GTLT - ___3___

Lightning Dock Geothermal, Inc.

TG: 12-7; 36-7; 41-13; 42-18; 44-7; 52-7; 52-8; 53-7; 56-14; 57-7; 64-7 & 78-12

OIL CONSERVATION DIVISION P. O. BOA 2028 SANTA FE. NEW MEXICO 87501

form G-101 Advance 10-1-78 Revised 10-1-78

File t N,M,0,M, U S.C.S.	•		T TO DRILL, DEEPEN MAL RESOURCES WE	•	5. Indicate Type STATE STATE COME N	FEE D
Constant				}		
. Is. Type of Work Drill S	<u> </u>	Deepen 🗆	Plug Back		7. Unit Agreemen	it Name
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	nal Producer Thermal Thermal		ction/Disposal		Fed. NM-	
2. Name of Operator Lightning Dock Geothe	ermal, Inc.				9. Well No. TG 52-7	
224 West Greening Ave					10. tela and koo Lightning	t. or Wildeat 2 Dock KGRA
		ED 1200 PEET FR	OM THE North	LINE	nimi	THITTINITY.
AND 3100 FEET FROM			outh RGE 19 West		13. County Hidalgo	
			Proposed Depth	9A. Formation	3 20.	Kotary or C.T.
				Alluvium/ v	1	
21. Usestians (Show whether DF.	RT, etc.) 21A. Kind		B. Drilling Contractor	A	22. Appres. Da	te Work will start
4200 Gr		Federal, in place	Everett D. Burgett,	Anunas Niv	1 JUIV	1, 2003
•	ρ	ROPOSED CASING AND	CEMENT PROGRAM			
SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF		EST, TOP
16" 9 7/8"	10, 3/4° 7, 5/8°	36.88	40 ft 300 ft	 	40	ground surf. ground surf
9 // 2		/0.30	1		-14	gomu sur
Pilot hole (6, 5/8") will Application, changes will Well will be drilled with Encountered, limited Depending on drilling reRetained as permanent to	ill be made known be mud rotary. Subs ST-will be complete esults, well can be c	y submittal of Sundry surface temperature ex d by airlift. ompleted by inserting	y Notice and G-103. spected to be lower the gwater-filled, 2-3/8-ii	nan 240 F. 1	If water bearin	g zones are
Pilot hole (6, 5/8") will Application, changes will will be drilled with Encountered, limited Depending on drilling reactions as permanent to the Retained Retain	ill be made known to he mud rotary. Substitution ST-will be complete esults, well can be comperature observations.	oy submittal of Sundry surface temperature exited by airlift. completed by inserting tion well until all use	w Notice and G-103. Expected to be lower the greater-filled, 2-3/8-in full measurements are noticed back, she data on or contested and belief.	nan 240 F. 1	If water bearin adient pipe to '	g zones are FD. Well would
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SANTA FE, NEW MEXICO 87501

roms u-ruz Adopted 10-1-74 Revised 10-1-78

		All distances n	nust be from th	e outer boundaries	of the Sectio	n.	
Operator Lightning Doc	k Geothermal, Inc		Lease	Fed. Geotherm	nal NM-3479	- 	Well No. TG 52-7
Unit Letter	Section	Township	i i	lange	County		
В	7	25 5	South	19 West		Hidalgo	
Actual Footage Local 3100	feet from the	West	line and	1200	feet from the	. Nort	h tine
Ground Level Dev. 4200	Producing For NA	mation	Pont	NA		υ	Dedicated Acreage:
	the acreage dedicat	led to the subjec	well by cok		chure marks	on the plat be	AC/E3
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	+			-		Name	A. Cunnor
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	i			į		Company	
1	ŧ			{ }			Dock Geothermal, Inc.
	i			1		Date 18 J	Sur 2003
	<u> </u>					**	
	•	ľ		i i		1	certify that the well location
	j I			1		1	this plat was plotted from field a actual surveys made by me or
	1			1	1		supervision, and that the same
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6 - 210 ALU	90 1330 1650 19	00 2310 2640	2000	1509 1000	a co <i>c</i>		

LIGHTNING DOCK GEOTHERMAL, INC. 224 W. GREENING AVENUE LAS CRUCES, NM 88005

April 12, 2003

Roy Johnson Oil Conservation Division 1220 S. St. Francis Drive Santa Fe, NM 87205

Enclosed are completed applications for nine (9) geothermal temperature gradient holes to be drilled on our Federal Geothermal Resources Lease NM34790.

All of the holes will be drilled on private surface land owned by Dale Burgett. All of the holes have the identical drilling program as contained in the G-101 applications for each hole.

We expect to drill on only three (3) of these locations, but at this time we do not know which three. We are exploring the thermal regime of the Animas Valley geothermal resources. Information gained as each new hole is drilled will allow us to move closer to final site selection.

Hoy, as you know these will feeke BLM approval.

Good hock Depending on final approval of all required permits, we anticipate that drilling will commence on the first hole on or about May 1, 2003.

Thank you for your assistance.

Sincerely,

Roy A. Cunniff President

Encl: a/s

OIL CONSERVATION DIVISION P. O. BOX 2018 SANTA FE, NEW MEXICO 87101

form G-131 Accepted 10-1-74 Revised 10-1-78

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12. Type of Work Orill &	<u> </u>	Deepen 🗆	Plug Back 🗍	7. Ur	uit Welcoment Name
b. Type at Well Geothern	nal Producer 🗀	Te	mp Observation 🔞	8. Fa	one on or Lease Name OG: Fed. Geothermal lease
2. Name of Operator Lightning Dock Geothern	nal, Inc.			1	u no. G 56-14
224 West Greening Ave.	Las Cru	ees 8	8005		eld and Pool, or Wildean
	THE WEST LINE OF		South RGE. 20 Wes	9A. Formation Alluvium	20. Rotary or C.T. Rotary Appros. One Work will start April 20, 2003
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SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMI	
16" 9-7/8"	10-3/4" 7-5/8"	38.88	20 ft 200 ft	15 35	ground surf. ground surf.
will be completed by inserting operature observation well. It subandoned IAW Federal and S	will be monitored fo tate regulations and	or a period of up to or requirements.	e year after completion	on, and then will	Hinerals.
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P.O. BOX 2013 BANTA FE, NLM MEXICO 87501

rorm u-ruz Adopted 10-1-74 Revised 10-1-78

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Operator Lightning Doc	k Geothermal, Inc	· · ·	LDG Fe	ederal lease:	Burgett Pri	vate surface	Well No. TG56-14
Unit Letter,	Section 14	Township 25 Sot	lkang ith	e 20 West	County	Hidalgo	
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Ground Level Dev.	Producing For		Pool				edicated Acreage:
42.10	NA NA	mation	N/	Α			10 Acres
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2. If more and roya		dedicated to the w	ell, outline ez	ch and iden	tify the own	nership thereof ((both as to working interest
		different ownersip		to the well,	have the int	terests of all ov	wners been consolidated by
Ų □ Yes	☐ No If a	nswer is "yes," type	of consolidati	ion			•
If answer is necessary.)	"no," list the ow	ners and tract desc	riptions which	have actua	lly been con	nsolidated. (Use	reverse side of this form if
		ned to the well or until a non-stand:					mmunitization, unitization, by the Division.
				<u> </u>			CERTIFICATION
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	į			1 1		Date 3-28	3-03
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	!			1		J '	ertify that the well location his plat was plotted from lield
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	t t			1		Date Surveyed	
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STATE OF NEW MEXICO OIL CONSERVATION DIVISION P. O. BOA 2088

