FOSSIL ENERGY

DOE/MC/08341-31
Vol. 1, Part 2

TARGET RESERVOIRS FOR CO_2 MISCIBLE FLOODING
TASK TWO: SUMMARY OF AVAILABLE RESERVOIR AND GEOLOGICAL DATA

Task Two Final Report

Vol. 1: Permian Basin Geological and Reservoir Data
Part 2: ADAIR - San Andres through EUNICE MONUMENT - Grayburg/San Andres

Work Performed for the Department of Energy
Under Contract No. DE-AC21-79MC08341

Date Published—October 1981

Gruy Federal, Inc.
Houston, Texas

Bartlesville Project Office
U. S. DEPARTMENT OF ENERGY
Bartlesville, Oklahoma

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UNITED STATES DEPARTMENT OF ENERGY

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ABSTRACT

This report describes work performed by Gruy Federal, Inc. as the second of six tasks under contract no. DE-AC21-79MC08341 with the U.S. Department of Energy. The stated objective of the study is to build a solid engineering foundation to serve as the basis for field mini- and pilot tests in both high and low oil saturation carbonate reservoirs for the purpose of extending the technology base in carbon dioxide miscible flooding.

The six tasks in this study are as follows:

I. Summary of available CO_2 field test data
II. Summary of existing reservoir and geological data
III. Selection of target reservoirs
IV. Selection of specific reservoirs for CO_2 injection tests
V. Selection of specific sites for test wells in carbonate reservoirs
VI. Drilling and coring activities.

This report for Task Two consists of a summary of existing reservoir and geological data on carbonate reservoirs located in west Texas, southeast New Mexico, and the Rocky Mountain states and is contained in two volumes, each with several parts. This volume, in four parts, is a summary of reservoir data for fields in the Permian basin of west Texas and southeast New Mexico. Volume two contains data for fields in sedimentary basins in the Rocky Mountain states.

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DATA PRESENTATION

Data Source Code

Each field summary contains data from numerous sources; hence, a data source code (defined in Table 1) is used to identify each source of information. Frequently, for a given data item, such as DISCOVERY YEAR in the following example, the data reported by different sources differ. On the field summary data sheets, we show each source of data in the following manner:

2,3,1 DISCOVERY YEAR: 3-1950, 6-1949, 1949

In this example, 2 indicates that the Texas Railroad Commission Enhanced Oil Recovery Projects Report (1-1978) shows the discovery month and year to be 3-1950; 3 indicates that the Texas Railroad Commission Annual Report (1-1980) shows the discovery month and year to be 6-1949; and 1 indicates that the Petroleum Data System TEXS data file shows the discovery year to be 1949. When two sources of information agree on a data item, this is shown in the following manner:

2,3, STOCK TANK OIL GRAVITY (°API) 40

Figure 1, Divisions and Boundaries of the Permian Basin, shows sub-basin boundaries used in this report. Figure 2 is a composite correlation chart for the Permian basin. Exhibit I contains a Texas Railroad Commission District Map.

Explanation of Terms and Abbreviations

For the Permian basin of west Texas and southeast New Mexico, we have adopted the definitions and terms used by the Texas Railroad Commission for enhanced recovery projects, shown in Exhibit 1. One additional abbreviation is used on the secondary recovery projects data sheet: an abbreviation for portion (P), field-wide (FW), or field-wide by summing acreage in all projects (FW/P). We use the term "portion" to describe secondary or enhanced projects that are less than half the reservoir acreage as stated by that project's operator.

