

#1 30-045-~~20762~~

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#4A 30-045-22525

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit NW Sec. 12 Twp 30 Rng 10Name of Well/Wells or Pipeline Serviced GRAMBLING C #4A, STICKLE #1

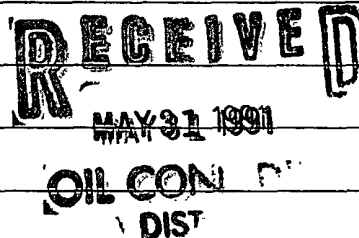
cps 1229w

Elevation 6544' Completion Date 6/21/78 Total Depth 480' Land Type* N/ACasing, Sizes, Types & Depths N/AIf Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 150' - 160'Depths gas encountered: N/AType & amount of coke breeze used: N/ADepths anodes placed: 445', 435', 425', 415', 405', 395', 385', 375', 365', 355'Depths vent pipes placed: N/AVent pipe perforations: N/ARemarks: gb #1

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto). ☐

Strike #1

Completion Date 6-21-78

Well Name		Location		CPS No.	
GRAMBLING "C" #4A		NW12-30-10		1229W	
Type & Size Bit Used		Total Drilling Rig Time		Work Order No.	
6 3/4"				57213-21	
Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used	
480 - 46 STD					
Anode Depth					
# 1 445	# 2 435	# 3 425	# 4 415	# 5 405	# 6 395
# 7 385	# 8 375	# 9 365	# 10 355		
Anode Output (Amps)					
# 1 2.4	# 2 3.0	# 3 3.0	# 4 2.8	# 5 2.7	# 6 2.8
# 7 3.0	# 8 2.7	# 9 2.2	# 10 1.4		
Anode Depth					
# 11	# 12	# 13	# 14	# 15	# 16
# 17	# 18	# 19	# 20		
Anode Output (Amps)					
# 11	# 12	# 13	# 14	# 15	# 16
# 17	# 18	# 19	# 20		
Total Circuit Resistance	No. 8 C.P. Cable Used		No. 2 C.P. Cable Used		
Volts 9.0	Amps 9.0	Ohms 1.0			

Remarks: STATIC = .86 ALL GRAPHITE ANODES
WATER AT 150 T 160 ESTIMATE 3-4 GAL PER MIN

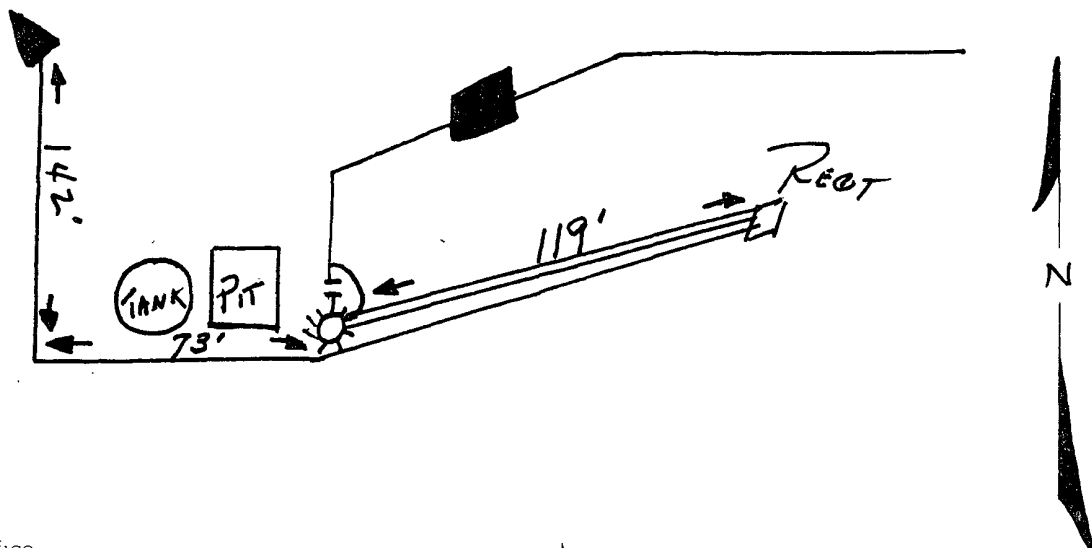
DITCH & 1 WIRE = 334'
EXTRA WIRE = 238'
40-16 RECT & METER POLE
HOLE = -35' GND BED