Form G-193 Accepted 10-1-18 Resized 10-1-78

ENERGY AND MINERALS DE	PARIMENT	SANTA FE, NEW	MEXICO 87191			KE 4134G 19-1-78
NO. OF COM! 3 RECEIVED				,		-
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Land Office						
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Low-Ten	no Thermal 🔲		njection/Disposal C			d. Geomermai iease
2. Name of Operator Lightning Dock Geothern	nal Inc			İ	9. Well No. TG 78-12)
	iai. iiic.					
224 West Greening Ave.,	Las Cruces, NM 88	005				Phot. or Wildeal Dock KGRA
			North		m	mmmm
UNIT LET	TER PLOCAT	ED JUSO PEET	FROM THE North	LINE		
AND 4049 FEET FROM	THE West LINE OF	SEC. 12 TWP. 25	South age. 20 West	NMPM		
	THITTITI	HIHIHI			13. County	
					Hidalgo	
			19. Proposed Depth	19A. Formation		20. Kalary or C.T.
	iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii		1000 ft	Tertiary vo		Rotary
21. Utvations (Show whether OF) 4193 Gr		al, in place	Everett D. Burgett		May I.	r. Date Work will start 2003
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9-7/8	7-3/8	20,40	200 H	33		ground surf.
temperature observation wand abandoned IAW Fede				ompletion, a	nd then wi	in oe piugged
N ABOVE SPACE DESCRIBE PROOFS, Give Disputed properties properties that the information	mit it say.		knowledge and belief.			Drapprod new production
APPROVED BY CONTINUES	and only	DISTR	CT SUPERVI	SOR	re <u>4</u> -1	14-03
THE PERSON AND ASSESSED ASSESS	any,		_			

e, o. dor 1911 Santa Fe, num mexico 87501

rorm 6-102 Adopted 10-1-74 Revised 10-1-78

		All distances must be f	rom the outer	pauragaries	of the Section	1,	
Operator Lightning Doc	k Geothermal, Inc.		Lease LDG Fede	ral lease	Burgett priv	ate surface	Well No. TG 78-12
	Section	Township	Range	and icuse.	County	ate stratee	1 10 70 12
Unit Latter P	12	25 South		West		Hidalgo	
Actual Footage Local 5036	tion of Well:	North tine	and 4	049	feet from the	West	line
Ground Level Flev. 4193	Producing Form	nution NA	Pool	١	JA		Dedicated Acresge:
1. Outline to 2. If more and roya 3. If more community Yes If answer is necessary.) No allowable	than one lease is delity). than one lease of itization, unitization. No If any "no," list the own le will be assigned.	ed to the subject well be dedicated to the well, of different ownersip is don, force-pooling, etc? swer is "yes," type of coners and tract description	edicated to to consolidation one which ha	and ident the well, l	ify the owner that the interest of the interes	ership thereof	oclow. If (both as to working interest owners been consolidated by se reverse side of this form if communitization, unitization, ad by the Division.
	 		; ; ;			contained	certify that the information herein is true and complete to f my knowledge and belief.
	; ;					Position President	
	1		; ; ;			Company Lightning Date	Dock Geothermal, Inc.
						shown on notes of a under my is true a	certify that the well location this plot was plotted from field actual surveys made by me or supervision, and that the same and correct to the best of my eand belief.
	t 1 i t		•			Date Surveyed Registered Pro and/or Land	ofessional Engineer
6. 310 neu e	201 001 00	2317 2640 2000	1302	•	200 0	Certificata Nu) .

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STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT SANTA FE, NEW MEXICO 87101

form G-131 Accoled 13-1-16 Revised 10-1-78

NO. OF COM! 3 RECE	VED	\overline{a}					3. Indicate	Type of Lease
File			A 001 1	CATION COD 0504	MTTO OBLIC OFF	ne er	STATE C	PEC D
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' Operator							THILL	:TITITITI
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Is. Type of Work	Oriti S	<u>z</u>	0	eepen 🗆	Plug Back [כ	7. Unit Age none	sement Name
b. Type of Well	Geothers Law-Ten		_				LDG: Fe	d. Geothermal lease
2. Name of Operator Lightning Dock (Geothern	nal. Inc.	· · · · · · · · · · · · · · · · · · ·				9. Well No. TG 64-7	
224 West Greeni	ng Ave.,	Las Cr	uces, NM 880	005				d Pool, or Wilden g Dock KGRA
4. Location of Well	UNIT LET	YER	G LOCAT	ED <u>2228</u> PEET				
AND 3730 FEE	T FROM	THE W	est LINE OF	sec. 7 twp. 25	South age. 19 W	est nmpm	MM	Milli
					19. Proposed Depth	19A. Formati	Hidalgo	20. Kosay ar C.T.
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420)7 Gr	. <u>.</u>		al, in place	Evereft D. Burger		I May 1	. 2003
SIZE OF HOLE		SIZE	OF CASING	WEIGHT PER FOOT			F CEMENT	EST. TOP
16"			10-3/4"	38.88	20 ft		15	ground surf.
9-7/8"			7-5/8	26.40	200 ft		35	ground surf.
temperature obse and abandoned L	ERIBE PR	vell. It	Will be monit	tored for a period of ions and requirement		er completion,	and then w	a proposed new productive
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	V		Fe	deval	,			

Adopted 10-1-74 Revised 10-1-79

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section. Well No. Operator Lease Lightning Dock Geothermal, Inc. LDG Federal lease: Burgett private surface TG 64-7 County Township Unit Letter Section 25 South 19 West Hidalgo Actual Footage Location of Well: 2228 3730 North West line feet from the feet from thu Ground Level Dev. Producing Formation Pool Dedicated Acreage: NA 4207 Acres 1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat 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). 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? If answer is "yes," type of consolidation_ ☐ Yes ☐ No 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 Division. CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. Name Position President Company Lightning Dock Geothermal, Inc. I hereby certify that the well location shown on this plat was platted 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. 1410 1050 1000 2310 3640 2000 1107 1000 200

STATE OF NEW MEXICO OIL CONSERVATION DIVISION P. O. BOA 2018

form G-101 Accoted 10-1-14 Revised 10-1-18

ENERGY AND MINERALS DE	PARTMENT	SANTA FE, NEW M	EXICO 87501			**************************************
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Low-Ten	np Thermal	Inje	ction/Disposal 🔲			d. Geothermal lease
Name of Operator Lightning Dock Geothern	nal, Inc.				9. Well 80. TG 53-7	
Address of Operator 224 West Greening Ave.,		005				d Pool, or Wildest g Dock KGRA
	TER G LOCAT	· · · · · · · · · · · · · · · · · · ·	OM THE North	LINE	MINI	<i>HIIIIIIII</i>
						
ND 3294 FEET FROM	THE West LINE OF	SEC. TWP. 23.3	outh RCE. 19 West	MANN	13. County	mittitilli
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4205 Gr	Feder	al, in place	Evereft D. Burgett		May I	s. Date Work will clast . 2003
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SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF	CEMENT	EST, TOP
16"	10-3/4"	38.88	20 ft	15		ground surf.
9-7/8"	7-5/8"	26,40	200 ft	35	,	ground surf.
temperature observation vand abandoned IAW Fede				ompietion. a	ina then w	nii be piuggea
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THE PERSON NAME OF THE PERSON NA	ted	leval				

F, O, DOR 2818 SANTA FC, NEW MEXICO 87501

rorm u-tur Adopted 10-1-74 Revised 10-1-78

		All dista	nces must be from	the outer bounds	ries of the Section	on,	
Operator Lightning Do	ck Geothermal, I	nc.·	Le:	se .DG Federal lea	ise: Burgett pri	vate surface	Well No. TG 53-7
Unit Latter	Section	Township		Range	County		
Ġ	7	2	5 South	19 West		Hidalgo	
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necessary.)					**************************************		
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STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

form 6-191

ENERGY MO ME	NERALS DE	PARTMENT	P. O. BOR Santa Fe, New M				Re-11ed 10-1-79
NO. OF COM! 3 REC	EIVEO				,		Table 1
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		<u> </u>	<u> </u>	Dia Danie (**)	<u></u>	2. Unit Agr	rement Name
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b. Type at Well	Geother	mai Producer 🔲	Te	mp Observation 🖂		8. burti Ut	Lease Name
	Low-Ten	no Thermal 🔲	Inje	ection/Disposal 🗆		LDG, Fe	d. Geothermal lease
2. Name of Operator Lightning Dock	Geothern	nal, Inc.				9. Well 200. TG 57-7	
224 West Gree		Las Cruces, NM 88	3005				d Pool, or Wildear g Dock KGRA
4. Location of Well	UNIT LET	TER O LOCA	TED 4137 FEET FR	OM THE North	LINE		
						IIIIII	HHHHHH
AND 3238 F	EET FROM	THE West LINE OF	sec. 7 twp. 25 S	South RGE. 19 Wes	I NAPA	777777	
						Hidalgo	
				9. Proposed Vepth 1000 ft	Tertiary v		20. Rotary or C.T. Rotary
21. Urvations <i>(Show</i> 4	whether DF 205 Gr		d & States Preg. Buses 2 ral, in place	18. Drilling Contractor Evereft D. Burgett		May I	s. Date Work will that . 2003
•		1	PROPOSED CASING AND	CEMENT PROGRAM			
SIZE OF HO	LE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF	CEMENT	EST, TOP
16"		10-3/4"	38.88	20 ft	15		ground surf.
9-7/8"		7-5/8**	26,40	200 ft	35	·	ground surf.
temperature ob	servation v	well. It will be mon	led, 2-3/8-inch upset sitored for a period of	np to one year after	rface to total completion, a	depth. Th	is will be a ill be plugged
and abandoned	IAW Fede	eral and State regula	ntions and requirement	IS.			
•							
				•			
N ABOVE SPACE DE	SCRIBE PRO	DPOSED PROGRAMILI	Coronous to common or	olog back, give data or	presant produc	live tane en	ב בי
hereby cutify that th	e information	n above is true and con	picts to the best of my ki	nowledge and belief.			