TABLE 1

DATA SOURCE CODE FOR TEXAS AND NEW MEXICO FIELDS

CODE	SOURCE OF INFORMATION
0	NOT DETERMINED
1	PETROLEUM DATA SYSTEM TEXS OR OILY DATA BASES
2	TEXAS RAILROAD COMMISSSION ENHANCED OIL RECOVERY PROJECTS REPORT (1-1978)
3	TEXAS RAILROAD COMMISSION ANNUAL REPORT (1-1980)
4a	TEXAS WATER DEVELOPMENT BOARD REPORT 157, A SURVEY OF THE SUBSURFACE SALINE WATER OF TEXAS (1972)
4b	OIL SCOUTS REPORT (1977-78)
5	OIL & GAS FIELDS IN WEST TEXAS - A SYMPOSIUM (1956 & 1965) and ABILENE GEOLOGICAL SOCIETY (1952, 1954, 1956, 1960, 1976) and PANHANDLE GEOLOGICAL SOCIETY, GENERAL INFORMATION
5a	OIL & GAS FIELDS IN WEST TEXAS - A SYMPOSIUM, West Texas Geological Society Pub. No. 66-52 (1966)
5b	OIL & GAS FIELDS IN WEST TEXAS - A SYMPOSIUM, West Texas Geological Society Pub. No. 69-57 (1969)
5c	ABILENE GEOLOGICAL SOCIETY, GEOLOGICAL CONTRIBUTIONS 1952, Monroe G. Cheney Memorial Volume
5d	ABILENE GEOLOGICAL SOCIETY, GEOLOGICAL CONTRIBUTIONS 1954
5e	ABILENE GEOLOGICAL SOCIETY, GEOLOGICAL CONTRIBUTIONS 1956
5f	ABILENE GEOLOGICAL SOCIETY, GEOLOGICAL CONTRIBUTIONS 1960
5g	ABILENE GEOLOGICAL SOCIETY, GEOLOGICAL CONTRIBUTIONS 1976
6	ROSWELL (NEW MEXICO) GEOLOGICAL SOCIETY, SYMPOSIUM OF OIL AND GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1956, 1960, 1967 1977 GENERAL INFORMATION
6a	A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1956, Roswell Geological Society
6b	A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1960, Roswell Geological Society
6c	A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1967, Roswell Geological Society
6d	THE OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1977 SUPPLEMENT, Roswell Geological Society
7	Landes, K.S., 1970, PETROLEUM GEOLOGY OF THE UNITED STATES: John Wiley & Sons, New York, New York.
8a	LEXICON OF PERMIAN STRATIGRAPHIC NAMES OF WEST TEXAS AND SOUTHEASTERN NEW MEXICO, 1976, West Texas Geological Society
8b	LEXICON OF PRE-PENNSYLVANIAN STRATIGRAPHIC NAMES OF WEST TEXAS AND SOUTHEASTERN NEW MEXICO, 1958, West Texas Geological Society
9a	Society of Petroleum Engineers ENHANCED RECOVERY FIELD REPORTS (Quarterly)
9b	Society of Petroleum Engineers Journal
9c	Journal of Petroleum Technology
10	Oil & Gas Journal
11	American Petroleum Institute
12a	American Association of Petroleum Geologist, Bulletin
12b	Society of Economic Paleontologists and Mineralogist, Journal of Sedimentary Petrology
12c	Other Geological Publications (Refrenced on Field Data Sheet)

DATA SOURCE CODE FOR TEXAS AND NEW MEXICO FIELDS, cont.

CODE	SOURCE OF INFORMATION
13a	Gulf Universities Research Consortium, THE STATE OF TEXAS GOVERNOR's ENERGY ADVISORY COUNCIL, ASSESSMENT OF ENHANCED RECOVERY TECHNOLOGY AS A MEANS FOR INCREASING TOTAL CRUDE OIL RECOVERY IN TEXAS, GURC Report 141, 1974
13b	Gulf Universities Research Consortium, APPENDICES 1-5 of PRELIMINARY FIELD TEST RECOMMENDATIONS AND PROSPECTIVE CRUDE OIL FIELDS OR RESERVOIRS FOR HIGH PRIORITY FIELD TESTING, GURC Report 148, 1976
13c	Gulf Universities Reserch Consortium, CANDIDATE RESERVOIRS FOR ENHANCED OIL RECOVERY, GUIDELINES FOR THEIR SELECTION AND APPRAISAL OF SIGNIFICANT TESTS TO DATE, GURC Report 153, 1977
14a	Energy Research and Development Administration, ANALYSIS AND ASSESSMENT OF ENHANCED OIL RECOVERY BASELINE DATA, ERDA 76-155/1 & ERDA 76-155/2, October, 1976, prepared by LaRue, Moore and Schafer, Dallas, Texas, including as Ehibit 2-3, Task II, p 1-51 and analysis and reproduction of Lewin & Associates, Inc., The Potential and Economics of Enhanced Oil Recovery (Data Base), April, 1976
14b	National Petroleum Council, ENHANCED OIL RECOVERY, AN ANALYSIS OF THE POTENTIAL FOR ENHANCED OIL RECOVERY FROM KNOWN FIELDS IN THE UNITED STATES--1976-2000, Appendix E, p.144-146, December, 1976
14c	Office of Technology Assessment, ENHANCED OIL RECOVERY POTENTIAL IN THE UNITED STATES, Appendix A-OTA Data Base p. 111-137, and Analysis of Reservoirs in Data Base to Determine Amount and Distribution of Remaining Oil, p. 139-141, January, 1978
14e	Energy Information Administration, EVALUATION OF TARGET OIL IN THE 50 MAJOR OILFIELDS OF THE PERMIAN BASIN FOR ENHANCED OIL RECOVERY, BETC/RI-78/15, October, 1978
15	PERMIAN BASIN FIELD MAP (1980 Edition), Midland Map Company
16a	TEXAS RAILROAD COMMISSION, MER HEARINGS SUMMARIES, 1965-66-67 Extracted from issues of the OIL REGULATION REPORT
16b	TEXAS RAILROAD COMMISSION, SECONDARY RECOVERY APPLICATION SUMMARIES, 1976, Extracted from issues of the OIL REGULATION REPORT
16c	MAXIMUM EFFICIENTY RATE (MER) HEARINGS IN TEXAS, Data supplied by the Energy Information Agency office in Dallas, 1979
17	GRUY Calculations for Missing Reservoir Properties Data (Explation of Calculations in Text), 1979-1980
18	New Mexico Oil & Gas Engineering Committee, ANNUAL REPORT, VOLUME 1 SOUTHEAST NEW MEXICO, 1979