All Construction Completed

BT

(Signature)

GROUND BED LAYOUT SKETCH



DISTRIBUTION:

WHITE - Division Corrosion Office
YELLOW - Area Corrosion Office
PINK - Originator File

6544

El Paso Natural Gas Company
ENGINEERING CALCULATIONSheet 6 of 6
Date: 6-
By: BT
File:

57213-21

1229 W STATIC = .2
GRAMBLING "C" #4A NW 12-30-10
WATER AT 150' TO 160' DRILLED TO 480' LOGGED TO 465'
ESTIMATE 3-4 GAL MIN
465' TD HOLE - 35' - UNABLE TO GET WATER SAMP

MW		gals/mol
16.04	C ₁	6.4
30.07	C ₂	10.12
44.10	C ₃	10.42
58.12	iC ₄	12.38
58.12	nC ₄	11.93
72.15	iC ₅	13.85
72.15	nC ₅	13.71
86.18	iC ₆	15.50
86.18	C ₆	15.57
100.21	iC ₇	17.2
100.21	C ₇	17.46
114.23	C ₈	19.39
28.05	C ₂	9.64
42.08	C ₃	9.67

ALL GRAPHITE ANODES
2" x 48"

100	60	20	1.3	④
			1.0	
			1.4	③
10	70	30	1.5	
			1.3	②
20	80	40	1.2	
			1.0	①
30	90	50	.9	
			.8	
40	300	60	.8	
			.6	
50	10	70		
60	20	80		
70	30	90		
80	40	500		

MW	MISC	gals/mol
32.00	O ₂	3.37
28.01	CO	4.19
44.01	CO ₂	6.38
64.06	SO ₂	5.50
34.08	H ₂ S	5.17
28.01	N ₂	4.16
2.02	H ₂	3.38

90	50	.6	⑩
200	60	.9	⑨
		1.3	
10	70	1.4	⑧
		1.3	
20	80	1.4	⑦
		1.6	
30	90	1.3	⑥
		1.3	
40	400	1.5	⑤
		1.4	
50	10	1.4	

4451 = 1.2
4352 = 1.4
4253 = 1.4
4154 = 1.8
4055 = 1.6
3956 = 1.4
3857 = 1.6
3758 = 1.6
3659 = 1.4
35510 = 1.0

$$9.0 \text{ V } 9.0 \text{ A} = 1.0 \Omega$$

[illegible]

SIGNED: Toolpusher

Company Supervisor

442

E

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO

Operator MERIDIAN OIL CO. Location: Unit C Sec. 12 Twp. 30 Rng. 10

Name of Well/Wells or Pipeline Serviced Grambling C # 4 A & Stickle # 1

CDS 1229w

Elevation 6544' Completion Date 7/27/90 Total Depth 460 Land Type N/A

Casing Strings, Sizes, Types & Depths Set 20 ft. 8" PVC CASING

If Casing Strings are cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

Cemented bottom 60 ft. and sealed offgas and water zone

Depths & thickness of water zones with description of water: Fresh, Clear

Salty, Sulphur, Etc. Water at 60 ft. got a sample

Depths gas encountered: Hit water and gas at 450 to 460

Ground bed depth with type & amount of coke breeze used:

2300 lbs of Ashbury Petroleum Coke

Depths anodes placed: 390, 380, 370, 360

Depths vent pipes placed: 400 ft.

Vent pipe perforations: Perforated 340 ft.

