

BTA OIL PRODUCERS
Drilling Program
7608 JV-P Hagood #1

Location: 990' FNL & 1980' FEL of Section 25, T-26-S, R-35-E, Lea County, N.M.
Elevation: 2959' GL, 2990 K.B.
Contractor: Cactus Drilling Corporation Rig #31 915-563-2500
To call rig: Call 505-397-3291 & ask
for Unit 6333
Toolpushers: James Silhan (Kermit) 915-586-5645
Cliff Hooker (Odessa) 915-337-6367
Operator: BTA Oil Producers, 104 South Pecos (Midland) 915-682-3753
Night Number 915-682-4911
Engineer: M. D. Frazier 915-682-0305
Mobile Phone 915-683-4090
Field Drlg Supt.: Paul Scholl (Odessa) 915-381-0764
Mobile Phone 915-683-4052
Field Drlg Supt.: Pete Welborn (Andrews) 915-523-5273
Mobile Phone (Unit 6338) Hobbs Area 505-397-3291
(Unit 6338) Midland Area 915-563-2244
Geologist: Scotty Alcorn 915-694-7545
Engineer: Carty Beal 915-682-9292
Other 915-282-2956
Manager: R. L. Halvorsen 915-682-0657

GENERAL INSTRUCTIONS

A. Operations

1. Magna-Flux all hoisting equipment below the blocks and any down hole tools prior to use. Magna-flux rotary beams prior to spudding.
2. Have geograph in operation from spud to TD.
3. Strap drill pipe and drill collars on last trip prior to each logging run and before any DST.
4. All BOP equipment will be pressure tested on installation and once every two weeks thereafter with rig pump.
5. BOP's will be operated and noted on Tour Sheet each bit change.
6. Have mud logging trailer operating when drilling at a depth of 4000'.
7. Drill collars will be inspected once every two weeks.
8. Rubber drill pipe protectors shall be maintained on drill pipe while drilling through casing. Rubbers shall be replaced when O.D. is within 1/4" of tool joint.O.D.
9. U.S.G.S. (Mr. Authur Brown - 505-393-3612) must be notified before cementing 20" surface casing. Also in the event of accidents involving life, threatening injuries, or the loss of life.
10. Notify one of the above listed BTA drilling personnel in the event of any loss of circulation, gas kick, excessive deviation, injuries, or any other occurrence which will necessitate a deviation from the following program.
11. Record 10' drilling time and catch 10' drilling samples from bottom of 20" to TD.
12. The amount and type of chemical added to the mud and a daily and cumulative mud cost will be reported each day.
13. Each bottom hole assembly will be discussed with BTA personnel before running. BHA detail including ID X OD X length of each member of BHA will be reported on morning report. Any change will be noted.
14. The cost book will be kept up to date showing date, company, service and amount.
15. Note possibility of hole problems listed following mud program.
16. Choke, flow line, flow sensor and gas control equipment to be installed and in use at a depth of 10,000'.
17. On all initial drill pipe inspection, the pipe will be checked in accordance with API Class 2 standards as outlined in API Spec 7 placed in API RP7G. No pipe will be used that does not meet API Class 2 or better standards.