DISTRICT SUPERVISOR CONDITIONS OF APPROVAL FANTI

rorm u-ju/ Adopted 10-1-74 Revised 10-1-78

		All distances must be fro	m the outer boundaries	of the Section.	
Uperator Lightning Doc	k Geothermal, In	ic.		Burgett private surface	Well No. TG 57-7
Unit Letter	Section	Township	Range	County	
Actual Fuutage Loca	/ Watt	25 South	19 West	Hidalgo	
4137	feet from the	North tine an	3238	feet from the West	line
Ground Level Dev.	Producing Fo		onl		dicated Acresge:
4205		NA	1	NA J	10 Acres
2. If more and roya	than one lease is ilty),	dedicated to the well, ou	tline each and idens	ify the ownership thereof (both as to working interest
Commun Yes If answer is necessary.)	Itization, unitizat No If a	ion, force-pooling, etc? inswer is "yes," type of cor where and tract description	s which have actual	ly been consolidated. (Use	reverse side of this form if
	•	-		nterests, has been approved	
	 		! ! ! !	I hereby co	ERTIFICATION . ertify that the information yein is true and complete to my knowledge and belief.
	+			Position President Company Lightning Do	ock Geothermal, Inc.
				f hereby cer shown on the notes of sen under my su	rtify that the well location is plat was plotted from field use surveys made by me or pervision, and that the same correct to the best of my and bolief.
	1			Pate Surveyed Registered Profe	
6. 310 neu	10 1310 1020 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	an 2319 >Cau 2000	1509 1000	neo o Certificate No.	

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION P. O. BOA 2018

form G-101 Accoted 10-1-78 Revised 10-1-78

Citital and imital and ac-		SANTA FE, NE	W MEXICO 87101				
OISTE HUTION . File IN,M,8,M. U.S.C.S.		PPLICATION FOR PEF PLUG BACKGEOTH				STATE	
Operator Land Office							
ta. Type of Work Orill 2	Z	Deepen 🗆	Plug Back	0		7. Unit Age none	temuni Name
** ***	nal Producer C no Thermal C		Temp Observation Injection/Disposal		ン -	LDG: Fe	d. Geothermal lease
2. Name of Operator Lightning Dock Geothern	nal, Inc.					9. Well No. TG 52-18	8
3. Address of Operator 224 West Greening Ave.,	Las Cruces, NM	I 88005					d Pool, or Wildean g Dock KGRA
4. Location of Well UNIT LETT	TER B LO	CATED 1237 FEET	FROM THEN	orth	LINE		
AND 2736 FEET FROM	THE West LINE	OF SEC. 18 TWP. 2	25 South AGE. 19	West	NMPM	12. County	
						Hidalgo	
			19. Proposed Depth				
			1000 ft		9A. Formati Tertiary	volcanics	20. Kotary or C.T. Rotary
21. klevations <i>(Show whether DF</i> . 4209 Gr		Kind & Status Plug. Bund ederal, in place	Evereft D. But	gett		May I	e. Date Work will start. 2003
•		PROPOSED CASING	NO CEMENT PROG	RAM			
SIZE OF HOLE	SIZE OF CASING			PTH		CEMENT	EST, TOP
16"	10-3/4"		20 ft			5	ground surf.
9-7/8**	7-5/8"	26,40	200 ft		 	5	ground surf.
temperature observation wand abandoned IAW Fede				ofter co	ompletion.	and then w	ill be plugged
N ABOVE SPACE DESCRIBE PRO	111, 11 3HY.	······································			resent produ	cum some and	DEDGOSOS NOW DIOGUES
nerety exists that the information	Ti y		y knowledge and believel.	f.		un <u>4-</u>	12-63
IPPROVED BY	hum	DISTR	ICT SUPER	VIS	OR .	ATE 4/1	14/03
ONDITIONS OF APPROVAL IF A	/MY _I	<u> </u>					

e, o, dok 2011 Santa FE, num mexico 87501

Revised 10-1-78

	·	All distances m	ust be from	inc Outer boundari	es of the Section	١,	
Operator	l. Coathamad Inc		Leas	C Federal loss	o. Domosti mir		Well No.
	k Geothermal, Inc.		[_1]	DG Federal leas	County	ate surface	TG 52-18
Unit Letter B	Section 18	Township 25 Sou	th	Range 19 West	County	Hidalgo	
Actual Footage Local 1237	tion of Well:	North	tine and	2736	feet from the	West	line
Ground Level Dev.	Producing Form		Puni				Dedicated Acreage:
4209		NA			NA		10 Acres
							below. I (both as to working interest
3. If more commun.	than one lease of itization, unitizatio	n, force-pooling, . swer is "yes," ty	etc? pe of consc	olidation	and the second s	A	owners been consolidated by
necessary.) _	no, list the own	icis and tract de	scriptions	willer have actu	any ocen cons	ondarea. (O	se reverse side of this form if
No allowab	le will be assign ng, or otherwise) or	ed to the well until a non-stan	l until all dard unit,	interests have eliminating such	been consolid	dated (by observed)	communitization, unitization, ed by the Division.
						the best of Name	CERTIFICATION certify that the information I herein is true and complete to of my knowledge and belief.
	!			1	į	President	
	ŧ			} }	l		Dock Geothermal, Inc.
	i			i		Date	
						shown on notes of under my is true a	certify that the well location this plat was plotted from field actual surveys made by me or a supervision, and that the same and correct to the best of my se and belief.
	1					Date Survey	•å
22	1		,*	1		Registered Pl and/or Land	tofesiunal Engineer
						Certificate N	v.
6. 210 NEU	421 0201 0(61 00	2317 2640	200c	1100 1000	200 0	1	-

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION P. O. BOA 2018

form G-101 Adupted 10-1-16 Recised 10-1-78

DACKOL WAS INVESTMENT OF	· ·	SANTA FE, NEW N	4EXICO 87101			
O. OF COM! 3 RECEIVED					(A desired	Typo of Loase
OISTE BUTION .					STATE C	
ire		LICATION FOR PERMI			STATE L	
,M,8,M,	OR PL	UG BACKGEOTHER	MAL RESOURCES W	ELL		
S.C.S.	- 				mm	nmmmm
eng Offico			A. A		7777777	TTTILL
	1	Deepen 🗆	Plug Back []		none	
, , ,	ermal Producer ermo Thermal		cction/Disposal		LDG; Fe	ed. Geothermal lease
. Name of Operator Lightning Dock Geother	rmal, Inc.			-	9. Well No. TG 44-7	
. Address of Operator 224 West Greening Ave	., Las Cruces, NM 8	8005				d Poot, or Wildcar g Dock KGRA
A		TED 2595 PEET FR	OM THE North	LINE	IIIII	THITTIET THE
	WEST LINE OF		South age. 19 West			
intillitilli	THITTITI	minimi	IIIIIIIIIII	TÜÜÜ	13. County	millit
					Hidalgo	
ittititiiniinii			THIMINI	MINI	MIIII	THIMIN
			1	19A. Formati		20. Kotary or C.T.
			1000 ft	Tertiary	volcanics	Rotary
1. Hevations (Show whether D 4198 Gr		eral, in place	Evereft D. Burgett		22. Appro May	a. Date Work will that
		PROPOSED CASING AND	,	·		
SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKEO	CEMENT	EST. TOP
16"	10-3/4"	38.88	20 ft		5	ground surf.
9-7/8"	7-5/8"	26,40	200 ft		<u></u> 5	ground surf.
Hole will be completed temperature observation and abandoned IAW Fed	well. It will be mor	nitored for a period of t	ip to one year after c			
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			•			
		•				
00000 00000 000000						
ASOVE SPACE DESCRIBE PE e, Give blowaut proventer prog	ROPOSED PROGRAME Fam, if any,	If drapass is to deepen or	Ding back, then data on t	neceut broduc	lime some and	proposed new product)
reby certify that the informati	no above is true and con	colors to the hour of my he	made for and halid	····		·
" Trylle	wy VA	TUE PRESIO	-		4-	12-03
	AN			0	J&	2-03
PROVED BY	Seftum	DISTRIC	I SUPERVIS	OR	4/	14/03
NOITIONS OF APPRIVAL.	ANY	TITLE	the same of the sa	0	ATE	1,00
	A	/				
	Fed	eval				

