COUNTY:	**CORSON**
LEGAL LOCATION:	**SWSW 26-21N-19E**
API NO:	**40 031 20021**
PERMIT NO:	**959**
WELL NAME:	**CHEVRON #1 SONAT-O'DONNELL**
OPERATOR:	**CHEVRON U.S.A. INC.**
PERMIT ISSUED:	**12/27/1979**
PERMIT CLOSED:	**04/09/1980**
FILE LOCATION:	**21N-19E-26 SWSW**

TARGET CODES:

WELL HISTORY / CHECKLIST

PERMIT TO DRILL / INTENT TO DRILL

WELL INSPECTION / SCOUT REPORTS

OPERATOR'S TECHNICAL REPORTS / MAPS

ADMINISTRATIVE / SUNDRY REPORTS

CORRESPONDENCE

MISCELLANEOUS

WELL HISTORY / CHECKLIST

BOND RELEASE CHECKLIST

Well Name & Location

Chevron #1 Sonat-O'Donnell
SWSW 26-21N-19E, Corson

Permit # 959

API # 40 031 20021

Bond # Date Issued Date Released

Surface Restoration

✓ Pits filled.

✓ Site Level

✓ Site policed

✓ Dry-hole marker solid, sealed, correctly inscribed

— No dry-hole marker desired, letter in UFO files from surface owner

✓ Letter of surface owner approval

Paperwork filed

— Form 4 (Completion or Recompletion Report)

— Form 6 (Sundry Notices and Report on Wells)

✓ Form 7 (Plugging Report)

Geological Information Filed

✓ Well Logs: IES, SNP, (DIL), (GR), MEMT, CALIP, Cement Bond, Temp, Micro, Laterlog, SM Dens, (FIL), CNFD, (BCL), (CD)

✓ DST Charts and Reports #1 ☒ #2 ☒ #3 ☒ #4 ☒

✓ Geologist's Report

✓ Results of coring and core analyses

✓ Set of 10-foot sample cuttings (check with Bob Schoon)
(Talked to Bob Schoon 8-13-80)

Date 12-23-80 Checked By Fred Sturm

PERMIT CHECKLIST

Well Name and Location: Chevron #1 Sonat-O'Donnell SWSW 26-21N-19E, Corson	Permit # 959 API # 40 031 20021 BOND #

Paperwork filed with WFO

- X Organization Report
- X Application
- X Bond
- X Permit Fee

The Following Papers sent to Operator:

- X Permit (Form 2a)
- X Receipt for $100 permit fee
- X Cover letter explaining material sent

Permit Fee Filed:

- X Permit fee w/Cash Receipts Transmittal Form sent to State Treasurer

Notification of New Permit sent to:

- X Dr. Duncan J. McGregor
- X [illegible] Mr. Warren R. Neufeld
- X [illegible] Mr. Jack Gerken
- X [illegible] Corson County Auditor

Date 12-27, 1979 Check By Cheryl Pederson

2

PERMIT TO DRILL / INTENT TO DRILL

13

State Pub. Co., Pierre

APPLICATION FOR PERMIT TO:

S. Dak. Oil & Gas Board
FORM 2

☒ DRILL ☐ DEEPEN ☐ PLUG BACK

☒ SINGLE ZONE

☒ OIL WELL ☐ GAS WELL ☐ MULTIPLE ZONE

FARM OR LEASE NAME
Chevron-SONAT-
O'Donnell

WELL NO.
1

OPERATOR
Chevron U.S.A. Inc.

FIELD AND POOL, OR WILDCAT
Wildcat

ADDRESS
P. O. Box 599, Denver, CO 80201

NO. ACRES IN LEASE
640

LOCATION (In feet from nearest lines of section or legal subdivision, where possible)*
660' FSL & 660' FWL

¼ ¼ SEC. TWP. RGE
SW SW Sec. 26, T21N, R19E

COUNTY
Corson

NAME AND ADDRESS OF SURFACE OWNER
Julia O'Donnell
Morristown, S. Dakota 57645

ELEVATION
2301.5

PROPOSED DEPTH
7900

NO. OF WELLS ETC.
1

ROTARY OR CABLE TOOLS
Rotary

NAME AND ADDRESS OF CONTRACTOR
Bomac Drilling
10403 West Colfax
Lakewood, CO 80215

APPROXIMATE DATE WORK WILL START
Jan. 2, 1980

IF LEASE PURCHASED WITH ANY WELLS DRILLED, FROM WHOM PURCHASED (Name and address)

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	NEW OR SECOND HAND	DEPTH	SACKS OF CEMENT
12¼"	9-5/8"	36#	New	600	To Surface

DESCRIBE PROPOSED OPERATIONS. IF PROPOSAL IS TO DEEPEN OF PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOW OUT PREVENTER PROGRAM IF ANY

It is proposed to drill this Exploratory Well to a depth of 7,900' to test the Cambrian.

Attachments:
- Drilling Procedure
- Certified Plat
- Chevron Class III BOPE Requirements
- $100.00 Filing Fee

RECEIVED NOV 1979 WESTERN FIELD OFFICE

SIGNED J. J. Johnson TITLE Engineering Ass't. DATE Nov. 15, 1979

DO NOT WRITE BELOW THIS LINE

PERMIT NO. 959

DATE ISSUED December 27, 1979

CHECKED BY Fred W. Steece
Supervisor, Western Field Office
School and Public Lands Date
Survey

CONDITIONS:

☐ COMPLETE SET OF SAMPLES, AND CORES IF TAKEN, MUST BE SUBMITTED.

☐ SAMPLES, AND CORES IF TAKEN, BELOW _____ DEPTH, MUST BE SUBMITTED.

SOUTH DAKOTA
STATE GEOLOGICAL SURVEY
WESTERN FIELD OFFICE

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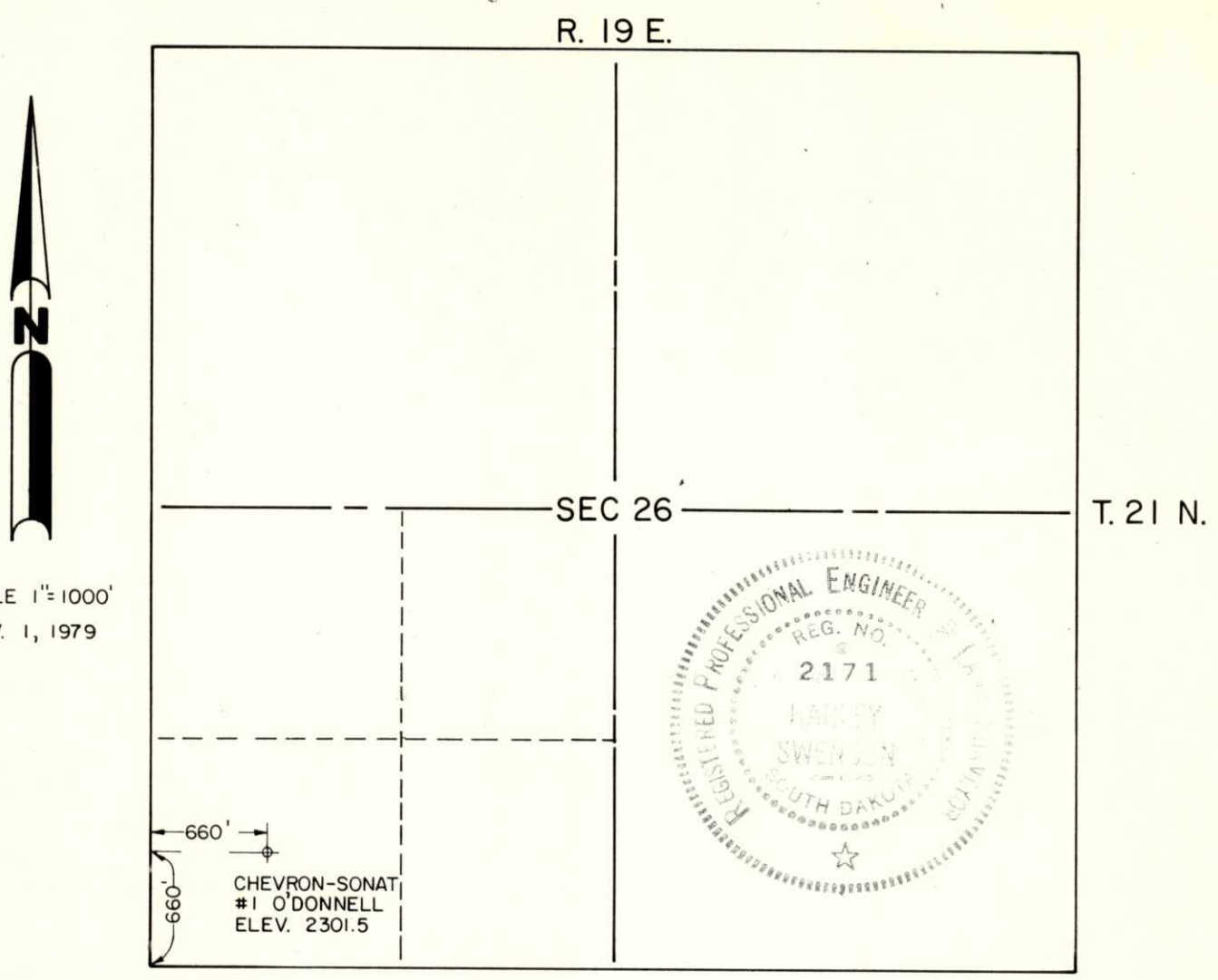

SURVEYOR'S CERTIFICATE

I, Harley E. Swenson, of Bismarck, North Dakota, hereby certify that this map was made from notes taken during an actual survey made under my direction on October 26, 1979 and that it shows correctly the drilling location of the Chevron-Sonat #1 O'Donnell as staked on the ground during said survey.

Harley E. Swenson
Registered Professional
Engineer and Land Surveyor
SD Registration No. 2171

CIVIL ENGINEERING LAND PLANNING LAND SURVEYING
SWENSON, HAGEN & CO. P.C.
Consulting Engineers
PO BOX 1135, 909 BASIN AVENUE
BISMARCK, NORTH DAKOTA 58501
701-223-2600

MAP SHOWING DRILLING LOCATION OF THE CHEVRON-SONAT #1 O'DONNELL

SW 1/4 SW 1/4 SEC 26
T. 21 N., R. 19 E.
BLACK HILLS MERIDIAN
CORSON COUNTY, SOUTH DAKOTA
FOR CHEVRON U.S.A. INC.

DRILLING PROCEDURE

Field South McIntosh Well Chevron-Sonat #1 O'Donnell

Location 660' FSL & 660' FWL SWSW Sec. 26, T21N, R19E Corson Co., South Dakota

Drill x Deepen ____ Elevation: GL 2302 KB ____ Total Depth 7900'

Non-Op Interests ____

1. Name of surface formation: Hill Creek

2. Estimated tops of important geologic markers:

Formation	Approximate Top	Formation	Approximate Top
Mission Canyon	5126	Pre Cambrian	7870
Red River	6640		
Deadwood	7370		

3. Estimated depths of anticipated water, oil, gas or other mineral bearing formations:

Formation	Depth	Type	Formation	Depth	Type
Mission Canyon	5126	Oil,Gas,or Water			
Red River	6640	Oil,Gas,or Water			
Deadwood	7370	Oil,Gas,or Water			

4. Casing Program (O = old, N = new):

	Surface	O/N	Intermediate	O/N	Oil String/ Liner	O/N
Hole Size	12¼"					
Pipe Size	9 5/8					
Grade	K-55					
Weight	36					
Depth	600					
Cement	To surface					
Time WOC	6 hrs					
Casing Test	2500 PSI					
BOP	3000 PSI					

Remarks ____

5. BOPE: Chevron Class III 3000 PSI MSP (Series 900)

6. Mud Program:

Depth Interval	Type	Weight	Viscosity	Water Loss
0-600	Wtr-Gel	-	-	-
600-TD	Gel-Chem	±9.0	±40 Sec	± 12cc

7. Auxiliary Equipment: Drill Pipe Safety Valve, PVT, Kelly Cocks, Mud Cleaner, Degasser, Automatic choke.

8. Logging Program:

Surface Depth -

Intermediate Depth -

Oil String Depth -

Total Depth DIL-SP, GR-Cal CNL-FDC, BHC GR-Cal Sonic Integrated w/Gamma to surface, continuous HR dipmeter.

9. Mud Logging Unit: 2 man

Scales: 2" = 100' 600' to 3000' ; 5" = 100' 3000' to TD

10. Coring & Testing Program:

		Formations	Approximate Depth	Approximate Length of Core
Core 1	DST 1	Mission Canyon	5126-5186	60'
Core 2	DST 2	Red River	6640-6760	120'
Core 1	DST 1	Deadwood	7370-7430	60'

11. Anticipated Bottom Hole Pressure/Temperatures/Hazards and plans for mitigating: Normal

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12. Completion & Remarks: ____

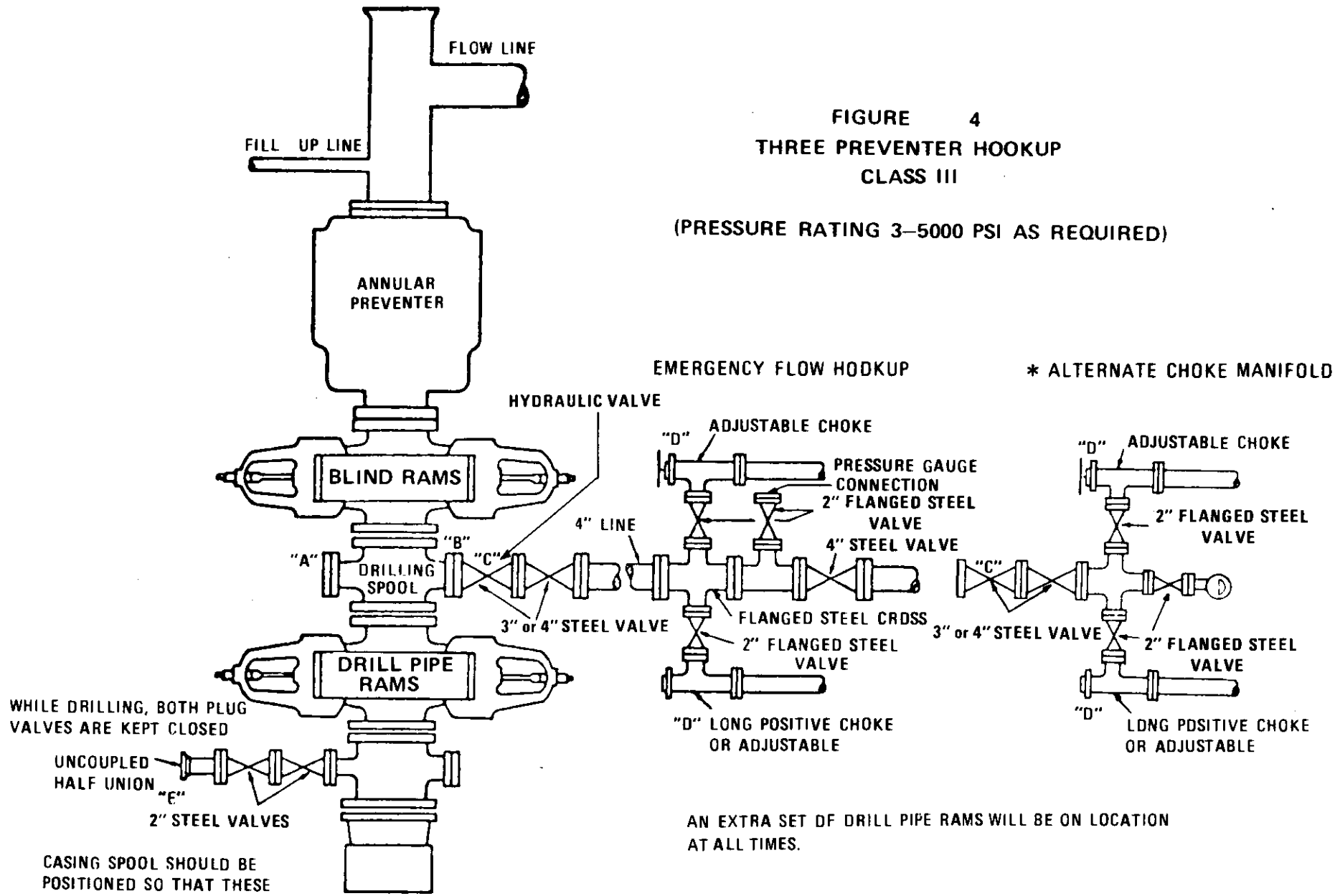
Division Development Geologist CFL/REH/ 11/14/79 Division Drilling Superintendent

Chief Development Geologist ____ Date ____

NS-44

FIGURE 4
THREE PREVENTER HOOKUP
CLASS III

(PRESSURE RATING 3–5000 PSI AS REQUIRED)



Chevron U.S.A. Inc.
ROCKY MTN. PRODUCTION DIVISION

45

Chevron U.S.A. Inc.

ROCKY MOUNTAIN PRODUCTION DIVISION

GENERAL INSTRUCTIONS AND REQUIREMENTS FOR BLOWOUT PREVENTION EQUIPMENT

I. ACCEPTABLE ACCUMULATOR UNITS

A. FOR 8" AND LARGER BOP UNITS.
   1. HYDRIL 80 GALLON
   2. PAYNE 80 GALLON (4-20 GALLON UNITS MANIFOLDED TOGETHER)
   3. KOOMEY 88 GALLON (4-22 GALLON UNITS MANIFOLDED TOGETHER)

B. FOR 6" BOP UNITS
   1. HYDRIL 40 GALLON
   2. PAYNE 40 GALLON (2-20 GALLON UNITS MANIFOLDED TOGETHER)
   3. KOOMEY 44 GALLON (2-22 GALLON UNITS MANIFOLDED TOGETHER)

C. A VALVE SHALL BE PROVIDED FOR INTRODUCTION OF EMERGENCY ENERGY (SUCH AS BAKER HAND PUMP) FROM AN EXTERIOR SOURCE OTHER THAN THE ACCUMULATOR. A VALVE SHALL BE INSTALLED TO PREVENT FLOW FROM AN EXTERIOR SOURCE TO THE ACCUMULATOR UNIT.

II. CONTROL UNITS

A. ALL VALVES TO BE CLEARLY LABELED TO INSURE PROPER OPERATION AND TO ELIMINATE THE POSSIBILITY OF CONFUSION.

B. HANDWHEELS FOR PIPE AND BLANK RAMS SHALL BE CLEARLY LABELED AND IN PLACE AT ALL TIMES WITH CLEAR ACCESS. A BARRICADE SHALL BE INSTALLED FOR THE PROTECTION OF THE OPERATOR AT THESE MANUAL CONTROLS.

III. PREVENTER UNITS

A. PRESSURE RATING OF BOP EQUIPMENT WILL BE AS STATED IN THE CONTRACT OR ON THIS DRAWING.

B. DRILLING NIPPLE AND BOP'S TO HAVE SUFFICIENT ID TO PASS HANGER FOR NEXT STRING OF CASING TO BE SET.

C. NEW API BX RING GASKETS TO BE USED EACH TIME A FLANGE IS ASSEMBLED.

D. FLANGE BOLTS ON BOP'S WILL BE TIGHTENED AFTER PRESSURE TESTS AND ONCE A WEEK ON A ROUTINE BASIS. CASINGHEAD BOLTS TO BE TIGHTENED DAILY.

E. PREVENTERS ARE TO BE WELL BRACED.

F. PRIOR TO RUNNING CASING, PIPE RAMS WILL BE CHANGED TO ACCOMMODATE SIZE OF CASING TO BE RUN.

G. CASINGHEAD SHALL BE INSTALLED SO KILL LINE VALVES WILL BE UNDER BOP'S FOR PROTECTION. KILL LINE VALVES TO BE KEPT CLOSED AFTER PRESSURE TESTS.

H. ALL REPLACEMENT PARTS TO BE OF SAME MANUFACTURE AS BOP'S.

IV. TESTING

A. BLOWOUT PREVENTERS, KILL LINE, ALL VALVES IN THE SYSTEM, KELLY COCK, SAFETY VALVE, STAND PIPE VALVES, ROTARY HOSE, ETC. ARE ALL TO BE TESTED TO THE WORKING PRESSURE OF THE BOP'S OR AS STATED IN THE CONTRACT.

B. BOP SYSTEM IS TO BE TESTED UPON INSTALLATION AND EACH WEEK THEREAFTER, USING A TEST PLUG OR AT THE FREQUENCY STATED IN THE CONTRACT.

C. ALL TESTING IS TO BE DONE WITH CLEAR OR DYED WATER.

D. TESTING PROCEDURE IS TO BE CARRIED OUT SO EACH VALVE IS TESTED INDIVIDUALLY.

E. ALL B.O.P.E. TO BE OPERATED DAILY; BLIND RAMS ON TRIPS.

V. MISCELLANEOUS

A. DRILL PIPE RUBBER, IN GOOD CONDITION, TO BE USED ON KELLY SAVER SUB AT ALL TIMES.

B. A FULL OPENING VALVE IN THE STAND PIPE WITH A 2" VALVE DOWNSTREAM FOR CONNECTING A PUMP TRUCK ARE REQUIRED. THESE VALVES ARE TO HAVE THE SAME PRESSURE RATING AS THE BOP'S.

C. CHECK WITH COMPANY REPRESENTATIVE FOR DIRECTION TO INSTALL OUTLET VALVES ON WELLHEAD.

D. MODIFICATIONS OF HOOK-UP MUST BE APPROVED IN WRITING ON TOUR REPORTS BY COMPANY REPRESENTATIVE.

E. INSIDE BLOWOUT PREVENTER AND FLOAT VALVE TO HAVE CONNECTIONS FOR DRILL STRING AND TO BE ABLE TO PASS THROUGH BOP STACK INTO OPEN HOLE.

WELL INSPECTION / SCOUT REPORTS

SOUTH DAKOTA GEOLOGICAL SURVEY
Western Field Office

SCOUT REPORT

Number _____

Date Scouted _____

Operator Chevron

Permit Number 960

Farm/Lease Name Sonat - O'Donnell #1

API Number 40-031-20021

SWSW Sec. 26 T. 21N R. 19E County Corson

Elev. 2301 Est. T.D. ---- Actual T.D. 7738 Spudded 1-31-80

Contractor Bomac #32 Geologist John Strojek

SCOUT'S OBSERVATION:

DST RECORD:

7-28-80 Marker is solid, sealed, properly labeled. Pits are dry and the site can be leveled.
10-30-80 Site is clean, level, seeded. Approved.

FORMATION TOPS:

PLUGGING RECORD:

DATE PLUGGED/COMPLETED 3-10-80

CASING RECORD:

~~12 1/4~~ From 0 To 620

_____ From _____ To _____

SITE INSPECTION:

Approved X

Not Approved _____

REMARKS:

SCOUTED BY Tim Kenyon

Tim Kenyon
Geologist

Fred V. Steece

Fred V. Steece, Supervisor
Western Field Office

SOUTH DAKOTA GEOLOGICAL SURVEY
Western Field Office

SCOUT REPORT

Number _____

Date Scouted 3-10-80

Operator Chevron

Permit Number 959

Farm/Lease Name #1 Sonat-~~Mc~~O'Donnell

API Number 40 031 20021

SWSW Sec. 26 T. 21N R. 19E County Corson

Elev. 2301 Est. T.D. --- Actual T.D. 7738 Spudded 1-31-80

Contractor Bomac #32 Geologist John Strojek

SCOUT'S OBSERVATION:
Preparing to plug

DST RECORD:
Flowed 400 Bbl water per hour from 6705-50; Cl content 5500 ppm.

FORMATION TOPS:

Niobrara---------2224	Mission Canyon--------5194	Deadwood----------7446
Greenhorn--------2780	Nisku----------6070	
Mowry----------2970	Duperow----------6122	
Fall River-------3548	Interlake----------6352	
Piper----------3966	Red River----------6728	
Minnelusa--------4280	Winnepeg----------7300	

PLUGGING RECORD:
100 sax 6600-6300
100 sax 5400-5100
40 sax 3600-3500
40 sax 0708-0508
10 sax surface

DATE PLUGGED/~~COMPLETED~~ 3-10-80

CASING RECORD:

_____ From _____ To _____

_____ From _____ To _____

SITE INSPECTION:

Approved _____

Not Approved _____

REMARKS:

Plug program arranged with Pat Patterson, Denver

SCOUTED BY Fred V. Steece

Fred V. Steece, Supervisor
Western Field Office

OPERATOR'S TECHNICAL REPORTS / MAPS

SONAT
SDGS
Cockrell

Chevron U.S.A. Inc.

OPERATOR: CHEVRON U.S.A. INC.

WELL NAME: Chevron-SONAT O'Donnell No. 1

FIELD: Willow Creek

LOCATION: SWSW Sec. 26, T21N, R19W, Corson Co., South Dakota

CONTRACTOR: BOMAC

DAILY ACTIVITY REPORT

1/29/80 BOMAC 32, RURT.

1/30/80 BOMAC 32, RURT.

1/31/80 BOMAC 32, RURT. Will spud today.

2/01/80 BOMAC 32, 620, prep to run csg. days 1. 580'/6½ hrs. Spud 6:30 PM 1-31-80.

2/04/80 BOMAC 32, 3630, drlg. days 4. 3010'/33¼ hrs.

2/05/80 BOMAC 32, 4050, drlg. days 5. 420'/15-3/4 hrs.

2/06/80 BOMAC 32, 4575, drlg. days 6. 525'/22 hrs.

2/07/80 BOMAC 32, 4935, drlg. days 7. 360'/19½ hrs.

2/08/80 BOMAC 32, 5253, RIH core bbl. days 8. 318'/13-3/4 hrs. POOH. PU core bbl for core #1.

2/11/80 BOMAC 32, 5384, drlg. days 11. Core No. 1 5253-5313 rec 16', DST No. 1 5240-70. Times 10-60-60-120. Open w/good blow inc to 9 psi. Ngts. Rec 3617' mud and 1000' wtr. Sampler 2100 cc wtr 0 psi. Press IHH 2604, IF 250, ISI 2367, FF 960-2119, FSI 2367, FHH 2604. 131'/24½ hrs. Lost 250 bbls mud at 5265. Cut Core 1, ran DST 1.

2/12/80 BOMAC 32, 5726, drlg. days 12. DST No. 1 5240-70. Times 10-60-60-120. Open w/good blow inc to 9 psi. Ngts. Rec 3617' mud and 1000' wtr. Sampler 2100 cc wtr 0 psi. Press IHH 2604, IF 250, ISI 2367, FF 960-2119, FSI 2367, FHH 2604. 342'/24 hrs.

2/13/80 BOMAC 32, 6122, drlg. days 13. 396'/23¼ hrs.

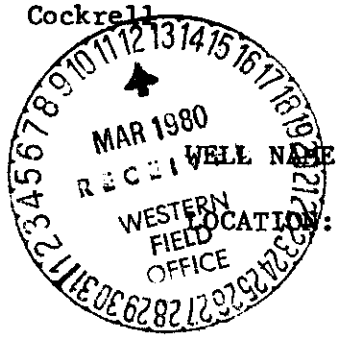
2/14/80 BOMAC 32, 6406, drlg. days 14. 284'/16¼ hrs.

2/15/80 BOMAC 32, 6718, cond hole for core 2. days 15. 312'/19¼ hrs. Circ & cond hole for core 2.

2/19/80 BOMAC 32, 7040, drlg. days 19. Core 2 - 6718-6778 cut & rec 60'. Red River A & B. Core 3 - 6778-6838 cut & rec 60'. Red River B & C. DST 2 - 6785-6838 on bottom Red River B & C Halliburton times (min): 15-60-60-120. Blow: Opened weak blow, weak to end. NGTS. Reopened strong blow, strong to end. NGTS. Recovery: 2604' fluid. Pulled 360' muddy water, no hydrocarbons (4 stands) and pipe went dry. Mechanical malfunction released remainder of fluid to hole. Sampler: 2200 cc salt water, no pres, no gas. Rw 0.114 @ 60° F. (78,000 Cl) 0 ppm nitrate. Rmf drlg mud 1.08 @ 50° F., 210 ppm nitrate. Press: IH 3441, IF 243-783, ISI 3013, FF 810-1940, FSI 3013, FHH 3441. BHT 170°. Valid test. DST 3 - 6726-6746 Straddle Red River A Halliburton times (min): 15-60-90-180. Blow: Opened very weak blow (surface bubbles), very weak to end. Re-opened dead, dead to end. Recovery: No pipe recovery. Sampler: 1500 cc mud, no hydrocarbons. Rm sampler: 1.11 @ 50° F. R drlg mud 1.11 @ 50° F. Nitrates: sampler 25 ppm. Drlg mud 210 ppm. Press: IH 3243, IF 16-31, ISI 31, FF 31-31, FSI 95, FH 3243. BHT 170° F. 202'/9½ hrs.

SONAT
SDGS
Cockrell

Chevron U.S.A. Inc.



OPERATOR: CHEVRON U.S.A. INC. WELL NAME: Chevron-SONAT O'Donnell No. 1

FIELD: Willow Creek LOCATION: SWSW Sec. 26, T21N, R19W, Corson Co., South Dakota

CONTRACTOR: BOMAC

DAILY ACTIVITY REPORT

2/20/80 BOMAC 32, 7344, drlg. days 20. 304'/19 hrs.

2/21/80 BOMAC 32, 7445, RIH for core no. 4. days 21. 101'/13 hrs.

2/22/80 BOMAC 32, 7564, drlg. days 22. core no. 4 7445-7505. Rec 29'. Cut core no. 4.

2/25/80 BOMAC 32, 7738, fishing. days 25. At 7738 PU 30' to grease rig. Pipe stuck w/bit at 7701. Spot pipe lax and diesel around DC's. Work pipe. Reduce mud wgt to 8.9 ppg. Water flow started. Build mud wgt to 9.0 and kill flow. Run free pt. Pipe free at 746(

2/26/80 BOMAC 32, 7738, POOH fish. days 26. BO at 7430. POOH w/9 DCS. RIH fish tools. Screw into fish. Jar 3 hrs w/o success. Jars failed. BO at 7430. POOH. PU DT tool & RIH. Engage fish. Open test tool. Fish came free. Now chain out.

2/27/80 BOMAC 32, 7738, cond hole for logs. days 27. POOH & rec all of fish. RIH bit to circ & cond hole for logs.

2/28/80 BOMAC 32, 7738, cond hole. days 28. Attempted to log 4 times. Logging equip hit bridges.

2/29/80 BOMAC 32, 7738, logging. days 29. Attempt to run logs 4 times w/o success. Made 5 cond trips. If logs don't go this time will run 5½" csg to 2000' and log thru it.

3/03/80 BOMAC 32, 7738, cond hole. days 32. DST no. 4 6730-45'. Times: 15-60-240-360/no gas, oil or wtr to surface. Tool open w/slite blow to dead in 13 min. Rec 5' mud in DC sample 0 psi, rec 200 cc mud. Pressures IHH 4333 psi, IF 57-95 psi, no press for ISS, FF or FSI. FHH 3884 psi. Ran 5½" csg to 2035' and logged hole. POOH 5½" csg and LD same. Ran DST no. 4. Now in hole cond to run straddle tools and acidize, then swab tes

3/04/80 BOMAC 32, 7738 TD, prep to acidize 6730-45. days 33. Cond hole. POOH. PU 2-7/8 tbg and lynes straddle pkrs. Set pkrs across interval 6730-45'. RU swab unit.

3/05/80 BOMAC 32, 7738 TD, prep to swab. days 34. Straddle interval 6730-45. Acidize w/500 gal HCL. Max press 1000 psi at 4 BPM, ISI 600 psi. 15 min 550 psi. Flow back plus or minus 20 bbls displ wtr and died. Left open overnite w/no flow. Prep to swab.

3/06/80 BOMAC 32, 7738 TD, working stuck tbg. days 35. With pkrs straddle 6730-45. Made one swab run to 1000. Rec 200' wtr and 800' mud. Top pkr failed. Ran GR to verify pkr depths. GR shows pkrs set 6731 and 6746. Attempt to rls pkrs. Unable to work torque down hole. Will run free pt.

3/07/80 BOMAC 32, 7738 TD, cond hole. days 36. Work tbg up to 100 MLBS while waiting on free pt truck. Worked one stand out and pkrs came free. POOH and LD tbg. No room to stand back. RIH DP to 6900' and cond mud. POOH. PU new Lynes pkr assembly. PU tbg and RIH. Revised straddle interval 6735-6750.

3/10/80 BOMAC 32, 7738 TD, prep to P&A. days 39. Set Lynes straddle tools 6735-6750 and acidize w/500 gal HCL. Load 88 bbls. Flow back 40 bbls wtr. Swab 25 bbls acid wtr and wtr. Swab 78 bbls mud w/annulus staying full. Start to flow. Flow 400 bbls wtr in 4½ hrs. CL 5500 PPM. Ran test of interval 6735-50. Rls pkrs and POOH LD tbg. LD DC, RIH open ended.

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SONAT
SDGS
Cockrell

Chevron U.S.A. Inc.

OPERATOR: CHEVRON U.S.A. INC.

WELL NAME: Chevron-SONAT O'Donnell No. 1

FIELD: Willow Creek

LOCATION: SWSW Sec. 26, T21N, R19W, Corson Co., South Dakota

CONTRACTOR: BOMAC

DAILY ACTIVITY REPORT

/11/80 BOMAC 32, 7738 TD, MORT. days 40. Plug and abandon well. Released rig 11:00 PM 3-10-80. Final report.

4

CHEVRON, U.S.A. INC.

CHEVRON-SONAT #1 O'DONNELL

SW SW SECTION 26: T21N - R19E

CORSON COUNTY, SOUTH DAKOTA

Prepared By:

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.
2929 Third Avenue North, Suite 329
Billings, Montana 59101
(406) 248-3101

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

Chevron-SONAT #1 O'Donnell
SW SW Section 26: T21N - R19E
Corson County, South Dakota

TABLE OF CONTENTS

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELL DATA SUMMARY

Well Name:	#1 O'Donnell
Location:	SW SW Section 26: T21N - R19E Corson County, South Dakota
Operator:	Chevron, U.S.A. Inc.
A.P.I. Well Number:	40-021-20021
Elevation:	2314' K.B. - 2303' G.L.
Co-ordinates:	660' FSL and 660' FWL
Total Depth:	7738' Driller; 7742' Schlumberger
Status:	Plugged and Abandoned
Spud Date:	6:30 P.M. January 31, 1980
Rig Released:	11:00 P.M. March 10, 1980
Hole Size:	12 1/4" to 620'; 7 7/8" to 7738'
Surface Casing:	Ran 16 joints of 9 5/8", 36#, K-55 ST&C Casing. (Total of 608'). Landed at 620' K.B., cemented with 325 sacks of Class G cement with 3% Calcium Chloride, and 1/2# Flocele.
Cores:	Core #1 5253 - 5313 - Recovered 15' Mission Canyon Formation Core #2 6718 - 6778 - Recovered 60' Red River "A" and "B" zones Core #3 6778 - 6838 - Recovered 60' Red River "C" zone Core #4 7445 - 7504 - Recovered 29.7' Cambrian Deadwood
Tests:	DST #1 5240 - 5270 - Mission Canyon Recovered 3617' Mud & 1000' Water DST #2 6785 - 6838 - Red River "B" & "C" Zone. Recovered 360' Mud Cut Water DST #3 6726 - 6746 - Red River "A" Zone No Pipe Recovery. Sampler contained 1500 cc's Mud. DST #4 6730 - 6745 - Red River "A" Zone Recovered 5' Very Slightly Gas Cut Mud

Logs:

Schlumberger Dual Induction Laterolog SFL & SP
5", 2016' to 7736'; 2", 2016' to 7736'

Schlumberger CNL-FDC with Gamma Ray & Caliper
5", 2016' to 7739'

Schlumberger Integrated BHC Sonic with Gamma Ray & Caliper
5", 2016' to 7739'; 2", 2016' to 7742'

Schlumberger Continuous HRD Dipmeter
5", 2016' to 7740'

Schlumberger Frac Finder Log
5", 2016' to 7740'

Abandonment Plugs:

Plug #1 6300 - 6600 with 100 sacks of Class G cement.

Plug #2 5100 - 5400 with 100 sacks of Class G cement.

Plug #3 3500 - 3600 with 40 sacks of Class G cement.

Plug #4 508 - 608 with 40 sacks of Class G cement.

Plug #5 Surface to 20' with 10 sacks of Class G cement.

Drilling Contractor:

Bomac Drilling - Rig #32
Toolpusher: Mr. Mike Leghorn

Wellsite Geologist:

Mr. John H. Hughes

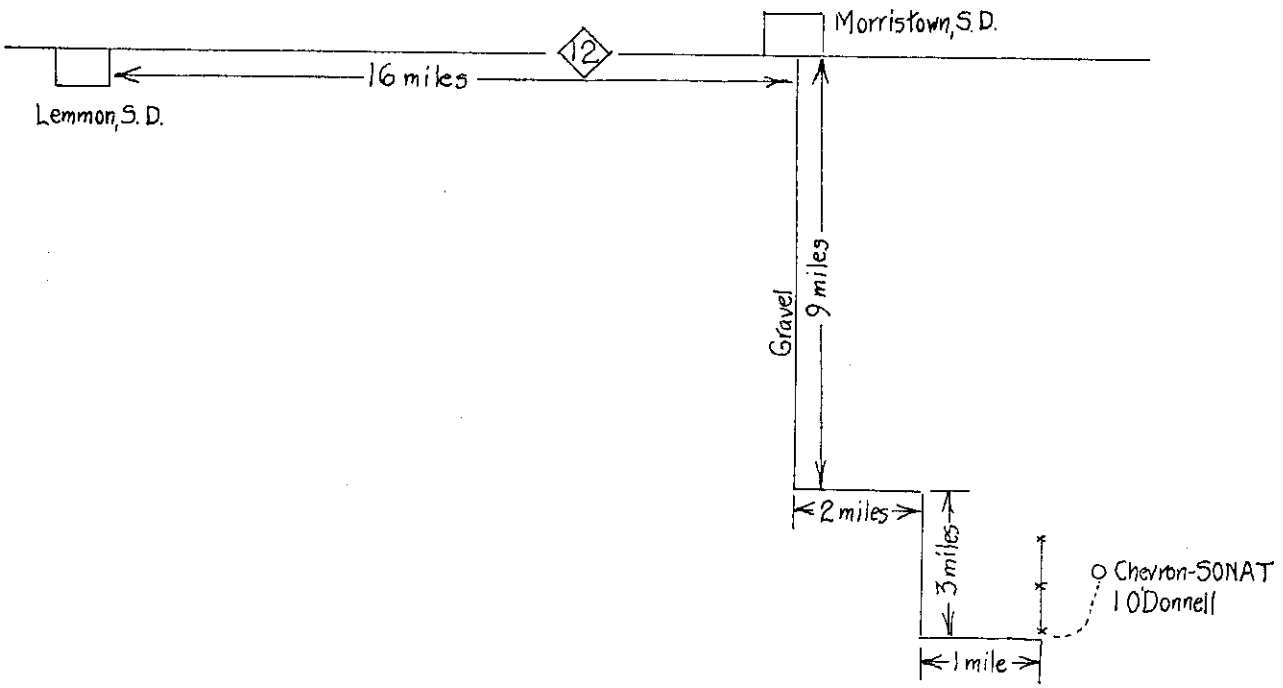
N

LOCATION SKETCH

WELL NAME Chevron-SONAT 1 O'Donnell

LOCATION SW¼ SW¼ Section 26, T21N-R19E

Corson County, South Dakota



HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

ELECTRIC LOG TOPS

WELL NAME: Chevron-SONAT #1 O'Donnell LOCATION: SW SW Sec. 26-T21N-R19E Corson County, South Dakota

KB ELEVATION: 2314 DATE RUN: 3/1/80 PICKED BY: John H. Hughes

FORMATION	DEPTH	SUBSEA
CRETACEOUS		
Niobrara	2224	+ 90
Greenhorn	2780	- 466
Mowry	2970	- 656
Muddy	3324	- 1010
Skull Creek	3370	- 1056
Dakota	3548	- 1234
JURASSIC		
Swift	3660	- 1346
Piper Lime	3966	- 1652
Picard	4080	- 1766
PENNSYLVANIAN		
Minnelusa	4280	- 1966
MISSISSIPPIAN		
Big Snowy	4640	- 2326
Charles	4974	- 2660
Mission Canyon MC4	5194	- 2880
MC3	5254	- 2940
MC2	5384	- 3070

Form HE-G3

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

ELECTRIC LOG TOPS - PAGE 2

WELL NAME: Chevron-SONAT #1 O'Donnell LOCATION: SW SW Sec. 26-T21N-R19E Corson County, South Dakota

KB ELEVATION: 2314 DATE RUN: 3/1/80 PICKED BY: John H. Hughes

FORMATION	DEPTH	SUBSEA
Mission Canyon MC1	5406	- 3092
Lodgepole	5500	- 3186
DEVONIAN		
Three Forks	6058	- 3744
Nisku	6070	- 3756
Duperow	6122	- 3808
Souris River	6220	- 3906
SILURIAN		
Interlake	6352	- 4038
ORDOVICIAN		
Gunton	6574	- 4260
Lower Stony Mountain	6688	- 4374
Red River A	6728	- 4414
B	6752	- 4438
C	6804	- 4490
D	6888	- 4574
Winnipeg	7300	- 4986
CAMBRIAN		
Deadwood	7446	- 5132
Total Depth Driller	7738	- 5424
Total Depth Schlumberger	7742	- 5428

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell

LOCATION SW SW Section 26, T21N, R19E Corson County, South Dakota

DATE 2-2-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	650			Cement
	680			Cement
	710			Slt st, md to lt gy, vy arg, sl calc, soft, lumpy, w/ num blk carbon specks & parts Sh, md gy soft.
	740			Slt st a/a. Sh, md gy, soft, calc, w/ many sh grains, subrd to subang, vy fn to fn gr, dk grn & dk grn-gy pyr.
	770			Slt st, md gy, arg, sl calc, soft, pyr, sl mic, w/ few blk, ang, carbon frag. Sh, md gy, soft, grad to silty sh.
	800			a/a
	830			Sh, md gy, sl silty, mic, lumpy, soft to firm
	860			a/a
	890			a/a
	920			a/a Tr bent, vy lt gy, sl mic, soft
	950			a/a
	980			Sh a/a. Tr sh, md gy, firm, w/ many cream calc specks
	1010			Sh, md gy firm, lumpy, few shell frag.
	1040			Sh a/a interb w/ silty sh, soft, few shell frag.
	1070			Sh, md gy, soft to firm, lumpy
	1100			a/a
	1130			a/a Tr bent, vy lt gy
	1160			a/a
	1190			a/a
	1220			a/a Tr ls, lt brn, mic xtln, den, ang, md hd
	1250			Sh, md gy, soft, flaky to lumpy
	1280			a/a
	1310			Sh, md gy, platy to ang, sl mic, soft to firm
	1340			a/a
	1370			a/a w/ few Inoceramus frag.
	1400			a/a
	1430			a/a
	1460			a/a
	1490			a/a
	1520			a/a w/ few Inoceramus frag
	1550			Sh a/a w/ few inclus of sh, buff, vy calc
	1580			Sh a/a Tr ls & dol, md to lt brn & gy brn, mic-xtln, den, ang, md hd
	1610			a/a
	1640			Sh, md gy, plty, splnty, ang, soft to firm, pyr, mic.
	1670			Sh a/a w/ few sh inclus, buff, calc, ang, soft
	1700			Sh, md gy, soft, flaky, w/ few seams sh vy silty, soft
	1730			a/a w/ few frag ls, md to lt brn, mic xtln den, ang, md hd
	1760			No spl.
	1790			Sh, dk gy, carbon, flaky, soft, loc calc, w/ few inclus ls, dk gy, vy arg
	1820			a/a
	1850			Sh a/a. Sh, md gy, flaky, plty, soft
	1880			No spl.

