GTLT - 2

NMSU-DG-1 No. 484
UL: G 27-23S-2E
Dona Ana County
Plugged & Abandoned

YEAR: 12/15/1980

Form G-103
Adopted 10/1/74

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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.

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
New Mexico State University

8. Farm or Lease Name

3. Address of Operator
Las Cruces, NM 88003

9. Well No.
NMSU-DG-1 - LRG-484

4. Location of Well
Unit Letter 1800 Feet From The North Line and 2200 Feet From The East Line, Section 27 Township 23S Range 2E NMPM.

10. Field and Pool, or Wildcat
NMSU Geothermal

15. Elevation *(Show whether DF, RT, GR, etc.)*
4111 Feet Above M.S.L. (GL)

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.

Repair action consisted of pulling the damaged casing, and 216 feet of casing was removed. Since the break in the casing at 216 feet is above water table depth (265 feet), the hole was then drilled with a 6-inch bit, and enlarged to original diameter to a depth of 215 feet. The hole was then filled with cement pumped into the hole under pressure, and the hole was plugged from 215 feet of depth to ground surface. A permanent steel marker was installed.

Work was performed by Cole Drilling Company.

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

SIGNED [signature] TITLE Senior Engr., NMSU Campus Geothermal Project DATE 15 December, 1980

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Form G-103
Adopted 10/1/74

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NMSU-DG-1

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PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER ☐	

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7. Unit Agreement Name

2. Name of Operator
New Mexico State University

8. Farm or Lease Name

3. Address of Operator
Las Cruces, NM 88003

9. Well No.
NMSU-DG-1

4. Location of Well
Unit Letter 1800 Feet From The North Line and 2200 Feet From The East Line, Section 27 Township 23S Range 2E NMPM.

10. Field and Pool, or Wildcat
NMSU Geothermal

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4111 Feet Above M.S.L. (GL)

12. County
Dona Ana

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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 ☐	

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SIGNED [signature] TITLE Senior Engr., NMSU Campus Geothermal Project DATE 15 December, 1990

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

MAR 18 1981

OIL CONSERVATION DIVISION
SANTA FE

Form G-103
Adopted 10/1/74

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P. O. Box 2088, Santa Fe 87501

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ Fee XX

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
New Mexico State University - Physical Plant Department

8. Farm or Lease Name
NMSU-DG1-LRG

3. Address of Operator
New Mexico State University
P.O. Box 3445, Las Cruces, New Mexico 88003

9. Well No.
484

4. Location of Well
Unit Letter G 1800 Feet From The North Line and 2200 Feet From The East Line, Section 27 Township 23S Range 2E NMPM.

10. Field and Pool, or Wildcat
NMSU Property

15. Elevation *(Show whether DF, RT, GR, etc.)*
4111 Feet above M.S.L. (GL)

12. County
Dona Ana

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

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TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☒
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER ☐	

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Work was performed by Cole Drilling Company; completed 15 December 1980.

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

SIGNED Roy L Cunniff TITLE NMSU Geothermal Project DATE 3-13-81

APPROVED BY Carl Ulvog TITLE SENIOR PETROLEUM GEOLOGIST DATE 3/20/81

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P. O. Box 2088, Santa Fe 87501

Form G-103
Adopted 10/1/74

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MAR 18 1981
OIL CONSERVATION DIVISION
SANTA FE

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

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5.a State Lease No.

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2. Name of Operator
New Mexico State University - Physical Plant Department

8. Farm or Lease Name
NMSU-DG1-LRG

3. Address of Operator
New Mexico State University
P.O. Box 3445, Las Cruces, New Mexico 88003

9. Well No.
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SIGNED [signature] TITLE NMSU Geothermal Project DATE 3-13-81

APPROVED BY Carl Ulvog TITLE SENIOR PETROLEUM GEOLOGIST DATE 3/20/81

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO STATE UNIVERSITY

Physical Science Laboratory

BOX 3-PSL, LAS CRUCES, NEW MEXICO 88003
AREA (505) 522-9100 TWX 910-983-0541

#484

March 12, 1981

Mr. Carl Ulvog
Senior Petroleum Geologist
New Mexico Oil Conservation Commission
P.O. Box 2086
Santa Fe, New Mexico 87503

Dear Mr. Ulvog:

Enclosed please find Form G-103 for the plugging action on two NMSU test wells.

