GTLT - ____21____

Energetics, Inc.
9-24S-2E
Dona Ana County

Well No. 1

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

July 11, 1983

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Energetics Corporation
P. O. Box 1596
Lovington, New Mexico 88260

Re: $2,000 One-Well Low-Temperature
Geothermal Well Bond
Energetics Corporation, Principal
United States Fidelity and
Guaranty Company, Surety
Sec. 9, T-24-S, R-2-E
Bond No. 01-0130-10807-81-9

Gentlemen:

The Oil Conservation Division hereby approves release of the above-captioned geothermal bond effective this date.

Sincerely,

JOE D. RAMEY,
Director

dr/

cc: Oil Conservation Division
Santa Fe, New Mexico

U. S. Fidelity & Guaranty Co.
P. O. Box 3566
Albuquerque, New Mexico 87190

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RECEIVED
MAR 10 1983
OIL CONSERVATION DIVISION
SANTA FE

Form G-103
Adopted 10-1-74
Revised 10-1-78

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File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ Fee ☒

5.a State Lease No.

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☒ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐

7. Unit Agreement Name

2. Name of Operator: Energetics, Inc.

8. Farm or Lease Name: Hanes Corporation

3. Address of Operator: Post Office Box 1596, Lovington, New Mexico 88260

9. Well No.: 1

4. Location of Well: Unit Letter F 600 Feet From The North Line and 600 Feet From The East Line, Section 9 Township 24S Range 2E NMPM.

10. Field and Pool, or Wildcat

15. Elevation (*Show whether DF, RT, GR, etc.*)

12. County

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☒	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐			COMMENCE DRILLING OPNS.	☒	PLUG & ABANDONMENT	☐
PULL OR ALTER CASING	☐	CHANGE PLANS	☐	CASING TEST AND CEMENT JOB	☐		
OTHER	☐			OTHER	☐		

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

Tubing was pulled and cement was used as a plug at depths of 1600 feet, 900 feet, 500 feet and top of hole.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED [signature] TITLE President DATE 3/8/83

APPROVED BY Carl Ulvog TITLE DISTRICT SUPERVISOR DATE 3-10-83

CONDITIONS OF APPROVAL, IF ANY:

Case 7636
Order 7121

RECEIVED
MAR 10 1983
OIL CONSERVATION DIVISION
SANTA FE

R. L. GUFFEY, INC. DRILLING CONTRACTORS

"WATER IS OUR BUSINESS"

PHONE (505) 524-4487

P. O. Box 756
MESILLA PARK, N.M. 88047

February 22,1983

TO WHOM IT MAY CONCERN:

This is to certify that on Feb. 21,1983, that cement was pumped, as a plug in a well at Hanes Corp., Dona Ana Co., N.M. at depths of 1600 ft, 900 ft., 500 ft and top of hole.

The company that pumped the cement was Halliburton.

R. L. Guffey, Inc. had the rig over the hole and pulled the tubing to depths that were to be pluged.

R. L. Guffey, Inc.

Michael Guffey

Michael Guffey

ENERGETICS CORPORATION
The Energy Company

833 E. Arapaho Road
Suite 202
Richardson, Texas 75081
(214) 783-4731

Post Office Box 1596
Lovington, New Mexico 88260
(505) 396-5889

February 15, 1983

W. Perry Pearce
General Counsel
Energy & Minerals Department
Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

RE: Hanes Corporation Well No. 1
located in Unit F, Section 9,
Twp 24S, Rge 2E, Dona Ana
County, - Plugging Bond

Dear Mr. Pearce:

Regarding the above captioned, on Wednesday, February 16, 1983, Mr. Michael Duffey of Las Cruces will attempt to pull the 1½" pipe. If he determines that it can be pulled, your office will be notified immediately, permiting you to have a representative on site if so desired. If the pipe cannot be pulled, we will then start drilling out the old hole.

Yours very truly,

WINFORD CARLILE
President

WC/bc

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

February 8, 1983

TONEY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Mr. Winford Carlile
Energetics Corporation
P. O. Box 1596
Lovington, New Mexico 88260

Re: Hanes Corporation Well
No. 1 - Plugging

Dear Mr. Carlile:

Following our telephone conversation of February 3, 1983, I checked with Mr. Ramey and confirmed that he had had discussions with Mr. Leroy Sumruld regarding the above-referenced well plugging. We appreciate your proceeding in this matter and would request that any information about timing of the plugging of this well which becomes available to you be relayed to us.

Our concern arises from the fact that the last correspondence shown from you in our file is dated October 18, 1982, in which you state that Mr. Sumruld expected to have the well plugged by November 15, 1982. In order to prevent the Division from having to proceed any further with the plugging of this matter, we request that you do everything within your power to get the well plugged and keep us informed of the progress of such procedures.

Thank you for your attention to this matter.

Sincerely,

W. PERRY PEARCE
General Counsel

WPP/dr

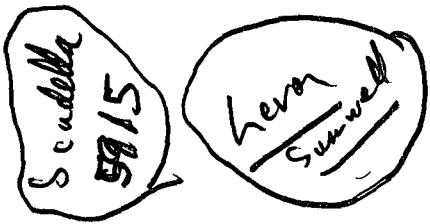
cc: Mr. Dale Clark

Richardson TX

214 555 1---

Dale Clark
214-783-4781

Winfred Carlile
505-396-5885



Plugging program: Energetics #1 Hanes Corp.
F-9-24S-2E Dona Ana Co.

Condition: 6" hole drilled to 1890'
Iron pipe 1½" (1¾"?) with check valve at base.
No cement used. Pipe supported at surface on timbers.

Minimum acceptable plugging:

option A. Circulate water down pipe and flush cavings from outside of pipe to surface.
Follow with Class A or better cement slurry effectively cementing entire bore hole.

option B. Remove pipe and cavings from hole to 1660'. Place cement plug from 1660' to 1530'. (approximately 32 sacks.)
Place cement plug at 900' to 800' (approximately 26 sacks)
Place cement plug at 500' to 340' (approximately 40 sacks)
Place cement plug at 10' below surface to within 2' of surface.
Clean location.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

CASE NO. 7686
Order No. R-7121

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION ON ITS OWN MOTION TO PERMIT ENERGETICS CORPORATION, UNITED STATES FIDELITY AND GUARANTY COMPANY, AND ALL OTHER INTERESTED PARTIES TO APPEAR AND SHOW CAUSE WHY THE HANES CORPORATION WELL NO. 1, LOCATED IN UNIT F OF SECTION 9, TOWNSHIP 24 SOUTH, RANGE 2 EAST, DONA ANA COUNTY, SHOULD NOT BE PLUGGED AND ABANDONED IN ACCORDANCE WITH A DIVISION-APPROVED PLUGGING PROGRAM.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 27, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 8th day of November, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That Energetics Corporation is the owner and operator of the Hanes Corporation Well No. 1, located in Unit F of Section 9, Township 24 South, Range 2 East, NMPM, Dona Ana County, New Mexico.

(3) That United States Fidelity and Guaranty is the surety on the Oil Conservation Division plugging bond on which Energetics Corporation is principal.

(4) That the purpose of said bond is to assure the state that the subject well will be properly plugged and abandoned when not capable of commercial production.

(5) That in order to prevent waste and protect correlative rights said well should be plugged and abandoned in accordance with a program approved by the Santa Fe District Office of the New Mexico Oil Conservation Division on or before January 1, 1983, or the well should be returned to active drilling status or placed on production.

IT IS THEREFORE ORDERED:

(1) That Energetics Corporation and United States Fidelity and Guaranty are hereby ordered to plug and abandon the Hanes Corporation Well No. 1, located in Unit F of Section 9, Township 24 South, Range 2 East, NMPM, Dona Ana County, New Mexico, or in the alternative, to return the well to active drilling status or place the well on production on or before January 1, 1983.

(2) That Energetics Corporation and United States Fidelity and Guaranty Company, prior to plugging and abandoning the above-described well, shall obtain from the Santa Fe office of the Division, a Division-approved program for said plugging and abandoning, and shall notify said Santa Fe office of the date and hour said work is to be commenced whereupon the Division may, at its option, witness such work.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

S E A L

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

December 3, 1982

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

CERTIFIED - RETURN
RECEIPT REQUESTED

U. S. Fidelity & Guaranty Co.
P. O. Box 3566
Albuquerque, New Mexico 87190

Re: Energetics Corporation
Hanes Corporation Well
No. 1-F, Sec. 9, T-24-S,
R-2-E, Dona Ana County
Bond No. 01-0130-10807-819

Gentlemen:

Attached please find a letter with enclosures which was recently sent to Energetics Corporation involving the subject well and subject bond. Please be advised that should Energetics fail to properly plug the referenced well and fully comply with its responsibilities prior to January 1, 1983, the New Mexico Oil Conservation Division will cause this well to be plugged and will look to United States Fidelity & Guaranty Company on its bonding obligation.

Sincerely,

JOE D. RAMEY,
Director

JDR/WPP/dr

enc.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

December 3, 1982

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

CERTIFIED - RETURN
RECEIPT REQUESTED

Mr. Dale Clark
Energetics Corporation
833 East Arapahoe Road
Suite 202
Richardson, Texas 75081

Re: Energetics Corporation,
Hanes Corporation Well
No. 1-F, Sec. 9, T-24-S,
R-2-E, Dona Ana County

Dear Mr. Clark:

For the past several months the Oil Conservation Division has been attempting to cooperate with you to cause the above-referenced well to be properly plugged and abandoned. Since the Division has been unsuccessful in having Energetics Corporation voluntarily cause the appropriate plugging procedures to be performed upon this well, the Division proceeded with its noticed and scheduled hearing on the forced plugging of this well. Attached to this letter is a copy of the order entered at that hearing which order requires Energetics Corporation and/or its bonding company, United States Fidelity and Guaranty Company, to plug the subject well. You will note that by the terms of this order, this well must be properly plugged or brought into production on or before January 1, 1983.

Thank you for your prompt attention to this matter.

Sincerely,

JOE D. RAMEY,
Director

JDR/WPP/dr

ENERGETICS CORPORATION
The Energy Company

833 E. Arapaho Road
Suite 202
Richardson, Texas 75081
(214) 783-4731

Post Office Box 1596
Lovington, New Mexico 88260
(505) 396-5889

October 18, 1982

W. Perry Pearce
General Counsel
Energy & Minerals Department
Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

RE: Hanes Corporation Well No. 1,
located in Unit F, Section 9,
Twp 24S, Rge 2E, Dona Ana
County-Plugging Bond

Dear Mr. Pearce:

Regarding the above captioned, Mr. LeRoy Sumruld talked with Mr. Joe Ramey this afternoon concerning the plugging procedures. Mr. Sumruld stated that the well will be plugged by November 15, 1982, provided no unforseen circumstances arise.

I trust this will finally get this matter resolved, and I appreciate your assistance.

