DENVER EAST
DIVISION

MOBIL OIL CORPORATION
DRILLING ENGINEERING

DENVER
AFE #: 6EM2
AFE $: 166M
LOC. CODE: 25982
BC: 12
API: 15-055-20,647

MARCH 4, 1986

PROCEDURE FOR DRILLING
BROWN #22-#23
SECTION 15-25S-34W
FINNEY COUNTY, KANSAS

OBJECTIVE: This is to be an oil producing well completed in the St. Louis formation at approximately 5000'. Estimated time from spud to TD is 10 days. A Chase backout does exist for this well.

PROPOSED TD: 5250'

SURFACE LOCATION: 2500' FSL & 3330' FEL of Sec. 15-25S-34W

ELEVATION: Approximately 2962' Ground and 2978' K.B.

TUBULAR GOODS REQUIRED:

Conductor:	80' of 16"
Surface:	1950' of 8-5/8", 24#, K-55, STC ($18,233)
Production:	5250' of 5-1/2", 15.5#, K-55, LTC ($36,883)

B.O.P.E. REQUIRED:

1950'-5250' Hydraulically operated double ram B.O.P. w/pipe and blind rams.
WP=3000 psi
Annular preventer WP=3000

NOTE: Use lower kelly-cock valve and keep inside blow-out preventer on rig floor at all times.

DRILLING PROCEDURE:

1. Set 80' of 16" conductor pipe and cement to surface.

   NOTE: Surveys should be taken every 500' during the drilling of the surface hole. Additional surveys should be taken every 1000' through TD.

2. Move in drilling rig and spud 12¼" hole.

   NOTE: A verbal notice should be given to the Kansas Corporation Commission (Richard Lacey (316) 225-6760 or (316) 225-6718) prior to spudding or setting any string of casing.

3. Drill 12-¼" hole to 1950' or 30' through the thirdfinger. Contact Welex to log the surface with BHC-Sonic-GR. Drilling deeper is an effort to reduce the salt content of the mud and to prevent sticking the surface pipe when reciprocating and cementing. See 8-5/8" Cementing Procedure.

NOTE: Please contact Welex Logging (Attn: Bill Williamson) to provide the mudlogging services. Their number in Oklahoma City is (405) 495-8533. The mudloggers will catch a set of samples from base of surface casing to TD. One set of samples should be sent to the Kansas Geological Survey, 4150 Monroe, Wichita, KS 67209.

4. Weld on 8-5/8" X 11" 3000 psi casing head, nipple up double rams and annular preventer, and pressure test.

5. Run in hole with 7-7/8" bit and drill to 5250'.

6. Circulate and condition hole. RU Welex (Liberal: 316-316-8123).

   1. Dual Induction/SGRD
   2. Spectral Dnesity Dual Spaced Neutron Log
   3. BHC-Sonic-GR-CAL
   4. Microlog 3225' up 1000'
   5. NGT-3225' up 1000'
   6. HDT-Dipmeter (optional)

7. Please telecopy logs to Bonnie Robinson at 303-455-6571 or 303 298-3646. Depending on logs, set 5½", 15.5#, K-55 casing to T.D. and cement in two stages. Reduce viscosity to less than 35 sec/quart after logging. The 5½" casing to be equipped with the following:

   - Guide shoe and float collar one joint above shoe.

   - Space centralizers every other joint from T.D. through pay zones to approximately 4400' (See 5½" Cement Procedure).

   - Place DV tool at approximately 3200' (200'± below Council Grove top). Space centralizers on the joints above and below the stage tool and every third joint up to 2400'.

8. Rig down and move out drilling rig.

8-5/8" CEMENTING PROCEDURE:

Run 8-5/8" K-55 equipped with guide shoe and insert float one joint above casing shoe. Use threadlocking compound on bottom two joints, and shoe. Place centralizers above and below the insert float. Run 4 more centralizers every third joint above the insert float. Please contact BJ Titan in Perryton at 806-435-4054 for cementing the surface pipe.

