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ATLANTIC COASTAL PLAIN GEOTHERMAL TEST HOLES, NEW JERSEY

Hole Completion Reports

By
LaVerne B. Cobb
Leroy Radford
Michael Glascock

MASTER

March 1979

Work Performed Under Contract No. ET-78-C-08-1558

Gruy Federal, Incorporated
Houston, Texas

U. S. DEPARTMENT OF ENERGY

Geothermal Energy

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NEW JERSEY

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LaVerne B. Cobb
LeRoy Radford
Michael Glascock

March 1979

Work Performed Under Contract
ET-78-C-08-1558

GRUY FEDERAL, INC.
2500 Tanglewilde, Suite 150
Houston, Texas 77063

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FOREWORD

This document summarizes work performed by Gruy Federal, Inc. as part of the Atlantic Coastal Plains Geothermal Drilling Program under DOE Contract No. ET-78-C-08-1558. Five holes drilled in New Jersey under this program are summarized in this report.

ABSTRACT

A description of the Atlantic Coastal Plains Geothermal Drilling Program and data for the following Geothermal test holes drilled in New Jersey are summarized in this Report:

1. Site No. 40	Fort Monmouth
2. Site No. 41	Sea Girt
3. Site No. 39-A	Forked River
4. Site No. 38	Atlantic City
5. Site No. 36	Cape May

SECTION 1. PROGRAM DESCRIPTION

I. INTRODUCTION

A. Program Responsibilities

Gruy Federal, Inc. of Houston, Texas, was selected by the Department of Energy (DOE), Division of Geothermal Energy, to plan, manage, and supervise the Atlantic Coastal Plain Geothermal Drilling Program (ACPGDP). The objectives of this program are:

1. To provide 50 or more heat flow measurement holes, approximately 1000 feet deep, in the sediments of the Atlantic Coastal Plain;
2. To provide these test holes over an area large enough to obtain a statistically comprehensive understanding of the heat flow characteristics of the Atlantic Coastal Plain; and
3. To locate the optimum site for a geothermal resource exploratory well, drilled to basement (approximately 6000 feet deep), after analysis of the heat flow data.

The ACPGDP involves the cooperative effort of several organizations--the DOE, Virginia Polytechnic Institute and State University (VPI&SU), the U.S. Geological Survey (USGS), appropriate state agencies, and Gruy Federal, Inc.--in the selection of drilling sites, planning and execution of drilling and testing programs, establishment of engineering criteria, and development of work schedules.

Work performed by Gruy Federal, Inc. at all New Jersey sites is described in this report. The Hole Data Reports Section contains information on site location, lease and permit requirements, drilling procedures and hole completion and site cleanup at each of the New Jersey sites.

B. Site Selection Procedure

Requirements for a geothermal resource beneath the Atlantic Coastal Plain Province are generally believed to consist of:

1. A radiogenic heat source (low-density granitic rock high in uranium and thorium content) to provide high heat generation;
2. An adequate thickness of insulating sedimentary rock overlying the heat source; and
3. Favorable resevoirs (sedimentary rock with sufficient porosity and permeability to transmit waters heated by the radiogenic source).

In preparing the ACPGDP drilling plan, Gruy Federal evaluated the geologic and geomorphic characteristics of the Atlantic Coastal Plain as they pertain to subsurface geology and drilling procedures. The principal criteria used in this evaluation were:

1. Depth of sediments, based on basement surface data (Fig. 1), and
2. Type of sediment overlying basement rock (Table 1).

GRUY FEDERAL, INC.

Figure 1. Contour Map of Basement Surface, Atlantic Coastal Plain (modified from Richards, 1974).

TABLE 1

ATLANTIC COASTAL PLAINS

Generalized Stratigraphic Sequences

<u>Region</u>	<u>State</u>	<u>Stratigraphy*</u>
I	Florida	Largely carbonates except for the basal-upper and lower Cretaceous clastic section.
II	Georgia S. Carolina	Upper Cretaceous sands and shales overlain by shales and carbonates of Paleocene through Miocene age.
III	S. Carolina N. Carolina	Largely upper Cretaceous sands and shales.
IV	Virginia Maryland Delaware New Jersey	Largely a sand-shale section, including a thick sequence of lower and upper Cretaceous clastic sediments overlain by a Paleocene-Pleistocene clastic sequence.

*Generalizing from the detailed work of Brown, Miller, and Swain (1972) and using earlier less-detailed studies of lithology distribution: Legrand (1961), Drake and others (1959), and Emery (1966).

Application of these criteria indicates that the Atlantic Coastal Plain can be divided into four regions, shown in Fig. 2.

The site locations (Table 2) for the 1000-foot heat flow measurement holes on the Atlantic Coastal Plain were selected by VPI&SU scientists on the basis of their interpretation of gravity field data and, in some cases, correlation between high geothermal gradient and negative gravity anomalies.

Figure 2. General Drilling Regions of the Atlantic Coastal Plain.

TABLE 2
DRILL SITE LOCATIONS

<u>STATE</u>	<u>SITE LOCATION</u>	<u>VPI NO.</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
New Jersey	Fort Monmouth	40	40° 18' 48" N	74° 03' 00" W
	Sea Girt	41	40° 07' 14" N	74° 02' 00" W
	Forked River	39	39° 50' 31" N	74° 10' 52" W
	Atlantic City	38	39° 22' 46" N	74° 27' 14" W
	Cape May	36	39° 00' 00" N	75° 54' 15" W
Delaware	Camp Barnes/Assawoman Bay	34-E	38° 29' 55" N	75° 05' 50" W
	Lewes	34	38° 47' 06" N	75° 09' 38" W
	State Tree Farm	34-C	38° 44' 35" N	75° 27' 43" W
	Dover AFB/Frederica	35	39° 06' 40" N	75° 27' 38" W
	Bridgeville	54	38° 46' 46" N	75° 37' 54" W
Maryland	Salisbury State College	31	38° 20' 26" N	75° 36' 28" W
	Crisfield Airport	32-A	38° 00' 57" N	75° 49' 34" W
	Cambridge	33-A	38° 24' 02" N	76° 11' 16" W
	Ocean City Airport	30-A	38° 18' 35" N	75° 07' 08" W
	Ocean City	43	38° 26' 00" N	75° 03' 25" W
	Ocean City	43-1	38° 26' 00" N	75° 03' 25" W
	Salisbury Airport	47	38° 19' 57" N	75° 30' 42" W
	Hebron	45	38° 23' 27" N	75° 41' 22" W
	Salisbury	46	38° 24' 14" N	75° 34' 20" W
	Snow Hill	53	38° 10' 24" N	75° 22' 45" W
	Princess Ann	52	38° 10' 30" N	75° 34' 47" W
	Kingston	51	38° 04' 52" N	75° 43' 32" W
	Rehobeth	50	38° 02' 09" N	75° 40' 19" W
Virginia	NASA/Wallops Station	29	37° 56' 40" N	75° 27' 17" W
	Isle of Wight	26	36° 54' 30" N	76° 42' 09" W
	City of Suffolk	25	36° 51' 01" N	76° 28' 45" W
	Oceana Naval Air Station	23	36° 48' 08" N	76° 02' 38" W
	Cheriton/ Northampton	28-A	37° 17' 54" N	75° 55' 55" W
	Creeds	22	36° 36' 24" N	76° 00' 25" W
	Norfolk Naval Base	24	36° 57' 55" N	76° 16' 11" W
	Langley Air Force Base	27	37° 05' 32" N	76° 22' 12" W

DRILL SITE LOCATION CONT'D

<u>STATE</u>	<u>SITE LOCATION</u>	<u>VPI NO.</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
Virginia	Wattsville	48	37° 56' 05" N	75° 30' 37" W
	Withams	49	37° 57' 32" N	75° 35' 37" W
	Atlantic	57	37° 53' 18" N	75° 30' 03" W
	Accomack/Tasley	55	37° 42' 32" N	75° 43' 09" W
	Eastville	56	37° 21' 16" N	75° 59' 32" W
	Hampton	60	37° 02' 13" N	76° 19' 02" W
	Smith Point	52	37° 52' 59" N	76° 15' 03" W
	Suffolk	25-B	36° 51' 01" N	76° 28' 45" W
North Carolina	Engelhard	18	35° 31' 15" N	75° 59' 17" W
	Manns Harbor	19	35° 45' 27" N	75° 47' 42" W
	Elizabeth City	20	36° 16' 50" N	76° 12' 57" W
	Barco	21	36° 19' 46" N	76° 03' 37" W
	Kingston	16-A	35° 14' 15" N	77° 35' 45" W
	Cherry Point	16	34° 54' 29" N	76° 51' 57" W
	Beaufort	17	34° 46' 19" N	76° 39' 28" W
	Camp Le Jeune	15	34° 39' 03" N	77° 19' 16" W
	Sneads Ferry/Hayes	15-A	34° 31' 30" N	77° 27' 23" W
	Wilmington	14	34° 13' 34" N	77° 52' 12" W
	Southport	14-A	33° 57' 05" N	77° 59' 25" W
	Myrtle Beach Air Force Base	13-A	33° 41' 00" N	78° 56' 40" W
South Carolina	Georgetown	12-B	33° 22' 43" N	79° 18' 09" W
	Georgetown	12-A	33° 25' 54" N	79° 24' 08" W
	Charleston Air Force Base	10	32° 54' 26" N	80° 03' 44" W
	Seabrook	8-B	32° 31' 30" N	80° 46' 00" W
	Paris Island	8-A	32° 20' 03" N	80° 42' 24" W
	Delta Plantation	7-A	32° 08' 21" N	81° 01' 56" W
	Savannah Airport	44	32° 08' 07" N	81° 12' 27" W
	Shellman Bluff	6-A	31° 34' 09" N	81° 19' 33" W
Georgia	Ludowici	4-B	31° 36' 30" N	81° 35' 50" W
	Sea Island/Bay Colony	5-A	31° 12' 30" N	81° 22' 45" W
	Waverly	3-A	31° 04' 24" N	81° 49' 24" W

II. Special Federal, State, Local or Landowner Requirements

A. New Jersey State Requirements

The only state requirement applicable to all New Jersey drill sites was a permit to move oversized or overweight vehicles. A well drilling permit was required at Fort Monmouth but was waived by the state for all other sites in New Jersey. Neither licensing nor bonding of out-of-state drillers was required in New Jersey.

A special water use permit, a welding permit and main gate passes were required by the Department of the Army and Fort Monmouth authorities before drilling equipment was permitted on the base at Site No. 40, Fort Monmouth, N.J.

Drilling activities in New Jersey were initiated through contacts with Dr. Kemble Widmer, New Jersey State Geologist. Correspondence with Dr. Widmer is shown in Exhibit II-1.

GRUY FEDERAL, INC.

CONSULTANTS IN ENERGY SYSTEMS

May 5, 1978

2500 TANGLEWILDE SUITE 150
HOUSTON, TEXAS 77063

1911 JEFFERSON DAVIS HWY., SUITE 500
ARLINGTON, VIRGINIA 22202

Dr. Kemble Widmer
State Geologist
Bureau of Geology & Topography
P. O. Box 2809
Trenton, NJ 08625

Dear Dr. Widmer:

Gruy Federal, Inc. is contractor to the Department of Energy/ Division of Geothermal Energy (DOE/DGE) to drill and case a number of 1000-foot holes along the Atlantic Coastal Plain for temperature gradient and heat flow measurements to be conducted later by the Virginia Polytechnic Institute and State University (VPISU). Dr. John K. Costain, VPISU Professor of Geophysics, has already been in touch with you about this program.

We are very pleased for the opportunity to do this work. We are also prime contractor for geothermal-geopressured tests in the Gulf Coast and for drilling and coring certain test wells for other governmental offices. We have also previously drilled and cored one geothermal test well in the State of Georgia.

Your guidance and counsel in our obtaining the necessary permits, certificates and other authorizations for the drilling of these non-commercial test and research holes under the Federal program, including the movement of trucks and other vehicles, is earnestly solicited. We also seek your assistance in establishing access to the drill sites indicated by Dr. John Costain in your state.

Time is of the essence in meeting the goals of this Federal program to find and evaluate the potential geothermal energy for the Eastern seaboard. We will use a special, relatively small mobile drilling rig operated 24 hours/day seven days/week for the next several months to maintain the drilling schedule, but this will not suffice for the program goals if the drilling rig is delayed in moving from site to site on an average of every three to four days.

GRUY FEDERAL, INC.

Dr. Kemble Widmer
May 5, 1978
Page two

Please respond at the earliest moment with the name of the person who will be our contact and advisor for operations in your state, and with the list and instructions of those documents required for this operation.

We will provide you with a description of the equipment, our operational and management plans, and the identity and credentials of our key personnel.

We invite your inspection of all our work, and we will keep posted of our plans and itinerary.

Sincerely,

Alan Lohse
Executive Vice President

AL:mw

Enclosure

Copies to:

Mr. Ronald T. Stearns
Mr. Glen A. Stafford
Mr. Harold E. Gill
Ms. Brenda Higgins

GRUY FEDERAL, INC.

CONSULTANTS IN ENERGY SYSTEMS

May 26, 1978

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

1911 JEFFERSON DAVIS HWY. SUITE 50X
ARLINGTON, VIRGINIA 22202

Dr. Kemble Widmer
State Geologist
Bureau of Geology and Topography
P. O. Box 2809
Trenton, New Jersey 08625

Dear Dr. Widmer:

The enclosed material describes our well prognosis, key people, certain other data, and the locations of the 1000-foot temperature gradient measurement wells that are proposed, as of this date, to be drilled in your state.

Two qualifying factors still remain with respect to the locations: (1) additional drill sites may be recommended by Dr. Costain at a near future time, and (2) we can change the actual site any place within the 8-kilometer circle to utilize state lands if the new site is of the same quality (i.e., ease of entry, firm soils, etc.) as the one herein indicated.

These are the locations for which we seek permits, subject to additional ones being added to the list within the next week or two, and subject to item (2) above. We would be pleased to have your recommendations about item (2) next week, and we will arrange to confer with you and/or make the necessary onsite inspection of any proposed change the following week.

Please contact Mr. G. W. Duncan, Gruy Federal's Manager of Drilling and Resource Evaluation, and Project Leader for this work (page 11, enclosed material).

We will provide you with a drilling schedule and other material as they are developed.

Sincerely,

Alan Lohse
Executive Vice President

AL:mw
Enclosures

Copies to:
Mr. Ronald T. Stearns
Mr. Glen A. Stafford
Dr. John K. Costain

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON 08625

OFFICE OF THE COMMISSIONER

PLEASE REPLY TO:
BUREAU OF GEOLOGY & TOPOGRAPHY
P. O. BOX 2809
TRENTON, NEW JERSEY 08625

June 29, 1978

Gruy Federal, Inc.
2500 Tanglewilde, Suite 150
Houston, Texas 77063

Attn: Mr. G. W. Duncan

Dear Mr. Duncan:

This is to confirm various arrangements which have been made in New Jersey in the past few weeks concerning the several test holes.

You are now at Fort Monmouth, so there are no problems here.

The National Guard has given permission to occupy a site at their Sea Girt Reservation.

We have just received confirmation from the Division of Fish and Game, Department of Environmental Protection, that you may occupy the site selected yesterday at the Forked River Game Farm.

We understand you have made arrangements for a private tract at Atlantic City.

I talked to Dr. Costain last night, June 28, and we agreed that in the first round of holes the site in the Ocean City area should be scratched.

It is my understanding that you already have arrangements in progress with the U. S. Coast Guard at Cape May.

Please let me or Mr. Charles Shaner know if there are any questions about these arrangements. We are in close touch with Colonel McCain.

Sincerely yours,

Kemble Widmer
Kemble Widmer
State Geologist

KW:ec

I. Site No. 40, Fort Monmouth, New Jersey

A. Site Location

The location of Site No. 40, Fort Monmouth, N.J., heat flow measurement hole is shown on Fig. 1-1, a section of USGA 7½' Quadrangle "Long Branch, N.J.". The coordinates of the drilling site are longitude 74° 03' W, latitude 40° 18.8 ' N. The site is located on the main post at Fort Monmouth Military Reservation and lies on the East Bank of the confluence of Parkers Creek Branch and Wampum Brook, which flow into Shrewsbury River. Ground elevation is approximately 10 feet above sea level.

B. Lease/Letter Agreements, Permits, Licenses

The U.S. Government, Department of the Army is landowner of Site No. 40. Access to Site No. 40 was obtained by permission of the Department of the Army, New York District Corps of Engineers, Permit No. DACA-51-4-78-437 (Exhibit I-1). The drilling permit from the State of New Jersey, Department of Environmental Protection, is shown in Exhibit I-2. Additional requirements for drilling at Site No. 40 included a certificate of insurance (Exhibit I-3), welding permits (retained by Fort Monmouth authority) and fire and safety indoctrination for field engineering personnel.

C. Environmental Information Survey

The environmental information checklist is shown in Exhibit I-4.

FIGURE 1-1 LOCATION SITE # 40, FORT MONMOUTH, N. J.
LATITUDE 40° 18.8' N, LONGITUDE 74° 03' W

LONG BRANCH, N. J.
N4015-W7358/7.5x9.5

1954
PHOTOREVISED 1970
AMS 6164 1 SE-SERIES V822

GRUY FEDERAL, INC.

SITE NO. 40

WELL NAME Fort Monmouth

LOCATION: LAT. 40° 18.8' N

16

LONG. 74° 03.0' W

RIG: Energy Service Company Rig No. 17

COUNTY Fort Monmouth

STATE New Jersey

DATE SPUDDED: July 2, 1978

DATE COMPLETED: July 12, 1978

CORES:

NO.	FROM	TO	RECOVERY
1	507	532	0
2	758	783	10
3	974	990	0
4	990	995	0

HOLE SIZE:

DEPTH		HOLE SIZE IN.		CSG. SIZE IN.		MUD	
FROM	TO	SIZE IN.	SIZE IN.	SIZE IN.	SIZE IN.	VIS.	WT.
0	53	12 1/4	8-5/8	40	9.2		
53	1034	7-7/8	4 1/2	45	9.4		

CASING:

FROM	TO	SIZE IN.	WT #/FT	GRADE	THREAD	NO. JTS
0	53	8-5/8	24.0	H-40	ST&C	1
0	1034	4 1/2	9.5	J-55	ST&C	25

TD 1047

PBTD 1030

ALL DEPTHS REFERENCE

KDB + 11' to GL

FIGURE 1-2 WELL SCHEMATIC WITH COMPLETION INFORMATION

D. Drilling Activities

Drilling activity for Site No. 40, Fort Monmouth, N.J., included both the movement of Energy Services Company rig #17 from Bowie, Texas, to Fort Monmouth, N.J., and the actual drilling. The daily drilling reports are included as Exhibit I-5.

Figure I-2 shows a schematic diagram of the completed hole with technical and summary data. Cuttings and cores obtained during drilling were sent to VPI&SU following completion of drilling activities. No electric logs were run at Site No. 40. Temperature logs were run by VPI&SU after the hole was cased; however, these data were not made available to Gruy. The completed hole was left filled with water containing corrosion inhibitor.

E. Site Preparation, Layout and Cleanup

Prior to initiation of drilling at Fort Monmouth, the site area was level and had a groomed grass covering. For site preparation, a bulldozer dug one pit 35' long, 35' wide, and 4' deep, and shallow pits for the water tank, mud pits, and pumps. The 4' x 4' cellar was dug by hand 4' deep and boarded over. After the hole was completed, the wellhead was installed and an iron grate was placed over the cellar (Fig. I-2) and locked. Later, Mr. John Bushnell, Fort Monmouth Facilities Engineer, replaced the lock installed by Gruy Federal; it is now necessary to check with Mr. Bushnell (201/5323737) to gain access to the hole.

On August 21 and 22 the mud pit was vacuumed and the site was backfilled, leveled, and seeded. Site cleanup was completed on August 22, 1978.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
26 FEDERAL PLAZA
NEW YORK, N. Y. 10007

NANRE-M

3 July 1978

Mr. Glen A. Stafford
United States Department of Energy
ATTN: ZEW/DOE/DGE
Washington, D.C. 20314

Dear Mr. Stafford:

Inclosed is a duly executed copy of Permit No. DACA51-4-78-437 issued to the United States Department of Energy for use and occupancy of certain property at Fort Monmouth, New Jersey. Said instrument is for a one year term commencing 29 June 1978.

