MAGCOBAR DIVISION, DRESSER INDUSTRIES, INC. 2250 E. WARDLOW ROAD, P. O. BOX 7684, LONG BEACH, CALIFORNIA 90807 (213) 426-6127

22 February 1980

Mapco Geothermal
P. O. Box 646
El Centro, CA 92243
Attn: Curley Grimlie

Subject: CURRIER #2: Surface Hole: 17½" bit to 3406'

To spud the well, mud was used from storage from Currier #1. The mud weight was 9.0#/gal. so this mud was watered back to reduce weight to 8.7 and also to help condition for drilling out cement in conductor pipe which was set to 95'. Because of the water-back, it was necessary to add Gel to keep the viscosity above 45 sec/qt after drilling out cement. After about 700', the well was directionally drilled. The large size of this portion of the well contributed to a slight solids buildup (up to 6-7% total solids) which brought the weight up to 9.5#/gal. The only way available to lower the weight to Mapco's specifications (below 8.9 ppg) was to discharge some mud, either to the sump or store in Baker Tanks, and add water.

The result of this was a full sump, full Baker Tanks and a 9.0 lb. mud in the system. The formation drilled in the first 3000' contained good mud-making clay with some Lignite stringers which made a fine mud, although a little heavy. I feel that in this portion of the well it is not necessarily important to keep weight and solids down to an extremely low level. This portion is cased off and cemented anyway.

A 45 ± viscosity was maintained with inverted flow properties for good hole cleaning. There was no fill or other hole problems on this portion of the well.

Intermediate Hole: 12¼" bit to 10,067' (13-3/8" csg to 3406')

Even with the slow drilling, it was difficult just keeping the mud weight at 9.0, much less below it. Water was constantly added at the flowline and through the centrifuge, necessary in hot wells to prevent dehydration and solids buildup. Mud weight was controlled by shipping and watering back. After a rock bit was put back on at about 5500', it was still necessary to control excess weight by shipping and watering back. This resulted in a need for large additions of Gel and Salt Gel to keep viscosity up. During this period the centrifuge was discharging very wet solids which, when dried, appeared to be (Salt Gel) not salt gel.

Analysis of the solids, a copy of which is included at the end of this report, showed no Attapulgite (Salt Gel) to be discharging from the solids equipment. Coulter Counter particle size distribution results though, showed a high concentration of 0.9-2.0 micron-sized particles (fines) in the mud (see Sample "D"), thus the higher than desired mud weight. We had a fines buildup on Currier #1 also. Sample "C", Centrifuge Effluent Kept in the System, shows that 90% of the solids in the effluent were below 3.5 microns - this was being kept in the active system, except when discharged to the sump.

Problems encountered in this part of the hole were pulling tight on connections and sticking upon pulling out of the hole. This was due to the directional nature of the well, which had a few dog-legs. Wash-outs in drill pipe and drill collars occurred frequently due to various factors-possibly from the drilling procedure plus the added shock of watering the mud back so many times and drastically cooling off the inside of the drill string.

For the stuck pipe, Diesel and Pipe Lax were spotted and every time the pipe immediately pulled free. This happened three times and was a contributing factor to getting the weight down to specifications. Keeping it down, however, was not totally due to the diesel, as after a few days, it disappeared from the system. Slow drilling rate in the final portion of the well allowed the solids equipment to keep up with the drilled solids enough to keep the weight down to 8.8 ppg.

The original Mud Program recommended the use of Resinex in the final 4000' of the well. Resinex is a mud stabilizer and reduces the temperature gelation. Good mud properties and lack of mud-related hole problems kept me from recommending its use until casing point was reached. The mud would not be circulated for some time and I felt the Resinex would aid in helping logs and casing going all the way to bottom, which they did with no problems. A minimum 2#/bbl Resinex was added while circulating for logs.

Bottom Hole: 8½" bit to 10,460' (9-5/8" csg to 10,067')

Mapco decided at this point to drill a little deeper. After drilling out of the casing, they drilled until the bit wore out. Other than pulling tight in casing, no problems occurred in the final drilling and mud weight was kept at 8.8-8.9 ppg without need of shipping and watering back.

I recommend some changes in the future on upcoming Mapco wells; that the same type of mud should be used and that a shearing device or a sidewinder hopper be added to aid in shearing Salt Gel for helping viscosity. The sidewinder hopper would be preferable as the existing hopper clogs too easily and does not allow fast, efficient additions of most materials. Also, design of the pits does not permit effective placement of a shearing device. A convenient method of shipping mud back from storage should also be utilized.

For better solids and weight control I believe a mud cleaner (a desilter with fine-mesh vibrating screens for drying solids to be discharged to sump) should be used instead of the existing desilter. At present, the only piece of equipment discharging solids is the centrifuge which processes only 130 gpm at peak efficiency. We were circulating over 400 gpm for most of the well.

Coulter Counter results showed that the centrifuge just could not keep up. A mud cleaner would help by getting rid of a large amount of solids and allow the centrifuge to take out what it is designed to take out. An added benefit of a mud cleaner is that fines will tend to adhere to the larger solids discharged over the vibrating fine-mesh screen. When fines are found to be built up, they can be discharged to the sump through the centrifuge effluent underflow. This will add to the efficiency of the solids equipment and probably keep the sump from having to be pumped out almost every day. It could not be run as a closed system very often.

I appreciate the opportunity to have worked with Mapco, Geosource and Republic personnel, and look forward to our meeting with Mapco and Geosource to discuss possible changes in the circulating system. Thank you and I look forward to future work with everyone involved.

