



Texaco E & P

205 E. Bandelier Blvd.

Hobbs, NM 87401

1-800-393-7273

June 10, 1997

COPY

New Mexico Oil Conservation Division
2040 South Pacheco
P.O. Box 6429
Santa Fe, New Mexico 87505

Attn: Mr. Michael Stogner
Engineering Bureau Chief Examiner

**Re: Administrative Approval for Directional Wellbore
Vacuum Glorieta West Unit #86 (API #30 025 20179)
Unit Letter K, Section 36, Township 17S, Range 34E
Lea County, New Mexico**

Dear Mr. Stogner,

Texaco E & P Inc. respectfully requests administrative approval to directionally drill a horizontal lateral interval from Vacuum Glorieta West Unit #86 (VGWU), an existing vertical wellbore. Upon completion of the horizontal section, VGWU #86 will also require the formation of a non-standard 80 acre proration unit for dedication. This project will be performed in accordance to rules 111-D and 104-D from the New Mexico Energy and Minerals Department Rules and Regulations manual.

VGWU #86 is currently producing 15 BOPD and 10 MCFPD from the Vacuum Glorieta unitized waterflood interval (Glorieta, Upper Paddock, and Lower Paddock). A horizontal lateral section is anticipated to increase the daily production rate to 115 BOPD and 35 MCFPD, while increasing unit reserves by approximately 80 MBO.

The proposed drill path is 14.43° West of due South and laterally 1,023' targeting the Upper Paddock Limestone interval (please see the attached wellpath directional survey). This interval has shown a favorable response to the waterflood and provides an ideal medium for directional drilling. Also, Texaco has significantly enhanced injection support in this area through recent conformance type injection well workovers (polymer treatments and cement squeezes).

Offset operator notification will not be required for this project due to the central location of the subject well within the unitized acreage.

Please review the attached directional survey, C-102 plat, type log section, and offset operator plat, for supplemental information. If you have any questions or concerns with regards to this matter please contact Darrell Carriger at (505) 397-0426. Thank you for your consideration of this proposal.

Sincerely,

Tim Miller
Texaco Exploration & Production Inc.
Hobbs Operating Unit Manager

/DJC

Attachments

cc: NMOCD District I (Hobbs location)

DISTRICT I

P.O. Box 1980, Hobbs, NM 88240-1980

DISTRICT II

P.O. Box Drawer DD, Artesia, NM 88211-0719

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV

P.O. Box 2088, Santa Fe, NM 87504-2088

COPY

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-102

Revised February 10, 1994

Instructions on back
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☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-20179		² Pool Code 62160		³ Pool Name VACUUM GLORIETA	
⁴ Property Code		⁵ Property Name VACUUM GLORIETA WEST UNIT			⁶ Well No. 86
⁷ OGRID Number 022351		⁸ Operator Name TEXACO EXPLORATION & PRODUCTION INC.			⁹ Elevation 4009' DF

