

BEFORE EXAMINER CATANACH	
OIL CONSERVATION DIVISION	
<u>CHEVRON</u>	EXHIBIT NO. <u>12</u>
CASE NO. <u>10059-61</u>	

EUNICE MONUMENT SOUTH UNIT

EUNICE MONUMENT SOUTH UNIT EXPANSION

WORKING INTEREST OWNERS' MEETING

FEBRUARY 27, 1990

AGENDA

EMSU STATUS REPORT

- **GEOLOGY**
- **WATERFLOOD PERFORMANCE**
- **SIMULATION WORK**
- **PROJECT ACTIVITIES**
- **AFE STATUS**
- **ADDITIONAL DISCUSSION**

EMSU EXPANSION

- **PROPOSED EXPANSION OVERVIEW**
- **INVESTMENT ADJUSTMENT**
- **CAPITAL EXPENDITURES**
- **OPERATING EXPENSE SHARING**
- **ADDITIONAL DISCUSSION**

EMSU STATUS REPORT CHRONOLOGY OF DEVELOPMENT

APRIL 1979 **Arco Completed Preliminary
Feasibility Study**

MAY 1979 **First Working Interest Owners' Meeting
Gulf to Expedite**

JULY 1979 **First Tech. Committee Meeting**

FEB. 1983 **Final Tech. Committee Meeting**

AUG. 1983 **Final WIO Meeting Prior to State Hearings
(21 Owners)**

NOV. 1984 **OCD Hearing**

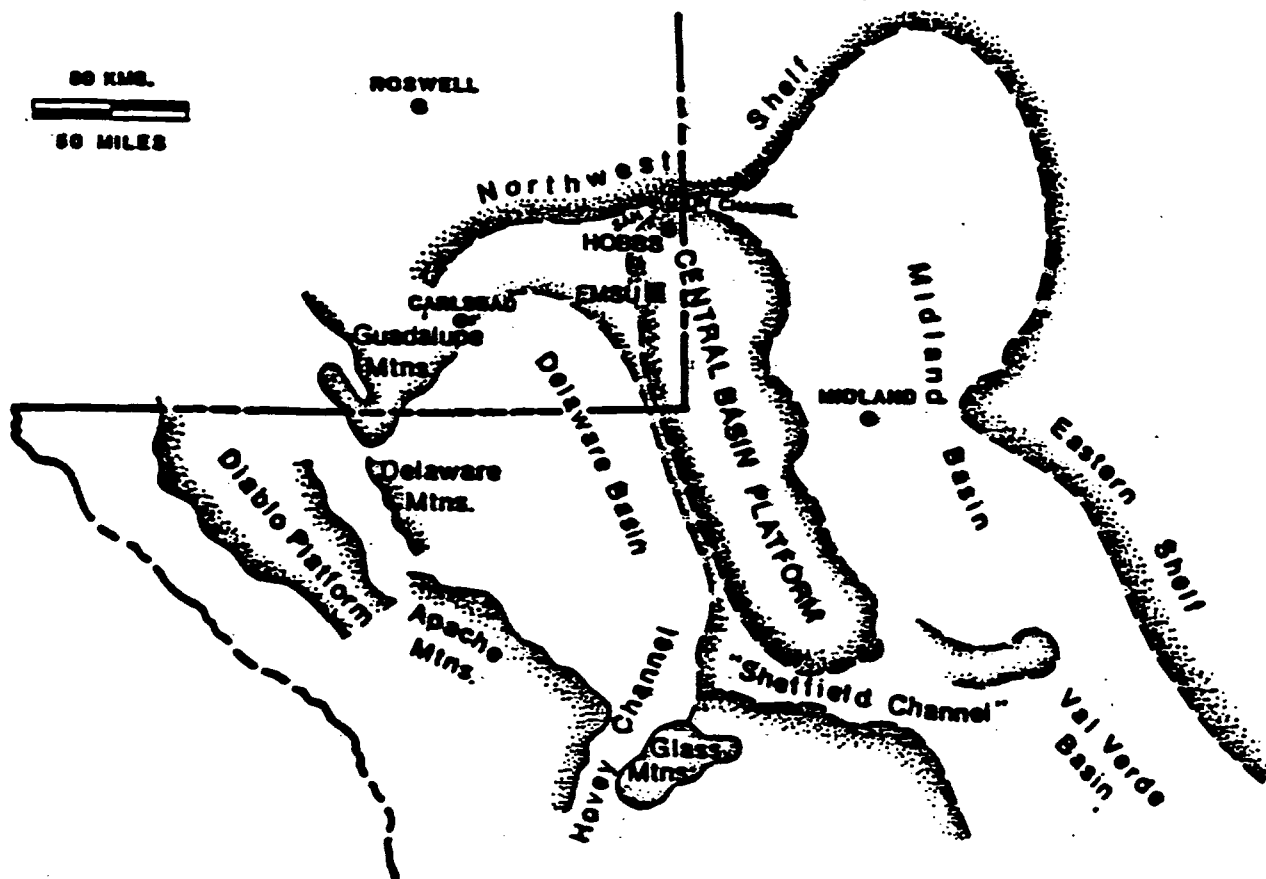
FEB. 1985 **Effective Unit**

NOV. 1986 **Water Injection Begins**

FEB. 1990 **87 MMBBL of Water Injected
(38% of Fillup)**

MAR. 1991 **Field Response**

SEPT. 1994 **Peak Oil Response**



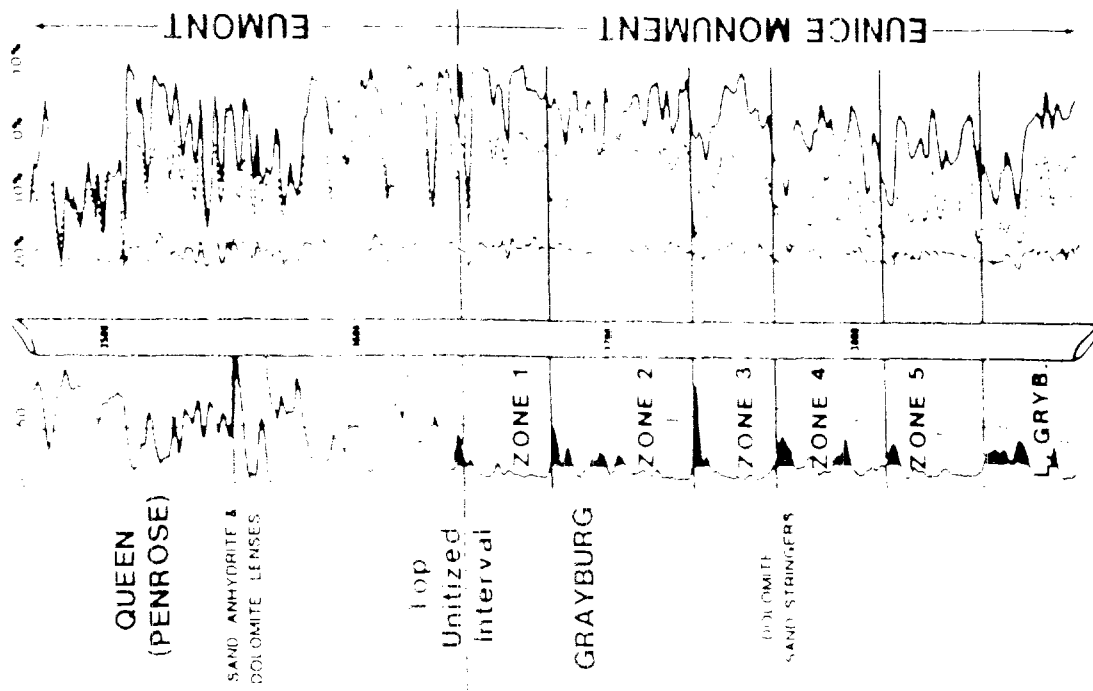
MAP OF THE PERMIAN BASIN OF WEST TEXAS AND SOUTHEASTERN NEW MEXICO SHOWING LARGE SCALE FEATURES DELINEATED BY SUBSURFACE STUDIES AND MOUNTAIN RANGES EXPOSING GUADALUPIAN STRATA ALONG THE WESTERN MARGIN OF THE DELAWARE BASIN. (AFTER WARD, HARRIS, KENDALL 1986)

TYPE LOG

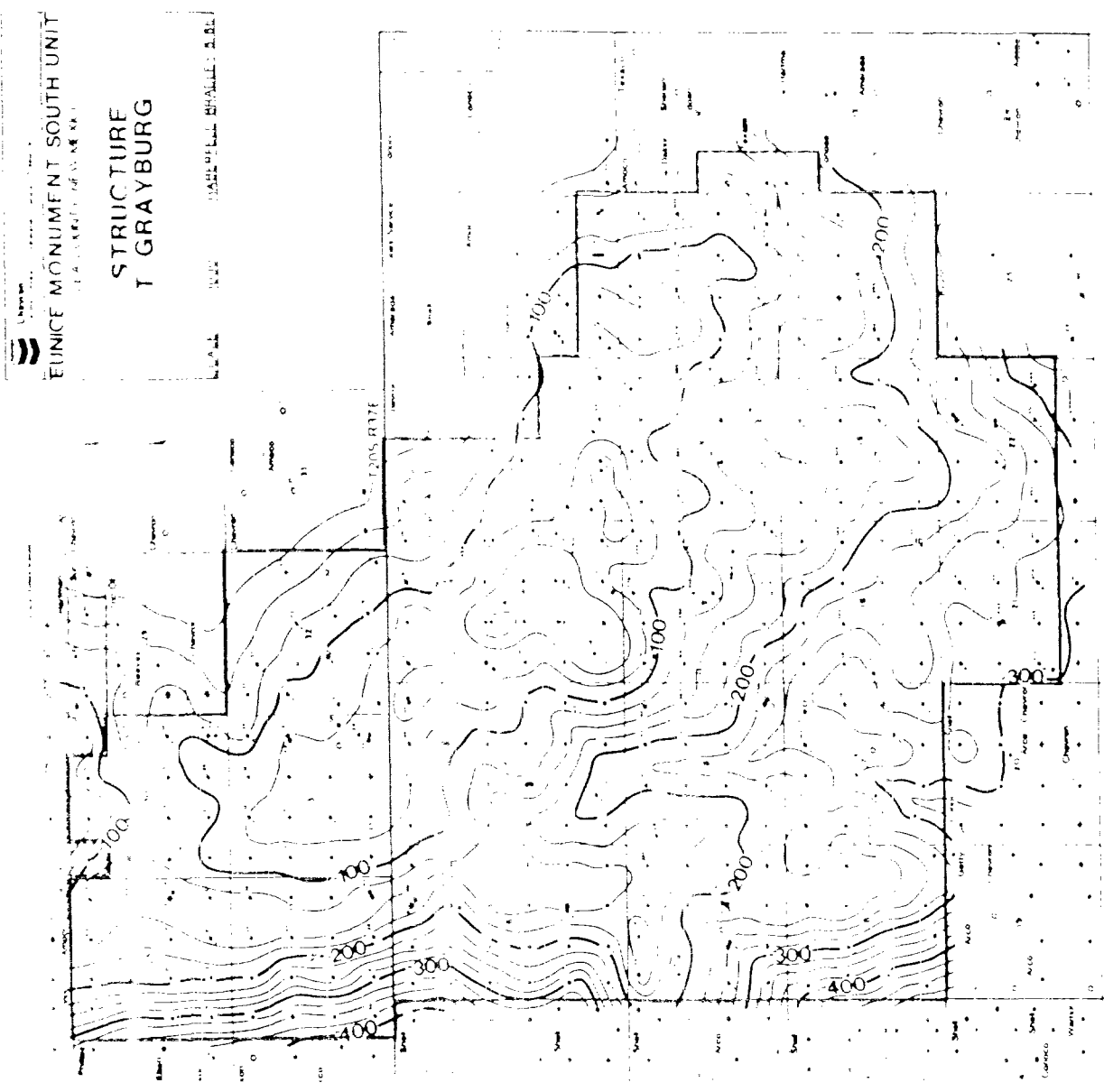
Gulf

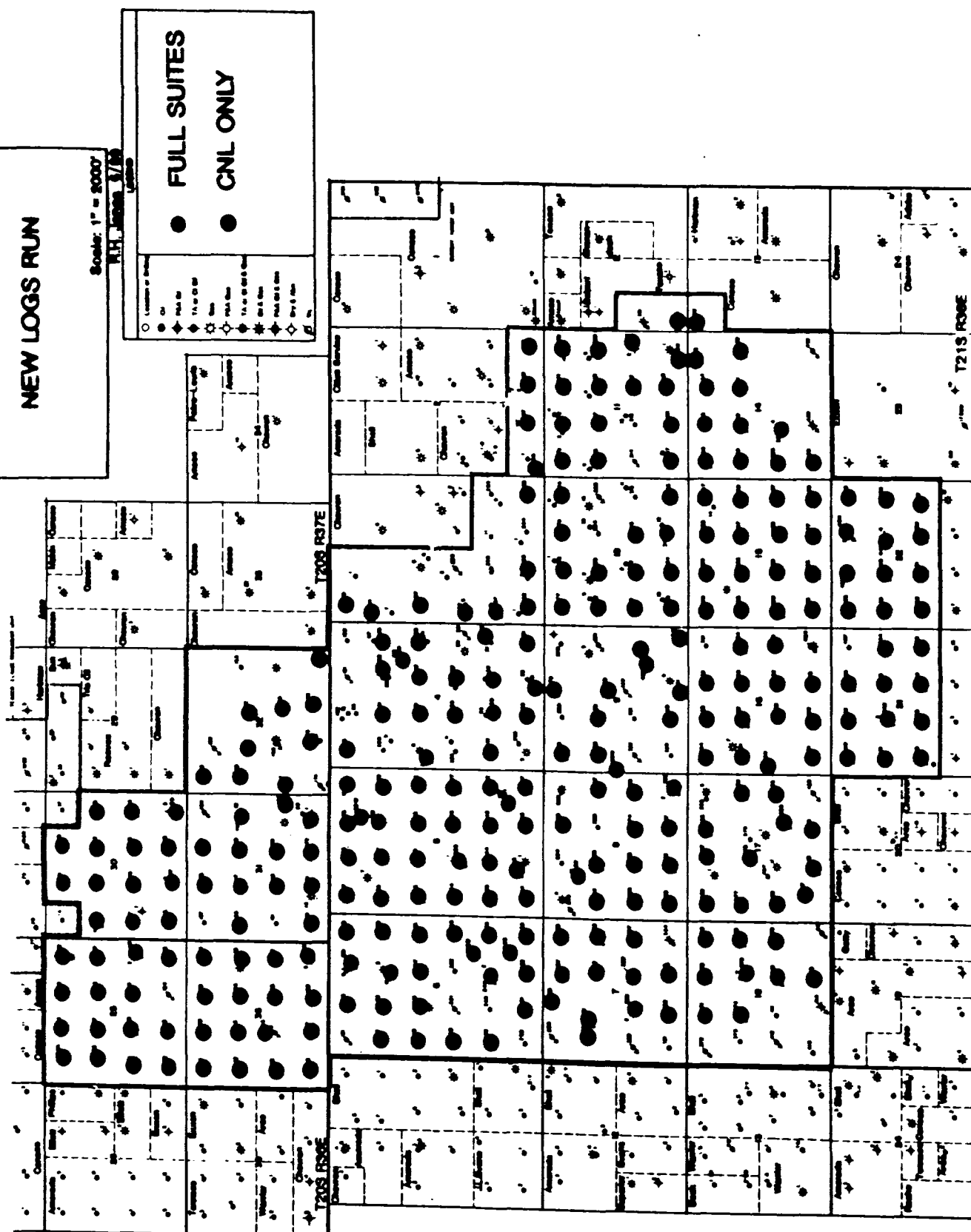
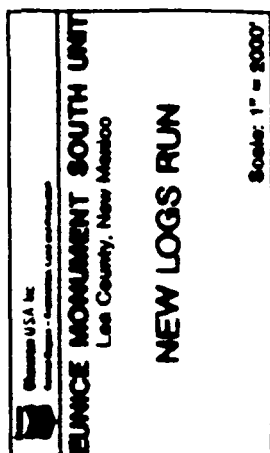
R.R. Bell (NCT-E) No. 4

CLIPPER NATURAL GAS WELL
DEPTH (FEET)



UNITIZED INTERVAL EXTENDS 1100 FT. DEEPER
(BASE SAN ANGELES)







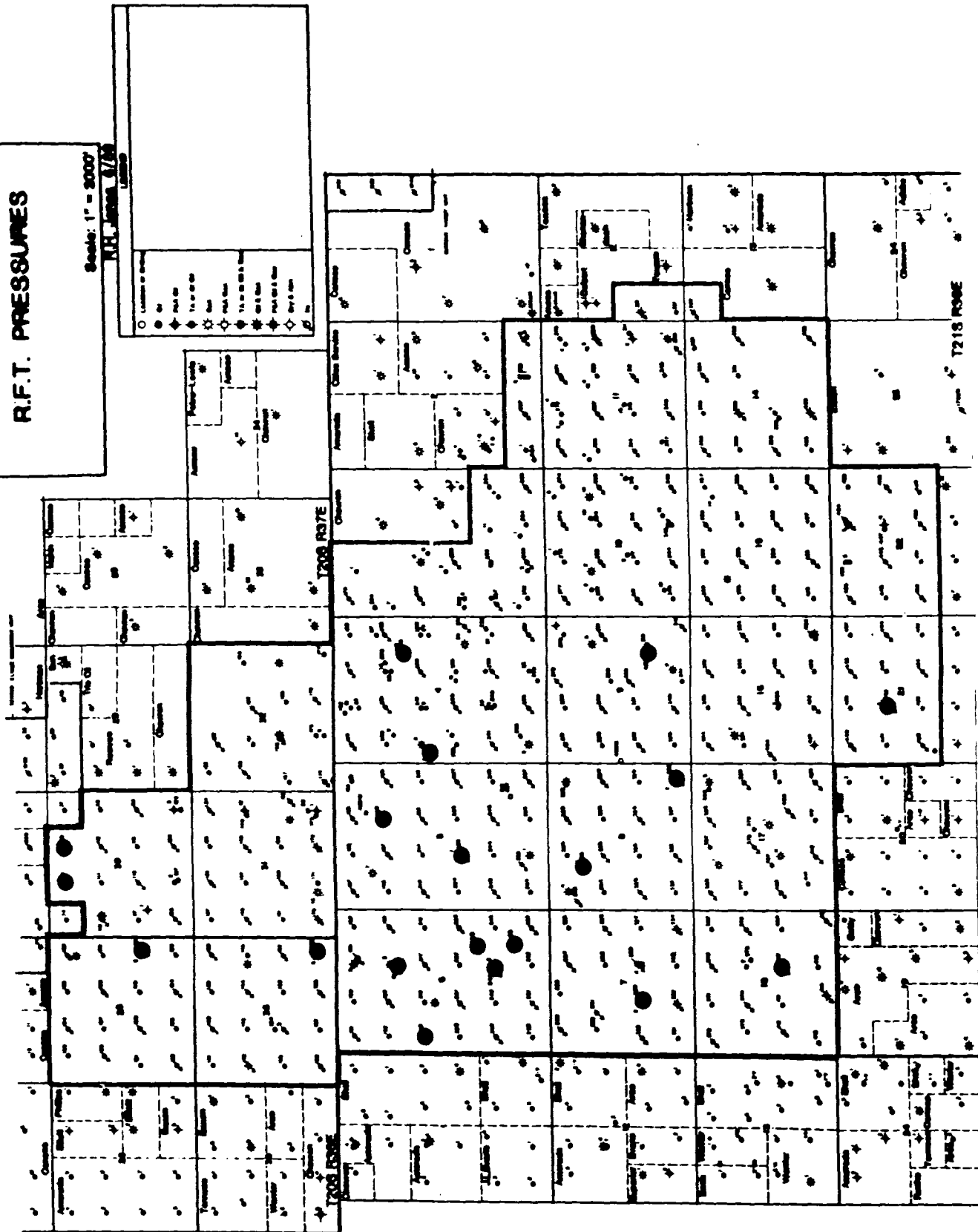
Chevron USA Inc.
Geological Services - Houston, Texas 77002-2401
© 2007