B. Drilling Operations Summary

1. Set 40' of 30" conductor pipe with rat hole unit.

RECEIVED

JUN 7 1978

ALABAMA COMMUNITY COLLEGE
FACULTY

2. Move in rig.
3. Drill 26" hole to 900'. Run caliper log.
4. Run and cement 20" casing. (See attached casing program for running and cementing details.)
5.
 - a. WOC 8 hours.
 - b. Install BOP's.
 - c. Clean out to shoe. Test casing to 1500 psi.
 - d. WOC 18 hours total - drill shoe.
5. Drill 17-1/2" hole to 5000' (\pm 100' into Delaware formation).
6. Run and cement 13-3/8" casing. (See attached casing program for running and cementing details.)
 - a. Cut off 20" casing and WOC 8 hours.
 - b. Install 13-3/8" X 13-5/8" 5000 psi casing head and BOP's.
 - c. Clean out to shoe. Test casing to 1500 psi.
 - d. WOC 18 hours total - drill shoe.
7. Drill 12-1/4" hole to \pm 13,000'.
 - a. Run Gamma-Sonic-Caliper logs.
8. Run and cement 9-5/8" casing. (See attached casing program for running and cementing details.)
 - a. WOC 8 hours.
 - b. Install spool and BOP's.
 - c. Test float collar and shoe to equivalent of 16.0#/gal. mud before and after drilling through (4000 psi surface pressure w/9#/gal brine water in hole).
9. Drill 8-1/2" hole to 17,600' and run logs according to logging program. (Approximately 100' into Mississippian.)
10. Run and cement 7-3/4" liner. (See attached casing program for running and cementing.)
 - a. WOC 18 hours.
 - b. Clean out to liner top and test liner top to 3000 psi.
 - c. Clean out to and drill liner shoe. Test to 2500 psi.
 - d. Note and report any gas shows following steps b & c above.
11. Drill 6-1/2" hole to \pm 22,000' (depth adequate to test the Ellenburger).
 - a. Run Gamma-Ray-Sonic Caliper and Dipmeter logs.
12. Run and cement 5" liner if well is productive. (see attached casing program for running and cementing details.)
13. Completion program to follow.

C. Bottom Hole Assemblies

26" hole to 900'. (Hole should be drilled w/minimum deviation.)

Bit
Blade stabilizer
Hughes shock sub
Drill collar
Blade stabilizer

17-1/2" hole to \pm 5000'. (Hole should be drilled w/minimum deviation.)

Bit
Blade stabilizer
Hughes shock sub
Drill collar
Blade stabilizer

12-1/4" hole to \pm 13,000'. (Deviation control will depend on existing conditions.)

Bit
Johnston shock sub
Blade stabilizer
2 drill collars
Blade stabilizer

8-1/2" hole to 17,600'. (Deviation control will depend on existing conditions.)

Bit
Bottom hole reamer (as needed)
Drill collar
Drill collar
Blade stabilizer
Drill collars

C. Bottom Hole Assemblies (Cont'd.)

6-1/2" hole to TD $\pm 22,000'$. (Deviation control will depend on existing conditions.)
 Bit
 Bottom hole reamer (as needed)
 2 drill collars
 Blade stabilizer
 Drill collars

D. Casing and Cementing Program

1. Surface Casing - 20" at $\pm 900'$.

- a. Casing Detail
- | | Weight | Grade | Thread |
|--------------------------|--------|-------|----------|
| Halliburton circulating | 94 | H-40 | ST&C 8rd |
| Down-jet shoe | | | |
| 80' (2 jts) | 94 | H-40 | ST&C 8rd |
| Halliburton Float Collar | 94 | H-40 | ST&C 8rd |
| 820' \pm | 94 | H-40 | ST&C 8rd |
- b. General
1. The bottom three collars will be tac welded on mill end.
 2. HOWCO-Weld will be used on the shoe, bottom two joints and the float collar.
 3. Install one centralizer on collars of the bottom three joints.
 4. API modified thread compound will be used on all couplings thereafter.
 5. Casing tong torque gauges are to be tested and calibrated after placement on rig floor.
 6. Casing will be made up to API recommended torque.
 7. If casing arrives with mill varnish, the bottom 500' will be sandblasted.

c. Cementing

1. Lead in Cement
 *Class "C" w/8% gel w/1/2#/sx Flocele w/2% CaCl_2 and 5#/sx gilsonite.
 Yield 2.23 cu ft/sx
 Slurry weight 12.0#/gal
 Thickening time 3 hours
 Compressive strength 250 psi in 24 hours
 Water required 12.8 gal/sx
 *Actual volume to be determined by caliper survey.
2. Tail in Cement
 200 sx Class "H" w/2% CaCl_2 .
 Yield 1.18 cu ft/sx
 Slurry weight 15.6#/gal
 Thickening time 2-1/2 hours +
 Water required 5.2 gal/sx

2. First Intermediate Casing - 13-3/8" at $\pm 5000'$.

- a. Casing Detail
- | | Weight | Grade | Thread |
|--------------------------|--------|-------|----------|
| Halliburton circulating | 72 | N-80 | ST&C 8rd |
| Down-jet shoe | | | |
| 80' (2 jts) | 72 | N-80 | ST&C 8rd |
| Halliburton Float Collar | 72 | N-80 | ST&C 8rd |
| 820' \pm | 72 | N-80 | ST&C 8rd |
| 1960' \pm | 68 | S-80 | ST&C 8rd |
| 2100' \pm | 61 | K-55 | ST&C 8rd |
- b. General
1. The bottom three collars will be tac welded on mill end.
 2. HOWCO-Weld will be used on the shoe, bottom two joints and the float collar.
 3. Install one centralizer on collars of the bottom three joints.
 4. API modified thread compound will be used on all couplings

RECEIVED

1978

CLIPPING

2. First Intermediate Casing (Cont'd.)

b. General (Cont'd.)