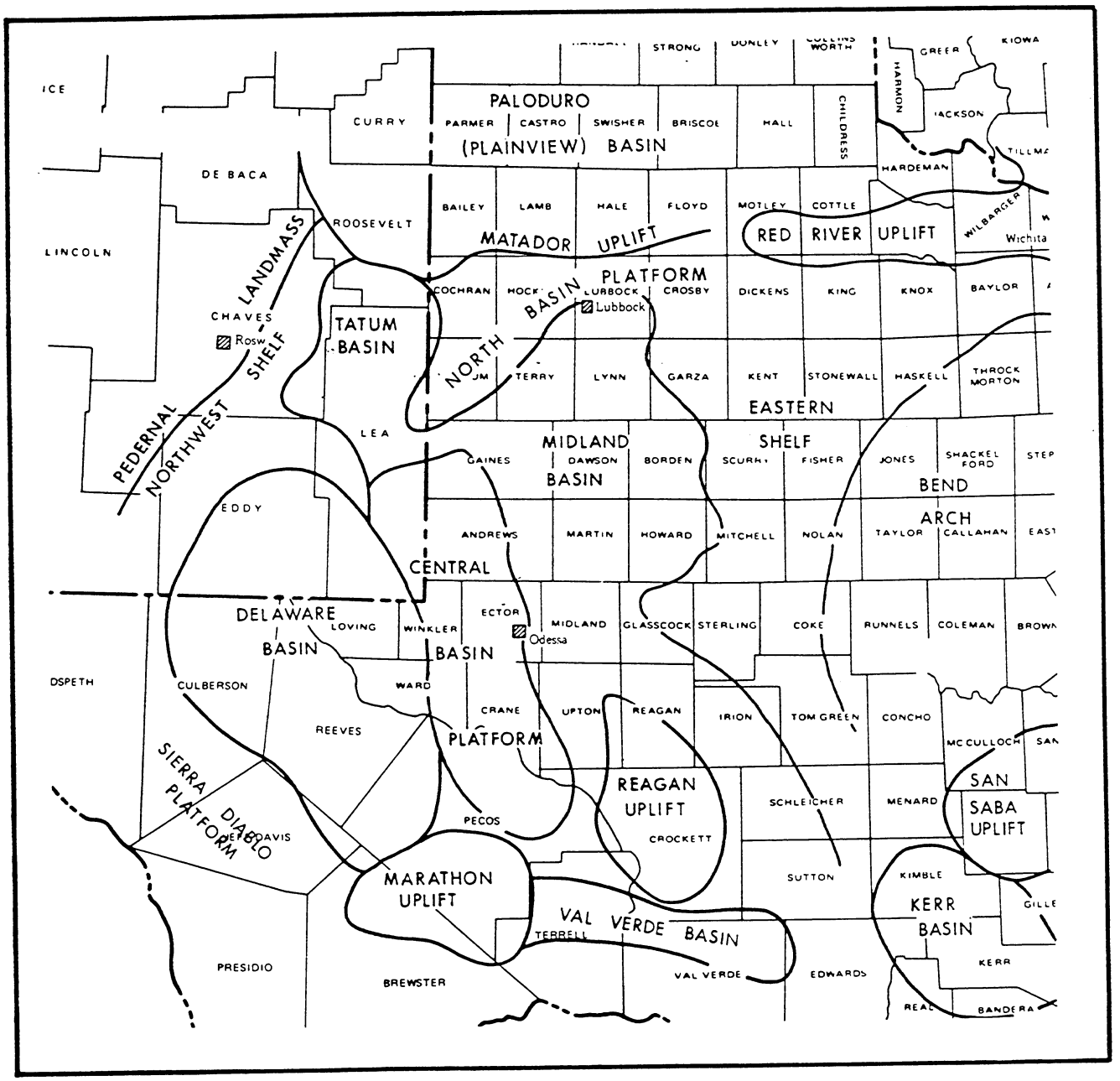
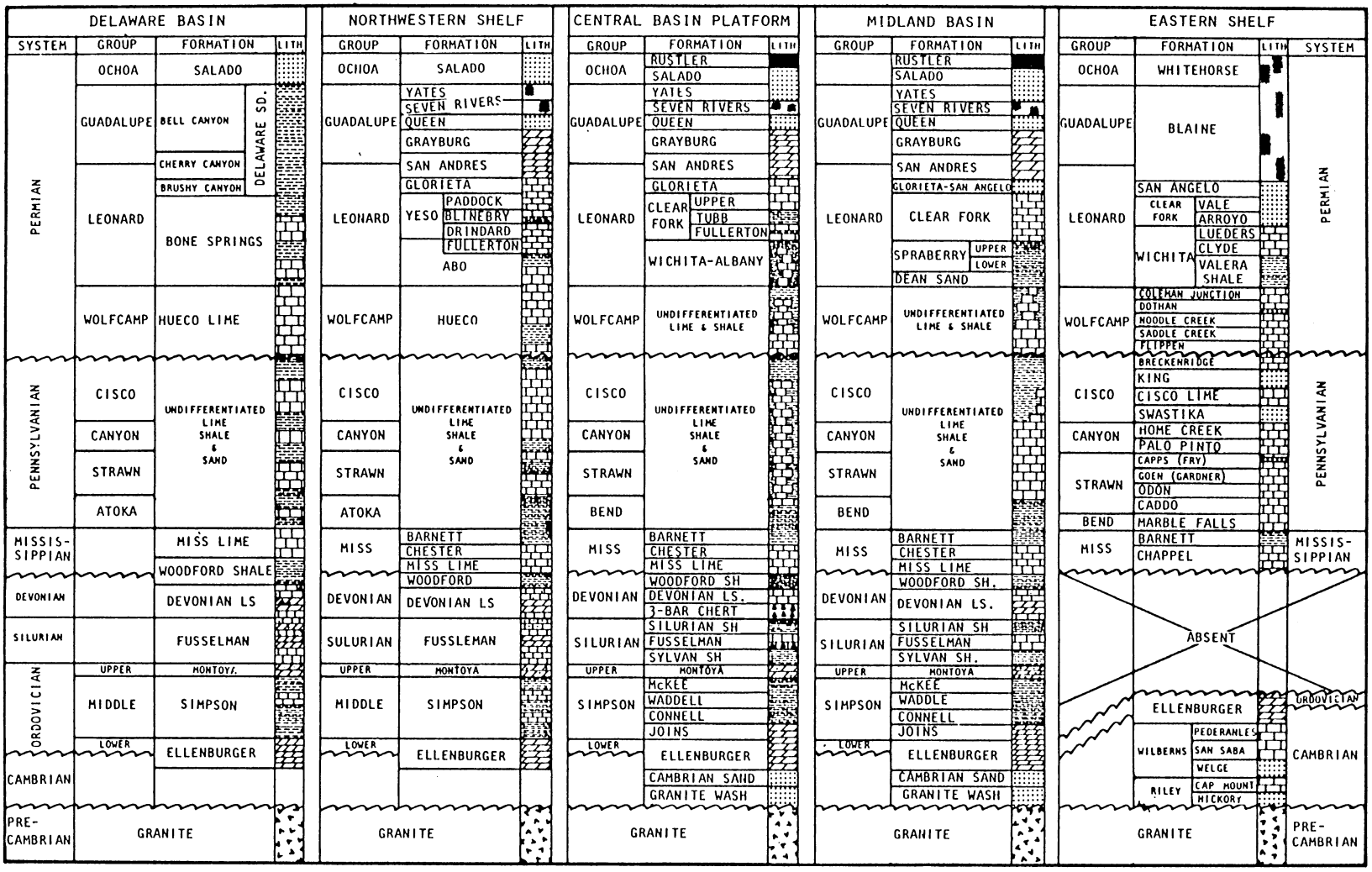