Yours very truly,

WINFORD CARLILE

WC/bc

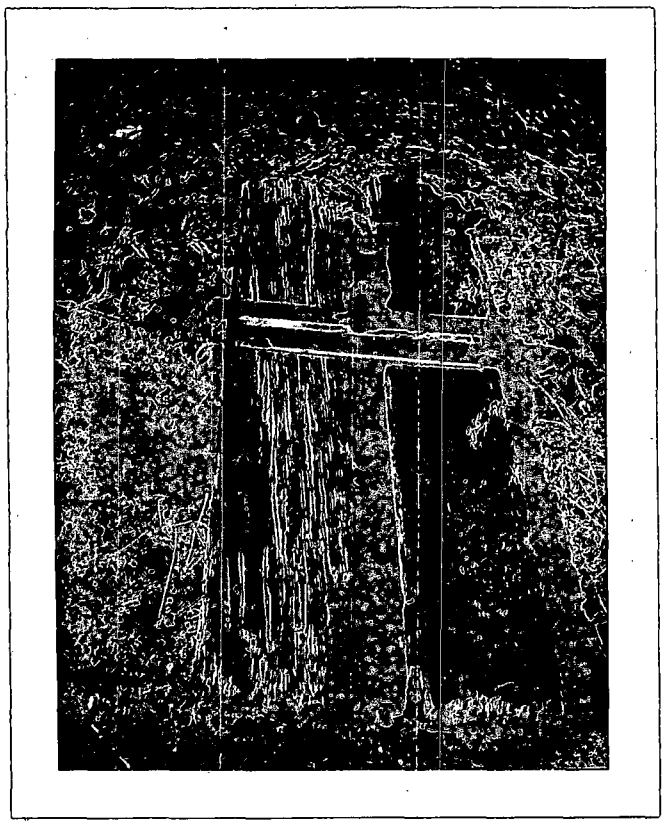
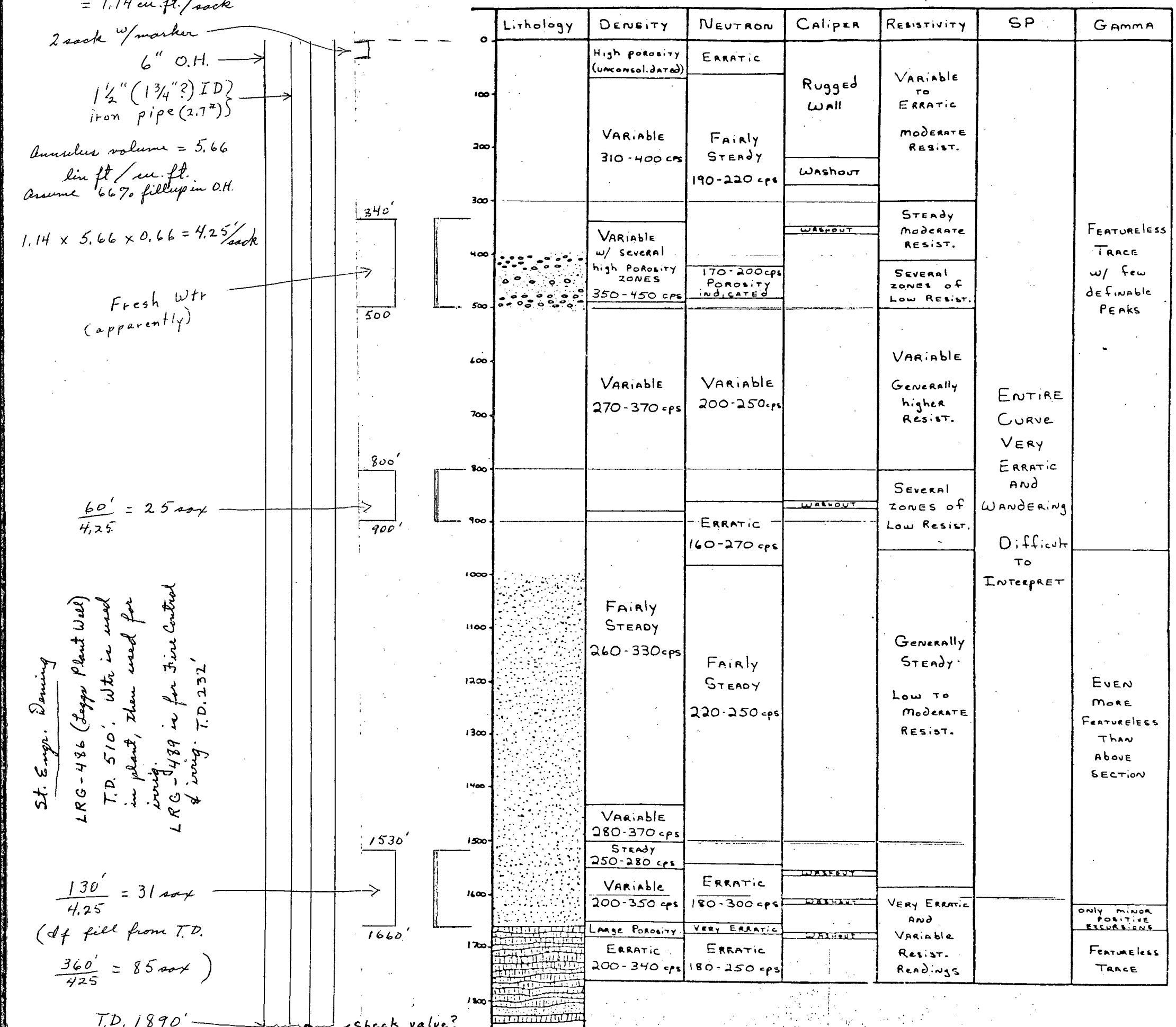


FIGURE C-1
LITHOLOGY OF SITE "A"
TO A DEPTH OF 1873 FEET.



①

Energetics Corporation #1 Hanes Corp.

1890' FNL & 3425' FEL, Sec 9, T-24-S, R-2-E

Drilled in May 1980; Completed May 20th.

No permits applied for at O.C.D. No notice given that well would be drilled or was drilled.

I heard (unofficially "rumors") that drilling had been done and met with Hanes officials at Leggs Plant on Nov. 18, 1980. At this time I learned of the arrangements for the well; details of the drilling & completion; Hanes rejection of assuming ownership; and made inspection of the well and surrounding area.

There was a 1½" iron pipe suspended in an open, uncased hole approximately 9" in dia. at one edge of the Leggs Plant parking lot. C. ±, 100' ~~to 1 "~~ to the NW was a large motor & pump on an irrigation well. Somewhat farther away ±500' to the S. - was another well which supplies the plant and - after plant usage is also used for surface use, including crops.

(2)

The nearest private irrigation well is identified by the State Engineers Office as LRG-489 and has a depth of 232'.
The combo. Legga water well irrig. well is identified as LRG-486 and is 510' deep. Water quality is essentially identical from both wells and is rated as "potable".

On Nov. 20, 1980, the Energetics Corp. was notified that the OCD had knowledge of the forgoing; that the well was not permitted; and that an explanation was in order.

On Nov. 25, 1980, I advised - by telephone - that Energetics must file all forms required, including a bond, G-101, G-102 etc. At that time I advised that well could not be abandoned as equipped. It would have to be cased or plugged and if to be plugged, would have to be done in a manner acceptable to the O.C.D. and with our witnessing the operation.

(3)

After more correspondence and telephone calls, the proper forms were eventually obtained — as of June 1, 1981.

According to the forms filed, and other information previously acquired, the well is 1890' deep, was drilled with a 6" bit, and has 1½" iron pipe suspended to T.D. with a check valve on bottom. Otherwise the hole is open.

On my first inspection (11-18-80) neither of the two nearby water wells were being pumped and it was apparent that water was standing in the annulus of the Energetics well at a shallow depth, estimated to be 25'.

A later inspection (2-17-81) found both water wells being pumped at a high rate, and the water level in the subject well much lower — possibly below 200' — altho apparent caving of the open hole prevented reaching water by soundings.

Yesterday (Oct 26th) I again met with the Legge Plant Manager, Mr. John Head, and we jointly inspected the well. Again it was established that the Hanes Corporation does not want the well for any purpose and is desirous of having it plugged and the location

restored. The well is beside a road used by service vehicles, trucks hauling raw materials in and finished products out, and by employees going to and from a parking lot. It is therefore a nuisance and a hazard.

Yesterday's inspection found that the surface hole has eroded and/or caved to approximately 3' in diameter, and that the timbers from which the 1½" iron pipe was initially suspended, have sunk to where they no longer support the pipe. At approximately 5' below the surface the hole is about 12" x 18" in size and appears to be that size from there on down as far as could be determined.

6/28/81:

Telephone conversation with Mr. John Head, Manager of Legge Industries, Las Cruces, regarding Energetics well.

He says the water well that supplies plant manufacturing need (St. Engr # LRG-486; T.D. 510') produces potable water. It is slightly "hard" and is treated for that (Ca Cl ?) but after use in plant goes for crop irrigation. (± 500' from Energetics)

Water quality is similar (if not equal) to that of LRG-489 which is used for irrigation and stand-by for fire protection. T.D. is 232'. (± 60' from Energetics)

CU

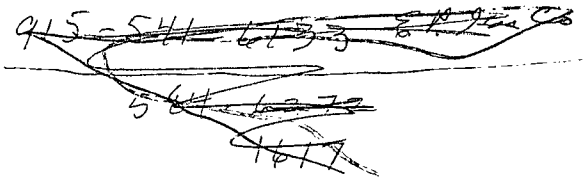
P.S Swanberg's report (pA-1) refers to a 500' Wtr well, loc. not given.

8/31:

I called Kaiser.

Gave him minimum plug requirements and left it up to Energetics to put plugs in place.

Johnson (driller) doesn't think cementing thru pipe (as is) will work.



Aug. 31, 1981, plugging program given Energetics (Brian Kaiser - Richardson, Tx)

Since then have provided some data regarding plugging to several different contractors and again, on three different occasions, to the Energetics corporation.

9/28

I Called Baber Well Service,
Hobbs; 393-5516

Gave him plugging program
previously (8/31/81) given Kaiser
(Energetics - Richardson, Texas).

options
1. Circulate water from 1890' to
surface thru 1½" tubing now
in hole, followed by cementing
from T.D. to surface with tubing
pulled.
2. Set cement plugs at 1600'-1530',
900'-800', 500'-340', and top plug.

10/4 - Talked to Baber (NMO&G)
gave him copies of dope.

ENERGETICS CORPORATION

The Energy Company

TEXAS ENERGETICS CORPORATION
833 E. Arapaho Road
Suite 202
Richarson, Texas 75081
(214) 783-4731

ENERGETICS CORPORATION
Post Office Box 1596
Lovington, New Mexico 88260
(505) 396-5889

27 May 1981

Mr. Joe D. Ramey
Director
State of New Mexico
Energy and Minerals Dept.
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Ramey:

Enclosed are the permits which we have discussed regarding the well drilled in Las Cruces, New Mexico in May of last year.

The Well Logs were taken by Dalton Well Logging Corp. and evaluated by Los Alamos Scientific Laboratories (LASL). Included herewith are temperature logs by Dr. Chandler Swanberg and the evaluation by LASL of the cuttings and geophysical logs. The actual documents (geophysical logs) are still in the possession of LASL.

Forthcoming under separate cover is the plugging bond. The bonding agent is Mr. Mike Hartgrave with Alston-Hartgrave Insurance Agency in Lovington, New Mexico. His agency is in the process of issuing the bond and will forward this item directly to you.

Thank you for your consideration in this matter, and again, I apologize for the delay.

Sincerely,

Bryan D. Kaiser
Vice President
Corporate Affairs

BDK:jp
Enclosures

Form G-101
Adopted 10/1/74

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Operator		
Land Office		

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK---GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE ☐ FEE ☐

5.a State Lease No.: Not Applicable

1a. Type of Work: Drill ☒ Deepen ☐ Plug Back ☐

b. Type of Well: Geothermal Producer ☐ Low-Temp Thermal ☐ Temp Observation ☒ Injection/Disposal ☐

7. Unit Agreement Name: --

8. Farm or Lease Name: Hanes Corporation

2. Name of Operator: ~~Texas~~ Energetics Corporation

9. Well No.: #1

3. Address of Operator: 833 E. Arapaho Rd., Suite 202, Richardson, Texas 75081

10. Field and Pool, or Wildcat: Wildcat

4. Location of Well: UNIT LETTER F LOCATED 610 FEET FROM THE N59°45'E LINE AND 630 FEET FROM THE S28°15'E LINE OF SEC. 9 TWP. 24S RGE. 2E NMPM

12. County: Dona Ana

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
1,890 ft.	Rio Grande Rift	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond*	21B. Drilling Contractor	22. Approx. Date Work will start
3,860' above MSL	$2K Observation well	Larry Johnson, Las Cruces, NM	12 May 1980

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
6"	1½"	2.7#	1890'	est. 30	1000'

Proposal to drill a slim shallow temperature gradient measurement test hole on the Hanes Corporation property casing of 1½" will be installed with bottom check valve as shoe for cementing. No production of water will be undertaken. After all temperature measurements and well logs are completed, it is expected that the well will be cemented and abandoned.

* Bonding agent to forward directly

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed [signature] Title Vice President-Corp. Affairs Date May 29th 1980

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. BOX 2088 SANTA FE 87501

Form G-102
Adopted 10/1/74

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Texas Energetics Corporation	Hanes Corporation	1

Unit Letter	Section	Township	Range	County
F	9	24S	2E	Dona Ana

Actual Footage Location of Well:
1890 feet from the North line and 3425 feet from the East line

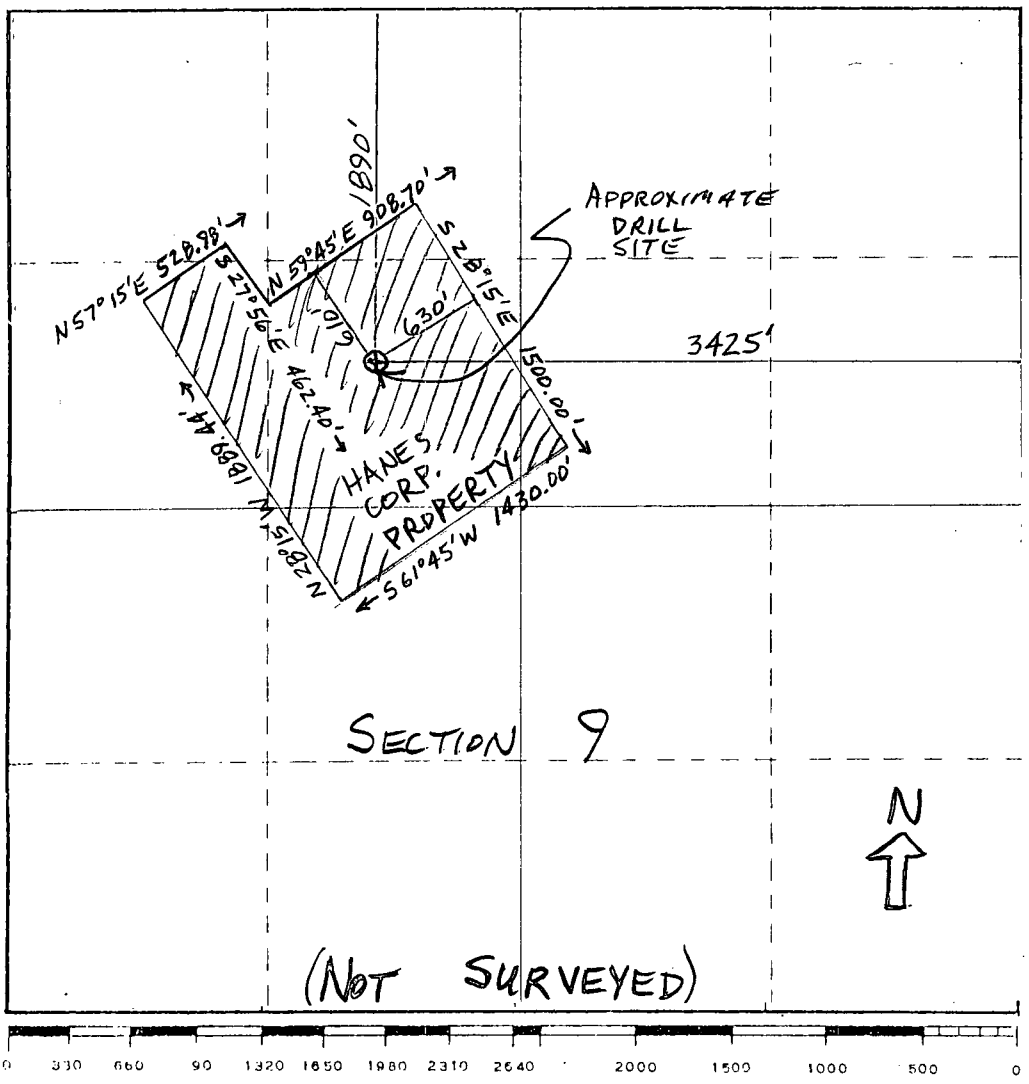
Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3860'	None	Temperature Gradient	None Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
   Not Applicable. However, the Hanes Corp. property is shown below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). Not Applicable.
3. If more than one lease of different ownersip is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc? Not Applicable

