



WELL NO. APACHE CANYON 30-2

7235' GL
7243' HB

13 3/8 48#/ft. Conductor set at 23' with grout to surface.

8 5/8" 24#/ft. Surface Pipe set at 527' with 375 sxs. cement.

TOP OF VERMEJO SANDSTONE 1295'

4 shot squeeze @ 1318, 505x. Cl. A. w/ 1/4# floccule, 2% CaCl₂

1370-72 }
1393-95 } 8 SPF 11-9-90
1467-71 }
1502-04 }

Breakdown using Halliburton API, 7 1/2% HCL, NEFE, 50 gal./ft.

4 shot squeeze @ 1520, 100 sxs. Cl. G. silicalite.

1573-75 }
1594-96 } 8 SPF 11-9-90
1639-41 }
1661-63 }

Breakdown same as above.

Reda pump set @ 1451 3-26-91
MAX. RATE 3600 BPD. (+/-)

Frac Detail

2843 bbl. Gelled 2% HCL, H₂O.
237,000 # 10/20 sand
210 # 8/12 sand
Avg. rate 60 BPM @ 2200 p.
ISIP -0-

TOP OF TRINIDAD SANDSTONE 1683'

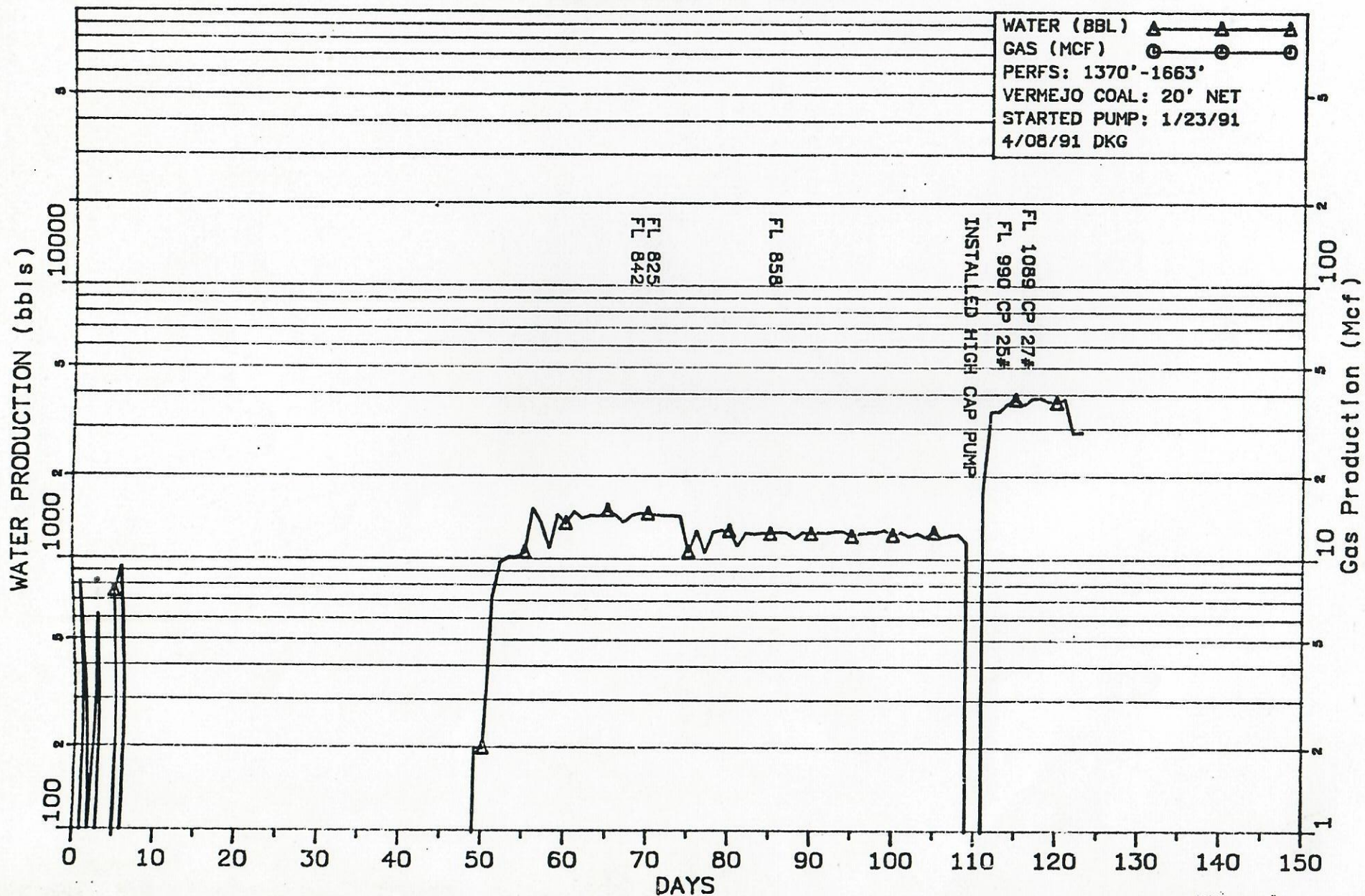
4 shot squeeze @ 1720, 300 sxs. Cl. G w/ 1/4# floccule, 4% CaCl₂.