John Teasley
Engineer

MAGCOBAR DIVISION, DRESSER INDUSTRIES, INC. 2250 E. WARDLOW ROAD, P. O. BOX 7684, LONG BEACH, CALIFORNIA 90807 (213) 426-6127

PRODUCT USE BREAKDOWN

Cypan	25 %
Salt Gel	20 %
Tannathin	12 %
Resinex	9 %
Caustic Soda	7 %
Pipe Lax	4.2 %
Bit Lube II	3.8 %
Sodaphos	3.7 %
Magcogel	3.0 %
D-D	2.7 %
LCM	1.5 %
Aluminum Sterate	0.5 %
Pallets	0.5 %
Trucking	1.6 %
State Sales Tax	5.5 %
	100 %

LABORATORY DATA

research & engineering department
technical services laboratory

Maccobar DRILLING FLUID SERVICES — DRESSER

to: Bill Miller
date: January 31, 1980
from: Tech Service Laboratory
subject: MAPCO
CURRIER #2
IMPERIAL VALLEY, CALIFORNIA

Copy to: Jack Heller
John Teasley
Harold Krause
Jim Sampey
Jim Bruton

Please find attached Coulter Counter and Quality Control Laboratory Data on above captioned well. Jim Bruton hand carried a copy to John Teasley. Also find attached an X-Ray report on Sample B which is the discharge sample that indicates there is no attapulgite clay present.

Regards,

HM

Harry Monk

Mel

Mel Hunter

HM/at
Attachments

Magcobar DRESSER

LABORATORY REPORT
CLAY ANALYSIS

Dresser Minerals DRESSER

PM-268-B

REPORT FOR:	SAMPLE RECEIVED NO.	PLANT	DATE
Harry Monk	SR-0397		1-24-80

MAGCOGEL ☐ SALT GEL ☒ OTHERS ☐

IDENTIFICATION	YIELD	APP. VIS.	PL. VIS.	YIELD POINT	pH	FLUID LOSS	% SAND	% MOIST.		°C Temp			DATE TESTED	TEST BY / VERIF. BY
Mapco Currier #2, Imperial, CA														
Houston		24	16	16	9.7		4.7			34				KR

REMARKS

DISTRIBUTION

PLANT RESULTS CERTIFIED	PRODUCTION TONS	CHEMICAL TREATMENT TYPE	CHEMICAL TREATMENT AMOUNT

CHECKED BY

APPROVED

PRINTED IN U.S.A.

Magcobar
DRILLING FLUID SERVICES
OILFIELD PRODUCTS DIVISION
Dresser Industries, Inc.

COULTER COUNTER® PARTICLE SIZE

RECEIVING NO. 5969 A thru D DATE 1-24-80

SAMPLE DESCRIPTION
Mapco
Currier # 2
Imperial, California

RECEIVED FROM
Mel Hunter

Mud Wts.
A 9.0 #/gal
B 9.2 #/gal Solids from Cards
C 9.2 #/gal ~~Bozich~~
D 9.2 #/gal

± I A			ELECTROLYTE	Phosphate
CALIB. A			CPS	
APERTURE DIA.	70	200	CI.	

Volume Mean μ^3	Base Line Diameter μ	Channel (W)		Mean Dia. μ	Vol %	Cum %		Vol %	Cum %
.00575	.198			.224	Surface				
.0115	.250			.283	~~5969~~ - A			5969 - B	
.0231	.315			.356					
.0462	.397			.450				Discharge	
.0925	.500			.561					
.1851	.630			.707					
.3702	.794	1		.891	6.6	0.9			
.7405	1.00	2		1.12	7.9	5.5			
1.481	1.26	3		1.42	9.3	13.3			
2.962	1.59	4		1.78	8.8	22.4			
5.924	2.00	5		2.24	9.0	31.1			
11.85	2.52	6	1	2.83	9.4	40.0		2.6	0.9
23.70	3.17	7	2	3.56	8.8	49.2		4.9	1.6
47.39	4.00	8	3	4.50	8.3	58.0		6.7	6.4
94.78	5.04	9	4	5.67	8.0	66.2		7.1	12.9
189.6	6.35	10	5	7.14	8.1	74.3		7.9	20.0
379.1	8.00	11	6	9.00	6.9	82.3		8.8	27.9
758.3	10.08	12	7	11.3	5.6	89.2		8.6	36.6
1516.	12.7	13	8	14.3	2.6	94.8		8.4	45.2
3033.	16.0	14	9	18.0	1.9	97.5		7.3	53.5
6066.	20.2	15	10	22.7 ✓	0.5	99.5		7.1	60.9
12.13×10^3	25.4	16	11	28.5	0	100.0		7.0	67.9
24.27×10^3	32.0		12	36.0				7.5	75.0
48.54×10^3	40.3		13	45.4				6.2	82.5
97.18×10^3	50.8		14	57.2				4.8	88.2
194.4×10^3	64.0		15	72.0				4.2	93.6
388.7×10^3	80.6		16	90.5				2.1	97.9
777.4×10^3	101.6			114.0					
1.55×10^6	128.0			143.6					
3.11×10^6	161.0			180.8					

REMARKS:
XC: Mel Hunter
Finis Turner

Bob Lockhart

BY Morris Cordova

APPROVED

Magcobar
DRILLING FLUID SERVICES
OILFIELD PRODUCTS DIVISION
Dresser Industries, Inc.

