BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
Texaco EXHIBIT NO. 20
CASE NO. 10515

VACUUM GLORIETA WEST UNIT

UNITIZATION AND WATERFLOOD DEVELOPMENT PLAN

Vacuum Glorieta Field
Lea County, New Mexico

April 1992

Vacuum Glorieta West Unit

UNITIZATION AND WATERFLOOD DEVELOPMENT PLAN

Vacuum Glorieta Field
Lea County, New Mexico

April 1992

INTRODUCTION

The Vacuum Glorieta Pool was discovered on January 9, 1963 with the completion of the Texaco New Mexico "O" State NCT-1 No. 12, located in Section 36, T-17-S, R-34-E of Lea County, New Mexico. The New Mexico Oil Conservation Commission defined the Vacuum Glorieta Pool on January 9, 1963 to start at the top of the Glorieta formation and end at the top of the Blinebry formation. The type log was designated as the Mobil Bridges State No. 95 which is provided as Figure 1 with the designated formation tops and depths depicted. The Geologic Subcommittee for the proposed Vacuum Glorieta Unit have further designated the Upper and Lower Paddock formation tops as shown on the type log.

The Vacuum Glorieta Field experienced rapid development following the initial discovery and now encompasses over 7000 surface acres. The wells were drilled on state-wide 40-acre spacing with a total of 190 wells having produced (as of January 1, 1991) 63,044 MBO plus 76,800 MMCFG and 37,272 MBW.

On February 12, 1991, the Working Interest Owners of the Vacuum Glorieta Field approved the Engineering-Geological Technical Committee Report dated November 1990. The field was divided into two separate waterflood study areas due to distinct and discernable geologic and reservoir properties on the east and west sides of the reservoir. A map displaying the proposed Vacuum Glorieta West Unit (VGWU) and Vacuum Glorieta East Unit (VGEU) is provided as Figure 2.

The proposed VGWU encompasses 2,779 surface acres and covers parts of T-17-S, R-34 & 35-E and T-18-S, R-34 & 35-E in Lea County, New Mexico. A base map of the proposed VGWU is provided in Figure 3. A total of 87 wells have been completed in the Glorieta Pool in the Proposed VGWU and as of January 1, 1991, have produced 20.4 MMBO. During 1990 there were 50 active producing wells in the proposed Unit, averaging 40,941 BOPM or 1,346 BOPD. The historical production plot of the wells contributing to the VGWU is provided as Figure 4.

The proposed interval to be unitized is defined as the top of the Glorieta to the top of the Blinebry as depicted on the type log (Figure 1). The Glorieta formation has localized development within the unit, but the Paddock formation is the dominate producing interval in the Vacuum Glorieta Field. The Upper Paddock formation extends over the entire field, whereas the Lower Paddock is only present within the boundaries of the proposed VGWU.

The following table lists the reservoir properties for the proposed VGWU as determined from the November 1990 Engineering-Geological Technical Committee Report.

Surface Area, acres	2,779
Average Depth, feet	5,900
Formation Type	Dolomite
Average Net Pay, feet	75
Average Porosity, %	10.1
Geometric Average Permeability, md	3.1
Average Initial Water Saturation, %	27.3
Reservoir Temperature, degrees F	119
Original Reservoir Pressure, psi	2,260
Bubble Point Pressure, psi	1,131
Oil Formation Volume Factor @ BPP, RB/STB	1.306
Oil Viscosity @ BPP, cp	0.622
Solution GOR @ BPP, SCF/STB	552
Original Oil In Place, MSTBO	64,370

PRODUCTION PERFORMANCE
FORECAST

PRODUCTION PERFORMANCE FORECAST

Prediction of continued primary production is based on decline curve analysis. Historical performance indicated a hyperbolic curve fit best represents Vacuum Glorieta West Unit reservoirs. Using hyperbolic curve analysis, the best fit resulted in an exponent (b) equal to 0.32 which compares favorably with the value of 0.30 developed in the Engineering-Geological Technical Committee Report dated November 1990 for the entire Vacuum Glorieta Field. The primary production forecast is shown on the predicted performance curve presented in Figure 5 and in Table 1. Remaining predicted primary and ultimate primary recovery are 4.4 and 25.2 MMSTBO, respectively.

Secondary recovery forecast was made using a computerized program of the Craig-Geffen-Morse method which is a traditional prediction technique. Its application, data required and procedure are presented in the Society of Petroleum Engineers Monograph Volume 3. Much of the engineering and geological data developed in the Engineering-Geological Technical Committee Report is required and was applied in Craig-Geffen-Morse. The program was utilized to forecast recovery for various flood designs. The 40-acre five spot pattern was selected for the project by the Working Interest Owners as discussed in the Waterflood Development Plan section of this report.

Craig-Geffen-Morse, as applied to the proposed Vacuum Glorieta West Unit, calculates secondary recovery from a single five-spot pattern. The result was then scaled up to provide a total field forecast. Averages of reservoir thickness; oil, gas and water saturations at the beginning of the flood; residual oil saturation at the end of the flood; water cut at abandonment and pressure variable PVT functions are important input parameters. The program has layering capability requiring layer thickness, porosity and permeability which are available from extensive coring in Texaco's New Mexico "O" State NCT-1 Well No. 26. In addition to the above data requirements, oil and water relative permeability are necessary which was available from special core analysis performed on the core from Well No. 26. Separate predictions for the Upper and Lower Paddock were made. To accomplish this, production was allocated between the two zones based on OOIP and the PVT analysis is assumed to be valid for both zones.

Result of the waterflood prediction is shown in Figure 5 and Table 1. The incremental recovery from waterflood is predicted to be 14.5 MMSTBO; i.e. Upper Paddock 12.9 and Lower Paddock 1.6 MMSTBO, over a thirty year life. The Original Oil In Place (OOIP) for the VGWU is 64.4 MMSTBO as determined in the Engineering-Geological Technical Report.

The following table lists the actual and forecasted recoveries for the project.

		% OOIP
Cumulative Production (1/01/91), MMSTBO . .	20.4	31.7
Remaining Primary (1/01/91), MMSTBO. . .	4.8	7.4
Ultimate Primary	25.2	39.1
Secondary Production Forecast, MMSTBO . .	14.5	22.5
Total Forecasted Recovery (Pri + WF), MMSTBO .	39.7	61.6

WATERFLOOD
DEVELOPMENT PLAN

WATERFLOOD DEVELOPMENT PLAN

The Technical Committee for the proposed VGWU evaluated the following three flood pattern developments: 80-acre five spot (uses existing well spacing), 40-acre five spot (drilling 20-acre producers) and 40-acre five spot (drilling 20-acre injectors). The Working Interest Owners approved the 40-acre five spot (drilling 20-acre injectors) at the request of the Technical Committee. A map displaying the approved flood plan is provided as Figure 6. This pattern was preferred because of the environmental impact of drilling new injection wells. Modern technology will insure superior wellbore integrity of the new wells as compared to injecting into the existing dated wellbores. The new injectors will be completed with 5 1/2" O.D. casing with cement brought to surface on all strings of casing. Typical wellbore diagrams of the planned completions are provided as Figures 7 and 8. The configuration in Figure 8 will be required in areas where there exists severe water flow from the intermediate salt sections. Anticipated costs to drill the injection wells is provided in Table 2. The approved flood plan presents the most uniform pattern arrangement and allows maximum injectivity. These factors result in optimal recovery of the waterflood reserves.

It is planned to drill twenty 20-acre injection wells in the second half of 1992. These wells are concentrated primarily in Section 36, T-17-S, R-34-E. This portion of the unit was selected for initial development because the greatest volume of floodable pay is concentrated there. An additional 39 injection wells will be drilled and completed in 1993 to complete the 40-acre five spot development. In addition, the Mobil Bridges State No. 113, located at Unit E, Section 24, T-17-S, R-34-E will be converted to injection in 1993. This conversion is necessary to maximize recovery in that portion of the field.