5 1/2" 14.0#/ft. Production Casing set at 1765' with 100 sxs. cement.

POTD 1746'

APACHE CANYON 30-2

DECLINE CURVE



**APACHE CANYON 30-2
DRILLING REPORT
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04/05/91 Produced 3744 BW (160 BWPH); CP: 26 psi; WFL: 1089'.
04/06/91 Produced 3856 BW (160 BWPH); CP: 26 psi; WFL: 891'.
04/07/91 Produced 2880 BW (160 BWPH); CP: 0 psi; Pump on 18 hrs.
04/08/91 Produced 2919 BW (160 BWPH); CP: 0 psi; Pump on 18.24 hrs; WFL: 858'.

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03/11/91 Produced 1216 BW, SICP 1.5 psi; WFL: 858'.

03/12/91 Produced 1244 BW, SICP 1.5 psi.

03/13/91 Produced 1256 BW, SICP 1.5 psi.

03/14/91 Produced 1258 BW, SICP 1.5 psi.

03/15/91 Produced 1283 BW, SICP 1.0 psi; WFL: 858'.

03/16/91 Produced 1226 BW, SICP 1.0 psi.

03/17/91 Produced 1259 BW, SICP 1.0 psi.

03/18/91 Produced 1212 BW, SICP 1.0 psi; WFL 858'.

03/19/91 Produced 1249 BW, SICP 1.0 psi.

03/20/91 Produced 1205 BW, CP: 1.0 psi.

03/21/91 Produced 1258 BW, CP: 1.0 psi.

03/22/91 Produced 1201 BW, CP: 1.0 psi; WFL: 858'.

03/23/91 Produced 1228 BW, Rate: 51 bwph, CP: 1.0 psi.

03/24/91 Produced 1238 BW, Rate: 51 bwph, CP: 1.0 psi.

03/25/91 Produced 1143 BW, Rate: 51 bwph, CP: 1.0 psi; WFL: 858'.

03/27/91 Little R Well Service pulled previous Reda pump, Reda ran larger 87hp 59 stage submersible pump w/ bottom of tubing at 1475 and pump inlet at 1451. Complete generator and electrical system modifications, back on pump @ 3:10 PM on 3/26; Produced 1764 BW (110 bwph/16hrs); SICP: 60.0 psi; WFL: 1056' this AM; WFL: 1386'this PM.

03/28/91 Produced 3469 BW (141 BWPH); TP: 70 psi, CP: 25 psi; WFL: 990'.

03/29/91 Produced 3478 BW (155 BWPH); CP: 25 psi; WFL: 961'.

03/30/91 Produced 3712 BW (160 BWPH); CP: 23 psi; WFL: 1056'.

03/31/91 Produced 3840 BW (160 BWPH); CP: 26 psi; WFL: 1089'.

04/01/91 Produced 3664 BW (160 BWPH); CP: 27 psi; WFL: 1089'.

04/02/91 Produced 3872 BW (160 BWPH); CP: 27 psi; WFL: 1089'.

04/03/91 Produced 3904 BW (160 BWPH); CP: 26 psi; WFL: 1089'.

04/04/91 Produced 3776 BW (160 BWPH); CP: 26 psi; WFL: 1089'.

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02/11/91 Made 1362 BW, no gas.

02/12/91 Made 1447 BW, no gas.

02/13/91 Made 1472 BW, no gas. SFL: 842', WFL: 842'.

02/14/91 Made 1469 BW, no gas.

02/15/91 Produced 1447 BW, no gas. WFL: 825'.

02/16/91 Produced 1437 BW, 0 gas.

02/17/91 Produced 1439 BW, 0 gas (trace, unmeasurable).

02/18/91 Produced 1426 BW, 0 gas (trace, unmeasurable), WFL: 825'.