COULTER COUNTER® PARTICLE SIZE

RECEIVING NO. 5969 A thru D DATE 1-24-80

SAMPLE DESCRIPTION	
Mapco	
Currier # 2	
Imperial, California	
RECEIVED FROM Mel Hunter	

± I A			ELECTROLYTE	phosphate
CALIB. A			CPS	
APERTURE DIA.	70		CI	

Volume Mean μ^3	Base Line Diameter μ	Channel (W)		Mean Dia. μ	Vol %	Cum %		Vol %	Cum %
.00575	.198			.224					
.0115	.250			.283	5969 - C			5969 - D	
.0231	.315			.356				Suction	
.0462	.397			.450	Underflow			Pit	
.0925	.500			.561					
.1851	.630			.707					
.3702	.794	1		.891	15.6	0.9		8.6	0.9
.7405	1.00	2		1.12	19.7	14.2		9.6	7.5
1.481	1.26	3		1.42	23.2	33.3		11.2	16.8
2.962	1.59	4		1.78	18.7	55.9		10.2	27.8
5.924	2.00	5		2.24	11.9	74.3		9.5	37.8
11.85	2.52	6		2.83	4.5	86.0		8.7	47.3
23.70	3.17	7		3.56	1.8	90.5		7.1	55.8
47.39	4.00	8		4.50	1.1	92.2		5.6	62.8
94.78	5.04	9		5.67	0.9	93.3		5.0	68.4
189.6	6.35	10		7.14	0.8	94.1		5.0	73.4
379.1	8.00	11		9.00	0.7	94.9		4.8	78.4
758.3	10.08	12		11.3	0.8	95.6		4.8	83.1
1516.	12.7	13		14.3	1.1	96.3		3.6	88.0
3033.	16.0	14		18.0	0.4	97.4		3.7	91.7
6066.	20.2	15		22.7	0.5	97.7		2.5	95.4
12.13×10^3	25.4	16		28.5	1.9	98.2		2.0	98.0
24.27×10^3	32.0			36.0					
48.54×10^3	40.3			45.4					
97.18×10^3	50.8			57.2					
194.4×10^3	64.0			72.0					
388.7×10^3	80.6			90.5					
777.4×10^3	101.6			114.0					
1.55×10^6	128.0			143.6					
3.11×10^6	161.0			180.8					

REMARKS:

XC: Mel Hunter

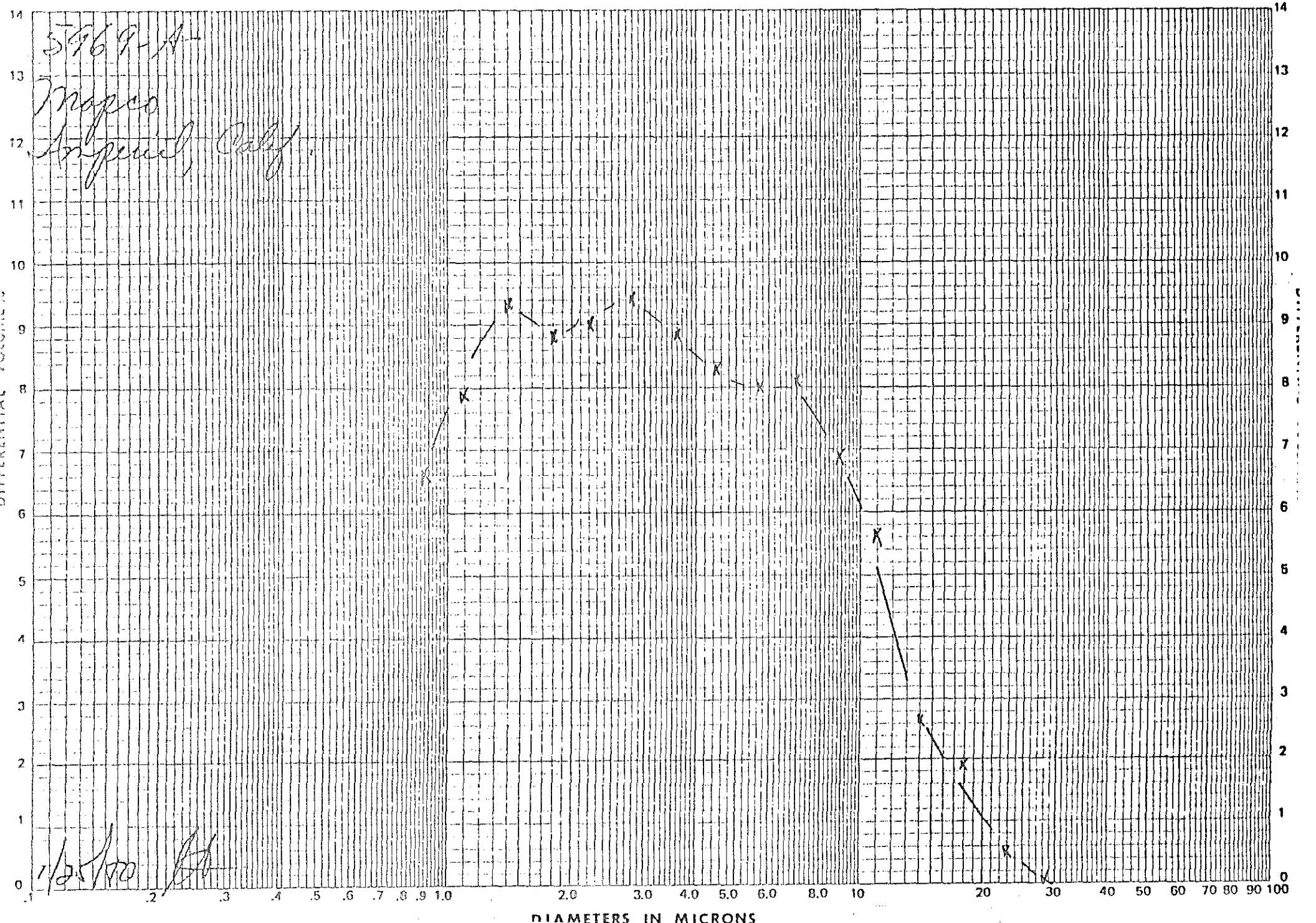
Finis Turner

Rob Lockhard

BY Morris Cordova

APPROVED

PARTICLE SIZE



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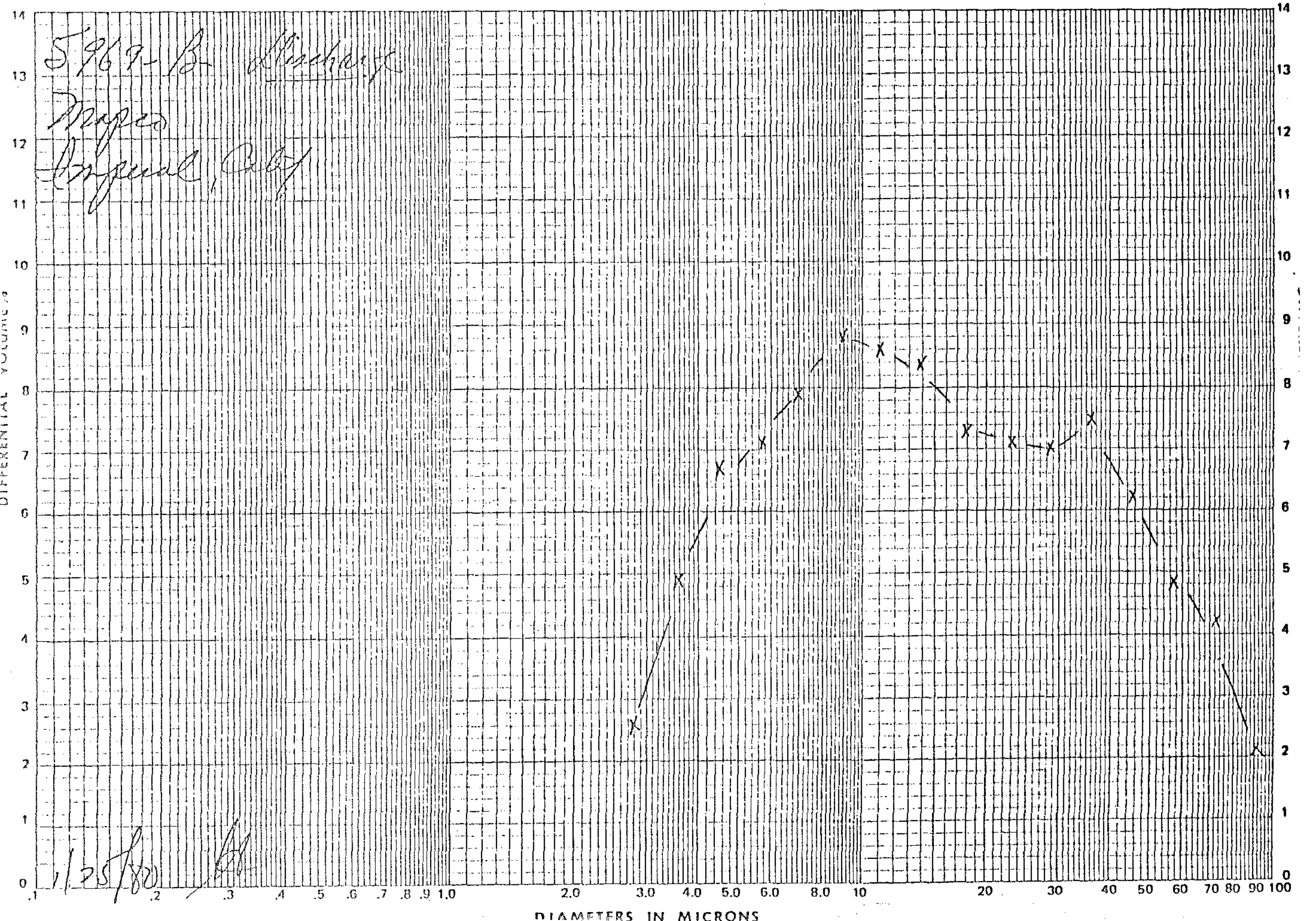