- 5. Casing tong torque gauges are to be tested and calibrated after placement on rig floor.
- 6. Casing will be made up to API recommended torque.
- 7. If casing arrives with mill varnish, the bottom 500' will be sandblasted.

c. Cementing

1. Lead in Cement

*Class "C" w/8% gel w/1/2#/sx Flocele w/2% CaCl₂ and 5#/sx gilsonite.
Yield 2.23 cu ft/sx
Slurry weight 12.0#/gal
Thickening time 3 hours
Compressive strength 250 psi in 24 hours
Water required 12.8 gal/sx

*Actual volume to be determined by caliper survey.

2. Tail in Cement

200 sx Class "H" plus 7#/sx salt.

Yield 1.18 cu ft/sx
Slurry weight 15.6#/gal
Thickening time 2-1/2 hours +
Water required 5.2 gal/sx

3. Second Intermediate Casing - 9-5/8" at ±13,000'

a. Casing detail

	Weight	Grade	Thread
Halliburton Diff fill	47	S-95	Hyd. T.S.
Float shoe			
80'± (2 jts)	47	Soo 95	Hyd. T.S.
Hall Diff Fill Float Collar	47	S-95	Hyd. T.S.
±12,100' casing	47	Soo 95	Hyd. T.S.

b. General

- 1. Install one centralizer on collars of the bottom three joints.
- 2. HOWCO-Weld will be used on the shoe bottom two joints and the float collar.
- 3. API modified thread compound will be used on all connections thereafter.
- 4. Check any jointers.
- 5. If casing arrives with mill varnish, the bottom 500' will be sandblasted.
- 6. Casing tong torque guages are to be tested and calibrated after placement on rig floor.
- 7. Casing will be made up to Hydril torque recommended.
- 8. Use slip type elevators.
- 9. Wood stripping will be used between each row of pipe while being transported.
- 10. All threads will be cleaned with solvent before applying thread compound.
- 11. Note: Casing will be sprayed with H₂S inhibitor when run.

c. Inspection

- 1. Scanalog 500'.
- 2. Type IV special end area.
- 3. API drift full length.

d. Cementing

- 1. *Lead in - Class "C" w/8% gel, 7#/sx gilsonite, 1/4#/sx Flocele mixed at 12.1#/gal - 2.12 cu ft/sx yield.
- 2. Tail in - 500 sx Class "H" w/1/4#/sx Flocele and 7#/sx salt.
- 3. When plug bumps, pressure to 3500 psi using 9.2± drlg wtr.

*Actual amounts will be determined by caliper survey.

4. Intermediate Liner - 7-3/4" at ± from 12,600' to 17,600'

a. Liner Detail

	Weight	Grade	Thread
HOWCO down-jet float shoe	45.47	P-110	SFJ-P
80' (2 jts) 7-3/4" csg	45.47	P-110	SFJ-P
HOWCO float collar	45.47	P-110	SFJ-P
±1100' 7-3/4" csg	45.47	P-110	SFJ-P

RECEIVED
JUN 11 1978
U.S. CONSERVATION SERVICE
PACIFIC REGION

b. General

1. Install centralizer on bottom three joints, on three joints just below 9-5/8" casing and through pay sections.
2. HOWCO-Weld will be used on the shoe, bottom two joints and the float collar.
3. API modified thread compound will be used on all connections thereafter.
4. Check any jointers.
5. If casing arrives with mill varnish, the top 500', the bottom 500' and portion through pay sections will be sandblasted.
6. Casing tong torque gauges are to be tested and calibrated after placement on rig floor.
7. Casing will be made up to torque recommended by Hydril.
8. A Hydril engineer will be on location during running.
9. Use slip type elevators.
10. Wood stripping will be used between each row of pipe while being transported.
11. All threads will be cleaned with solvent before applying thread compound.