¹⁰ Surface Location

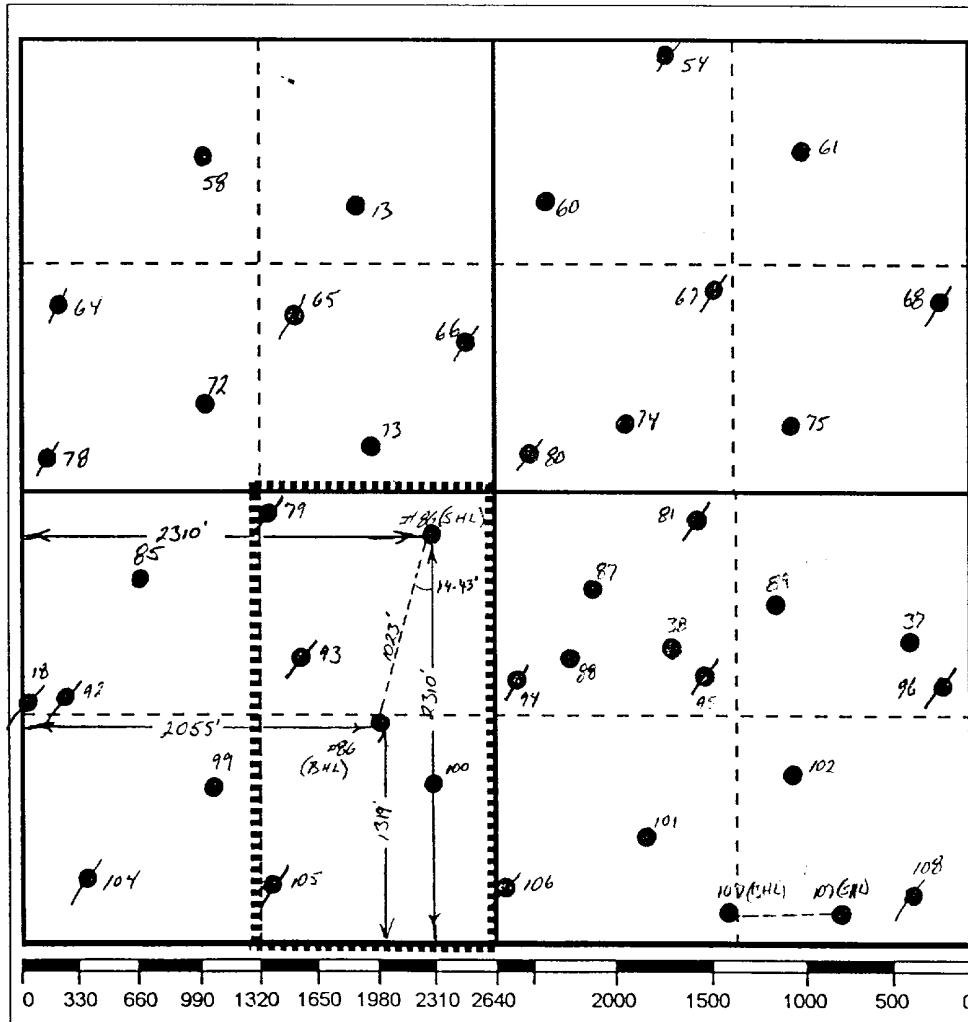
UI or lot no.	Section	Township	Range	Lot.Idn	Feet From The	North/South Line	Feet From The	East/West Line	County
K	36	17S	34E		2310	SOUTH	2310	WEST	LEA

¹¹ Bottom Hole Location If Different From Surface

UI or lot no.	Section	Township	Range	Lot.Idn	Feet From The	North/South Line	Feet From The	East/West Line	County
N	36	17S	34E		1319	FSL	2055	FWL	Lea

¹² Dedicated Acres 80	¹³ Joint or Infill No	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



17 OPERATOR CERTIFICATION

I hereby certify that the information
contained herein is true and complete to the
best of my knowledge and belief

Signature

Printed Name

Darrell J. Carriger

Position

Prod. Engineer

Date

6/9/97

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown
on this plat was plotted from field notes of
actual surveys made by me or under my
supervision, and that the same is true and
correct to the best of my knowledge and
belief.

Date Surveyed

Signature & Seal of

Professional Surveyor

Certificate No.

File name: C:\WINSERVE\VGWU86.SVY
Date/Time: 03-Jun-97 / 18:18

Job Number:
Company: TEXACO E & P, INC.
Lease/Well: VGWU #86
Location: LEA CO., NEW MEXICO
Rig Name: YEK #119
Declination: 9.11° EAST

CRITICAL POINTS

MD	TVC	AZH	TVD	N-S	E-W
KOP: 5830' MD, 56.59°/100'			5830.00	.00	.00
5830.00	.00	194.43	5830.00	.00	.00
EOB: 5992' MD, 5931' TVD, 91.54° INC.			5931.21	-100.68	-25.91
5991.76	91.54	194.43	5931.21	-100.68	-25.91
ADROP AT 10.0°/100'			5915.00	-686.63	-176.68
6597.01	91.54	194.43	5915.00	-686.63	-176.68
WORLD 80.98° INC.			5914.88	-711.34	-183.04
6622.52	80.98	194.43	5914.88	-711.34	-183.04
TD: 6911' MD, 1023' VS			5920.00	-990.73	-254.93
6911.06	80.98	194.43	5920.00	-990.73	-254.93

KOP: 5830' MD, 56.59°/100'

EOB: 5992' MD, 5931' TVD, 91.54° INC.