In confirmation of our telephone discussions, the Form G-103 notifies you of the completion of plugging, and also advises you of a name and number change which records the owner and purpose of the wells in the well name, and uses the State Engineer's well number.

Well NMSU-DG1-LRG 484 formerly was named and numbered NMSU-DG-1 and NMSU-DT-2. It also might have been designated NMSU-2.

Well NMSU-DG2-LRG-485 formerly was named and numbered NMSU-DG-2 and NMSU-DT-1. It also had been designated NMSU-1.

You should have earlier Forms G-103 on these two wells, referring to them as NMSU-DG-1 and NMSU-DG-2, in which I notified you of our intent to repair or plug and abandon. You approved those forms on or about 26 November 1980.

Sincerely yours,

Roy A. Cunniff
Project Director
NMSU
Geothermal Project

cjs
Enclosure

NEW MEXICO STATE UNIVERSITY
Physical Science Laboratory
BOX 3-PSL, LAS CRUCES, NEW MEXICO 88003
AREA (505) 522-9100 TWX 910-983-0541

#484

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New Mexico Oil Conservation Commission
P.O. Box 2086
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Well NMSU-DG2-LRG-485 formerly was named and numbered NMSU-DG-2 and NMSU-DT-1. It also had been designated NMSU-1.

You should have earlier Forms G-103 on these two wells, referring to them as NMSU-DG-1 and NMSU-DG-2, in which I notified you of our intent to repair or plug and abandon. You approved those forms on or about 26 November 1980.

Sincerely yours,

Roy A. Cunniff
Project Director
NMSU
Geothermal Project

cjs
Enclosure

COLLEGE OF ARTS AND SCIENCE

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

March 12, 1980

Mr. Carl Ulvog
Senior Petroleum Geologist
New Mexico Oil Conservation Commission
P.O. Box 2086
Santa Fe, New Mexico 87503

Dear Mr. Ulvog,

Early in 1979 I received the oral consent of Drs. Chaturvedi and Gunaji of the NMSU Engineering College to use two temperature observation wells, NMSU-DG-1 and NMSU-DG-2, for seismic velocity measurements as part of a Department of Energy funded seismic investigation of the low temperature geothermal field to the east of the NMSU main campus. It was with their full knowledge and consent that small explosive charges were set in these wells, but unfortunately they failed to tell me that the wells were subject to plugging requirements. As the detonation of an explosive charge in a well always carries a significant risk of damaging the well, this lack of communication was an unfortunate oversight.

I have enclosed a copy of a memo to Dr. Chaturvedi giving him the details of the possible damage to the wells. If there is any further information that your office requires regarding this matter, I will be happy to supply it.

Sincerely yours,

Paul Morgan

PAUL MORGAN, Associate Professor
Departments Earth Sci/Physics

PM:nd

Enclosure

#485

COLLEGE OF ARTS AND SCIENCE

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

NEW MEXICO STATE UNIVERSITY

March 4, 1980

MEMORANDUM

TO: Dr. Lokesh Chaturvedi

FROM: P. Morgan

SUBJECT: Las Alturas Deep Temperature Test Wells

The caving in holes DT1 and DT2 is indeed unfortunate; if I had been informed that these boreholes were subject to plugging regulations I would not have used the holes for seismic velocity measurements. Although the experiments were designed to minimize the risk of caving in the holes, there was always a significent risk that this would occur. In our informal meetings with Dr. Daw in which I requested permission to use the holes for the seismic measurements, no reference was made to the plugging requirement.

We performed shallow tests (~10m) with the seismic charges in the DT2 (west well) with no caving problems. Charges were then set at 90m and 80m with no problems, but after a charge at 70m we found it impossible to re-enter the hole past approximately 70m. We assume there to be a minor blockage at this depth due to the charge.