Cement volumes are based on 12-1/4" hole with 70% calculated excess to circulate cement to surface.

PREFLUSH: 10 bbls fresh water

LEAD SLURRY:

800 sx (241 bbls) Poz mix (65/35/6) + 3% $CaCl_2$.

Slurry Weight:	13.1 lb/gal
Slurry Yield:	1.69 ft^3/sk
Water Requirement:	8.8 gal/sk
Pump Time:	5:10 hours
24 Hr. Comp. Strength:	810 psi.

TAIL SLURRY:

100 sx (19 bbls) Class "H" + 3% $CaCl_2$.

Slurry Weight:	16.4 lb/gal
Slurry Yield:	1.07 ft^3/sk
Water Requirement:	4.3 gal/sk
Pump Time:	1:40 hours
24 hr. Comp. Strength:	2760 psi.

Reciprocate casing in 10' to 20' strokes while displacing cement around the shoe. Bump plug W/500 psi over final pumping pressure. Bleed off pressure to check float equipment.

NOTE: Cement must be circulated to surface. Record and report what amount, if any, is received back. If no cement returns are seen, top in the 12-1/4" x 8-5/8" annulus using 1" tubing with Class "H" + 2% CaCl (15.5 lb/gal).

5-1/2" CEMENTING PROCEDURE:

FIRST STAGE:

Please contact Halliburton at 316-624-3879 for cementing services. Cement volumes are based on 7-7/8" hole to 70% excess. The open hole caliper log should be looked at prior to cementing and cement volumes adjusted on integrated hole volume + 15%. The cement top should be approximately 4400'.

PREFLUSH:

20 bbl. of 10% salt water

316-624-3879

SLURRY: (5250'-4400')

220 Class "H" (2% Gel) + 5% salt

Slurry Weight:	15.6 lb/gal
Slurry Yield:	1.22 ft^3/sk
Water Requirements:	5.43 gal/sk
Thickening Time:	2 hrs 48 min.
Compressive Strength:	2160' psi

Reciprocate casing in 10' to 20' strokes while displacing cement around the shoe. Displace at 6-8 bpm, slowing down to 2-3 bpm 10 bbls short of the float collar. Bump plug with 750 psi over final pumping pressure and bleed off to check float equipment. After dropping the bomb and opening the stage tool, circulate 2 hours for 2nd stage.

SECOND STAGE: (3200'-2400')

PREFLUSH:

10 bbls fresh water

LEAD SLURRY

75 sx (33 bbls) Poz mix (65/35/6) + 3% $CaCl_2$

Slurry Weight:	13.1 lb/gal
Slurry Yield:	1.69 ft^3/sk
Water Requirement:	8.8 gal/sk
Pump Time:	5:10 hours
24 Hr. Comp. Strength:	810 psi

Lead slurry is designed to cover 400' (2400'-2800') with 75% excess required for washout.

TAIL SLURRY:

130 sx (25 bbls) 50/50 (Poz/"H") (2% Gel) + 2% CaCl

Slurry Weight:	14.2 lb/gal
Slurry Yield:	1.26 ft^3/sk
Water Requirement:	5.75 gal/sk

Tail slurry is calculated to cover 400' (3200'-2800') with 100% excess required for washout.

NOTE: Volumes based on cement on 5-1/2" casing to cover from 3200'-2400' (800').

ESTIMATED TOPS

Elevation: +2962' K.B.: +2978 T.D.: 5250'

PROGNOSIS:

FORMATION TOPS	DRILL DEPTH
Glorietta	1338'
Chase	2462'
Council Grove	2794'
Wabaunsee	3176'
Shawnee	3501'
Lansing	3878'
Marmaton Pay	4433'
Morrow	4827'
Chester	4902'
St. Louis	5034'
TD	5250'

CONTACTS

TELEPHONE	OFFICE	RESIDENCE
R. W. Vines (Randy)	(303) 298-3692	(303) 693-4711
R. K. Scott (Kent)	(701) 774-7156	(701) 572-7411
b. b. robinson (Bonnie)	(303) 298-3646	(303) 455-6571
T. D. Beaty (Tom)	(303) 298-3626	(303) 771-5621

