FILE NOTATIONS

Entered in N I D File ✓

Entered On S R Sheet

Location Map Pinned

Card Indexed ✓

I W R for State or Fee Land

Checked by Chief

Copy N I D to Field Office

Approval Letter

Disapproval Letter

COMPLETION DATA:

Date Well Completed

OW..... WW..... TA.....

GW..... OS..... PA.....

Location Inspected

Bond released
State of Fee Land

LOGS FILED

Driller's Log.....

Electric Logs (No.).....

E..... I..... E-I..... GR..... GR-N..... Micro.....

Lat..... Mi-L..... Sonic..... Others.....

Form 9-331 C
(May 1963)

SUBMIT IN PLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [XX] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [XX] GAS WELL [XX] OTHER — SINGLE ZONE [XX] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: ARCO ~~Oil~~ Oil & Gas Company

3. ADDRESS OF OPERATOR: P.O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 500' FSL & 2035' FWL (SE SW)
At proposed prod. zone: same

5. LEASE DESIGNATION AND SERIAL NO.: U-19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME: Hole-in-Rock

9. WELL NO.: #1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 30 T22S R7W

12. COUNTY OR PARISH: Millard

13. STATE: UT

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 17.7 miles NW of Kanosh, Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 500'

16. NO. OF ACRES IN LEASE: 2546.4

17. NO. OF ACRES ASSIGNED TO THIS WELL: Not assigned

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 2640'+

19. PROPOSED DEPTH: 12,500'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 4774' GR

22. APPROX. DATE WORK WILL START*: August 1, 1980

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17½"	13-3/8" new	54.5# K-55 ST&C	500'	Approximately 700 sacks
12¼"	10-3/4" new	40.5# K-55 ST&C	2400'	Approximately 400 sacks
9-7/8"	7" new	26 & 23# J-55 S-95 BTC, STC, LT&C	12,500'	to cover prospective zones

1.) Set 50' of 26# O.D. galvanized corrugated conductor pipe and cement in place.
2.) Drill 17½" hole and set 13-3/8" surface casing to 500' with good returns.
3.) Drill 12¼" hole and set 10-3/4" intermediate casing to 2400' and cement.
4.) Log BOP checks in daily drill reports and drill 9-7/8" hole to 12,500'.
5.) Run tests if warranted and run 7" casing if productive.
6.) Run logs as needed and perforate and stimulate as needed.

EXHIBITS ATTACHED

"A" Location and Elevation Plat
"B" The Ten-Point Compliance Program
"C" The Blowout Preventer Diagram
"D" The Multi-Point Requirements for A.P.D.
"E" & "E1" Access Road Maps to Location
"F" Radius Map of Field
"G" Drill Pad Layout, Production Facilities & Cut-Fill Cross-Section
"H" Drill Rig Layout

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED [signature] TITLE Operations Mgr DATE 6/16/80

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY (ORIG. SGD.) R. A. HENRICKS TITLE FOR E. W. GUYNN DISTRICT ENGINEER DATE AUG 27 1980

CONDITIONS OF APPROVAL, IF ANY:

CONDITIONS OF APPROVAL ATTACHED TO OPERATOR'S COPY

*See Instructions On Reverse Side

NOTICE OF APPROVAL

FLARING OR VENTING OF GAS IS SUBJECT TO NTL 4-A DATED 1/1/80

Utah Oil & Gas

POWERS ELEVATION

OIL WELL ELEVATIONS AND LOCATIONS
CHERRY CREEK PLAZA, SUITE 1201
600 SOUTH CHERRY STREET
DENVER, COLORADO 80222
PHONE NO. 303/321-2217

June 16, 1980

Division of Oil, Gas and Mining
1588 West, North Temple
Salt Lake City, Utah 84116

RECEIVED
JUN 23 1980
DIVISION OF
OIL, GAS & MINING

RE: Filing Application for Permit to Drill
ARCO Oil & Gas Company
#1 Hole-in-Rock
SE SW Sec. 30 T22 S R7W
500' FSL & 2035' FWL
Millard County, Utah

Gentlemen:

Enclosed are three copies each of the Federal A.P.D. Form 9-331C, the location and elevation plat, the Ten-Point Compliance program and Blow-out Preventer diagram for the above-referenced location.

Please return the approved copies to:

Marc Smith
ARCO Oil & Gas Company
P.O. Box 5540
Denver, Colorado 80217

Very truly yours,

POWERS ELEVATION
Connie L. Frailey/vg

Connie L. Frailey
Manager, Environmental Services

CLF:vg
Enclosures

cc: Marc Smith

Form 9-331 C
(May 1963)

SUBMIT TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [XX] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [XX] GAS WELL [XX] OTHER ____ SINGLE ZONE [XX] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: ARCO Oil & Gas Company

3. ADDRESS OF OPERATOR: P.O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 500' FSL & 2035' FWL (SE SW)
At proposed prod. zone: same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 17.7 miles NW of Kanosh, Utah

5. LEASE DESIGNATION AND SERIAL NO.: U-19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME: Hole-in-Rock

9. WELL NO.: #1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 30 T22S R7W

12. COUNTY OR PARISH: Millard

13. STATE: UT

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 500'

16. NO. OF ACRES IN LEASE: 2546.4

17. NO. OF ACRES ASSIGNED TO THIS WELL: Not assigned

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 2640'+

19. PROPOSED DEPTH: 12,500'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 4774' GR

22. APPROX. DATE WORK WILL START*: August 1, 1980

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17½"	13-3/8" new	54.5# K-55 ST&C	500'	Approximately 700 sacks
12¼"	10-3/4" new	40.5# K-55 ST&C	2400'	Approximately 400 sacks
9-7/8"	7" new	26 & 23# J-55 S-95 BTC, STC, LT&C	12,500'	to cover prospective zones

1.) Set 50' of 26# O.D. galvanized corrugated conductor pipe and cement in place.
2.) Drill 17½" hole and set 13-3/8" surface casing to 500' with good returns.
3.) Drill 12¼" hole and set 10-3/4" intermediate casing to 2400' and cement.
4.) Log BOP checks in daily drill reports and drill 9-7/8" hole to 12,500'.
5.) Run tests if warranted and run 7" casing if productive.
6.) Run logs as needed and perforate and stimulate as needed.

RECEIVED
JUN 23 1980
DIVISION OF OIL, GAS & MINING

EXHIBITS ATTACHED

"A" Location and Elevation Plat
"B" The Ten-Point Compliance Program
"C" The Blowout Preventer Diagram
"D" The Multi-Point Requirements for A.P.D.
"E" & "E1" Access Road Maps to Location
"F" Radius Map of Field
"G" Drill Pad Layout, Production Facilities & Cut-Fill Cross-Section
"H" Drill Rig Layout

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED [signature] TITLE Operations Mgr DATE 6/16/80

(This space for Federal or State office use)

PERMIT NO. ____ APPROVAL DATE ____

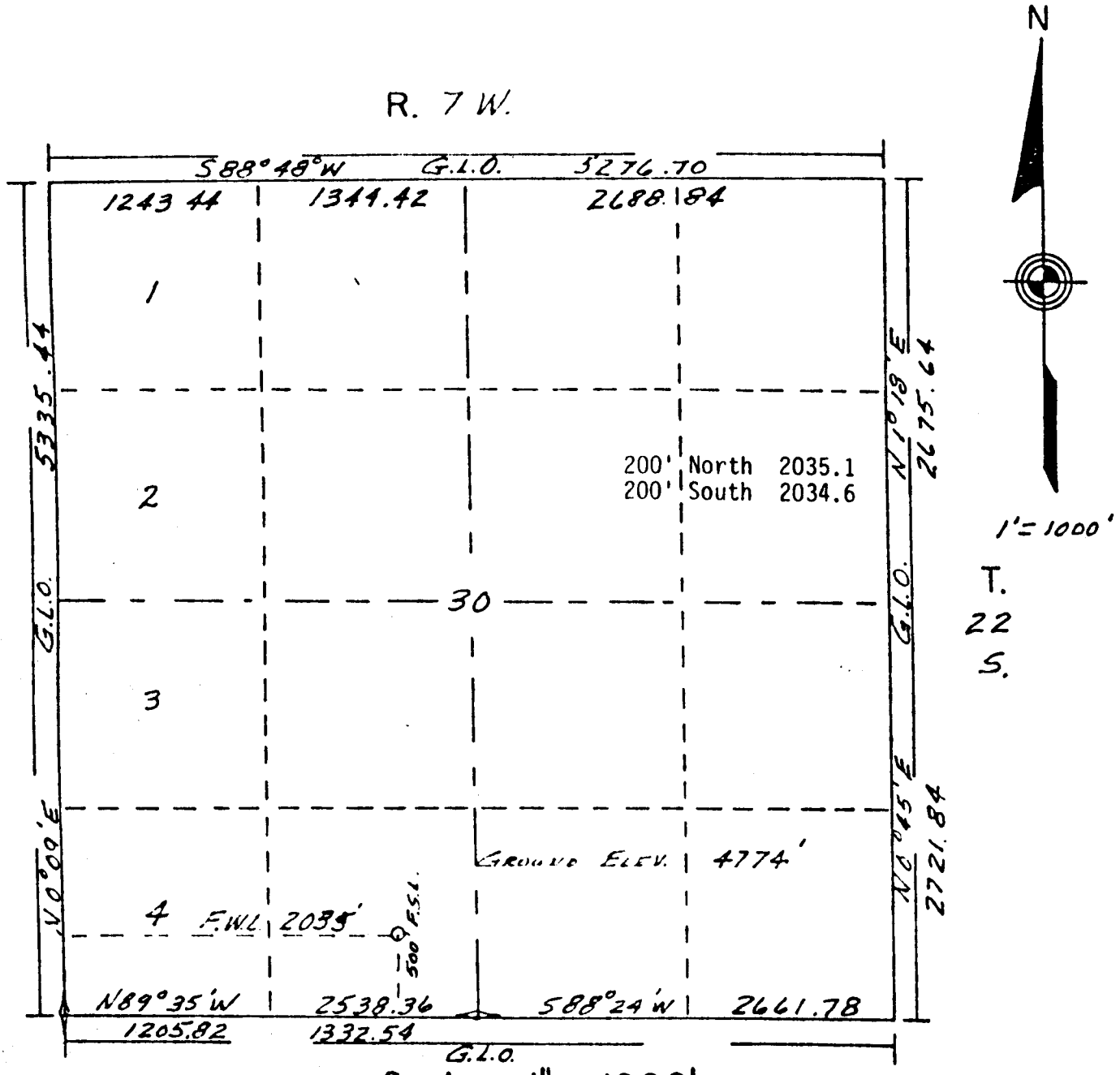
APPROVED BY ____ TITLE ____ DATE ____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

FORM F-106

EXHIBIT "A"
Location and Elevation Plat



Scale··· 1" = 1000'

Powers Elevation of Denver, Colorado
has in accordance with a request from Mark Smith
for Arco Oil & Gas Company
determined the location of Hole-in-Rock
to be 500' F.S.L. & 2035' F.W.L. of Section 30 Township 22 S
Range 7 W. of the Salt Lake Meridian
Millard County, Utah

I hereby certify that this plat is an accurate representation of a correct survey showing the location of Hole-in-Rock

Date: 6-1-80

Jerry D. Barber
Licensed Land Surveyor No. 4189
State of Utah

EXHIBIT "B"

TEN-POINT COMPLIANCE PROGRAM

OF NTL-6 APPROVAL OF OPERATIONS

Attached to Form 9-331C
ARCO Oil & Gas Company
#1 Hole-in-Rock
SE SW Sec. 30 T22S R7W
500' FSL & 2035' FWL
Millard County, Utah

1. The Geologic Surface Formation

The surface formation is the Quarternary Alluvium.

2. Estimated Tops of Important Geologic Markers

Mid Miocene Salt Lake Group	3,000'
Paleozoics	10,000'
Total Depth	12,500'

3. Estimated Depths of Anticipated Water, Oil, Gas or Minerals

Miocene Salt Lake Group	3000'	Oil or Gas
Lower Miocene formations	3000' - 10,000'	Oil or Gas

Water horizons not known

4. The Proposed Casing Program

CASING	HOLE SIZE	INTERVAL	SECTION LENGTH	SIZE (OD)	WEIGHT, GRADE & JOINTS	NEW OR USED
Conductor	26"	0 - 50'	50'	20"	New Conductor Set in Dry Hole	
Surface	17½"	0 - 500'	500'	13-3/8"	54.5# K-55 STC	New
Intermediate	12¼"	0 - 2400'	2400'	10-3/4"	40.5# K-55 STC	New
Production	9-7/8"	0 - 3100'	3100'	7"	26.0# J-55 BTC	New
		3100' - 8620'	5520'	7"	26.0# J-55 STC	New
		4620' - 12,500'	3880'	7"	23.0# S-95 LTC	New

Cement Program

Conductor - Fill to surface neat cement approximately 50 sacks.

Surface - Fill to surface neat cement approximately 700 sacks.

Intermediate - 1000' fill approximately 400 sacks, additional required for conditions.

Production - To cover prospective zones and 500', additives as required for conditions.

5. The Operator's Minimum Specifications for Pressure Control

EXHIBIT "C" is a schematic diagram of the blowout preventer equipment. The BOP's will be hydraulically tested to 3000 psi after nippling up and after any use under pressure. Pipe rams will be operationally checked each 24-hour period, as will blind rams and annular preventer each time pipe is pulled out of the hole. Such checks of BOP will be noted on daily drilling reports.

Accessories to BOP will include a kelly cock, floor safety valve and a drill string BOP with pressure rating equivalent to the BOP stack.

6. The Type and Characteristics of the Proposed Circulating Muds

Mud system will be gel-chemical with adequate stocks of sorptive agents on site to handle possible spills of fuel and oil on the surface. Heavier muds will be on location to be added if pressure requires.

DEPTH	TYPE	WEIGHT #/gal.	VISCOSITY-sec./qt.	FLUID LOSS
0 - 2400'	Water & Gel	8.5 - 8.7	45 - 60	15 - 20
2400' - 4700'	Water & Gel	8.5 - 8.7	35 - 40	15 - 20
4700' - 12,500'	Water & Gel	8.5 - 9.0	35 - 40	10 - 15

7. The Auxiliary Equipment to be Used

(a) A kelly cock will be kept in the string.

(b) A float will not be used at the bit.

(c) A mud logging unit or gas detecting device will be monitoring the system.

(d) A stabbing valve will be on the floor to be stabbed into the drill pipe when kelly is not in the string.

(e) A pit level monitor will be used.

8. The Testing, Logging and Coring Programs to be Followed

(a) Three DST's are anticipated at 4700', 8900', and 12,000' based on drilling results. Other zones will be tested as needed.

(b) The logging program will consist of a DIL/MSFL, BHC-Sonic CST, FDC/CNL, HDT, and CST. Log each casing point back to previous casing. Also a velocity survey at total depth.

(c) Three 30' cores are anticipated at 4700', 8900' and 12,000'.

(d) Well will be completed by gun perforating casing and flowing through tubing. Acid or frac treatments may be required but cannot be detailed until well is drilled and tested. Appropriate Sundry notice will be submitted.

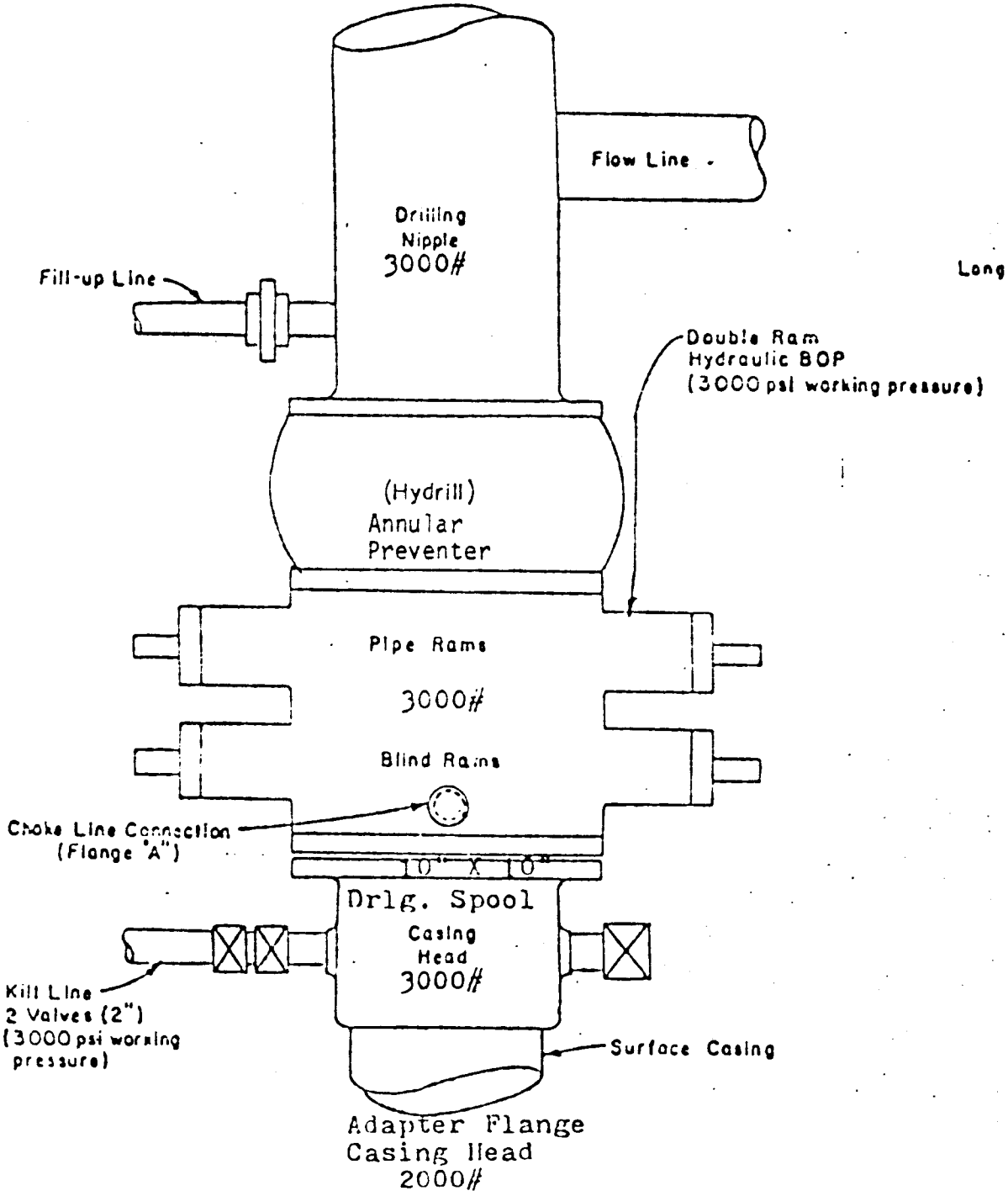
9. Any Anticipated Abnormal Pressures or Temperatures

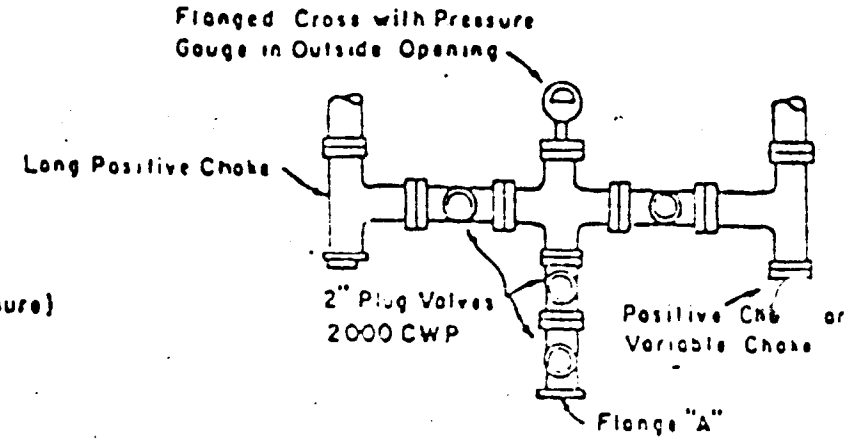
No abnormal pressures or temperatures have been noted or reported in wells drilled in the area nor at the depths anticipated in this well. Maximum bottom hole pressure expected is 5400.

No hydrogen sulfide or other hazardous fluids or gases have been found, reported or known to exist at these depths in the area.

10. Anticipated Starting Date and Duration of the Operations

The anticipated starting date is set for August 1, 1980, or as soon as possible after examination and approval of drilling requirements. Operations should be completed within 120 days after spudding the well and drilling to casing point.





PLAN VIEW - CHOKE MANIFOLD

EXHIBIT "C"
BLOWOUT PREVENTER DIAGRAM

Form 9-331 C
(May 1963)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: U-19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME: Hole-in-Rock

9. WELL NO.: #1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 30 T22S R7W

12. COUNTY OR PARISH: Millard

13. STATE: UT

1a. TYPE OF WORK: DRILL [XX] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [XX] GAS WELL [XX] OTHER ____ SINGLE ZONE [XX] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: ARCO Oil & Gas Company

3. ADDRESS OF OPERATOR: P.O. Box 5540, Denver, Colorado 80217 Attn: Marc Smith

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 500' FSL & 2035' FWL (SE SW)
At proposed prod. zone: same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 17.7 miles NW of Kanosh, Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 500'

16. NO. OF ACRES IN LEASE: 2546.4

17. NO. OF ACRES ASSIGNED TO THIS WELL: Not assigned

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 2640'+

19. PROPOSED DEPTH: 12,500' Paleozoic

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 4774' GR

22. APPROX. DATE WORK WILL START*: August 1, 1980

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17½"	13-3/8" new	54.5# K-55 ST&C	500'	Approximately 700 sacks
12¼"	10-3/4" new	40.5# K-55 ST&C	2400'	Approximately 400 sacks
9-7/8"	7" new	26 & 23# J-55 S-95 BTC, STC, LT&C	12,500'	to cover prospective zones

1.) Set 50' of ~~26#~~ 20# O.D. galvanized corrugated conductor pipe and cement in place (26" hole)
2.) Drill 17½" hole and set 13-3/8" surface casing to 500' with good returns.
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4.) Log BOP checks in daily drill reports and drill 9-7/8" hole to TD.
5.) Run tests if warranted and run 7" casing if productive.
6.) Run logs as needed and perforate and stimulate as needed.

RECEIVED
JUN 23 1980
DIVISION OF OIL, GAS & MINING

EXHIBITS ATTACHED

"A"	Location and Elevation Plat	"G"	Drill Pad Layout, Production Facilities & Cut-Fill Cross-Section
"B"	The Ten-Point Compliance Program		
"C"	The Blowout Preventer Diagram		
"D"	The Multi-Point Requirements for A.P.D.	"H"	Drill Rig Layout
"E" & "E₁"	Access Road Maps to Location		
"F"	Radius Map of Field		

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED [signature] TITLE Operations Mgr DATE 6/16/80

(This space for Federal or State office use)

PERMIT NO. 43-027-30019 APPROVAL DATE 6/30/80

APPROVED BY ____ TITLE ____ DATE ____

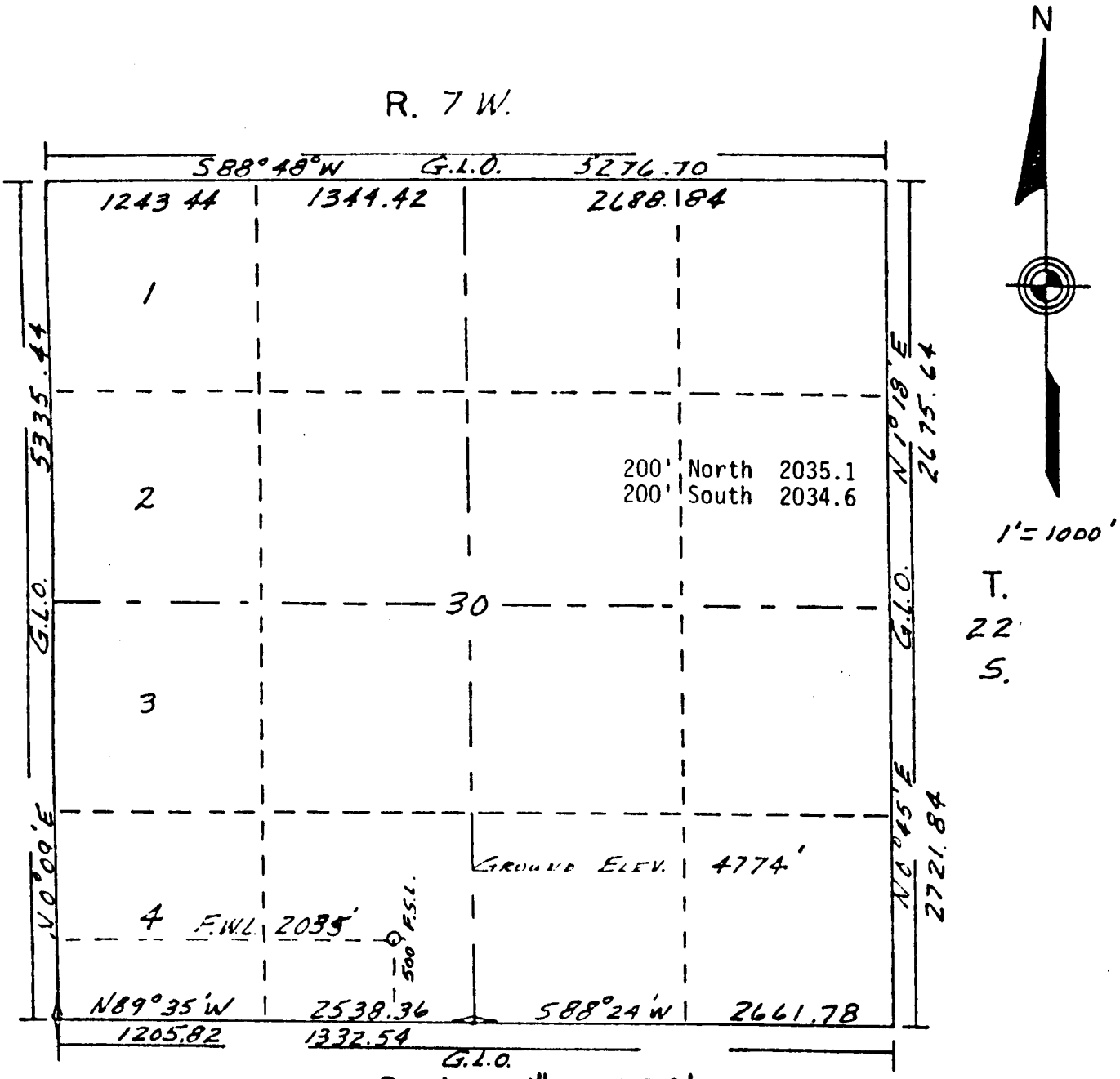
CONDITIONS OF APPROVAL, IF ANY: Providing casing & BOP equipment is increased to a minimum of 5000# w.p.

APPROVED BY THE DIVISION OF OIL, GAS, AND MINING
DATE: 6-30-80
BY: M.J. Minder

*See Instructions On Reverse Side

FORM F-106

EXHIBIT "A"
Location and Elevation Plat



Scale··· 1" = 1000'

Powers Elevation of Denver, Colorado
has in accordance with a request from MARK SMITH
for ARCO OIL & GAS COMPANY
determined the location of HOLE-IN-ROCK
to be 500' F.S.L & 2035' F.W.L. OF Section 30 Township 22 S
Range 7 W. OF THE SALT LAKE Meridian
MILLARD County, UTAH

I hereby certify that this plat is an accurate representation of a correct survey showing the location of HOLE-IN-ROCK

Date: 6-1-80

Licensed Land Surveyor No. 4189
State of UTAH

EXHIBIT "B"

TEN-POINT COMPLIANCE PROGRAM

OF NTL-6 APPROVAL OF OPERATIONS

Attached to Form 9-331C
ARCO Oil & Gas Company
#1 Hole-in-Rock
SE SW Sec. 30 T22S R7W
500' FSL & 2035' FWL
Millard County, Utah

1. The Geologic Surface Formation

The surface formation is the Quarternary Alluvium.

2. Estimated Tops of Important Geologic Markers

Mid Miocene Salt Lake Group	3,000'
Paleozoics	10,000'
Total Depth	12,500'

3. Estimated Depths of Anticipated Water, Oil, Gas or Minerals

Miocene Salt Lake Group	3000'	Oil or Gas
Lower Miocene formations	3000' - 10,000'	Oil or Gas

Water horizons not known

4. The Proposed Casing Program

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		3100' - 8620'	5520'	7"	26.0# J-55 STC	New
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Cement Program

Conductor - Fill to surface neat cement approximately 50 sacks.

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Intermediate - 1000' fill approximately 400 sacks, additional required for conditions.

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5. The Operator's Minimum Specifications for Pressure Control

EXHIBIT "C" is a schematic diagram of the blowout preventer equipment. The BOP's will be hydraulically tested to 3000 psi after nippling up and after any use under pressure. Pipe rams will be operationally checked each 24-hour period, as will blind rams and annular preventer each time pipe is pulled out of the hole. Such checks of BOP will be noted on daily drilling reports.

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7. The Auxiliary Equipment to be Used

(a) A kelly cock will be kept in the string.

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(d) A stabbing valve will be on the floor to be stabbed into the drill pipe when kelly is not in the string.

(e) A pit level monitor will be used.

8. The Testing, Logging and Coring Programs to be Followed

(a) Three DST's are anticipated at 4700', 8900', and 12,000' based on drilling results. Other zones will be tested as needed.

(b) The logging program will consist of a DIL/MSFL, BHC-Sonic CST, FDC/CNL, HDT, and CST. Log each casing point back to previous casing. Also a velocity survey at total depth.

(c) Three 30' cores are anticipated at 4700', 8900' and 12,000'.

(d) Well will be completed by gun perforating casing and flowing through tubing. Acid or frac treatments may be required but cannot be detailed until well is drilled and tested. Appropriate Sundry notice will be submitted.

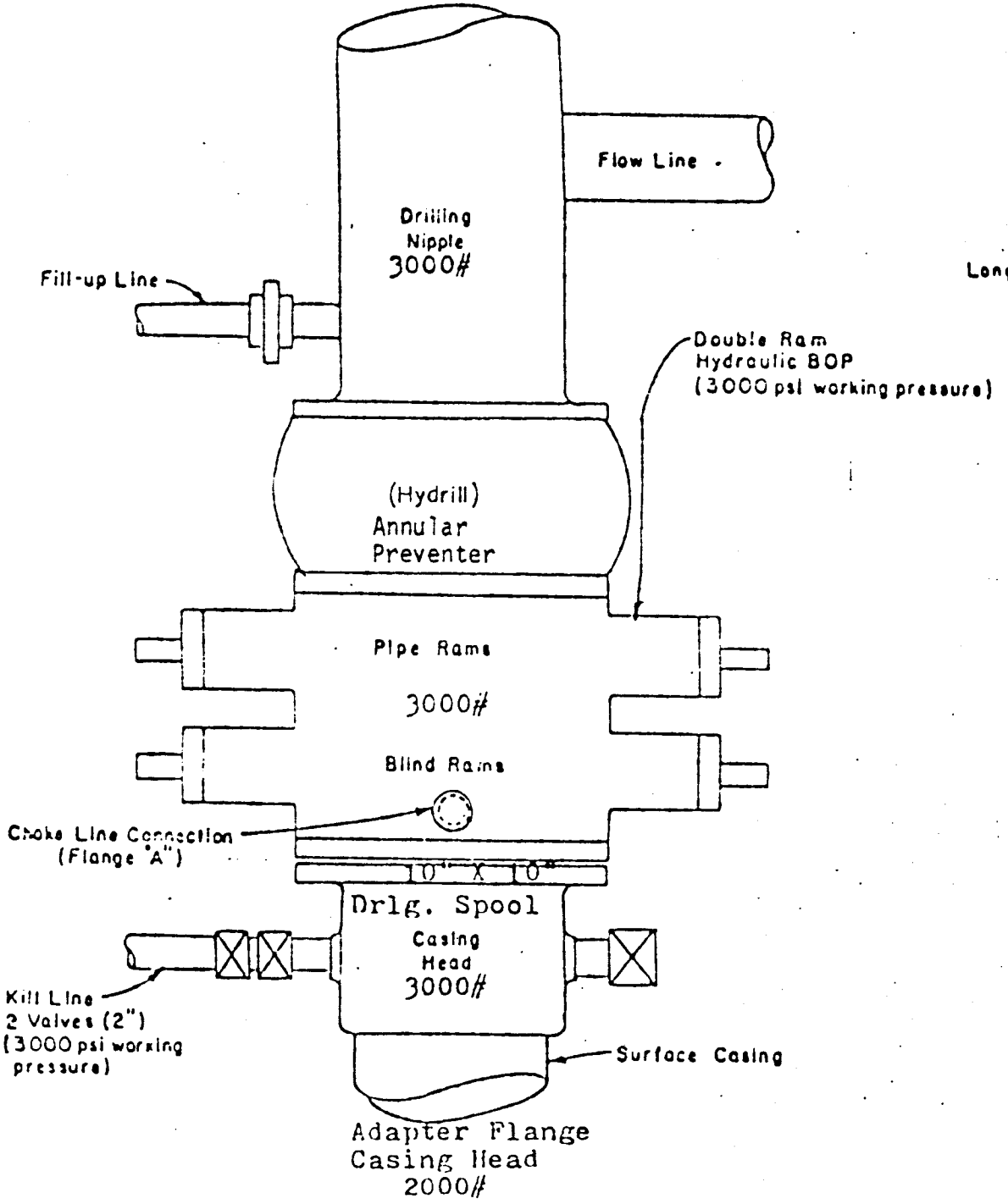
9. Any Anticipated Abnormal Pressures or Temperatures

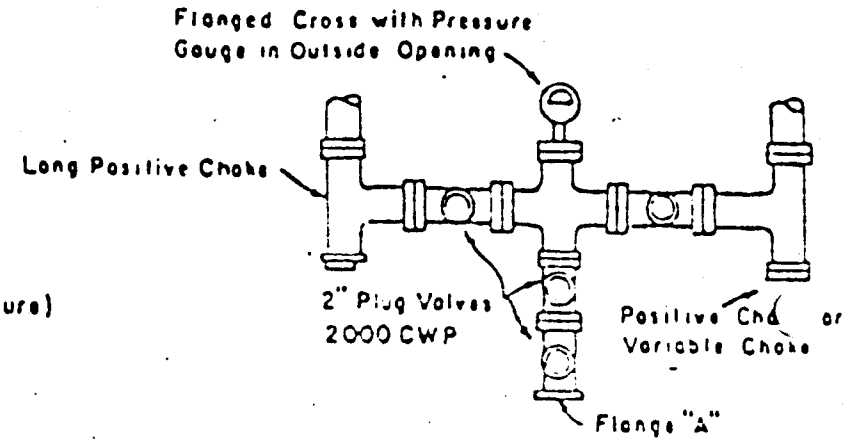
No abnormal pressures or temperatures have been noted or reported in wells drilled in the area nor at the depths anticipated in this well. Maximum bottom hole pressure expected is 5400.

No hydrogen sulfide or other hazardous fluids or gases have been found, reported or known to exist at these depths in the area.

10. Anticipated Starting Date and Duration of the Operations

The anticipated starting date is set for August 1, 1980, or as soon as possible after examination and approval of drilling requirements. Operations should be completed within 120 days after spudding the well and drilling to casing point.





PLAN VIEW - CHOKE MANIFOLD

EXHIBIT "C"

BLOWOUT PREVENTER DIAGRAM

Oil and Gas Drilling

EA No. 506-80

United States Department of the Interior
Geological Survey
2000 Administration Bldg.
1745 West 1700 South
Salt Lake City, Utah 84104

Usual Environmental Analysis

Date: August 1, 1980

Operator: Arco Oil & Gas Company

Project or Well Name and No.: 1

Location: 500' FSL 2035' FWL

Sec.: 30 T.: 22 S R.: 7 W

County: Millard

State: Utah

Field/Unit: Wildcat

Lease No.: U-19522

Permit No.: N/A

Joint Field Inspection Date: July 15, 1980

Prepared by: George Diwachak

Field Inspection Participants, Titles and Organizations:

George Diwachak	USGS
Jerry Muhlstein	BLM
Mike Horn	BLM
Mark Smith	Arco
Leonard Heney	Ross Construction

Related Environmental Documents:

N/A

Drill pad 350' x 450'
Reserve pit 150' x 150'
access road 18' x 140'
Disturbed area 4 acres
Millard County road agreement needed
Monitor mud returns for temperature
Conditions of approval p. 7 (1-6)
Admin. complete ?

DESCRIPTION OF PROPOSED ACTION

Proposed Action:

1. Location State: Utah
County: Millard

500', F S L, 2035' F W L, SE ¼ SW ¼

Section 30, T 22 S., R. 7 W., SLM

2. Surface Ownership Location: Public
Access Road: Public

Status of Reclamation Agreements: Not applicable.

3. Dates APD Filed June 17, 1980
APD Technically Complete: June 30, 1980
ADP Administratively Complete: Aug 22, 1980

4. Project Time Frame Starting Date: Upon approval
Duration of drilling activities: 120 days

A period of 30 to 60 days is normally necessary to complete a well for production if hydrocarbons are discovered. If a dry hole is drilled, recontouring and reseeding would normally occur within one year; revegetation or restoration may take several years. If the well is a producer, an indefinite period of time would occur between completion and rehabilitation.

5. Related actions of other Federal or State agencies and Indian tribes:

None known

6. Nearby pending actions which may affect or be affected by the proposed action:

None known

7. Status of variance requests:

None known

The following elements of the proposed action would/could result in environmental impacts:

1. A drill pad 350' wide x 450' long including a reserve pit 150' x 150' would be constructed. Approximately 140 feet of new access road, averaging an 18' driving surface, would be constructed from a maintained county road. Four acres of disturbed surface would be associated with the project. Maximum disturbed width of access road would be limited to 30'. The access road may be graveled for stability as the soils in the area are slippery when wet. The operator has agreed to maintain the road to prevent vehicles from leaving the established roadway to avoid mud, dust, or other undesirable conditions.

   An agreement must be reached with Millard County for use of existing county roads.

2. Drilling

3. Waste disposal

4. Traffic

5. Water requirements - A water well would be drilled on location.

6. Completion

7. Production - Facilities would be contained within the area of pad disturbance and are outlined in APD.

8. Transportation of hydrocarbons - Not requested in APD.

9. Other

Details of the proposed action are described in the Application for Permit to Drill.

The location plat included with the APD is 180° out of phase with the staked location.

Environmental Considerations of the Proposed Action:

Regional Setting/Topography - The location is situated on flat desert land near the eastern edge of the Basin and Range Physiographic Province.

PARAMETER

A. Geology

1. Other Local Mineral Resources to be Protected: Geothermal resources may be present in the vicinity. Cooling mud, if ~~pressures~~ TEMPERATURES exceed 175°F, would protect the resource.

Information Source:: MER, Mining Report, Geothermal Report (informal).

2. Hazards:

a. Land Stability: No land instability is expected at the well site. Soils in the area become slippery when wet and generate dust when dry. Graveling the access road would provide stability.

Information Source: Field observation, BLM.

b. Subsidence: No subsidence is expected, although the withdrawal of fluids could cause subsidence.

Information Source: "Environmental Geology", Keller; field observation.

c. Seismicity: The well site is within an area of moderate to major seismic risk. The operating plan does not account for such potential hazards.

Information Source: "Geologic Atlas of the Rocky Mountain Region", Rocky Mountain Association of Geologists.

d. High Pressure Zones/Blowout Prevention: No high pressure zones are expected. B.O.P. system is outlined in APD.

Information Source: APD.

B. Soils

1. Soil Character: Soils are clayey and are unstable when wet. Soils generate dust when dry as road traffic tends to generate silt. Topsoil would be stockpiled requiring complete revegetation upon abandonment.

Information Source: BLM, APD, field observation.

2. Erosion/Sedimentation: Erosion would be minimal due to flat terrain. No sedimentation is expected as site is within a closed drainage basin.

Information Source: Field observation, APD.

C. Air Quality - Air quality would decrease temporarily from equipment and vehicle emissions. Fugitive dust could become a problem and would be heavy at times due to the silty characteristics of area soils. The well site is in a Class II Attainment Area.

Information Source: Field observation, BLM.

D. Noise Levels - Noise levels would increase temporarily from equipment and vehicle operations affecting wildlife in a distributional sense.

Information Source: Field observations.

E. Water Resources

1. Hydrologic Character

a. Surface Waters: The well site is within an undefined closed drainage basin. No impacts are expected.

Information Source: USGS, 15-minute Tabernacle Hill Quadrangle Map.

b. Groundwaters: Groundwater resources are unknown in the area. A water well would be drilled on location for use during drilling. A State of Utah permit has been applied for. Drilling could provide information of any groundwater resources in the immediate area.

Information Source: Field observation, APD, MER.

2. Water Quality

a. Surface Waters: Not applicable

Information Source: Field observation.

b. Groundwaters: Any aquifers present could be affected by introduction of drilling fluids and/or commingling of aquifers. Lost circulation is possible and the addition of lost circulation materials could impact groundwater.

Information Source: Field observation, operator.

F. Flora and Fauna

1. Endangered and Threatened Species Determination

Based on the informal comments received from BLM on July 15, 1980, we determine that there would be no effect on endangered and threatened species and/or their critical habitat.