Injection lines and satellites will be installed concurrent with the 1992 drilling program. The new injection wells will be connected to injection immediately following their completion. A temporary supply of injection water will be provided from Texaco's Vacuum Grayburg San Andres waterflood at a cost of $0.07 per barrel. There is sufficient capacity at this facility to support the scheduled completions until the permanent facilities can be constructed. The use of these temporary facilities will allow initial response of the project to be realized six months earlier than waiting for new facility construction.

It is forecasted to replace nineteen producing wells beginning in 1993. The current production casing in these wells will be restrictive in moving the anticipated increased fluid volumes. Typical wellbore diagrams of the planned completions are provided as Figures 9 and 10. The configuration in Figure 10 will be required in the water flow area. The anticipated replacement wells and dates are shown in Figure 6.

INJECTION AND
PRODUCTION FACILITIES

INJECTION AND PRODUCTION FACILITIES

WATER SUPPLY

Predicted maximum water injection rate is 42,000 BWPD. At the start of the project Ogallala make-up water will be the major source of water. As the flood matures demand for Ogallala water will decline, since produced water will be re-injected. Ogallala water supply system is shown of Figure 11. Lines from the supply wells to the injection station will be four and six inch polyethylene pipe which will be buried.

WATER INJECTION

Figure 12 shows the injection system. Major components include central water station, three satellites and distribution system. A closed system utilizing a gas blanket for oxygen exclusion will be installed. Injection plant will consist of two Bingham Centrifugal pumps alloyed with stainless steel, monel and stellite for corrosion and erosion resistance; one 10,000; one 3,000; two 1,000; and two 750 barrel steel tanks internally plastic coated. Water treatment is provided by the 3,000 barrel tank as a skimming and settling vessel for oil and solids removal for the produced water; two 1000 barrel tanks will be settling vessels for solids removal for the Ogallala supply water and a bactericide will be used. The two 750 barrel tanks are suction tanks for the Binghams, and the 10,000 barrel tank is to handle produced water overflow in the event the injection pumps go down.

Injection distribution system includes six inch trunk lines from the central injection plant to three injection satellites and two inch laterals from the satellites to the individual injection wells. A three inch line will be laid from the southern satellite to Marathon's Warn State A/C 2 lease where a six well manifold will be installed to service the injectors on Warn State, Texaco's State "R" and VGWU line wells. Injection rates and pressures for each well will be measured at the satellites; rates will be measured with turbine meters. All injection lines will be welded steel cement lined externally wrapped and buried. Line sizes have been designed to allow an initial injection pressure of 1250 psig and up to a maximum of 2000 psig at the injection plant.

Until the central water station is completed, existing injection facilities at Texaco's 100% operated Grayburg-San Andres flood could be used. At this plant two Can Turbine pumps are tied into the Ogallala water supply system and could provide approximately 20,000 BWPD at the low injection pressure expected initially. A temporary four inch bare steel line would be laid from Grayburg-San Andres plant in the NW/4 of Section 2-18S-34E to injection satellite three. Injection into twenty injectors planned to be drilled in the second half of 1992 would be handled by satellite numbers one and three. This option has the advantage of early injection into the depleted Paddock reservoirs at minimal investment.

PRODUCTION FACILITIES

Most wells will require high volume lift equipment to produce the anticipated fluid volumes. Wells that are required to produce 500, 700, and greater than 700 BFPD will be equipped with 456,000; 640,000 inch-pound torque pumping units and submersible pumps, respectively. It is expected that existing pumping units smaller than 456,000 inch-pound will be replaced within eighteen months after initiation of water injection. Currently there are nine each 456,000 and 640,000 units; one 921,000 unit and one submersible pump on wells in the proposed unit. To lift the predicated fluid volumes eleven 456,000; nineteen 640,000 and thirty two submersible pumps will be needed.

The production from each well will be gathered in flowlines to four satellite stations which will be equipped with three phase separators for test and production and then on to a central tank battery. The gathering system shown on figure 13 is comprised of approximately thirty one miles of three inch polyethylene and 2.5 miles of four inch polyethylene line pipe laid on the surface. The major components of the central tank battery includes two free water knockouts, one 5000 barrel gunbarrel, four 1,000 barrel stock tanks, one LACT unit, H_2S monitoring system and a vapor recovery unit. The central tank battery is designed to process approximately 45,000 BFPD.

AUTOMATION

Automation for the lease will be integrated into the Buckeye Subarea SCADA (Supervisory Control and Data Acquisition) system which is currently being installed. The system will be supported by the Local Area Network (LAN) for data storage and dissemination of information to users. Production satellites will be equipped for Automatic Well Testing (AWT) and will be monitored for critical operational parameters as well as daily production data. Injection well control consisting of rates, pressures and volumes will be done at injection headers. Remote Terminal Units (RTU's) installed at the battery and injection station will monitor, control and relay information concerning these facilities. POC's (Pump Off Controllers) will be installed at the producing wells. All information will be installed at the SCADA system via radio telemetry. Alarms received by the system will be forwarded to appropriate personnel during non-working hours by means of a telephone autodialer.

INVESTMENT SCHEDULE

INVESTMENT SCHEDULE

The development plan described below is based on an anticipated unitization date of July 1, 1992. The plan assumes full field development beginning in the third quarter of 1992 and concluding in the first quarter of 1994.

1992

Twenty 20-acre injection wells are to be drilled. Two injection headers will be installed and injection lines laid to each of the new wells. A temporary line will be run from the water injection plant at Texaco's Vacuum Grayburg-San Andres Unit which will supply the injection water for the initial phase of the project. Remedial workovers will be performed on any producer in the effected waterflood area.

Injection Facilities . . .	$ 2,154 M
Drilling New Wells	$ 7,553 M
Producing Well Workovers . . .	$ 668 M
Total 1992 Investment . . .	**$ 10,375 M**

1993

The remaining thirty-nine 20-acre injection wells are to be drilled. The remainder of the injection distribution system will be installed. A central injection plant will be constructed and will begin servicing the injection wells in the unit. The Mobil Bridges State No. 113 will be converted from production to injection. The remaining producing wells will be worked over as needed. At this time we will have agreement with the VGEU for leaseline injection along the unit boundary.

Injection Facilities	$ 689 M
Drilling New Wells	$ 14,257 M
Producing Well Workovers . . .	$ 668 M
Convert One Well to Injection . .	$ 51 M
Total 1993 Investment . . .	**$ 15,665 M**

1994

A centralized battery consolidation is planned for the first quarter of 1994. Significant production increase is predicted, therefore pumping equipment upgrades are anticipated to handle the additional fluid.

Production Facilities. . . .	$ 1,071 M
Pumping Equipment Upgrade . .	$ 4,783 M
Total 1994 Investment . . .	**$ 5,854 M**

1995

The remainder of the producing well pumping unit upgrades will be performed.

Pumping Equipment Upgrade . .	**$ 1,608 M**
Total Project Cost	**$ 33,502 M**

A more detailed investment breakdown by category is provided in Table 3.

PROJECT ECONOMICS

Incremental economics of this waterflood project over continued primary operations were developed utilizing the forecasted recoveries and operating costs provided in table 1. Capital expenditures include those presented in Section 3 and additional investment for replacing nineteen producing wells which are forecasted to be inadequate in moving the increased fluid volumes. The results of the economic analysis are presented below:

Investment, $M	37,661
Net Present Value disc @ 11.5%, $M	42,999
Discount Factored Return On Investment, %	48.8
Present Worth Index	3.36
Payout, years	4.0
Project Life, years	31
Reserves, MBOE	15,278

The following premises were utilized in the economic analysis:

Crude price held constant at $20.00 per BO.

Gas price held constant at $1.30 per MCF.

No escalation of investments and operating costs.