MAILING ADDRESS

MOBIL OIL CORPORATION
P.O. Box 5444
Denver, Colorado 80217-5444

MUD PROGRAM

0'-1950'

Weight: less than 9.0 ppg
Viscosity: 28-34
Water Loss: No Control
Comments: Native mud, some gel and cottonseed hulls for Glorietta at approximately 1150'-1350'

1900'-4600'

Weight:	less than 9.0 ppg
Viscosity:	30-34
Water Loss:	25-50 cc
Comments:	low solids non-dispersed

4600'-5250'

Weight:	less than 9.1 ppg
Viscosity:	40-50
Water Loss:	10-20 cc
Comments:	Obtain maximum fluid control possible with natural bentonite. Polymers will not be required. Increase the viscosity before drilling the Morrow Shale.

Anticipate lost circulation by building up with cottonseed hulls prior to drilling the Glorietta at approximately 1150'. Keep this LCM in the system until 8-5/8" casing has been set.

It may be desired to drill with water from 2000' to approximately 2500'. If loss occurs in the Chase, Chase (2500'-3200') spot pills of cottonseed hulls - after being sealed off shake out and run desander, desilter & shaker. If loss occurs the 2nd time consider leaving LCM in system.

MUD PROGRAM FOR CORING OR DST:

Weight:	less than 9.1 ppg
Viscosity:	35-50
Water Loss:	10 cc
Comments:	To control fluid loss, add 1-2 sx of Drispac and/or 4-5 sx of Lignite. After circulating approximately 30 minutes with the desired mud properties, a short trip will be necessary up above the Morrow and Cherokee formations. (Approximately 10 stands). Return to bottom and circulate one hour prior to tripping out of the hole. Assemble DST tool, run in hole and set packers. A basic timetable for the test should be: 15 minutes initial open flow 30 minutes shut in 60 minutes final open flow 120 minutes final shut in These times may be varied at the discretion of the on-site geologist.

If seepage becomes a problem prior to drilling the productive formation, it may be desired to periodically run LCM pills (cottonseed hulls) to alleviate this problem. These pills should only be allowed one or two circulations. Do not bypass the shaker or shut down any other solids control equipment.

BOTTOM HOLE ASSEMBLIES

(From surface pipe)

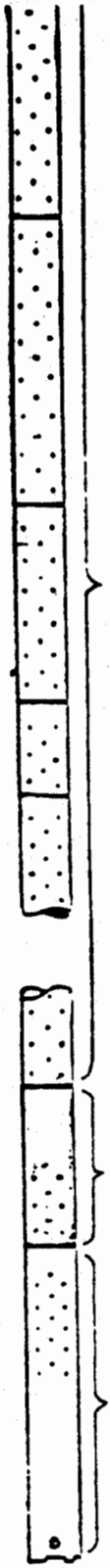
Bit
21 - 6¼" X 2¼" D.C. (91 ppf)
Approximate BHA weight - 57,330 lbs.
BHA weight in mud - 49,353

OFFSET INFORMATION

The Fred Brown #1 was drilled within a mile of the proposed location. The surface hole was drilled to a depth of 1952' in 22 hours. Lost circulation (50 bbls) at a depth of 2598'. The pipe was stuck at 2709'. The drill pipe was backed off at 2472'. After 3 days of fishing, the hole was finally cleared of all debris. At 4819', lost a bit nozzle on bit #4. The well was drilled to TD with no further problems. Both stages of the cement job were performed with full circulation.

RWV/kw
D/8690

R. W. Vines



Perforated Flush Joint Anchor 3/16" holes – (trucks usually carry about 3 feet of 1/2" hole anchor also)

5 & 3 & 2 foot sections

long test intervals can be filled in w/ Drill Collars

(W.C Holmley #1 test was run with 35 ft of perforated anchor)

H-T-500 Temperature Recording Device

Blanked off Case for bottom RT. type Pressure-Time recording gauge