.5	
	Average	79.1	75.0	94.8
R		85.0	71.8	
		72.5	73.5	
		78.0	74.0	
		85.0	74.0	
		82.0	73.5	
	Average	80.5	72.9	90.6

BFGoodrich Company
Fabricated Polymer Products

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 4th day of June 1980.

BF

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

June 16, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
S	80.5	70.2	
	86.0	78.2	
	90.0	75.5	
	85.5	76.5	
	95.5	76.0	
Average	87.5	75.3	86.0
T	90.5	75.0	
	90.0	69.5	
	83.5	73.0	
	88.5	71.5	
	92.0	71.0	
Average	88.8	72.0	81.1
U	88.5	76.2	
	87.8	75.8	
	86.0	71.0	
	91.5	70.2	
	88.5	73.5	
Average	88.5	73.3	82.8
V	81.5	75.0	
	90.0	73.8	
	86.0	72.0	
	83.8	76.2	
	84.0	74.5	
Average	85.7	74.3	86.6
W	79.5	70.0	
	82.0	74.0	
	87.5	72.0	
	84.0	72.0	
	83.0	71.0	
Average	83.2	71.8	86.3

BF

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Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

June 16, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
X	91.5	72.0	
	83.0	71.0	
	83.0	72.0	
	80.0	72.5	
	82.0	72.0	
Average	83.9	71.9	85.7
Y	85.8	69.0	
	91.8	72.0	
	92.0	73.5	
	84.5	72.5	
	87.5	70.5	
Average	88.3	71.5	81.0
Z	91.8	78.2	
	89.5	72.5	
	84.0	75.2	
	91.5	78.0	
	91.0	80.4	
Average	89.6	76.9	85.5
AA	87.5	68.0	
	86.2	64.6	
	84.0	77.8	
	86.0	77.2	
	91.0	75.6	
Average	86.9	72.6	83.5
BB	92.0	74.5	
	90.0	72.6	
	92.5	77.2	
	86.0	77.5	
	88.0	80.0	
Average	89.7	76.4	85.2

BF

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Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

June 16, 1980

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
CC	88.8	78.8	
	84.5	78.0	
	87.5	77.0	
	91.5	76.6	
	91.5	73.2	
Average	88.8	76.7	86.4
DD	82.0	69.0	
	87.0	72.0	
	86.0	70.0	
	87.0	72.0	
	86.0	71.0	
Average	85.6	70.8	82.7
EE	82.0	73.5	
	90.5	74.0	
	84.5	71.8	
	81.5	75.8	
	76.0	80.5	
Average	82.9	75.1	90.6
FF	81.0	79.5	
	83.0	79.0	
	85.8	72.0	
	86.5	73.0	
	80.5	74.0	
Average	83.4	75.5	90.5

BFGoodrich Company
Fabricated Polymer Products

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 16th day of June 1980.

Notary Public in and for said County

APPENDIX D

PVC LINER TEST DATA CELL 1-I

energy fuels nuclear, inc.
executive offices • suite 900 • three park central • 1515 arapahoe • denver, colorado 80202 • (303) 623-8317

September 22, 1981

Mr. Cory Oldweiler
Assistant Project Engineer
D'Appolonia Consulting Engineers
7400 South Alton Court
Englewood, Colorado 80112

Dear Cory:

I am enclosing the Factory Seam Tests, Quality Control Tests and Field Seam Test results for the PVC liner material installed in Cell 1-I, White Mesa Project. These results are to be included in the final Construction Report.

The drawings showing the final as-built contours of Cell 1-I should be available within two weeks.

If you have any questions, please call me.

Very truly yours,

Harold R. Roberts

H. R. Roberts
Senior Project Engineer

HRR/jf

Enc.

cc: MDV, DKS, CEB

The BFGoodrich Company
Engineered Products Group
500 South Main Street
Akron, Ohio 44318

Address Reply To:
Dept. 1914
Bldg. WHB-3

February 17, 1981

Mr. Harold Roberts
Energy Fuels Nuclear, Inc.
3 Park Central - Suite 900
Denver, CO 80202

Dear Mr. Roberts:

RE: LABORATORY TEST REPORTS - BLANDING, UTAH PROJECT

Please find enclosed the lab testing reports for the 30-mil PVC lining material for installation at the Blanding, Utah site. The enclosed reports include: 1) Factory Seam Tests for blankets 217 through 278 and, 2) Quality Control Tests for 1,750,000 ft.^{2} of calendered roll goods.

Please advise Jon Simbeck or me on a time frame for installing the balance of approximately 2.4 million ft.^{2} for this project.