e, o, dor zese Santa FE, num mexico 8750;

rorm u-luz Adopted 10-1-74 Revised 10-1-78

		All distance	s must be from	the outer boun	daries of the Sec	tion,	
Operator Lightning Doc	k Geothermal, Inc.		Lea	se		orivate surface	Well No. TG 44-7
Unit Letter	Section	Township		Range	County		
Ė	7	•	South	19 Wes	3	Hidalgo	17775
Actual Footage Local 2595	tion of Well:	North	line and	2431	feet from	the West	line
Ground Level Bev. 4198	Producing Form	nation NA	Pon	i	NA	Ľ	dedicated Acreage:
2. If more and roya 3. If more	lty).	ledicated to t	the well, outli	ne each and	identify the ov	vnership thereof	clow. (both as to working interest where been consolidated by
necessary.) _ No_allowabl	"no," list the owr	ed to the	descriptions	which have a	ve been cons	onsolidated. (Use	e reverse side of this form if ommunitization, unitization, the Division.
					and the same same	Name Position President Company	CERTIFICATION certify that the information herein is true and complete to my knowledge and belief. Dock Geothermal, Inc.
						shown on a nates of a under my is true and knowledge. Date Surveyed	
6. 510 neu 1	00 1970 1070 1081		2000	1302 1000	300	and/or Land S	urveyor

OIL CONSERVATION DIVISION P.O. BOX 2016

form G-101 Accord 10-1-14 Revised 10-1-78

		SANTA FE, NEW M	EXICO 87101				
NO. OF COM! 3 RECEIVED OISTI BUTION File N.M.B.M. U.S.C.S. Oberator	· • •	PLICATION FOR PERMI LUG BACKGEOTHERM	· · ·	-	3. Indicato STATE 5.4 Slate Le		FEE D
Lena Offica							
· 12. Type of Work Drill	777	Deepen 🗆	Plug Back 🗍		1	ement Name	<i>x (; () ()</i>
b. Type of Well Geot	hermal Producer	Ter	mp Observation	•	none	ease Name	
	Temp Thermal	Inje	ction/Disposal			d. Geothern	nal lease
. 7. Name of Operator Lightning Dock Geoth	ermal, Inc.		W		9. Well No. TG 42-18	}	
224 West Greening Av	ve., Las Cruces, NM	88005				Pool, or Wild Dock KGF	
	LETTER <u>C</u> LOC	ATED 1227 PEET FR	om the North South RGE. 19 West	LINE			
			9. Pracoved Depth	9A. Formation		20. Kotary at	
21. Lievations (Show whether	05 87 4% (314 5	lind & Status Plug. Hund 2	1000 ft	Tertiary v	~~~~~~	Rota	
4200 Gr		deral, in place	Evereft D. Burgett		May I.	2003	MII (1971
•		PROPOSED CASING AND	CEMENT PROGRAM				
SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF	CEMENT	EST.	rop
16"	10-3/4"	38.88	20 ft	1	5	ground	
9-7/8"	7-5/8"	26,40	200 ft	3:	5	ground	surf.
and abandoned IAW F	PROPOSED PROGRAM	enitored for a period of unlations and requirement	s.				
rone, Give atowaut preventer of the territy certify that the inference	rogram, it any.	omplete to the best of my ke					
umed Toples	m)	Tue PROIDE	BUT	0	4- A	12.03	
APPROVED BY 2 CONDITIONS OF APPROVAL.	//	eval	T SUPERVIS	OR	ATR 4/	14/03	

#.O.BOK IELL SANTA FE, NEW MEXICO 87501

rorm w-luc Adopted 10-1-74 Revised 10-1-78

		All distances must be fin	m the Outer boundari	es of the Section.	···	
Operator Lightning Doc	ck Geothermal, In	i	LDG Federal lease	e: Burgett priva	ite surface	Well No. TG 42-18
Unit Letter	Section 18	Township 25 South	Range 19 West	County		
Actual Footage Loca		2.7 South	13 West		Hidalgo	
1227	feet from the	North sine 3		feet from the	West	line
Ground Level Dev. 4200	Producing Fo	NA	ývol	NA	Dear	cated Acresge:
1. Outline	the acreage dedicate	ated to the subject well by	colored pencil or h	achure marks o	n the plat belo	
2 16 muss	than and lases is	dedicated to the well, ou	uline each and ide	wife the aware	thin thereof (h	oth we to anothing interest
and roya		. acoletica to the acu, or	·	·	any mercor (o	oth as to working interest
3 W mura	then one leave o	f different ownersip is dec	ticated to the well	have the inter	ests of all own	ers haan annsalidatad hu
		ion, force-pooling, etc?	neared to the went	, mave the inter	C313 07 01 041	ers occir consolidated by
☐ Yes	□ No If a	inswer is "yes," type of co	nsalidation			
•						
If answer is necessary.) _	"no," list the ov	wners and tract description	is which have actu	ally been conso	lidated. (Use to	everse side of this form if
,	ole will be assis	gned to the well until	all interests have	been consolida	ated (by com	nunitization, unitization.
		or until a non-standard un				
				· · · · · · · · · · · · · · · · · · ·		
		·	1 1		CE	RTIFICATION
			l i		-	tify that the information
	l		E			ein is true and complete to v knowledge and belief.
	i		l t			
	1		1			
	+				Name	·
	1		1	• •	Position President	
	1		!	1 1	Company	
ł	<u>}</u>	j	 		Lightning Doc	k Geothermal, Inc.
	i		, i	1 1	Date	
	1	ŀ	!		I hereby cert	ily that the well location
	i		i I		shown on this	plat was plotted from field
	1		1			of surveys made by me or cryision, and that the same
	i		1			orrect to the best of my
	I		į		knowledge and	t belief,
	· ·					
	i		i		Date Surveyed	
)		1			
	1	·	1		Registered Profess and for Land Survi	ional Engineer
	1		1			·
					Certificate No.	
f. 310 neu	00 1370 1050 10	on 2317 2440 2000	1302 1000	200 0	uju 11V.	

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION P.O. BOX 2018

form 6-101 Adopted 10-1-14 Posted 10-1-79

		SANTA	. FE, NEW M	EXICO 87501			Revised 10	-1-78
O. OF COM! 3 RECEIVED								
DISTUBUTION .						I	Typo of Lease	
ite				TO DRILL, DEEPER		STATE [FEC E
(,M,0,M,		OR PLUG BACK	-GEOTHERN	MAL RESOURCES WE	LL	S. SIATO LE	250 PEG.	
) S.C.S.	 					mm	mm	7777
and Ottico	 							.////:
	<u> L</u> J			0 . 0 . 4 . 73		27. Unit Aere	cment Name	77771
a. Type of Work Oril		Deepen (Plug Back []		none		
b. Type at Well Geo	thermal Producer		Ter	np Observation 🔞)	8. Jum or L	ease Name	
Low	Temp Thermal		Inje	ction/Disposal		LDG: Fe	d. Geotherma	I lease
. Name of Operator						9. Well No.		
Lightning Dock Geotl	nermal, Inc.					TG 41-13	3	
. Address of Operator 224 West Greening A	ve., Las Cruces	NM 88005					Pool. or Wilder Dock KGRA	
. Location of Well		LOCATED 56	8 ******	OM THE North		THITT	MINITE	IIII
UNIT	LETTER	COCATED	ZPEET PHO	DM THE	LINE			IIII
IND 2536 FEET FR	ON THE West	LINE OF SEC. 13	Two. 25 S	outh RGE. 20 West	NMPM			11111
						13. County Hidalgo		
			111111111111111111111111111111111111111	Proposed Vepth 1000 ft	9A. Formatio		20. Rotary or C Rotar	
1. Urvations (Show whether	DE RT esc.	21A. Kind & Status	Plue Book 21				<u>'</u>	
4196 Gi		Federal; in pla	ce	B. Driving Contractor Evereft D. Burgett		May I,	i. Date Work wil 2003	11451
•		PROPOSEO	CASING AND	CEMENT PROGRAM				
SIZE OF HOLE	SIZE OF CA	ASING WEIGHT	PER FOOT	SETTING DEPTH	SACKS OF CEMENT		EST TO	12
16"	10-	-3/4"	38.88	20 ft	1		ground s	
9-7/8"		5/8"	26,40	200 ft	3	5	ground s	
9-110								
16*^	10-	ASING WEIGHT	PER FOOT 38.88	SETTING DEPTH		5		3

IN ABOVE SPACE DESCRIBE PRODUSED PROGRAM: If procedule is to deeden or plug back, give data on present productive tone and proposed new productive rone, Give observed proventer proposen, if any.