BUNCE MONUMENT SOUTH UNIT

Lea County, New Mexico

R.F.T. PRESSURES

Scale: 1" = 2000'
N.H. Jones 5/7/06



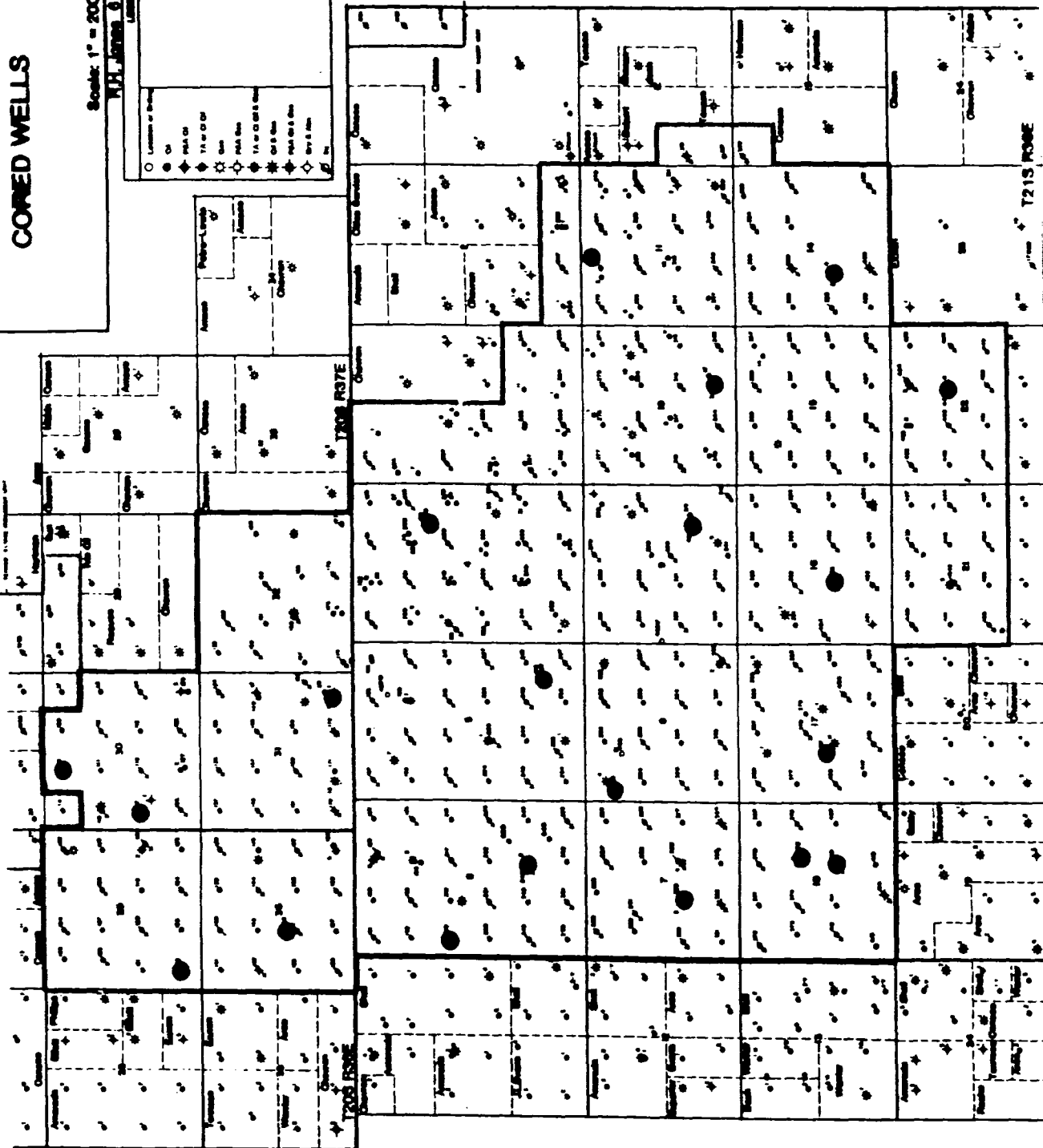
ELUNCE MONUMENT SOUTH UNIT
Lea County, New Mexico

CONED WELLS

Books: 1° = 2000°

James
6876 Sunset Hm

- Location or Binding
- CH
◆ PMA CH
◆ TA to CH
☼ Gas
⊕ PMA Gas
◆ TA to CH & Gas
☼ CH & Gas
◆ PMA CH & Gas
◇ Dry & Air
✶ In



EMSU (CORE DATA)

DOLOMITES 3877 DATA POINTS

Average Porosity 9.1 %

Average Permeability 2.74 md

GRAINSTONES 1900 DATA POINTS

Average Porosity 11.85%

Average Permeability 11.5 md

MUDSTONES 1977 DATA POINTS

Average Porosity 6.4 %

Average Permeability 0.68 md

SANDS 1008 DATA POINTS

Average Porosity 10.8 %

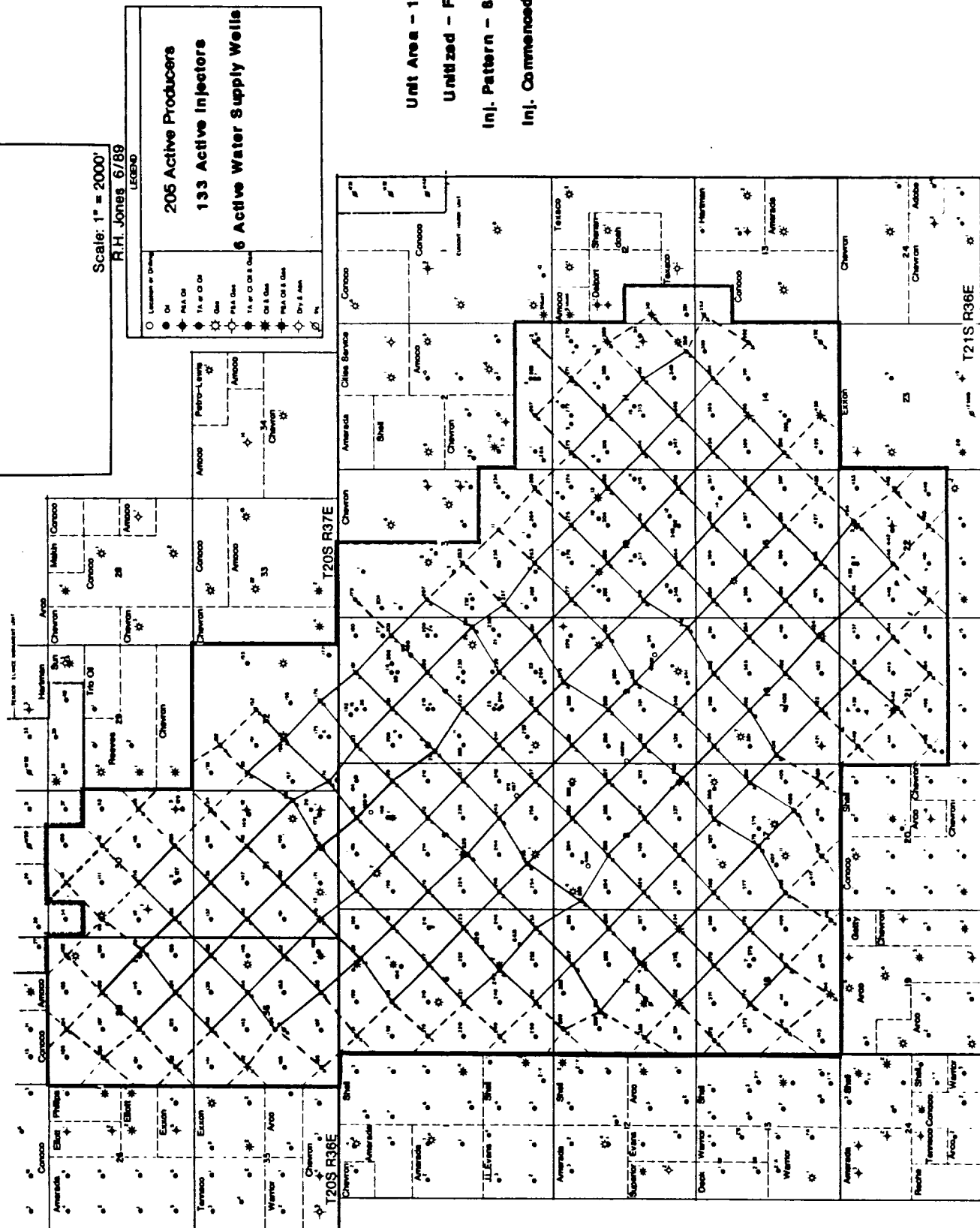
Average Permeability 0.41 md

EUNICE MONUMENT SOUTH UNIT

WATERFLOOD PERFORMANCE

- * Unit Status
- * Current Unit Performance
- * Reservoir Parameters
- * Secondary Response Prediction
 - Current Rate Time Prediction
 - Fillup
- * Waterflood Response
 - Total Unit
 - Specific Wells
- * Unit Performance
 - Current
 - Cumulatives
- * Waterflood Monitoring Program
- * Future Work
 - Leaseline Conversions
 - Off Center Pattern Evaluation

Chaparral USA Inc.
 Central Region - Sales, Service, Lease and Production
EUNICE MONUMENT SOUTH UNIT
 Lea County, New Mexico

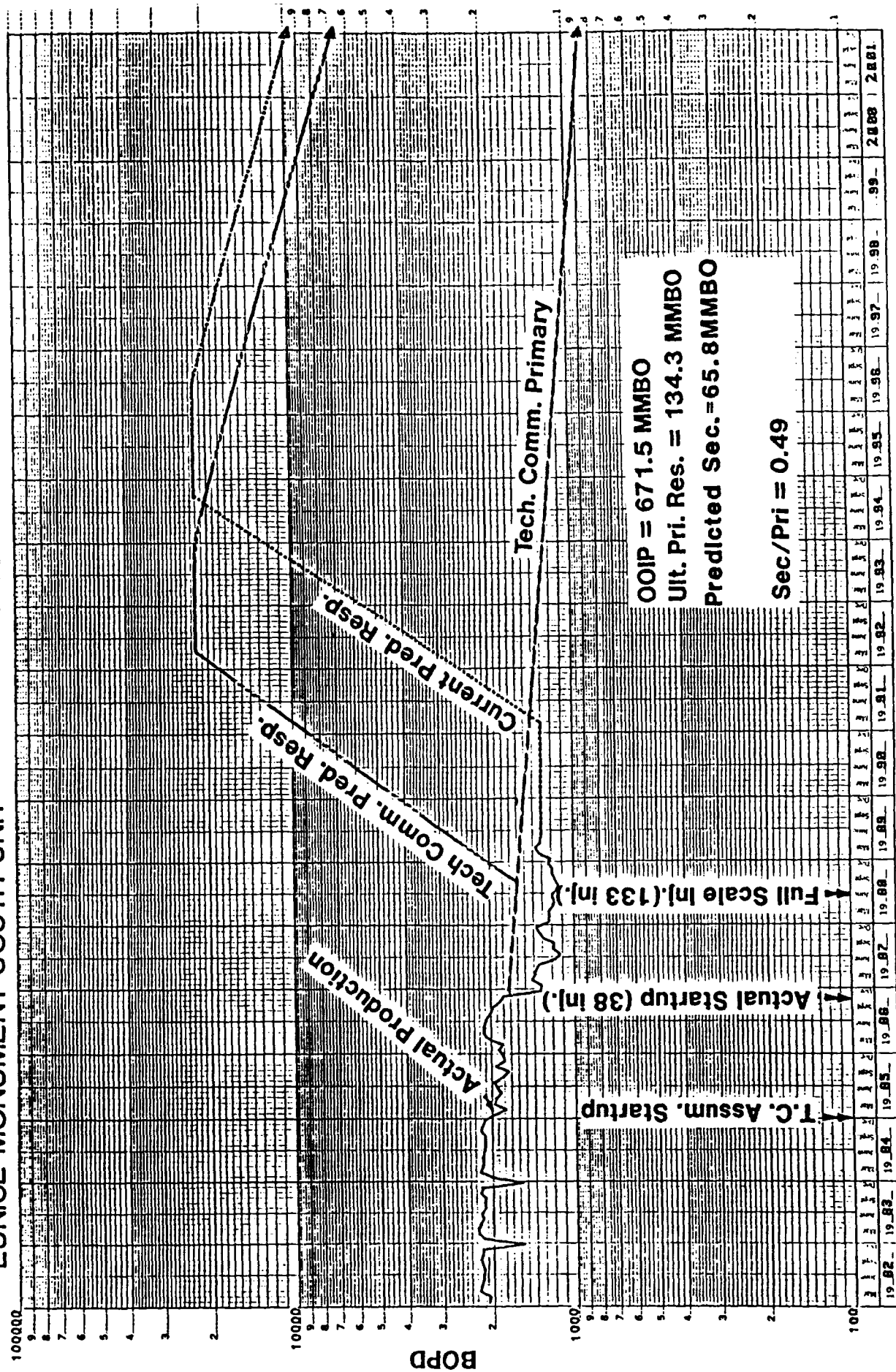


Unit Area - 14190 ac.
 Utilized - Feb. 1985
 Inj. Pattern - 80 ac. 5 spot
 Inj. Commenced - Nov. 1985

EMSU RESERVOIR PARAMETERS

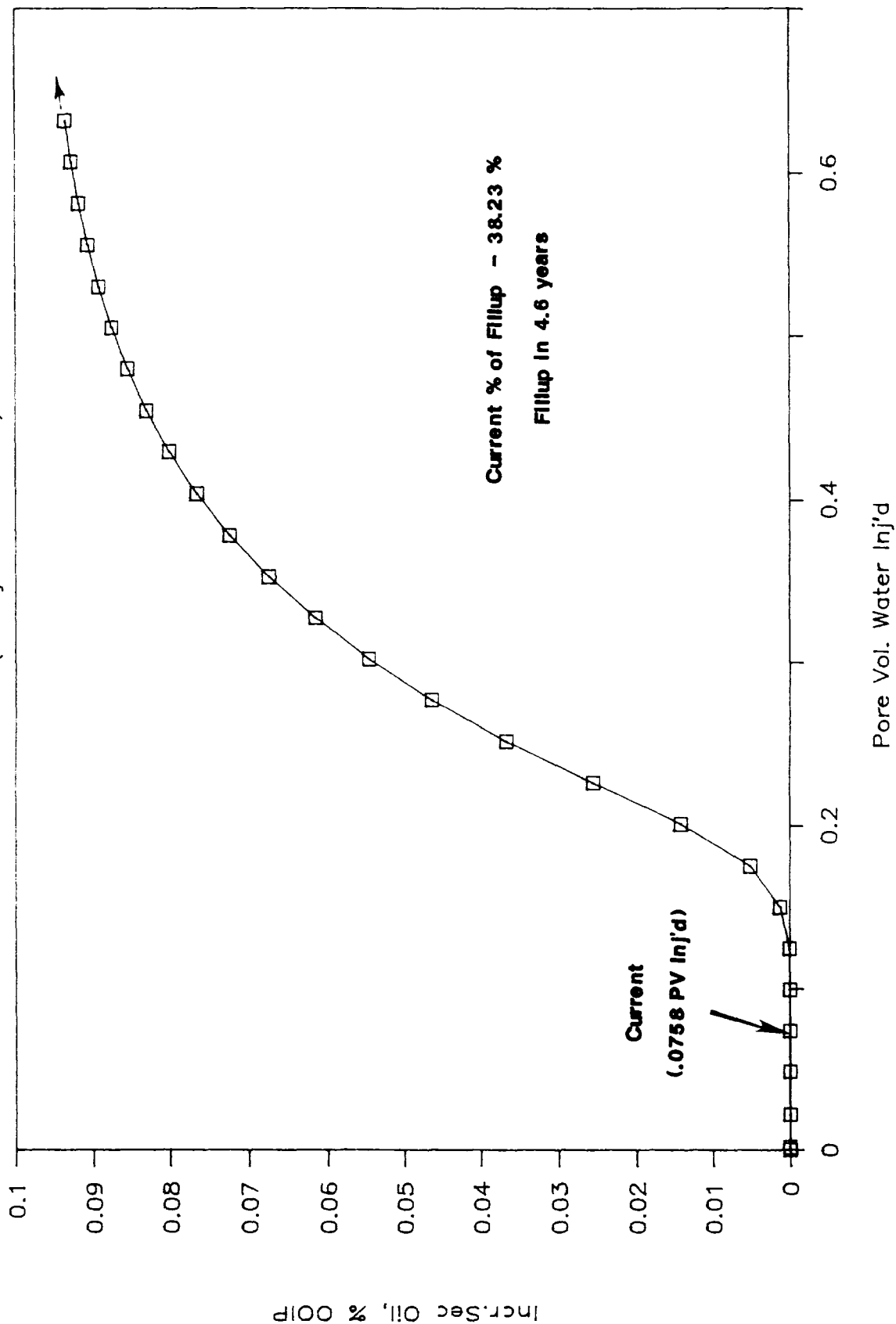
UNIT AREA	14190 ACRES
INITIAL RESERVOIR PRESSURE	1450 PSI
RESERVOIR PRESSURE AT START OF WATERFLOOD	250 PSI
SATURATION PRESSURE	1372 PSI
SOLUTION GOR	423 SCF/STB
CURRENT PRODUCING GOR	4007 SCF/STB
RESERVOIR TEMPERATURE	90 DEG F
OIL GRAVITY	32 DEG API
INITIAL FORMATION VOLUME FACTOR	1.20 RB/STB
CURRENT FORMATION VOLUME FACTOR	1.05 RB/STB
AVERAGE NET PAY	134 FT
AVERAGE POROSITY	8.0 %
INITIAL WATER SATURATION	30.0 %
OIL SATURATION AT START OF WATERFLOOD	50.0 %
RESIDUAL OIL SATURATION	25.0 %
VOLUMETRIC SWEEP EFFICIENCY	60 %
ULTIMATE PRIMARY RECOVERY	134.3 MMBO 20 % OOIP
OOIP	671.5 MMBO
ESTIMATED SECONDARY RECOVERY	65.8 MMBO 9.8 % OOIP
SECONDARY TO PRIMARY RATIO	49 %
ESTIMATED RECOVERY DUE TO INFILL DRILLING	5 % OOIP 33 MMBO
ESTIMATED RECOVERY DUE TO CO2 FLOODING	10 % OOIP 67 MMBO

PREDICTED WATERFLOOD RESPONSE



Eunice Monument South Unit

WF Prediction (PV Inj. vs Sec. Oil)