Sincerely yours,

L. N. Cifoni
Product Specialist
Environmental Products

kh
Enclosure
cc: J. E. Lang
C. T. Marcott
J. E. Simbeck

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 281739 Representing 281736-281779
Blanket Number: 121

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0304-.0310	Gauge
Specific Gravity		-	1.25	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2708	ASTM D882
	T	2300 Min.	2497	
100% Modulus, psi	L	1350 Average	1129	ASTM D882
	T	1350 Average	1065	
Ultimate Elongation, %	L	300 Min.	600	ASTM D882
	T	300 Min.	609	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	365	ASTM D1004
	T	300 Min.	340	
Water Extraction, %		.30 Max.	+0.17	ASTM D1239 (24 Hrs.at 23°C)
Volatility, %		.70 Max.	0.69	ASTM D1203
Impact Cold Crack, -20°F		5 failures/10 Max.	0 failures	ASTM D1790
Hardness, Shore A		94 Average	92	ASTM D2240
Dimensional Stability, %	L		-2.4	ASTM D1204 (212°F/1 Hr.)
	T		+0.3	

Thomas R. Ward
Senior Product Engineer

STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 4th day of February 1981.

Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth
My Comm Expires August 31, 1982

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 284091 Representing 284072-284113
Blanket Number: 239

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.030	.0300-.0312	Gauge
Specific Gravity			1.25	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2722	ASTM D882
	T	2300 Min.	2508	
100% Modulus, psi	L	1350 Average	1185	ASTM D882
	T	1350 Average	1113	
Ultimate Elongation, %	L	300 Min.	548	ASTM D882
	T	300 Min.	552	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	377	ASTM D1004
	T	300 Min.	368	
Water Extraction, %		.30 Max.	+0.20	ASTM D1239 (24 Hrs.at 23°C)
Volatility, %		.70 Max.	0.66	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	1 failure	ASTM D1790
Hardness, Shore A		94 Average	90	ASTM D2240
Dimensional Stability, %	L		-3.0	ASTM D1204
	T		+1.1	(212°F/1 Hr.)

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

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Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth
My Comm.Expires August 31, 1982

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The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 285138 Representing 284114-284135 and 285138-285157
Blanket Number: 171

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0298-.0311	Gauge
Specific Gravity			1.24	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2736	ASTM D882
	T	2300 Min.	2634	
100% Modulus, psi	L	1350 Average	1221	ASTM D882
	T	1350 Average	1139	
Ultimate Elongation, %	L	300 Min.	540	ASTM D882
	T	300 Min.	590	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	366	ASTM D1004
	T	300 Min.	387	
Water Extraction, %		.30 Max.	+0.18	ASTM D1239 (24 Hrs. at 23°C)
Volatility, %		.70 Max.	0.68	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	0 Failures	ASTM D1790
Hardness, Shore A		94 Average	90	ASTM D2240
Dimensional Stability, %	L		-2.5	ASTM D1204
			+1.7	(212°F/1 Hr.)

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

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Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 285175 Representing 285158-285190 and 281727-281735
Blanket Number: 103

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0288-.0295	Gauge
Specific Gravity			1.24	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2830	ASTM D882
	T	2300 Min.	2896	
100% Modulus, psi	L	1350 Average	1309	ASTM D882
	T	1350 Average	1359	
Ultimate Elongation, %	L	300 Min.	530	ASTM D882
	T	300 Min.	555	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	395	ASTM D1004
	T	300 Min.	397	
Water Extraction, %		.30 Max.	+0.25	ASTM D1239 (24 Hrs.at 23°C
Volatility, %		.70 Max.	0.63	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	0 Failures	ASTM D1790
Hardness, Shore A		94 Average	93	ASTM D2240
Dimensional Stability, %	L		-2.2	ASTM D1204 (212°F/1 Hr.)
	T		+0.8	

Thomas R. Ward
Senior Product Engineer

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Mary M. Farnsworth
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Mary M. Farnsworth
My Comm.Expires August 31, 1982

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 170012 Representing 169988-170029
Blanket Number: 215 and 216

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0300-.0311	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2947	ASTM D882
	T	2300 Min.	2650	
100% Modulus, psi	L	1350 Average	1262	ASTM D882
	T	1350 Average	1175	
Ultimate Elongation, %	L	300 Min.	640	ASTM D882
	T	300 Min.	605	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	393	ASTM D1004
	T	300 Min.	400	
Water Extraction, %		.30 Max.	+0.18	ASTM D1239 (24 Hrs.at 23°C)
Volatility		.70 Max.	0.52	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	0 Failures	ASTM D1790
Hardness, Shore A		94 Average	92	ASTM D2240
Dimensional Stability, %	L		-2.6	ASTM D1204
	T		+1.2	(212°F/1 Hr.)