Sincerely yours,

Warren Gordon

WARREN GORDON

Acting Chief, Real Estate Division

1 Incl
As Stated

RECEIVED
COMMERCIAL, INC.
TEXAS

JUL 10 1978

DEPARTMENT OF THE ARMY
PERMIT TO OTHER FEDERAL GOVERNMENT DEPARTMENT OR AGENCY
TO USE PROPERTY ON

..... **FORT MONMOUTH, NEW JERSEY** **DACA51-4-78-437**

United States Department of Energy

is hereby granted a permit for a term of one (1) year

beginning 29 June , 1978 , and ending 28 June , 19 79 ,

but revocable at will by the Secretary of the Army, to drill and conduct geothermal temperature measurement investigations on a parcel of land, approximately 200 ft. by 200 ft., located on the Main Post at Fort Monmouth, New Jersey, west of the intersection of Wilson and Sherrill Avenues,

as shown substantially in red on Exhibit A, attached hereto and made a part hereof, and described as follows:

THIS PERMIT is granted subject to the following conditions:

1. That the use and occupation of the said premises shall be without cost or expense to the Department of the Army, under the general supervision and subject to the approval of the officer having immediate jurisdiction over the premises, and subject also to such rules and regulations as he may from time to time prescribe.

2. That the permittee shall, at its own expense and without cost or expense to the Department of the Army, maintain and keep in good repair and condition the premises herein authorized to be used.

3. That any interference with or damage to property under control of the Department of the Army incident to the exercise of the privileges herein granted shall be promptly corrected by the permittee to the satisfaction of the said officer.

4. That the permittee shall pay the cost, as determined by the said officer, of producing and/or supplying any utilities and other services furnished by the Department of the Army or through Department of the Army facilities for the use of the permittee.

5. That no additions to or alterations of the premises shall be made without the prior consent of the said officer.

6. That if for any reason it should be deemed necessary or expedient for the Department of the Army to perform functions and/or render services which are the responsibility of the permittee, the said officer may, in lieu of reimbursement, require the permittee to furnish the personnel and/or materials required for the performance of said functions and/or for the rendering of said services. In addition to furnishing personnel and/or materials, the permittee shall reimburse the Department of the Army for any costs incurred by the Department of the Army in connection with said functions and/or services, such as for supervision and/or equipment furnished. Selection of such personnel will be subject to the approval of the said officer.

7. That on or before the date of expiration of this permit or its relinquishment by the permittee, the permittee shall vacate the said premises, remove its property therefrom, and restore the premises to a condition satisfactory to the said officer, ordinary wear and tear and damage beyond the control of the permittee excepted. If, however, this permit is revoked, the permittee shall vacate the premises, remove its property therefrom, and restore the premises as aforesaid within such time as the Secretary of the Army may designate.

8. That, in addition to the provisions of Condition 7 above, the permittee, upon expiration or termination of this instrument, shall, at its own cost or expense, properly plug the bore hole and otherwise restore the affected property to a condition that is environmentally clean and acceptable to the said officer.

9. That the permittee's use and occupancy of the permitted property shall not interfere with the mission of the installation.

Prior to the execution of this permit, Conditions 8 and 9 were added, and inapplicable language was deleted from the Granting Clause.

THIS PERMIT is not subject to Title 10, United States Code, Section 2662, as amended.

IN WITNESS WHEREOF I have hereunto set my hand by authority of the Secretary of the

Army this

29th

day of

June

, 1978 .

MAURICE LUSTIG
Chief, Real Estate Division

Mail to
STATE GEOLOGIST
P.O. BOX 1390
TRENTON, N.J. 08625

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF THE COMMISSIONER
TRENTON, N.J.

Site #40 21
EXHIBIT I-2
Permit No. 25-4465

PERMIT TO DRILL WELL VALID ONLY AFTER APPROVAL BY THE D.E.P.

Owner Ft. Monmouth Driller John Gurley - Energy Services
Address Ft. Monmouth Military Res. Address Bowie, Texas

diameter of well <u>4 1/2"</u> inches	proposed depth of well <u>1000</u> feet	proposed capacity of pump — G.P.M.
method of drilling <u>Rotary</u> (cable-tool, rotary, jet, etc.)		use of well <u>test</u> (semi-public, domestic, industrial, public-supply, test, etc.)

LOCATION OF WELL

lot #	block #	municipality	county
			<u>Monmouth</u>

Draw sketch showing distance and relations of well site to nearest public roads, streets, septic systems, etc.

State Atlas Map No. 29

SEE REVERSE SIDE for IMPORTANT PROVISIONS AND REGULATIONS pertaining to this permit. APPROVAL of this permit is made SUBJECT TO acceptance of and compliance with the following ADDITIONAL CONDITIONS:

- ☐ Permit issued in accordance with provisions of letter of transmittal dated _____.
- ☐ It is necessary that Geophysical Logs of this well be made by the Division of Water Resources. The owner shall require the driller to notify the Division by PHONE (609-292-2232) when drilling is completed. Permanent pumping equipment SHALL NOT be installed until such logs are made.
- ☐ Samples of cuttings required every _____ feet.
- ☐ _____
- _____

This space for Approval Stamp

WELL PERMIT APPROVED
JUN 22 1978
DEPT. ENV. PROTECTION OFF. OF THE COMM. KEMBLE THOMAS STATE GEOLOGIST

In compliance with R. S. 58:4A-14, application is made for a permit to drill a well as described above.

Date 6/22/79

Signature of Owner Michael R. Thomas

OWNER'S COPY

**Marsh &
McLenn**

22

Marsh & McLennan, Inc.
Suite 4500
1100 Milam Building
Houston, Texas 77002
Telephone 713 658-9888

EXHIBIT I-3

June 14, 1978

Mr. John Bushnell
Facilities Engineering
Fort Monmouth, New Jersey 07703

Gruy Federal, Inc.

Dear Mr. Bushnell:

Enclosed is a Certificate of Insurance we have issued on behalf of our insured.

If you should have any questions or need additional information, please let us know.

Yours very truly,

(Mrs.) Irene Sanchez

is/
encl.

cc: Mr. Gayland E. Daugherty
Gruy Federal, Inc.

RECEIVED
GRUY FEDERAL, INC.
HOUSTON, TEXAS

JUN 15 1978

Site # 40

FORT MONMOUTH NON-SECURITY AREA, NEW JERSEY
SITE-SPECIFIC ENVIRONMENTAL INFORMATION CHECKLIST
ATLANTIC COASTAL PLAIN
GEOTHERMAL TEST PROGRAM
GRUY FEDERAL, INC.

A. GENERAL

1. Has federal, state and/or local environmental assessment been conducted previously for the proposed test well or other wells in the area? Yes _____ No X If yes, provide a copy if available.
2. Have all required permits, licenses, and/or agreements for proposed project been obtained? Yes _____ No X
If no, explain. Decision for approval has been made by
Commanding General, and paperwork is in progress.
3. Does the project site fall within the habitat of rare or endangered species? Yes _____ No X If yes, explain. Eastern
flyway, but no species occupy the area at the test site.
4. Are known archeological sites, historic sites, or natural landmarks within or visible from the site area? Yes _____ No X
If yes, explain. _____
5. Will expected continuous noise levels from site operations be 65 dBA or less at the nearest residence? Yes _____ No X
If no, explain. Each 8V-71 GMC engine equipped with two 4"
No. SRU04-0196 Maxim silencers; maximum noise level 32.0 dBA, 250
center frequency; for residential use.

page 2 of 5

FORT MONMOUTH NON-SECURITY AREA, NEW JERSEY

2

B. SITE CONSTRUCTION

1. Will additional land clearing be required for the test well
(e.g., drill pad, road construction, mud reserve pits, pipeline)?
Yes _____ No X If yes, describe. _____

2. Will additional land clearing be required for the disposal well
(e.g., drill pad, reserve pits, utilities, road construction,
pipeline)? Yes _____ No X If yes, describe.
No disposal well required.

3. Will the site and related roads be treated to minimize dust?
yes _____ No X If no, explain. Not necessary due to
paved roads and soil conditions.

4. Are portable sanitary facilities or an approved septic system to
be used at the site? Yes X No _____ If no, explain.

5. Will liquid and solid wastes be disposed in accordance with local
regulations? Yes X No _____ If no, explain.
No liquid and solid wastes involved.

6. Will erosion control be required for excavated areas?
Yes _____ No X If yes, explain. _____

7. Will dredge spoil be deposited in grassland, swamp, forest or marshland? Yes _____ No X If yes, explain.

No dredge spoil involved.

8. Upon completion of proposed test program, will the site be restored to as natural a condition as possible by regrading, filling, and reseeding? Yes X No _____ If no, explain.

C. WELL TESTING AND SAFETY

1. fluid production from the well during testing expected to be 2 weeks or less in duration per formation? Yes _____ No X
If no, explain. No fluid production involved; this is a temperature measurement hole; does not produce anything.

2. Is the total dissolved solids of any produced geothermal fluids expected to be 90,000 mg/l or less? Yes _____ No X
If no, explain. See #1

3. Is the temperature of produced geothermal fluid expected to be 260°C or less? Yes _____ No _____ If no, explain.
See #1

4. Will there be any gas content in the produced fluid? Yes _____ No _____ If yes, explain how it will be disposed of.
See #1

5. Will blowout preventers rated be used? Yes x No
If no, explain.
6. Will production tubing rated to at least 10,000 PSI, be used?
Yes No If no, explain. See #1
7. Can safety valves be operated from remote locations? Yes x
No If no, explain.
8. Will the test tree be rated to at least 10,000 PSI? Yes
No If no, explain. See #1
9. Will a test well directional survey be conducted? Yes
No x If yes, at what interval? feet. If no,
explain. Not necessary for 1000' nonproducing hole
10. Will a lined pond be used to hold all liquid effluents and
production fluids that are not injected? Yes No x
If no, explain. No such effluents and fluids.
11. Has an injection permit been obtained? Yes No x
If no, explain. No injection involved.

12. Will H_2S monitors be located onsite Yes _____ No X
If no, explain. No H_2S formations.
13. Will fire extinguishers be located onsite? Yes X No _____
If no, explain. _____
14. Do contingency plans exist for evacuating personnel should a blowout occur or high levels of H_2S be detected? Yes X
No _____ If no, explain. _____
15. Will engineering and mud logging personnel be onsite during production well drilling operations? Yes X No _____
If no, explain. _____

Prepared by:

Alan Foxlee

Title:

Exec. V.P. From inspection notes concerning the area in which the specific site will be treated.

Date:

6/12/78

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. Rig PreparationDATE June 1, 1978COUNTY BowieSTATE TexasREPORT NO.REPORTED BYDEPTH --PROGRESS --ACTIVITY AT REPORT TIMETIME LOGFROM TOELAPSEDOPERATIONS

0800 --

Waiting On:

Steel for Substructure
Shale Shaker
BOP Stack
PT 350 pump
Rotary tablePeople still being assembled
Estimated Rig Departure 7th - 12th

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

29

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig-Up

DATE June 2, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 2

REPORTED BY Duncan

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600 --

Received steel for substructure and plane. Will
take 4-5 days to build.

Received BOP stack, they will build bell nipple.
Flow line set, install choke/kill line valves.

Received desander

Waiting on: Shaker
350 pump
Rotary

Still obtaining camp facilities EST Dep. 8th-12th.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 30
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig-Up

DATE June 3-5, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 3

REPORTED BY Duncan

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

0600 --

OPERATIONS

Continue Rig-Up. Sub-structure is framed.
Needs final welding and side plating.
Rotary drive installed. Rotary beams in.

Waiting on: Shaker
350 Pump

Estimate 5-6 days rig-up yet. Gurley on BI 14 to
Dulles, Ark. 3:20 p.m.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

31

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig-Up

DATE June 6, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 4

REPORTED BY Duncan

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0900 --

Continue Rigging-Up, Welding Substructure
Heavy rains have stopped welding at present.
About one day of welding left.
Trucks and floats ETA Bowie late Wednesday.

Waiting on: Swivel
Kelley
Rotary Table
PT 350 Pump
Shale Shaker

75% Rigged-Up

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

32

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig-up

DATE June 7, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 5

REPORTED BY Duncan

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO ELAPSED

0600 --

OPERATIONS

Continue Rigging-up, sub-structure lacks 6-8
hours welding.

Trucks and floats ETA Bowie Thursday due to storms

Waiting on: PT 350 Pump
80% Rigged-up

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

33

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig-up

DATE June 8, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 6

REPORTED BY Duncan

DEPTH

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600 --

Finish out sub-structure.

Lining up rig components.

Truck & floats ETA Bowie - Friday.

Still waiting on pump & rotary table.

85% rigged up.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

34

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig-Up

DATE June 9, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 7

REPORTED BY Duncan

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600 --

Move Drillers console to floor area. Continue plumbing of water/mud system. Pump and Shale Shaker have arrived.

Trucks estimated to depart (ETD) Bowie now June 12.
Rotary table ETD Bowie now June 13.
Final Rig-Up and trials estimated June 14-15
87% complete.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. Rig-UpDATE June 10 - 12, 1978COUNTY BowieSTATE TexasREPORT NO. 8REPORTED BY DuncanDEPTH --PROGRESS --ACTIVITY AT REPORT TIMETIME LOGFROM TOELAPSEDOPERATIONS

0600 --

Trucks and shale shaker not yet arrived. ETA
June 13th. Hook - Up mud pots, desander, shaker
and pumps 90% complete.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. Rig - UpDATE June 13, 1978COUNTY BowieSTATE TexasREPORT NO. 9REPORTED BY DuncanDEPTH --PROGRESSACTIVITY AT REPORT TIMETIME LOGFROM TOELAPSEDOPERATIONS

0800 --

Continue Hook-up mud system, PT-B50 pump
arrived, waiting on skid for pump.
Trucks not yet arrived.
92% complete

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig - Up

DATE June 14, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 10

REPORTED BY Duncan

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0800 --

Pump skid has arrived and requires additional fabrication.

Trucks not yet arrived. Mud system hook-up nearly complete (85%)

Final rig-up and trials by Friday relies on receipt of travelling equipment, Kelly, swivel and Drill tools.

95% complete

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. Rig - UpDATE June 15, 1978COUNTY BowieSTATE TexasREPORT NO. 11REPORTED BY DuncanDEPTH --PROGRESSACTIVITY AT REPORT TIMETIME LOGFROM TOELAPSEDOPERATIONS

0800 --

Skid for pump being fabricated and pump being installed.

Mud system hook-up being completed (85%).

Need to install rig pump when skid is ready and pipe, centrifugal pump needs piping.

Trucks not yet arrived

Travelling equipment, Kelly, swivel, and drilling tools not yet arrived.

Rig Up 95% complete

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig - Up

DATE June 16, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 12

REPORTED BY Duncan

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0800 --

Continue pump - mud system Hook-up,
general rigging such as guard rails, step,
plumbing. Minimal progress due to waiting on
following equipment for installation.

1	Blocks
2	Swivel, Hook
3	Kelly
4	Rat Table
5	Welding machine
6	Trucks
7	Drill pipe
8	Slips, elevators, tongs

All above items scheduled for delivery by June 17th.

Work projects remaining

1	finish pump package connections
2	make up BOP flanges, adapter for 8 5/8"
3	install rotary table
4	fabricate loading nipple
5	complete electrical wiring; tie in of generator
6	hang travelling equipment

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

40

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig-up

DATE June 17, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 13

REPORTED BY Duncan

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0800 --

Sent pvt. trucks to Oklahoma City, Houston and Henderson to pick up remaining 8 items.

Energy service trucks in Bowie.

1 - Working on electrical system. Lights in control panel moved.

2 - Finishing up pump package except for discharge manifold

1700 --

Blocks on location w/swivel, hook, kelly, slips, elevators, tongs.

1-Rotary table set

2-Drill pipe on road

3-Bit sub, kelly sub have arrived

4-1 of 2 crates of wellhead has arrived

5-electric wiring nearly complete

6-waiting on mud test kit and bit

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig - Up

DATE June 18, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 14

REPORTED BY Duncan

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

1200 --

Travelling equipment, hung drill pipe, collars
arrived, elec wiring requires about 9 more hours

Mud system complete - tested pump on

Will need to obtain truck registration tomorrow

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. Rig - UpDATE June 19, 1978COUNTY BowieSTATE TexasREPORT NO. 15REPORTED BY DuncanDEPTH --PROGRESSACTIVITY AT REPORT TIMETIME LOG
FROM TOELAPSEDOPERATIONS

0800 --

Finish electric wiring

Tested hydraulic system

Require truck registration today

intend to start load-up, packing p.m. today

Bowie 0900 6/20

Fort Monmouth 6/24

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Rig - Up

DATE June 20, 1978

COUNTY Bowie

STATE Texas

REPORT NO. 16

REPORTED BY Duncan

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0800 --

Truck registration accomplished
Finish up general rigging and packing.
Breaking components down for a load-out
and transportation to New Jersey.
Will depart today 6/20

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

44

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Move

DATE June 21, 1978

COUNTY --

STATE

REPORT NO. 1

REPORTED BY Duncan

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

Moving rig to New Jersey
Carrier departed w/advance party
1500 hrs June 20
2 loads departed late June 20,
remainder, A.M. of 21st.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 45
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Move

DATE June 22, 1978

COUNTY

STATE

REPORT NO. 2

REPORTED BY Duncan

DEPTH

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

During move-out, broke drive shaft on one truck.
It was decided to keep other trucks with broken uni
to keep caravan together while repairs are being
made. Carrier and crew trucks are proceeding, and
are in Arkansas.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

46

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Move

DATE June 23, 1978

COUNTY

STATE

REPORT NO. 3

REPORTED BY Duncan

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

Moving - 24 Hours

One truck overweight. Was stopped by Arkansas state police and was detained until another truck was dispatched to take a partial load. The rig (carrier) is near Memphis, Tenn.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. MoveDATE June 26, 1978COUNTYSTATEREPORT NO. 4REPORTED BY DuncanDEPTH --PROGRESSACTIVITY AT REPORT TIMETIME LOGFROM TOELAPSEDOPERATIONS

Moving rig - 24 Hours

Carrier has arrived.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

48

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. Moving to site 40

DATE June 27, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 5

REPORTED BY

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0800 EST June 26

Report program 0800 Hrs. June 27

7 Hrs. Move in rig

Arrived on location 2000 Hours June 26

17 Hours rig up on site 40, Fort Monmouth, New Jersey

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

49

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE June 28, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 6

REPORTED BY

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

Report program 0800 hrs. EST

June 27 - 0800 June 28

All subsequent reports will follow this procedure

In 24 hours - rig up, build location. Set pump
in mud tank unit.