Remarks: gb #2

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of a logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto) ☐ Gd. Bed #2 Completion Date 7-27-90

CPS #	Well Name, Line or Plant	Work Order #	Static:	Ins. Union Check
1229-W	Grambling C #4A STICKLE #1			☒ Good ☐ Bad
Location	Anode Size	Anode Type	Size Bit	
C12-30-10	2" X 60"	ANOTAC	6 3/4	
Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used
460	395 400		2300#	
Anode Depth				
#1 390	#2 380	#3 370	#4 360	#5
#6	#7	#8	#9	#10
Anode Output (Amps)				
#1 3.3	#2 4.1	#3 4.2	#4 3.0	#5
#6	#7	#8	#9	#10
Anode Depth				
#11	#12	#13	#14	#15
#16	#17	#18	#19	#20
Anode Output (Amps)				
#11	#12	#13	#14	#15
#16	#17	#18	#19	#20
Total Circuit Resistance	No. 8 C.P. Cable Used		No. 2 C.P. Cable Used	
Volts 12.4	Amps 7.6	Ohms 1.6		30'

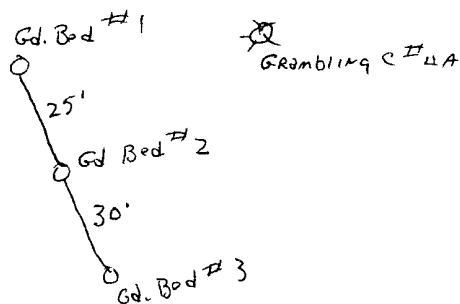
Remarks: DRILLER SAID HIT WATER AT 60', GOT WATER SAMPLE. HIT WATER AND GAS AT 450 TO 460' CEMENTED BOTTOM 60' AND SEALED OFF GAS AND WATER ZONE. DID NOT HAVE ROOM FOR 10 ANODES IN Gd. Bed #3 SO RAN 4 ANODES IN Gd. Bed #2. HOLE HAD FILLED UP TO 37'. SO WE HAD TO RIG UP RIG AND CLEAR OUT HOLE. DRILLED TO 410' LOGGED 400' RAN 400' OF 1" V PIPE PERFORATED 340' OF VENT PIPE. SET 20' OF 8" PVC CASING.

Rectifier Size: _____ V _____ A
 Addn'l Depth: _____
 Depth Credit: _____
 Extra Cable: 5
 Ditch & 1 Cable: 25'
 25' Meter Pole: _____
 20' Meter Pole: _____
 10' Stub Pole: _____
 Junction Box: 1

All Construction Completed

Willis Knight Jr.
(Signature)

GROUND BED LAYOUT SKETCH



6544

BURGE CORROSION SYSTEMS, INC.

**P.O. BOX 1359 - PHONE 334-6141
AZTEC, NEW MEXICO 87410**

COMPANY MERIDIAN OIL

DAILY DRILLING REPORT

7-23

1890

WELL NAME:

WELL NUMBER:

SECTION:

TOWNSHIP:

FRANCE

GRAMBLING

C 4 A

WATER AT:

FEET:

HOLE MADE:

50

460' #1

435' #2

DESCRIPTION OF FORMATION

[illegible]

REMARKS:

REMARKS: Hit WATER AT 50' Hit GAS AT 450' TRIED TO CEMENT
off with 12 SACKS OF CEMENT - PLUS WATER SAMPLE 20 hrs - Cementing
Bottom gas zone - ^{ABANDONED} ~~LEFT~~ HOLE AFTER CEMENTING 2 TIMES

Driller

Tool Dresser

NOTE: DRILLED NEW HOLE to 435' placed 6 anodes
REENTERED HOLE #1 60' CEMENT PRESENT cleaned to 400'
LEAVING CEMENT INTACT. placed 4 anodes in hole #1