2. Flora: Plants in the area consist of a sparse covering of shadscale, cheatgrass and halogeton. Construction would remove vegetation and invader species such as the nearby halogeton would probably become established on disturbed areas.

Information Source: BLM, field observation.

3. Fauna: Wildlife is sparse and consists primarily of rodents, birds, coyotes and a few raptors.

Information Source: Field observation.

G. Land Uses

1. General: The area is used primarily for grazing of livestock.

Information Source: Field observation.

2. Affected Floodplains and/or Wetlands: Not applicable.

Information Source: Field obeservation.

3. Roadless/Wilderness Area: Not applicable

Information Source: BLM.

H. Aesthetics: The project does not blend in with the local surroundings and will pose a visual impact until reclamation is completed. Painting any permanent equipment a color to blend in with local surroundings would reduce visual impacts.

Information Source: Field observation.

I. Socioeconomics: The drilling of one well would have little effect on local populations and economy. However, if a discovery were made, local economics and possibly populations could increase.

Information Source: Field observation.

J. Cultural Resources Determination: Based on the informal comments received from BLM on July 15, 1980, we determine that there would be no effect on cultural resources.

Information Source: BLM.

K. Other: The dry vegetation in the area would pose a fire hazard necessitating the need for extreme caution during drilling.

Information Source: Field observation.

L. Adequacy of Restoration Plans: The restoration plans meet the minimum requirements of NTL-6. The operator should coordinate rehabilitation with the BLM.

Information Source: Field observation, APD.

Alternatives to the Proposed Action:

1. Disapproving the proposed action or no action - If the proposed action is denied, no action would occur, the existing environment would remain in its present state, the lessee/operator would not realize any return on investments and the public would be denied a potential energy source.

2. Approving the project with the recommended stipulations - Under Federal oil and gas leasing provisions, the Geological Survey has a responsibility to approve mineral development if the environmental consequences are not too severe or irreversible. Permanent damage to the surface and subsurface would be prevented as much as possible under USGS and Surface Management Agency supervision. Environmental impacts would be significantly mitigated.

Adverse Environmental Effects:

1. If approved as proposed:

   a. About 4 acres of vegetation would be removed, increasing and accelerating erosion potential.

   b. Pollution of groundwater systems could occur with the introduction of drilling fluids into the aquifer(s). The potential for interaquifer leakage and lost circulation is ever-present, depending on the casing program.

   c. Minor air pollution would be induced on a temporary basis due to exhaust emissions from rig engines and support traffic.

   d. The potential for fires, leaks, spills of gas and oil or water exists.

   e. During construction and drilling phases of the operation, noise and dust levels would increase.

   f. Distractions from aesthetics during the lifetime of the project would exist.

   g. If hydrocarbons would be discovered and produced, further development of the area could be expected to occur, which would result in the extraction of an irreplaceable resource, and further negative environmental impacts. These impacts include the cumulative loss of wildlife habitat due to the areas necessary for roads, pipelines, drillsites, and transmission lines. These actions may disrupt wildlife social behavior and force habitat relocation over an extended period of time. In addition, the cumulative effects of non-point erosion become substantial in a developing field, primarily those located near perennial streams where siltation and sedimentation are critical to aquatic life cycles.

2. Conditional approval

   All adverse impacts described in section one above would occur, except:

   Painting any permanent equipment a color to blend with the local surroundings would reduce visual impacts.

Recommended Approval Conditions:

Drilling should be allowed, provided the following mitigative measures are incorporated into the proposed APD and adhered to by the operator:

1. See attached Lease Stipulations. None

2. See attached BLM Stipulations.

3. An agreement must be reached with Millard County for use of county roads.

4. Rehabilitation of the well site and access road will be coordinated with the BLM, Fillmore.

5. Due to the potential for geothermal steam, any mud temperatures that exceed 175°F should be cooled to protect the resource.

6. A copy of the temperature logs will be furnished to the USGS, Geothermal Supervisor, Salt Lake City, Utah.

Controversial Issues and Conservation Division Response: None.

We have considered the proposed action in the preceding pages of this EA and find, based on the analysis of environmental considerations provided therein, no evidence to indicate that it will significantly (40 CFR 1508.27) impact the quality of the human environment.

Determination

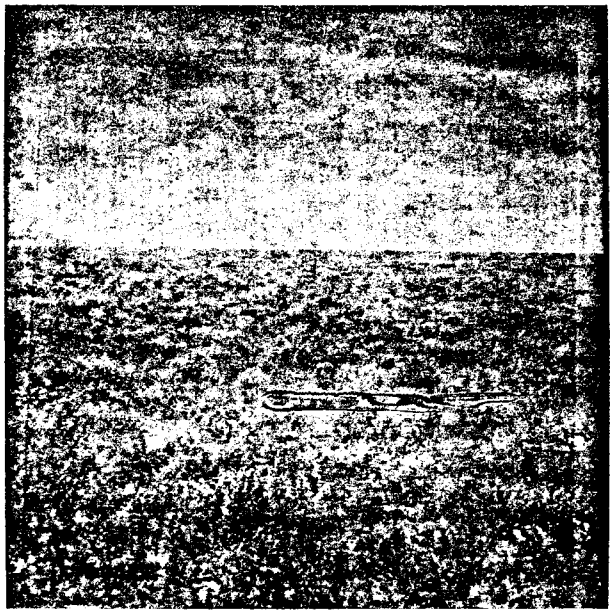
I determine that the proposed action (as modified by the recommended approval conditions) does not constitute a major Federal action significantly affecting the quality of the human environment in the sense of NEPA, Section 102(2)(C).

FOR E. W. GUYNN
DISTRICT ENGINEER

AUG 25 1980

District Engineer
U.S. Geological Survey
Conservation Division
Oil & Gas Operations
Salt Lake City District

Date



U. S. GEOLOGICAL SURVEY CONSERVATION DIVISION

George

FROM : DISTRICT GEOLOGIST ME, SALT LAKE CITY, UTAH

TO : DISTRICT ENGINEER, O&G, SALT LAKE CITY, UTAH

SUBJECT: APD MINERAL EVALUATION REPORT LEASE NO. U-19522

OPERATOR: ARCO WELL NO. 1

LOCATION: SE¼ SE¼ SW¼ sec. 30, T. 22S, R. 7W, SLM

Millard County, Utah

1. Stratigraphy:

Quat. Alluvium	surface
Mid Miocene	3,000'
Paleozoics	10,000'
TD	12,500'

2. Fresh Water:

Unknown

3. Leasable Minerals:

4. Additional Logs Needed: Adequate

5. Potential Geologic Hazards: None expected

6. References and Remarks:

Possible geothermal steam - operator should note maximum temperature

Signature: Gregory W. Wood Date: 7-23-80

** FILE NOTATIONS **

DATE: June 23, 1980

Operator: ARCO Oil & Gas

Well No: Hole-in-Rock #1

Location: Sec. 30 T. 22S R. 7W County: Millard

File Prepared: [ ] Entered on N.I.D.: [✓]

Card Indexed: [ ] Completion Sheet: [ ]

[✓] API Number 43-027-30019

CHECKED BY:

Geological Engineer:

Petroleum Engineer: M.J. Minder 6-30-80 Providing that both the BOP equipment & casing are designed to a minimum of 5000# w.p.

Director:

APPROVAL LETTER:

Bond Required: [ ] Survey Plat Required: [ ]

Order No. O.K. Rule C-3 [✓]

Rule C-3(c), Topographic Exception/company owns or controls acreage within a 660' radius of proposed site [ ]

Lease Designation [Fed] Plotted on Map [✓]

Approval Letter Written [✓] WTM

PI NL

POWERS ELEVATION

OIL WELL ELEVATIONS AND LOCATIONS
CHERRY CREEK PLAZA, SUITE 1201
600 SOUTH CHERRY STREET
DENVER, COLORADO 80222
PHONE NO. 303/321-2217

RECEIVED
JUN 25 1980
DIVISION OF
OIL, GAS & MINING

June 23, 1980

U.S. Geological Survey
Mr. Ed Guynn, District Engineer
2000 Administration Building
1745 West, 1700 South
Salt Lake City, Utah 84138

RE: Casing Program
ARCO Oil & Gas Company
#1 Hole-In-Rock
SE SW Sec. 30 T22S R7W
500'FSL & 2035'FWL
Millard County, Utah

Dear Mr. Guynn:

The above-referenced location was filed on June 16, 1980. This is to inform you that a 20" O.D. galvanized corrugated conductor pipe will be placed in a 26" hole for a 50' interval. Please make the correction on the A.P.D.

Sincerely yours,

POWERS ELEVATION

Chris Worsham

Chris Worsham
Editor, Environmental Reports

cc: Division of Oil, Gas and Mining - Salt Lake City, Utah

June 30, 1980

ARCO Oil and Gas Company
P.O. Box 5540
Denver, Colorado 80217

RE: WELL NO. Hole-in-Rock #1
Sec. 30, T. 22S, R. 7W.,
Millard County, Utah

Insofar as this office is concerned, approval to drill the above referred to oil/gas well is hereby granted in accordance with Rule C-3, General Rules and Regulations and Rules of Practice and Procedure.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

MICHAEL T. MINDER - Petroleum Engineer
Office: 533-5773
Home: 876-3001

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (acquifers) are encountered during drilling. Your cooperation in completing this form will be appreciated.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence, and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-027-30019.

Sincerely,

DIVISION OF OIL, GAS AND MINING

Michael T. Minder
Petroleum Engineer

/btm

cc: USGS

IN REPLY REFER

United States Department of the Interior

3100
U-502

BUREAU OF LAND MANAGEMENT
WARM SPRINGS RESOURCE AREA
Fillmore, Utah 84631

July 21, 1980

United States Geological Survey
Attention: Mr. George Diwachak
2000 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104

Gentlemen:

We received the ARCO application to drill in Section 30, T 22 S, R 7 W, on June 16, 1980. We attended the scheduled field inspection with George Diwachak of USGS, Mark Smith of ARCO, and Leonard Heeney of Ross Construction Company. We discussed the site construction and drilling operation and feel that the following stipulations should be included:

1. The access road should be upgraded and maintained in such a condition that will prevent vehicles from leaving the established roadway to avoid mud, dust, or other undesirable road conditions.

2. Fire danger is high and every effort must be taken to prevent fires.

3. All waste must be properly disposed of. All combustible material can be burned at the site, but all solid non-combustible material must be hauled to an approved sanitary land fill.

4. All pits or other hazardous material or conditions must be fenced to exclude animals accidentally becoming entrapped.

5. Top soil will be stockpiled and replaced at the completion of the activity. Seed will be drilled at the rate specified by the Warm Springs Area Manager.

6. No material from the drilling operation or from pits will be allowed to be pumped onto the soil surface without written permission from the Warm Springs Area Manager.

7. The company will provide BLM with all information pertaining to water, and if water is located, the company will give BLM an

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

George

received AUG 1 1980 GJD

Opportunity to occupy and use the well after they have completed their exploration activities.

8. Pits must be capable of retaining the fluids used in drilling.

Sincerely yours,

Mark E. Bailey
Area Manager

Arco Oil & Gas
30-225-74

Memorandum

George

To: District Oil and Gas Engineer, Mr. Edward Guynn

From: Mining, Supervisor, Mr. Jackson W. Moffitt

Subject: Application for Permit to Drill (form 9-331c) Federal oil and gas lease No. U-19522 Well No. 1

1. The location appears potentially valuable for:

   [ ] strip mining*

   [ ] underground mining**

   [✓] has no known potential.

2. The proposed area is

   [ ] under a Federal lease for _____ under the jurisdiction of this office.

   [✓] not under a Federal lease under the jurisdiction of this office.

   [ ] Please request the operator to furnish resistivity, density, Gamma-Ray, or other appropriate electric logs covering all formations containing potentially valuable minerals subject to the Mineral Leasing Act of 1920.

*If location has strip mining potential:

Surface casing should be set to at least 50 feet below the lowest strip minable zone at _____ and cemented to surface. Upon abandonment, a 300-foot cement plug should be set immediately below the base of the minable zone.

**If location has underground mining potential:

The minable zones should be isolated with cement from a point 100 feet below the formation to 100 feet above the formation. Water-bearing horizons should be cemented in like manner. Except for salines or water-bearing horizons with potential for mixing aquifers, a depth of 4,000 feet has been deemed the lowest limit for cementing.

Signed Allen J Vance

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well [X] gas well [X] other

2. NAME OF OPERATOR ARCO Oil and Gas Company
Division of Atlantic Richfield Company

3. ADDRESS OF OPERATOR
P. O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL (SE SW)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Approx the same

5. LEASE
U-19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
---

7. UNIT AGREEMENT NAME
---

8. FARM OR LEASE NAME
Hole-In-Rock

9. WELL NO.
1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
30-22S-7W

12. COUNTY OR PARISH: Millard
13. STATE: Utah

14. API NO.
NOT ASSIGNED

15. ELEVATIONS (SHOW DF, KDB, AND WD)
4744' GR

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) CHANGE IN CASING PLANS		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

RECEIVED
JUL 28 1980
DIVISION OF
OIL, GAS & MINING

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

The initial Application for Permit to Drill was submitted on this well June 16, 1980.

We now advise of our intention to change the 13-3/8" casing to 16", 75#, K-55, ST&C casing set @ 500'. The hole size will be 22".

All other plans remain as originally submitted.

APPROVED BY THE DIVISION OF
OIL, GAS, AND MINING
DATE: 7/30/80
BY: CB Feight

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W A Walther Jr. TITLE Operations Manager DATE 7-25-80
W. A. Walther, Jr.

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

NAME OF COMPANY: ARCO Oil and Gas

WELL NAME: Hole-in-Rock #1

SECTION 30 SE SW TOWNSHIP 22S RANGE 7W COUNTY Millard

DRILLING CONTRACTOR Loffland Brothers

RIG # 58

SPUDDED: DATE 9/16/80

TIME 8:00 p.m.

HOW rotary

DRILLING WILL COMMENCE presently

REPORTED BY Kathy Flinn

TELEPHONE # 303-575-7036

DATE September 17, 1980 SIGNED M. J. M.

cc: USGS

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR ARCO Oil and Gas Company
Division of Atlantic Richfield Company

3. ADDRESS OF OPERATOR
P.O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL (SE SW)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Approx the same

5. LEASE
U-19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
---

7. UNIT AGREEMENT NAME
---

8. FARM OR LEASE NAME
Hole in Rock

9. WELL NO.
1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 30 (T. 22S) (R. 7W)

12. COUNTY OR PARISH
Millard

13. STATE
Utah

14. API NO.
43-027-30019

15. ELEVATIONS (SHOW DF, KDB, AND WD)
4744' GR

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) N.O. spud & set surface casing		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Spud 13-3/4" hole @ 8:00 pm 9-15-80. Drilled 13-3/4" hole to 560'. Reamed 20" hole to 560'. Ran 18 jts 16", 75#, K-55, 8rd, ST&C casing and set @ 549'. Cemented with 550 sx Type II Cement with 2% CaCl, 3% salt and 1/4# flocele/sx. PD @ 12:00 midnite 9-17-80.

Drilling ahead.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W. A. Walther, Jr. TITLE Operations Manager DATE 9-24-80

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well [X] gas well [X] other

2. NAME OF OPERATOR ARCO Oil and Gas Company, Division of Atlantic Richfield Company

3. ADDRESS OF OPERATOR P.O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL (SE SW)
AT TOP PROD. INTERVAL: Approx the same
AT TOTAL DEPTH:

5. LEASE U-19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME - - - - - -

7. UNIT AGREEMENT NAME - - - - - -

8. FARM OR LEASE NAME Hole in Rock

9. WELL NO. 1

10. FIELD OR WILDCAT NAME Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA 30-22S-7W

12. COUNTY OR PARISH Millard

13. STATE Utah

14. API NO. 43-027-30019

15. ELEVATIONS (SHOW DF, KDB, AND WD) 4774' GR

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) NO setting intermediate csg.		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drld to 3332' & logged. Ran 75 jts 10-3/4", 40.5#, K-55, 8rd, ST&C csg & landed @ 3331'. Cmtd w/650 sx lite poz 50/50, 2% CaCl, 1/4#/sx D-29 foll w/300 sx Cl "B", 2% CaCl, 10#/sx D-42, 1/4#/sx D-29. Displ w/329 BW. Good returns. PD @ 1:30 am 9/26/80.

Tstd BOP to 5000# - held OK.

Drlg ahead.

RECEIVED
OCT 6 1980
DIVISION OF
OIL, GAS & MINING

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W. A. Walther, Jr. TITLE Operations Manager DATE October 3, 1980

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR ARCO Oil and Gas Company
Division of Atlantic Richfield Company

3. ADDRESS OF OPERATOR
P. O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL (SE SW)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Approx the same

5. LEASE
U-19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
---

7. UNIT AGREEMENT NAME
---

8. FARM OR LEASE NAME
Hole in Rock

9. WELL NO.
1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
30-22S-7W

12. COUNTY OR PARISH
Millard

13. STATE
Utah

14. API NO.
43-027-30019

15. ELEVATIONS (SHOW DF, KDB, AND WD)
4774' GR

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) N.O. setting production casing		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled to 10,390' & logged. Drilled to 10,990'. Ran 236 jts 7", 23# & 26#, K-55 & CY-95, LT&C & buttress casing and bottomed @ 9746'. Cemented with 20 BW followed by 300 sx 35/65 poz + 6% gel, .2% D-8, 1/4#/sx celloflake & 10#/sx kolite followed by 300 sx Class "G" cement + 3/4% D-65 with 1/4#/sx celloflake & 15#/sx kolite. P.D. @ 5:15 am 12-14-80.

Released rig @ 5:00 pm 12-14-80.

Waiting on completion.

RECEIVED
DEC 22 1980
DIVISION OF
OIL, GAS & MINING

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W A Walther Jr. W. A. Walther, Jr. TITLE Operations Manager DATE 12-18-80

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

RECEIVED
JAN 30 1981
DIVISION OF OIL, GAS & MINING

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

5. LEASE: U 19522
6. IF INDIAN, ALLOTTEE OR TRIBE NAME: ---
7. UNIT AGREEMENT NAME: ---
8. FARM OR LEASE NAME: Hole in Rock
9. WELL NO.: 1
10. FIELD OR WILDCAT NAME: Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 30-22S-7W
12. COUNTY OR PARISH: Millard
13. STATE: Utah
14. API NO.: 43-027-30019
15. ELEVATIONS (SHOW DF, KDB, AND WD): 4744' GR

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR: ARCO Oil and Gas Company
Division of Atlantic Richfield Company

3. ADDRESS OF OPERATOR: P. O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL (SE SW)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Approx the same

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) TEMPORARY ABANDON		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

APPROVED BY THE DIVISION OF OIL, GAS, AND MINING
DATE: 2-3-81
BY: M. J. Minder

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Present status: 24" casing @ 60' cement to surface; 16" casing @ 549' cement to surface with 550 sx; 10-3/4" casing @ 3331' cement with 650 sx; 7" casing @ 9746' cement with 600 sx, cement top 9640'. Squeeze @ 9605', cement top 9215'. T.D. 10,990'. Ran 6 cores and 2 DST's.

Perf'd 9619'-9638', acidized and swabbed and flowed 400 bbls water. Squeezed through retainer @ 9548' with 200 sx, 5 sx on top of retainer.

Perf'd 9381'-929', flowed approximately 20 BPH water. Squeezed off with 200 sx through retainer @ 9334'.

Perf'd 9231'-9235' flowed and swabbed 550 bbls water. Will squeeze off through retainer @ 9207' with 125 sx, 5 sx on top of retainer. (OVER)

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W A Walther Jr. W. A. Walther, Jr. TITLE Operations Manager DATE 1-27-81

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Approval for temporary abandon for 30 - 60 days, Mr. Jimmy Rafoul, U.S.G.S. and Mr. Marc Smith, ARCO Oil and Gas Company, 1-27-81.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR ARCO Oil and Gas Company
Division of Atlantic Richfield Company

3. ADDRESS OF OPERATOR
P. O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL (SE SW)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Approx the same

5. LEASE
U 19522

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
---

7. UNIT AGREEMENT NAME
---

8. FARM OR LEASE NAME
Hole in Rock

9. WELL NO.
1

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
30-22S-7W

12. COUNTY OR PARISH: Millard
13. STATE: Utah

14. API NO.
43-027-30019

15. ELEVATIONS (SHOW DF, KDB, AND WD)
4744' GR

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) MI & RU pulling unit		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Well was temporarily abandon 1-30-81. Plan to MI & RU casing pulling unit approximately 3-23-81 through 3-[illegible]. Will pull 7" casing and spot final cement plugs to P & A well.

RECEIVED
MAR 1[illegible]

DIVISION OF
OIL, GAS & MINING

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W A Walther Jr / Agt TITLE Operations Manager DATE 3-13-81
W. A. Walther, Jr.

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☐ other x
2. NAME OF OPERATOR ARCO Oil and Gas Company
Division of Atlantic Richfield Company
3. ADDRESS OF OPERATOR
P. O. Box 5540, Denver, Colorado 80217
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL (SE SW)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Approx the same

5. LEASE
U 19522
6. IF INDIAN, ALLOTTEE OR TRIBE NAME
---
7. UNIT AGREEMENT NAME
---
8. FARM OR LEASE NAME
Hole In Rock
9. WELL NO.
1
10. FIELD OR WILDCAT NAME
Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
30-22S-7W
12. COUNTY OR PARISH
Millard
13. STATE
Utah
14. API NO.
43-027-30019
15. ELEVATIONS (SHOW DF, KDB, AND WD)
4744' GL

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) MI & RU Pulling Unit		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Due to delays it is now estimated that this rig will be moved in and rigged up between 4-6-81 and 4-13-81.

RECEIVED
APR 6 1981
DIVISION OF
OIL, GAS & MINING

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W A Walther, Jr / for W. A. Walther, Jr. TITLE Operations Manager DATE 4-3-81

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

A PA

DIVISION OF OIL, GAS AND MINING

PLUGGING PROGRAM

NAME OF COMPANY: Arco P. Archey

WELL NAME: Hole In Rock #1

SECTION 30 TOWNSHIP 22S RANGE 7W COUNTY Millard

VERBAL APPROVAL GIVEN TO PLUG AND ABOVE REFERRED TO WELL IN THE FOLLOWING MANNER:

TOTAL DEPTH: 10,990'

CASING PROGRAM:

24" @ 60'

16" @ 549'

10 3/4" @ 3331'

7" @ 9746' TOC 9215'

FORMATION TOPS:

Quarternary surface

Mid Moicene Salt Lake- 3000'

Paleozoic- 10,000'

Perfs:
9619-38' (400BW)
9381-929' (20 BPH)
9231-35' (550 BW)

PLUGS SET AS FOLLOWS:

Prior Plugs:
a) Set retainer at 9548'& squeeze 200 sx
b) Set retainer at 9334' & squeeze 200 sx
c) Set retainer at 9207' & squeeze 150 sx

1) Shoot off 7" casing at 8500', spot 150 sx plug at 8300'
2) 7100' spot 150 sx plug
3) 5800' spot 150 sx plug
4) 3400' spot 180 sx plug
5) 1500' spot 50 sx plug
6) Set CIBP @ 800 cement to surface

Place 9.2# fresh water gel based abandonm mud between plugs; clean, restore and reg site, erect regulation dryhole marker.

DATE 5-4-81 SIGNED MTM

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☐ other x
2. NAME OF OPERATOR ARCO Oil and Gas Company
Division of Atlantic Richfield Company
3. ADDRESS OF OPERATOR
P. O. Box 5540, Denver, Colorado 80217
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 500' FSL & 2035' FWL SE SW
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-19522
6. IF INDIAN, ALLOTTEE OR TRIBE NAME
---
7. UNIT AGREEMENT NAME
---
8. FARM OR LEASE NAME
Hole In Rock
9. WELL NO.
1
10. FIELD OR WILDCAT NAME
Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
30-22S-7W
12. COUNTY OR PARISH
Millard
13. STATE
Utah
14. API NO.
43-027-30019
15. ELEVATIONS (SHOW DF, KDB, AND WD)
4774' GL

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☒
(other)		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

RECEIVED
MAY 21 1981
DIVISION OF
OIL, GAS & MINING

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

MI & RU Pulling Unit. Free point @ 7800'. Shoot off casing @ 7800'. Pulled 6 jts. Began circulating and reciprocating. Prep to cement when swedge blew apart. Pulled 5 jts. Cemented with 150 sx cement; tired to pump, but couldn't. Pulled 9 more jts when chain and sprocket broke on 6-plex hydraulic pump. Press csg & blew swedge out. Pumped on plugged casing. Found depth of plug @ 4849'; ran small shot in csg. Resumed pulling csg. Casing parted at point where shot was made. Recov'd 149 jts. Estimate 47-2/3 jts (1890') dropped off. Ran 1 jt and rehung and welded cap on top. RD. RU Service Unit. GIH and tag top of casing. Circulate down tbg. Pumped 250 sx cement plug @ 4575'-3320'*; pumped
(OVER)

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED W A Walther Jr. TITLE Operations Manager DATE 5-19-81
W. A. Walther, Jr.

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Instructions

General: This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated, on Federal and Indian lands pursuant to applicable Federal law and regulations, and, if approved or accepted by any State, on all lands in such State, pursuant to applicable State law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 17: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by local Federal and/or State offices. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well; and date well site conditioned for final inspection looking to approval of the abandonment.

200 sx cement plug @ 3233'-2793'; set CIBP @ 800'; set 25 sx cement surface plug 61'-surface.

Release Service Unit.

Well P & A 5-14-81.

Location will be seeded.

Pit will be pumped and filled.

*Oral approval to change plugging program, put 250 sx cement plug on top of fish, per conservation with A. Raffoul, U.S.G.S., and Pat Archey, ARCO, 2:00 pm 5-4-81.

☆GPO 1979—680-655/684

ARCO Oil and Gas Company
Western Distr
717 - 17th Street
Mailing address: P.O. Box 5540
Denver, Colorado 80217
Telephone 303 575 7031

W. A. Walther, Jr.
Operations Manager

May 20, 1981

Mr. Edgar Guynn
United States Geological Survey
1745 W. 1700 S
Ste 2000
Salt Lake City, Utah 84104

Re: Hole In Rock #1
SE SW Section 30-22S-7W
Millard County, Utah
Federal Lease #U-19522

Dear Mr. Guynn:

Enclosed please find the Well Completion Report, Form 9-330, on the above referenced well. The final prints of logs on this well have not been run. These will be forwarded to your office when received.

Thank you.

Very truly yours,

K L Flinn

K. L. Flinn
Operations Information Assistant

Encl.

cc: Utah Division of Oil, Gas & Mining

RECEIVED
MAY 22 1981
DIVISION OF
OIL, GAS & MINING

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE (See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

2. NAME OF OPERATOR: ARCO Oil and Gas Company
Division of Atlantic Richfield Company

3. ADDRESS OF OPERATOR: P. O. Box 5540, Denver, Colorado 80217

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 500' FSL & 2035' FWL SE SW
At top prod. interval reported below: Approx the same
At total depth: API #43-027-30019

5. LEASE DESIGNATION AND SERIAL NO.: U 19522
6. IF INDIAN, ALLOTTEE OR TRIBE NAME: ---
7. UNIT AGREEMENT NAME: ---
8. FARM OR LEASE NAME: Hole in Rock
9. WELL NO.: 1
10. FIELD AND POOL, OR WILDCAT: Wildcat
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: 30-22S-7W
12. COUNTY OR PARISH: Millard
13. STATE: Utah

RECEIVED MAY 22 1981 DIVISION OF OIL, GAS & MINING

14. PERMIT NO.: Mr. Henricks
DATE ISSUED: 8-27-80

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
9-15-80	12-2-80	P & A 5-14-81	4774'GL 4805' KB	---

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,990'	9707' P & A	P & A	→	0-10,990'	---

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
PLUGGED AND ABANDONDED

25. WAS DIRECTIONAL SURVEY MADE: NO

26. TYPE ELECTRIC AND OTHER LOGS RUN
DIL-GR FIL BHC-GR DLL-GR FDC/CNL-GR VDL/AMP/MF

27. WAS WELL CORED: YES

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
24"		60'		CONDUCTOR	
16"	75#	549'	20"	550 sx	NONE
10-3/4"	40.5#	3331'	13-3/4"	950 sx	NONE
7"	23# & 26#	9746'	9-7/8"	600 sx	

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
P & A				

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
	P & A	

31. PERFORATION RECORD (*Interval, size and number*)

9605' 4 holes squeeze
9619'-9638' 2 JSPF
9381'-9429' 2 JSPF
9231'-9235' 2 JSPF

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
9605'	200 sx Cl "H" w/.7% Halad - squeeze
9605'	150 sx Cl "H" w/.7% Halad
9619'-9638'	1000 gals 7½% MSR & 50 ball sealers
9548'	200 sx Cl "H" w/.7% Halad - squeeze

33.* PRODUCTION (OVER)

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
P & A	---	---

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
---	---	---	→	---	---	---	---

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
---	---	→		DRY HOLE		---

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*): ---

TEST WITNESSED BY: ---

35. LIST OF ATTACHMENTS
2 of #26 above and Daily Well History

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED W A Walther, Jr. / by W. A. Walther, Jr. TITLE Operations Manager DATE 5-19-81

*(See Instructions and Spaces for Additional Data on Reverse Side)

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.
If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.
Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.
Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.
Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.
Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.
Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES:
SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
SEE ATTACHED			

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

9334'	200 sx Cl "H"	w/.7% Halad - squeeze
9205'	125 sx Cl "H"	w/.7% Halad - squeeze

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Miocene	1730'	
Oligocene	7200'	
Paleogosi	9200'	
Pliocene-Pliostocene	0-1700'	
Miocene	1700'-7000'	
Oligocene	7000'-7480'	
Lower Teritary	7480'-9100'	
Paleogozi - Carbonates	9100'-TD	

U.S. GOVERNMENT PRINTING OFFICE: 1963—O-683636

HOLE IN ROCK #1
SE SW Section 30-22S-7W
Millard County, Utah

DST #1	9,395'- 9,482'	Tool stuck, test failed
DST #2	10,310'- 10,390'	Rec 7635' wtr 25,000 ppm CL No wtr cushion IMP 4965; IF 231-1446; ISI 4432; FF 1630-4467; FM 5235

CORE #1	5,902'- 5,929'	Cut 27'	Rec 26' ?
CORE #2	9,152'- 9,171'	Cut 19'	Rec 19' Limestone
CORE #3	9,505'- 9,513'	Cut 8'	Rec 6' Dolomite
CORE #4	9,513'- 9,534'	Cut 21'	Rec 11' Dolomite
CORE #5	10,314'- 10,346'	Cut 32'	Rec 6' Dolomite
CORE #6	10,348'- 10,378'	Cut 30'	Rec 30' Dolomite

9619'-9638'	Squeezed with 200 sx cement through retainer @ 9548'
9381'-9429'	Squeezed with 200 sx cement through retainer @ 9334'
9231'-9235'	Squeezed with 125 sx cement through retainer @ 9207'
4575'-3320'	250 sx cement
3233'-2793'	200 sx cement
800'	CIBP
61'-surface	25 sx cement

HOLE IN ROCK #1
SE SW Section 30-2_ /W
Millard County, Utah

9/16/80	110	Day-1, Ftg-110. Drlg. Mud: 8.5#, vis 39, WL 16. Fin RU. Spud 8 pm 9/15/80. Lost returns @ 90'. WO LCM. Mixed LCM @ 15#/bbl. Regained circ. Drlg & PU BHA.
9/17/80	560	Day-2, Ftg-450. Rm'g @ 260'. Mud: 8.6#, vis 45, WL 31. Drld to 560' w/ 13-3/4" bit. TOH. LD hvy wt & BHA. PU 20" hole opnr. Rm'd 20" hole to 260'. 3/4° @ 208', 1° @ 560'.
9/18/80	560	Day-3, Ftg-Rmd 300'. WOC. Mud: 8.7#, vis 40, WL 16.8. Fin rmg 13-3/4" to 20". Circ. POH. RU & run 18 jts 16" 75# K-55 8rd ST&C csg & set @ 549'KB (18 jts 549.49', GS 1.17', FC 1.63' = total 552.29'). Cmtd by Hallib w/550 sx Type II cmt w/2% CaCl, 3% salt & 1/4# Flocele/sx. PD @ 12 MN. WOC. Cmtd landing jt in 24" conductor pipe w/flash set & hvy contaminated mud - couldn't drain & flush conductor & flw line. Cut off conductor & NU.
9/19/80	560	Day-4, Ftg-0. NU flw line. Mud: 8.6#, vis 38, WL 15.2. ND 24" flw nple & flw line. Cut off 16" landing jt & instl'd 16" 3000# csg hd. WO 16" hydril & mud cross spool f/13 hrs. NU hydril. Built 16" flw nple & NU flw line.
9/20/80	887	Day-5, Ftg-327. Drlg 13-3/4" hole. Mud: 8.6#, vis 43, WL 13.4. Fin'd NU wellhead, hydril & flwline. RIH w/rerun bit. Drld FC, shoe jt & GS. Begin drlg fm @ 4:30 pm 9/19/80.
9/21/80	1367	Day-6, Ftg-480. Drlg 13-3/4" hole. Mud: 8.6#, vis 30, WL 14.2. Drlg 13-3/8" hole w/both pmps on hole; however 1 pmp dn @ rpt time. Bit balling up quite frequently, requiring to pull up & pmp off build up. 1/4° @ 1026'.
9/22/80	2400	Day-7, Ftg-1033. Circ, WO Schl. Mud: 8.7#, vis 36, WL 15.6.
9/23/80	3020	Day-8, Ftg-620. Drlg. Mud: 9#, vis 46, WL 17.1. Circ & WO Schl, chg in orders. Resumed drlg @ 2400' @ 10 am. Cont'd w/ 1/2-1 min/ft drlg to 2647'; slowed to 10-20 min/ft to 2664'; resumed fast penetration (chg in fm). Still Sh. Mud fluffy f/entrained air combating w/1" stream wtr & phos. 1-3/4° @ 2729
9/24/80	3332	Day-8, Ftg-312. Circl & cond mud. Mud 9#, Vis 34, WL 19.4. Drld to 3300', Circl & cond hole f/Schlum. POH. Strapped out. Tite plg out. Steel line meas 3332' - off 1 jt in pipe tally. LD rmrs & BHA. RU Schl & attptd to log. RIH. Wshd & CO bridges f/1800-2900'. Circl & cond mud. 1-1/2° @ 3156 & 3332'.
9/25/80	3332	Day-10, Ftg-0. Logging. Mud: 9.4#, vis 33, WL 31. Unplugged flwline. Circ & cond hole. Trt out Ca. Made short trip 16 stds. RIH & circ hole clean. Weld brake flange leaks. POH & RU Schl. Ran DIL, dipmeter, dens & sonic logs. LTD 3306', BHT 117°.
9/26/80	3332	Day-11, Ftg-0. NU BOPs. RD Schl. TIH. Circ & cond hole. Short trip 5 stds. Circ & WO Dowell. TOH. LD 9" DC. RU to case. Ran 75 jts 10-3/4" 40.5# K-55 8rd ST&C, GS, Diff fill FC & 6 cntrlzrs (3335.10'), landed @ 3331'KB. Cmtd w/650 sx Lite Poz 50/50, 2% CaCl, 1/4# D-29/sx; foll w/300 sx Cl "B", 2% CaCl, 10# D-42/sx, 1/4# D-29/sx. Displ'd w/329 BW (3 bbls over). Did not bmp plug. Bled back 1 bbl. Flt held. Gd returns thruout job. No cmt to surf. PD 1:30 am 9/26/80. FC @ 3286'.

9/27/80	3332	Day-12, Ftg-0. Tstg BOP stack. NU & WO tstr & press tst stack. Tst rams & chk manifold to 5000 psi, upper & lower kelly cock to 5000 psi, Hydril to 2500 psi.
9/28/80	3416	Day-13, Ftg-84. Drlg. Mud: 8.3+, vis 27, WL-NC. Fin tst BOP stack, RU & PU DC. RU HOWCO & press 10-3/4" csg to 500 psi & press 10-3/4 x 16" annulus to 600 psi for 10 min. No leak off. RD HOWCO. PU DC & DP rubber every other jt. Drld FC & shoe. Start drlg new hole 4:00 am. Top cmt 3250' - FC @ 3286' - Shoe @ 3331'.
9/29/80	3965	Day-14, Ftg-549. Survey. Mud: 9.6, vis 34, WL-NC. Drlg. TOH to PU stabilizers. TIH w/bit #4. Drlg. Repair. Drlg. Survey. Drlg. Survey. Slow pmp rate 32 SPM @ 500#. Desander underflow 11.2#/gal. Desilter underflow 10.5#/gal. 1-1/2° @ 3639', 1-3/4° @ 3912'.
9/30/80	4478	Day-15, Ftg-513. Drlg. Mud: 9.8, vis 33, WL-NC. Slow rate pmp press = 500 psi @ 32. Drld. Surveyed. Drld. Surveyed. Drld. Repair. Drld. 1-3/4° @ 3912'. 2-1/4° @ 4387'.
10/1/80	4758	Day-16, Ftg-280. Drlg. Mud: 9.8, vis 33, WL-NC. Drld - rig service - drld - rig service - drld - TOH - repair - set wear bushing - TIH - drld. Steel line meas +19' corrected.
10/2/80	5092	Day-17, Ftg-334. Drlg. Mud: 9.9, vis 35, WL-NC. 2-1/2° @ 4729', 1-3/4° @ 5092'.
10/3/80	5367	Day-18, Ftg-275. Drlg. Mud: 9.8#, vis 33, WL 21.4.
10/4/80	5464	Day-19, Ftg-97. Prep to TIH after BHA stabilizer arrive. Circ'd samples. Drld to 5464' & pld up to make conn & bit stuck 40' off btm. Mixed 100 gals Milfree in 50 bbls diesel & pmpd around DCs (40 bbls outside DCs & 10 bbls inside). Moved diesel 1/2 bbl every hr. After a total of 3-3/4 hrs, pipe came free. TOH. LD 11 DCs. Will PU stabilizers & 15 jts 5" HWDP f/drlg BHA w/15 jts more HWDP ordered. Prior to pipe differential sticking, mud chlorides incr'd f/94M ppm to 120M ppm. Will add 8-10% diesel to mud system & wtr to reduce dissolved solids mud wt.
10/5/80	5592	Day-20, Ftg-128. Drlg. Mud: 9.7#, vis 36, WL 19.2. Mixed diesel in surf mud system while WO stabilization equip 8-1/2 hrs. PU BHA & TIH. Had to wsh 50' to btm. Begin drlg ahead w/ stabilized BHA & 8% diesel in mud.
10/6/80	5865	Day-21, Ftg-273. Drlg. Mud: 9.7#, vis 36, WL 16.5. 1-2 units BGG. Will try to core today.
10/7/80	5916	Day-22, Ftg-51. Coring. Mud: 9.7#, vis 37, WL 9.8. Drld. Circ to core. Trip out f/CB. SLM - no correction. PU CB. TIH & coring. Desander under flw 11.6#/gal. 3/4° @ 5902'.
10/8/80	5974	Day-23, Ftg-58. Drlg. Mud: 9.5#, vis 38, WL 9.1. Coring. TOH w/core. LD core, LD CB. PU BHA. TIH. Drlg. BGG 1 unit. Trip gas 4 units. Core #1, 5902-5929', cut 27', rec'd 26'.
10/9/80	6210	Day-24, Ftg-236. Drlg. Mud: 9.5, vis 36, WL 18.8 Drld, circl samples @ 6156' NS. Cont Drlg.