TD: 6911' MD, 1023' VS

TRUE VERTICAL DEPTH (FT)

-- WELL PLAN

VERTICAL SECTION (Ft) @ 194.43°



Job Number:
Company: TEXACO E & P, INC.
Lease/Well: VGWU #86
Location: LEA CO., NEW MEXICO
Rig Name: YEK #119
RKB:
G.L. or M.S.L.:

State/Country:
Declination: 9.11° EAST
Grid:
File name: C:\WINSERVE\VGWU86.SVY
Date/Time: 03-Jun-97 / 18:18
Curve Name: WELL PLAN

PHOENIX DRILLING SERVICES, INC.

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 194.43

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
KOP: 5830' MD, 56.59°/100'										
5830.00	.00	194.43	5830.00	5830.00	.00	.00	.00	.00	.00	.00
5840.00	5.66	194.43	5839.98	5839.98	-4.48	-1.12	.49	.49	194.43	56.59
5850.00	11.32	194.43	5849.87	5849.87	-1.91	-4.49	1.97	1.97	194.43	56.59
5860.00	16.98	194.43	5859.56	5859.56	-4.27	-1.10	4.41	4.41	194.43	56.59
5870.00	22.64	194.43	5868.97	5868.97	-7.55	-1.94	7.80	7.80	194.43	56.59
5880.00	28.29	194.43	5877.99	5877.99	-11.72	-3.01	12.10	12.10	194.43	56.59
5890.00	33.95	194.43	5886.66	5886.66	-16.72	-4.30	17.26	17.26	194.43	56.59
5900.00	39.61	194.43	5894.56	5894.56	-22.52	-5.79	23.25	23.25	194.43	56.59
5910.00	45.27	194.43	5901.93	5901.93	-29.05	-7.47	29.99	29.99	194.43	56.59
5920.00	50.93	194.43	5908.61	5908.61	-36.25	-9.33	37.43	37.43	194.43	56.59
5930.00	56.59	194.43	5914.52	5914.52	-44.06	-11.34	45.50	45.50	194.43	56.59
5940.00	62.25	194.43	5919.60	5919.60	-52.40	-13.48	54.10	54.10	194.43	56.59
5950.00	67.91	194.43	5923.82	5923.82	-61.17	-15.74	63.17	63.17	194.43	56.59
5960.00	73.58	194.43	5927.11	5927.11	-70.31	-18.09	72.60	72.60	194.43	56.59
5970.00	79.22	194.43	5929.46	5929.46	-79.72	-20.51	82.32	82.32	194.43	56.59
5980.00	84.88	194.43	5930.85	5930.85	-89.31	-22.98	92.22	92.22	194.43	56.59
5990.00	90.54	194.43	5931.25	5931.25	-98.98	-25.47	102.21	102.21	194.43	56.59
EOB: 5992' MD, 5931' TVD, 91.54° INC.										
5991.76	91.54	194.43	5931.21	5931.21	-100.68	-25.91	103.96	103.96	194.43	56.52
6091.76	91.54	194.43	5928.54	5928.54	-197.50	-50.82	203.93	203.93	194.43	.00
6191.76	91.54	194.43	5925.86	5925.86	-294.31	-75.73	303.89	303.89	194.43	.00
6291.76	91.54	194.43	5923.18	5923.18	-391.12	-100.64	403.86	403.86	194.43	.00
6391.76	91.54	194.43	5920.50	5920.50	-487.93	-125.55	503.82	503.82	194.43	.00
6491.76	91.54	194.43	5917.82	5917.82	-584.74	-150.46	603.79	603.79	194.43	.00
6591.76	91.54	194.43	5915.14	5915.14	-681.55	-175.37	703.75	703.75	194.43	.00

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
DROP AT 10.0°/100'										
6597.01	91.54	194.43	5915.00	5915.00	-686.63	-176.68	709.00	709.00	194.43	.00
6607.01	90.54	194.43	5914.82	5914.82	-696.32	-179.17	719.00	719.00	194.43	10.00
6617.01	89.54	194.43	5914.81	5914.81	-706.00	-181.66	729.00	729.00	194.43	10.00
HOLD 88.98° INC.										
6622.52	88.98	194.43	5914.88	5914.88	-711.34	-183.04	734.51	734.51	194.43	10.00
6722.52	88.98	194.43	5916.66	5916.66	-808.17	-207.95	834.49	834.49	194.43	.00
6822.52	88.98	194.43	5918.43	5918.43	-905.00	-232.87	934.48	934.48	194.43	.00
TD: 6911' MD, 1023' VS										
6911.06	88.98	194.43	5920.00	5920.00	-990.73	-254.93	1023.00	1023.00	194.43	.00