4½" and 8 5/8" casing has arrived on location

Cementing units on location

Christensen coring people on location

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

50

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE June 29, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 7

REPORTED BY Glascock

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

0800 0800

24

OPERATIONS

EST June 28 - 0800 EST June 29

Rig up - 24 hours

1. Finish sub-structure and placed into position
2. Installed fluid end on 350 PT pump.
3. Positioned BOP
4. Placed guidelines into position

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 51
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE June 30, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 8

REPORTED BY Glascock

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0800-1000

2 Hrs.

Rig up 24 Hours

1000-1200

2 Hrs.

Set pipe back in place

1200-1400

2 Hrs.

Build steps

1400-1800

4 Hrs.

Placed rotary table

1800-2200

4 Hrs.

Build rotary motor skid

2200-0100

3 Hrs.

Make up kelly hose to swivel and kelly

0100-0200

1 Hrs.

Fitting fiberglass from 6x8 to desander

0200-0300

1 Hrs.

Built reducer for desander

0300-0700

4 Hrs.

Built BOP adapter

0700-0800

1 Hrs.

Moved BOP and digging cellar

Bonding fiberglass and heat pad

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 52
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 1, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 9

REPORTED BY Glascock

DEPTH Not spudded

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u> <u>FROM</u> <u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0800-0900	1 Hr.	Set up pipe racks, unload pipe from pipe box
0900-1000	1 Hr.	P.U. saver sub, bit sub, and kelly
1000-1200	2 Hr.	Hook up standpipe hose, dig cellar 3 1/2 feet deep
1200-1300	1 Hr.	P.U. tongs and make up subs
1300-1500	2 Hr.	Help welders prefabricate standpipe hookup and level rig
1500-1600	1 Hr.	Fill mud pit with water, put rotary motor on rig fl
1600-2000	4 Hrs.	Dug ditches from cellar to reserve pit, clean out bottom of cellar cut, lumber for cellar
2000-2400	4 Hrs.	Finish cutting lumber for cellar, bond 6" fiberglass from hopper to pit.
2400-0200	2 Hrs.	Helping welder to cut floor plates for rig floor
0200-0400	2 Hrs.	Cut fiberglass for 5 x 6 centrifugal to pit. Bond fiberglass from hopper to pit
0400-0500	1 Hr.	Help welders place floor plate on rig floor
0500-0730	2 1/2 Hrs.	Remove dirt from cellar to reserve pit
0730-0800	1/2 Hr.	Police up work area

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

53

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 2, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 10

REPORTED BY Glascock

DEPTH 45'

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u> <u>FROM TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0800-0830	1/2 Hr.	Hook up hose from 350 pump to pit.
0830-1000	1 1/2 Hr.	Hook up standpipe manifold on rig.
1000-1230	2 1/2 Hrs.	Help welders put handrails on sub floor
1230-1300	1/2 Hr.	Put drive chain on Rotary table
1300-1430	1 1/2 Hrs.	Assemble hydraulic system to power tongs and hand from derrick
	1 1/2 Hrs.	Mix mud, help welders put floor over rotary table
1430-1730	1 1/2 Hrs.	Bond fiberglass from pit to 5x6 centrifugal
1730-1900	1 1/2 Hrs.	Put vibrator hose on from pit to stand pipe manifold
1900-2100	2 Hrs.	M. U. B.H.A.
2100-2200	2 Hr.	Put tong counter weights on line
2200-2300	1 Hr.	Put relief valve and bull plug on discharge manifold
2300-1200	1 Hr.	Run 350 pt. pump at 130 spm at 1000 psi
1200-0230	2 1/2 Hrs.	Drill mousehold and case with 16-5/8" csg. at 34 feet Tighten leaking mud end on 350 pt.
0230-0430	2 Hrs.	Drill rat hole and place kelly shuck into position (40 feet)
0430-0630	2 Hrs.	Mud up - change bit, bit sub. Spud at 0630 Hrs. w/12 1/4" bit 7/2/78
0630-0730	1 Hr.	Drill to 45 feet from RKB
	1/2 Hr.	POH with balled bit
	24 Hrs.	

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 54
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 3, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 11

REPORTED BY Glascock

DEPTH 55'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0800-1200

4 Hrs.

R.I.H. - unable to get back to bottom - break out collar and lay down same. PU Kelly, wash and Ream 10 feet to bottom. P.U. Drill Collar and finished drilling surface hole

1200-1230

1/2 Hr.

Circ/Condition mud and hole

1230-0400

3 1/2 Hr.

R.U. to run 8 5/8 inches CSG. had trouble breaking drill collar

0400-1700

1 Hr.

Lay down BHA

1700-1800

1 Hr.

P.U. One Joint 8 5/8 inch casing (J55, STC, 24 #/Ft w/Howco float shoe and landing joint casing set at 53 feet from RKB.

1800-1830

1/2 Hr.

M.U. Howco cement head, cement 8 5/6 inch casing

1830-0700

12 1/2 Hrs.

W.O.C. and repairing rig

0700-0800

1 Hr.
24 Hrs.

Engineer placed rig on standby at 0700 hrs. until all safety standards complied with.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 4, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 12

REPORTED BY Glascock

DEPTH 55'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0800-1100

3 Hours

Rig still on stand by as per engineer's order

1100-1600

5 Hours

N. U. 8 5/8" Braden Head and B.O.P.E. - Mix Mud

1600-0800

4 Hours

Finish Nipple Up. Blank off choke and kill lines
tighten guide line wires. Install 8" flow line
Put (4) Bracket Turnbuckles from BOP to substructure.
(Securing BOP)

0800-1200

4 Hours

Rig shut down due to engine failure excessive
burning of oil (4 qts. in one hour) Local mechanic
refused to work on engine due to wind and rain

1200-0800

8 Hours

Repairing Detroit Diesel Engine

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 5, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 13

REPORTED BY Glascock

DEPTH 55'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0800 --

24 Hours Repairing Detroit Diesel Engine

Start connecting HYD system to BOP
Hook up Geolograph recorder
Repair mud bucket and hang in Derrick
Open pipe rams
PU all air & Hydraulic lines off ground and hang-up

Clean-up, lubricate
Hooking-up standpipe manifold

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 6, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 14

REPORTED BY Lawrence/Duncan

DEPTH 55'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0800-1600

8 Hours

Working on Detroit diesel engines on carrier
Rig Up work during repairs
Hook up standpipe valves
Change oil/filters on light plant and rotary engine
Point Substructure

1600-1700

1 Hour

Start, run and observe diesels

1700-1900

2 Hour

PU Drill Collar, make up 7 7/8 inch bit, GIH, did not
pass adapter flange

1900-2400

7½ Hours

Change out adapter flange, and connect BOPE

2400-0530

2½ Hours

GIH W/D. C., 7 7/8 inch bit, and drill out shoe

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 7, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 15

REPORTED BY Lawrence/Duncan

DEPTH 563'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0800-1330	5-1/2 Hours	Drill 23' cement in 8-5/8" CSG & Shoe
1330-2300	9 1/2 Hours	Drill 55' - 507'
2300-2330	1/2 Hour	Circulate & Condition mud & hole
2330-0100	1 1/2 Hours	Made 3 stand wiper trip
0100-0200	1 Hour	POOH for core barrel
0200-0400	2 Hour	PU core barrel & GIH
0400-0500	1 Hour	Core 507' - 532'
0500-0630	1 1/2 Hours	POOH with core barrel, no recovery. Laid down core barrel.
0630-0730	1 Hour	GIH with bit #2
0730-0800	1/2 Hour	Drill 532 - 563'

Present Operations - Drilling

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 8, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 16

REPORTED BY Lawrence/Duncan

DEPTH 726'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0800-0930

1-1/2 Hrs.

Circulate & condition mud

0930-1000

1/2 Hours

Drill to 656'

1000-1200

2 Hrs.

Circulate & condition mud

1200-1430

2-1/2 Hrs.

Drill to 726'

1430-1530

1 Hr.

POOH due to rotary table failure

1530-0600

14-1/2 Hrs.

Tear down table, Bolts backed out of cover on transfer case & fell into pinion gear. Seal plate rotated shearing off remainder of bolts, forcing into ring gear teeth.

0600-0800

2 Hours

Receive re-dressed gear from machine shop & install same.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 9, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 17

REPORTED BY Lawrence/Duncan

DEPTH 990'

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u>			
<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0800-1130		3-1/2 Hrs.	Finish installing rotary table & gears.
1130-1230		1 Hr	GIH, No fill, No bridges.
1230-1300		1/2 Hr	Condition & circulate mud & hole
1300-1400		1 Hr	POOH
1400-1530		1-1/2 Hr	PU core barrel & GIH
1530-1630		1 Hr	Core w/7-27/32"bit 758-783, Core #2 -
1630-1700		1/2 Hr	POOH w/core #2 - Rec 10'
1700-1800		1 Hr	LD core in PVC & LD barrel
1800-1830		1/2 Hr	Service rig
1830-2000		1-1/2 Hr	Make up assembly & GIH to 753' & wash to bottom
2000-0100		5 Hr	Drill 783' - 974'
0100-0230		1-1/2 Hr	Circulate Bottoms up & POOH
0230-0400		1-1/2 Hr	Working on PT 350 pump.
0400-0630		2-1/2 Hr	PU & make up core barrels, GIH.
0630-0800		1-1/2 Hr	Core 974' - 990'

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 40DATE July 10, 1978COUNTY Fort MonmouthSTATE New JerseyREPORT NO. 18REPORTED BY Lawrence/DuncanDEPTH 1047'PROGRESSACTIVITY AT REPORT TIME

<u>TIME LOG</u> <u>FROM</u> <u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0800-0830	1/2 Hr.	Core 984' - 990'
0830-0900	1/2 Hr.	Circulate bottom up
0900-1000	1 Hr.	POOH w/core barrel, no recovery
1000-1330	3-1/2 Hr.	Fabricate "orange-peel" 4½" casing core barrel
1330-1430	1 Hr.	GIH w/4½" casing joint
1430-1500	1/2 Hr.	Core 990-995'
1500-1530	1/2 Hr.	POOH w/4½" casing joint, w/handful of recovery.
1530-1600	1/2 Hr.	GIH w/7-7/8" re-run #2
1600-1730	1-1/2 Hr.	Drill 995'-1047'
1730-1800	1/2 Hr.	Circulate bottoms up
1800-2000	3 Hr.	POOH, Laid down drill pipe, break out bit & bit sub
2000-2030	1/2 Hr.	Service rig
2030-2330	2 Hr.	Nipple down BOP
2330-2400	1/2 Hr.	Rigging up to run 4½" casing
2400-0300	2 Hr.	Ran 25 joints of 4½" 9.5#/ft. J-55 ST&C 8RD R-3 seamless casing, shoe at 1034' RKB
0300-0600	3 Hrs.	Attempt to cement, unable to keep continuous suction
0600-0800	2 Hrs.	Request new pump truck Circulate

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 62
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 11, 1978

COUNTY Fort Monmouth

STATE Texas

REPORT NO. 20

REPORTED BY Lawrence/Duncan

DEPTH 1047'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0800-0700

7/11

Waiting on Halliburton pump truck

Make up 16 stands 2-3/8" tubing and stand back
Circulate and reciprocate pipe w/5'-10' stroke
Cleaned sand trap in pit, screens in pump
Inventory of rig equipment
Prepare rig for move.

0700-0730

Rig up Halliburton pump truck

0730-0800

Cement with 170 sacks Class A - HLC at 12.6 PPG.

Bump plug at 0800 w/16½ barrels at 800 PSI.

Release pressure, no flow back. Mud returns at surface.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 40

DATE July 12, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 21

REPORTED BY Lawrence/Smith

DEPTH 1030'

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u> <u>FROM</u> <u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0600-0700	1 Hr.	Waiting on Halliburton pump truck.
0700-0730	½ Hr.	Rig up Halliburton to cement.
0730-0800	½ Hr.	Cement with 170 sacks of Class A Howco Light at 12.6 PPG. Displace with 16.5 barrels of water. Bump plug at 0800 hr. with 800 PSI. Release pressure, no flowback. Good mud returns throughout job. No cement returns. Top of cement 40 ft. below ground level. Did not cement 40 ft. VPI did not require.
0800-1200	4 Hr.	Waiting on cement.
1200-1300	1 Hr.	Running hole 2-3/8 tubing. Tag shoe at 1030'.
1300-1430	1½ Hr.	Circulate 4½" casing, clean with water. Displace casing with 16.5 barrels of X-corr treated water.
1430-1500	½ Hr.	POOH Lay down 2-3/8" tubing.
1500-1700	2 Hr.	Rig up & run VPI temperature probe.

ENDS WELL NO. 40 - COMPLETE.

II. Site No. 41, Sea Girt, New Jersey

A. Site Location

The location of Site No. 41, Sea Girt, New Jersey, heat flow measurement hole is shown on Fig. 2-1, a section of USGS 7½' Quadrangle "Point Pleasant, N.J.". The coordinates of the drill site are longitude 74° 02' 00" W, latitude 40° 07' 14" N. The site, located at the National Guard Camp at Sea Girt, lies to the northeast of Stockton Lake and is approximately 10 feet above sea level.

B. Lease/Letter Agreements, Permits, Licenses

Access to Site No. 41 was obtained by permission of the New Jersey Department of Defense by letter agreement (Exhibit I-1). No drilling permit was required.

C. Environmental Information Survey

The environmental information checklist, supplementary information required by the "Environmental Assessment, Geothermal Exploratory Drilling Program, Eastern United States, Coastal Plains and Piedmont Provinces" (DOE/EA-0015), is shown in Exhibit II-2.

D. Drilling Activities

Drilling activities at Site No. 41, Sea Girt, N.J., began July 12, 1978 and were completed on July 20, 1978. Fig. 2-2, a schematic diagram of the completed hole, summarizes data for Site No. 41. The daily drilling reports are shown in Exhibit II-3. Cores and cuttings taken from the hole during drilling were delivered to VPI&SU. The USGS ran electric logs on this hole and temperature logs were run by VPI&SU after casing the hole; however, these data were not made available to Gruy. The completed hole was left filled with water containing corrosion inhibitor.

GRUY FEDERAL, INC.

SITE NO. 41

WELL NAME Sea Girt

66

LOCATION: LAT. 40° 07.2' N

LONG. 74° 02.0' W

RIG: Energy Service Company Rig No. 17

COUNTY Sea Girt

STATE New Jersey

DATE SPUD: July 15, 1978

DATE COMPLETED: July 19, 1978

CORES:

NO.	FROM	TO	RECOVERY
1	821	845	19'
2	973	998	24'

HOLE SIZE:

DEPTH		HOLE SIZE IN.	CSG. SIZE IN.	MUD	
FROM	TO			VIS.	WT.
0	69	12 1/4	8-5/8	40	8.9
69	998	7-7/8	4 1/2	42	9.3

CASING:

FROM	TO	SIZE IN.	WT #/FT	GRADE	THREAD	NO. JTS
0	53	8-5/8	24.0	H-40	ST&C	1
0	961	4 1/2	9.5	J-55	ST&C	24

ALL DEPTHS REFERENCE
KDB + 11' to GL

FIGURE 2-2 WELL SCHEMATIC WITH COMPLETION INFORMATION

E. Site Preparation, Layout and Cleanup

Prior to initiation of drilling at Sea Girt, N.J. the site area was almost level and had an ungroomed grass covering. For site preparation, a bulldozer dug one pit 35' long, 35' wide, and 4' deep, and shallow pits for the water tank, mud pits, and pumps. The 4' x 4' cellar was dug by hand 4' deep and boarded over. After the hole was completed, the wellhead was installed and an iron grate was placed over the cellar (Fig. 2-2) and locked. On August 23, the mud pit was vacuumed and the site was backfilled, leveled, and seeded.

GRUY FEDERAL, INC.
2500 Tanglewilde, Suite 150
Houston, Texas 77063

June 28, 1978

The Chief of Staff
Department of Defense-New Jersey
Eggert Crossing Road
P.O. Box 979
Trenton, New Jersey 08625

Dear General:

With reference to recent letters, telephone conversations and personal visits with members of your Staff by representatives of Gruy Federal, Incorporated and the U. S. Department of Energy, we request permission be granted to Gruy Federal to drill, case and cement one heat gradient hole of 1,000' depth at a site within the boundaries of the National Guard Training Center, Sea Girt, New Jersey. Gruy Federal will execute this drilling under contract ET-73-C-08-1558 with the U. S. Department of Energy.

The purpose of the drilling is to conduct a scientific geological study attempting to find sources of residual heat in the bed rocks of the Atlantic Coastal Plains. Our utilization of the site is critical to the study. The first well is being drilled at Fort Monmouth, New Jersey, and your site location is next in priority.

An area of approximately one acre will be required for the site during actual drilling operations for a period of about 5 days. All disturbed land will be restored to its original condition, leaving only a 4' X 4' X 4' pit with a hinged steel cover on the site. The cover will be flush with the surface. The 1,000' hole will be filled with fresh water. For one year following, scientists from the New Jersey State Bureau of Geology and Topography, Virginia Polytechnic Institute, the U. S. Geological Survey and the U. S. Department of Energy, under Gruy Federal responsibility, will conduct heat gradient measurements of this water.

On completion of the tests, the hole will be turned over to you or to the State for any use deemed appropriate or Gruy Federal will plug and abandon the site as prescribed by Federal and State law.

During the time Gruy Federal conducts its operations on the site, it shall remain responsible for accidents, injuries or damages arising out of its operations. The site will be vacated in its original condition.

The actual bore hole site will be selected mutually by your representative and a representative of Gruy Federal, Inc.

Your cooperation and assistance in this research are sincerely appreciated. If you have any further questions concerning this operation, please call Mr. G. W. Duncan, Manager, Drilling and Resource Evaluation Division, Houston, Texas, at AC 713-785-9200, Collect.

Respectfully yours,

W. Edward McCain
Agent & Attorney In Fact

Department of Energy
Nevada Operations Office
P.O. Box 14100
Las Vegas, NV 89114

EXHIBIT IT-1.2

70

RECEIVED
GRUY FEDERAL INC.
HOUSTON, TEXAS

JUN 21 1978

JUN 16 1978

Dr. Kemble C. Widmer
Bureau of Geology & Topography
P. O. Box 2809
Trenton, NJ 08625

Dear Dr. Widmer:

We would appreciate your assistance in writing to Major General W. C. Menard, Chief of Staff, State of New Jersey, Department of Defense, and requesting that permission be granted to Gruy Federal Inc, of Houston, Texas to drill, case, and cement one heat gradient hole of approximately 1000 foot depth at a site within the National Guard Facility at Manasquan, New Jersey and/or other site(s) also within the National Guard jurisdiction as may be determined.

The specific drill site(s) will be mutually selected by Gruy Federal Inc. personnel and members of the National Guard staff at location(s) recommended and approved by Dr. Widmer, New Jersey State Geologist and Dr. John Costain of VPI and SU. Gruy Federal Inc. will execute this drilling under contract EG-78-C-03-1553 with the U. S. Department of Energy. An Environmental Assessment has been conducted and approved for this program. A site-specific checklist will be executed and DOE informed by Gruy Federal Inc. that the proposed drilling activities at Manasquan Facility will produce no adverse impact on the environment.

Access to the drilled hole(s) by DOE, Gruy Federal Inc., New Jersey State Bureau of Geology and Topography, VPI and SU, and USGS personnel for a period of approximately one year to collect scientific data is also requested.

Final disposition of the hole(s) subsequent to the DOE requirement for data collection will be that mutually agreed upon with your staff.

Sincerely,

R. T. Stearns
Geothermal Branch

E&EAD:RTS-682

cc: Col. H. Mutz, Dir.,
Install. & Services, Trenton, NJ
General Menard, Chief of Staff,
State of New Jersey Department of Defense, Trenton, NJ
Dr. A. Lohse, Gruy Federal Inc., Houston, TX
W. Duncan, Gruy Federal Inc., Houston, TX

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON 08625

OFFICE OF THE COMMISSIONER

PLEASE REPLY TO:
BUREAU OF GEOLOGY & TOPOGRAPHY
P. O. BOX 2609
TRENTON, NEW JERSEY 08625

June 27, 1978

New Jersey Department of Defense
Att: Major General W. C. Menard, Chief of Staff
New Jersey National Guard
Eggerts Crossing Road
Trenton, New Jersey 08625

Dear General Menard:

As you may know, the United States Department of Energy has embarked on a drilling program to determine possible geothermal resources in the Atlantic Coastal Plain. Part of the program involves five test wells in New Jersey. An appropriate site for one of these test wells is the National Guard property in Manasquan.

Both the New Jersey Energy Department and Department of Environmental Protection are extremely interested in the above program. We, therefore, respectfully request you give favorable consideration to allowing drilling at your Manasquan property.

A site-specific checklist will be executed and DOE informed by Gruy Federal, Inc. that the proposed drilling activities at Manasquan Facility will produce no adverse impact on the environment.

Access to the drilled hole by DOE, Gruy Federal, Inc., New Jersey State Bureau of Geology and Topography, VPI and SU, and USGS personnel for a period of approximately one year to collect scientific data is also requested.

Final disposition of the hole subsequent to the DOE requirement for data collection will be that mutually agreed upon with your staff.