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Bryan D. Kaiser

Position: Vice President-Corp. Affairs

Company: Texas Energetics Corporation

Date: May 27, 1981

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

Form G-103
Adopted 10/1/74

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U. S. G. S		
Operator		
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NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease State ☐ Fee ☐

5.a State Lease No. Not Applicable

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☐ Temp. Observation XX; Low-Temp Thermal ☐ Injection/Disposal ☐

7. Unit Agreement Name

2. Name of Operator: Energetics Corporation

8. Farm or Lease Name: Hanes Corporation

3. Address of Operator: 833 E. Arapaho Rd., Suite 202, Richardson, Texas 75081

9. Well No.

4. Location of Well: Unit Letter F 610 Feet From The N59°45'E Line and 630 Feet From The S28°15'E Line, Section 9 Township 24S Range 2E NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation *(Show whether DF, RT, GR, etc.)*: 3,860' above MSL

12. County: Dona Ana

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☒		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER ☐	

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

A 6" diameter temperature gradient test hole cased with 1½" casing was completed 20 May 1980 on the Hanes Corporation property to a depth of 1,890 feet. The well is to be temporarily abandoned until a final decision is reached between Texas Energetics Corporation and the Hanes Corporation as to the further use and/or development of the drilled hole.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED [signature] TITLE Vice President-Corp. Affairs DATE May 27, 1981

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-104
Adopted 10/1/74

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES

OWNER OR OPERATOR
Name ~~Texas~~ Energetics Corporation
Address 833 E. Arapaho Rd., Suite 202, Richardson, Texas 75081

TYPE OF WELL
Geothermal Producer [ ] Low-Temperature Thermal [ ] Injection/Disposal [ ]

REASON FOR FILING
New Well [ ] Recompletion [ ]
Change in Ownership [ ] Designation of Purchaser [ ]
Other (Please Explain) [X] Notice: There is no intent to produce or sell any product from this well.

DESCRIPTION OF WELL
Lease Name Haynes Corp. Property Well No. 1 Name of Reservoir Wildcat
Kind of Lease (Fee, Fed. or State) Private Property Lease Number N/A

LOCATION
Unit Letter F ; 610 feet from the N59° 45'E line and 630 feet from the S28° 15'E line of
Section 9 Township 24S Range 2E
County Dona Ana

TYPE OF PRODUCT
Dry Steam None Steam and Water None Low Temp. Thermal Water None

DESIGNATION OF PURCHASER OF PRODUCT
Name of Purchaser None
Address of Purchaser
Product Will Be Used For

CERTIFICATE OF COMPLIANCE

I hereby certify that all rules and regulations concerning geothermal resources wells in the State of New Mexico, as promulgated by the Oil Conservation Commission of New Mexico, have been complied with, with respect to the subject well, and that the information given above is true and complete to the best of my knowledge and belief.

Signed Bryan D. Kaiser Position Vice President-Corporate Affairs Date 5/27/81
Bryan D. Kaiser

Approved Position Date

Form G-105
Adopted 10/1/74

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL LOG

Operator Texas Energetics Corporation

Address 833 E. Arapaho Rd., Suite 202, Richardson, Texas 75081

Reservoir Rio Grande Rift

Lease Name Hanes Corporation Well No. 1 Unit Letter F

Location: 1890 feet from the North line and

3,425 feet from the East line Section 9

Township 24S Range 2E County Dona Ana

FORMATIONS PENETRATED BY WELL

DEPTH TO		Thickness	Drilled or Cored	Recovery	DESCRIPTION
Top of Formation	Bottom of Formation				
0'	1660'	1660'	Drilled	Mud Logs	Heterogeneous sandy gravel; tan color; mostly quartz and feldspar.
1660'	1890'	230'	Drilled	Mud Logs	Black volcanic rock; probably Basalt.

Attach Additional Sheets if Necessary

This form must be accompanied by copies of electric logs, directional surveys, physical or chemical logs, water analyses, tests, and temperature surveys (See Rule 205).

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed Bryan Glasser Position Vice President - Corporate Affairs Date May 27, 1981

ENERGETICS CORPORATION

The Energy Company

TEXAS ENERGETICS CORPORATION
833 E. Arapaho Road
Suite 202
Richarson, Texas 75081
(214) 783-4731

ENERGETICS CORPORATION
Post Office Box 1596
Lovington, New Mexico 88260
(505) 396-5889

24 February 1981

Mr. Joe D. Ramey
Director
Oil Conservation Division
Energy and Minerals Department
State of New Mexico
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Dear Mr. Ramey:

We have received your letter of 12 February 1981 regarding permits for a well drilled in Las Cruces, New Mexico. We are in the process of completing the following forms. Please advise if there are any ommissions.

Designation of Agent

Plugging Bond - one well, geothermal observation, $2,000.00

G101 - Application

G102 - Well Location

G103 - Sundry Notices & Reports

G104 - Certification of Compliance

G105 - Geothermal Resources Well Log

Thank you for your assistance.

Sincerely,

Bryan D. Kaiser
Vice President
Corporate Affairs

BDK:jp

Contract No. 67-79

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT made and entered into this 28th day of June 1979, by and between the State of New Mexico, Energy and Minerals Department, hereinafter referred to as the "Department", and Monument Solar Corporation for L'eggs Products, Inc., hereinafter referred to as the "Contractor."

IT IS MUTUALLY AGREED BETWEEN THE PARTIES:

1. Scope of Work. The scope of the entire demonstration includes the following:

Phase I will include analysis of the geophysical and chemical parameters of the L'eggs property. Upon the U.S. Department of Energy's selection of the best of five sites (including the L'eggs property) for development, an analysis of the proposed project will be developed which will include a preliminary design for utilizing the geothermal resource for spaceheating and, if possible, for direct heat applications. An estimate of project costs will be submitted. Conceptual plans will be furnished to the Department on the L'eggs property as completed. The Department will evaluate Phase I and shall promptly inform the Contractor of the acceptability or non-acceptability of Phase I work. Contractor shall not begin any State funded Phase II effort without prior written authorization by the Secretary of the Department. One hundred percent funding for Phase I is included in the Addendum for U.S. DOE PRDA-03-79-ET-27004.

Phase II will include the development of the geothermal resource, necessary engineering, detailed design, and the installation of necessary equipment to get the geothermal on line. Limited funding for the Phase II effort planned for the second year of the program is included in the Addendum for U.S. DOE PRDA-03-79-ET-27004.

Phase III will include the operation of the geothermal system for a length of time that will allow for a thorough analysis of, and reporting on, the entire project. Analysis of the data and information gathered will be performed to determine actual costs of equipment installation, geothermal energy utilization, natural gas and electrical savings, maintenance and oper-

ating considerations, cost effectiveness and the applicability of concept and retrofit methodology to other facilities. No funding for this effort is included in the Addendum for U.S. DOE PRDA-03-79-ET-27004.

Report Schedule:

Monthly Progress Reports: The Contractor will furnish the Department monthly reports detailing progress and expenditures during the previous calendar month. Monthly expenditures paid by the Contractor for effort in the contract will be submitted and the State shall reimburse the Contractor for such expenditures in not more than 30 days after receipt of the Contractor's invoice. These reports shall be delivered to the Department no later than the 20th of the following month.

Phase I Report: Contractor will submit a detailed Phase I report after the evaluation has taken place and a determination of the geothermal deposit to be matched to the L'eggs property has been made by the U.S. DOE. Contractor shall also submit a detailed interim report by December 1, 1979.

Final Reports: The final report will be written in two sections. One section will evaluate the effectiveness of the Demonstration project and will be written to promote the use of geothermal energy. The other section will document what needs to be done to implement the project and will be written as a guide to implementing similar projects elsewhere in the State of New Mexico. The final report shall be submitted no later than June 1, 1981. Prior to delivery of each final report, the Contractor shall submit one (1) copy of the draft version of each final report to the Department for review. If the Department fails to respond to the Contractor regarding a report within 15 days, then the final version of that report may be prepared by the Contractor.

Upon written notice of completion of the demonstration by the Contractor, and with the agreement of the Secretary, the facilities constructed and the fixed equipment contained therein shall become the property of the Contractor.

The Contractor agrees to allow Department personnel, and other individuals authorized by the Department, to enter and monitor activities within the facilities during the contract period and for one (1) year after the contract period ends provided that reasonable notice is given to the Contractor.

2. Compensation.

A. The Department shall pay to the Contractor in full payment for services rendered an amount not to exceed fifty six thousand two hundred and

thirty-six dollars and sixty-six cents ($56,236.66) providing that not less than one hundred (100) percent matching funds are provided for these monies from available federal or private resources.

Notwithstanding the allocation of funds stated herein and further detailed in Exhibit A, adjustments to the funding allocations may be made as provided in paragraph 3 of this agreement.

B. The Department shall pay the Contractor the New Mexico Gross Receipts Tax levied on the amounts payable under this Agreement.

C. Payment shall be made monthly upon receipt of a detailed, certified Statement of Account.

3. Funding and Budget Adjustments. Notwithstanding the funding allocation stated in paragraph 2 of this Agreement, the Department and the Contractor may agree in writing to readjust the allocation of funds within the total amount of the Agreement, provided that such written authorization occurs prior to any expense, being incurred which would alter the original allocation of funds. Any adjustment in excess of ten (10) percent of a budgeted line item must be approved in writing by the Department and the Contractor in advance of the expenses having been incurred.

4. Term. This Agreement shall not become effective until approved by the Department of Finance and Administration. This agreement shall terminate on June 1, 1981, unless terminated pursuant to paragraph 5, infra.

5. Termination. This Agreement may be terminated by either of the parties hereto upon written notice delivered to the other party at least 30 days prior to the intended date of termination. By such termination, neither party may nullify obligations already incurred for performance or failure to perform prior to the date of termination.

6. Status of Contractor. The Contractor, and his agents and employees, are independent contractors performing professional services for the Department and are not employees of the State of New Mexico. The Contractor, and his agents and employees, shall not accrue leave, retirement, insurance, bonding, use of state vehicles, or any other benefits afforded to employees of the State of New Mexico as a result of this Agreement.

7. Assignment. The Contractor shall not assign or transfer any interest in this agreement or assign any claims for money due or to become due under this Agreement without the prior written approval of the Department.

8. Subcontracting. The Contractor shall not subcontract any portion of the services to be performed under this Agreement without the prior written approval of the Department.

9. Records and Audit. The Contractor shall maintain detailed time records which indicate the date, time and nature of services rendered. These records shall be subject to inspection by the Department, the Department of Finance and Administration, and the State Auditor. The Department shall have the right to audit billings both before and after payment; payment under this Agreement shall not foreclose the right of the Department to recover excessive or illegal payments.

10. Appropriations. The terms of this Agreement are contingent upon sufficient appropriations and authorization being made by the Legislature of New Mexico for the performance of this Agreement. If sufficient appropriations and authorization are not made by the Legislature, this Agreement shall terminate upon written notice being given by the Department to the Contractor. The Department's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final.

11. Release. The Contractor, upon final payment of the amount due under this Agreement, releases the Department, its officers and employees, and the State of New Mexico from all liabilities, claims and obligations whatsoever arising from or under this Agreement. The Contractor agrees not to purport to bind the State of New Mexico to any obligations not assumed herein by the State of New Mexico, unless the Contractor has express written authority to do so, and then only within the strict limits of that authority.

12. Confidentiality. Any confidential information provided to or developed by the Contractor in the performance of this Agreement shall be kept confidential and shall not be made available to any individual or organization by the Contractor without the prior written approval of the Department.

13. Product of Services; Copyright. All materials developed or acquired by the Contractor under this Agreement shall become the property of the State of New Mexico and shall be delivered to the Department not later than the termination date of this Agreement. Nothing produced, in whole or in part, by the Contractor under this Agreement shall be the subject of an application for copyright by or on behalf of the Contractor.

14. Conflict of Interest. The Contractor warrants that he presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required under this Agreement. The Contractor shall comply with the provisions of Section 10-16-12 NMSA 1978 which require disclosure to the Office of the Secretary of State of amounts received under contract when if such provisions become applicable.