6 MCF gas is equivalent to 1 BO.

The following tax rates were used:

FIT	34%
Severance tax (1992 - 1994).	3.750%
Severance tax (1994 - 2022).	1.875%
Conservation tax	0.19%
Privilege tax	3.15%
Ad valorem	1.336%
State tax	7.6%

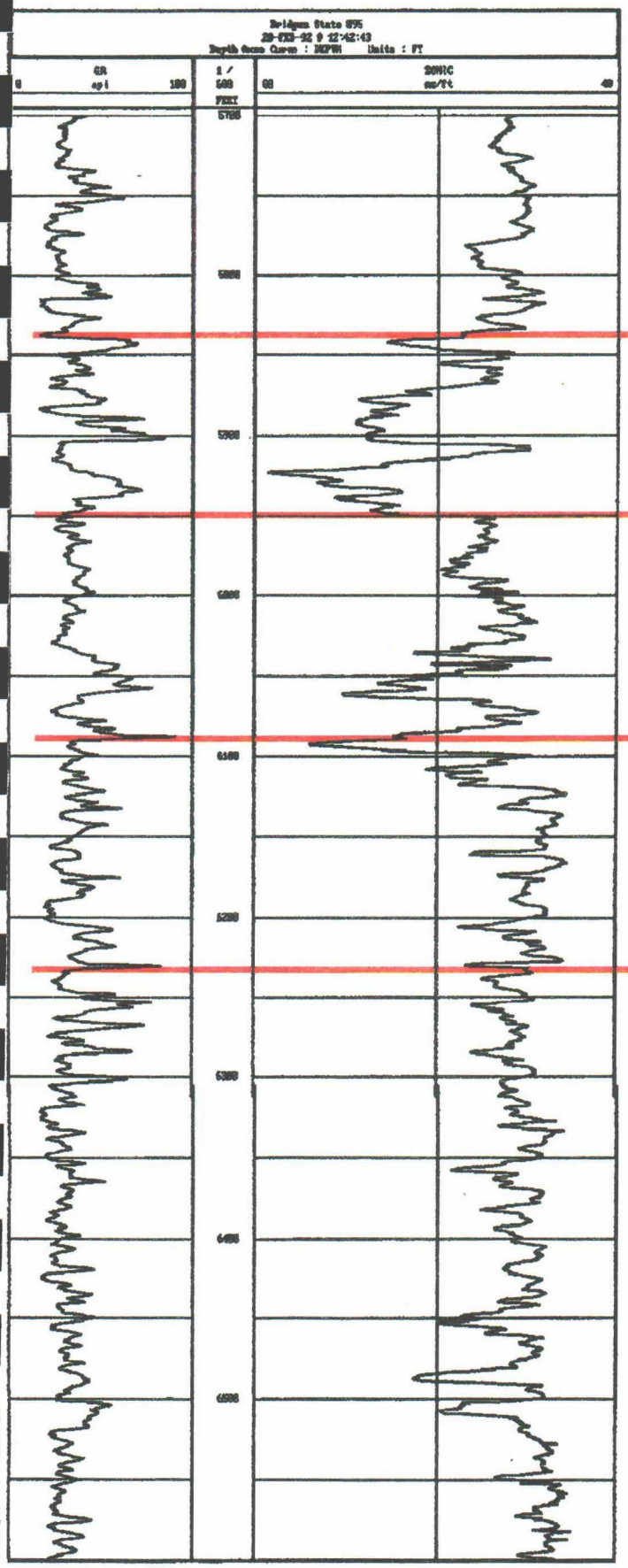
Salvage value equals plugging cost.

FIGURES

LIST OF FIGURES

TYPE LOG

MOBIL
BRIDGES ST. #95
SEC. 26-T17S/R34E
K. B. 4016'



Glorieta
5838' (-1822' SS)

U. Paddock
5950' (-2074' SS)

UNITIZED INTERVAL

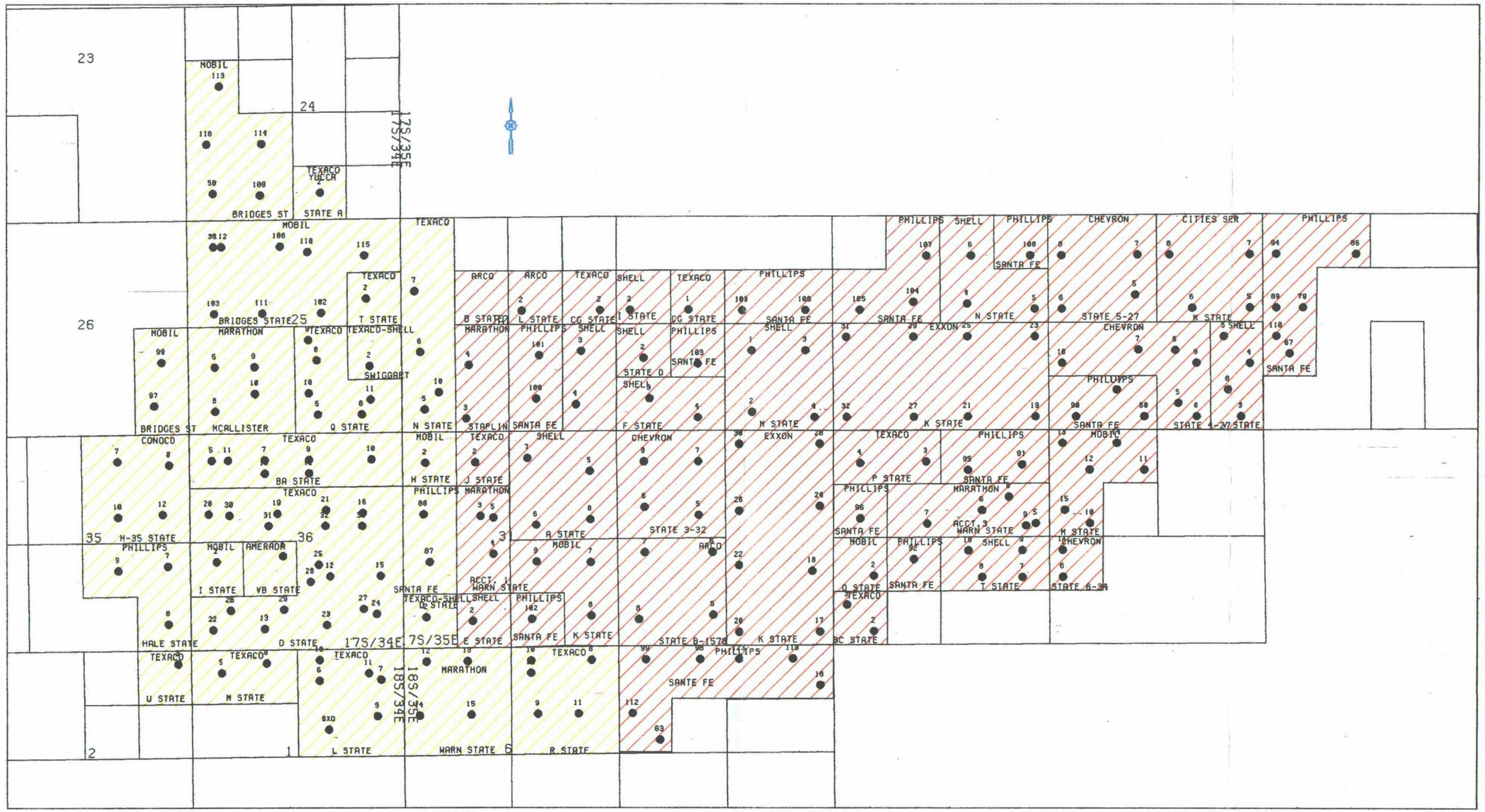
L. Paddock
6090' (-2074' SS)

Blinebry
6235' (-2219' SS)

TEXACO E& P INC.

Vacuum Glorieta West Unit
Lea County, New Mexico
Type Log for Unitized Interval

BY: R. N. GOON | FIG. 1



TEXACO E & P INC		
MIDLAND	TEXAS	U.S.A.

VACUUM GLORIETA FIELD
LEA COUNTY, NEW MEXICO
PROPOSED VACUUM GLORIETA UNITS

FIG. 2

SCALE 1"=2800'	DRAWN R. N. GOON			DATE 17-MAR-92
DRAWING				

TEXACO E & P INC
MIDLAND TEXAS U.S.A.