The same charge in DT1 (east well) produced disasterous results. A charge at 190m caused major caving from above, burying the cable we were using for detonating the charges. Attempts to pull the cable free failed, so we set a further charge to break the cable to retrieve what we could. The cable broke free immediately after the charge was detonated, but again was buried at a higher level by caving from above. Two further charges were required to completely free the cable. On the last of these charges the casing subsided down the hole.

My sincere apologies for any problems that may arise because of the blocking of DT1 and DT2. If I had known of the plugging requirement I would not have attempted the experiment.

cc: Dr. Daw
Dr. Swanberg

Form G-103
Adopted 10/1/73

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

Now Well # 484

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

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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: Lokesh Chaturvedi, Principal Investigator
Department of Energy Geothermal Research Project (Phase II)
8. Farm or Lease Name

3. Address of Operator: Box 3CE, New Mexico State University
Las Cruces, NM 88003
9. Well No. DT-2
NMSU - DG-1

4. Location of Well
Unit Letter G 1800 Feet From The North Line and 2220 Feet From The East Line, Section 27 Township 23 S Range 2E NMPM.
10. Field and Pool, or Wildcat
NMSU Geothermal

15. Elevation (Show whether DF, RT, GR, etc.)
4111 Feet above M.S.L. (GL)
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Dona Ana

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PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER Completion of drilling ☒	

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.

Drilling started at this location on 12-27-78 at 9:00 a.m. and was completed on 1/3/79 at 2:00 a.m. The drilling was done by Mr. Larry Johnson of Johnson Drilling Company, Las Cruces. Drilling bit size of 5 1/8 inches was used. The hole was completed with a 2" steel pipe placed in the entire length of the well. Total depth drilled for the well was 1200 ft. We are making temperature gradient measurements in the well. The drilling and logging was done under the direction and supervision of Dr. N. N. Gunaji, Director, Engineering Experiment Station, NMSU.

TD ± 1000'

RECEIVED
FEB 20 1979
OIL CONSERVATION COMM.
Santa Fe

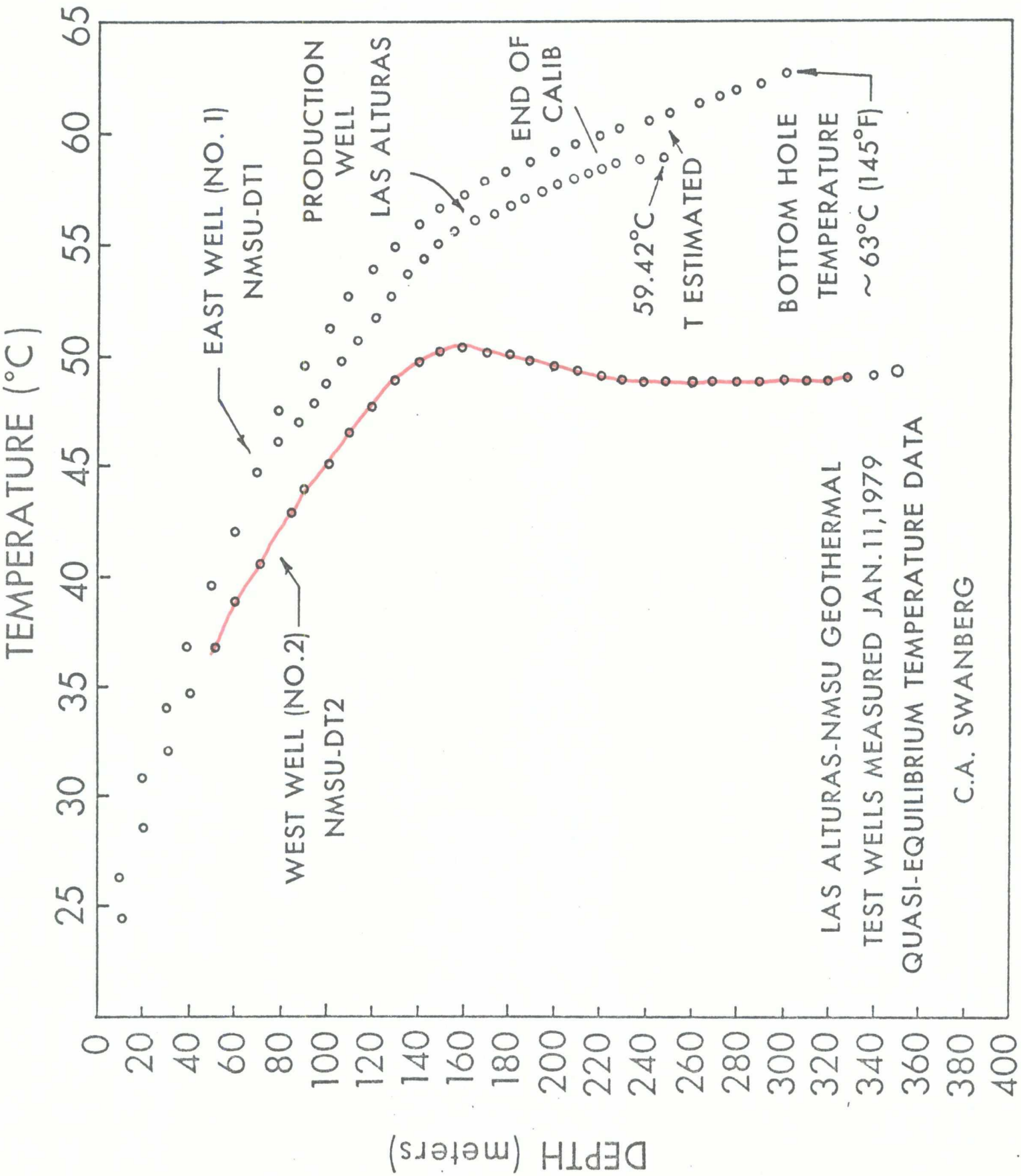
18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED LChaturvedi TITLE Assistant Professor DATE 2/12/79