FIGURE 1

DIVISION AND BOUNDARIES
OF PERMIAN BASIN



Legend

LIMESTONE
DOLOMITE
SANDSTONE
ANHYDRITE
SHALE
CHERT
IGNEOUS OR METAMORPHIC

FIGURE 2

CORRELATION CHART WITH LITHOLOGIC SECTION FOR PERMIAN BASIN

EXPLANATION OF TERMS

ENHANCED RECOVERY:

In a generic sense, the term describes all fluid injection operations where the intent of the operator is to improve recovery from the reservoir. In a more limited sense, the term is used to distinguish those projects which may qualify for special allowable treatment under Statewide Rule 47 regarding allowable transfer for injection wells. (This explanation does not attempt to address "Enhanced Recovery" as referred to under the U. S. Natural Gas Policy Act of 1978).

WATER CLASSIFICATION:

The following categories are compatible with the Texas Department of Water Resources classifications:

Fresh Water - less than 1,000 PPM dissolved solids

Brackish Water - 1,000 to 3,500 PPM dissolved solids

Salt Water - over 3,500 PPM dissolved solids

M BBLS:

Thousands of barrels, M being the abbreviation for "one thousand".

MMCF:

Millions of cubic feet, MM being the abbreviation for "one million".

From, TEXAS RAILROAD COMMISSION, Secondary and Enhanced Recovery Operations in Texas to 1978, p. VI.- X.

ABBREVIATIONS
(Used in Project Table)

*** Between Item (5) and Item (6)**

*	Used as a separator between Item (5), Field Name, and Item 6, Reservoir, when Reservoir is shown.