CONSTRUCTION LOGGING READINGS

Meridian Oil

CPS #: 1229-W WELL NAME: Grambling C. 4A LOCATION: C12-30-10 DATE: 7-25-90 #2

TOTAL VOLTS: 12.4 TOTAL AMPS: 7.6 OHMS RESISTANCE: 1.6

Gd. Bed #2

Q. Bed - 2

												ANODE READINGS			
DEEP	LOG	ANODE	DEEP	LOG	ANODE	DEEP	LOG	ANODE	DEEP	LOG	ANODE	NO.	DEPTH	NO COKE	WITH COKE
ANODE	NO.	ANODE	NO.	ANODE	NO.	ANODE	NO.	ANODE	ANODE	NO.	ANODE				
5			185	.70		365	1.4		545			1	390	2.6	3.3
10			190	.60		370	1.70	3	550			2	380	2.1	4.1
15			195	.50		375	1.9		555			3	370	2.4	4.2
20			200	.50		380	2.0	2	560			4	360	1.9	3.0
25			205	.50		385	2.0		565						
30			210	.50		390	2.0	1	570						
35			215	.50		395	2.0		575						
40			220	.40	TD	400			580						
45			225	.40		405			585						
50			230	.40		410			590						
55			235	.30		415			595						
60	.80		240	.40		420			600						
65	1.0		245	.50		425			605						
70	2.1	7	250	.50		430			610						
75	2.2		255	.50		435			615						
80	1.6	5 1/2	260	.50		440			620						
85	.80		265	.50		445			625						
90	.60		270	.50		450			630						
95	.40		275	.50		455			635						
100	.50		280	.50		460			640						
105	.70		285	.60		465			645						
110	.70		290	.60		470			650						
115	.60		295	.60		475			655						
120	.50		300	.50		480			660						
125	.50		305	.50		485			665						
130	.60		310	.40		490			670						
135	.50		315	.40		495			675						
140	.40		320	.50		500			680						
145	.50		325	.60		505			685						
150	.80		330	.70		510			690						
155	1.2		335	.70		515			695						
160	1.0	5	340	.70		520			700						
165	.80		345	.70		525			705						
170	.70		350	.70		530			710						
175	.60		355	.80		535			715						
180	.60		360	1.1	4	540			720						

REMARKS: DRILLER HIT Sand & Gas at 460'. Mixed 12 Sacks Cement Filled 30' of hole. ON 7-23-90. 7-24-90 CEMENT did NOT seal hole. DRILLED 10' of cement and mixed 8 Sacks of cement and 2 Sacks of Barite. 7-25-90 CEMENT Seemed to seal hole, Hole is NOT Bubbling and can NOT smell gas. Logged hole did not have enough room for 10 Anodes. Ran 4 Anodes in this hole. COKE-BREEZE APPROX. 40' above TOP ANODE.

API WATER ANALYSIS REPORT FORM

Laboratory No.

Company MERIDIAN OIL INC		Sample No. 3	Date Sampled 7/23/90	
Field	Legal Description C-12-30-10	County or Parish		State
Lease or Unit GRAMBLING C	Well #4A	Depth 50'	Formation	Water, B/D
Type of Water (Produced, Supply, etc.) Ground bed		Sampling Point		Sampled By

DISSOLVED SOLIDS

CATIONS

	mg/l	me/l
Sodium, Na (calc.)	<u>18</u>	<u>3.4</u>
Calcium, Ca	<u>353</u>	<u>17.6</u>
Magnesium, Mg	<u>5</u>	<u>0.4</u>
Barium, Ba		

OTHER PROPERTIES

pH	<u>9.83</u>
Specific Gravity, 60/60 F.	<u>1.0043</u>
Resistivity (ohm-meters) _____ F.	<u>5.30</u>

Total Dissolved Solids (calc.)