02/19/91 Produced 1067 BW, 0 gas (trace, unmeasurable).

02/20/91 Produced 1268 BW, No gas.

02/21/91 Produced 1054 BW, no gas.

02/22/91 Produced 1262 BW, trace gas; WFL: 825'.

02/23/91 Produced 1279 BW, trace gas.

02/24/91 Produced 1273 BW, trace gas.

02/25/91 Produced 1115 BW, trace gas.

02/26/91 Produced 1252 BW, SICP 0.5 psi.

02/27/91 Produced 1236 BW, trace gas.

02/28/91 Produced 1252 BW, trace gas.

03/01/91 Produced 1245 BW, trace gas.

03/02/91 Produced 1261 BW, trace gas; WFL: 858'.

03/03/91 Produced 1251 BW, trace gas.

03/04/91 Produced 1197 BW, trace gas; WFL: 858'.

03/05/91 Produced 1259 BW, SICP 1.0 psi.

03/06/91 Produced 1244 BW, SICP 1.0 psi.

03/07/91 Produced 1256 BW, SICP 1.0 psi.

03/08/91 Produced 1248 BW, SICP 1.5 psi; WFL: 858'.

03/09/91 Produced 1267 BW, SICP 1.5 psi.

03/10/91 Produced 1267 BW, SICP 1.5 psi.

01/27/91	Made 974 BW, no gas.
01/28/91	Made 1018 BW, no gas.
01/29/91	Made 1017 BW, no gas.
01/30/91	Made 1062 BW, no gas.
01/31/91	Made 1527 BW, no gas.
02/01/91	Made 1356 BW, no gas.
02/02/91	Made 1097 BW, no gas.
02/03/91	Made 1451 BW, no gas.
02/04/91	Made 1355 BW, no gas.
02/05/91	Made 1490 BW, no gas.
02/06/91	Made 1406 BW, no gas.
02/07/91	Made 1445 BW, no gas.
02/08/91	Made 1430 BW, no gas.
02/09/91	Made 1508 BW, no gas.
02/10/91	Made 1443 BW, no gas.

	Daily Completion Cost 16,500	Cumulative Completion Cost 145,167
12/07/90	Complete electrical/generator/propane/plumbing installation. Start pump @ 1:30 PM. Daily Completion Cost 5,950	Cumulative Completion Cost 151,117
12/08/90	Made 820 BW, 2303 BLWTR. No gas show.	
12/09/90	Made 102 BW, generator down due to mechanical problems. 2201 BLWTR.	
12/10/90	Made 619 BW, no gas show, 1582 BLWTR.	
12/11/90	Pump down, tubing parted. Little R COH with rods and rotor, RIH with Andco spear, retrieve tubing string. Tubing parted @ 50' and 300' with significant wear in 6 places near TD. Suspect deviation problem or unit unlevel. Repairs made, replaced bad tubing joints, RIH with original assembly, re-leveled and braced unit, started pump.	
12/12/90	Made 755 BW, no gas shows, 827 BLWTR.	
12/13/90	Made 930 BW, no gas shows, total load recovered.	
12/14/90	Tubing parted again, confirming excessive deviation. New submersible pump system ordered, anticipated arrival and installation during the late December or early January.	
12/21/90	Shot fluid level with 0# casing pressure. Static level @ 36 jts to fluid or 1188' from surface.	
01/03/91	MIRU Little R Well Service, Strip out of hole rods and tubing. Found tubing parted in 7 places. Retrieved all rods and rotor and 25 jts. tubing. SDFN.	
01/04/91	RIH w/ 2 7/8 overshot. Could not get over fish. Suspect fish is flared or warped. SDFN.	

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01/08/91	Finished COH, RIH w/ overshot, extension, fluted mill, grapple. After slowly milling over top of fish and repeated attempts overshot grapple caught tubing. COH w/ remaining 17jts. of tubing and stator. Break out defective tubing and rods, load and take to yard. SDFN. Waiting on rods and pump delivery.
01/22/91	Preparing to run Reda submersible pump. MIRU Little R Well Service. RIH with 4-1/2" sand pump. Recovered 5' sand and metal fragments. COH SDFN.
01/23/91	Continue to run Reda pump. SD run do to faulty cable end. New cable end via Hot Shot overnight. Completed installation on separator and electrical control box. SDFN.
01/24/91	Completed running and installing Reda pump system. Set bottom of pump at 1673'. Completed wiring and testing, started pump at 3:30 PM 1/23/91. Estimated 200 BW, no gas.
01/25/91	Reda Pump SD due to electronic control problem. Technician on site at present. Made 200 BW, no gas.
01/26/91	Made 729 BW, no gas.