Sincerely yours,
FOR THE STATE GEOLOGIST

Charles H. Shaner
Environmental Specialist

CHS:js

STATE OF NEW JERSEY
DEPARTMENT OF DEFENSE
EGGERT CROSSING ROAD, BOX 979
TRENTON, N.J. 08625

EXHIBIT II-1.4

73

IS

7 July 1978

Gruy Federal, Inc.
2500 Tanglewide, Suite 150
Houston, Texas 77063

Gentlemen:

Your request, dated 28 June 1978, to drill, case and cement one (1) heat gradient hole of 1000 feet depth on the lands of the State of New Jersey, Department of Defense, Training Center, Sea Girt, New Jersey, is approved.

Method of installation and controlling safeguards as set in your request, are to be strictly adhered to.

The Superintendent of the NJ National Guard Training Center, Sea Girt, NJ, will ensure you comply with your agreement. Direct contact with Col George Marshall (Ret) Superintendent is authorized (201 449-5269).

Sincerely yours,

J. P. CALLAHAN
LTC, FA, NJARNG (Ret)
Adjutant General

RECEIVED
GRUY FEDERAL INC.
HOUSTON, TEXAS

JUL 12 1978

SITE-SPECIFIC ENVIRONMENTAL INFORMATION CHECKLIST
HEAT GRADIENT HOLES
ATLANTIC COASTAL PLAIN GEOTHERMAL TEST PROGRAM

Site No. 41 State N. J.

Location New Jersey National Guard
Sea Girt, New Jersey

A. GENERAL

1. Has federal, state and/or local environmental assessment been conducted previously for the proposed drill site? Yes No X If yes, provide a copy, if available.
2. Have all required permits, licenses, and/or agreements for the proposed drill site been obtained? Yes X No If no, explain.
3. Does the drill site fall within the habitat of rare or endangered species? Yes No X If yes, explain. Eastern fly way, but no
species occupy the area at the test site.
4. Are known archeological sites, historic sites, prime or unique farmland, or natural landmarks within or visible from the site area? Yes No X If yes, explain.
5. Will casing left in the hole protect all ground water aquifers? Yes X No If no, explain.
6. Will a directional survey be conducted in the drill hole? Yes No X If yes, at what interval? feet. If no, explain. Not required for control in shallow 1000-foot hole.

7. Will expected continuous noise levels from site operations be 65 dBA or less at the nearest residence? Yes _____ No X If no, explain.
Each 8V-71 GMC engine equipped with two 4" No. SRU04-0196 maxim
silencers; maximum noise level 32.0 dBA, 250 center frequency;
for residential use.

B. SITE CONSTRUCTION

1. Will additional land clearing be required for the drilling and data collection activities (e.g., preparation of drill pad, road construction, mud reserve pits, pipeline)? Yes _____ No X If yes, describe.

2. Will the drill site and related roads be treated to minimize dust? Yes _____ No X If no, explain. Not necessary due to paved
roads and soil conditions.

3. Are portable sanitary facilities or an approved septic system to be used at the drill site? Yes X No _____ If no, explain. _____
Two porta-can type.

4. Will liquid and solid wastes be disposed in accordance with local regulations? Yes X No _____ If no, explain. _____

5. Will erosion control be required for excavated areas? Yes _____ No X If yes, explain. _____

6. Upon completion of proposed drilling and data collection activities, will the site be restored to as natural a condition as possible by regrading, filling, and reseeding? Yes X No _____ If no, explain. _____

C. SAFETY

1. Will blowout preventers be used? Yes X No _____ If no, explain. _____

2. Will fire extinguishers be located onsite? Yes X No _____ If no, explain. _____

3. Will engineering and mud logging personnel be onsite during drilling operations? Yes X No _____ If no, explain. _____

4. Does an emergency plan exist for evacuating personnel? Yes X No _____ If no, explain. _____

5. Will the drilling operations be conducted under a safety policy that ensures safe operating procedures and attention to job safety and health protection? Yes X No _____ If no, explain. _____

Completed from onsite inspection by:

Michael R. Glascock
by D.W. Duncan
Signature

Position: Engineer

Date: 1st July 78

SAFETY POLICY

1. The safety policies of Gruy Federal, Inc. are defined by the joint requirements of:
 - a. the Occupational Safety and Health Act of 1970, as defined and enforced by the Occupational Safety and Health Administration (OSHA) of the Department of Labor with respect to job safety and health protection, and
 - b. the safe operating procedures, inspection and training programs, and accident investigation forms of the International Association of Drilling Contractors, whether involving drilling rigs or other equipment.
2. OSHA requirements are summarized in the 10" X 16" plastic laminated JOB SAFETY AND HEALTH PROTECTION sign, GPO: 1974 O - 537-604; IADC procedures and inspection and report forms are summarized in the booklet Outline for Drilling Rig Safety Program, compiled by the IADC Safety Publications Subcommittee, revised 1976. Both of these documents are required to be displayed, reviewed at regular intervals by all supervisory personnel, and followed in concept and practice in all Gruy Federal operations involving job safety and health protection.
3. All Gruy Federal subcontractors and/or third party services are required to maintain meaningful and effective safety programs that include scheduled training and drills for personnel, and scheduled maintenance and testing of safety equipment.
4. In addition, all Gruy Federal field operations and all subcontractors and/or third party services to Gruy Federal field operations are required to maintain familiarity with and follow the recommended safe operating procedures and guidelines of the Accident Prevention Manual, IADC, revised edition, October, 1975.
5. The Gruy Federal Project Manager or his designated field representative shall have responsibility for maintaining these safety policies through:
 - a. inspection of all equipment and materiel,
 - b. inspection of personnel and equipment performance in safety drill or demonstration upon request, and
 - c. shutdown or exclusion from the job of any operation, materiel or personnel whose temporary condition or malfunction violates or jeopardizes the requirements of these safety policies.

February, 1978

Alan Lohse
Executive Vice President

GRUY FEDERAL, INC.

EXHIBIT II-3 78
2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 41 - Sea Girt

DATE July 12, 1978

COUNTY Fort Monmouth STATE New Jersey

REPORT NO. 1

REPORTED BY Lawrence / Smith

DEPTH

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

1700 0600

13 Hours

Tearing down rig & moving to new location.

Approximately 60% moved, 10% rigged up

on new location.

First report for well 41, commence operations
at 1700 hrs. 7/11/78.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 41 - Sea GirtDATE July 13, 1978COUNTY Fort Monmouth STATE New JerseyREPORT NO. 2REPORTED BY Lawrence / DuncanDEPTH -0-PROGRESSACTIVITY AT REPORT TIMETIME LOG
FROM TOELAPSEDOPERATIONS

24 Hour Rig Up

95% Moved

95% Rigged Up

GRUY FEDERAL, INC.

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(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 41 - Sea Girt

DATE July 14, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 3

REPORTED BY Lawrence / Smith

DEPTH -0-

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	1100	5 Hours	Rigging up. Dig cellar & ditches to reserve pit. Rig up control lines to rotary & rig floor. Install kelly hose. Place all subs & bit breakers on rig floor. Stake out guidelines to guide post. Fill mud pit & water tank with water, start walling cellar.
1100	2200	11 Hours	Clean Location No. 40.
2200	0100	3 Hours	Finish walling cellar.
0100	0230	1½ Hours	Rig up to drill rat hole & mouse hole.
0230	0300	½ Hour	Attempt to drill rat hole. Got kelly ½ way down with 200 psi on pump & ran out of water.
0300	0500	2 Hours	Go get truck driver.
0500	0600	1 Hour	Getting water & prepare to finish rat hole & mouse hole.

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(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 41 - Sea Girth

DATE July 15, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 4

REPORTED BY Lawrence / Duncan

DEPTH 69'-Shoe at 53

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0800	2 Hours	Finish filling mud pit w/water.
0800	0900	1 Hour	Finish drilling mouse hole & rat hole.
0900	1030	1½ Hours	Spud 12-1/4" hole at 0900 7/14/78 & drill to 69'.
1030	1130	1 Hour	Attempt circulating Hole clean.
1130	1230	1 Hour	Rig up Halliburton to cement.
1230	1400	1½ Hours	Drive shaft down on Halliburton pump truck -- repair.
1400	1600	2 Hours	Make up Halliburton float shoe on 1 joint 8-5/8" 24#/ft J-55 ST&C - & run to 53' RKB.
1600	1700	1 Hour	Cement w/45 sacks Halco lite w/2% Calcium Chloride at 12.6 pounds per gallon, displace w/3 barrels water. Bump plug w/500 psi at 1700 hours CIP. Good returns to surface.
1700	0100	8 Hours	Hold pressure w/Halliburton head while waiting on cement & building mud volume.
0100	0230	1½ Hours	Run in mousehole & tag firm cement 8' off bottom.
0230	0430	2 Hours	Release pressure on Halliburton head - No flow. Break out head. Back out, lay down landing joint.
0430	0600	1½ Hours	No BOPE.

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 41 - Sea Girt

DATE July 16, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 5

REPORTED BY Lawrence / Duncan

DEPTH 569'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0600 0700

1 Hour

Finish NU BOPE

0700 1000

3 Hours

Waiting on welder

1000 1330

3½ Hours

Fab new bell nipple

1330 1400

½ Hour

GIH & displace casing with mud.

1400 1430

½ Hour

Tag shoe at 52' and drill out 1 foot of cement & shoe.

1430 0230

12 Hours

Drill 52' - 450'.

0230 0400

1½ Hours

Shaker screens torn up.

0400 0600

2 Hours

Drill 450' - 569'.

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 41 - Sea Girt

DATE July 17, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 6

REPORTED BY Lawrence / Duncan

DEPTH 845'

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0630	½ Hour	Repair shale shaker.
0630	1100	4½ Hours	Drill 569' - 821' with rerun #2.
1100	1130	½ Hour	Circulate bottoms up.
1130	1200	½ Hour	POOH.
1200	1600	4 Hours	Repair makeup tongs.
1600	1700	1 Hour	GIH, Circulate bottoms up.
1700	2000	3 Hours	POOH, SLM.
2000	2200	2 Hours	GIH w/Christensen 6-3/4" core barrel & bit.
2200	2300	1 Hour	Wash & ream 2 joints to bottom.
2300	0030	1½ Hours	Core 821' - 845'.
0030	0200	1½ Hours	POOH, starter broke.
0200	0300	1 Hour	Repair starter on drawworks motor.
0300	0530	2½ Hours	Finish POOH w/core barrel LD core, 19' recovery, redress barrel and laid down.
0530	0600	½ Hour	GIH w/rerun #2.

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 41 - Sea Girt

DATE July 18, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. 7

REPORTED BY Lawrence / Smith

DEPTH 998'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0600	0630	½ Hour	Running hose with rerun Bit #2.
0630	0700	½ Hour	Circulating.
0700	0730	½ Hour	Wash & ream 1 joint to bottom.
0730	0800	½ Hour	Drilling from 845' to 853'.
0800	0830	½ Hour	Service Rig.
0830	0900	½ Hour	Drilling from 853' to 879'.
0900	1000	1 Hour	Repair shale shaker.
1000	1200	2 Hours	Drilling from 879' to 973'.
1200	1230	½ Hour	Circulating.
1230	1400	1½ Hours	POOH. Pick up core barrel #2 blade type core bit.
1400	1500	1 Hour	Run in hole.
1500	1630	1½ Hours	Core from 973' to 998'.
1630	1900	2½ Hours	POOH with core barrel. Laid down inner barrel. 24½' of recovery. Redress core barrel & laid down same.
1900	2300	4 Hours	Rig up USGS & Log. (Gamma Ray, Caliper & Temp.)
2300	2400	1 Hour	Run in hole to 952' at 45' of fill. Wash to 998'. (Stopped logging, hole was getting sticky).
2400	0030	½ Hour	Circulate bottom up.
0030	0100	½ Hour	Rig up to lay down drill pipe.
0100	0400	3 Hours	POOH. Lay down drill pipe, Bottom hole assembly.
0400	0600	2 Hours	Nippling down BOP equipment.

24 Hours

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DAILY DRILLING REPORTJOB NO. 3022WELL NO. 41 - Sea GirtDATE July 19, 1978COUNTY Fort Monmouth STATE New JerseyREPORT NO. 8REPORTED BY Lawrence / SmithDEPTH 959'PROGRESSACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0700	1 Hour	Finish nipping down BOP equipment.
0700	0800	1 Hour	Make up Halliburton shoe on 4½" casing.
0800	1000	2 Hours	Rig up & run 24 joints of 4½" casing. Stopped at 967".
1000	1200	2 Hours	Circulating casing & attempting to work to bottom with no success.
1200	1230	½ Hour	Waiting on orders.
1230	1300	½ Hour	LD 1 joint casing. PU landing joint & set 4½" at 961 RKB. Ran total of 24 joints, 4½", 9.5# per foot, J-55 ST&C 8R casing. Shoe at 961' RKB.
1300	1400	1 Hour	Rig up Halliburton & cement w/300 sacks Class A Lite w/2% Calcium Chloride at 12.6 PPG. Displace w/16 barrels of water. Bump plug at 1000 psi. Cement in place at 1400 hours. Good mud returns through-out. No cement to surface.
1400	1430	½ Hour	Release pressure. No flowback. ND Halliburton.
1430	1600	1½ Hour	PU & run 2-3/8" tubing.
1600	1700	1 Hour	Repair tubing elevators.
1700	1800	1 Hour	Finish running 2-3/8" tubing. Plug back TD at 959' RKB.
1800	2100	3 Hours	Cleaning sand trap & mud pit.
2100	2130	½ Hour	Circulating 4½" casing.
2130	2200	½ Hour	Mix 6 gallons X-corr. Displace casing w/16 barrels of treated water.
2200	2400	2 Hours	POOH. LD 2-3/8" tubing.
2400	0600	6 Hours	Rigging down rig for rig move. Mud pit loaded out. Mixing pump loaded out Suction & discharge lines loose.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150⁸⁶
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 41 - Sea Girt

DATE July 20, 1978

COUNTY Fort Monmouth

STATE New Jersey

REPORT NO. (Page 1 of 2)

REPORTED BY Foster / Duncan

DEPTH 959'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0600 1200

6 Hours

Rigging down. Move out 350 pump & mixing pump, mud pit & water tank.

1200 1800

6 Hours

Finish rigging down. Load out cat walk, gooseneck trailer.

1800 2100

3 Hours

Load out substructure & carrier.

15 Hours

Release rig from well No. 41 at 2100 Hours, July 19, 1978.

III. Site No. 39-A, Forked River, New Jersey

A. Site Location

The location of Site No. 39-A, Forked River, N.J., heat flow measurement hole is shown on Fig. 3-1, a section of USGS 7½' Quadrangle "Forked River, N.J.". The coordinates of the drill site are longitude 74° 10' 52" W, latitude 39° 50' 31" N. The site, located at the New Jersey State Game Farm at Forked River, lies east of Lake Barnegat and is approximately 15 feet above sea level.

B. Lease/Letter Agreements, Permits, Licenses

Access to Site No. 39-A was obtained by permission of the New Jersey Division of Fish and Game, Department of Environmental Protection by letter of agreement (Exhibit III-1). No drilling permit was required.

C. Environmental Information Survey

The environmental information checklist, supplementary information required by the "Environmental Assessment, Geothermal Exploratory Drilling Program, Eastern United States, Coastal Plains and Piedmont Provinces" (DOE/EA0015), is shown in Exhibit III-2.

D. Drilling Activities

Drilling activities at Site No. 39-A, Forked River, New Jersey, began July 20, 1978 and were completed on August 1, 1978. Fig. 3-2, a schematic diagram of the completed hole, summarizes data for Site No. 39-A. The daily drilling reports are shown in Exhibit III-3 and Exhibit III-4 is an operational summary of Site No. 39-A. Cores and cuttings taken from the hole during drilling were delivered

FIGURE 3-1 LOCATION SITE # 39-A, FORKED RIVER, N. J.
 LATITUDE 39°50.5' N, LONGITUDE 74°10.6' W

FORKED RIVER, N. J.

N3945—W7407.5/7.5

1953
 PHOTO REVISSED 1972
 AMS 6163 I SW—SERIES V822

GRUY FEDERAL, INC.

SITE NO. 39-A

WELL NAME Forked River

89

LOCATION: LAT. 39° 50.5' N
LONG. 74° 10.6' W

RIG: Energy Service Company Rig No. 17

COUNTY Forked River

STATE New Jersey

DATE SPUDED: July 24, 1978

DATE COMPLETED: Aug. 1, 1978

CORES:

NO.	FROM	TO	RECOVERY
1	733	758	18'
2	975	1000	0'

HOLE SIZE:

DEPTH		HOLE SIZE IN.	CSG. SIZE IN.	MUD	
FROM	TO			VIS.	WT.
0	131	12 1/4	8-5/8	40	8.8
131	1000	7-7/8	4 1/2	45	8.8

CASING:

FROM	TO	SIZE IN.	WT #/FT	GRADE	THREAD	NO. JTS
0	129	8-5/8	24.0	H-40	ST&C	3
0	983	4 1/2	9.5	J-55	ST&C	24

ALL DEPTHS REFERENCE
KDB + 11' to GL

FIGURE 3-2 WELL SCHEMATIC WITH COMPLETION INFORMATION

to VPI&SU. No electric logs were run on this hole. Temperature logs were run by VPI&SU after casing the hole; however, these data were not made available to Gruy. The completed hole was left filled with water containing corrosion inhibitor.

E. Site Preparation, Layout, and Cleanup

Prior to initiation of drilling at Forked River, the site area was almost level and had a wild grass covering. For site preparation, a bulldozer dug one pit 35' long, 35' wide, and 4' deep, and shallow pits for the water tank, mud pits, and pumps. The 4' x 4' cellar was dug by hand 4' deep and boarded over. After the hole was completed, the wellhead was installed and an iron grate was placed over the cellar (Fig. 3-2) and locked. On August 22, the mud pit was vacuumed and the site was backfilled, leveled, and seeded.

MEMORANDUM

EXHIBIT III-1

DATE June 29, 1978

TO: Russell A. Cookingham
Director, Div. Fish, Game & Shellfisheries

FROM: Kemble Widmer, State Geologist
Bureau of Geology & Topography

SUBJECT: Geothermal Test

The federal government is financing a test program of (60) 1,000 ft. test holes starting at Fort Monmouth, NJ and running southward to Georgia. Five of these holes are to be in New Jersey. Upon completion of the measurements, the holes become the property of the land owner for whatever use that he may wish to make of it. Each hole is 1,000 ft. deep and 4½" in diameter, sealed top and bottom, after being filled with fresh water. Approximately three months after the hole is drilled, a panel truck with a delicate heat sensor will take heat measurements and this will occur periodically for approximately another year.

Upon completion of the tests, it has occurred to me that we could probably use the hole for a deep water well for the Game Farm. Its diameter limits the size of the pump but the depth would indicate we can use one of the deeper aquifers.

As you have already been advised, the actual operation by Gruy Federal involves a very large truck-mounted drilling rig and support vehicles. They require about an acre of open space near a paved road. All sumps, pumps and auxiliary equipment are contained on the trucks and upon completion of the operation (estimated 5 days) they will restore the surface and seed the area. What remains is a 4x4 ft. by approximately 3 ft. deep pit enclosing the top of the well, and this has a locked grating or door even with the surface. My representative, Mr. Charles Shaner, Civil Engineer, and Col. W. Edward McCain, Landsman for Gruy Federal, have talked to Mr. Golden on the site and everything seems satisfactory. If you have any further questions I may be available on the 7th (if we have to move); but certainly on the 10th.

I would appreciate formal approval confirming the message from George Howard that they have your permission to move onto the site approximately the 10th of July.

Kemble Widmer

KW:js

SITE-SPECIFIC ENVIRONMENTAL INFORMATION CHECKLIST

EXHIBIT III-2 92

HEAT GRADIENT HOLES

ATLANTIC COASTAL PLAIN GEOTHERMAL TEST PROGRAM

Site No. 39 State New Jersey
 Location State Game Farm
Forked River, New Jersey

A. GENERAL

1. Has federal, state and/or local environmental assessment been conducted previously for the proposed drill site? Yes No X If yes, provide a copy, if available.
2. Have all required permits, licenses, and/or agreements for the proposed drill site been obtained? Yes X No If no, explain.
3. Does the drill site fall within the habitat of rare or endangered species? Yes No X If yes, explain. Eastern Bluebird, but no species occupy the area @ the test site
4. Are known archeological sites, historic sites, prime or unique farmland, or natural landmarks within or visible from the site area? Yes No X If yes, explain.
5. Will casing left in the hole protect all ground water aquifers? Yes X No If no, explain.
6. Will a directional survey be conducted in the drill hole? Yes No X If yes, at what interval? feet. If no, explain. Not necessary for 1000' nonproducing hole

7. Will expected continuous noise levels from site operations be 65 dBA or less at the nearest residence? Yes _____ No X If no, explain.