c. Inspection

1. Scanalog 500'.
2. Type IV special end area.
3. API drift full length.

d. Cementing

1. *Lead in - Class "H" cement w/35% Silica Flour, 8% gel, 1.5% Halad-14 and 0.4% LWL.
Yield 2.3 cu ft/sx
Weight 13.5#/gal
Mix water 11.8 gal/sx
2. *Tail in - Class "H" cement w/40% Silica Flour, 1.0% Halad-14 and 0.4% HR-12.
Yield 1.6 cu ft/sx
Weight 15.6#/gal
Mix water 6.7 gal/sx
3. Precede the above cement compositions w/750 gals of diesel oil mixed with 4 gals of Hyflo, followed by 20 bbls of water mixed with 2 gals Morflo.
4. If top of the liner is squeeze cemented, use 350 sx Class "H" cement w/0.5% CFR-2 and 7.8#/sx salt.

*Amount to be determined from caliper.

5. Production Liner 5" at \pm from 17,200' to 22,000'. May be changed depending on hole conditions and required mud weights.

a. Liner Detail

	Weight	Grade	Thread
HOWCO down-jet float shoe	18	C-75	SFJ-P
80' (2 jts)	18	C-75	SFJ-P
HOWCO float collar	18	C-75	SFJ-P
\pm 4700' casing	18	C-75	SFJ-P
TIW liner hanger	18	C-75	SFJ-P

b. General

1. Install Weatherford stabilizers according to anticipated completion program.
2. HOWCO-Weld will be used on the shoe, bottom two joints and the float collar.
3. API modified thread compound will be used on all couplings thereafter.
4. Check any jointers.
5. If casing arrives with mill varnish, sandblast entire string.
6. Casing tong torque gauges will be tested and calibrated after placement on rig floor.
7. Casing will be made up to Hydril torque specifications.
8. A Hydril engineer will be on location during running.
9. Use slip type elevators.
10. Wood stripping will be used between each row of pipe while being transported.
11. All threads will be cleaned with solvent before applying thread compound.

RECEIVED

JUL 21 1976

CONSERVATION COMMISSION
FISH & WILDLIFE

c. Inspection

1. Scanalog 500'.
2. Type IV special end area.
3. API drift full length.

d. Cementing

1. *Class "H" cement w/40% Silica Flour, 1.0% Halad-14 and 0.4% HR-12.

Yield	1.6 cu ft/sx
Weight	15.6#/gal
Mix water	6.7 gal/sx
2. Precede the above cement compositions with 20 bbls of water mixed w/2 gals Morflo.

*Amounts to be determined from Caliper.

E. Mud Programs

1. Copy of detailed recommended program will be in toolpusher's house trailer for reference.
2. Surface to 900' - Spud mud w/40 to 60 viscosity. To a depth of 600', two slugs of loss circulation material may be required for loss of circulation. If returns not recovered, finish hole by dry drilling. Before 20" casing is run and circulation has not been obtained, spot spud mud in bottom of hole.
3. 900' to 5000' - 8.5# to 10#/gal controlled brine water using lime for pH control - 10 to 11. Flosal, salt gel slurry may be needed in fifth pit to slug hole in event fill-up occurs. Make a short trip prior to running caliper to 5000' to check fill-up. Circulate through steel pits.
4. 5000' to 13,000' - Same as from 900' to 5000'. Drill out with controlled 9.0 to 9.2#/gal brine water using lime for corrosion protection. Note possibilities of loss circulation possibilities listed in hole problem section.
5. 13,000' to 17,600' - Drill out with a salt, Dextrid, Drispac mud. Characteristics to 14,000': weight 10.0 to 11.0#/gal, viscosity 35 to 40 sec., PV 10 to 14, YP 8 to 14, pH ± 9.5 , WL ± 20 cc. Characteristics from 14,000' to 17,600': weight 11.5 to 15.0# or as needed, viscosity 35 to 38, PV 10 to 14, Yp 8 to 14, pH ± 9.5 , WL ± 20 cc.
6. 17,600' to TD - Controlled brine 9.0 to 9.2#/gal using Caustic Soda for pH control from 10 to 11. Mud up with Dextrid/Drispac for water loss of 10-15 cc's if hole conditions warrant due to torque, drag, seepage losses, etc.