Per RMWS-CBL	1661-63	1502-04
	1639-41	1467-71
	1594-96	1393-95
	1573-75	1370-72

Plans are to shoot additional 4 SPF 11/09/90. SDFN.

Daily Completion Cost 1,200

Cumulative Completion Cost 50,888

11/09/90 Schlumberger shot additional 4 SPF in same intervals. RIH with scraper on tbg., COH, PU Halco PIP system, RIH, set below bottom perms, pressure test to 2400 psi., COH to 1st interval, set tools performed this and subsequent breakdowns with the following results:

APACHE CANYON #30-2 - ACID BREAKDOWN USING HALCO PPI 11/09/90

Interval	Surf Pressure	Static HH	BH Break	HCL Volume	Rate
1661-63	1700	719	2419	100	2 BPM
1639-41	1750	710	2349	100	2 BPM
1594-96	1750	690	2440	100	2 BPM
1573-75	1850	681	2531	150	2 BPM
1502-04	1900	650	2550	100	2 BPM
1467-71	1900	635	2535	250	2 BPM
1393-95	1800	603	2403	100	2 BPM
1370-72	1750	593	2343	300	2 BPM

After COH, LD tools, RIH with swab, recovered 35 BW. SDFN. 37 BLWTR.

Daily Completion Cost 7,600

Cumulative Completion Cost 58,488

11/10/90 Resume swabbing with IFL @ 1000, SFL @ 1250, made 40 BW. SD, RD.

Daily Completion Cost 650

Cumulative Completion Cost 59,138

11/14/90 Little R returned, resumed swabbing, IFL @ 1300' with SN @ 1400. As swabbing continues SFL raises to 1000 possibly due to influx and gas cutting. Continue swabbing, recover 40 BW, SDFN.

Daily Completion Cost 800

Cumulative Completion Cost 59,938

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11/15/90 Resume swabbing to purge for water sample. Recovered 25 BW, filled sample containers, sent to lab. SD, RD.

Daily Completion Cost 600

Cumulative Completion Cost 60,538

11/28/90 MIRU Serfco from Liberal, KS., frac well with gelled water and 24,000# 40/70 sand, 239,000# 10/20 sand, and 210# 8/12 sand. Avg. rate 60 bpm, avg. press. 220 psi., ISIP -0-. Total fluid pumped 2,843 BW.

Daily Completion Cost 68,134

Cumulative Completion Cost 128,668

12/06/90 Little R MIRU, RIH w/notched collar to 1670, no sand. Cott, MU Co-Rod 3-1/2" series 200 progressive cavity pump stator with no turn tool on bottom. Set bottom of stator @ 1347'. RIH with 7/8 rods on rotor, land in stator with 7/8 rod subs and 16' x 1-1/4" polished rod. Mount 40 HP VED unit, SDFN.

DRILLING REPORT

APACHE CANYON #30-2

850' FNL & 3495' FWL (NW $\frac{1}{4}$ NE $\frac{1}{4}$)

Section 30-33S-67W

Las Animas County, Colorado

ETD: 1750' (Trinidad)
CONTRACTOR: Finley Drilling Co.
ELEVATIONS: 7235' GL, 7243' KB

10/09/90 Depth 540'. Previously set 23' of 13-3/8" conductor and grouted to surface. Spud well with 12-1/4" bit on October 8, 1990. Drilled with air-mist to 540'. Survey 1/2° @ 305'. Ran 12 jts 8-5/8" 24 #/ft casing and landed @ 527' KB. Cemented with 375 sx class "G" with 2% CaCl₂ + 1/4 #/sx flocele. Cement circulated to surface.
Daily Cost 21,370 Cumulative Cost 34,366 (location cost of \$9,996)

10/10/90 Depth 1321'. Pulling bit for core barrel run. WOC 8 hrs. TIH with 7-7/8" bit drill out 8-5/8" shoe and drill with air-mist. Surveys: 2-3/4° @ 521', 2-3/4° @ 820', 3° @ 1121'.
Daily Cost 8,678 Cumulative Cost 43,044

10/11/90 Depth 1390'. Cored a total of 60' in four trips with Core barrel. Recovered 3' of coal (1339-42) and 2' of coal (1372-74) from upper Vermejo section. TIH with 7-7/8" bit, drill ahead with air-mist.
Daily Cost 6,776 Cumulative Cost 49,820