Form HE-GE1

GEOLOGIST John F. Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O Donnell
LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-4-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	1910			Sh a/a. Minor bent, vy lt gy to dull wh, mic, soft
	1940			Sh a/a. Much bent, a/a
	1970			Sh, md gy soft, plty, flaky, pyr. Minor sh, dk gy, carb w/ few ls inclus, dk gy, vy arg. Minor bent, dull wh, flaky, soft
	2000			a/a
	2030			Sh, md gy, platy, soft, sl pyr.
	2060			a/a
	2090			Sh, md gy, soft, flaky w/ many vy fn ls inclus, cream
	2120			Sh, md gy, mic, platy, soft.
	2150			a/a
	2180			a/a
	2210			a/a
	2240			No spl.
	2270			Sh, speck, md to lt gy, vy calc, soft w/ many inclus of ls, cream, soft, chlky
	2300			a/a
	2330			a/a
	2360			Sh, md gy, plty, soft, mic.
	2390			a/a
	2420			a/a
	2450			a/a
	2480			a/a
	2510			a/a
	2540			Sh a/a, pyr, w/ few seams bent, dull wh
	2570			a/a
	2600			a/a
	2630			a/a
P	2660			a/a, vy pyr.
P	2690			a/a w/ less pyr
	2720			a/a
	2750			a/a
	2780			a/a
	2810			a/a Sh, dk gy, carb, calc, plty, soft. Ls, lt brn to buff, cream, mic xtln dcn, arg, ha interb w/ sh, dk gy carb. Ls, md to lt brn gy, mic to vy fn xtln, sl to vy arg, interb w/ sh, dk gy, carb, soft.
	2840			Ls a/a
	2870			Ls a/a decreas
	2900			Ls a/a
	2930			Sh, dk gy, vy calc, flaky, firm w/ many vy fn specks of buff, soft, chlky ls
	2960			a/a
	2990			a/a
	3020			Sh, dk gy, plty, soft to firm
	3050			a/a
	3080			a/a
	3110			a/a
	3140			Sh a/a w/ few brn fish scales
	3170			a/a

Form HE-GE1

GEOLOGIST John W Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SWSW Section 26, T21N-R19E, Corson County, South Dakota

DATE 2-4-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	3200			a/a
	3230			a/a
	3260			Sh a/a w/few part sltst, vy lt gy, poor intergran por, NS
	3290			a/a
	3320			a/a Tr sltst, lt gy, vy arg, soft, sl glauc.
	3350	P		Sh, dk gy, plty, soft to firm. Ss, vy lt gy, vy fn gr, ang, sl calc, fria, mic, poor intergran por grad to ss, vy fn gr, vy slty, NS
	3380			Sh, dk gy, plty, soft
	3410			a/a
	3440			a/a
	3470			a/a
P	3500			Sh a/a, pyr.
P	3520			a/a
	3540	P		Sh a/a. Tr ss, md to lt gy, vy fn gr, ang to subang, vy slty, mic, matrix with pale grn chlky fill, poor intergran por, fria, NS
	3560	F-G		Ss, dull wh, vy fn gr, tr fn gr, ang to subang, fria, mod sort, fair to vy gd intergran por, NS
		F-G		Ss a/a NS.
	3580	F-G		Sltst, dull wh, mic, lumpy, soft, NS. Ss, dull wh, vy fn gr, ang, fria, to firm, calc, fair to gd intergran por, NS
	3600	F-G		a/a NS Tr sh, blk, wxy, plty, soft, carb.
	3610	F-VG		a/a NS. Tr ss, loose, md gr, subrd to subang, frost, fria, vy gd intergran por, NS. Much gyp, wh, soft, chlky, sl slty & vy fn sdy
	3620	F-VG		a/a, NS
	3630	F-VG		a/a NS
	3640	F-G		Ss, wh, vy fn to fn gr, ang to subang, mod sort, vy fria, vy calc, fair to gd intergran por, NS Minor gyp, wh, soft, chlky.
	3650	P-G		Ss a/a, poor to gd intergran por, NS. Gyp a/a.
	3660	P-G		a/a NS
	3670	P-G		a/a NS Few loose ss gr, md to crs gr, ang, NS.
	3680	P-G		Ss a/a, vy pyr.
	3690	F-G		Ss, buff & pale orng, vy fn gr, tr fn gr, ang to subang, sl slty, poor sort, fria, fair to gd intergran por, NS. Sh, lt gy, earthy, plty, soft, loc rust tinge
	3700	F-G		Sh, lt gy, earthy, plty, soft. Tr ss, buff, vy fn gr, ang to subang, fria, fair to gd intergran por, NS Tr sltst, lt to vy lt gy, sl to vy arg, glauc, fria to firm, NS
	3710	F-G		a/a
	3720			Sh & sltst a/a
	3730			a/a
	3740			a/a
	3750			a/a Trip spl, much cave
	3760			Sh & sltst a/a
	3770			a/a
	3780			Sh, lt gy, earthy, plty, soft
	3790			Sh a/a. Tr sh, lt grn-gy, subwxy plty, soft
	3800			Sh a/a Tr sltst, lt to vy lt gy, sl to vy arg, NS
	3810			Sh, lt grn-gy, subwxy, plty, soft

Form HE-GE1

GEOLOGIST John N Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-5-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	3820	P		Sh a/a Minor ss, vy fn gr, dull wh, slty, calc, ang to subang, well sort, lumpy, friq, poor intergran por, NS
	3830			Sh, lt grn-gy & lt gy-grn, subwxy, plty, splnty, soft
	3840	P-G		a/a Tr ss dull wh, vy fn gr, ang to subang, well sort, glauc, poor to gd intergran por, NS
	3850	P		Sh a/a Tr ss, pale orng, vy fn gr, ang, slty, lumpy, soft, poor intergran por, NS
	3860			Sh a/a Minor sltst, lt orng to buff, calc, lumpy, firm. Tr sh, md red-brn, subwxy, soft.
	3870			Sh a/a Tr slt st a/a
	3880			Sh, lt gy, earthy, plty, soft. Sh, lt grn-gy, subwxy, plty, soft
	3890			Sh a/a. Tr sh, md red-brn, soft, earthy to subwxy.
	3900			Sh, lt gy & lt gy-grn, subwxy, plty, soft.
	3910			a/a. Tr slt st, dull wh, calc, lumpy, soft. Tr anhy, pink, cryp xtln.
	3920			a/a
	3930	P		Sh, lt gy & lt gy-grn, subwxy, plty, soft w/ few inclus & part of slt st & vy fn ss, ang to subang, dull wh & lt gy, well sort, glauc, calc, firm, poor intergran por, NS
	3940	P		a/a
	3950	P		a/a
	3960			a/a
	3970			a/a. Tr ls lt brn, vy fn detrit matrix mic xtln, den, ang hd
	3980			Ls, buff to cream, cryp xtln, sl chlky, plty/ang, md hd. Tr ls cream, soft, chlky.
	3990			Ls a/a. Minor ls, mar, pink, pink-brn, cryp xtln, md hd. Tr ls, md to lt orng, soft, chlky.
	4000			a/a w/ less ls, buff & cream
	4010			Ls, buff & cream, cryp xtln, sl chlky, plty, ang, md hd. Minor ls cream, soft, chlky.
	4020			Sh, dk to lt brn-red, pale orng, sl calc, firm to md hd, gypsif lumpy
	4030			Sh a/a. Tr anhy, orng, cryp xtln, md hd. Ls, dolic grad to calc dol, mic xtln, chlky, gypsif, den, lumpy, md hd.
	4040			Sh a/a. Ls, dolic, cream, mic xtln, den, gypsif, md hd.
	4050			a/a
	4060			a/a
	4070			Ls, lt gy-brn, gy-buff, lt gy & lt brn, cryp xtln, plty, md hd
	4080			a/a
	4090			Ls grad to dolic ls cream, mic xtln den, sl chlky, md hd. Ls a/a decreas.
	4100			Ls a/a. Ls, gy-buff & buff, mic xtln, den, ang, md hd. Sh, dk to lt brn-red, calc, lumpy, firm
	4110			Sh, dk to lt brn-red, calc, lumpy, firm, gypsif, loc slty. Ls, dolic grad to calc dol, cream, mic to cryp xtln, ang to lumpy, soft to md hd
	4120			Sh a/a decreas. Ls, lt brn to buff, mic xtln, den, ang, md hd.
	4130			Sh, md to lt brn-red, sl calc, ang, gypsif, firm interval w/ minor slt st, red-orng, sl arg, gypsif, sl calc, soft, lumpy. Minor sh, lt grn-gy, subwxy, plty, soft.
	4140			Sh, lt grn-gy, subwxy, plty, soft.
	4150			Sh, md orng-red & lt grn-gy, subwxy, gypsif, soft to firm, plty to ang, loc grad to slty sh, soft scat inclus wh, vy fn xtln gyp.
	4160			a/a
	4170			a/a
	4180			a/a
	4190	F-G		Sh a/a increas in gyp. Tr ss orng vy fn gr, subrd to subang, sl slty friq, loc w/ wh chlky in matrix, fair to gd intergran por, NS. Slt st, orng, arg, gypsif, soft, lumpy. Tr sh, lt orng, vy gypsif, calc, soft

Form HE-GE1

GEOLOGIST John D. Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SW SW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-6-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	4200	F-G		Sh a/a. Tr ss a/a
	4210			Sh, md orng-red, subwxy, gypsif, soft to firm loc grad to slty sh, soft. Slt st, orng, arg, gypsif, soft, lumpy
	4220			a/a
	4230			a/a
	4240			a/a
	4250			a/a
	4260			a/a
	4270			a/a
	4280			a/a
	4290			a/a
	4300			Dol, calc, buff & cream w/ mar mott, mic xtln, den, plty to ang, md hd. Tr ls buff, soft, chlky
	4310	F		Dol, calc, cream, pink, buff, minor mar, mic-xtln, den, gypsif, soft to md hd. Tr ss, pink, vy fn gr, subang to subrd, sl arg, friq, well sort, dolic, fair intergran por, NS
	4320	F		a/a
	4330	F		a/a
	4340	F		a/a
	4350	F		a/a
	4360	F		a/a Sh, blk & sh lt gy-grn, no dol or ss, vy poor spl
	4370	F		a/a
	4380			No spl.
	4390			Dol, calc, pink, buff, mic xtln, den, md hd. Sh, md to lt brt red-orang, fiss, subwxy, soft
	4400			a/a
	4410			a/a
	4420			a/a
	4430	G		Tr dol, pink, mic xtln, den, md hd, tr pp por, NS. Tr ss, pink to wh, vy fn gr, subrd to subang, well sort, gypsif, friq, gd intergran por, NS
	4440	G		Ss a/a
	4450	G		Ss a/a
	4460			Sh, pink, buff, yel-buff, orange-buff & lt grn-gy, subwxy, plty, soft.
	4470			Sh, lt gy-grn & lt grn-gy, subwxy, soft, plty. Sh, blk, carbhy, splnty, plty, soft
	4480			Sh a/a
	4490	F-G		Ss, wh, vy fn gr, ang to subang, friq, mod sort, fair to gd intergran por, NS. Sh, orng-red, subwxy, plty, soft.
	4500	F-G		a/a
	4510			Dol, calc, buff, cream, pink, mic xtln, den, plty to ang, md hd. Sh, red-orng, pink, orng-red, yel, yel-buff, buff & lt gy-grn, subwxy to wxy, plty, soft
	4520			Sh a/a
	4530			Sh a/a
	4540			Sh buff, red-buff, pink, md to lt red-orng, mar, subwxy, plty, vy soft. Sh, lt grn-gy, subwxy, plty, soft.
	4550			Sh, lt grn-gy & lt gy-grn, subwxy, plty, soft.
	4560			a/a
	4570			a/a
	4580			a/a

Form HE-GE1

GEOLOGIST John W Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-7-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	4590			a/a
	4600			a/a
	4610			Sh, ltgy-grn, subwxy, soft w/ part of sltst, vy ltgy. Sh, orng-red, red-orng, buff, pink, yel & cream, subwxy, soft, plty.
	4620			Sh a/a Tr dol, sl calc, buff, mic xtln, den, soft
	4630			Sh a/a
	4640			Sh a/a
	4650			Sh a/a
	4660			Sh a/a Tr dol sl calc, mar to pink, mic xtln, den, plty, soft
	4670			Sh, dkgy to blk, vy splnty, soft. Sh, blk, carb, lignitic, vy flaky, soft.
	4680			Sh, dkgy to blk, vy splnty, soft
	4690			Sh a/a
	4700			Sh a/a
	4710			Sh a/a. Tr dol, calc, buff, mic xtln, den, soft, plty
	4720			Sh, ltgy-grn & ltgy, subwxy, plty, soft. Tr sh, mott ltgrn, ltgy, mar, red-brn, orng-brn, pink, yel, splnty, soft
	4730			Sh, mott olive grn, ltgrn, mar, gy-buff, md to ltgy, yel, subwxy, splnty, plty, soft
	4740			Sh a/a Sh, orng-red & red-orng, subwxy, plty, soft. Sh, md to dkgy & blk, splnty, vy soft.
	4750			a/a
	4760			a/a Tr dol, calc, buff to cream, mic xtln, den, ang, plty, md hd
	4770			Sh a/a
	4780			a/a
	4790			a/a
	4800			a/a
	4810			a/a
	4820			a/a
	4830			a/a
	4840			Dol, sl calc, md to dkgy, mic xtln, den, gypsif, ang, md hd
	4850			Dol a/a
	4860			Dol a/a decreas, Ls, dkgy, vy arg, soft. Ls, md to dkgy, mic-xtln, den, arg, ang, hd
	4870			Ls a/a
	4880			Ls a/a. Ls lamin, dkgy arg w/ part ls, cream, soft, chlky. Minor ls, md to ltgy, soft, chlky, arg, few part sh, blk, sl calc, flaky, soft.
	4890			Ls a/a. Ls, md to ltgy, speck, mic to vy fn detrit, matrix chlky to mic-xtln, arg, soft to md hd w/ part sh, blk, soft
	4900			Ls a/a Tr ls, md to ltbrn, mic to cryp xtln, ang, md hd
	4910			a/a
	4920			a/a
	4930	VG		Sh, yel, olive grn, ltgrn, ltgy, md brn, md red brn, yel-brn, mar, subwxy, splnty, sl vy fn sdy, soft Tr ss, wh, vy fn gr, ang to subang, fria, well sort, vy gd intergran por, NS. Loose ss, fn to md gr, subrd, NS.
	4940	VG		a/a
	4950	G		Ss, wh, vy fn to md gr, ang to subang, poor sort, fria, gd intergran por, NS
	4960			Sh, mott md & ltgy, splnty, soft, loc sl vy fn sdy.
	4970			Sh, md brn, md red-brn, yel, olive grn, yel-brn, mar, ltgy, subwxy, soft, sl vy fn sdy

Form HE-GE1

GEOLOGIST John N Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-9-80

LITHOLOGY	OEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	4980			Sh a/a
	4990			Ls, cream, soft, chlky.
	5000			Ls, buff, cream, mic to cryp xtln, sl chlky, gypsif, ang, md hd. Ls, cream, soft, chlky, gypsif.
	5010			Ls a/a
	5020			Ls a/a. Ls buff to cream, mic to vy fn detrit-ool, matrix chlky to mic xtln, den, plty, soft
	5030			Ls a/a. Minor ls, lt brn, cryp xtln, ang, md hd.
	5040			Ls a/a.
	5050			Ls, cream, cryp xtln, chlky, soft to md hd
	5060			Ls a/a Ls, lt brn to buff, mic to cryp xtln, ang, md hd
	5070			Ls, md to lt brn & buff, mic to cryp xtln, den, gypsif, ang, md hd. Minor ls, cream, mic-gran, soft, chlky, gypsif. Minor ls, lt brn to buff, mic to vy fn detrit, matrix chlky to mic-xtln, poor chlky & inter xtln por, gypsif, plty, soft, NS Tr ls, gy-buff & cream, soft, chlky.
	5080			Ls a/a. Tr ls, md to lt gy & md to lt gy-brn, mic-xtln, den, ang, md hd.
	5090			Ls, speck, md gy & cream, vy fn detrit-pellet, matrix chlky, soft, plty, intercal w/ ls, md gy-brn, mic-xtln, den, plty, md hd.
	5100			Ls, md to lt brn & buff, mic xtln, den, plty, md hd intercal w/ ls, vy fn to fn detrit-pellet, matrix mic-xtln to chlky, gypsif, poor chlky & inter-xtln por, soft, NS Ls, cream, soft, chlky, gypsif
	5110			Ls a/a. Minor dol, calc, md to lt brn & buff, mic-suc, fair inter xtln por, md hd, NS Ls, md to lt brn & buff, soft, sl arg, chlky.
	5120			Ls a/a Tr chert, lt gy, cryp xtln, ang, hd
	5130			Ls a/a
	5140			Ls md to lt brn & buff, vy fn to fn detrit, matrix mic-xtln, den, minor chlky matrix, gypsif, soft.
	5150			Ls sl dolic, cream, chlky, lumpy, mic-xtln, den, gypsif, soft to md hd. Ls, dolic, buff, mic to vy fn detrit & mic-gran, matrix mic-xtln, sl chlky, gypsif, poor inter xtln por, lumpy, soft to md hd, NS
	5160			Ls a/a, N.S. Ls, dolic, buff, mic-suc, lumpy, fair inter xtln por, minor pp por, vy soft, NS
	5170			a/a NS
	5180	P-F		Ls, buff to cream, vy fn to md gr detrit-ool, mic xtln to chlky matrix, poor to fair ool & inter frag por, sl gypsif, soft, NS
	5190			Ls a/a
	5200			Anhy, buff & lt gy, cryp xtln, plty, md hd.
	5210			Anhy a/a.
	5220			Anhy a/a. Ls, cream, chlky intercal w/ gyp, wh, mic-xtln, soft, N.S.
	5230			Anhy a/a
	5240			Anhy a/a
	5250			Anhy a/a.
	5253 Circulated			Anhy a/a. Ls, lt brn to buff, mic-xtln, den, plty, md hd. Dol, calc, buff, mic-xtln, den, plty, md hd. Tr ls, dolic, buff to cream, mic to vy fn detrit, matrix mic-xtln, poor inter xtln por, tr blk dead oil stain, no fluor, no cut.
				CORE 1 5253-5313 See detailed core description
				Ron DST 1 5240-5270
	5320			Ls, buff to cream, mic to md gr detrit, matrix chlky to mic-xtln, poor chlky & inter-xtln por, plty to lumpy, soft to md hd, few dk brn specks & part of dead oil, no live show
	5330			Ls a/a w/ sl increas in specks dead oil.
	5340			Ls a/a w/ decreas in specks dead oil.
	5350			Ls a/a, N.S. Ls, buff, vy fn xtln, matrix chlky, soft, poor inter xtln & chlky por, NS. Tr anhy, lt gy,

Form HE-GE1

GEOLOGIST John W Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-12-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
				cryp-xtln, plty grad to soft, mic-xtln, calc, den, chlky
\	5360	P-F		Ls lt brn to buff, mic-xtln, den, gypsif, md hd to hd grad to vy fn xtln, den, md hd. Ls, buff, dolic, vy fn xtln, sl to vy gypsif, poor to fair inter xtln por, tr pp por, soft to md hd, NS. Anhy, lt gy, cryp-xtln, plty, md hd grad to anhy, soft, mic-xtln, calc, chlky, den. Dol, calc, cream, cryp-xtln, hd loc w/ poor pp por, NS. Ls, buff to cream, cryptxtln, hd
\	5370	P-F		Ls a/a Anhy, lt gy, cryp-xtln, md hd. Minor ls, cream, vy fn detrit, matrix chlky, vy gypsif, soft
/	5380	G-VG		Ls, lt brn, buff & cream, mic xtln, den, md hd. Dol, calc, buff to cream, vy fn xtln, gypsif, gd to vy gd inter xtln por, soft, NS
	5390	P-F		Ls, buff to cream, mic-xtln, den, gypsif, md hd. Ls, buff to cream, vy fn to fn detrit, matrix mic-xtln to chlky, gypsif, poor to fair inter xtln & chlky por, soft, NS
/	5400	P-G		Ls, md to lt brn & buff, vy fn xtln, gypsif, fair to gd inter xtln por, soft, NS. Dol, calc, md to lt brn, vy fn xtln, fair to gd inter xtln por, soft to md hd grad to mic xtln, den, md hd, NS. Ls, lt brn to buff, mic-xtln, den, md hd. Ls, buff to cream, mic to vy fn detrit, matrix mic xtln to chlky, gypsif, poor chlky & inter xtln por, soft, NS
	5410	P-F		Ls, buff to cream, vy fn to md detrit-ool, matrix mic xtln to chlky to sl open, gypsif, poor to fair interfrag, inter xtln & chlky por, soft, NS. Minor ls, cream, soft, chlky.
	5420	P-F		Ls, buff to cream vy fn to md detrit-ool, matrix mic-xtln to chlky, gypsif, soft, poor to fair interfrag por & chlky por, NS
	5430	P-F		Ls a/a, NS
/	5440	P		Dol, calc, grad to dolic ls, gy-buff to buff, mic to vy fn xtln, gypsif, den to poor inter xtln por, md hd, NS. Tr ls, lt gy & lt brn-gy, mic xtln, den, md hd.
	5450	P		Ls, md to lt gy-brn, md to lt brn-gy, mic-xtln, den, gypsif, md hd, intercal w/ minor ls, lt gy cream wh, mic to vy fn detrit, matrix chlky, gypsif, soft, poor chlky por, NS. Minor ls, md to lt gy-brn, md to lt brn-gy, mic to vy fn detrit, matrix mic-xtln, den, md hd
	5460	P		Ls a/a
	5470	P		Ls a/a
	5480	P		Ls a/a
	5490	P		Ls a/a. Ls md to lt gy & lt brn-gy, mic to vy fn xtln, den, soft
	5500	P		Ls, lt brn to buff, mic to cryp xtln, den, md hd grad to ls, vy fn to fn gr pellet-detrit, matrix mic-xtln, gypsif, poor inter xtln por, intercal w/ ls, vy lt gy & cream, soft, chlky, loc vy fn to fn gr detrit, matrix chlky, soft, NS
	5510	P		a/a
	5520	P		Ls md to lt gy, md to lt brn-gy & lt gy-brn, mic to fn detrit, gypsif, matrix mic-xtln, pyr, poor inter-xtln por, md hd intercal w/ ls, vy lt gy to dull wh, mic to fn detrit, matrix chlky, sl arg, vy soft, NS
	5530	P		a/a
	5540	P		a/a
	5550	P		a/a
	5560	P		a/a
	5570	P		a/a
	5580	P		a/a
	5590	P		a/a
	5600	P		a/a
	5610	P		a/a
	5620	P		a/a
	5630	P		a/a

Form HE-GE1

GEOLOGIST John D Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell

LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-12-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	5640	P		a/a
	5650	P		a/a
	5660	P		a/a
	5670	P		a/a Minor ls, lt brn to buff & cream, mic to vy fn detrit, matrix mic-xtln, den, soft interval w/ls, cream, mic to vy fn detrit, matrix chlky to mic xtln, soft, NS
	5680	P		a/a
	5690	P		a/a
	5700	P		a/a
	5710	P		a/a
	5720	P		a/a
	5730	P		a/a
	5740	P		a/a
	5750	P		a/a
	5760	P-F		Ls, buff to cream, vy lt gy & dull wh, mic to fn detrit, matrix mic xtln to chlky, vy soft, fair inter xtln & chlky por, interval w/ls, buff & gy-buff, vy fn to fn detrit, matrix mic xtln to chlky, den to poor inter xtln por, soft, N.S.
	5770	P-F		a/a
	5780	P-F		a/a
	5790	P		Ls, buff to cream, mic to vy fn detrit, matrix mic xtln, den, gypsif, soft interval w/ls, cream to wh, mic to vy fn detrit, matrix chlky, vy soft, poor chlky por, gypsif, N.S.
	5800	P		a/a
A	5810	P-F		Ls, buff to cream, mic to vy fn detrit, matrix mic-xtln, den, gypsif, soft, NS Ls cream to wh, mic to vy fn detrit, matrix chlky, vy soft, gypsif, poor chlky por, NS. Tr ls, lt brn to buff, vy fn xtln, fair inter xtln por, soft, N.S. Tr chert, cream, mic detrit, den, md hd.
	5820	P-G		Ls a/a, NS. Minor ls, buff to cream, vy fn to md gr detrit-ool-pellet, matrix open to mic xtln & chlky, fair to gd inter frag por, poor to fair chlky & inter xtln por, soft, N.S.
	5830	P-G		Ls a/a except no ls, vy fn xtln a/a.
	5840	P-G		a/a
	5850	P-G		Ls, buff, mic to fn detrit, matrix mic-xtln & chlky to minor open, gypsif, soft, poor to gd inter frag, chlky & inter xtln por, interval w/ls, cream, soft, chlky, NS. Tr ls, buff, mic-suc, soft, fair inter-xtln por, NS
	5860	P-G		a/a
	5870	P-G		a/a
	5880	P-F		Ls a/a except den to poor inter xtln & chlky por, NS. Tr ls, md to lt brn, vy fn xtln, gypsif, soft, fair inter xtln por, NS
	5890	P-F		Ls a/a
	5900	P-F		Ls a/a
A	5910	P-F		Ls a/a Tr chert, lt gy, cryp xtln, hd.
A	5920			Ls md to lt gy, lt gy-brn, buff & cream, mic to fn detrit-pellet, matrix mic xtln, den, md hd Tr chert a/a.
A	5930			Ls a/a
A	5940			Ls a/a
A /	5950	P		Ls, buff & gy-buff, mic to md gr detrit, matrix mic xtln to chlky, gypsif, soft, den to poor inter xtln & chlky por, interval w/ls cream, mic to fn detrit, matrix chlky, vy soft, w/ few chert inclus, lt gy, hd, NS. Tr dol, calc, buff & cream, cryp xtln, hd.

Form HE-GE1

GEOLOGIST John W. Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell

LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-13-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	5960	P		a/a
	5970	P		a/a
	5980	P		a/a
	5990			Dol, sl calc, buff & cream, cryp xtln, hd. Ls, buff, cream, cryp xtln, md hd
	6000			a/a
	6010			a/a
	6020			a/a
	6030			a/a Sh, brick red, Sh, pale grn, subwxy, firm. Tr dol, sl calc, md brn to gy-brn, mic xtln, den, hd Trsh, lt org, plty, firm
	6040			Sh, brick red, firm, lumpy, loc subwxy, gypsif intercal w/sh, vy lt grn. Tr dol, lt brn, mic xtln, den, md hd.
	6050	P-F		Ls, md to lt brn, vy fn detrit-pellet, matrix mic xtln, minor chlky, gypsif, den to fair inter xtln por grad to ls, mic xtln, den intercal w/ls buff to cream, mic to vy fn detrit-pellet, matrix chlky, vy soft, gypsif, poor chlky por, N.S. Minor ls, lt gy & lt brn-gy, vy fn detrit, matrix mic xtln, den, md hd intercal w/ls, vy lt gy, mic to vy fn detrit, matrix chlky, soft, poor chlky por, NS
	6060	P-F		a/a
	6070	P-F		a/a w/ increas in ls, cream, soft, chlky
	6080	P-F		a/a Minor ls, buff, cryp xtln, md hd.
	6090	P-F		a/a
	6100	P-F		a/a
	6110			Ls, lt brn to buff, cream, cryp xtln, md hd intercal w/ls cream, soft, chlky, gypsif.
	6120			Ls, buff & cream, cryp xtln, gypsif, md hd intercal w/ls, cream to wh, chlky, vy soft, gypsif.
	6130			Ls a/a. Ls lt brn, mic xtln, den grad to fn to md gr detrit, matrix mic xtln.
	6140	G		Ls, cream, mic xtln, den, loc chlky, grad to vy fn xtln, matrix chlky, gypsif, soft. Tr ls, dolic, cream, mic-suc, soft, gd inter xtln por, NS Ls, cream, mic to md gr detrit matrix mic xtln to chlky, soft.
	6150	G-VG		Ls dolic, cream, mic suc, sl vy fn vug, soft, gd inter xtln por, NS Ls cream, cryp xtln, md hd Ls, buff to cream, vy fn detrit-pellet, soft, vy gd inter frag por, soft, NS. Ls, cream, soft, chlky.
	6160	VG		Ls, dolic, mic-suc to vy fn xtln, vy gd inter xtln por, soft, NS. Ls, cream, soft, chlky.
	6170	P-VG		Ls a/a. Ls, buff to cream, vy fn to fn grool-detrit, matrix chlky, soft, poor chlky por, NS Tr ls, md to lt brn, fn to md gr detrit, matrix chlky, soft.
	6180	F-G		Ls, dolic, buff, mic xtln, to vy fn vug, sub-suc, foss, earthy, fair to gd inter xtln & vy fn vug por, soft, NS. Ls, buff, mic-xtln, den w/ many brn, vy fn calcite frags, md hd. Ls lt brn, buff & cream, fn to md gr pellet-detrit, matrix mic xtln to chlky, vy gypsif, soft, poor to fair inter xtln & chlky por, NS Minor dol, calc, md to lt brn, vy fn xtln, matrix chlky, poor to fair chlky por, soft, NS
	6190	P-G		a/a NS
	6200	P-G		a/a NS Tr ls, md brn, mic xtln, den, md hd.
	6210			No spl due to a 23' down hole correction made @ 6202'
	6220'			No spl.
	6230	P		Ls, md to lt gy & lt brn gy, mic xtln, den, md hd w/ part of md gy sh, ls grad to ls, mic to vy fn detrit matrix den, md hd intercal w/ls, lt gy to wh, soft, chlky, arg, vy fn to md gr detrit-foss, poor chlky por, NS
	6240	P		Ls a/a. Ls, md to lt brn, buff & cream, mic to cryp xtln, den, md hd
	6250	P		Ls, md to lt gy-brn & md to lt brn, mic to fn detrit, matrix mic xtln, den, md hd intercal w/ls, cream, lt gy, wh, md brn & buff, vy fn to md gr detrit-foss, matrix chlky, soft, arg, poor chlky por, NS Ls, md to lt brn, buff & cream, mic to cryp xtln, den, md hd.
	6260	P		Ls a/a

Form HE-GE1

GEOLOGIST John W. Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell

LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-14-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	6270			Ls, buff to cream, cryp xtln, md hd. Ls, cream to wh, soft, chlky
	6280			a/a sl pyr.
	6290			a/a Ls, lt brn, cryp xtln, md hd
	6300			Ls, lt brn to buff, minor cream, cryp xtln, md hd,
	6310	F		Ls, buff to cream, minor lt brn, cryp xtln, md hd. Ls, cream to wh, soft, chlky. Tr ls, dolic, buff, wh, mic-suc, fair interxtln por, soft, NS Minor ls, dolic, buff, mic xtln, earthy, chlky, den, soft.
	6320	F		a/a
	6330	F		a/a w/increas in ls, dolic, wh, mic-suc, fair interxtln por, soft, NS No ls, dolic, buff, earthy a/a
	6340	F		Ls, dolic, wh, mic-suc to vy fn xtln, fair interxtln por, NS. Ls, mato lt brn & buff, cream, cryp xtln, md hd
	6350	F		a/a
	6360	F		a/a
	6370			Dol, calc, buff, cream, tr pink, md orng, cryp to mic xtln, hd. Trsh, pale orng, vy calc, soft.
	6380			Dol a/a. Trsh, red-orng, subwxy, plty, soft.
	6390			Dol a/a
	6400	P-G		Ls, dolic, grad to calc dol, mic-suc to mic xtln, vy fn vug, vy soft, cream, wh, buff & pink, poor to fair interxtln por, poor vy fn vug por, NS Tr dol, wh, vy fn to fn xtln, fair to gd interxtln por, soft, NS
	6410	P-G		a/a
	6420	VG		Dol, calc, buff to cream, mic xtln, den, hd. Minor dol, wh, vy fn xtln, vy gd interxtln por, soft, NS.
	6430	VG		Dol a/a, mic xtln, den, sl vug por, NS. Minor dol, cream to wh, vy fn to fn xtln, vy gd interxtln por, soft, prob vug lining, NS
	6440	VG		Dol, sl calc, cry/p to mic xtln, den, hd. Dol, cream to wh, vy fn to fn xtln, vy gd interxtln por a/a decreas,
	6450	VG		a/a w/tr dol, vy fn to fn xtln a/a.
	6460	VG		a/a
	6470	G-VG		a/a. Tr dol, wh, vy fn xtln, gd interxtln por, soft, NS prob vug or frac face
	6480	P		Ls, dolic, cream to wh, mic xtln, vy chlky, sl vy fn vug, poor interxtln & chlky pore, poor vug por, grad to tr ls, vy fn detrit, vy soft, NS
	6490	P		a/a
	6500	P-G		Ls a/a grad to dol, vy fn xtln, gd interxtln por, soft, NS. Ls, dolic, wh, vy fn detrit matrix mic-xtln, vy soft, poor to fair interxtln pore, poor to fair vy fn vug por, NS. Minor dol, wh, fn to md xtln, gd interxtln por, grad to mic xtln, den, soft to md hd.
	6510	G		Dol, wh, fn to md xtln, gd interxtln por grad to mic xtln, den, soft to md hd, NS, numerous per dol xtl clusters indic vug devel.
	6520	G		a/a NS
	6530			Dol, calc, pink, buff & cream, mic xtln, den, md hd
	6540			a/a
	6550	P		Dol calc, cream, soft, chlky, mic-xtln, poor interxtln por, loc sl vy fn vug, NS. Minor dol, cream, vy fn xtln, poor interxtln por, soft, NS
	6560	P		a/a
	6570	F		Dol, calc, cream, mic-xtln, fair interxtln por, soft, NS. Dol, buff to cream, mic xtln, den, md hd
	6580			Dol, calc, cream, mic xtln, den, md hd. Trsh, md grn-gy to md gy, subwxy, vy splnty, soft. Trsh, md grn, subwxy, calc, soft
	6590			Dol a/a. Trsh, md grn & gy-grn, plty, calc, soft
	6600			Dol a/a. Trsh, md grn-gy, calc, plty, soft.
	6610			Dol a/a. Trsh, md grn, subwxy, vy calc, sl plty, splnty, soft. Dol, wh, mic xtln, den to vy fn xtln, vy fn sdy.
	6620	F-G		Sh, md gy to vy lt grn, subwxy, calc, vy fn to fn say, soft. Trsh, md gy-grn w/a/a gy sh part, calc, grilly

Form HE-GE1

GEOLOGIST John D Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SW SW Section 26, T21N-R19E Carson County, South Dakota

DATE 2-15-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
				Dol calc, dull wh, mic-xtln, den, vy fn sdy, md hd grad to dol, vy fn xtln, matrix mic-xtln, den, soft to md hd. Dol calc dolic ls, buff, mic-suc, loc vy fn to fn sdy, fair to gd inter xtln por, soft, NS
/ /	6630	G		Dol, calc, buff, mic-suc grad to vy fn xtln, gd inter xtln por, soft, NS
/	6640	G		Dol a/a, NS
	6650			Ls, mott, cream & gy-cream, vy lt gy to wh & dk gy, soft, chlky, sl arg, sl vy fn to md gr detrit-foss intercal w/ls, md to lt gy & lt gy-brn, vy fn to md gr detrit, matrix mic-xtln, den, loc mott dk gy, md hd.
	6660			Ls a/a
	6670			Ls a/a
	6680			Ls, cream & gy cream, vy lt gy w/dk gy mott, vy chlky, soft, sl vy fn to md gr detrit-foss, intercal w/ls, md to lt gy & lt gy-brn, vy fn to md gr detrit, matrix mic-xtln, den, mott dk gy, md hd.
	6690			Ls a/a
	6700			Ls a/a.
	6710			Ls a/a
	6718			Ls a/a
				CORE 2 6718-6778 See detailed core description
				CORE 3 6778-6838 See detailed core description
				Ran DST 2 6785-6838
				Ran DST 3 6726-6746
	6840			Ls, dolic, buff, mic-xtln, den, md hd. Ls, buff, fn to crs detrit-foss matrix mic xtln To chlky, den, md hd, intercal w/ls, cream, soft, chlky, gypsif Ls, buff, mic to cryp xtln, sl chlky, den, soft to md hd. Tr dol, cream, mic xtln den, md hd.
	6850	P		Ls a/a w/tr dk brn, dead stain, weak wh cut, no fluor, no live stain.
	6860	P-F		Ls a/a w/tr dk brn, dead stain, weak wh cut, no fluor, no live stain. Tr ls, dolic, lt brn to buff, vy fn xtln, poor to fair inter xtln por, soft, NS.
	6870	P-F		Ls, dolic, lt brn to buff, tr cream, vy fn xtln, poor to fair inter xtln por, tr slow, weak pale wh cut, no fluor, no live stain, tr dk brn dead stain, soft intercal w/ls cream, soft, chlky, ls, buff, mic-xtln, den, grad to mic to fn detrit, matrix mic xtln, den, sl chlky, soft.
	6880	P-F		Ls, dolic, lt brn to buff, vy fn xtln, poor to fair inter xtln por, soft intercal w/ls, buff, cryp xtln, sl chlky, soft to md hd gypsif. Minor ls, buff, mic to fn detrit, matrix mic-xtln, den, gypsif, soft to md hd. Ls, cream, soft, chlky, grad to mic to fn detrit, matrix chlky, soft.
	6890	P-F		Ls a/a w/decreas in ls, vy fn xtln a/a NS
	6900	P-F		Ls a/a
	6910	P-F		Ls a/a
	6920	FG		Ls, buff, vy fn xtln to mic-suc, fair to gd inter xtln por, soft, NS
	6930	F		Ls, dolic, buff, mic-suc to vy fn xtln, fair inter xtln por, soft intercal w/minor ls cream, soft, chlky & ls, buff to cream, mic to fn detrit, matrix mic xtln to chlky, soft, NS
	6940	F		Ls a/a. Minor ls, buff, cryp to mic xtln, den, md hd
	6950	F		Ls, buff to cream, mic to md gr detrit, matrix mic xtln to chlky, soft. Ls cream, soft, chlky, gypsif. Minor ls buff, mic to cryp xtln, den, sl chlky, md hd. Minor ls, lt brn to buff, vy fn xtln, den to fair inter xtln por, soft to md hd.
	6960	F		a/a
	6970	F		a/a
	6980	F		a/a
	6990	F		a/a

Form HE-GE1

GEOLOGIST John N Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-18-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	7000	F		q/a Trdol, sl calc, lt brn, buff & cream, cryp xtln, hd.
	7010			Ls, buff to cream, cryp xtln, chlky, soft to md hd interca l w/ ls cream soft chlky, gypsif & minor ls, buff to cream, vy fn to md gr detrit, matrix chlky to minor mic xtln, gypsif, soft.
	7020			q/a
	7030			q/a
	7040			q/a
	7050			q/a
	7060			q/a
	7070			q/a
	7080			q/a
	7090			q/a
	7100			q/a
	7110			q/a
	7120			q/a
	7130			q/a
	7140			q/a
	7150			q/a
	7160			q/a
	7170			q/a
	7180			q/a
	7190			q/a
	7200			No spl lost circulation at 7211'
	7210			No spl.
	7220	F		Ls, cream, vy fn to md gr detrit, matrix chlky, soft grad to ls, cream, soft, chalky, gypsif. Ls, buff, mic xtln, den, soft grad to ls, buff, vy fn to md gr detrit, matrix mic xtln, gypsif, den. Minor ls, lt brn to buff, vy fn xtln, soft, fair inter xtln por, NS. Minor ls, lt gy-brn, ma to lt brn e buff, mic xtln, den, md hd
	7230	F		q/a
	7240	F		q/a
	7250	F		q/a
	7260	F		q/a
	7270	F		q/a
	7280	F		q/a Tr ls, lt gy & lt brn-gy, mic xtln, den, pyr; sl vy fn sdy, md hd interca l w/ ls lt gy, soft, chlky, sl vy fn detrit
	7290			Ls, lt gy q/a.
	7300	F-G		Ss vy lt gy, vy fn gr, ang to subang, sl calc, mod sort, fria, fair to gd intergran por, NS Minor ls, mott dk gy & dull wh, soft, chlky, sl arg, lies on top of ss.
	7310	F-G		Ss q/a
	7320	F-G		Ss q/a
	7330	F-G		Ss q/a except becom silty.
	7340			Sh, md grn-gy, subwxy, splnty, flaky, soft
	7350			Sh q/a grad to md gy-grn
	7360			Sh q/a
	7370			Sh q/a
	7380			Sh q/a

Form HE-GE1

GEOLOGIST John W Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

WELLSITE SAMPLE DESCRIPTION

WELL NAME Chevron-SONAT 1 O'Donnell
LOCATION SWSW Section 26, T21N-R19E Corson County, South Dakota

DATE 2-20-80

LITHOLOGY	DEPTH	SHOWS Poros.	SHOWS Stain.	SAMPLE DESCRIPTION
	7390			Sh a/a
	7400			Sh a/a
	7410			Sh a/a, sl pyr.
	7420			No spl.
	7430			Sh a/a
	7440			Sh a/a w/ few inclus ls, cream, soft, chlky, ls, buff, mic xtln, den.
	7445			Sh a/a
				CORE A 7445-7504' See detailed core description
	7520	VG		Ss, loose, wh, vy fn to crs gr, subang to subrd, fria, poor sort, vy gd intergran por, NS.
	7530	VG		Ss a/a w/ few crs nodules of blk, sbny, subrd phoshate.
	7540	VG		Ss a/a, NS. Sh, md gy-grn, plty, splnty, soft w/ few inclus of phosphate nodules a/a, sh grad to slty sh & vy fn sdy sh.
	7550			Sh, md gy-grn, subwxy, plty, firm w/ phosphate inclus, sl pyr. Sh grad to slty & vy fn sdy sh & to lt gy shly siltst.
	7560	VG		Ss, loose, vy fn to vy crs, subrd, frost, poor sort, vy gd intergran por, NS. Sh a/a w/ phosphate
	7570	VG		Tr loose ss a/a, NS. Sh a/a w/ blk phosphate nodules
	7580	P		Sh a/a w/ phosphate nodules & seams of ss, md to lt gy, lt grn-gy, vy fn gr, subang to subrd, loc shly, poor intergran por, NS.
	7590			Sh a/a w/ phosphate nodules.
	7600	VG		Ss loose, vy fn to crs gr, subrd, poor sort, frost, NS. Sh, md gy-grn, subwxy, plty, firm w/ nodules of blk phosphate, sh grad to md gy, slty & vy fn sdy sh.
	7610	F-G		Ss, wh, vy fn to crs gr, ang to subrd, poor sort, fria, fair to gd intergran por, few loose grains, NS
	7620	G		Sh a/a. Ss, wh, vy fn to md gr, ang to subang, poor sort, fria, gd intergran por, few loose grains, NS
	7630			Sh a/a
G	7640	P-F		Ss, pink to wh, vy fn to fn gr, ang to subang, mod sort, slargil, glauc, fria to firm, poor to fair intergran por, NS. Tr ls, wh, pale grn, rust, mott, soft, vy chlky, glauc.
G	7650	P-F		Ss, cream to wh, tr pink, vy fn to md gr, ang to subang, glauc, matrix sl chlky, fria, poor sort, poor to fair intergran por, ss grad to calc, dens ss, w/ minor secondy vy fn to fn gr calcite & dolic calcite xtls, NS. Ls, wh, soft, chlky, loc w/ brt grn specks of chlorite.
G	7660	F-G		Ss a/a except fair to gd intergran por loc w/ few part pale grn sh, NS. Tr siltst, lt gy, glauc, soft. Ls, wh, soft, chlky a/a
G	7670	F-G		Ss a/a NS
	7680	F-VG		Ss, vy lt gy to dull wh, vy fn to fn gr, ang, fria, mod sort, fair to vy gd intergran por, NS
	7690	F-VG		Ss a/a NS
G	7700	P-F		Ss, vy lt gy, vy fn gr, ang, sl arg, sl glauc, w/ part sh md gy, wxy, poor to fair intergran por, NS. Ss dull wh, vy fn to md gr, ang to subrd, sl glauc, fria, fair to gd intergran por, NS. Minor ls, wh, chlky.
G	7710	F-VG		Ss, vy lt gy to dull wh, vy fn to fn gr, ang, sl arg, sl glauc, mod sort, fria, fair to vy gd intergran por, NS. Tr ls, wh, chlky, soft.
G	7720	F-VG		Ss a/a NS
G	7730	F-VG		Ss a/a NS. Ss, cream, vy fn to fn gr, ang to subang, mod sort, matrix loc sl chlky, sl glauc, fria, fair to gd intergran por, NS.
G	7738	F-VG		Ss a/a, NS.
				Total Depth Driller 7738' Total Depth Schlumberger 7742'

Form HE-GE1

GEOLOGIST John N Hughes

Chevron-SONAT #1 O'Donnell
SW SW Section 26: T21N - R19E
Corson County, South Dakota

CORE DESCRIPTION

CORE NO. 1: 5253' - 5313' CUT 60' - RECOVERED 16'

5253 - 54	Limestone, light brown, very fine to course grained detrital, matrix microcrystalline, dense to poor intercrystalline porosity, strong odor, moderate white cuts, no streamers, no live stain, locally with specks of black, tarry, soft dead oil and irregular tight fractures with hairline fill of black, tarry, soft, dead oil. Limestone, locally has horizontal zones to 1-inch maximum containing close spaced partings and thin seams of dark grey, fine to course detrital, dense limestone, interval cut by one open vertical fracture with scattered coating of black tarry viscous dead oil on fracture plane.
5254 - 55	Limestone, as above with many scattered fine to medium gypsum crystals, quick milky white cuts, no fluorescence, no live stain, strong odor, interval cut by one open vertical fracture with scattered coating of black, tarry, viscous dead oil on fracture plane.
5255 - 56	Limestone as above with show, as above, interval cut by one open, vertical fracture with scattered coating of black, tarry, viscous dead oil on fracture plane.
5256 - 57	Limestone, as above grading to medium brown, show, as above.
5257 - 58	Limestone, as above, light brown, trace of scattered dark brown dead stain in matrix, show, as above.
5258 - 59	Limestone, as above, poor to fair intercrystalline porosity, matrix slightly chalky, show as above becoming weaker, few inclusions to 1/2-inch of white, micro-sucrosic soft gypsum and scattered dark brown fine crystalline gypsum.
5259 - 60	Limestone, as above with show as above. Traces of scattered dark brown dead stain in matrix.