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

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Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth
My Comm.Expires August 31, 1982

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The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 170053 Representing 170030-170071
Blanket Number: 257

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0303-.0310	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2840	ASTM D882
	T	2300 Min.	2679	
100% Modulus, psi	L	1350 Average	1294	ASTM D882
	T	1350 Average	1213	
Ultimate Elongation, %	L	300 Min.	585	ASTM D882
	T	300 Min.	590	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	399	ASTM D1004
	T	300 Min.	410	
Water Extraction, %		.30 Max.	+0.19	ASTM D1239 (24 Hrs.at 23°C)
Volatility, %		.70 Max.	0.52	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	2 Failures	ASTM D1790
Hardness, Shore A		94 Average	93	ASTM D2240
Dimensional Stability, %	L		-1.5	ASTM D1204 (212°F/1 Hr.)
	T		+0.6	

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:

Subscribed in my presence and sworn to before me this 4th day of February 1981.

Mary M. Farnsworth
Notary Public in and for said County

Mary M. Farnsworth
My Comm.Expires August 31, 1982

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 178181 Representing 170072-170077 and 178156-178191
Blanket Number: 264 & 265

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0303-.0317	Gauge
Specific Gravity			1.27	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2622	ASTM D882
	T	2300 Min.	2483	
100% Modulus, psi	L	1350 Average	1066	ASTM D882
	T	1350 Average	1038	
Ultimate Elongation, %	L	300 Min.	555	ASTM D882
	T	300 Min.	575	
Elmendorf Tear, bm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	337	ASTM D1004
	T	300 Min.	368	
Water Extraction, %		.30 Max.	+0.21	ASTM D1239 (24 Hrs.at 23°C)
Volatility, %		.70 Max.	0.70	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	1 Failure	ASTM D1790
Hardness, Shore A		94 Average	85	ASTM D2240
Dimensional Stability, %	L		-1.8	ASTM D1204
	T		+0.7	(212°F/1 Hr.)

Thomas R. Ward
Senior Product Engineer

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Mary M. Farnsworth
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BF

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

Product Number: 64-03-3730-92-3 (30 Mil PVC Sheet)
Customer : Energy Fuels Nuclear
Roll Number : 178222 Representing 178192-178233
Blanket Number: 219

Physical Property		Requirement	Test Results	Test Method
Thickness, Inches		.030 ±.003	.0292-.0300	Gauge
Specific Gravity			1.26	BFG Method 8-012
Tensile Strength, psi	L	2300 Min.	2784	ASTM D882
	T	2300 Min.	2680	
100% Modulus, psi	L	1350 Average	1243	ASTM D882
	T	1350 Average	1187	
Ultimate Elongation, %	L	300 Min.	565	ASTM D882
	T	300 Min.	635	
Elmendorf Tear, gm/mil	L	175 Min.	210+	ASTM D689
	T	175 Min.	210+	
Graves Tear, #/Inch	L	300 Min.	365	ASTM D1004
	T	300 Min.	386	
Water Extraction, %		.30 Max.	+0.19	ASTM D1239 (24 Hrs.at 23°C)
Volatility, %		.70 Max.	0.66	ASTM D1203
Impact Cold Crack, -20°F		5 Failures/10 Max.	1 Failure	ASTM D1790
Hardness, Shore A		94 Average	92	ASTM D2240
Dimensional Stability, %	L		-1.4	ASTM D1204 (212°F/1 Hr.)
	T		+0.4	

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Mary M. Farnsworth
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The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets(135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength(#)	Seam Strength(#)	Percentage
217-228	78.4	69.2	
	76.4	64.2	
	79.2	64.0	
	79.6	62.8	
	78.2	60.8	
Average	78.4	64.2	81.9
229-240	73.0	61.6	
	76.8	59.0	
	77.2	62.4	
	74.0	57.4	
	74.0	59.6	
Average	75.0	60.0	80.0
241-252	82.6	65.2	
	80.0	65.0	
	81.4	65.4	
	80.0	66.4	
	82.6	64.2	
Average	81.3	65.2	80.2
253-267	83.0	71.6	
	85.6	66.6	
	83.6	66.2	
	80.0	66.4	
	84.6	73.6	
Average	83.4	68.9	82.6

(continued)

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The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

February 4, 1981

LABORATORY TEST REPORT

FACTORY SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Fabricated Blankets(135' X 150')
Customer : Energy Fuels Nuclear

Blanket Number	Material Strength(#)	Seam Strength(#)	Percentage
268-278	90.0	68.0	
	82.8	73.8	
	87.6	73.4	
	87.4	74.6	
	89.0	72.6	
Average	87.4	72.6	83.1

Thomas R. Ward
Senior Product Engineer

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Notary Public in and for said County