Jan. 1990

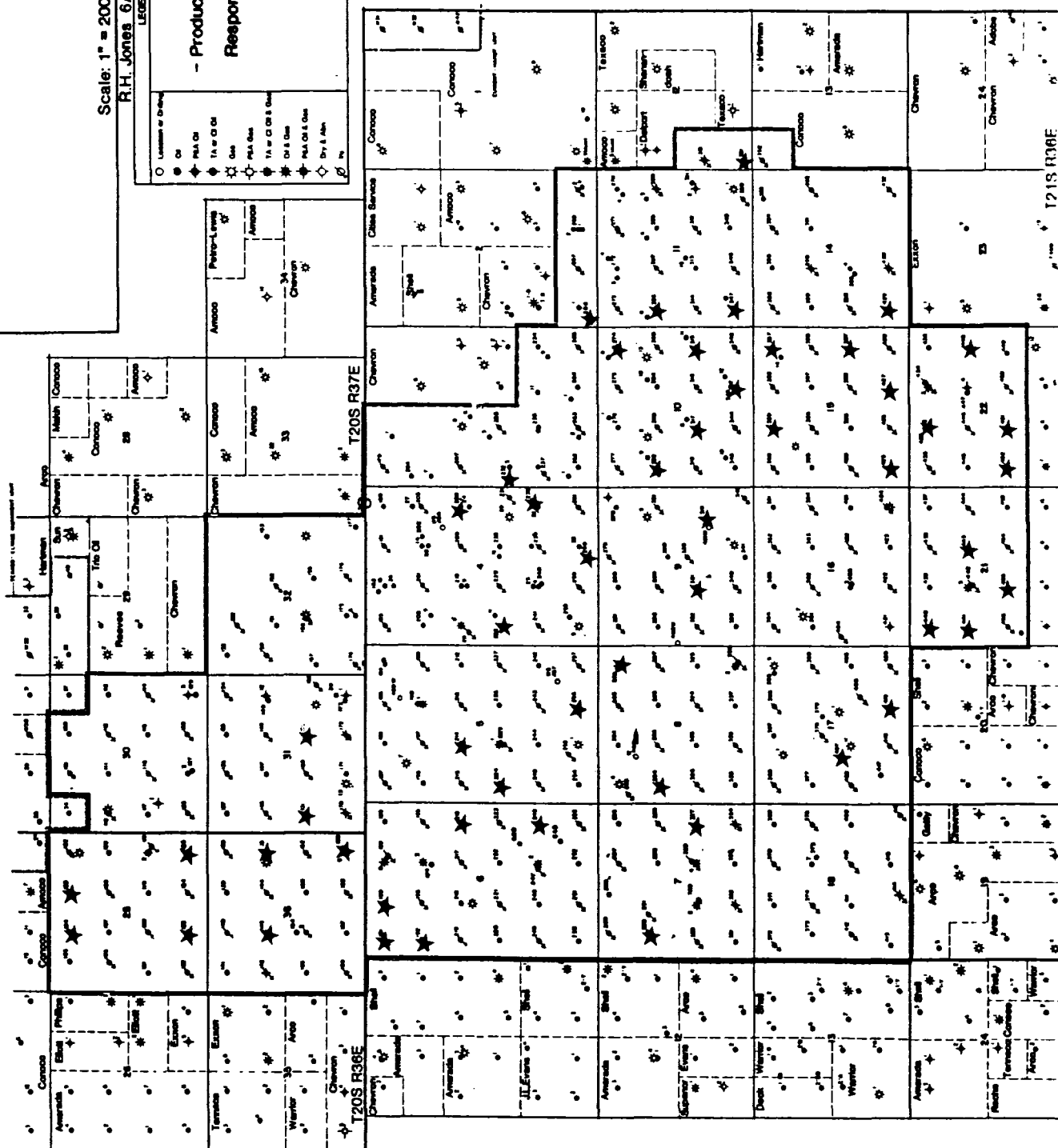
LEONICE MONUMENT SOUTH UNIT
Lea County, New Mexico

Scale: 1" = 2000'

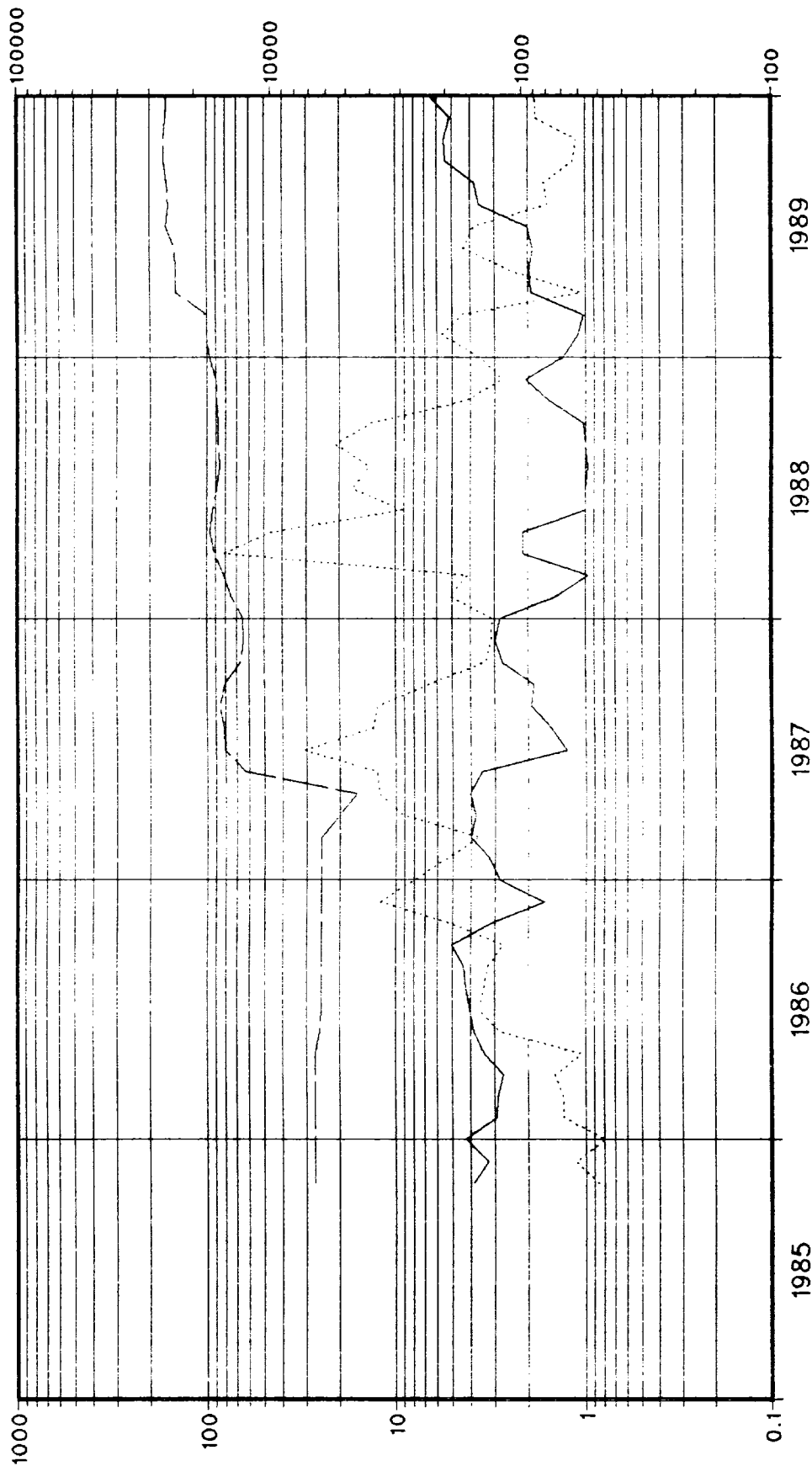
R.H. Jones 6/89

OVER

- Producer Showing Response 53 Wells

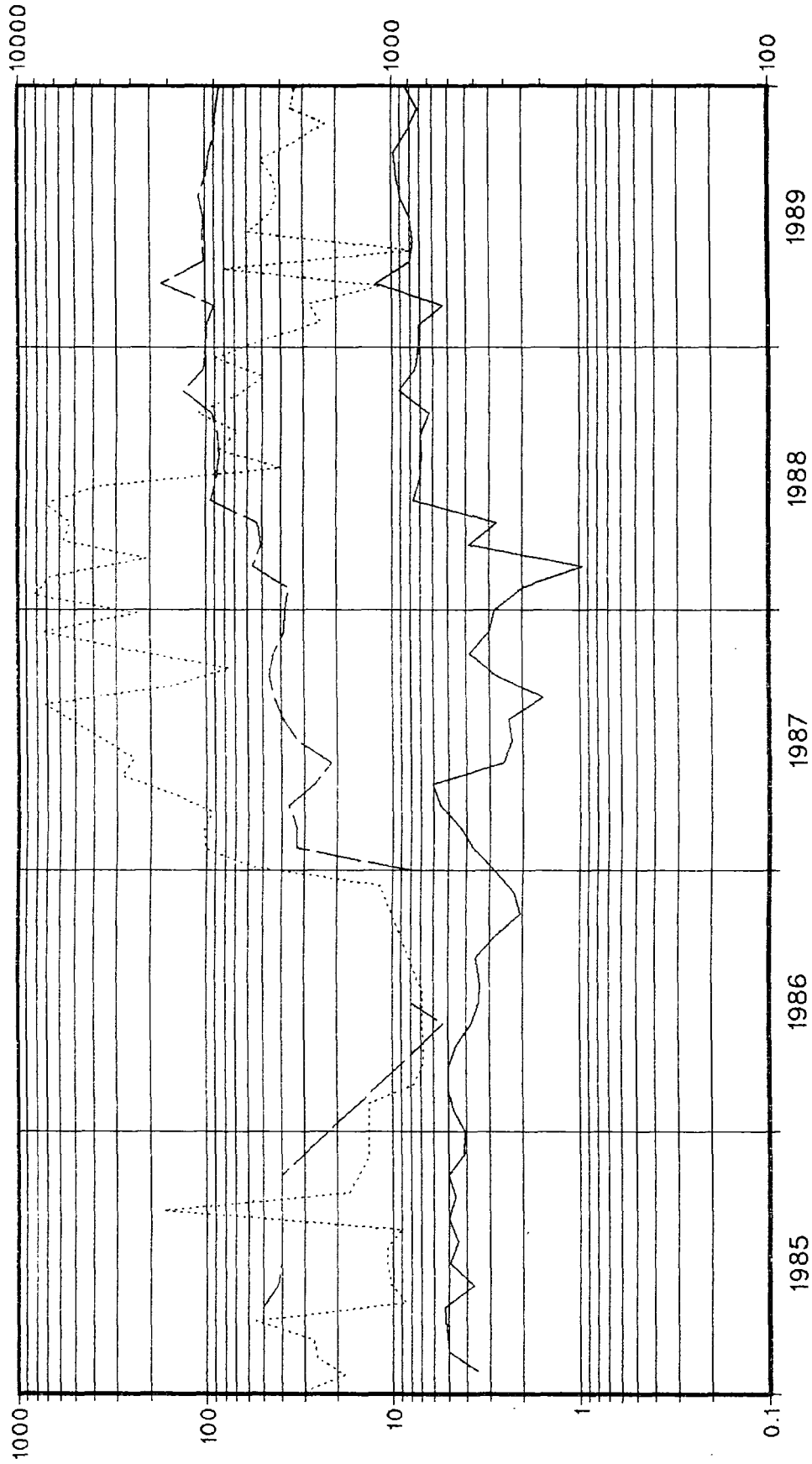


EUNICE MONUMENT SOUTH UNIT PRODUCTION PLOT



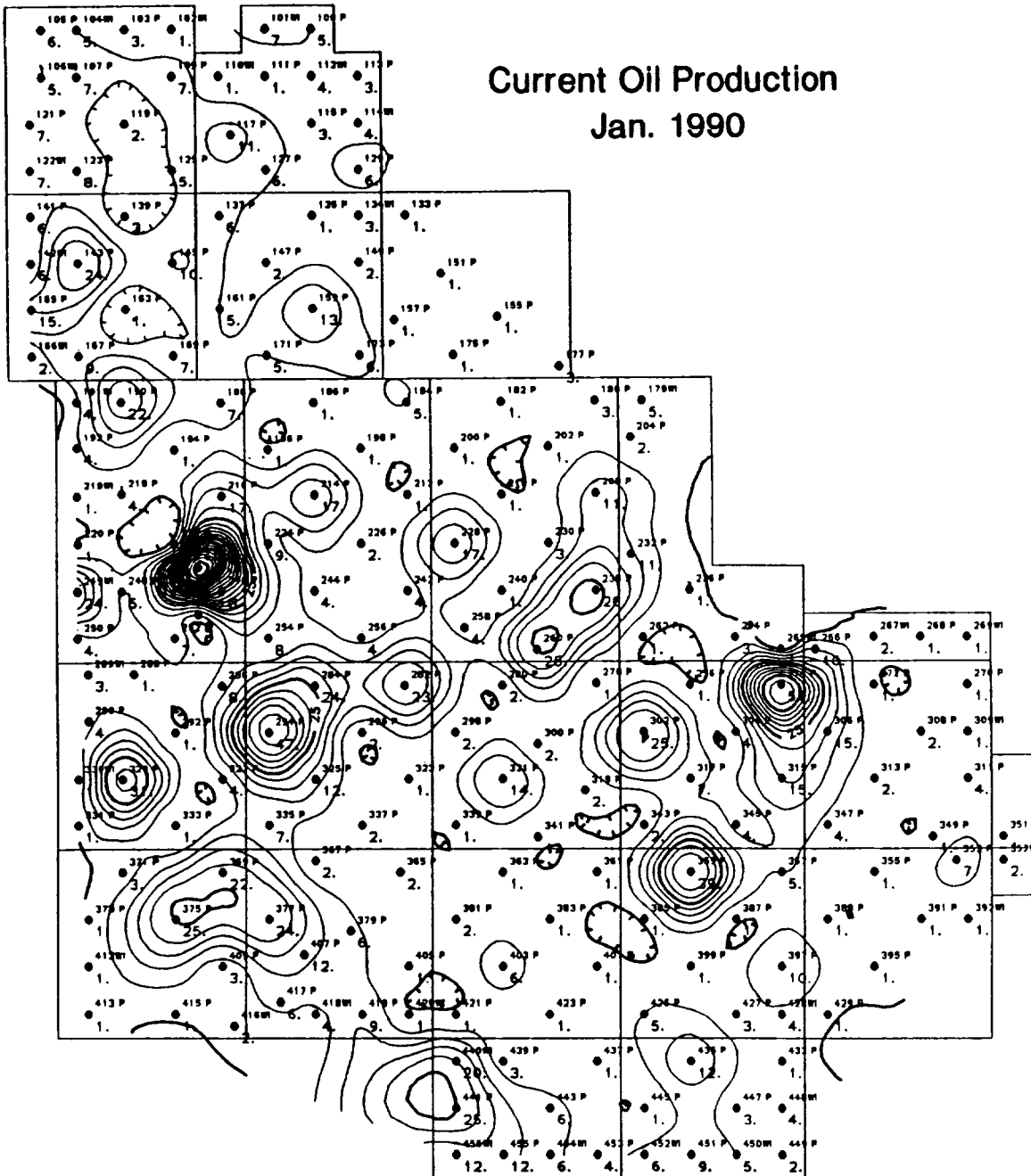
LOG (Left)	LOG (Right)	COMPANY : CUSA	
		DIVISION : HOBBS	
		FIELD : EUNICE MONUMENT	
		PROPERTY : EUNICE MONUMENT SOUTH UNIT	
		RESERVOIR : GRAYBURG SAN ANDRES	
		WELL # : 317	
		COMP ID : FA5731-01	

EUNICE MONUMENT SOUTH UNIT PRODUCTION PLOT



LOG (Left)	LOG (Right)	COMPANY : CUSA	
AWD Pr Oil- BPWD AWD Pr WTR- BPWD	Gas Oil Ratio	DIVISION : HOBBS FIELD : EUNICE MONUMENT PROPERTY : EUNICE MONUMENT SOUTH UNIT RESERVOIR: GRAYBURG SAN ANDRES WELL # : 397 COMP ID : FA5787-01	