10/12/90 Depth 1760'. Cored 60' in lower Vermejo. Recovered 2' from 1641-43. TIH with 7-7/8" bit and drilled to TD.
Daily Cost 7,750 Cumulative Cost 57,570

10/13/90 Depth 1760'. Logging. Conditioned hole. POH. RU Schlumberger. Hit bridge @ 800'. TIH with 7-7/8" bit wash through bridge, condition for logs.
Daily Cost 23,997 Cumulative Cost 81,567

10/14/90 Depth 1760'. Ran Schlumberger DIL-SFL and CNL-LDT logs with high resolution run TD to surface casing. Ran GST log 1760 to 1400' and 900' to surface casing. TIH open ended with DP, spotted 1000 gal Temblock-100 pill on bottom. POH. TIH with bit, wash to bottom. POH. Ran 5-1/2" 14 #/ft casing and landed shoe @ 1765'. Mixed and pumped 100 sx silicalite with 4% CaCl₂, 2% gel, 1% thixset A, 0.25% thixset B and 1/2 #/sx flocele. No circulation during job. Set slips. Released rig.
Daily Cost 20,543 Cumulative Cost 102,110

*** FINAL REPORT UNTIL COMPLETION ***

APACHE CANYON #30-2

DRILLING REPORT

PAGE TWO

COMPLETION

10/17/90 Bury deadmen, MIRU Little R Well Service, PU 2-7/8 tbg., stand back. Rocky

FINLEY DRILLING CO., INC.

P.O. Box 391
Raton, New Mexico 87740
Phone: (505) 445-5741

October 14, 1990

Western Oil Corporation
P.O. Box 15277
Lakewood, Colorado 80215

Attention: Jerry Anderson

Apache Canyon #30-2

Billing for drilling services: ~~Cherry Canyon:~~

Move:		\$ 3,000.00
Hourly: 7½ hrs.	@ \$135.00 per hr.	\$ 1,012.50
Hourly: 129 hrs.	@ \$150.00 per hr.	19,350.00
Air Package: 6 days	@ \$1050.00 per day	6,300.00
Rotating Head: 6 days	@ \$ 75.00 a day	450.00
Water Truck: 25 hrs.	@ \$ 38.00 per day	950.00
Winch Truck: 2 hrs.	@ \$ 55.00 per hr.	110.00
Truck & Trailer: 5 hrs.	@ \$ 55.00 per hr.	275.00
Elevators		35.00

Supplies:		
Rotating Head Rubber		\$ 450.00
Varel 7 7/8" bit		1,800.00
Fuel: Invoice 4346		1,964.10
Cement: 22	@ \$ 6.85 per sk.	150.70
12% Handling Charge on Supplies		523.78

TOTAL AMOUNT DUE: \$36,371.08

If total invoice is paid by October 25, 1990, deduct 12% handling charge or \$523.78 from total.

Thank you,

Joe D. Finley
Joe D. Finley

JAA

TEMBLOK 100 - LOST CIRCULATION PLUG

(1) MIX 100 lbs. K-35 WITH 1000 GALS. FRESH WATER

ALL TANKS, PUMPING EQUIPMENT, WATER TRUCKS

MUST BE COMPLETELY FREE OF CONTAMINANTS

THAT MIGHT AFFECT THE PH OF THE TEMBLOK-100

FLUID BY CIRCULATING THIS SOLUTION THRU THEM.

PUMP TO PIT AFTER CIRCULATING EQUIPMENT.

(2) MIX 50 lbs. WG-12 WITH 1000 GALS. FRESH WATER

HYDRATE GEL BY CIRCULATING BEFORE RAISING

PH TO ABOVE 10 WITH 10-20 LBS. OF K-35

(3) PUMP HIGH PH SPACER INTO WATER TRUCK

(4) MIX 500 lbs TEMBLOK-101 WITH 1000 GALS FRESH

WATER. MIX FOR AT LEAST TEN (10) MINUTES

TO ENSURE ADEQUATE GEL VISCOSITY.

Don't get
Baroid's idea of
LCM type and concentration

→ * OTHER ADDITIVES, SUCH AS SOLID DIVERTING

AGENTS, MAY BE BOTH MIXED OR ADDED

AS THE SLURRY IS PUMPED

(5) AFTER MIXING, PUMP 500 GALS OF HIGH PH SPACER

(6) PUMP 1000 GAL TEMBLOK-101

(7) PUMP HIGH PH SPACER EQUAL TO HEIGHT OF 500 GAL

SPACER ON BACK-SIDE IN DRILL PIPE

(8) DISPLACE FOR BALANCE PLUG

COST ESTIMATION: 4200.00

Gasco, Inc.