Item (24) – – – TYPE INJ FLUID

SW	Salt Water
BW	Brackish Water
FW	Fresh Water
G	Natural Gas
AIR	Air
LPG	Liquid Petroleum Gas
STM	Steam
HW	Hot Water
NRG	Nergas
IG	Inert Gas
FG	Flue Gas
CO_2	Carbon Dioxide
PRG	Plant Residue Gas
PWW	Plant Waste Water
N_2	Nitrogen
CW	Carbonated Water
SSW	Surfactant & Salt Water
DOG	De-ethanized Overhead Gas
TLW	Tank Liquid Waste
UNK	Unknown

Item (25) – – – TYPE INJ

WF	Waterflood
MD	Miscible Displacement
TH	Thermal Recovery
PM	Pressure Maintenance
GC	Gas Cycling
AR	Attic Recovery
GOR	Net Gas-Oil Ratio
DP	Disposal
CR	Cellar Recovery
GS	Gas Storage
GR	Gas Repressure
LGS	Liquid Petroleum Gas Storage
TRT	Tertiary Recovery Test
UNK	Unknown

Item (26) – – – FLUID STATUS, 1–78

ICP	Injection Currently in Progress 1–1–78
INS	Injection Not Started as of 1–1–78
ITD	Injection Temporarily Discontinued
IPD	Injection Permanently Discontinued
U	Project Unreported at Publication Time

Item (28) – – – EFF OF TYPE INJ

VE	Very Effective
ME	Moderately Effective
NE	Not Effective
UD	Undetermined

Item (59) – – – INJECTION PATTERN

N	None (No injection well yet)
SW	Single Well (One Well)
I	Irregular (Random)
P	Peripheral (Perimeter)
MP	Modified Peripheral
PI	Peripheral & Irregular
LD	Direct Line Drive
MLD	Modified Line Drive
SLD	Staggered Line Drive (Split Line Drive)
MSL	Modified Split Line Drive
C	Crestal (Center)
F	Flank (Edge) (End Sweep)
MF	Modified Flank
3S	3-Spot
4S	4-Spot
5S	5-Spot
7S	7-Spot
9S	9-Spot
M5	Modified 5-Spot (Irregular 5-Spot)
I5	Inverted 5-Spot
I7	Inverted 7-Spot
I9	Inverted 9-Spot
MI9	Modified Inverted 9-Spot
E11	Enclosed 11-Spot (5-Spot & Chicken Wire)
5LD	5-Spot & Line Drive
5SL	5-Spot & Split Line Drive
5I9	5-Spot & Inverted 9-Spot
P5	Peripheral & 5-Spot
PLD	Peripheral & Line Drive
OTH	Other Injection Pattern

Item (62) – – – OPER PROBLEMS CODES

CR	Corrosion
CH	Channeling
EG	Excessive Gas-Oil Ratio
EW	Excessive Water-Oil Ratio
SC	Scale
PA	Pattern
IP	Injection Well Plugging
EP	Excessive Injection Pressure
SF	Scarcity of Injection Fluid
EB	Early Breakthrough
PI	Injection Pressure Increasing
BT	Bacteria

Item (63) – – – * – – REMARKS REFERENCE

ABBREVIATIONS

(A Complete Listing)

ABBREVIATION	MEANING OF SYMBOL
ABD	Abandoned
ADD	Additional
ADJ	Adjacent
API	American Petroleum Institute
APPROX	Approximately
AR	Attic Recovery
AVG	Average
BBL(S)	Barrels
BEG	Beginning
BHP	Bottom Hole Pressure
BT	Bacteria
BW	Brackish Water
C	Crestal (Center) in Item 59
CH	Channeling
CHEM	Chemicals, Chemical Treatment
CLRFK	Clearfork
CMT	Cement
CO	Company
CO_2	Carbon Dioxide
COND	Condensate
CONG	Conglomerate
CONS	Consolidated
COR	Corrosion
CO REG	County Regular
CR	Cellar Recovery in Item 25; Corrosion in Item 62
CSG	Casing
CUM	Cumulative
CW	Carbonated Water
D	Day
DEV	Devonian
DISC	Discovered, Discovery, Discontinued
DIST	RRC District
DOG	De-ethanized Overhead Gas
DOL	Dolomite
DP	Disposal Project
E	Enclosed in Item 59
EB	Early Breakthrough
EFF	Effective, Effectiveness
EG	Excessive Gas-Oil Ratio
EP	Excessive Injection Pressure
EST	Estimated
EW	Excessive Water-Oil Ratio
EX	Excessive
EXG	Exhaust Gas
EXT	External
F	Symbol for Fluid Injection into a Productive Zone (used as part of RRC Injection Project Number); Flank (Edge) (End Sweep) in Item 59
FG	Flue Gas
FLD(S)	Field(s)
FORM	Formation
FRAC	Fracture
FW	Fresh Water
FT	Feet
G	Gas
GC	Gas Cycling
GF	Gas Field
GOR	Gas-Oil Ratio
GR	Gas Repressure
GRAV	Gravity
GS	Gas Storage
HORZ	Horizontal
HW	Hot Water
I	Irregular (Random) in Item 59; I with number means inverted spot
ICP	Injection Currently in Progress
ID	Identification
IG	Inert Gas
INC	Increase
INHB	Inhibitors
INJ	Injection
INS	Injection not Started as of 1-1-78
IP	Injection Well Plugging
IPD	Injection Permanently Discontinued
ITD	Injection Temporarily Discontinued
LD	Direct Line Drive
LGS	Liquid Petroleum Gas Storage
LM	Lime
LMT	Limited
LO	Lower
LPG	Liquid Petroleum Gas
LSE(S)	Lease(s)
M	One Thousand; Modified in Item 59
MAX	Maximum
MCF	Thousand Cubic Feet
MD	Millidarcys, in Heading of Item 12; Miscible Displacement in Item 25
ME	Moderately Effective
MF	Modified Flank
MID	Middle
MLD	Modified Line Drive
MM	One Million
MMCF	Million Cubic Feet
MP	Modified Peripheral
MSL	Modified Split Line Drive
N_2	Nitrogen
N	Symbol for New (1976-1977) Project; None in Item 59
NE	Not Effective
NO(S)	Number(s)
NRG	Nergas
OI	Operator Involved in Project and Not the Main Injection Operator