Current Oil Production Jan. 1990

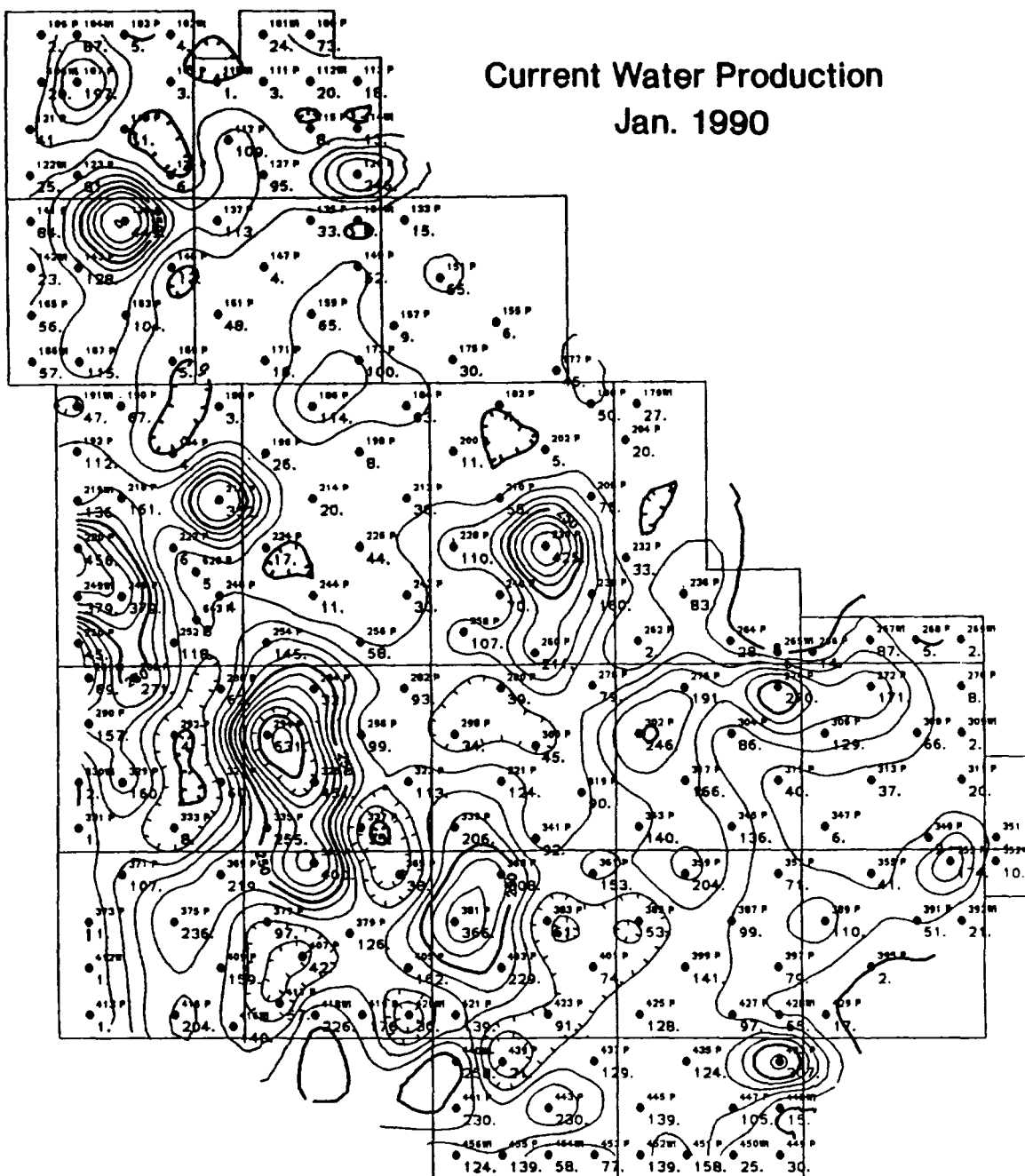


ID = DOLAN
AUTOMAP SYSTEM
02/14/90
SCALE 1 IN = 2640 FEET
CI = 5 UNITS
CONTOUR METHOD = SCAI
LEGEND
• PRODUCING WELL

CHEVRON CORPORATION
EUNICE MONUMENT SOUTH UNIT
CONTOUR BOPD 01/90

0 3 6 9 12 15000 FEET

Current Water Production Jan. 1990

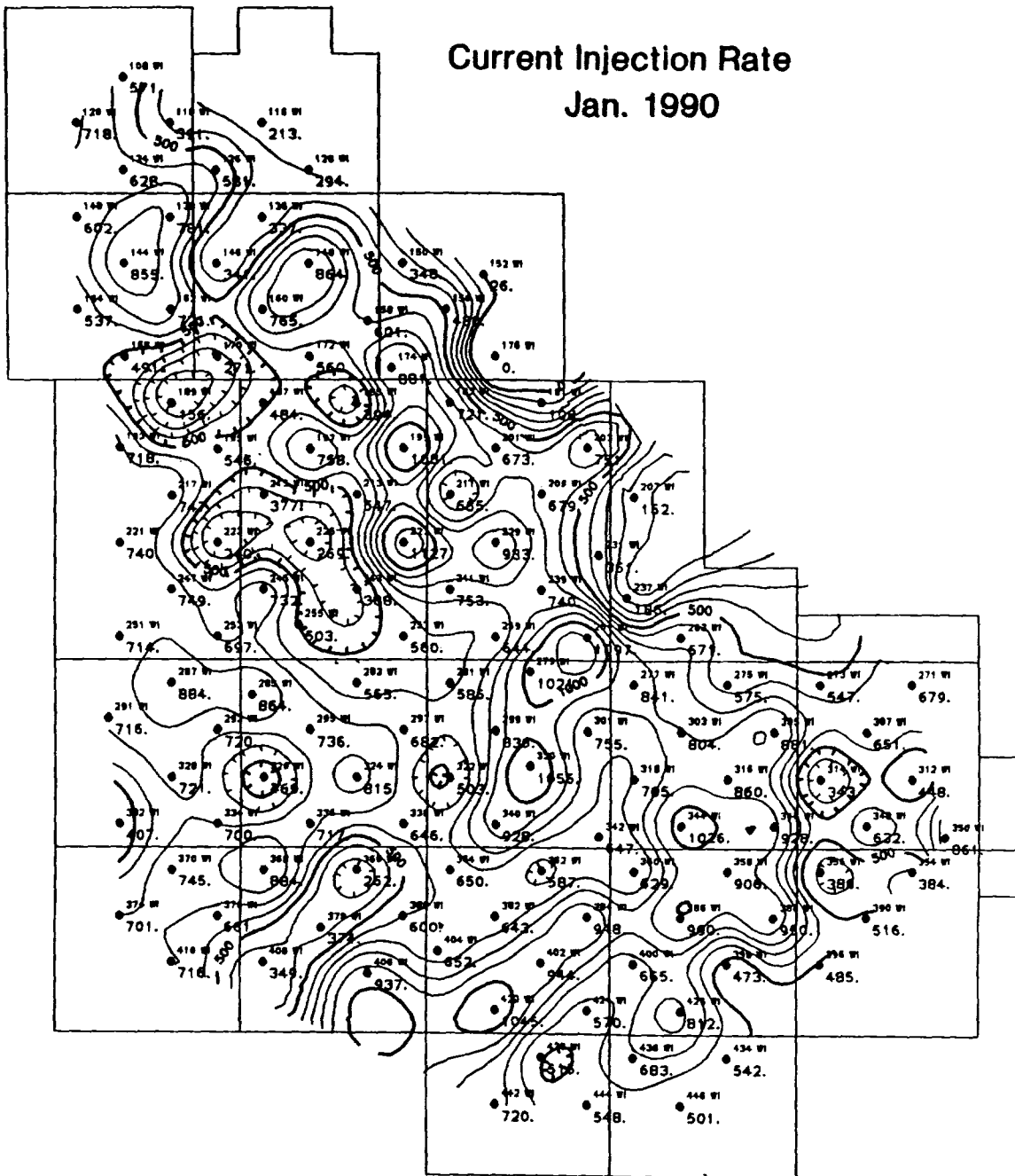


ID = DOLAN
AUTOMAP SYSTEM
02/14/90
SCALE 1 IN = 2640 FEET
CI = 50 UNITS
CONTOUR METHOD = SCAI
LEGEND
• PRODUCING WELL

CHEVRON CORPORATION
EUNICE MONUMENT SOUTH UNIT
CONTOUR BWPD 01/90



Current Injection Rate Jan. 1990



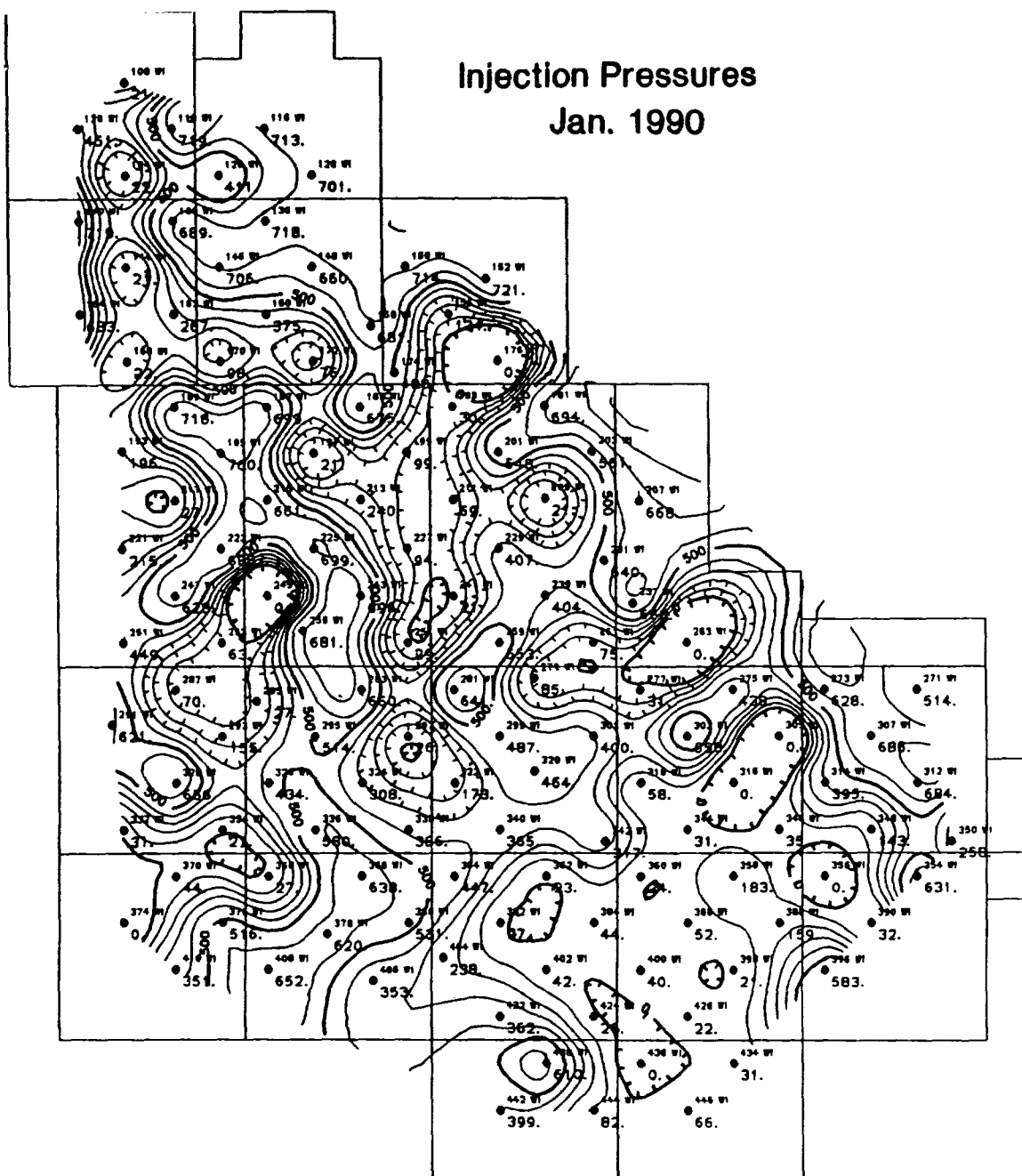
ID = DOLAN
AUTOMAP SYSTEM
02/14/90
SCALE 1 IN = 2640 FEET
CI = 100 UNITS
CONTOUR METHOD = SCAI
LEGEND
• INJECTION WELL

CHEVRON CORPORATION
EUNICE MONUMENT SOUTH UNIT
CONTOUR INJ (BWIPD)01/90

0 3 6 9 12 15000 FEET

Injection Pressures

Jan. 1990



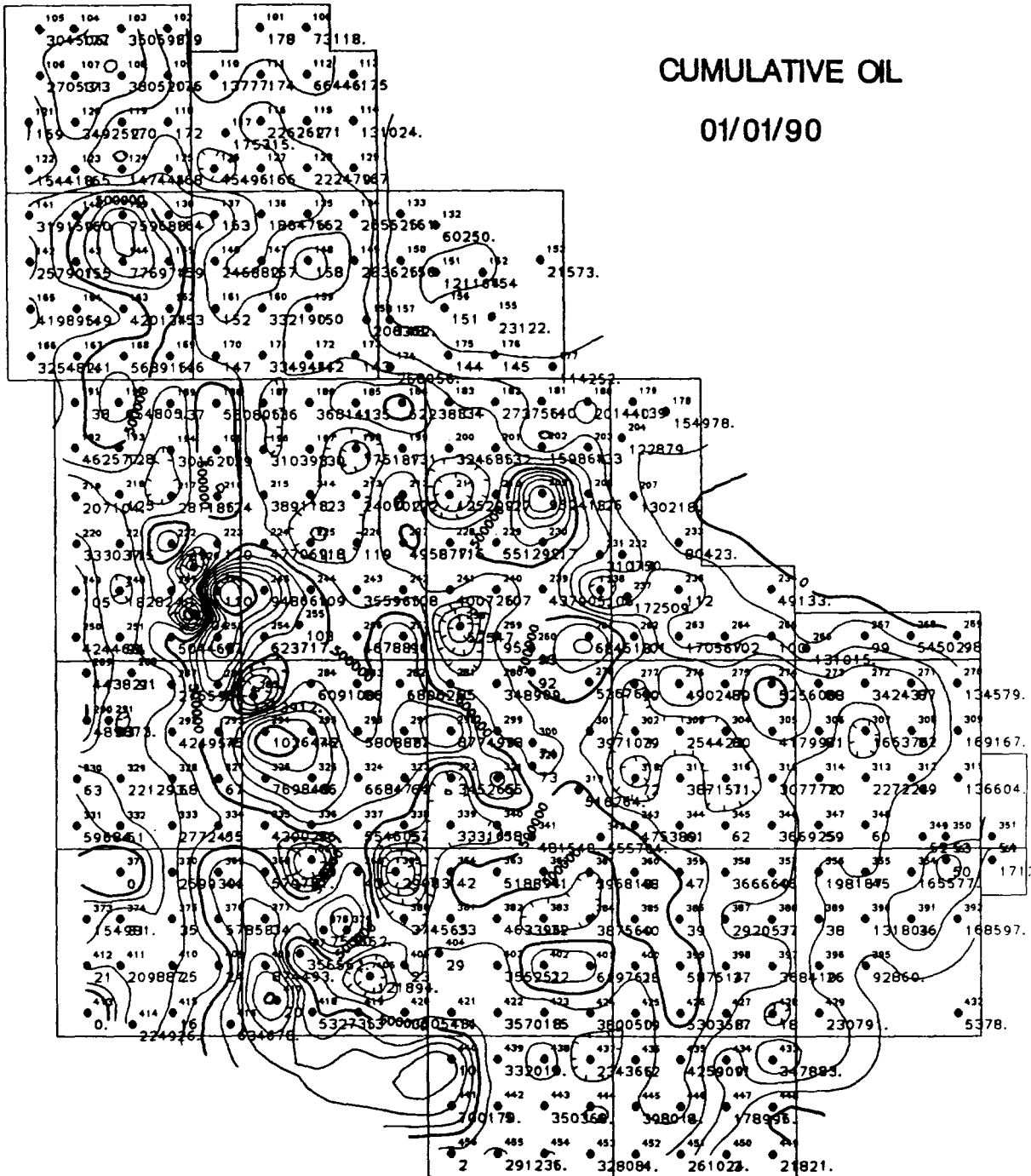
ID = DOLAN
 AUTOMAP SYSTEM
 02/14/90
 SCALE 1 IN = 2640 FEET
 CI = 100 UNITS
 CONTOUR METHOD = SCAI
 LEGEND
 • INJECTION WELL

CHEVRON CORPORATION
 EUNICE MONUMENT SOUTH UNIT
 CONTOUR INJ. PRESS 01/90



CUMULATIVE OIL

01/01/90

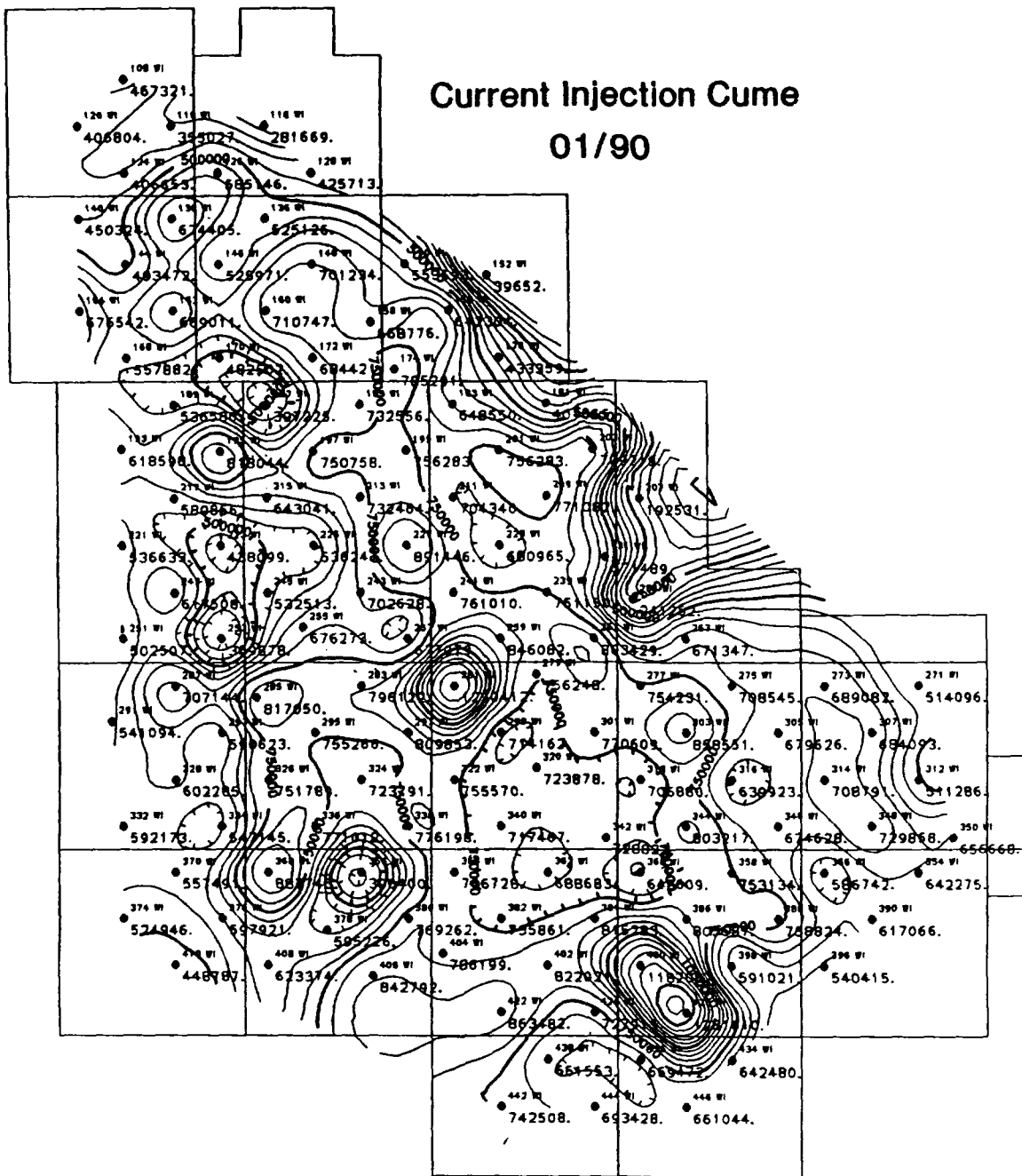


ID = DOLAN
AUTOMAP SYSTEM
02/23/90
SCALE 1 IN = 2640 FEET
CI = 100000 UNITS
CONTOUR METHOD = SCAI
LEGEND
• INJECTION WELL

CHEVRON CORPORATION
EUNICE MONUMENT SOUTH UNIT
CONTOUR ON CUMEOIL 12/89

0 3 6 9 12 15000 FEET

Current Injection Cume 01/90



ID = DOLAN
AUTOMAP SYSTEM
02/15/90
SCALE 1 IN = 2640 FEET
CI = 50000 UNITS
CONTOUR METHOD = SCAI
LEGEND
• INJECTION WELL

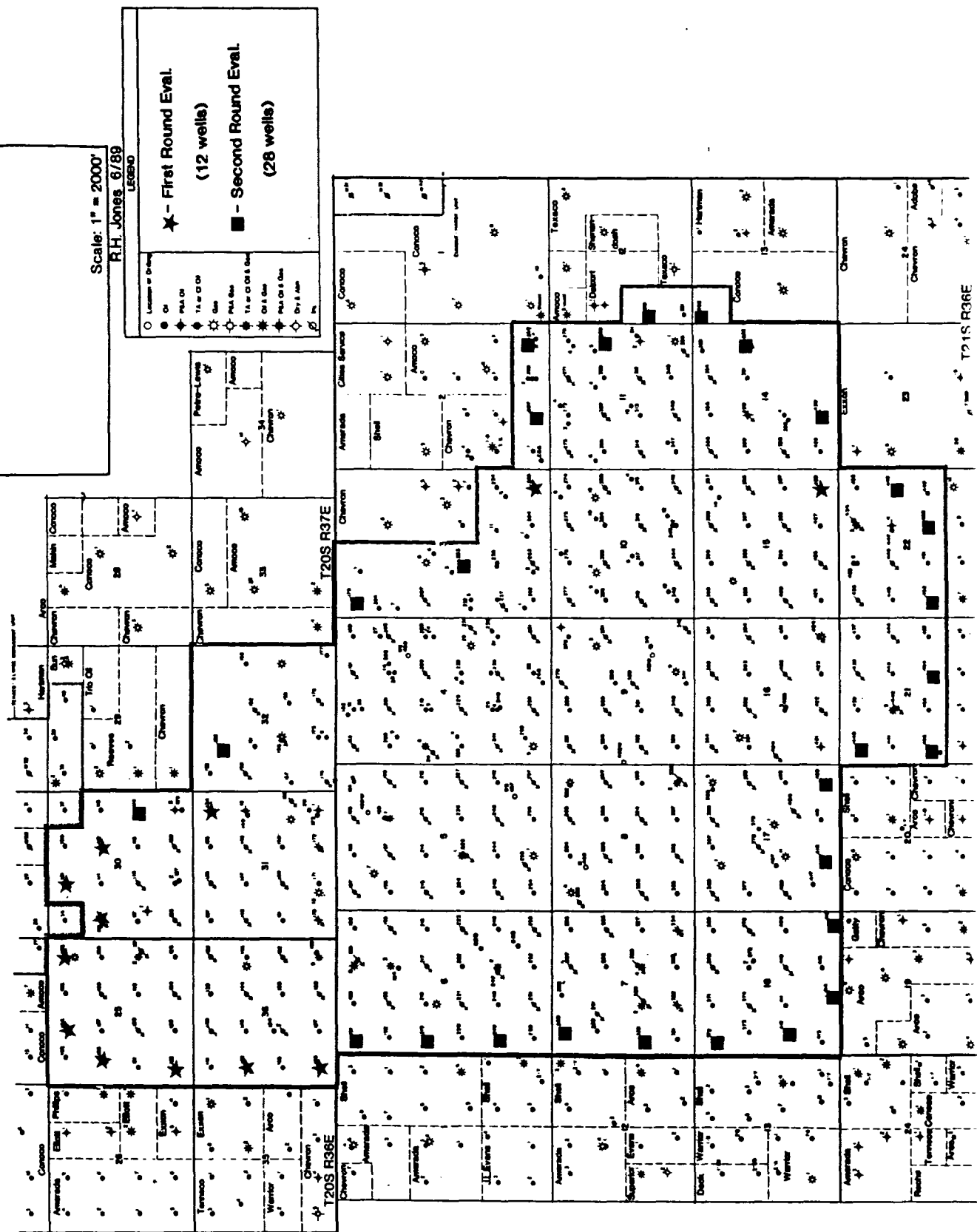
CHEVRON CORPORATION
EUNICE MONUMENT SOUTH UNIT
CONTOUR CUME INJ. 01/90

0 3 6 9 12 15000 FEET

EUNICE MONUMENT SOUTH UNIT WATERFLOOD MONITORING PLAN

GOAL: MAXIMIZE PROFITS BY OPTIMIZING RECOVERY "OPTIMIZE UNIT PERFORMANCE"