I neverly cutify that the infinitesima above is true and complete to the best of my knowledge and brief.

Title PRESIDENT Our 4-12-03

I This species for the Up;

APPROVED BY

TITLE

DISTRICT SUPERVISOR

DATE

DATE

TITLE

CONDITIONS OF APPROVAL/A ANY:

Form 6-102 Adopted 10-1-74 Revised 10-1-70

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section. Well No. Operator LDG Federal lease: Burgett private surface Lightning Dock Geothermal, Inc. TG 41-13 Township County Section Unit Letter 25 South 20 West Hidalgo 13 Actual Footage Location of Well: 2536 West North feet from the line feet from the Dedicated Acreage: Ground Level Dev. Producing Formation Pool 4196 NA Acres 1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat 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). 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? 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 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 Division. CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. Position President Lightning Dock Geothermal, Inc. 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. 3 10 neu 1470 1050 1000 2317 7640 2000 1000 200

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION P. O. BOA 2018

form G-101 Adopted 10-1-76 Revised 10-1-78

			MEXICO 87301			
NO. OF COM! 3 RECEIVED					(4)	Type of Lease
OISTE BUTION	 				1 -	
Filq	1 1		IT TO ORILL, DEEPE		STATE	
N,M,B,M.	OR PLU	IG BACKGEOTHER	imal resources w	ELL		
U S.C.S.					mm	יחדווווווווייי
Operator	+				IIIIII	
Land Office	<u>. L . J </u>		0 0 0		1.7. Unit Aere	ATTINITY TO STATE
· 1s. Type of Work Orill S	-3i C	Deepen 🔲	Plug Bzck		none	
b. Type at Well Geother	mal Producer 🔲	T	emp Observation 🔯	ノ	S. Farm or	Lease Name
	no Thermal	In	jection/Disposal		LDG; Fe	d. Geothermal lease
: 7. Name of Operator					9. Well No.	
Lightning Dock Geothern	nal. Inc.				TG 36-7	
.). Address of Operator						Pool, or Wildest
224 West Greening Ave.,	Las Cruces, NM 880	005			Lightning	g Dock KGRA
4. Location of Well	TER K LOCAT	CO 3744 ###T F	now the North	LINE	IIIII	
ON) (LES	TERCOCAT	CO	NOW THE			
AND 1568 FEET FROM	THE West LINE OF	sec. 7 two, 25	South RGE. 19 West	NMPM	IIIII	
					12. County	
			TITITITI	7777777	Hidalgo	
				.1111111	7777777	
			19. Proposed Depth	19A. Formati		20. Rotary of C.T.
<i>.111111111111111</i>		<i>IIIIIIIIII</i>	1000 ft	теплагу	volcanics	Rotary
21. Urvations (Show whether DF 4195 Gr		& Status Plug. Bund : al, in place	Everett D. Burgett		May 1	. Date Work will start 2003
41/3 GI	1 Cuci	ai, iii piace	Everett D. Dangett		11101 2	
•	Pi	ROPOSED CASING AN	O CEMENT PROGRAM			
SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKED	F CEMENT	CCT TO2
16"	10-3/4"	38,88	20 ft		5	ground surf.
9-7/8"	7-5/8"	26,40	200 ft		5	ground surf.
9-7/8	/-5/6	20.70	200 R		<u></u>	ground surr.
temperature observation vand abandoned IAW Federal and abandoned IAW Federal and abandoned IAW Federal and abandoned Describe Processors. Give allowant programmer programmer programmer programmer programmer programmer programmer programmer.	PROGRAMA 11	ions and requiremen	nts.			
i nereby certify that the information		plote to the best of my i	inowiedge and belief.			
< 8.0%	A .	TUR TRESIDE			<i>A</i>	1
igned Square	A A	Title 1 RETURN	<i>w</i>		Ne 4-17	<u> </u>
I his soure sorts	ارس اور					<i>·</i> /
1 5		NETOIC	TO CHARACIA	· /*\ 65		
APPROVED BY	Mu	TITLE LABORATE	T SUPERVIS	WK ,	MIE 4/1	14/03
CONDITIONS OF APPROVAL,	ANY,		_			
\mathcal{U}	Federa	1				

		All distail	cos must be fron	n the outer t	gundaries	of the Sectio	n,	
Operator Lightning Doc	ck Geothermal, In	c.·		LDG Feder	al lease;	Burgett pri	vate surface	TG 36-7
Unit Latter	Section	Township		Range		County		
<u> </u>	7	25	South	19 \	West		Hidalgo	
Actual Footage Loca 3744	ition of Well:	North	line and	, 15	68	feet from the	West	line
Ground Level Flev. 4195	Producing For	rmation NA	Po	nol .	N	A		Dedicated Acreage:
I. Outline	the acreage dedica	ted to the su	bject well by c	colored pen	eil or hac	hure marks	on the plat	——————————————————————————————————————
2. If more and roys		dedicated to	the well, out	line each a	nd identi	fy the own	ership thereo	f (both as to working interest
	than one lease of			cated to ti	ie well, h	ave the int	erests of all	owners been consolidated by
Ŭ Yes	□ No If a	nswer is "yes	," type of con	solidation_		**************************************	······································	
If answer is necessary.)	"no," list the ov	vners and tra	et descriptions	which has	e actually	y been con	solidated. (U	se reverse side of this form if
No allowab forced-pooli	ole will be assigning, or otherwise)	ned to the or until a nor	well until al i-standard unit	ll interests , elimination	have be g such in	en consoli terests, has	dated (by o	communitization, unitization, ed by the Division.
		•		† 1				CERTIFICATION
	1			! 			1	certify that the information therein is true and complete to
	t •	-		ŧ B			1	of my knowledge and belief.
	1 1			i			Name	
	1						Position President	
				İ			Company	Dook Coothogoal Inc
	1			\$			Date	Dock Geothermal, Inc.
				- 			()	
	!			1			sharm or	certify that the well location this plat was plotted from field actual surveys made by me or
				1			under m	supervision, and that the same
	6				····		ł	and correct to the best of my be and belief.
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	17 125 - 5			1			Registered P	rufessiungs Engineer
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OIL CONSERVATION DIVISION F. O. BOX 1918 SANTA FE. NEW MEXICO 8710:

form 5-101 Asspire 10-1-14 Revised 10-1-18

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and abandoned IAW with Federal and State regulations and requirements.

i hereby certify that the information above is true at	nd complete to the best of my knowledge and belief.	
somes Tay Servery	Tub PLESIDENT	
APPROVED BY TO APPROVAL IP ANY,	, DISTRICT SUPERVISO	R 2/6/03
* As these are federa	lleases/Nr10eD authority p	estains only to

OIL CONSERVATION DIVISION P.O. BOR 1911 SANTA FE. NEW MEXICO 87161

form 6-101 Assisted 10-1-76 Re-11ed 10-1-78

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OIL CONSERVATION DIVISION P. O. BOA 2018 SANTA FE, NEW MEXICO 87101

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Revised	10-1-78

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GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section, Well No. Operator Lightning Dock Geothermal, Inc. Fed. Geothermal NM-34790 TG 12-7 County Township Hange Unit Letter Section D 7 25 South 19 West Hidalgo Actual Footage Location of Well: 500 West 1150 fest from the North feet feam thu Dedicated Acreage: Ground Level Elev Producing Formation 4190 NA NA Acres 1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat 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). 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? If answer is "yes," type of consolidation___ ☐ Yes ☐ No 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 Division. CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. Position President Company Lightning Dock Geothermal, Inc. 1-29-03 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. 3 10 REU 1470 1050 1080 2310 2440 2000 1100 1000 200