10/10/80	6437	Day-25, Ftg-227. Drlg. Mud: 9.4, vis 34, WL 34. Drld. Worked on SCR panel & drld. BGG 1-3 units.
10/11/80	6760	Day-26, Ftg-323. Drlg. Mud: 9.4, vis 36, WL 14.2. Drlg & circ, drlg brk, spls 6541' - NS - drlg, repairs, & drlg.
10/12/80	6858	Day-27, Ftg-98. GIH & inspect HWDP. Mud: 9.5#, vis 35, WL 17.7. Drld to 6858', lost 600# press. POH - vy tite to btm of csg. Found wshout in HWDP 2 stds above DC - crack in box. Bud's DC Serv inspected BHA & HWDP. Laid out 1 more jt hvy wt w/sli crack. Now GIH.
10/13/80	6968	Day-28, Ftg-110. Working on SCR units. Mud: 9.5#, vis 36, WL 17.8. Parts for SCR units due @ rig this pm. Fm: clay, sd & silt stone , w/ tr of Dolo. At 6858' had 60' of fill; wsh'd last 4 jts f/safety. 1-1/4° @ 6853'.
10/14/80	7016	Day-29, Ftg-48. Drlg. Mud: 9.6#, vis 34, WL 12. 16 hrs repair SCR system while waiting up in csg. Wsh 60' to btm on TIH & had no fill up. 8 unit trip gas, 3 unit BGG. Drlg ahead.
10/15/80	7269	Day-30, Ftg-253. Drlg. Mud: 9.3#, vis 36, WL 12.4. 1 - 3 units BGG, 6 - 8 unit connection gas. Drlg ahead.
10/16/80	7449	Day-31, Ftg-180. Drlg. Mud: 9.2+#, vis 38, WL 11.6. SCR system reparis, mud line broke. BGG 2-4 units, Conn. gas 6-8 units.
10/17/80	7558	Day-32, Ftg-109. Drlg. Mud: 9.4#, vis 37, WL 9.4. BGG 2 units, Conn gas 6-8 units, 30 units on trip @ 7449' f/1 min or so. Lost 600 psi. Chk all surf equip to locate. Will POH f/wsh out. 1/2° @ 7449'.
10/18/80	7662	Day-33, Ftg-104. Drlg. Mud: 9.3#, vis 37, WL 11.5. POH @ 7558' & located wshout 5 jts above DC in HWDP 1" horiz cut x 1/4" wide in box @ btm thread thru side. Fin POH, chg'd jars, chk'd bit & WIH. Wsh'd 60' to btm f/safety - no fill. BGG 2 units, Conn gas 6 units, Trip gas 8 units.
10/19/80	7917	Day-34, Ftg-255. Drlg. Mud: 9.3#, vis 35, WL 9.8. BGG 2 units, Conn 4-8 units. Drlg 6-7 min/ft.
10/20/80	8085	Day-35, Ftg-168. Drlg. Mud: 9.2#, vis 36, WL 10.4. Drld, rig service & drld.
10/21/80	8132	Day-36, Ftg-47. Drlg. Mud: 9.3#, vis 36, WL 9.8. Drld. TOH. Rig service. Chg out 24 jts HWDP. Chg rubbers on NRS. TIH. Wsh to btm. Drld. 5-1/2° @ 8129'.
10/22/80	8237	Day-37, Ftg-105. Drlg. Mud: 9.2#, vis 35, WL 9.1. Drld, rig service, drld. BGG 2 units.
10/23/80	8360	Day-38, Ftg-123. Re-circl & trip for bit. Drld, Survey, Drld, circulate. MW 9.2,Vis 36, WL 13.8.
10/24/80	8400	Day-39, Ftg-40. Drlg. MW: 9.3, Vis 36, WL 14.6 BGG - 2 units.

10/25/80	8548	Day-40, Ftg-148. Drlg. Mud: 8.9#, vis 35, WL 16.4. Circ samples @ 8461'; no shows, no gas. Drlg mud chlorides increase was due to drlg some thin anhyrite stringers. BGG 2 units. 6-1/4° @ 8432'.
10/26/80	8664	Day-41, Ftg-116. Drlg. Mud: 9.4#, vis 38, WL 13.2. BGG 2 units w/1 unit incr @ 8600'.
10/27/80	8764	Day-42, Ftg-100. Drlg. Mud: 9.3#, vis 38, WL 11.2. BGG 2 units. 5-3/4° @ 8620'.
10/28/80	8924	Day-43, Ftg-160. Drlg. Mud: 9.0#, vis 37, WL 10.8. BGG 3 units. 5-1/4° @ 8796'.
10/29/80	8934	Day-44, Ftg-10. Drlg. Mud: 9.3#, vis 39, WL 11.4. Tite hole f/5660-4600'. Wsh out bridge on trip in @ 5060-5120'. Took 1-1/2 hr to pull wear ring. Wsh to btm 98' f/ 8827-8925'. Chg'd out 3 rubber sleeves on NRS. Had SLM w/no correction. 4° @ 8925'.
10/30/80	9109	Day-45, Ftg-175. Drlg. Mud: 9.1#, vis 39, WL 11.4. BGG 1-2 units. Drlg break @ aprox 9118'.
10/31/80	9152	Day-46, Ftg-43. Clean btm, prep to Core #2. Mud: 9.3#, vis 41, WL 12.3. BGG 1-2 units. Wshd 75' to btm. 3° @ 9152'.
11/1/80	9171	Day-47, Ftg-19. Trip in w/bit. Mud: 9.4#, vis 40, WL 11.8. Cut Core #2, 9152-9171', cut 19', rec'd 19'. CB jammed. Drk grey limestone w/black streaks; fractures @ btm.
11/2/80	9214	Day-48, Ftg-43. Rng logs. Mud: 9.3#, vis 43, WL 10.4. Fin in hole w/bit. Rm'd 20' core hole or fill to btm & resumed drlg. Drld to 9225' DM. Core & cond hole & MOH, corrected to 9214'. RU Schl & strtd logging, WLTD 9215'. Rng DLL.
11/3/80	9286	Day-49, Ftg-72. Drlg. Mud: 9.3#, vis 44, WL 10.1. Ran DLL w/MSFL @ 9214', Loggers TD 9215'. Ran Borehole comp sonic GR w/caliper @ 9214'. Ran FDC/CNL @ 9214'. Trip gas 10 units, BGG 2 units. Had boiler f/24 hrs.
11/4/80	9482	Day-50, Ftg-196. TOH f/core bbl. Mud: 9.3#, vis 43, WL 14.4. At 9407' lost 110 bbls. Total mud lost of 300 bbls thru seepage thru suction. Never lost full returns. Circ samples @ 9343'. Drlg brk went f/6 min/ft to 2"/min. Circ btm samples @ 9482'. No show in cutting. Tr oil & phlos in mud. BGG 1-2 units incr'd to 5 units thru section. On C-1, 10 units up to 22 units incr. Drlg in limestone dolo w/abundant calcite filled fracs. Had boiler f/24 hrs.
11/5/80	9482	Day-51, Ftg-0. TIH f/DST #1. Mud: 9.2#, vis 42, WL 9.7. DST #1 tst zone 9395-9482' (87'). POH w/B#14, PU CB. RIH w/CB to 4000' & TOH chg of orders. Stnd back CB. RIH to 3300'. Incr mud volume & WO tstr. TOH. PU tst tools. WO chg over sub. TIH w/tst tool. So far hole in gd shape. Had boiler f/24 hrs. 2-3/4° @ 9482'.

11/6/80	9482	Day-52, Ftg-0. GIW w/free pt indicator. Mud: 9.2#, vis 43, WL 10.2. TIH w/tst tool & tst f/4 hrs. Had 10 min Initial Opn, 30 min SI, 120 min opn f/FF, 60 min FSI. Tool prepare to opn 1/4" blw. Cont to tst, blw died in 10 mins. Tried to pull tool loose, no jar action, stuck. Worked stuck tool. Dropped bar & sheared rev sub. Tried to equalize annulus. No rev. didn't go. PU Kelly & circ thru rev sub @ 9230'. Circ & work pipe. RU to free pt indicator.
11/7/80	9482	Day-53, Ftg-0. Jarring on fish (top of fish 9198'). Mud: 9#, vis 47, WL 26. RU McCullough free pt, found 3 DCs free. Backed off 5 DCs above tool. Rec'd 2 - 7" DCs. Required 2 - 700 grain shots w/5-3/4 round rev torque. Backed off DCs 2 dn; tite, circ & work free. TOH. PU 4 DCs & fshg tools. Cut drlg line. TIH. Circ & screw into fish. Jarring on fish w/120M# above string wt - up 325M#.
11/8/80	9482	Day-54, Ftg-0. Fishing - Disp; mud in annulus to reduce hydrostatic. Mud: 9.3#, vis 72, WL 6.4. Circ & cond mud & jarred on fish 5 hrs w/o success. Cont'd circ & cond mud & jarring on fish 18 hrs while WO nitrogen truck f/Farmington. Hooked up nitrogen lines & displ'g 129BM f/annulus so as to reduce hydrostatic mud wt (should lower mud level in hole to 1300' & reduce btm hole press by 625#).
11/9/80	9482	Day-55, Ftg-0. Circ @ top of fish @ 9230'. Mud: 9.3#, vis 63, WL 6. Jarred on fish 1 hr after reducing hydrostatic w/N2. Ran free pt - would go below 9240'. Ran WL sinker bar & jars & went to 9345'. Ran back off shot & backed off @ the free DC just above circ'g sub. Chained out & SLM out of hole & LD 1 - 7" DC rec'd. PU shoe & 3 jts 9" wsh over pipe. Had 3-1/2 hrs running in hole w/wsh over pipe to top of fish. Circ'd to clean hole before strt'g to wsh over the 3 DCs above DST pker. DST pkr @ 9395'.
11/10/80	9482	Day-56, Ftg-0. TOH w/wsh pipe. Mud: 9.4#, vis 50, WL 6.6. Circ 2 hrs btms up before strtg to wsh over. Wsh over 7" DC 9230-9332' in 15 hrs. Circ btms up while over fish 2 hrs. Spt 25 bbls Black Magic pill around fish. TOH w/53 stds. Hit tite hole @ 4600'. Trip took 1-1/2 hrs to pull stds. Circ & work tite pipe. Clean hole @ 4600'. TOH. Last 12 fish of wsh over went real easy, seemed to be free. Hole sloughing @ 4600'. (Chloride in mud up - probably due to lowering hydrostatic w/nitrogen.)
11/11/80	9482	Day-57, Ftg-0. Prep to GIH w/bit & clrs. Mud: 9.4#, vis 55, WL 6.6. POH w/wsh pipe. WIH w/fshg assmbly. Circ & screwed into fish @ 9230'. Jarred & came free. POH w/fish. LD fshg tools. Brk dn & loaded out tst tools. Began PU BHA.
11/12/80	9505 (corr'd)	Day-58, Ftg-0. TIH w/CB. Mud: 9.5#, vis 52, WL 6. PU BHA. TIH. Wsh 9260-9482'. Chase pkr rubber dn hole f/9260-9482' & drlg up same. TOH & SLM & set BHA. Clean out rubber f/flw line. PU CB & TIH. SLM 23' correction; 3 straps & corr'd depth to 9505'.
11/13/80	9513	Day-59, Ftg-8. Magnaflux drill collars. Mud: 9.4#, Vis 51, WL 6.2. TIH w/CB. Wsh 60' to btm; circl btm clean; no fill. Core #3. Unbolt & clean out stabilizer rubber in flow line. Core jammed, had to pull. Circl & pump pill. TOH. Tite hole @ 8500'. Wash thru packer rubber probably. Extract core, recov'd 6'. Service barrel & stand back. Worked BOP. Inspect drill collar & service BHA. Core #3 f/9505-9513'. Had 6' recovery, dolomite mostly, highly fractured, no shows.

11/14/80	9513	Day-60, Ftg-0. TIH f/Core #4. Mud: 9.4#, vis 49, WL 5.8. Inspect DC, saver sub, safety valve on Kelly. TIH w/bit to CO rubber & core. Wsh to btm, no fill, Circ'd. Short trip to 15 stds. Circ'd. TOH. Repair master drive chain on drawworks. PU CB & TIH.
11/15/80	9534	Day-61, Ftg-21. GIH w/bit. Mud: 9.4#, vis 39, WL 5.4. WIH w/CB. Core #4, 9513-9534 (21'). POH w/11' fractured Dolo - no show. WIH w/drlg assembly.
11/16/80	9623	Day-62, Ftg-89. Drlg grey Dolo. Mud: 9.1#, vis 44, WL 6.7. WIH w/new bit. Wshd & rmd core hole. Drld to 9614' & lost full returns. Sptd LCM pill. PU to 7300'. Cont'd mixing LCM. Regained returns @ 7300'. WIH to 8500' & circ'd. WIH to 9500' & wshd to btm. Total mud loss 450 bbls. Resumed drlg w/full returns.
11/17/80	9835	Day-63, Ftg-212. Drlg - dolo w/fractures. Mud: 9.4#, vis 43, WL 6. Sli mud loss thru seepage - 90 bbls/24 hrs. Hole in gd shape, no sloughing. Shaker by-passed. Samples gd.
11/18/80	10,028	Day-64, Ftg-193. Drlg. Mud: 9.4#, vis 44, WL 5.7. 1 unit BGG - no shows. No mud loss. Samples gd. No hole problems.
11/19/80	10,207	Day-65, Ftg-179. Drlg Dolo. Mud: 9.4#, vis 46, WL 6. 1 unit BGG. Samples gd - no hole problems.
11/20/80	10,207	Day-66, Ftg-57. Drlg Dolo. Mud: 9.4#, vis 43, WL 6.8 No tite hole on trip. LD 21 jts test pipe. PU 21 jts "E" pipe. Had bridge @ 10,100'. Drl out & wsh to btm, 20' fill. Had 200 bbls mud loss down hole on trip. No gas, no show. 2-3/4° @ 10,210.
11/21/80	10,315	Day-67. Ftg-51. Coring Core #5 @ 10,314'. Mud: 9.4#, vis 45, WL 8.8 Drld. Circ f/core. Made 10 std short trip. Circ. TOH. PU CB & chg inter-barrel bearing. TIH slow. Wsh 32' & circ to btm. Core, no tite hole. Had SLM 6' dn hole, not corr'd. Had must loss on trip dn hole - 150 bbls.
11/22/80	10,346	Day-68, Ftg-31. LD core #5. MW: 9.3#, Vis 49, WL 7.4. Fin cut core #5 10,314 - 10,346'. Cut 32, rec 6'. Torqued up. Inner bbl bearing went out & locked up. Had slight mud loss while coring. Rec 6' high fractured dolomite - gray w/dark spots, microxtn - no show.
11/23/80	10,348	Day-69, Ftg-2. Trip w/core bbl. MW: 9.4, Vis 49, WL 7.8. WIH w/9-7/8" bit & went to bottom w/no problem. No fill on bottom. Drld 2' & POH. PU Christensen core bbl. Now GIH for Core #6.
11/24/80	10,378	Day-70, Ftg-30. TOH w/core #6. MU: 9.2#, Vis 48, WL 6.2. TIH w/core #6. Circl & wsh 40' to btm & clean btm. Cutting core #6. TOH Some tite hole @ 8500' w/core barrel only. Built 250 bbl mud volume while coring. Core #6 f/1038-10378'. Recov'd 30' dolomite.

11/25/80	10,378	Day-71, Ftg-0. Rig to log. MU: 9.2#, Vis 49, WL 6.4. Extract core #6 & LD barrel. Service rig. TIH w/bit. Wsh & ream 60' to btm, no fill. Circlg. Short trip, 30 stds. Circlg for logs. TOH. SLM RU Schlumberger. Hole good on trips. No tite hole on bridges. SLM 10,390'. KB elev 4805'. GL elev corrected to 4774'.
11/26/80	10,390	Day-72, Ftg-0. Logging - loggers depth 10,375'. MW: 9.2, Vis 51, WL 6. Ran Dual laterlog, MSFL 9200' - TD. Ran FDC/CNL 9200' - TD. Ran BHC Sonic 9200' - TD. Ran Dipmeter 3300' - TD. Ran Frac log 9000' - TD. Ran Variable Density Waveform 9000' - TD. GIH w/Velocity log. Hole taking mud @ rate of about 15 bbl/hr. Mix mud to retain volume.
11/27/80	10,390	Day-73, Ftg-0. TIH f/DST #2 (10,310-10,390'). Mud: 9.2#, vis 49, WL 5.7. Had 7 hrs fin'g rng velocity log. TIH & circ & cond mud. TOH w/hole in gd shape. Made up Johnson tools f/DST #2. Will run 10" - 30" - 120" - 60" periods. Should have tool on btm about 1 pm today. BHC in tool is 1/2".
11/28/80	10,390	Day-74, Ftg-0. PU drlg assembly. Mud: 9.2#, vis 49, WL 5.7. Cut drlg line. WIH w/tst tools. Tool opn 1:30 pm w/wk to incr'g blw. After 10 min flw period, SI 30 min. Opnd tool w/strong blw bld'g to 1.5 psi in 15 min. Well dead in 52 min. Took 1 hr FSI. Worked pkr free in 1 hr. POH & rec'd 10, 156' total fld. Had 900' MCW, 1620' lite muddy wtr, 7636' wtr. chlorides 25M ppm, 1.3 Resistivity @ 60°, BHT 240°F. No wtr cushion, IMP 4965#, IF 231-1446#, ISI 4432#, FF 1630-4467#, FM 5235#. Sampler had 180 cc wtr w/vy sli oil cut.
11/29/80	10,484	Day-75, Ftg-94. Drlg Dolo. Mud: 9.1#, vis 44, WL 7.4. WIH to 3200' & incr'd mud vol, adding LCM to system. WIH to 10,270'. Wshd to btm @ 10,390' losing 10% returns. Drld to 10,458', lost 50% returns. (120 bbls in 1 hr). Resumed drlg w/full returns.
11/30/80	10,717	Day-76, Ftg-233. Drlg Dolo. Mud: 9.2#, vis 48, WL 5-8. Drld f/24 hrs w/no mud loss.
12/1/80	10,940	Day-77, Ftg-223. Drlg Dolo. Mud: 9.1#, vis 48, WL 5.4. Hole gd - no problems. Mud loss in 24 hrs - 80 bbls. BGG 2 units.
12/2/80	10,990	Day-78, Ftg-50. Drlg out (pipes tite). Mud: 9.1#, vis 68, WL 5.1. Tite place f/4337-4347' (90'). Able to rotate upward f/60'; last 30' could only gain 1" upward ea time pull up & rotate. 6 hr working last 30' out.
12/3/80	10,990	Day-79. Ftg-0. Rmg w/rmr. Mud: 9.3#, vis 65, WL 5.9. Drlg out & work pipe - made 3'. Bit depth 4244'. PU Grant string rmr w/sharp cutters. TIH to 3749'. Got tite. Rm'd f/3749-4097' (348'). Hvy cuttings coming bk - 40% silt, remainder Dolo, sd, etc. Also long strips of rubber f/stabilizer. Will cont to rm until free f/tite spt.
12/4/80	10,990	Day-80, Ftg-0. Rmg on bridge. Mud: 9.3+", vis 68, WL 6.2. Rm'd w/string rmr f/4097-4347' (250'). TOH. LD part of BHA. TIH @ 8452'. Drld on bridge. 2-1/2° @ 10,990'.

12/5/80	10,990	Day-81, Ftg-0. TOH. Mud: 9.4#, vis 63, WL 6.2. Rmg 8452-9078' (626'). Lost returns @ 9078'. Worked out 60' of pipe. Rec'd returns. Circ & cond mud. Work tite pipe free. TOH. Pipe tite 9078-8859' (219'). Samples returned 80% Wall Cake, 20% Sh. Fld lost in last 24 hrs - 350 bbls.
12/6/80	10,990	Day-82, Ftg-0. Bldg vol. Mud: 8.8#, vis 38, WL 6.8. POH. WIH & rmd 9270-9848' (614'). Lost returns. Pld 10 stds & sptd 50 bbl LCM pill @ 9040'. Pld 3 stds & sptd another 50 bbl pill. Blt vol & sptd 2 more pills. Pld up to 8439'. (Total mud lost 760 bbls).
12/7/80	10,990	Day-83, Ftg-0. Circ'g & mixing LCM. Mud: 8.7#, vis 64, WL 6.8. Incr'd mud vol & pmpd 230 bbls @ 4670'. Pmpd in 300 bbls in annulus, but unable to fill hole. POH & cut drlg line. Blt 1000 bbls mud vol. WIH to 7252' & pmpd in DP. Rec'd partial returns. Now pmpg w/gd returns, losing about 16 BPH.
12/8/80	10,990	Day-84, Ftg-0. Bldg mud vol w/bit in csg. Mud: 10, vis 31, WL 18.4. Circ & cond mud. TI to 8769', mixed LCM & circ'd. Fin in hole to 9427' w/no problems. Rmd tite spt 9427-9553'. Lost returns. POH 9238'. Mixed vis & LCM pill 85 bbls - vis 70, LCM 50%. WIH to 9543' & sptd pill. POH to 8613' & blt vol. Circ & cond mud & mud properties chg'd. POH to csg shoe. Cleaned pits & bldg vol. Total loss in 24 hrs = 700 bbls.
12/9/80	10,990	Day-85, Ftg-0. Bldg vol. Mud: 9.2#, vis 56, WL 33.8. Bld vol & cond mud. TOH. LD part of BHA. TIH. Bridge @ 8618'. Circ to equalize U-tube. Wshd & rmd 8618-8678' (60'). 6 stds of DP WIH free f/8678-9244' (566'). Wshd & rmd 9244-9308' (64'). Lost returns. Mixed & PI 40 bbl pill, 65 vis, 40 LCM. Spt pill @ 9290'. POH w/9 stds & 1 single. Mixed mud & bld vol. FL last 24 hrs = 300 bbls.
12/10/80	10,990	Day-86, Ftg-0. Spt LCM pill. Mud: 9.4#, vis 81. Bld vol. Pmpd dn 225 BF, no returns. Bld vol. TIH to 9197'. Mixed pill & pmpd same. Rec'd circ w/225 bbls (45 bbls before pill in place). Cont circ'g. Rm'g 9197-9300'. Cond mud & circ to 9300'. Wshd & rmd 9300-9684'. Lost circ. Spt pill in place @ 9675' (contents of pill: 100 bbls, 80 vis, 45% LCM).
12/11/80	10,990	Day-87, Ftg-0. RD csg crew, prep to PU DP. Mud: 9.3#, vis 34, WL 0. Pld 10 stds DP. Bld vol. Ran 10 stds DP in hole to 9653'. Could not get circ. Blind drld to 9763'. Mixed & spt pill @ 9750'. LD DP. RU to run csg. Respt LD machine truck. Ran csg (RI shoe, 2 jts csg, FC & 1 jt csg). Dropped csg. Caught top jt w/slips. FC thread pld out of clr. Lost 2 jts in hole.
12/12/80	10,990	Day-88, Ftg-0. Circ & cond mud. Mud: 9.2#, vis 60, WL NC. Fin RD csg tongs. PU DP OE, 46 stds. POH. PU & tighten kelly. PU BHA. Ran 46 stds DP in hole. PU DP, 243 jts. Tag fish @ 9430'. PU kelly, couldn't get returns. Pull 1 std to 9340' & brk circ & work tite pipe. Mix & cond mud.
12/13/80	10,990	Day-89, Ftg-0. Prep to LD DC. Mud: 9.2#, vis 72, WL 68. Rmd 9340-9642'. Apparently tagged top of fish @ 9520' & pushed to 9642'. Lost returns @ 9625'. Unable to go below 9642'. POH. More or less indicated bit was on fish. FL appears to be far dn.

12/14/80	10,990	Day-90. TD - RD Dowell (est PB 9701') RU LD machine & LD DC. DP still stdg in derrick. RU & ran 7" csg. Hit bridge or top of 7" csg fish @ 9640'. Had no mud returns while rng csg. RU & pmpd mud dn csg w/no returns & pushed fish to 9746' w/wt f/0-30M#. Csg stuck @ this pt. Pmpd in csg w/add'l 250 BM w/no returns. Csg in hole: 236 jts 7" OD, 23 & 26#, K-55 & CY-95, LT&C & buttress, R-3 csg w/Bkr flt shoe & FC btm'd @ 9746.46'. RU Dowell & cmtd w/20 BW; foll'd w/300 sx 35/65 Poz + 6% gel, .2% D-8 (fld loss), 1/4# Celloflake/sx & 10# Kolite/sx (12.5#/gal); foll'd w/300 sx Cl "G" cmt + 3/4% D-65 w/ 1/4# Cellofake/sx & 15# Kolite/sx (14.2#/gal). Pmpd plug dn w/376 BW. No returns thruout, no displ press until plug dn - rate 5-1/2 to 3 BPM. PD @ 5:15 am 12/14/80 w/600#. FC @ 9701'. Total 650 BM lost while wshg dn pmpg in w/no returns.
12/15/80	10,990	Day-91. TD - Drain pmp & clean mud tks. Raise BOP & set csg slips. Cut csg off & set BOP bk dn. Rig to LD DP f/derrick & LD same. Drain up pmp, mud lines & mud tks. Prep to run bond log @ 8 am. Schl to be on loc. FC @ 9703'.
12/16/80	10,990	Day-92. TD - RR & rigging dn. RR 5 pm 12/15/80. Ran CBL, Loggers @ 9686' on top of FC. Had gd bond cmt top @ 9635'.
12/17/80	10,990	Day-92. TD - Tearing dn & WO completion.
12/18/80	10,990	Day-92. TD - WO completion. (Drop f/report until completion commences.)
1/8/81	10,990	Day-92. TD - Prep to MI CU (Weltex, Inc.) (Dropped f/report of 12/18/80.)
1/9/81	10,990	Day-93. TD - Prep to fin rigging up. MI & strtd RU of Weltex CU. Unloaded 314 jts 2-7/8" N-80 8rd EUE tbg. Two jts rec'd were bent & not useable. Total length of 312 jts = 9672'. Rec'd BOPs (dbl) & closing unit. Tbg hd due 8 am 1/9/81 which will permit completion of rigging up.
1/10/81	10,990	Day-94. TD - PU tbg & RIH. Cut off 7" csg. Install McEyoy tbg spool. Tst PO to 3500# - OK. NU 6", 5000 psi dbl BOP w/2-7/8" pipe rams & blind rams. RU pmp, tk & lines. Tst blind rams to 2500# f/15 min - OK. PU 6-1/8" bit, 7" csg scraper, XO sub & 22 jts 2-7/8" tbg & strt RIH. SDON.
1/11/81	10,990	Day-95. TD - Displ hole to KCl wtr. PU tbg & RIH. Tag PBTD @ 9707'. (Btm perf to be @ 9638'. Leaves 69' rat hole.) Mix 500 bbl KCl wtr & store in frac tk.
1/12/81	10,990	Day-96. TD - RIH w/tbg stinger & cmt squeeze. Circ'd hole w/2% KCl wtr. Tstd pipe rams to 3000#. RU Welex & perf'd f/squeeze 4 holes (.5" dia) @ 9605'. Ran Bkr cast iron cmt retainer on WL & set same @ 9560'. RD Welex. SDON.

1/13/81	10,990	Day-97. TD - Prep to resqz perfs 9605' w/150 sx. RIH & stung into cmt retainer @ 9560'. Estab'd pmp in rate into perfs @ 9605' by pmpg in @ 5 BPM @ 1900#. ISI 800# & 5 min SI 100#. Pld above retainer & pmpd 10 bbls spacer wtr into tbg. Howco mixed & displ'd 200 sx Cl "H" cmt w/.7% Halad-9 into tbg & stung into retainer. Held bk press on annulus (7" x 2-7/8") so as cmt wouldn't U-tube prior to stinging into retainer. Pmpd cmt to within 5 bbls of retainer & slowed pmps to approx 1/2 BPM. Pmpd cmt to retainer @ 400#. Staged 1-3/4 bbls in 1/2 bbl increments every 15 mins @ 1/4 BPM as foll: 1/2 bbl @ 1/4 BPM & 400# after 15 min; 1/2 bbl @ 1/4 BPM & 400# after 30 min; 1/2 bbl @ 1/4 BPM & 350#; 1/4 bbl @ 1/4 BPM & after 15 min had 350# std'g press. Cleared perfs w/2 bbls for a total of 60.38 bbls displ'mt & pld stinger out of retainer. Pld 120' & SDON.
1/14/81	10,990	Day-98. TD - Prep to TIH w/DC's & bit to drill out cmt sqz. Stung into retainer at 9560' & pmpd in @ 5 BPM @ 1900#. Pmpd 5 bbl wtr into tbg. HOWCO mixed 150 sx Cl "H" cmt w/.7% Halad-9 add (28.3 bbls slurry) & pmpd same into tbg foll'd by 16 BW. Lowered stinger into retainer & caught up to flw w/40 bbls displacement. Displ'd 15 bbls w/o any press which still left 1 bbl cmt slurry inside tbg plus 1-3/4 bbls inside csg below retainer & begin staging. Pmpd 1/2 bbl w/o press & SD 15 min, pmpd 1/2 bbl w/250# & SD 15 min, pmpd 1/2 bbl @ 300# & SD 15 min, pmpd 1/2 bbl @ 350 psi & SD f/30 min, pmpd 1/4 bbl @ 1200 psi f/a total of 57-1/4 bbls displm't behind cmt. Pld stinger above retainer & rev'd 58 bbls--no cmt in returns. Stung into retainer & pmpd 1/4 w/press incr'g to 2000#--bled off to 1900# in 15 min. Press'd to 2100# w/no bleed off. TOH. PU bit & DCs & begin TIH. SDON. NOTE: The 10-3/4" x 7" annulus valve was opnd during this 150 sx sqz but there wasn't any blow.
1/15/81	10,990	Day-99. TD - Prep to TOH w/bit & run CBL & perf f/tst. Fin TIH w/ 6-1/8" bit & 6 - 4-3/4" DCs. Tagged cmt retainer @ 9560'. RU power swivel & in 3-1/2 hrs drld retainer. Tagged cmt below retainer @ 9575' & DO hard cmt to just below sqz'd perfs @ 9605'. CO 9686' & circ'd hole clean. Tstd csg to 2000# - OK. SDON.
1/16/81	10,990	Day-100. TD - Prep to run Bkr pkr & swb tst. POH w/tbg & DC. RU Petrolog & run CBL f/PBTD to cmt top @ 9316'. Re-logged well w/1000# on csg. Bond as foll: 9678-9666' 85-100%; 9649-9666' 50-95%; 9638-9649' 80-85%; 9632-9638' 60-90%; 9694-9632' 90-100%; 9560-9592' 40-85%; 9448-9560' 90-100%; 9443-9448' 60-90%; 9432-9443' 85-100%; 9422-9432' 60-80%; 9401-9422' 80-100%; 9394-9401' 45-100%; 9316-9394' 80-100%. LD logging tools & PU perf'g gun. Perf Schl Cyberlook interval 9619-9638' w/2 JSPF f/total 39 shots. Used 4" csg gun w/23 gram DML charges. No flw or appreciable wtr loss after perf. RD perf. Displ hole w/1 std clr. SDON.
1/17/81	10,990	Day-101. TD - Prep to check FL & acidize perfs 9619-9638'. THP is TSTM. RIH w/Baker retriematic pkr & set same @ 9607' RKB. Tstd annulus to 1500 psi, OK. Bebin swbg at 1pm, 1/15/81. Swbd 60 to 70 bbls wtr fluid in 13 swab runs. Finl fluid level @ 9500'. Swbd fluid was KCL wtr and a mixture of KCL & salt wtr. Last run recovered 1/2 bbl of wtr cut drlg mud. No odor or shows. Caught sample f/next to last swab run. Annulus stood full during the swbg operations.

1/18/81	10,990	Day-102. TD - Prep to swab well. 0 psi SITHP @ 7 am 1/18/81. RIH w/swb & tagged fluid level @ 8900'. Made swab run and caught sample. Loded tbg w/2% KCL & pmpd in @ 2800 psi. Released pkr, added an eight foot pup jt and reset pkr @ 9611' RKB. RU Dowell and spotted 1000 gallons 7-1/2% MSR-100 acid using 50 ball sealers. Broke down @ 2200 psi and pmpd in @ 2 BPM @ 0 psi. Displcd acid w/57 bbls 2% KCL wtr. ISIP was 0 psi. RU swab and had FL @ surface. Swbd 65 bbls in 13 runs & well kicked off flowing @ 0 psi FTHP & by bucket tst @ 700 BPD rate plus and underterminable amount of non-flamable gas (probably acid gas). Flowing fluid is H_2O cut mud with LCM material (cedar fiber). Flowed well to reserve pit & well died @ 8 pm 1/17/81.
1/19/81	10,990	Day-103. TD - Prep to continue swbg/flowing the interval 9619-9638'. Fluid level on 1st swab run @ 200'. Swbd ± 450 bbls fluid in 37 swab runs w/fluid level remaining @ ± 200' from surface. Annulus was periodically checked and was okay. Fluid swbd was reddish-brown H_2O and didn't taste very salty. Well began flowing @ ± 9 BPH rate @ 4:30 pm 1/18/81. Caught water sample & SDON.
1/20/81	10,990	Day-104. TD - Prep to POH w/pkr & cmt off 9619'-9638' interval. Well had been SION & 7 am 1-19-81 THP = 0 psi. Rigged up swab. FL at the surf, 1-19-81. Made a total of 32 swab runs with well flwg intermittantly. Rec'd estimated 400 bbls of hot reddish brown wtr - nearly fresh. Caught sample @ noon and one before shutting down at end of day (1-19-81). Annulus stood full during the tst. Chem Lab analysis of wtr sample caught at end of day 1-18-81 after having acidized and swabbed/flowed ± 400 bbls of reddish brown wtr was as follows: Sodium 6,295 mg/L; Pottassium 170 mg/L; Calcium 1,071 mg/L; Sulphates 1,088 mg/L; Chlorides 11,150 mg/L; Magnesium 165 mg/L, PH 6.8; Resistivity water was .036 ohm meter @ 68° F. Total dissolved solids are 20,182 mg/L.
1/21/81	10,990	Day-105. TD - Prep to COH & perf zone #2 f/9381-9429'. Rel pkr, POH. RIH w/model K-1 cmt retainer to 9548.36'. Set retainer. RU Hallib. Est inj rate @ 4-1/2 BPM @ 800 psi. Mxd 200 sx Cl "H", .7% Halad 9, 37.8 bbls slurry. Pmpd 5 BW ahead. 37.8 bbls cmt. Displ'd w/55.75 bbls wtr. Unstung retainer. Left 1 bbl cmt in tbg. Pld up 30'. Reversed out. (68 bbls total) 5 gals of watery cmt in returns. SDFN.
1/22/81	10,990	Day-106. TD - Cont GIH to 9334' & set pkr. Mix 370 bbls 2% KCL. Circ'd csg. POH. RU Welex. Perf'd w/4" csg gun (23 gram, DML, 1/2" hole) @ 9381-9389'. 9413-9421', 9426-29' w/2 SPF. RD Welex. Redressed Bkr pkr retrievamatic. Ran to 8000'. SI well. SDON.
1/23/81	10,990	Day-107. TD - Prep to sq off interval 9381 to 9429' & come up to 9231-9235'. Cont RIH w/Baker Packer and set same @ 9334' w/S.N. @ 9331'. Made 6 swab runs to 4000' w/fluid level 100 to 300'. Well kicked off flwg @ noon 1-22-81, flwg in excess of 20 BPH of clear, warm salt wtr (taste indicates low salinity). Flwd well overnite & by 7 am flwd total of 400 bbls to pit. Caught sample after 100 bbls on 1-22-81 and drove sample to SLC and put on plane to Casper f/wtr analysis. Will catch sample this morning f/analysis.

1/24/81	10,990	Day-108. TD - Prep to cmt sqz 9381-9429'. Rel'd Bkr pkr & POH. RIH w/Bkr Mod "K" cmt retainer & set same @ 9334'. Chem Lab analysis of wtr sample caught @ end of day 1/22 after swbg & having flwd total of 100 bbls fld f/9381-9429' was as foll: Sodium 2209 mg/L; Pottassium 139 mg/L; Calcium 430 mg/L; Magnesium 65 mg/L; Sulphates 725 mg/L; Chlorides 3760mg/L; Carbonates 0 mg/L; Total dissolved solids 7583 mg/L; Ph 6.6; Resistivity of wtr .89 ohm meter @ 68°F. Sample caught about 9 am 1/23/81 after having flwd about 400 bbls will be sent to Chem Lab f/analysis.
1/25/81	10,990	Day-109. TD - Prep to perf 9231-9235'. Stung into cmt retainer @ 9334' & then PU & displ'd tbg & csg vol w/ fresh wtr to lower wellbore temp. Stung into retainer & estab'd fm pmp in rate of 5 BPM @ 1400#. Mixed 200 sx of Cl "H" cmt w/.7% Halad-9 add (38 bbls cmt slurry) & displ'd w/45 BW w/last 10 bbls being pmpd in @ 1/2 BPM & 3000#. Held 1500# on annulus during sqz. Pld 30' above cmt retainer & rev'd out 50 sx cmt. Circ'd hole w/2% Cl1 wtr & begin TOH. SDON.
1/26/81	10,990	Day-110. TD - Prep to cont flwg/swbg well. Perf'd 9231-9235' w/2 JSPF (.47" dia holes). RIH w/Bkr pkr & set @ 9207'. Well begin flwg when pkr was set. Flwd @ 1-1/2 to 2 BPM rate. RU swb & made 10 swb runs to 2000' w/FL @ surf. To 7 am 1/26/81 have rec'd 170 BF - dirty colored wtr which clears up after allowed to settle f/ couple hrs.
1/27/81	10,990	Day-111. TD - Prep to rel pkr & TOH & sq 9231-9235'. At 7 am 1/26 well was flwg 1-1/2 to 2 BPH w/170 BF rec'd since perf'g 9231-9235'. RU & swbd well until 6 pm 1/27, plg swb f/2000' w/FL @ 100' between runs. Total fld (sli discolored wtr) swbd/flwd in 10 hrs was 380 bbls f/a total f/this interval of 550 bbls. Caught sample @ noon 1/26. Cumulative fld @ this time = 340 bbls since perf'g. Sample will be sent to Chem Lab f/wtr analysis.
1/28/81	10,990	Day-112. TD - Prep to abandon well. Rel'd pkr & POH. Ran Bkr Mod "K" cmt retainer & set same @ 9205'. Pmpd into perfs 9231-9235' @ 5 BPM @ 800#. Mixed 125 sx Cl "H" cmt w/.7% Halad-9 add & sqz 115 sx below retainer w/1300# standing press. Pld above retainer & placed 10 sx above retainer. Pld up 30' & rev'd out tbg capacity. Begin POH LD tbg to abandon well.
1/29/81	10,990	Day-113. TD - Moving off rig & equipment. LD 2-7/8" tbg & begin npl'g dn BOPs & other equip. This am will have 7 L. L. Smith trucks (Casper) on location to haul back tbg & other tools.
1/30/81	10,990	Day-114. TD - Well is temporarily abbandoned until 7" csg is cut & pld and cmt plugs sptd. Fin'd DN BOPs & McElvoy tbg head & rel'd Welltech compl rig 4 pm 1/29/81. Loaded up 2 L. L. Smith trucks w/2-7/8" tbg (314 jts) f/return to Walkers yard in Casper. Loaded up 4 L.L. Smith trucks w/rig equip, components, pipe racks, etc., f/trip to Riverton. The McElvoy tbg head will be dropped off at McElvoy's shop in Rock Springs. Truck didn't arrive to haul BOPs, closing unit, 6 DCs, bit sub, TIW surf valve, & handling tools. (Drop f/report until well is P & A'd.)

4/25/81	10,990	Day-115. TD - Fin RU unit. Welded lift nple on 7" csg stub. Set up jacks & cribbing. (Drop f/report of 1/30/81.)
4/26/81	10,990	Day-116. TD - Strt to POH. Fin'd RU jack base cribbing & jacks. PU on 7" csg & removed slips. Wrkd pipe. Took free pt by stretch meas @ 7800'. Shot off csg @ 7800'. Had gd cut.
4/27/81	10,990	Day-117. TD - Prep to cmt 1st plug. Ran shot in well @ 7800'. Got cln shot. RU power & manual tongs. Pld 6 jts to bld slide & pipe racks.
4/28/81	10,990	Day-118. TD - Prep to cmt. Began circ thru pipe & reciprocating f/gd circ. Prep to cmt when swedge blew apart. Had to find welder (5 hrs).
4/29/81	10,990	Day-119. TD - Prep to press up on csg & SI (WO sprocket). Pld 5 jts Buttress & chg over jt & then pmpd f/circ. Cmtd w/150 sx cmt. Pld 8 jts wet; tried to pmp, but couldn't. Pld 9 more jts when chain & sprocket brk on 6-plex hydraulic pmp causing loss of jacks.
4/30/81	10,990	Day-120. TD - Repaired hydraulic pmp. Ran sinker bar on slick line & sinker bar stopped @ 4890'. Press csg slowly to 4200 psi & blew swage out of csg. POH one more jt 7" csg. SD to repair swage.
5/1/81	10,990	Day-121. TD - Plg csg. Pmpd on plugged csg f/3200-4000#. Ran WL & found depth of plug @ 4849'. Then ran sml shot to put hole in csg to equal out hole press. Adjusted mast & strtd plg csg. LD 21 jts.
5/2/81	10,990	Day-122. TD - Prep to resume plg 7" csg. LD 7 jts. RU manual tongs, then pld & LD 40 more jts 7". Total 47 dn today.
5/3/81	10,990	Day-123. TD - Prep to resume plg 7" csg. Pld & LD 6 jts & Hyd pmp began to fail. Cln'g Hyd oil. Pld 31 more jts. Total 37 jts today.
5/4/81	10,990	Day-124. TD - Well closed in - WO plg unit. Resumed POH & LD 7" csg. Pld & LD 14 jts when csg parted @ pt where shot was made as it was just below spider. Rec total 149 jts 7" csg. Est 47-2/3 jts (1890') dropped off. Ran 1 jt & rehung & welded cap on top. RD Thaxton Enterprises. Rel'd SU 5:00 pm.
5/5/81	10,990	Day-124. TD - WO plg unit. (Drop f/report until plg unit moves in.)
5/13/81	10,990	Day-125. TD - TIH w/tbg. RU Green River Well Service & WO tbg. Tbg arrived @ 3 pm. Unloaded & prep to GIH. Strapping. Tag top of csg (or) go to 5000' w/171 jts of 2-7/8" EUE tbg. (Dropped f/report of 5/5/81.)