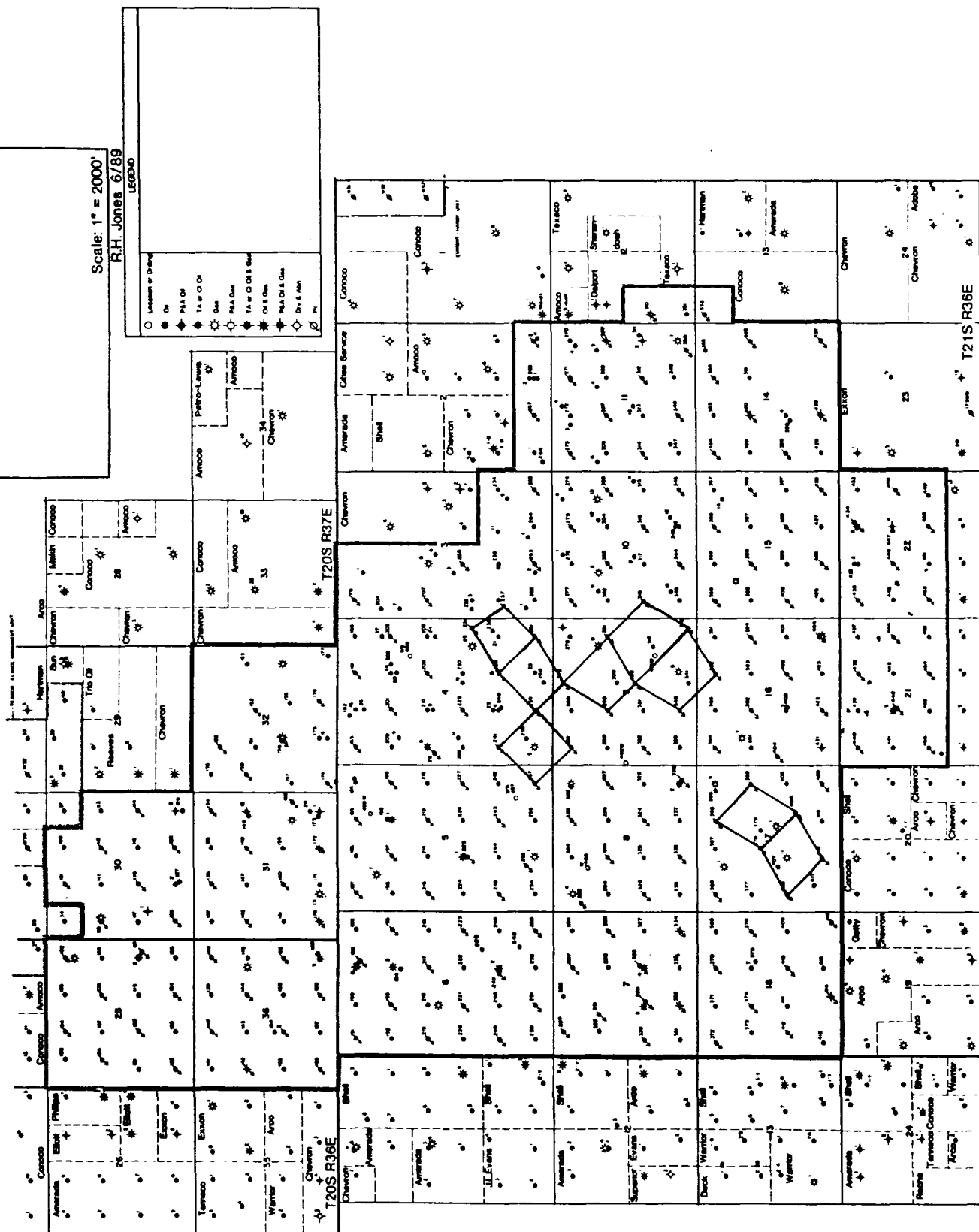
OBJECTIVE	ACTION	SECONDARY ACTION	RESULTS
I. Optimize Vertical Sweep Efficiency	A. Profile Wells (133 by 7/1/89) (every 12 - 18 months thereafter) B. Maximize Continuity (Review Well Logs)	1. Analyze Logs 2. Install Data on Workstation (log traces) 3. Install Data on PIECES 1. Generate and Evaluate Fence diagrams, X-Sections, etc.	a. Generate Sweep Improvement Workovers b. Use data as Diagnostic Tool c. Monitor Sweep / Make Rec's a. Prepare W/O Recommendation i). Add Perforations ii). Squeeze Off Out of Zone Inj.
II. Minimize Fillup Time	A. Step Rate Tests (10-15/yr.) B. Hallplot Generation (Qtrly)	1. Evaluate Step Rate Tests 1. Evaluate Hallplots	a. Recommend Inj. Rate Changes a. Recommend Changes i). Cut rates ii). Stimulate iii). No Action iii). No Action
III. Maximize Oil Production and Minimize Water Production	A. Generate Plots and Evaluate B. Pattern Evaluation (FIFO Qtrly) (Build / Initiate FIFO Prgm by 6/1/90) C. Gather & Analyze Water Samples (yearly basis)	1. Rate vs. Time (monthly) 2. Rate vs. Cum. (semi-annually) 3. WOR vs. Cum. (semi-annually) 4. Miscellaneous Plots (as needed) 1. Balance Patterns 2. Evaluate Performance 1. Identify Water Source in Problem Wells	a. Generate Workovers b. Recommend Changes c. No Action a. Stimulate Producers b. Stimulate Injectors c. Change Rates a. Generate Workovers b. No Action
IV. Optimize Recovery Method	A. Model the Reservoir	1. Scale-up CLASS 2. Build CHI-TUBE model	a. Evaluate Present Operations b. Infill Drilling c. CO2 Flooding d. Pattern Re-alignment
V. Obtain Reservoir Parameters	A. Run Buildups (15+ per year) B. Run Falloffs (10-15/yr)	1. Evaluate Data	a. Track Reservoir Pressure Across Unit b. Calculate FVF's c. Calculate Skin Damage / Generate Workovers d. Determine if MWP is Achieved



Chaparral USA Inc
Central Region - Sales/Marketing, Lead and Production

REUNICE MONUMENT SOUTH UNIT
Lea County, New Mexico

Scale: 1" = 1000'



EMSU Simulation

Objective

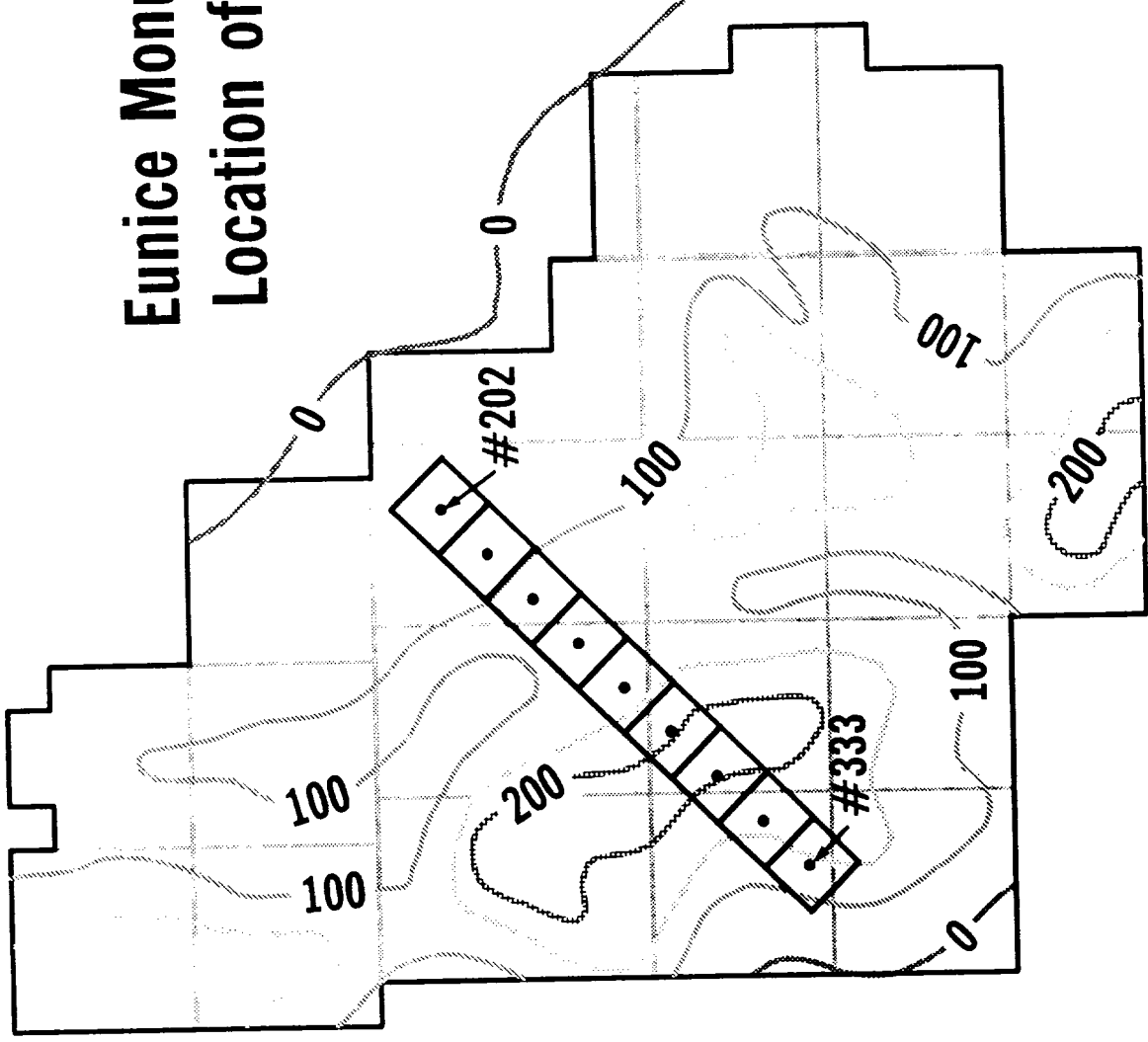
Predict Unit Waterflood Performance

- Select Representative Area

- Simulate Area

- Develop Unit Forecast

Eunice Monument South Unit Location of Simulation Area



EMSU Simulation

Model Construction

Model: Black Oil Simulator

Element: 9 Pattern Strip
Aquifer on West Side

Grid: 65 X 7 X 7 (3000 cells)

Layering: Zone Layers

Penrose 1

Grayburg 1-6 5

San Andres 1

EMSU Simulation

Model Construction (Cont'd)

Data: Structure

Thickness

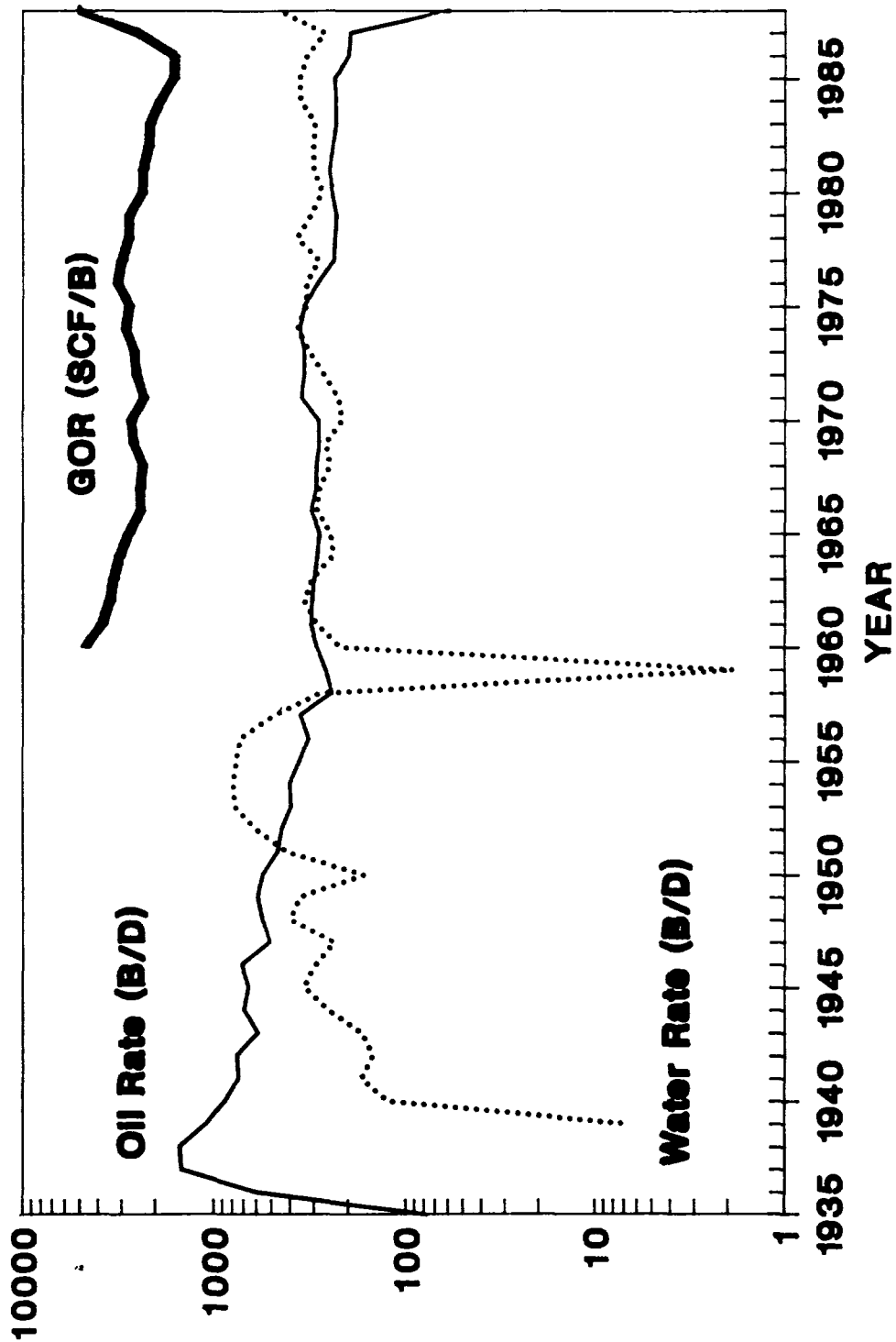
Porosity

Permeability

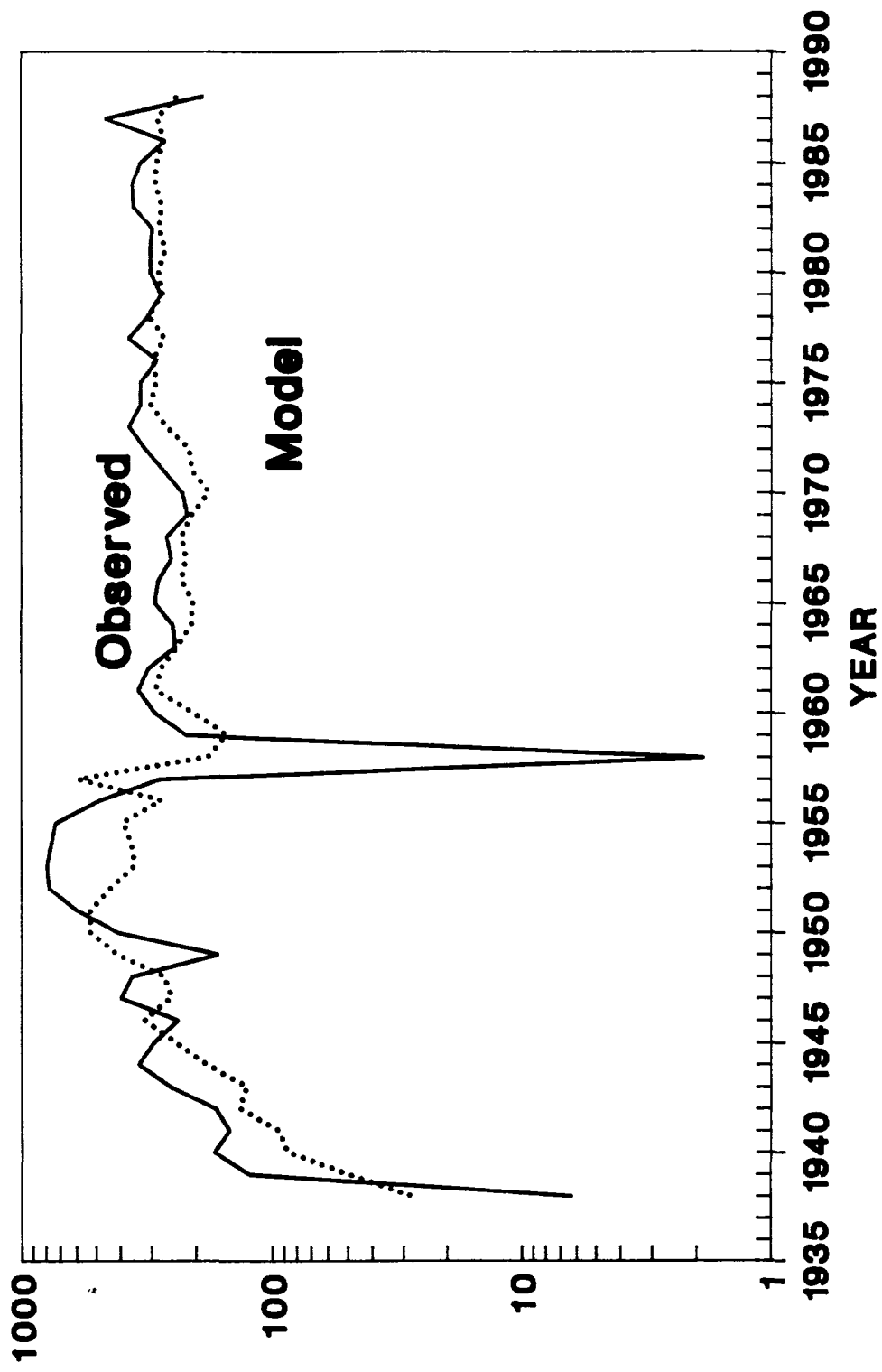
Water Oil Contact

Initial Water Saturation

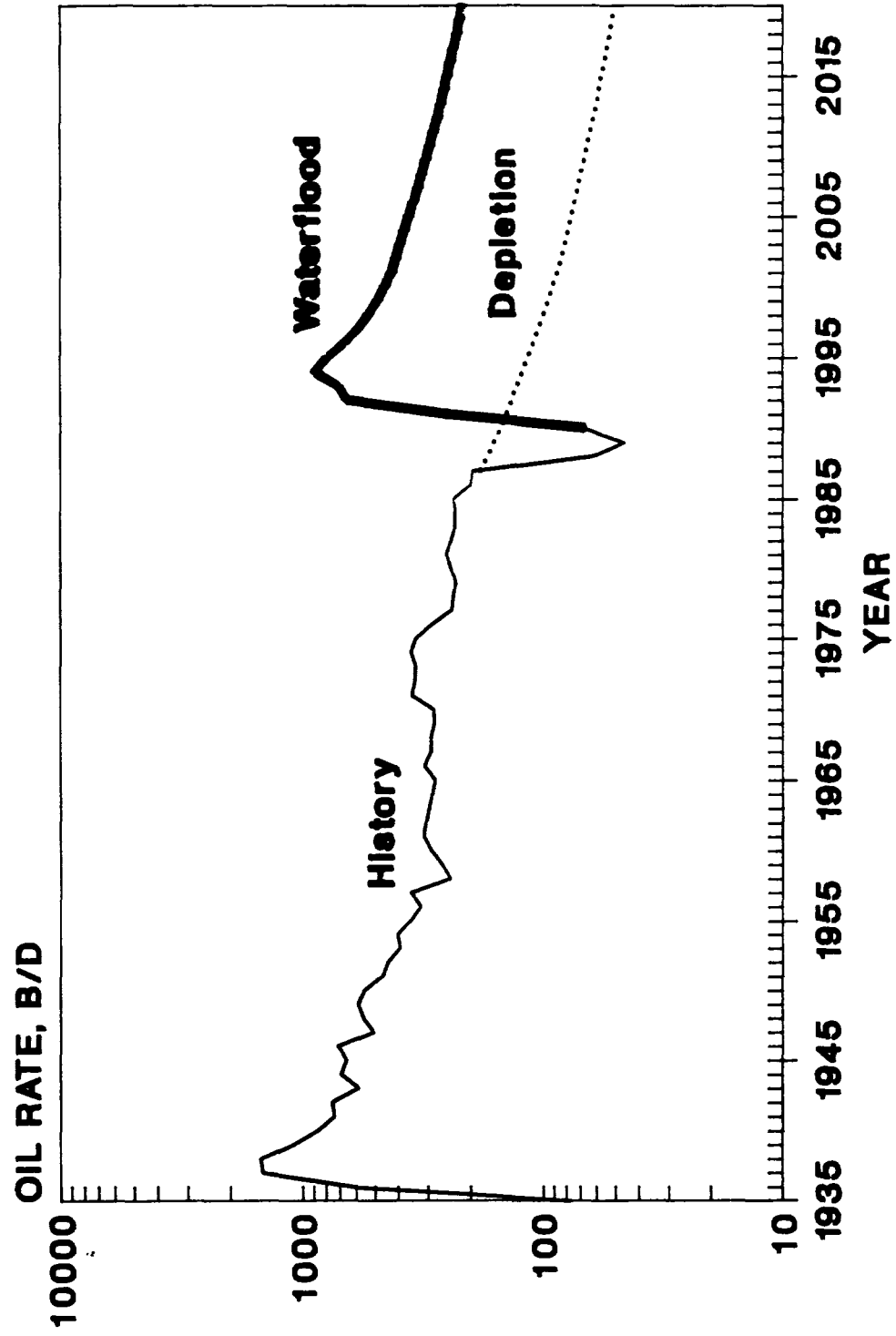
EMSU SIMULATION 9 PATTERN PRODUCTION HISTORY