Mary M. Farnsworth
My Comm. Expires August 31, 1982

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

September 17, 1981

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
6-16-81 A	79.4	65.0	
	71.6	70.2	
	67.2	64.4	
	69.6	75.8	
	75.8	73.6	
Average	72.7	69.8	96.0
6-16-81 B	79.8	76.2	
	79.0	74.4	
	84.6	73.2	
	79.2	75.2	
	80.4	71.0	
Average	80.6	74.0	91.8
6-17-81 A	71.0	68.6	
	73.2	68.2	
	73.2	67.2	
	73.0	69.4	
	71.8	59.0	
Average	72.4	66.5	91.8
6-17-81 B	66.6	64.8	
	66.0	65.4	
	68.0	65.0	
	66.2	67.6	
	66.6	68.4	
Average	66.7	66.2	99.2
6-18-81-A	70.0	64.8	
	69.0	63.0	
	68.8	65.0	
	69.0	66.0	
	70.0	65.2	
Average	69.4	64.8	93.4

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Engineered Products Group
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Marietta, Ohio 45750
373-6611

September 17, 1981

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
6-18-81 B	70.4	65.6	
	66.8	70.2	
	70.2	67.8	
	66.8	62.4	
	67.0	63.8	
Average	68.2	66.0	96.8
6-19-81 A	68.8	68.4	
	68.2	63.8	
	67.0	60.6	
	66.6	64.4	
	70.4	66.2	
Average	68.2	64.7	94.9
6-19-81 B	64.8	57.8	
	68.6	55.0	
	60.6	59.6	
	64.2	56.2	
	64.4	62.6	
Average	64.5	58.2	90.2
6-20-81 A	72.4	63.8	
	72.8	64.6	
	68.0	62.4	
	73.6	60.0	
	75.4	63.2	
Average	72.4	62.8	86.7
6-20-81 B	67.0	68.0	
	66.2	64.4	
	68.2	63.6	
	64.0	67.2	
	71.2	66.4	
Average	67.3	65.9	97.9

The BFGoodrich Company
Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

September 17, 1981

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
6-22-81 A	78.2	54.8	
	75.6	61.2	
	77.8	66.0	
	77.0	67.0	
	70.4	60.0	
Average	75.8	61.8	81.5
6-22-81 B	76.4	68.8	
	76.4	66.4	
	78.4	65.8	
	79.0	68.2	
	78.8	70.4	
Average	77.8	67.9	87.3
6-23-81 A	70.8	67.8	
	67.6	60.6	
	65.4	67.8	
	65.4	66.2	
	68.0	69.8	
Average	67.4	66.4	98.5
6-23-81 B	73.0	59.6	
	68.0	59.6	
	75.8	64.0	
	73.6	58.0	
	77.6	60.4	
Average	73.6	60.3	81.9
6-24-81 A	63.4	63.6	
	67.4	60.8	
	62.6	60.4	
	62.8	57.0	
	64.2	58.8	
Average	64.1	60.1	93.8

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Engineered Products Group

Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

September 17, 1981

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength (#)	Percentage
6-24-81 B	72.0	67.0	
	71.4	65.4	
	70.2	68.2	
	70.2	65.0	
	70.0	68.6	
Average	70.8	66.8	94.3
6-25-81 A	69.4	68.4	
	71.0	70.0	
	70.0	69.4	
	70.6	70.4	
	70.2	67.6	
Average	70.2	69.2	98.6
6-25-81 B	67.2	64.6	
	66.6	64.8	
	69.8	64.4	
	68.6	67.8	
	70.0	64.8	
Average	68.4	65.3	95.5
6-26-81 A	67.8	68.6	
	72.4	69.6	
	68.4	67.2	
	68.8	69.4	
	70.6	67.6	
Average	69.6	68.5	98.4
6-26-81 B	76.0	68.6	
	77.2	66.8	
	77.6	71.4	
	77.6	69.6	
	73.0	67.2	
Average	76.3	68.7	90.0

The BFGoodrich Company
Engineered Products Group
Oak Grove
P. O. Box 657
Marietta, Ohio 45750
373-6611

September 17, 1981

LABORATORY TEST REPORT

FIELD SEAM STRENGTH

Product Number: 64-50-3730-92-9
Description : 30 Mil PVC Blankets
Customer : Energy Fuels Nuclear

Field Sample	Material Strength(#)	Seam Strength(#)	Percentage
6-29-81 A	77.8	70.6	
	78.6	74.4	
	77.6	68.6	
	79.4	70.6	
	71.0	70.0	
Average	76.9	70.8	92.1
6-29-81 B	76.2	70.8	
	75.6	71.0	
	79.6	70.6	
	72.6	69.0	
	76.8	69.0	
Average	76.2	70.1	92.0

BFGoodrich Company
Fabricated Polymer Products

Thomas R. Ward
Senior Product Engineer

THE STATE OF OHIO, COUNTY OF WASHINGTON, SS:
Subscribed in my presence and sworn to before me this 17th day of September 1981.

Notary Public in and for said County

John F. Walter
My Comm. Expires February 28, 1986