5260 - 61	Limestone, as above, medium to light brown and show as above. Limestone, locally has few isolated fine to medium vugs partly filled with dark brown dead stain and scattered specks of dark brown dead oil in matrix; quick yellow-white streaming cut from irregular fracture with scattered dark brown stain, no fluorescence, no live stain.
5261 - 62	Limestone, light brown, very fine to medium-grained detrital, matrix microcrystalline, dense to poor intercrystalline porosity, many irregular tight incipient fracture-filled with black mineralization and possible dead stain, slow milky white cuts from matrix, no fluorescence, no live stain, odor, medium hard.
5262 - 63	Limestone, light brown, very fine to course grained detrital, matrix microcrystalline to chalky, poor intercrystalline and chalky porosity, slightly fossiliferous, trace pinpoint porosity, dead dark brown stain in few pores and trace isolated dark brown dead stain in matrix, slow weak pale white cuts, no fluorescence, live stain, odor, medium hard, interval cut by 60-degree open fracture.
5263 - 65	Limestone, light brown, very fine to very course grained detrital, slightly fossiliferous, matrix microcrystalline to chalky, poor intercrystalline and chalky porosity, few isolated fine vugs with dead brown stain, slow, weak palc white cuts, no fluorescence, no live stain, interval cut by one open vertical fracture with scattered black soft tar on fracture plane, no fluorescence, quick streaming white cut from tar surface of fracture.
5265 - 66	Limestone, as above, medium to light brown, show as above, locally with irregular tight hairline frac-filled with black mineralization and traces of dark brown dead stain.
5266 - 67	Limestone, very fine to fine grained detrital, poor to good intercrystalline porosity, trace scattered dark brown, dead stain, show as above, few specks black, shiny, soft tar in good porosity produce quick streaming yellow-white cut, interval cut by a 70-degree double open fracture, bottom 3 inches of foot consists of broken fragments and ground-up rock.
5267 - 68	Limestone, light brown, very fine to medium grained detrital, matrix microcrystalline, dense, medium hard, no show, interval cut by one 45-degree open fracture.

5268 - 69	Limestone, light brown, very fine to medium grained detrital, matrix microcrystalline, dense, medium hard locally mottled, light brown and white, medium to course detrital with numerous very course grained white calcite inclusions and crystals, few vugs to 1/4-inch thick maximum, partly filled with secondary calcite and minor very fine crystalline gypsum, isolated poor vuggy porosity, medium hard, bottom 3 inches consists of small broken rock fragments and ground up rock.
5269 - 5313	Ground up rock.

CORE NO. 2: 6718' - 6778' CUT 60' - RECOVERED 60'

6718 - 22	Shale, very calcareous, medium green-grey, medium hard, slightly fossiliferous, hackly , locally platy, slightly pyritic, brachiopod, coral and bryozoa casts.
6722 - 24	Shale, as above interbedded and intercalated with limestone, grey-buff and green-buff and very light grey, microcrystalline, dense, fossiliferous, grading to lim e stone, micro to very fine detrital matrix microcrystalline, dense, medium hard, locally pyritic.
6724 - 25	As above with calcite casts of corals.
6725 - 26	Limestone, grey-buff, buff and very light grey, microcrystalline, dense, medium hard intercalated with limestone, medium grey, micro to very fine crystalline, argillaceous, pyritic, dense, medium hard, interval cut by two open vertical and high angle fractures, no show.
6726 - 27	Limestone, medium grey-brown grading to light green-grey, microcrystalline, dense, medium hard to limestone, micro to fine detrital and slightly sandy, fossiliferous, pyritic, matrix micro-crystalline, dense, medium hard with few irregular partings of light green-grey, calcareous firm shale.

6727' - "A" ZONE

6727 - 29	Limestone, medium grey to medium brown-grey, microcrystalline, dense, medium hard.
6729 - 31	Limestone, medium grey-brown to medium brown-grey, microcrystalline, dense, medium hard.
6731 - 32	Limestone, as above, interval cut by one open vertical fracture, no show.
6732 - 33	Limestone, buff to white, micro to course crystalline, gypsiferous, slightly fine vuggy with scattered fine-grained gypsum crystals, few fossil casts, poor to fair intercrystalline porosity, medium hard, interval cut by one open vertical fracture, no show.
6733 - 35	Limestone, medium grey-brown, micro to cryptocrystalline, dense, medium hard with few inclusions and fracture-filled of white fine to course crystalline calcite and gypsum, interval cut by one open vertical fracture, no show.

6735 - 36	Limestone, as above with numerous inclusions and incipient fracture fills of fine to course crystalline calcite and gypsum with few horizontal seams of limestone, dark brown, microcrystalline, dense, slightly argillaceous, medium hard, interval cut by one open vertical fracture, no show.
6736 - 39	Limestone, as above except medium brown and medium grey-brown, interval cut by one open vertical fracture, no show.
6739 - 40	Limestone, medium grey-brown, cryptocrystalline, medium hard with few incipient vertical fractures with scattered brown live stain, dull to bright yellow fluorescence, quick bright yellow cut, no odor.
6740 - 41	Limestone, as above with few incipient fractures with medium brown tarry oil stain, gives quick bright yellow cut, no odor.
6741 - 42	Limestone, as above with few vertical fractures, as above with scattered brown live stain, dull to bright yellow fluorescence, quick bright yellow cut, no odor.
6742 - 43	Limestone, as above with vertical fracture with scattered brown live stain, dull brown-yellow fluorescence, quick bright yellow cut, no odor.
6743 - 44	Limestone, as above with few vertical fractures with scattered brown live stain, bright yellow fluorescence, quick bright yellow cut, no odor.
6744 - 45	Limestone, medium brown, micro to cryptocrystalline, dense with few scattered gypsum and calcite crystals, fine to medium crystalline, no fracture with stain, no cuts, no fluorescence.
6745 - 46	Limestone, medium brown, cryptocrystalline, dense, medium hard, one incipient vertical fracture with brown live stain and thick black tarry dead stain, no fluorescence, quick bright yellow cut, no odor. Limestone, has few horizontal partings of dark grey, microcrystalline, dense, slightly argillaceous limestone.
6746 - 47	Limestone, medium grey-brown, micro to cryptocrystalline, dense, medium hard, no vertical fracture, no show.

6747 - 48	Limestone, medium grey, microcrystalline, dense, medium hard intercalated with dolomite, calcareous, medium grey to buff, microcrystalline, dense, medium hard, many parts of dark grey, micro-crystalline argillaceous limestone which give weak white cut, no fluorescence, no visible stain, interval cut by one open vertical fracture, no show.
6748 - 49	Limestone, dolomitic, light grey, microcrystalline, dense, medium hard, interval cut by one open vertical fracture, no show.

6749' - "B" ZONE

6749 - 51	Limestone, dolomitic, grading to calcareous dolomite, light grey, microsucrosic to very fine crystalline, fair to good intercrystalline porosity, fair very fine vuggy porosity, trace of scattered brown dead stain, no fluorescence, weak white cut, no live stain, soft.
6751 - 52	Limestone and dolomite, as above, buff, porous, as above, water-wet, interval cut by one open, vertical fracture, no show.
6752 - 53	Limestone and dolomite, as above, good intercrystalline porosity, poor to fair fine vuggy porosity, water-wet, interval cut by one open vertical fracture, no show.
6753 - 54	Limestone and dolomite, as above, fair to good intercrystalline porosity, poor to fair fine to course vuggy porosity, scattered dark brown dead stain, few slow, weak white cuts, no fluorescence, no live stain, water-wet.
6754 - 55	Limestone, dolomitic, micro-sucrosic to very fine crystalline porosity, soft, few slow, weak white cuts, no fluorescence, no live or dead stain.
6755 - 56	Limestone, dolomitic as above, fair to good porosity, trace dark brown dead oil stain in matrix, few slow, weak white cuts, no fluorescence, no live stain.
6756 - 57	Limestone, dolomitic, fossiliferous, fair to good intercrystalline porosity, poor to fair fine to very course vuggy porosity, vugs to 1/4-inch maximum, few vugs with dark brown dead oil stain, few slow, weak white cuts, no fluorescence, no live stain.

6757 - 60	Limestone, dolomitic as above, fair to good intercrystalline porosity and fair to good, fine to very coarse vuggy porosity, few very slow, weak white cuts, no fluorescence, no live stain.
6760 - 61	Limestone, dolomitic as above with porosity, as above grading to dolomite, calcareous, light brown to buff, microcrystalline, dense, medium hard, no show.
6761 - 62	Limestone, buff, micro-sucrosic to very fine crystalline with fair to good intercrystalline porosity, grading to fine to coarse detrital, matrix micro-sucrosic and very fine crystalline, soft grading to limestone, buff, microcrystalline, dense, medium hard with many inclusions to 1-inch of light grey, angular, hard, chert, no show.
6762 - 64	Limestone, light brown to buff, micro to very coarse detrital-fossiliferous, matrix microcrystalline to chalky, poor chalky and intercrystalline porosity, few very slow, very weak pale white cuts, no fluorescence.
6764 - 65	Limestone, medium brown to buff, micro to very coarse detrital-fossiliferous and fine to coarse crystalline, matrix microcrystalline, dense, gypsiferous, poor interfragmental porosity, grades to very fine crystalline limestone with fair intercrystalline porosity, trace very fine vuggy porosity, medium hard, interval cut by one 80-degree open fracture, no show.
6765 - 66	Limestone, as above locally with limestone, medium to light brown, very fine crystalline, poor intercrystalline porosity, angular inclusions of light grey to white, hard cryptocrystalline chert, trace dark brown, dead stain, trace very slow, very weak pale white cut, no fluorescence, no live stain.
6766 - 67	Limestone, as above with few inclusions and fracfills of fine to coarse crystalline calcite and gypsum, show as above.
6767 - 68	Limestone, medium to light brown, very fine to coarse detrital, minor fine to coarse crystalline, matrix microcrystalline to minor chalky, poor intercrystalline and chalky porosity, grades to zones of limestone, medium to light brown, very fine crystalline and microcrystalline, dense to poor intercrystalline porosity, medium hard, trace very slow, very weak pale white cut.

6768 - 69	Limestone, medium brown, microcrystalline, dense, intercalated with limestone, medium brown, very fine to coarse detrital, matrix micro-crystalline, dense, medium hard, trace dark brown stain on incipient fracture face, quick yellow-white cut, no fluorescence.
6769 - 70	Limestone, as above. No show.
6770 - 71	Limestone, as above with large masses of fine to very coarse crystalline white calcite, few fine to very coarse vugs, medium hard, trace very slow, very weak pale white cut, no fluorescence, no live stain, interval cut by one open vertical fracture with no show.
6771 - 72	Limestone, as above grading to limestone, buff, micro to fine detrital-fossiliferous, matrix microcrystalline, dense, hard with inclusions of white chert, few inclusions of fine to medium crystalline calcite in partly filled vugs. Trace very slow, very weak pale white cut, no fluorescence, no live stain. Interval cut by one open vertical fracture with no show.
6772 - 73	Limestone, medium to light brown, micro to coarse detrital, matrix micro to fine crystalline and chalky, locally with medium to light brown and buff, fine to very coarse crystalline calcite, trace very slow, very weak pale white cut, no fluorescence, no live stain, trace dark brown dead stain in matrix, locally poor to fair intercrystalline porosity, medium hard, styolite surfaces with dark brown to black mineralization and trace black dead stain.
6773 - 74	Limestone, medium to light brown, micro to coarse detrital, matrix microcrystalline, dense, hard, trace scattered dark brown dead stain, very weak pale white cut, no fluorescence, no live stain, styolite surfaces with dark brown to black mineralization and trace dark brown dead stain.
6774 - 76	Limestone, light brown, microcrystalline to crypto-crystalline, dense, hard intercalated with lime-stone, micro to fine detrital, matrix microcrystal-line, dense, hard with inclusions and frac-fills of fine to coarse crystalline calcite and gypsum, irregular styolite surface with black mineralization and trace dark brown dead stain, very weak, pale white cut, no fluorescence, no live stain.

6776 - 78

Limestone, light brown, micro to very coarse detrital-fossiliferous, matrix microcrystalline, hard, with inclusions and irregular frac-fills of fine to coarse crystalline calcite and gypsum, irregular styolite surface with black mineralization, very slow, very weak pale white cut, no fluorescence, no stain.

NOTE: From 6735 feet and below core contains horizontal styolite zones spaced 10 to 20 inches apart with black mineral deposits to 1/2-inch in thickness.

CORE NO. 3: 6778' - 6838' CUT 60' - RECOVERED 60'

6778 - 79	Limestone, medium brown, fine to coarse detrital and fine to coarse crystalline matrix micro-crystalline, slightly chalky, dense to fair inter-crystalline porosity, poor very fine vuggy poro-sity, gypsiferous with scattered fine gypsum crystals, grades to microcrystalline, dense, medium hard, few irregular partings of dark grey calcareous shale and dark grey argillaceous-fossiliferous limestone, few partly open, incipient frac-filled with white, very fine calcite and gypsum, random irregular styolite surfaces with black mineralization and scattered dark brown dead stain, few fossil casts, no show. Core breaks on the irregular styolite surfaces.
6779 - 80	Limestone, as above, weak white cuts, no fluorescence, no stain.
6780 - 81	Limestone, as above, weak white cuts, no fluorescence, no stain.
6781 - 82	Limestone, as above, poor intercrystalline porosity, weak white cuts, no fluorescence, no stain.
6782 - 84	Limestone, medium brown, microcrystalline, dense, gypsiferous, medium hard, weak white cuts, no fluorescence, no stain, irregular styolite surface with dark mineral deposit, few incipient frac-filled with very fine to fine calcite and gypsum crystals, grades to minor zones of limestone, medium brown, fine to coarse detrital, matrix microcrystalline, dense, medium hard, scattered dark brown dead stain on styolite surfaces.
6784 - 85	Limestone, medium to light brown, micro to crypto-crystalline, dense, slight to very fossiliferous, hard, gypsiferous, many inclusions and frac-filled of fine to medium crystalline calcite and gypsum, poor to fair intercrystalline porosity in frac-fills and inclusion-fill, no show in matrix or fractures. Irregular styolite surface with black mineralization and trace spotted live stain, quick yellow cut, no fluorescence, zones at and beneath styolite surfaces grade to limestone, very fine to medium detrital, fossiliferous, matrix micro-crystalline, dense, medium hard.
6785 - 87	Limestone, as above, weak white cuts from styolite surface, no fluorescence, no live stain.
6787 - 92	Limestone, as above, no show in matrix, styolitic surface gives weak white cut, no fluorescence, no stain.

6792 - 93	Limestone, as above, trace incipient fractures with live stain, quick yellow cut, no fluorescence, matrix dense, no show in matrix.
6793 - 97	Limestone, as above, no show in matrix, styolite surface gives weak white cut, no fluorescence, no stain.
6797 - 98	Limestone, medium to dark brown, fine to coarse detrital and fine to coarse crystalline, matrix microcrystalline, dense, weak white cut, no fluorescence, trace spotted dead brown stain, quick yellow white cut, no fluorescence, no live stain, numerous seams of dark grey, argillaceous, microcrystalline, dense limestone and dark grey, calcareous shale.
6798 - 99	Limestone, medium grey-brown, cryptocrystalline, hard, many inclusions and frac-fills of white, very fine to coarse crystalline calcite, latter show poor to fair intercrystalline porosity, no show.
6799 - 6800	Shale, laminated dark to light grey and dark brown, slightly calcareous, hackly, medium hard, pyritic, platy.
6800 - 01	Shale, as above interbedded with seams of limestone, dark brown, microcrystalline, dense, medium hard.

6801' - "C" ZONE

6801 - 02	Dolomitic, slightly calcareous, cream, microcrystalline, poor intercrystalline porosity, hard with near horizontal partings and seams of medium to dark brown dolomite, thin bedded, bedding plane contains brown, dead stain, weak white cut from latter.
6802 - 03	Dolomite, as above grading to limestone, show as above.
6803 - 05	Limestone, medium brown, micro to cryptocrystalline, dense, hard, thin bedded, no show.
6805 - 06	Limestone, medium to light brown, microcrystalline to micro-sucrosic, dense to poor intercrystalline porosity with partings of dark brown microcrystalline limestone, trace brown dead stain, very weak white cut, no fluorescence, no stain.
6806 - 07	Limestone, light brown, crypto to microcrystalline, dense, hard.

6807 - 08	Limestone, medium red-brown, microcrystalline dense, hard.
6808 - 10	Limestone, medium brown, cryptocrystalline, weak white cut from styolite face, no fluorescence, no stain, hard, few inclusions and frac-fills of very fine to fine crystalline calcite.
6810 - 11	Limestone, light brown, cryptocrystalline, medium hard, trace spotted brown live stain on incipient fracture, quick yellow cut, no fluorescence.
6811 - 12	Limestone, as above with weak white cut from styolite surface.
6812 - 14	Dolomite, calcareous, buff, microcrystalline, poor intercrystalline and pinpoint porosity, thin-bedded, much dark brown dead stain on bedding planes, no fluorescence, no live stain, weak white cut, odor, looks water-wet.
6814 - 18	Dolomite, calcareous, buff to cream, microcrystalline, dense, hard, no show.
6818 - 19	Dolomite, as above, one bed plane with dead dark brown oil stain, weak white cut, no fluorescence, no live stain.
6819 - 28	Dolomite, as above, thin bedded bed planes with scattered dead dark brown stain, weak white cut.
6828 - 29	Dolomite, calcareous, buff to cream, microcrystalline, dense, medium hard, fair to good, fine to medium vuggy porosity, slightly gypsiferous with scattered fine to medium gypsum crystals, thin-bedded with black mineralization and dead brown oil stain on close-spaced bedding planes, gives weak white cut, no fluorescence, no live stain, water-wet, no show in matrix.
6829 - 30	Dolomite, calcareous grading to limestone, buff, very fine to very coarse detrital, fair to very good interfragmental and fine to coarse vuggy porosity, water-wet, no show.
6830 - 32	Dolomite, calcareous, microcrystalline, dense, hard with light brown, horizontal color-banding, thin bedded with dark brown dead stain on bedding planes, weak white cut, no fluorescence, no live stain.

6832 - 34	Limestone, dolomitic, buff, fine to medium grade detrital, very good interfragmental and fine to medium vuggy porosity, soft, no show, water-wet.
6834 - 35	Dolomite, calcareous, cream, cryptocrystalline, hard, vertical open fractures with brown dead stain, no cut, no fluorescence, no live stain.
6835 - 37	Limestone, buff, microcrystalline, dense, hard, few bedding planes with brown dead stain, no cut, no fluorescence, no live stain.
6837 - 38	Limestone, buff, fine to coarse detrital-fossiliferous, matrix microcrystalline to chalky, dense to poor intercrystalline and very fine vuggy porosity, much dead oil stain, trace very pale weak white cut, no fluorescence, no live stain, medium hard.

CORE NO. 4: 7445' - 7504' CUT 59' - RECOVERED 29'7"

7445 - 45.1	Dolomite, medium grey to brown, cryptocrystalline, hard.
7445.1 - 47	Sandstone, light grey, medium grained, minor fine grained subround, poorly sorted, very friable, slightly calcareous, very good intergranular porosity, no show.
7447 - 50	Sandstone, light grey, fine grained with minor medium, subangular to subround, poorly sorted, very friable, very good intergranular porosity, no show.
7450 - 51	Sandstone, light grey, fine to medium grained, subround to subangular, poorly sorted, very friable, very good intergranular porosity, no show.
7451 - 52	Sandstone, light grey, very fine to fine grained, angular to subround, poorly sorted, very friable, very good intergranular porosity, no show.
7452 - 54	Sandstone, as above, fine to medium grained, no show.
7454 - 56	Sandstone, as above with few horizontal partings of dull white, silty, very fine grained sandstone, firm, no show.
7456 - 57	Sandstone, light grey, fine to medium grained, subangular to subround, poorly sorted, very friable, very good intergranular porosity, no show.
7457 - 58	Sandstone, light grey, fine grained, subangular to subround, well-sorted, very friable, very good intergranular porosity, no show.
7458 - 61	Sandstone, light grey, fine to medium grained, subangular to subround, poorly sorted, very friable, very good intergranular porosity, no show.
7461 - 64	Sandstone, as above with few zones of sandstone, white, silty, tight, very fine grained, no show.
7464 - 65	Sandstone, light grey, fine grained, angular to subround, well sorted, very friable, very good intergranular porosity, no show.
7465 - 68	Sandstone, light grey, fine to medium grained, subangular to subround, very friable, very good intergranular porosity with zones of white, tight silty, very fossiliferous, angular to subangular, firm, quartzitic.

7468 - 69	Sandstone, fine to medium grained, light grey, subangular to subround, poorly sorted, very friable, very good intergranular porosity, no show.
7469 - 72	Sandstone, as above with horizontal seams to 1/4-inch of sandstone, white, very fine to medium grained, subangular to subround, tight, no show.
7472 - 74	Sandstone, light grey, very fine to medium grained, subangular to subround, poorly sorted, friable, good intergranular porosity, no show.
7474 - 75	Sandstone, mottled light green and white, very fine to medium grained, angular to subround, poorly sorted, poor to very good intergranular porosity, few inclusions of light green, soft shale.

Chevron-SONAT #1 O'Donnell
SW SW Section 26: T21N - R19E
Corson County, South Dakota

GEOLOGICAL SUMMARY

The subject well was drilled to a drillers depth of 7738 feet or approximately 293 feet below the Cambrian Deadwood formation top. Primary objectives of the well were the Mission Canyon MC-3 Zone, the Ordovician Red River Zones and the Cambrian Deadwood sandstone.

Secondary objectives were porous zones in the Pennsylvanian Minnelusa formation, the Mississippian Charles and Mission Canyon MC-1 intervals, the Devonian Nisku and Duperow formations, the Silurian Interlake formation and the Ordovician Gunton formation.

Cores were cut in the Mission Canyon, Red River and Deadwood formations. The Mission Canyon MC-3 zone and the Red River A, B, and C Zones were drill stem tested. Based upon the presence of very good live oil shows in the Red River A Zone, the latter was acidized and swabbed through tubing. After flowing considerable water, efforts to complete the well in the A Zone were halted. The venture was plugged and abandoned on March 10, 1980.

No shows were observed in the cuttings above the Mission Canyon MC-4 Zone. Core #1 was cut in the MC-3 Zone of the Mission Canyon formation from 5253 to 5313 feet (drillers depths). Sixteen feet of core, all limestone, was recovered. It is believed that 44 feet of core was ground up. By comparing the enclosed drill time log with the CNL-FDC log, it can be seen that the core barrel jammed at approximately 5269 feet and the jamming accounts for the very slow coring time between the depths of 5269 and 5284 feet. The CNL-FDC log demonstrates that an MC-3 interval simalar to that present at the Chevron-SONAT #1 Zubrod is developed at the subject well. However, the equivalent to the sixteen feet of porous limestone recovered at the subject test is represented by dense anhydrite and dolomite at the Chevron-SONAT #1 Zubrod. (See report by J.H. Hughes, Chevron-SONAT #1 Zubrod, SW NE Sec. 18: T22N-R21E, Corson County, South Dakota).

The cored interval between 5253 and 5269 feet consisted of a very fine to coarse grained detrital limestone exhibiting poor to good intercrystalline porosity and poor chalky and pinpoint porosity in the

matrix. Strong, open vertical fractures or joints were present from 5253 to 5256 feet and from 5262 to 5265 feet. These open fractures contained a scattered thick coating of black viscous dead oil which resembled tar. When treated with Xylene, the tar produced a quick streaming white cut under black light. The matrix contained specks and tight fracture fill of this same black tar or dead oil. The matrix also contained scattered, dark brown dead stain ring. No live oil stain or fluorescence was observed in the matrix and no dead shows were present in the bottom two feet of the core. When cut with Xylene, the core fragments produced slow to quick white cuts. The matrix exhibited no dry fluorescence. A strong, hydrocarbon odor was present in some of the core fragments.

Drill Stem Test #1 from 5240 to 5270 feet covered the top sixteen feet of Core #1 and included the interval represented by the recovered core. Recovery consisted of 3617 feet of mud and 1000 feet of fresh water.

No shows of live oil were observed in the Mission Canyon MC-1 Zone. No shows were observed in fair to good porosity in the Lodgepole between the depths of 5800 and 5860 feet.

The Devonian Nisku exhibited poor to fair intercrystalline porosity without show. The Duperow formation exhibited good to very good interfragmental and intercrystalline porosity without show.

No shows were observed in the cuttings from the Silurian Interlake formation. Beginning at 6390 feet and extending down to about 6510 feet the Interlake displayed good to very good intercrystalline porosity.

The Ordovician Gunton formation displayed good intercrystalline porosity from 6618 to 6636 feet. No shows were observed.

The Red River sample top was picked at 6726 feet. This would also be the top of the A Zone.

Core #2 was cut from 6718 to 6778 feet and included the Red River A Zone as well as the top 29 feet of the B Zone. Except for the presence of open, vertical fractures, the A Zone was dense and tight.

However, the fracture pattern is important in that, if a suitable structure or stratigraphic trap was present, the fractures might constitute a reservoir bed. The highest, open vertical fracture in the core occurred at 6725 to 6726 feet and extended down to 6738 feet. No live or dead oil shows were present on the fracture planes nor in the dense matrix behind the planes. Live oil shows were present between the core depths of 6739 and 6746 feet. The latter interval consisted of a cryptocrystalline tight limestone characterized by close spaced, open vertical fractures. Some planes were 1/2-inch apart. The fracture planes contained scattered brown live oil stain and some brown to black, thick, viscous dead oil. The fracture surfaces produced a dull to bright yellow fluorescence under the black light. Xylene produced quick streaming, bright yellow cuts from the planes. The interval containing live shows 6739 - 6746 feet, had no pipe recovery. Sample chamber recovery consisted of 1500 cc of drilling mud with no pressure. It should be remembered that this test also included the interval from 6731 to 6738 feet where open, vertical fractures with no show were present. Drill Stem Test #4 from 6730 to 6745 feet recovered only five feet of very slightly gas cut mud. Sample chamber recovery consisted of 1500 cc of very slightly gas cut mud with no pressure. Based upon Gamma Ray and Collar Locator logs, the interval 6732 to 6747 feet was acidized and swabbed 20 barrels of mud. After cleaning out the hole, the interval 6735 to 6750 feet was acidized. After displacement was completed, the well flowed 40 barrels of water into a tank truck. Swabbing tests then began. Water, acid water, and mud with a few gas bullets were swabbed. Near the end of the swab period, water was swabbed and finally reached the surface. At 6:20 PM on March 8, 1980 the well flowed a 2-inch thick stream of fresh water. After flowing 70 barrels of water in 35 minutes, the well was shut in for overnight pressure tests. The following morning the well flowed 400 barrels of water after which the test was terminated.

The Red River B Zone was picked at 6749 feet. Core #2 included the top 29 feet of the B Zone. The B Zone from 6749 to 6761 feet (drillers depths) consisted of a micro-sucrosic to very fine crystalline dolomitic limestone and calcareous dolomite exhibiting fair to

good intercrystalline porosity and poor to fair very fine to coarse vuggy porosity. Shows were poor with traces of scattered dark brown dead stain present in the matrix. Weak, white cuts were produced throughout the interval and no fluorescence or live stain was observed. The B Zone below 6761 feet consisted of micro to very coarse and crystalline limestone that exhibited poor to fair intercrystalline and chalky porosity. Shows were poor and consisted of weak, white cuts, traces of dark brown dead stain and traces of live stain at 6768-6769, 6784-6785 and 6792-6793 feet. The interval was not tested. Core #3 included the bottom 23 feet of the B Zone. Prominent, open vertical fractures with no shows were present from 6751-6753, 6764-6565 and from 6770-6772 feet.

The Red River C Zone was picked at 6801 feet. Core #3 included the top 37 feet of the C Zone. Shows were poor with scattered, weak white cuts and scattered, dark brown dead stain. A trace of spotted light brown stain was observed at 6810-6811 feet. Other than the latter show, no live stain or fluorescence was observed. Porosities in the C Zone were poor to fair with good to very good porosity encountered from 6829 to 6832 feet. No open, vertical fractures were present in the core from the C Zone.

The Red River D Zone was picked at 6885 feet. No shows were detected and porosities were poor to fair.

The Winnipeg sandstone was topped at 7294 feet. Although fair to good intergranular porosity was present, no hydrocarbon shows were observed.

The Deadwood sandstone was encountered at 7445 feet and consisted of a fine to medium grained sandstone exhibiting very good intergranular porosity but no shows. Core #4, 7445-7504 feet, recovered the top 29 1/2 feet of the Deadwood sand. Approximately 29 feet of Core #4 was either dropped tripping out or ground up during coring.

After getting stuck at a depth of 7738 feet, management decided to drill no deeper. At this point 293 feet of Deadwood sandstone had been drilled, all lacking shows.

Considerable variation exists between drillers and Schlumbergers depths. At 5253 feet, steel line measurement indicated an 18-foot uphole correction was required. No correction was made at this time. At a depth of 6202 feet, steel line measurement indicated a 23-foot downhole correction was made.

At a depth of 7211 feet, circulation was lost.

A two man Tooke logging unit was in operation from base of surface casing to total depth. Ralph Earl and P.H. McCance, operators.

Thirty-foot samples were caught down to a depth of 3500 feet. Between 3500 and 3600 feet, twenty-foot samples were caught. Below 3600 feet, ten-foot samples were caught.

J. H. Hughes

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 1 DATE Feb. 1, 1980

DEPTH 620' FEET MADE 580 HRS. ON BOTTOM 6 1/2

OPERATION Tripping

SURVEYS								
	288'	1/4°						
	620'	1/4°						

LAST PIPE TALLY _____ BOARD _____ CORRECTION: YES ___ NO ___

WT OF STRING M LBS. 50 WT ON BIT M LBS 10-20 ROTARY RPM 95

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 60 PRESS 500-800

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 12

BOTTOM HOLE ASSEMBLY _____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
1-A	12¼	DS	40	620	580	6 1/2	15	15	15				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD - Water

WT ___ VIS ___ WL ___ GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- - ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED _____

DAILY MUD COST _____

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm Press. ___ psig

MAKE ___ RATING ___

RIG TIME

1. Drilling 6 1/2
2. Tripping 1/2
3. Service & BOPs ___
4. Reaming ___
5. Slip & Cutline ___
6. Surveying 1/4
7. Circulating 4 3/4
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing 1/2
11. Coring ___
12. Testing ___
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. Rigging Up - 6
17. Waiting on Water Service
18. Rig - 5 1/2
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Rigged up. Well spudded at 6:30 P.M. on January 31, 1980. Drilled 12 1/4" surface hole with Bit #1-A from 40 to 620 feet. Circulated and tripped out of hole.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. 20 °F _____ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 2 DATE Feb. 2, 1980

DEPTH 620' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Repairing

SURVEYS							

LAST PIPE TALLY _____ BOARD _____ CORRECTION: YES ___ NO ___

WT OF STRING M LBS. _____ WT ON BIT M LBS _____ ROTARY RPM _____

PUMP No. 1 National C-350 IN USE _____ LINERS 5 1/2 x 18 SPM _____ PRESS _____

PUMP No. 2 National C-250 IN USE _____ LINERS 5 1/2 x 16 SPM _____ PRESS _____

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 12

BOTTOM HOLE ASSEMBLY _____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD - Water

WT _____ VIS _____ WL _____ GEL _____ FC _____

PH _____ APP VIS _____ PLAS VIS _____ YLO. PT. _____

WATER _____ OIL _____ CL- - _____ PPM

SOLIDS _____ SAND _____ CA++ _____ PPM

AV _____ NV _____ d-exp _____ Pore Press _____

MUD ADDED _____

DAILY MUD COST _____

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSDR DATA MUD DUMPED _____ bbl

OUTPUT _____ cfm Press. _____ psig

MAKE _____ RATING _____

RIG TIME

1. Drilling _____
2. Tripping 1
3. Service & BOPs _____
4. Reaming _____
5. Slip & Cutline _____
6. Surveying _____
7. Circulating _____
8. Clean to Btm _____
9. Cond. Mud _____
10. Repairing 3/4
11. Coring _____
12. Testing _____
13. Logging _____
14. Casing 1 3/4
15. WOC _____

OTHERS (SPECIFY)

16. Cementing - 3 1/4
17. Waiting on Cement & Cleaning Mud Tank - 4 1/2
18. Broke Down Landing Joint - 4
19. Nippling Up BOP - 7
20. Waiting on Fish Hand - 1
    Waiting on Water - 3/4

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Tripped out of hole. Rigged up to run surface casing. Ran 620 feet (16 joints), 9 5/8", 36#, K-55, ST&C casing. Set at 620.2 feet. Total 608 feet. Cemented with 325 sacks Class G cement with 3% Calcium Chloride, and 1/2# Flocele. Plug down at 12:30 P.M. on February 1, 1980. Cleaned mud tank, and waited on cement. Broke down landing joint, and put on weld head, and nippled up. Dropped iron in hole. Waited on fishing tools. Tripped into hole with magnet. Waited on water. Tightened Kelly hose.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. 20 °F _____ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 3 DATE Feb. 3, 1980

DEPTH 2252' FEET MADE 1632 HRS. ON BOTTOM 15 1/2

OPERATION Drilling

SURVEYS							
1505'	1/2°						

LAST PIPE TALLY _____ BOARD _____ CORRECTION: YES ___ NO ___

WT OF STRING M LBS. 77 WT ON BIT M LBS 25 ROTARY RPM 120

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 55 PRESS 1000

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 12

BOTTOM HOLE ASSEMBLY _____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
1	7 7/8	SDS	620		1632	15 1/2	13	13	13				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD - Water

WT ___ VIS ___ WL ___ GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- - ___ PPM

SDLIDS ___ SAND ___ CA + + ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED _____

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm Press. ___ psig

MAKE RATING

RIG TIME

1. Drilling 15 1/2
2. Tripping 1
3. Service & BOPs 1/4
4. Reaming ___
5. Slip & Cutline ___
6. Surveying 1/2
7. Circulating ___
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing 1/2
11. Coring ___
12. Testing ___
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. Fishing - 3 1/2
17. Pressure Up - 1/2
18. Drilling Plug & Cement - 2¼
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Fished for iron fragment. Pressured up, tested Hydril to 1500 psi, and blind and pipe rams to 300 psi. Drilled plug and cement. Tripped out for new bit. Tripped into hole with Bit #1, and drilled from 620 to 2252 feet. Cleaned flow line.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F _____ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 4 DATE Feb. 4, 1980

DEPTH 3627' FEET MADE 1375 HRS. ON BOTTOM 17 3/4

OPERATION Drilling

SURVEYS								
	2438'	3/4°						
	3185'	3/4°						

LAST PIPE TALLY _____ BOARD _____ CORRECTION: YES ___ NO ___

WT OF STRING M LBS. 101 WT ON BIT M LBS 30 ROTARY RPM 122

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 54 PRESS 1000

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 15

BOTTOM HOLE ASSEMBLY _____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			CDND T	CDND B	CDND G	REMARKS
1	7 7/8	SDS	620	3185	2565	26	13	13	13				
2	7 7/8	DGT	3185		442	7¼	12	12	12				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 8.9 VIS 28 WL 8 GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- - ___ PPM

SOLIDS ___ SAND ___ CA + + ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 8 Rayvan, 4 Caustic, 3 Driscose, 5 Soda Ash, 11 Salt Gel

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm Press. ___ psig

MAKE RATING

RIG TIME

1. Drilling 17 3/4
2. Tripping 3
3. Service & BOPs 1/4
4. Reaming 1 1/4
5. Slip & Cutline ___
6. Surveying 1/2
7. Circulating ___
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing ___
11. Coring ___
12. Testing ___
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. Picking Up 3 Drill Collars - 1/4
17. Cleaning Mud Tanks - 1
18. ___
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #1 from 2252 to 3185 feet. Tripped out of hole. Cleaned mud tanks. Picked up 3 drill collars, and tripped into hole with Bit #2. Reamed to bottom and drilled from 3185 to 3627 feet.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F ___ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 5 DATE Feb. 5, 1980

DEPTH 4046' FEET MADE 419 HRS. ON BOTTOM 15

OPERATION Drilling

SURVEYS							
3759'	3/4°						

LAST PIPE TALLY _____ BOARD _____ CORRECTION: YES ___ NO ___

WT OF STRING M LBS. 112 WT ON BIT M LBS 40 ROTARY RPM 75

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 50 PRESS 1050

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY _____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
2	7 7/8	DGT	3185	3759	574	12½	12	12	12				
3	7 7/8	F-2	3759		287	9 3/4	12	12	12				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 8.9 VIS 31 WL 10.2 GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 17 Salt Gel, 1 Driscose, 2 Rayvan, 1 Causti, 1 Soda Ash, 2 Mica

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm Press. ___ psig

MAKE RATING

RIG TIME

1. Drilling 15
2. Tripping 4 1/2
3. Service & BOPs 1/4
4. Reaming 1/2
5. Slip & Cutline ___
6. Surveying 1/4
7. Circulating ___
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing 1/2
11. Coring ___
12. Testing ___
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. Picking Up 3 Drill Collars - 3/4
17. Cut Drilling Line - 2 1/4
18. ___
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #2 from 3627 to 3759 feet. Tripped out of hole. Repaired pump. Picked up 3 drill collars and ran in hole. Cut drilling line. Tripped into hole with Bit #3, washed and reamed 50 feet to bottom. Drilled from 3759 to 4046 feet.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 6 DATE Feb. 6, 1980

DEPTH 4575' FEET MADE 529 HRS. ON BOTTOM 22

OPERATION Drilling

SURVEYS							

LAST PIPE TALLY _____ BOARD _____ CORRECTION: YES ___ NO ___

WT OF STRING M LBS. 118 WT ON BIT M LBS 40 ROTARY RPM 75

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 44 PRESS 1100

PUMP No. 2 National C-250 IN USE _____ LINERS 5 1/2 x 16 SPM _____ PRESS _____

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY _____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
3	7 7/8	F-2	3759		816	31 3/4	12	12	12				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 9.2 VIS 33 WL 18.4 GEL _____ FC _____

PH _____ APP VIS _____ PLAS VIS _____ YLD. PT. _____

WATER _____ OIL _____ CL-- _____ PPM

SOLIDS _____ SAND _____ CA++ _____ PPM

AV _____ NV _____ d-exp _____ Pore Press _____

MUD ADDED 24 Salt Gel, 8 Rayvan, 5 Caustic, 5 Soda Ash, 5 Mica, 1 Driscose

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED _____ bbl

OUTPUT _____ cfm Press. _____ psig

MAKE RATING

RIG TIME

1. Drilling 22	6. Surveying	11. Coring	16.	OTHERS (SPECIFY)	
2. Tripping	7. Circulating	12. Testing	17.		
3. Service & BOPs 3/4	8. Clean to Btm	13. Logging	18.		
4. Reaming	9. Cond. Mud	14. Casing	19.		
5. Slip & Cutline	10. Repairing 1 1/4	15. WOC	20.		

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #3 from 4046 to 4575 feet. Repaired mud line union. Cleaned mud tanks, and sand trap.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. _____ °F _____ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 7 DATE Feb. 7, 1980

DEPTH 4957' FEET MADE 382 HRS. ON BOTTOM 19 1/2

OPERATION Drilling

SURVEYS

LAST PIPE TALLY _____ BOARD _____ CORRECTION: YES ___ NO ___

WT OF STRING M LBS. 120 WT ON BIT M LBS 40 ROTARY RPM 70

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 45 PRESS 1000

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY _____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
3	7 7/8	F-2	3759		1198	51 1/4	12	12	12				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD
WT 9.2 VIS 32 WL 9 GEL ___ FC ___
PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___
WATER ___ OIL ___ CL-- ___ PPM
SOLIDS ___ SAND ___ CA++ ___ PPM
AV ___ NV ___ d-exp ___ Pore Press ___
MUD ADDED 43 Salt Gel, 8 Rayvan, 7 Caustic, 6 Soda Ash, 2 Mica, 1 Driscose
DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl
OUTPUT ___ c.f.m Press. ___ psig
MAKE RATING

RIG TIME

1. Drilling 19 1/2
2. Tripping ___
3. Service & BOPs 1/4
4. Reaming ___
5. Slip & Cutline ___
6. Surveying ___
7. Circulating ___
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing 4 1/4
11. Coring ___
12. Testing ___
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. ___
17. ___
18. ___
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #3 from 4575 to 4720 feet. Repaired rig. Drilled from 4720 to 4795 feet. Worked on #1 pump. Drilled from 4795 to 4957 feet at report time.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F ___ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 8 DATE Feb. 8, 1980

DEPTH 5253' FEET MADE 296 HRS. ON BOTTOM 13 3/4

OPERATION Repairing Rig

SURVEYS							
5253'	1°						

LAST PIPE TALLY 5235 BOARD 5253 CORRECTION: YES ___ NO X

WT OF STRING M LBS. 122 WT ON BIT M LBS 40 ROTARY RPM 65

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 45 PRESS 1000

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY ___

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
3	7 7/8	F-2	3759	5253	1494	65	12	12	12	7	5	1	
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 9.4 VIS 32 WL 20 GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

___ NV ___ d-exp ___ Pore Press ___

2 Driscose, 5 Caustic, 3 Revlon, 2 Mica,
4 Soda Ash, 8 Salt Gel, 1 Lignite, 1 Nitrate

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm Press. ___ psig

MAKE RATING

RIG TIME

1. Drilling	13 3/4	6. Surveying	1/4	11. Coring		16.	Cleaning Mud Tank & Mixing
2. Tripping	2 1/2	7. Circulating	3 1/4	12. Testing		17.	Mud - 1 3/4
3. Service & BOPs	1/2	8. Clean to Btm		13. Logging		18.	Picking Up Core Barrel - 1¼
4. Reaming		9. Cond. Mud		14. Casing		19.	
5. Slip & Cutline		10. Repairing	3/4	15. WOC		20.	

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #3 from 4957 to 5253 feet, and circulated samples. Tripped out of hole. Cleaned mud tanks, and mixed mud. Picked up core barrel. Repaired fluid coupler on #1 Motor.

SLM 5235 - Board 5253

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 9 DATE Feb. 9, 1980

DEPTH 5297' FEET MADE 44 HRS. ON BOTTOM 17 1/4

OPERATION Coring

SURVEYS

LAST PIPE TALLY 5235 BOARD 5253 CORRECTION: YES ___ NO X

WT OF STRING M LBS. 128 WT ON BIT M LBS 18 ROTARY RPM 46

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 34 PRESS 750

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
2-A	7 7/8										
Ream Bit No.											
Core No. 1	4"	Mc-201	5253		44	17 1/4	FEET CUT		FEET REC.		

MUD
WT 9.2 VIS 32 WL 14.4 GEL ___ FC ___
PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___
WATER ___ OIL ___ CL- ___ PPM
SOLIDS ___ SAND ___ CA++ ___ PPM
AV ___ NV ___ d-exp ___ Pore Press ___
MUD ADDED 4 Rayvan, 4 Caustic, 2 Mica, 4 Caustic Lignite, 3 Nitrate, 60 Salt Gel, 2 Drilscose, 12 Hygel
DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl
OUTPUT ___ ctm Press. ___ psig
MAKE RATING

RIG TIME

1. Drilling	6. Surveying		11. Coring	17 1/4	16.
2. Tripping	4 1/2	7. Circulating	1/4	12. Testing	17.
3. Service & BOPs		8. Clean to Btm		13. Logging	18.
4. Reaming	1	9. Cond. Mud		14. Casing	19.
5. Slip & Cutline		10. Repairing	1	15. WOC	20.