VACUUM GLORIETA WEST UNIT
LEA COUNTY, NEW MEXICO

BASE MAP
FIG. 3

SCALE 1"=2150' | R. N. GOON | 16-MAR-92

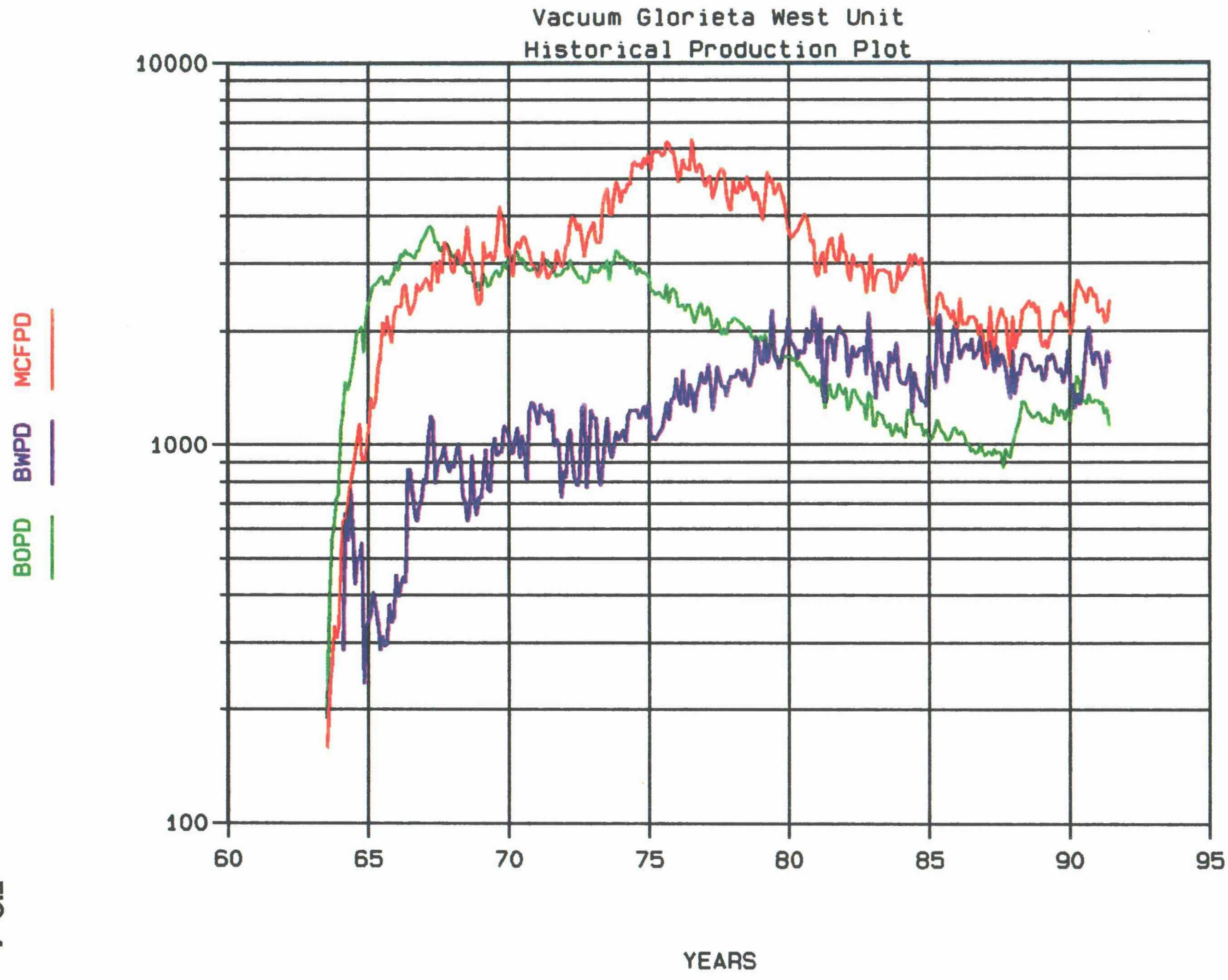

Vacuum Glorieta West Unit
Historical Production Plot
10000
1000
100
60
65
70
75
80
85
90
95
YEARS
MCFPD
BWPD
BOPD