15. Amendment. This Agreement shall not be altered, changed or amended except by instrument in writing executed by the parties hereto.

16. Scope of Agreement. This Agreement incorporated all the agreements, covenants and understandings between the parties hereto concerning the subject matter hereof, and all such covenants, agreements and understandings have been merged into this written agreement. No prior agreement or understanding, verbal or otherwise, of the parties or their agents shall be valid or enforceable unless embodied in this Agreement.

17. Liability and Indemnification. Neither the Department or the State of New Mexico will be liable for payment of damages for injuries to any person, or loss of life or personal property, or loss suffered or sustained and arising from the work performed under this Agreement. The Contractor agrees to indemnify and save the Department harmless from any and all claims, demands, damages, actions, costs, or charges against the Department arising as the result of the above-mentioned injuries, damages or loss, except for any such damages or claims arising out of the negligent acts of the Department or its employees in the course of their official duties.

18. Patent Rights. The Department shall acquire or reserve the principal or exclusive right to any patent which was the result of a work performed under this Agreement. The Department or its successor agency, on behalf of the State of New Mexico, shall make a determination of the respective interest in a patent of the Department, the Contractor, and any other funding organization or governmental unit in any instance where the patent is a result of work performed under this Agreement. In making such a determination, the Department shall consider:

A. The proportion of funding of the project by the State vis a vis other funding sources;

B. The extent of the experience of the State in the particular application area;

C. Terms of other grants or awards which funded the project, and

D. Any special expertise of the Contractor and/or the Institution with which the Contractor is affiliated, and whether such expertise was acquired before the award of State funds.

19. Permits. Except as otherwise directed by the Department, the Contractor shall procure all necessary permits or licenses and abide by all applicable laws, regulations, and ordinances of the United States, the State of New Mexico and the political subdivision in which the work under this Agreement is performed.

20. Applicable Law. This Agreement shall be governed by the laws of the State of New Mexico.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

BY: _____
SECRETARY

BY: L Dale Clark
CONTRACTOR

This Agreement has been approved by:

DEPARTMENT OF FINANCE AND ADMINISTRATION

BY: _____, State Contracts Officer

DATE: 28 JUN 1979

The records of the Taxation and Revenue Department reflect that the Contractor is registered with the Taxation and Revenue Department of the State of New Mexico to pay gross receipts and compensating taxes.

ID NO: 01-750115-00

BY: Lucy Delgado

DATE: 6/25/79
TAXATION AND REVENUE DEPARTMENT

COST PROPOSAL

DIRECT LABOR

	Hrs.	Rate/hr.	Total Cost
Program Manager	48 x	18.53	$ 889.44
Engineering (average rate)	960 x	12.28	11,788.80
Site Suitability	312 x	6.06	1,890.72
Secretarial	90 x	4.73	425.70
TOTAL			$14,994.66

OVERHEAD

	Rate x Base	
Engineering & Fringes	77.42% x 14,994.66	11,608.87

GENERAL & ADMINISTRATION

20% of Direct Labor & Overhead	5,320.71
Sub-contractor	11,500.00

OTHER DIRECT COSTS

Reproductions	1,200.00
Computer	3,750.00
Travel	3,750.00
TOTAL COST	51,124.24
FEE 10% OF TOTAL COST	5,112.42
TOTAL COST & FEE	$56,236.66

Table 3.1

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Adopted 10-1-74
Revised 10-1-78

DESIGNATION OF AGENT

In compliance with Rule 100, New Mexico Oil Conservation Division Rules and Regulations, Geothermal Resources, ENERGETICS CORPORATION (Name of Operator), whose address is P. O. Box 1596, 1600 S. Love, City LOVINGTON, State NEW MEXICO, hereby designates WINFORD CARLILE (Name of Designee), whose address is P. O. Box 1596, City LOVINGTON, New Mexico, as RESIDENT agent, who shall be the repository for all well records for each geothermal well drilled by ENERGETICS CORPORATION (Name of Operator) in the State of New Mexico *.

Further, that in accordance with Rule 200 B of said Rules and Regulations, all such well records shall remain in custody of said Designated Agent within the State of New Mexico until all required forms and attachments pertaining to each such well have been filed with the Division, and that these well records shall be available for inspection, during normal business hours, by the Division or its representatives, or the State Engineer or his representatives.

This Designation supersedes all previous designations made for the above-described purpose.

Comes now WINFORD CARLILE, after being first duly sworn, upon his (or her) oath deposes and says that he (or she) has read the foregoing and that he (or she) is familiar with same, and that with full power and authority to do so, he (or she) hereby executes this Designation of Agent.

Signature

PRESIDENT, ENERGETICS CORPORATION
Position

SUBSCRIBED AND SWORN to before me on this 21st day of MAY, 19 81

My Commission Expires:
DECEMBER 12, 1984

Notary Public

AGENT'S ACCEPTANCE:

Comes now WINFORD CARLILE, after being first duly sworn, upon his (or her) oath deposes and says that he (or she) has read the foregoing and that he (or she) is familiar with same, and that he (or she) hereby accepts Designation of Agent for ENERGETICS CORPORATION (Name of Operator) in accordance with and subject to the above conditions and provisions.

Designated Agent

SUBSCRIBED AND SWORN to before me on this 21st day of MAY, 19 81

My Commission Expires:
DECEMBER 12, 1984

Notary Public

*Should the owner or operator filing this form choose to appoint more than one agent, each for a given area, "State of New Mexico" should be deleted, and "County(ies) of _____" inserted, with the County(ies) named. A separate form must be filed for each agent.

NOTE: An individual who is a resident of New Mexico may designate himself as agent.

COLLEGE OF ARTS AND SCIENCE

DEPARTMENT OF PHYSICS
Box 3D/Las Cruces, New Mexico 88003
Telephone (505) 646-3831

NEW MEXICO STATE UNIVERSITY

June 17, 1980

Mr. Dale Clark
Energetics Corporation
833 E. Arapaho Road, Suite 202
Richardson, Texas 75081

Dear Mr. Clark:

I am enclosing three temperature logs for the geothermal test well at the L'eggs Factory south of Las Cruces. These logs were run May 21, 26, and 30. The May 30 log is very close to equilibrium, but I will log the well once again to be sure. The maximum bottom hole temperature is 31.77°C at 570 meters.

The temperature gradient in the well is fairly typical of the Rio Grande Rift as can be seen by comparing the data in Figure 1 with the enclosed report by Harder et al. (1980). The gradient in the upper 110 meters is extremely erratic and probably effected by shallow groundwater circulation. Below 115 meters, a quasi-conductive gradient is observed. This gradient averages about 26°C/Km between 115 and 500 meters and then jumps to over 40°C/Km below 500 meters. This increase in conductivity is probably due to a lithologic change, but I would like to examine the geophysical logs to make sure.

Very truly yours,

Chandler A. Swanberg

CHANDLER A. SWANBERG, Assoc. Professor
Departments Physics/Geology

CAS:nd

Enclosures

L'eggs Factory

May 21, 1980

Depth	Temperature (°C)	Depth	Temperature (°C)
5	20.67	235	22.38
10	21.07	240	22.44
15	21.63	245	22.53
20	21.17	250	22.69
25	20.93	255	22.83
30	20.81	260	22.94
35	20.89	265	23.07
40	20.99	270	23.17
45	20.94	275	23.27
50	20.98	280	23.39
55	20.98	285	23.48
60	20.90	290	23.59
65	20.81	295	23.70
70	20.71	300	23.80
75	20.66	305	23.90
80	20.61	310	24.01
85	20.63	315	24.12
90	20.56	320	24.23
95	20.53	325	24.34
100	20.55	330	24.44
105	20.57	335	24.53
110	20.57	340	24.64
115	20.61	345	24.74
120	20.64	350	24.83
125	20.67	355	24.96
130	20.73	360	25.06
135	20.77	365	25.16
140	20.84	370	25.27
145	20.90	375	25.38
150	20.95	380	25.48
155	21.00	385	25.58
160	21.06	390	25.69
165	21.13	395	25.79
170	21.21	400	25.91
175	21.29	405	26.02
180	21.36	410	26.14
185	21.44	415	26.25
190	21.54	420	26.36
195	21.63	425	26.47
200	21.73	430	26.58
205	21.80	435	26.69
210	21.90	440	26.80
215	22.02	445	26.90
220	22.11	450	27.00
225	22.21	455	27.13
230	22.32	460	27.25

Depth	Temperature (°C)
465	27.34
470	27.46
475	27.60
480	27.68
485	27.80
490	27.96
495	28.05
500	28.12
505	28.29
510	28.39
515	28.50
520	28.67
525	28.90
530	29.30
535	29.60
540	29.71
545	30.00
550	30.22
555	30.34
560	30.49
565	30.74
570	31.19
575	31.57

L'eggs Plant

May 26

Depth	Temperature (°C)	Depth	Temperature (°C)
5	21.74	270	22.57
10	19.54	275	22.71
15	20.36	280	22.85
20	19.50	285	22.97
25	18.65	290	23.10
30	18.78	295	23.23
35	19.19	300	23.37
40	19.32	305	23.50
45	19.15	310	23.63
50	19.22	315	23.76
55	19.07	320	23.89
60	18.83	325	24.02
65	18.80	330	24.14
70	18.71	335	24.26
75	18.67	340	24.38
80	18.63	345	24.50
85	18.64	350	24.62
90	18.66	355	24.75
95	18.65	360	24.88
100	18.73	365	25.00
105	18.77	370	25.13
110	18.82	375	25.26
115	18.88	380	25.39
120	18.97	385	25.52
125	19.06	390	25.64
130	19.19	395	25.77
135	19.28	400	25.91
140	19.39	405	26.05
145	19.51	410	26.18
150	19.59	415	26.30
155	19.70	420	26.44
160	19.79	425	26.58
165	19.90	430	26.70
170	20.01	435	26.84
175	20.13	440	26.97
180	20.25	445	27.11
185	20.37	450	27.25
190	20.50	455	27.39
195	20.63	460	27.53
200	20.75	465	27.66
205	20.87	470	27.83
210	21.01	475	27.96
215	21.15	480	28.09
220	21.27	485	28.27
225	21.41	490	28.44
230	21.52	495	28.57
235	21.64	500	28.73
240	21.77	505	28.91
245	21.90	510	29.08
250	22.03	515	29.26
255	22.17	520	29.47
260	22.33	525	29.70
265	22.44	530	30.05

Depth	Temperature (°C)
535	30.22
540	30.43
545	30.65
550	30.84
555	30.99
560	31.23
565	31.43
570	31.76

L'eggs Plant

May 30

Depth	Temperature (°C)	Depth	Temperature (°C)
5	18.99	260	22.21
10	19.37	265	22.33
15	20.07	270	22.47
20	19.46	275	22.61
25	18.43	280	22.76
30	18.45	285	22.89
35	18.89	290	23.02
40	19.09	295	23.15
45	18.92	300	23.29
50	18.99	305	23.42
55	18.87	310	23.56
60	18.60	315	23.70
65	18.55	320	23.83
70	18.42	325	23.96
75	18.44	330	24.08
80	18.37	335	24.21
85	18.39	340	24.33
90	18.40	345	24.45
95	18.39	350	24.58
100	18.46	355	24.71
105	18.51	360	24.84
110	18.55	365	24.97
115	18.63	370	25.10
120	18.74	375	25.23
125	18.83	380	25.36
130	18.96	385	25.48
135	19.03	380	25.64
140	19.14	395	25.77
145	19.28	400	25.91
150	19.37	405	26.06
155	19.49	410	26.18
160	19.58	415	26.31
165	19.70	420	26.45
170	19.81	425	26.59
175	19.94	430	26.72
180	20.06	435	26.86
185	20.19	440	26.99
190	20.32	445	27.14
195	20.45	450	27.28
200	20.57	455	27.42
205	20.70	460	27.57
210	20.84	465	27.71
215	20.98	470	27.87
220	21.10	475	28.01
225	21.24	480	28.16
230	21.36	485	28.34
235	21.49	490	28.51
240	21.62	495	28.66
245	21.75	500	28.81
250	21.90	505	29.01
255	22.05	510	29.18

Depth	Temperature (°C)
515	29.37
520	29.57
525	29.81
530	30.08
535	30.28
540	30.48
545	30.69
550	30.88
555	31.05
560	31.26
565	31.47
570	31.77

Appendix C

Interpretation of Geophysical Logs at Site A

Brief Summary of the Cuttings and Geophysical Logs from
L'Eggs Product Plant Geothermal Well - Site A, Las Cruces, NM

Borehole cuttings and a suite of geophysical logs from a geothermal test hole near Las Cruces, NM have recently been examined by LASL personnel. The cuttings have been examined in detail over the interval 1000' - 1870' and also for a limited zone in the upper part of the hole (400'-500'). This information has been summarized in the lithologic column of Figure C-1. Detailed descriptions of the lithologies in the closely examined intervals follow:

400' to 500' -

Sandy gravels to gravelly sands of heterogeneous composition. The gravels are generally subangular to subrounded and are up to 15 mm in diameter. Compositionally they include rhyolite, granite, limestone and other misc. rock fragments. The sand is poorly sorted, angular to subangular, probably of granitic origin, and is calcite cemented.

1000' to 1660' -

Buff to tan, poorly sorted, angular-to-subrounded sand, probably of granitic origin. Consists mostly of quartz and feldspar, with minor and variable amounts of amphibole, biotite, chlorite, epidote, magnetite and traces of zircon and sphene. The sand appears to have been cemented with calcite.