DISTRICT I

P.O. Box 1980, Hobbs, NM 88240-1980

DISTRICT II

P.O. Box Drawer DD, Artesia, NM 88211-0719

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV

P.O. Box 2088, Santa Fe, NM 87504-2088

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Energy, Minerals and Natural Resources Department**OIL CONSERVATION DIVISION**P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-101

Revised February 10, 1994

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☐ AMENDED REPORT**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

¹ Operator Name and Address TEXACO EXPLORATION & PRODUCTION INC. 205 E. Bender, HOBBS, NM 88240		² OGRID Number 022351
⁴ Property Code 11125	⁵ Property Name VACUUM GLORIETA WEST UNIT	³ API Number 30-025-20179
		⁶ Well No. 86

⁷ Surface Location

Ul or lot no.	Section	Township	Range	Lot.Idn	Feet From The	North/South Line	Feet From The	East/West Line	County
K	36	17S	34E		2310	SOUTH	2310	WEST	LEA

⁸ Proposed Bottom Hole Location If Different From Surface

Ul or lot no.	Section	Township	Range	Lot.Idn	Feet From The	North/South Line	Feet From The	East/West Line	County
N	36	17S	34E		1319	FSL	2055	FWL	Lea

⁹ Proposed Pool 1 Vacuum Glorieta (Same Pool)	¹⁰ Proposed Pool 2
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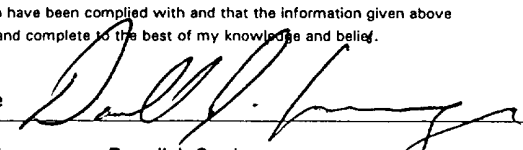
¹¹ Work Type Code D	¹² WellType Code O	¹³ Rotary or C.T. Rotary	¹⁴ Lease Type Code S	¹⁵ Ground Level Elevation 4009' DF
¹⁶ Multiple No	¹⁷ Proposed Depth 6890'	¹⁸ Formation Glorieta	¹⁹ Contractor Dawson	²⁰ Spud Date 7/1/97

²¹ Proposed Casing and Cement Program

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12-1/4"	8-5/8"	24	1538'		Circulated
7-7/8"	5-1/2"	15.5	6850'		TOC @ 2610'

²² Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Please see the attached procedure.

²³ I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.		OIL CONSERVATION DIVISION	
Signature 			
Printed Name Darrell J. Carriger		Approved By:	
Title Prod. Engineer		Title:	
Date 6/10/97		Approval Date:	Expiration Date:
Telephone 397-0426		Conditions of Approval: Attached ☐	

VGWU #86 Horizontal Lateral Procedure

1. MIRU pulling unit. TOH with rods and pump. Install BOP. TOH with 2-7/8" production tubing. RIH with bit. Clean out casing to 5930'. TOH with drill bit and tubing. Rig down pulling unit.
2. Rig up Schlumberger logging services. Run cement bond log from 5600' to 5930'. Rig down Schlumberger.
3. Rig up wireline company. Set CIBP @ approximately 5870' and cap CIBP with 30' cement (depth of CIBP may change depending on cement bond log. The new PBTD needs to be 5' above the casing collar in a 38' casing joint). Load casing and pressure test casing to 500 psi.
4. MIRU (drilling) pulling unit with substructure and mud equipment. Commence 24 hour operation.
5. Pick up 4-3/4" window mill, scraper, and smooth watermelon mill. Clean out wellbore to PBTD. Tag PBTD. Set 15,000# on PBTD to ensure stability.

Trip #1

6. Measure and caliper all mills to be used. Pick up a single joint of the drill pipe and place it in the mouse hole. Pick up orienting sub and make-up on top of the joint of drill pipe.
7. TIH (slowly - about the speed of running a packer) with 4-1/2" 1-1/2° Concave Face Retrieval "WhipBack" whipstock, 4-3/4" starting mill, 1 joint drill pipe, orientation sub, 12 3-1/2" drill collars on 2-7/8" drill pipe.
8. Rig up and TIH with surface readout gyro (SRG). Survey wellbore on the fly to determine bottomhole location. Orient whipstock face to an azimuth of 14.4301° West of due South. Lower whipstock and tag PBTD. Confirm Gyro reading. Slack to shear lower assembly and set whipstock slips. TOH with gyro.
9. Commence milling operation with starting mill (pump rate of ~ 150 GPM). Pump a sweep and circulate well out.
10. TOH with BHA and visually inspect starting mill for bright space on mill, a ring and wear on blades, and a bevel on the outside of the blades. Lay down orienting sub.