APPROVED BY Carl Ulvog TITLE SENIOR PETROLEUM GEOLOGIST DATE 2/22/79

CONDITIONS OF APPROVAL, IF ANY:

was DT-2 now #484



was DT-2

Now #484

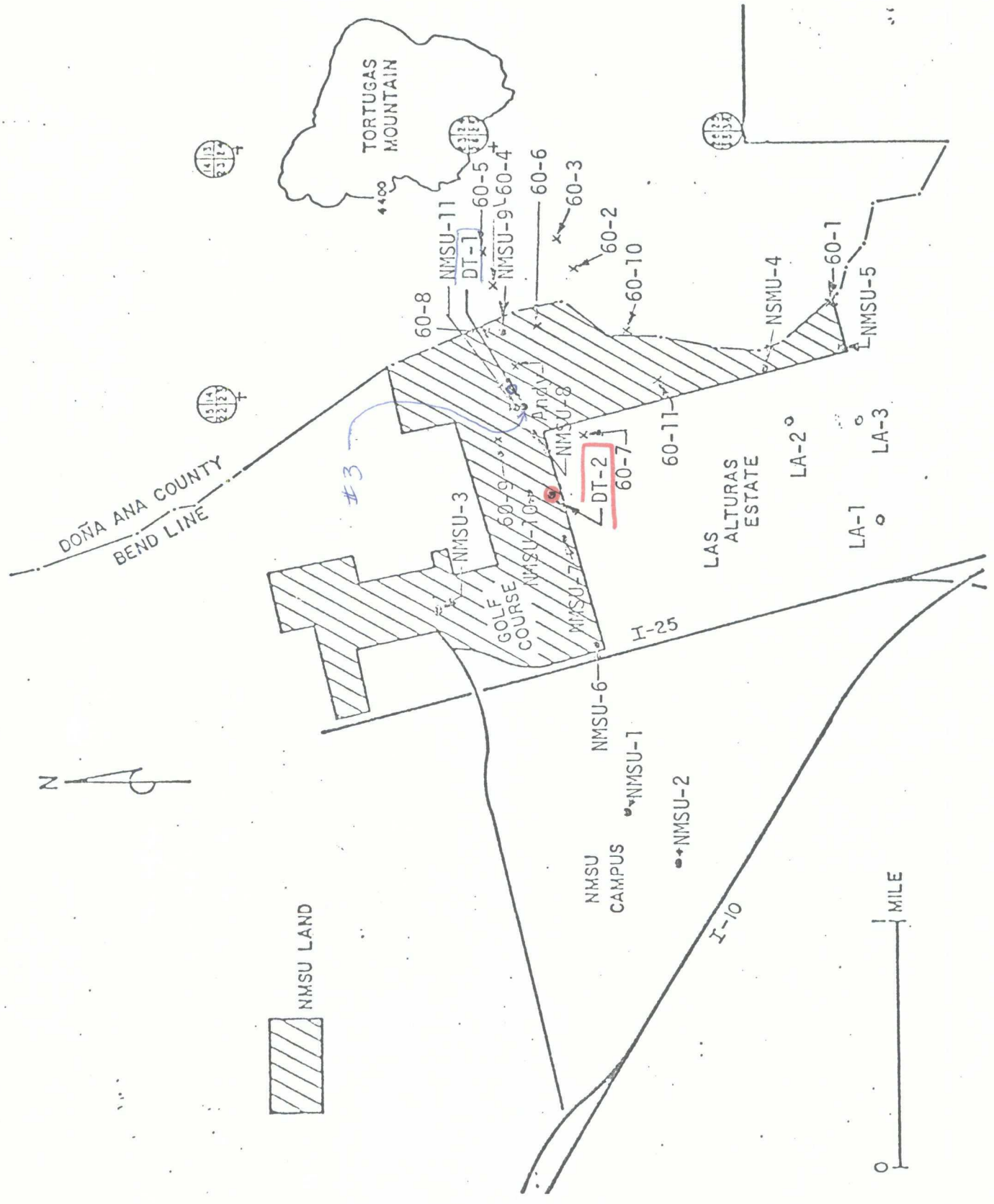


Figure 11. Map of the Las Alturas anomaly area, Las Cruces, New Mexico, showing the location of existing wells and thermal gradient holes.

Re-numbered #484 DT #2

NMSU-DT-2 (NMSU DEEP GEOTHERMAL WELL NO. 2)

