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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U. S. G. S	ON	5. Indicate Type of Lease
Operator	GEOTHERMAL RESOURCES WELLS	State Fee
Land Office		5.a State Lease No.

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a For Permit —" (Form G-101) for Such Proposals.)	Different Reservoir. Use "Application
I. Type of well Geothermal Producer Temp. Observation	7. Unit Agreement Name
Low-Temp Thermal 🔲 Injection/Disposal	
2. Name of Operator	8. Farm or Lease Name
New Mexico State University	
3. Address of Operator	9. Well No.
Las Cruces, NM 88003	NMSU-DG-1-LRG-484
4. Location of Well	10. Field and Pool, or Wildcat
Unit Letter1800Feet From The North	Line and 2200 Feet From NMSU Geothermal
The <u>East</u> Line, Section <u>27</u> Township <u>235</u>	Range2ENMPM.
15. Elevation (Show whether 4111 Feet Above	
16. Check Appropriate Box To Indicate Na	ture of Notice, Report or Other Data
NOTICE OF INTENTION TO:	SUBSEQUENT REPORT OF:
PERFORM REMEDIAL WORK 🗍 💿 PLUG AND ABANDON 🗌	REMEDIAL WORK
TEMPORARILY ABANDON	COMMENCE DRILLING OPNS.
PULL OR ALTER CASING CHANGE PLANS	CASING TEST AND CEMENT JOB
_	OTHER
OTHER	
	l l

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.

TITLE Senior Engr., NMSU Campus Geothermal Project

1980 1980 DATE

APPROVED BY

TITLE

_DATE

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Operator	GEOTHERMAL RE	SOURCES WELLS	State Fee
Land Office		-	5.a State Lease No.
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Do Not Use This Form for Proposals to For Permit –" (Form G-101) for Such	o Drill or to Deepen or Plug Back to a (Proposals.)	Different Reservoir. Use "Application	
1. Type of well Geothermal Proc	lucer Temp. Observation	ΓX Ι	7. Unit Agreement Name
Low-Temp Therr	nal Injection/Disposal		•
2. Name of Operator			8. Farm or Lease Name
New Mexico State Univer	sity		
3. Address of Operator			9. Well No.
Las Cruces, NM 88003			NMSU-DG-1
4. Location of Well			10. Field and Pool, or Wildcat
Unit Letter1800Feet From The <u>North</u> Line and <u>2200</u> Feet From			NMSU Geothermal
			X/////////////////////////////////////
The <u>East</u> Line, Section	<u>27</u> Township <u>235</u>	Range <u>2E</u> NMPM.	
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ΑΗΗΗΗΗΗΗΗΗ	4111 Feet Above	M.S.L. (GL)	Dona Ana
16. Chec	k Appropriate Box To Indicate Na	ture of Notice, Report or Other Da	ta
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PULL OR ALTER CASING	CHANGE PLANS	CASING TEST AND CEMENT JOB	
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Form G-103

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DATE

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CONDITIONS OF APPROVAL, IF ANY:

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U. S. G. S	01	N	5. Indicate Type of Lease
Operator	GEOTHERMAL RE	SOURCES WELLS	State Fee
Land Office			5.a State Lease No.
Do Not Use This Form for Proposals For Permit —" (Form G-101) for Su	s to Drill or to Deepen or Plug Back to a ch Proposals.)	Different Reservoir. Use "Application	
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Low-Temp Th	ermal 🔲 Injection/Disposal		
2. Name of Operator			8. Farm or Lease Name
New Mexico State Univ	ersity		
3. Address of Operator			9. Well No.
Las Cruces, NM 88003			NMSU-DG-1
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Unit Letter 1800	Feet From The <u>North</u>	Line and <u>2200</u> Feet From	NMSU Geothermal
The <u>East</u> Line, Secti	ion <u>27</u> Township <u>235</u>	Range <u>2E</u> NMPM.	
	15. Elevation (Show wheth	er DF, RT, GR, etc.)	12. County
	4111 Feet Above	M,S,L, (GL)	Dona Ana
16. Ch	neck Appropriate Box To Indicate Na	ature of Notice, Report or Other Da	ita .
NOTICE OF IN	TENTION TO:	SUBSEQUE	NT REPORT OF:
PERFORM REMEDIAL WORK	PLUG AND ABANDON	REMEDIAL WORK	
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PULL OR ALTER CASING	CHANGE PLANS	CASING TEST AND CEMENT JOB	
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Form G-103