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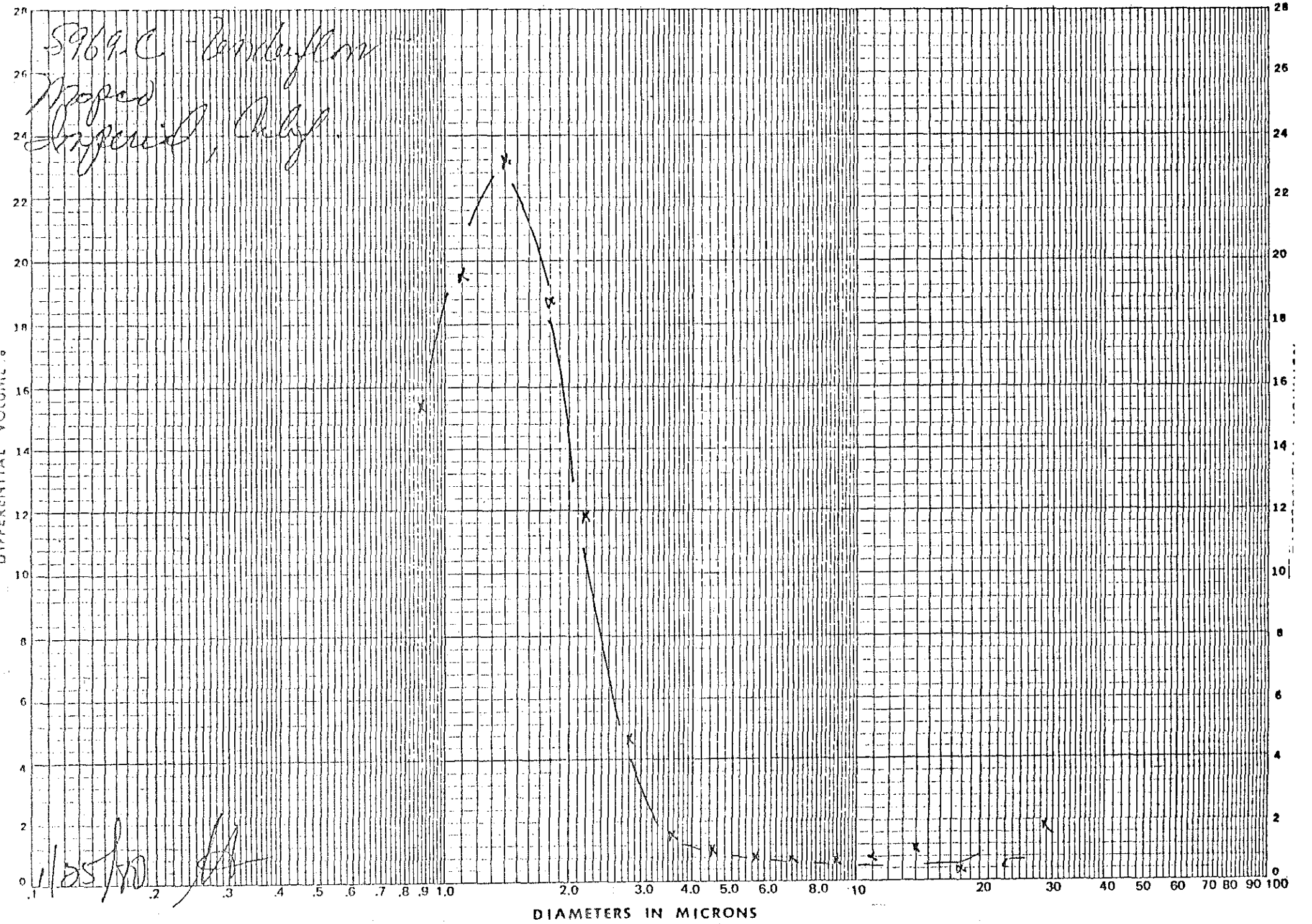

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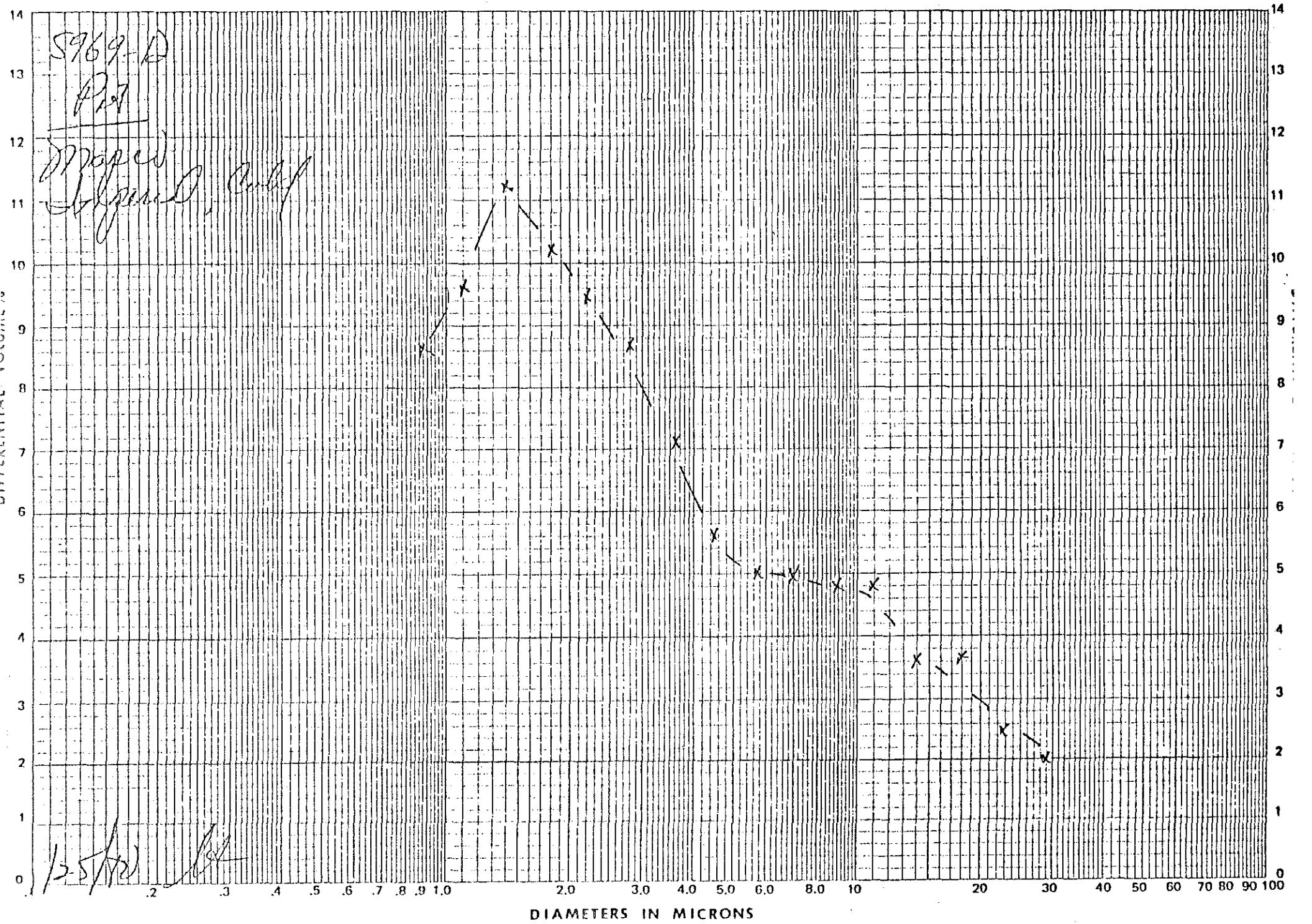