5/14/81	10,990	Day-126. TD - Circ'g & prep to pmp 2nd plug @ 3400'. Began TIH @ 7 am. Reached 3750'. Pmpd then rotated thru wk bridge. Cont'd dn to 4575' where tite hole encountered. Tripped out & took off bit & bit sub. Tripped in & began circ'g dn tbg. Pmpd 170 bbls fresh wtr - getting full circ. Got 120 bbls hvy SW & old cmt up annulus & out to pit, then pmpd cmt plug @ 4575'. Pld 13 stds (397') wet, pmpd 6 BW to help equalize press. Pld 27 more stds until flw was equalized. SI valves & tbg O/N so plug would not move up hole.
5/15/81	10,990	Day-127. TD - FINAL REPORT - WELL P & A, 5/14/81. Ran tbg to 3410'. Tried to circ, but tbg was plugged w/old cmt, salt wtr & part of 1st plug. TOH & removed btm 3 stds. TIH 50 stds (3040') & began circ'g. Circ'd until flw line plugged @ 1200#. Pld valve off of spool & found rubber covering opng. Pld BOP off & pld rubber out of opng. Hooked BOP up & circ'd 190 bbls fresh wtr til flw line showed cln hole. RI 3 more stds & circ'd another 20 bbls. Pmp 2nd plug. Pld 66 jts dry & reverse circ'd. TOH & RU GO WL. Set CIBP @ 800' @ 5 pm. RI 1 std & pmpd surf plug. Set dry hole marker. Rel'd Hallib, GO WL & Green River Well Service @ 7:30 pm. 1st plug, 250 sx 4575-3320'; 2nd plug, 200 sx 3233-2793'; surf plug, 25 sx 61-surf.

90' of cmt @ surface

9/27/80	3332	Day-12, Ftg-0. Tstg BOP stack. NU & WO tstr & press tst stack. Tst rams & chk manifold to 5000 psi, upper & lower kelly cock to 5000 psi, Hydril to 2500 psi.
9/28/80	3416	Day-13, Ftg-84. Drlg. Mud: 8.3+, vis 27, WL-NC. Fin tst BOP stack, RU & PU DC. RU HOWCO & press 10-3/4" csg to 500 psi & press 10-3/4 x 16" annulus to 600 psi for 10 min. No leak off. RD HOWCO. PU DC & DP rubber every other jt. Drld FC & shoe. Start drlg new hole 4:00 am. Top cmt 3250' - FC @ 3286' - Shoe @ 3331'.
9/29/80	3965	Day-14, Ftg-549. Survey. Mud: 9.6, vis 34, WL-NC. Drlg. TOH to PU stabilizers. TIH w/bit #4. Drlg. Repair. Drlg. Survey. Drlg. Survey. Slow pmp rate 32 SPM @ 500#. Desander underflow 11.2#/gal. Desilter underflow 10.5#/gal. 1-1/2° @ 3639', 1-3/4° @ 3912'.
9/30/80	4478	Day-15, Ftg-513. Drlg. Mud: 9.8, vis 33, WL-NC. Slow rate pmp press = 500 psi @ 32. Drld. Surveyed. Drld. Surveyed. Drld. Repair. Drld. 1-3/4° @ 3912'. 2-1/4° @ 4387'.
10/1/80	4758	Day-16, Ftg-280. Drlg. Mud: 9.8, vis 33, WL-NC. Drld - rig service - drld - rig service - drld - TOH - repair - set wear bushing - TIH - drld. Steel line meas +19' corrected.
10/2/80	5092	Day-17, Ftg-334. Drlg. Mud: 9.9, vis 35, WL-NC. 2-1/2° @ 4729', 1-3/4° @ 5092'.
10/3/80	5367	Day-18, Ftg-275. Drlg. Mud: 9.8#, vis 33, WL 21.4.
10/4/80	5464	Day-19, Ftg-97. Prep to TIH after BHA stabilizer arrive. Circ'd samples. Drld to 5464' & pld up to make conn & bit stuck 40' off btm. Mixed 100 gals Milfree in 50 bbls diesel & pmpd around DCs (40 bbls outside DCs & 10 bbls inside). Moved diesel 1/2 bbl every hr. After a total of 3-3/4 hrs, pipe came free. TOH. LD 11 DCs. Will PU stabilizers & 15 jts 5" HWDP f/drlg BHA w/15 jts more HWDP ordered. Prior to pipe differential sticking, mud chlorides incr'd f/94M ppm to 120M ppm. Will add 8-10% diesel to mud system & wtr to reduce dissolved solids mud wt.
10/5/80	5592	Day-20, Ftg-128. Drlg. Mud: 9.7#, vis 36, WL 19.2. Mixed diesel in surf mud system while WO stabilization equip 8-1/2 hrs. PU BHA & TIH. Had to wsh 50' to btm. Begin drlg ahead w/ stabilized BHA & 8% diesel in mud.
10/6/80	5865	Day-21, Ftg-273. Drlg. Mud: 9.7#, vis 36, WL 16.5. 1-2 units BGG. Will try to core today.
10/7/80	5916	Day-22, Ftg-51. Coring. Mud: 9.7#, vis 37, WL 9.8. Drld. Circ to core. Trip out f/CB. SLM - no correction. PU CB. TIH & coring. Desander under flw 11.6#/gal. 3/4° @ 5902'.
10/8/80	5974	Day-23, Ftg-58. Drlg. Mud: 9.5#, vis 38, WL 9.1. Coring. TOH w/core. LD core, LD CB. PU BHA. TIH. Drlg. BGG 1 unit. Trip gas 4 units. Core #1, 5902-5929', cut 27', rec'd 26'.
10/9/80	6210	Day-24, Ftg-236. Drlg. Mud: 9.5, vis 36, WL 18.8 Drld, circl samples @ 6156' NS. Cont Drlg.

10/10/80	6437	Day-25, Ftg-227. Drlg. Mud: 9.4, vis 34, WL 34. Drld. Worked on SCR panel & drld. BGG 1-3 units.
10/11/80	6760	Day-26, Ftg-323. Drlg. Mud: 9.4, vis 36, WL 14.2. Drlg & circ, drlg brk, spls 6541' - NS - drlg, repairs, & drlg.
10/12/80	6858	Day-27, Ftg-98. GIH & inspect HWDP. Mud: 9.5#, vis 35, WL 17.7. Drld to 6858', lost 600# press. POH - vy tite to btm of csg. Found wshout in HWDP 2 stds above DC - crack in box. Bud's DC Serv inspected BHA & HWDP. Laid out 1 more jt hvy wt w/sli crack. Now GIH.
10/13/80	6968	Day-28, Ftg-110. Working on SCR units. Mud: 9.5#, vis 36, WL 17.8. Parts for SCR units due @ rig this pm. Fm: clay, sd & silt stone , w/ tr of Dolo. At 6858' had 60' of fill; wsh'd last 4 jts f/safety. 1-1/4° @ 6853'.
10/14/80	7016	Day-29, Ftg-48. Drlg. Mud: 9.6#, vis 34, WL 12. 16 hrs repair SCR system while waiting up in csg. Wsh 60' to btm on TIH & had no fill up. 8 unit trip gas, 3 unit BGG. Drlg ahead.
10/15/80	7269	Day-30, Ftg-253. Drlg. Mud: 9.3#, vis 36, WL 12.4. 1 - 3 units BGG, 6 - 8 unit connection gas. Drlg ahead.
10/16/80	7449	Day-31, Ftg-180. Drlg. Mud: 9.2+#, vis 38, WL 11.6. SCR system reparis, mud line broke. BGG 2-4 units, Conn. gas 6-8 units.
10/17/80	7558	Day-32, Ftg-109. Drlg. Mud: 9.4#, vis 37, WL 9.4. BGG 2 units, Conn gas 6-8 units, 30 units on trip @ 7449' f/1 min or so. Lost 600 psi. Chk all surf equip to locate. Will POH f/wsh out. 1/2° @ 7449'.
10/18/80	7662	Day-33, Ftg-104. Drlg. Mud: 9.3#, vis 37, WL 11.5. POH @ 7558' & located wshout 5 jts above DC in HWDP 1" horiz cut x 1/4" wide in box @ btm thread thru side. Fin POH, chg'd jars, chk'd bit & WIH. Wsh'd 60' to btm f/safety - no fill. BGG 2 units, Conn gas 6 units, Trip gas 8 units.
10/19/80	7917	Day-34, Ftg-255. Drlg. Mud: 9.3#, vis 35, WL 9.8. BGG 2 units, Conn 4-8 units. Drlg 6-7 min/ft.
10/20/80	8085	Day-35, Ftg-168. Drlg. Mud: 9.2#, vis 36, WL 10.4. Drld, rig service & drld.
10/21/80	8132	Day-36, Ftg-47. Drlg. Mud: 9.3#, vis 36, WL 9.8. Drld. TOH. Rig service. Chg out 24 jts HWDP. Chg rubbers on NRS. TIH. Wsh to btm. Drld. 5-1/2° @ 8129'.
10/22/80	8237	Day-37, Ftg-105. Drlg. Mud: 9.2#, vis 35, WL 9.1. Drld, rig service, drld. BGG 2 units.
10/23/80	8360	Day-38, Ftg-123. Re-circl & trip for bit. Drld, Survey, Drld, circulate. MW 9.2,Vis 36, WL 13.8.
10/24/80	8400	Day-39, Ftg-40. Drlg. MW: 9.3, Vis 36, WL 14.6 BGG - 2 units.

10/25/80	8548	Day-40, Ftg-148. Drlg. Mud: 8.9#, vis 35, WL 16.4. Circ samples @ 8461'; no shows, no gas. Drlg mud chlorides increase was due to drlg some thin anhyrite stringers. BGG 2 units. 6-1/4° @ 8432'.
10/26/80	8664	Day-41, Ftg-116. Drlg. Mud: 9.4#, vis 38, WL 13.2. BGG 2 units w/1 unit incr @ 8600'.
10/27/80	8764	Day-42, Ftg-100. Drlg. Mud: 9.3#, vis 38, WL 11.2. BGG 2 units. 5-3/4° @ 8620'.
10/28/80	8924	Day-43, Ftg-160. Drlg. Mud: 9.0#, vis 37, WL 10.8. BGG 3 units. 5-1/4° @ 8796'.
10/29/80	8934	Day-44, Ftg-10. Drlg. Mud: 9.3#, vis 39, WL 11.4. Tite hole f/5660-4600'. Wsh out bridge on trip in @ 5060-5120'. Took 1-1/2 hr to pull wear ring. Wsh to btm 98' f/ 8827-8925'. Chg'd out 3 rubber sleeves on NRS. Had SLM w/no correction. 4° @ 8925'.
10/30/80	9109	Day-45, Ftg-175. Drlg. Mud: 9.1#, vis 39, WL 11.4. BGG 1-2 units. Drlg break @ aprox 9118'.
10/31/80	9152	Day-46, Ftg-43. Clean btm, prep to Core #2. Mud: 9.3#, vis 41, WL 12.3. BGG 1-2 units. Wshd 75' to btm. 3° @ 9152'.
11/1/80	9171	Day-47, Ftg-19. Trip in w/bit. Mud: 9.4#, vis 40, WL 11.8. Cut Core #2, 9152-9171', cut 19', rec'd 19'. CB jammed. Drk grey limestone w/black streaks; fractures @ btm.
11/2/80	9214	Day-48, Ftg-43. Rng logs. Mud: 9.3#, vis 43, WL 10.4. Fin in hole w/bit. Rm'd 20' core hole or fill to btm & resumed drlg. Drld to 9225' DM. Core & cond hole & MOH, corrected to 9214'. RU Schl & strtd logging, WLTD 9215'. Rng DLL.
11/3/80	9286	Day-49, Ftg-72. Drlg. Mud: 9.3#, vis 44, WL 10.1. Ran DLL w/MSFL @ 9214', Loggers TD 9215'. Ran Borehole comp sonic GR w/caliper @ 9214'. Ran FDC/CNL @ 9214'. Trip gas 10 units, BGG 2 units. Had boiler f/24 hrs.
11/4/80	9482	Day-50, Ftg-196. TOH f/core bbl. Mud: 9.3#, vis 43, WL 14.4. At 9407' lost 110 bbls. Total mud lost of 300 bbls thru seepage thru suction. Never lost full returns. Circ samples @ 9343'. Drlg brk went f/6 min/ft to 2"/min. Circ btm samples @ 9482'. No show in cutting. Tr oil & phlos in mud. BGG 1-2 units incr'd to 5 units thru section. On C-1, 10 units up to 22 units incr. Drlg in limestone dolo w/abundant calcite filled fracs. Had boiler f/24 hrs.
11/5/80	9482	Day-51, Ftg-0. TIH f/DST #1. Mud: 9.2#, vis 42, WL 9.7. DST #1 tst zone 9395-9482' (87'). POH w/B#14, PU CB. RIH w/CB to 4000' & TOH chg of orders. Stnd back CB. RIH to 3300'. Incr mud volume & WO tstr. TOH. PU tst tools. WO chg over sub. TIH w/tst tool. So far hole in gd shape. Had boiler f/24 hrs. 2-3/4° @ 9482'.

11/6/80	9482	Day-52, Ftg-0. GIW w/free pt indicator. Mud: 9.2#, vis 43, WL 10.2. TIH w/tst tool & tst f/4 hrs. Had 10 min Initial Opn, 30 min SI, 120 min opn f/FF, 60 min FSI. Tool prepare to opn 1/4" blw. Cont to tst, blw died in 10 mins. Tried to pull tool loose, no jar action, stuck. Worked stuck tool. Dropped bar & sheared rev sub. Tried to equalize annulus. No rev. didn't go. PU Kelly & circ thru rev sub @ 9230'. Circ & work pipe. RU to free pt indicator.
11/7/80	9482	Day-53, Ftg-0. Jarring on fish (top of fish 9198'). Mud: 9#, vis 47, WL 26. RU McCullough free pt, found 3 DCs free. Backed off 5 DCs above tool. Rec'd 2 - 7" DCs. Required 2 - 700 grain shots w/5-3/4 round rev torque. Backed off DCs 2 dn; tite, circ & work free. TOH. PU 4 DCs & fshg tools. Cut drlg line. TIH. Circ & screw into fish. Jarring on fish w/120M# above string wt - up 325M#.
11/8/80	9482	Day-54, Ftg-0. Fishing - Disp; mud in annulus to reduce hydrostatic. Mud: 9.3#, vis 72, WL 6.4. Circ & cond mud & jarred on fish 5 hrs w/o success. Cont'd circ & cond mud & jarring on fish 18 hrs while WO nitrogen truck f/Farmington. Hooked up nitrogen lines & displ'g 129BM f/annulus so as to reduce hydrostatic mud wt (should lower mud level in hole to 1300' & reduce btm hole press by 625#).
11/9/80	9482	Day-55, Ftg-0. Circ @ top of fish @ 9230'. Mud: 9.3#, vis 63, WL 6. Jarred on fish 1 hr after reducing hydrostatic w/N2. Ran free pt - would go below 9240'. Ran WL sinker bar & jars & went to 9345'. Ran back off shot & backed off @ the free DC just above circ'g sub. Chained out & SLM out of hole & LD 1 - 7" DC rec'd. PU shoe & 3 jts 9" wsh over pipe. Had 3-1/2 hrs running in hole w/wsh over pipe to top of fish. Circ'd to clean hole before strt'g to wsh over the 3 DCs above DST pker. DST pkr @ 9395'.
11/10/80	9482	Day-56, Ftg-0. TOH w/wsh pipe. Mud: 9.4#, vis 50, WL 6.6. Circ 2 hrs btms up before strtg to wsh over. Wsh over 7" DC 9230-9332' in 15 hrs. Circ btms up while over fish 2 hrs. Spt 25 bbls Black Magic pill around fish. TOH w/53 stds. Hit tite hole @ 4600'. Trip took 1-1/2 hrs to pull stds. Circ & work tite pipe. Clean hole @ 4600'. TOH. Last 12 fish of wsh over went real easy, seemed to be free. Hole sloughing @ 4600'. (Chloride in mud up - probably due to lowering hydrostatic w/nitrogen.)
11/11/80	9482	Day-57, Ftg-0. Prep to GIH w/bit & clrs. Mud: 9.4#, vis 55, WL 6.6. POH w/wsh pipe. WIH w/fshg assmbly. Circ & screwed into fish @ 9230'. Jarred & came free. POH w/fish. LD fshg tools. Brk dn & loaded out tst tools. Began PU BHA.
11/12/80	9505 (corr'd)	Day-58, Ftg-0. TIH w/CB. Mud: 9.5#, vis 52, WL 6. PU BHA. TIH. Wsh 9260-9482'. Chase pkr rubber dn hole f/9260-9482' & drlg up same. TOH & SLM & set BHA. Clean out rubber f/flw line. PU CB & TIH. SLM 23' correction; 3 straps & corr'd depth to 9505'.
11/13/80	9513	Day-59, Ftg-8. Magnaflux drill collars. Mud: 9.4#, Vis 51, WL 6.2. TIH w/CB. Wsh 60' to btm; circl btm clean; no fill. Core #3. Unbolt & clean out stabilizer rubber in flow line. Core jammed, had to pull. Circl & pump pill. TOH. Tite hole @ 8500'. Wash thru packer rubber probably. Extract core, recov'd 6'. Service barrel & stand back. Worked BOP. Inspect drill collar & service BHA. Core #3 f/9505-9513'. Had 6' recovery, dolomite mostly, highly fractured, no shows.

11/14/80	9513	Day-60, Ftg-0. TIH f/Core #4. Mud: 9.4#, vis 49, WL 5.8. Inspect DC, saver sub, safety valve on Kelly. TIH w/bit to CO rubber & core. Wsh to btm, no fill, Circ'd. Short trip to 15 stds. Circ'd. TOH. Repair master drive chain on drawworks. PU CB & TIH.
11/15/80	9534	Day-61, Ftg-21. GIH w/bit. Mud: 9.4#, vis 39, WL 5.4. WIH w/CB. Core #4, 9513-9534 (21'). POH w/11' fractured Dolo - no show. WIH w/drlg assembly.
11/16/80	9623	Day-62, Ftg-89. Drlg grey Dolo. Mud: 9.1#, vis 44, WL 6.7. WIH w/new bit. Wshd & rmd core hole. Drld to 9614' & lost full returns. Sptd LCM pill. PU to 7300'. Cont'd mixing LCM. Regained returns @ 7300'. WIH to 8500' & circ'd. WIH to 9500' & wshd to btm. Total mud loss 450 bbls. Resumed drlg w/full returns.
11/17/80	9835	Day-63, Ftg-212. Drlg - dolo w/fractures. Mud: 9.4#, vis 43, WL 6. Sli mud loss thru seepage - 90 bbls/24 hrs. Hole in gd shape, no sloughing. Shaker by-passed. Samples gd.
11/18/80	10,028	Day-64, Ftg-193. Drlg. Mud: 9.4#, vis 44, WL 5.7. 1 unit BGG - no shows. No mud loss. Samples gd. No hole problems.
11/19/80	10,207	Day-65, Ftg-179. Drlg Dolo. Mud: 9.4#, vis 46, WL 6. 1 unit BGG. Samples gd - no hole problems.
11/20/80	10,207	Day-66, Ftg-57. Drlg Dolo. Mud: 9.4#, vis 43, WL 6.8 No tite hole on trip. LD 21 jts test pipe. PU 21 jts "E" pipe. Had bridge @ 10,100'. Drl out & wsh to btm, 20' fill. Had 200 bbls mud loss down hole on trip. No gas, no show. 2-3/4° @ 10,210.
11/21/80	10,315	Day-67. Ftg-51. Coring Core #5 @ 10,314'. Mud: 9.4#, vis 45, WL 8.8 Drld. Circ f/core. Made 10 std short trip. Circ. TOH. PU CB & chg inter-barrel bearing. TIH slow. Wsh 32' & circ to btm. Core, no tite hole. Had SLM 6' dn hole, not corr'd. Had must loss on trip dn hole - 150 bbls.
11/22/80	10,346	Day-68, Ftg-31. LD core #5. MW: 9.3#, Vis 49, WL 7.4. Fin cut core #5 10,314 - 10,346'. Cut 32, rec 6'. Torqued up. Inner bbl bearing went out & locked up. Had slight mud loss while coring. Rec 6' high fractured dolomite - gray w/dark spots, microxtn - no show.
11/23/80	10,348	Day-69, Ftg-2. Trip w/core bbl. MW: 9.4, Vis 49, WL 7.8. WIH w/9-7/8" bit & went to bottom w/no problem. No fill on bottom. Drld 2' & POH. PU Christensen core bbl. Now GIH for Core #6.
11/24/80	10,378	Day-70, Ftg-30. TOH w/core #6. MU: 9.2#, Vis 48, WL 6.2. TIH w/core #6. Circl & wsh 40' to btm & clean btm. Cutting core #6. TOH Some tite hole @ 8500' w/core barrel only. Built 250 bbl mud volume while coring. Core #6 f/1038-10378'. Recov'd 30' dolomite.

HOLE IN ROCK #1
SE SW Section 30-22 W
Millard County, Utah

11/25/80	10,378	Day-71, Ftg-0. Rig to log. MU: 9.2#, Vis 49, WL 6.4. Extract core #6 & LD barrel. Service rig. TIH w/bit. Wsh & ream 60' to btm, no fill. Circlg. Short trip, 30 stds. Circlg for logs. TOH. SLM RU Schlumberger. Hole good on trips. No tite hole on bridges. SLM 10,390'. KB elev 4805'. GL elev corrected to 4774'.
11/26/80	10,390	Day-72, Ftg-0. Logging - loggers depth 10,375'. MW: 9.2, Vis 51, WL 6. Ran Dual laterlog, MSFL 9200' - TD. Ran FDC/CNL 9200' - TD. Ran BHC Sonic 9200' - TD. Ran Dipmeter 3300' - TD. Ran Frac log 9000' - TD. Ran Variable Density Waveform 9000' - TD. GIH w/Velocity log. Hole taking mud @ rate of about 15 bbl/hr. Mix mud to retain volume.
11/27/80	10,390	Day-73, Ftg-0. TIH f/DST #2 (10,310-10,390'). Mud: 9.2#, vis 49, WL 5.7. Had 7 hrs fin'g rng velocity log. TIH & circ & cond mud. TOH w/hole in gd shape. Made up Johnson tools f/DST #2. Will run 10" - 30" - 120" - 60" periods. Should have tool on btm about 1 pm today. BHC in tool is 1/2".
11/28/80	10,390	Day-74, Ftg-0. PU drlg assembly. Mud: 9.2#, vis 49, WL 5.7. Cut drlg line. WIH w/tst tools. Tool opn 1:30 pm w/wk to incr'g blw. After 10 min flw period, SI 30 min. Opnd tool w/strong blw bld'g to 1.5 psi in 15 min. Well dead in 52 min. Took 1 hr FSI. Worked pkr free in 1 hr. POH & rec'd 10, 156' total fld. Had 900' MCW, 1620' lite muddy wtr, 7636' wtr. chlorides 25M ppm, 1.3 Resistivity @ 60°, BHT 240°F. No wtr cushion, IMP 4965#, IF 231-1446#, ISI 4432#, FF 1630-4467#, FM 5235#. Sampler had 180 cc wtr w/vy sli oil cut.
11/29/80	10,484	Day-75, Ftg-94. Drlg Dolo. Mud: 9.1#, vis 44, WL 7.4. WIH to 3200' & incr'd mud vol, adding LCM to system. WIH to 10,270'. Wshd to btm @ 10,390' losing 10% returns. Drld to 10,458', lost 50% returns. (120 bbls in 1 hr). Resumed drlg w/full returns.
11/30/80	10,717	Day-76, Ftg-233. Drlg Dolo. Mud: 9.2#, vis 48, WL 5-8. Drld f/24 hrs w/no mud loss.
12/1/80	10,940	Day-77, Ftg-223. Drlg Dolo. Mud: 9.1#, vis 48, WL 5.4. Hole gd - no problems. Mud loss in 24 hrs - 80 bbls. BGG 2 units.
12/2/80	10,990	Day-78, Ftg-50. Drlg out (pipes tite). Mud: 9.1#, vis 68, WL 5.1. Tite place f/4337-4347' (90'). Able to rotate upward f/60'; last 30' could only gain 1" upward ea time pull up & rotate. 6 hr working last 30' out.
12/3/80	10,990	Day-79. Ftg-0. Rmg w/rmr. Mud: 9.3#, vis 65, WL 5.9. Drlg out & work pipe - made 3'. Bit depth 4244'. PU Grant string rmr w/sharp cutters. TIH to 3749'. Got tite. Rm'd f/3749-4097' (348'). Hvy cuttings coming bk - 40% silt, remainder Dolo, sd, etc. Also long strips of rubber f/stabilizer. Will cont to rm until free f/tite spt.
12/4/80	10,990	Day-80, Ftg-0. Rmg on bridge. Mud: 9.3+", vis 68, WL 6.2. Rm'd w/string rmr f/4097-4347' (250'). TOH. LD part of BHA. TIH @ 8452'. Drld on bridge. 2-1/2° @ 10,990'.

12/5/80	10,990	Day-81, Ftg-0. TOH. Mud: 9.4#, vis 63, WL 6.2. Rmg 8452-9078' (626'). Lost returns @ 9078'. Worked out 60' of pipe. Rec'd returns. Circ & cond mud. Work tite pipe free. TOH. Pipe tite 9078-8859' (219'). Samples returned 80% Wall Cake, 20% Sh. Fld lost in last 24 hrs - 350 bbls.
12/6/80	10,990	Day-82, Ftg-0. Bldg vol. Mud: 8.8#, vis 38, WL 6.8. POH. WIH & rmd 9270-9848' (614'). Lost returns. Pld 10 stds & sptd 50 bbl LCM pill @ 9040'. Pld 3 stds & sptd another 50 bbl pill. Blt vol & sptd 2 more pills. Pld up to 8439'. (Total mud lost 760 bbls).
12/7/80	10,990	Day-83, Ftg-0. Circ'g & mixing LCM. Mud: 8.7#, vis 64, WL 6.8. Incr'd mud vol & pmpd 230 bbls @ 4670'. Pmpd in 300 bbls in annulus, but unable to fill hole. POH & cut drlg line. Blt 1000 bbls mud vol. WIH to 7252' & pmpd in DP. Rec'd partial returns. Now pmpg w/gd returns, losing about 16 BPH.
12/8/80	10,990	Day-84, Ftg-0. Bldg mud vol w/bit in csg. Mud: 10, vis 31, WL 18.4. Circ & cond mud. TI to 8769', mixed LCM & circ'd. Fin in hole to 9427' w/no problems. Rmd tite spt 9427-9553'. Lost returns. POH 9238'. Mixed vis & LCM pill 85 bbls - vis 70, LCM 50%. WIH to 9543' & sptd pill. POH to 8613' & blt vol. Circ & cond mud & mud properties chg'd. POH to csg shoe. Cleaned pits & bldg vol. Total loss in 24 hrs = 700 bbls.
12/9/80	10,990	Day-85, Ftg-0. Bldg vol. Mud: 9.2#, vis 56, WL 33.8. Bld vol & cond mud. TOH. LD part of BHA. TIH. Bridge @ 8618'. Circ to equalize U-tube. Wshd & rmd 8618-8678' (60'). 6 stds of DP WIH free f/8678-9244' (566'). Wshd & rmd 9244-9308' (64'). Lost returns. Mixed & PI 40 bbl pill, 65 vis, 40 LCM. Spt pill @ 9290'. POH w/9 stds & 1 single. Mixed mud & bld vol. FL last 24 hrs = 300 bbls.
12/10/80	10,990	Day-86, Ftg-0. Spt LCM pill. Mud: 9.4#, vis 81. Bld vol. Pmpd dn 225 BF, no returns. Bld vol. TIH to 9197'. Mixed pill & pmpd same. Rec'd circ w/225 bbls (45 bbls before pill in place). Cont circ'g. Rm'g 9197-9300'. Cond mud & circ to 9300'. Wshd & rmd 9300-9684'. Lost circ. Spt pill in place @ 9675' (contents of pill: 100 bbls, 80 vis, 45% LCM).
12/11/80	10,990	Day-87, Ftg-0. RD csg crew, prep to PU DP. Mud: 9.3#, vis 34, WL 0. Pld 10 stds DP. Bld vol. Ran 10 stds DP in hole to 9653'. Could not get circ. Blind drld to 9763'. Mixed & spt pill @ 9750'. LD DP. RU to run csg. Respt LD machine truck. Ran csg (RI shoe, 2 jts csg, FC & 1 jt csg). Dropped csg. Caught top jt w/slips. FC thread pld out of clr. Lost 2 jts in hole.
12/12/80	10,990	Day-88, Ftg-0. Circ & cond mud. Mud: 9.2#, vis 60, WL NC. Fin RD csg tongs. PU DP OE, 46 stds. POH. PU & tighten kelly. PU BHA. Ran 46 stds DP in hole. PU DP, 243 jts. Tag fish @ 9430'. PU kelly, couldn't get returns. Pull 1 std to 9340' & brk circ & work tite pipe. Mix & cond mud.
12/13/80	10,990	Day-89, Ftg-0. Prep to LD DC. Mud: 9.2#, vis 72, WL 68. Rmd 9340-9642'. Apparently tagged top of fish @ 9520' & pushed to 9642'. Lost returns @ 9625'. Unable to go below 9642'. POH. More or less indicated bit was on fish. FL appears to be far dn.

12/14/80	10,990	Day-90. TD - RD Dowell (est PB 9701') RU LD machine & LD DC. DP still stdg in derrick. RU & ran 7" csg. Hit bridge or top of 7" csg fish @ 9640'. Had no mud returns while rng csg. RU & pmpd mud dn csg w/no returns & pushed fish to 9746' w/wt f/0-30M#. Csg stuck @ this pt. Pmpd in csg w/add'l 250 BM w/no returns. Csg in hole: 236 jts 7" OD, 23 & 26#, K-55 & CY-95, LT&C & buttress, R-3 csg w/Bkr flt shoe & FC btm'd @ 9746.46'. RU Dowell & cmtd w/20 BW; foll'd w/300 sx 35/65 Poz + 6% gel, .2% D-8 (fld loss), 1/4# Celloflake/sx & 10# Kolite/sx (12.5#/gal); foll'd w/300 sx Cl "G" cmt + 3/4% D-65 w/ 1/4# Cellofake/sx & 15# Kolite/sx (14.2#/gal). Pmpd plug dn w/376 BW. No returns thruout, no displ press until plug dn - rate 5-1/2 to 3 BPM. PD @ 5:15 am 12/14/80 w/600#. FC @ 9701'. Total 650 BM lost while wshg dn pmpg in w/no returns.
12/15/80	10,990	Day-91. TD - Drain pmp & clean mud tks. Raise BOP & set csg slips. Cut csg off & set BOP bk dn. Rig to LD DP f/derrick & LD same. Drain up pmp, mud lines & mud tks. Prep to run bond log @ 8 am. Schl to be on loc. FC @ 9703'.
12/16/80	10,990	Day-92. TD - RR & rigging dn. RR 5 pm 12/15/80. Ran CBL, Loggers @ 9686' on top of FC. Had gd bond cmt top @ 9635'.
12/17/80	10,990	Day-92. TD - Tearing dn & WO completion.
12/18/80	10,990	Day-92. TD - WO completion. (Drop f/report until completion commences.)
1/8/81	10,990	Day-92. TD - Prep to MI CU (Weltex, Inc.) (Dropped f/report of 12/18/80.)
1/9/81	10,990	Day-93. TD - Prep to fin rigging up. MI & strtd RU of Weltex CU. Unloaded 314 jts 2-7/8" N-80 8rd EUE tbg. Two jts rec'd were bent & not useable. Total length of 312 jts = 9672'. Rec'd BOPs (dbl) & closing unit. Tbg hd due 8 am 1/9/81 which will permit completion of rigging up.
1/10/81	10,990	Day-94. TD - PU tbg & RIH. Cut off 7" csg. Install McEyoy tbg spool. Tst PO to 3500# - OK. NU 6", 5000 psi dbl BOP w/2-7/8" pipe rams & blind rams. RU pmp, tk & lines. Tst blind rams to 2500# f/15 min - OK. PU 6-1/8" bit, 7" csg scraper, XO sub & 22 jts 2-7/8" tbg & strt RIH. SDON.
1/11/81	10,990	Day-95. TD - Displ hole to KCl wtr. PU tbg & RIH. Tag PBTD @ 9707'. (Btm perf to be @ 9638'. Leaves 69' rat hole.) Mix 500 bbl KCl wtr & store in frac tk.
1/12/81	10,990	Day-96. TD - RIH w/tbg stinger & cmt squeeze. Circ'd hole w/2% KCl wtr. Tstd pipe rams to 3000#. RU Welex & perf'd f/squeeze 4 holes (.5" dia) @ 9605'. Ran Bkr cast iron cmt retainer on WL & set same @ 9560'. RD Welex. SDON.

1/13/81	10,990	Day-97. TD - Prep to resqz perfs 9605' w/150 sx. RIH & stung into cmt retainer @ 9560'. Estab'd pmp in rate into perfs @ 9605' by pmpg in @ 5 BPM @ 1900#. ISI 800# & 5 min SI 100#. Pld above retainer & pmpd 10 bbls spacer wtr into tbg. Howco mixed & displ'd 200 sx Cl "H" cmt w/.7% Halad-9 into tbg & stung into retainer. Held bk press on annulus (7" x 2-7/8") so as cmt wouldn't U-tube prior to stinging into retainer. Pmpd cmt to within 5 bbls of retainer & slowed pmps to approx 1/2 BPM. Pmpd cmt to retainer @ 400#. Staged 1-3/4 bbls in 1/2 bbl increments every 15 mins @ 1/4 BPM as foll: 1/2 bbl @ 1/4 BPM & 400# after 15 min; 1/2 bbl @ 1/4 BPM & 400# after 30 min; 1/2 bbl @ 1/4 BPM & 350#; 1/4 bbl @ 1/4 BPM & after 15 min had 350# std'g press. Cleared perfs w/2 bbls for a total of 60.38 bbls displ'mt. & pld stinger out of retainer. Pld 120' & SDON.
1/14/81	10,990	Day-98. TD - Prep to TIH w/DC's & bit to drill out cmt sqz. Stung into retainer at 9560' & pmpd in @ 5 BPM @ 1900#. Pmpd 5 bbl wtr into tbg. HOWCO mixed 150 sx Cl "H" cmt w/.7% Halad-9 add (28.3 bbls slurry) & pmpd same into tbg foll'd by 16 BW. Lowered stinger into retainer & caught up to flw w/40 bbls displacement. Displ'd 15 bbls w/o any press which still left 1 bbl cmt slurry inside tbg plus 1-3/4 bbls inside csg below retainer & begin staging. Pmpd 1/2 bbl w/o press & SD 15 min, pmpd 1/2 bbl w/250# & SD 15 min, pmpd 1/2 bbl @ 300# & SD 15 min, pmpd 1/2 bbl @ 350 psi & SD f/30 min, pmpd 1/4 bbl @ 1200 psi f/a total of 57-1/4 bbls displm't behind cmt. Pld stinger above retainer & rev'd 58 bbls--no cmt in returns. Stung into retainer & pmpd 1/4 w/press incr'g to 2000#--bled off to 1900# in 15 min. Press'd to 2100# w/no bleed off. TOH. PU bit & DCs & begin TIH. SDON. NOTE: The 10-3/4" x 7" annulus valve was opnd during this 150 sx sqz but there wasn't any blow.
1/15/81	10,990	Day-99. TD - Prep to TOH w/bit & run CBL & perf f/tst. Fin TIH w/ 6-1/8" bit & 6 - 4-3/4" DCs. Tagged cmt retainer @ 9560'. RU power swivel & in 3-1/2 hrs drld retainer. Tagged cmt below retainer @ 9575' & DO hard cmt to just below sqz'd perfs @ 9605'. CO 9686' & circ'd hole clean. Tstd csg to 2000# - OK. SDON.
1/16/81	10,990	Day-100. TD - Prep to run Bkr pkr & swb tst. POH w/tbg & DC. RU Petrolog & run CBL f/PBTD to cmt top @ 9316'. Re-logged well w/1000# on csg. Bond as foll: 9678-9666' 85-100%; 9649-9666' 50-95%; 9638-9649' 80-85%; 9632-9638' 60-90%; 9694-9632' 90-100%; 9560-9592' 40-85%; 9448-9560' 90-100%; 9443-9448' 60-90%; 9432-9443' 85-100%; 9422-9432' 60-80%; 9401-9422' 80-100%; 9394-9401' 45-100%; 9316-9394' 80-100%. LD logging tools & PU perf'g gun. Perf Schl Cyberlook interval 9619-9638' w/2 JSPF f/total 39 shots. Used 4" csg gun w/23 gram DML charges. No flw or appreciable wtr loss after perf. RD perf. Displ hole w/1 std clr. SDON.
1/17/81	10,990	Day-101. TD - Prep to check FL & acidize perfs 9619-9638'. THP is TSTM. RIH w/Baker retriematic pkr & set same @ 9607' RKB. Tstd annulus to 1500 psi, OK. Bebin swbg at 1pm, 1/15/81. Swbd 60 to 70 bbls wtr fluid in 13 swab runs. Finl fluid level @ 9500'. Swbd fluid was KCL wtr and a mixture of KCL & salt wtr. Last run recovered 1/2 bbl of wtr cut drlg mud. No odor or shows. Caught sample f/next to last swab run. Annulus stood full during the swbg operations.

1/18/81	10,990	Day-102. TD - Prep to swab well. 0 psi SITHP @ 7 am 1/18/81. RIH w/swb & tagged fluid level @ 8900'. Made swab run and caught sample. Loded tbg w/2% KCL & pmpd in @ 2800 psi. Released pkr, added an eight foot pup jt and reset pkr @ 9611' RKB. RU Dowell and spotted 1000 gallons 7-1/2% MSR-100 acid using 50 ball sealers. Broke down @ 2200 psi and pmpd in @ 2 BPM @ 0 psi. Displcd acid w/57 bbls 2% KCL wtr. ISIP was 0 psi. RU swab and had FL @ surface. Swbd 65 bbls in 13 runs & well kicked off flowing @ 0 psi FTHP & by bucket tst @ 700 BPD rate plus and underterminable amount of non-flamable gas (probably acid gas). Flowing fluid is H_2O cut mud with LCM material (cedar fiber). Flowed well to reserve pit & well died @ 8 pm 1/17/81.
1/19/81	10,990	Day-103. TD - Prep to continue swbg/flowing the interval 9619-9638'. Fluid level on 1st swab run @ 200'. Swbd ± 450 bbls fluid in 37 swab runs w/fluid level remaining @ ± 200' from surface. Annulus was periodically checked and was okay. Fluid swbd was reddish-brown H_2O and didn't taste very salty. Well began flowing @ ± 9 BPH rate @ 4:30 pm 1/18/81. Caught water sample & SDON.
1/20/81	10,990	Day-104. TD - Prep to POH w/pkr & cmt off 9619'-9638' interval. Well had been SION & 7 am 1-19-81 THP = 0 psi. Rigged up swab. FL at the surf, 1-19-81. Made a total of 32 swab runs with well flwg intermittantly. Rec'd estimated 400 bbls of hot reddish brown wtr - nearly fresh. Caught sample @ noon and one before shutting down at end of day (1-19-81). Annulus stood full during the tst. Chem Lab analysis of wtr sample caught at end of day 1-18-81 after having acidized and swabbed/flowed ± 400 bbls of reddish brown wtr was as follows: Sodium 6,295 mg/L; Pottassium 170 mg/L; Calcium 1,071 mg/L; Sulphates 1,088 mg/L; Chlorides 11,150 mg/L; Magnesium 165 mg/L, PH 6.8; Resistivity water was .036 ohm meter @ 68° F. Total dissolved solids are 20,182 mg/L.
1/21/81	10,990	Day-105. TD - Prep to COH & perf zone #2 f/9381-9429'. Rel pkr, POH. RIH w/model K-1 cmt retainer to 9548.36'. Set retainer. RU Hallib. Est inj rate @ 4-1/2 BPM @ 800 psi. Mxd 200 sx Cl "H", .7% Halad 9, 37.8 bbls slurry. Pmpd 5 BW ahead. 37.8 bbls cmt. Displ'd w/55.75 bbls wtr. Unstung retainer. Left 1 bbl cmt in tbg. Pld up 30'. Reversed out. (68 bbls total) 5 gals of watery cmt in returns. SDFN.
1/22/81	10,990	Day-106. TD - Cont GIH to 9334' & set pkr. Mix 370 bbls 2% KCL. Circ'd csg. POH. RU Welex. Perf'd w/4" csg gun (23 gram, DML, 1/2" hole) @ 9381-9389'. 9413-9421', 9426-29' w/2 SPF. RD Welex. Redressed Bkr pkr retrievamatic. Ran to 8000'. SI well. SDON.
1/23/81	10,990	Day-107. TD - Prep to sq off interval 9381 to 9429' & come up to 9231-9235'. Cont RIH w/Baker Packer and set same @ 9334' w/S.N. @ 9331'. Made 6 swab runs to 4000' w/fluid level 100 to 300'. Well kicked off flwg @ noon 1-22-81, flwg in excess of 20 BPH of clear, warm salt wtr (taste indicates low salinity). Flwd well overnite & by 7 am flwd total of 400 bbls to pit. Caught sample after 100 bbls on 1-22-81 and drove sample to SLC and put on plane to Casper f/wtr analysis. Will catch sample this morning f/analysis.