FIG. 4

Vacuum Glorieta West Unit
Historical Production and Forecasts

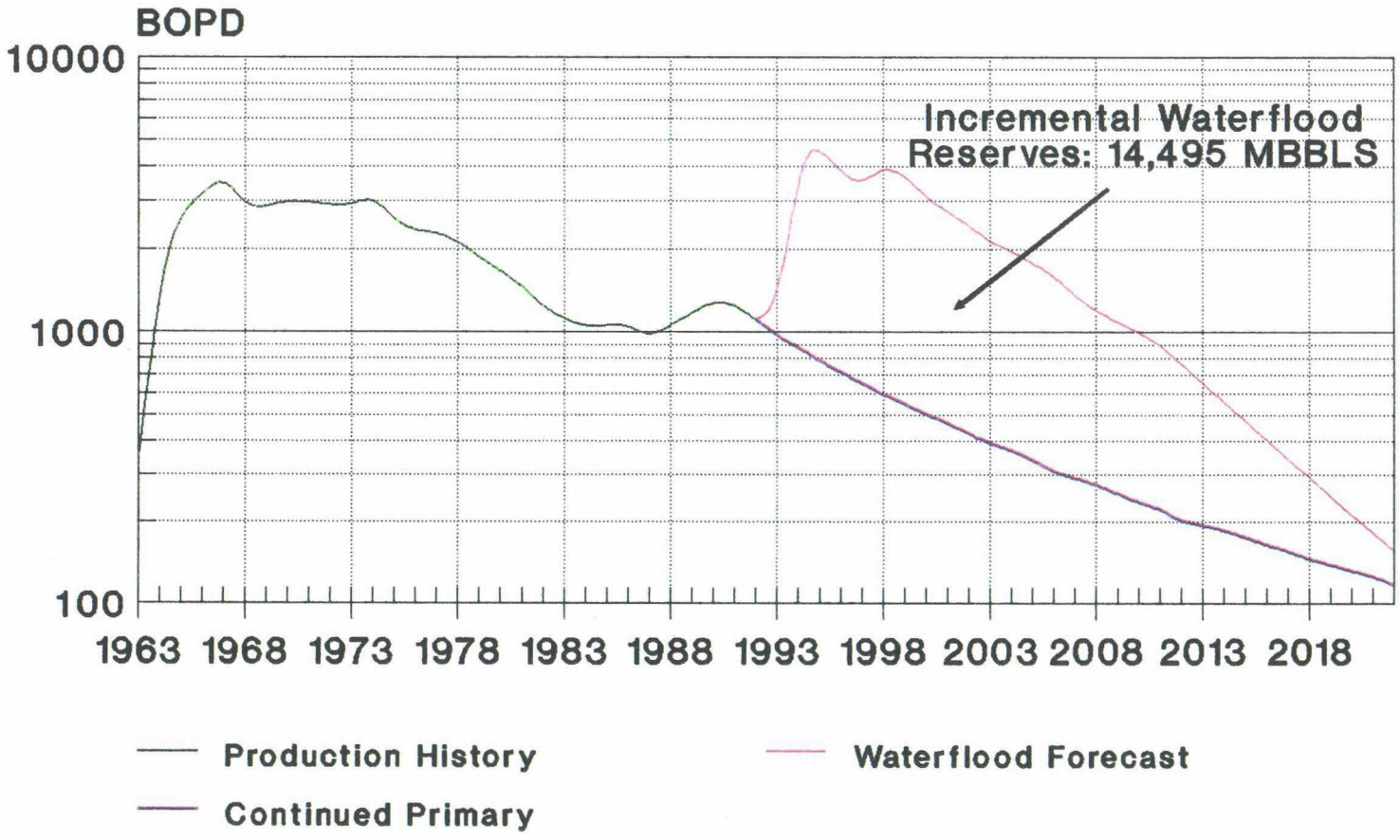
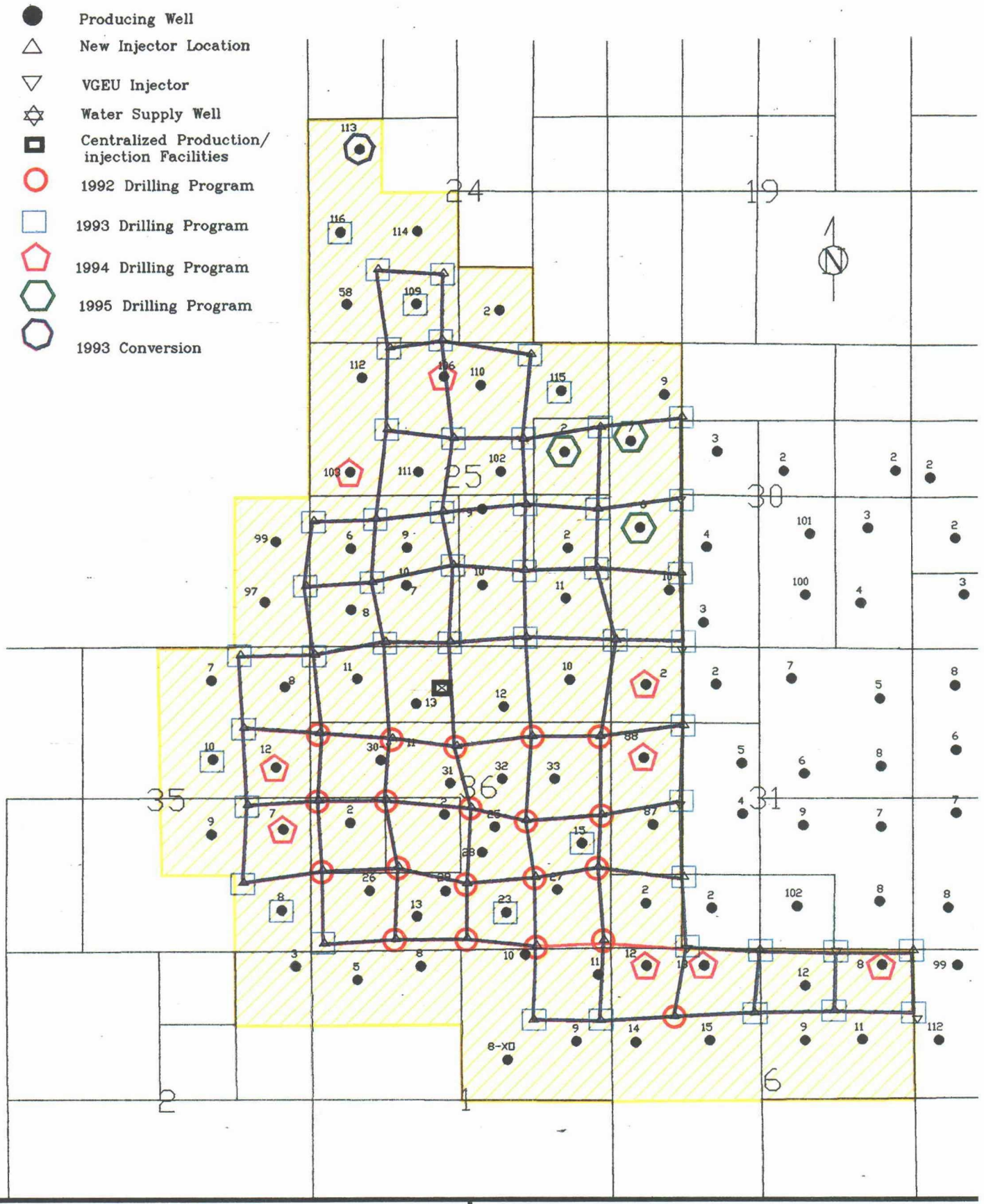


FIG. 5



TEXACO E & P INC.

MIDLAND TEXAS USA

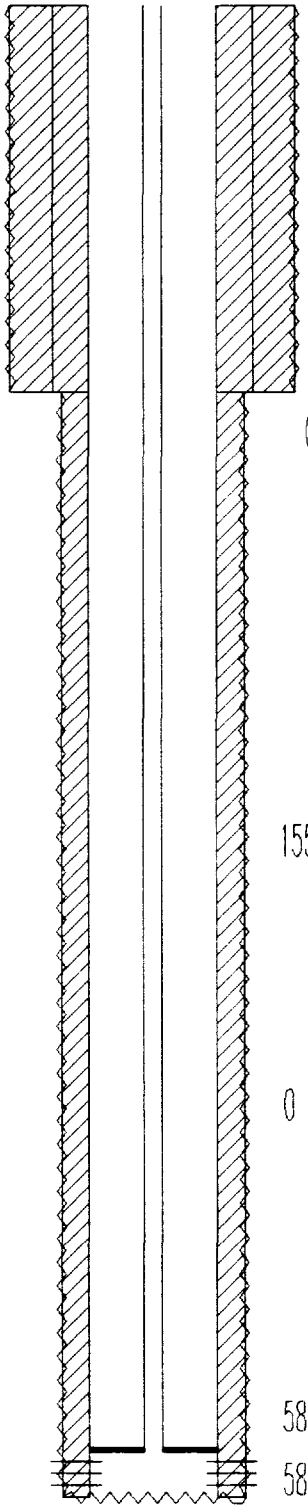
VACUUM GLORIETA WEST UNIT
LEA COUNTY, NEW MEXICO
INJECTION PATTERNS

SCALE: 1"= 2325'

BY: R. N. GOON

FIG. 6

VACUUM GLORIETA WEST UNIT
NEW INJECTION WELL DIAGRAM
NON-WATER FLOW AREA



0 - 1550' 12.25" OD Openhole

0 - 1550' 8 5/8" OD S-80 STC Surface Casing

0 - 1550' Cement TOC @ SURF

1550 - 6000' 7.875" OD Openhole

0 - 5800' 2.375" OD J-55 EUE Tubing

5800 - 5815' Packer

5850 - 5950' Perfs TYPICAL INJECTION INTERVAL

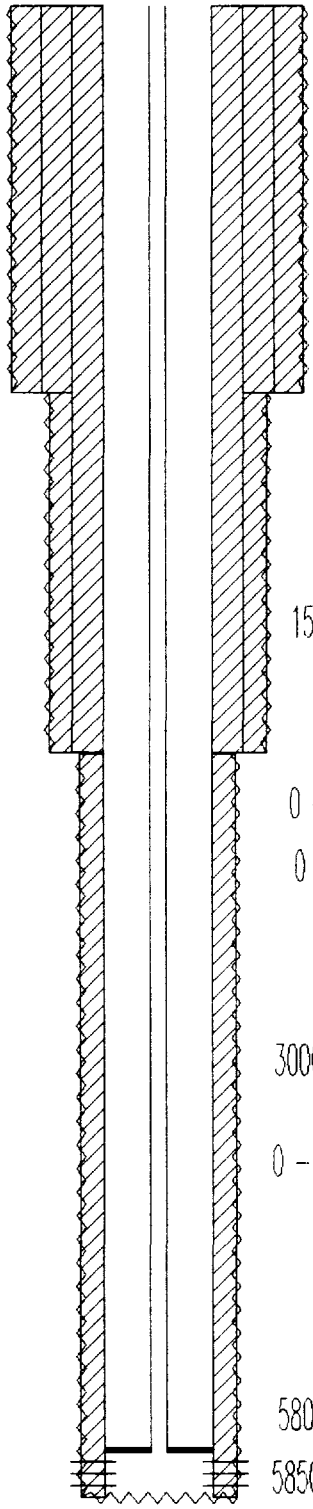
TD: 6000'