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Repaired fluid coupler. Tripped into hole with core barrel, and reamed bridges. Began cutting Core #1, cored from 5253 to 5297 feet.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 10 DATE Feb. 10, 1980

DEPTH 5313 FEET MADE 16 HRS. ON BOTTOM 2 3/4

OPERATION Tripping Out

SURVEYS

LAST PIPE TALLY 5330 BOARD 5313 CORRECTION: YES ___ NO X

WT OF STRING M LBS. ___ WT ON BIT M LBS ___ ROTARY RPM ___

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 37 PRESS 900

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY ___

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
2-A	7 7/8										
Ream Bit No. 3	7 7/8	F-2	5313	5313	0						Rerun
Core No. 1	4"	MC-201	5253	5313	60	20	FEET CUT 60	FEET REC. 16			

MUD

WT 9.5 VIS 38 WL 14 GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 143 Salt Gel, 15 Fiber, 6 Hulls, 10 Mica, 2 Revlon, 2 Driscose, 6 Caustic Lignite, 2 Caustic, 1 Nitrate, 1 Soda Ash DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bb

OUTPUT ___ cfm Press. ___ psig

MAKE ___ RATING ___

RIG TIME

1. Drilling		6. Surveying		11. Coring	2 3/4	16.	Laying Down Core - 1/4
2. Tripping	7 1/2	7. Circulating	7 3/4	12. Testing		17.	Waiting on Orders - 2 1/2
3. Service & BOPs		8. Clean to Btm		13. Logging		18.	Drilling Up Lost Core - 2 3/4
4. Reaming	1/2	9. Cond. Mud		14. Casing		19.	
5. Slip & Cutline		10. Repairing		15. WOC		20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Cored from 5297 to 5313 feet. Tripped out with Core #1. Cut 60 feet, recovered 16 feet. Laid down core. Waited on orders. Tripped into hole with Bit #3 (rerun) to drill up lost core. Reamed 90 feet, and drilled up lost core. Made short trip. Circulated, and conditioned mud. Made short trip. Circulated and conditioned mud. Lost circulation. Mixed plug and pumped down 50 barrels mud. Began tripping out.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F ___ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 11 DATE Feb. 11, 1980

DEPTH 5385 FEET MADE 72 HRS. ON BOTTOM 4 1/2

OPERATION Drilling

SURVEYS

LAST PIPE TALLY 5330 BOARD 5313 CORRECTION: YES ___ NO X

WT OF STRING M LBS. 125 WT ON BIT M LBS 40 ROTARY RPM 65

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 44 PRESS 1100

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND C	REMARKS
4	7 7/8	F-45	5313		72	4 1/2	13	13	13				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 9.4 VIS 45 FC ___

PH ___ API WL ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 15 Fiber, 8 Cotton Seed Hulls, 3 Mica, 74 Salt Gel, 15 Hydro Gel, 1 Rayvan, 1 Caustic Lignite, 2 Caustic Soda, 1 Driscos@AILY MUD COST

	Hrs Rep.	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm Press. ___ psig

MAKE RATING

RIG TIME

1. Drilling 4 1/2
2. Tripping 9 1/2
3. Service & BOPs 1/4
4. Reaming 1
5. Slip & Cutline ___
6. Surveying ___
7. Circulating ___
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing ___
11. Coring ___
12. Testing 4 1/2
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. Making Up Test Tool - 1 3/4
17. Breaking Down Test Tool
18. Waiting on Others - 1
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Tripped out of hole. Made up Halliburton test tool, and tripped into hole. Ran DST #1 from 5240-5270 feet. Tripped out with test tool, and broke down. Waited on orders. Tripped into hole with Bit #4, and reamed to bottom. Drilled from 5313 to 5385 feet.

Note: See Drill Stem Test Report #1 for details of this test.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 12 DATE Feb. 12, 1980

DEPTH 5745' FEET MADE 360 HRS. ON BOTTOM 24

OPERATION Drilling

SURVEYS

LAST PIPE TALLY 5330 BOARD 5313 CORRECTION: YES ___ NO X

WT OF STRING M LBS. 130 WT ON BIT M LBS 40 ROTARY RPM 68

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 46 PRESS 1100

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND C	REMARKS
4	7 7/8	F-45	5313		432	28 1/2	13	13	13				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 9.4 VIS 33 WL 19.8 CEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 52 Salt Gel, 4 Lignite, 3 Rayvan, 6 Caustic Soda, 9 Mica, 2 Nitrate

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/CAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm Press. ___ psig

MAKE ___ RATING ___

RIG TIME

1. Drilling 24
2. Tripping ___
3. Service & BOPs ___
4. Reaming ___
5. Slip & Cutline ___
6. Surveying ___
7. Circulating ___
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing ___
11. Coring ___
12. Testing ___
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. ___
17. ___
18. ___
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #4 from 5385 to 5745 feet.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F Supervisor: John M. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 13 DATE Feb. 13, 1980

DEPTH 6123' FEET MADE 378 HRS. ON BOTTOM 23 1/4

OPERATION Drilling

SURVEYS

LAST PIPE TALLY 5330 BOARD 5313 CORRECTION: YES ___ NO X

WT OF STRING M LBS. 140 WT ON BIT M LBS 40 ROTARY RPM 68

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 46 PRESS 1100

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
4	7 7/8	F-45	5313		810	51 3/4	13	13	13				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 9.3 VIS 37 WL 14 GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 100 Salt Gel, 6 Caustic Soda, 3 Caustic Lignite, 3 Rayvan, 4 Mica, 2 Nitrate

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ BBL

OUTPUT ___ cfm Press. ___ psig

MAKE RATING

RIG TIME

1. Drilling 23 1/4
2. Tripping ___
3. Service & BOPs 1/4
4. Reaming ___
5. Slip & Cutline ___
6. Surveying ___
7. Circulating ___
8. Clean to Btm ___
9. Cond. Mud ___
10. Repairing ___
11. Coring ___
12. Testing ___
13. Logging ___
14. Casing ___
15. WOC ___

OTHERS (SPECIFY)

16. Cleaning Mud Tanks - 1/2
17. ___
18. ___
19. ___
20. ___

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #4 from 5745 to 6123 feet. Cleaned mud tanks.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F ___ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 14 DATE Feb. 14, 1982

DEPTH 6405' FEET MADE 282 HRS. ON BOTTOM 16 1/4

OPERATION Drilling

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION YES X NO

WT OF STRING M LBS. 145 WT ON BIT M LBS 40 ROTARY RPM 70

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 48 PRESS 1100

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
4	7 7/8	F-45	5313	6225	912	56	13	13	13				
5	7 7/8	F-45	6225		180	12	13	14	14				Rerun #4
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 9.5 VIS 37 WL 16.2 GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED 32 Salt Gel, 1 Mica, 1 Nitrate, 3 Caustic, 2 Rayvan, 2 Caustic Lignite

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbl

OUTPUT cfm Press. psig

MAKE RATING

RIG TIME

1. Drilling	16 1/4	6. Surveying		11. Coring		16.	Cutting Drill Line - 1
2. Tripping	6 1/2	7. Circulating		12. Testing		17.	
3. Service & BOPs	1/4	8. Clean to Btm		13. Logging		18.	
4. Reaming		9. Cond. Mud		14. Casing		19.	
5. Slip & Cutline		10. Repairing		15. WOC		20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #4 from 6123 to 6202 feet. Tripped out due to hole in pipe. SLM 6225, Board 6202. Made 23 foot down hole correction. Cut drilling line. Tripped into hole with Bit #5, and drilled from 6225 to 6405 feet.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John M. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 15 DATE Feb. 15, 1990

DEPTH 6718' FEET MADE 313 HRS. ON BOTTOM 19

OPERATION Circulating

SURVEYS							

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO ___

WT OF STRING M LBS. 150 WT ON BIT M LBS 40 ROTARY RPM 70

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 48 PRESS 1000

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No IN HOLE 18

BOTTOM HOLE ASSEMBLY ___

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
5	7 7/8	F-45	6225		493	31	13	14	14				Rerun #4
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT 9.5 VIS 37 WL 19.8 GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 5 Nitrate, 1 Mica, 3 Caustic, 2 Caustic Lignite, 2 Rayvan, 30 Salt Gel

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbls

OUTPUT ___ clm Press. ___ psig

MAKE RATING

RIG TIME

						OTHERS (SPECIFY)	
1. Drilling	19	6. Surveying		11. Coring		16.	
2. Tripping	4 1/4	7. Circulating	1/4	12. Testing		17.	
3. Service & BOPs	1/2	8. Clean to Btm		13. Logging		18.	
4. Reaming		9. Cond. Mud		14. Casing		19.	
5. Slip & Cutline		10. Repairing		15. WOC		20.	

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #5 from 6405 to 6609 feet. Pulled 30 stands to find hole in pipe, and tripped back in. Drilled from 6609 to 6718 feet. Cleaned mud tank. Circulated for Core #2.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ___ °F Supervisor: John E. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 16 DATE Feb. 15, 19

DEPTH 6778' FEET MADE 60 HRS. ON BOTTOM 9 1/2

OPERATION Waiting on orders

SURVEYS						
6718'	1/4°					

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. 154 WT ON BIT M LBS 20 ROTARY RPM 54

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 38 PRESS 750

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
5	7 7/8	F-45	6225	6718	493	31	13	14	14				Rerun #4
3-A	7 7/8												
Ream Bit No.													
Core No. 2	4	MC-201	6718	6778	60	9 1/2	FEET CUT 60			FEET REC. 60			

MUD

WT 9.4 VIS 36 WL 20 GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED 45 Salt Gel, 1 Driscose, 6 Caustic Lignite, 2 Mica, 3 Rayvan, 1 Nitrate

DAILY MUD COST

	Incr. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbls

OUTPUT cfm Press. psig

MAKE RATING

RIG TIME

1. Drilling		6. Surveying	1/4	11. Coring	9 1/2	16.	Waiting on Core Hand - 1½
2. Tripping	7 3/4	7. Circulating	2	12. Testing		17.	Rigging Up Core Barrel - 1½
3. Service & BOPs		8. Clean to Btm		13. Logging		18.	Laying Down Core - 1
4. Reaming		9. Cond. Mud		14. Casing		19.	Waiting on Orders - 1/2
5. Slip & Cutline		10. Repairing		15. WOC		20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Circulated for Core #2. Tripped out of hole. Waited on core hand. Rigged up core tool. Tripped into hole with core barrel, and cored from 6718 to 6778 feet. Tripped out of hole with Core #2. Laid down core. Cut and recovered 60 feet. Waited on orders.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 17 DATE Feb. 17, 1980

DEPTH 6838' FEET MADE 60 HRS. ON BOTTOM 6 1/2

OPERATION Tripping

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO ___

WT OF STRING M LBS. 154 WT ON BIT M LBS 20 ROTARY RPM 50

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 42 PRESS 1000

PUMP No. 2 National C-250 IN USE ___ LINERS 5 1/2 x 16 SPM ___ PRESS ___

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY ___

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
4-A	7 7/8										
Ream Bit No.											
Core No. 3	4"	MC-201	6778	6838	60	8 1/2	FEET CUT 60	FEET REC. 60			

MUD

WT 9.5 VIS 38 WL 18.4 GEL ___ FC ___

PH ___ APP VIS ___ PLAS VIS ___ YLD. PT. ___

WATER ___ OIL ___ CL- ___ PPM

SOLIDS ___ SAND ___ CA++ ___ PPM

AV ___ NV ___ d-exp ___ Pore Press ___

MUD ADDED 6 Salt Gel, 1 Rayvan, 1 Caustic Lignite, 2 Caustic Soda, 2 Mica

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ___ bbl

OUTPUT ___ cfm. Press. ___ psig

MAKE RATING

RIG TIME

1. Drilling	6. Surveying	11. Coring	8 1/2	16.	Waiting on Orders - 3 1/4
2. Tripping	10 1/4	7. Circulating	12. Testing	17.	Unloading Core - 2
3. Service & BOPs		8. Clean to Btm	13. Logging	18.	
4. Reaming		9. Cond. Mud	14. Casing	19.	
5. Slip & Cutline		10. Repairing	15. WOC	20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Waited on orders. Tripped into hole to cut Core #3. Cored from 6778 to 6838 feet. Tripped out of hole, and unloaded core. Tripped into hole to condition for DST #2.

	$
Well Costs	
Daily	
Cumulative	

WEATHER: TEMP. ___ °F ___ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 13 DATE Feb. 18, 1980

DEPTH 6838 FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Tripping

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. 158 WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT 9.5 VIS 38 WL 19.6 GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- - PPM

SOLIDS SAND CA + + PPM

AV NV d-exp Pore Press

MUD ADDED 32 Salt Gel

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbl

OUTPUT c/m Press. psig

MAKE RATING

RIG TIME

1. Drilling
2. Tripping 11 1/4
3. Service & BOPs 1/2
4. Reaming
5. Slip & Cutline
6. Surveying
7. Circulating 2
8. Clean to Stm
9. Cond. Mud
10. Repairing
11. Coring
12. Testing 4 1/2
13. Logging
14. Casing
15. WOC

OTHERS (SPECIFY)

16. Making Up Test Tool - 5 3/4
17.
18.
19.
20.

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Circulated and tripped out. Rigged up Halliburton test tool, and tripped into hole. Ran DST #2 from 6785-6838 feet. Tripped out of hole. Laid down test tool. Picked up test tool to run DST #3, and tripped into hole.

Note: See DST #2 report for full details of test.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 19 DATE Feb. 15, 1980

DEPTH 7035 FEET MADE 197 HRS. ON BOTTOM 9 1/2

OPERATION Drilling

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. 160 WT ON BIT M LBS 48 ROTARY RPM 65

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 44 PRESS 1000

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
6	7 7/8	F-45	6838		197	9 1/2	14 14 14				
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT 9.5 VIS 37 WL 28 GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED 2 Rayvan, 2 Caustic Soda, 1 Caustic Lignite, 1 Driscose

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbls

OUTPUT cfm Press. psig

MAKE RATING

RIG TIME

1. Drilling	9 1/2	6. Surveying		11. Coring		16.	Laid Down Test Tool - 2 1/4
2. Tripping	5 1/2	7. Circulating		12. Testing	5 1/2	17.	Cutting Drill Line - 3/4
3. Service & BOPs	1/4	8. Clean to Bttm	1/4	13. Logging		18.	
4. Reaming		9. Cond. Mud		14. Casing		19.	
5. Slip & Cutline		10. Repairing		15. WOC		20.	

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Ran DST #3. Tripped out of hole, chained out. Laid down test tool. Ran in drill collars and cut drilling line. Tripped into hole with Bit #6. Washed to bottom, and drilled from 6838 to 7035 feet. Cleaned mud tank.

Note: See DST #2 report for full details of test.

	$
Well Costs	
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John H. Helms

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 20 DATE Feb. 10, 1980

DEPTH 7340' FEET MADE 305 HRS. ON BOTTOM 19 1/4

OPERATION Drilling

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. 165 WT ON BIT M LBS 40 ROTARY RPM 65

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 74 PRESS 1000

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
6	7 7/8	F-45	6838		502	28 3/4	14 14 14				
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT 9.3 VIS 39 WL 18 GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED 145 Salt Gel, 6 Rayvan, 8 Caustic Soda, 5 Caustic Lignite, 10 Mica, 1 Driscose, 28 Fiber, 17 Hulls

DAILY MUD COST

Hrs. Run 3 Out

DESILTER LB/GAL

DESANDER LB/GAL

DEGASSER LB/GAL

COMPRESSOR DATA MUD DUMPED BBL

OUTPUT cfm Press. psig

MAKE RATING

RIG TIME

1. Drilling 19 1/4
2. Tripping
3. Service & BOPs 3/4
4. Reaming
5. Slip & Cutline
6. Surveying
7. Circulating
8. Clean to Btm
9. Cond. Mud
10. Repairing
11. Coring
12. Testing
13. Logging
14. Casing
15. WOC
16. OTHERS (SPECIFY) Regaining Circulation - 4
17.
18.
19.
20.

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be Inserted below)

Drilled with Bit #6 from 7035 to 7211, and lost circulation. Pulled five stands. Lost 300 barrels mud. Mixed mud, and pumped down plug. Regained circulation, and drilled from 7211 to 7340 feet.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John D. Tucker

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT
(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 21 DATE Feb. 23 1980
DEPTH 7445' FEET MADE 105 HRS. ON BOTTOM 12 3/4
OPERATION Repairing Water Pump
SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO
WT OF STRING M LBS. 163 WT ON BIT M LBS 40 ROTARY RPM 65
PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 50 PRESS 1100
PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS
DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18
BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND. T	COND. B	COND. G	REMARKS
6	7 7/8	F-45	6838	7445	607	41 1/2	14	14	14				
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD
WT 9.4 VIS 58 WL GEL FC
PH APP VIS PLAS VIS YLD. PT.
WATER OIL Cl- PPM
SOLIDS SAND CA++ PPM
LV NV d-exp Pore Press
MUD ADDED

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbl
OUTPUT disc Press. psi
MAKE RATING

RIG TIME

1. Drilling	12 3/4	6. Surveying		11. Coring		16.	Picking Up Core Barrel - 3/4
2. Tripping	4 1/4	7. Circulating	2	12. Testing		17.	Waiting on Welder - 3/4
3. Service & BOPs	1/4	8. Clean to Btm		13. Logging		18.	
4. Reaming		9. Cond. Mud		14. Casing		19.	
5. Slip & Cutline		10. Repairing	3 1/4	15. WOC		20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #6 from 7340 to 7445 feet. Circulated and conditioned mud for Core #4. Tripped out. Picked up core barrel. Waited on welder. Ran drill collars into hole. Repaired water pump, and waited on water.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor John H. Hughes
Form HE-D1

MELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 22 DATE Feb. 22 19[illegible]

DEPTH 7572' FEET MADE 127 HRS. ON BOTTOM 10 1/4

OPERATION Drilling

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. 164 WT ON BIT M LBS 40 ROTARY RPM 80

PUMP No. 1 National C-350 IN USE X LINERS 5 1/2 x 18 SPM 43 PRESS 1000

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	CORD T	CORD B	CORD G	REMARKS
5-A	7 7/8										Core #4
7	7 7/8	F-45	7504		68	3	14 14 14				Rerun #6
Ream Bit No.											
Core No. 4	4"	MC-201	7445	7504	59	7 1/4	FEET CUT 59	FEET REC. 29.7			

MUD

WT 9.6 VIS 40 WL 14 GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL Cl- PPM

SOLIDS SAND Ca++ PPM

AV NV d-exp Pore Press

MUD ADDED: 15 Hydro Gel, 1 Rayvan, 1 Caustic Lignite, 2 Caustic Soda, 1 Nitrate, 2 Mica

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DECASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbl

OUTPUT disc Press. psig

MAKE RATING

RIG TIME

1. Drilling	3	6. Surveying		11. Coring	7 1/4	16.	Laying Down Core - 1
2. Tripping	7 1/2	7. Circulating	3/4	12. Testing		17.	Laying Down Core Barrel - 1
3. Service & BOPs		8. Clean to Btm		13. Logging		18.	Cutting Drill Line - 3/4
4. Reaming	1	9. Cond. Mud		14. Casing		19.	
5. Slip & Cutline		10. Repairing	1 3/4	15. WOC		20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Tripped into hole with Christensen core barrel, and circulated. Cored from 7445 to 7504 feet. Tripped out of hole. Laid down core, and core barrel. Tripped into hole. Cut drilling line. Washed and reamed to bottom. Drilled with Bit #7 from 7504 to 7572 feet. Worked on pump.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 23 DATE Feb. 23, 1980

DEPTH 7738' FEET MADE 166 HRS. ON BOTTOM 7 3/4

OPERATION Stuck

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS 40 ROTARY RPM 70

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS 1000

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504		234	10 3/4	14 14 14				Rerun #6
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT 9.5 VIS 38 WL 16 GEL FC

PH 9.1 APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV MV d-exp Pore Press

MUD ADDED

DAILY MUD COST

	In Rig	In	Out	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbls

OUTPUT stm Press. psi

MAKE RATING

RIG TIME

1. Drilling	7 3/4	6. Surveying		11. Coring		16.	Stuck @ 7738' - 15 1/2
2. Tripping		7. Circulating		12. Testing		17.	
3. Service & BOPs	1/4	8. Clean to Btm		13. Logging		18.	
4. Reaming		9. Cond. Mud		14. Casing		19.	
5. Slip & Cutlin		10. Repairing	1/2	15. WOC		20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Drilled with Bit #7 from 7572 to 7738 feet. Let pipe set for 30 minutes while working on pump, and pipe stuck. Spotted 4,000 gallons diesel oil and 90 gallons pipe Lax. Moved pipe every 30 minutes, and moved 5 barrels oil every hour.

Well Cost	$
Daily	
Cumul.	

WEATHER: TEMP. °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 24 DATE Feb. 24, 1990

DEPTH 7738 FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Working Stuck Pipe

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CONNECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504		234	10 3/4	14 14 14				Rerun #6
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT 8.9 VIS 41 WL 9.6 GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED 100 Gel, 6 Rayvan, 3 Caustic Lignite, 3 Caustic, 1 Driscose

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbl

OUTPUT atm. Press. psig

MAKE RATING

RIG TIME

1. Drilling
2. Tripping
3. Service & BOPs
4. Reaming
5. Slip & Cutline
6. Surveying
7. Circulating
8. Clean to Btm
9. Cond. Mud
10. Repairing
11. Coring
12. Testing
13. Logging
14. Casing
15. WOC

OTHERS (SPECIFY)

16. Working Stuck Pipe - 24
17.
18.
19.
20.

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Cleaned mud tanks, and displaced 9.5 mud with 8.9 mud. Spotted 2,000 gallons diesel oil, and 135 gallons pipe Lax. Spotted at 6:30 A.M., February 24, 1990. Worked stuck pipe.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John H. Hargues

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 25 DATE Feb. 25, 1980

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Running Free Point

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504		234	10 3/4	14	14	14				Rerun #6
Run in Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD WT 9.1 VIS 32 WL 12 CHL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED 244 Gel, 4 Walnuts, 2 Mica, 6 Rayvan, 6 Caustic Lignite, 138 BAR, 1 Driscose, 2 Caustic Soda.

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED bbl

OUTPUT cfm Press. psig

MAKE RATING

DAILY MUD COST

RIG TIME

1. Drilling
2. Coring
3. Trips & BOPs
4. Reaming
5. Cutline
6. Surveying
7. Circulating
8. Clean to Bom
9. Cond. Mud 6 1/2
10. Repairing
11. Coring
12. Testing
13. Logging
14. Casing
15. WOC

OTHERS (SPECIFY)

16. Working Stuck Pipe - 13
17. Pumping Mud From Reserve Pit - 3
18. Running Free Point - 1 1/2
19.
20.

GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Spotted oil and worked stuck pipe. Pumped mud from reserve pit to stop water flow. Conditioned mud, and circulated. Ran Free Point.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 26 DATE Feb. 26, 19..

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Tripping in

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504		234	10 3/4	14	14	14				Rerun #6
Ream Bit No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT	VIS	WL	GEL	FC			
PH	APP VIS	PLAS VIS	YLD. PT.				
WATER	OIL	CL-	PPM				
SOLIDS	SAND	CA++	PPM				
AV	NV	d-exp	Pore Press				

MUD ADDED

DAILY MUD COST

Hrs. Run	IN	OUT	
DESILTER			LB/GAL
DESANDER			LB/GAL
DEGASSER			LB/GAL

COMPRESSOR DATA MUD DUMPED bbl

OUTPUT cfm Press. psi

MAKE RATING

RIG TIME

1. Drilling	6. Surveying	11. Coring	16.	OTHERS (SPECIFY)	
2. Tripping 11 1/2	7. Circulating	12. Testing	17.	Running Free Point - 4 1/2	
3. Service & BOPs 1/4	8. Clean to Btm	13. Logging	18.	Shot collars & Free Point - 4	
4. Reaming	9. Cond. Mud	14. Casing	19.	Jarring collars - 2 3/4	
5. Slip & Cutline	10. Repairing	15. WOC	20.	Picking Up Test Tool - 1	

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Ran Free Point. Shot off collars. Tripped out chaining. Made up jars, and ran in drill collars. Tripped into hole. Worked jars on fish. Ran Free Point. Shot off Free Point, did not work. Ran Free Point. Tripped out chaining. Picked up test tool, and tripped into hole.

Well Costs	0
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 27 DATE Feb. 27, 1980

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Conditioning Mud

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504		234	10 3/4	14 14 14				Rerun #6
Team Bit No.											
Core No.							FEET OUT	FEET REC.			

MUD

WT ____ VIS ____ WL ____ GEL ____ FC ____

PH ____ APP VIS ____ PLAS VIS ____ YLD. PT. ____

WATER ____ OIL ____ CL- ____ PPM

SOLIDS ____ SAND ____ CA++ ____ PPM

AV ____ NV ____ d-exp ____ Pore Press ____

MUD ADDED 25 Gel, 3 Nitrate, 1 Driscose

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED ____ bbl

OUTPUT ____ cfm Press. ____ psig

MAKE ____ RATING ____

RIG TIME

1. Drilling		6. Surveying		11. Coring		16.	Unplugging Jets - 2 1/4
2. Tripping	15 1/2	7. Circulating	1 1/2	12. Testing		17.	Attaching Goose Neck on
3. Service & BOPs		8. Clean to Btm	1	13. Logging	1	18.	Swival - 1
4. Reaming		9. Cond. Mud		14. Casing		19.	Screwing into Fish, and
5. Slip & Cutline		10. Repairing		15. WOC		20.	Releasing Pressure - 1/4

OTHERS (SPECIFY) Rigging Up Logging Tool - 1½

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Finished tripping into hole with packers. Screwed into fish, and released hydrostatic pressure. Tripped out, and laid down test tool. Tripped into hole with drill collars. Put goose neck on swivel, and hooked up Kelly hose. Tripped into hole, and had plugged jets in bit. Attempted to unplug jets. Tripped out. Rigged up logging tool. Tool would not go below 7300 feet due to bridge. Pulled tool. Tripped into hole with Bit #7, washed to bottom, and circulated to condition hole.

Nitrates 230 ppm SoCo, Casper, Wyoming

No mud report for Feb. 25, and Feb. 26 by Rough Rider

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. ____ °F ____ Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SOSAT #1 O'Donnell DAY NO. 28 DATE Feb. 28 19 80

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Tripping in

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 TMD XH DRILL COLLARS OD 6 1/4 TMD XH No. IN HOLE 13

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504		234	10 3/4	14	14	14				Rerun #6
Prev. Bit No.													
Core No.							FEET OUT		FEET REC.				

MUD

WT _____ VIS _____ WL _____ GEL _____ FC _____

PH _____ APP VIS _____ PLAS VIS _____ YLD. PT. _____

WATER _____ OIL _____ CL- _____ PPM

SOLIDS _____ SAND _____ CA++ _____ PPM

AV _____ HV _____ d-exp _____ Pore Press _____

MUD ADDED 3 Driscose, 65 Gel

DAILY MUD COST

	Rec. Rate	IN	OUT	
DESILTER				BBL/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED _____ bbl

OUTPUT _____ cfm Press. _____ psi

MAKE RATING

RIG TIME

1. Drilling
2. Tripping 13 3/4
3. Service & SOPs
4. Reaming
5. Slip & Cut Line
6. Surveying
7. Circulating
8. Clean to Btm
9. Cond. Mud 7 1/4
10. Rigging
11. Coring
12. Testing
13. Logging 5
14. Casing
15. WOC

OTHERS (SPECIFY)

16.
17.
18.
19.
20.

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Conditioned mud, and circulated. Tripped out to run logs. Schlumberger hit bridge at 1150 feet. Made 14 stand short trip, and reamed bridge. Tripped out for logs. Schlumberger hit bridge at 1150 feet. Conditioned mud. Made short trip. Circulated and conditioned mud. Tripped out for logs. Schlumberger hit bridge at 1450 feet. Made 13 stand short trip. Schlumberger hit bridge at 1193 feet. Rigged down logging tool. Tripped into hole.

Well Cost $

Daily

Cumulative

WEATHER: TEMP. _____ °F _____ Supervisor John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 39 DATE Feb. 29, 1980

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Tripping

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH NO. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds			COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504		234	10 3/4	14	14	14				Rerun #6
Room BR No.													
Core No.							FEET CUT			FEET REC.			

MUD

WT _____ VIS _____ WL _____ GEL _____ FC _____

PH _____ APP VIS _____ PLAS VIS _____ YLD. PT. _____

WATER _____ OIL _____ CL- _____ PPM

SOLIDS _____ SAND _____ CA++ _____ PPM

MBT _____ MV _____ d-exp _____ Pore Press _____

MUD ADDED

DAILY MUD COST

	HRS. RUN	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DECASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED _____ bbl

OUTPUT _____ cfm Press. _____ psig

MAKE RATING

RIG TIME

1. Drilling		6. Surveying		11. Coring		OTHERS (SPECIFY) 16. Rigging Up to Log - 3/4	
2. Tripping	9 1/2	7. Circulating		12. Testing		17.	
3. Service & BOPs		8. Clean to Stm		13. Logging	9 1/2	18.	
4. Reaming	1/2	9. Cond. Mud	3 3/4	14. Casing		19.	
5. Slip & Cutline		10. Repairing		15. WOC		20.	

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Reamed to bottom. Circulated and conditioned mud. Tripped out to run logs. Rigged up to log. Tried to log, would not go. Made 14 stand short trip to knock out bridge. Tried to log, would not go. Made short trip to clear bridge. Rigged up to log. Schlumberger unable to get below 1865 feet. Made 20 stand short trip to knock out bridge. Schlumberger unable to get below 1350 feet. Made short trip to knock out bridge.

Well Cost	$
Daily	
Cumulative	

WEATHER: TEMP. _____ °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 30 DATE March 1, 1980

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Logging

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 18

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
7	7 7/8	F-45	7504	7738	234	10 3/4	14 14 14				Rerun #6
Reun Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT VIS WL GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

S/V NV d-exp Pore Press

MUD ADDED

DAILY MUD COST

Hydrom	IN	OUT
DESILTER		LB/GAL
DESANDER		LB/GAL
DEGASSER		LB/GAL

COMPRESSOR DATA MUD DUMPED bbl

OUTPUT cfm Press psig

MAKE RATING

RIG TIME

1. Drilling
2. Tripping 7
3. Service & BOPs
4. Reaming
5. Slip & Cutline
6. Surveying
7. Circulating
8. Clean to Btm 1/4
9. Cond. Mud 3 1/2
10. Repairing
11. Coring
12. Testing
13. Logging 10 1/4
14. Casing 2 1/4
15. WOC

OTHERS (SPECIFY)

16. Cutting drill line - 3/4
17.
18.
19.
20.

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Made short trip. Schlumberger unable to get below 1449 feet. Tripped into hole with collars. Cut drilling line. Tripped into hole and reamed to bottom. Circulated and conditioned mud. Tripped out of hole. Ran 2000 feet of 5 1/2" casing. and held by slips. Ran logs.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor John H. Hughes

Form HE-D1

MELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 31 DATE March 2, 1980

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Testing

SURVEYS

LAST PIPE TALLY 6225 BOARD 6205 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH No. IN HOLE 13

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND T	COND B	COND G	REMARKS
Room Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT _____ VIS _____ WL _____ GEL _____ FC _____

PH _____ APP VIS _____ PLAS VIS _____ YLD. PT. _____

WATER _____ OIL _____ Cl- _____ PPM

SOLIDS _____ SAND _____ CA++ _____ PPM

PV _____ YP _____ d-exp _____ Pore Press _____

MUD ADDED

DAILY MUD COST

	hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPRESSOR DATA MUD DUMPED _____ bbls

OUTPUT _____ cfm Press. _____ psi

MAKE RATING

RIG TIME

1. Drilling		6. Surveying		11. Coring		16.	Making up Test Tool - 3 1/4
2. Tripping	3 1/4	7. Circulating		12. Testing	3 1/4	17.	Waiting on Casing Crew - 1
3. Service & BOPs		8. Clean to Btm		13. Logging	10 1/2	18.	Laying Down Casing - 1 1/2
4. Reaming		9. Cond. Mud		14. Casing		19.	Waiting on Tester - 1 1/-
5. Slip & Cutline		10. Repairing		15. WOC		20.	

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be Inserted below)

Ran logs. Waited on casing crew. Laid down 2000 feet of 5 1/2" casing. Waited on tester. Made up Lynes test straddle tool. Tripped into hole with test tool. Rigged up test tool. Began DST #4 from 6730-6745 feet.

Well Cost	$
Daily	
Cumulative	

WEATHER: TEMP. _____ °F Supervisor John I. Hughes

Form HE-D1

[illegible] ENGINEERING [illegible] GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(As of 7:00 a.m.)

WELL: Chevron-[illegible] #1 O'Donnell DAY NO.: 52 DATE: [illegible] 3, [illegible]

DEPTH: [illegible]736' FEET MADE: ______ [illegible]: [illegible]

OPERATION: Waiting on Orders

SURVEYS:

LAST PIPE TALLY: 6225 BOARD: 6202 CORRECTION: YES X NO ____

WT OF STRING M LBS: ______ WT ON BIT M LBS: ______ ROTARY RPM: ______

PUMP No. 1: National C-350 IN USE: ______ LINERS: 5 1/2 x 18 SPM: ______ PRESS: ______

PUMP No. 2: National C-250 IN USE: ______ LINERS: 5 1/2 x 18 SPM: ______ PRESS: ______

DRILL PIPE OD: 4 1/2 T.J.D: XH DRILL COLLARS OD: 6 1/4 T.J.D: XH No. IN HOLE: 18

BOTTOM HOLE ASSEMBLY: ______

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE 32nds	COND. T	B	G	REMARKS
Ream Bit No.											
Core Bit No.							FEET CUT	FEET REC.			

MUD

WT: 9.2 VIS: 90 WL: 8 GEL: ______ FC: ______

PH: ______ APP VIS: ______ PLAS VIS: ______ YLD. PT.: ______

WATER: ______ OIL: ______ CL--: ______ PPM

SOLIDS: ______ SAND: ______ CA++: ______ PPM

AV: ______ NV: ______ Temp: ______ Pore Press: ______

MUD ADDED: ______

DAILY MUD COST: ______

[illegible] IN [illegible] OUT

DESILTER: ______ [illegible]

DESANDER: ______ [illegible]

DEGASSER: ______ [illegible]

COMPRESSOR DATA: ______ MUD [illegible]: ______

OUTPUT: ______ [illegible]: ______

[illegible]: ______ RATING: ______

RIG TIME

1. Drilling ______	6. Surveys ______	11. Coring ______	16. Waiting on Orders - 5 1/2
2. Tripping 7	7. Circulating ______	12. Testing 8 3/4	17. [illegible] Test Tool - 2 [illegible]
3. Service & BOPs ______	8. Clean to Btm ______	13. Logging ______	18. ______
4. Reaming ______	9. Cond. Mud ______	14. Casing ______	19. ______
5. Slip & Cutline ______	10. Repairing ______	15. WOC ______	20. ______

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be Entered Below)

Ran DST #4 from 6730-6745 feet. Tripped out with test tool. Loaded out test tool. Tripped into hole. Waited on orders.

Note: See Drill Stem Test #4 for full details of report.

Wtr. Cost: [illegible]

Daily: ______

Cum.: ______

WEATHER: TEMP. ______ °F ______ Supervisor: John H. [illegible]

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL: Chevron-SUNAT #1 O'Donnell DAY NO. 33 DATE March 4, 1983

DEPTH 7733' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Picking up Tubing

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION: YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PRESS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PRESS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 6 1/4 THD XH NO IN HOLE

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND. T	B	G	REMARKS
Foam Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT _____ VIS _____ WL _____ GEL _____ FC _____

FM _____ APP VIS _____ PLAS VIS _____ YLD. PT. _____

WATER _____ OIL _____ CL- _____ PPM

SOLIDS _____ SAND _____ CA++ _____ PPM

pH _____ MF _____ d-exp _____ Pore Press _____

MUD ADDED

DAILY MUD COST

	Hrs. Run	IN	OUT	
DESILTER				LB/GAL
DESANDER				LB/GAL
DEGASSER				LB/GAL

COMPUTER DATA MUD DUMPED bbl

OUTPUT gpm Press. psi

MAKE RATING

RIG TIME

1. Drilling		6. Surveying		11. Coring		16.	Rigging Up To Run Tubing - 1
2. Tripping	3	7. Circulating		12. Testing		17.	Running Tubing - 3
3. Service & BOPs		8. Clean to Btm		13. Logging		18.	Running Water Cushion - 1/2
4. Reaming		9. Cond. Mud		14. Casing		19.	Picking Up Tubing - 1 1/2
5. Slip & Cutline		10. Repairing		15. WOC		20.	Waiting on Orders - 14 1/2

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be Inserted Below)

Waited on orders. Tripped out. Rigged up to run tubing. Ran tubing, set packer, cushion. Picked up tubing.

Well Costs	$
Daily	
Cumulative	

WEATHER: TEMP. _____ °F _____ Supervisor: John H. Stiles

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT
(AS OF 7:00 AM)

WELL Chevron-SONAT #1 O'Donnell DAY NO. 34 DATE [illegible]

DEPTH 7738' FEET MADE 0 HRS. ON BOTTOM 0

OPERATION Waiting on Orders

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTIONS YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 National C-350 IN USE LINERS 5 1/2 x 18 SPM PSS

PUMP No. 2 National C-250 IN USE LINERS 5 1/2 x 16 SPM PSS

DRILL PIPE OD 4 1/2 THD XH DRILL COLLARS OD 4 1/4 THD XH IN HOLE

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND. T B G	REMARKS
Ream Bit No.									
Core No.							FEET CUT	FEET REC.	

MUD

WT VIS WL GEL PC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED

DAILY MUD COST

DESILTER LB/GAL

DESANDER LB/GAL

DEGASSER LB/GAL

COMPRESSOR DATA bbg

OUTPUT psig

RIG TIME

1. Drilling
2. Tripping
3. Service & BOPs
4. Reaming
5. Slip & Cutline
6. Surveying
7. Circulating
8. Clean to Btm
9. Cond. Mud
10. Repairing
11. Coring
12. Testing
13. Logging
14. Casing
15. WOC

OTHERS SPECIFY:

16. Acidizing - 1 1/2
17. Waiting on Orders - 16 1/2
18. Filling Tubing - 3/4
19. Rigging up Halliburton &
20. Testing Lines - Running Tool to Open Circulating Sleeves & Stuck Tool in Tubing - 4 1/4

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be included)

Filled tubing. Rigged up Halliburton, and tested lines. Ran tool to open circulating sleeves, and stuck tool. Much water over flowed top of tubing (fresh). Bar unstuck at 12:45 P.M., and water stopped over flowing out of tubing. [illegible] on orders. Pumped 500 gallons of 15% HCL from 2:45 to 3:[illegible] P.M. (12 barrels). Tubing had 38 barrels of water in it before acid pumped in. Pumped acid at 4 barrels per minute at 1200 psi, ISIP 750 psi. Left shut in for 10 minutes. Opened tubing and flowed water and acid back from 3:45 to 4:15 P.M. with no trace of gas or oil. Flow stopped at 4:25 P.M. Left valve open all night with no flow. Waited on orders.

Well Costs: 0
Daily
Cumulative

WEATHER: TEMP. °F Supervisor: Jim H. [illegible]

Form HE-D1

HELTON ENGINEERING — GEOLOGY & SERVICES, INC.

DAILY DRILLING REPORT

(As of 7:00 a.m.)

WELL Chevron-SOHIO #1 O'Donnell DAY NO. 35 DATE November 3 1980

DEPTH 7738' FEET MADE ____ HRS. ON BOTTOM ____

OPERATION Waiting on orders

SURVEYS

LAST PIPE TALLY 6225 BOARD 6202 CORRECTION? YES X NO ___

WT OF STRING M LBS. ____ WT ON BIT M LBS ____ ROTARY RPM ____

PUMP No. 1 National C-350 IN USE ____ LINERS 5 1/2 x 18 SPM ____ PRESS ____

PUMP No. 2 National C-250 IN USE ____ LINERS 5 1/2 x 16 SPM ____ PRESS ____

DRILL PIPE OD 4 1/2 TYPE XH DRILL COLLARS OD 6 1/4 TYPE ____ FLOW HOLE ____

BOTTOM HOLE ASSEMBLY ____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZES	CONDITION T	B	G	REMARKS
Spare Bit No.											
Dev.							FEET OUT	FEET REC.			

MUD

WT ____ VIS ____ WL ____ GEL ____ FC ____

PH ____ APP VIS ____ PLAS VIS ____ YLD. PT. ____

WATER ____ OIL ____ CL- ____ PPM

SOLIDS ____ SAND ____ CA++ ____ PPM

AV ____ MV ____ d-exp ____ Pore Press ____

MUD ADDED

DAILY MUD COST

	IN	OUT
DESILTER		BBLS
DESANDER		BBLS
DEGASSER		LB/GAL
CONTRACTOR DUMPED		bbl
OUTPUT		psig
MAKE	BALCO	

RIG TIME

1. Drilling	6. Surveying	11. Coring		16.	Waiting on Orders - 1 1/2
2. Tripping	7. Circulating	12. Testing		17.	Swabbing through 2 7/8
3. Service & BOPs	8. Clean to Btm	13. Logging	3	18.	Tubing - 2 1/2
4. Reaming	9. Cond. Mud	14. Cutting		19.	Waiting on Loggers - 13 1/2
5. Slip & Cutting	10. Repairing	15. WOC		20.	Moved Drill Pipe on Derrick for Tubing - 4 1/2

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Worked Stuck Tubing - 1

Waited on orders. Swabbed through tubing beginning at 8:30 A.M. with fluid at surface of 2 7/8" O.D. tubing.

Pulled 8:30 A.M. from 1000 feet 200' water & 800' mud - 6 barrels
9:00 from 500 feet - 3 barrels mud
9:10 from 500 feet - 3 barrels mud
9:20 from 500 feet - 3 barrels mud
10:00 from 500 feet - 3 barrels mud
10:15 from 300 feet - 2.16 barrels mud
Swabbed 20.16 barrels total

Waited on orders. Ran Schlumberger Gamma Ray & Collar Locator log through tubing to check on depth of packers. Packer interval 6732-6747 feet.

Costs	$
Day	
Cumulative	

WEATHER: TEMP. ____ °F Supervisor: John H. Helton

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT

(AS OF 7:00 AM)

WELL: Chevron-SUNAT #1 O'Donnell DAY NO. 30 DATE March 7, 1980

DEPTH: 7738' FEET MADE: HRS. ON BOTTOM:

OPERATION: Repairing

SURVEYS:

LAST PIPE TALLY: 6225 BOARD: 6202 CORRELATION YES X NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP NO. 1: National C-350 IN USE LINERS: 5 1/2 x 18 SPM PRESS

PUMP NO. 2: National C-250 IN USE LINERS: 5 1/2 x 16 SPM PRESS

DRILL PIPE OD: 4 1/2 THD: XH DRILL COLLARS OD: 6 1/4 I.D. NO. IN HOLE

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH CUT	FT. MADE	TOTAL HRS.	JET SIZE	COND. T	B	G	REMARKS
Rerun Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT VIS WL GEL FC

PH APP VIS PLAS VIS YLD. PT.

WATER OIL CL-- PPM

SOLIDS SAND CA++ PPM

AV NV d-exp Pore Press

MUD ADDED

DAILY MUD COST

	HRS. RUN	IN	OUT
DESILTER			LB/GAL
DESANDER			LB/GAL
DEGASSER			LB/GAL

[illegible] BOTTOMS UP [illegible] PUMPED _____ BBL

OUTPUT ____ Circ. Press. ____ psig

[illegible]

RIG TIME

1. Drilling	6. Surveying	11. Coring	16. Working Stuck Tubing – 8
2. Tripping 11 1/4	7. Circulating 2 1/4	12. Testing	17. Laying Down Test Tool – 1/2
3. Service & BOPs	8. Clean to Btm	13. Logging	18.
4. Reaming	9. Cond. Mud	14. Casing	19.
5. Slip & Cutline	10. Repairing 2	15. WOC	20.