1/24/81	10,990	Day-108. TD - Prep to cmt sqz 9381-9429'. Rel'd Bkr pkr & POH. RIH w/Bkr Mod "K" cmt retainer & set same @ 9334'. Chem Lab analysis of wtr sample caught @ end of day 1/22 after swbg & having flwd total of 100 bbls fld f/9381-9429' was as foll: Sodium 2209 mg/L; Pottassium 139 mg/L; Calcium 430 mg/L; Magnesium 65 mg/L; Sulphates 725 mg/L; Chlorides 3760mg/L; Carbonates 0 mg/L; Total dissolved solids 7583 mg/L; Ph 6.6; Resistivity of wtr .89 ohm meter @ 68°F. Sample caught about 9 am 1/23/81 after having flwd about 400 bbls will be sent to Chem Lab f/analysis.
1/25/81	10,990	Day-109. TD - Prep to perf 9231-9235'. Stung into cmt retainer @ 9334' & then PU & displ'd tbg & csg vol w/ fresh wtr to lower wellbore temp. Stung into retainer & estab'd fm pmp in rate of 5 BPM @ 1400#. Mixed 200 sx of Cl "H" cmt w/.7% Halad-9 add (38 bbls cmt slurry) & displ'd w/45 BW w/last 10 bbls being pmpd in @ 1/2 BPM & 3000#. Held 1500# on annulus during sqz. Pld 30' above cmt retainer & rev'd out 50 sx cmt. Circ'd hole w/2% CL1 wtr & begin TOH. SDON.
1/26/81	10,990	Day-110. TD - Prep to cont flwg/swbg well. Perf'd 9231-9235' w/2 JSPF (.47" dia holes). RIH w/Bkr pkr & set @ 9207'. Well begin flwg when pkr was set. Flwd @ 1-1/2 to 2 BPM rate. RU swb & made 10 swb runs to 2000' w/FL @ surf. To 7 am 1/26/81 have rec'd 170 BF - dirty colored wtr which clears up after allowed to settle f/ couple hrs.
1/27/81	10,990	Day-111. TD - Prep to rel pkr & TOH & sq 9231-9235'. At 7 am 1/26 well was flwg 1-1/2 to 2 BPH w/170 BF rec'd since perf'g 9231-9235'. RU & swbd well until 6 pm 1/27, plg swb f/2000' w/FL @ 100' between runs. Total fld (sli discolored wtr) swbd/flwd in 10 hrs was 380 bbls f/a total f/this interval of 550 bbls. Caught sample @ noon 1/26. Cumulative fld @ this time = 340 bbls since perf'g. Sample will be sent to Chem Lab f/wtr analysis.
1/28/81	10,990	Day-112. TD - Prep to abandon well. Rel'd pkr & POH. Ran Bkr Mod "K" cmt retainer & set same @ 9205'. Pmpd into perfs 9231-9235' @ 5 BPM @ 800#. Mixed 125 sx Cl "H" cmt w/.7% Halad-9 add & sqz 115 sx below retainer w/1300# standing press. Pld above retainer & placed 10 sx above retainer. Pld up 30' & rev'd out tbg capacity. Begin POH LD tbg to abandon well.
1/29/81	10,990	Day-113. TD - Moving off rig & equipment. LD 2-7/8" tbg & begin npl'g dn BOPs & other equip. This am will have 7 L. L. Smith trucks (Casper) on location to haul back tbg & other tools.
1/30/81	10,990	Day-114. TD - Well is temporarily abbandoned until 7" csg is cut & pld and cmt plugs sptd. Fin'd DN BOPs & McElvoy tbg head & rel'd Welltech compl rig 4 pm 1/29/81. Loaded up 2 L. L. Smith trucks w/2-7/8" tbg (314 jts) f/return to Walkers yard in Casper. Loaded up 4 L.L. Smith trucks w/rig equip, components, pipe racks, etc., f/trip to Riverton. The McElvoy tbg head will be dropped off at McElvoy's shop in Rock Springs. Truck didn't arrive to haul BOPs, closing unit, 6 DCs, bit sub, TIW surf valve, & handling tools. (Drop f/report until well is P & A'd.)

4/25/81	10,990	Day-115. TD - Fin RU unit. Welded lift nple on 7" csg stub. Set up jacks & cribbing. (Drop f/report of 1/30/81.)
4/26/81	10,990	Day-116. TD - Strt to POH. Fin'd RU jack base cribbing & jacks. PU on 7" csg & removed slips. Wrkd pipe. Took free pt by stretch meas @ 7800'. Shot off csg @ 7800'. Had gd cut.
4/27/81	10,990	Day-117. TD - Prep to cmt 1st plug. Ran shot in well @ 7800'. Got cln shot. RU power & manual tongs. Pld 6 jts to bld slide & pipe racks.
4/28/81	10,990	Day-118. TD - Prep to cmt. Began circ thru pipe & reciprocating f/gd circ. Prep to cmt when swedge blew apart. Had to find welder (5 hrs).
4/29/81	10,990	Day-119. TD - Prep to press up on csg & SI (WO sprocket). Pld 5 jts Buttress & chg over jt & then pmpd f/circ. Cmtd w/150 sx cmt. Pld 8 jts wet; tried to pmp, but couldn't. Pld 9 more jts when chain & sprocket brk on 6-plex hydraulic pmp causing loss of jacks.
4/30/81	10,990	Day-120. TD - Repaired hydraulic pmp. Ran sinker bar on slick line & sinker bar stopped @ 4890'. Press csg slowly to 4200 psi & blew swage out of csg. POH one more jt 7" csg. SD to repair swage.
5/1/81	10,990	Day-121. TD - Plg csg. Pmpd on plugged csg f/3200-4000#. Ran WL & found depth of plug @ 4849'. Then ran sml shot to put hole in csg to equal out hole press. Adjusted mast & strtd plg csg. LD 21 jts.
5/2/81	10,990	Day-122. TD - Prep to resume plg 7" csg. LD 7 jts. RU manual tongs, then pld & LD 40 more jts 7". Total 47 dn today.
5/3/81	10,990	Day-123. TD - Prep to resume plg 7" csg. Pld & LD 6 jts & Hyd pmp began to fail. Cln'g Hyd oil. Pld 31 more jts. Total 37 jts today.
5/4/81	10,990	Day-124. TD - Well closed in - WO plg unit. Resumed POH & LD 7" csg. Pld & LD 14 jts when csg parted @ pt where shot was made as it was just below spider. Rec total 149 jts 7" csg. Est 47-2/3 jts (1890') dropped off. Ran 1 jt & rehung & welded cap on top. RD Thaxton Enterprises. Rel'd SU 5:00 pm.
5/5/81	10,990	Day-124. TD - WO plg unit. (Drop f/report until plg unit moves in.)
5/13/81	10,990	Day-125. TD - TIH w/tbg. RU Green River Well Service & WO tbg. Tbg arrived @ 3 pm. Unloaded & prep to GIH. Strapping. Tag top of csg (or) go to 5000' w/171 jts of 2-7/8" EUE tbg. (Dropped f/report of 5/5/81.)

5/14/81	10,990	Day-126. TD - Circ'g & prep to pmp 2nd plug @ 3400'. Began TIH @ 7 am. Reached 3750'. Pmpd then rotated thru wk bridge. Cont'd dn to 4575' where tite hole encountered. Tripped out & took off bit & bit sub. Tripped in & began circ'g dn tbg. Pmpd 170 bbls fresh wtr - getting full circ. Got 120 bbls hvy SW & old cmt up annulus & out to pit, then pmpd cmt plug @ 4575'. Pld 13 stds (397') wet, pmpd 6 BW to help equalize press. Pld 27 more stds until flw was equalized. SI valves & tbg O/N so plug would not move up hole.
5/15/81	10,990	Day-127. TD - FINAL REPORT - WELL P & A, 5/14/81. Ran tbg to 3410'. Tried to circ, but tbg was plugged w/old cmt, salt wtr & part of 1st plug. TOH & removed btm 3 stds. TIH 50 stds (3040') & began circ'g. Circ'd until flw line plugged @ 1200#. Pld valve off of spool & found rubber covering opng. Pld BOP off & pld rubber out of opng. Hooked BOP up & circ'd 190 bbls fresh wtr til flw line showed cln hole. RI 3 more stds & circ'd another 20 bbls. Pmp 2nd plug. Pld 66 jts dry & reverse circ'd. TOH & RU GO WL. Set CIBP @ 800' @ 5 pm. RI 1 std & pmpd surf plug. Set dry hole marker. Rel'd Hallib, GO WL & Green River Well Service @ 7:30 pm. 1st plug, 250 sx 4575-3320'; 2nd plug, 200 sx 3233-2793'; surf plug, 25 sx 61-surf.

CORE ANALYSIS RESULTS FOR

ARCO OIL & GAS COMPANY

HOLE IN ROCK NO. 1

WILDCAT

MILLARD COUNTY, UTAH

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

ARCO OIL & GAS COMPANY
HOLE IN ROCK NO 1
WILDCAT
MILLARD COUNTY

FORMATION : LOWER TERTIARY
DRLG. FLUID: WATER BASE MUD
LOCATION : SEC 30-T22S-R7W
STATE : UTAH

DATE : 10-22-80
FILE NO. : RP-2-6306
ANALYSTS : CW
ELEVATION: 4774'GL

CONVENTIONAL CORE ANALYSIS

SAMP. NO	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION	
	5902-5903							NO ANALYSIS - SHALE	
1	5903 -4	6.9		6.0	0.0	88.5		SD BROWN VF-CG CONG	VF
2	5904 -5	2.1		2.2	0.0	65.4		SD BROWN VF-MG SILTY	VF
3	5905 -6	0.01		9.0	0.0	90.2		SD BROWN VF-FG SILTY	
4	5906 -7	0.02		15.0	0.0	77.3		SD BROWN VF-MG SILTY	
5	5907 -8	3.4		18.2	0.0	53.2		SD BROWN VF-CG CONG	VF
	5908-5912							NO ANALYSIS - SHALE	
6	5912-13	0.01		8.4	0.0	89.4		SD BROWN VF-MG SILTY	
7	5913-14	0.01		6.7	0.0	86.6		SD BROWN VF-MG SILTY	VF
8	5914-15	0.02		7.8	0.0	79.7		SD BROWN VF-MG SILTY	
9	5915-16	0.06		18.5	0.0	64.8		SD BROWN VF-MG CONG	
10	5916-17	11		3.5	0.0	17.0		SD BROWN VF-CG CONG	
	5917-5920							NO ANALYSIS - SHALE	
11	5920-21	0.25		16.8	0.0	48.0		SD BROWN VF-CG CONG	
12	5921-22	84		10.8	0.0	51.9		SD BROWN VF-CG CONG	
13	5922-23	4.7		5.3	0.0	80.0		SD BROWN VF-CG CONG	
14	5923-24	0.01		5.4	0.0	61.5		SD BROWN VF-MG SILTY	
15	5924-25	1.4		7.1	0.0	24.5		SD BROWN VF-MG SILTY	VF
16	5925-26	0.53		10.7	0.0	23.4		SD BROWN VF-CG CONG	VF
17	5926-27	5.0		4.4	0.0	73.6		SD DK BROWN VF-CG CONG SILTY	VF
	5927-5928							NO ANALYSIS - RUBBLE	
	5928-9152							DRILLED	

VF = Vertical Fracture

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

ARCO OIL & GAS COMPANY
HOLE IN ROCK NO 1
WILDCAT
MILLARD COUNTY

FORMATION : LOWER TERTIARY
DRLG. FLUID: WATER BASE MUD
LOCATION : SEC 30-T22S-R7W
STATE : UTAH

DATE : 10-22-80
FILE NO. : RP-2-6306
ANALYSTS : CW
ELEVATION: 4774'GL

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION	
18	9152-53	0.02		0.5	0.0	82.0		LS DK GRAY FXLN	
19	9153-54	0.01		0.6	0.0	76.8		LS DK GRAY FXLN	
20	9154-55	0.01		0.8	0.0	77.5		LS DK GRAY FXLN	
21	9155-56	0.01		0.9	0.0	91.0		LS DK GRAY FXLN	
22	9156-57	0.03		1.0	0.0	89.9		LS DK GRAY FXLN	
23	9157-58	0.01		0.6	0.0	78.7		LS DK GRAY FXLN	
24	9158-59	0.01		0.3	0.0	68.2		LS DK GRAY FXLN	
25	9159-60	0.01		0.5	0.0	82.2		LS DK GRAY FXLN	
26	9160-61	0.02		0.9	0.0	69.9		LS DK GRAY FXLN	
27	9161-62	0.03		1.1	0.0	80.5		LS DK GRAY FXLN	
28	9162-63	0.01		0.7	0.0	66.8		LS DK GRAY FXLN	
29	9163-64	0.09		0.6	0.0	39.2		LS DK GRAY FXLN	
30	9164-65	0.01		0.9	0.0	49.5		LS DK GRAY FXLN	
31	9165-66	0.03		1.2	0.0	55.3		LS DK GRAY FXLN	
32	9166-67	0.45		0.7	0.0	58.6		LS DK GRAY FX LN	
	9167-9171							NO ANALYSIS - RUBBLE	
	9171-9505							DRILLED	
33	9505 -6	*0		5.9	0.0	69.5		DOLOO GRAY FXLN	VF
34	9506 -7	0.03	0.40	2.0	0.0	46.0		DOLO GRAY FXLN	VF
35	9507 -8	0.15	17	1.9	0.0	58.2		DOLO GRAY FXLN	VF
36	9508 -9	0.89	1.6	1.8	0.0	64.0		DOLO GRAY FXLN	VF
37	9509-10	7.4	0.49	2.2	0.0	70.0		DOLO GRAY FXLN	VF
	9510-9511							NO ANALYSIS - RUBBLE	
38	9511-12	0.35	0.42	2.6	0.0	67.9		DOLO GRAY FXLN	VF
	9512-9516							NO ANALYSIS - RUBBLE	

* = Unsuitable for Permeability

VF = Vertical Fracture

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Petroleum Reservoir Engineering

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39	9516.2-17.0	5.7		2.5	0.0	26.5		DOLO GRAY FXLN CALC	
40	9517.0-17.3	4.8		1.2	0.0	55.3		DOLO GRAY FXLN CALC	
	9517.3-18.0							REMOVED BY CLIENT	
41	9518.0-18.5	1.4		1.9	0.0	35.8		DOLO GRAY FXLN CALC	
	9518.5-18.7							REMOVED BY CLIENT	
42	9518.7-19.2	0.56		1.0	0.0	45.4		DOLO GRAY FXLN CALC	
	9519.2-19.9							REMOVED BY CLIENT	
43	9519.9-21.0	0.45		1.7	0.0	40.1		DOLO GRAY FXLN CALC	
44	9521.0-21.5	0.54		1.8	0.0	51.5		DOLO GRAY FXLN CALC	
	9521.5-10314							DRILLED	
45	10314-15 F	3.9		0.4	0.0	52.1		DOLO GRAY FXLN	
46	10315-16 F	0.79		0.9	0.0	24.5		DOLO GRAY FXLN	
47	10316-17	0.05		0.3	0.0	74.3		DOLO GRAY FXLN	
48	10317-18 F	5.0		1.3	0.0	71.2		DOLO GRAY FXLN	
49	10318-19 F	0.48		0.9	0.0	52.5		DOLO GRAY FXLN	
50	10319-20 F	0.36		1.8	0.0	76.8		DOLO GRAY FXLN	
	10320-10348							DRILLED	
51	10348-49 F	25		1.1	0.0	40.6		DOLO GRAY FXLN	
52	10349-50 F	3433		3.0	0.0	58.4		DOLO GRAY FXLN	VF
53	10350-51	0.03		1.6	0.0	69.3		DOLO GRAY FXLN	
54	10351-52	*		1.7	0.0	38.2		DOLO GRAY FXLN	
55	10352-53 F	0.56		1.5	0.0	29.5		DOLO GRAY FXLN	
	10353-10354							NO ANALYSIS - RUBBLE	
56	10354-55	0.01		1.6	0.0	69.7		DOLO GRAY FXLN	
57	10355-56	0.04		1.2	0.0	56.1		LS GRAY FXLN	

* = Unsuitable for Permeability

F = Fractured plug

VF = Vertical Fracture

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

ARCO OIL & GAS COMPANY
HOLE IN ROCK NO 1
WILDCAT
MILLARD COUNTY

FORMATION : LOWER TERTIARY
DRLG. FLUID: WATER BASE MUD
LOCATION : SEC 30-T22S-R7W
STATE : UTAH

DATE : 10-22-80
FILE NO. : RP-2-6306
ANALYSTS : CW
ELEVATION: 4774'GL

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION	
58	10356-57	0.01		1.2	0.0	36.6		LS GRAY FXLN	
59	10357-58	0.01		1.2	0.0	36.5		LS GRAY FXLN	
60	10358-59	<0.01		0.7	0.0	32.4		LS GRAY FXLN	
61	10359-60	0.02		0.6	0.0	37.2		LS GRAY FXLN	
62	10360-61	0.08		1.1	0.0	40.2		LS GRAY FXLN	
63	10361-62	<0.01		0.8	0.0	51.9		LS GRAY FXLN	
64	10362-63	0.11		1.2	0.0	35.2		LS GRAY FXLN	
65	10363-64	0.04		1.2	0.0	54.9		LS GRAY FXLN	
66	10364-65	<0.01		0.6	0.0	37.1		LS GRAY FXLN	
67	10365-66	<0.01		0.9	0.0	47.9		LS GRAY FXLN	
68	10366-67	<0.01		0.8	0.0	55.4		LS GRAY FXLN	
69	10367-68	<0.01		1.3	0.0	49.4		LS GRAY FXLN	
70	10368-69	0.16		1.6	0.0	41.6		LS GRAY FXLN	
71	10369-70	0.01		1.4	0.0	46.9		LS GRAY FXLN	
72	10370-71	0.01		0.9	0.0	74.5		LS GRAY FXLN	
73	10371-72	0.01		1.2	0.0	36.2		LS GRAY FXLN	
74	10372-73	<0.01		1.0	0.0	22.7		LS GRAY FXLN	
75	10373-74	F 0.92		0.9	0.0	47.3		LS GRAY FXLN	VF
76	10374-75	0.03		1.0	0.0	22.2		LS GRAY FXLN	
77	10375-76	<0.01		0.9	0.0	24.7		LS GRAY FXLN	
78	10376-77	0.21		1.1	0.0	19.2		LS GRAY FXLN	
79	10377-78	0.19		1.2	0.0	35.7		LS GRAY FXLN	VF

F = Fractured Plug

VF = Vertical Fracture

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JS-164-A

COMPANY ARCO OIL AND GAS WELL HOLE IN THE ROCK #1 TEST NO. 1 COUNTY MILLARD STATE UTAH

JOHNSTON-MACCO

Schlumberger

technical report

FIELD REPORT #25461 D

BOTTOM HOLE PRESSURE AND TIME DATA

JS-193

JOHN Schlumberger

PAGE NUMBER 2

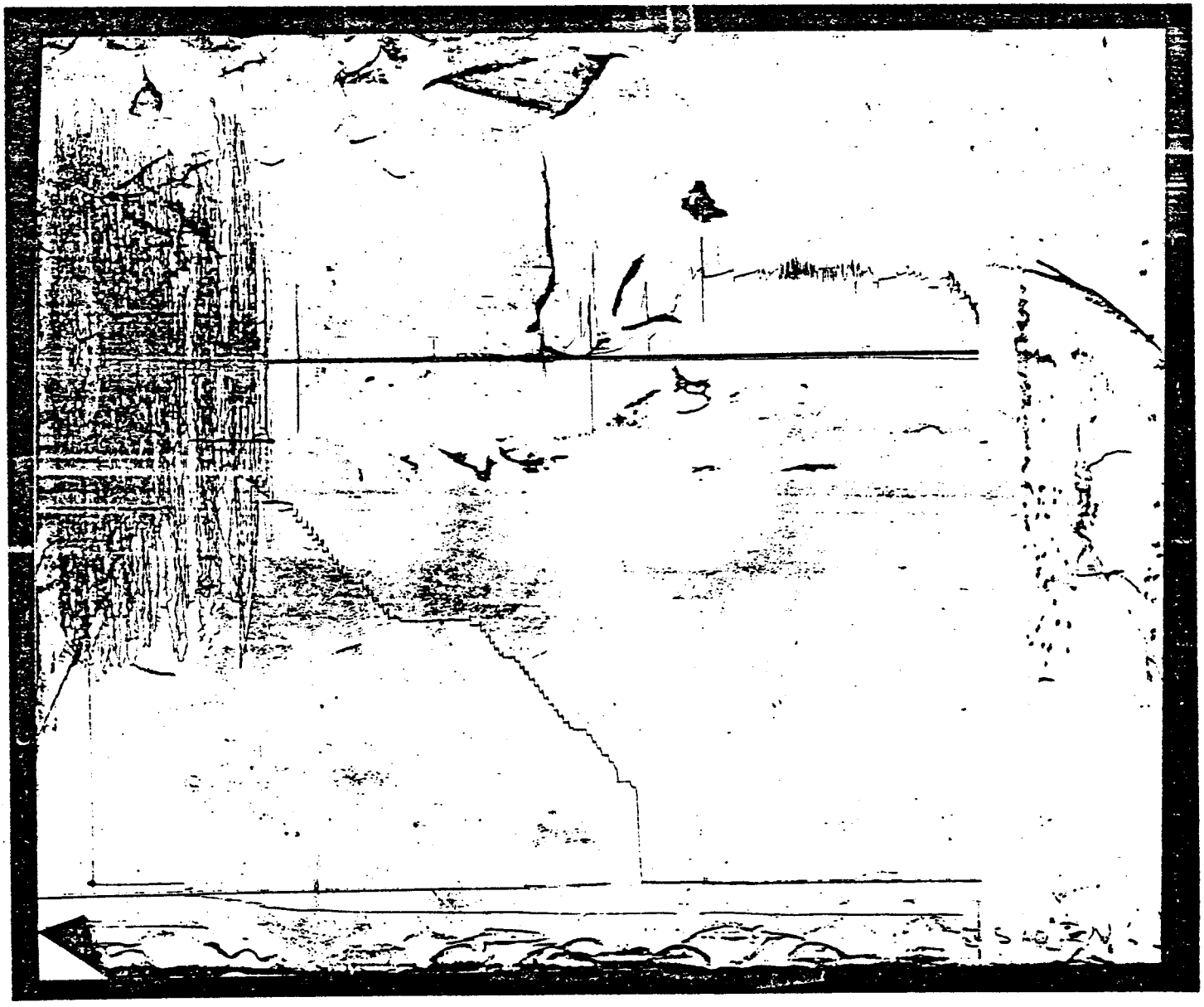
INSTRUMENT NUMBER	CAPACITY (P.S.I.)	DEPTH
J-510	6,400#	9,401'
PORT OPENING	**BOTTOM HOLE TEMPERATURE**	**FIELD REPORT NUMBER**
INSIDE	READ AT 200°F	25461 D

DESCRIPTION	LABELED POINTS	PRESSURE (P.S.I.)	GIVEN TIME	COMPUTED TIME
INITIAL HYDROSTATIC MUD				
INITIAL FLOW (1)				
INITIAL FLOW (2)				
INITIAL SHUT-IN				
SECOND FLOW (1)				
SECOND FLOW (2)				
SECOND SHUT-IN				
FINAL FLOW (1)				
FINAL FLOW (2)				
FINAL SHUT-IN				
FINAL HYDROSTATIC MUD				

REMARKS:

UNSUCCESSFUL TEST

5+



JOHNSTON
Schlumberger

JS-225

SURFACE INFORMATION

Description (Rate of Flow)	Time	Pressure (P.S.I.G.)	Surface Choke
Opened Tool	0933	–	1/4''
BLOW, 1/2'' IN WATER			
CLOSED FOR INITIAL SHUT-IN	0943	–	''
FINISHED SHUT-IN	1013	–	''
RE-OPENED TOOL	1014	–	''
BLOW, 1/4'' IN WATER			
NO BLOW	1017	–	''
SLIGHT BUBBLES ONLY	1051	–	''
NO BLOW	1100	–	''
CLOSED FOR FINAL SHUT-IN	1214	–	''
FINISHED SHUT-IN	1314	–	''
STUCK ABOVE PACKERS			

Cushion Type	Amount	Pressure	Bottom Choke
	–		Size 15/16''

MUD DATA

Mud Type LOW SOLIDS NON-DISP. Wt. 9.2
Viscosity 42 Water Loss 9.7 C.C.
Resist: of Mud – @ – °F; of Filtrate – @ – °F
Chloride Content – PPM

EQUIPMENT & HOLE DATA

Type Test M.F.E. OPEN HOLE
Formation Tested –
Elevation 4774 Ft.
Net Productive Interval 57 Ft.
Estimated Porosity – %
All Depths Measured From KELLY BUSHING
Total Depth 9482 Ft.
Main Hole/Casing Size 9 7/8''
Rat Hole/Liner Size –
Drill Collar Length 210' I.D. –
Drill Pipe Length 9141' I.D. –
Packer Depth(s) 9391 & 9395 Ft.

MULTI-FLOW EVALUATOR FLUID SAMPLE DATA

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

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	@ °F.	ppm
Recovery Mud	@ °F.	
Recovery Mud Filtrate	@ °F.	ppm
Mud Pit Sample	@ °F.	
Mud Pit Sample Filtrate	@ °F.	ppm

RECOVERY DESCRIPTION	FEET	BARRELS	% OIL	% WATER	% OTHERS	API GRAVITY	RESISTIVITY	CHL. PPM
–						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	

Remarks: UNSUCCESSFUL TEST; SPUDDED 30' TO BOTTOM OF HOLE. TOOL BECAME STUCK AND WAS FISHED FROM HOLE 4 DAYS LATER.

Address P. O. BOX 5540; DENVER, COLORADO 80202

Company ARCO OIL AND GAS Field WILD CAT
Well HOLE IN THE ROCK #1 Location SEC.30-T22S-R7W
Test Interval 9395' TO 9482' (UNSUCCESSFUL) Test # 1 Date 11-5-80

County MILLARD State UTAH
Technician RICHARDS (VERNAL) Test Approved By MR. E. L. GARRISON

Field Report No. 25461 D
No. Reports Requested 5

BOTTOM HOLE PRESSURE AND TIME DATA

JS—193

JOH' Schlu rger

PAGE NUMBER 3

INSTRUMENT NUMBER	CAPACITY (P.S.I.)	DEPTH
J-903	6,400#	9,426'
PORT OPENING	**BOTTOM HOLE TEMPERATURE**	**FIELD REPORT NUMBER**
OUTSIDE	READ AT 200°F	25461 D

DESCRIPTION	LABELED POINTS	PRESSURE (P.S.I.)	GIVEN TIME	COMPUTED TIME
INITIAL HYDROSTATIC MUD				
INITIAL FLOW (1)				
INITIAL FLOW (2)				
INITIAL SHUT-IN				
SECOND FLOW (1)				
SECOND FLOW (2)				
SECOND SHUT-IN				
FINAL FLOW (1)				
FINAL FLOW (2)				
FINAL SHUT-IN				
FINAL HYDROSTATIC MUD				

REMARKS:

UNSUCCESSFUL TEST

5+

JS-165

COMPANY ARCO OIL & GAS WELL HOLE IN THE ROCK #1 TEST NO. 2 COUNTY MILLIARD STATE UTAH

JOHNSTON

Schlumberger

computerized data analysis

FIELD REPORT # 25469 D

JOHNSTON
Schlumberger

COMPUTERIZED DATA ANALYSIS

DECEMBER 8, 1980

GENTLEMEN:

THE ENCLOSED TEST APPEARS TO BE A GOOD MECHANICAL DRILL STEM TEST DURING WHICH THE TOOLS DID FUNCTION PROPERLY. THE FORMATION PRODUCED ENOUGH RESERVOIR FLUID FOR PROPER IDENTIFICATION. RESERVOIR PRESSURE DRAWDOWN WAS SUFFICIENT AND AN ADEQUATE SHUT-IN BUILD-UP DID OCCUR FOR RELIABLE QUANTITATIVE ANALYSIS. (NO FINAL SHUT-IN BUILD-UP WAS OBTAINED) RESERVOIR PARAMETERS WERE CALCULATED BY THE HORNER METHOD.

1. FLOW RATE: A FLOW RATE OF 3708 BBLS/DAY OF WATER WAS NOTED DURING THE INITIAL FLOW PERIOD OF THIS TEST. THE AVERAGE RATE FOR BOTH FLOWS WAS 1946 BPD.

2. RESERVOIR PRESSURE: MECHANICAL STABILIZATION OF THE INITIAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 4449 P.S.I.G. AT RECORDER DEPTH. MECHANICAL STABILIZATION OF THE FINAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 4447 P.S.I.G. AT RECORDER DEPTH.

3. PERMEABILITY: THE CALCULATED TRANSMISSIBILITY FACTOR OF 8789.10 MD.-FT./CP. INDICATES AN AVERAGE EFFECTIVE PERMEABILITY TO WATER OF 42.53 MD. FOR THE REPORTED 62 FOOT NET INTERVAL. THE CALCULATIONS WERE BASED ON A SLOPE OF 71 P.S.I./LOG CYCLE OBTAINED FROM THE INITIAL SHUT-IN BUILD-UP PLOT. IT WAS ASSUMED FOR THESE CALCULATIONS: (A) VISCOSITY .30 CP., (B) FORMATION VOLUME FACTOR 1.035 BBL/BBL. THESE FIGURES WERE OBTAINED FROM THE AVAILABLE TECHNICAL LITERATURE.

4. WELLBORE DAMAGE: THERE APPEARS TO BE NO WELLBORE DAMAGE PRESENT AT THE TIME AND CONDITIONS OF THIS TEST.

5. RADIUS OF INVESTIGATION: THE CALCULATED RADIUS OF INVESTIGATION OF THIS TEST IS 1000 FEET BASED ON AN ASSUMED POROSITY OF 10%, COMPRESSIBILITY OF 3.2×10^{-6}, AND OTHER ASSUMPTIONS MADE IN NUMBER 3 ABOVE.

6. GENERAL COMMENTS: THE FORMATION EXHIBITS THE CHARACTERISTICS OF RELATIVELY GOOD PERMEABILITY EFFECTIVE TO THE RESERVOIR FLUID AND INDICATES THE ABSENCE OF WELLBORE DAMAGE.

D. J. Simper

D.J. SIMPER
RESERVOIR EVALUATION
DEPARTMENT

ARCO OIL & GAS
HOLE IN THE ROCK #1; MILLIARD COUNTY, UTAH
TEST #2; 10310' TO 10390'
LOCATION: SEC. 30 - T22S - R7W

FIELD REPORT # 25469 D

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.

JOHNSTON

Reservoir Engineering Data

Recorder No. J-510

Field Report No. 25469 D

Damage Ratio	DR	-		Effective Transmissibility TO WATER	$\frac{Kh}{\mu B}$	8789.10	$\frac{Md\text{-}ft.}{Cp.}$
Maximum Reservoir Pressure INITIAL SHUT-IN	P_o	4449	P.S.I.G.	Effective Transmissability	$\frac{Kh}{\mu B}$	-	$\frac{Md\text{-}ft.}{Cp.}$
Slope of Shut-in Curve INITIAL SHUT-IN	M	71	PSI/log cycle	Flow Rate INITIAL FLOW TEST AVERAGE	Q	3708 1946	Bbl./day
Potentiometric Surface (Datum Plane, Sea Level)	PS	4725	ft.	Pressure Gradient		.431	PSI/ft.
Productivity Index	PI	-	Bbl./day/PSI	Gas Oil Ratio	GOR	-	CF/Bbl.
Radius of Investigation		1000	ft.	K (Effective to WATER)		42.53	Md.

SLOPE M = 4462 - 4391 = 71

Assumptions made for Calculations for Liquid Recoveries

1. Q is averaged at a constant rate.
2. P_f is formation flowing pressure at a constant rate.
3. Formation flow is taken as single phase flow.
   If gas is produced at surface, phase separation is assumed to have occurred in drill pipe.
4. Radial flow is assumed.
5. For the purpose of calculating EDR where specific reservoir parameters are not available it is assumed that:

Effective permeability, K, will fall between	1 to 200 md
Formation porosity, ϕ, will fall between	0.1 to 0.3
Fluid compressibility, c, will fall between	10^{-6} to 10^{-4}
Fluid viscosity, μ, will fall between	0.05 to 50 cp.
Well bore radius, r_w, will fall between	$3\frac{7}{8}$" to $4\frac{3}{8}$"
Which gives an average value for the function log $\frac{K}{\phi\mu c r_w^2}$ of	5.5

6. Other standard radial flow, equilibrium assumptions.

Empirical Equations:

1. $EDR = \frac{P_o - P_f}{M(\log T + 2.65)}$ where $M = \frac{P_1 - P_{10}}{\text{Log Cycle}}$
2. Transmissibility $\frac{Kh}{\mu\beta} = \frac{162.6\,Q}{M}$
3. DST $J = \frac{Q}{P_o - P_f}$ Theoretical $J = \frac{7.08 \times 10^{-3}\,Kh}{\mu\beta \ln(r_e/r_w)}$ Assumed $\ln(r_e/r_w) = 7.60$
4. P.S. = [P_o × 2.309 ft./PSI] - [Recorder depth to sea level.]
5. Radius of investigation, $r_i = \sqrt{\frac{Kt}{40\phi\mu c}}$ where t = time in days

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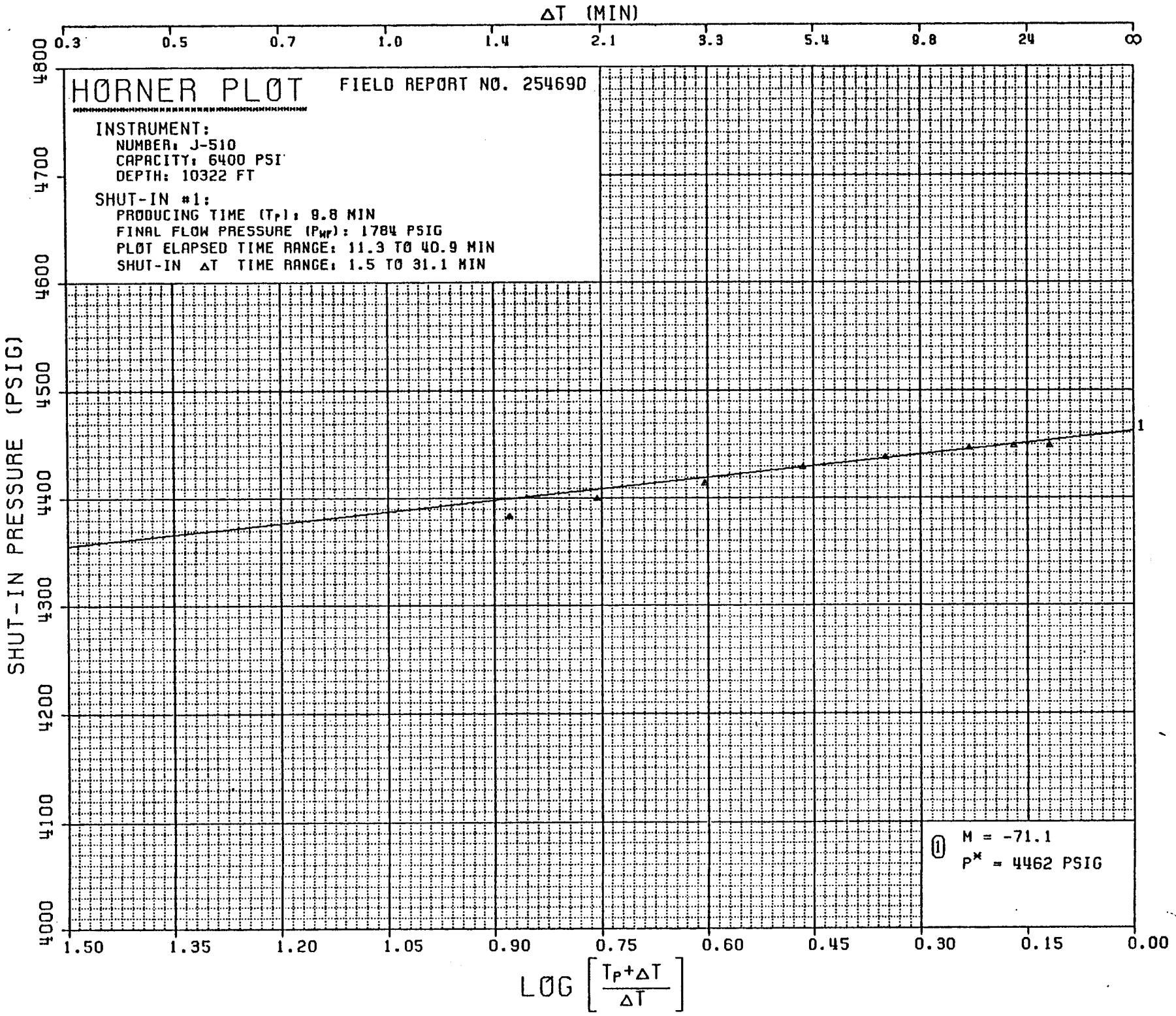
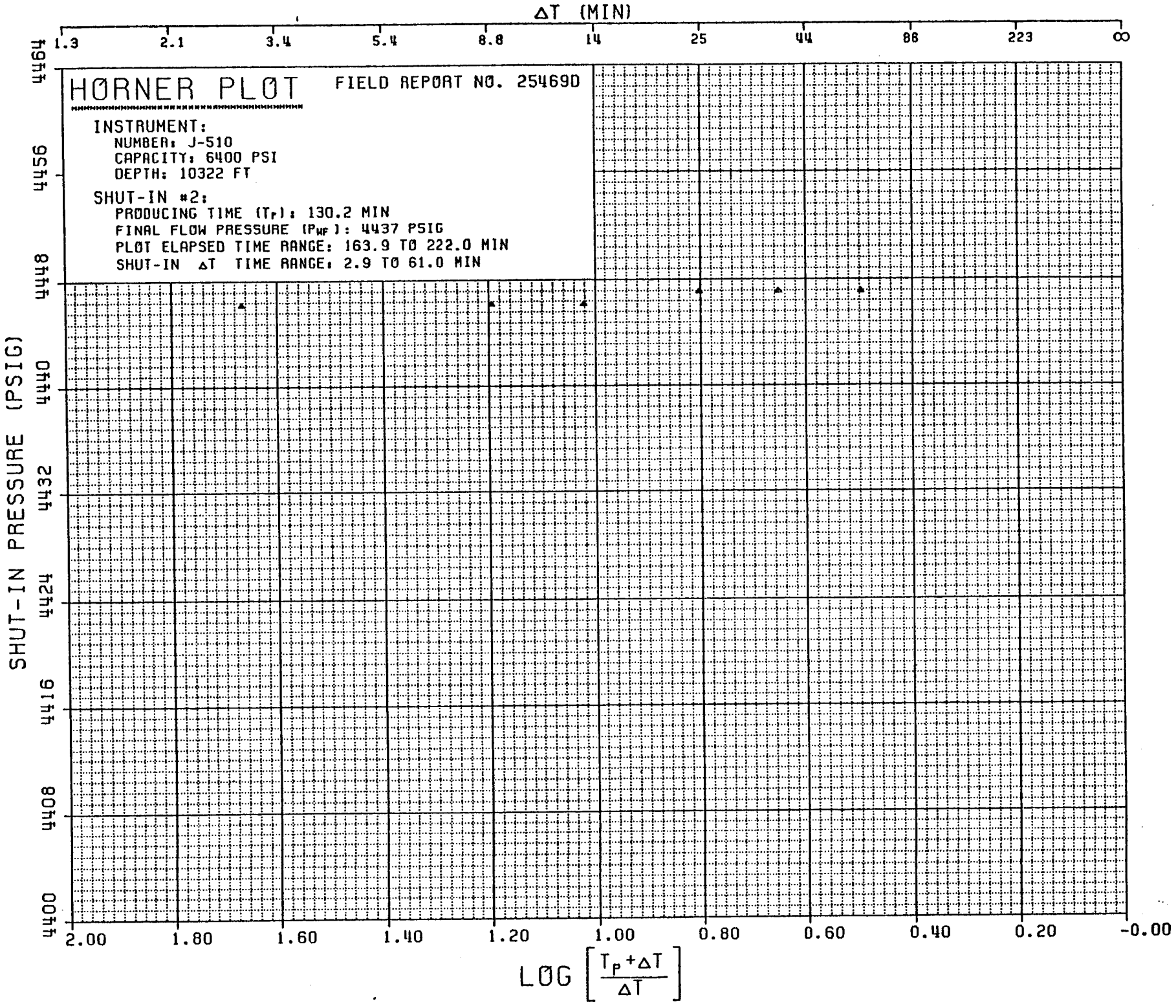

ΔT (MIN)
0.3
0.5
0.7
1.0
1.4
2.1
3.3
5.4
9.8
24
∞
HORNER PLOT
FIELD REPORT NO. 254690
INSTRUMENT:
NUMBER: J-510
CAPACITY: 6400 PSI
DEPTH: 10322 FT
SHUT-IN #1:
PRODUCING TIME (T_P): 9.8 MIN
FINAL FLOW PRESSURE (P_{WF}): 1784 PSIG
PLOT ELAPSED TIME RANGE: 11.3 TO 40.9 MIN
SHUT-IN ΔT TIME RANGE: 1.5 TO 31.1 MIN
SHUT-IN PRESSURE (PSIG)
4800
4700
4600
4500
4400
4300
4200
4100
4000
1
1
M = -71.1
P^* = 4462 PSIG
1.50
1.35
1.20
1.05
0.90
0.75
0.60
0.45
0.30
0.15
0.00
LOG $\left[\frac{T_P+\Delta T}{\Delta T}\right]$