MAG-44-1D

FILE SUBJECT X-5236 SHEET NO. _____ DATE January 30 19 80

Magcobar DRESSER

LABORATORY REPORT

RECEIVING NO. _____ DATE REC'D _____ 19 _____

SAMPLE DESCRIPTION
Centrifuge solids discharge from Mapco Well

Currier # 2, Sample B 1/21/80

RECEIVED FROM
Harry Monk

OBJECT OF TEST
X-ray diffraction (Mineralgoy)

Analysis by x-ray diffraction identified the following components:

Substance	%
Alpha quartz	60-65
Calcite	10-15
Chlorite	2-5
Dolomite	1-2
Feldspars	2-5
Mica	2-5
Montmorillonite	2-5
Siderite	Trace

XC: Finis Turner
Bob Lockhart
Keith Wagner
Harry Monk ✓

REMARKS:

BY Brenda Reder-James APPROVED BY RDL

PRINTED IN U.S.A.

Bill Mnus
MAPCO CURRIER #2
FOLDER

TELEPHONE (805) 327-8567

OILWELL RESEARCH, INC.
HORNKOHL LABORATORIES DIVISION
CHEMICAL AND TESTING ENGINEERS
714 TRUXTUN AVENUE
BAKERSFIELD, CALIFORNIA 93301

February 8, 1980

Laboratory No : 2A-1088-1 & 2 **Marked:** As Identified Below.

Sample Corrosion Rings

Received February 7, 1980

Submitted by Magcobar
4800 Stockdale Highway, Suite 308
Bakersfield, CA 93309

* * * * * *

CORROSION ANALYSES

Test Performed		Corrosion Rings # 2440	Corrosion Rings # 2388
Location	-	Kelly Sub	Top of 1st Joint Above Monel
Depth In, feet	-	4288	6516
Depth Out, feet	-	6582	8470
Well	-	Not Given	Not Given
Visual Corrosion			
Scale	-	Heavy	Heavy
Pitting	-	Heavy	Heavy
Corrision Type			
Sulfates	-	Neagative	Negative
Carbonates	-	Negative	Negative
Initial Weight, gms	-	134.1888	249.580
Final Weight, gms	-	131.1002	246.180
Weight Loss, gms	-	3.0886	3.400
K Factor	-	196	134
Total Hours	-	168	208
Corrosion Rate $lb/ft^2/yr$	-	3.603	2.19

***Continued on Page 2 -

(805) 327-8567

OILWELL RESEARCH, INC.
HORNKOHL LABORATORIES DIVISION

CHEMICAL AND TESTING ENGINEERS
714 TRUXTUN AVENUE
BAKERSFIELD, CALIFORNIA 93301

February 8, 1980

Laboratory No : 2A-1088-3 & 4 Marked: As Identified Below.

Sample Corrosion Rings

Received February 7, 1980

Submitted by Magcobar
4800 Stockdale Highway, Suite 308
Bakersfield, CA 93309

* * * * * *

CORROSION ANALYSES

Test Performed		Corrosion Rings # 2387	# 2439
Location	-	Kelly Sub	Top of Monel
Depth In, feet	-	Not Given	640
Depth Out, feet	-	Not Given	3415
Well	-	Not Given	Not Given
Visual Corrosion			
Scale	-	Light	Moderate
Pitting	-	None Detected	Light
Corrosion Type			
Sulfates	-	Negative	Negative
Carbonates	-	Negative	Negative
Initial Weight, gms	-	133.6367	250.640
Final Weight, gms	-	133.1740	250.210
Weight Loss, gms	-	0.4627	0.430
K Factor	-	196	134
Total Hours	-	102	100
Corrosion Rate, $lb/ft^2/yr$	-	0.3126	0.576

Respectfully submitted,

E Miller/ander

Jeanne D. Miller, Chief Chemist

WELL HISTORY
MAG-464-C

Magcobar
DRILLING FLUID SERVICES

OPERATOR	SECTION	TOWNSHIP	RANGE	MUD TYPE
WESTMORLAND GEOTHERMAL ASSOC.	15	13S	13E	Salt Gel/Lignite
WELL	FIELD			SPUD DATE
CURRIER #2	Westmorland			1/5/80
CONTRACTOR	COUNTY/PARISH			T.D. DATE
Republic	Imperial			2/18/80
ENGINEERS	STATE			DAYS TO T.D.
John Teasley	California			45

	CONDUCTOR	SIZE	DEPTH	BIT SIZE	N BITS	ROTATING HOURS	DEGASSER	DESANDER	DESILTER	CENTR FUGE	SHAKER SCREENS
	SURFACE	13-3/8"	3406'	17-1/2	1			X			
	INTERMEDIATE	9-5/8"	10067	12-1/4	11				X		
	LINER(S)										
	PRODUCTION									X	