CONDITIONS OF APPROVAL, IF ANY

OIL CONSERVATION DIVISION P. O. BOA 1918 SANTA FE, NEW MEXICO 87191

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hound level De			Pool	-		Jedicated Acreage:
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OIL CONSERVATION DIVISION A, O, BOA 1918 SANTA FE, NEW MEXICO 87101

form & 101 Adopted 10-1-14 Restred 10-1-78

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FORM W-102 Adopted 10-1-74 Revised 10-1-79

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CONDITIONS OF APPROVAL, IF ANY

OIL CONSERVATION DIVISION F, O, BOA 2618 SANTA FE, NEW MEXICO 87101

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O, DOX 2018 ENERGY AND MINERALS DEPARTMENT SANTA FC. NEW MEXICO 87501

Adopted 13-1-74 Revised 10-1-79

Operator		Marie Language - marie reference and color of the color o	Lease	Commence of the commence of th			Well No.
Lightning Dock Geo	hermal, Inc.			Fed. Geotherm	al NM-3479	0	TG 12-7
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OIL CONSERVATION DIVISION P. O. BOA 2028 SANTA FE, NEW MEXICO 87101

form G-101 Adopted 10-1-18 Revised 10-1-18

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Lightning Dock Geothern	nal, Inc.						9. Well No. TG 52-	7	
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P.O. BOX 1911 SANTA FE, NUM MEXICO 87501

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انوديمون Lightning Do	ock Geothermal, Inc	· ·	Fe	d. Geotherm	al NM-3479	00	TG 52-7
Unit Letter	Section	Township	itange		County	TT: 4 1.	
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STATE OF NEW MEXICO OIL CONSERVATION DIVISION . ENERGY AND MINERALS DEPARTMENT SANTA FE, NEW MEXICO 87101

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We est	ed 10-1-78

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				na Observation 🖼		none	
b. Type of Well		no Thermal C		tron/Disposal []		Fed. NM-	
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SIZE OF HOL		SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH		CEMENT BO	est. 109 ground surf.
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GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

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STATE OF NEW MEXICO OIL CONSERVATION DIVISION ENERGY AND MINERALS DEPARTMENT SANTA FE, NEW MEXICO 87101

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GEOTHERMAL RESOURCES WELL LOCATION AND ACKEAGE DEDICATION PLAT

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GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

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Form 3160-5 (September 2001)

UNITED STATES DEPARTMENT OF THE INTERIOR **BUREAU OF LAND MANAGEMENT**

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FORM APPROVED OMB No. 1004-0135 Expires: January 31, 2004 5. Lease Serial No. NM-34790 6. If Indian, Allottee or Tribe Name

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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

FORM APPROVED OMB No. 1004-0135 Expires: January 31, 2004

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals

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PROPOSED DRILLING PLAN

Lightning Dock KGRA

Hidalgo County, New Mexico

Federal Geothermal Resources Lease NM 34790

PROPOSED OPERATIONS: Drill two (2) temperature gradient holes

OBJECTIVE: To test for boundaries on known geothermal resources

LIGHTNING DOCK GEOTHERMAL INC. (LDG) 224 W. Greening Avenue Las Cruces, NM 88005 Telephone: (505) 523-7908

DRILLING CONTRACTOR: Driver Drilling Company

FIELD SUPERVISORS, LDG, Inc.

Roger L. Bowers (775) 289-3537 Roy A. Cunniff (505) 523-7908

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Location and Roads	1
Site Geology and Hydrology	2
Scope of Proposed Work	3
Drill site construction	3
Drilling program	4
Environmental factors	5
Emergency contingency plan	8

List of Attachments

- 1. Exhibit "A": Hole location map
- 2. Exhibit "B": Hole diagrams
- 3. Exhibit :C": Mapped spread of geothermal fluid
- 4. Exhibit "D": Water quality for typical geothermal groundwater
- 5. Exhibit "E": Temperatures for two wells

INTRODUCTION

Lightning Dock Geothermal, Inc. ("LDG") proposes to drill two (2) temperature gradient holes on our Federal Geothermal Resources Lease, NM 34790, at the Lightning Dock KGRA in Hidalgo County, New Mexico. The gradient holes have a target depth of 1,000 feet, and will be sited within our lease on private surface land owned by T.H. McCants pursuant to an Operating Agreement with Mr. McCants entered into by and between McCants and AMAX Exploration, Inc. That Operating Agreement is part of the lease, and is currently in force. A copy is on file with the Las Cruces Field Office of the BLM.

In accordance with 32CFR3251.12, this Drilling Plan is submitted for approval to undertake the proposed work.

LOCATION AND ROADS

Proposed site locations for the two temperature gradient holes are shown on map Exhibit "A", which shows the topography of the area, existing roads and trails, and other man-made features. The planned well locations are listed as follows:

Hole Number	Location
TG 12-7	SW ¹ / ₄ NW ¹ / ₄ NW ¹ / ₄ , Sec 7, T25S R19W
TG 52-7	SW¼NW¼NE¼, Sec 7, T25S R19W

As depicted on Exhibit A, access to hole number TG 12-7 will be from the paved road (designated by Hidalgo County as Hot Water Road), passing through an existing gate, thence east on an existing unimproved trail leading to the drill site. Access to hole number TG 52-7 will be along Hot Water Road to an existing improved dirt roads leading to the drill site.

There will be no need for building additional roads

SITE GEOLOGY AND HYDROLOGY

The Lightning Dock KGRA in the Animas Valley contains a very warm and shallow geothermal resource, with boiling water temperature in the range of 210 to 225 °F) at the water table, currently at about 70 feet of depth. This shallow boiling water is a highly localized phenomenon, and within a relatively short distance from the hot spot in certain directions, ground water at depth is cool. Boiling geothermal water is believed to represent upwards flow along a fault conduit. When the hot water reaches the shallow alluvium, the hot water flows underground to the north and northwest for several miles before completely cooling and mixing with normal groundwater. This plume of hot water has been mapped as covering an area extending about 4 miles to the north and about 3 miles to the northwest gradually cooling and mixing with normal groundwater before it finally reaches equilibrium with cooler valley groundwater. Kintzinger (1956) and Summers (1961) mapped the spread of the hot water plume (See Exhibit "C").

In addition to retaining a temperature image of the geothermal source, the groundwater to the north and northwest of the hot spot retains a chemical signature from the geothermal source. At the hot spot, geothermal fluid contains about 1,150 to 1,250 mg of dissolved minerals per liter of fluid. Away from the hot spot, wells located within a few hundred meters, such as the AmeriCulture Federal No. 1, have the identical chemical composition but are significantly cooler. (See water quality at Exhibit "D".) For example, the original hot well completed in 1948, in the center of what is now the Burgett geothermal complex, encountered water with a temperature of 215 °F at 80 feet of depth. For the AmeriCulture well, the maximum temperature is 191 °F at 195 feet of depth.

The earliest shallow geothermal wells encountered volcanic rock at depths of 60 to 80 feet. The rock has been described as very dense, reddish in color, and is weathered and fissured rhyolite. The fault conduit for the geothermal fluid is believed to be a relatively Recent fault in this volcanic rock strata.

From drilling records and other geological and geophysical research conducted on the KGRA, it is expected that the two gradient wells would be drilled into alluvium for most of their depth. However, hole TG 52-7 possibly could intersect volcanic rock at an unknown depth, possibly as

shallow as 500 feet of depth. Exhibit B contains sketches of likely subsurface conditions expected to be encountered during drilling operations.

SCOPE OF PROPOSED WORK

Drill site construction

Hole TG 52-7 is sited on ground previously highly disturbed by human occupation and activities. It is on the original farm road used for more than 70 years as access to the farm house and ranching activities. Hole TG 12-7 also is sited on previously disturbed ground. The unimproved road to be used as the drill pad for hole TG 12-7 has been heavily used for more than 20 years. In the early 1980's, the trail was used to install a 2-1/2-inch water pipeline leading to the old Beall greenhouse (now used by AmeriCulture as a fish farm.) More recently in the past two years, a second 2-inch water pipeline was installed in this trail by T.H. McCants to serve his farmhouse and ranching operations.

The ground surface at both drill sites is level ground with minimal to no vegetative cover. The sites are well drained and the soil consists of gravel and fine sand. Accordingly, no need exists for any earthwork such as leveling and grading the ground surface. Because these are small-diameter gradient holes, the well pads will be very small; not more than 50 ft by 75 ft.