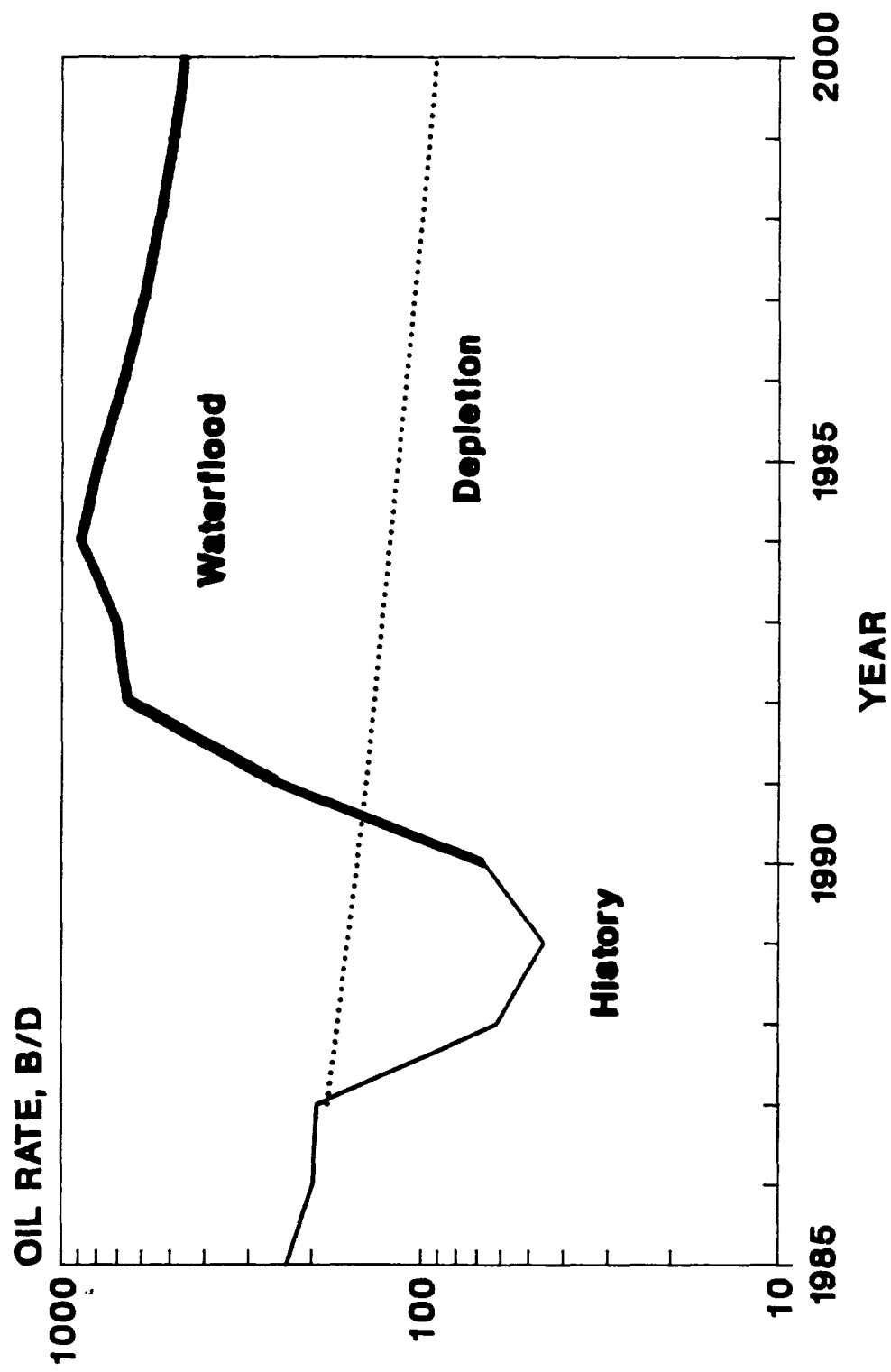
EMSU SIMULATION 9 PATTERN WATER PRODUCTION MATCH



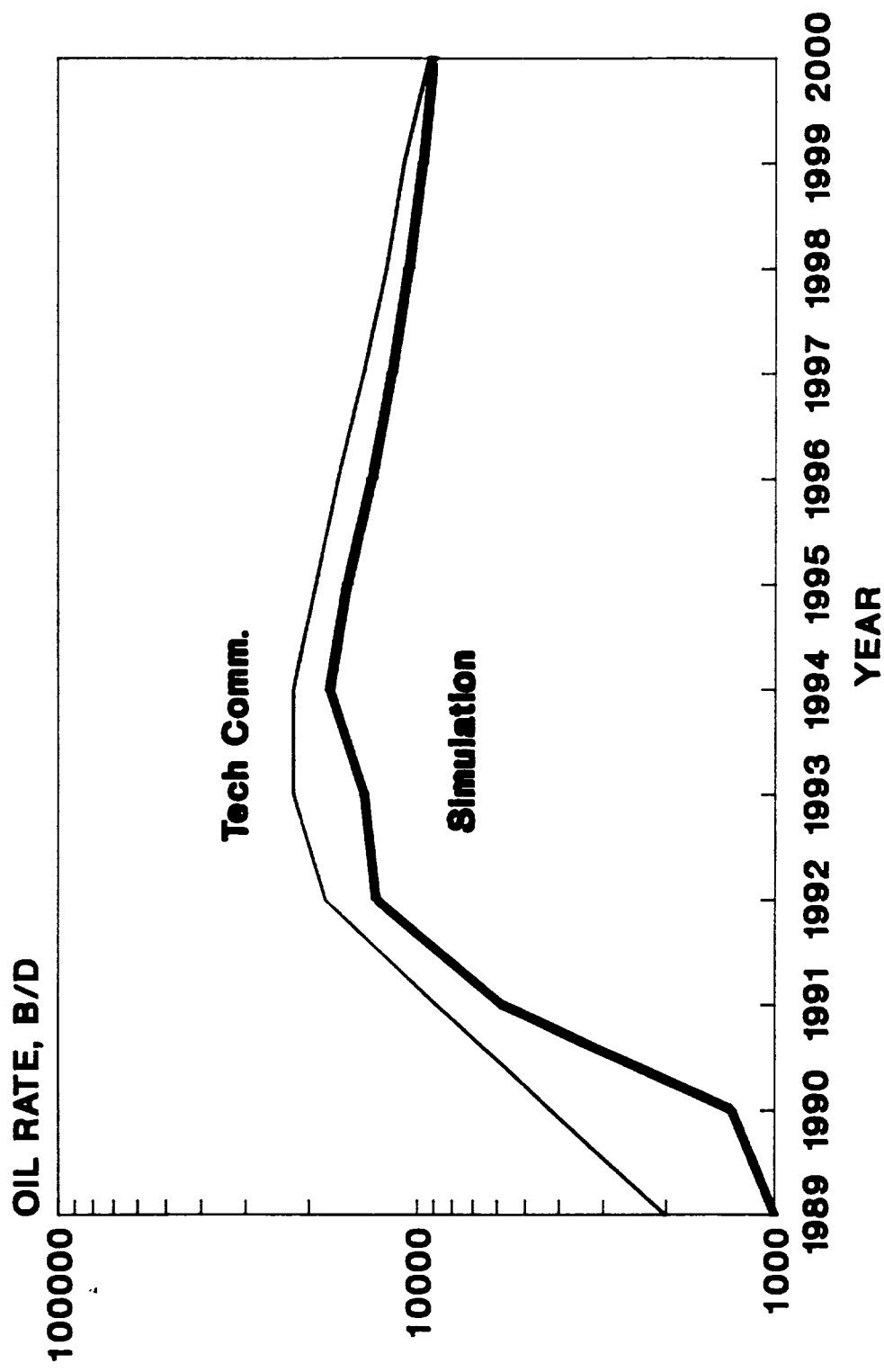
EMSU SIMULATION 9 PATTERN PREDICTION



EMSU SIMULATION 9 PATTERN PREDICTION



EMSU FIELD PREDICTION



EMSU Simulation

Ultimate Recoveries for Nine Patterns

- S/P Ratio = 0.51
- Primary = 9.8 MMSTB
- Primary Plus Secondary = 14.8 MMSTB
- Secondary = 5.0 MMSTB

EMSU Simulation

Summary

- History Match of 9-Pattern Strip Successful
- S/P Ratio for Field = 0.51
- Simulation & Technical Committee Waterflood Forecasts Are Similar

I. EMSU ACTIVITIES

A. WORK TO DATE

- 1. SURFACE FACILITIES**
- 2. DRILLING WELLS**
- 3. WORKOVERS**

B. FUTURE WORKOVERS

- 1. LEASE LINE CONVERSIONS**
- 2. WATER SHUTOFFS**
- 3. PATTERN ALIGNMENT**
- 4. STIMULATION**

C. HIGHLIGHTS

II. AFE STATUS

A. EXPENDITURES

B. COST SAVINGS

EMSU PRODUCTION SYSTEM

- * 217 MILES OF PRODUCTION LINES
AND FLOW LINES**
- * 12 SATELLITE BATTERIES**
- * 48 PRESSURE VESSELS**
- * 1 CENTRAL TANK BATTERY**
- * 4 PRESSURE VESSELS**
- * 12,000 BBLS OF TANKAGE**

TOTAL COST \$7.6MM

EMSU INJECTION SYSTEM

- * 5 MULTISTAGE GOULD
CENTRIFUGAL PUMPS**
- * 3 WEMCO FILTERS**
- * 5 10,000 BBL WATER TANKS**
- * 67 MILES OF INJECTION PIPE**
- * 46 INJECTION MANIFOLDS**

TOTAL COST \$8.2MM

EMSU GENERAL FACILITIES

- * 151 MILES OF NEW AND
IMPROVED ROADS**
- * 60 MILES OF POWER
DISTRIBUTION LINES**
- * SUPERVISORY CONTROL AND
DATA ACQUISITION SYSTEM
(SCADA)**

TOTAL COST \$2.9MM

EMSU DRILLING ACTIVITY

- * 28 PATTERN PRODUCERS

- * 2 INFILL PRODUCERS

- * 18 INJECTORS

- * 6 WATER SUPPLY WELLS

- * 19 WELLS WITH REPEAT
FORMATION TESTS

- * 17 WELLS CORED

EMSU WORKOVER ACTIVITY

- * 404 WORKOVERS PERFORMED
- * 270 WELLS DEEPENED
- * 115 CONVERSIONS
- * 116 RECONDITIONS/PERFS
CLEAN OUTS/ACIDIZE/LOG
- * 20 WATER SHUTOFFS
- * 8 PLUGBACK INJECTORS
- * 13 WSW REPAIRS
- * 10 CASING LEAKS
- * 6 INJECTOR TUBING LEAKS

FUTURE WORKOVER ACTIVITY

LEASE LINE INJECTOR CONVERSIONS

- * 12 PROBABLE
- * 28 POSSIBLE

WATER SHUTOFFS

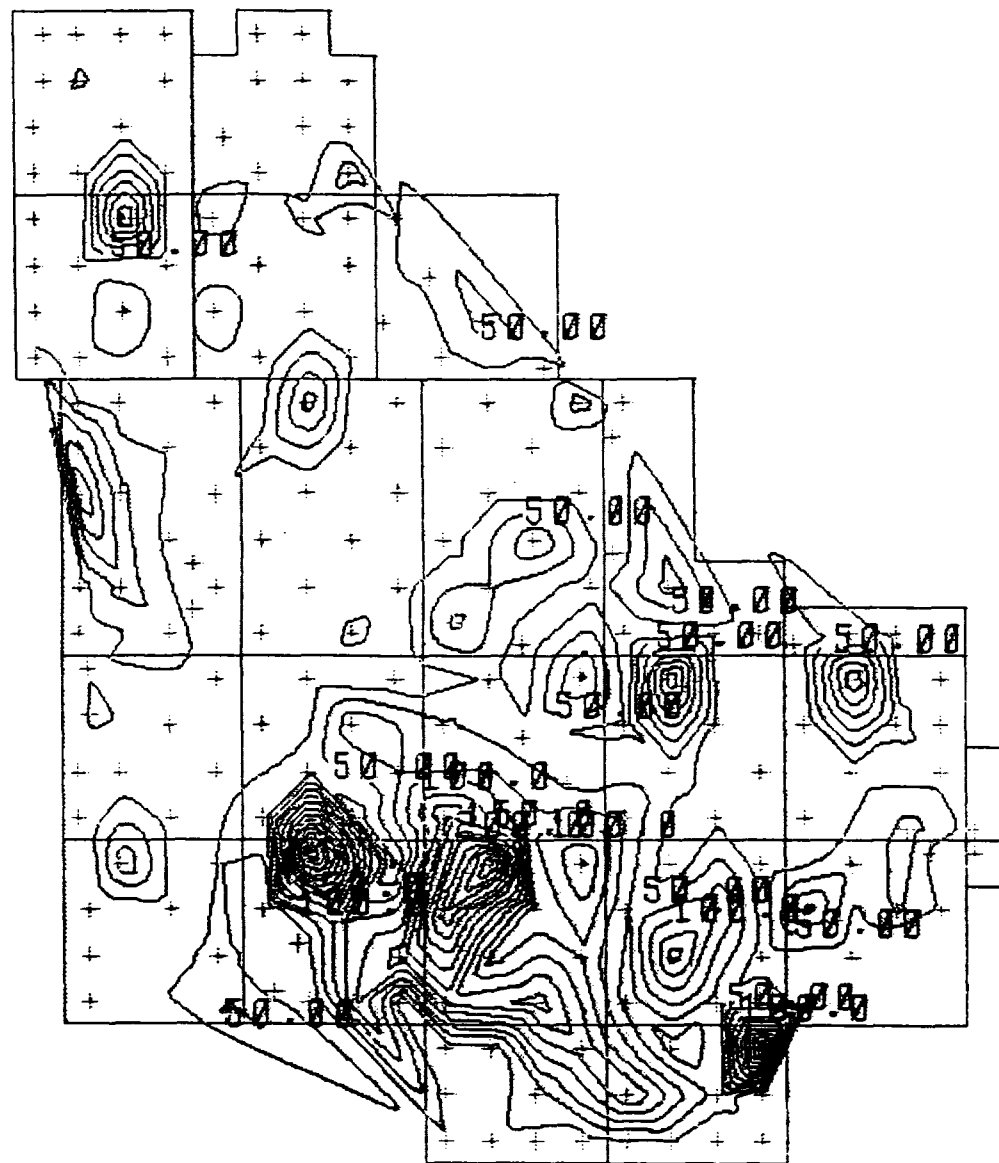
- * PLUGBACKS
- * LINERS
- * POLYMER SQUEEZES

PATTERN ALIGNMENT

- * PERFORATE PRODUCERS
- * PERFORATE INJECTORS
- * SHUTOFF OUT OF ZONE INJECTION
- * PROFILE MODIFICATION

STIMULATION

- * INCREASE INJECTIVITY
- * REMOVE WELLBORE DAMAGE



EMSU HIGHLIGHTS

- * ELIMINATED INTERMEDIATE CASING STRING**
- * AIR MIST DRILLING**
- * DRILLED ONLY 6 WSW, RUN 3 OR 4 PUMPS AT ONE TIME**
- * PORTABLE POC**
- * COLD WEATHER PRODUCING CAPABILITIES**
- * OPTIMIZED PUMPING UNITS**
- * PURCHASED SONIC FL DEVICE**

EUNICE MONUMENT SOUTH UNIT

PROJECT DRILLING & WORKOVER METHODS

Drilling

Original Method	-	Surf 11'3/4" @ 400' (FW Sands) Int. 8 5/8" @ 2700' (Salt Section) Prod. 5 1/2" to TD (last 600' drld. req'd. low fluid loss mud with high concentrations of LCM due to depleted zones)
Improved Method	-	Surf 8 5/8" @ 1200' Prod. 5 1/2" to TD (Used Air/Mist drilling program from 2700' to TD')
Results	-	ROP increased 101%, mud cost cut 66% . Rotating hours decreased 40% (Savings \$35K/well)
Workovers	-	Over 270 wells req'd. deepening
Original Methods	-	Deepened with mud containing large quantities of LCM
Improved Method	-	Deepened with Air/Mist System
Results	-	ROP increased 97%, decreased load wtr lost by 50%, job time cut 22%, formation damage decreased, oil prod. return almost instantly (W/O Saving \$16K/Well)

EMSU PORTABLE PUMP OFF CONTROLLERS

EMSU #238

- OCT 1988 - WELL PUMPING 17/96 BFPD
SONIC FL INDICATES <50' PS**
- NOV 1988 - INSTALLED POC
WELL NEVER PUMPED OFF
UPGRADED UNIT TO 320
INCREASED PLUNGER SIZE**
- DEC 1988 - WELL PUMPING 31/180 BFPD**

EMSU #302

- JUL 1989 - WELL PUMPING 1/216 BFPD
SONIC FL INDICATED +- 200' PS**
- LATE 1989 - INSTALLED POC
WELL NEVER PUMPED OFF
UPGRADED UNIT TO 456
INCREASED PLUNGER SIZE
WELL PUMPING 23/280 BFPD**

EMSU AFE STATUS

ORIGINAL AFE AMOUNT	\$60,599,000
EXPENDITURES TO DATE	\$49,455,366
BALANCE	\$11,143,634

FUTURE EXPENDITURES

PATTERN ALIGNMENT	\$1,500,000
PROBABLE CONVERSIONS	\$1,200,000
OTHER CONVERSIONS	\$2,800,000
INVESTMENT ADJUSTMENT	(\$1,061,000)
ESTIMATED FINAL EXPENDITURE	\$51,794,366

EMSU

AFE VS. EXPENDITURES

	<u>AFE</u>	<u>ACT</u>	<u>UNDER</u>
SURFACE FACILITIES	19.9	17.8	2.1
WORKOVERS	19.3	19.8	-0.5
DRILLING WELLS	12.2	10.3	1.9
EQUIP TO PUMP	8.2	1.5	6.7
DRILL AND EQUIP	20.4	11.7	8.6
CORING AND TESTING	1.0	0.2	0.8
TOTALS	60.6	49.6	11.0

(\$MM)

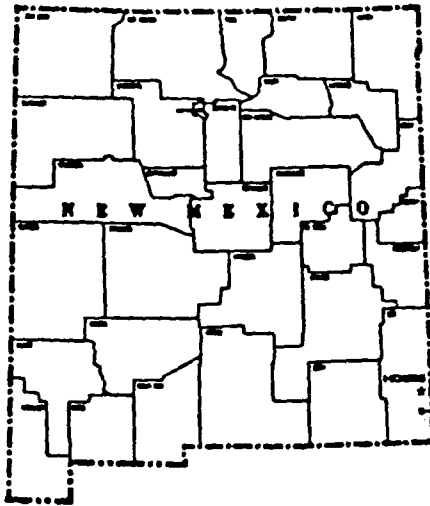
PROPOSED
EUNICE MONUMENT SOUTH UNIT EXPANSION
OUTLINE

- * EMSU Expansion Project Overview
 - Location
 - Stand Alone vs. Expansion Cost
 - Working Interest Owners
 - Proposed Well Status
 - Project Costs
 - Waterflood Response Prediction
- * Investment Adjustment / Cap. Exp's
 - Inv. Adj. Cost Basis
 - Prorata Share Determination
 - Investment Adjustment Revenue
 - Capital Expenditures
- * Operating Expense Sharing
 - Water Requirements
 - Expense Sharing example
- * Summary