DATE 1980	MEAS. DEPTH	T.V.D.	MUD WT.	VIS. SEC.	ANGLE AND DIRECTION	FLOW RATE (gpm)	FLOW LINE TEMP. °F / °C	PV.	YP.	GELS 0 / 10	PH	API FLUID LOSS	H.T.H.P. FLUID LOSS	P_f	M_f	P_m	CHLORIDE ppm / mg/l	CALCIUM (ppm)	SOL %	OIL %	Gel	Salt Gel	Tannathin	Sodaphos	Cypan	D-D	Caustic Soda	Alum. Sterate	Pipe Lax	MUD COST $
1/5	300		8.8	46				14	8	2 / 5	9.5	14.7		.2			3,000	0	4	0	20			14						925.00
	Filled pits w/mud from Currier #1; drill out conductor and treat out cement.																													925.00
1/6	950		8.9	46				11	10	3 / 15	9.0	14.9		.15			2,800	150	4	0	35					1				350.00
	Drill to 706', POH f/dyna drill; RIH and dyna-drill ahead.																													1,275.00
1/7	1763		9.0	45				12	15	15 / 20	9.5	15.0		.2			2,800	80	5	0	10						2			300.00
	Dyna drill to 1350', POH to change BHA; discharging and watering back mud to keep solids and weight to a minimum as per company man's orders (17½" surface hole')																													1,575.00
1/8	2730		9.3	42				10	18	20 / 30	9.0	13.0		.15			2,200	100	6½	0	53					4	2			725.00
	POH'd various times to reposition stabilizers - still transferring & watering mud.																													2,300.00
1/9	3445		9.1	46			110	11	19	20 / 30	9.5	13.8		.2			2,200	80	5	0	19					10				730.00
	Drill to 3445', circ. 3 hours; make 20 stand wiper run (no fill).																													3,030.00
1/10	3460		8.9	38			110	9	9	2 / 13	9.5	12.0		.4			2,000	80	4	0			70			1	15			1,770.00
	Circ. & cond. mud for logging; log surface hole; RIH & drill 15' to 3460, circ. & POH to run casing.																													4,800.00
1/12	3460		8.8	35			110	8	6	0 / 2	10	12.5		.5			2,000	0	3	0				21						1,150.00
	Run 13-3/8" casing. Drill out cement.																													5,950.00
1/13	4288		9.0	38			137	11	8	1 / 9	10	12.0		.5			2,000	0	4½	0	8	100	10			2	1			1,050.00
	Drilling ahead; POH for new bit.																													7,000.00
1/14	4680		8.9	40			138	13	8	2 / 8	10	11.8		.5			2,000	0	3½	0	2	40	15			3	1			925.00
	RIH with button (drilling clay); drilling ahead sl-o-o-w.																													7,925.00
1/15	5000		8.9	38			148	9	7	2 / 11	9.0	12.2		.2			1,500	0	4	0	5		32		2		2			975.00
	Drilling ahead with button bit.																													8,900.00
1/16	5500		8.9	36			156	8	5	1 / 6	10	11.0		.4			1,500	0	4	0			41		16	4	15	1		3,930.00
	Drilling ahead with button bit.																													12,830.00
1/17	5840		9.0	36			150	9	8	2 / 6	10	10.5		.4			1,500	0	4	0		20	27		8	2	10	1		2,325.00
	Drill to 5500'. POH to change to rock bit.																													15,155.00
1/18	6140		9.0	35			150	8	4	1 / 2	10	10.5		.35			1,500	0	4	0		61	15		6	1	2	1		1,785.00
	Drilling ahead.																													16,940.00
1/19	6485		9.1	34			156	7	4	1 / 5	9.5	10.8		.3			1,500	0	4	0	5	160			6		3			2,100.00
	Drilling ahead; large additions of Salt Gel w/little rise in viscosity-suspect centrifuge of discharging Gel (putting out wet solids). Send samples to Houston for analysis. Fines building up in mud, increasing weight.																													19,040.00
1/20	6582		9.2	35			156	6	4	0 / 2	9.0	11.5		.25			1,500	0	5	0	5	150			3		3			1,700.00
	Drill to 6516', POH for dyna-drill & new bit; dyna-drill to 6582' and survey.																													20,740.00
1/21	6700		9.2	43			158	9	5	1 / 3	10	11.8		.35			1,500	0	5	Tr	10	110					5	10		2,100.00
	Dyna-drill to 6645', POH change BHA, RIH ream 3406'-3460'; run in and stuck pipe @ 6532' (Keyseat) - spot 70 bbls Diesel & 10 cans Pipe Lax-pulled right out, ream 6500' - 6646'.																													22,840.00
1/22	7060		9.3	35			167	10	7	2 / 4	10	10.8		.35			1,500	0	5	Tr	10	50	10		5	2	10			1,800.00
	Drilling ahead.																													24,640.00
1/23	7500		9.1	35			168	12	7	2 / 6	10	10.8		.35			1,500	0	5	Tr	3	110	25		8		8			2,740.00
	Drilling ahead.																													27,380.00
1/24	7660		9.0	34			158	11	7	2 / 6	10	10.8		.3			1,500	0	4	0	7	70	25		6		4			2,100.00
	Drill to 7524', POH f/new bit, RIH ream bridge 7089'-7149'.																													29,480.00
1/25	7990		9.1	35			163	10	7	2 / 5	10	10.6		.35			1,500	0	5	0	5	160	20		2		3			2,000.00
	Drilling ahead.																													31,480.00
1/26	8150		9.0	30			158	5	3	0 / 1	9.0	12.0		.2			1,200	0	4	0	15	200					1			1,660.00
	Drill to 8045', lost pressure f/washout in collars. POH - watering back mud considerably to reduce weight as per company man's orders.																													33,140.00

WELL HISTORY
MAG-464-D

Magcobar
DRILLING FLUID SERVICES

OPERATOR	SECTION	TOWNSHIP	RANGE	MUD TYPE
WESTMORLAND GEOTHERMAL ASSOC.	15	13S	13E	Salt Gel/Lignite

WELL	FIELD	SPUD DATE
CURRIER #2	Westmorland	1/5/80

CONTRACTOR	COUNTY/PARISH	T.D. DATE
Republic	Imperial	2/18/80

ENGINEERS	STATE	DAYS TO T.D.
John Teasley	California	45

CONDUCTOR	SIZE	DEPTH	BIT SIZE	N BITS	ROTATING HOURS	DEGASSER	DESANDER	DESILTER	CENTRIFUGE	SHAKER SCREENS
SURFACE	13-3/8"	3406'	17-1/2	1			X			
INTERMEDIATE	9-5/8"	10067	12-1/4	11				X		
LINER(S)										
PRODUCTION									X	