It is planned to drill hole TG 12-7 with air; accordingly, it is anticipated that there will be no need for a mud pit. For hole TG 52-7, drilling with mud will be used to control temperature. A small mud pit will be excavated by backhoe, and used for mixing small amounts of bentonite mud or other EPA-approved polymers used as drilling additives.

Water for drilling and make up water will be supplied via a purchase agreement with a local rancher

There is no plan to conduct drill stem tests on this hole; accordingly, there is no need for a reserve pit, and none will be built.

Drilling program

1. Description of Drilling Plan

Two temperature gradient holes will be drilled and completed. For each hole, an 8-inch diameter hole will be drilled by air rotary (or mud rotary if necessary) to 200 feet. Six-inch steel pipe will be installed, and grout will be placed in the annulus using a 1-inch tremie pipe

Continuation drilling will use air rotary, with a 4 ½-inch hammer drill bit to target depth of 1,000 feet. The slim hole will be completed by inserting 1,000 feet of 2-inch galvanized steel tubing. The tube will be filled with water and used for subsequent temperature measurements.

No need is foreseen for Blow-out Prevention Equipment (BOPE) because the maximum temperature likely to be encountered on hole TG 12-7 is not expected to exceed 145° F. For hole TG 52-7, the maximum expected mud temperature is about 145° F. It is expected that a temperature reversal will occur with deeper drilling.

These conclusions are supported by a review of the nearest deep geothermal wells; namely AMAX gradient hole 225, located in the SE½SE½SW½of Section 6, about 2,000 feet NW of location 12-7, and the existing Test for Discovery well 55-7 completed about 1,700 feet south of location TG 52-7. For the AMAX gradient hole, maximum subsurface temperature was 155° F at the total depth of 1,000 feet. (See Exhibit "E, temperature profile for AMAX gradient hole 225.) For well 55-7, the maximum mud temperature was about 125° F at a depth of 1,000 feet, and about 175° F at 3,800 feet of depth. (See Exhibit "E", temperature profile for drilling well 55-7, in 1984-85).

Personnel from Lightning Dock Geothermal, Inc will be on site during the entire drilling program, and will monitor return mud temperatures to assure that excessive temperatures do not occur. If return mud temperature rises higher than 150° F, drilling will be suspended until either a mud cooler or BOPE can be brought to the site.

2. Equipment and Personnel

The drill rig will be supplied by Driver Drilling Company, located in Sierra Vista, Arizona, and consists of a Schramm Model 985 ROTADRILL. This is truck-mounted, top drive, air rotary rig. Personnel from Driver Drilling will conduct the drilling.

Lightning Dock Geothermal, Inc. will supply the drilling supervisor in the person of Roger L. Bowers, Vice-President and a registered geologist.

Water for drilling and make up water will be supplied via a purchase agreement with a local rancher.

3. Logging and Sampling Program

Formation samples will be collected and mud logs will be maintained. Temperature measurements of the completed gradient hole will be taken at completion of the drilling program and also at intervals following completion. It is expected that two or three separate temperature surveys will be completed in each hole over a one-year period after drilling.

4. Completion and Abandonment

Upon completion of each gradient hole, the tubing will be chained and locked to prevent unauthorized borehole entry. Upon completion of all temperature measurements, the hole will be abandoned in accordance with an approved Sundry Notice.

Environmental Factors

1. General environmental procedures

All operations will be conducted in compliance with environmental protection requirements set forth in Geothermal Resources Operations Order #4, and all other applicable federal and state regulations.

2. Soil erosion.

Both of the proposed drill sites are located on surface land that has been exposed to and in constant use for more than 70 years for vehicle access and

other ranching operations. The land surface is level, and has been heavily trafficked and disturbed for more than 70 years. Accordingly, the land surface currently is highly compacted, and drilling operations will not cause any significant additional disturbance. Thus, soil erosion is not expected to occur.

Only minor site leveling and grading may be done. Upon abandonment, the ground surface will be restored to the satisfaction of the surface landowner. Care will be exercised to avoid making any changes to drainage in the existing land surface.

3. Waste disposal

Portable sanitary facilities will be provided and maintained in accordance with federal and state health standards. Solid waste such as paper, cans, and packing materials will be collected at the site in an approved container and disposed of at an approved solid waste facility.

4. Ground water protection

All of the shallow ground water in the vicinity of the two proposed gradient holes is composed of geothermal water originating at depth and rising to near surface in the eastern portion of Section 7. The area has been studied and researched by many expert geologists and hydrologists for the past 40 years. Temperature measurements made in 1956 by Kintzinger, and in 1976 by Summers (See Exhibit "C") showed that the spreading geothermal fluid covers an area of about four square miles to the north and northwest of the greenhouse complex located in the eastern part of Section 7. (This greenhouse complex is depicted on Exhibit A.) Geothermal groundwater contains approximately 1,150 to 1,250 mg of dissolved minerals per liter of fluid.(See Exhibit "D" for typical chemical composition of geothermally associated groundwater).

Accordingly, the drilling program is highly unlikely to encounter more heavily mineralized geothermal fluid. Moreover, there are no fresh water zones that would be at risk of contamination from drilling operations.

All drilling fluids will be formulated from non-toxic components as defined by the U.S. Environmental Protection Agency. Drilling mud and fluids will be contained in open steel tanks or excavated lined sumps during the drilling phase.

All petroleum products, such as vehicle fuel and lubricants, will be stored in approved containers and equipment fuel tanks.

5. Clean air and noise standards.

Diesel or gasoline engines are used to power drilling machinery. Exhaust stacks on all power-generating equipment and vehicles will be equipped with mufflers. All equipment will be properly maintained and muffled to assure compliance with federal and state regulations.

Noise and equipment operation will be restricted to a maximum of a 12-hour drilling day. In addition, drilling operations are expected to be completed at each of the two drill sites within a 10-day period of time.

EMERGENCY CONTINGENCY PLAN

Overview

Types of emergency situations that could occur are fire, injury, drilling fluid spills, and uncontrolled blowout. Any emergency that might arise will be controlled by the driller and by the on-site Drilling Supervisor appointed by Lightning Dock Geothermal, Inc(LDG, Inc.). As necessary and appropriate, and as soon as operationally feasible, LDG, Inc. will notify all regulatory agencies of any significant emergency. Written documentation will be provided to the cognizant State and Federal agencies as soon as possible after the event.

Fires

The LDG, Inc. Drilling Supervisor will take every reasonable precaution to prevent, control, and suppress any fire on ranch land at and near the drill sites. Fire extinguishing equipment, water, and tools will be on site and will be made available as fire suppression and control

Injuries

Personnel will use first aid supplies available on site to render first aid. If needed, assistance will be requested from the Lordsburg medical facilities, and severely injured personnel can be evacuated by air ambulance to the more complete facilities in Silver City or Tucson.

Drilling Fluids Spills

Drilling fluids are composed of a nontoxic mixture of water, EPA-approved additives, and solid material used in drilling operations to lubricate and cool the drill bit and to carry drill cuttings out of the hole. Drilling fluids will be stored in open tanks at the drill site. Potential sources of drill fluid discharge are leakage from the tanks, or tanks overflow; the chances are minimal that either event would occur.

Fluid accidentally discharged by leakage or overflow will be contained and cleaned up.

Uncontrolled Blowout

As described previously in this document, there is a very remote likelihood that deeper drilling, especially in hole TG 12-7, could encounter subsurface temperatures higher than 150° F. For hole 52-7, because drilling with be done with heavy mud, there is little likelihood that the mud temperature would be higher than a bout 125 °f. Even so, however, if the drill stem intersects a higher temperature zone, heat build up will be detected very quickly and control measures to guard against uncontrolled blowout would be put into effect. The easiest control mechanism is water quench, and ample supplies of water will be available at the drill site.

The driller will maintain two water tankers, one of 1,200 gallons and one with 1,500 gallon capacity. The replenishment water point, consisting of a 14,000 gallon water storage tank, is located only about 300 feet from 52-7. In addition, coordination has been made with a second potential source, also located a few hundred feet away, where the storage capacity is 40,000 gallons.

List of Attachments

Exhibit "A": Hole location map

Exhibit "B": Hole diagrams

Exhibit "C": Mapped spread of geothermal water

Exhibit "D": Water quality for several wells

Exhibit "E": Temperatures for two wells.