1660' to 1870' -

Dark grey to black volcanic rock fragments. The chips range in size from 1.0 to 10.0 mm (ave. about 2-3 mm) and are all angular. Extensive alteration of the primary phenocrysts has occurred. From the crystal pseudomorphs remaining and the assemblage of alteration minerals, the rock could probably be termed a basalt. Lath-shaped plag. pseudomorphs are still preserved, the plag. being replaced by light yellowish to greenish material, probably saussurite (epidote). Original ferromagnesians (pyroxene?) have also been replaced by a deeper greenish mineral, probably chlorite. The most prominent and abundant alteration mineral appears as greenish blue, fine-grained botryoidal material (prehnite?) found in the numerous vugs and cavities present in the rock. Other alteration minerals present include calcite, quartz and hematite. The groundmass appears vitreous and chocolate brown under the binocular scope.

Also found associated with the basaltic rock samples, but in minor amounts, are off-white, non-volcanic, fine-to-medium grained clumps that are flecked with a dark material. These clumps probably represent secondary alteration veins in the basalt (possibly zeolites). Angular to sub-angular sand, very similar to the sand in the overlying section, is also present. Some of this sand could be due to spallation from the upper sand section. However, in the interval 1800' - 1830' significant amounts of sand with minor amounts of gravel are present. From 1830' to 1870', the cuttings are again mostly basaltic rock fragments. There is a possibility then for several separate flows to exist.

Near the top of the upper flow (1660'-1670') the volcanic fragments take on a much lighter grey, earthy color and the amount of alteration material also increases, with the greenish blue prehnite as a very abundant vug and cavity filler.

The exact stratigraphic position of the rocks penetrated by this bore hole is uncertain. According to Chaturvedi (ref. C-1) two geothermal test holes on New Mexico State University property just north of the Las Alturas Estate penetrated sediments of the Santa Fe Group but bottomed in "rhyolite gravel" at a depth of about 1200'. No indication of the stratigraphic age of these gravels was given. Chaturvedi (ref. C-2) mentions the possibility of encountering sedimentary rocks of Upper Paleozoic Age at a depth of 1000' to 2000' in the Las Cruces area.

Geophysical Log Summary

Logging performed in this bore hole included: (1) density, (2) neutron, (3) caliper, (4) resistivity (type of tool not specified), (5) SP, and (6) gamma ray. Tool responses over the intervals described in the lithologic section are discussed below and are summarized in Figure IV-3. It must be mentioned however, that the tool readings were not calibrated in standard API units. Therefore, information concerning absolute porosity can not be extracted from these logs. Only information on relative changes in porosity can be given.

Density -

Over the interval 340' to 490', the density log indicates several zones of high porosity (high counts per second-cps). These zones correspond to the sandy gravels observed in the cuttings.

Very uniform trace with little deviation from 1000' to 1440'. Apparent small increase in porosity at 1440-50'. At approximately 1550' to 1650', the trace is mildly erratic and generally appears to have slightly lower porosity than the section 1000' to 1440'.

An abrupt decrease in the density reading occurs at 1605' and is apparently related to a hole washout at this depth. Base of the sand section (at about 1660') is marked by a large increase in porosity and is probably due to poorly consolidated sand (an aquifer?). From 1670' to 1760' (total depth logged), the erratic trace could be due to rugged hole conditions or possibly fracturing in the basalt.

Neutron -

The neutron log readings over the interval 420'-480' are low, indicating relatively higher porosity for this section. Again this probably corresponds to water saturated sandy gravels.

Very uniform trace in the sand section from 1000' to 1550'. From 1550' to 1657' the readings are mildly erratic and this corresponds in a general way to the desnity log values over the same interval.

The increase in the neutron log reading at 1657' apparently records the base of the sand (as did the density log) and may indicate the presence of water.

From 1660' to 1760', the neutron log records lower values than in the sand section (as would be expected).

Caliper -

The hole is in fairly good gage in the sand section from 1000' to 1660'. Minor washouts do occur at 1550'-60' and 1605'-15'. At the top of the basalt section the hole enlarges by several inches (at approx. 1670') possibly due to the weathered or fractured nature of the flow top. From 1675' to 1760', the hole is a little rugged (more so than in the sand section).

Resistivity -

Type of resistivity tool is not indicated. In the interval 420' to 500', several zones of low resistivity (indicating water-filled porosity) are present. This tool response corresponds to the readings of the density and neutron devices in the same interval.

The resistivity values are fairly uniform over the interval from 1000' to 1570'. From 1570' to the base of the sand the trace is quite erratic. The

basalt section gives widely varying readings, and is therefore difficult to interpret.

The resistivity value at the base of the sand is not distinctive as would be expected if water were present (as was presumably indicated by both the density and neutron logs).

SP-

The reading of the SP log is difficult to interpret. For the relatively homogeneous sand section from 1000' to 1660', the SP gives widely fluctuating excursions. Such variable values would (and should) not be expected from such a sandstone section as this. Possibly indicates tool malfunction.

Gamma Ray -

From 1000' to 1620' the log is featureless. From 1620' to 1655' there is a slight and variable increase in the gamma ray count. The largest excursion occurs at 1650-55' (the base of the sand). From 1655' to 1760' the log is again featureless with readings similar to that of the sand section. It appears that the sensitivity control was set at too low of a value.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

February 12, 1981

Energetic Corporation
833 E. Arapaho Road
Suite 202
Richardson, Texas 75081

Attention: Mr. L. Dale Clark

Gentlemen:

Please excuse the delay in answering your letter of December 16, 1980.

Since this well was drilled as a geothermal project partially funded by the Energy and Minerals Department it can be construed as nothing but a geothermal well.

You must therefore, as operator, file all forms necessary to drill and complete a geothermal well in New Mexico. This, of course, will include proper bonding.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

cc: Carl Ulvog

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
ENERGY RESOURCE AND DEVELOPMENT DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2770
113 WASHINGTON AVENUE
SANTA FE, NEW MEXICO 87501
(505) 827-2471

May 15, 1981

Mr. Bryan Kaiser
833 E. Arapaho Road
Suite 202
Richardson, Texas 75081

Dear Mr. Kaiser:

This is to confirm our May 15, 1981, phone conversation relating to the L'eggs Geothermal Demonstration project.

1. The Oil Conservation Division has not received copies of forms G101, G102, G103, G104, G105, Designation of Agency, nor a Plugging Bond.

2. The Energetics Corporation is tentatively scheduled for a Show Cause Hearing before the OCD in June so as to determine if the L'eggs well should be plugged and abandoned.

3. There is information on file with the OCD that there is communication between water zones in the L'eggs well.

4. The Director has informed me that your company may be liable for failure to file necessary forms and the penalty for this is a maximum of $1,000 per day.

5. The situation may be mitigated by your filing both the necessary forms and a plan to plug and abandon the well with the OCD prior to May 31, 1981.

This is an unfortunate situation, but, once again, it may be mitigated with your timely cooperation and consideration. I would appreciate hearing from you on May 22 as to your intents and actions in this matter.

Sincerely,

GEORGE SCUDELLA, Chief
Resources Bureau

GS:lmd

ENERGETICS CORPORATION
The Energy Company

TEXAS ENERGETICS CORPORATION
833 E. Arapaho Road
Suite 202
Richarson, Texas 75081
(214) 783-4731

ENERGETICS CORPORATION
Post Office Box 1596
Lovington, New Mexico 88260
(505) 396-5889

16 December 1980

Mr. Joe D. Ramey
Director
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Reference: Letter from Joe Ramey to
Dale Clark dated 11/20/80

Dear Mr. Ramey:

In the above referenced letter, it was requested that an explanation be provided regarding a well that was drilled in the Las Cruces area without a G-101 on file with your organization.

On April 24, 1980, Mr. Carl Ulvog of the Oil Conservation Division (OCD) was contacted by telephone by two of Energetics' personnel (Gary N. Bond and Bryan D. Kaiser). During the approximate thirty (30) minute telephone conversation between the 3 men, several items were discussed. One item in particular was permitting. Mr. Ulvog was informed by Mr. Bond and Mr. Kaiser of the plans to drill a well and was requested to forward the appropriate forms required by the OCD for permitting geothermal wells. At this time, Mr. Ulvog told the two Energetics employees that if the well was drilled as a "water well" no permits or approvals would be necessary from the OCD. Mr. Ulvog went on to say that permitting from the OCD would be required only if the "water well" proved to be hot and geothermal production was desired. Mr. Ulvog informed Messrs. Kaiser and Bond that water wells were however, subject to rules and regulations of the State Engineer and provided the name of Gene Gray as the person to contact for water well requirements. In a letter from Mr. Gene Gray, it was determined that the Las Cruces area was not within the boundaries of a declared underground water basin and consequently water well drilling was not subject to the rules and regulation of the State Engineer's office (see attachment I).

Based on the advice of Mr. Ulvog and the State Engineer's Office, Energetics contracted with Larry Johnson to drill a water well on the L'eggs plant site (see attachment II). Drilling began on May 12, 1980 and was completed on May 20, 1980.

I hope this letter answers any questions you have concerning the well drilled in Las Cruces. If not, please feel free to call me any time.

Thank you for your consideration in this matter.

Very truly yours,

L. Dale Clark/jp

L. Dale Clark
President

jp

cc: Winford Carlile

Note: I sent them rule book & forms for geothermal wells. cc

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

November 20, 1980

Mr. Dale Clark
Energetic Corporation
833 E. Arapaho Road
Suite 202
Richardson, Texas 75081

Dear Mr. Clark:

I recently obtained a report titled "Temperature Gradient Test Hole at Site A." In this report it states that, "the drilling was performed by Larry Johnson under contract to Energetics Corporation..."

We have determined the well has been drilled. However, no G-101 was filed with this office, and no approval was obtained prior to drilling the well.

Please explain.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

cc: ✓Carl Ulvog

11-25 – Gary Bond, Energetics called (214-783-4731)
Told him to file all forms and data on well G-101 thru G-105. If well is to be P&A, we will give plugging requirements, if convert to wtr supply (cold) we will provide casing requirements. They have rule book & forms.

2/17/81

Note to file:

Today I met with manager of Leggs Plant – ± 4mi So. of Las Cruces – (John Head) and two supervisors.

Discussed and inspected Energetics 2000' geothermal well. (see picture)

Leggs has no use for well as water supply; they already have more water available than needed. Well is also in their way (on edge of parking area and service road to back of plant.) Would appreciate it being plugged and location cleared unless deeper drilling there planned.

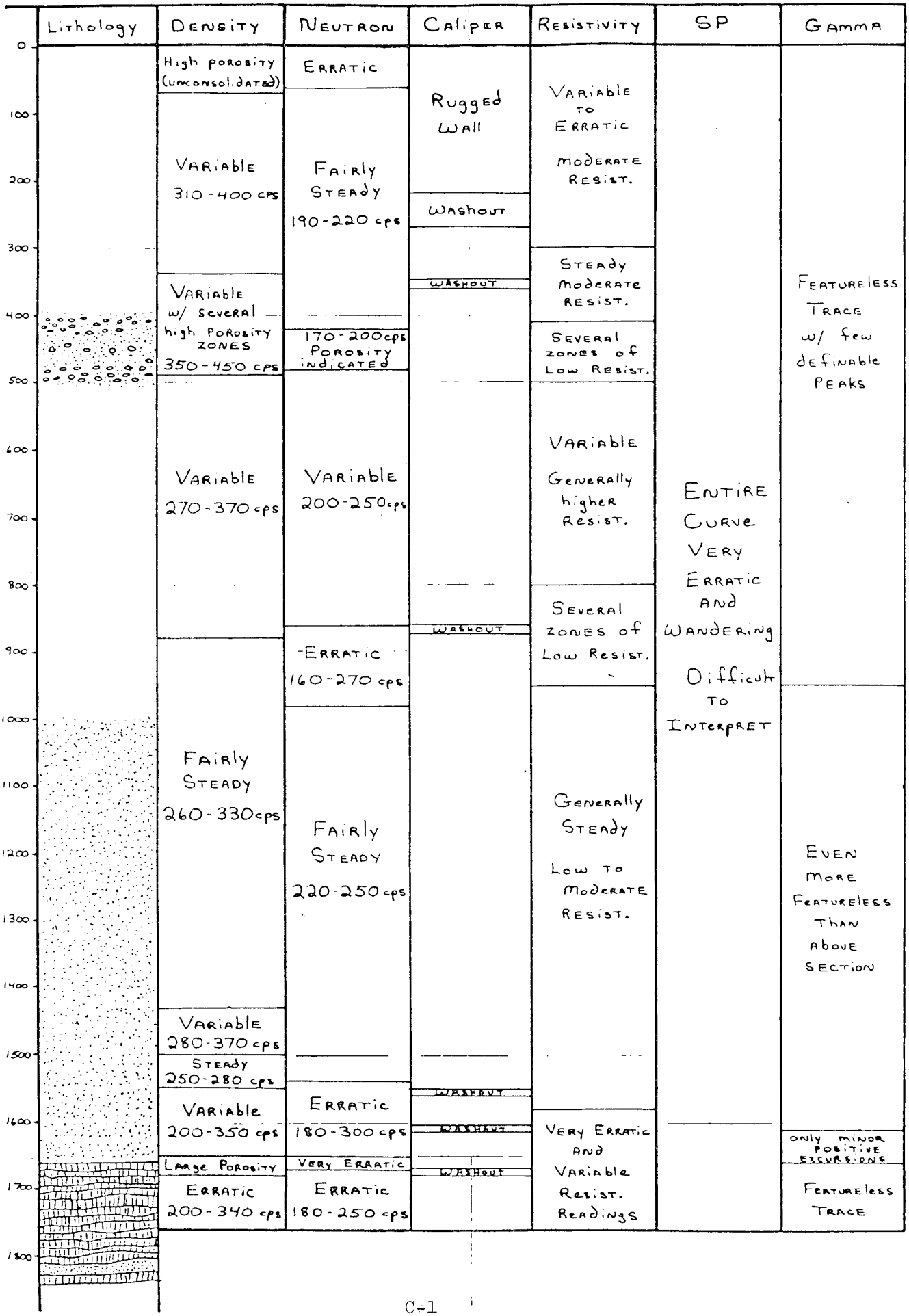
Three water wells nearby. One ± 75 yds to North T.D. 230' with wtr @ 24'. Another ± 200 yds to South T.D. 250' with wtr @ 25'. Third well on plant site (not inspected) has T.D. 510'

Energetics well (est. 7" dia hole) has 1¾" ID rusty iron pipe open at surface and suspended from angle irons & timbers. No other csg or pipe; no sign of cement.