Each 8V-71 GMC engine equipped w/ two 4" No. SRU04-0196 Maxim silencers; maximum noise level 320 dBA, 250 center frequency; for residential use.

B. SITE CONSTRUCTION

1. Will additional land clearing be required for the drilling and data collection activities (e.g., preparation of drill pad, road construction, mud reserve pits, pipeline)? Yes _____ No X If yes, describe.

2. Will the drill site and related roads be treated to minimize dust?

Yes _____ No X If no, explain. Not necessary due to paved roads and soil conditions.

3. Are portable sanitary facilities or an approved septic system to be used at the drill site? Yes X No _____ If no, explain. Two portable toilets will be on location.

4. Will liquid and solid wastes be disposed in accordance with local regulations? Yes X No _____ If no, explain. _____

5. Will erosion control be required for excavated areas? Yes _____ No X If yes, explain. _____

6. Upon completion of proposed drilling and data collection activities, will the site be restored to as natural a condition as possible by regrading, filling, and reseeding? Yes X No _____ If no, explain. _____

C. SAFETY

1. Will blowout preventers be used? Yes X No _____ If no, explain. _____
2. Will fire extinguishers be located onsite? Yes X No _____ If no, explain. _____
3. Will engineering and mud logging personnel be onsite during drilling operations? Yes X No _____ If no, explain. _____
4. Does an emergency plan exist for evacuating personnel? Yes X No _____ If no, explain. _____
5. Will the drilling operations be conducted under a safety policy that ensures safe operating procedures and attention to job safety and health protection? Yes X No _____ If no, explain. _____

Completed from onsite inspection by:

Michael R. Shrock
Signature

Position: Field Engineer

Date: July 9, 1978

SAFETY POLICY

1. The safety policies of Gruy Federal, Inc. are defined by the joint requirements of:
 - a. the Occupational Safety and Health Act of 1970, as defined and enforced by the Occupational Safety and Health Administration (OSHA) of the Department of Labor with respect to job safety and health protection, and
 - b. the safe operating procedures, inspection and training programs, and accident investigation forms of the International Association of Drilling Contractors, whether involving drilling rigs or other equipment.
2. OSHA requirements are summarized in the 10" X 16" plastic laminated JOB SAFETY AND HEALTH PROTECTION sign, GPO: 1974 O - 537-604; IADC procedures and inspection and report forms are summarized in the booklet Outline for Drilling Rig Safety Program, compiled by the IADC Safety Publications Subcommittee, revised 1976. Both of these documents are required to be displayed, reviewed at regular intervals by all supervisory personnel, and followed in concept and practice in all Gruy Federal operations involving job safety and health protection.
3. All Gruy Federal subcontractors and/or third party services are required to maintain meaningful and effective safety programs that include scheduled training and drills for personnel, and scheduled maintenance and testing of safety equipment.
4. In addition, all Gruy Federal field operations and all subcontractors and/or third party services to Gruy Federal field operations are required to maintain familiarity with and follow the recommended safe operating procedures and guidelines of the Accident Prevention Manual, IADC, revised edition, October, 1975.
5. The Gruy Federal Project Manager or his designated field representative shall have responsibility for maintaining these safety policies through:
 - a. inspection of all equipment and materiel,
 - b. inspection of personnel and equipment performance in safety drill or demonstration, upon request, and
 - c. shutdown or exclusion from the job of any operation, materiel or personnel whose temporary condition or malfunction violates or jeopardizes the requirements of these safety policies.

Alan Lohse
Executive Vice President

GRUY FEDERAL, INC.

EXHIBIT III-3
2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 39A

DATE July 20, 1978

COUNTY Forked River

STATE New Jersey

REPORT NO. (Page 2 of 2)

REPORTED BY Foster / Duncan

DEPTH -0-

PROGRESS

ACTIVITY AT REPORT TIME

Start Well 39A at 2100 Hours - July 19, 1978

TIME LOG

FROM TO

ELAPSED

OPERATIONS

2100 2400

3 Hours

Moving Units.

2400 0600

6 Hours

Rigging up.

9 Hours

Spot mud pit, & pumps.
Cleaning up location 41.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150⁹⁷
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 39A

DATE July 21, 1978

COUNTY Forked River

STATE New Jersey

REPORT NO. 1

REPORTED BY Foster / Lawrence

DEPTH -0-

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0600 2400

12 Hours

Moving equipment & pipe to Location 39A
and clean location at 41.

2400 0600

12 Hours

Digging cellar & walling same - Dig ditches
to reserve pit, filling water tank & vacuum
truck with water

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 39A

DATE July 22, 1978

COUNTY Forked River

STATE New Jerwey

REPORT NO. 2

REPORTED BY Lawrence / Foster

DEPTH -0-

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0700	1 Hour	Refuel all trucks & day tank w/diesel.
0700	0800	1 Hour	Prepare substructure to unload w/one winch truck.
0800	0900	1 Hour	Set substructure over hole.
0900	1100	2 Hours	Spot rig in place, set leveling jacks & level rig.
1100	1200	1 Hour	Raise mast & relelevel rig.
1200	1300	1 Hour	Scope up derrick, set belly guide lines.
1300	1600	3 Hours	Rig up floor, repair hyd. line on pump, set goose neck trailer in place.
1600	1700	1 Hour	Move cat walk in place & set V-Door.
1700	1800	1 Hour	Rig up standpipe manifold & vibrator hose.
1800	2000	2 Hours	Rig up lights on mud pit & electrical lines to centrifugal pump. Repair short on centrifugal pump.
2000	2100	1 Hour	R.U. guide lines to guide post.
2000	2130	½ Hour	Pick up swivel, Kelly, & NU Kelly hose.
2130	2300	1½ Hours	NU x-over sub, bit sub, & 12½" bit.
2300	2400	1 Hour	Drilling rat hole, lost circ. 10' below ground level, continue to drill to 40' below ground level. POH - Attempt to set Kelly shuck, would not go, hole caving. Drilled w/water.
2400	0330	3½ Hours	Repair derrick lights, torn up on rig move, hand power tongs (3 men on morning tour: Driller, roughneck, truck driver).
0330	0600	2½ Hours	Install shaker tub-motor on wrong side.

24 Hours

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DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 23, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 3REPORTED BY Lawrence / FosterDEPTHPROGRESSACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSEDOPERATIONS

0600 0800	2 Hours	Tear down old shale shaker & attempt to rig up new one.
0800 0900	1 Hour	Service Rig.
0900 1000	1 Hour	Move catwalk (realign) to V-Door & substructure.
1000 1300	3 Hours	Building mud.
1300 1400	1 Hour	Drill mousehole w/mud.
1400 1500	1 Hour	Drill rathole w/mud.
1500 1530	½ Hour	Set Kelly shuck in rathole, service swivel (top seal evidently out).
1530 1600	½ Hour	Rig Up to Nipple Up.
1600 1700	1 Hour	Turn Kelly hose (hanging up on board).
1700 1830	1½ Hours	NU BOPE (Bell nipple 4" too high).
1830 1900	½ Hour	Rig up weight indicator & Totco.
1900 0600	11 Hours	W.O. Welder: while waiting the following accomplished: <ul style="list-style-type: none"> (A.) P.U. & M.U. BHA (B.) Rig up handrails (C.) Pick up, clean up tools and spare parts (D.) Replace crown light bulb and one derrick light (E.) Load pipe rack w/27 joints d.p. (F.) Drain excess water from around mud pit to reserve pit.

 24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 24, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 4REPORTED BY Gurley / DuncanDEPTH 192'PROGRESSACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	1000	4 Hours	Make up Bell nipple.
1000	1200	2 Hours	NU BOPE
1200	1230	½ Hour	GIH, Tag Bottom at 40'.
1230	1300	½ Hour	Drill 12'.
1300	1330	½ Hour	Repair rotary socket.
1330	1500	1½ Hours	Drill to 99'.
1500	1630	1½ Hours	Hole caving, circulate, raise viscosity to 45.
1630	2000	3½ Hours	Drilling to 192'.
2000	2400	4 Hours	POOH, Build Volume
2400	0300	3 Hours	Work pipe, C&C Mud & Hole.
0300	0330	½ Hour	Returns coming up outside 8-5/8".
0330	0600	2½ Hours	ND BOPE

 24 Hours

GRUY FEDERAL, INC.

 2500 TANGLEWILDE, SUITE 150
 HOUSTON, TEXAS 77063
 (713) 785-9200
DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 25, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 5REPORTED BY Foster / LawrenceDEPTH 131'PROGRESSACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0800	2 Hours	P.U. 8-5/8" landing & Make up same in 8-5/8" surface casing. Pull one joint surface & lay down same.
0800	0930	1½ Hours	Lay down drill pipe & collars.
0930	1200	2½ Hours	Drill 12-1/4" hole to 130.94.
1200	1600	4 Hours	Circulate & Condition hole & mud.
1600	1630	½ Hour	POH to run 8-5/8" casing.
1630	1730	1 Hour	M.U. Howco shoe & R.U. & Run 3 joints 8-5/8", 24#/ft J-55, ST&C, 8RD casing w/shoe at 128.90.
1730	1830	1 Hour	Rig up Howco to cement.
1830	1900	½ Hour	Cement w/250 sacks Class A light 2/2% Calcium Chloride at 13.6 ppg. Displace w/9 barrels water. Bump plug w/500 psi - CLOSED in pressure at 1900 hours. Release pressure. No flow back. Good mud returns throughout job & cement returns to surface.
1900	0600	11 Hours	Waiting on cement at 0500 hours. Break out cement head & lay down same.

 24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 26, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 6REPORTED BY Acker / LawrenceDEPTH 695'PROGRESSACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0900	3 Hours	Finish NU BOPE.
0900	1000	1 Hour	Run in hole.
1000	1100	1 Hour	Tag cement at 128' & drill shoe.
1100	1200	1 Hour	Drilling to 162'.
1200	1300	1 Hour	Repair clutch actuator on PT 350 pump.
1300	1400	1 Hour	Drilling to 193' bit plugged.
1400	1600	2 Hours	POH- unplug bit - Ran in hole.
1600	1630	½ Hour	Wash to 193'.
1630	0600	13½ Hours	Drilling from 193' to 695' circulating each joint. prior to connection.

 24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 27, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 7REPORTED BY Gurley / LawrenceDEPTH 733'PROGRESSACTIVITY AT REPORT TIME

<u>TIME LOG</u>			
<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0600	0630	½ Hour	Clean sand trap.
0630	0700	½ Hour	Drill.
0700	0730	½ Hour	Circulate & Condition mud & hole.
0730	0930	2 Hours	Drill to 733'.
0930	1000	½ Hour	Circulate & Condition hole - hole started caving.
1000	1100	1 Hour	POH
1100	1400	3 Hours	Repair PT350 pump
1400	1600	2 Hours	PU core barrel & RIH
1600	1700	1 Hour	Plug core barrel
1700	1800	1 Hour	POH w/plugged core barrel
1800	2000	2 Hours	Unplug core barrel & ond d:c.
2000	2100	1 Hour	R.I.H. w/bit #2.
2100	2130	½ Hour	Attempt to circulate - bit plugged.
2130	2230	1 Hour	POH w/plugged bit.
2230	2400	1½ Hours	Unplug bit & R.I.H.
2400	0100	1 Hour	Plugged bit & POH.
0100	0300	2½ Hours	Clean pits.
0330	0600	2½ Hours	Repair PT350 pump.

 24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 28, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 8REPORTED BY Acker / LawrenceDEPTH 733'PROGRESSACTIVITY AT REPORT TIMETIME LOG
FROM TOELAPSEDOPERATIONS

0600	0830	2½ Hours	Finish cleaning mud pit.
0830	1230	4 Hours	Mix mud.
1230	1730	5 Hours	Wash from 175 - 636 and plug bit.
1730	1800	½ Hour	Unplug bit by working pipe.
1800	2230	4½ Hours	Wash from 636 - 733.
2230	0500	6½ Hours	Circ. & Cond. Mud & hole.
0500	0600	1 Hour	POH for core #1.

 24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 29, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 9REPORTED BY Nickel / LawrenceDEPTH 878'PROGRESS 145'ACTIVITY AT REPORT TIME

Drilling Mud Wt. @8.8 Vis. @40

TIME LOG

<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0600	0630	½ Hour	Service Rig.
0630	0700	½ Hour	RIH w/6-3/4" blade type core bit & core barrel.
0700	0800	1 Hour	Circ.
0800	1000	2 Hour	Core from 733' to 758'.
1000	1200	2 Hours	POH w/core barrel.
1200	1330	1½ Hours	LD PVC w/18' recovery.
1330	1400	½ Hour	RIH
1400	1500	1 Hour	Attempt to break circulation - bit plugged.
1500	1600	1 Hour	POH - Remove jets from bit & RIH w/6 stds. d.p. (ground caved in from T-Bar to substructure)
1600	1830	2½ Hours	Fill cave-in w/sand & gravel (approx. 5 yds) & level derrick.
1830	2100	2½ Hours	Circ. & build mud viscosity.
2100	2130	½ Hour	Finish RIH.
2130	2200	½ Hour	Ream 6-3/4' hole to 7-7/8" from 733' to 758'.
2200	0300	5 Hours	Drill from 758' to 840'.
0300	0330	½ Hour	Service Rig.
0330	0600	2½ Hours	Drill from 840' to 878'.

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 39A

DATE July 30, 1978

COUNTY Forked River

STATE New Jersey

REPORT NO. 10

REPORTED BY Nickel / Lawrence

DEPTH 916'

PROGRESS 38'

ACTIVITY AT REPORT TIME

Drilling Mud wt. @8.8 Vis. @43

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600	0630	½ Hour	Drilling rom 878 - 881'
0630	0730	1 Hour	POH to repair PT350 pump.
0730	0800	½ Hour	Service Rig.
0800	1200	4 Hours	Repair Oilwell PT350 pump motor radiator (belts & hos
1200	1300	1 Hour	RIH to 848, bit plugged, POH and remove jets.
1300	1500	2 Hours	RIH
1500	2100	6 Hours	Filling cave in with gravel & sand.
2100	2300	2 Hours	Wash out & clean sand trap.
2300	0300	4 Hours	Wash from 310 - 881.
0300	0600	3 Hours	Drilling from 881 - 916.

24 Hours

NOTE: Morning tour short handed, wanted to
shut rig down, but J. Nickel would
not allow.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE July 31, 1978COUNTY Forked River STATE New JerseyREPORT NO. 10REPORTED BY Nickel / LawrenceDEPTH 1000'PROGRESS 84'ACTIVITY AT REPORT TIME

N. D. BOPE Mud wt. @8.8 Vis. @53

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	1200	6 Hours	Drilling to 975.
1200	1230	½ Hour	Circulating
1230	1330	1 Hour	POH for core #2.
1330	1480	1 Hour	Repair kelly hose & gooseneck.
1430	1600	1½ Hours	RIH w/6-3/4' blade type bit & core barrel.
1600	1800	2 Hours	Core from 975' to 1000'.
1800	1900	1 Hour	POH w/core barrel
1900	2100	2 Hours	LD core barrel, no recovery.
2100	2200	1 Hour	RIH w/7-7/8" bit.
2200	2400	2 Hours	Wash from 823 - 975 (Precautionary) no fill.
2400	0130	1½ Hour	Ream 6-3/4" hole to 7-7/8" from 975 - 1000'.
0130	0230	1 Hour	Circ., Cond. Mud & Hole.
0230	0430	2 Hours	L.D.D.P.
0430	0600	1½ Hours	ND BOPE.

 24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 39ADATE August 1, 1978COUNTY Forked RiverSTATE New JerseyREPORT NO. 12REPORTED BY Nickel / LawrenceDEPTH 980'PROGRESSACTIVITY AT REPORT TIMETIME LOG

<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0600	0800	2 Hours	Finish N.D. BOPE
0800	0900	1 Hour	Rig up 4½" casing tools
0900	1030	1½ Hour	Run 24 jts. 4½", 9.5#/ft., J-55, 8RD, ST&C csg. w/Howco float shoe @ 982.62 RKB.
1030	1100	½ Hour	Circ.
1100	1230	1½ Hours	Rig up Howco & cement 4½" w/300 sacks Class A light w/2% Calcium Chloride at 12.7 to 13.7 ppg. Bump plug w/1000 psi @ 1230 hours 7/31/78 w/16 barrels fresh water. Good mud returns throughout job w/8 barrels cement to surface.
1230	1600	3½ Hours	Rig up tbg. tools - PU 2-3/8" tbg. - RIH w/3-3/4" bit & tag plug @ 980'.
1600	1700	1 Hour	Circ. & displace 4½" w/16 barrels fresh water treated w/16 gallons X-Corr.
1700	1830	1½ Hour	POH & lay down 2-3/8" tbg.
1830	2030	2 Hours	Wash and clean mud pit.
2030	2400	3½ Hours	Rig down for move to Atlantic City.
		<u>18 Hours</u>	

WELL 39A COMPLETE AT 2400 HOURS 07/31/78.

September 28, 1978

OPERATIONS SUMMARY

OPERATOR : Gruy Federal
 LEASE : Forked River
 WELL : No. 39-A
 COUNTY : Ocean, New Jersey

7/28/78 TD 733'. Activity at report time: Preparing to core. 24 hrs. breakdown: 2.5 hrs. finished cleaning mud pits. 4 hrs. mixed pit of mud, build volume. 5 hrs. washed & reamed from 175'-636'. Plugged bit. .5 hr. working pipe to unplug bit, successful. 4.5 hrs. washed & reamed from 512-733'. 6.5 hrs. circ. & cond. hole. 1 hr. POH to run core barrel.

7/29/78 TD 878'. Progress: 145'. Activity at report time: Drlg. M.W. 8.8, Visc. 40. Elapsed time: .5 hr. rig service. .5 hr. TIH w/core barrel. 1 hr. circ. to screen sd. from mud. 2 hrs. coring from 733'-758'. 2 hrs. POH w/core barrel. 1.5 hrs. LD core, recovered 18'. .5 hr. GIH w/7-7/8" bit, plugged bit. 1 hr. trying to break circ., bit plugged. 1 hr. POH, remove bit noz. Started TIH. Run 6 stands. Ground caved in under rig T-bar between pit & rig floor substructure. 2.5 hrs. filled cave in w/sd. & gravel used 5 yards. Leveled derrick. 2.5 hrs. circ. & mixed gel to build up viscosity. .5 hr. FTIH. .5 hr. reamed 6-3/4" hole to 7-7/8" from 733'-758'. 5 hrs. drlg. from 758'-840'. .5 hr. rig service. 2.5 hrs. drlg. from 820'-878'.

7/30/78 TD 916'. Progress: 38'. Activity at report time: Drlg. M.W. 8.8, Visc. 43. Elapsed time: .5 hr. drlg. from 878'-881'. 1 hr. POH to repair pmp. & fill cave in under substructure. .5 hr. rig service. 4 hrs. repaired hose on Oil Well PT350 pmp 12-V-71 engine & replaced V-belts & hose to radiator. 1 hr. TIH to 848'. Bit plugged POOH to remove bit noz. 2 hrs. GIH w/no jets in bit & unplugging bit. 6 hrs. filling cave in under substructure w/gravel & LD board matting. 2 hrs. washed out sd. trap. 4 hrs. washed down from 310'-881'. 3 hrs. drlg. from 881'-916'.