EXHIBIT A Hole Location Map

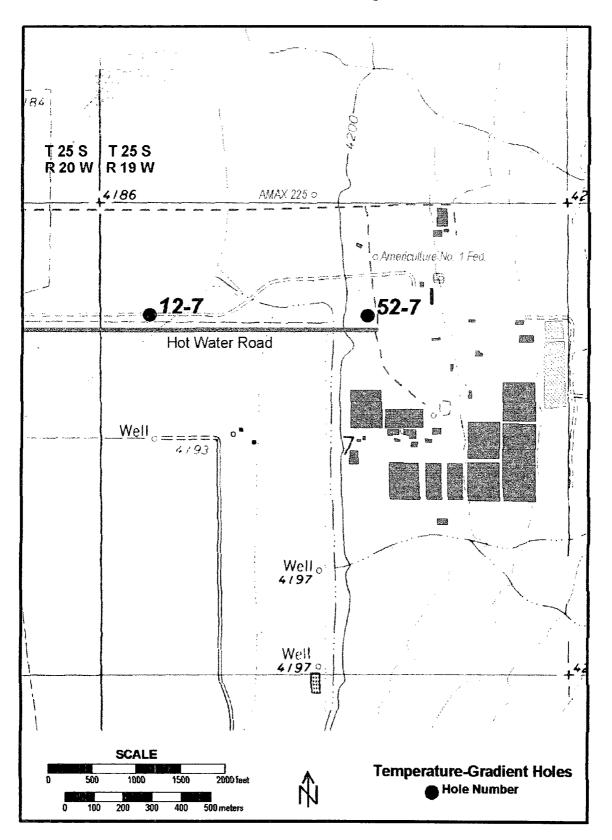
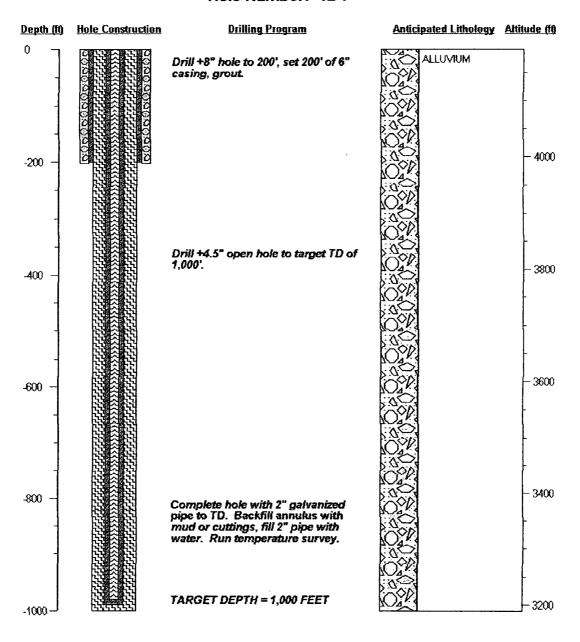


EXHIBIT B Hole Diagrams

GEOTHERMAL TEMPERATURE OBSERVATION HOLE

Lightning Dock KGRA, Animas Valley Hidalgu Cuunty, New Mexicu

Hole Number: 12-7



GEOTHERMAL TEMPERATURE OBSERVATION HOLE

Lightning Dock KGRA, Animas Valley Hidalgo County, New Mexico

Hole Number: 52-7

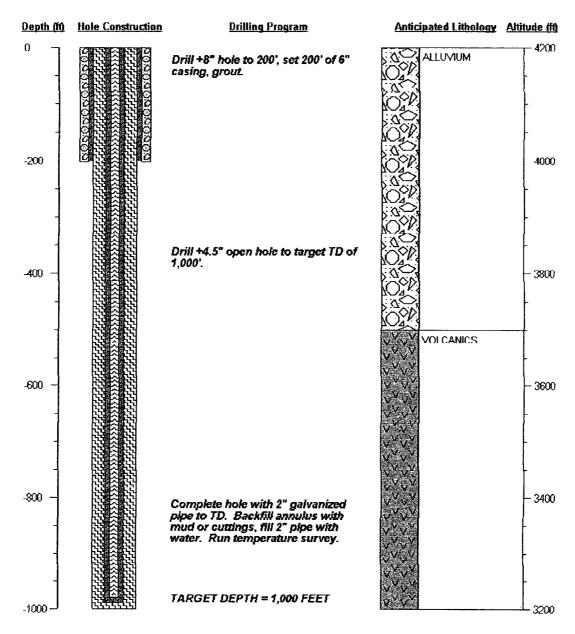
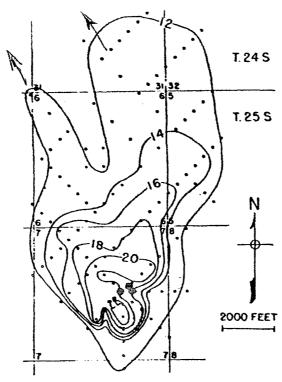
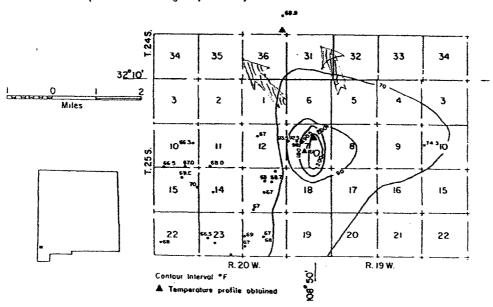


EXHIBIT "C"

Mapped spread of geothermal fluid



TEMPERATURE AT A DEPTH OF ONE METER AROUND HOT WELLS (in Kintzinger, 1956)

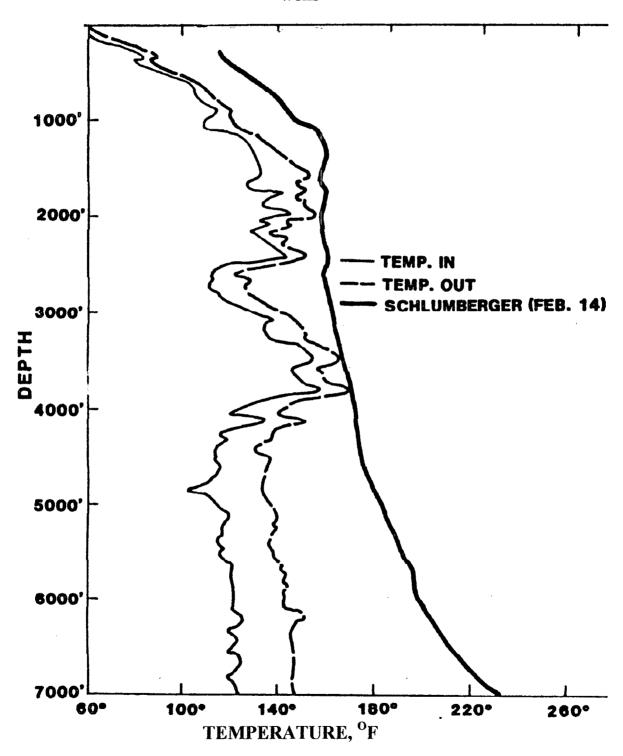


MAP OF THE THERMAL ANOMALY IN THE ANIMAS VALLEY, SHOWING TEMPERATURES OF DISCHARGING WATER AND LOCATIONS (in Summers, 1976)

EXHIBIT DWater Quality: For Typical Geothermal Groundwater

	Burgett	McCants	Folks	Folks	AmeriCultur
Dissolved	Hot well	Hot well	Hot well	Hot well	Fed.No.1
Mineral	102 °C	98 °C	54 °C	46 °C	88 °C
рН	7.8	8.1	7.0	8.3	7.38
Cl	112	84	130	87	81.2
F	15.0	12.0	7.8	10.1	0.8
HCO ₃	90	80	93	40	119
SiO ₂	145	130	99	63	113.5
SO ₄	400	460	700	265	394.6
Na	340	330	420	400	255.3
K	20	19	26	6	9.8
Ca	20	21	70	11	20.7
Mg	0.3	0.1	5	2	
Li	0.5	0.5	0.8	0.4	
В	0.4	0.3	0.2	1.0	
Mo ug/l	N/A	25	30	N/A	
NH ₃	0.12	0.12	0.2	0.1	
Total					
dissolved	1143	1137	1552	1245	1092
solids					

EXHIBIT "E"
Temperature curves for two
wells



Mud Temperatures for Well 55-7

EXHIBIT "E"Temperature curves for two wells