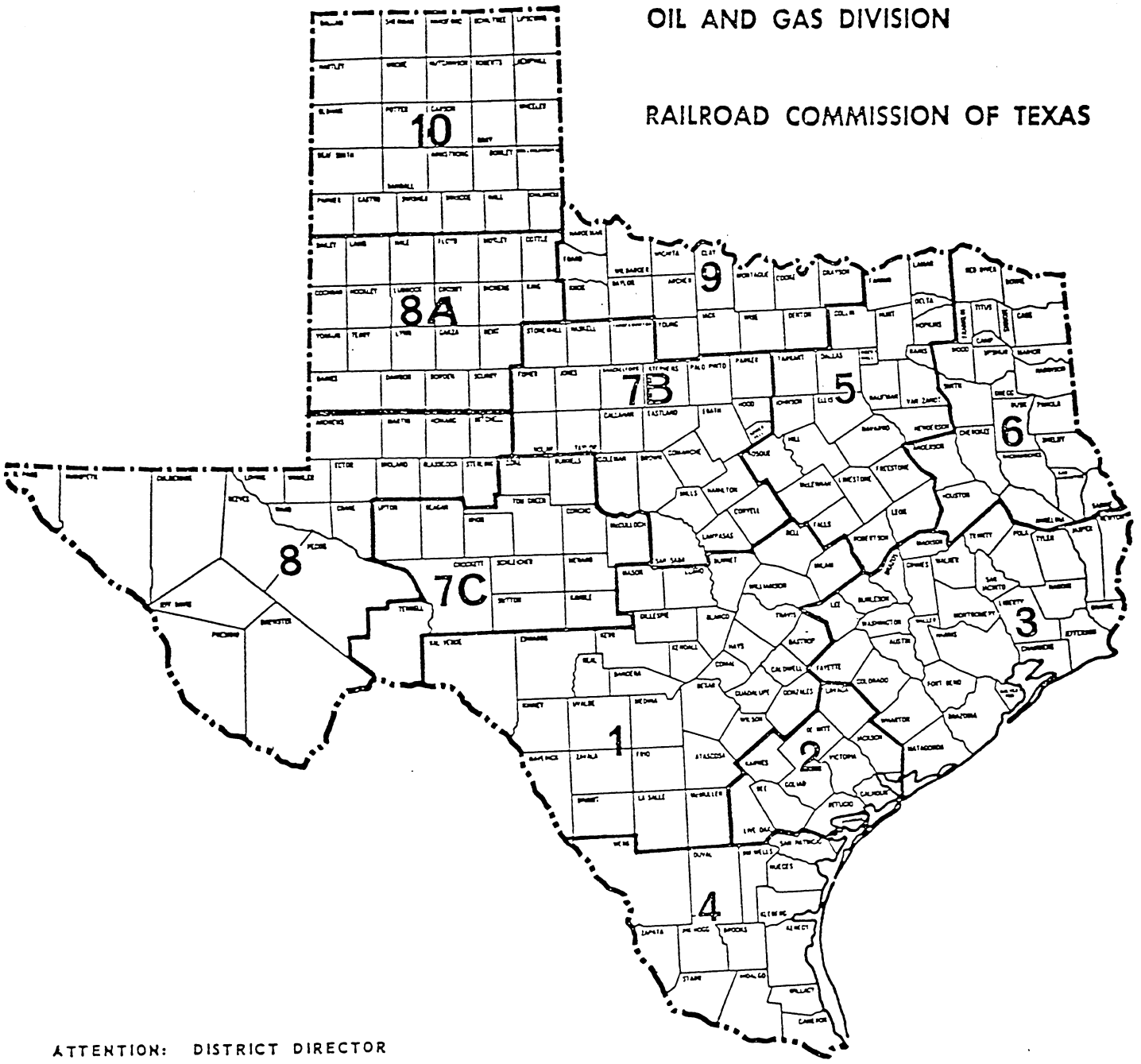
ABBREVIATION	MEANING OF SYMBOL
OPR, OPER	Operator, Operated
ORIG	Original
OTH	Other
P	Peripheral
PA	Paraffin
P&A	Plug & Abandon
PCG	Processed Casinghead Gas
PERM	Permeability
PGG	Processed Gas Well Gas
PI	Peripheral & Irregular in Item 59; Injection Pressure Increasing in Item 62
PLG	Pipeline Gas
PLUGG	Plugging
PM	Pressure Maintenance
POR	Porosity
PPD	Production Permanently Discontinued
PRESS.	Pressure
PRG	Plant Residue Gas
PROD	Production, Producing or Productive
PROJ(S)	Project(s)
PSI	Pounds Per Square Inch
PTD	Production Temporarily Discontinued
PW	Plant Waste
PWW	Plant Waste Water
RCG	Raw Casinghead Gas
REC	Recovery
RESP	Response
RESV	Reservoir
RG	Residue
RGG	Raw Gas Well Gas
RRC	Railroad Commission
S	Spot in Item 59
SC	Scale
SEC	Secondary
SD	Sand
SF	Scarcity of Injection Fluid
SLD	Staggered Line Drive (Split Line Drive) in Item 59
SQZ	Squeeze
SR	Secondary Recovery
SS	Sandstone
SSW	Surfactant & Salt Water
STM	Steam
SUC	Successful
SURF	Surface
SW	Salt Water; Single Well in Item 59
SWD	Salt Water Disposal
SYS	System
TBG	Tubing
TEMP	Te mporary
TH	Thermal
TLW	Tank Liquid Waste
TOT	Total
TRT	Tertiary Recovery Test