CU

4/29/81: No change except water level lower. Irrigation wells running.

FIGURE C-1
LITHOLOGY OF SITE "A"
TO A DEPTH OF 1873 FEET.



EMD - #56,480.00

T.D. 1890' (p. A-5)
1½" pipe hung in 6" D.H.

Appendix A

Temperature Gradient Test Hole at Site A

Dale Clark
833 E. Arapaho Road
Suite 202
Richardson 75081

214-783-4731

Appendix A

Temperature Gradient Test Hole at Site A

A slim temperature test hole was drilled at Site A (shown on the L'eggs property in Figure A-1) to a depth of 1873 feet in May 1980. Figures A-2 through A-4 are pictures of the drilling of the test hole. The purpose of this test hole was to obtain information concerning the lithology and geothermal temperature gradient at this site. The drilling was performed by Larry Johnson, a local driller, under contract to Energetics Corporation with funds provided by the State of New Mexico's Energy and Minerals Department.

Temperatures were originally estimated for Site A from geochemical analysis of an existing 500 ft water well (See Energetics' DOE Part 1 Technical Progress Report dated 3 March 1980). However, the depths at which these temperatures occur could not be determined strictly from geochemical analysis. Therefore, it was necessary to drill a temperature test hole at the L'eggs Plant site to better define the temperature gradient. From the shallow temperature gradient thus made available, temperatures at greater depths could then be better estimated.

Drilling was performed during the week of May 11. The following week, the 6" hole was cased with work completed by May 20. Cutting samples from the hole were taken at 20 feet intervals and the well was logged down to a depth of 1760 feet. The well was logged when two cones from a tri-cone bit were lost down the hole at 1760 feet. It was decided at that time to not risk the possibility of the hole collapsing before well log data could be taken and, therefore, the geophysical logs were taken at 1760 feet.

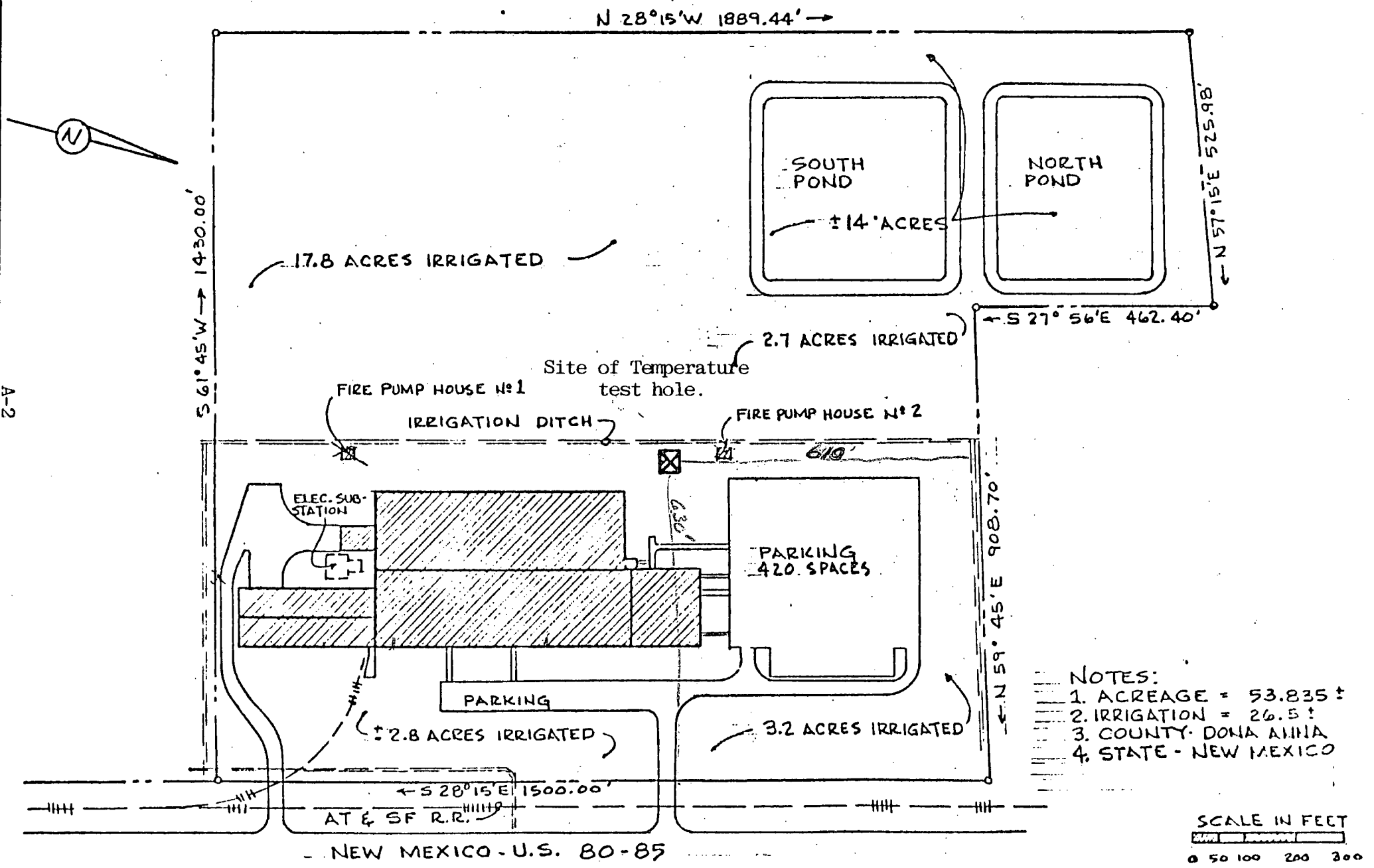


Figure A-1. Location of 1890 foot Temperature Gradient Test Hole.

LAS CRUCES PLANT
L'EGGS PRODUCTS INC.

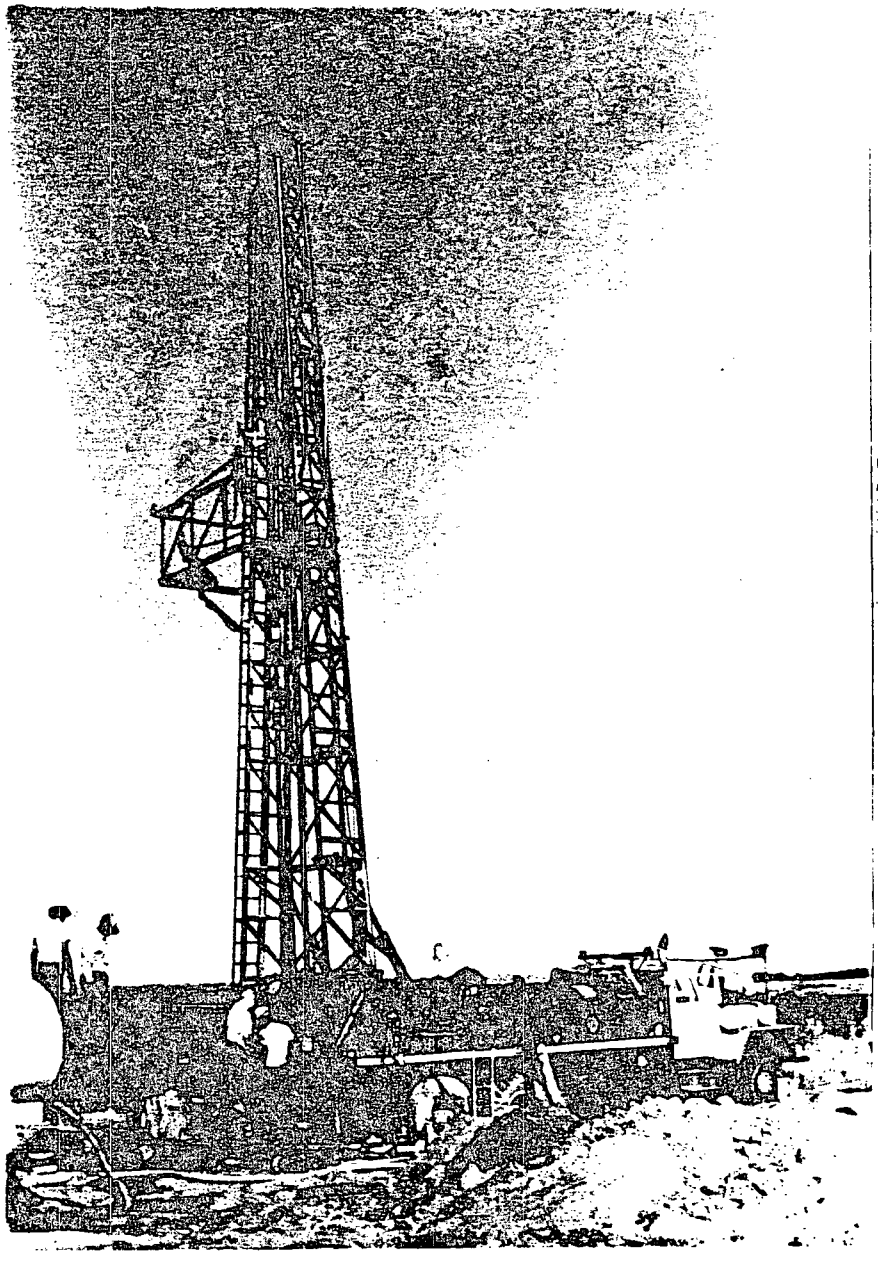


FIGURE A-2. DRILLING RIG AT SITE "A"

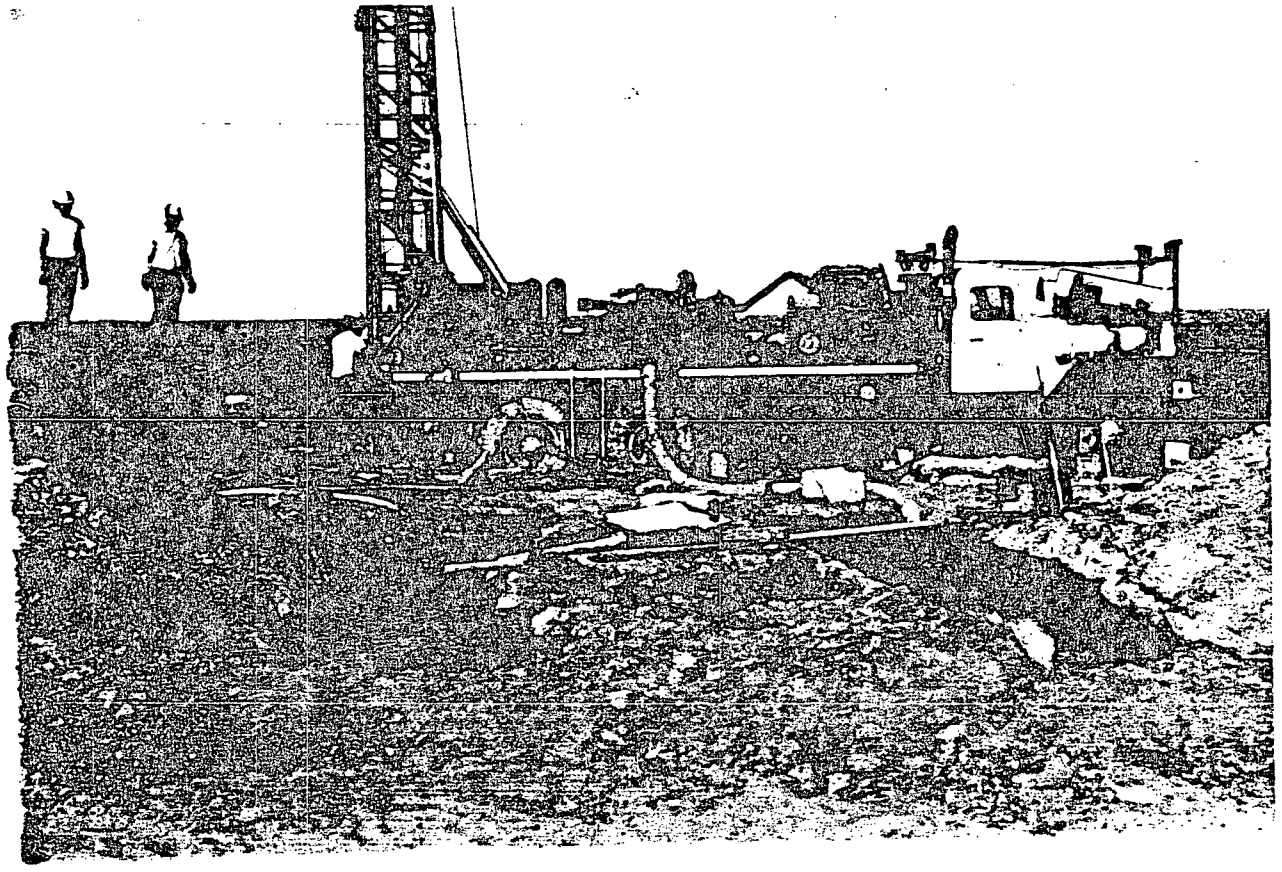


FIGURE A-3. DRILLING RIG AND MUD PIT AT SITE "A"