0 - 6000' 5 1/2" OD J-55 LTC Production Casing

0 - 6000' Cement TOC @ SURF

FIG. 7

VACUUM GLORIETA WEST UNIT
NEW INJECTION WELL DIAGRAM
WATER FLOW AREA



0 - 1550' 14.75" OD Openhole

0 - 1550' 11 3/4" OD H-40 STC Surface Casing

0 - 1550' Cement TOC @ SURF

1550 - 3000' 11" OD Openhole

0 - 3000' 8 5/8" OD S-80 LTC Intermediate Casing

0 - 3000' Cement TOC @ SURF

3000 - 6000' 7.875" OD Openhole

0 - 5800' 2.375" OD J-55 EUE Tubing

5800 - 5815' Packer

5850 - 5950' Perfs TYPICAL INJECTION INTERVAL

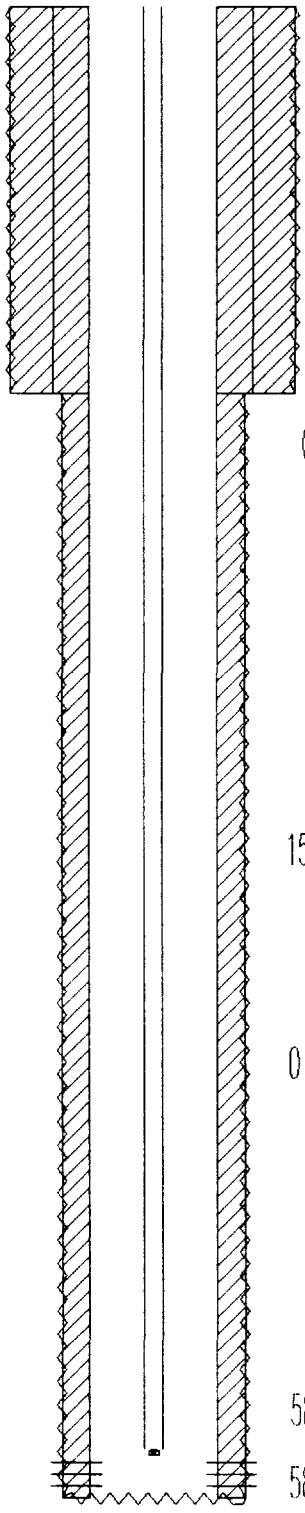
TD: 6000'

0 - 6000' 5 1/2" OD J-55 LTC Production Casing

0 - 6000' Cement TOC @ SURF

FIG. 8

VACUUM GLORIETA WEST UNIT
REPLACEMENT WELL DIAGRAM
NON-WATER FLOW AREA



0 - 1550' 12.25" OD Openhole

0 - 1550' 8 5/8" OD S-80 STC Surface Casing

0 - 1550' Cement TOC @ SURF

1550 - 6000' 7.875" OD Openhole

0 - 5800' 2.375" OD J-55 EUE Tubing

5800 - 5825' Pump

5850 - 5950' Perfs TYPICAL PRODUCING INTERVAL

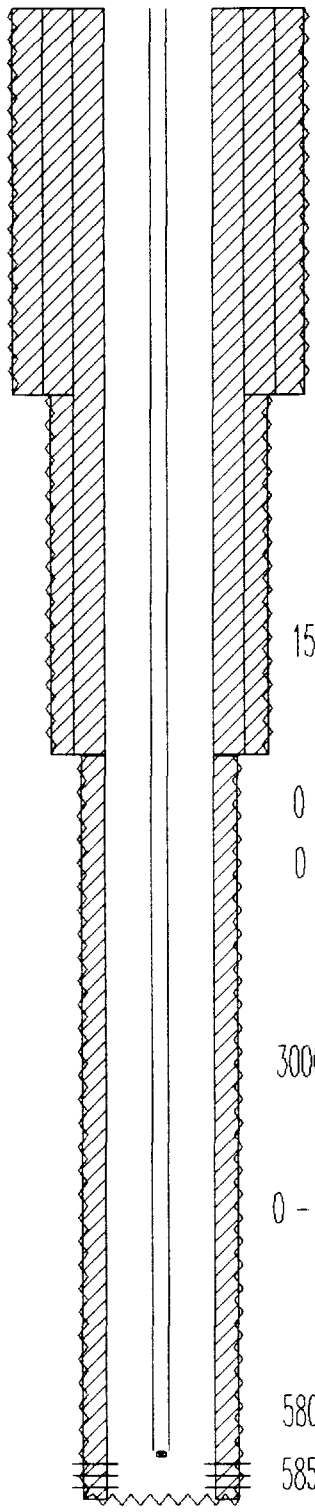
TD: 6000'

0 - 6000' 5 1/2" OD J-55 LTC Production Casing

0 - 6000' Cement TOC @ SURF

FIG. 9

VACUUM GLORIETA WEST UNIT
REPLACEMENT WELL DIAGRAM
WATER FLOW AREA



0 - 1550' 14.75" OD Openhole

0 - 1550' 11 3/4" OD H-40 STC Surface Casing

0 - 1550' Cement TOC @ SURF

1550 - 3000' 11" OD Openhole

0 - 3000' 8 5/8" OD S-80 LTC Intermediate Casing

0 - 3000' Cement TOC @ SURF

3000 - 6000' 7.875" OD Openhole

0 - 5800' 2.375" OD J-55 EUE Tubing

5800 - 5825' Pump

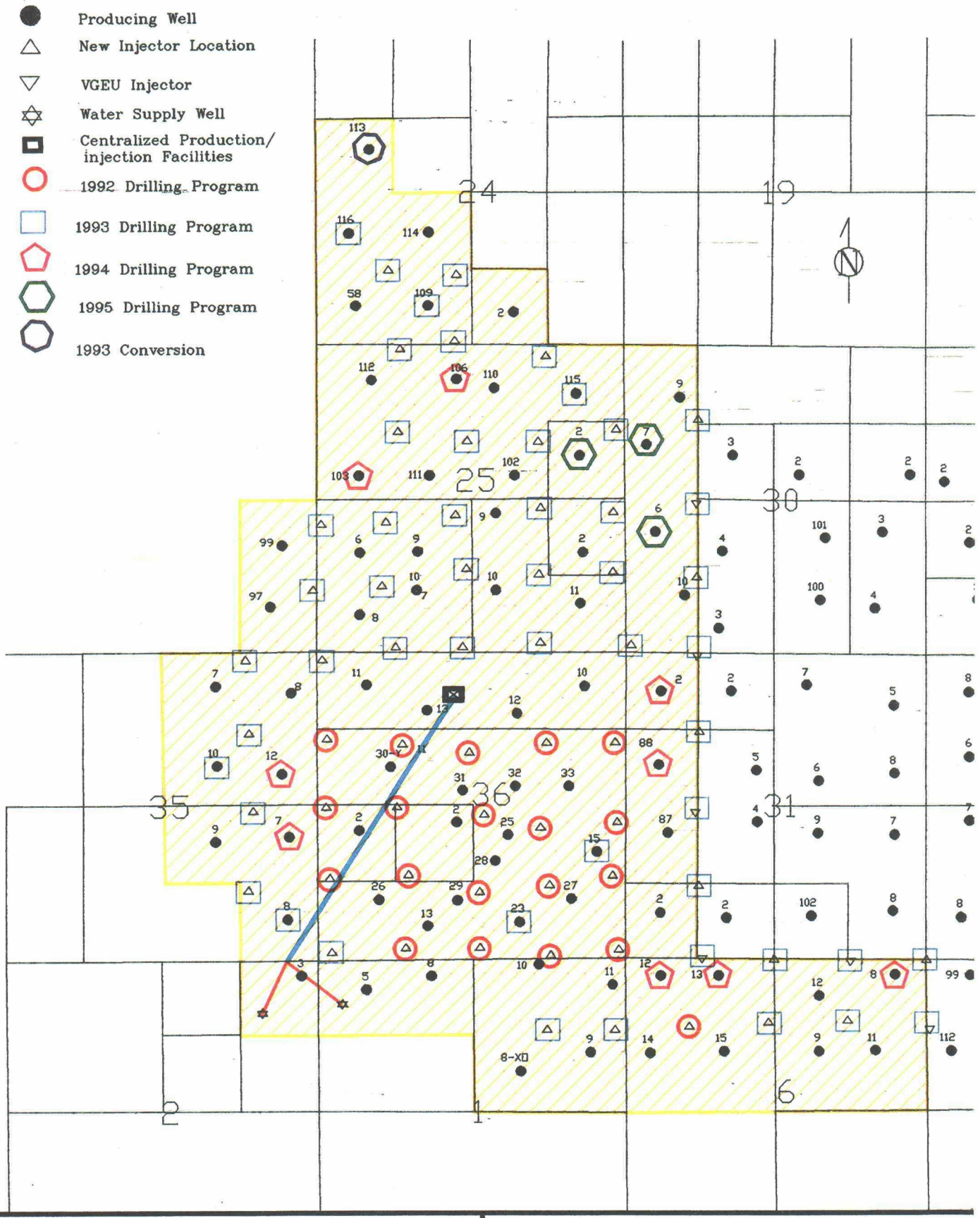
5850 - 5950' Perfs TYPICAL PRODUCING INTERVAL