7/31/78 TD 1000'. Progress: 84'. Activity at report time: ND BOP's. M.W. 8.8, Visc. 53. Elapsed time: 6 hrs. drlg. from 916' to 975'. .5 hr. circ. 1 hr. TOH to core. 1 hr. repaired kelly hose connection or goose neck. 1.5 hrs. TIH w/core barrel & 6-3/4" bit. 2 hrs. coring from 975'-1000'. 1 hr. TOH w/core barrel. 2 hrs. LD core barrel, no recovery. Orders from Dr. Joe Lambaise w/VPI to stop coring & set 4 1/2" csg. 1 hr. TIH w/7-7/8" bit. 2 hrs. washed from 823'-975'. 1.5 hrs. reamed 6-3/4" hole to 7-7/8" from 975'-1000'. 1 hr. circ. & cond. mud. 2 hrs. LD D.P. 1.5 hrs. ND BOP's.

Operations Summary
Forked River No. 39-A
Page 2

8/1/78 Present operations: Well complete, moving rig. PBTD 980'. Elapsed time: 2 hrs. FND BOP's. 1 hr. RU 4.5" csg. tools. 1.5 hrs. running 24 jts. of 4.5" 9.5# RD ST&C csg. + float shoe measures 970.12' set @ 982.62'. .5 hr. circ. 1.5 hrs. RU Halliburton cmt. equipment & cmt. 4.5" csg. w/300 sks. of Halliburton lite wt. 2% CaCl. Make slurry 12.7 to 13.7 ppg. Plug on btm. @ 12:30 p.m. 7-31-78. 8 bbls. of cmt. returned to surface of ground. 3.5 hrs. RU tb. tool. PU 2-3/8" tb. TIH w/3-3/4" bit, found plug @ 980'. 1 hr. circ. Displ. F.W. w/CORR-X corrosion inhibitor water. 1.5 hrs. LD 2-3/8" tb. 2 hrs. washed mud pits. 3.5 hrs. RD to move. Well complete @ 12:00 midnight 7-31-78.

IV. Site No. 38, Atlantic City, New Jersey

A. Site Location

The location of Site No. 38, Atlantic City, N.J., heat flow measurement hole is shown on Fig. 4-1, a section of USGS 7½' Quadrangle "Oceanville, N.J.". The coordinates of the drill site are longitude 74° 27' 14" W, latitude 39° 22' 46" N. The site, located at the Dry Land Marina off Absecon Blvd., lies on the west bank of Beach Thorofare and Absecon Channel, and has a ground elevation of approximately 5 feet above sea level.

B. Lease/Letter Agreements, Permits, Licenses

Access to Site No. 38 was obtained by permission of the owners of Dry Land Marina by a fee-lease arrangement (Exhibit IV-1). No drilling permit was required.

C. Environmental Information Survey

The environmental information checklist, supplementary information required by the "Environmental Assessment, Geothermal Exploratory Drilling Program, Eastern United States, Coastal Plains and Piedmont Provinces" (DOE/EA-0015) is shown in Exhibit IV-2.

D. Drilling Activities

Drilling activities at Site No. 38, Atlantic City, N.J., began August 1, 1978 and were completed on August 10, 1978. Fig. 4-2, a schematic diagram of the completed hole, summarizes data for Site No. 38. The daily drilling reports are shown in Exhibit IV-3 and Exhibit IV-4 is an operational summary of Site No. 38. Cores and cuttings taken from the hole during drilling were delivered to VPI&SU. Electric logs were run on this hole by the USGS and temperature logs were run by VPI&SU after the hole was cased; however, these data were not made available to Gruy. The completed hole was left filled with water containing corrosion inhibitor.

FIGURE 4-1 LOCATION SITE # 38, ATLANTIC CITY, N. J.
LATITUDE 39°22.8' N, LONGITUDE 74°27.4' W

OCEANVILLE, N. J.

N3922.5—W7422.5/7.5

1952
PHOTOREVISED 1972
AMS 6162 IV NW--SERIES V822

GRUY FEDERAL, INC.

SITE NO. 38

WELL NAME Atlantic City

LOCATION: LAT. 39° 22.8' N

113

LONG. 74° 27.4' W

RIG: Energy Service Company Rig No. 17

COUNTY Atlantic

STATE New Jersey

DATE SPUD: Aug. 5, 1978

DATE COMPLETED: Aug. 9, 1978

CORES:

NO.	FROM	TO	RECOVERY
1	599	624	21'
2	975	1003	18'

HOLE SIZE:

DEPTH		HOLE SIZE IN.	CSG. SIZE IN.	MUD	
FROM	TO			VIS.	WT.
0	50	12 1/4	8-5/8	60	8.8
50	1034	7-7/8	4 1/2	45	8.9

CASING:

FROM	TO	SIZE IN.	WT #/FT	GRADE	THREAD	NO. JTS
0	51	8-5/8	24.0	H-40	ST&C	1
0	989	4 1/2	9.5	J-55	ST&C	24

ALL DEPTHS REFERENCE
KDB + 11' to GL

FIGURE 4-2 WELL SCHEMATIC WITH COMPLETION INFORMATION

E. Site Preparation, Layout, and Cleanup

Prior to initiation of drilling at Atlantic City, the site area was level and had a wild grass covering. At one time the area had been graveled over. For site preparation, a bulldozer dug one pit 35' long, 35' wide, and 4' deep, and shallow pits for the water tank, mud pits and pumps. The 4' x 4' cellar was dug by hand 4' deep and boarded over. After the hole was completed, the wellhead was installed and an iron grate was placed over the cellar (Fig. 4-2) and locked. On August 24, the mud pit was vacuumed and the site was backfilled, leveled, and graveled.

F. Exhibits

EXHIBIT IV-1

115

STATE OF

COUNTY OF

LEASE CONTRACT FOR GEOTHERMAL MEASUREMENT

This Lease Contract, made and entered into as of this the 1st day of JULY, 1978 by and between DRY LAND MARINA INC.
2079 ROSEBUD BLVD
ATLANTIC CITY, NEW JERSEY, of
 _____, herein
 referred to as "Grantor", whether one or more and GRUY FEDERAL, INC. a Texas
 Corporation, of Suite 150, 2500 Tanglewilde, Houston, Texas 77063, herein
 referred to as "Grantee", as follows:

WITNESSETH:

That Grantor for and in consideration of One Hundred (\$100.00) Dollars in hand paid to Grantor by Grantee and for other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, Grantor until February 1st, 1979, has granted the use and by these presents does loan, lease and let to Grantee the land situated in ATLANTIC County, State of NEW JERSEY, as more particularly described in Exhibit "A", attached hereto and incorporated herein by reference, together with a servitude of passage on, over and crossing the lands, including existing roadways, trails, bridges and the like lying and being situated on the leased lands or adjacent lands owned by Grantor or in which Grantor has a right of passage, so that Grantee may have access to the bore hole site later described in this agreement with the sole and exclusive right to Grantee, acting as Contractor and Agent for the Division of Geothermal Energy, U. S. Department of Energy:

1. To use a self contained portable truck drilling rig unit to conduct a geothermal (heat) resource scientific experimental test involving the drilling, casing and testing of an approximately 1000' deep geothermal temperature measurement bore hole from a location on the leased lands, with Grantee utilizing during such testing operations the services of scientific and technical representatives and facilities of Virginia Polytechnical Institute and State University, Blacksburg, Virginia. Such testing operations shall consist of logging the well, collecting formation samples, and keeping the bore hole filled with fresh water and conducting periodic temperature tests. At the end of the testing period Grantee shall take steps necessary to properly plug and abandon the well in accordance with governmental regulations, except that if Grantor so elects, Grantor may take over the hole in its then present condition at Grantor's risk and expense. In case of such election, Grantor agrees to execute an appropriate release of Grantee from any future obligation in respect of such bore hole. During the time Grantee conducts its operations on the leased premises, it shall remain responsible for damages arising out of its operations on the leased site and it agrees to restore the surface of the land as near as practicable to its condition prior to Grantee's operations. *mutual agreement on drill location SEE PLOT PLAN*
2. Grantee shall have no right to produce any minerals from the bore hole or shall it have any ownership in minerals or production under the leased site.

In witness whereof, the GRANTORS have executed this instrument effective the day first above written.

Monte J. Cummings, Sec.

DRY LAND MARINA INC.
John B. Liscovsky

STATE OF
COUNTY OF

Be it remembered, that on the _____ day of _____, 19____,
before me, the subscriber, a _____ personally appeared _____
_____ and _____ his wife, who I am satisfied
are the grantors named in and who executed the within instrument and they did
severally acknowledge that they signed, sealed and delivered the same as their
act and deed for the uses and purposes therein expressed.

NOTARY PUBLIC

STATE OF New Jersey)

COUNTY OF Atlantic)

Be it remembered that on this 29th day of June, 1978,
before me, the subscriber, a Corporation of the State of New
Jersey, authorized to take acknowledgments and proofs in
said county and state, personally appeared John B. Gibson Jr full age and to me
known, and who being by me duly sworn according to law, on his oath, doth
depose and give proof to my satisfaction that he saw Mrs. Land Mame, Jr
the grantor named in the within indenture, to him personally known, sign, seal
and deliver the said indenture as his voluntary act and deed for the uses and
purposes therein expressed; and that he, the said John B. Gibson Jr
subscribed his name to the same at the same time, as a subscribing witness.

Subscribed and sworn to before me at June 29, 1978 the day and year
aforesaid.

Lemora Langley
NOTARY PUBLIC

SCHEDULE "B"PARCEL 1.

BEGINNING at a point in the Northeasterly line of Absecon Boulevard (190 feet wide,) said point being North 68 degrees, 22 minutes, 10 seconds West, 648 feet from the Pierhead and Bulkhead line in Beach Thoroughfare as shown on plan entitled "State of New Jersey, Board of Commerce and Navigation map showing lands under tide water situate in the City of Atlantic City, County of Atlantic, leased to Sun Oil Company, May 18, 1931," recorded in the Clerk's Office, Atlantic County, Mays Landing, New Jersey, in book of deeds #971, page #230 and extending; thence

- (1) North 68 degrees 22 minutes 10 seconds West 100 feet to a point of curvature in said line of Absecon Boulevard; thence
- (2) Continuing in a Northwesterly direction and curving to the right along an arc having a radius of 1337.69 feet for a distance of 77 feet; thence
- (3) North 57 degrees 59 minutes East 587.17 feet; thence
- (4) At right angles to the third course 142.55 feet; thence
- (5) South 57 degrees 59 minutes West and parallel with the Third Course 582.25 feet more or less to the point and place of Beginning.

Parcel 2.

BEGINNING at a point in the division line between Giberson's Fuel Oil Company and Phillips Oil Company 587.17 feet north 59 degrees 59 minutes east from Absecon Boulevard and extending thence

- (1) Northwestwardly at right angles to said division line 98.90 feet; thence
- (2) Southwestwardly 300 feet to a point; thence
- (3) Southeastwardly parallel with the first course 98.90 feet to a point; thence
- (4) Northeastwardly 300 feet to the point and place of BEGINNING.

PARCEL 3.

SCHEDULETract #1

587.17?

BEGINNING at a point in the division line between Giberson's Fuel Oil Company and Phillip's Oil Company 587.17 feet North 57 degrees 59 minutes East from the Northeasterly line of Absecon Boulevard; and extending thence

Not Applied

- (1) North 57 degrees 59 minutes East in and along the projected division line 387.76 feet more or less to the bulkhead line in Beach Thorofare; thence
- (2) Southwardly, along the same, 148.53 feet more or less; thence
- (3) Southwestwardly, parallel with the first course 246.04 feet more or less to a point at right angles from the beginning; thence
- (4) Northwestwardly, at right angles to the first course 142.55 feet to the point and place of BEGINNING.

Parcel

Tract #2

Survey Plat Shows 4 Tracts

BEGINNING at a point in the division line between Giberson's Fuel Oil Company and Phillips Oil Company 587.17 feet North 57 degrees 59 minutes East from Absecon Boulevard; and extending thence

- (1) Northwestwardly, at right angles to the said division line 82.55 feet; thence
- (2) Northeastwardly, parallel with the division line, 316.36 feet; thence
- ✓ (3) Northwestwardly, at right angles to the division line 82.55 feet; thence
- ✓ (4) Northeastwardly, parallel with the division line 224.5 feet to the bulkhead line in Beach Thorofare; thence
- ✓ (5) Southwardly, along the same, 189.06 feet more or less to the said division line; thence
- ✓ (6) Southwestwardly, in said division line 487.76 feet more or less to the point and place of BEGINNING.

WOOD & SCHILLING
Professional Engineers & Land Surveyors
421 GUARANTEE TRUST BUILDING
ATLANTIC CITY, N. J. 08401
609-345-2833

J. THOMAS WOOD, JR., P.E. & L.S.
GEORGE E. SCHILLING, L.S.

January 6, 1972

Parcel A

BEGINNING at the fourth corner as described in the Phillip's Oil Company Parcel B, said point being 142.55 feet at right angles from the beginning point of said parcel B, said beginning point being in the division line between Giberson's Fuel Oil Company and Phillip's Oil Company, 687.17 feet North 57 degrees, 59 minutes East from the northeasterly line of Absecon Boulevard and extending thence:

1. South 57 degrees, 59 minutes West parallel with the division line between Giberson's Fuel Oil Company and Phillip's Oil Company 100 feet; thence
2. Northwestwardly at right angles to said division line 221.45 feet to the southeasterly line now or formerly of John C. Moore; thence
3. Northeastwardly and parallel with the first course along said John C. Moore line 100 feet; thence
4. Southeastwardly parallel with the second course 221.45 feet to the beginning.

TOGETHER with and subject to a 20 feet wide right of way as described in the description for Phillip's Oil Company Parcel B.

HEAT GRADIENT HOLES

ATLANTIC COASTAL PLAIN GEOTHERMAL TEST PROGRAM

Site No. 38 State New Jersey
Location Dry Land Marina
Atlantic City, New Jersey

A. GENERAL

1. Has federal, state and/or local environmental assessment been conducted previously for the proposed drill site? Yes No X If yes, provide a copy, if available.
2. Have all required permits, licenses, and/or agreements for the proposed drill site been obtained? Yes X No If no, explain.
3. Does the drill site fall within the habitat of rare or endangered species? Yes No X If yes, explain. Eastern Fluvay but
no species occupy the area @ the test site
4. Are known archeological sites, historic sites, prime or unique farmland, or natural landmarks within or visible from the site area? Yes No X If yes, explain.
5. Will casing left in the hole protect all ground water aquifers? Yes X No If no, explain.
6. Will a directional survey be conducted in the drill hole? Yes No X If yes, at what interval? feet. If no, explain. Not necessary for 1000' nonproducing hole

7. Will expected continuous noise levels from site operations be 65 dBA or less at the nearest residence? Yes _____ No X If no, explain.

Each 8V-71 GMC engine equipped w/ two 4" No. SRVCA-0196 Maxim silencers; maximum noise level 32.0 dBA, 250 center frequency; for residential use.

B. SITE CONSTRUCTION

1. Will additional land clearing be required for the drilling and data collection activities (e.g., preparation of drill pad, road construction, mud reserve pits, pipeline)? Yes _____ No X If yes, describe.

2. Will the drill site and related roads be treated to minimize dust?

Yes _____ No X If no, explain. Not necessary due to roads and soil conditions.

3. Are portable sanitary facilities or an approved septic system to be used at the drill site? Yes X No _____ If no, explain. two

portable toilets will be on location

4. Will liquid and solid wastes be disposed in accordance with local regulations? Yes X No _____ If no, explain. _____

5. Will erosion control be required for excavated areas? Yes _____

No X If yes, explain. _____

6. Upon completion of proposed drilling and data collection activities, will the site be restored to as natural a condition as possible by regrading, filling, and reseeded? Yes X No _____ If no, explain. _____

SAFETY

1. Will blowout preventers be used? Yes X No _____ If no, explain. _____
2. Will fire extinguishers be located onsite? Yes X No _____ If no, explain. _____
3. Will engineering and mud logging personnel be onsite during drilling operations? Yes X No _____ If no, explain. _____
4. Does an emergency plan exist for evacuating personnel? Yes X No _____ If no, explain. _____
5. Will the drilling operations be conducted under a safety policy that ensures safe operating procedures and attention to job safety and health protection? Yes X No _____ If no, explain. _____

Completed from onsite inspection by:

Michael R. Masada
Signature

Position: Field Engineer

Date: July 9, 1978

SAFETY POLICY

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1. The safety policies of Gruy Federal, Inc. are defined by the joint requirements of:
 - a. the Occupational Safety and Health Act of 1970, as defined and enforced by the Occupational Safety and Health Administration (OSHA) of the Department of Labor with respect to job safety and health protection, and
 - b. the safe operating procedures, inspection and training programs, and accident investigation forms of the International Association of Drilling Contractors, whether involving drilling rigs or other equipment.
2. OSHA requirements are summarized in the 10" X 16" plastic laminated JOB SAFETY AND HEALTH PROTECTION sign, GPO: 1974 O - 537-604; IADC procedures and inspection and report forms are summarized in the booklet Outline for Drilling Rig Safety Program, compiled by the IADC Safety Publications Subcommittee, revised 1976. Both of these documents are required to be displayed, reviewed at regular intervals by all supervisory personnel, and followed in concept and practice in all Gruy Federal operations involving job safety and health protection.
3. All Gruy Federal subcontractors and/or third party services are required to maintain meaningful and effective safety programs that include scheduled training and drills for personnel, and scheduled maintenance and testing of safety equipment.
4. In addition, all Gruy Federal field operations and all subcontractors and/or third party services to Gruy Federal field operations are required to maintain familiarity with and follow the recommended safe operating procedures and guidelines of the Accident Prevention Manual, IADC, revised edition, October, 1975.
5. The Gruy Federal Project Manager or his designated field representative shall have responsibility for maintaining these safety policies through:
 - a. inspection of all equipment and materiel,
 - b. inspection of personnel and equipment performance in safety drill or demonstration upon request, and
 - c. shutdown or exclusion from the job of any operation, materiel or personnel whose temporary condition or malfunction violates or jeopardizes the requirements of these safety policies.

Alan Lohse.
Executive Vice President

February, 1978

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

125

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. #38, Atlantic City

DATE 8/2/78

COUNTY Atlantic

STATE New Jersey

REPORT NO. 1

REPORTED BY Nickel

DEPTH --

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>
0600	1800	12
1800	2400	6
2400	0600	6

OPERATIONS

Moving in, rigging up
Repairing rig (PT 350 pump)
Morning tour driller and one hand showed up

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200

126

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 38, Atlantic City

DATE 8/3/78

COUNTY Atlantic

STATE New Jersey

REPORT NO. 2

REPORTED BY Nickel

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	2300	17	Repairing rig. Replaced rotary and working on pump fluid.
2300	0400	5	Repairing Enline - 3 cylinder mud mixing pump. Change starters.
0400	0500	1	Change fuel filter - 12V71 Mud Pump engine.
0500	0600	1	Mixing spud mud

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 127
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 38, Atlantic City

DATE 8/4/78

COUNTY Atlantic

STATE New Jersey

REPORT NO. 3

REPORTED BY Carsrud

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

Drilling

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0700	1	Mixing mud.
0700	0900	2	Made attempt to wash rat hole with no luck. Cement blocks & building bracks in old land fill.
0900	1200	3	Nippling back down Kelly & bit. Digging w/pick & shovel. Cement block too big.
1200	1600	4	Called for air chisel. Started busting up concrete. Block is still too big to move.
1600	2300	7	Rig back up kelly & bit. R.U. power tongs to try to rotate bit to drill through cement blocks. Still could not drill through blocks. Haul & order backhole.
2300	0100	2	Service rig, bring viscosity to 45. Wait on backhole.
0100	0200	1	Wait on backhole
0200	0600	4	Backhole arrived on location. Dig out concrete & bldg. bricks, dug down 11 feet w/backhole. Go in with bit & kelly. Wash down. Pull kelly & bit back out. P.U. kelly shuck. Put in rat hole. Started digging on mouse hole. Ran into same problem w/cement blocks. Did not have room to work w/backhole under rig floor, so could not drill mouse hole.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. 38, Atlantic CityDATE 8/5/78COUNTY AtlanticSTATE New JerseyREPORT NO. 4REPORTED BY CarsrudDEPTH 473'PROGRESS 473'ACTIVITY AT REPORT TIME DrillingTIME LOGFROM TOELAPSEDOPERATIONS

0600 0700

1

Build mud volume.

0700 0830

1½

Drill 5' cement inside 8-5/8" and shoe.