ABBREVIATION	MEANING OF SYMBOL
UD	Undetermined
ULT	Ultimate
UNK	Unknown
UNS	Unsucessful
UP	Upper
VE	Very Effective
VOL(S)	Volume(s)
W	Wells
W/	With
WF	Waterflood
WI	Water Injection
WIW	Water Injection Well
WOR	Water-Oil Ratio
WS	Water Supply
WTR	Water
YR(S)	Years
%	Percentage
°API	Degrees API
*	Used as a separator between Item 5, Field Name, and Item 6, Reservoir, When Reservoir is shown.

DISTRICT MAP

OIL AND GAS DIVISION

RAILROAD COMMISSION OF TEXAS



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District 10:	P. O. Box 941, Municipal Bldg., Pampa, Texas 79065 – 806 665-1653

Adair
San Andres
Midland

DATA SOURCE CODE		
	STATE	Texas
2	COUNTY	Gaines
2	REGULATORY DISTRICT	8A
2	BASIN	Permian
15	SUB-BASIN	Midland
2	FIELD	Adair
2	RESERVOIR	San Andres
8	GEOLOGIC AGE	Permian- Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
12c	RESERVOIR LITHOLOGY	Dolomite, anhydritic, finely crystalline to crystalline, pinpoint to fractured porosity.
12c	TRAPPING MECHANISM	Anticlinal folding, but porosity influences accumulation.
2	DISCOVERY YEAR	1947
2, 16c	PROVED ACREAGE	5338
	REGULAR WELL SPACING (acres/well)	
2, 3	RESERVOIR DEPTH	4870 avg., 4874
	RESERVOIR THICKNESS	
2,16c ,12c	NET PAY	40.5, 50, 60
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.145 avg.
	PERMEABILITY	
	RANGE	
2	AVERAGE	7 md
	HORIZONTAL	
	VERTICAL	
2	OTHER INFORMATION	est. abandoned SRP F1723 by 12/91
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1,2	TOTAL NUMBER OF WELLS	131; 180 (94P-68I-18A)
	PRODUCTION 1976 oil (cum)	
2	PRODUCTION 1977 oil (cum)	35,911 (total 2 SRPs)
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	42,671
3	PRODUCTION 1-1-79 to 1-1-80	2,378.7 mbbls oil; 550.5 mmcf gas
	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	
12c	STRUCTURE CONTOUR?	Yes
12c	LOGS?	Yes
	STRUCTURE SECTION?	No
	ENGINEERING REPORTS?	No
	CORE DESCRIPTIONS?	No

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Adair
	RESERVOIR:	San Andres
16c	PROD. ACRES:	5338
16c	AVG. THICKNESS (FT.):	60
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.12
16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.13/76
16c	WATER SATURATION (S_w):	.35
16c	OIL SATURATION (S_o):	.65 (DY)
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	103 (GG=.6)
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	490
2,	RESERVOIR PRESSURE INITIAL (psi):	1788 avg. 2073
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 12c	STOCK TANK OIL GRAVITY (°API):	33, 28.7-34
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1311
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 2 SRPs:	168,379 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 2 SRPs:	25,000 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Adair RESERVOIR: San Andres TOTAL NO. PROJECTS: 2 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