1410

ANIONS

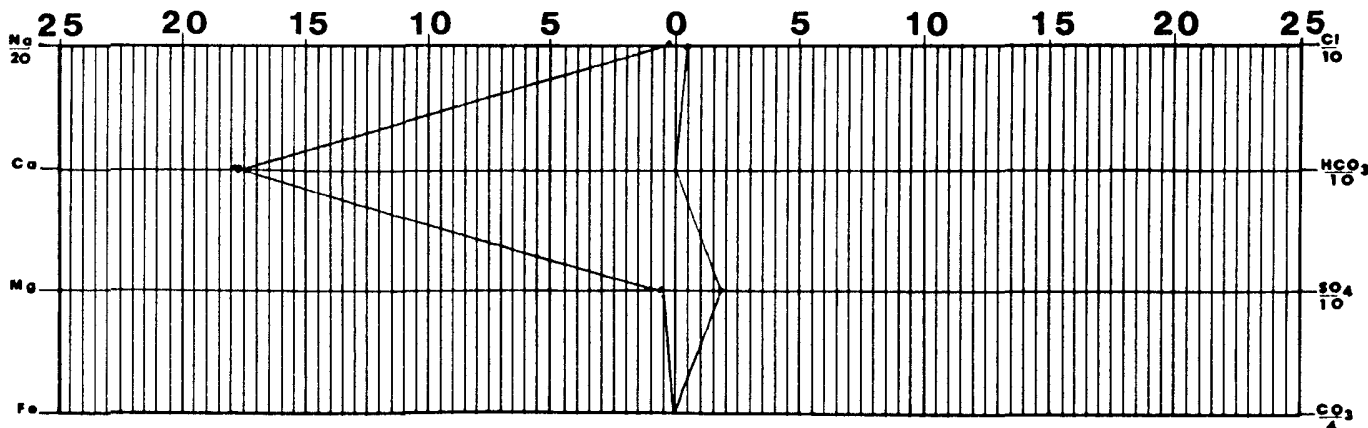
Chloride, Cl	<u>142</u>	<u>4.0</u>
Sulfate, SO_4	<u>812</u>	<u>16.9</u>
Carbonate, CO_3	<u>10</u>	<u>0.5</u>
Bicarbonate, HCO_3	<u>0</u>	

Iron, Fe (total)

Sulfide, as H_2S

0

REMARKS & RECOMMENDATIONS:



Date Received 8/1/91	Preserved	Date Analyzed 8/1/91	Analyzed By NDH
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TECH, Inc.
333 East Main
Farmington
New Mexico
87401
505/327-3311

843

8 M

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO

Operator MERIDIAN OIL CO. Location: Unit C Sec. 12 Twp 30 Rng 10

Name of Well/Wells or Pipeline Serviced Grambling C # 4 A & Stickle # 1

cps 1229w

Elevation 6544' Completion Date 7/27/90 Total Depth 435 Land Type N/A

Casing Strings, Sizes, Types & Depths 20 ft. 8" PVC CASING

If Casing Strings are cemented, show amounts & types used N/A

20 ft. PVC

If Cement or Bentonite Plugs have been placed, show depths & amounts used N/A

Depths & thickness of water zones with description of water: Fresh, Clear, Salty, Sulphur, Etc. Water at 50 ft.

Depths gas encountered: N/A

Ground bed depth with type & amount of coke breeze used: 405 ft. 2300 ft. of Ashbury Petroleum Coke used.

Depths anodes placed: 400 ft. 390. 380. 370. 360. 350

Depths vent pipes placed: 405 ft. 1" vent pipe

Vent pipe perforations: 345 ft. perforated

Remarks: gb #3

RECEIVED
MAY 31 1991
OIL CON. DIV
DIST. 3

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If Federal or Indian, add Lease Number.