TD: 6000'

0 - 6000' 5 1/2" OD J-55 LTC Production Casing

0 - 6000' Cement TOC @ SURF

FIG. 10



Unit Boundary
Line, 4" Polyethyene, Buried
Line, 6" Polyethyene, Buried

TEXACO E & P INC.
MIDLAND TEXAS USA

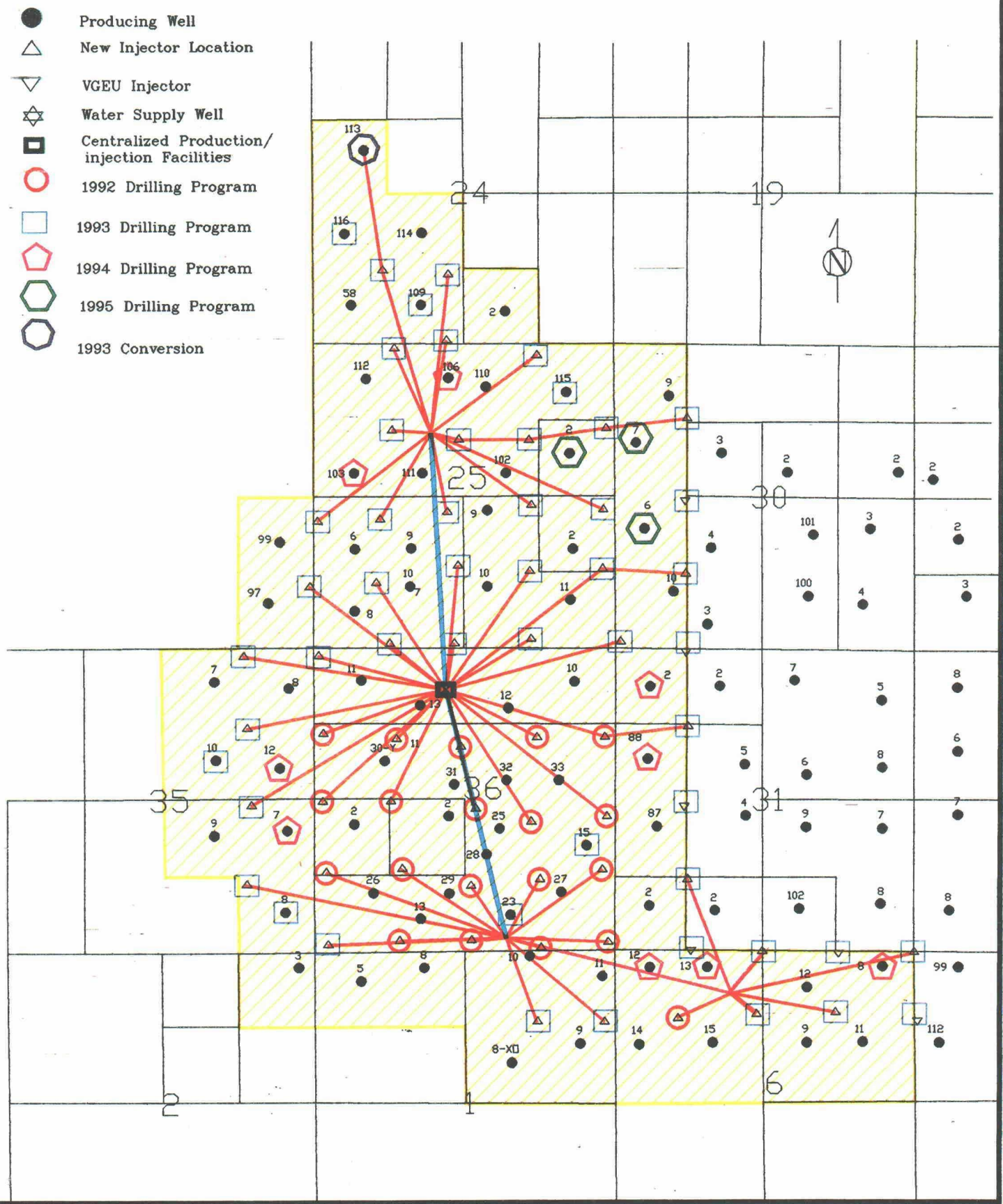
VACUUM GLORIETA WEST UNIT
LEA COUNTY, NEW MEXICO

WATER SUPPLY MAP

FIG. 1

SCALE: 1"= 2325'

BY: R. N. GOON



Unit Boundary
Line, 2" steel, cement lined, externally wrapped
Line, 6" steel,cement lined, externally wrapped
Line, 3" steel, cement lined, externally wrapped

TEXACO E & P INC.

MIDLAND TEXAS USA

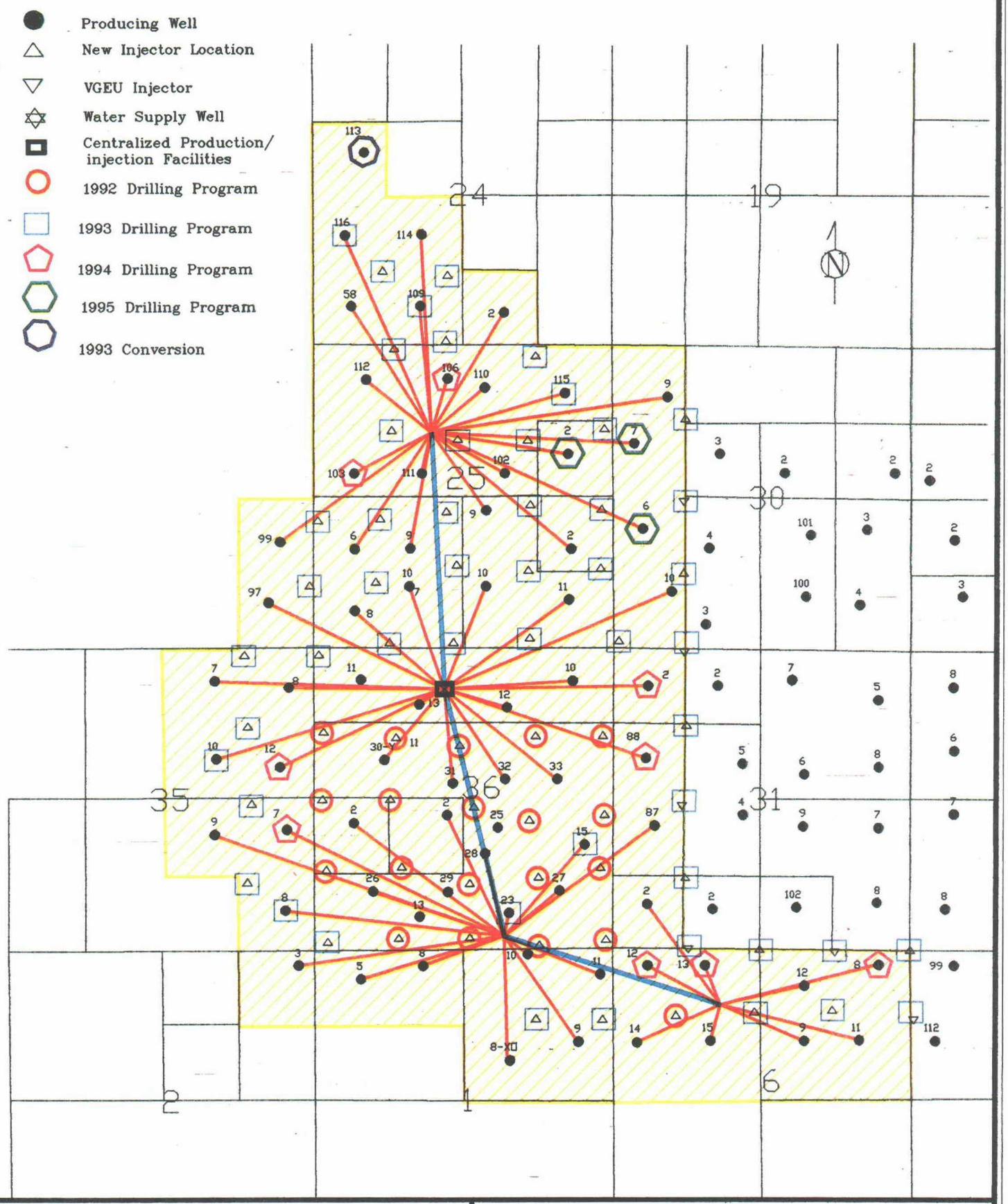
VACUUM GLORIETA WEST UNIT
LEA COUNTY, NEW MEXICO