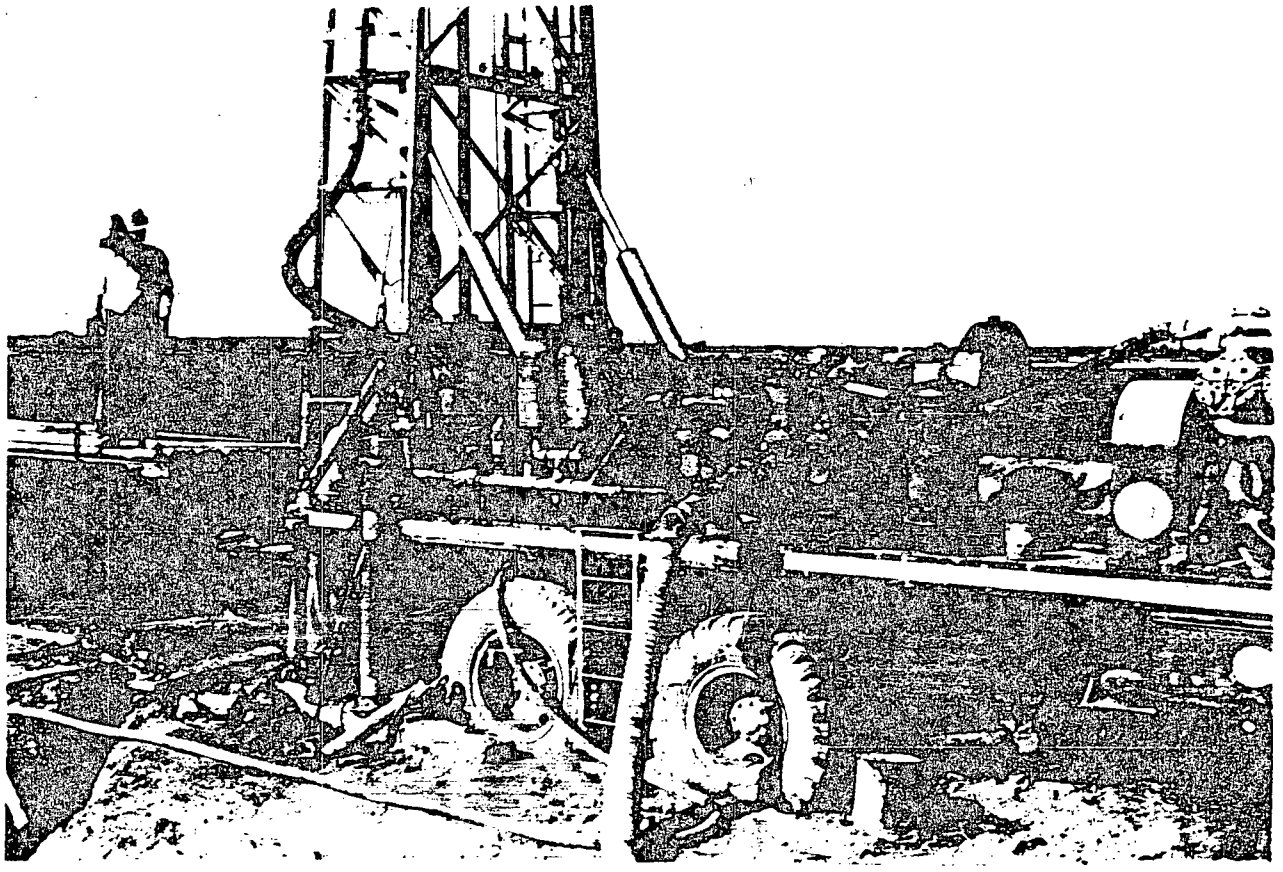


FIGURE A-4. MUD PUMP ON DRILLING RIG AT SITE "A"

Upon completion of the logs, the two cones were successfully retrieved from the hole and drilling was resumed to the finished depth of 1890 feet.

A 1½ inch steel casing with a check valve as a shoe, was then placed in the hole for the total depth. The check valve will allow a cementing job to be performed if the need should arise to plug the hole. A drilling record for the completed well is presented in Table A-1.

Temperature measurements were taken the day after completion of the hole with the casing filled with water. Two other temperature logs were also taken, 6 and 10 days after completion of the hole. These temperature logs are provided in Appendix B.

The well logs and mud samples were provided to the Los Alamos Scientific Laboratory for analysis and readings. Preliminary evaluation of the geophysical and lithology logs (see Appendix C) indicate that valley alluvium occurs down to 1600 ft where basalt is encountered. Resistivity logs tend to indicate possible injection acquifers at 440 to 480 feet, 850 to 880, and 1660 to 1670 feet zones.

Steady state temperatures of the alluvium from the temperature logs indicate that ground water flow from the Rio Grande River system sweeps out the geothermal heat down to about 500 feet. From 500 feet to 1600 feet a gradient of 1.5°F/100 feet is encoutered. Towards the bottom of the hole in the basalt region, a high gradient of 2.4°F/100 feet is seen. This gradient, although significantly higher than that obtained for the preceeding 1000 feet, when extrapolated to greater depths matches very closely those temperatures presumed by Swanberg (Energetics DOE Part I Technical Progress Report) for depths of 2,000 to 3,000 meters. The temperature gradient measured for Site A is shown in Figure 3 of the main text.

Table A-1. Temperature Gradient Test Hole

Tuesday 5/12/80

8:00 a.m.	dig mud pit----2 at 5'x5'x25' mix mud and prepare rig
1:30 p.m.	start drilling with drag bit 6 3/4"
4:00 p.m.	125'

Wednesday 5/13/80

2:00 p.m.	650' ROP = 63 ft/hr
11:30 p.m.	1250' ROP = 63 ft/hr

Thursday 5/14/80

8:00 a.m.	1340' ROP = 10.6 ft/hr

Friday 5/15/80

12:30 a.m. - 12:00 p.m.	rig down to repair mud pump due to drawing sand through pit
12:00 p.m.	start using a soft tri-cone bit $6\frac{1}{4}$" at 1500' ROP =114ft/hr
1:00 p.m.	1690' ROP = 30 ft/hr
6:00 p.m.	1770' clutch went out, chain on break out table broke

Saturday 5/16/80

4:00 a.m.	clutch repaired
8:00 a.m. - 2:00 p.m.	took geophysical logs to 1760', mud $\frac{10.0 lb_m}{gal}$
3:00 p.m.	repaired chain
5:15 p.m.	start trip to fish out 2 tri-cones lost down hole
8:15 p.m.	hit bottom and closed junk basket
10:45 p.m.	out of hole with one-half of one tri-cone

Sunday 5/18/80

8:00 a.m.	make new junk basket and start fishing
3:00 p.m.	out of hole with the rest of the tri-cones
6:00 p.m.	Repair hydraulics on rotary table and replaced fraying kelly cable.

Table A-1. (cont.) Temperature Gradient Test Hole

Monday 5/19/80

8:00 a.m.	start drilling again with button bit tri-cone
12:00 p.m.	1810' ROP = 6.6 ft/hr

Tuesday 5/20/80

3:00 a.m.	1890' stopped drilling
8:00 a.m.	Began casing drill hole
6:00 p.m.	Casing completed

ROP = Rate of Penetration

Appendix B

Temperature Logs from L'eggs Plant (Site A) Test Hole

COLLEGE OF ARTS AND SCIENCE

DEPARTMENT OF PHYSICS
Box 3D/Las Cruces, New Mexico 88003
Telephone (505) 646-3831

June 17, 1980

Mr. Dale Clark
Energetics Corporation
833 E. Arapaho Road, Suite 202
Richardson, Texas 75081

Dear Mr. Clark:

I am enclosing three temperature logs for the geothermal test well at the L'eggs Factory south of Las Cruces. These logs were run May 21, 26, and 30. The May 30 log is very close to equilibrium, but I will log the well once again to be sure. The maximum bottom hole temperature is 31.77°C at 570 meters.

The temperature gradient in the well is fairly typical of the Rio Grande Rift as can be seen by comparing the data in Figure 1 with the enclosed report by Harder et al. (1980). The gradient in the upper 110 meters is extremely erratic and probably effected by shallow groundwater circulation. Below 115 meters, a quasi-conductive gradient is observed. This gradient averages about 26°C/Km between 115 and 500 meters and then jumps to over 40°C/Km below 500 meters. This increase in conductivity is probably due to a lithologic change, but I would like to examine the geophysical logs to make sure.

Very truly yours,

Chandler A. Swanberg

CHANDLER A. SWANBERG, Assoc. Professor
Departments Physics/Geology

CAS:nd

Enclosures

L'eggs Factory

May 21, 1980

Depth	Temperature (°C)	Depth	Temperature (°C)
5	20.67	235	22.38
10	21.07	240	22.44
15	21.63	245	22.53
20	21.17	250	22.69
25	20.93	255	22.83
30	20.81	260	22.94
35	20.89	265	23.07
40	20.99	270	23.17
45	20.94	275	23.27
50	20.98	280	23.39
55	20.98	285	23.48
60	20.90	290	23.59
65	20.81	295	23.70
70	20.71	300	23.80
75	20.66	305	23.90
80	20.61	310	24.01
85	20.63	315	24.12
90	20.56	320	24.23
95	20.53	325	24.34
100	20.55	330	24.44
105	20.57	335	24.53
110	20.57	340	24.64
115	20.61	345	24.74
120	20.64	350	24.83
125	20.67	355	24.96
130	20.73	360	25.06
135	20.77	365	25.16
140	20.84	370	25.27
145	20.90	375	25.38
150	20.95	380	25.48
155	21.00	385	25.58
160	21.06	390	25.69
165	21.13	395	25.79
170	21.21	400	25.91
175	21.29	405	26.02
180	21.36	410	26.14
185	21.44	415	26.25
190	21.54	420	26.36
195	21.63	425	26.47
200	21.73	430	26.58
205	21.80	435	26.69
210	21.90	440	26.80
215	22.02	445	26.90
220	22.11	450	27.00
225	22.21	455	27.13
230	22.32	460	27.25

Depth	Temperature (°C)
465	27.34
470	27.46
475	27.60
480	27.68
485	27.80
490	27.96
495	28.05
500	28.12
505	28.29
510	28.39
515	28.50
520	28.67
525	28.90
530	29.30
535	29.60
540	29.71
545	30.00
550	30.22
555	30.34
560	30.49
565	30.74
570	31.19
575	31.57

L'eggs Plant May 26

Depth	Temperature (°C)	Depth	Temperature (°C)
5	21.74	270	22.57
10	19.54	275	22.71
15	20.36	280	22.85
20	19.50	285	22.97
25	18.65	290	23.10
30	18.78	295	23.23
35	19.19	300	23.37
40	19.32	305	23.50
45	19.15	310	23.63
50	19.22	315	23.76
55	19.07	320	23.89
60	18.83	325	24.02
65	18.80	330	24.14
70	18.71	335	24.26
75	18.67	340	24.38
80	18.63	345	24.50
85	18.64	350	24.62
90	18.66	355	24.75
95	18.65	360	24.88
100	18.73	365	25.00
105	18.77	370	25.13
110	18.82	375	25.26
115	18.88	380	25.39
120	18.97	385	25.52
125	19.06	390	25.64
130	19.19	395	25.77
135	19.28	400	25.91
140	19.39	405	26.05
145	19.51	410	26.18
150	19.59	415	26.30
155	19.70	420	26.44
160	19.79	425	26.58
165	19.90	430	26.70
170	20.01	435	26.84
175	20.13	440	26.97
180	20.25	445	27.11
185	20.37	450	27.25
190	20.50	455	27.39
195	20.63	460	27.53
200	20.75	465	27.66
205	20.87	470	27.83
210	21.01	475	27.96
215	21.15	480	28.09
220	21.27	485	28.27
225	21.41	490	28.44
230	21.52	495	28.57
235	21.64	500	28.73
240	21.77	505	28.91
245	21.90	510	29.08
250	22.03	515	29.26
255	22.17	520	29.47
260	22.33	525	29.70
265	22.44	530	30.05

Depth	Temperature (°C)
535	30.22
540	30.43
545	30.65
550	30.84
555	30.99
560	31.23
565	31.43
570	31.76