Trip #2 (Window cutting trip)

11. Pick up and TIH with 4-3/4" Window mill, and 4-3/4" rough OD watermelon mill, bit sub, 1 joint drillpipe, and drill collars on drillpipe.
12. Drill/ream window section and approximately 5' of rathole to KOP. TOH with bottom hole assembly.
13. TIH with 4-3/4" window mill, 4-3/4" rough OD watermelon mill, and a 4-3/4" smooth OD string mill on drill collars and drillpipe. Make final cleanup run until drillstring passes through window with no rotation with minimal drag. Circulate hole with VGWU produced water. TOH with BHA.
14. Rig up mudloggers.
15. TIH with curve building assembly and drill 100' (long radius) radius curvature section as per attached Phoenix recommendation
16. Circulate hole clean.
17. Drill ahead following attached well path in accordance to Phoenix attached recommendations. Circulate hole clean.

Stimulation:

18. Rig up coiled tubing unit and acid stimulate horizontal lateral in accordance to the attached stimulation procedure.
19. Swab back load taking samples and recording oil cut. Unichem personnel should be on location recording pH levels in swab samples. When pH level reaches 5.5 or above, proceed with procedure.
20. Scale squeeze horizontal lateral with 330 gallons TH 756 (Unichem - low pH Acetic Phosphonate scale inhibitor) + 23 bbls fresh water using coiled tubing unit. Squeeze treatment as follows:
 - a) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6890'
 - b) Spot 129 gallons inhibitor/water mix
 - c) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6790'
 - d) Spot 129 gallons inhibitor/water mix
 - e) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6690'
 - f) Spot 129 gallons inhibitor/water mix

- g) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6590'
 - h) Spot 129 gallons inhibitor/water mix
 - i) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6490'
 - j) Spot 129 gallons inhibitor/water mix
 - k) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6390'
 - l) Spot 129 gallons inhibitor/water mix
 - m) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6290'
 - n) Spot 129 gallons inhibitor/water mix
 - o) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6190'
 - p) Spot 129 gallons inhibitor/water mix
 - q) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6090'
 - r) Spot 129 gallons inhibitor/water mix
 - s) Run DS 1-1/2" coiled tubing in horizontal lateral to a measured depth setting of ~ 6040'
 - t) Flush coiled tubing fresh water + 100 bbls fresh water
21. Rig down DS coiled tubing unit.
22. TIH with production equipment. Size and type of production equipment will be based on fluid volume estimates from swab runs.
23. Return well to production and place on test.

PROPOSED DRILLING PROCEDURE

**PREPARED BY
PHOENIX DRILLING SERVICES, INC.
FOR
TEXACO EXPLORATION & PRODUCTION, INC.
WELL: VACUUM GLORIETTA WEST UNIT #86
4-3/4" HOLE, 5-1/2" CASING RE-ENTRY
LEA COUNTY, NEW MEXICO
P97-254R
JUNE 4, 1997**