ΔT (MIN)
1.3
2.1
3.4
5.4
8.8
14
25
44
86
223
∞
HØRNER PLØT
FIELD REPØRT NØ. 25469D
INSTRUMENT:
NUMBER: J-510
CAPACITY: 6400 PSI
DEPTH: 10322 FT
SHUT-IN #2:
PRODUCING TIME (T_P): 130.2 MIN
FINAL FLOW PRESSURE (P_{WF}): 4437 PSIG
PLØT ELAPSED TIME RANGE: 163.9 TØ 222.0 MIN
SHUT-IN ΔT TIME RANGE: 2.9 TØ 61.0 MIN
SHUT-IN PRESSURE (PSIG)
4464
4456
4448
4440
4432
4424
4416
4408
4400
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
-0.00
LØG $\left[\frac{T_P+\Delta T}{\Delta T}\right]$

FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-510

CAPACITY: 6400 PSI

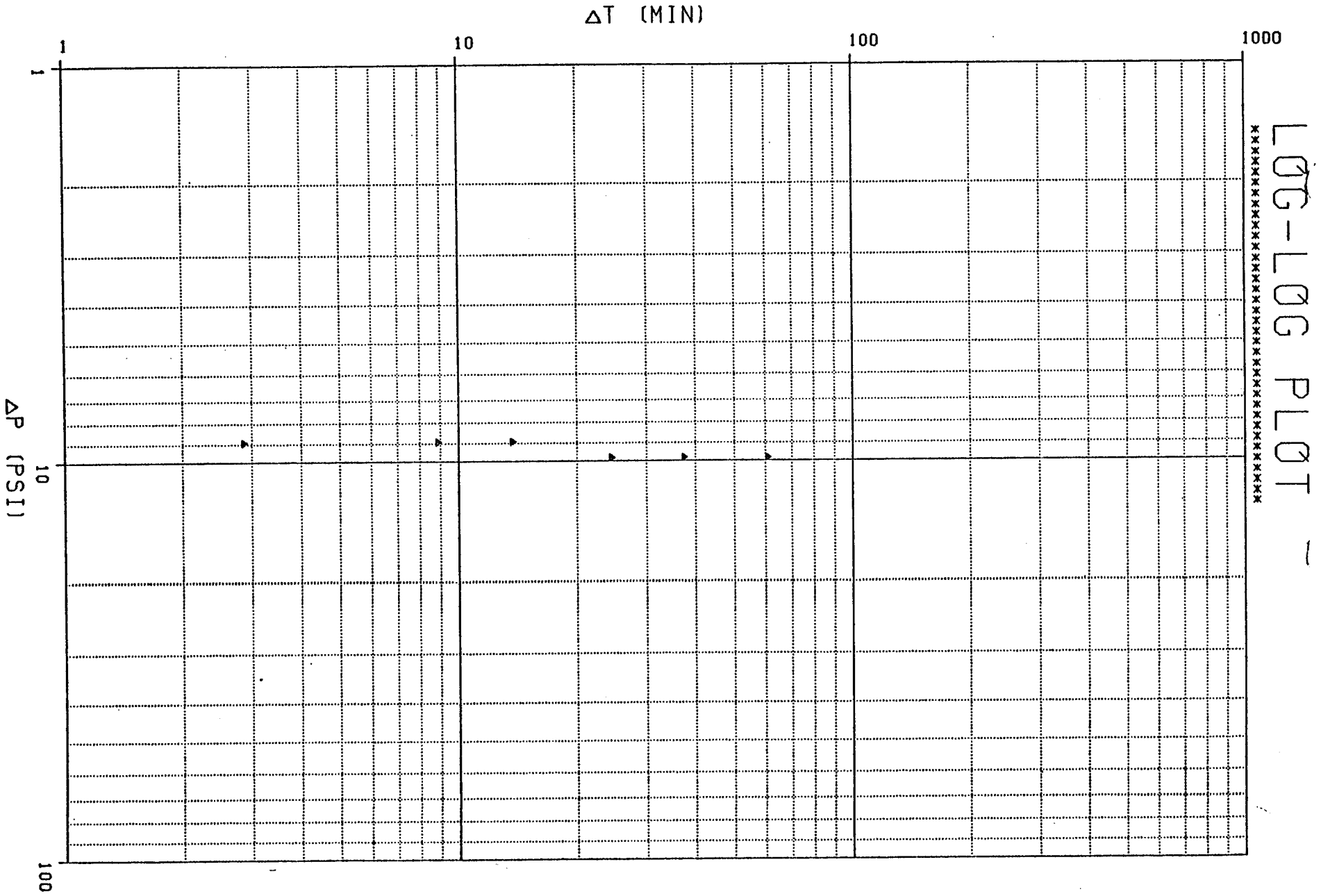
DEPTH: 10322 FT

SHUT-IN #2:

FINAL FLOW PRESSURE (P_{WF}): 4437 PSIG

PLOT ELAPSED TIME RANGE: 163.9 TO 222.0 MIN

SHUT-IN ΔT TIME RANGE: 2.9 TO 61.0 MIN



FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-510

CAPACITY: 6400 PSI

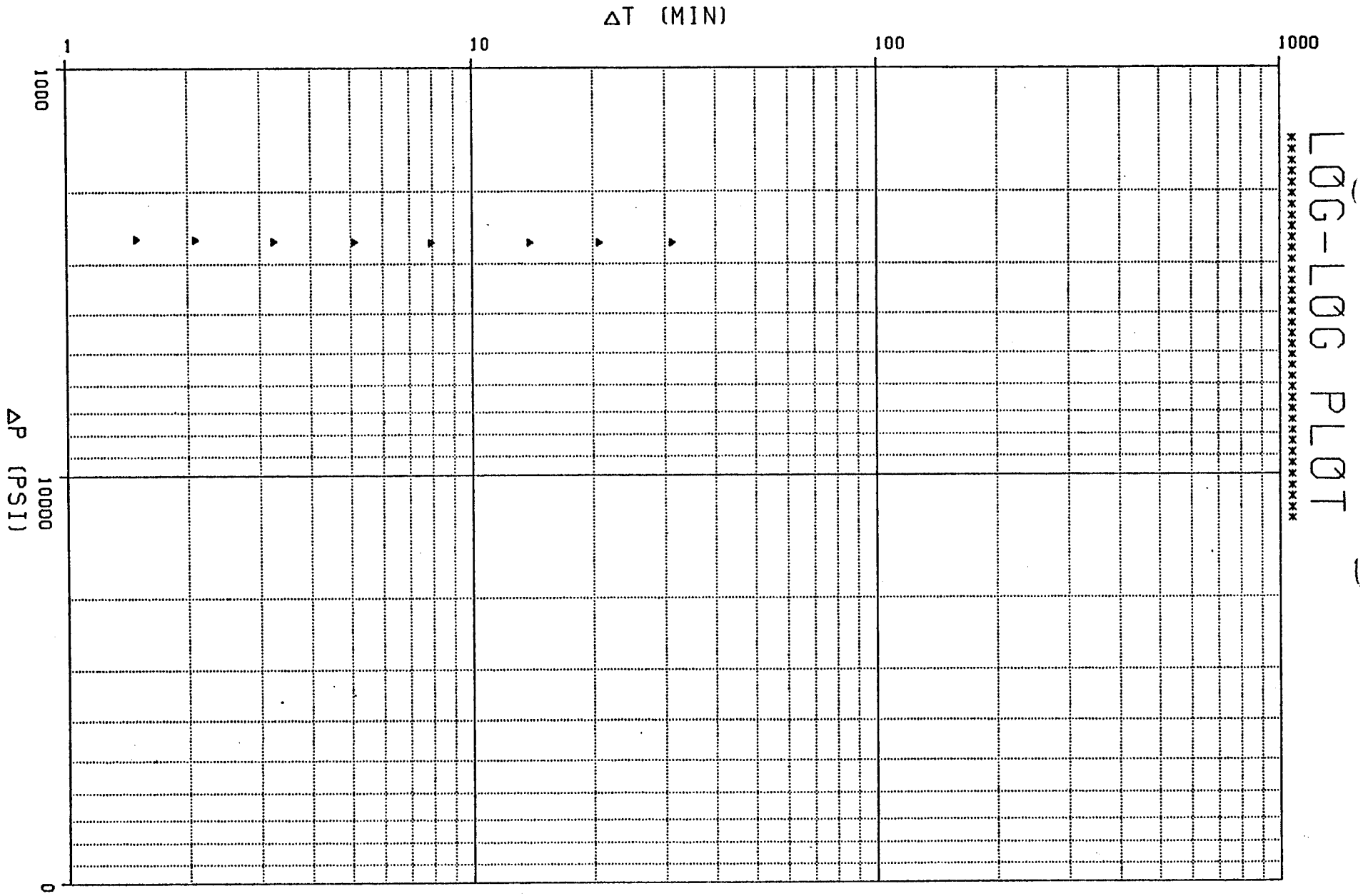
DEPTH: 10322 FT

SHUT-IN #1:

FINAL FLOW PRESSURE (P_{WF}): 1784 PSIG

PLOT ELAPSED TIME RANGE: 11.3 TO 40.9 MIN

SHUT-IN ΔT TIME RANGE: 1.5 TO 31.1 MIN



WELL IDENTIFICATION

COMPANY:	ARCO OIL & GAS P.O. BOX 5540 DENVER, COLORADO 80217	CUSTOMER:	SAME
WELL:	HOLE IN THE ROCK #1	LOCATION:	SEC. 30 - T22S - R7W
TEST INTERVAL:	10310' TO 10390'	FIELD:	WILD CAT
TEST NO:	2	TEST DATE:	11-28-80
COUNTY:	MILLIARD	STATE:	UTAH
TECHNICIAN:	STEWART (VERNAL)	TEST APPROVED BY:	MR. E.L. GARRISON

EQUIPMENT AND HOLE DATA

TEST TYPE:	M.F.E. OPEN HOLE		DRILL PIPE LENGTH:	9998	FT.
			DRILL PIPE I.D.:	-	IN.
ELEVATION:	4774	FT.	DRILL COLLAR LENGTH:	270	FT.
TOTAL DEPTH:	10390	FT.	DRILL COLLAR I.D.:	-	IN.
MAIN HOLE/CASING SIZE:	9 7/8	IN.	PACKER DEPTHS:	10306 & 10310	FT.
RAT HOLE/LINER SIZE:	-	IN.		&	FT.
FORMATION TESTED:	-			&	FT.
NET PROD. INTERVAL:	62	FT.	DEPTHS REF. TO:	KELLY BUSHING	
POROSITY:	-	%			

TEST TOOL CHAMBER DATA

SAMPLER PRESSURE:	-	PSIG
RECOVERED OIL GRAVITY:	- API @	- DEG. F.
RECOVERY GOR:	-	FT3/BBL.

SAMPLE CHAMBER CONTENTS

FLUID	VOLUME	RESIST. (OHM-M)	MEAS. TEMP. (DEG F.)	CHLOR. (PPM)
GAS:	- FT.3			
OIL:	- CC			
WATER: 180 (OIL CUT)	CC	-	-	-
MUD:	- CC	-	-	
FILTRATE:		-	-	-
TOTAL LIQUID:	180 CC			

MUD DATA

TYPE:	LOW SOLIDS NON DISPER.	
WEIGHT:	9.2	LB/GAL.
VISCOSITY:	42	SEC.
WATER LOSS:	9.7	CC

FLUID	RESIST (OHM-M)	TEMP (DEG F)	CHLOR (PPM)
MUD:	.2	40	
FILTRATE:	2.0	40	20000

REMARKS

NO. OF REPORTS REQUESTED: 12 (5X)

FIELD REPORT NO. 25469D

SURFACE INFORMATION

DESCRIPTION(RATE OF FLOW)	TIME	PRESSURE PSIG	SURFACE CHOKE
SET PACKER	1316	-	1/4"
OPENED TOOL	1318	1.25	"
BLOW OFF BOTTOM OF BUCKET	1324	-	"
CLOSED FOR INITIAL SHUT-IN	1328	-	"
FINISHED SHUT-IN	1358	-	"
RE-OPENED TOOL	1359	-	"
	14Ø3	1	"
	14Ø8	1.25	"
	1413	1.5	"
	1418	1.25	"
	1423	.75	"
	1428	.25	"
	1433	.25	"
BLOW IS AT 1/2" IN BUCKET	1438	.25	"
	1443	-	"
BLOW, 1/4" IN WATER	1448	-	"
BLOW DIED	1453	-	"
CLOSED FOR FINAL SHUT-IN	16ØØ	-	"
FINISHED SHUT-IN	17ØØ	-	"
PULLED PACKER LOOSE	17Ø1	-	"

CUSHION TYPE: - - FT - PSIG | 1/2 IN. BOTTOM CHOKE

RECOVERY INFORMATION

RECOVERY	FEET	BARRELS	%OIL	%WATER	%OTHERS	API GRAV.	DEG.	RESIST	DEG.	CHL PPM
MUD CUT WATER	9ØØ			65	35 MUD			.3	43	23ØØØ
LIGHT COLORED MUD WATER	162Ø			9Ø	1Ø MUD			1	5Ø	23ØØØ
WATER WITH SULFUR SMELL	7636			1ØØ				1.3	6Ø	25ØØØ

FIELD REPORT NO. 25469D

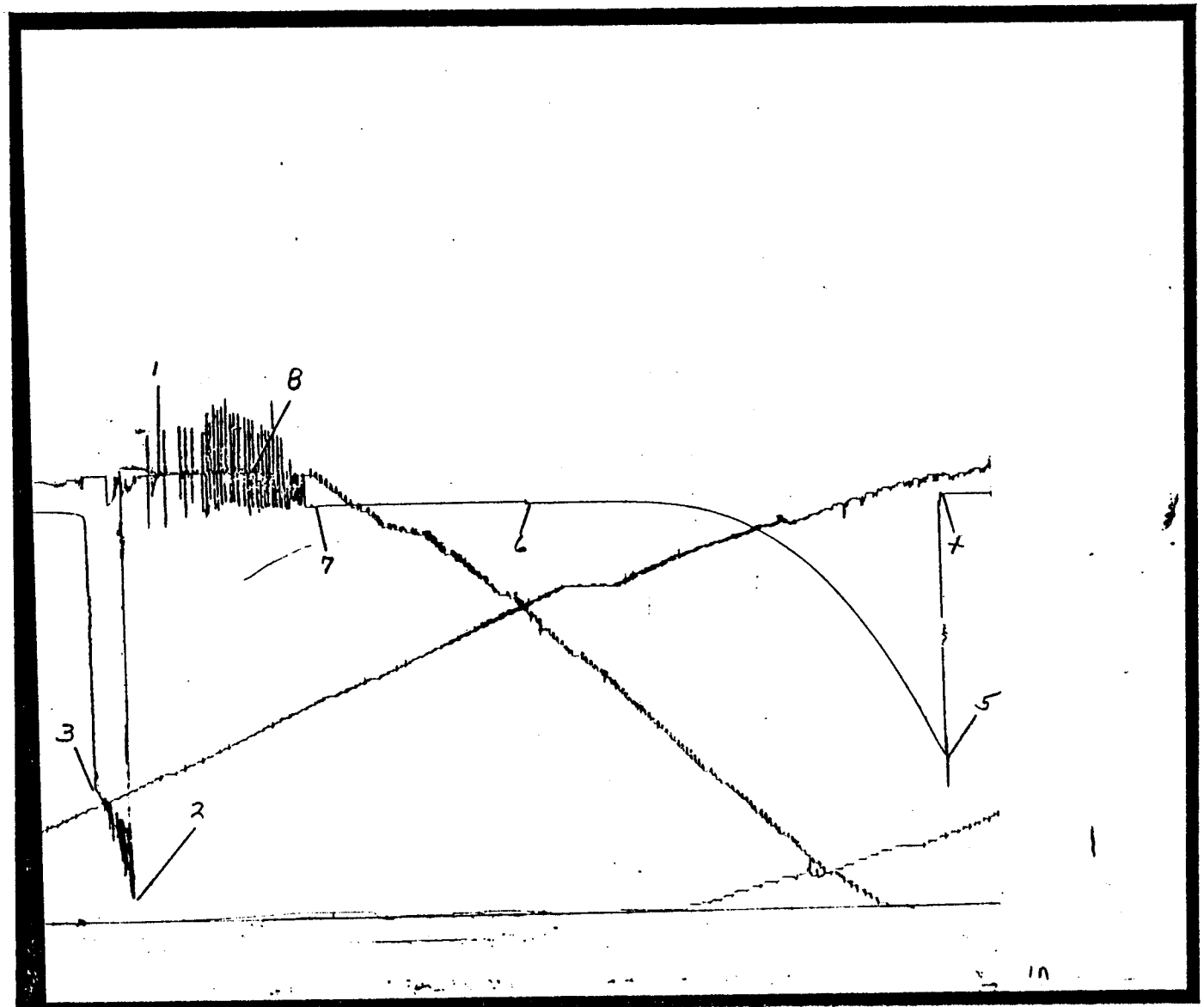
FIELD REPORT NO.: 25469 D

CAPACITY: 9000#

INSTRUMENT NO.: J-889

NUMBER OF REPORTS: 12+

JOHNSTON
Schlumberger



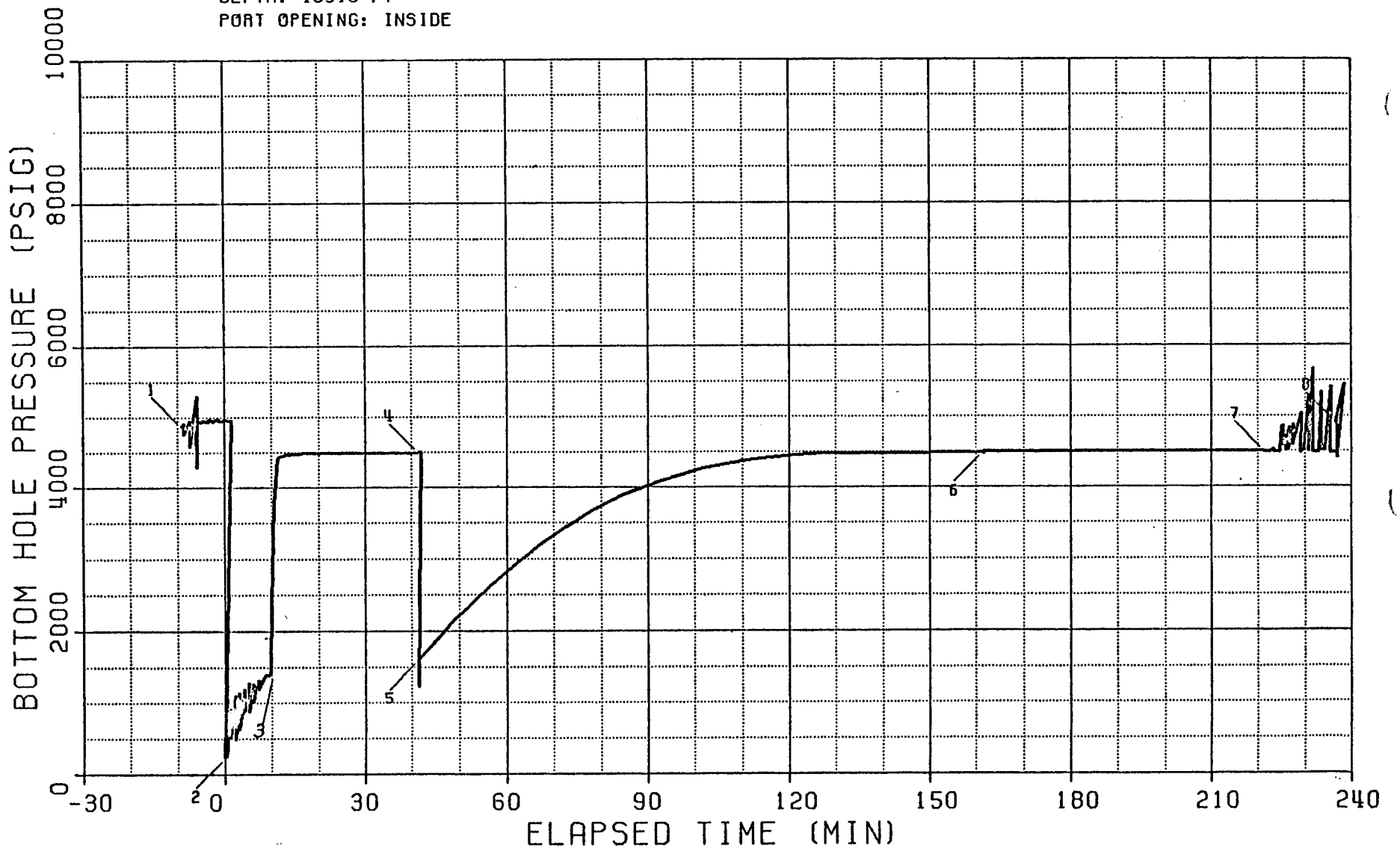
JS—167

PRESSURE LOG

FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-889
CAPACITY: 9000 PSI
DEPTH: 10316 FT
PORT OPENING: INSIDE



BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-889 CAPACITY (PSI): 9000 DEPTH (FT): 10316
PORT OPENING: INSIDE BOTTOM HOLE TEMP (F): 230

EXPLANATION	LABELED POINT	PRESSURE (PSIG)	ELAPSED TIME (MIN)
HYDROSTATIC MUD	1	4874	-9.2
START FLOW	2	236	0.0
END FLOW & START SHUT-IN	3	1445	9.7
END SHUT-IN	4	4490	41.3
START FLOW	5	1601	41.4
END FLOW & START SHUT-IN	6	4484	161.4
END SHUT-IN	7	4498	221.2
HYDROSTATIC MUD	8	4902	236.6

* SUMMARY OF FLOW PERIODS *

FLOW PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF FLOW (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)
1	0.0	9.7	9.7	236	1445
2	41.4	161.4	120.1	1601	4484

* SUMMARY OF SHUT-IN PERIODS *

SHUT-IN PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF SHUT-IN (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)	FINAL FLOW PRESSURE (PSIG)	PRODUCING TIME (MIN)
1	9.7	41.3	31.7	1445	4490	1445	9.7
2	161.4	221.2	59.8	4484	4498	4484	129.7

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-889

TEST PHASE : FLOW PERIOD # 1
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
Ø.Ø	Ø.Ø	236
5.Ø	5.Ø	882
9.7	9.7	1445

TEST PHASE : SHUT-IN PERIOD # 1
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 1445 PSIG
2. PRODUCING TIME ["T_P"] = 9.7 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
9.7	Ø.Ø	1445		Ø
1Ø.7	1.Ø	3896	1.Ø28	2451
11.7	2.Ø	4426	Ø.766	2981
12.7	3.Ø	4451	Ø.626	3ØØ6
13.7	4.Ø	4463	Ø.534	3Ø18
14.7	5.Ø	4469	Ø.467	3Ø24
15.7	6.Ø	4473	Ø.417	3Ø28
16.7	7.Ø	4477	Ø.377	3Ø32
17.7	8.Ø	448Ø	Ø.344	3Ø35
18.7	9.Ø	4483	Ø.317	3Ø38
19.7	1Ø.Ø	4484	Ø.294	3Ø39
21.7	12.Ø	4487	Ø.257	3Ø42
23.7	14.Ø	4489	Ø.228	3Ø44
25.7	16.Ø	449Ø	Ø.2Ø5	3Ø45
27.7	18.Ø	449Ø	Ø.187	3Ø45
29.7	2Ø.Ø	449Ø	Ø.171	3Ø45
31.7	22.Ø	449Ø	Ø.158	3Ø45
33.7	24.Ø	449Ø	Ø.147	3Ø45
35.7	26.Ø	449Ø	Ø.137	3Ø45
37.7	28.Ø	449Ø	Ø.129	3Ø45
39.7	3Ø.Ø	449Ø	Ø.121	3Ø45
41.3	31.7	449Ø	Ø.116	3Ø45

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-889

TEST PHASE : FLOW PERIOD # 2
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
41.4	0.0	1601
46.4	5.0	1963
51.4	10.0	2307
56.4	15.0	2624
61.4	20.0	2902
66.4	25.0	3169
71.4	30.0	3391
76.4	35.0	3594
81.4	40.0	3774
86.4	45.0	3929
91.4	50.0	4055
96.4	55.0	4160
101.4	60.0	4260
106.4	65.0	4323
111.4	70.0	4382
116.4	75.0	4417
121.4	80.0	4446
126.4	85.0	4466
131.4	90.0	4473
136.4	95.0	4477
141.4	100.0	4480
146.4	105.0	4481
151.4	110.0	4482
156.4	115.0	4483
161.4	120.0	4484
161.4	120.1	4484

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4484 PSIG
2. PRODUCING TIME ["T_P"] = 129.7 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
161.4	0.0	4484		0
162.4	1.0	4494	2.116	11
163.4	2.0	4494	1.819	11
164.4	3.0	4495	1.646	12
165.4	4.0	4496	1.524	12
166.4	5.0	4496	1.430	12
167.4	6.0	4496	1.354	12
168.4	7.0	4496	1.291	12

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-889

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4484 PSIG
2. PRODUCING TIME ["T_P"] = 129.7 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
169.4	8.Ø	4496	1.236	12
17Ø.4	9.Ø	4496	1.188	12
171.4	1Ø.Ø	4496	1.145	12
173.4	12.Ø	4497	1.Ø72	13
175.4	14.Ø	4498	1.Ø11	14
177.4	16.Ø	4498	Ø.959	14
179.4	18.Ø	4498	Ø.914	14
181.4	2Ø.Ø	4498	Ø.874	14
183.4	22.Ø	4498	Ø.839	14
185.4	24.Ø	4498	Ø.8Ø7	14
187.4	26.Ø	4498	Ø.777	14
189.4	28.Ø	4498	Ø.751	14
191.4	3Ø.Ø	4498	Ø.726	14
196.4	35.Ø	4498	Ø.673	14
2Ø1.4	4Ø.Ø	4498	Ø.628	14
2Ø6.4	45.Ø	4498	Ø.589	15
211.4	5Ø.Ø	4498	Ø.556	15
216.4	55.Ø	4498	Ø.526	15
221.2	59.8	4498	Ø.5Ø1	15

FIELD REPORT NO.: 25469 D

CAPACITY: 6400#

INSTRUMENT NO.: J-510

NUMBER OF REPORTS: 12+

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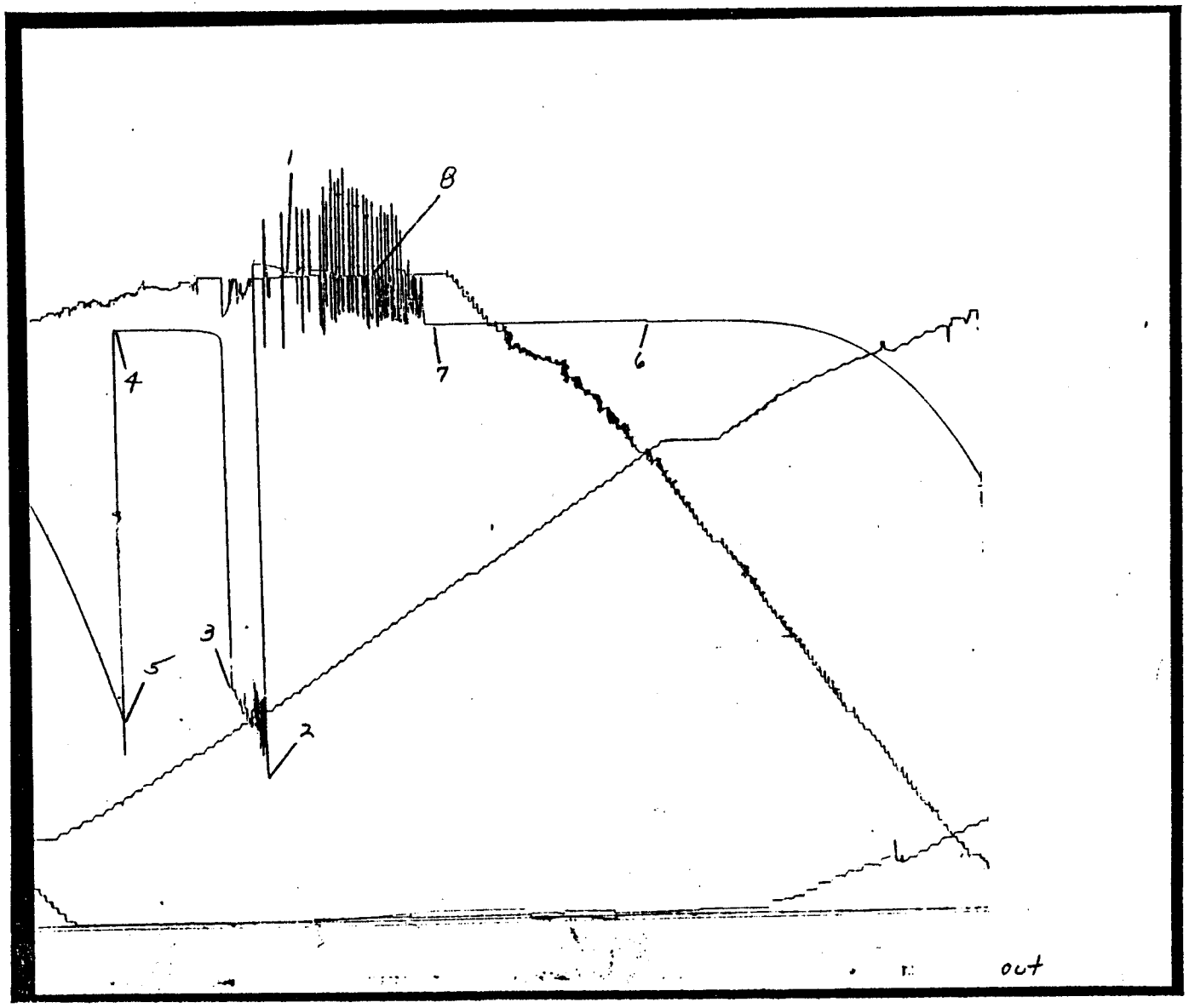


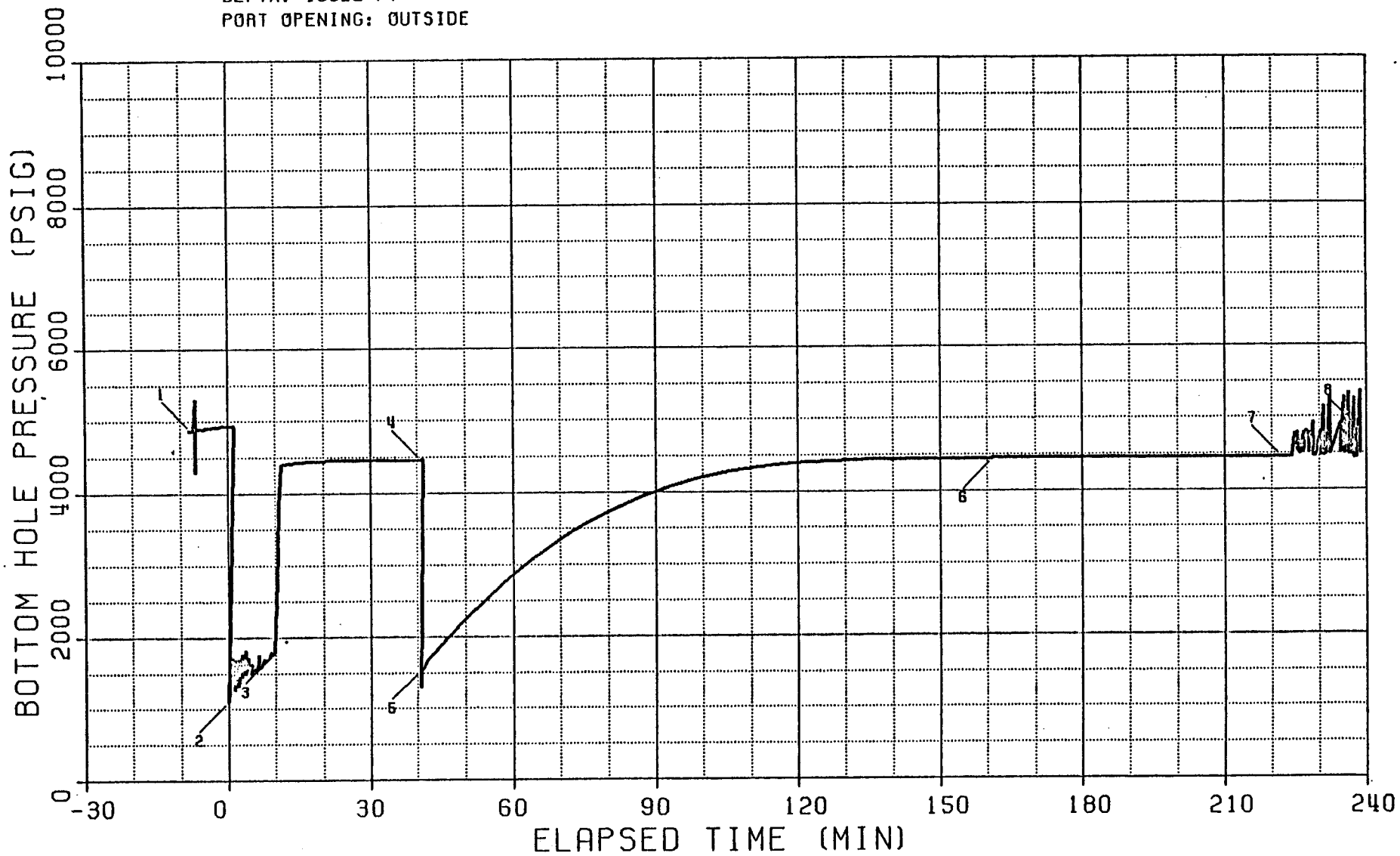
JS-167

PRESSURE LOG

FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-510
CAPACITY: 6400 PSI
DEPTH: 10322 FT
PORT OPENING: OUTSIDE



BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-510 CAPACITY (PSI): 6400 DEPTH (FT): 10322
PORT OPENING: OUTSIDE BOTTOM HOLE TEMP (F): 230 PAGE 1

EXPLANATION	LABELED POINT	PRESSURE (PSIG)	ELAPSED TIME (MIN)
HYDROSTATIC MUD	1	4859	-7.6
START FLOW	2	1101	0.0
END FLOW & START SHUT-IN	3	1784	9.8
END SHUT-IN	4	4449	40.9
START FLOW	5	1544	40.7
END FLOW & START SHUT-IN	6	4437	161.1
END SHUT-IN	7	4447	222.0
HYDROSTATIC MUD	8	4825	238.4

SUMMARY OF FLOW PERIODS

FLOW PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF FLOW (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)
1	0.0	9.8	9.8	1101	1784
2	40.7	161.1	120.4	1544	4437

SUMMARY OF SHUT-IN PERIODS

SHUT-IN PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF SHUT-IN (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)	FINAL FLOW PRESSURE (PSIG)	PRODUCING TIME (MIN)
1	9.8	40.9	31.1	1784	4449	1784	9.8
2	161.1	222.0	61.0	4437	4447	4437	130.2

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

TEST PHASE : FLOW PERIOD # 1
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
0.0	0.0	1101
5.0	5.0	1517
9.8	9.8	1784

TEST PHASE : SHUT-IN PERIOD # 1
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 1784 PSIG
2. PRODUCING TIME ["T_P"] = 9.8 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
9.8	0.0	1784		0
10.8	1.0	3965	1.033	2181
11.8	2.0	4398	0.770	2614
12.8	3.0	4411	0.630	2627
13.8	4.0	4420	0.538	2636
14.8	5.0	4428	0.471	2644
15.8	6.0	4431	0.420	2648
16.8	7.0	4435	0.380	2651
17.8	8.0	4438	0.347	2655
18.8	9.0	4440	0.320	2656
19.8	10.0	4441	0.296	2657
21.8	12.0	4444	0.259	2660
23.8	14.0	4447	0.230	2663
25.8	16.0	4447	0.207	2664
27.8	18.0	4448	0.189	2665
29.8	20.0	4449	0.173	2665
31.8	22.0	4449	0.160	2665
33.8	24.0	4449	0.149	2665
35.8	26.0	4449	0.139	2665
37.8	28.0	4449	0.130	2665
39.8	30.0	4449	0.123	2665
40.9	31.1	4449	0.119	2665

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

TEST PHASE : FLOW PERIOD # 2

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
40.7	0.0	1544
45.7	5.0	1939
50.7	10.0	2285
55.7	15.0	2609
60.7	20.0	2897
65.7	25.0	3161
70.7	30.0	3381
75.7	35.0	3575
80.7	40.0	3748
85.7	45.0	3895
90.7	50.0	4022
95.7	55.0	4125
100.7	60.0	4207
105.7	65.0	4275
110.7	70.0	4329
115.7	75.0	4364
120.7	80.0	4392
125.7	85.0	4411
130.7	90.0	4423
135.7	95.0	4431
140.7	100.0	4434
145.7	105.0	4436
150.7	110.0	4437
155.7	115.0	4437
160.7	120.0	4437
161.1	120.4	4437

TEST PHASE : SHUT-IN PERIOD # 2

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4437 PSIG
2. PRODUCING TIME ["T_P"] = 130.2 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
161.1	0.0	4437		0
162.1	1.0	4446	2.118	9
163.1	2.0	4446	1.820	9
164.1	3.0	4446	1.647	9
165.1	4.0	4446	1.526	9
166.1	5.0	4446	1.432	9
167.1	6.0	4446	1.356	9
168.1	7.0	4446	1.292	9

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4437 PSIG

2. PRODUCING TIME ["T_P"] = 130.2 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
169.1	8.0	4446	1.237	9
170.1	9.0	4446	1.189	9
171.1	10.0	4446	1.147	9
173.1	12.0	4446	1.074	9
175.1	14.0	4446	1.013	9
177.1	16.0	4446	0.961	9
179.1	18.0	4447	0.915	9
181.1	20.0	4447	0.876	9
183.1	22.0	4447	0.840	10
185.1	24.0	4447	0.808	10
187.1	26.0	4447	0.779	10
189.1	28.0	4447	0.752	10
191.1	30.0	4447	0.727	10
196.1	35.0	4447	0.674	10
201.1	40.0	4447	0.629	10
206.1	45.0	4447	0.590	10
211.1	50.0	4447	0.557	10
216.1	55.0	4447	0.527	10
221.1	60.0	4447	0.501	10
222.0	61.0	4447	0.496	10

JS-165

COMPANY ARCO OIL & GAS WELL HOLE IN THE ROCK #1 TEST NO. 2 COUNTY MILLIARD STATE UTAH

JOHNSTON

Schlumberger

computerized data analysis

FIELD REPORT # 25469 D

JOHNSTON
Schlumberger

COMPUTERIZED DATA ANALYSIS

DECEMBER 8, 1980

GENTLEMEN:

THE ENCLOSED TEST APPEARS TO BE A GOOD MECHANICAL DRILL STEM TEST DURING WHICH THE TOOLS DID FUNCTION PROPERLY. THE FORMATION PRODUCED ENOUGH RESERVOIR FLUID FOR PROPER IDENTIFICATION. RESERVOIR PRESSURE DRAWDOWN WAS SUFFICIENT AND AN ADEQUATE SHUT-IN BUILD-UP DID OCCUR FOR RELIABLE QUANTITATIVE ANALYSIS. (NO FINAL SHUT-IN BUILD-UP WAS OBTAINED) RESERVOIR PARAMETERS WERE CALCULATED BY THE HORNER METHOD.

1. FLOW RATE: A FLOW RATE OF 3708 BBLS/DAY OF WATER WAS NOTED DURING THE INITIAL FLOW PERIOD OF THIS TEST. THE AVERAGE RATE FOR BOTH FLOWS WAS 1946 BPD.

2. RESERVOIR PRESSURE: MECHANICAL STABILIZATION OF THE INITIAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 4449 P.S.I.G. AT RECORDER DEPTH. MECHANICAL STABILIZATION OF THE FINAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 4447 P.S.I.G. AT RECORDER DEPTH.

3. PERMEABILITY: THE CALCULATED TRANSMISSIBILITY FACTOR OF 8789.10 MD.-FT./CP. INDICATES AN AVERAGE EFFECTIVE PERMEABILITY TO WATER OF 42.53 MD. FOR THE REPORTED 62 FOOT NET INTERVAL. THE CALCULATIONS WERE BASED ON A SLOPE OF 71 P.S.I./LOG CYCLE OBTAINED FROM THE INITIAL SHUT-IN BUILD-UP PLOT. IT WAS ASSUMED FOR THESE CALCULATIONS: (A) VISCOSITY .30 CP., (B) FORMATION VOLUME FACTOR 1.035 BBL/BBL. THESE FIGURES WERE OBTAINED FROM THE AVAILABLE TECHNICAL LITERATURE.

4. WELLBORE DAMAGE: THERE APPEARS TO BE NO WELLBORE DAMAGE PRESENT AT THE TIME AND CONDITIONS OF THIS TEST.

5. RADIUS OF INVESTIGATION: THE CALCULATED RADIUS OF INVESTIGATION OF THIS TEST IS 1000 FEET BASED ON AN ASSUMED POROSITY OF 10%, COMPRESSIBILITY OF 3.2×10^{-6}, AND OTHER ASSUMPTIONS MADE IN NUMBER 3 ABOVE.

6. GENERAL COMMENTS: THE FORMATION EXHIBITS THE CHARACTERISTICS OF RELATIVELY GOOD PERMEABILITY EFFECTIVE TO THE RESERVOIR FLUID AND INDICATES THE ABSENCE OF WELLBORE DAMAGE.