0830 0900

½

Clean sand trap

0900 1130

2½

Drilling

1130 1200

½

Clean suction screen on PT350 pump

1200 1330

1½

Drilling

1330 1400

½

Repair gasket rubber on PT350 pump

1400 1500

1

Drilling

1500 1700

2

Clean sand trap, pull caps on pump and wash sand from around valves.

1700 2130

4

Finish repairing PT350 pump. Clean sand from suction system (from centrifugal on sanded up)

2130 2200

½

RIH.

2200 2400

2

Build mud volume

2400 0130

1½

Drill to 316'

0130 0230

1

Mix mud, clean sand trap.

0230 0300

½

Change fan belt on PT350 pump motor

0300 0400

1

Drilling

0400 0500

1

Circulate, ream, to condition mud & hole

0500 0600

1

Drilling to 473'

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063
(713) 785-9200DAILY DRILLING REPORTJOB NO. 3022WELL NO. #38 Atlantic CityDATE 8/6/78COUNTY AtlanticSTATE New JerseyREPORT NO. 5REPORTED BY CarsrudDEPTH 864'PROGRESS 391'ACTIVITY AT REPORT TIME Drilling

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0730	1½	Build mud volume, clean sand trap
0730	0930	2	Drill 473'-599'
0930	1000	½	Circulate & Condition mud and hole prior to first core
1000	1100	1	POH
1100	1200	1	PU core barrel, break same and check inner barrel
1200	1300	1	RIH with core barrel
1300	1430	1½	Core from 599' to 624'
1430	1530	1	POH with core barrel
1530	1600	½	Lay down core, recover 21 feet
1600	1900	3	Clean sand out of mud pit, sand trap, build mud volume
1900	2000	1	RIH
2000	2230	2½	Open hole to 7-7/8" from 599'-624' and drill to 732'
2230	2400	1½	Build mud, water cut from water zone. (728-732')
2400	0100	1	Drill from 732' to 766'
0100	0130	½	Clean sand trap
0130	0300	1½	Drill from 766' to 852'
0300	0400	1	Circulate, condition mud & hole - increase viscosity of drilling fluid (hole caving on connections)
0400	0600	2	Drill from 852' to 864'

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 130
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. #38, Atlantic City

DATE 8/7/78

COUNTY Atlantic

STATE New Jersey

REPORT NO. 6

REPORTED BY Carsrud

DEPTH 1003

PROGRESS 139'

ACTIVITY AT REPORT TIME

Drilling

<u>TIME LOG</u>		<u>ELAPSED</u>	<u>OPERATIONS</u>
<u>FROM</u>	<u>TO</u>		
0600	0930	3½	Drill to second core point at 975'
0930	1030	1	Circulate and condition mud and hole
1030	1130	1	POH
1130	1200	½	Pick up core barrel
1200	1300	1	RIH
1300	1500	2	Core 975'-1003'
1500	1700	2	POH
1700	1730	½	Lay down core barrel. Recovered 18'
1730	1830	1	RIH - open hole to 7-7/8" from 975'-1003'
1830	1930	1	Circulate & condition mud & hole for logs.
1930	2000	½	POH
2000	0100	5	Rig up and log with USGS: density, gamma, temperature, caliper, porosity & short normal hole good, no problem logging.
0100	0200	1	RIH
0200	0400	2	POH and lay down drill pipe
0400	0600	2	Rig up to run 4½" casing welder making hanger for 8-5/8" casing

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 131
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. #38, Atlantic City

DATE 8/8/78

COUNTY Atlantic

STATE New Jersey

REPORT NO. 7

REPORTED BY Carsrud

DEPTH 1003'

PROGRESS

ACTIVITY AT REPORT TIME Waiting on Halliburton

TIME LOG

<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0600	0800	2	Making hanger for 8-5/8" casing (casing sliding down hole) N.D. BOP's
0800	1030	2½	Running 4½" casing. Tag bottom at 1003.50. Lay down 1 joint to make collar come out at top of 8-5/8" casing
1030	1330	3	Cut off old hanger. Welder built new one & installed. First hanger did not hold.
1330	1430	1	Rigging up Halliburton
1430	1600	1½	Wait on water to cement with
1600	1630	½	Halliburton pick pump up & break circulation. Transmission goes out on Halliburton pump truck.
1630	0600	13½	Waiting on Halliburton.

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 132
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. #38, Atlantic City

DATE 8/9/78

COUNTY Atlantic

STATE New Jersey

REPORT NO. 8

REPORTED BY Carsrud

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME Moving rig to Cape May

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600	0930	3½	Waiting on Halliburton
0930	1030	1	Halliburton on location. Rigging up to pump cement
1030	1130	1	Pump 400 sacks HLW Class B cement. Circulate cement. Cement to surface. Dropped plug. Pumped 16 barrels of displacement. Bump plug with 1500 psi, 500 psi over circulation pressure.
1130	1200	½	Rig down Halliburton
1200	1700	5	Rid down, Load on truck, preparing to move
1700	0600	13	Rig loading out

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 133
HOUSTON, TEXAS 77063
(713) 785-9200

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. #38, Atlantic City

DATE 8/10/78

COUNTY Atlantic

STATE New Jersey

REPORT NO. 9

REPORTED BY Carsrud

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

Moving

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0600 0700

1

Finish loading rig

Well complete - final report

October 3, 1978

OPERATIONS SUMMARY

OPERATOR : Gruy Federal
LEASE : Atlantic City
WELL : No. 38
COUNTY : Atlantic, New Jersey

8/1/78 Report #1. 6 hrs. moving rig from Forked River 39-A to Atlantic City, New Jersey #38.

8/2/78 Report #2. Operations at report time: Shut down. No crew. Elapsed time: 12 hrs. MI & RU. 6 hrs. repairing rig. 6 hrs. shut down. Drlr. & 1 man showed up on morning tower.

8/3/78 Report #3. Activity at report time: Drlg. rat hole. 17 hrs. repairing rig. Replaced rotary & working on pump. MI. 5 hrs. repairing Inline 3-cylinder mud mixing pump. Changed out starter. 1 hr. changing fuel filter on 12-V-71 mud pump engine. 1 hr. mixing spud mud. M.W. 8.7, Visc. 62, Solids 3%, Sd. $\frac{1}{2}$ %. Mud D/C: \$306. Well D/C: \$9736; A/C: \$17,976.

8/4/78 Report #4. Activity at report time: Spudding in. Elapsed time: 1 hr. mixing mud. 2 hrs. make attempt to wash rat hole w/no luck. Cmt. block & building bricks in old land fill. Could not wash thru. 3 hrs. NU. 4 hrs. washed rat hole. Attempted to try again to wash out. Order air hammer. Air hammer gets to location, concret block is too big to break up w/air hammer. 7 hrs. RU power tongs. Tried to rotate bit. Did not work. Order backhoe. While waiting on backhoe bring visc. up to 45 on mud. 2 hrs. service rig. 1 hr. WO backhoe. 4 hrs. get concret out of rat hole w/backhoe & washed down w/bit & kelly. PU kelly shuck. Put in rat hole. Try to dig mouse hole & ran into same problem as we did w/rat hole. Cmt. bricks was keeping us from drlg. & washing out the hole for the mouse hole. Could not get backhoe under the rig to dig out, so we had to leave that out. M.W. 8.8, Visc. 60, Solids 3%, Sd. 1/2%. Mud D/C: \$261; A/C: \$638. Well D/C: \$7233; A/C: \$25,010.

8/5/78 Report #5. TD 473'. Activity at report time: Drlg. Elapsed time: 1 hr. filled mud back up. 1 $\frac{1}{2}$ hrs. started drlg. & cmtg. 8-5/8". $\frac{1}{2}$ hr. cleaned sd. from screen & pump. 2 $\frac{1}{2}$ hrs. drlg. to 130'. $\frac{1}{2}$ hr. cleaned sd. from pit & screen. 1 $\frac{1}{2}$ hr. drlg. $\frac{1}{2}$ hr. repairing pump. 1 hr. drlg. 1 hr. cleaning sd. from pits. Mixed mud. 1 hr. repair pump. Pump down. 1 hr. POH. 4 $\frac{1}{2}$ hrs. finished repairing pump. Cleaned sd. out of hole & pump system. Pulled caps on pump, washed sd. out. 2 hrs. bldg. mud volume back up. 1 $\frac{1}{2}$ hrs. drlg. 1 hr. mixed mud. Build visc. Cleaned sd. trap. $\frac{1}{2}$ hr. fan belt change on pump. 1 hr. drlg. 1 hr. circ. & reamed to cond. hole. 1 hr. drlg. to 473'. M.W. 8.6, Visc. 34, Solids 2%, Sand $\frac{1}{2}$ %. Mud D/C: \$180; A/C: \$818. Well D/C: \$7140; A/C: \$32,150.

Operations Summary
Atlantic City No. 38
Page 2

8/6/78 Report #6. TD 864'. Activity at report time: Drlg. Elapsed time: 1½ hr. cleaned sand trap. Cond. mud. 2 hrs. drlg. ½ hr. circ. & cond. hole for coring. 1 hr. POH. 1 hr. PU core barrel brake & check inner barrel. 1 hr. GIH w/core barrel. 1½ hr. coring. 1 hr. POH. ½ hr. LD core barrel. 3 hrs. build mud volume back up. 1 hr. GIH w/D.P. & D.C. 2½ hrs. drlg. 1½ hr. bldg. up viscosity. 1 hr. drlg. ½ hr. cleaned sd. trap. 1½ hr. drlg. 1 hr. circ. & cond. hole. Hole caving in. 2 hrs. drlg. M.W. 8.9, Visc. 45, Sd. 1%, Solids 2%. Mud D/C: \$289; A/C: \$1107. Well D/C: \$6541; A/C: \$38,691.

8/7/78 Report #7. TD 1003'. 3½ hrs. drlg. Reached coring pt. 1 hr. circ. & cond. hole. 1 hr. POH. ½ hr. PU core barrel. 1 hr. GIH w/core barrel. 2 hrs. coring from 978'-1003'. 2 hrs. POH w/core barrel. ½ hr. LD core barrel. 1 hr. GIH w/D.P. Reamed core zone. 1 hr. circ. & cond. mud to get hole in shape to log. ½ hr. POH to log. 5 hrs. logging. RU logger & RD. 1 hr. GIH w/D.P. 2 hrs. LD D.P. 2 hrs. RU to run csg. 4½". Welder making & installing hanger for 8-5/8" csg. around top jt. because csg. is falling in cellar, sliding down hole. M.W. 8.9, Visc. 45, Sd. 1%, Solids 2%. Mud D/C: \$120; A/C: \$1227. Well D/C: \$10,559; A/C: \$49,250.

8/8/78 Report #8. TD 1003'. Activity at report time: WO Halliburton. 2 hrs. making hanger for 8-5/8". ND BOP's. 2½ hrs. running 4½" csg. Tagged btm. @ 1004'. LD 1 jt. to make collar come out @top of 8-5/8". 3 hrs. cut off old hanger. Welder building new one. Surface pipe still sliding down hole. 1 hr. RU Halliburton. 1½ hr. WO water to cmt. with. ½ hr. Halliburton PU pump & break circ. Transmission goes out on Halliburton pump truck. 13½ hrs. WO Halliburton. Well D/C: \$6960; A/C: \$56,210.

8/9/78 Report #9. TD 1003'. Activity at report time: Moving rig. RD to move to Capemay. 3½ hrs. WO Halliburton. 1 hr. Halliburton on location. RU to pump cmt. 1 hr. pumped 400 sks. of HLW cmt. Circ. cmt. Dropped plug. Pumped 16 bbls. of displ. w/CORR-X corrosion inhibitor. Cmt. mixed @ 13.6 ppg, 1.54 yield. Plug bumped w/500 over pumping press. ½ hr. pumped 500# above pump press. Plug held. Relieved press. RD Halliburton. 5 hrs. RD rig. Ready to move. Loaded onto truck. 13 hrs. night watchman on rig. Waiting until daylight to move. Well D/C: \$7814; A/C: \$64,024. FINAL COST on Atlantic City #38 \$74,671.

V. Site No. 36, Cape May, New Jersey

A. Site Location

The location of Site No. 36, Cape May, New Jersey, heat flow measurement hole is shown on Fig. 5-1, a composite of sections of USGS 7½' Quadrangles "Cape May, N.J." and "Rio Grande, N.J.". The coordinates of the drill site are longitude 74° 54' 15" W, latitude 39° 00' 00" N. The site, located north of Breakwater Road at the Cape May County Airport, has a ground elevation of approximately 20 feet above sea level.

B. Lease/Letter Agreements, Permits, Licenses

Access to Site No. 36 was obtained by permission of the Chosen Freeholders, County of Cape May, N.J., by letter of agreement (Exhibit V-1). No drilling permit was required.

C. Environmental Information Survey

The environmental information checklist, supplementary information required by the "Environmental Assessment, Geothermal Exploratory Drilling Program, Eastern United States, Coastal Plains and Piedmont Provinces" (DOE/EA-0015), is shown in Exhibit V-2.

D. Drilling Activities

Drilling activities at Site No. 36, Cape May, N.J., began August 10, 1978 and were completed on August 18, 1978. Fig. 5-2, a schematic diagram of the completed hole, summarizes data for Site No. 36. The daily drilling reports are shown in Exhibit V-3 and Exhibit V-4 is an operational summary of Site No. 36. Cores and cuttings taken from the hole during

FIGURE 5-1 LOCATION SITE # 36, CAPE MAY AND RIO GRANDE,
N. J. LONGITUDE $74^{\circ}54.1' W.$, LATITUDE $39^{\circ}00.0' N.$

RIO GRANDE, N. J.

N 3900—W 7452.5/7.5

1956
PHOTOREVISED 1972
AMS 6062 III SW—SERIES V822

CAPE MAY, N. J.

N 3852.5—W 7452.5/7.5

1954
PHOTOREVISED 1972
AMS 6061 IV NW—SERIES V822

GRUY FEDERAL, INC.

SITE NO. 36

WELL NAME Cape May

138

LOCATION: LAT. 39° 00.0' N

LONG. 74° 54.1' W

RIG: Energy Service Company Rig No. 17

COUNTY Cape May

STATE New Jersey

DATE SPUDDED: Aug. 12, 1978

DATE COMPLETED: Aug. 16, 1978

CORES:

NO.	FROM	TO	RECOVERY
1	447	467	18'
2	998	1010	5'
3	1010	1033	13'

HOLE SIZE:

DEPTH		HOLE SIZE IN.	CSG. SIZE IN.	MUD	
FROM	TO			VIS.	WT.
0	165	12 1/4	8-5/8	40	8.6
165	1033	7-7/8	4 1/2	35	8.6

CASING:

FROM	TO	SIZE IN.	WT #/FT	GRADE	THREAD	NO. JTS
0	136	8-5/8	24.0	H-40	ST&C	3
0	1023	4 1/2	9.5	J-55	ST&C	25

FIGURE 5-2 WELL SCHEMATIC WITH COMPLETION INFORMATION

drilling were delivered to VPI&SU. No electric logs were run on this hole. Temperature logs were run by VPI&SU after the hole was cased; however these data were not made available to Gruy. The completed hole was left filled with water containing corrosion inhibitor.

E. Site Preparation, Layout, and Cleanup

Prior to initiation of drilling at Cape May Airport, the site area was almost level and had a groomed grass covering. For site preparation, a bulldozer dug one pit 35' long, 35' wide, and 4' deep, and shallow pits for the water tank, mud pits and pumps. The 4' x 4' cellar was dug by hand 4' deep and boarded over. After the hole was completed, the wellhead was installed and an iron grate was placed over the cellar (Fig. 5-2) and locked. On August 27, the mud pit was vacuumed and the site was backfilled, leveled, and seeded.

F. Exhibits

BOARD OF CHOSEN FREEHOLDERS

EXHIBIT V-1

140

Anthony T. Catanoso, Director
Director of Administration, Airport
Public Works & Public Affairs

Gerald M. Thornton
Director of Health, Welfare
Charities & Planning Board

William E. Sturm, Jr., Vice Director
Director of Revenue, Finance
& Crest Haven

COUNTY OF CAPE MAY
CAPE MAY COURT HOUSE, N. J. 08210

Ralph W. Evans
Director of Buildings, Grounds
& Education

Thomas B. Tucker
Director of Courts, Agencies
& Public Safety

Kathryn A. Willis
Clerk of the Board

RECEIVED
GRU...
E...

August 7, 1978

AUG 11 1978

Gruy Federal, Inc.
2500 Tanglewilde
Suite 150
Houston, Texas 77063

Attention: Ken Laurence

Dear Mr. Laurence:

Enclosed please find a copy of Resolution No. 5514-78, granting a "Permission" only or license to the Federal Government and its contractor "Gruy Federal Inc." to conduct exploratory drilling at the Cape May County Airport; adopted by the Cape May County Board of Chosen Freeholders at a special meeting held on August 3, 1978.

Very truly yours,

Kathryn A. Willis

Kathryn A. Willis
Clerk of the Board

KW:mlr
enc.

P.S. Insurance coverage furnished this date, 8/8/78. Thank you for your promptness. K.A. Willis

BOARD OF CHOSEN FREEHOLDERS
CAPE MAY COUNTY, NEW JERSEY

RESOLUTION

No. 5514-78

WHEREAS, it is desired to cooperate with the Federal Department of Energy of the Federal Government and the State of New Jersey in Drilling and conducting certain tests at the Cape May County Airport, Cape May County, New Jersey, and it is desired to provide the necessary authorization, on the conditions hereinafter set forth;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Chosen Freeholders of the County of Cape May as follows:

A. This Board hereby expresses its desire to cooperate with the Federal Government in exploratory drilling of a Geothermal Well and for periodic testing with a view to developing a potential new energy source.

B. This Board does hereby grant a "Permission" only or license to the Federal Government and its contractor "Gruy Federal Inc." of Houston, Texas to conduct said exploratory drilling forthwith at the Cape May County Airport, said drilling to commence forthwith and to proceed to a depth of approximately one thousand (1,000) feet at a location to be fixed by the County.

C. Drilling shall commence forthwith and be terminated approximately one week after commencement.

D. Testing at said site shall be permitted for a period on one year from the date of this resolution.

E. Prior to the commencement to said drilling operations, Gruy Federal Inc., shall furnish evidence of satisfactory insurance coverage in a form acceptable to County Counsel, to protect the County and save it harmless from all claims made as a result of said drilling and testing.

**BOARD OF CHOSEN FREEHOLDERS
CAPE MAY COUNTY, NEW JERSEY**

**RESOLUTION
No.**

F. No title shall pass by reason of this authority and the same shall be construed as a "Temporary Licence or permission" only.

This resolution shall be reconfirmed at the next regular meeting of this Board, in compliance with the Sunshine Law of the State of New Jersey.

cc: Federal Dept. of Energy
N.J. Bureau of Geology
Gury Federal Inc.
County Counsel
Co. Airport

Offered by

Seconded by

STATE OF NEW JERSEY
COUNTY OF CAPE MAY

ss.:

I, Kathryn A. Willis, Clerk of the Board of Chosen Freeholders of the County of Cape May, State of New Jersey, do hereby certify that the foregoing is a correct and true copy of a resolution adopted by the Board at a meeting duly held on the 3rd day of August 1978

Signed, Kathryn A. Willis

Clerk of the Board.

Roll Call	Ayes	Nayes	Abstain	Absent
Mr. Evans				

SITE-SPECIFIC ENVIRONMENTAL INFORMATION CHECKLIST
HEAT GRADIENT HOLES
ATLANTIC COASTAL PLAIN GEOTHERMAL TEST PROGRAM

Site No. 36 State New Jersey

Location Cape May County Airport near
Cape May Courthouse, New Jersey

A. GENERAL

1. Has federal, state and/or local environmental assessment been conducted previously for the proposed drill site? Yes No X If yes, provide a copy, if available.
2. Have all required permits, licenses, and/or agreements for the proposed drill site been obtained? Yes X No If no, explain.
3. Does the drill site fall within the habitat of rare or endangered species? Yes No X If yes, explain. EASTERN FLYWAY, BUT NO SPECIES
OCCUPY THE AREA AT THE TEST SITE.
4. Are known archeological sites, historic sites, prime or unique farmland, or natural landmarks within or visible from the site area? Yes
No X If yes, explain.
5. Will casing left in the hole protect all ground water aquifers? Yes X
No If no, explain.
6. Will a directional survey be conducted in the drill hole? Yes
No X If yes, at what interval? feet. If no, explain.
Not necessary for 1000' nonproducing hole.