F. Hole Problems

1. Possible gravel heaving to 700'. Also possibility of loss circulation.
2. Possible seepage and loss circulation to 5000'. Control seepage with Hy-Seal. For loss of circulation of 25% or more, dry drill using slugs of flosal in salt gel every 12
3. Possible seepage and loss circulation from 5000' to 14,000'.
4. Possibility of high pressure - low volume gas flow from 10,000' to 13,000'. With mud weight held at 9.2#/gal, drill under-balanced and control gas flow with surface chokes and separation equipment while flaring gas.
5. Sloughing shale is probable in the pressured Wolfcamp, Pennsylvanian lime, Atoka section. Mud weights in excess of 14-15#/gal may be necessary to control these shales.

G. Corrosion Protection - Baroid's recommendation may be substituted

1. Control pH of drilling system from 9.5 to 11 with lime or with caustic soda in the event of a calcium carbonate scaling problem noted on drill pipe. If scaling problem continues, use an organic phosphate scale inhibitor in addition.
2. In event corrosion protection provided by pH control is inadequate,
 - a. Use a sulfite type oxygen scavenger added at the suction to remove oxygen.
 - b. For hydrogen sulfide or other sulfide, use a water soluble sulfide scavenger in sufficient quantities to maintain zero ppm sulfide at the flowline.
3. Filming amine may be used in all portions of the hole with the exception of the 8-1/2" hole to control hydrogen sulfide problems. Under severe conditions, the drill string will be sprayed on trips in addition to continuous dribbling at the pump suction.

RECEIVED

1976

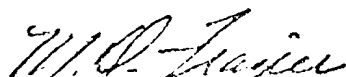
AL-CONSULTANT CENTER
1000 N. 1st St.

F. Corrosion Protection (Cont'd.)

4. The 9-5/8" casing will be sprayed with a filming amine when run.

H. Formation Tops

Anhydrite	850'	Woodford	18,000'
Delaware	4,900'	Fusselman	18,800'
Bone Spring	9,050'	Ellenburger	21,100'
Atoka Sand	14,500'	Total Depth	22,000'
Mississippian	17,500'		



M. D. FRAZIER
For BTA Oil Producers

MDF/cah
7-30-76

RECEIVED

1/21/1976

NAVATION COMAD
P. H.

VENDORS FOR 7608 JV-P HAGOOD #1

Mud	Baroid
Location	Machen
Rig	Cactus Drilling Corporation
Supply Store	Continental Emsco
Reamers, 3 points and 6 points	Texas Reamer
Blade stabilizers & string reamers	Drilprodco
Wellhead 13-3/8"	Cameron
Wellhead, Other	Cameron
Float Equipment	Halliburton
Casing Crew	Bob's
Drill Pipe Inspection	Plastic Applicators or J. e. J.
Casing Inspection	Plastic Applicators
Drill Collar Inspection	J. e. J. Inspection
Hydro Testing	
Caliper Survey 26" & 17-1/2" hole	Worth Well
Rental Tools (Fishing)	Wilson
Logging	Schlumberger
BOP Testing	Yellowjacket
Separator, Shaker, Cameron Choke	Baroid
Casing	Vinson Supply & Fort Worth Pipe & Supply
Mud Logger	Exploration Services
Brine Hauling	
P. V. T. & Flow Sensor	Dresser (SWACO)
Centralizers	Halliburton & Weatherford
Trucking	Thrasher and Dale Meyer
7-3/4" Hanger	M.W.L. (T.I.W.)
5" Hanger	M.W.L. (T.I.W.)
Cementing	Halliburton
Formation Testing	Halliburton or Johnston
Corrosion Control (H ₂ S & Oxygen)	Baroid
Degasser	Dresser (SWACO)
Shock Sub (26" & 17-1/2" holes)	Hughes Tool Company
Shock Sub (12-1/4" hole)	Johnston
Bits Charged to:	
26"	Fort Worth Pipe & Supply
17-1/2"	Fort Worth Pipe & Supply
12-1/4"	Vinson Pipe & Supply
8-1/2"	Vinson Pipe & Supply
6-1/2"	Vinson Pipe & Supply

RECEIVED

1/23/1976

BY AIR MAIL 1976
JAN 23 1976