L'eggs Plant

May 30

Depth	Temperature (°C)	Depth	Temperature (°C)
5	18.99	260	22.21
10	19.37	265	22.33
15	20.07	270	22.47
20	19.46	275	22.61
25	18.43	280	22.76
30	18.45	285	22.89
35	18.89	290	23.02
40	19.09	295	23.15
45	18.92	300	23.29
50	18.99	305	23.42
55	18.87	310	23.56
60	18.60	315	23.70
65	18.55	320	23.83
70	18.42	325	23.96
75	18.44	330	24.08
80	18.37	335	24.21
85	18.39	340	24.33
90	18.40	345	24.45
95	18.39	350	24.58
100	18.46	355	24.71
105	18.51	360	24.84
110	18.55	365	24.97
115	18.63	370	25.10
120	18.74	375	25.23
125	18.83	380	25.36
130	18.96	385	25.48
135	19.03	380	25.64
140	19.14	395	25.77
145	19.28	400	25.91
150	19.37	405	26.06
155	19.49	410	26.18
160	19.58	415	26.31
165	19.70	420	26.45
170	19.81	425	26.59
175	19.94	430	26.72
180	20.06	435	26.86
185	20.19	440	26.99
190	20.32	445	27.14
195	20.45	450	27.28
200	20.57	455	27.42
205	20.70	460	27.57
210	20.84	465	27.71
215	20.98	470	27.87
220	21.10	475	28.01
225	21.24	480	28.16
230	21.36	485	28.34
235	21.49	490	28.51
240	21.62	495	28.66
245	21.75	500	28.81
250	21.90	505	29.01
255	22.05	510	29.18

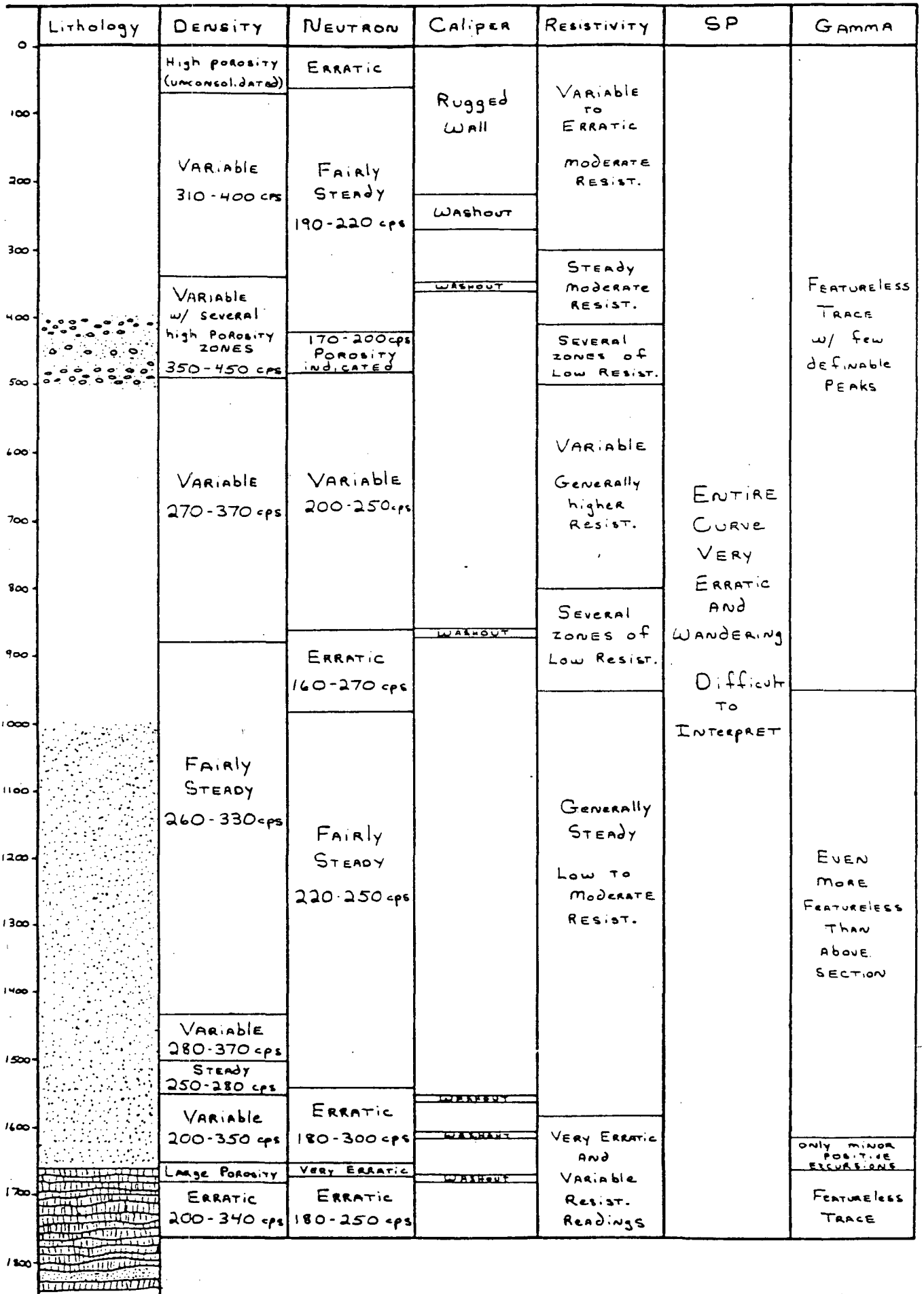
Depth	Temperature (°C)
515	29.37
520	29.57
525	29.81
530	30.08
535	30.28
540	30.48
545	30.69
550	30.88
555	31.05
560	31.26
565	31.47
570	31.77

Appendix C

Interpretation of Geophysical Logs at Site A

FIGURE 3-1

LITHOLOGY OF SITE "A"
TO A DEPTH OF 1873 FEET.



Brief Summary of the Cuttings and Geophysical Logs from
L'Eggs Product Plant Geothermal Well - Site A, Las Cruces, NM

Borehole cuttings and a suite of geophysical logs from a geothermal test hole near Las Cruces, NM have recently been examined by LASL personnel. The cuttings have been examined in detail over the interval 1000' - 1870' and also for a limited zone in the upper part of the hole (400'-500'). This information has been summarized in the lithologic column of Figure C-1. Detailed descriptions of the lithologies in the closely examined intervals follow:

400' to 500' -

Sandy gravels to gravelly sands of heterogeneous composition. The gravels are generally subangular to subrounded and are up to 15 mm in diameter. Compositionally they include rhyolite, granite, limestone and other misc. rock fragments. The sand is poorly sorted, angular to subangular, probably of granitic origin, and is calcite cemented.

1000' to 1660' -

Buff to tan, poorly sorted, angular-to-subrounded sand, probably of granitic origin. Consists mostly of quartz and feldspar, with minor and variable amounts of amphibole, biotite, chlorite, epidote, magnetite and traces of zircon and sphene. The sand appears to have been cemented with calcite.

1660' to 1870' -

Dark grey to black volcanic rock fragments. The chips range in size from 1.0 to 10.0 mm (ave. about 2-3 mm) and are all angular. Extensive alteration of the primary phenocrysts has occurred. From the crystal pseudomorphs remaining and the assemblage of alteration minerals, the rock could probably be termed a basalt. Lath-shaped plag. pseudomorphs are still preserved, the plag. being replaced by light yellowish to greenish material, probably saussurite (epidote). Original ferromagnesians (pyroxene?) have also been replaced by a deeper greenish mineral, probably chlorite. The most prominent and abundant alteration mineral appears as greenish blue, fine-grained botryoidal material (prehnite?) found in the numerous vugs and cavities present in the rock. Other alteration minerals present include calcite, quartz and hematite. The groundmass appears vitreous and chocolate brown under the binocular scope.

Also found associated with the basaltic rock samples, but in minor amounts, are off-white, non-volcanic, fine-to-medium grained clumps that are flecked with a dark material. These clumps probably represent secondary alteration veins in the basalt (possibly zeolites). Angular to sub-angular sand, very similar to the sand in the overlying section, is also present. Some of this sand could be due to spallation from the upper sand section. However, in the interval 1800' - 1830' significant amounts of sand with minor amounts of gravel are present. From 1830' to 1870', the cuttings are again mostly basaltic rock fragments. There is a possibility then for several separate flows to exist.

Near the top of the upper flow (1660'-1670') the volcanic fragments take on a much lighter grey, earthy color and the amount of alteration material also increases, with the greenish blue prehnite as a very abundant vug and cavity filler.

The exact stratigraphic position of the rocks penetrated by this bore hole is uncertain. According to Chaturvedi (ref. C-1) two geothermal test holes on New Mexico State University property just north of the Las Alturas Estate penetrated sediments of the Santa Fe Group but bottomed in "rhyolite gravel" at a depth of about 1200'. No indication of the stratigraphic age of these gravels was given. Chaturvedi (ref. C-2) mentions the possibility of encountering sedimentary rocks of Upper Paleozoic Age at a depth of 1000' to 2000' in the Las Cruces area.

Geophysical Log Summary

Logging performed in this bore hole included: (1) density, (2) neutron, (3) caliper, (4) resistivity (type of tool not specified), (5) SP, and (6) gamma ray. Tool responses over the intervals described in the lithologic section are discussed below and are summarized in Figure IV-3. It must be mentioned however, that the tool readings were not calibrated in standard API units. Therefore, information concerning absolute porosity can not be extracted from these logs. Only information on relative changes in porosity can be given.

Density -

Over the interval 340' to 490', the density log indicates several zones of high porosity (high counts per second-cps). These zones correspond to the sandy gravels observed in the cuttings.

Very uniform trace with little deviation from 1000' to 1440'. Apparent small increase in porosity at 1440-50'. At approximately 1550' to 1650', the trace is mildly erratic and generally appears to have slightly lower porosity than the section 1000' to 1440'.

An abrupt decrease in the density reading occurs at 1605' and is apparently related to a hole washout at this depth. Base of the sand section (at about 1660') is marked by a large increase in porosity and is probably due to poorly consolidated sand (an aquifer?). From 1670' to 1760' (total depth logged), the erratic trace could be due to rugged hole conditions or possibly fracturing in the basalt.

Neutron -

The neutron log readings over the interval 420'-480' are low, indicating relatively higher porosity for this section. Again this probably corresponds to water saturated sandy gravels.

Very uniform trace in the sand section from 1000' to 1550'. From 1550' to 1657' the readings are mildly erratic and this corresponds in a general way to the desnity log values over the same interval.

The increase in the neutron log reading at 1657' apparently records the base of the sand (as did the density log) and may indicate the presence of water.

From 1660' to 1760', the neutron log records lower values than in the sand section (as would be expected).

Caliper -

The hole is in fairly good gage in the sand section from 1000' to 1660'. Minor washouts do occur at 1550'-60' and 1605'-15'. At the top of the basalt section the hole enlarges by several inches (at approx. 1670') possibly due to the weathered or fractured nature of the flow top. From 1675' to 1760', the hole is a little rugged (more so than in the sand section).

Resistivity -

Type of resistivity tool is not indicated. In the interval 420' to 500', several zones of low resistivity (indicating water-filled porosity) are present. This tool response corresponds to the readings of the density and neutron devices in the same interval.

The resistivity values are fairly uniform over the interval from 1000' to 1570'. From 1570' to the base of the sand the trace is quite erratic. The

basalt section gives widely varying readings, and is therefore difficult to interpret.

The resistivity value at the base of the sand is not distinctive as would be expected if water were present (as was presumably indicated by both the density and neutron logs).

SP-

The reading of the SP log is difficult to interpret. For the relatively homogeneous sand section from 1000' to 1660', the SP gives widely fluctuating excursions. Such variable values would (and should) not be expected from such a sandstone section as this. Possibly indicates tool malfunction.

Gamma Ray -

From 1000' to 1620' the log is featureless. From 1620' to 1655' there is a slight and variable increase in the gamma ray count. The largest excursion occurs at 1650-55' (the base of the sand). From 1655' to 1760' the log is again featureless with readings similar to that of the sand section. It appears that the sensitivity control was set at too low of a value.

Appendix C References

C-1. Chaturvedi, Lokesh (1978), New Mexico State University Geothermal Field, prepared for the DOE/NM Low Temperature Geothermal Reservoir Assessment Program, 12 pp.

C-2 Chaturvedi, Lokesh (1979), Analysis of Geological & Geophysical Logs of Two Geothermal Exploration Wells Drilled on NMSU Land, Las Cruces, New Mexico, prepared for DOE, Division of Geothermal Energy under contract #EW-78-05-07-1717, 25 pp.

HEALTH & ENVIRONMENT department

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November 6, 1979

Mr. Broan Kaiser
Energetics Corporation
833 E. Arapahoe Rd.
Suite 202
Richardson, Texas 75081

Dear Mr. Kaiser:

In regard to our November 1, 1979, telephone conversation, it was understood that Energetics Corporation is constraining the feasability of a geothermal project in the Las Cruces area.

Enclosed is a copy of the New Mexico Water Quality Control Commission regulations. Please note Page 14, Part 3, of these regulations pertaining to ground water protection.

Pursuant to Section 3-106B., Page 18, a Notice of Intent to discharge will be needed before determination for a discharge plan can be made. Items to be included on Page 4, Section 1-201, Notices for both the Geothermal Project site and the disposal injection site should be submitted to:

Oil Conservation Division, ATTN: Mr. Carl Ulvag ?
P. O. Box 2088
Santa Fe, NM 87501

Mr. Ulvag, at (505) 827-2533 should be able to answer other questions you may have.

Sincerely,

Ken McCallum,
Environmental Scientist
Ground Water Unit

KMc:tpc

cc: Roy McKeag, EID District III Manager, Las Cruces, NM
✓Carl Uluag, N.M. Oil Conservation Commission ?

(Enclosure)