D. J. Simper

D.J. SIMPER
RESERVOIR EVALUATION
DEPARTMENT

ARCO OIL & GAS
HOLE IN THE ROCK #1; MILLIARD COUNTY, UTAH
TEST #2; 10310' TO 10390'
LOCATION: SEC. 30 - T22S - R7W

FIELD REPORT # 25469 D

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.

JOHNSTON

Reservoir Engineering Data

Recorder No. J-510

Field Report No. 25469 D

Damage Ratio	DR	–		Effective Transmissibility TO WATER	$\frac{Kh}{\mu B}$	8789.10	$\frac{Md\text{-}ft.}{Cp.}$
Maximum Reservoir Pressure INITIAL SHUT-IN	P_o	4449	P.S.I.G.	Effective Transmissability	$\frac{Kh}{\mu B}$	–	$\frac{Md\text{-}ft.}{Cp.}$
Slope of Shut-in Curve INITIAL SHUT-IN	M	71	PSI/log cycle	Flow Rate INITIAL FLOW TEST AVERAGE	Q	3708 1946	Bbl./day
Potentiometric Surface (Datum Plane, Sea Level)	PS	4725	ft.	Pressure Gradient		.431	PSI/ft.
Productivity Index	PI	–	Bbl./day/PSI	Gas Oil Ratio	GOR	–	CF/Bbl.
Radius of Investigation		1000	ft.	K (Effective to WATER)		42.53	Md.

SLOPE M = 4462 – 4391 = 71

Assumptions made for Calculations for Liquid Recoveries

1. Q is averaged at a constant rate.
2. P_f is formation flowing pressure at a constant rate.
3. Formation flow is taken as single phase flow.
   If gas is produced at surface, phase separation is assumed to have occurred in drill pipe.
4. Radial flow is assumed.
5. For the purpose of calculating EDR where specific reservoir parameters are not available it is assumed that:

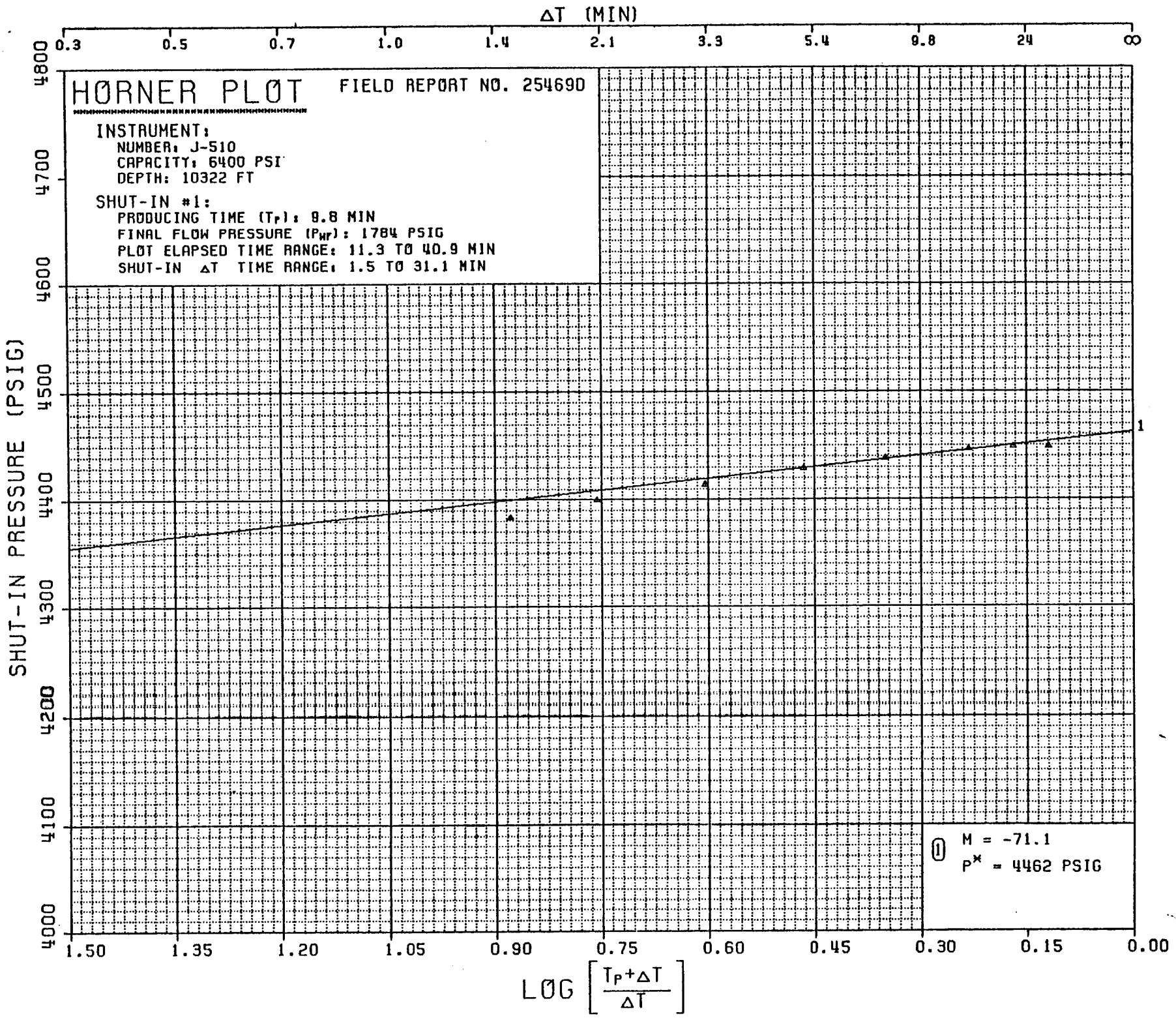
Effective permeability, K, will fall between	1 to 200 md
Formation porosity, ϕ, will fall between	0.1 to 0.3
Fluid compressibility, c, will fall between	10^{-6} to 10^{-4}
Fluid viscosity, μ, will fall between	0.05 to 50 cp.
Well bore radius, r_w, will fall between	$3\frac{7}{8}$" to $4\frac{3}{8}$"
Which gives an average value for the function $\log \frac{K}{\phi \mu c r_w^2}$ of	5.5

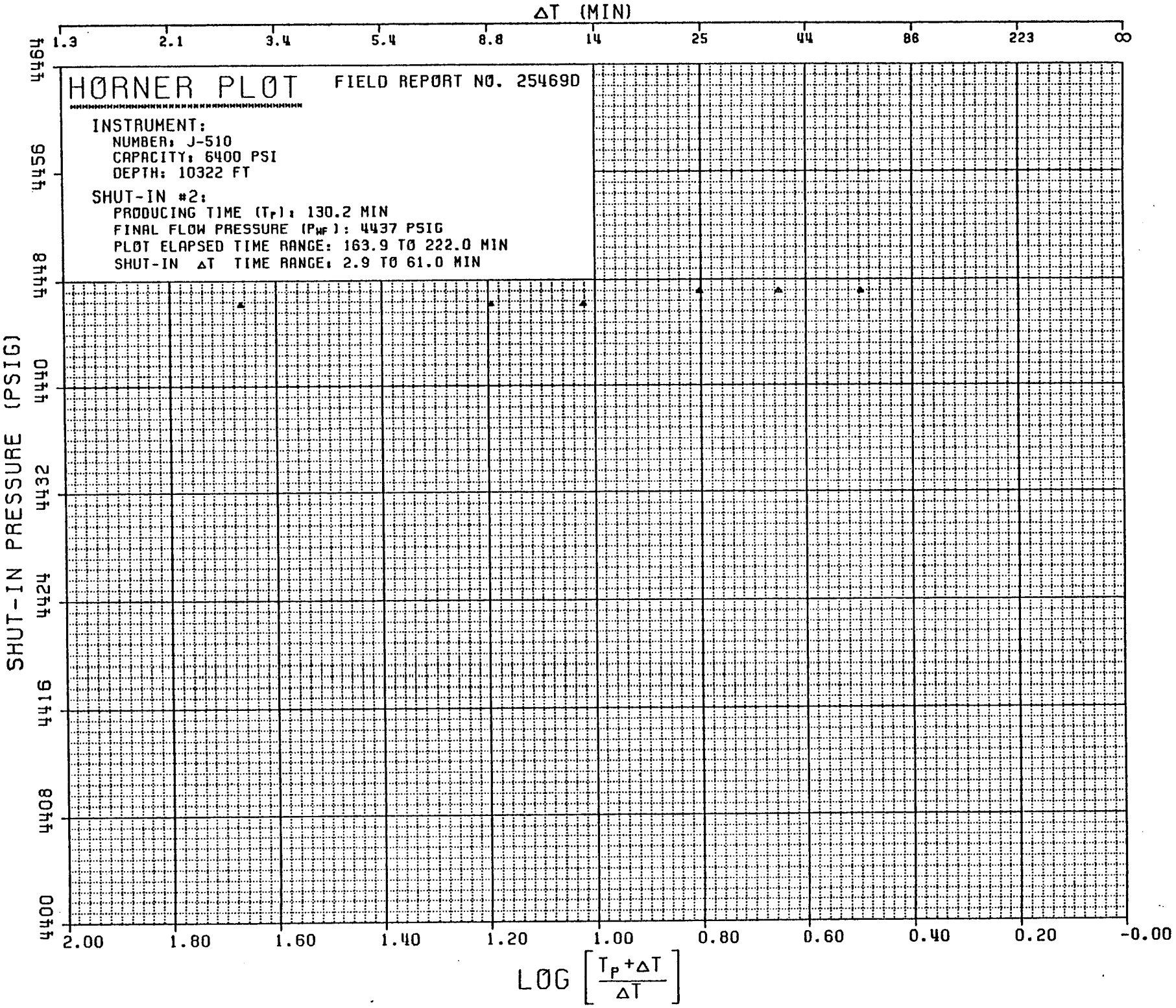
6. Other standard radial flow, equilibrium assumptions.

Empirical Equations:

1. $EDR = \frac{P_o - P_f}{M(\log T + 2.65)}$ where $M = \frac{P_1 - P_{10}}{\text{Log Cycle}}$
2. Transmissibility $\frac{Kh}{\mu\beta} = \frac{162.6\ Q}{M}$
3. DST $J = \frac{Q}{P_o - P_f}$ Theoretical $J = \frac{7.08 \times 10^{-3}\ Kh}{\mu\beta \ln (r_e/r_w)}$ Assumed $\ln (r_e/r_w) = 7.60$
4. $P.S. = \left[P_o \times 2.309\ ft./PSI\right] - \left[\text{Recorder depth to sea level.}\right]$
5. Radius of investigation, $r_i = \sqrt{\frac{Kt}{40\phi\mu c}}$ where t = time in days

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.


HORNER PLOT
FIELD REPORT NO. 25469D
INSTRUMENT:
NUMBER: J-510
CAPACITY: 6400 PSI
DEPTH: 10322 FT
SHUT-IN #1:
PRODUCING TIME (T_P): 9.8 MIN
FINAL FLOW PRESSURE (P_{WF}): 1784 PSIG
PLOT ELAPSED TIME RANGE: 11.3 TO 40.9 MIN
SHUT-IN ΔT TIME RANGE: 1.5 TO 31.1 MIN
ΔT (MIN)
0.3
0.5
0.7
1.0
1.4
2.1
3.3
5.4
9.8
24
∞
SHUT-IN PRESSURE (PSIG)
4800
4700
4600
4500
4400
4300
4200
4100
4000
1.50
1.35
1.20
1.05
0.90
0.75
0.60
0.45
0.30
0.15
0.00
LOG [(Tp+ΔT)/ΔT]
1
M = -71.1
P* = 4462 PSIG


HORNER PLOT
FIELD REPORT NO. 25469D
INSTRUMENT:
NUMBER: J-510
CAPACITY: 6400 PSI
DEPTH: 10322 FT
SHUT-IN #2:
PRODUCING TIME (T_P): 130.2 MIN
FINAL FLOW PRESSURE (P_{WF}): 4437 PSIG
PLOT ELAPSED TIME RANGE: 163.9 TO 222.0 MIN
SHUT-IN ΔT TIME RANGE: 2.9 TO 61.0 MIN
ΔT (MIN)
1.3
2.1
3.4
5.4
8.8
14
25
44
86
223
∞
SHUT-IN PRESSURE (PSIG)
4464
4456
4448
4440
4432
4424
4416
4408
4400
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
-0.00
LOG $\left[\frac{T_P+\Delta T}{\Delta T}\right]$

FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-510

CAPACITY: 6400 PSI

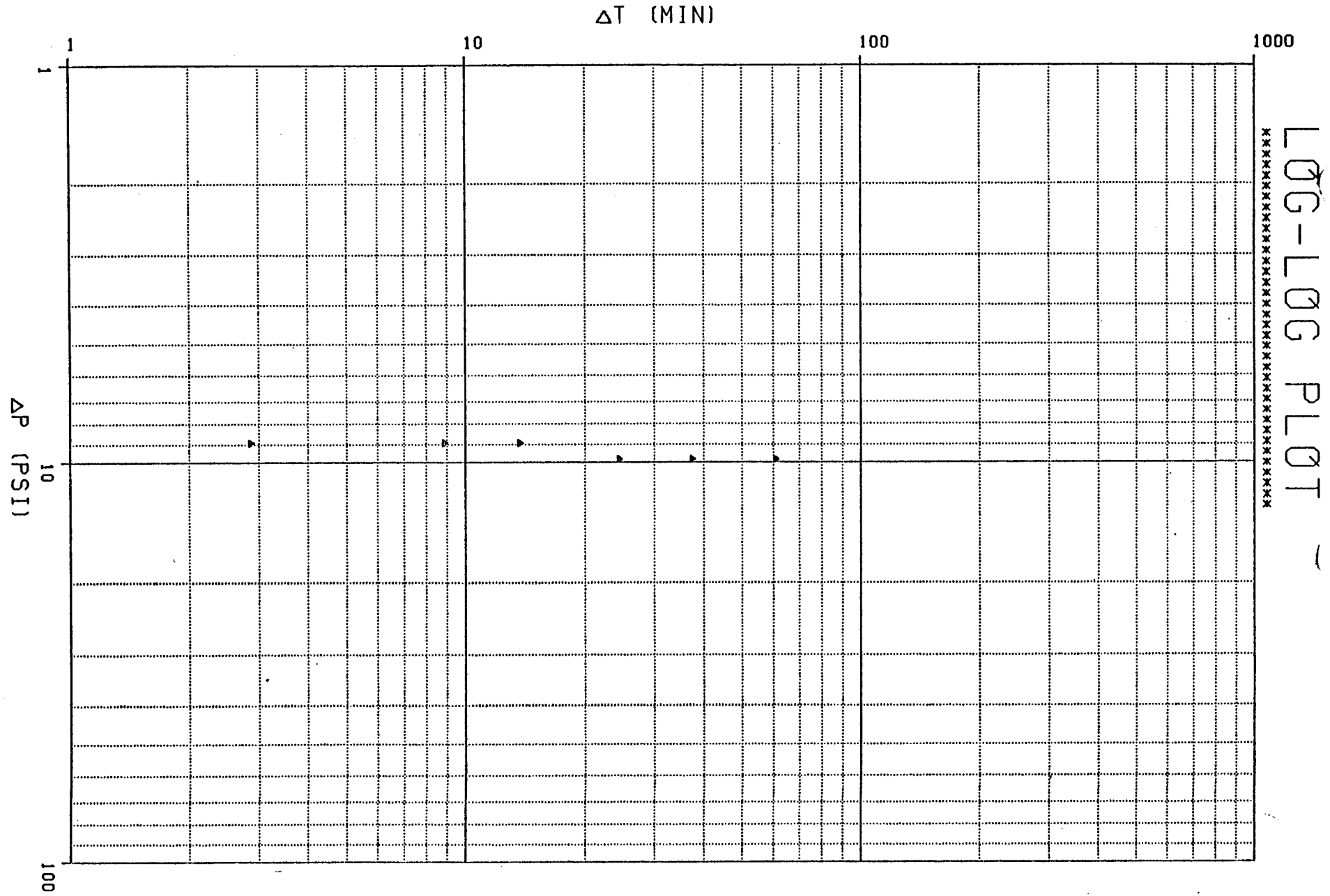
DEPTH: 10322 FT

SHUT-IN #2:

FINAL FLOW PRESSURE (P_{WF}): 4437 PSIG

PLOT ELAPSED TIME RANGE: 163.9 TO 222.0 MIN

SHUT-IN ΔT TIME RANGE: 2.9 TO 61.0 MIN



FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-510

CAPACITY: 6400 PSI

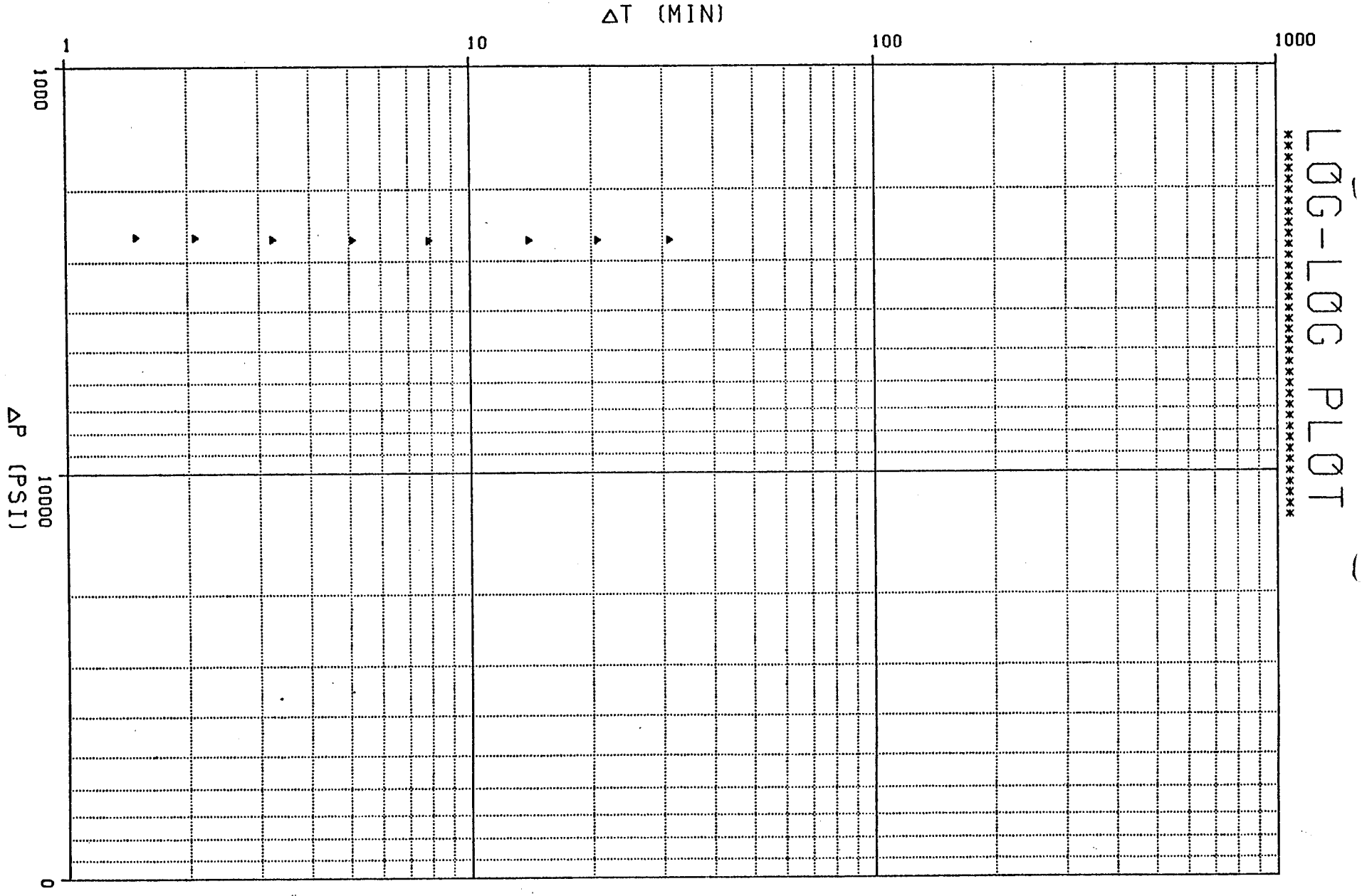
DEPTH: 10322 FT

SHUT-IN #1:

FINAL FLOW PRESSURE (P_{WF}): 1784 PSIG

PLOT ELAPSED TIME RANGE: 11.3 TO 40.9 MIN

SHUT-IN ΔT TIME RANGE: 1.5 TO 31.1 MIN



WELL IDENTIFICATION

COMPANY:	ARCO OIL & GAS P.O. BOX 5540 DENVER, COLORADO 80217	CUSTOMER:	SAME
WELL:	HOLE IN THE ROCK #1	LOCATION:	SEC. 30 - T22S - R7W
TEST INTERVAL:	10310' TO 10390'	FIELD:	WILD CAT
TEST NO:	2	TEST DATE:	11-28-80
COUNTY:	MILLIARD	STATE:	UTAH
TECHNICIAN:	STEWART (VERNAL)	TEST APPROVED BY:	MR. E.L. GARRISON

EQUIPMENT AND HOLE DATA

TEST TYPE:	M.F.E. OPEN HOLE		DRILL PIPE LENGTH:	9998	FT.
			DRILL PIPE I.D.:	-	IN.
ELEVATION:	4774	FT.	DRILL COLLAR LENGTH:	270	FT.
TOTAL DEPTH:	10390	FT.	DRILL COLLAR I.D.:	-	IN.
MAIN HOLE/CASING SIZE:	9 7/8	IN.	PACKER DEPTHS:	10306 & 10310	FT.
RAT HOLE/LINER SIZE:	-	IN.		&	FT.
FORMATION TESTED:	-			&	FT.
NET PROD. INTERVAL:	62	FT.	DEPTHS REF. TO:	KELLY BUSHING	
POROSITY:	-	%			

TEST TOOL CHAMBER DATA

SAMPLER PRESSURE:	-	PSIG
RECOVERED OIL GRAVITY:	- API @	- DEG. F.
RECOVERY GOR:	-	FT3/BBL.

SAMPLE CHAMBER CONTENTS

FLUID	VOLUME	RESIST. (OHM-M)	MEAS. TEMP. (DEG F.)	CHLOR. (PPM)
GAS:	- FT.3			
OIL:	- CC			
WATER:	180 (OIL CUT) CC	-	-	-
MUD:	- CC	-	-	
FILTRATE:		-	-	-
TOTAL LIQUID:	180 CC			

MUD DATA

TYPE:	LOW SOLIDS NON DISPER.	
WEIGHT:	9.2	LB/GAL.
VISCOSITY:	42	SEC.
WATER LOSS:	9.7	CC

FLUID	RESIST (OHM-M)	TEMP (DEG F)	CHLOR (PPM)
MUD:	.2	40	
FILTRATE:	2.0	40	20000

REMARKS

NO. OF REPORTS REQUESTED: 12 (5X)

FIELD REPORT NO. 25469D

SURFACE INFORMATION

DESCRIPTION(RATE OF FLOW)	TIME	PRESSURE PSIG	SURFACE CHOKE
SET PACKER	1316	-	1/4"
OPENED TOOL	1318	1.25	"
BLOW OFF BOTTOM OF BUCKET	1324	-	"
CLOSED FOR INITIAL SHUT-IN	1328	-	"
FINISHED SHUT-IN	1358	-	"
RE-OPENED TOOL	1359	-	"
	14Ø3	1	"
	14Ø8	1.25	"
	1413	1.5	"
	1418	1.25	"
	1423	.75	"
	1428	.25	"
	1433	.25	"
BLOW IS AT 1/2" IN BUCKET	1438	.25	"
	1443	-	"
BLOW, 1/4" IN WATER	1448	-	"
BLOW DIED	1453	-	"
CLOSED FOR FINAL SHUT-IN	16ØØ	-	"
FINISHED SHUT-IN	17ØØ	-	"
PULLED PACKER LOOSE	17Ø1	-	"

CUSHION TYPE: - - FT - PSIG | 1/2 IN. BOTTOM CHOKE

RECOVERY INFORMATION

RECOVERY	FEET	BARRELS	%OIL	%WATER	%OTHERS	API GRAV.	DEG.	RESIST	DEG.	CHL PPM
MUD CUT WATER	9ØØ			65	35 MUD			.3	43	23ØØØ
LIGHT COLORED MUD WATER	162Ø			9Ø	1Ø MUD			1	5Ø	23ØØØ
WATER WITH SULFUR SMELL	7636			1ØØ				1.3	6Ø	25ØØØ

FIELD REPORT NO. 25469D

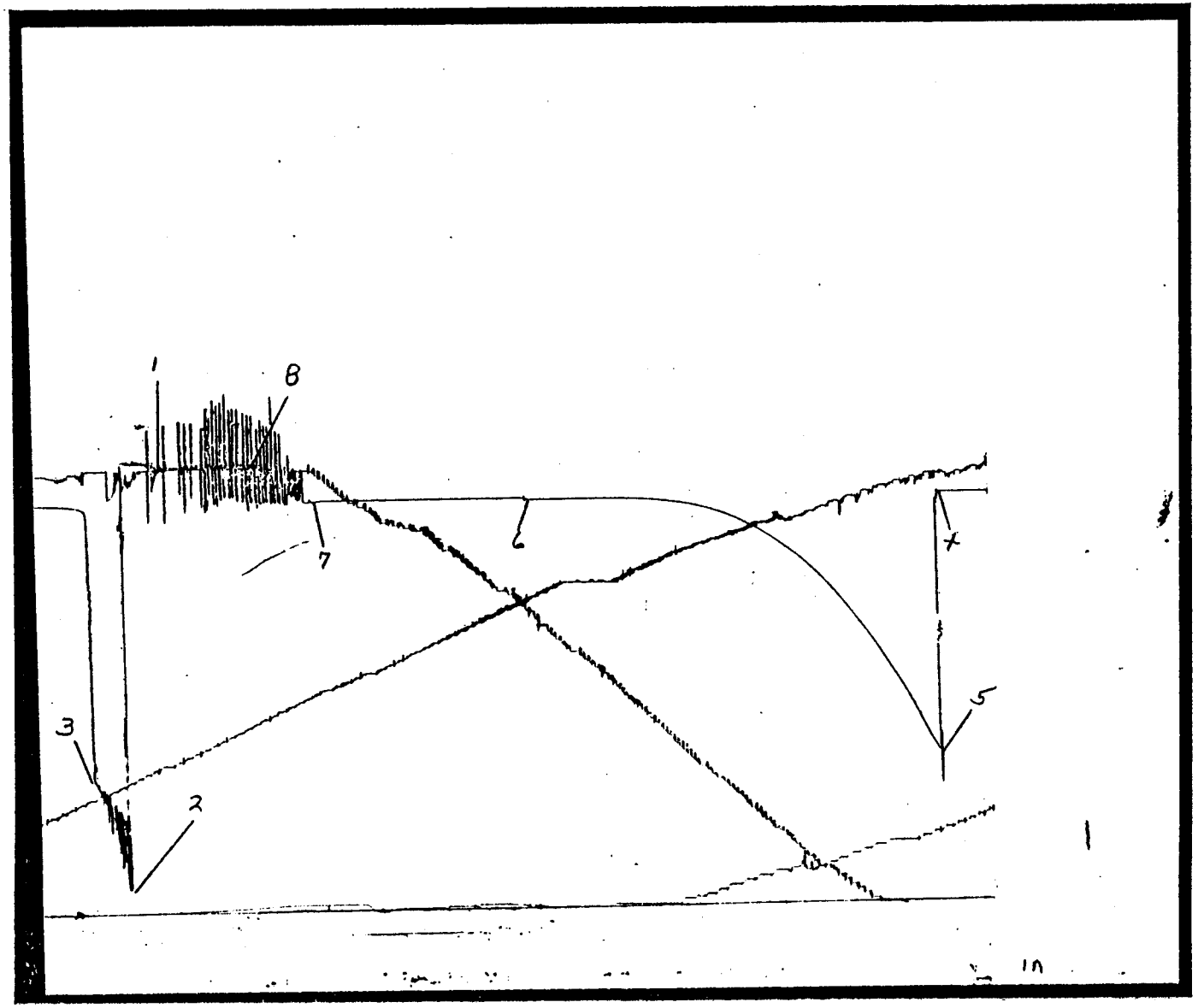
FIELD REPORT NO.: 25469 D

CAPACITY: 9000#

INSTRUMENT NO.: J-889

NUMBER OF REPORTS: 12+

JOHNSTON
Schlumberger



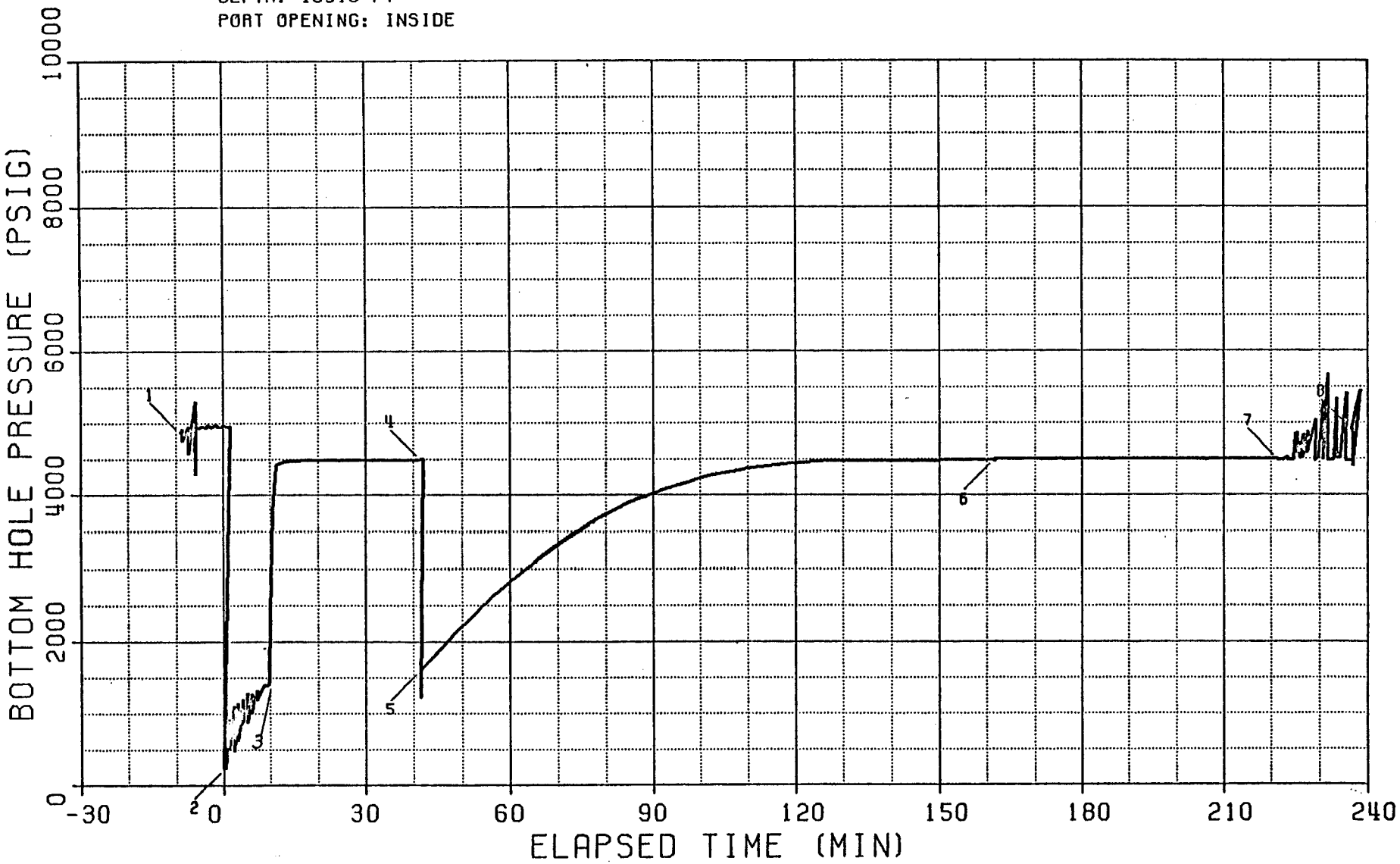
JS-167

PRESSURE LOG

FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-889
CAPACITY: 9000 PSI
DEPTH: 10316 FT
PORT OPENING: INSIDE



BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-889 CAPACITY (PSI): 9000 DEPTH (FT): 10316
PORT OPENING: INSIDE BOTTOM HOLE TEMP (F): 230

EXPLANATION	LABELED POINT	PRESSURE (PSIG)	ELAPSED TIME (MIN)
HYDROSTATIC MUD	1	4874	-9.2
START FLOW	2	236	0.0
END FLOW & START SHUT-IN	3	1445	9.7
END SHUT-IN	4	4490	41.3
START FLOW	5	1601	41.4
END FLOW & START SHUT-IN	6	4484	161.4
END SHUT-IN	7	4498	221.2
HYDROSTATIC MUD	8	4902	236.6

SUMMARY OF FLOW PERIODS

FLOW PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF FLOW (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)
1	0.0	9.7	9.7	236	1445
2	41.4	161.4	120.1	1601	4484

SUMMARY OF SHUT-IN PERIODS

SHUT-IN PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF SHUT-IN (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)	FINAL FLOW PRESSURE (PSIG)	PRODUCING TIME (MIN)
1	9.7	41.3	31.7	1445	4490	1445	9.7
2	161.4	221.2	59.8	4484	4498	4484	129.7

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-889

TEST PHASE : FLOW PERIOD # 1
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
Ø.Ø	Ø.Ø	236
5.Ø	5.Ø	882
9.7	9.7	1445

TEST PHASE : SHUT-IN PERIOD # 1
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 1445 PSIG
2. PRODUCING TIME ["T_P"] = 9.7 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
9.7	Ø.Ø	1445		Ø
1Ø.7	1.Ø	3896	1.Ø28	2451
11.7	2.Ø	4426	Ø.766	2981
12.7	3.Ø	4451	Ø.626	3ØØ6
13.7	4.Ø	4463	Ø.534	3Ø18
14.7	5.Ø	4469	Ø.467	3Ø24
15.7	6.Ø	4473	Ø.417	3Ø28
16.7	7.Ø	4477	Ø.377	3Ø32
17.7	8.Ø	448Ø	Ø.344	3Ø35
18.7	9.Ø	4483	Ø.317	3Ø38
19.7	1Ø.Ø	4484	Ø.294	3Ø39
21.7	12.Ø	4487	Ø.257	3Ø42
23.7	14.Ø	4489	Ø.228	3Ø44
25.7	16.Ø	449Ø	Ø.2Ø5	3Ø45
27.7	18.Ø	449Ø	Ø.187	3Ø45
29.7	2Ø.Ø	449Ø	Ø.171	3Ø45
31.7	22.Ø	449Ø	Ø.158	3Ø45
33.7	24.Ø	449Ø	Ø.147	3Ø45
35.7	26.Ø	449Ø	Ø.137	3Ø45
37.7	28.Ø	449Ø	Ø.129	3Ø45
39.7	3Ø.Ø	449Ø	Ø.121	3Ø45
41.3	31.7	449Ø	Ø.116	3Ø45

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-889

TEST PHASE : FLOW PERIOD # 2
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
41.4	0.0	1601
46.4	5.0	1963
51.4	10.0	2307
56.4	15.0	2624
61.4	20.0	2902
66.4	25.0	3169
71.4	30.0	3391
76.4	35.0	3594
81.4	40.0	3774
86.4	45.0	3929
91.4	50.0	4055
96.4	55.0	4160
101.4	60.0	4260
106.4	65.0	4323
111.4	70.0	4382
116.4	75.0	4417
121.4	80.0	4446
126.4	85.0	4466
131.4	90.0	4473
136.4	95.0	4477
141.4	100.0	4480
146.4	105.0	4481
151.4	110.0	4482
156.4	115.0	4483
161.4	120.0	4484
161.4	120.1	4484

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4484 PSIG
2. PRODUCING TIME ["T_P"] = 129.7 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
161.4	0.0	4484		0
162.4	1.0	4494	2.116	11
163.4	2.0	4494	1.819	11
164.4	3.0	4495	1.646	12
165.4	4.0	4496	1.524	12
166.4	5.0	4496	1.430	12
167.4	6.0	4496	1.354	12
168.4	7.0	4496	1.291	12

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-889

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4484 PSIG
2. PRODUCING TIME ["T_P"] = 129.7 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
169.4	8.Ø	4496	1.236	12
17Ø.4	9.Ø	4496	1.188	12
171.4	1Ø.Ø	4496	1.145	12
173.4	12.Ø	4497	1.Ø72	13
175.4	14.Ø	4498	1.Ø11	14
177.4	16.Ø	4498	Ø.959	14
179.4	18.Ø	4498	Ø.914	14
181.4	2Ø.Ø	4498	Ø.874	14
183.4	22.Ø	4498	Ø.839	14
185.4	24.Ø	4498	Ø.8Ø7	14
187.4	26.Ø	4498	Ø.777	14
189.4	28.Ø	4498	Ø.751	14
191.4	3Ø.Ø	4498	Ø.726	14
196.4	35.Ø	4498	Ø.673	14
2Ø1.4	4Ø.Ø	4498	Ø.628	14
2Ø6.4	45.Ø	4498	Ø.589	15
211.4	5Ø.Ø	4498	Ø.556	15
216.4	55.Ø	4498	Ø.526	15
221.2	59.8	4498	Ø.5Ø1	15