OTHERS (SPECIFY)

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be described below)

Worked stuck 2 7/8" tubing. Tripped out with tubing. Laid down test tool. Tripped into hole, and circulated to clean out hole. Tripped out of hole. Repaired second chain in draw works.

Prev. Cost	$
Daily	
Cumulative	

WEATHER: TEMP. °F Supervisor: John H. Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT
(AS OF 7:00 AM)

WELL: Chevron-SONAT #1 O'Donnell   DAY NO. 37   DATE March 8, 1980

DEPTH 7738'   FEET MADE 0   HRS. OFF BOTTOM 0

OPERATION: Waiting on orders

SURVEYS:

LAST PIPE TALLY 6225   BOARD 6202   CORRECTION: YES X NO

WT OF STRING M LBS. ____ WT ON BIT M LBS ____ ROTARY RPM ____

PUMP No. 1 National C-350   IN USE ____ LINERS 5 1/2 x 18   SPM ____ PRESS ____

PUMP No. 2 National C-250   IN USE ____ LINERS 5 1/2 x 16   SPM ____ PRESS ____

DRILL PIPE OD 4 1/2   THD XH   DRILL COLLARS OD 6 1/4   THD XH   No. IN HOLE ____

BOTTOM HOLE ASSEMBLY ____

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	DULL T	DULL B	DULL G	REMARKS
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT ____ VIS ____ WL ____ GEL ____ FC ____
pH ____ APP VIS ____ PLAS VIS ____ YLD. PT. ____
WATER ____ OIL ____ CL- ____ PPM
SOLIDS ____ SAND ____ CA ++ ____ PPM
AV ____ NV ____ d-exp ____ Pore Press ____
MUD ADDED ____

DAILY MUD COST

DESILTER ____ GPM; DESANDER ____ GPM; DEGASSER ____ GPM
COMPRESSOR DATA ____ MUD PUMPED ____ bbl
OUTPUT ____ Disch Press ____ psig
MAKE ____ RATING ____

RIG TIME

1. Drilling ____	6. Surveying ____	11. Coring ____	16. Waiting on Orders - 16
2. Tripping ____	7. Circulating ____	12. Testing ____	17. Making up Tubing - 1
3. Service & BOPs ____	8. Clean to Btm ____	13. Logging 1 3/4	18. Running 2 7/8" Tubing - 4½
4. Reaming ____	9. Cond. Mud ____	14. Casing ____	19. Rigging up Schlumberger - ½
5. Slip & Cut line ____	10. Repairing ____	15. WOC ____	20. Laying Down Tubing - ½

OTHERS-SPECIFY

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Made up 2 7/8" tubing and test tools. Ran tubing into hole. Rigged up Schlumberger to run Gamma Ray and Collar Locator log. Ran logs, two runs. Laid down one joints of tubing, and made up 12 feet. Set base of upper packer at 6735 feet. Waited on orders. Test interval 6735-6750 feet.

Well Cost $ ____
Daily ____
Cum. Rental ____

WEATHER: TEMP. ____ °F ____   Supervisor: John R. Ingles

Form HE-D1

[illegible] ENGINEERING [illegible], INC.

DAILY [illegible] REPORT
(AS OF 7:00 A.M.)

WELL: Chevron-SONAT #1 O'Donnell — DAY NO.: 38 — DATE: March [illegible]

DEPTH: 7738' — FEET MADE: 0 — HRS. [illegible]: 0

OPERATION: Waiting on Orders

SURVEYS:

LAST PIPE TALLY: 6225 — BOARD: 6202 — [illegible]: YES X NO

WT. OF STRING M LBS.: — WT ON BIT M LBS: — ROTARY RPM:

PUMP No. 1: National C-350 — IN USE: — LINERS: 5 1/2 x 18 — SPM: — PRESS:

PUMP No. 2: National C-250 — IN USE: — LINERS: 5 1/2 x 16 — SPM: — PRESS:

DRILL PIPE OD: 4 1/2 — THD: XH — DRILL COLLARS OD: 6 1/4 — THD: XH — [illegible] IN HOLE:

BOTTOM HOLE ASSEMBLY:

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE 32nds	T	B	G	REMARKS
Ream Bit No.											
Core No.							FEET OUT	FEET REC.			

MUD: WT — VIS — WL — GEL — FC

PH — APP VIS — PLAS VIS — YLD. PT.

WATER — OIL — CL — PPM

SOLIDS — SAND — CA ++ — PPM

[illegible] — RV — d-exp — Pore Press

MUD ADDED:

DAILY MUD COST

DESILTER — LB/GAL; CLEANER — LB/GAL; DEGASSER — LB/GAL

[illegible] DATA — MUD DUMPED — BBL

OUTPUT — [illegible] Press. — psig

[illegible] — RATIO

RIG TIME

1. Drilling	6. Surveying	11. Coring	16. Waiting on Orders - 14
2. Tripping	7. Circulating	12. Testing	17. Swabbing - 7 3/4
3. Service & BOPs	8. Clean to btm	13. Logging	18. Acidizing - 1 1/4
4. Reaming	9. Cond. Mud	14. Casing	19. Shut in at 550 psi - 1/4
5. Slip & Cutline	10. Repairing	15. WOC	20. Flowed back 40 Barrels Water - 1

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to [illegible])

Waited on orders. Opened sleeve in test tool. Pump schedule as follows: 10:10 A.M. Pressure tested lines at 3000 psi. 10:13 A.M. Estimated injection rate 1 barrel per minute at 300 psi. 10:15 A.M. Started acid at 1 barrel per minute at 300 psi, total 12 barrels 15% HCL. 10:30 A.M. Started flush at 3/4 barrel per minute at 300 psi. 11:04 A.M. Acidized perforations at 3/4 barrel per minute at 300 psi. 11:06 A.M. Increased rate at 1 1/2 barrels per minute at 600 psi. 11:12 A.M. Acid displaced with 39 barrels total fluid at 1 1/2 barrels per minute at 600 psi. Instant shut in 500 psi. Shut in 15 minutes, 400 psi. Maximum pressure 600 psi. Average pressure 450 psi. Maximum injection rate 1.5 barrels per minute. Minimum rate 1 barrel per minute. Average injection rate 1.25 barrels per minute. Stopped pumping at 11:12 A.M., March 8, 1980. At 12:12 test interval flowed back 40 barrels water into tank truck in one hour.

At 12:25, March 8, 1980 swab tests began from interval 6735-6750 [illegible].

Waiting on orders at report time.

Well Costs: $

Daily:

Cum Daily:

WEATHER: TEMP. °F — Supervisor: John [illegible] Hughes

Form HE-D1

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT
(AS OF 7:00 A.M.)

WELL: Chevron-SONAT #1 O'Donnell — DAY NO.: 39 — DATE: March 10, [illegible]

DEPTH: 7738' — FEET MADE: 0 — HRS. ON BOTTOM: 0

OPERATION: Tripping

SURVEYS:

LAST PIPE TALLY: 6225 — BOARD: 6202 — CORRECTION: YES X NO

WT OF STRING M LBS: — WT ON BIT M LBS: — ROTARY RPM:

PUMP No. 1: National C-350 — IN USE: — LINERS: 5 1/2 x 16 — SPM: — PSI LBS:

PUMP No. 2: National C-350 — IN USE: — LINERS: 5 1/2 x 16 — SPM: — PSI LBS:

DRILL PIPE OD: 4 1/2 — THD: XH — DRILL COLLARS OD: 6 1/4 — THD: XH — IN HOLE:

BOTTOM HOLE ASSEMBLY:

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND. T	B	G	REMARKS
Ream Bit No.											
Core No.							FEET CUT	FEET REC.			

MUD

WT: — VIS: — WL: — GEL: — FC:

PH: — APP VIS: — PLAS VIS: — YLD. PT.:

WATER: — OIL: — CL-: PPM

SOLIDS: — SAND: — CA++: PPM

AV: — NV: — d-exp: — Pore Press:

MUD ADDED:

DAILY MUD COST:

DESILTER: LB/GAL — DESANDER: LB/GAL — DEGASSER: LB/GAL — COMPRESSOR: PUMPED: — OUTPUT: — MAKE: — RATING:

RIG TIME

1. Drilling	6. Surveying	11. Coring	16. OTHER (SPECIFY) Waiting on Orders - 3/4
2. Tripping 10	7. Circulating	12. Testing	17. Flow Testing - 5 1/4
3. Service & BOPs	8. Clean to Btm	13. Logging	18. Laying Down 2 7/8" Tubing -
4. Reaming	9. Cond. Mud	14. Casing	19. 5 1/2
5. Slip & Cutline	10. Repairing	15. WOC	20. Laying Down Drill Collars - 2 1/2

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be inserted below)

Ran flow tests from A zone 6735-6750 feet: Flowed 100 barrels fresh water in 95 minutes, flowed 100 barrels fresh water in 65 minutes, flowed 100 barrels fresh water in 55 minutes, flowed 100 barrels fresh water in 55 minutes - 7:30 A.M. to 12:40 P.M. Received plugging orders. Pulled 2 7/8" tubing and laid down. Tripped into hole open ended. Pulled 40 stands breaking circulation every 10 stands. Tripped back into hole open ended.

Well Costs: 0
Daily:
Cumulative:

WEATHER: TEMP. °F — Supervisor: [illegible]

Form HE-01

[illegible] ENGINEERING GEOLOGICAL SERVICES, INC.

DAILY DRILLING REPORT
(AS OF 7:00 AM)

WELL: Chevron-SONAT #1 O'Donnell DAY NO. 40 DATE March [illegible] 1980

DEPTH 7738 FEET MADE 0 HRS. ON BOTTOM

OPERATION: Plugged and Abandoned

SURVEYS

LAST PIPE TALLY BOARD CORRECTION: YES NO

WT OF STRING M LBS. WT ON BIT M LBS ROTARY RPM

PUMP No. 1 IN USE LINERS SPM PRESS

PUMP No. 2 IN USE LINERS SPM PRESS

DRILL PIPE OD THD DRILL COLLARS OD THD NO. IN HOLE

BOTTOM HOLE ASSEMBLY

BIT NO.	SIZE	TYPE	DEPTH IN	DEPTH OUT	FT. MADE	TOTAL HRS. RUN	JET SIZE IN 32nds	COND. T B G	REMARKS
Ream Bit No.									
Core							FEET CUT	FEET REC.	

MUD

WT VIS WL GEL FC

pH APP VIS PLAS VIS YLD. PT.

WATER OIL CL- PPM

SOLIDS SAND CA++ PPM

RM NV d-exp Pore Press

MUD ADDED

DAILY MUD COST

DESILTER LB/GAL

DESANDER LB/GAL

DEGASSER LB/GAL

COMPRESSOR DATA No. PUMPS

OUTPUT psig

TANK RATING

RIG TIME

1. Drilling
2. Tripping
3. Service & BOPs
4. Reaming
5. Slip & Cutline
6. Surveying
7. Circulating
8. Clean to Btm
9. Cond. Mud
10. Repairing
11. Coring
12. Testing
13. Logging
14. Casing
15. WOC

OTHERS (SPECIFY)

16. Plugging & Laying Down
17. Drill Pipe - 8
18. [illegible] BOP, [illegible] Tanks
19. & Plugging Down - 8
20.

DRILLING & GEOLOGICAL REMARKS (Time & Sequence of Operations to be listed below)

Set plugs as follows:

Plug #1 6300 - 6600 100 sacks cement

Plug #2 5100 - 5400 100 sacks cement

Plug #3 3500 - 3600 40 sacks cement

Plug #4 508 - 608 40 sacks cement

Plug #5 Surface 10 sacks cement.

Laid down drill pipe. Rigged down. Rig released at 11:00 P.M. March 10, 1980.

Well Cost $

Daily

Cumulative

WEATHER: TEMP. °F

Supervisor John [illegible]

Form HE-01

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

DEVIATION SURVEY SUMMARY

WELL NAME: Chevron-SONAT #1 O'Donnell

LOCATION: SW SW Sec. 26-T21N-R15E
Corson County, South Dakota

DEPTH FEET	DEVIATION DEGREES	CHANGE DEGREES	INTERVAL FEET	Rate of Change Degrees/100 Ft.
288	1/4	1/4	288	0.086
620	1/4	0	332	--
1505	1/2	+ 1/4	885	0.028
2488	3/4	+ 1/4	983	0.026
3165	3/4	0	747	--
3759	3/4	0	594	--
5253	1	+ 1/4	1494	0.016
6718	1/4	- 3/4	1465	0.051

Form: HE-D6

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

BIT RECORD

WELL NAME: Chevron-SONAT #1 O'Donnell LOCATION: SW SW Section 26: T21N - R19E, Corson Co.,

BIT NO.	SIZE	MAKE	TYPE	SERIAL NO.	JET SIZE	DEPTH FROM	DEPTH TO	FEET MADE	HRS RUN	WT ON BIT M.B.	RPM	PUMP PRESS	MUD WT	MUD VIS	DULL COND T	DULL COND B	DULL COND G	REMARKS
1-A	12¼"	SMITH	DS		15-15-15	40	620	580	6½	10-20	95	500-600	WATER					
1	7 7/8	STC	DGS		13-13-13	620	3185	2565	26	30	122	1000	8.9	28				
2	7 7/8	STC	DGT		12-12-12	3185	3759	574	12½	40	75	1050	8.9	33				
3	7 7/8	STC	F-2		12-12-12	3759	5253	1494	65	40	65	1000	9.4	32	7	5	I	
2-A	7 7/8	CHRIST	MC201			5253	5313	60	20	15	48	700	9.5	38				Core #1
3-RR	7 7/8	STC	F-2		12-12-12	5313	5313	0	--	18	46	900	9.5	38				Tilted pp lost cone
4	7 7/8	STC	F-45		13-13-13	5313	6225	912	56	40	70	1100	9.5	37				
5	7 7/8	STC	F-45		13-14-14	6225	6718	493	21	40	70	1000	9.5	37				Reran bit #4
4-A	7 7/8	CHRIST.	MC201			6718	6778	60	9½	16	50	800	9.5	36				Core #2
4-A	7 7/8	CHRIST.	MC201			6778	6838	60	9½	16	60	950	9.5	37				Core #3
5	7 7/8	STC	F-45		14-14-14	6838	7445	607	48½	40	65	1100	9.6	40				
5-A	7 7/8	CHRIST.	MC201			7445	7504	59	7'	16	60	1100	9.4	58				Core #4
6	7 7/8	STC	F-45		14-14-14	7504	7738	234	10 3/4	40	70	1000	9.5	36				

Form HE-306

Chevron-Scott . O'Donnell
SE SW Section 26: 122N - 69E
Corson County, South Dakota

MUD SUMMARY

Fresh water mud was used to drill the hole down to a depth of 3627 feet. Beginning at a depth of 3627 feet, a chemical-gel mud was mixed and maintained during the remainder of the hole.

Mud properties below 3627 feet were maintained as follows:

DEPTH	WEIGHT	VISCOSITY	WATER LOSS
3627	8.9	28	[illegible]
4046	8.9	31	10.2
4575	9.2	33	18.4
4957	9.2	32	[illegible]
5253	9.4	32	20
5297	9.2	32	14.4
5313	9.5	38	14
5385	9.4	36	16
5745	9.4	33	20.6
6123	9.3	37	14
6405	9.5	37	16.2
6718	9.5	37	19.8
6778	9.4	36	20
6833	9.5	39	13.4
7035	9.5	37	28
7340	9.3	39	18
7445	9.4	38	18
7572	9.6	40	14
7738	9.5	38	16

Materials used to drill the hole are listed below:

Salt Gel	822 sacks
Gel	434 sacks
Kayvan	66 sacks
Caustic Soda	73 sacks
Driscose	22 sacks
Soda Ash	22 sacks
Mica	59 sacks
Revlon	5 sacks
Lignite	5 sacks
Nitrate	20 sacks
Caustic Lignite	38 sacks
Hydrogel	42 sacks
Fiber	58 sacks
Walnut Hulls	35 sacks
BAR	138 sacks

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

PLUG-BACK AND ABANDONMENT REPORT

Well Name: Chevron-SONAT #1 O'Donnell Location: SW SW Sec. 26-T21N-R19E Corson County, South Dakota

Operator approval to plug obtained from (Name) Pat Patterson on March 10, 1980

Regulatory approval to plug granted by (Name) Fred Steece of (Regulatory Board) South Dakota Geological Survey on March 10, 1980

Hole Size	12¼	7 7/8		
Depth	620	7738		

KB Elevation 2314

Total Depth 7738

CASING IN HOLE	SIZE	SET AT	TOP OF CEMENT
Surface Casing	9 5/8	620	Surface
Intermediate			
Production String			

Fluid in Hole Mud

Plug Back String Drill Pipe

Service Company Halliburton

Regulatory Official Fred Steece

	PLUG 1	PLUG 2	PLUG 3	PLUG 4	PLUG 5	PLUG 6
Date	3-10-80	3-10-80	3-10-80	3-10-80	3-10-80	
Interval – Top Bottom	6300 6600	5100 5400	3500 3600	508 608	Surface 20	
Formation – Name Depth	Interlake 6352	M. Canyon 5194	Dakota 3548	Bottom Sur. Csg.		
Calipered Hole Size (Average)	8 1/2"	9"	11"			
Type of Cement	Class G	Class G	Class G	Class G	Class G	
No. of Sacks	100	100	40	40	10	
Additives						
Bbls of Water Ahead						
Displacement – Bbls Water Bbls Mud						
Slurry Weight						
Mixing Times – Start Finish						
Displacing Times – Start Finish						
Felt Plug Time						
Felt Plug Depth						

Surface Casing Cut 3 Ft Below Ground Surface Plug 10 Sacks from Surface to 20'

Plate Welded – (Yes)/No DH Marker Installed – (Yes)/No

CASING SALVAGE: Shot off at None No. of Jts. Recovered _____ Ft. _____

Remarks _____

Supervisor: Don Conners

Form HE-D8

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water 2100
cc. Mud _____
Tot. Liquid cc. 2100
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY			CHLORIDE CONTENT
Recovery Water	1.14	@ 65	°F.	5500 ppm
Recovery Mud	1.15	@ 65	°F.	5600 ppm
Recovery Mud Filtrate	-	@	°F.	ppm
Mud Pit Sample	1.16	@ 50	°F.	7500 ppm
Mud Pit Sample Filtrate	1.01	@ 50	°F.	8000 ppm

Mud Weight 9.3 vis 38 SEC. x SP

Date 2-10-80 Ticket Number 746150
Kind of Job OPEN HOLE PACKER ON BOTTOM STRADDLE Halliburton District GLENDIVE
Tester DRILL STEM TEST HUFFMAN-NEWTON Witness CONNER
Drilling Contractor BOMAC #32 DR

EQUIPMENT & HOLE DATA

Formation Tested Mission Canyon
Elevation - Ft.
Net Productive Interval 30' Ft.
All Depths Measured From Kelly Bushing
Total Depth 5313' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length 537' I.D. 2.25"
Drill Pipe Length 4661' I.D. 3.826"
Packer Depth(s) 5234-5240-5270-5276' Ft.
Depth Tester Valve 5213' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve
Surface Choke 1/4" Bottom Choke 3/4"

Recovered 3617 Feet of mud
Recovered 1000 Feet of water
Recovered Feet of
Recovered Feet of
Recovered Feet of

Remarks See production test data sheet

UTR-Unable to read

TEMPERATURE	Gauge No. 1770 Depth: 5214 Ft.	Gauge No. 7509 Depth: 5218 Ft.	Gauge No. 7508 Depth: 5310 Ft.	TIME
	24 Hour Clock	24 Hour Clock	24 Hour Clock	Tool Opened 13:51 A.M. P.M.
Est. °F.	Blanked Off No	Blanked Off NO	Blanked Off Yes	Opened A.M.
Actual 140 °F.	Pressures	Pressures	Pressures	Bypass 18:05 P.M.

	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	2574	2584.7	2604	2576.0	2836	2652.8		
First Period Flow Initial	167	UTR	-	UTR			——	——
First Period Flow Final	250	UTR	-	UTR			10	10
First Period Closed in	2367	2365.6	2343	2356.5			62	60
Second Period Flow Initial	960	1026.9	1000	963.0	Hydrostatic		——	——
Second Period Flow Final	2119	2173.5	2126	2160.8	release:	2421.3	61	62
Second Period Closed in	2367	2369.8	2343	2358.6			121	122
Third Period Flow Initial							——	——
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	2574	2438.0	2604	UTR	2836	2478.1	——	——

Legal Location Sec. - Twp. - Rng. 26-21-19
O'DONNELL Lease Name
1 Well No.
1 Test No.
5240-5270' Tested Interval
Field Area WILDCAT
Meas. From Tester Valve
County CARSON
State SOUTH DAKOTA
CHEVRON U.S.A. INCORPORATED Lease Owner/Company Name

FORM 181-R1—PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 9667: 10M 6/74

Casing perfs. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 746150

Gas gravity _____ Oil gravity _____ GOR _____

Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
13:51					Opened tool, bottom of bucket
13:55					2#
14:01					Closed tool 3#
14:02					3#
14:03					3#
14:18					2#
14:33					1#
14:48					3#
15:03					Opened tool 2#
15:14					1 1/2 #
15:24					5#
15:34					7#
15:44					9#
15:54					6#
16:04					4# Closed tool
16:15					No blow
18:05					Started off bottom

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 5M 8/74

Gauge No. 1770	Depth 5214'	Clock No. 11889	24 hour	Ticket No. 746150

	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0			.000		UTR	.000	1026.9	.000		2173.6					
1			.0101		1879.2	.0387**	1385.0	.0098		2326.4					
2	Unable	to read	.0201		2289.2	.0710	1660.4	.0197		2345.0					
3			.0302		2324.3	.1032	1867.4	.0295		2353.3					
4			.0402		2351.2	.1355	2002.0	.0394		2357.4					
5			.0503		2355.3	.1677	2097.1	.0492		2359.5					
6			.0603		2359.5	.2000	2173.5	.0590		2361.5					
7			.0704		2361.5			.0689		2363.6					
8			.0804		2363.6			.0787		2365.6					
9			.0905		2365.6			.0886		2367.7					
10			.1005		2365.6			.0984		2369.8					
11			.1340		2365.6			.1738		2369.8					
12			.1675		2365.6			.2492		2369.8					
13			.2010		2365.6			.3246		2369.8					
14								.4000		2369.8					
15															

Gauge No. 7509			Depth 5218'			Clock No. 10055			hour 24					
0			.000		UTR	.000	963.0	.000		2160.8					
1			.0099		2186.9	.0395**	1378.7	.0098		2315.2					
2	Unable	to read	.0199		2278.2	.0724	1647.1	.0197		2334.7					
3			.0299		2315.2	.1053	1848.4	.0295		2343.4					
4			.0398		2330.4	.1382	1987.0	.0394		2347.8					
5			.0498		2339.1	.1711	2084.4	.0492		2349.9					
6			.0597		2345.6	.2040	2160.8	.0590		2352.1					
7			.0697		2349.9			.0688		2354.3					
8			.0796		2352.1			.0787		2356.5					
9			.0896		2354.3			.0886		2358.6					
10			.0995		2356.5			.0984		2358.6					
11			.1327		2356.5			.1738		2358.6					
12			.1658		2356.5			.2492		2358.6					
13			.1990		2356.5			.3246		2358.6					
14								.4000		2358.6					
15															
Reading Interval				*			10		***						Minutes

REMARKS: *-First 10 intervals equal to 3 minutes each; last 3 intervals equal to 10 minutes each. ** 12 minutes
**-First 10 intervals equal to 3 minutes each; last 4 intervals equal to 23 minutes each.
UTR-Unable to read

SPECIAL PRESSURE DATA

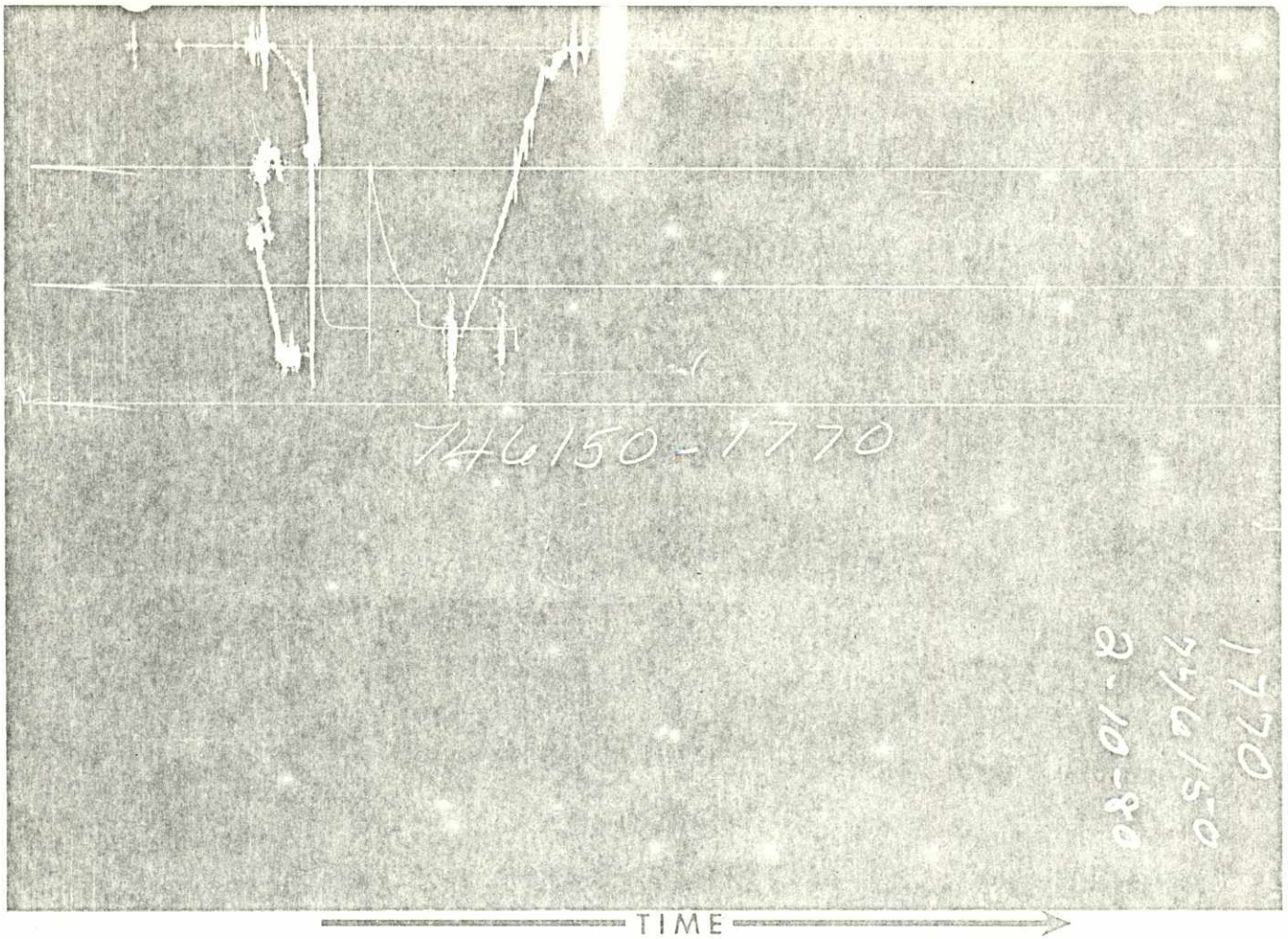
TICKET NO. 746150

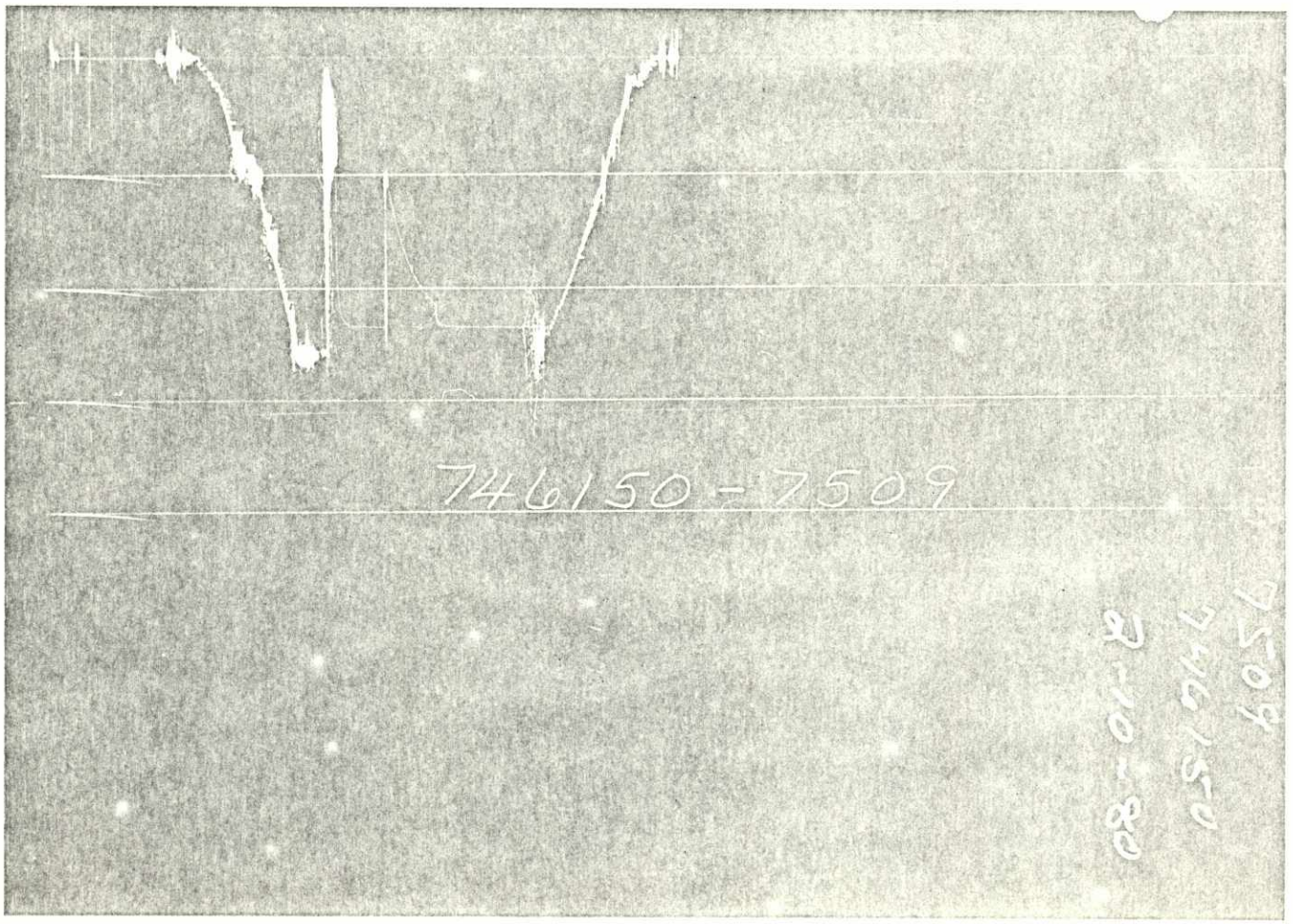
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	6"	2.5"	1'	
Water Cushion Valve				
Drill Pipe	4 1/2"	3.826"	4661'	
Drill Collars	6 1/4"	2.25"	537'	
Handling Sub & Choke Assembly				
Dual CIP Valve	6"	2.5"	1' Double Pin	
Dual CIP Sampler	5"	.75"	7'	5202'
Hydro-Spring Tester	5"	.75"	5'	5213'
Multiple CIP Sampler				
Extension Joint				
AP Running Case (2)	5"	2.75"	4'	5214'-5218'
Hydraulic Jar	5"	1.75"	5'	
VR Safety Joint	5"	1"	2.75'	
Pressure Equalizing Crossover	1"	3/4"	42'	
Packer Assembly	7"	1.53"	6'	5234'
Distributor				
Packer Assembly	7"	1.53"	6'	5240'
Flush Joint Anchor	5"	2.37"	25'	
Pressure Equolizing Tube	5"	1"	1' O Ring sub	
Blanked-Off B.T. Running Case	5"	2.5"	1' Double Box	
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	7"	1.53"	6'	5270'
Distributor				
Packer Assembly	7"	1.53"	6'	5276'
	5"	2.5"	1' Double pin	
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	28'	
Blanked-Off B.T. Running Case	5"	2.75"	4'	5310'
Totol Depth				5313'

FORM 187-R1—PRINTED IN U.S.A.

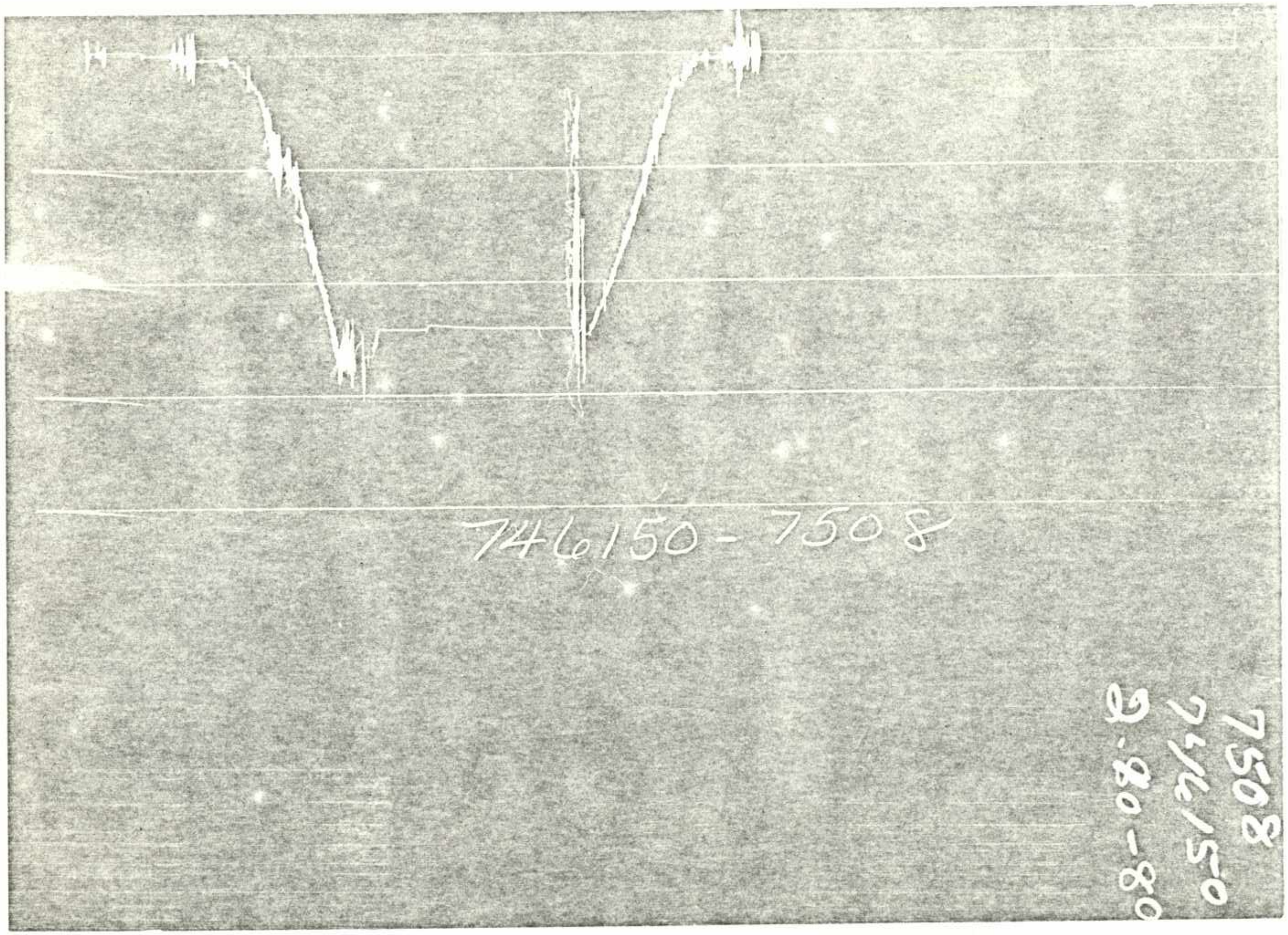
EQUIPMENT DATA

LITTLE'S 96676 75C 8/74





Each Horizontal Line Equal to 1000 p.s.i.


746150-7508
7508
746150
9-20-80

FLUID SAMPLE DATA

Sampler Pressure 0 P.S.I.G. at Surface
Recovery: Cu. Ft. Gas
cc. Oil
cc. Water 2240 Salt Water
cc. Mud
Tot. Liquid cc.
Gravity ° API @ °F.
Gas/Oil Ratio cu. ft./bbl.

		RESISTIVITY			CHLORIDE CONTENT
Recovery Water	1.66	@ 60	°F.	945	ppm
Recovery Mud	.23	@ 68	°F.	30,000	ppm
Recovery Mud Filtrate		@	°F.		ppm
Mud Pit Sample	1.112	@ 50	°F.	7,500	ppm
Mud Pit Sample Filtrate	1.077	@ 50	°F.	8,000	ppm

Mud Weight 9.5 vis 37 sec.

Date 2-17-80 Ticket Number 813383
Kind of D.S.T. OPEN HOLE Halliburton Location GLENDIVE
Tester NEWTON Witness HUGHES
Drilling Contractor BOMAC DRILLING # 32 NM S

EQUIPMENT & HOLE DATA

Formotion Tested Red River
Elevation - Ft.
Net Productive Interval - Ft.
All Depths Measured From Kelly Bushing
Total Depth 6838' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length 540' I.D. 2.25"
Drill Pipe Length 6238' I.D. 3.826"
Packer Depth(s) 6777' - 6785' Ft.
Depth Tester Valve 6760' Ft.

Cushion TYPE NONE AMOUNT Ft. Depth Back Pres. Valve NONE Surface Choke .25" Bottom Choke .75"

Recovered 360' Feet of muddy water
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Remarks Reach fluid 2604' from top of the test tool. Pulled 360' of muddy water and lost the remainder of the recovery... SEE PRODUCTION TEST DATA SHEET FOR REMAINDER OF THE REMARKS...

TEMPERATURE	Gauge No. 6224 Depth: 6761' Ft.	Gauge No. 6223 Depth: 6834' Ft.	Gauge No. Depth: Ft.	TIME (00:00-24:00 hrs.)
	24 Hour Clock	24 Hour Clock	Hour Clock	Taal
Est. °F.	Blanked Off NO	Blanked Off YES	Blanked Off	Opened 16:38
Actual 170 °F.	Pressures	Pressures	Pressures	Opened Bypass 20:55

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		3337.9	3348.7	3441.2	3387.7				
First Period	Flow Initial	219.8	186.8	243.3	243.2			—	—
	Flow Final	659.4	670.3	783.8	729.7			17	16
	Closed in	2956.3	2969.9	3013.4	3010.6			60	60
Second Period	Flow Initial	769.3	782.9	810.9	835.1			—	—
	Flow Final	1863.4	1879.7	1940.9	1922.0			60	61
	Closed in	2956.3	2961.7	3013.4	3002.6			120	120
Third Period	Flow Initial							—	—
	Flow Final								
	Closed in								
Final Hydrostatic		3337.9	3348.7	3441.2	3387.7			—	—

Legal Location Sec. - Twp. - Rng. 26 - 21N - 19E
Lease Name O' DONNELL
Well No. 1
Test No. -
Tested Interval 6785' - 6838'
Lease Owner/Company Name CHEVRON, U.S.A., INCORPORATED
Field Area WILDCAT
Mea. From Tester Valve
County CORSON
State SOUTH DAKOTA

FORM 181-R2 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 11:003 7.5C 2/80

//

Casing perfs._____ Battam chake_____ Surf. temp_____ °F Ticket No. 813383

Gas gravity_____ Oil gravity_____ GOR_____

Spec. gravity_____ Chlorides_____ ppm Res._____ @_____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED_____

Date 2-17-80 Time a.m. p.m.	Chake Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
16:38 PM					Opened tool with a 3" blow.
16:43					4" blow.
16:48					3" blow.
16:53					2" blow.
16:55					Closed tool with a ½" blow.
16:58					Had a surface blow.
17:02					Blow was dead.
17:55					Opened tool - blew off bottom of bucket.
18:05					25" in water.
18:15					1½#
18:25					2#
18:35					2#
18:45					2#
18:55					2# - closed tool.
19:04					Blow was dead.
20:55					Released packers.

Gouge No.	6224	Depth	6761'	Clock No.	20000	24 hour	Ticket No.	813383	

	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0	.000	186.8	.000		670.3	.000	782.9	.000		1879.7					
1	.0128	357.1*	.0133		2734.9	.0359	1002.7**	.0264		2819.6					
2	.0224	439.5	.0267		2836.0	.0685	1226.7	.0528		2866.1					
3	.0319	527.4	.0400		2879.7	.1011	1420.7	.0792		2887.9					
4	.0415	598.9	.0533		2901.6	.1338	1590.1	.1056		2901.6					
5	.0510	670.3	.0667		2918.0	.1664	1740.4	.1320		2915.2					
6			.0800		2931.6	.1990	1879.7	.1584		2926.2					
7			.0933		2939.8			.1848		2931.6					
8			.1067		2948.0			.2112		2937.1					
9			.1200		2953.5			.2376		2942.6					
10			.1333		2956.2			.2640		2948.0					
11			.1467		2961.7			.2904		2950.8					
12			.1600		2964.4			.3168		2956.2					
13			.1733		2967.1			.3432		2959.0					
14			.1867		2969.9			.3696		2961.7					
15			.2000		2969.9			.3960		2961.7					

Gouge No.	6223	Depth	6834'	Clock No.	16979	hour	24		

0	.000	243.2	.000		729.7	.000	835.1	.000		1922.0					
1	.0130	405.4*	.0131		2804.3	.0359	1061.8**	.0263		2860.6					
2	.0228	505.4	.0261		2884.7	.0685	1279.5	.0525		2906.1					
3	.0326	599.9	.0392		2922.2	.1011	1470.4	.0788		2927.6					
4	.0424	675.6	.0523		2943.7	.1338	1647.8	.1051		2943.7					
5	.0520	729.7	.0653		2959.7	.1664	1790.3	.1313		2954.4					
6			.0784		2973.2	.1990	1922.0	.1576		2967.8					
7			.0915		2981.2			.1839		2973.2					
8			.1045		2986.6			.2101		2978.5					
9			.1176		2991.9			.2364		2981.2					
10			.1307		2997.3			.2627		2986.6					
11			.1437		3000.0			.2889		2991.9					
12			.1568		3002.6			.3152		2994.6					
13			.1699		3005.3			.3415		2997.3					
14			.1829		3008.0			.3677		3000.0					
15			.1960		3010.6			.3940		3002.6					
Reading Interval	3		4			10		8							Minutes

REMARKS: * INTERVAL = 4 MINUTES. ** INTERVAL = 11 MINUTES.