INTERPRETED SUBSURFACE CONDITIONS BASED ON ALL LOGS

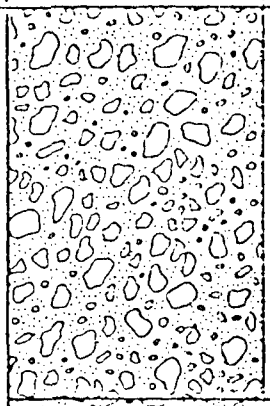
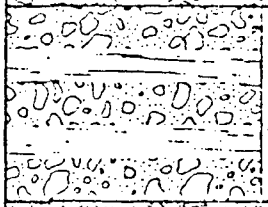
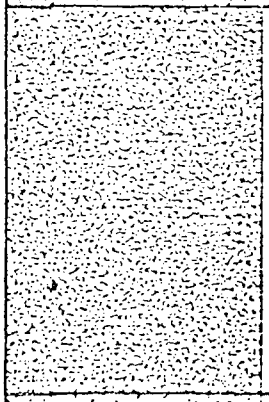
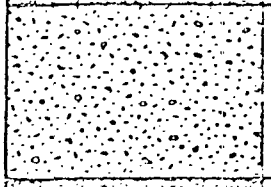
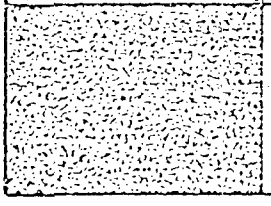
DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION
0 50 100 150 200 250		SAND AND GRAVEL. ROUNDED TO SUBROUNDED GRAVEL PIECES CONSIST OF QUARTZ, FELDSPARS, RHYOLITE, ASH FLOW TUFFS, A VARIETY OF IGNEOUS ROCKS, ETC. HIGH RESISTIVITY. UNIFORM CALIPER WITH MINOR FLUCTUATIONS, UNIFORM GAMMA RAY AND UNIFORM LOW POROSITY DENSILOG AND NEUTRON. PROBABLY SANTA FE GROUP BASIN FILL. DRY. ABOVE THE WATER TABLE.
300 350 400		WATER TABLE CLEARLY INDICATED BY ALL LOGS AT 265FT BELOW SURFACE. FROM 265FT. DOWN TO ABOUT 420FT., THERE APPEAR TO BE LAYERS OF SAND AND GRAVEL ALTERNATING WITH LAYERS OF CLAY. LOW RESISTIVITY, CAVED ZONES, FLUCTUATING GAMMA RAY, HIGH POROSITY VALUES AND LITHOLOGY ALL INDICATE THIS.
450 500 550 600 650 700		BETWEEN 420 AND 450FT. BELOW SURFACE DOWN TO 720FT., THERE IS A ZONE OF SUBANGULAR TO SUBROUNDED FRAGMENTS OF RHYOLITE, RHYOLITIC ASH FLOW TUFF, ANDESITE AND ANDESITE ASH FLOW TUFF - APPROX. ¼ INCH DIAMETER PIECES OR FINER. UNIFORM RESISTIVITY AND HIGH GAMMA RAY FOR THIS ZONE.
750 800 850		FROM 720FT. TO 850FT., THERE ARE GRAVEL AND SAND OF MORE HETEROGENEOUS COMPOSITION WITH SOME FLATTENED, ROUNDED GRAVELS OF ANDESITE.
900 950 1000		FROM 850FT TO THE BOTTOM OF THE WELL, THE ZONE IS CHARACTERIZED BY VERY UNIFORM PROFILES OF RESISTIVITY, GAMMA RAY, NEUTRON AND DENSILOG. LITHOLOGY SHOWS FINE CHIPS OF RHYOLITE AND MINOR AMOUNTS OF QUARTS, FELDSPARS, ETC.

Figure 18. Interpreted composite log of NMSU deep test well DT-2 (Chaturvedi, 1979).

Form G-103
Adopted 10/1

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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.

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
New Mexico State University
8. Farm or Lease Name

3. Address of Operator
Las Cruces, New Mexico 88003
9. Well No.
NMSU-DG-1

4. Location of Well
Unit Letter 1800 Feet From The North Line and 2220 Feet From
The East Line, Section 27 Township 23 S Range 2 E NMPM.
10. Field and Pool, or Wildcat
NMSU Geothermal

15. Elevation *(Show whether DF, RT, GR, etc.)*
4111 Feet above M.S.L. (GL)
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.

Reference is made to a letter from Dr. Lokesh Chaturvedi, Assistant Professor, New Mexico State University, to Mr. Carl Ulvog, Senior Petroleum Geologist, New Mexico Oil Conservation Commission, dated February 12, 1979. This letter forwarded two Form 103's for two geothermal observation wells NMSU-DG-1 and NMSU-DG-2. The letter notes changes in the location of the two wells from the locations cited in previous correspondence. The locations stated in the Form 103's of the February 12 letter were the locations where the wells were actually drilled. A subsequent letter from Dr. Paul Morgan of New Mexico State University, dated March 12, 1980, reported damage to the two wells.

This well was drilled as a temperature observation well. It was completed January 3, 1979. Plugging was planned after December 31, 1979. In the course of other research at New Mexico State University, the well was damaged and a portion of the well caved in. The purpose of this Notice is to obtain approval to perform remedial work on the well. The remedial work will consist of removal of the broken pipe casing and investigation of the feasibility of using the well as a disposal well. A subsequent report of remedial work and findings will be made. All work will be performed by a commercial well driller.

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

SIGNED [signature] TITLE Assistant Director of Physical Plant Department DATE Nov. 24, 1980

APPROVED BY Carl Ulvog TITLE SENIOR PETROLEUM GEOLOGIST DATE 11-25-80

CONDITIONS OF APPROVAL, IF ANY:

Form G-103
Adopted 10/1

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

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15. Elevation (*Show whether DF, RT, GR, etc.*): 4111 Feet above M.S.L. (GL)
12. County: Dona Ana

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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	

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