EUNICE MONUMENT WEST UNIT

Lea County, New Mexico

WATERFLOOD PROJECT

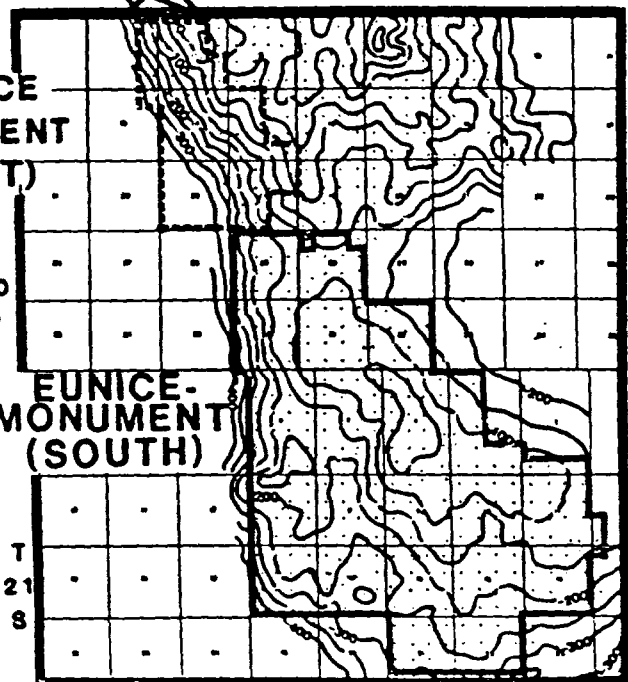


EUNICE
MONUMENT
(WEST)

T
20
S

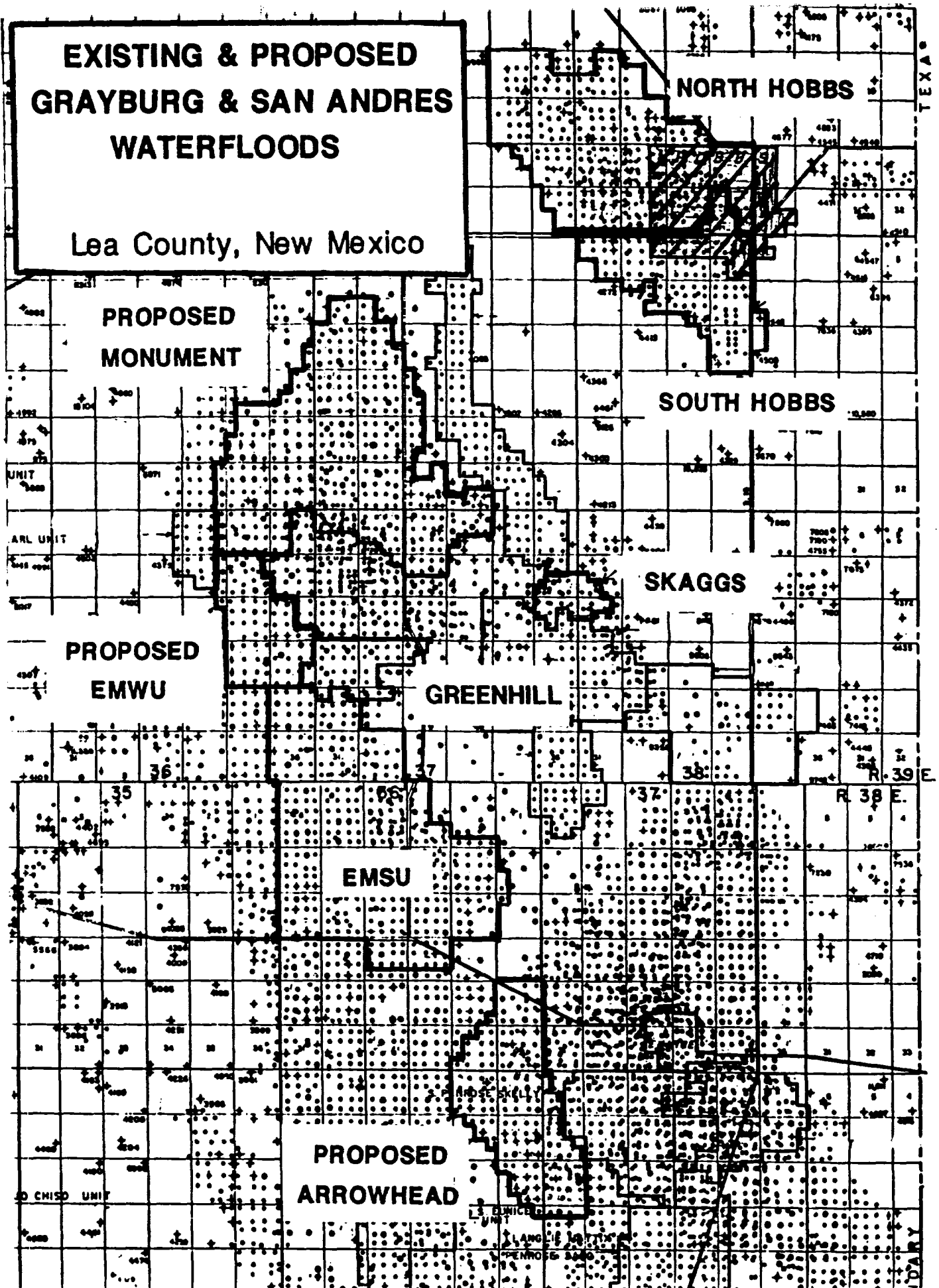
EUNICE-
MONUMENT
(SOUTH)

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21
S



EXISTING & PROPOSED GRAYBURG & SAN ANDRES WATERFLOODS

Lea County, New Mexico



EMSU EXPANSION
COMPARATIVE FACILITIES COSTS

	<u>EXPANSION</u>	<u>STAND ALONE</u>
DRILL AND COMPLETE 2 PRODUCERS	\$ 350,000	\$ 350,000
DRILL AND COMPLETE 3 INJECTORS	515,000	515,000
WORKOVER 47 PRODUCERS	2,961,000	2,961,000
CONVERT 23 PRODUCERS	1,656,000	1,656,000
SURFACE FACILITIES	3,524,000	3,524,000
INVESTMENT ADJUSTMENT	1,060,786	-
INJECTION FACILITIES	-	1,125,000
D & C 2 WATER SOURCE WELLS	-	782,000
D & C 1 SALT WATER DISPOSAL WELL	-	309,000
	10,066,786	11,222,000

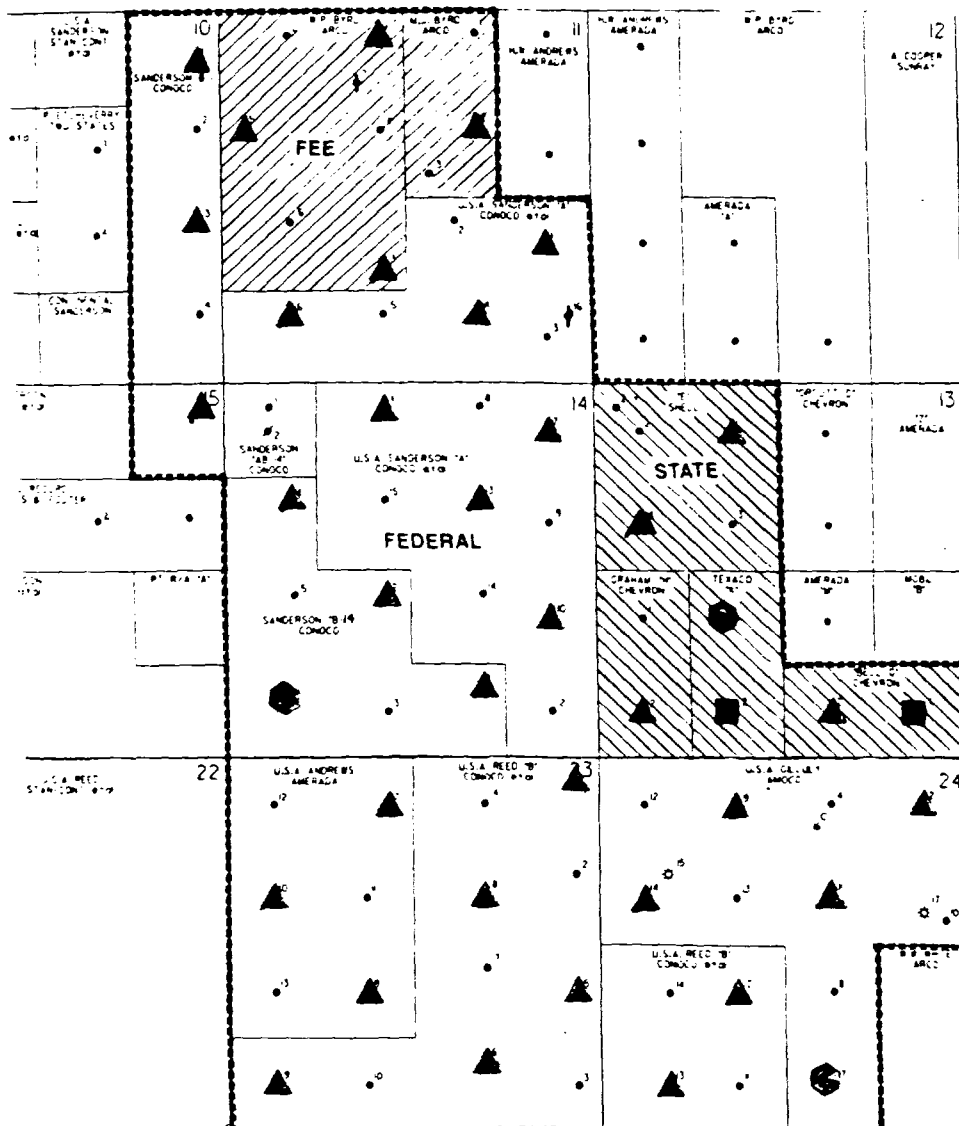
EUNICE MONUMENT WEST UNIT

Proposed Participation

<u>Partner</u>	<u>Working Interest</u>
Amoco	30.54%
Arco	29.40%
Chevron	19.40%
Conoco	13.83%
Shell	4.47%
Amerada Hess	1.72%
Texaco	0.64%

PROPOSED

EUNICE MONUMENT WEST UNIT



Drill & Complete 2 Producers - 

Drill & Complete 3 Injectors - 

Conv. 35 Prod's to Injection - 

(12 Lease/line)

Total After Fully Developed

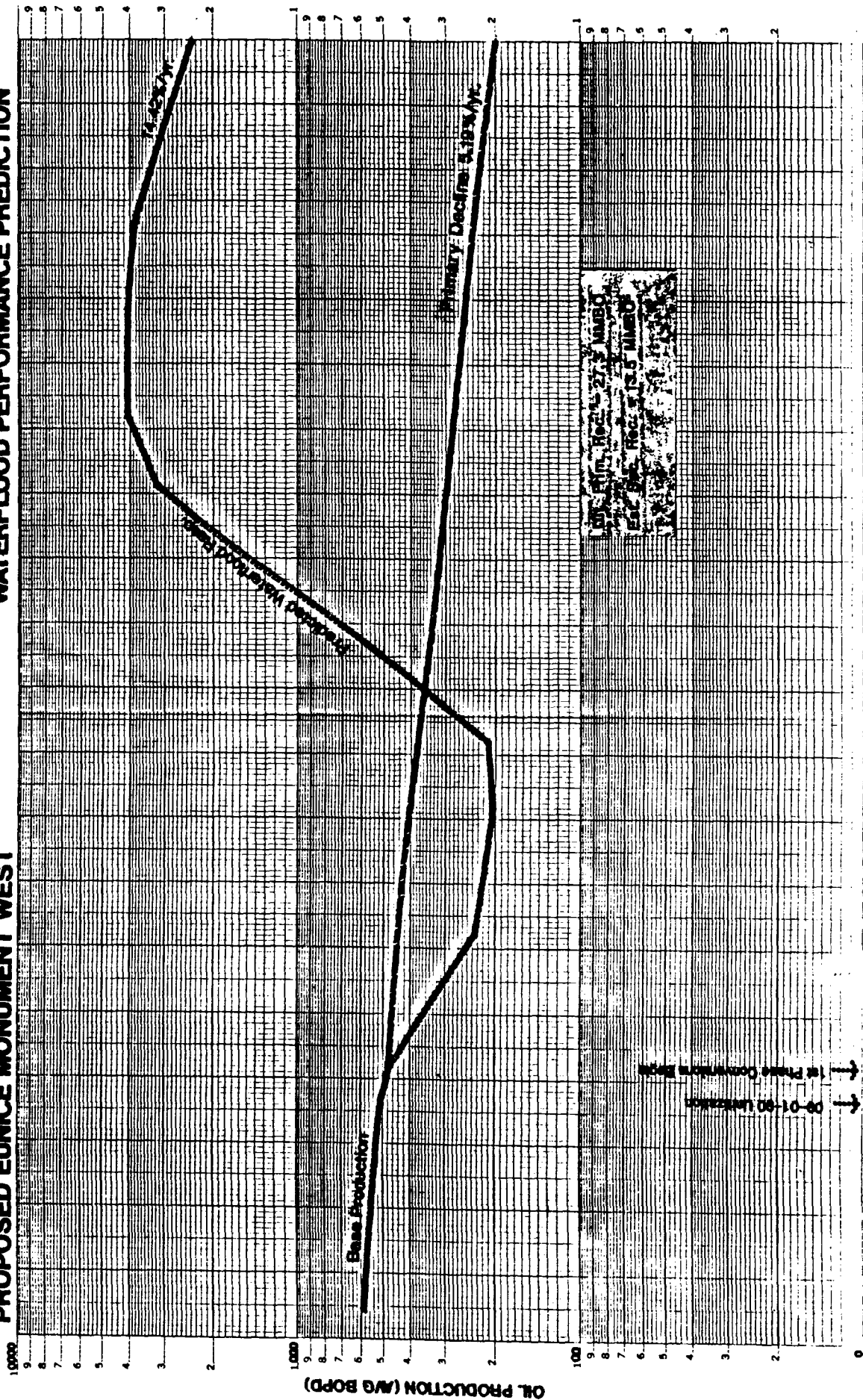
37 PRODUCERS
38 INJECTORS

**PROPOSED EUNICE MONUMENT WEST UNIT
PROJECT COSTS**

	Project 100% <u>(\$M)</u>
Drill and Complete 2 Producers	350
Drill and Complete 3 Injectors	515
Workover 47 Wells	2,961
Convert 35 Wells to Injectors	2,520
Surface Facilities	3,858
Investment Adjustment	<u>1,061</u>
TOTAL PROJECT	11,265

PROPOSED EUNICE MONUMENT WEST

WATERFLOOD PERFORMANCE PREDICTION



EMSU WIO MEETING (FEB. 27, 1990)

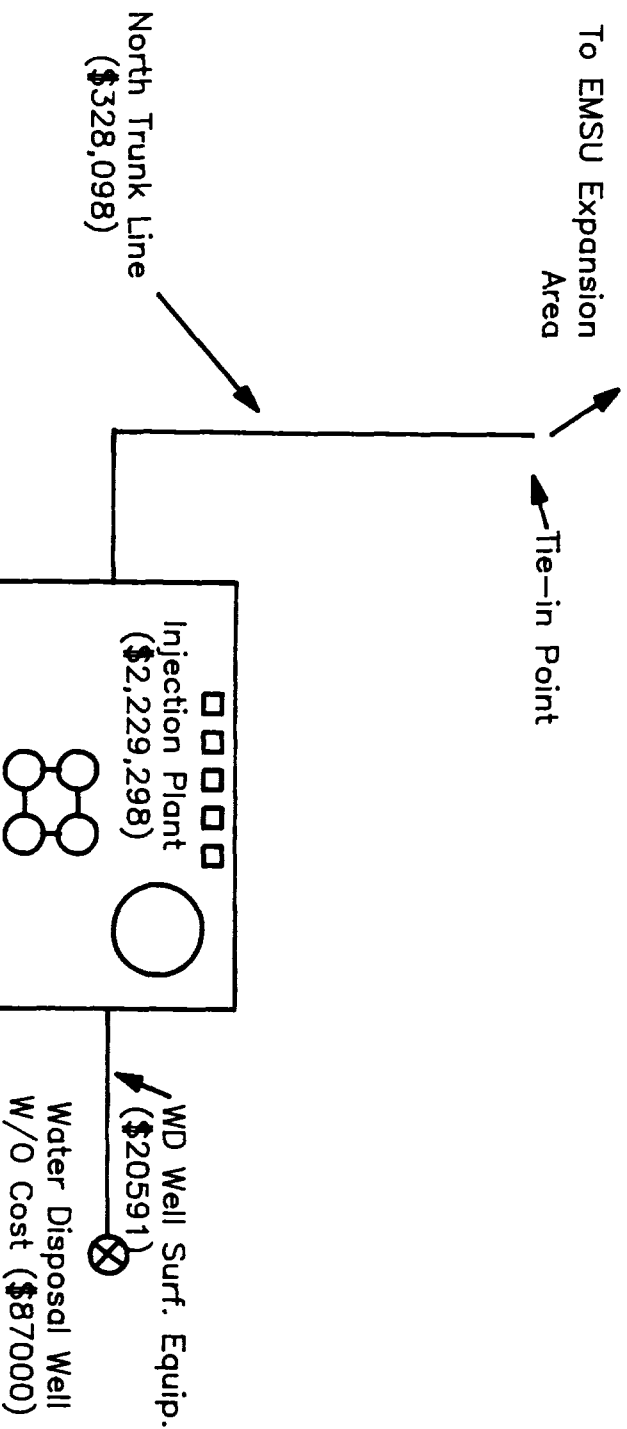
EMSU EXPANSION PROPOSAL

**GOAL: Develop Agreement on the Basis
of EMWU Admission into the EMSU**

ISSUES:

- 1. Determine Equitable Investment Adjustment
– Cost to buy into existing EMSU Injection System**
- 2. Determine Equitable Expense Sharing Agreement
– Proportionate sharing of common injection
system monthly expenses**
- 3. Determine Equitable Method of Sharing Capital
Expenditures on Common Injection System**

INVESTMENT ADJUSTMENT COST BASIS



Main Trunk Lines		
Water Inj. Plant	\$	328,098
Water Supply Wells (Surf. Equip.)	\$	2,229,298
Water Disposal Well (Surf. Equip.)	\$	403,974
Water Supply Wells (D&C and Equip.)	\$	20,591
Water Disposal Well (W/O Costs)	\$	3,511,044
	\$	87,000
TOTAL	\$	6,580,005

Investment Adjustment

Calculation of Capital Depreciation Cost (Units of Production Method)

EMSU Oil & Gas Production

Year	BOPY	MCFPY	BOEG	Dep./BOEG	Dep. Expenses
1987	469217	1830573	774312.5	\$1.18	\$ 913,688.75
1988	436255	1787207	734122.0	\$0.81	\$ 594,638.82
1989	475231	2207220	843101.0	\$1.05	\$ 885,256.05
1990	487200	1938317	810252.8	\$1.05	<u>\$ 850,765.48</u>

Total Dep. Expenses \$3,244,349.10
(est. 1990 values)

$$\text{Dep. (yrly)} = \frac{\text{Mineral (NBV)}}{\text{Proved Reser.}} + \frac{\text{Wells, Equip. \& Fac. (NBV)}}{\text{Proved Dev. Reser.}} + \frac{\text{Unprovided Aban. Cos.}}{\text{Proved Dev. Reser.}}$$

$$\begin{aligned}\text{Depreciation Factor} &= 1 - (\text{Tot. Dep. Exp.} / \text{Gross Exp. thru 1990}) \\ &= 1 - (3244349.1 / 50000000) = (.93511)\end{aligned}$$

$$\text{Depreciated EMSU Inv. Adj. Cost Basis} = \underline{\underline{\$ 6,153,048.33}}$$

EMSU / EMWU

METHODS OF DETERMINING PROPORTIONATE CHARGES
(FOR INVESTMENT ADJUSTMENT AND CAPITAL EXPENDITURES)