SPECIAL PRESSURE DATA

TICKET NO. 813383

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub 4½" H-90	6.25"	2.50"	1'	90' UP
Water Cushion Valve				
Drill Pipe	4½"	3.826"	6238'	
Drill Collars	6.25"	2.25"	540'	
X-OVER 4½" REG to 3½" IF	6.25"	2.50"	1'	
Dual CIP Valve				
Dual CIP Sampler	5"	.75"	7'	6749'
Hydro-Spring Tester	5"	.75"	5'	6760'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	2.25"	4'	6761'
Hydraulic Jar	5"	1.75"	5'	
VR Safety Joint	5"	1"	2.75'	
Pressure Equalizing Crossover				
Packer Assembly	7"	1.53"	6'	6777'
Distributor	5"	1.68"	2'	
Packer Assembly	7"	1.53"	6'	6785'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	49'	
Blanked-Off B.T. Running Case	5"	2.75"	4'	6834'
Total Depth				6838'

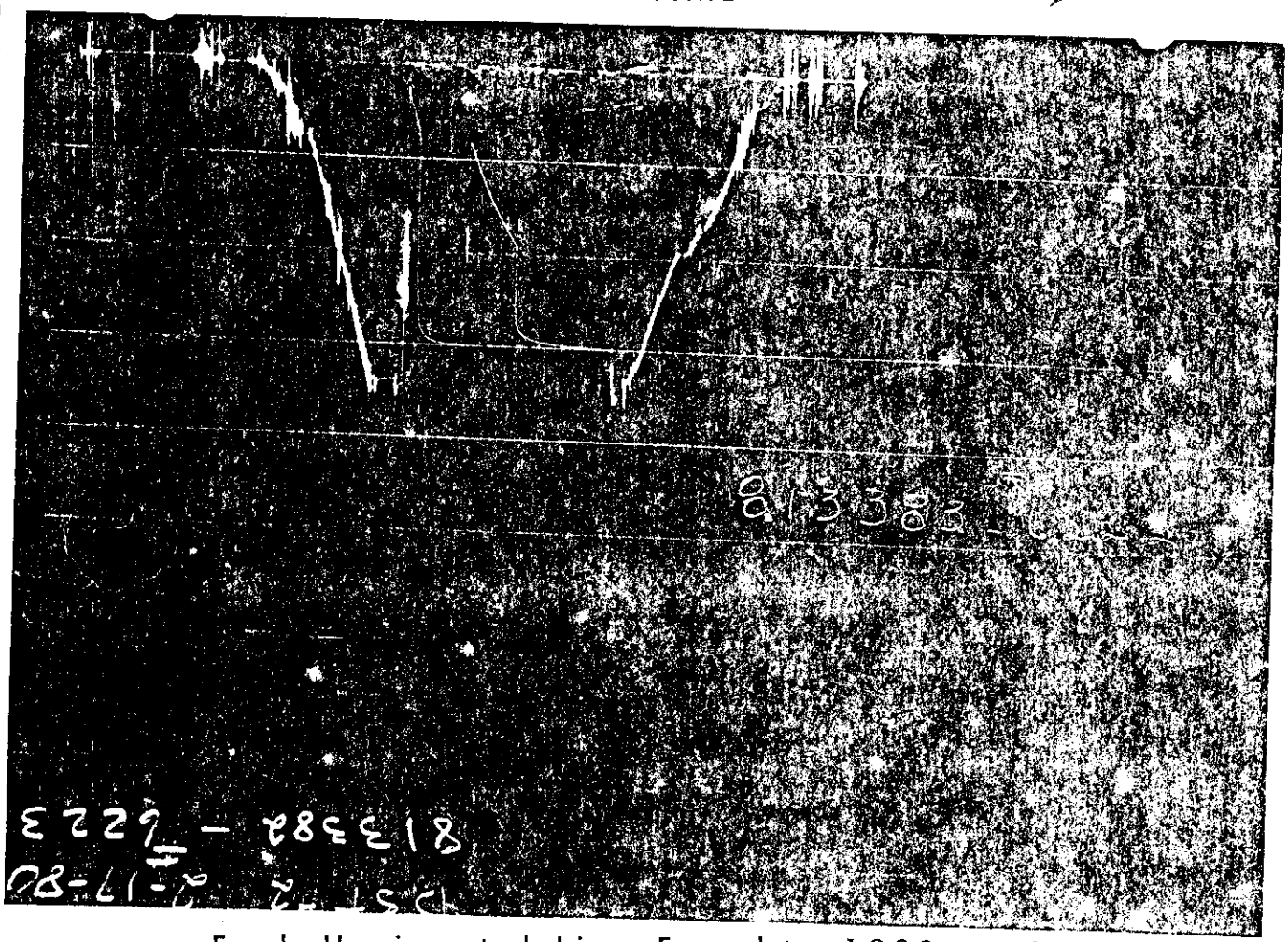
EQUIPMENT DATA

813383 # 6224

PRESSURE

813383 2-17-80

TIME



Each Horizontal Line Equal to 1000 p.s.i.

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud 1500
Tot. Liquid cc. 1500
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY			CHLORIDE CONTENT
Recovery Water	____	@ ____	°F.	____	ppm
Recovery Mud	1.112	@ 50	°F.	7500	ppm
Recovery Mud Filtrate	1.112	@ ____	°F.	____	ppm
Mud Pit Sample	____	@ 50	°F.	7500	ppm
Mud Pit Sample Filtrate	1.077	@ 50	°F.	8000	ppm

Mud Weight 9.5 vis 37 sec.

Date 2-18-80 Ticket Number 813552
Kind of D.S.T. OPEN HOLE ON BOTTOM STRADDLE Halliburton Location GLENDIVE
Tester MR. HUFFMAN Witness MR. CONNERS
Drilling Contractor BOMAC DRILLING COMPANY #32 bc

EQUIPMENT & HOLE DATA

Formation Tested Red River "A"
Elevation _____ Ft.
Net Productive Interval 7' Ft.
All Depths Measured From Kelly Bushing
Total Depth 6838' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length 537' I.D. 2.25"
Drill Pipe Length 6151' I.D. 3.826"
Packer Depth(s) 6720' - 6726' - 6746' - 6752' Ft.
Depth Tester Valve 6699' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke 1/4" Bottom Choke 3/4"

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks SEE PRODUCTION TEST DATA SHEET.

TEMPERATURE	Gauge No. 1735 Depth: 6700' Ft.	Gauge No. 594 Depth: 6704' Ft.	Gauge No. 1770 Depth: 6835' Ft.	TIME (00:00-24:00 hrs.)
	24 Hour Clock	24 Hour Clock	24 Hour Clock	Tool Opened 0645
Est. °F.	Blanked Off No	Blanked Off No	Blanked Off Yes	
Actual 170 °F.	Pressures	Pressures	Pressures	Opened Bypass 1230

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		3297	3331.7	3243	3337.5	3318	3404.9		
First Period	Flow Initial	16	9.7	16	20.7			___	___
	Flow Final	32	9.7	31	20.7			15	
	Closed in	32	22.7	31	33.4	HYDROSTATIC		60	
Second Period	Flow Initial	32	11.3	31	19.1	RELEASE:	3256.1	___	___
	Flow Final	32	11.3	31	19.1			90	
	Closed in	97	58.4	95	70.0			180	
Third Period	Flow Initial							___	___
	Flow Final								
	Closed in								
Final Hydrostatic		3297	3236.2	3243	3243.6	3318	3309.9	___	___

Legal Location Sec. - Twp. - Rng. 26 - 21 - 19
Lease Name O'DONNELL
Well No. 1
Test No. 3
Field Area WILDCAT
Tested Interval 6726' - 6746'
County CORSON
State SOUTH DAKOTA
Lease Owner/Company Name CHEVRON, U.S.A., INCORPORATED

FORM 181-R2 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 11003 7SC 2/80

11

Casing perfs._____ Bottom choke_____ Surf. temp_____ °F Ticket No. 813552

Gas gravity_____ Oil gravity_____ GOR_____

Spec. gravity_____ Chlorides_____ ppm Res._____ @_____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED_____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
0645					Opened tool with a surface blow
0700					Closed tool with a surface blow
0706					Blow died
0800					Opened tool with no blow
0930					Closed tool with no blow
1230					Started off bottom

FORM 162-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 SM 8/74

11

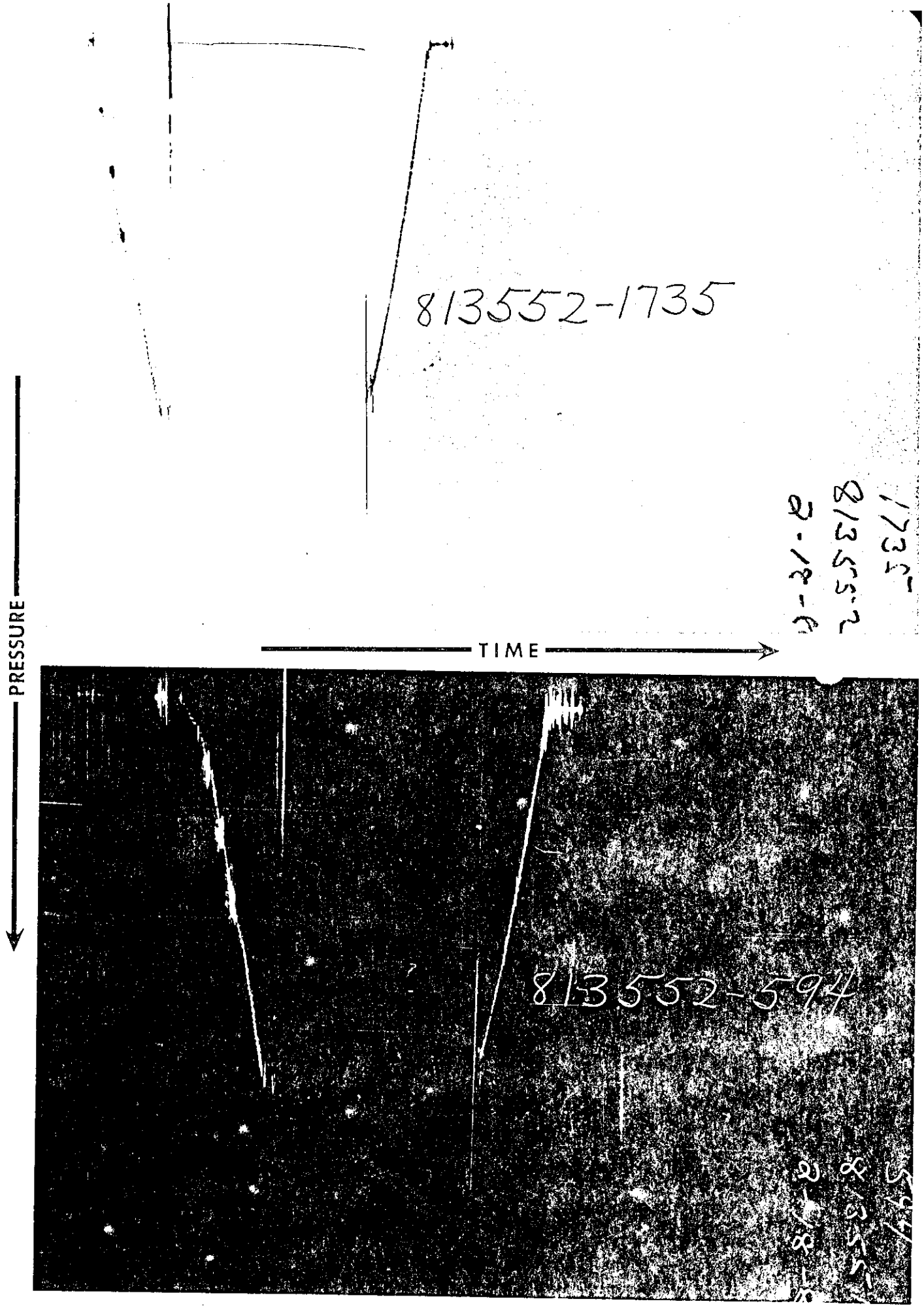
TICKET NO. 813552

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collors				
Reversing Sub	6"	2.5"	1'	
Water Cushion Valve				
Drill Pipe	4½"	3.826"	6151'	
Drill Collors	6¼"	2.25"	537'	
Handling Sub & Choke Assembly				
Dual CIP Valve				
Dual CIP Sampler	5"	.75"	7'	6688'
Hydro-Spring Tester	5"	.75"	5'	6699'
Multiple CIP Sampler				
Extension Joint				
AP Running Case (2)	5"	2.75"	4'	6700' 6704'
Hydraulic Jor	5"	1.75"	5'	
VR Safety Joint	5"	1"	2.75'	
Pressure Equolizing Crossover	5"	3/4"	1'	
Packer Assembly	7"	1.53"	6'	6720'
Distributor				
Pocker Assembly	7"	1.53"	6'	6726'
Flush Joint Anchor	5"	2.75"	15'	
Pressure Equalizing Tube	1"	3/4"	32'	
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
"O" Ring Sub	5"	-	1'	
Double Box	5"	2.5"	1'	
Packer Assembly	7"	1.53"	6'	6746'
Distributor				
Packer Assembly	7"	1.53"	6'	6752'
Anchor Pipe Safety Joint				
Double Pin	6"	2.5"	½'	
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	77'	
Blanked-Off B.T. Running Case	5"	2.75"	4'	6835'
Total Depth				6838'

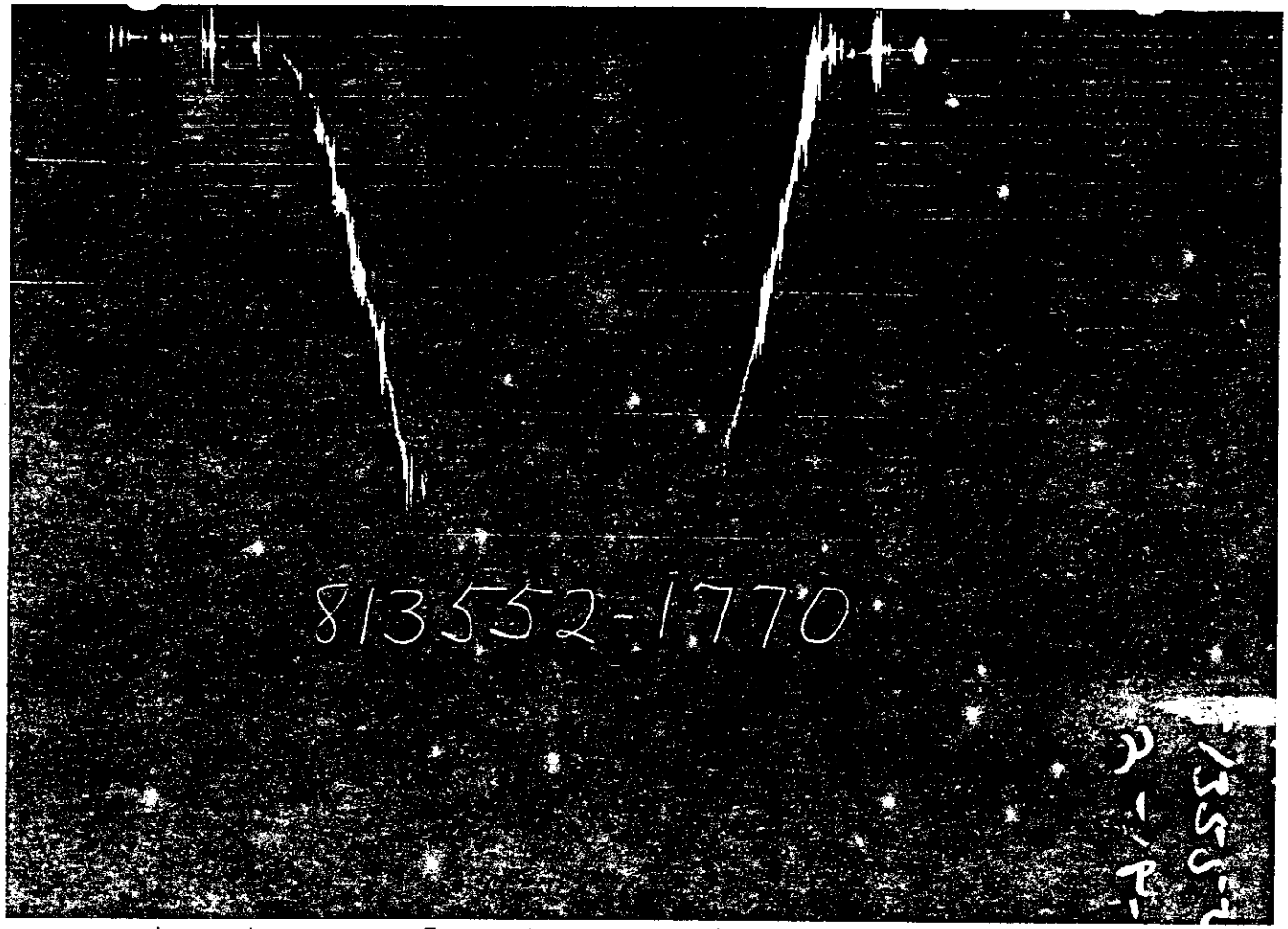
FORM 187—R2 — PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 111006 75C 2/80



Each Horizontal Line Equal to 1000 p.s.i.


813552-1770

Phone
713-790-9132

LYNES, INC.

Box 12486
Houston, TX 77017

Operator Chevron, U.S.A., Inc.

Address See Distribution

Well Name and No. Sonat-ODonnell-Chevron #1

Ticket No. 28242

Date 3-2-80

DST No. 4

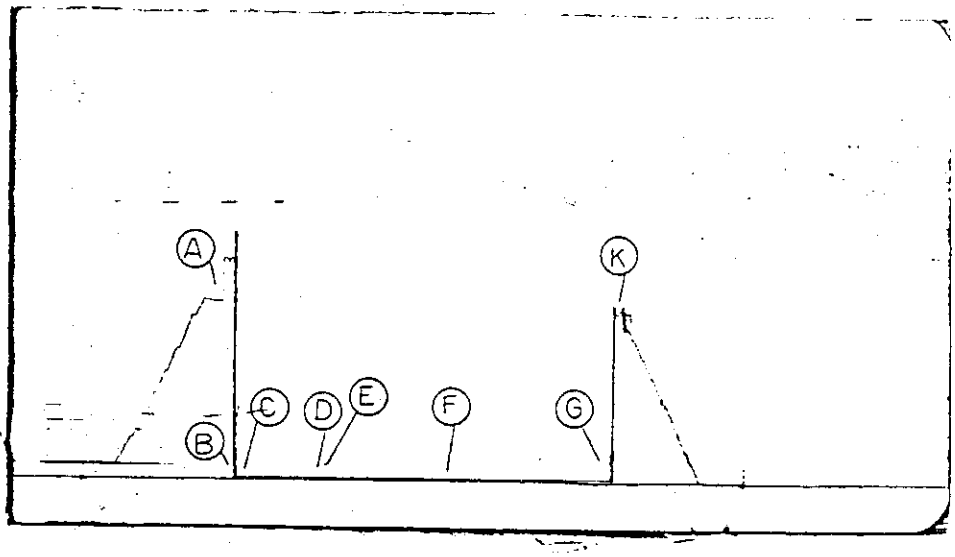
No. Final Copies 10

Contractor	Bomac Drilling	Top Choke	1"
Rig No.	32	Bottom Choke	3/4"
Spot	SW-SW	Size Hole	7 7/8"
Sec.	26	Size Rat Hole	--
Twp.	21 N	Size & Wt. D. P.	4 1/2" 16.60
Rng.	19 E	Size Wt. Pipe	--
Field	Wildcat	I. D. of D. C.	2 1/4"
County	Corson	Length of D. C.	543'
State	South Dakota	Total Depth	7744'
Elevation	2314' "K.B."	Interval Tested	6730-6745'
Formation	Red River "A"	Type of Test	Inflate Straddle

Flow No. 1	15	Min.
Shut-in No. 1	60	Min.
Flow No. 2	240	Min.
Shut-in No. 2	360	Min.
Flow No. 3	--	Min.
Shut-in No. 3	--	Min.

Bottom Hole Temp.	165°F
Mud Weight	9.4
Gravity	--
Viscosity	78

Tool opened @ 4:35



Outside Recorder

PRD Make Kuster K-3
No. 13257 Cap. 9300 @ 6739'

		Press Corrected
Initial Hydrostatic	A	3492
Final Hydrostatic	K	3302
Initial Flow	B	57
Final Initial Flow	C	57
Initial Shut-in	D	57
Second Initial Flow	E	57
Second Final Flow	F	57
Second Shut-in	G	57
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Dickinson, N.D.
Our Tester: Jim Grosulak
Witnessed By: Don Conner

Did Well Flow – Gas no Oil no Water no

RECOVERY IN PIPE: 5' Slightly gas cut heavy mud = 0.02 bbl.

Sample R.W.: 2.6 @ 60°F = 2650 ppm. Chl.

Blow Description:

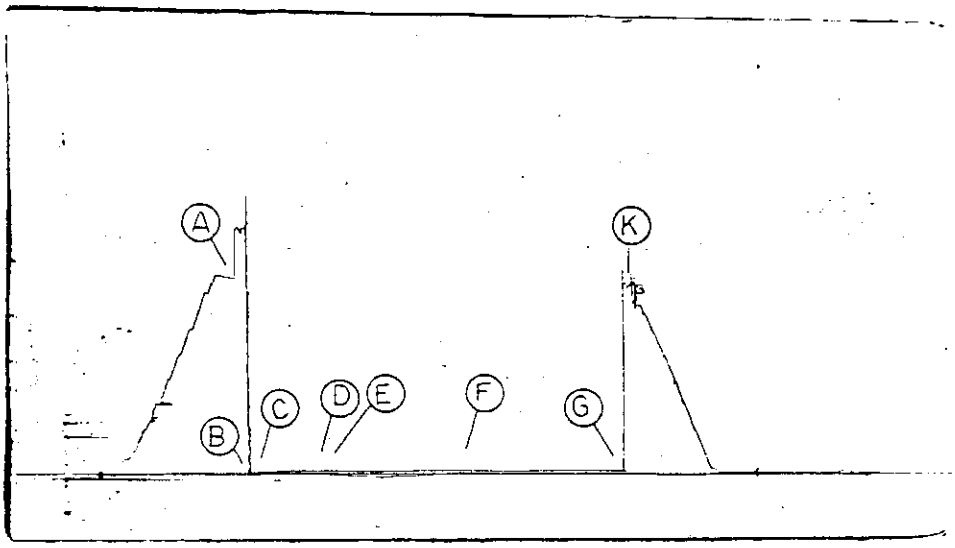
1st Flow: Tool opened with a 1/2" underwater blow and remained thru flow period. After shut-in blow died immediately.

2nd Flow: Tool opened with a weak blow; decreased and died in 13 minutes.

Breakdown of shut-in pressures is not practical for Horner extrapolations.

LYNES, INC.

Chevron, U.S.A., Inc.	Sonat-ODonnell-Chevron #1	4
Operator	Well Name and No.	DST No.



Inside Recorder

PRD Make Kuster K-3

No. 19119 Cap. 8100 @ 6705'

Press		Corrected
Initial Hydrostatic	A	3451
Final Hydrostatic	K	3279
Initial Flow	B	52
Final Initial Flow	C	52
Initial Shut-in	D	52
Second Initial Flow	E	52
Second Final Flow	F	52
Second Shut-in	G	52
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--
Pressure Below Bottom Packer Bled To		

PRD Make_____

No._____ Cap._____ @_____

Press		Corrected
Initial Hydrostatic	A	
Final Hydrostatic	K	
Initial Flow	B	
Final Initial Flow	C	
Initial Shut-in	D	
Second Initial Flow	E	
Second Final Flow	F	
Second Shut-in	G	
Third Initial Flow	H	
Third Final Flow	I	
Third Shut-in	J	
Pressure Below Bottom Packer Bled To		

LYNES, INC.

Sampler Report

Company: Chevron, U.S.A., Inc. Date: 3-2-80

Well Name & No.: Sonat-ODonnell-Chevron #1 Ticket No.: 28242

County: Corson State: South Dakota

Test Interval: 6730-6745' DST No.: 4

Total Volume of Sampler: 2500 cc.

Total Volume of Sample: 1900 cc.

Pressure in Sampler: None psig

Oil: None cc.

Water: NOne cc.

Mud: 1900 cc.

Gas: None cu. ft.

Other: None

Sample R.W.: 2.2 @ 60°F = 3050 ppm. Chl.

Resistivity

Make Up Water _____ @ _____ of Chloride Content _____ ppm.

Refractometer
Mud Pit Sample 6270 ppm. NaCl. @ _____ of Chloride Content 3800 ppm. Chl. ppm.

Gas/Oil Ratio _____ Gravity _____ °API @ _____ °F

Where was sample drained On location

Remarks:

HELTON ENGINEERING & GEOLOGICAL SERVICES, INC.

Chevron-SONAT #1 O'Donnell
SW SW Section 26: T21N - R19E
Corson County, South Dakota

DISTRIBUTION LIST

Chevron, U.S.A. Inc. (3)
Attention: Mr. Bob Hobart
P. O. Box 599
Denver, CO 80201

SONAT Exploration (1)
Attention: Mr. Keith Shanley
P. O. Box 1513
Houston, TX 77001

South Dakota Geological Survey (2)
Attention: Mr. Fred Steece
308 West Blvd.
Rapid City, SD 57701

CL1-12A (REV. 1964)

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

WATER ANALYSIS REPORT

OPERATOR Chevron USA, Inc.
WELL NO. Chevron Sonat #1 O'Donnell
FIELD
COUNTY Corson
STATE South Dakota

DATE 3-26-80 LAB NO. 33610-8
LOCATION Sec. 26-21N-19E
FORMATION Red River
INTERVAL 6735-6750
SAMPLE FROM Swabbing (3-9-80) #17

REMARKS & CONCLUSIONS: Formation water flow (470 bbls into flow) REH
After acid treatment and swabbing (570 bbls over load)

Cations	mg/l	meq/l	Anions	mg/l	meq/l
Sodium	1166	50.74	Sulfate	1270	26.42
Potassium	92	2.36	Chloride	1440	40.61
Lithium	-	-	Carbonate	-	-
Calcium	320	15.97	Bicarbonate	305	5.00
Magnesium	36	2.96	Hydroxide	-	-
Iron	-	-	Hydrogen sulfide	-	-
Total Cations		72.03	Total Anions		72.03

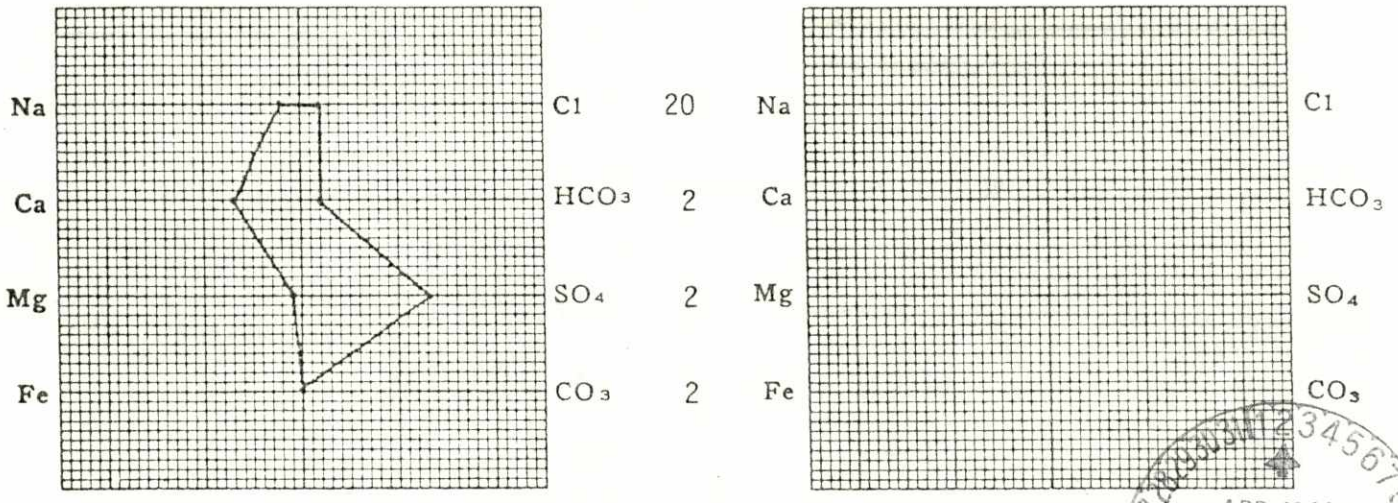
Total dissolved solids, mg/l 4474
NaCl equivalent, mg/l 3791
Observed pH 7.8

Specific resistance @ 68°F.:
Observed 1.53 ohm-meters
Calculated 1.68 ohm-meters

WATER ANALYSIS PATTERN

Sample above described

Scale
MEQ per Unit



(Na value in above graphs includes Na, K, and Li)
NOTE: Mg/l = Milligrams per liter Meq/l = Milligram equivalents per liter
Sodium chloride equivalent = by Dunlap & Hawthorne calculation from components

CL1-12A (REV. 1964)

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

WATER ANALYSIS REPORT

OPERATOR	Chevron USA, Inc.	DATE	3-18-80 LAB NO. 33518-2
WELL NO.	Chevron-Sonat 1 O'Donnell	LOCATION	Sec. 26-21N-19E
FIELD	Wildcat	FORMATION	Red River
COUNTY	Corson	INTERVAL	6785-6838
STATE	South Dakota	SAMPLE FROM	DST No.2 (Sampler)

REMARKS & CONCLUSIONS:

Cations	mg/l	meq/l	Anions	mg/l	meq/l
Sodium	34764	1512.22	Sulfate	920	19.14
Potassium	1160	29.70	Chloride	68500	1931.70
Lithium	-	-	Carbonate	-	-
Calcium	6300	314.37	Bicarbonate	49	0.80
Magnesium	460	95.35	Hydroxide	-	-
Iron	Present	-	Hydrogen sulfide	-	-
Total Cations		1951.64	Total Anions		1951.64

Total dissolved solids, mg/l	112828
NaCl equivalent, mg/l	113202
Observed pH	5.5

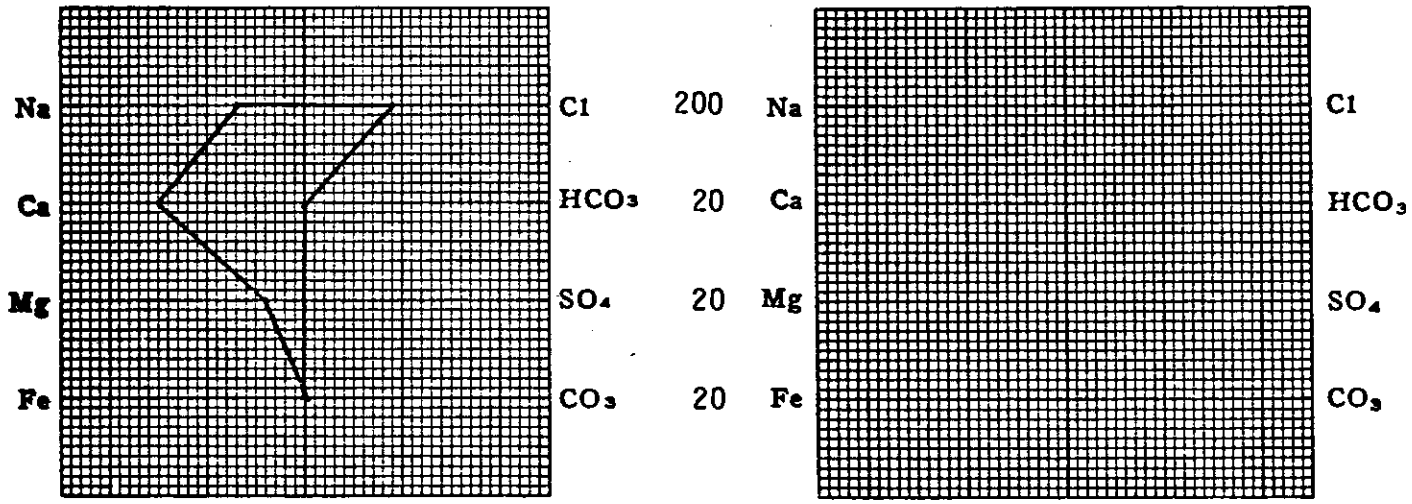
Specific resistance @ 68°F.:

Observed	0.08	ohm-meters
Calculated	0.07	ohm-meters

WATER ANALYSIS PATTERN

Sample above described

Scale MEQ per Unit



(Na value in above graphs includes Na, K, and Li)
NOTE: Mg/l=Milligrams per liter Meq/l= Milligram equivalents per liter
Sodium chloride equivalent=by Dunlap & Hawthorne calculation from components

CL1-12A (REV. 1964)

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

WATER ANALYSIS REPORT

OPERATOR Chevron USA, Inc. DATE 3-18-80 LAB NO. 33518-3
WELL NO. Chevron-Sonat 1 O'Donnell LOCATION Sec. 26-21N-19E
FIELD Wildcat FORMATION Red River
COUNTY Corson INTERVAL 6726-6746
STATE South Dakota SAMPLE FROM DST No.3 (Sampler)

REMARKS & CONCLUSIONS: Watery mud.

Cations	mg/l	meq/l	Anions	mg/l	meq/l
Sodium	4032	175.41	Sulfate	3130	65.10
Potassium	103	2.64	Chloride	6000	169.20
Lithium	-	-	Carbonate	-	-
Calcium	960	47.90	Bicarbonate	293	4.80
Magnesium	160	13.15	Hydroxide	-	-
Iron	-	-	Hydrogen sulfide	-	-
Total Cations		239.10	Total Anions		239.10

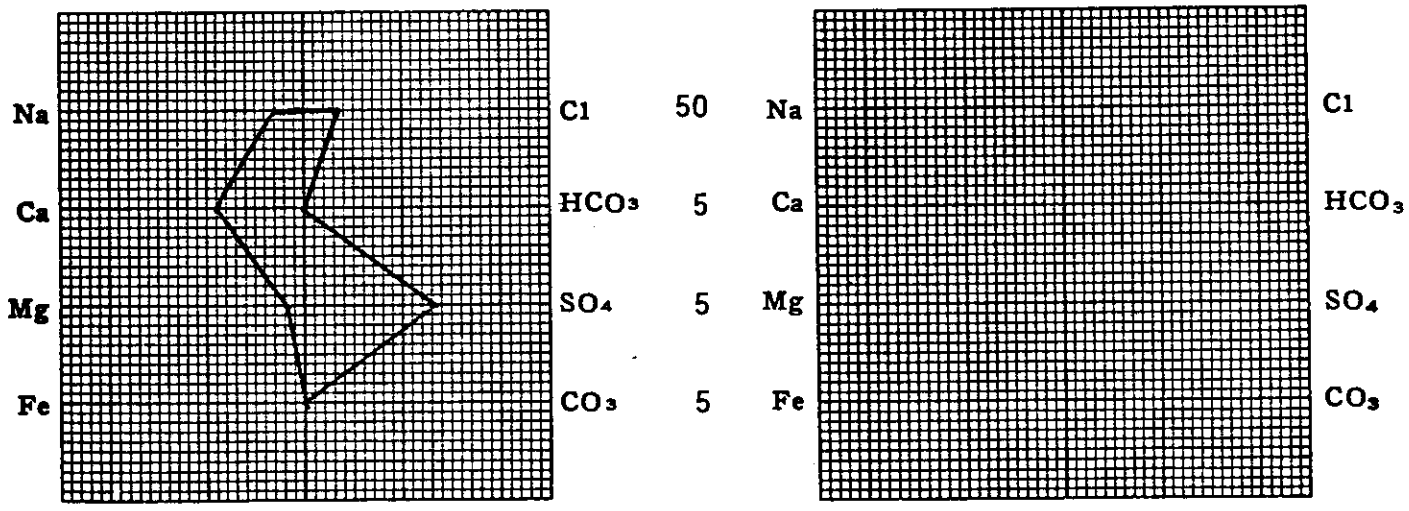
Total dissolved solids, mg/l 14529
NaCl equivalent, mg/l 13011
Observed pH 7.7

Specific resistance @ 68°F.:
Observed 0.50 ohm-meters
Calculated 0.64 ohm-meters

WATER ANALYSIS PATTERN

Sample above described

Scale MEQ per Unit



(Na value in above graphs includes Na, K, and Li)
NOTE: Mg/l=Milligrams per liter Meq/l= Milligram equivalents per liter
Sodium chloride equivalent=by Dunlap & Hawthorne calculation from components

CL1-12A (REV. 1964)

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

WATER ANALYSIS REPORT

OPERATOR Chevron USA, Inc. DATE 3-18-80 LAB NO. 35518-4
WELL NO. Chevron-Sonat 1 O'Donnell LOCATION Sec. 26-21N-19E
FIELD Wildcat FORMATION Red River
COUNTY Corson INTERVAL 6735-6750
STATE South Dakota SAMPLE FROM DST No.4 (Bottom)

REMARKS & CONCLUSIONS:
Mud, low water loss.

Cations	mg/l	meq/l	Anions	mg/l	meq/l
Sodium	3386	147.31	Sulfate	3550	72.84
Potassium	75	1.92	Chloride	3000	84.60
Lithium	-	-	Carbonate	-	-
Calcium	300	14.97	Bicarbonate	622	10.29
Magnesium	54	4.44	Hydroxide	-	-
Iron	-	-	Hydrogen sulfide	-	-
Total Cations		168.64	Total Anions		168.64

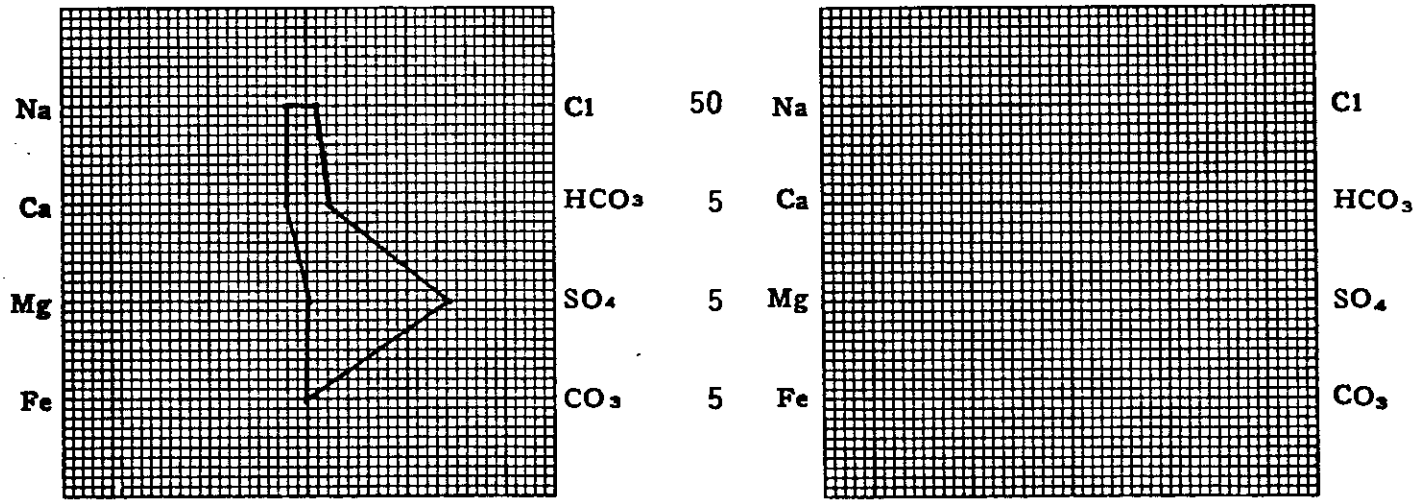
Total dissolved solids, mg/l 10671
NaCl equivalent, mg/l 8797
Observed pH 8.3

Specific resistance @ 68°F.:
Observed 0.70 ohm-meters
Calculated 0.74 ohm-meters

WATER ANALYSIS PATTERN

Sample above described

Scale
MEQ per Unit



(Na value in above graphs includes Na, K, and Li)
NOTE: Mg/l=Milligrams per liter Meq/l= Milligram equivalents per liter
Sodium chloride equivalent=by Dunlap & Hawthorne calculation from components

Phone
713-790-9132

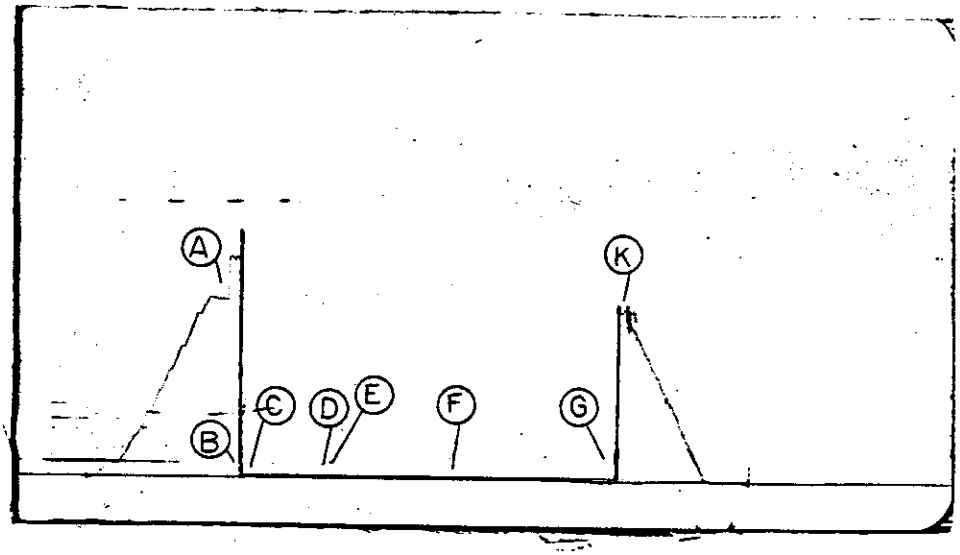
LYNES, INC.

Box 12486
Houston, TX 77017

Operator Chevron, U.S.A., Inc.
Address See Distribution
Well Name and No. Sonat-ODonnell-Chevron #1
Ticket No. 28242
Date 3-2-80
DST No. 4
No. Final Copies 10

Contractor	Bomac Drilling	Top Choke	1"
Rig No.	32	Bottom Choke	3/4"
Spot	SW-SW	Size Hole	7 7/8"
Sec.	26	Size Rat Hole	--
Twp.	21 N	Size & Wt. D. P.	4 1/2" 16.60
Rng.	19 E	Size Wt. Pipe	--
Field	Wildcat	I. D. of D. C.	2 1/4"
County	Corson	Length of D. C.	543'
State	South Dakota	Total Depth	7744'
Elevation	2314' "K.B."	Interval Tested	6730-6745'
Formation	Red River "A"	Type of Test	Inflate Straddle

Flow No. 1	15	Min.
Shut-in No. 1	60	Min.
Flow No. 2	240	Min.
Shut-in No. 2	360	Min.
Flow No. 3	--	Min.
Shut-in No. 3	--	Min.
Bottom Hole Temp.	165°F	
Mud Weight	9.4	
Gravity	--	
Viscosity	78	
Tool opened @	4:35	



Outside Recorder

PRD Make Kuster K-3
No. 13257 Cap. 9300 @ 6739'

		Press	Corrected
Initial Hydrostatic	A		3492
Final Hydrostatic	K		3302
Initial Flow	B		57
Final Initial Flow	C		57
Initial Shut-in	D		57
Second Initial Flow	E		57
Second Final Flow	F		57
Second Shut-in	G		57
Third Initial Flow	H		--
Third Final Flow	I		--
Third Shut-in	J		--

Lynes Dist.: Dickinson, N.D.
Our Tester: Jim Grosulak
Witnessed By: Don Conner

Did Well Flow – Gas no Oil no Water no

RECOVERY IN PIPE: 5' Slightly gas cut heavy mud = 0.02 bbl.

Sample R.W.: 2.6 @ 60°F = 2650 ppm. Chl.

Blow Description:

1st Flow: Tool opened with a 1/2" underwater blow and remained thru flow period. After shut-in blow died immediately.

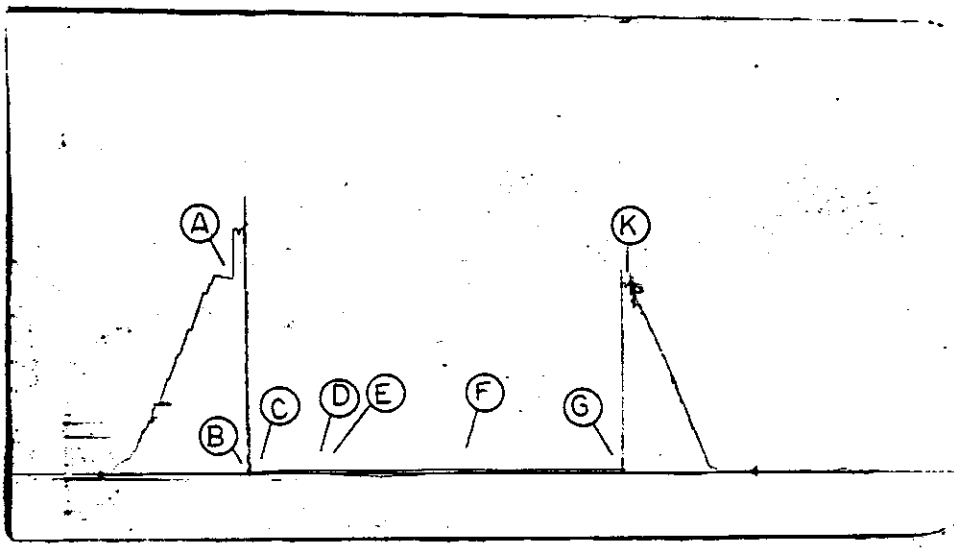
2nd Flow: Tool opened with a weak blow; decreased and died in 13 minutes.

Breakdown of shut-in pressures is not practical for Horner extrapolations.

Form 1

LYNES, INC.

Chevron, U.S.A., Inc.	Sonat-ODonnell-Chevron #1	4
Operator	Well Name and No.	DST No.