INJECTION SYSTEM

SCALE: 1"= 2325'

BY: R. N. GOON

FIG. 12



Unit Boundary
Line, 3" Polyethylene
Line, 4" Polyethylene

TEXACO E & P INC.

MIDLAND TEXAS USA

VACUUM GLORIETA WEST UNIT
LEA COUNTY, NEW MEXICO

GATHERING SYSTEM

SCALE: 1"= 2325'

BY: R. N. GOON

FIG. 13

TABLES

LIST OF TABLES

TABLE 1

VACUUM GLORIETA WEST UNIT

PRODUCTION FORECAST

YEAR	PRIMARY PRODUCTION MBOPY	WATERFLOOD PRODUCTION MBOPY	TOTAL OIL PRODUCTION MBOPY	TOTAL GAS PRODUCTION MMCFPY	NON-INFLATED PROJECT OPER. COSTS M $
1992	405	0	405	722	270
1993	350	47	397	707	1080
1994	318	1386	1704	1840	2621
1995	285	1416	1701	1558	2621
1996	259	1115	1374	1081	2621
1997	237	998	1235	825	2621
1998	215	1248	1463	793	2621
1999	201	1151	1352	648	2621
2000	183	920	1103	529	2621
2001	170	826	996	478	2621
2002	155	727	882	423	2621
2003	142	628	770	370	2621
2004	135	580	715	343	2621
2005	124	523	647	311	2508
2006	111	471	582	279	2403
2007	106	385	491	236	2299
2008	100	332	432	205	2194
2009	93	304	397	189	2090
2010	86	276	362	172	1986
2011	82	243	325	154	1881
2012	73	204	277	132	1778
2013	71	165	236	112	1632
2014	68	134	202	94	1513
2015	64	108	172	80	1393
2016	60	86	146	68	1274
2017	57	67	124	58	1155
2018	53	53	106	50	1035
2019	51	39	90	42	916
2020	48	29	77	36	796
2021	46	20	66	31	677
2022	43	14	57	27	557
	4,391	14,495	18,886	12,593	58,268

TABLE 2

VACUUM GLORIETA WEST UNIT
DRILLING COST ANALYSIS

INJECTION WELLS

	NON WATER FLOW AREA	WATER FLOW AREA
*Well Head 11 3/4" x 8 5/8" x 5 1/2" x 2 3/8"		15,000
*Well Head 8 5/8" x 5 1/2" x 2 3/8"	11,000	
Casing 18 5/8", 11 3/4", 8 5/8", 5 1/2"		150,000
Casing 13 3/8", 8 5/8", 5 1/2"	81,000	
Cement Lined Tubing 2 3/8"	20,000	20,000
Total Tangibles	$112,000	$185,000
Drilling Contract Rig, Bits And Supervision	80,000	86,000
Drilling Mud, Water And Waste Disposal	16,000	16,000
Cementing And Logging	47,000	57,000
Completion	40,000	42,000
Transportation, Dirt Work And Damages	12,000	13,000
Other Drilling Costs And Rental Equipment	35,000	45,000
Total Intangibles	230,000	259,000
Total Cost	$342,000	$444,000

*Flanged With H_2S

TABLE 2 CONTINUED

VACUUM GLORIETA WEST UNIT
DRILLING COST ANALYSIS

PRODUCTION WELLS

	NON WATER FLOW AREA	WATER FLOW AREA
*Well Head 11 3/4" x 8 5/8" x 5 1/2" x 2 7/8"		11,000
*Well Head 8 5/8" x 5 1/2" x 2 7/8"	7,000	
Casing 18 5/8", 11 3/4", 8 5/8", 5 1/2"		150,000
Casing 13 3/8", 8 5/8", 5 1/2"	81,000	
Tubing 2 7/8"	28,000	28,000
Total Tangibles	$116,000	$189,000
Drilling Contract Rig, Bits And Supervision	80,000	86,000
Drilling Mud, Water And Waste Disposal	16,000	16,000
Cementing And Logging	47,000	57,000
Completion	40,000	42,000
Transportation, Dirt Work And Damages	12,000	13,000
Other Drilling Costs And Rental Equipment	35,000	45,000
Total Intangibles	230,000	259,000
Total Cost	$346,000	$448,000

*Flanged, Pumping With H_2S Trim

TABLE 3

40-ACRE 5 SPOT
DRILL NEW INJECTORS
INJECTION SYSTEM
****

Satellite #1 - 25 wells; 60,350' of 2" line

Satellite #2 - 16 wells; 34,000' of 2" line

Satellite #3 - 13 wells; 25,600' of 2" line

Maniflod - 6 wells; 8,400' of 2" line

Total 2" line = $ 1,177,700

3" Trunkline to manifold	= $ 60,000
6" and 4" Line to two water wells	= $ 75,000
6" Trunkline to Satellites 1, 2 and 3	= $ 240,000
4 Injection headers	= $ 250,000
Automation	= $ 240,000
2 Bingham pumps, motors, transformers and accessories	= $ 420,000
Injection station building	= $ 85,000
2 - 1000 BBL tanks	= $ 30,000
2 - 750 BBL tanks	= $ 25,000
1 - 3000 BBL tank	= $ 50,000
1 - 10,000 BBL tank	= $ 150,000
1 - Main header	= $ 40,000
TOTAL COST	**= $2,842,700**

TABLE 3 CONTINUED

40-ACRE 5 SPOT
DRILL NEW INJECTORS
PRODUCTION SYSTEM
****

Satellite #1 - 20 wells; 52,381' of 3" polypipe

Satellite #2 - 21 wells; 51,744' of 3" polypipe

Satellite #3 - 18 wells; 45,263' of 3" polypipe

Satellite #4 - 8 wells; 12,856' of 3" polypipe

Total 3" polypipe = (162,244 ft) * ($1.60/ft)	**= $ 259,590**
4" line to satellites = (13,706 ft)*($7.50/ft)	= $ 102,795
4 Satellites	= $ 284,000
Automation of satellites	= $ 160,000
4 1000 BBL tanks	= $ 60,000
1 5000 BBL gunbarrel	= $ 70,000
1 LACT unit	= $ 20,000
2 SS transfer pumps	= $ 12,000
2 FWKO	= $ 60,000
1 Circulating pump	= $ 3,000
H_2S monitoring system	= $ 20,000
Vapor Recovery Unit	= $ 20,000
TOTAL COST	**= $1,071,385**