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

		-10				15	~	
SIGNED_	(Top Cum	V-TT-TI	TLE Senior	Engr., N	MSU Campus	DATE	December,	1990
		\mathcal{N}	Geother	cmal Proje	ect			

DATE

TITLE

APPROVED BY

CONDITIONS OF APPROVAL, IF ANY:

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Land Office						5.a State Lease No.
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2. Name of Operator						8. Farm or Lease Name
New Mexico_State	e U	nive	rsity - Physical P	lant]	Department	NMSU-DG1-LRG
3. Address of Operator Ne	ew .	Mexi	co State Universit	У		9. Well No.
P.	.0.	Box	3445, Las Cruces,	New 1	Mexico 88003	484
4. Location of Well Unit Letter G 1800)		Feet From The	orth	Line andFeet From	10. Field and Pool, or Wildcat NMSU Property
			27Township	235	RangeNMPM	
	111	1111	15. Elevation (Show	whether	DF, RT, GR, etc.)	12. County
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16.	1	Check	Appropriate Box To Indi	cate Nat	ture of Notice, Report or Other D	ata
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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 Bright Curriff	NMSU Geothermal Project	DATE 3-13-81
APPROVED BY Carl Ulwog CONDITIONS OF APPROVAL, IF ANY:	SENIOR PETROLEUM GEOLOGIST	DATE 3/20/81

		/ M=	
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Operator	GEOTHERMAL RE	ESOURCES WELLS	State Fee XX
Land Office			5.a State Lease No.
For Permit –" (Form G-101) for S	······································	Different Reservoir. Use "Application	7. Unit Agreement Name
•			7. Onte Agreement Name
2. Name of Operator	Thermal 🛛 Injection/Disposal		8. Farm or Lease Name
New Mexico State U	niversity - Physical Plant	Department	NMSU-DG1-LRG
and the second	Mexico State University		9. Well No.
	Box 3445, Las Cruces, New	Mexico 88003	.484
4. Location of Well Unit Letter G 1800	Feet From TheNorth		10. Field and Pool, or Wildcat NMSU Property
TheLine, Se	ction 2.7 Township 23		
THUNNING STREET,	15. Elevation (Show wheth	ner DF, RT, GR, etc.)	12. County
	4111 Feet above	M.S.L. (GL)	Dona Ana
16. (Check Appropriate Box To Indicate N	lature of Notice, Report or Other D	ata
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PERFORM REMEDIAL WORK	PLUG AND ABANDON	REMEDIAL WORK	
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SIGNED Bylling	TITLE NMSU Geothermal Project	DATE 3-13-81
ONDITIONS OF APPROVAL, IF ANY:	TITLE SENIOR PETROLFUM GEOLOGIST	DATE 3/20/81



Physical Science Laboratory

MAR 18 1981

OIL CONSERVATION DIVISION SANTA FE

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.

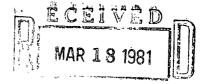
Sincerely yours,

Roy A. Cunniff Project Director NMSU Geothermal Project

cjs Enclosure



Physical Science Laboratory



OIL CONSERVATION DIVISION SANTA FE

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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

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, Associate Professor Departments Earth Sci/Physics

PM:nd

Enclosure

COLLEGE OF ARTS AND SCIENCE

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



March 4, 1980

MEMORANDUM

TO: Dr. Lokesh Chaturvedi

FROM: P. Morgan 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 DTl and DT2. If I had known of the plugging requirement I would not have attempted the experiment.