7. Will expected continuous noise levels from site operations be 65 dBA or less at the nearest residence? Yes _____ No X If no, explain.
Each 8V-71 GMC engine equipped w/two 4" NO. SRU04-0196 Maxim silencers;
maximum noise level 32.0 dBA, 250 center frequency; for residential use.

B. SITE CONSTRUCTION

1. Will additional land clearing be required for the drilling and data collection activities (e.g., preparation of drill pad, road construction, mud reserve pits, pipeline)? Yes _____ No X If yes, describe.
2. Will the drill site and related roads be treated to minimize dust? Yes _____ No X If no, explain. Not necessary due to paved roads and soil conditions.
3. Are portable sanitary facilities or an approved septic system to be used at the drill site? Yes X No _____ If no, explain. Two portable toilets will be on location.
4. Will liquid and solid wastes be disposed in accordance with local regulations? Yes X No _____ If no, explain.
5. Will erosion control be required for excavated areas? Yes _____ No X If yes, explain.

6. Upon completion of proposed drilling and data collection activities, will the site be restored to as natural a condition as possible by regrading, filling, and reseeded? Yes X No _____ If no, explain. _____
- _____
- _____

C. SAFETY

1. Will blowout preventers be used? Yes X No _____ If no, explain. _____
- _____
- _____
2. Will fire extinguishers be located onsite? Yes X No _____ If no, explain. _____
- _____
3. Will engineering and mud logging personnel be onsite during drilling operations? Yes X No _____ If no, explain. _____
- _____
4. Does an emergency plan exist for evacuating personnel? Yes X No _____ If no, explain. _____
- _____
5. Will the drilling operations be conducted under a safety policy that ensures safe operating procedures and attention to job safety and health protection? Yes X No _____ If no, explain. _____
- _____

Completed from onsite inspection by:

Michael R. Glascock

by D. W. Duncan
Signature

Position: Manager, Drilling
Shirley Federal, Inc.

Date: August 6, 1978

SAFETY POLICY

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1. The safety policies of Gruy Federal, Inc. are defined by the joint requirements of:
 - a. the Occupational Safety and Health Act of 1970, as defined and enforced by the Occupational Safety and Health Administration (OSHA) of the Department of Labor with respect to job safety and health protection, and
 - b. the safe operating procedures, inspection and training programs, and accident investigation forms of the International Association of Drilling Contractors, whether involving drilling rigs or other equipment.
2. OSHA requirements are summarized in the 10" X 16" plastic laminated JOB SAFETY AND HEALTH PROTECTION sign, GPO: 1974 O - 537-604; IADC procedures and inspection and report forms are summarized in the booklet Outline for Drilling Rig Safety Program, compiled by the IADC Safety Publications Subcommittee, revised 1976. Both of these documents are required to be displayed, reviewed at regular intervals by all supervisory personnel, and followed in concept and practice in all Gruy Federal operations involving job safety and health protection.
3. All Gruy Federal subcontractors and/or third party services are required to maintain meaningful and effective safety programs that include scheduled training and drills for personnel, and scheduled maintenance and testing of safety equipment.
4. In addition, all Gruy Federal field operations and all subcontractors and/or third party services to Gruy Federal field operations are required to maintain familiarity with and follow the recommended safe operating procedures and guidelines of the Accident Prevention Manual, IADC, revised edition, October, 1975.
5. The Gruy Federal Project Manager or his designated field representative shall have responsibility for maintaining these safety policies through:
 - a. inspection of all equipment and materiel,
 - b. inspection of personnel and equipment performance in safety drill or demonstration upon request, and
 - c. shutdown or exclusion from the job of any operation, materiel or personnel whose temporary condition or malfunction violates or jeopardizes the requirements of these safety policies.

Alan Lohse
Executive Vice President

February, 1978

GRUY FEDERAL, INC.

EXHIBIT V-3
2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 36

DATE August 10, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO.

REPORTED BY Carsrud/Duncan

DEPTH -0-

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0700 1800

11 Hours

Trucks moving rig and equipment from Atlantic
City Site 38 to Cape May Site 36.

Dig out and rebuild cellar.

Levelling sub-structure pad.

Lay boards for substructure, set substructure,
dig ditches to reserve pits.

1800 0600

12 Hours

Insufficient crews to continue operations.

3 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

148

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 36

DATE August 11, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO.

REPORTED BY Carsrud / Duncan

DEPTH -0-

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600	1000	4 Hours	Setting & levelling mud pits and water tank with trucks.
1000	1200	2 Hours	Winch truck failed, waiting on other trucks to arrive from Atlantic City.
1200	1800	6 Hours	Started setting pipe racks and mud pump skid and hook up to pit. Set booster pump skid, level and tie-in. Tie-in fuel and electric lines.
1800	2000	2 Hours	Working on swivel packing gland - No parts.
2000	0600	10 Hours	Insufficient crews to continue operations.

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 149
HOUSTON, TEXAS 77063

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 36

DATE August 12, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO. 3

REPORTED BY Carsrud / Duncan

DEPTH 165'

PROGRESS

ACTIVITY AT REPORT TIME

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0600	0900	3 Hours	Put up Guy Lines, Mixing mud volume.
0900	1000	1 Hour	Repair Swivel.
1000	1300	3 Hours	NU Kelly to dig rat hole.
1300	1600	3 Hours	Dig rat hole. Put Kelly shuck, drill mouse hole.
1600	1800	2 Hours	Re Level rig, blocks not straight.
1800	2100	3 Hours	Drill to 102', Hole taking mud. Shut down to build volume.
2100	0100	4 Hours	Water pit empty & waiting on driver.
0100	0230	1½ Hours	Drill to 132', made connection, hole caved. Wash down w/kelly.
0230	0330	1 Hour	Drill to 165'.
0330	0400	½ Hour	POOH.
0400	0600	2 Hours	RU to run 8-5/8" & run 3 joints to 135'.

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

150

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 36

DATE August 13, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO. 4

REPORTED BY Carsrud / Duncan

DEPTH 165'

PROGRESS

ACTIVITY AT REPORT TIME

<u>TIME LOG</u>			
<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0600	0700	1 Hour	RU Howco & cement w/full returns w/75 sacks. Dropped plug, disp. w/6½ barrels, at 100 psi, bump plug w/250 psi.
0700	0800	1 Hour	RD Howco and casing tools
0800	0900	1 Hour	Build mud volume.
0900	1030	1½ Hours	Change screen on shale shaker.
1030	1230	2 Hours	RU Geolograph.
1230	1300	½ Hour	Repair shale shaker.
1300	1430	1½ Hours	RU & build spinning chain.
1430	1600	1½ Hours	RU desander.
1600	1900	3 Hours	Repack swivel.
1900	2000	1 Hour	Break off Hall. & landing joint.
2000	2300	3 Hours	NU BOP'S.
2300	2400	1 Hour	Break out Kelly.
2400	0600	6 Hours	Change out 40' Kelly to smaller Kelly -- did not have right changeover subs -- replace w/old Kelly.

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 36

DATE August 14, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO. 5

REPORTED BY Carsrud / Duncan

DEPTH 165'

PROGRESS

ACTIVITY AT REPORT TIME

Drilling at report time.

<u>TIME LOG</u>			
<u>FROM</u>	<u>TO</u>	<u>ELAPSED</u>	<u>OPERATIONS</u>
0600	0700	1 Hour	Make up bit & bit sub.
0700	0800	1 Hour	GIH, Swivel leaking.
0800	1100	3 Hours	Wait on swivel parts.
1100	1200	1 Hour	Swivel put back together --parts didn't arrive.
1200	1300	1 Hour	Broke circulation, tag bottom at 52', would not go through circulation through D.P. & around outside 8-5/8".
1300	1600	3 Hours	ND BOPE, put landing joint back in.
1600	1700	1 Hour	Attempt screw back in casing.
1700	1900	2 Hours	Welder making spear to line up casing.
1900	2100	2 Hours	GIH w/spear, lined up at casing part. Turn w/tongs, started threads & tightened.
2100	2300	2 Hours	Run 2 joints 2-3/8" tubing in 8-5/8" x 12-1/2" annulus & tag cement at 58'.
2300	0200	3 Hours	RU Howco & cement annulus w/20 sacks LWC & 2% Calcium Chloride.
0200	0300	1 Hour	Pull 2-3/8" tubing & lay down.
0300	0330	1/2 Hour	RD Howco & clean out cement & breakout 8-5/8" landing joint.
0330	0600	2 1/2 Hours	NU BOPE.

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150 152
HOUSTON, TEXAS 77063

DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 36

DATE August 15, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO. 6

REPORTED BY Carsrud / Lawrence

DEPTH 739'

PROGRESS 574

ACTIVITY AT REPORT TIME

Drilling

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600	0700	1 Hour	Finish NU BOPE.
0700	0800	1 Hour	Break off guide spear used to line up 8-5/8" csg.
0800	1130	3½ Hours	Drill out rubber plug and Howco guide shoe.
1130	1230	1 Hour	Shut down to work on shaker at 300'.
1230	1300	½ Hour	Kelly hook broke, the latch part, welder re-paired same.
1300	1600	3 Hours	Drill to 396' (tour change).
1600	1800	2 Hours	Drill to 447'.
1800	2000	2 Hours	Cond. mud & hole to POH for core barrel.
2000	2100	1 Hour	POH w/collars & D.P.
2100	2130	½ Hour	P.U. core barrel
2130	2200	½ Hour	R.I.H. w/core barrel. (447-467')
2200	2300	1 Hour	Work on weight indicator.
2300	2330	½ Hour	Core 20'.
2330	2400	½ Hour	POH w/core barrel.
2400	0100	1 Hour	L.D. core barrel 18' recovery.
0100	0200	1 Hour	R.I.H. w/bit, d.c., d.p.
0200	0600	4 Hours	Drill from 465' to 739'.

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

153.

DAILY DRILLING REPORTJOB NO. 3022WELL NO. 36DATE August 16, 1978COUNTY Cape MaySTATE New JerseyREPORT NO. 7REPORTED BYDEPTH 1033'PROGRESS 294ACTIVITY AT REPORT TIME

NDBOPE to run 4½" csg.

TIME LOGFROM TOELAPSEDOPERATIONS

0600	0800	2 Hours	Clean out sand out of pit & sand trap.
0800	1130	3½ Hours	Drilling to 950'.
1130	1230	1 Hour	Clean sand trap.
1230	1400	1 Hour	Drilling to 990'.
1400	1500	1 Hour	Work on PT 350 mud pump.
1500	1530	½ Hour	Drilling to 998'.
1530	1600	½ Hour	POH
1600	1700	1 Hour	P.U. core barrel.
1700	1800	1 Hour	R.I.H. w/core barrel w/blade type bit.
1800	1900	1 Hour	Circ. & clean hole to core.
1900	2000	1 Hour	Core 12 ft. stopped coring @ 1010' (998-1010)
2000	2100	1 Hour	POH w/core barrel - LD same - 5 ft. recovery.
2100	2200	1 Hour	P.U. 2nd core barrel and R.I.H.
2200	2400	2 Hours	Circ. & clean hole -- start core.
2400	0200	2 Hours	Core 1010 to 1033.
0200	0330	1½ Hours	POH w/core barrel.
0330	0430	1 Hour	L.D. core barrel -- Recover 13 ft.
0430	0530	1 Hour	Break down kelly & L.D. same.
0530	0600	½ Hour	NDBOPE.

24 Hours

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. 36

DATE August 17, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO. 8

REPORTED BY Carsrud / Lawrence

DEPTH 1033'

PROGRESS

ACTIVITY AT REPORT TIME

Moving Rig to Salisbury

TIME LOG
FROM TO

ELAPSED

OPERATIONS

0600 1000

4 Hours

R,D,B.O,P.E.

1000 1100

1 Hour

R.U. to run 4½" csg.

1100 1400

*3 Hours

Run 4½" csg. Hit bridge on tight spot @ 145'

R.U. Howco & wash down past tight spot. Finish running 4½".

1400 1430

½ Hour

R.U. Howco

1430 1530

1 Hour

Cmt. w/Howco w/350 sx Class A light w/2% CaCl₂
Good mud returns & cmt returns to surface - pump
plug w/16.3 bbls X-Corr treated H₂O w/400 psi &
bump plug @1400 psi - CIP @1530 hours.

1530 1600

½ Hour

R.D. Howco

1600 1700

1 Hour

Set 4½" on 8-5/8" hanger - N.D. 4½" landing Jt.

1700 2000

3 Hours

R.D. Rig & preparing to move- check float collar
w/Howco Line & found same @1022'.

2000 0600

10 Hours

Watchman on rig. Rig shut down for meeting
with T. J. Clardy.

24 Hours

*Ran 25 Jts. of 4½", 9.5#/ft., ST&C, J55, 8

csg. 1008.43 - shoe 1.00 - RKB of shoe @1023.43

T.D. @1033 leaving 9.57 Rathole

GRUY FEDERAL, INC.

2500 TANGLEWILDE, SUITE 150
HOUSTON, TEXAS 77063

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DAILY DRILLING REPORT

JOB NO. 3022

WELL NO. #36

DATE August 18, 1978

COUNTY Cape May

STATE New Jersey

REPORT NO. 2

REPORTED BY Carsrud

DEPTH --

PROGRESS --

ACTIVITY AT REPORT TIME

Move rig

TIME LOG

FROM TO

ELAPSED

OPERATIONS

0600 0600

24

Rig moving from Cape May
Site #36 to Salisbury, MD Site #31.

October 3, 1978

OPERATIONS SUMMARY

OPERATOR : Gruy Federal
 LEASE : Capemay
 WELL : No. 36
 COUNTY : Capemay, New Jersey

8/10/78 Report #1. Activity at report time: MI rig to Capemay. 11 hrs. trucks moving rig from Atlantic City #38 to Capemay #36. Leveling & boarding up under substructure. Digging out & bldg. cellar. 1 hr. finished loading rig. Carrier departed. Released rig from #38. Worked only 12 hrs., the rest of time shut down. D/C: \$3443.

8/11/78 Report #2. Activity at report time: RU. 4 hrs. setting & leveling mud tanks, water tanks w/trucks. 2 hrs. Wench truck on location had mechanical failure. Had to wait on truck to get back from last load from Atlantic City. 6 hrs. truck gets back, start setting up pipe racks & setting up pumps. Secured. Hooked up to pit. Set booster pump, mud pump, mud mixing skid. Level & tie-in, tie in electric line & fuel line. 2 hrs. packing, land gone out of swivel. Tear down, no parts. 10 hrs. no fuel for rig. Setting up to run light plant all night w/3-man crew to FRU. Not sufficient crew to run rig if we had fuel. D/C: \$6950; A/C: \$10,393.

8/12/78 Report #3. Activity at report time: Still RU. 2 hrs. put up guide lines. Mixing up mud volume. 1 hr. put up guide lines. 1 hr. put swivel back together. 3 hrs. NU kelly to dig rat hole. 3 hrs. dig rat hole. Put in kelly shucks. Dig mouse hole. 2 hrs. blocks not hanging straight. Re-leveled rig. 3 hrs. start drlg. Drld. to 102'. Shut down to build mud volume back up. Hole taking fluid. 6½ hrs. drld. 30'. Made connection, hole caved in, put kelly back on, washed down. Circ. hole. Made connection @ 135'. Drld. thru 165', kelly dishing meas. & circ. ½ hrs. POH. 2 hrs. RU to run 8-5/8" csg. RIH 3 jts. Pipe meas. 120.29'. Kelly bushing meas. w/landing jt. 135.29'. M.W. 8.6, Visc. 40. D/C: \$6823; A/C: \$17,216.

8/13/78 Report #4. TD 165'. Activity at report time: Working on kelly. 1 hr. RU Halliburton & pump cmt. Full cmt. returns w/75 sks. Dropped plug. Displ. 100# pumping press. Pumped 200# over pump press. Bumped plug. RD Halliburton. ½ hr. cleaned cmt. out of cellar. ½ hr. RD csg. tool. PU D.P. 1 hr. build up mud volume. Hole taking fluid when drlg. 1½ hr. changed screens on shale shaker. 2 hrs. RU geolograph. ½ hr. welder making repairs on shaker. 1½ hrs. RU spinning chain. 1½ hr. RU de-sander. 3 hrs. working on swivel. 1 hr. break off Halliburton head & landing jt. 3 hrs. NU BOP's, csg. came loose when BOP's set on top. 1 hr. break out kelly. 6 hrs. changed out kelly from 40' to 30' did not have right change over subs. Had to put 40' kelly back on. D/C: \$9029; A/C: \$26,243.

Operations Summary
Capemay No. 36
Page 2

8/14/78 Report #5. TD 165'. Activity at report time: Drlg. 1 hr. MU bit & bent sub. 1 hr. RIH. Swivel leaking bad. Come out of hole to work on swivel. 3 hrs. WO swivel parts. 1 hr. put swivel back together. 1 hr. broke circ. Tagged btm. @ 40'. Circ. Broke circ. w/mud. Circ. around 8-5/8". 3 hrs. ND BOP's. Put landing jt. back on. Top 40' unscrewed. 1 hr. trying to screw back into csg. 2 hrs. had welder to make spear to line csg. back up. 2 hrs. run spear in hole. Lines up where csg. parted. Start turning w/tongs. Threads caught when started & tighten up. 1 hr. running 2 jts. 2-3/8" tbg. in beside 8-5/8". Tagged cmt. from 60'. 2 hrs. RU Halliburton to cmt. outside top of jt. 1 hr. top out cmt. on 8-5/8" used 45 sks. of LWC. 1 hr. pulled 2-3/8" tbg. out after cmtg. & LD. 1 hr. RD Halliburton. Cleaning cmt. out of cellar. 1/2 hr. break 8-5/8" landing jt. out. 2 1/2 hrs. NU BOP's. D/C: \$6823; A/C: \$33,064.

8/15/78 Report #6. TD 739'. Activity at report time: Drlg. 1 hr. FNU BOP's. 1 hr. break off spears that were used to line up 8-5/8". 3 hrs. drill out rubber plug in shoe. 1 hr. shut down to work on shaker @ 300'. 1/2 hr. welder re-build kelly hook. Broke when making connection. 3 hrs. drlg. to 396'. Changed towers. 2 hrs. drlg. Drlg. to 447'. 2 hrs. cond. mud in hole before starting to PU core barrel. 1 hr. POH to chore. 1/2 hr. PU core barrel. 1/2 hr. GIH w/core barrel. 1 hr. working on wt. indicator. 1/2 hr. coring. Cored 25'. Recov. 18'. 1/2 hr. POH w/core. 1 hr. LD core barrel. 1 hr. GIH w/D.P. & D.C.'s. 4 hrs. drlg. from 465'-739'. M.W. 8.6, Visc. 35. D/C: \$7408; A/C: \$40,474.

8/17/78 Report #8. TD 1033'. Elapsed time: 4 hrs. RD BOP's. 1 hr. RU to run 4 1/2" csg. Start running 4 1/2" csg. hit bridge. RU Halliburton washed down. 3 hrs. finish running csg. 1/2 hr. RU Halliburton. 1 hr. pmpd. cmt. dropped plug. Pump displacement w/corrison inhibitor 16.3 bbls. displacement, 400# pmpg. press. Pressured up on plug when tagged up 1000# over pmpg. press. Run 350 sks. of Howco lite w/2% CaCl. 1/2 hr. RD Halliburton. 1 hr. hang 4 1/2" on 8-5/8" hanger. ND 4 1/2" landing jts. 3 hrs. RD, ready to move. Shut down til morning. 10 hrs. watchman on rig & 25 jts. of 4 1/2" csg. tally out to 1008.43', 1' on Halliburton shoe, total is 1009.43'. Kelly bushing meas. 1023.43'. TD 1033' @ 9.57 rat hole. D/C: \$14,965; A/C: \$62,705.

GOLDEN ENGINEERING, INC.