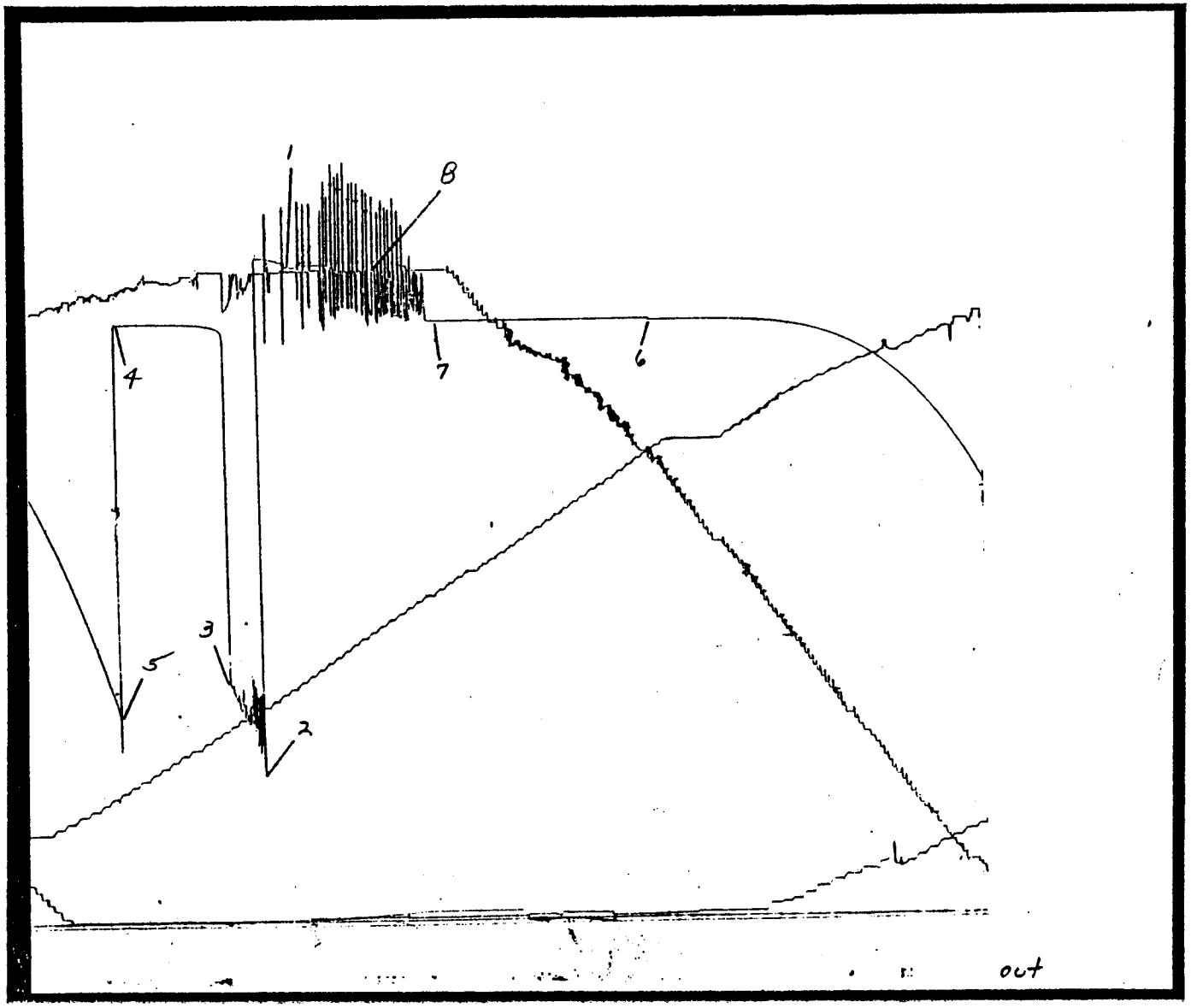
FIELD REPORT NO.: 25469 D

CAPACITY: 6400#

INSTRUMENT NO.: J-510

NUMBER OF REPORTS: 12+

JOHNSTON
Schlumberger



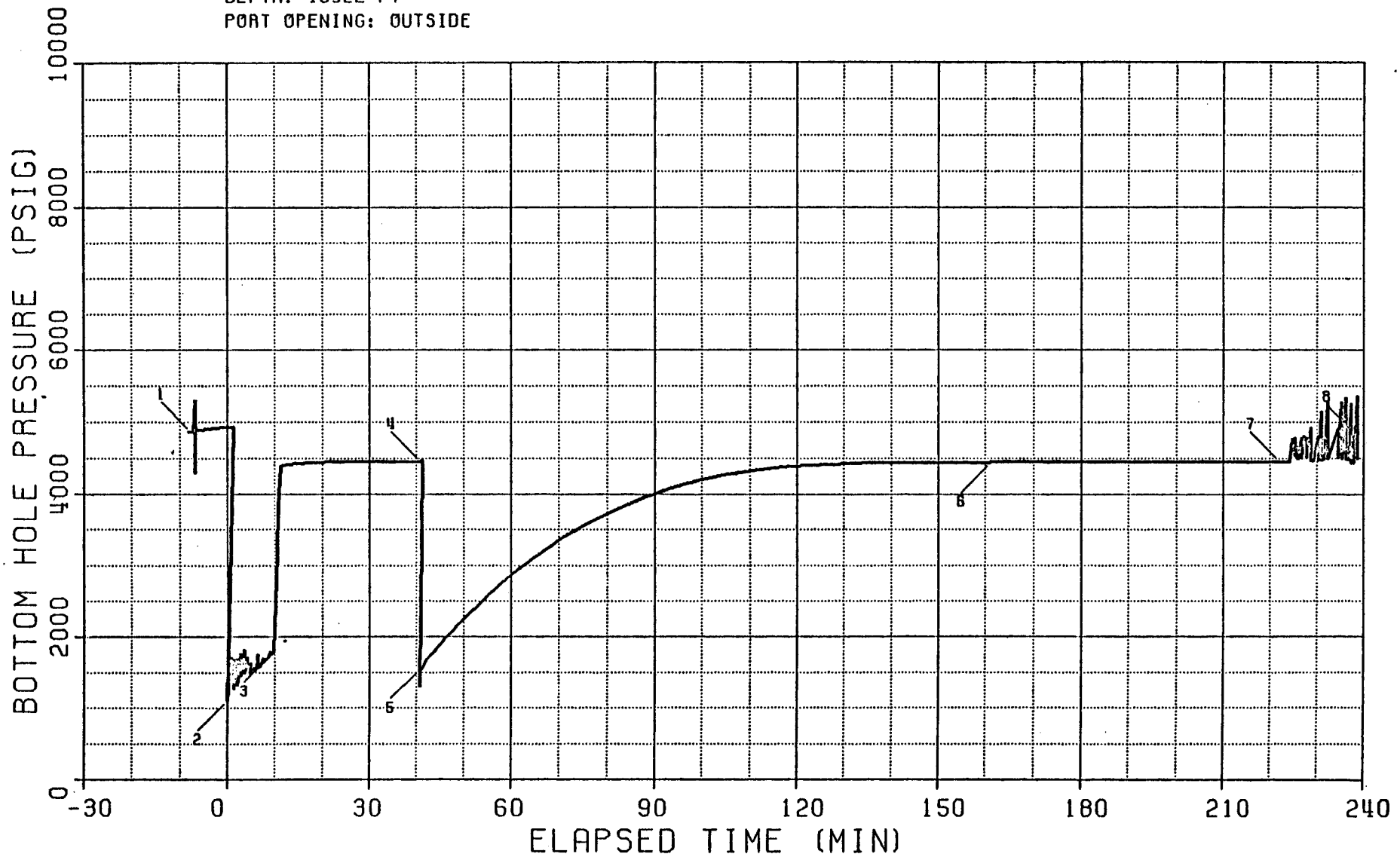
JS—167

PRESSURE LOG

FIELD REPORT NO. 25469D

INSTRUMENT:

NUMBER: J-510
CAPACITY: 6400 PSI
DEPTH: 10322 FT
PORT OPENING: OUTSIDE



BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-510 CAPACITY (PSI): 6400 DEPTH (FT): 10322
PORT OPENING: OUTSIDE BOTTOM HOLE TEMP (F): 230 PAGE 1

EXPLANATION	LABELED POINT	PRESSURE (PSIG)	ELAPSED TIME (MIN)
HYDROSTATIC MUD	1	4859	-7.6
START FLOW	2	1101	0.0
END FLOW & START SHUT-IN	3	1784	9.8
END SHUT-IN	4	4449	40.9
START FLOW	5	1544	40.7
END FLOW & START SHUT-IN	6	4437	161.1
END SHUT-IN	7	4447	222.0
HYDROSTATIC MUD	8	4825	238.4

SUMMARY OF FLOW PERIODS

FLOW PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF FLOW (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)
1	0.0	9.8	9.8	1101	1784
2	40.7	161.1	120.4	1544	4437

SUMMARY OF SHUT-IN PERIODS

SHUT-IN PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF SHUT-IN (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)	FINAL FLOW PRESSURE (PSIG)	PRODUCING TIME (MIN)
1	9.8	40.9	31.1	1784	4449	1784	9.8
2	161.1	222.0	61.0	4437	4447	4437	130.2

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

TEST PHASE : FLOW PERIOD # 1
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
0.0	0.0	1101
5.0	5.0	1517
9.8	9.8	1784

TEST PHASE : SHUT-IN PERIOD # 1
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 1784 PSIG
2. PRODUCING TIME ["T_P"] = 9.8 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
9.8	0.0	1784		0
10.8	1.0	3965	1.033	2181
11.8	2.0	4398	0.770	2614
12.8	3.0	4411	0.630	2627
13.8	4.0	4420	0.538	2636
14.8	5.0	4428	0.471	2644
15.8	6.0	4431	0.420	2648
16.8	7.0	4435	0.380	2651
17.8	8.0	4438	0.347	2655
18.8	9.0	4440	0.320	2656
19.8	10.0	4441	0.296	2657
21.8	12.0	4444	0.259	2660
23.8	14.0	4447	0.230	2663
25.8	16.0	4447	0.207	2664
27.8	18.0	4448	0.189	2665
29.8	20.0	4449	0.173	2665
31.8	22.0	4449	0.160	2665
33.8	24.0	4449	0.149	2665
35.8	26.0	4449	0.139	2665
37.8	28.0	4449	0.130	2665
39.8	30.0	4449	0.123	2665
40.9	31.1	4449	0.119	2665

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

TEST PHASE : FLOW PERIOD # 2
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
40.7	0.0	1544
45.7	5.0	1939
50.7	10.0	2285
55.7	15.0	2609
60.7	20.0	2897
65.7	25.0	3161
70.7	30.0	3381
75.7	35.0	3575
80.7	40.0	3748
85.7	45.0	3895
90.7	50.0	4022
95.7	55.0	4125
100.7	60.0	4207
105.7	65.0	4275
110.7	70.0	4329
115.7	75.0	4364
120.7	80.0	4392
125.7	85.0	4411
130.7	90.0	4423
135.7	95.0	4431
140.7	100.0	4434
145.7	105.0	4436
150.7	110.0	4437
155.7	115.0	4437
160.7	120.0	4437
161.1	120.4	4437

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4437 PSIG
2. PRODUCING TIME ["T_P"] = 130.2 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
161.1	0.0	4437		0
162.1	1.0	4446	2.118	9
163.1	2.0	4446	1.820	9
164.1	3.0	4446	1.647	9
165.1	4.0	4446	1.526	9
166.1	5.0	4446	1.432	9
167.1	6.0	4446	1.356	9
168.1	7.0	4446	1.292	9

FIELD REPORT NO. 25469D
INSTRUMENT NO. J-510

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 4437 PSIG

2. PRODUCING TIME ["T_P"] = 130.2 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
169.1	8.0	4446	1.237	9
170.1	9.0	4446	1.189	9
171.1	10.0	4446	1.147	9
173.1	12.0	4446	1.074	9
175.1	14.0	4446	1.013	9
177.1	16.0	4446	0.961	9
179.1	18.0	4447	0.915	9
181.1	20.0	4447	0.876	9
183.1	22.0	4447	0.840	10
185.1	24.0	4447	0.808	10
187.1	26.0	4447	0.779	10
189.1	28.0	4447	0.752	10
191.1	30.0	4447	0.727	10
196.1	35.0	4447	0.674	10
201.1	40.0	4447	0.629	10
206.1	45.0	4447	0.590	10
211.1	50.0	4447	0.557	10
216.1	55.0	4447	0.527	10
221.1	60.0	4447	0.501	10
222.0	61.0	4447	0.496	10

CORE ANALYSIS RESULTS FOR

ARCO OIL & GAS COMPANY

HOLE IN ROCK NO. 1

WILDCAT

MILLARD COUNTY, UTAH

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

ARCO OIL & GAS COMPANY
HOLE IN ROCK NO 1
WILDCAT
MILLARD COUNTY

FORMATION : LOWER TERTIARY
DRLG. FLUID: WATER BASE MUD
LOCATION : SEC 30-T22S-R7W
STATE : UTAH

DATE : 10-22-80
FILE NO. : RP-2-6306
ANALYSTS : CW
ELEVATION: 4774'GL

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION	
	5902-5903							NO ANALYSIS - SHALE	
1	5903 -4	6.9		6.0	0.0	88.5		SD BROWN VF-CG CONG	VF
2	5904 -5	2.1		2.2	0.0	65.4		SD BROWN VF-MG SILTY	VF
3	5905 -6	0.01		9.0	0.0	90.2		SD BROWN VF-FG SILTY	
4	5906 -7	0.02		15.0	0.0	77.3		SD BROWN VF-MG SILTY	
5	5907 -8	3.4		18.2	0.0	53.2		SD BROWN VF-CG CONG	VF
	5908-5912							NO ANALYSIS - SHALE	
6	5912-13	0.01		8.4	0.0	89.4		SD BROWN VF-MG SILTY	
7	5913-14	0.01		6.7	0.0	86.6		SD BROWN VF-MG SILTY	VF
8	5914-15	0.02		7.8	0.0	79.7		SD BROWN VF-MG SILTY	
9	5915-16	0.06		18.5	0.0	64.8		SD BROWN VF-MG CONG	
10	5916-17	11		3.5	0.0	17.0		SD BROWN VF-CG CONG	
	5917-5920							NO ANALYSIS - SHALE	
11	5920-21	0.25		16.8	0.0	48.0		SD BROWN VF-CG CONG	
12	5921-22	84		10.8	0.0	51.9		SD BROWN VF-CG CONG	
13	5922-23	4.7		5.3	0.0	80.0		SD BROWN VF-CG CONG	
14	5923-24	0.01		5.4	0.0	61.5		SD BROWN VF-MG SILTY	
15	5924-25	1.4		7.1	0.0	24.5		SD BROWN VF-MG SILTY	VF
16	5925-26	0.53		10.7	0.0	23.4		SD BROWN VF-CG CONG	VF
17	5926-27	5.0		4.4	0.0	73.6		SD DK BROWN VF-CG CONG SILTY	VF
	5927-5928							NO ANALYSIS - RUBBLE	
	5928-9152							DRILLED	

VF = Vertical Fracture

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

ARCO OIL & GAS COMPANY
HOLE IN ROCK NO 1
WILDCAT
MILLARD COUNTY

FORMATION : LOWER TERTIARY
DRLG. FLUID: WATER BASE MUD
LOCATION : SEC 30-T22S-R7W
STATE : UTAH

DATE : 10-22-80
FILE NO. : RP-2-6306
ANALYSTS : CW
ELEVATION: 4774'GL

CONVENTIONAL CORE ANALYSIS

SAMP. NO	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION	
18	9152-53	0.02		0.5	0.0	82.0		LS DK GRAY FXLN	
19	9153-54	0.01		0.6	0.0	76.8		LS DK GRAY FXLN	
20	9154-55	0.01		0.8	0.0	77.5		LS DK GRAY FXLN	
21	9155-56	0.01		0.9	0.0	91.0		LS DK GRAY FXLN	
22	9156-57	0.03		1.0	0.0	89.9		LS DK GRAY FXLN	
23	9157-58	0.01		0.6	0.0	78.7		LS DK GRAY FXLN	
24	9158-59	0.01		0.3	0.0	68.2		LS DK GRAY FXLN	
25	9159-60	0.01		0.5	0.0	82.2		LS DK GRAY FXLN	
26	9160-61	0.02		0.9	0.0	69.9		LS DK GRAY FXLN	
27	9161-62	0.03		1.1	0.0	80.5		LS DK GRAY FXLN	
28	9162-63	0.01		0.7	0.0	66.8		LS DK GRAY FXLN	
29	9163-64	0.09		0.6	0.0	39.2		LS DK GRAY FXLN	
30	9164-65	0.01		0.9	0.0	49.5		LS DK GRAY FXLN	
31	9165-66	0.03		1.2	0.0	55.3		LS DK GRAY FXLN	
32	9166-67	0.45		0.7	0.0	58.6		LS DK GRAY FX LN	
	9167-9171							NO ANALYSIS - RUBBLE	
	9171-9505							DRILLED	
33	9505 -6	*0		5.9	0.0	69.5		DOLOO GRAY FXLN	VF
34	9506 -7	0.03	0.40	2.0	0.0	46.0		DOLO GRAY FXLN	VF
35	9507 -8	0.15	17	1.9	0.0	58.2		DOLO GRAY FXLN	VF
36	9508 -9	0.89	1.6	1.8	0.0	64.0		DOLO GRAY FXLN	VF
37	9509-10	7.4	0.49	2.2	0.0	70.0		DOLO GRAY FXLN	VF
	9510-9511							NO ANALYSIS - RUBBLE	
38	9511-12	0.35	0.42	2.6	0.0	67.9		DOLO GRAY FXLN	VF
	9512-9516							NO ANALYSIS - RUBBLE	

* = Unsuitable for Permeability

VF = Vertical Fracture

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

ARCO OIL & GAS COMPANY
HOLE IN ROCK NO 1
WILDCAT
MILLARD COUNTY

FORMATION : LOWER TERTIARY
DRLG. FLUID: WATER BASE MUD
LOCATION : SEC 30-T22S-R7W
STATE : UTAH

DATE : 10-22-80
FILE NO. : RP-2-6306
ANALYSTS : CW
ELEVATION: 4774'GL

CONVENTIONAL CORE ANALYSIS

SAMP. NO.	DEPTH	PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION	
39	9516.2-17.0	5.7		2.5	0.0	26.5		DOLO GRAY FXLN CALC	
40	9517.0-17.3	4.8		1.2	0.0	55.3		DOLO GRAY FXLN CALC	
	9517.3-18.0							REMOVED BY CLIENT	
41	9518.0-18.5	1.4		1.9	0.0	35.8		DOLO GRAY FXLN CALC	
	9518.5-18.7							REMOVED BY CLIENT	
42	9518.7-19.2	0.56		1.0	0.0	45.4		DOLO GRAY FXLN CALC	
	9519.2-19.9							REMOVED BY CLIENT	
43	9519.9-21.0	0.45		1.7	0.0	40.1		DOLO GRAY FXLN CALC	
44	9521.0-21.5	0.54		1.8	0.0	51.5		DOLO GRAY FXLN CALC	
	9521.5-10314							DRILLED	
45	10314-15 F	3.9		0.4	0.0	52.1		DOLO GRAY FXLN	
46	10315-16 F	0.79		0.9	0.0	24.5		DOLO GRAY FXLN	
47	10316-17	0.05		0.3	0.0	74.3		DOLO GRAY FXLN	
48	10317-18 F	5.0		1.3	0.0	71.2		DOLO GRAY FXLN	
49	10318-19 F	0.48		0.9	0.0	52.5		DOLO GRAY FXLN	
50	10319-20 F	0.36		1.8	0.0	76.8		DOLO GRAY FXLN	
	10320-10348							DRILLED	
51	10348-49 F	25		1.1	0.0	40.6		DOLO GRAY FXLN	
52	10349-50 F	3433		3.0	0.0	58.4		DOLO GRAY FXLN	VF
53	10350-51	0.03		1.6	0.0	69.3		DOLO GRAY FXLN	
54	10351-52	*		1.7	0.0	38.2		DOLO GRAY FXLN	
55	10352-53 F	0.56		1.5	0.0	29.5		DOLO GRAY FXLN	
	10353-10354							NO ANALYSIS - RUBBLE	
56	10354-55	0.01		1.6	0.0	69.7		DOLO GRAY FXLN	
57	10355-56	0.04		1.2	0.0	56.1		LS GRAY FXLN	

* = Unsuitable for Permeability

F = Fractured plug

VF = Vertical Fracture

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

ARCO OIL & GAS COMPANY
HOLE IN ROCK NO 1
WILDCAT
MILLARD COUNTY

FORMATION : LOWER TERTIARY
DRLG. FLUID: WATER BASE MUD
LOCATION : SEC 30-T22S-R7W
STATE : UTAH

DATE : 10-22-80
FILE NO. : RP-2-6306
ANALYSTS : CW
ELEVATION: 4774'GL

CONVENTIONAL CORE ANALYSIS

SAMP. NO	DEPTH		PERM. TO AIR (MD) HORZ.	VERTICAL	POR. FLD.	FLUID SATS. OIL	WATER	GR. DNS.	DESCRIPTION	
58	10356-57		0.01		1.2	0.0	36.6		LS GRAY FXLN	
59	10357-58		0.01		1.2	0.0	36.5		LS GRAY FXLN	
60	10358-59		<0.01		0.7	0.0	32.4		LS GRAY FXLN	
61	10359-60		0.02		0.6	0.0	37.2		LS GRAY FXLN	
62	10360-61		0.08		1.1	0.0	40.2		LS GRAY FXLN	
63	10361-62		<0.01		0.8	0.0	51.9		LS GRAY FXLN	
64	10362-63		0.11		1.2	0.0	35.2		LS GRAY FXLN	
65	10363-64		0.04		1.2	0.0	54.9		LS GRAY FXLN	
66	10364-65		<0.01		0.6	0.0	37.1		LS GRAY FXLN	
67	10365-66		<0.01		0.9	0.0	47.9		LS GRAY FXLN	
68	10366-67		<0.01		0.8	0.0	55.4		LS GRAY FXLN	
69	10367-68		<0.01		1.3	0.0	49.4		LS GRAY FXLN	
70	10368-69		0.16		1.6	0.0	41.6		LS GRAY FXLN	
71	10369-70		0.01		1.4	0.0	46.9		LS GRAY FXLN	
72	10370-71		0.01		0.9	0.0	74.5		LS GRAY FXLN	
73	10371-72		0.01		1.2	0.0	36.2		LS GRAY FXLN	
74	10372-73		<0.01		1.0	0.0	22.7		LS GRAY FXLN	
75	10373-74	F	0.92		0.9	0.0	47.3		LS GRAY FXLN	VF
76	10374-75		0.03		1.0	0.0	22.2		LS GRAY FXLN	
77	10375-76		<0.01		0.9	0.0	24.7		LS GRAY FXLN	
78	10376-77		0.21		1.1	0.0	19.2		LS GRAY FXLN	
79	10377-78		0.19		1.2	0.0	35.7		LS GRAY FXLN	VF

F = Fractured Plug
VF = Vertical Fracture

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JS-1184-A

COMPANY ARCO OIL AND GAS WELL HOLE IN THE ROCK #1 TEST NO. 1 COUNTY MILLARD STATE UTAH

JOHNSTON-MACCO

Schlumberger

technical report

FIELD REPORT #25461 D

JOHNSTON Schlumberger

JS-225

SURFACE INFORMATION

Description (Rate of Flow)	Time	Pressure (P.S.I.G.)	Surface Choke
Opened Tool	0933	–	1/4''
BLOW, 1/2'' IN WATER			
CLOSED FOR INITIAL SHUT-IN	0943	–	''
FINISHED SHUT-IN	1013	–	''
RE-OPENED TOOL	1014	–	''
BLOW, 1/4'' IN WATER			
NO BLOW	1017	–	''
SLIGHT BUBBLES ONLY	1051	–	''
NO BLOW	1100	–	''
CLOSED FOR FINAL SHUT-IN	1214	–	''
FINISHED SHUT-IN	1314	–	''
STUCK ABOVE PACKERS			

Cushion Type	Amount	Pressure	Bottom Choke Size
	–		15/16''

MUD DATA

Mud Type: LOW SOLIDS NON-DISP. Wt.: 9.2

Viscosity: 42 Water Loss: 9.7 C.C.

Resist: of Mud – @ – °F; of Filtrate – @ – °F

Chloride Content: – PPM

EQUIPMENT & HOLE DATA

Type Test: M.F.E. OPEN HOLE

Formation Tested: –

Elevation: 4774 Ft.

Net Productive Interval: 57 Ft.

Estimated Porosity: – %

All Depths Measured From: KELLY BUSHING

Total Depth: 9482 Ft.

Main Hole/Casing Size: 9 7/8''

Rat Hole/Liner Size: –

Drill Collar Length: 210' I.D. –

Drill Pipe Length: 9141' I.D. –

Packer Depth(s): 9391 & 9395 Ft.

MULTI-FLOW EVALUATOR FLUID SAMPLE DATA

Sampler Pressure: _____ P.S.I.G. at Surface

Recovery: Cu. Ft. Gas: _____

cc. Oil: _____

cc. Water: _____

cc. Mud: _____

Tot. Liquid cc.: _____

Gravity: _____ °API @ _____ °F.

Gas/Oil Ratio: _____ cu. ft./bbl.

		RESISTIVITY		CHLORIDE CONTENT
Recovery Water		@	°F.	ppm
Recovery Mud		@	°F.	
Recovery Mud Filtrate		@	°F.	ppm
Mud Pit Sample		@	°F.	
Mud Pit Sample Filtrate		@	°F.	ppm

RECOVERY DESCRIPTION	FEET	BARRELS	% OIL	% WATER	% OTHERS	API GRAVITY		RESISTIVITY		CHL. PPM
–						@	°F.	@	°F.	
						@	°F.	@	°F.	
						@	°F.	@	°F.	
						@	°F.	@	°F.	
						@	°F.	@	°F.	
–						@	°F.	@	°F.	
						@	°F.	@	°F.	
						@	°F.	@	°F.	

Remarks: UNSUCCESSFUL TEST; SPUDDED 30' TO BOTTOM OF HOLE. TOOL BECAME STUCK AND WAS FISHED FROM HOLE 4 DAYS LATER.

Address: P. O. BOX 5540; DENVER, COLORADO 80202

Company: ARCO OIL AND GAS Field: WILD CAT

Well: HOLE IN THE ROCK #1 Location: SEC.30-T22S-R7W

Test Interval: 9395' TO 9482' (UNSUCCESSFUL) Test #: 1 Date: 11-5-80

County: MILLARD State: UTAH

Technician: RICHARDS (VERNAL) Test Approved By: MR. E. L. GARRISON

Field Report No.: 25461 D

No. Reports Requested: 5

BOTTOM HOLE PRESSURE AND TIME DATA

JS-193

JOHNSTON Schlumberger

PAGE NUMBER 2

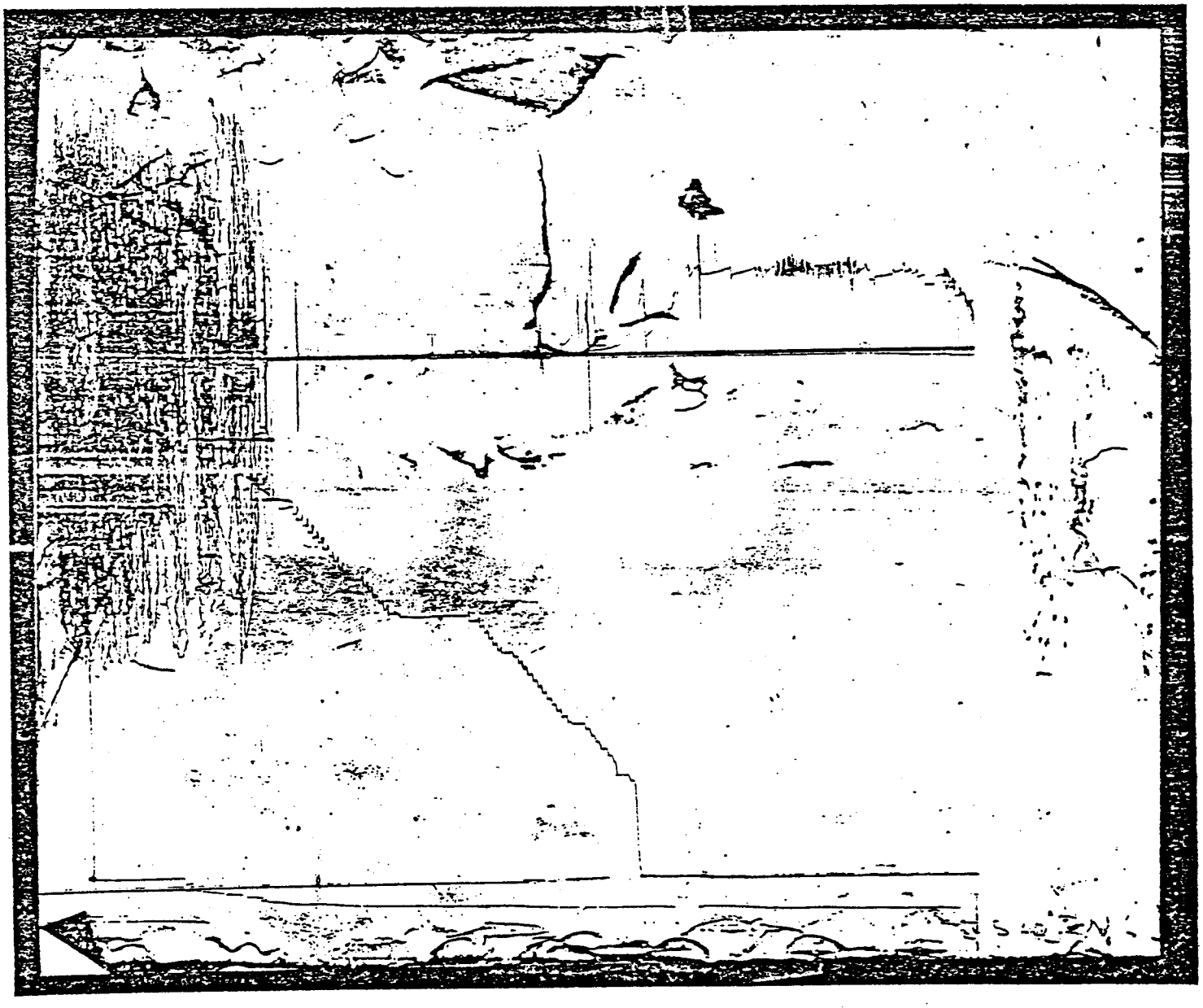
INSTRUMENT NUMBER	CAPACITY (P.S.I.)	DEPTH
J-510	6,400#	9,401'
PORT OPENING	**BOTTOM HOLE TEMPERATURE**	**FIELD REPORT NUMBER**
INSIDE	READ AT 200°F	25461 D

DESCRIPTION	LABELED POINTS	PRESSURE (P.S.I.)	GIVEN TIME	COMPUTED TIME
INITIAL HYDROSTATIC MUD				
INITIAL FLOW (1)				
INITIAL FLOW (2)				
INITIAL SHUT-IN				
SECOND FLOW (1)				
SECOND FLOW (2)				
SECOND SHUT-IN				
FINAL FLOW (1)				
FINAL FLOW (2)				
FINAL SHUT-IN				
FINAL HYDROSTATIC MUD				

REMARKS:

UNSUCCESSFUL TEST

5+



BOTTOM HOLE PRESSURE AND TIME DATA

JS—193

JOHNSTON Schlumberger

PAGE NUMBER 3

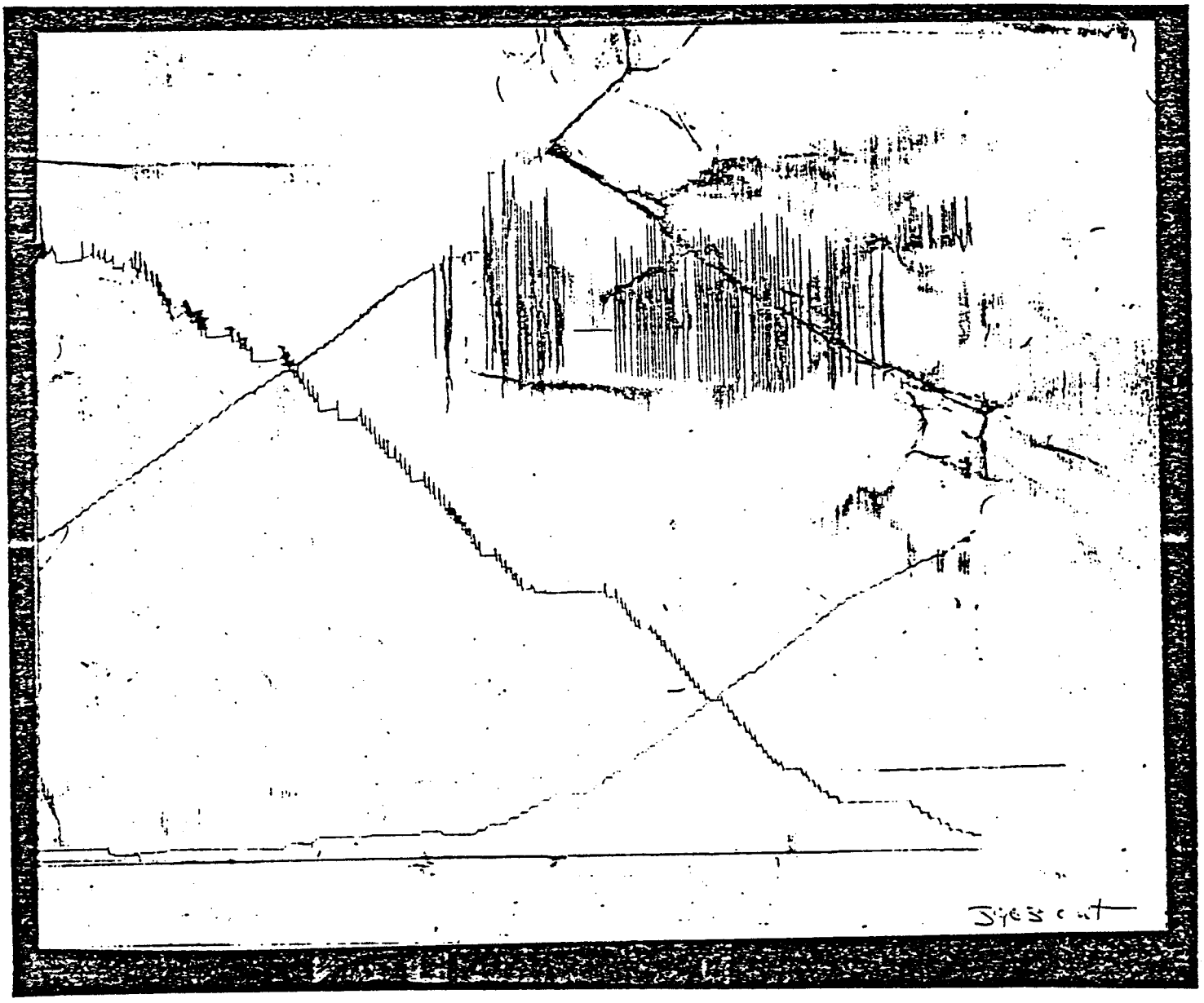
INSTRUMENT NUMBER	CAPACITY (P.S.I.)	DEPTH
J-903	6,400#	9,426'
PORT OPENING	**BOTTOM HOLE TEMPERATURE**	**FIELD REPORT NUMBER**
OUTSIDE	READ AT 200°F	25461 D

DESCRIPTION	LABELED POINTS	PRESSURE (P.S.I.)	GIVEN TIME	COMPUTED TIME
INITIAL HYDROSTATIC MUD				
INITIAL FLOW (1)				
INITIAL FLOW (2)				
INITIAL SHUT-IN				
SECOND FLOW (1)				
SECOND FLOW (2)				
SECOND SHUT-IN				
FINAL FLOW (1)				
FINAL FLOW (2)				
FINAL SHUT-IN				
FINAL HYDROSTATIC MUD				

REMARKS:

UNSUCCESSFUL TEST

5+



HOLE IN ROCK #1
SE SW Section 30-22S-7W
Millard County, Utah

DST #1	9,395'- 9,482'	Tool stuck, test failed
DST #2	10,310'- 10,390'	Rec 7635' wtr 25,000 ppm CL No wtr cushion IMP 4965; IF 231-1446; ISI 4432; FF 1630-4467; FM 5235

CORE #1	5,902'- 5,929'	Cut 27'	Rec 26' ?
CORE #2	9,152'- 9,171'	Cut 19'	Rec 19' Limestone
CORE #3	9,505'- 9,513'	Cut 8'	Rec 6' Dolomite
CORE #4	9,513'- 9,534'	Cut 21'	Rec 11' Dolomite
CORE #5	10,314'- 10,346'	Cut 32'	Rec 6' Dolomite
CORE #6	10,348'- 10,378'	Cut 30'	Rec 30' Dolomite

9619'-9638'	Squeezed with 200 sx cement through retainer @ 9548'
9381'-9429'	Squeezed with 200 sx cement through retainer @ 9334'
9231'-9235'	Squeezed with 125 sx cement through retainer @ 9207'
4575'-3320'	250 sx cement
3233'-2793'	200 sx cement
800'	CIBP
61'-surface	25 sx cement

HOLE IN ROCK #1
SE SW Section 30-2_ 7W
Millard County, Utah

9/16/80	110	Day-1, Ftg-110. Drlg. Mud: 8.5#, vis 39, WL 16. Fin RU. Spud 8 pm 9/15/80. Lost returns @ 90'. WO LCM. Mixed LCM @ 15#/bbl. Regained circ. Drlg & PU BHA.
9/17/80	560	Day-2, Ftg-450. Rm'g @ 260'. Mud: 8.6#, vis 45, WL 31. Drld to 560' w/ 13-3/4" bit. TOH. LD hvy wt & BHA. PU 20" hole opnr. Rm'd 20" hole to 260'. 3/4° @ 208', 1° @ 560'.
9/18/80	560	Day-3, Ftg-Rmd 300'. WOC. Mud: 8.7#, vis 40, WL 16.8. Fin rmg 13-3/4" to 20". Circ. POH. RU & run 18 jts 16" 75# K-55 8rd ST&C csg & set @ 549'KB (18 jts 549.49', GS 1.17', FC 1.63' = total 552.29'). Cmtd by Hallib w/550 sx Type II cmt w/2% CaCl, 3% salt & 1/4# Flocele/sx. PD @ 12 MN. WOC. Cmtd landing jt in 24" conductor pipe w/flash set & hvy contaminated mud - couldn't drain & flush conductor & flw line. Cut off conductor & NU.
9/19/80	560	Day-4, Ftg-0. NU flw line. Mud: 8.6#, vis 38, WL 15.2. ND 24" flw nple & flw line. Cut off 16" landing jt & instl'd 16" 3000# csg hd. WO 16" hydril & mud cross spool f/13 hrs. NU hydril. Built 16" flw nple & NU flw line.
9/20/80	887	Day-5, Ftg-327. Drlg 13-3/4" hole. Mud: 8.6#, vis 43, WL 13.4. Fin'd NU wellhead, hydril & flwline. RIH w/rerun bit. Drld FC, shoe jt & GS. Begin drlg fm @ 4:30 pm 9/19/80.
9/21/80	1367	Day-6, Ftg-480. Drlg 13-3/4" hole. Mud: 8.6#, vis 30, WL 14.2. Drlg 13-3/8" hole w/both pmps on hole; however 1 pmp dn @ rpt time. Bit balling up quite frequently, requiring to pull up & pmp off build up. 1/4° @ 1026'.
9/22/80	2400	Day-7, Ftg-1033. Circ, WO Schl. Mud: 8.7#, vis 36, WL 15.6.
9/23/80	3020	Day-8, Ftg-620. Drlg. Mud: 9#, vis 46, WL 17.1. Circ & WO Schl, chg in orders. Resumed drlg @ 2400' @ 10 am. Cont'd w/ 1/2-1 min/ft drlg to 2647'; slowed to 10-20 min/ft to 2664'; resumed fast penetration (chg in fm). Still Sh. Mud fluffy f/entrained air combating w/1" stream wtr & phos. 1-3/4° @ 2729
9/24/80	3332	Day-8, Ftg-312. Circl & cond mud. Mud 9#, Vis 34, WL 19.4. Drld to 3300', Circl & cond hole f/Schlum. POH. Strapped out. Tite plg out. Steel line meas 3332' - off 1 jt in pipe tally. LD rmrs & BHA. RU Schl & attptd to log. RIH. Wshd & CO bridges f/1800-2900'. Circl & cond mud. 1-1/2° @ 3156 & 3332'.
9/25/80	3332	Day-10, Ftg-0. Logging. Mud: 9.4#, vis 33, WL 31. Unplugged flwline. Circ & cond hole. Trt out Ca. Made short trip 16 stds. RIH & circ hole clean. Weld brake flange leaks. POH & RU Schl. Ran DIL, dipmeter, dens & sonic logs. LTD 3306', BHT 117°.
9/26/80	3332	Day-11, Ftg-0. NU BOPs. RD Schl. TIH. Circ & cond hole. Short trip 5 stds. Circ & WO Dowell. TOH. LD 9" DC. RU to case. Ran 75 jts 10-3/4" 40.5# K-55 8rd ST&C, GS, Diff fill FC & 6 cntrlzrs (3335.10'), landed @ 3331'KB. Cmtd w/650 sx Lite Poz 50/50, 2% CaCl, 1/4# D-29/sx; foll w/300 sx Cl "B", 2% CaCl, 10# D-42/sx, 1/4# D-29/sx. Displ'd w/329 BW (3 bbls over). Did not bmp plug. Bled back 1 bbl. Flt held. Gd returns thruout job. No cmt to surf. PD 1:30 am 9/26/80. FC @ 3286'.

Form 9-[illegible]
(April 1952)

43-027-30019

EA # 506-80

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION

Sec. 30
T. 22S
R. 7W
SLB & Mer.

INDIVIDUAL WELL RECORD

PUBLIC LAND: Date May 28, 1981 Ref. No. 1

Land office Utah State Utah

Serial No. 19522 County Millard

Lessee Columbia Gas Development Pan Canadian Petroleum, et al Field Wildcat

Operator ARCO Oil & Gas Co. District Salt Lake City

Well No. Hole-in-Rock 1 Subdivision SE SW

Location 500' FSL & 2035' FWL

Drilling approved Aug. 27, 1980 Well elevation 4774 GR feet

Drilling commenced Sept. 15, 1980 Total depth 10990 feet

Drilling ceased Dec. 2, 1980 Initial production Dry

Completed for production Oral to abandon May 14, 1981 Gravity A. P. I.

Abandonment approved ____, 19__ Initial R. P.

Geologic Formations		Productive Horizons		
Surface	*Lowest tested*	*Name*	*Depths*	*Contents*
Quat. Alluv.	Paleogosi			

WELL STATUS

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1980									spud			TD 10990
1981					ABD							

REMARKS Geologic Markers: see well file
Casing record: 24" cc @ 60'
16" cc @ 549' w/550 sxs.
10 3/4" cc @ 3331' w/950 sxs.
7" cc @ 9746' w/600 sxs.

☆U.S. Government Printing Office: 1979 —680-201/613

June 18, 1981

Division of Atlantic Richfield Company
P. O. Box 5540
Denver, Colorado 80217

Re: Well No. Hole-in-Rock #1
Sec. 30, T. 22S, R. 7W
Millard County, Utah

Gentlemen:

According to our records, a "Well Completion Report" filed with this office 5-19-81, from above referred to well indicates the following electric logs were run: DIL-GR, FIL, BHC-GR, FDC/CNL-GR, VDL/AMP/MF. As of todays date this office has not received these logs.

Rule C-5, General Rules and Regulations and Rules of Practice and Procedure, requires that a well log shall be filed with the Commission together with a copy of the electric and radioactivity logs.

Your prompt attention to the above will be greatly appreciated.

Sincerely,

DIVISION OF OIL, GAS, AND MINING

Sandy Bates

Sandy Bates
Clerk-Typist

ARCO Oil and Gas Company
Western Division
717 - 17th Street
Mailing address: P.O. Box 5540
Denver, Colorado 80217
Telephone 303 575 7031

W. A. Walther, Jr.
Operations Manager

Please hold Conf.

June 22, 1981

#2.01

RECEIVED
JUN 24 1981
DIVISION OF
OIL, GAS & MINING

Mr. Edgar Guynn
United States Geological Survey
1745 W. 1700 S
Ste 2000
Salt Lake City, Utah 84104

#2.01

Re: Hole In Rock #1
SE SW Section 30-22S-7W
Millard County, Utah
Federal Lease #U-19522

conf.

Will write a Conf. letter

Dear Mr. Guynn:

Enclosed please find the logs for the above referenced well. The Completion Report, Form 9-330 was forwarded to your office May 20, 1981.

Very truly yours,

K L Flinn

K. L. Flinn
Operations Information Assistant

Encl.

cc: Utah Division of Oil, Gas & Mining