DATE 1980	MEASURED DEPTH	T.V.D	MUD WT.	VIS SEC.	ANGLE AND DIRECTION	FLOW RATE (gpm)	FLOW LINE TEMP. ☒ °F ☐ °C	PV.	YP.	GELS 0 / 10	PH	API FLUID LOSS	H.T.H.P. FLUID LOSS	P_f	M_f	P_m	CHLORIDE ☒ ppm ☐ mg/l	CALCIUM (ppm)	SOL %	OIL %	Gel	Salt Gel	Tannathin	Sodaphos	Cypan	D-D	Caustic Soda	Alum.	Sterate	Pipe Lax	Bit Lube	Resinex	Cottonseed Hulls				MUD COST $
1/27	8415		8.9	35			158	8	5	1 / 3	10	12.2		.35			1,200	0	3½	0		250			6		10										3,070.00
	Drill ahead; POH f/washout in D.P. - trying to raise viscosity & keep weight down as ordered.																																				36,210.00
1/28	8470		9.0	35			162	11	8	2 / 5	10	11.4		.3			1,200	0	4	0	5	20	5		4		7										1,100.00
	Drilling ahead. Raised viscosity-POH f/another washout in collars, changed bit.																																				37,310.00
1/29	8640		8.9	34			162	9	5	2 / 4	10	11.5		.35			1,200	0	3½	0	25	130	30		2		10										2,360.00
	RIH w/new bit. Ream 25' to bottom (undergauge hole).																																				39,670.00
1/30	8750		8.9	35			180	9	7	1 / 3	10	11.5		.35			1,200	0	4	0	10	45	25			1	5										1,300.00
	Drilling ahead - POH f/new bit (locked up).																																				40,970.00
1/31	8955		9.0	33			180	8	7	2 / 5	10	11.0		.35			1,200	0	4	Tr		35	20		4	1	5				10	2					4,210.00
	RIH & ream undergauge hole 55' to bottom. Drill & survey w/tight hole connections to 8955'; stuck pipe @ 8955' - spotted 95 bbls Diesel & 50 gals. Pipe Lax.																																				45,180.00
	Drilling ahead after 1st jar.									/																											
2/1	9048		8.9	33			185	8	6	2 / 5	10	10.0		.35			1,200	0	3½	1		20	20		5		5				10						2,540.00
	Drilling ahead, stuck again @ 9048' - spotted 100 bbls Diesel & 50 gals Pipe Lax, pulled free immediately-circ. & POH f/stabilizers(not in previously)& keyseat wiper.																																				47,720.00
2/2	9120		8.8	36			187	12	10	2 / 9	10	10.5		.3			1,200	0	3½	1	3	20	15		4		3										1,200.00
	RIH w/new BHA - clean out 5' of fill - drilling ahead w/normal connections.																																				48,920.00
2/3	9373		8.8	37			192	12	9	2 / 8	10	10.8		.35			1,200	0	3½	1		20	35		4	1	7										1,750.00
	Drilling ahead; POH f/new bit.																																				50,670.00
2/4	9530		8.8	37			176	12	9	2 / 7	10	10.5		.35			1,200	0	3½	Tr		35	15		4		5										1,350.00
	RIH ream 30' undergauge hole; drilling ahead.																																				52,020.00
2/5	9800		8.8	36			183	12	9	2 / 5	10	10.6		.3			1,200	0	3½	Tr	2	75	25		3		5				1						2,420.00
	Drilling ahead; sticky connections; added bit to loosen (partial returns all day).																																				54,440.00
2/6	10015		8.8	36			192	11	9	2 / 10	10	10.3		.35			1,500	0	3½	Tr	4	50	20		3		7										1,500.00
	Drilling ahead.																																				55,940.00
2/7	10082		8.8	35			192	11	7	2 / 6	10	10.8		.35			1,500	0	3½	Tr		6	10		2		8				1						1,560.00
	Drill string parted - fishing.																																				57,500.00
2/9	10082		8.9	35			183	10	8	1 / 10	10	12.0		.4			1,500	0	3½	Tr			7				5				85						7,350.00
	Recovered fish; RIH Circ. bottoms up, run 30 stand wiper run, circ. & cond. mud f/logging- POH - 2#/bbl Resinex to reduce gelation.																																				64,850.00
2/10	10082		8.9	36			191	10	5	1 / 4	10	11.2		.4			1,500	0	3½	0												10						160.00
	Run logs - RIH circ. f/csg. - spot cottonseed hull pill (50 bbls/10 sx) on bottom - POH .																																				65,010.00
2/14	10082		8.8	31			145	6	3	0 / 1	10.5	15.0		.4			1,200	0	3	0			15														820.00
	Run 9-5/8" casing to bottom & cement in stages - nipple up bope; drill out float collars - treat out cement																																				65,830.00
2/16	10315		8.8	36			178	8	4	1 / 4	10.0	15.0		.35			1,200	0	3	0	10	50	5		1		3										820.00
	Bond - Log and pressure-test; POH (pulled tight in casing). RIH back to drilling.																																				66,650.00
2/17	10425		8.7	32			175	8	3	1 / 4	10.5	12.2		.4			1,500	0	3	0	11	94	8		4		2										1,650.00
	Drill ahead and dull bit. (Partial returns all day).																																				68,300.00
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