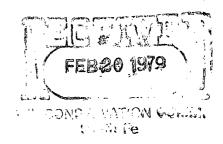
cc: Dr. Daw Dr. Swanberg

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Do Not Use This Form for Proposals to For Permit —" (Form G-101) for Such) Drill or to Deepen or Plug Back Proposals.)	to a Different Reservoir. Use "Application	
I. Type of well Geothermal Prod	ucer Temp. Observati	on X	7. Unit Agreement Name
Low-Temp Therr	nal 🗌 Injection/Dispose	al 🛄	
2. Name of Operator Lokesh Ch	· · ·	0	S. Farm or Lease Name
Departmen	it of Energy Geotherm	al Research Project (Phase I	I)
3. Address of Operator Box 3CE,		versity	9. Well No. DT-2
Las Cruce	es, NM 88003		NMSU – DG–, J
4. Location of Well			10. Field and Pool, or Wildcar NMSU Geothermal
Unit Letter <u>G</u> 1800	Feet From The $_\N$	orth_Line and 2220 Feet From	
The <u>East</u> Line, Section	Townsnip	23 SRangeNMPM.	
	15. Elevation (Show v	whether DF, RT. GR, etc.)	12. County
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PERFORM REMEDIAL WORK	PLUG AND ABANDON	REMEDIAL WORK	
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		OTHER Completion of	drilling X
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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'

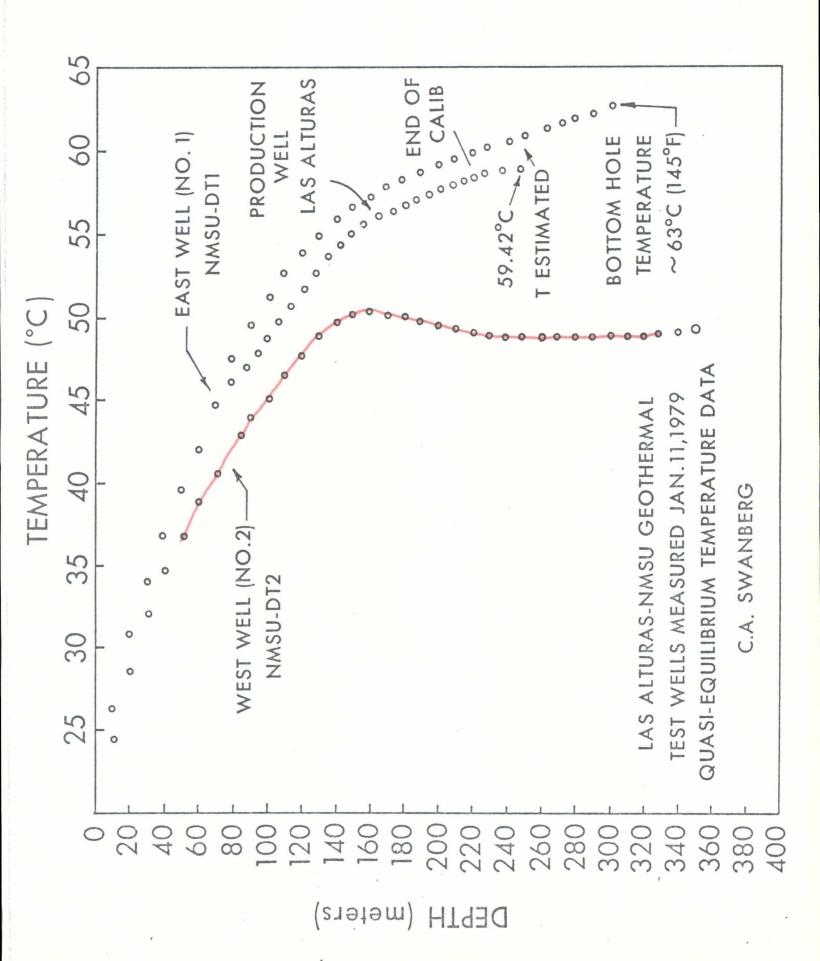


Form G-103

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

SIGNED WChatwired.	Assistant Professor	DATE 2/12/79
(and)/P	SENIOR PETROLEUM GEOLOGIST	2/22/79

CONDITIONS OF APPRUVAL, IF ANY:



was DT-2

now #484

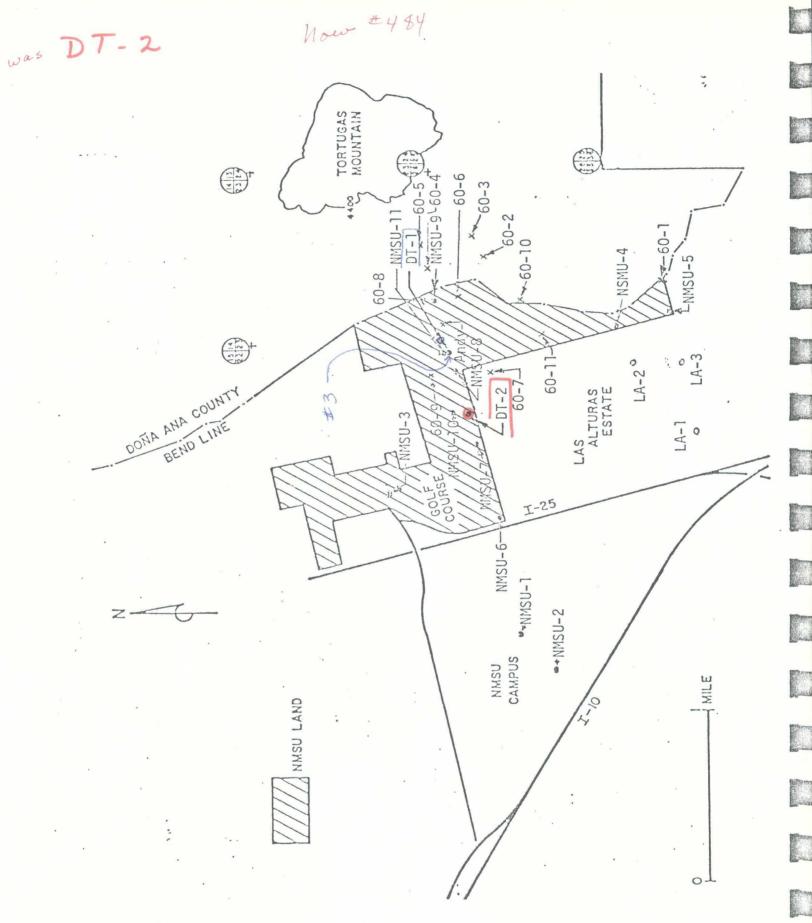


Figure 11. Map of the Las Alturas anomaly area, Las Cruces, New Mexico, showing the location of existing wells and thermal gradient holes.

Re-numbered #484 ź2 DT

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

INTERPRETED SUBSURFACE CONDITIONS BASED ON ALL LOGS				
DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION		
0	00000000000	SAND AND GRAVEL. ROUNDED TO SUBROUNDED GRAVEL PIECES CONSIST OF QUARTZ, FELDSPARS, RHYOLITE, ASH FLOW TUFFS, A VARIETY OF IGNEOUS ROCKS, ETC.		
50	000000000	HIGH RESISTIVITY UNIFORM CALIPER WITH MINOR FLUCTUATIONS, UNIFORM GAMMA RAY AND		
100	$\bigcap_{i=1}^{n} \bigcap_{i=1}^{n} \bigcap_{i$	UNIFORM LOW POROSITY DENSILOG AND NEUTRON. PROBABLY SANTA FE GROUP BASIN FILL. DRY.		
150	000 3000000000000000000000000000000000	ABOVE THE WATER TABLE .		
200				
250		WATER TABLE CLEARLY INDICATED BY ALL LOGS AT 265FT BELOW		
300	20272 CA)22	SURFACE. FROM EGSFT. DOWN TO ABOUT GEOFT., THERE APPEAR TO BE LAYERS OF SAND AND GRAVEL ALTERNATING WITH LAYERS OF CLAY. LOW		
350		RESISTIVITY, CAVED ZONES, FLUCTUATING GAMMA RAY, HIGH POROSITY VALUES AND LITHOLOGY ALL INDICATE THIS.		
400				
450		BETWEEN 420 AND 450 FT. BELOW SURFACE DOWN TO 720 FT., THERE IS A ZONE OF SUBANGULAR TO SUBROUNDED FRAGMENTS OF RHYOLITE, RHYOLITIC		
500		ASH FLOW TUFF, ANDESITE AND ANDESITE ASH FLOW TUFF - APPROX. 14 INCH DIAMETER PIECES OR FINER.		
550		UNIFORM RESISTIVITY AND HIGH GAMMA RAY FOR THIS ZONE.		
600				
650		• •		
700				
750		FROM TOOFT. TO ASOFT, THERE ARE GRAVELAND SAND OF MORE HETEROGENEOUS COMPOSITION WITH		
800	· · · · · · · · · · · · · · · · · · ·	SOME FLATTENED, ROUNDED GRAVELS OF ANDESITE.		
850				
900		FROM 850FT TO THE BOTTOM OF THE WELL, THE ZONE IS CHARACTERIZED BY VERY UNIFORM PROFILES OF RESISTIVEY CANNAD DAY, NEWTONNAND DE VENDO		
950		RESISTIVITY, GAMMA RAY, NEUTRON AND DENSILOG. LITHOLOGY SHOWS FINE CHIPS OF RHYOLITE AND MINOR AMOUNTS OF QUARTS, FELDSPARS, ETC.		
1000		MINULISIO OF GUARIS, FELDSPARS, ETC.		