141 UNION BLVD; SUITE 400
LAKEWOOD, COLORADO 80228
TELEPHONE: (303) 980-9340

Western Oil Corporation FAX COVER LETTER

Date/Time: 10-8-90

Total # Pages: 2
(including cover letter)

TO: Billie

FROM: Jerry Anderson

Comments: Please give this to Don Penrod the next time
he comes in.

Don - Please add a second cement basket to your
Apache Canyon prognosis and place it on the bottom
joint of 8⁵/₈".

Also - attached is Halliburton's recommendation on
pumping the Temblock 100. This material will be pumped
after reaching TD ahead of anything else. After balancing
the plug - pull bit 200' ± above it and try to put 100 to 150 psi.
on it. Wait 4 hours, then drill out the plug to bottom and
then condition hole w/gel-LCM before logging.

- Our fax number: (303) 989-0823
- If all pages are not received, please call: (303) 980-9340
- Transmittal on RAPICOM 120 - 20 seconds/page
- Send on fasted speed - ours will adapt
- Call answered automatically

Drilling Prognosis
Apache Canyon # 30-2
800' FNL and 1785' FEL (NW/NE)
Sec 30-33S-R67W

Surface Elevation: 7235'

Datum : 7243' KB

- 1) Drill 17½" hole with air to approximately 15'. Cut 13¾" 48#/ft casing jt to appropriate length in order to properly space out flange and rotating head. Mix one sack grout and dump in hole. Stab 13¾" casing into grout. Mix and dump approximately 175x grout along outside of casing

While waiting on cement to set (3 hrs), install companion flange on 13¾" thread and nipple up rotating head.

Keep pilot light lit on blooey line and require mud loggers to describe samples to 520'.

- 2) Drill 12¼" hole with air-mist to 520±. While drilling add fresh water to one 120 Bbl mud tank and mix in bentonite (Aquagel) at 15 to 18 ppb. The bentonite should be allowed to fully hydrate at least 8 hours before adding LCM. Add LCM at the direction of mud engineer.

At 520' displace hole with mud-LCM and pull bit.

Apache Canyon #30-2 (2)

- 3.) Run $8\frac{5}{8}$ " 24#/ft casing w/guide shoe, insert float and latch down baffle. Centralize bottom, middle and second joint from top and place cement basket approx. 100' above Maxwell seam. Tack weld bottom 3 jts. Cement to surface with 200% estimated volume (i.e. 430 cubic feet or 374 sx class "G" + 2% CaCl_2 + $\frac{1}{4}$ #/sx Floccle) Conduct top job thru 1" tubing if necessary. Allow cement to set 8 hours (4 hrs w/pressure held).
4. During 8 hr WOC time: remove $13\frac{3}{8}$ " Flange and rotating head; install $8\frac{5}{8}$ " x $5\frac{1}{2}$ " casing head, companion flange, rotating head and BOP. Drill out $8\frac{5}{8}$ " shoe w/ $7\frac{7}{8}$ " bit using air-mist and drill to TD (1750'±). Well site geologist to pick core points in both upper and lower Vermejo coals plus TD 75'+ into Trinidad sandstone. Coals to be cannistered and desorbed by Raven Ridge personnel.
5. At TD mud up with bentonite and LCM commencing with 100 bbls of 20 ppb gel containing 1% LCM followed by 100 bbl pill of 15 ppb gel containing approx 8 ppb LCM per mud engineers direction. Circulate hole for several hours. POH laying down drill pipe and collars.

Apache Canyon #30-2 (3)

- 6.) Log as follows: Schlumberger DIL-SFL-GR, CNL-LDT and High resolution logs: TD to surface casing. NGT and GST logs: TD to top of Vermejo. If sufficient open hole core not obtained plan to cut side wall cores for description, proximate and maceral analyses.
- 7.) Run 5½" 14#/ft casing with guide shoe, float collar on top of first joint and centralizers through coals. Place one cement basket on second joint off bottom, place DV tool below upper coals (if any) and cement baskets one joint on either side. Cement first stage with 5 bbls super seal flush followed by cement to fill up to top of Vermejo. Shut down 3 hrs between stages. Open DV tool and pump 100 sx per cementing program. Set slips, cut off casing and rig down to move out.

Jerry Anderson
October 5, 1990