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto) ☒

Gd. Bed # 3

Completion Date 7-27-90

CPS #		Well Name, Line or Plant		Work Order #		Static:		Ins. Union Check	
1229-W		GRAMBLING C # 4A						☒ Good ☐ Bad	
		STICKLE # 1							
Location C12-30-10		Anode Size: 2" X 60"		Anode Type: ANOTEC		Size Bit: 6 3/4"			
Depth Drilled 435'		Depth Logged 405'		Drilling Rig Time		Total Lbs. Coke Used 2300 #		Lost Circulation Mat'l Used	
Anode Depth									
# 1 400	# 2 390	# 3 380	# 4 370	# 5 360	# 6 350	# 7	# 8	# 9	# 10
Anode Output (Amps)									
# 1 2.2	# 2 3.7	# 3 3.5	# 4 3.2	# 5 3.6	# 6 3.0	# 7	# 8	# 9	# 10
Anode Depth									
# 11	# 12	# 13	# 14	# 15	# 16	# 17	# 18	# 19	# 20
Anode Output (Amps)									
# 11	# 12	# 13	# 14	# 15	# 16	# 17	# 18	# 19	# 20
Total Circuit Resistance				No. 8 C.P. Cable Used		No. 2 C.P. Cable Used			
Volts 12.4		Amps 9.2		Ohms 1.3					

Remarks: DRILLER said water at 50'. Drilled hole to 435' Logged 405'. ONLY had...

Room for 6 ANODES. Ran 405' of 1" VENT P.P.R. PERFORATED 345' of VENT PIPE.

Set 20' of 8" PVC CASING

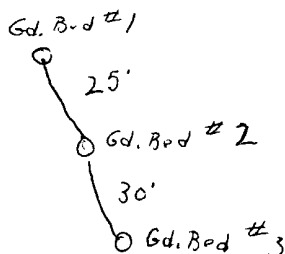
(NOTE) INSTALLED 4 ANODES IN Gd. Bed # 2

Rectifier Size: _____ V _____ A
 Addn'l Depth: _____
 Depth Credit: _____
 Extra Cable: _____ 85'
 Ditch & 1 Cable: _____ 55'
 25' Meter Pole: _____
 20' Meter Pole: _____
 10' Stub Pole: _____
 Junction Box: _____ 1

All Construction Completed

Willis Knight Jr.
(Signature)

GROUND BED LAYOUT SKETCH



GRAMBLING C # 4A

STICKLE # 1

6544

CONSTRUCTION LOGGING READINGS

Meridian Oil

CPS #: 1229-W WELL NAME: Grubling C4A LOCATION: C12-30-10 DATE: 7-27-90

TOTAL VOLTS: 12.4 TOTAL AMPS: 9.2 OHMS RESISTANCE: 1.3

Gd. Bod #3

												ANODE READINGS			
DEEP	LOG ANODE	ANODE NO.	DEEP	LOG ANODE	ANODE NO.	DEEP	LOG ANODE	ANODE NO.	DEEP	LOG ANODE	ANODE NO.	NO.	DEPTH	NO COKE	WITH COKE
5			185			365	1.6		545			1	400	1.6	2.2
10			190			370	1.5	4	550			2	390	1.9	3.7
15			195			375	1.7		555			3	380	1.8	3.5
20			200			380	1.6	3	560			4	370	1.8	3.2
25			205			385	1.5		565			5	360	2.2	3.6
30			210			390	1.3	2	570			6	350	1.5	3.0
35			215			395	1.2		575						
40			220			400	1.4	1	580						
45			225			405	1.4		585						
50			230			410			590						
55			235			415			595						
60			240			420			600						
65			245			425			605						
70			250			430			610						
75			255			435			615						
80			260			440			620						
85			265			445			625						
90			270			450			630						
95			275			455			635						
100			280			460			640						
105			285			465			645						
110			290			470			650						
115			295			475			655						
120			300			480			660						
125			305			485			665						
130			310			490			670						
135			315			495			675						
140			320			500			680						
145			325			505			685						
150			330			510			690						
155			335			515			695						
160			340	1.70		520			700						
165			345	1.4		525			705						
170			350	1.56		530			710						
175			355	1.6		535			715						
180			360	1.65		540			720						

REMARKS: Moved 30' SE. of hole #1. Drilled #2 hole to 435'
 Deller said hit water 50'. Drilled to 435'. Hole filled to
 405'. Installed 6 Anodes in this hole and 4 Anode
 in 1st. Hole. Will install 2 Jet. Boxes Run #2
 cable Between them. Covered #6 Anode approx.
 25' of coke