Figure 18.

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

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U. S. G. S			-	5. Indicate Type of Lease	
Operator	1	-	ON GEOTHERMAL RESOURCES WELLS		State E Fee
Land Office			GEOTHERMAL RESOURCES WELLS		5.a State Lease No.
For Permit (Form G-101	Propos I) for	Such	Proposals.)	a Different Reservoir. Use "Application	7. Unit Agreement Name
Low-	Temp	Thern	nal injection/Disposal		
2. Name of Operator	·····				8. Farm or Lease Name
New Mexico State	e Un	ive	sity		
3. Address of Operator				9. Well No. NMSU-DG-1	
Las Cruces, New Mexico 88003				NMSU-DG-1	
4. Location of Well Unit Letter 1800	0		Feet From The	th 2220Feet From	10. Field and Pool, or Wildcat NMSU Geothermal
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NOTIC	E OF	INTE	NTION TO:	SUBSEQUE	ENT REPORT OF:
PERFORM REMEDIAL WO	RK	X	PLUG AND ABANDON	REMEDIAL WORK	ALTERING CASING
TEMPORARILY ABANDON	v [COMMENCE DRILLING OPNS.	PLUG & ABANDONMENT
PULL OR ALTER CASING	[CHANGE PLANS	CASING TEST AND CEMENT JOE	3
				OTHER	
OTHER					· · · · ·
			perations (Clearly state all pertinen	nt details, and give pertinenet dates, incl	huding estimated date of starting any
proposed work! CUE D1	11 12 2	0.2			

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 researchat 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 CAM Grage TITLE_	Assistant Director of Physical Plant Department DATE	Nov. 24,	1980

APPROVED BY Carl Ulwog-

CONDITIONS OF APPROVAL, IF ANY

_TITLE SENIOR PETROLEUM GEOLOGIST

DATE 11-25-80

Form G-103

				Adopted 10/1
NO. OF COPIES RECEIVED	NEW MEXICO OI	L CONSE	RVATION COMMISSION	
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File				
N, M. B. M.	SUNDRY N	IOTICES	AND REPORTS	
U. 5. G. S		ON		5. Indicate Type of Lease
Operator	GEOTHERMAL RESOURCES WELLS			State 🗍 Fee 🗍
Land Office				5.a State Lease No.
Do Not Use This Form for Proposals to For Permit —" (Form G-101) for Such P	Drill or to Deepen or Plug Ba roposals.)	ack to a D	ifferent Reservoir. Use "Application	
1. Type of well Geothermal Produ Low-Temp Therm				7. Unit Agreement Name
2. Name of Operator				8. Farm or Lease Name
New Mexico State Univer	sity			
3. Address of Operator				9. Well No.
Las Cruces, New Mexico	88003			NMSU-DG-1
4. Location of Well 1800	۲	North	2220	10. Field and Pool, or Wildcat NMSU Geothermal
Unit Letter1000	Feet From The		Line andFeet From	
The East Line, Section	27Township	23 S	RangeNMPM	
	15. Elevation (Show 4111 Feet		<i>DF. RT. GR. etc.)</i> e M.S.L. (GL)	12. County Dona Ana
16. Check	Appropriate Box To Indi	icate Nat	ure of Notice, Report or Other D	ata
NOTICE OF INTER	TION TO:		SUBSEQU	ENT REPORT OF:
PERFORM REMEDIAL WORK	PLUG AND ABANDON		REMEDIAL WORK	
TEMPORARILY ABANDON			COMMENCE DRILLING OPNS.	
PULL OR ALTER CASING	CHANGE PLANS		CASING TEST AND CEMENT JO	
OTHER		_ 🗆 🛛		

Form G-103

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.

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

CONDITIONS OF APPROVAL

SIGNED Control March Mov. 24, 1980 APPROVED BY Carl Worg TITLE SENIOR PETROLEUM GEOLOGIST DATE 11-25-80