Inside Recorder

PRD Make Kuster K-3

No. 19119 Cap. 8100 @ 6705'

Press		Corrected
Initial Hydrostatic	A	3451
Final Hydrostatic	K	3279
Initial Flow	B	52
Final Initial Flow	C	52
Initial Shut-in	D	52
Second Initial Flow	E	52
Second Final Flow	F	52
Second Shut-in	G	52
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--
Pressure Below Bottom Packer Bled To		

PRD Make_____

No._____ Cap._____ @_____

Press		Corrected
Initial Hydrostatic	A	
Final Hydrostatic	K	
Initial Flow	B	
Final Initial Flow	C	
Initial Shut-in	D	
Second Initial Flow	E	
Second Final Flow	F	
Second Shut-in	G	
Third Initial Flow	H	
Third Final Flow	I	
Third Shut-in	J	
Pressure Below Bottom Packer Bled To		

Form 3

LYNES, INC.

Sampler Report

Company: Chevron, U.S.A., Inc. Date: 3-2-80

Well Name & No.: Sonat-ODonnell-Chevron #1 Ticket No.: 28242

County: Corson State: South Dakota

Test Interval: 6730-6745' DST No: 4

Total Volume of Sampler: 2500 cc.

Total Volume of Sample: 1900 cc.

Pressure in Sampler: None psig

Oil: None cc.

Water: NOne cc.

Mud: 1900 cc.

Gas: None cu. ft.

Other: None

Sample R.W.: 2.2 @ 60°F = 3050 ppm. Chl.

Resistivity

Make Up Water _____ @ _____ of Chloride Content _____ ppm.

Refractometer
Mud Pit Sample 6270 ppm.NaCl. @ _____ of Chloride Content 3800 ppm. Chl. ppm.

Gas/Oil Ratio _____ Gravity _____ °API @ _____ °F

Where was sample drained On location

Remarks:

Form 5

LYNES, INC.

Distribution of Final Reports

Operator Chevron, U.S.A., Inc. Well Name and No. Sonat-ODonnell-Chevron #1

Original &

2 copies: Chevron, U.S.A., Inc., P.O. Box 599, Denver, Co. 80201

Attn: Bob Hobart

2 copies: Sonat Exploration, P.O. Box 1513, Houston, Texas 77001 Attn: Keith Shanley

2 copies: South Dakota Geological Survey, 308 West Blvd., Rapid City, South Dakota 57701

1 copy: Cockrell Corp., 999 The Main Bldg., 1212 Main St., Houston, Texas 77002

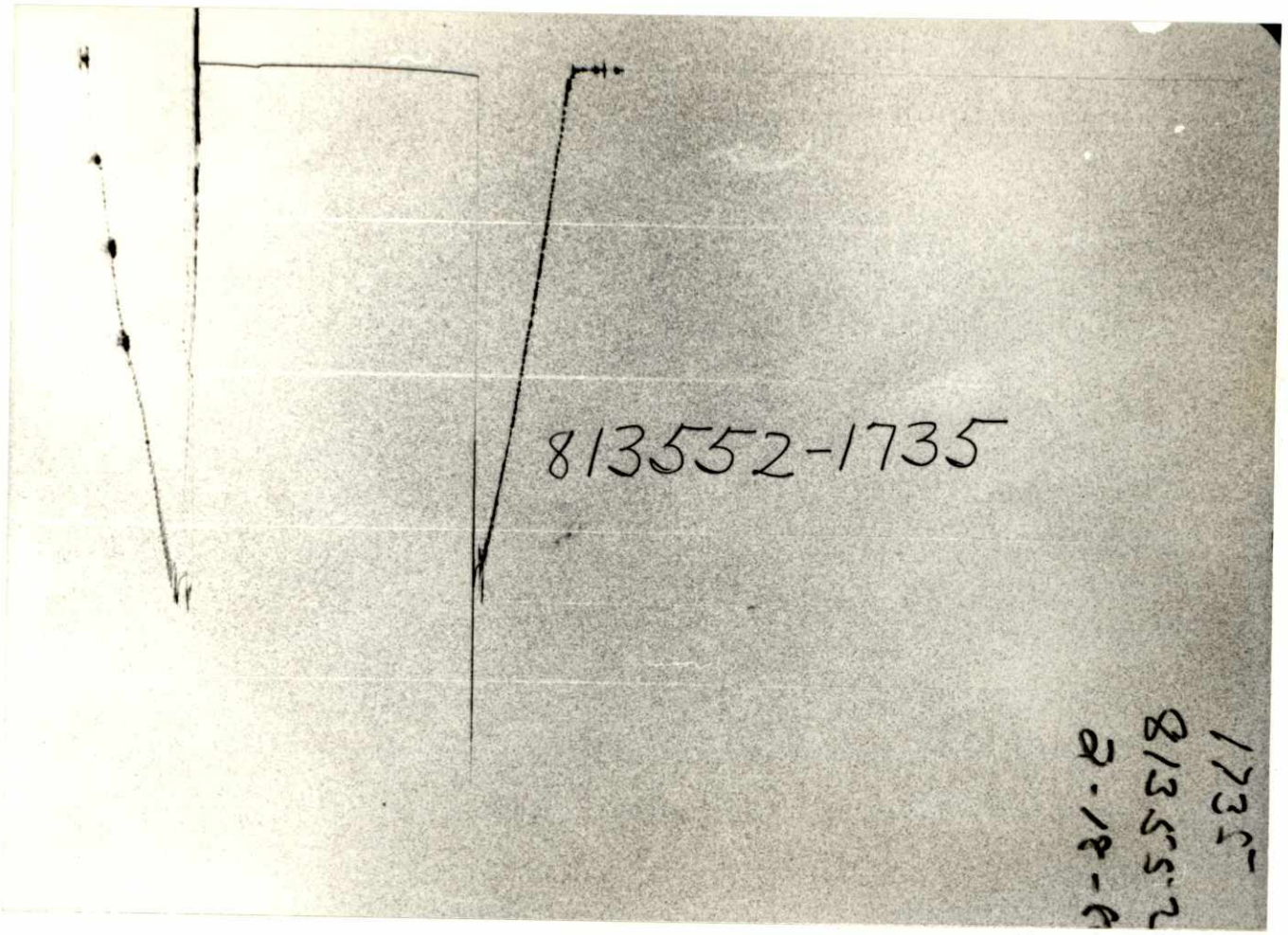
Attn: W.C. Miley

1 copy: Cockrell Corp., 999 The Main Bldg., 1212 Main St., Houston, Texas 77002

Attn: Feldor Hollenshead

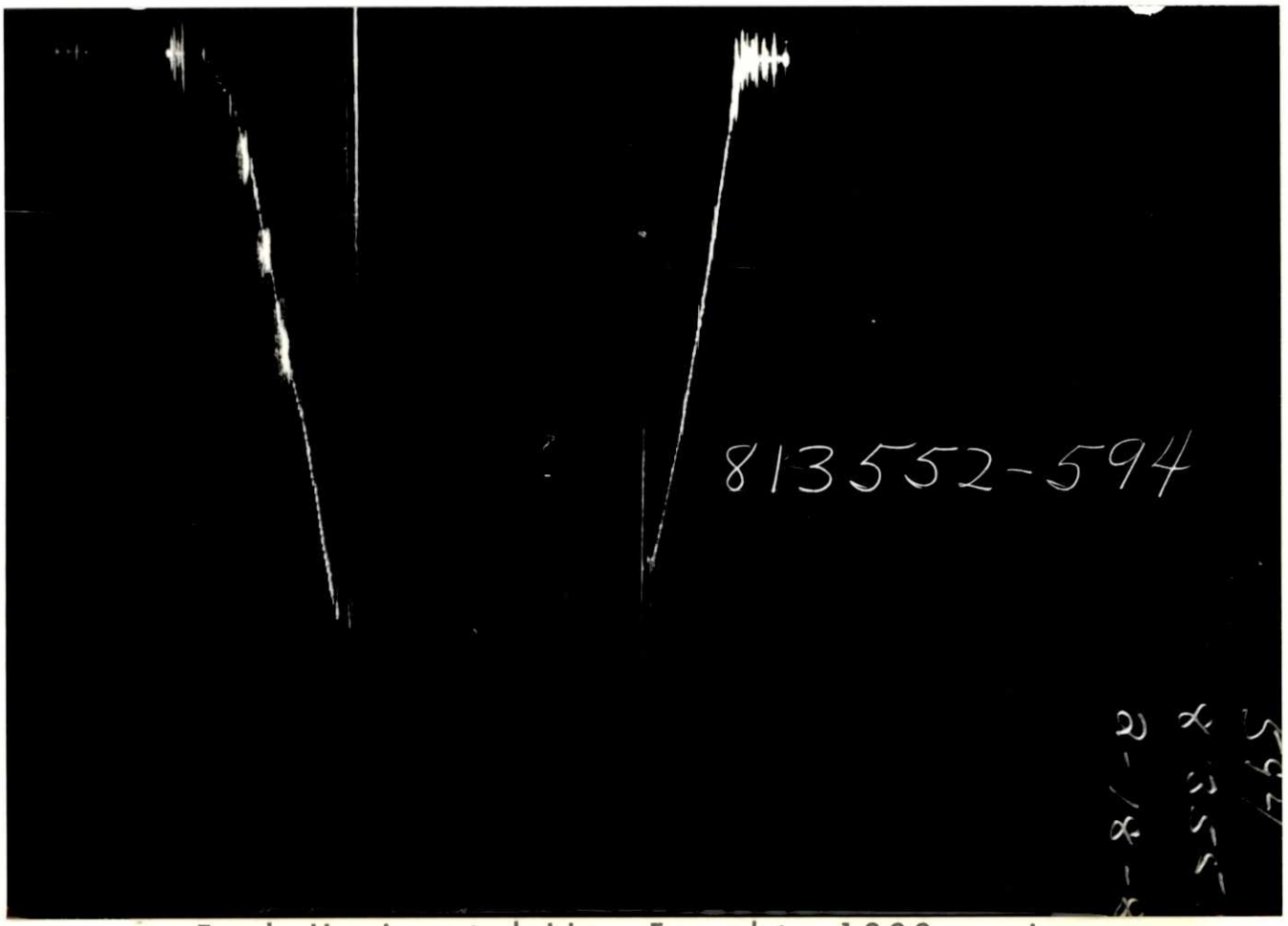
1 copy: Helton Engineering, Inc., Suite 329, 2929 Third Ave., North, Billings, Montana 59102

Form 6



PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud 1500
Tot. Liquid cc. 1500
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY			CHLORIDE CONTENT
Recovery Water	____	@ ____	°F.	____	ppm
Recovery Mud	1.112	@ 50	°F.	7500	ppm
Recovery Mud Filtrate	____	@ ____	°F.	____	ppm
Mud Pit Sample	1.112	@ 50	°F.	7500	ppm
Mud Pit Sample Filtrate	1.077	@ 50	°F.	8000	ppm

Mud Weight 9.5 vis 37 sec.

Date 2-18-80 Ticket Number 813552
Kind of D.S.T. OPEN HOLE ON BOTTOM STRADDLE Halliburton Location GLENDIVE
Tester MR. HUFFMAN Witness MR. CONNERS
Drilling Contractor BOMAC DRILLING COMPANY #32 bc

EQUIPMENT & HOLE DATA

Formation Tested Red River "A"
Elevation _____ Ft.
Net Productive Interval 7' Ft.
All Depths Measured From Kelly Bushing
Total Depth 6838' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length 537' I.D. 2.25"
Drill Pipe Length 6151' I.D. 3.826"
Packer Depth(s) 6720' - 6726' - 6746' - 6752' Ft.
Depth Tester Valve 6699' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke 1/4" Bottom Choke 3/4"

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks SEE PRODUCTION TEST DATA SHEET.

TEMPERATURE	Gauge No. 1735 Depth: 6700' Ft.	Gauge No. 594 Depth: 6704' Ft.	Gauge No. 1770 Depth: 6835' Ft.	TIME (00:00-24:00 hrs.)
	24 Hour Clock	24 Hour Clock	24 Hour Clock	Tool Opened 0645
Est. °F.	Blanked Off No	Blanked Off No	Blanked Off Yes	
Actual 170 °F.	Pressures	Pressures	Pressures	Opened Bypass 1230

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		3297	3331.7	3243	3337.5	3318	3404.9	____	____
First Period	Flow Initial	16	9.7	16	20.7			____	____
	Flow Final	32	9.7	31	20.7			15	
	Closed in	32	22.7	31	33.4	HYDROSTATIC		60	
Second Period	Flow Initial	32	11.3	31	19.1	RELEASE:	3256.1	____	____
	Flow Final	32	11.3	31	19.1			90	
	Closed in	97	58.4	95	70.0			180	
Third Period	Flow Initial							____	____
	Flow Final								
	Closed in								
Final Hydrostatic		3297	3236.2	3243	3243.6	3318	3309.9	____	____

Legal Location Sec. - Twp. - Rng. 26 - 21 - 19
Lease Name O'DONNELL
Well No. 1
Test No. 3
Field Area WILDCAT
Tested Interval 6726' - 6746'
County CORSON
State SOUTH DAKOTA
Lease Owner/Company Name CHEVRON, U.S.A., INCORPORATED

FORM 181-R2 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 11033 75C 2/80

Casing perfs.____ Bottom choke____ Surf. temp____ °F Ticket No. 813552

Gas gravity____ Oil gravity____ GOR____

Spec. gravity____ Chlorides____ ppm Res.____ @____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
0645					Opened tool with a surface blow
0700					Closed tool with a surface blow
0706					Blow died
0800					Opened tool with no blow
0930					Closed tool with no blow
1230					Started off bottom

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 6M 8/74

11

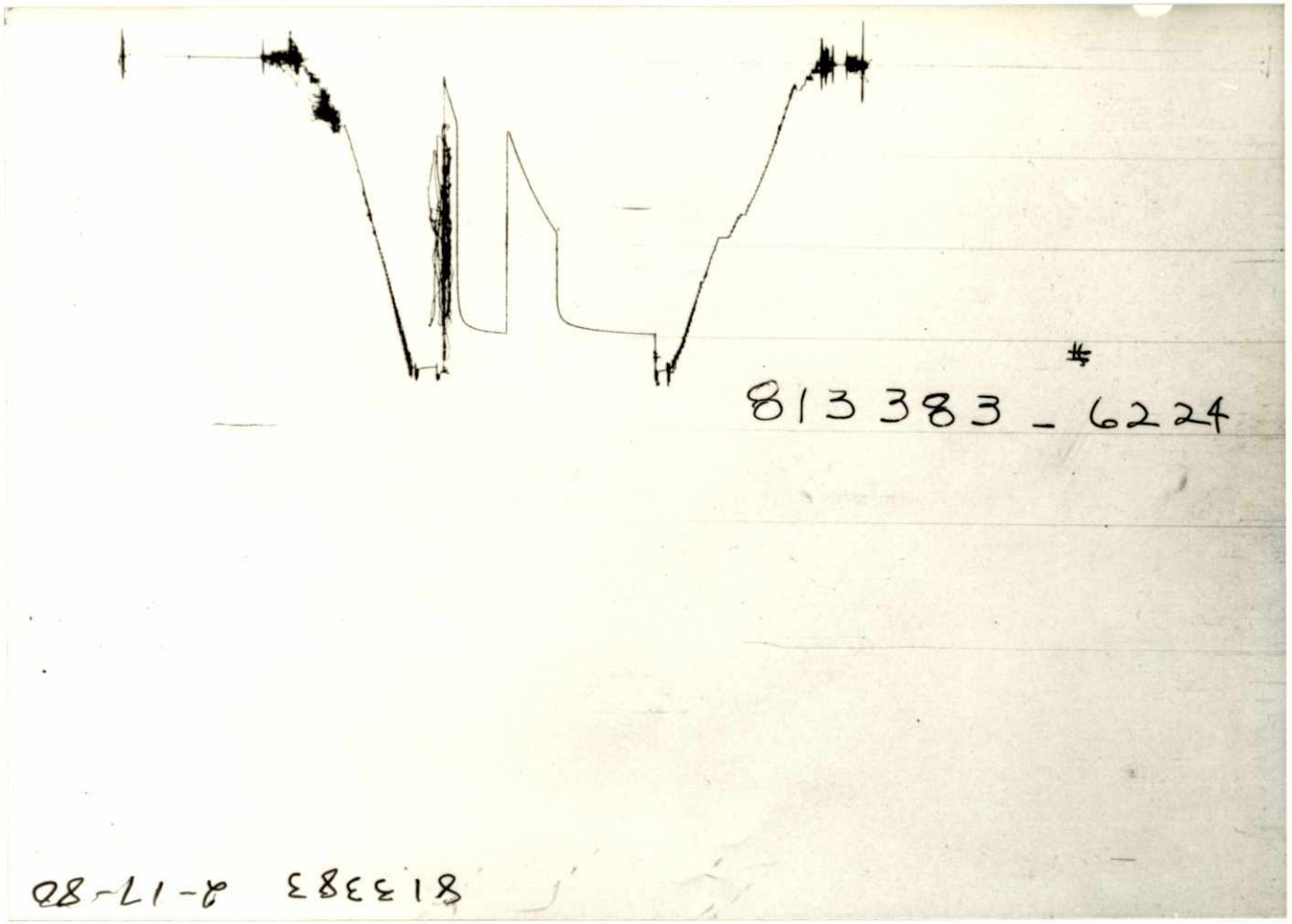
TICKET NO. 813552

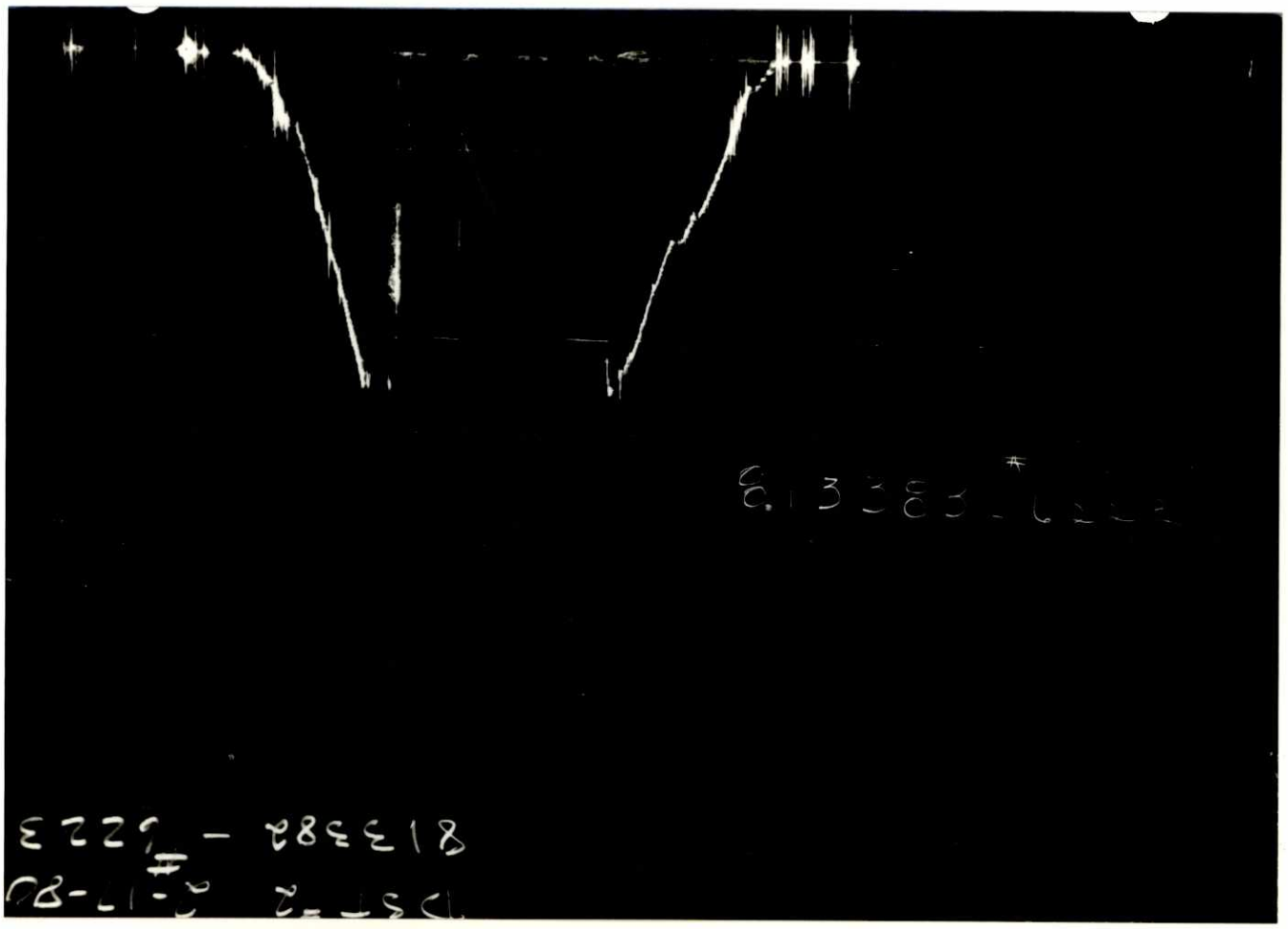
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub	6"	2.5"	1'	
Water Cushion Valve				
Drill Pipe	4½"	3.826"	6151'	
Drill Collars	6¼"	2.25"	537'	
Handling Sub & Choke Assembly				
Dual CIP Valve				
Dual CIP Sampler	5"	.75"	7'	6688'
Hydro-Spring Tester	5"	.75"	5'	6699'
Multiple CIP Sampler				
Extension Joint				
AP Running Case (2)	5"	2.75"	4'	6700' 6704'
Hydraulic Jar	5"	1.75"	5'	
VR Safety Joint	5"	1"	2.75'	
Pressure Equalizing Crossover	5"	3/4"	1'	
Packer Assembly	7"	1.53"	6'	6720'
Distributar				
Packer Assembly	7"	1.53"	6'	6726'
Flush Joint Anchor	5"	2.75"	15'	
Pressure Equalizing Tube	1"	3/4"	32'	
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
"O" Ring Sub	5"	-	1'	
Double Box	5"	2.5"	1'	
Packer Assembly	7"	1.53"	6'	6746'
Distributar				
Packer Assembly	7"	1.53"	6'	6752'
Anchor Pipe Safety Joint				
Double Pin	6"	2.5"	½'	
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	77'	
Blanked-Off B.T. Running Case	5"	2.75"	4'	6835'
Total Depth				6838'

FORM 187-R2 — PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 111064 SC 2/80





Each Horizontal Line Equal to 1000 p.s.i.

FLUID SAMPLE DATA

Sampler Pressure 0 P.S.I.G. at Surface
Recovery: Cu. Ft. Gas
cc. Oil
cc. Water 2240 Salt Water
cc. Mud
Tot. Liquid cc.
Gravity ° API @ °F.
Gas/Oil Ratio cu. ft./bbl.

	RESISTIVITY			CHLORIDE CONTENT
Recovery Water	1.66	@ 60	°F.	945 ppm
Recovery Mud	.23	@ 68	°F.	30,000 ppm
Recovery Mud Filtrate		@	°F.	ppm
Mud Pit Sample	1.112	@ 50	°F.	7,500 ppm
Mud Pit Sample Filtrate	1.077	@ 50	°F.	8,000 ppm

Mud Weight 9.5 vis 37 sec.

Date 2-17-80 Ticket Number 813383
Kind of D.S.T. OPEN HOLE Halliburton Locotion GLENDIVE
Tester NEWTON Witness HUGHES
Drilling Contractor BOMAC DRILLING # 32 NM S

EQUIPMENT & HOLE DATA

Formation Tested Red River
Elevation - Ft.
Net Productive Interval - Ft.
All Depths Measured From Kelly Bushing
Total Depth 6838' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length 540' I.D. 2.25"
Drill Pipe Length 6238' I.D. 3.826"
Packer Depth(s) 6777' - 6785' Ft.
Depth Tester Valve 6760' Ft.

Cushion TYPE NONE AMOUNT Ft. Depth Back Pres. Valve NONE Surface Choke .25" Bottom Choke .75"

Recovered 360' Feet of muddy water
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks Reach fluid 2604' from top of the test tool. Pulled 360' of muddy water and lost the remainder of the recovery... SEE PRODUCTION TEST DATA SHEET FOR REMAINDER OF THE REMARKS...

TEMPERATURE	Gauge No. 6224 Depth: 6761' Ft.	Gauge No. 6223 Depth: 6834' Ft.	Gauge No. Depth: Ft.	TIME (00:00-24:00 hrs.)
	24 Hour Clock	24 Hour Clock	Hour Clock	Tool Opened 16:38
Est. °F.	Blanked Off NO	Blanked Off YES	Blanked Off	Opened Bypass 20:55
Actual 170 °F.	Pressures	Pressures	Pressures	

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		3337.9	3348.7	3441.2	3387.7				
First Period	Flow Initial	219.8	186.8	243.3	243.2			—	—
	Flow Final	659.4	670.3	783.8	729.7			17	16
	Closed in	2956.3	2969.9	3013.4	3010.6			60	60
Second Period	Flow Initial	769.3	782.9	810.9	835.1			—	—
	Flow Final	1863.4	1879.7	1940.9	1922.0			60	61
	Closed in	2956.3	2961.7	3013.4	3002.6			120	120
Third Period	Flow Initial							—	—
	Flow Final								
	Closed in								
Final Hydrostatic		3337.9	3348.7	3441.2	3387.7			—	—

Legal Location Sec. - Twp. - Rng. 26 - 21N - 19E
Lease Name O' DONNELL
Well No. 1
Test No. -
Field Area WILDCAT
County CORSON
State SOUTH DAKOTA
Tested Interval 6785' - 6838'
Lease Owner/Company Name CHEVRON, U.S.A., INCORPORATED

FORM 181-82 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 111033 75C 2/80

Casing perfs._____ Bottom choke_____ Surf. temp._____ °F Ticket No. 813383

Gas gravity._____ Oil gravity._____ GOR._____

Spec. gravity._____ Chlorides._____ ppm Res._____ @_____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED_____

Date 2-17-80 Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
16:38 PM					Opened tool with a 3" blow.
16:43					4" blow.
16:48					3" blow.
16:53					2" blow.
16:55					Closed tool with a ½" blow.
16:58					Had a surface blow.
17:02					Blow was dead.
17:55					Opened tool - blew off bottom of bucket.
18:05					25" in water.
18:15					1½#
18:25					2#
18:35					2#
18:45					2#
18:55					2# - closed tool.
19:04					Blow was dead.
20:55					Released packers.

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 98672 5M 8/74

Gauge No.	6224	Depth	6761'	Clock No.	20000	24 hour	Ticket No.	813383	

	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0	.000	186.8	.000		670.3	.000	782.9	.000		1879.7					
1	.0128	357.1*	.0133		2734.9	.0359	1002.7**	.0264		2819.6					
2	.0224	439.5	.0267		2836.0	.0685	1226.7	.0528		2866.1					
3	.0319	527.4	.0400		2879.7	.1011	1420.7	.0792		2887.9					
4	.0415	598.9	.0533		2901.6	.1338	1590.1	.1056		2901.6					
5	.0510	670.3	.0667		2918.0	.1664	1740.4	.1320		2915.2					
6			.0800		2931.6	.1990	1879.7	.1584		2926.2					
7			.0933		2939.8			.1848		2931.6					
8			.1067		2948.0			.2112		2937.1					
9			.1200		2953.5			.2376		2942.6					
10			.1333		2956.2			.2640		2948.0					
11			.1467		2961.7			.2904		2950.8					
12			.1600		2964.4			.3168		2956.2					
13			.1733		2967.1			.3432		2959.0					
14			.1867		2969.9			.3696		2961.7					
15			.2000		2969.9			.3960		2961.7					

Gauge No.			6223		Depth	6834'		Clock No.		16979	hour	24			
0	.000	243.2	.000		729.7	.000	835.1	.000		1922.0					
1	.0130	405.4*	.0131		2804.3	.0359	1061.8**	.0263		2860.6					
2	.0228	505.4	.0261		2884.7	.0685	1279.5	.0525		2906.1					
3	.0326	599.9	.0392		2922.2	.1011	1470.4	.0788		2927.6					
4	.0424	675.6	.0523		2943.7	.1338	1647.8	.1051		2943.7					
5	.0520	729.7	.0653		2959.7	.1664	1790.3	.1313		2954.4					
6			.0784		2973.2	.1990	1922.0	.1576		2967.8					
7			.0915		2981.2			.1839		2973.2					
8			.1045		2986.6			.2101		2978.5					
9			.1176		2991.9			.2364		2981.2					
10			.1307		2997.3			.2627		2986.6					
11			.1437		3000.0			.2889		2991.9					
12			.1568		3002.6			.3152		2994.6					
13			.1699		3005.3			.3415		2997.3					
14			.1829		3008.0			.3677		3000.0					
15			.1960		3010.6			.3940		3002.6					

Reading Interval	3	4	10	8	Minutes

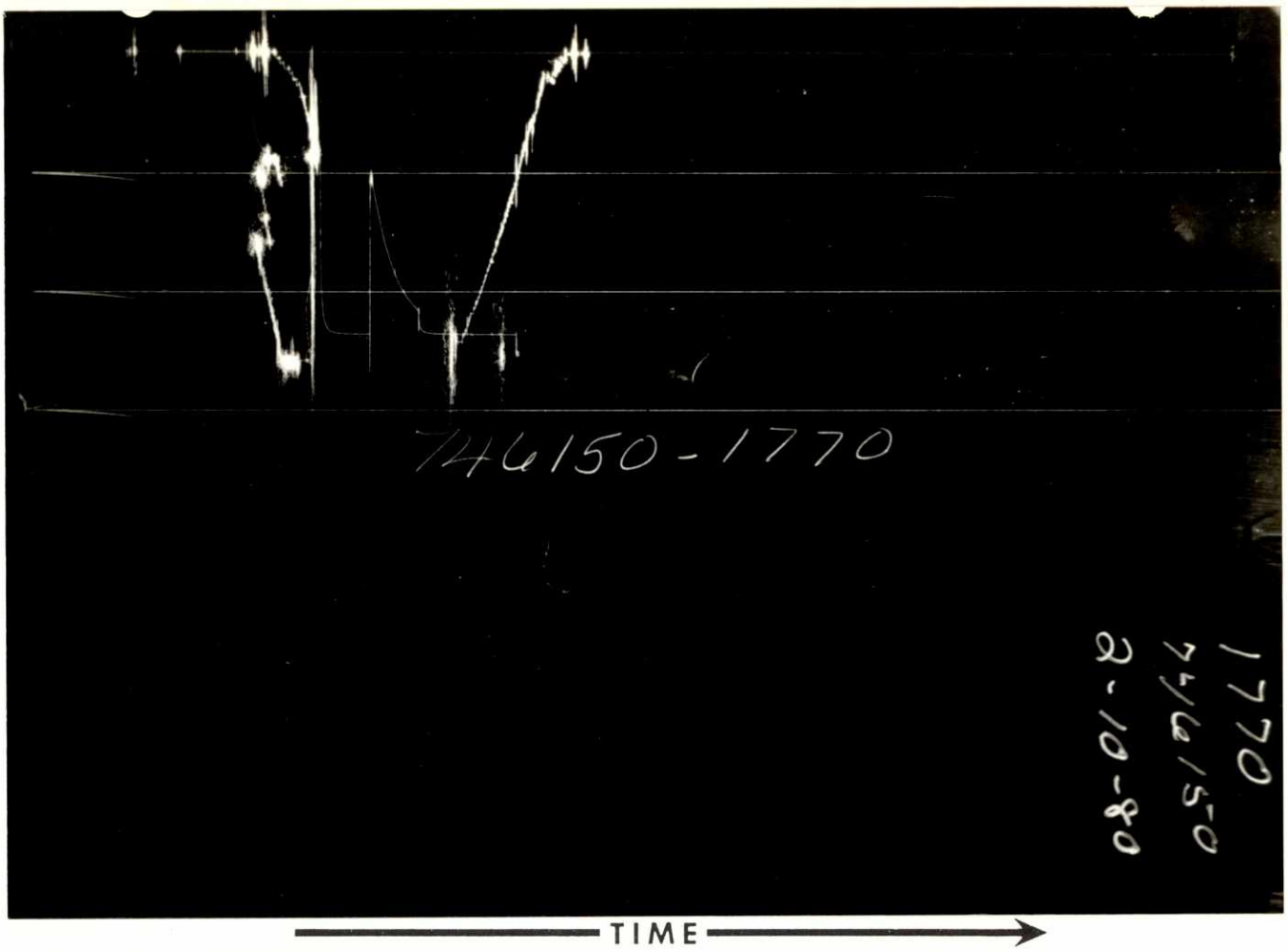
REMARKS: * INTERVAL = 4 MINUTES. ** INTERVAL = 11 MINUTES.

SPECIAL PRESSURE DATA

TICKET NO. 813383

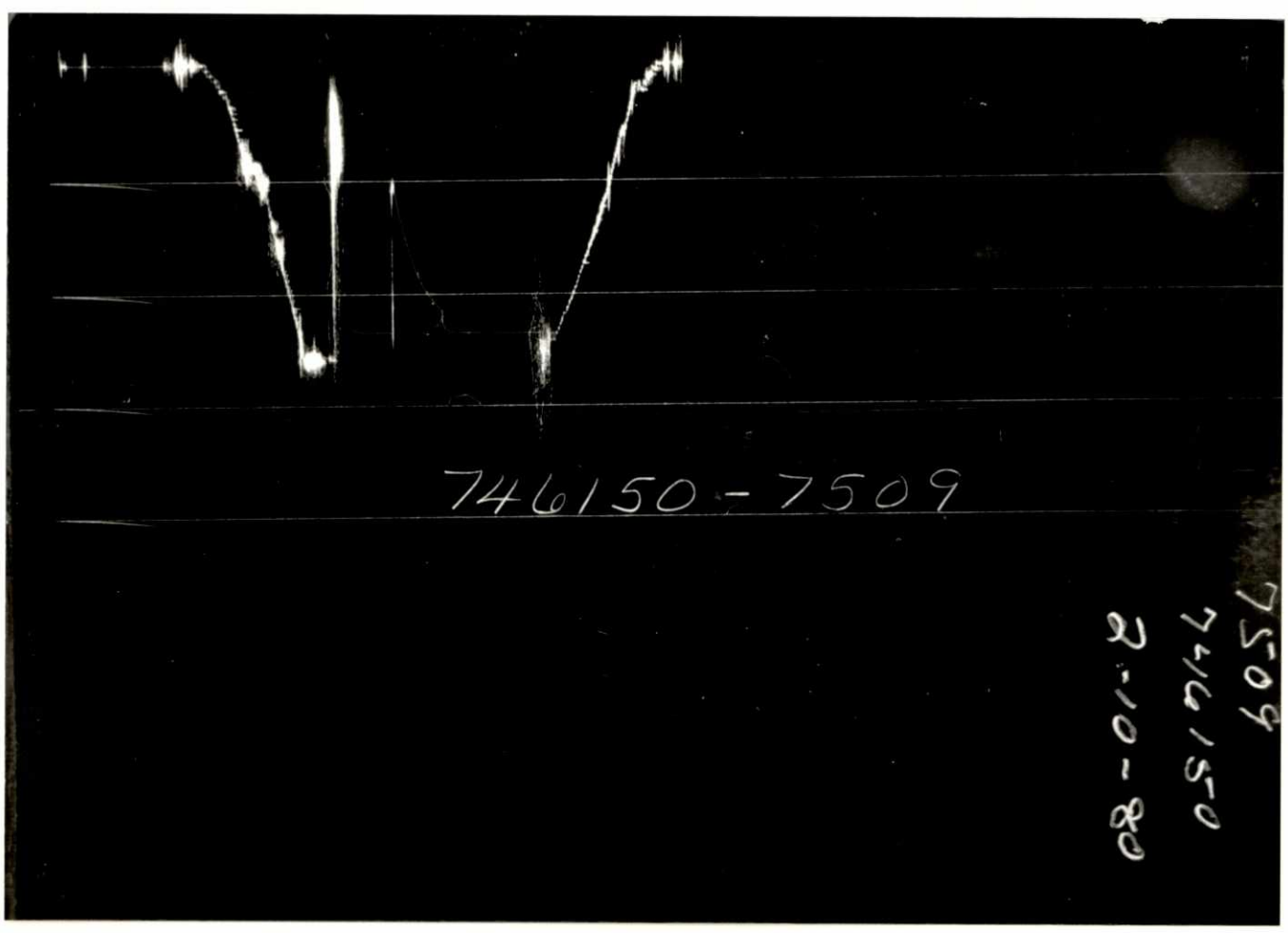
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub 4½" H-90	6.25"	2.50"	1'	90' UP
Water Cushion Valve				
Drill Pipe	4½"	3.826"	6238'	
Drill Collars	6.25"	2.25"	540'	
X-OVER 4½" REG to 3½" IF ~~Marking Sub or Choke Assembly~~	6.25"	2.50"	1'	
Duol CIP Valve				
Dual CIP Sampler	5"	.75"	7'	6749'
Hydro-Spring Tester	5"	.75"	5'	6760'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	2.25"	4'	6761'
Hydroulic Jar	5"	1.75"	5'	
VR Safety Joint	5"	1"	2.75'	
Pressure Equalizing Crossover				
Packer Assembly	7"	1.53"	6'	6777'
Distributor	5"	1.68"	2'	
Packer Assembly	7"	1.53"	6'	6785'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	49'	
Blanked-Off B.T. Running Case	5"	2.75"	4'	6834'
Total Depth				6838'

EQUIPMENT DATA

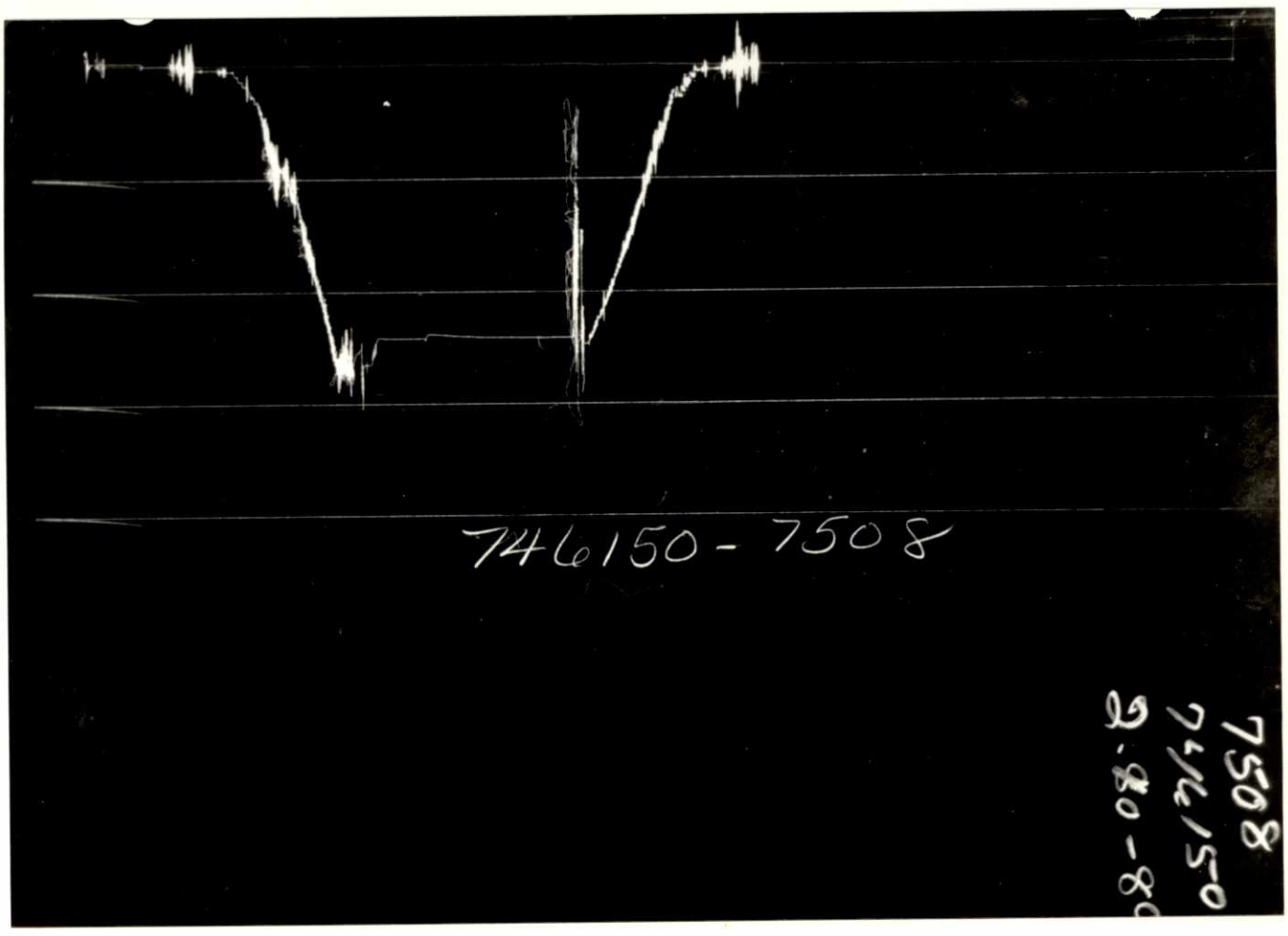


PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.



FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water 2100
cc. Mud _____
Tot. Liquid cc. 2100
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY			CHLORIDE CONTENT
Recovery Water	1.14	@ 65	°F.	5500	ppm
Recovery Mud	1.15	@ 65	°F.	5600	ppm
Recovery Mud Filtrate	-	@ _____	°F.	_____	ppm
Mud Pit Sample	1.16	@ 50	°F.	7500	ppm
Mud Pit Sample Filtrate	1.01	@ 50	°F.	8000	ppm

Mud Weight 9.3 vis 38 SEC. x SP

Date 2-10-80 Ticket Number 746150
Kind of Job OPEN HOLE PACKER ON BOTTOM STRADDLE Halliburton District GLENDIVE
Tester DRILL STEM TEST HUFFMAN-NEWTON Witness CONNER
Drilling Contractor BOMAC #32 DR

EQUIPMENT & HOLE DATA

Formation Tested Mission Canyon
Elevation - Ft.
Net Productive Interval 30' Ft.
All Depths Measured From Kelly Bushing
Total Depth 5313' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length 537' I.D. 2.25"
Drill Pipe Length 4661' I.D. 3.826"
Packer Depth(s) 5234-5240-5270-5276' Ft.
Depth Tester Valve 5213' Ft.

Cushion TYPE _____ AMOUNT _____ Ft. Depth Back Pres. Valve _____ Surface Choke 1/4" Bottom Choke 3/4"

Recovered 3617 Feet of mud
Recovered 1000 Feet of water
Recovered _____ Feet of _____
Recovered _____ Feet of _____
Recovered _____ Feet of _____

Meas. From Tester Valve

Remarks See production test data sheet

UTR-Unable to read

TEMPERATURE	Gauge No. 1770 Depth: 5214 Ft.	Gauge No. 7509 Depth: 5218 Ft.	Gauge No. 7508 Depth: 5310 Ft.	TIME
	24 Hour Clock	24 Hour Clock	24 Hour Clock	Tool Opened 13:51 A.M. P.M.
Est. °F.	Blanked Off No	Blanked Off No	Blanked Off Yes	Opened A.M.
Actual 140 °F.	Pressures	Pressures	Pressures	Bypass 18:05 P.M.