				AREA SHARE	
				EMSU	EMWU
1.	Fillup Volume by Area	WU = 47563 MBW	SU = 228383 MBW	82.76%	17.24%
2.	Acreage by Area	WU = 3000 ac	SU = 14190 ac	82.55%	17.45%
3.	Active Inj. Wells	WU = 25 wells	SU = 133 wells	84.18%	15.82%
4.	Yearly Inj. (Projected 1993)	WU = 5891 MBW	SU = 28329 MBW	82.78%	17.22%
5.	Secondary Reserves	WU = 13467 MBO	SU = 65800 MBO	83.01%	16.99%
6.	Average Month Injection (ex. 6/93)	WU = 16200 buipd	SU = 77450 buipd	82.70%	17.30%
7.	Hydrocarbon Pore Volume	WU = 163496 MBO	SU = 805800 MBO	83.13%	16.87%
8.	Total Potential Inj's by Area	WU = 38 wells	SU = 177 wells	82.33%	17.67%
9.	Remaining Inj. to 1.5 HCPV	WU = 245244 MBW	SU = 1124027 MBW	82.09%	17.91%
10.	Est. Ult. Primary	WU = 27269 MBO	SU = 134300 MBO	83.12%	16.88%
11.	Part. Formula on SU & WU total	.5 (cum) + .4 (rem. pri) + .1 (current)		81.70%	18.30%
				All Method Average	17.24%
				Low Value	15.82%
				High Value	18.30%

EMWU INVESTMENT ADJUSTMENT

Inv. Adj. by various EMWU Proportionate Share Methods

Method	<u>Average</u>	<u>T. C. Report</u>	<u>High EMWU%</u>	<u>Low EMWU%</u>
Inv. Adj.	\$1,060,786	\$1,056,188	\$1,126,008	\$973,412

(EMSU Cost Basis = \$ 6,153,048.33)

Investment Adjustment Impact on WIO's

Working Interest Owner Income

Company	<u>Average</u>	<u>T.C. Report</u>	<u>High EMWU%</u>	<u>Low EMWU%</u>	<u>Range</u>
Amerada Hess	\$13945	\$13885	\$14803	\$12797	\$ 2006
Exxon	\$57205	\$56957	\$60722	\$52493	\$ 8229
Shell WE&P	\$71713	\$71403	\$76123	\$65807	\$10316
Wiser	\$ 1124	\$ 1119	\$ 1193	\$ 1031	\$ 162
Koch Expl.	\$ 3498	\$ 3483	\$ 3713	\$ 3210	\$ 503
Turner Est.	\$ 925	\$ 921	\$ 982	\$ 849	\$ 133
Catron TR	\$ 193	\$ 192	\$ 204	\$ 177	\$ 28
Five St. 1987	\$ 2540	\$ 2529	\$ 2696	\$ 2331	\$ 365
Bruin Energy	\$ 5663	\$ 5638	\$ 6011	\$ 5196	\$ 815
Five St. 1988	\$ 3194	\$ 3180	\$ 3391	\$ 2931	\$ 459
Texaco	\$77579	\$77243	\$82349	\$71189	\$11160
Amoco	\$88937	\$88552	\$94405	\$81612	\$12794
Arco	\$217133	\$216192	\$230483	\$199248	\$31235
Pfluger	\$ 615	\$ 613	\$ 653	\$ 565	\$ 89
Conoco	\$99889	\$99456	\$106030	\$91661	\$14369
Catron JS TB	\$ 193	\$ 192	\$ 204	\$ 177	\$ 28
Perdew	\$ 182	\$ 182	\$ 194	\$ 167	\$ 26
Carpenter O&G	\$ 2230	\$ 2220	\$ 2367	\$ 2046	\$ 321
Energy Prod.	\$ 7715	\$ 7682	\$ 8190	\$ 7080	\$ 1110
Chevron	<u>\$406313</u>	<u>\$404552</u>	<u>\$431295</u>	<u>\$372846</u>	<u>\$58449</u>
TOTALS	\$1060786	\$1056188	\$1126008	\$ 973412	\$152596

EMSU / ENMU/
Injection Facility or Water Supply System
CAPITAL EXPENDITURE COST SHARING

Example - Cost to Partner - \$200000 cap. expenditure

WORKING INTEREST OWNERS

EMSU	Average	High	Low	Range	EMMU	Average	High	Low	Range
Amerada Hess	0.013146	2213	2148	65	Amoco	0.3054193	10531	11178	9665
Exxon	0.053926	8926	8812	267 *	Amco	0.2939991	10137	10760	9304
Shell W&P	0.067604	11190	11381	335	Chen	0.1933766	6638	7099	6139
Wiser	0.001059	175	178	5 *	Conoco	0.1283128	4769	5062	4377
Koch Expl.	0.003297	546	555	539	Shell	0.0446939	1541	1636	1414
Turner Est.	0.000871	144	147	142	Amerada	0.0171688	592	623	543
Catron TR	0.000181	30	31	30	Texaco	0.0064294	222	235	203
Five St. 1987	0.002394	396	403	391					
Brown Energy	0.005338	884	899	872					
Five St. 1988	0.003011	498	507	492					
Texaco	0.073133	12105	12312	11950	362				
Amoco	0.083840	13877	14115	13700	415				
Amco	0.204690	33880	34461	33447	1014				
Pfluquer	0.000058	96	98	95	3 *	Amoco		24408	24878
Conoco	0.094164	15586	15853	15437	466	Amco		24015	24460
Catron JS TB	0.000181	30	31	30	1 *	Chen		20087	20623
Perdue	0.000171	28	29	28	1 *	Conoco		20355	20449
Carpenter O&G	0.002101	348	354	343	10 *	Shell		12731	12796
Energy Prod.	0.007273	1204	1224	1183	36 *	Amerada		2763	2776
Chevron	0.383030	63399	64485	62587	1897	Texaco		12427	12185
TOTAL COST COMMON (EMSU & EMMU) PARTICIPANTS									
						Average	SU high	RU high	Range
						24408	23780	24878	-1038
						24015	23419	24460	-1041
						20087	20623	19487	937
						20355	20230	20449	-219
						12731	12796	12682	113
						2763	2757	2776	-20
						12427	12516	12185	330

TOTAL COST COMMON (EMSU & ENMU) PARTICIPANTS

	Average	SU	High	Low	High	Range
Amoco	24408	23780	24878			
Amco	24015	23419	24460			
Chen	20087	20623	19487			
Conoco	20355	20230	20449			
Shell	12731	12796	12682			
Amerada	2763	2757	2776			
Texaco	12427	12516	12185			

Others impacted as noted (*) on EMSU range

+ Highest EMSU ++ Highest ENMU Proportionate Share Method

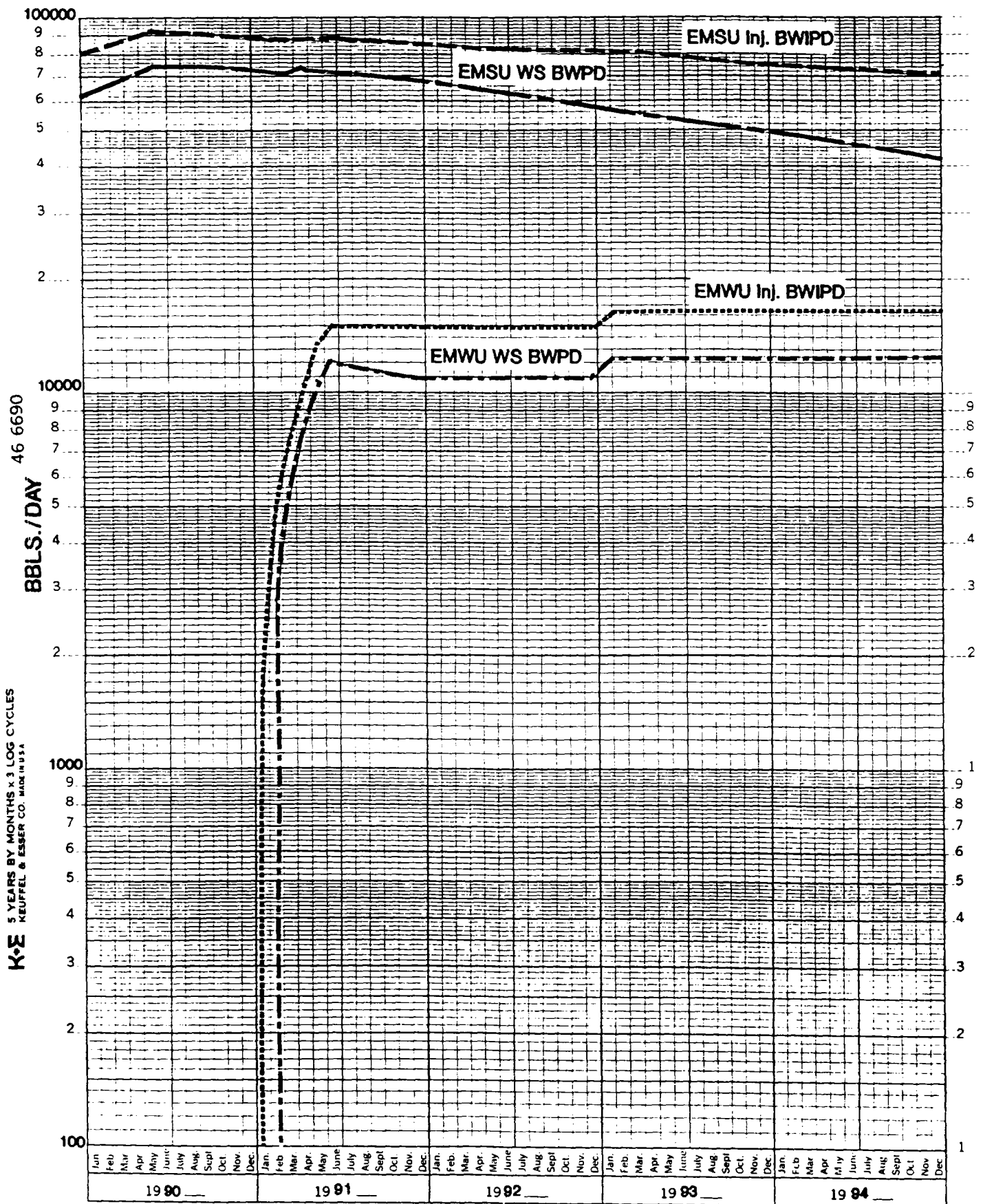
EMSU / EMWU Shared Operating Expenses

- * Base EMWU share of EMSU Operating Expenses on Monthly Water Injection and Water Supply take.
(% of total inj. and total wat. supplied)
- * Direct Measurement of Volumes and Elec.
- * Indirect Charges (contract labor, etc.)
coded differently and shared proportionally.
- * Interruptions in system affect both areas equally.

EMWU Operating Expenses

$$\begin{aligned} \text{Indirect Costs} & * \frac{\text{EMWU Inj. (BWIPM)}}{\text{Tot. Inj. (SU \& WU)}} + \text{Fac. Elec.} * \frac{\text{EMWU Inj.}}{\text{Tot. Inj.}} \\ & + \text{WSW Elec. Costs} * \frac{\text{EMWU WS (BPM)}}{\text{Total WS (BPM)}} \end{aligned}$$

Estimated water inj. & Water Supply EMSU EMWU



COMMON EMWU/EMSU OPERATING EXPENSES

EXAMPLE

<u>Expenses To Be Shared</u>	<u>Estimated Yrly Total</u>	<u>Estimated Common YRLY</u>	<u>Percent of Total EMSU</u>
Company Labor	\$ 535,284	\$ 93,656	17.5%
Contract Labor	\$ 48,554	\$ 2,428	5.0%
Contract Services	\$ 356,848	\$ 17,842	5.0%
Lease Fuels Other	\$ 69,190	\$ 6,919	10.0%
Util. Electric	\$1,627,267	\$1,072,693	65.9%
Chemical	\$ 627,407	\$ 347,109	55.3%
Matl's/Repair Parts	\$ 125,653	\$ 12,565	10.0%
Trans.(other)	\$ 82,525	\$ 8,253	10.0%
Overhead(7wells)	\$ 47,544	\$ 47,544	100.0%
 TOTAL	 \$3,520,272	 \$1,609,009	

MONTHLY EXPENSE EXAMPLE (BY AREA)

WATER REQUIREMENTS
EMSU & EMU

TYPICAL MONTH

Bbl/day (avg.)	1/91	4/91	7/91	12/91	1992	1993	1994
EMSU Inj.	87462	88102	88302	85901	82323	77615	72647
EMU Inj.	1500	10500	15000	15000	15000	16141	16200
Total Inj.	88962	98602	103302	100901	97323	93756	88847
EMSU Mat Prod	15103	15737	16397	17559	19253	22698	26752
EMU Mat Prod	2072	2551	3140	4000	4000	3845	3840
EMSU Mat Supply	72359	72365	71905	68342	67665	54917	45835
EMU Mat Supply	0	7949	11860	11000	11000	12296	12360
Total Supply	72359	80314	83765	79342	78665	67213	58195

ALLOCATIONS (% of Total)

EMSU Inj.	98.31%	89.35%	85.48%	85.13%	84.68%	82.78%	81.77%
EMU Inj.	1.68%	10.65%	14.52%	14.87%	15.32%	17.22%	18.23%
EMSU Mat Sup	100.00%	90.10%	85.84%	86.14%	85.27%	81.71%	78.78%
EMU Mat Sup	0.00%	9.90%	14.16%	13.86%	14.73%	18.29%	21.22%

Expenses by Area (shared only)

Exp's by Area = Fac. Exp + (Area Inj./Tot. Inj.) + WSH Exp. * (Area WS / Tot. WS)
+ Overhead (7 wells) * (Area Inj. / Tot. Inj.)

SAMPLE EXPENSES (shared only) BY AREA

EMSU	\$121,693	\$120,032	\$119,027	\$115,446	\$110,870	\$102,247	\$93,935
EMU	\$1,461	\$13,965	\$20,040	\$19,688	\$19,795	\$21,705	\$23,020

% of Total

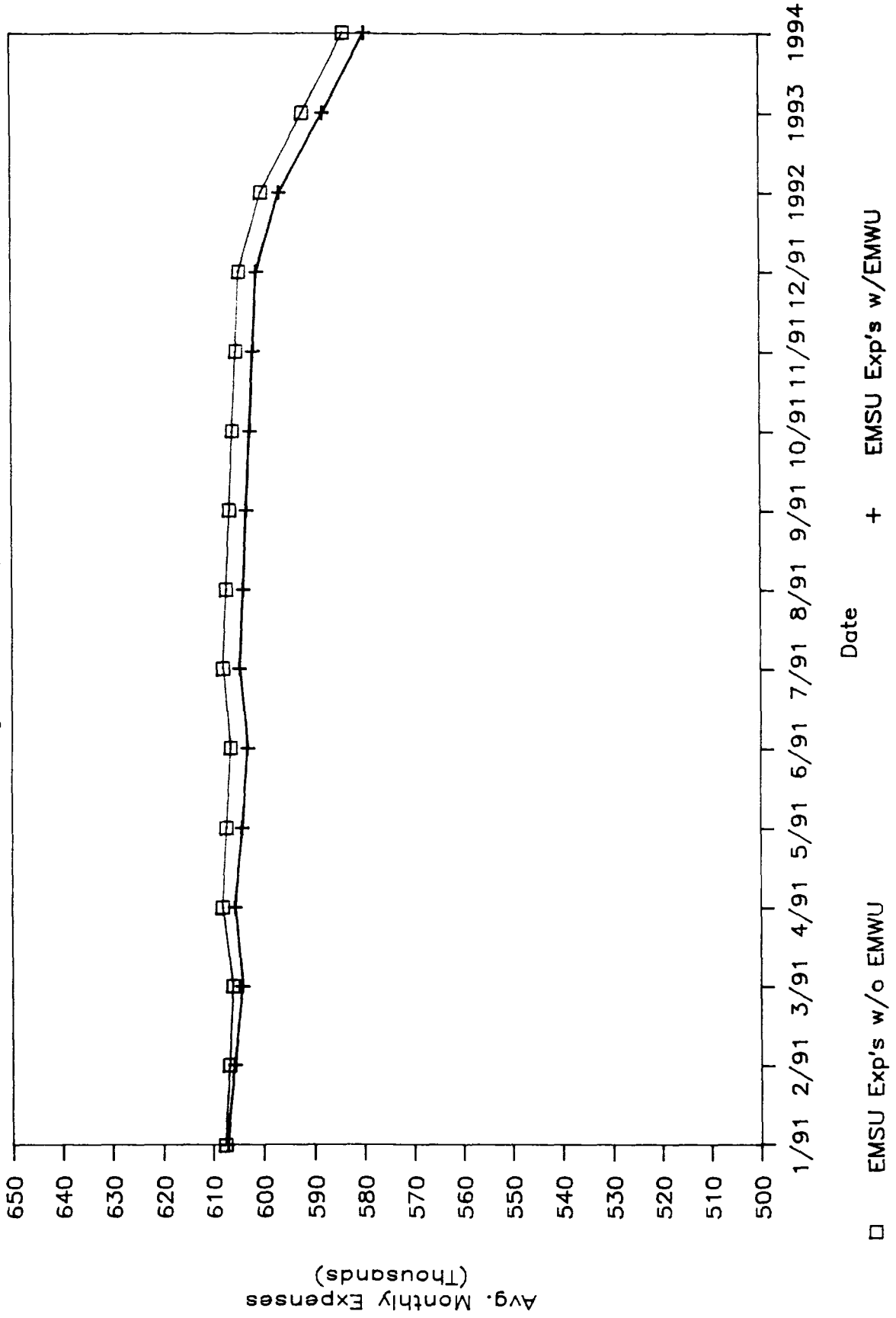
EMSU	98.81%	89.53%	85.59%	85.43%	84.85%	82.49%	81.01%
EMU	1.19%	10.47%	14.41%	14.57%	15.15%	17.51%	18.99%

Total EMSU Expenses (assumes most exp's don't inflate)

w/o Expansion	\$607,625	\$608,032	\$607,991	\$604,493	\$600,023	\$591,819	\$583,777
w/ Expansion	\$607,227	\$605,566	\$604,561	\$600,980	\$596,404	\$587,781	\$579,469
Change	\$4,398	\$2,466	\$3,430	\$3,513	\$3,619	\$4,038	\$4,308

EMSU Expense Impact With EMWU Expansion

Average Monthly Expenses



EUNICE MONUMENT SOUTH UNIT
EXPENSE IMPACT
WITH INCLUSION OF EMWU EXPANSION

Area Injection / Water Supply Required

Typical Month -- Dec. 1991

<u>Area</u>	<u>Injection</u>	<u>Water Supply Req'd</u>
EMSU	85901 bwipd	68342 bwpd
EMWU	15000 bwipd	11000 bwpd

TOTAL EXPENSES (on EMSU)

With EMWU Expansion	<u>\$620668</u>	Difference of \$16175 (EMWU absorbs % of Fixed Costs)
Without Expansion	<u>\$604493</u>	

SHARED EXPENSES WITH EMWU EXPANSION (Total \$135134)

EMSU share	<u>\$115446</u>
EMWU share	<u>\$ 19688</u>

IMPACT ON EMSU EXPENSES

EMSU Expenses <u>with</u> EMWU Expansion	<u>\$600980</u>
EMSU Expenses <u>without</u> EMWU Expansion	<u>\$604493</u>
Net Savings	<u>\$ 3515/mo.</u>

EXAMPLE IMPACT TO WORKING INTEREST OWNER

PARTICIPATION = 10 %

Expenses with EMWU Expansion =	\$60098	Savings of
Expenses without EMWU Expansion =	\$60449	\$ 351 / mo.

Investment Adjustment Rebate = \$106079

NET EFFECT -- \$106079 Investment Rebate + avg. \$351/mo savings

PROPOSED
EUNICE MONUMENT SOUTH UNIT
EXPANSION
SUMMARY

- * Expand EMSU to include 3000 ac. tract to the north of the existing unit boundary.
- * Treat each area as separate tract.
- * EMSU Expansion purchase a 17.24% interest in existing Injection System for \$ 1060786.
- * Future common Capital Expenditures shared at 17.24% expansion area, 82.76% existing area prorata share.
- * Common Operating Expenses shared based on water injection and water supply take by area.