1. Set a whipstock or cut a section and prepare the wellbore for KOP at 5830' MD.
2. Circulate hole clean and TOO H.
3. Pick up, orient, and test BHA #1 consisting of:
 - a. 4-3/4" bit
 - b. 3-3/4" short radius motor.
 - c. 3-3/4" orienting/float sub
 - d. Two 3-1/2" Flex Monel Drill Collars.
 - e. 1320' 2-7/8" PH-6 (8.7#/ft) P-105 tubing.
 - f. 2-7/8" AOH (10.4#/ft) drill pipe to surface.
4. Run in hole to KOP. Break circulation at 130 gpm and drill one foot to insure proper operation of motor.
5. Run in hole with surface recording gyro. Survey as per state requirements and seat in mule shoe. Orient toolface to desired azimuth.
6. POOH with gyro.
7. Begin pumping at 130 gpm and drill ahead slowly increasing differential to 200 psi. Drill ahead checking tool face orientation as necessary with the gyro until sufficient inclination has been built to steer from high side toolface reading.
8. PU gamma/steering tool (if gamma option is selected) and run in hole to seat steering tool in mule shoe. RU Wet Connect.
9. Continue drilling at the same flow rate and pressure to complete the build portion at:
 - a. 5992' MD
 - b. 5931' TVD
 - c. 91.54° inclination
 - d. 194.43° azimuth
10. Circulate hole clean.
11. Trip out of hole to Wet Connect and retrieve steering tool.
12. Continue trip out of hole with BHA #1. Lay down same.
13. Pick up, orient, and test BHA #2 (lateral assembly with slightly less bend). TIH to KOP at 5830' MD.
14. PU steering tool and run in hole to seat in mule shoe. RU the Wet Connect. Resume TIH to bottom.
15. Drill ahead following the programmed well path at 130 gpm and 200 psi differential pressure to TD at:
 - a. 6911' MD
 - b. 5920' TVD
 - c. 88.98° inclination
 - d. 194.43° azimuth
 - e. 1023' vertical section
16. Circulate hole clean.
17. Trip out of hole to Wet Connect and retrieve steering tool.
18. Continue trip out of hole with BHA #2
19. Demobilize.

V6W4 # 86

5900

Ø 7% - SW 69%

Ø 14% - SW 47%

Ø 12% - SW 47%

Ø 12% - SW 60%

Ø 15% - SW 12%

REF: 5930-36, 5956-
Ø 5966-70, 5973-76;
6008-12 w/2 JET SHOTS
FEET.

P: FLOW NATURAL 342
BORE, 22/64" CHOKE,
COR 585, GRAVITY
88.5
(BASED ON 3 HR TEST)

COMPLETE: 7-19-63.

Ø 10% - SW 23%

Ø 14% SW 17%

Ø 10% SW 25%

6000

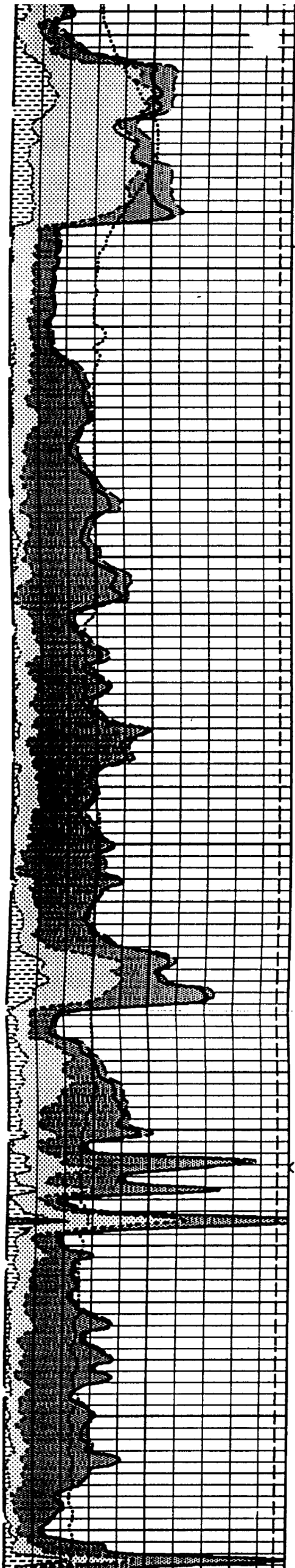
Ø 11.5% SW 12%

Ø 11.5% SW 58%

Ø 12% SW 55%

6100

UGWU-93



5892

5900

5950

5991

6000

DENSITY CORR

6050

---TENSION

6060

PE

6100

6120

U6W4 #708

Ø 14% - SW 47%

Ø 12% - SW 47%

Ø 12% - SW 60%

Ø 16% - SW 12%

Ø 10% - SW 23%

Ø 14% SW 17%

Ø 10% SW 25%

Ø 11.5% SW 12%

Ø 11.5% SW 58%

Ø 12% SW 55%

5900

5430

6000

6100

REF: 5930-36, 5956-
02, 5966-70, 5973-76,
6008-12 W/2 JET SHOTS
PER FOOT.

1. 2.0% NATURAL, 342
BORE, 22/64" CHOKE,
COR 535, GRAVITY
33.2
(BASED ON 3 HR TEST)

COMPLETE: 7-19-63.