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		2574	2584.7	2604	2576.0	2836	2652.8		
First Period	Flow Initial	167	UTR	-	UTR			———	———
	Flow Final	250	UTR	-	UTR			10	10
	Closed in	2367	2365.6	2343	2356.5			62	60
Second Period	Flow Initial	960	1026.9	1000	963.0	Hydrostatic		———	———
	Flow Final	2119	2173.5	2126	2160.8	release:	2421.3	61	62
	Closed in	2367	2369.8	2343	2358.6			121	122
Third Period	Flow Initial							———	———
	Flow Final								
	Closed in								
Final Hydrostatic		2574	2438.0	2604	UTR	2836	2478.1	———	———

Legal Location Sec. - Twp. - Rng. 26-21-19
Lease Name O'DONNELL
Well No. 1
Test No. 1
Field Area WILDCAT
County CARSON
State SOUTH DAKOTA
Tested Interval 5240-5270'
Lease Owner/Company Name CHEVRON U.S.A. INCORPORATED

FORM 161-R1—PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 96671 10M 8/74

Casing perfs. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 746150

Gas gravity _____ Oil gravity _____ GOR _____

Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
13:51					Opened tool, bottom of bucket
13:55					2#
14:01					Closed tool 3#
14:02					3#
14:03					3#
14:18					2#
14:33					1#
14:48					3#
15:03					Opened tool 2#
15:14					1 1/2 #
15:24					5#
15:34					7#
15:44					9#
15:54					6#
16:04					4# Closed tool
16:15					No blow
18:05					Started off bottom

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 SM 8/74

Gauge No. 1770			Depth 5214'			Clock No. 11889			24 hour	Ticket No. 746150				
	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0			.000		UTR	.000	1026.9	.000		2173.6					
1			.0101		1879.2	.0387**	1385.0	.0098		2326.4					
2	Unable	to read	.0201		2289.2	.0710	1660.4	.0197		2345.0					
3			.0302		2324.3	.1032	1867.4	.0295		2353.3					
4			.0402		2351.2	.1355	2002.0	.0394		2357.4					
5			.0503		2355.3	.1677	2097.1	.0492		2359.5					
6			.0603		2359.5	.2000	2173.5	.0590		2361.5					
7			.0704		2361.5			.0689		2363.6					
8			.0804		2363.6			.0787		2365.6					
9			.0905		2365.6			.0886		2367.7					
10			.1005		2365.6			.0984		2369.8					
11			.1340		2365.6			.1738		2369.8					
12			.1675		2365.6			.2492		2369.8					
13			.2010		2365.6			.3246		2369.8					
14								.4000		2369.8					
15															

Gauge No. 7509			Depth 5218'			Clock No. 10055			hour 24					
0			.000		UTR	.000	963.0	.000		2160.8					
1			.0099		2186.9	.0395**	1378.7	.0098		2315.2					
2	Unable	to read	.0199		2278.2	.0724	1647.1	.0197		2334.7					
3			.0299		2315.2	.1053	1848.4	.0295		2343.4					
4			.0398		2330.4	.1382	1987.0	.0394		2347.8					
5			.0498		2339.1	.1711	2084.4	.0492		2349.9					
6			.0597		2345.6	.2040	2160.8	.0590		2352.1					
7			.0697		2349.9			.0688		2354.3					
8			.0796		2352.1			.0787		2356.5					
9			.0896		2354.3			.0886		2358.6					
10			.0995		2356.5			.0984		2358.6					
11			.1327		2356.5			.1738		2358.6					
12			.1658		2356.5			.2492		2358.6					
13			.1990		2356.5			.3246		2358.6					
14								.4000		2358.6					
15															
Reading Interval				*			10		***						Minutes

REMARKS: *-First 10 intervals equal to 3 minutes each; last 3 intervals equal to 10 minutes each, **_12 minutes
**-First 10 intervals equal to 3 minutes each; last 4 intervals equal to 23 minutes each.
UTR-Unable to read

SPECIAL PRESSURE DATA

TICKET NO. 746150

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	6"	2.5"	1'	
Water Cushion Valve				
Drill Pipe	4 1/2"	3.826"	4661'	
Drill Collars	6 1/4"	2.25"	537'	
Handling Sub & Choke Assembly				
Dual CIP Valve	6"	2.5"	1' Double Pin	
Dual CIP Sampler	5"	.75"	7'	5202'
Hydro-Spring Tester	5"	.75"	5'	5213'
Multiple CIP Sampler				
Extension Joint				
AP Running Case (2)	5"	2.75"	4'	5214'-5218'
Hydraulic Jar	5"	1.75"	5'	
VR Safety Joint	5"	1"	2.75'	
Pressure Equalizing Crossover	1"	3/4"	42'	
Packer Assembly	7"	1.53"	6'	5234'
Distributor				
Packer Assembly	7"	1.53"	6'	5240'
Flush Joint Anchor	5"	2.37"	25'	
Pressure Equalizing Tube	5"	1"	1' O Ring sub	
Blanked-Off B.T. Running Case	5"	2.5"	1' Double Box	
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	7"	1.53"	6'	5270'
Distributor				
Packer Assembly	7"	1.53"	6'	5276'
	5"	2.5"	1' Double pin	
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	28'	
Blanked-Off B.T. Running Case	5"	2.75"	4'	5310'
Total Depth				5313'

FORM 187-R1—PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 96676 75C 8/74

CORE ANALYSIS RESULTS FOR

CHEVRON USA, Inc.

CHEVRON SONAT NO. 1 O'DONNELL

WILDCAT

CORSON COUNTY, SOUTH DAKOTA

CHEVRON USA, INC.
CHEVRON SONAT #1 O'DONNELL
WILDCAT
CORSON COUNTY

FORMATION : RED RIVER A & B
DRLG. FLUID: CHEM GEL NO OIL
LOCATION : SW SW SEC 26 T21N-R19E
STATE : SOUTH DAKOTA

DATE : 2-21-80
FILE NO. : RP-4-5562-5
ANALYSTS : STEELE
ELEVATION: 2314 KB

FULL DIAMETER ANALYSIS--BOYLE'S LAW HELIUM POROSITY

SAMP. NO.	DEPTH	PERM. TO AIR (MD) MAX.	90 DEG.	VERTICAL	POR. B.L.	FLUID SATS. OIL	WATER	DESCRIPTION
	6720-6721							NON SAMPLED INTERVAL
1	6721-22	1.8	1.5	0.07	8.7	2.7	86.4	2.79 LS, LTGN VFXLN
2	6722-23	1.1	0.73	0.05	7.4	0.0	87.2	2.76 LS, LTGN VFXLN
	6723-6724							NON SAMPLED INTERVAL
3	6724-25	1.0	0.27	0.05	7.2	0.0	80.8	2.76 LS, LTGN VFXLN
	6725-6736							NON SAMPLED INTERVAL
4	6736-37	1.4	0.33	0.18	1.8	61.7	34.3	2.71 LS, BRN FXLN FOS
	6737-6739							NON SAMPLED INTERVAL
5	6739-40	3.2	2.8	0.19	1.6	84.0	10.5	2.71 LS, BRN FXLN FOS
6	6740-41	0.57	0.03	0.20	1.5	87.3	7.6	2.72 LS, BRN FXLN FOS
7	6741-42	1.0	0.64	0.54	1.7	83.4	12.8	2.70 LS, BRN FXLN FOS
	6742-6744							NON SAMPLED INTERVAL
8	6744-45	1.6	0.71	0.16	1.5	43.3	43.3	2.70 LS, BRN FXLN FOS
	6745-6749							NON SAMPLED INTERVAL
9	6749-50	0.47	0.14	1.6	3.6	9.2	9.2	2.71 LS, BRN FXLN SH/LAM
	6750-6754							NON SAMPLED INTERVAL
10	6754-55	49	47	23	25.8	2.7	49.2	2.86 DOL, TN FXLN VUG
	6755-6757							NON SAMPLED INTERVAL
11	6757-58	99	99	38	31.6	2.2	66.6	2.87 DOL, TN FXLN VUG
	6758-6760							NON SAMPLED INTERVAL

* SAMPLE NOT SUITABLE FOR FULL DIAMETER ANALYSIS

CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY	CHEVRON USA, INC.	FIELD	WILDCAT	FILE	RP-4-5562
WELL	CHEVRON SONAT #1 O'DONNELL	COUNTY	CORSON	DATE	2-21-80
LOCATION	SW SW SEC 26 T21N - R19E	STATE	SOUTH DAKOTA	ELEV.	2314 KB

CORE-GAMMA CORRELATION

VERTICAL SCALE: 5" = 100'

CORE-GAMMA SURFACE LOG
(PATENT APPLIED FOR)

GAMMA RAY
RADIATION INCREASE →

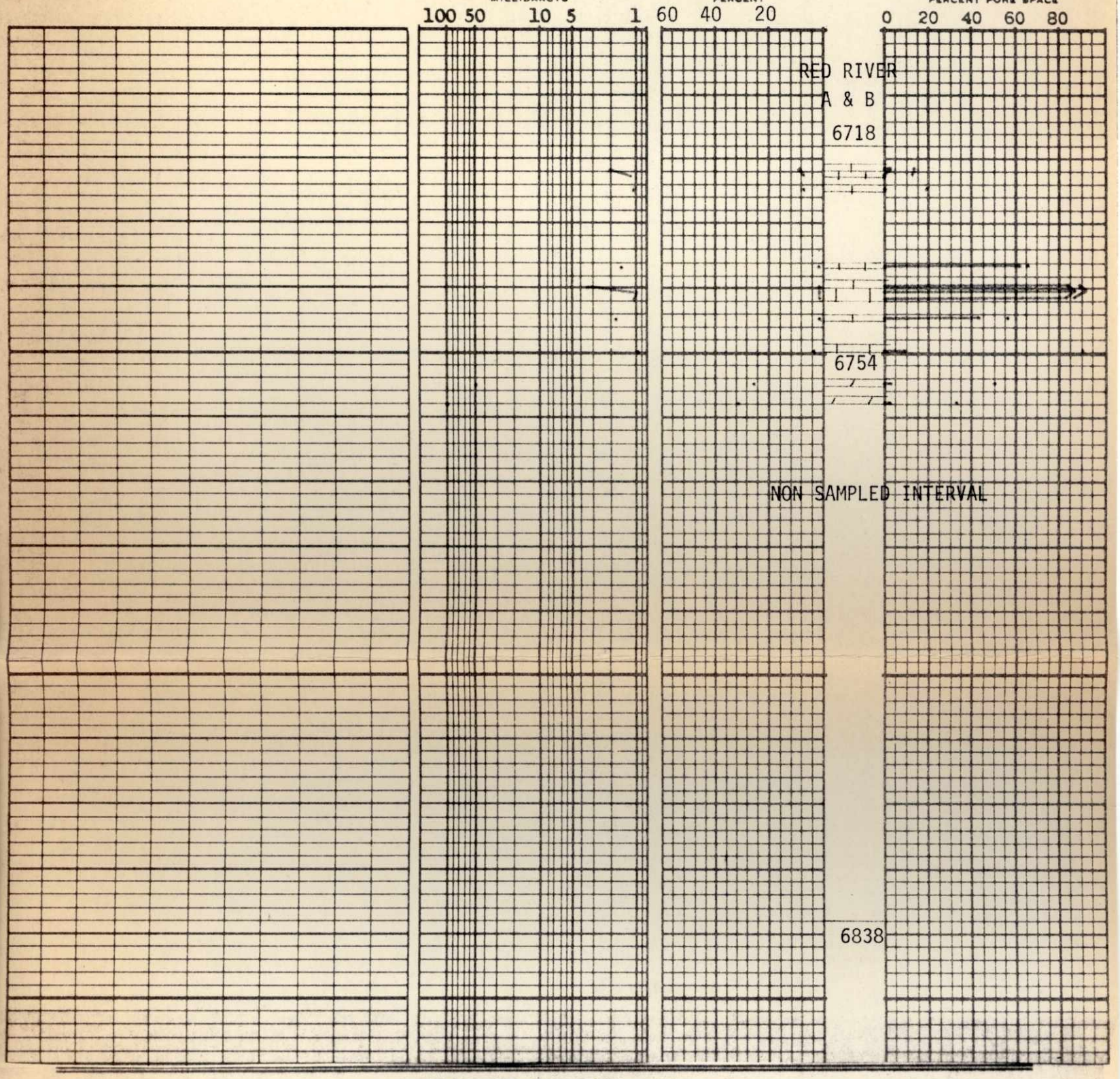
COREGRAPH

TOTAL WATER ——
PERCENT TOTAL WATER
80 60 40 20 0

PERMEABILITY ——
MILLIDARCYS
100 50 10 5 1

POROSITY ——
PERCENT
60 40 20

OIL SATURATION - - - - -
PERCENT PORE SPACE
0 20 40 60 80



INTERPRETATION OF DATA

6718.0 - 6838.0 Feet - Sampled per client's request. No interpretation.

These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.

CORE ANALYSIS RESULTS FOR

CHEVRON USA, INC.

CHEVRON-SONAT # 1 O'DONNELL

WILDCAT

CORSON COUNTY, SOUTH DAKOTA

CHEVRON USA, INC.
SONAT NO. 1 O'DONNELL
WILDCAT
CORSON

FORMATION : MISSION CANYON, RED RIVER
DRLG. FLUID: WATER BASE MUD
LOCATION : SW SW SEC 26 T21N R19E
STATE : SOUTH DAKOTA

DATE : FEB 10, 1980
FILE NO. : 9105-2603
ANALYSTS : MOHL
ELEVATION: 2314 KB

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION
1	5253-54	0.02		2.7	19.4	69.9		VF LM, FN XLN ALGAL
2	5254-55	0.01		2.7	27.3	62.4		VF LM, FN XLN ALGAL
3	5255-56	0.02		2.7	7.7	77.3		VF LM, FN XLN-ALGAL, CALC INFILL
4	5256-57	0.02		1.3	8.1	81.3		VF LM, FN XLN-ALGAL, STYO
5	5257-58	0.07		6.4	11.1	41.2		VF LM, FN XLN-ALGAL
6	5258-59	0.06		7.9	2.6	43.6		VF LM, FN XLN-ALGAL
7	5259-60	0.08		6.7	3.0	45.7		VF LM, FN XLN-ALGAL
8	5260-61	0.25		11.0	1.8	32.3		VF LM, FN XLN-ALGAL
9	5261-62	0.12		11.6	1.7	33.7		VF LM, FN XLN-ALGAL
10	5262-63	0.15		10.9	0.9	21.5		VF LM, FN XLN-ALGAL
11	5263-64	0.52		9.7	1.0	42.9		VF LM, FN XLN-ALGAL
12	5264-65	0.47		12.9	0.8	31.6		VF LM, FN XLN-ALGAL
13	5265-66	0.05		4.8	10.7	38.5		VF LM, FN XLN-ALGAL
14	5266-67	0.17		9.7	1.0	28.7		VF LM, FN XLN-ALGAL
15	5267-68	<0.01		2.0	10.5	84.0		VF LM, V/FN XLN ALGAL
16	5268-69	<0.01		2.0	10.2	61.3		VF LM, V/FN XLN ALGAL
	5269-5313							LOST CORE
	5313-6718							DRLG TO RED RIVER FORMATION
17	6718-19	0.40		7.2	2.9	87.6		SHL LMY FOSS
18	6719-20	1.6		8.0	2.6	88.3		SHL LMY FOSS
19	6720-21	0.95		6.2	3.3	86.9		SHL LMY FOSS
20	6721-22	0.06		8.7	2.4	90.0		SHL LMY FOSS SLI PYR
21	6722-23	0.27		7.6	6.9	85.2		SHL LIMY FOSS
22	6723-24	0.06		6.4	1.7	91.0		SHL LIMY FOSS
23	6724-25	0.11		5.0	4.3	89.6		SHL LIMY FOSS

CHEVRON USA, INC.
SONAT NO. 1 O'DONNELL
WILDCAT
CORSON

FORMATION : RED RIVER
DRLG. FLUID: WATER BASE MUD
LOCATION : SW SW SEC 26 T21N R19E
STATE : SOUTH DAKOTA

DATE : FEB 10, 1980
FILE NO. : 9105-2603
ANALYSTS : MOHL
ELEVATION: 2314 KB

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION
24	6725-26	0.01		1.0	0.0	85.4	VF	LM, V/FN-XLN SHLY
25	6726-27	0.10		3.4	3.2	82.7	VF	LM, V/FN-XLN SHLY
26	6727-28	0.02		1.2	18.1	72.6	VF	LM, V/FN-XLN SHLY
27	6728-29	0.02		2.5	21.6	69.0	VF	DOLO, V/FL-XLN LMY
28	6729-30	0.02		1.1	0.0	78.3	VF	DOLO, V/FL-XLN LMY
29	6730-31	0.02		1.6	6.9	69.3		DOLO, V/FN-XLN LMY
30	6731-32	0.02		1.8	30.6	48.9		DOLO, V/FN-XLN LMY
31	6732-33	0.02		1.7	31.3	37.6	VF	LM, V/FN-XLN ALGAL DOLO
32	6733-34	0.01		0.7	29.0	58.1	VF	LM, V/FN-XLN ALGAL
33	6734-35	0.02		1.6	59.7	26.5	VF	LM, V/FN-XLN ALGAL
34	6735-36	0.30		1.9	78.1	11.2	VF	LM, V/FN-XLN ALGAL
35	6736-37	0.04		1.8	42.6	48.7	VF	LM, V/FN-XLN ALGAL
36	6737-38	0.47		1.1	47.4	18.9	VF	LM, V/FN-XLN
37	6738-39	0.16		2.9	77.6	7.4	VF	LM, V/FN-XLN
38	6739-40	0.02		4.0	85.3	5.3	VF	LM, V/FN-XLN
39	6740-41	0.03		3.1	87.8	7.0	VF	LM, V/FN-XLN
40	6741-42	0.02		1.3	74.5	16.5	VF	LM, V/FN-XLN
41	6742-43	0.03		1.9	67.6	11.3	VF	LM, V/FN-XLN
42	6743-44	0.02		1.0	20.5	20.5	VF	LM, V/FN-XLN
43	6744-45	0.02		0.6	17.3	34.6	VF	LM, V/FN-XLN
44	6745-46	0.02		1.0	21.8	21.8	VF	LM, V/FN-XLN
45	6746-47	0.03		0.9	12.1	48.4	VF	LM, V/FN-XLN
46	6747-48	0.11		14.5	0.7	66.5	VF	DOLO, V/FN-XLN CHKY SLI PYR
47	6748-49	0.05		14.0	1.5	77.8	VF	DOLO V/FN-XLN CHKY STYO
48	6749-50	6.3		17.2	1.2	89.3		DOLO V/FN-XLN SUC

CHEVRON USA, INC.
SONAT NO. 1 O'DONNELL
WILDCAT
CORSON

FORMATION : RED RIVER
DRLG. FLUID: WATER BASE MUD
LOCATION : SW SW SEC 26 T21N R19E
STATE : SOUTH DAKOTA

DATE : FEB 10, 1980
FILE NO. : 9105-2603
ANALYSTS : MOHL
ELEVATION: 2314 KB

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	PERM. TO AIR (MD) VERTICAL	POR. FLD.	FLUID SATS. OIL	FLUID SATS. WATER	GR. DNS.	DESCRIPTION
49	6750-51	1.1		11.8	1.8	84.5	VF	DOLO V/FN-XLN SUC
50	6751-52	98		28.6	0.6	85.9	VF	DOLO V/FN-XLN SUC
51	6752-53	237		29.6	0.6	92.2	VF	DOLO, V/FN-XLN SUC PP VUG
52	6753-54	84		22.5	0.8	86.3	VF	DOLO, V/FN-XLN SUC PP VUG
53	6754-55	30		25.0	0.7	87.4	VF	DOLO, V/FN-XLN SUC PP VUG
54	6755-56	102		28.3	0.6	85.5	VF	DOLO, V/FN-XLN SUC PP VUG
55	6756-57	157		32.6	0.5	83.0	VF	DOLO, V/FN-XLN SUC PP VUG
56	6757-58	86		33.4	0.5	87.1		DOLO, V/FN-XLN SUC PP VUG
57	6758-59	67		38.5	0.4	69.1		DOLO, V/FN-XLN SUC PP VUG
58	6759-60	200		34.3	0.3	89.4		DOLO, V/FN-XLN SUC PP VUG
59	6760-61	53		17.8	1.1	83.5	VF	DOLO, V/FN-XLN SUC PP VUG
60	6761-62	9.1		22.1	0.8	76.9		DOLO, V/FN-XLN SUC PP VUG LMY
61	6762-63	0.12		7.7	2.7	59.2		DOLO V/FN-XLN ALGAL LMY
62	6763-64	0.12		7.5	2.8	55.6		DOLO V/FN-XLN ALGAL LMY
63	6764-65	11		6.6	3.1	34.6	VF	LM, V/FN-XLN ALGAL
64	6765-66	0.08		6.9	3.0	57.3	VF	LM, V/FN-XLN ALGAL
65	6766-67	0.22		5.0	4.2	62.9	VF	LM, V/FN-XLN ALGAL
66	6767-68	0.09		3.7	2.7	76.9	VF	LM, V/FN-XLN ALGAL
67	6768-69	0.12		2.1	10.2	61.0	VF	LM, V/FN-XLN ALGAL
68	6769-70	0.05		3.5	15.2	60.9	VF	LM, V/FN-XLN ALGAL STYO
69	6770-71	0.68		1.9	5.6	66.7	VF	LM, V/FN-XLN ALGAL
70	6771-72	0.10		2.8	7.7	61.5	VF	LM, V/FN-XLN ALGAL
71	6772-73	0.07		3.2	0.0	45.8	VF	LM, V/FN-XLN ALGAL
72	6773-74	0.91		3.9	2.6	36.8	VF	LM, V/FN-XLN ALGAL
73	6774-75	0.89		2.6	8.0	40.0	VF	LM, V/FN-XLN ALGAL

CHEVRON USA, INC.
SONAT NO. 1 O'DONNELL
WILDCAT
CORSON

FORMATION : RED RIVER
DRLG. FLUID: WATER BASE MUD
LOCATION : SW SW SEC 26 T21N R19E
STATE : SOUTH DAKOTA

DATE : FEB 10, 1980
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CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION
74	6775-76	0.06		4.5	2.3	18.2	VF	LM, V/FN-XLN ALGAL STYO
75	6776-77	0.08		1.7	12.8	64.2	VF	LM, V/FN-XLN ALGAL STYO
76	6777-78	0.16		1.7	12.2	48.9	VF	LM, V/FN-XLN ALGAL STYO
77	6778-79	0.22		3.1	6.7	53.6	VF	LM, V/FN-XLN ALGAL
78	6779-80	0.04		4.1	5.2	72.4		LM, V/FN-XLN ALGAL
79	6780-81	0.04		2.1	10.0	49.9		LM, V/FN-XLN ALGAL
80	6781-82	0.15		1.8	42.5	24.3		LM, V/FN-XLN ALGAL STYO
81	6782-83	0.10		0.8	25.2	25.2	VF	LM, V/FN-XLN ALGAL
82	6783-84	0.12		1.7	12.4	37.2	VF	LM, V/FN-XLN ALGAL
83	6784-85	0.04		1.3	15.6	46.7		LM, V/FN-XLN ALGAL
84	6785-86	0.06		1.2	18.0	36.0		LM, V/FN-XLN ALGAL STYO
85	6786-87	0.12		1.7	13.0	39.2		LM, V/FN-XLN ALGAL
86	6787-88	1.8		1.8	11.8	47.0	VF	LM, V/FN-XLN ALGAL
87	6788-89	0.46		1.7	32.1	25.7		LM, V/FN-XLN ALGAL STYO
88	6789-90	0.13		1.3	16.0	48.1		LM, V/FN-XLN ALGAL
89	6790-91	0.15		1.7	12.9	25.7		LM, V/FN-XLN ALGAL STYO
90	6791-92	0.08		1.0	21.6	21.6		LM, V/FN-XLN ALGAL
91	6792-93	0.15		0.9	22.8	22.8		LM, V/FN-XLN ALGAL
92	6793-94	0.04		0.3	57.4	16.4		LM, V/FN-XLN
93	6794-95	0.04		1.0	22.0	22.0		LM, V/FN-XLN
94	6795-96	0.06		0.9	23.2	23.2		LM, V/FN-XLN
95	6796-97	0.04		0.5	24.3	48.6		LM, V/FN-XLN
96	6797-98	0.02		6.0	38.9	38.9	VF	LM, V/FN-XLN ALGAL
97	6798-99	0.03		0.5	23.5	47.0	VF	LM, V/FN-XLN CALC INFILL
98	6799 -0	0.03		6.4	8.4	90.3	VF	DOLO, V/FN-XLN SLI LMY

CHEVRON USA, INC.
SONAT NO. 1 O'DONNELL
WILDCAT
CORSON

FORMATION : RED RIVER
DRLG. FLUID: WATER BASE MUD
LOCATION : SW SW SEC 26 T21N R19E
STATE : SOUTH DAKOTA

DATE : FEB 10, 1980
FILE NO. : 9105-2603
ANALYSTS : MOHL
ELEVATION: 2314 KB

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION
99	6800 -1	0.02		1.5	14.5	72.7	VF	LM, V/FN-XLN SHLY
100	6801 -2	2.6		15.3	1.4	78.4	VF	DOLO, V/FN-XLN-SUC
101	6802 -3	0.59		16.7	1.2	78.1	VF	DOLO, V/FN-XLN-SUC
102	6803 -4	0.05		0.4	25.1	50.3	VF	LM, V/FN-XLN
103	6804 -5	4.0		7.6	1.4	82.3	VF	DOLO, V/FN-XLN-SUC
104	6805 -6	3.2		6.2	0.0	68.0		DOLO, V/FN-XLN-SUC
105	6806 -7	0.03		1.0	10.7	42.6	VF	DOLO, V/FN-XLN LMY STYO
106	6807 -8	0.09		0.5	0.0	42.3	VF	DOLO, V/FN-XLN LMY
107	6808 -9	1.0		8.0	0.0	75.7	VF	DOLO, V/FN-XLN LMY
108	6809-10	0.02		1.0	20.7	62.1	VF	DOLO, V/FN-XLN LMY
109	6810-11	0.02		0.6	0.0	37.5	VF	DOLO, V/FN-XLN LMY
110	6811-12	0.02		0.8	0.0	76.6	VF	DOLO, V/FN-XLN LMY STYO
111	6812-13	0.03		0.3	16.8	50.5	VF	DOLO, V/FN-XLN LMY
112	6813-14	7.2		14.4	0.7	75.7	VF	DOLO, V/FN-XLN CHKY PYR
113	6814-15	0.19		17.9	1.1	72.9	VF	DOLO, V/FN-XLN CHKY
114	6815-16	0.20		14.4	1.4	84.1	VF	DOLO, V/FN-XLN CHKY
115	6816-17	0.50		15.4	1.3	83.6	VF	DOLO, V/FN-XLN CHKY
116	6817-18	1.1		15.2	1.4	85.2	VF	DOLO, V/FN-XLN CHKY
117	6818-19	0.19		14.7	1.4	72.6	VF	DOLO, V/FN-XLN CHKY
118	6819-20	4.5		20.4	0.1	81.9	VF	DOLO, V/FN-XLN CHKY
119	6820-21	1.8		15.8	1.3	77.0	VF	DOLO, V/FN-XLN CHKY PP VUG
120	6821-22	0.16		14.6	1.4	78.4	VF	DOLO, V/FN-XLN CHKY
121	6822-23	0.10		8.8	2.5	81.1	VF	DOLO, V/FN-XLN CHKY
122	6823-24	0.38		11.8	1.8	73.6	VF	DOLO, V/FN-XLN CHKY
123	6824-25	0.08		9.7	2.2	79.2	VF	DOLO, V/FN-XLN CHKY

CHEVRON USA, INC.
SONAT NO. 1 O'DONNELL
WILDCAT
CORSON

FORMATION : RED RIVER, DEADWOOD
DRLG. FLUID: WATER BASE MUD
LOCATION : SW SW SEC 26 T21N R19E
STATE : SOUTH DAKOTA

DATE : FEB 10, 1980
FILE NO. : 9105-2603
ANALYSTS : MOHL
ELEVATION: 2314 KB

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION
124	6825-26	0.11		10.9	1.0	81.1	VF	DOLO, V/FN-XLN CHKY
125	6826-27	0.31		16.8	1.2	84.3	VF	DOLO, V/FN-XLN CHKY
126	6827-28	0.53		15.8	1.3	77.6		DOLO, V/FN-XLN CHKY
127	6828-29	154		16.4	1.2	68.4		DOLO, V/FN-XLN CHKY PP VUG
128	6829-30	70		24.5	0.8	73.3		DOLO, V/FN-XLN CHKY PP VUG
129	6830-31	0.92		17.2	1.2	76.7	VF	DOLO, V/FN-XLN CHKY
130	6831-32	0.24		19.0	1.1	80.2	VF	DOLO, V/FN-XLN CHKY
131	6832-33	155		28.7	0.3	83.2	VF	DOLO, V/FN-XLN CHKY PP VUG
132	6833-34	15		29.5	0.3	89.5	VF	DOLO, V/FN-XLN CHKY
133	6834-35	0.39		23.2	0.8	77.8	VF	DOLO, V/FN-XLN CHKY
134	6835-36	0.04		5.3	4.0	72.5	VF	DOLO, V/FN-XLN CHKY LMY
135	6836-37	0.08		7.9	2.6	58.1	VF	DOLO, V/FN-XLN CHKY LMY
136	6837-38	0.08		14.7	1.3	52.3	VF	DOLO, V/FN-XLN CHKY LMY
	6838-7445							DRLG TO DEADWOOD FORMATION
137	7445-46	603		17.2	0.0	79.2	VF	SD, FN-CSE
138	7446-47	224		18.7	0.0	83.7		SD, FN-CSE
139	7447-48	1196		16.7	0.0	82.5	VF	SD, FN-CSE
140	7448-49	509		18.2	0.0	84.6		SD, FN-MED
141	7449-50	166		20.2	0.0	67.6		SD, FN-MED
142	7450-51	1270		19.6	0.0	79.3		SD, FN-MED
143	7451-52	114		19.8	0.0	80.8		SD, FN-MED
144	7452-53	333		4.3	0.0	64.4	VF	SD, FN-CSE QTZ
145	7453-54	558		13.6	0.0	81.8		SD, MED-CSE
146	7454-55	2.6		18.8	0.0	82.8	VF	SD, MED-CSE
147	7455-56	0.28		16.6	0.0	68.0		SD, MED-CSE

CHEVRON USA, INC.
SONAT NO. 1 O'DONNELL
WILDCAT
CORSON

FORMATION : RED RIVER, DEADWOOD
DRLG. FLUID: WATER BASE MUD
LOCATION : SW SW SEC 26 T21N R19E
STATE : SOUTH DAKOTA

DATE : FEB 10, 1980
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ELEVATION: 2314 KB

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	PERM. TO AIR (MD) VERTICAL	POR. FLD.	FLUID SATS. OIL	FLUID SATS. WATER	GR. DNS.	DESCRIPTION
148	7456-57	48		15.0	0.0	83.9		SD, MED-CSE
149	7457-58	120		19.7	0.0	76.2		SD, FN
150	7458-59	226		9.6	0.0	78.0		SD, FN-CSE QTZ
151	7459-60	219		16.7	0.0	85.3		SD, FN-CSE
152	7460-61	311		16.3	0.0	82.6	VF	SD, MED-CSE
153	7461-62	150		17.7	0.0	82.3		SD, MED-CSE
154	7462-63	0.26		16.1	0.0	67.1		SD, MED-CSE QTZ
155	7463-64	679		10.1	0.0	75.6		SD, MED-CSE QTZ
156	7464-65	0.56		18.1	0.0	78.1		SD, MED-CSE
157	7465-66	565		17.1	0.0	80.6		SD, FN-MED
158	7466-67	693		14.9	0.0	73.0		SD, FN-MED
159	7467-68	6.0		17.4	0.5	74.1		SD, FN-MED
160	7468-69	422		17.5	0.5	79.6		SD, FN-MED
161	7469-70	438		18.1	0.5	80.7	VF	SD, FN-CSE LAM
162	7470-71	231		14.9	0.0	71.7	VF	SD, FN-CSE
163	7471-72	274		15.8	0.0	75.7	VF	SD, FN
164	7472-73	154		14.8	0.0	55.4	VF	SD, FN-CSE
165	7473-74	133		10.9	0.0	78.9	VF	SD, FN-CSE QTZ SLI GLAUC SLI PYR
166	7474-75	6.5		13.2	0.0	73.9		SD, FN-CSE QTZ GLAUC
	7475-7504							LOST CORE

. **CORE LABORATORIES, INC.** *Petroleum Reservoir Engineering*

COMPANY	CHEVRON USA, INC.	FIELD	WILDCAT	FILE	9105-2603
WELL	CHEVRON-SONAT #1 O'DONNELL	COUNTY	CORSON	DATE	2-10-80
LOCATION	SW SW SEC 26-21N-19E	STATE	SOUTH DAKOTA	ELEV.	2314'KB

CORE-GAMMA CORRELATION

VERTICAL SCALE: 5" = 100'

CORE-GAMMA SURFACE LOG
(PATENT APPLIED FOR)

GAMMA RAY
RADIATION INCREASE →

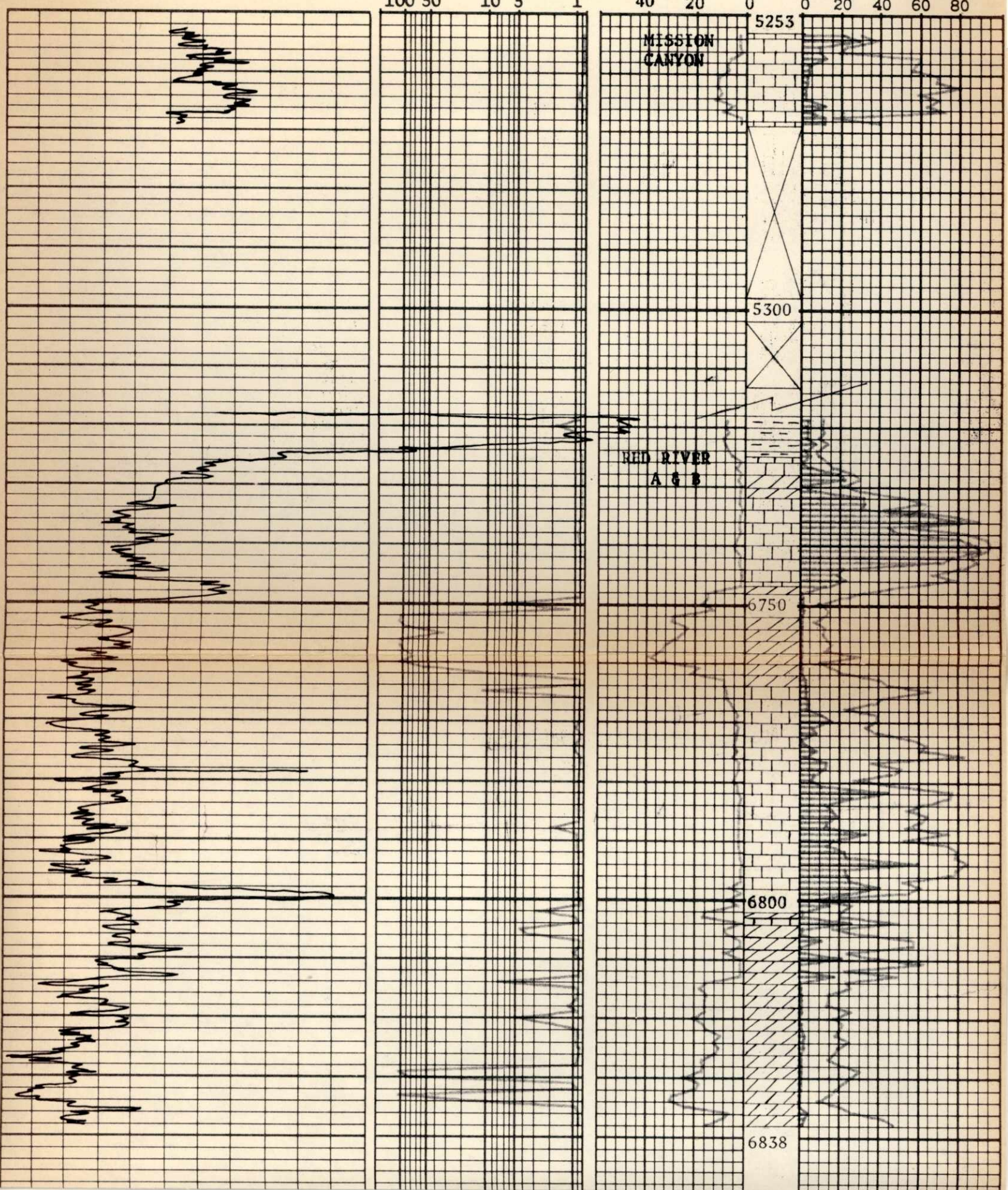
COREGRAPH

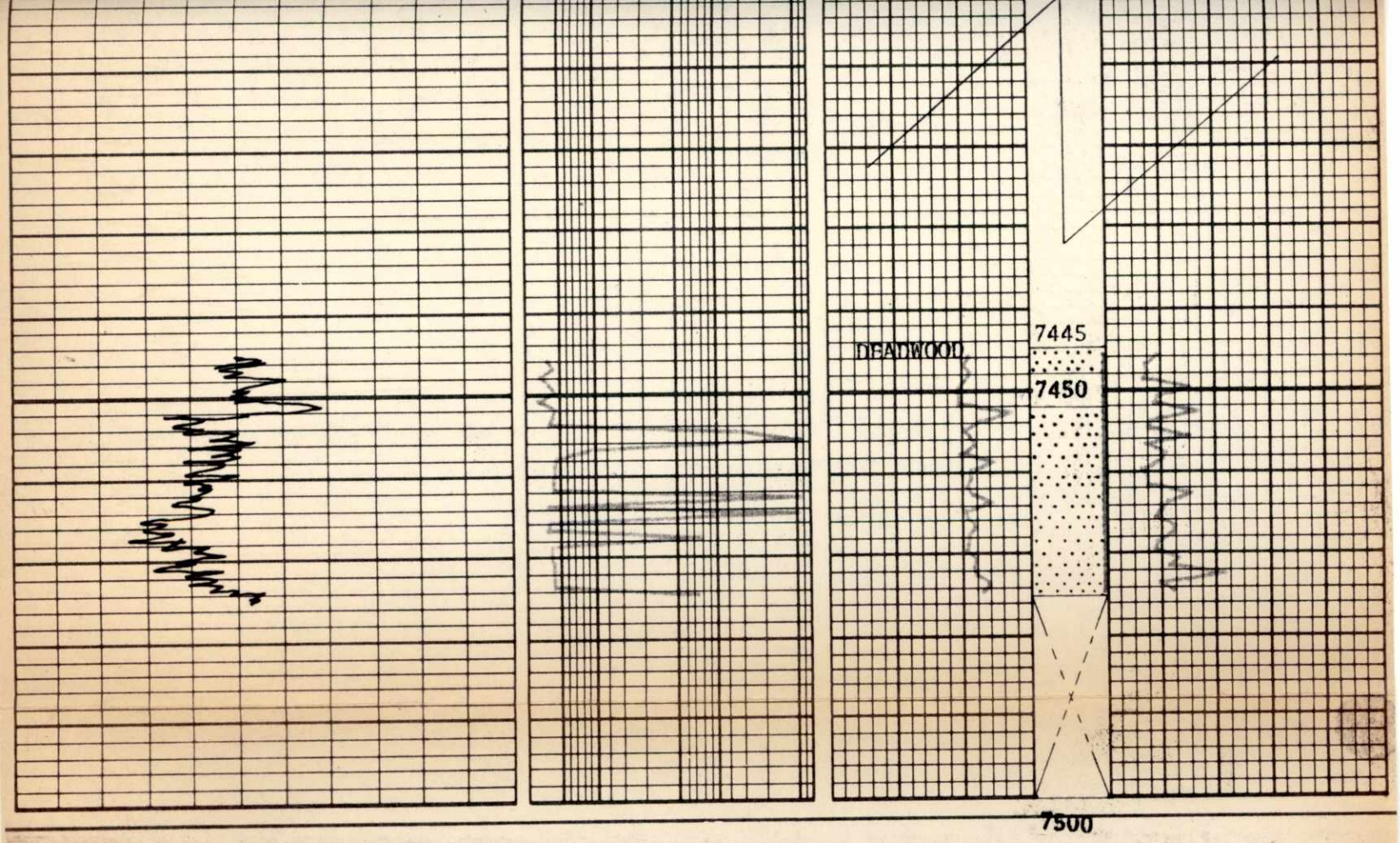
TOTAL WATER
PERCENT TOTAL WATER
80 60 40 20 0

PERMEABILITY
MILLIDARCYS
100 50 10 5 1

POROSITY
PERCENT
40 20 0

OIL SATURATION
PERCENT PORE SPACE
0 20 40 60 80





INTERPRETATION OF DATA

5253.0-5267.0 Feet - Water productive where permeable.
6718.0-6838.0 Feet - Water productive.
7445.0-7475.0 Feet - Water productive.

These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.

ADMINISTRATIVE / SUNDRY REPORTS

STATE PUB. CO., PIERRE

S. Dak. Oil & Gas Board
FORM 7

PLUGGING RECORD

Operator	Address
Chevron U.S.A. Inc.	P. O. Box 599, Denver, CO 80201

Name of Lease	Well No.	Field & Reservoir
Chevron SONAT O'Donnell	1	Wildcat

Location of Well	Sec-Twp-Rge or Block & Survey	County
660' FNL & 660' FWL (SW SW)	Sec. 26, T21N, R19E	Corson

Application to drill this well was filed in name of	Has this well ever produced oil or gas	Character of well at completion (initial production): Oil (bbls/day)	Gas (MCF/day)	Dry?
Chevron U.S.A. Inc.	No			X

Date plugged:	Total depth	Amount well producing when plugged: Oil (bbls/day)	Gas (MCF/day)	Water (bbls./day)
3-10-80	7738'	0	0	0

Name of each formation containing oil or gas. Indicate which formation open to well-bore at time of plugging	Fluid content of each formation	Depth interval of each formation	Size, kind & depth of plugs used indicate zones squeeze cemented, giving amount cement.
	Water 5500 Cl-	Mission Canyon 5240-70'	Plugs
None	Water 945 Cl-	Red River 6785-6838'	100 sx 6600-6300'
	Water 5000 Cl-	Red River 6735-50'	100 sx 5100-5400'
			40 sx 3500-3600'
			40 sx 508-708'
			10 sx Top Surf. Csg.

CASING RECORD

Size pipe	Put in well (ft.)	Pulled out (ft.)	Left in well (ft.)	Give depth and method of parting casing (shot, ripped etc)	Packers and shoes
9-5/8"	620'	0	620'		

Was well filled with mud-laden fluid, according to regulations?	Indicate deepest formation containing fresh water.
Yes	None known - Shallowest log 2006'.

In addition to other information required on this form, if this well was plugged back for use as a fresh water well, give all pertinent details of plugging operations to base of fresh water sand, perforated interval to fresh water sand, name and address of surface owner, and attach letter from surface owner authorizing completion of this well as a water well and agreeing to assume full liability for any subsequent plugging which might be required.

RECEIVED
APR 1980
WESTERN FIELD OFFICE

USE REVERSE SIDE FOR ADDITIONAL DETAIL

Executed this the 1st day of April, 19 80

State of Colorado

County of

Yolanda J. Hamar
Signature of Affiant

Before me, the undersigned authority, on this day personally appeared Yolanda J. Hamar known to me to be the person whose name is subscribed to the above instrument, who being by me duly sworn on oath states, that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct.

Subscribed and sworn to before me this 1st day of April, 19 80

SEAL

Lois J. Thompson

My commission expires July 5, 1983

Notary Public in and for Colorado

County,

DO NOT WRITE BELOW THIS LINE

Approved APR 09 1980
Date

OIL AND GAS BOARD OF THE STATE OF SOUTH DAKOTA

Fred N. Steece, Secretary

42

CORRESPONDENCE

Mr. Fred V. Steece, Supervisor
Western Field Office
308 West Blvd.
Rapid City, SD 57701

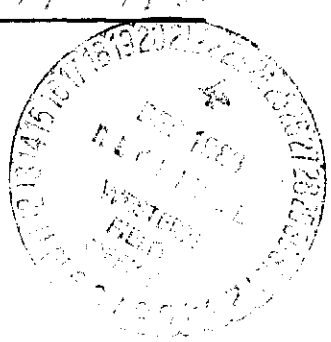
Dear Mr. Steece:

This letter informs you that the surface restoration at the site of the following oil or gas test well has been completed to my satisfaction:

Permit	Well Name and Location
959	Chevron #1 Sonat-O'Donnell, SWSW 26-21N-19E, Corson

I am the surface owner of record.

SIGNED X Julia C. O'Donnell DATE Dec 17-1981



April 21, 1980

Ms. Yolanda J. Hamar
Chevron, U.S.A., Inc.
P.O. Box 599
Denver, CO 80201

Dear Ms. Hamar:

Please find enclosed the approved copy of the Plugging Record, (Form 7) for the following well:

Permit	Well Name and Location
959	Chevron #1 Sonat O'Donnell, SWSW 26-21N-19E, Corson

This is for your information.

If there is any other way that I can be of help to you, please let me know.

Sincerely,

Fred V. Steece, Supervisor
Western Field Office

FVS/cp
Enc.
cc: Dr. Duncan J. McGregor

MISCELLANEOUS

NO MISCELLANEOUS
INFORMATION FOR THIS WELL
AS OF 5/12/2011