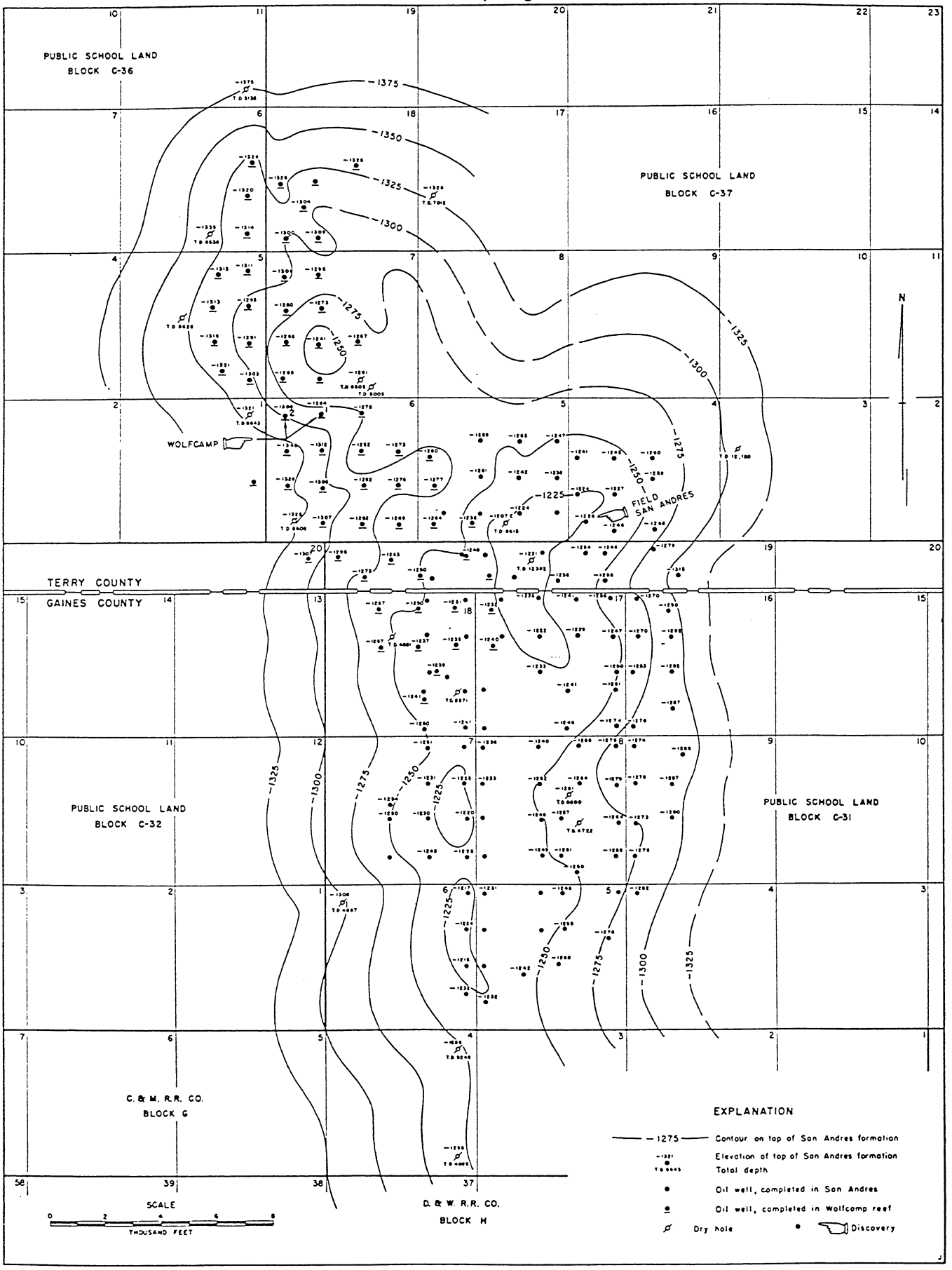
1976 PROD. (this project): MBBLS	2674	39
1977 PROD. (this project):	2793	40
CUM. PROD. FROM DISC. TO 1/78:	35,428	483
PROJECT NO.	F1722	F1721
LEASE NO.(s):	17304	19650
OPERATOR:	Amerada-Hess	Getty
RESERVOIR:	San Andres	San Andres
DEPTH PRODUCING ZONE:	4789	4950
PRODUCTIVE ACREAGE IN RESERVOIR:	5338	5260
ACREAGE IN PROJECT:	5338	320
PILOT OR FIELD WIDE:	FW	P
TYPE:	WF/SW, FW	WF/SW, FW
PATTERN:	5SL	LD*
YEAR BEGAN:	10-1963	7-1967
YEAR TERMINATED OR STATUS:	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1875	1700
BEG. INJECTION:	445	450
LATEST:	638	1050
NUMBER OF WELLS TOTAL:	171	9
PRODUCING WELLS:	90	4
INJECTION WELLS:		
MAXIMUM:	64	4
LATEST:	64	4
SHUT-IN/ABANDONED WELLS:	17	1
SURFACE INJECTION PRESSURE:	1250	1700
EFFECTIVENESS OF INJECTION:	VE	ME
OPERATOR PROBLEMS:	CR,SC,PA	CR,SC,PA
ESTIMATED PRODUCTION DUE TO INJ.:		
1977:	2793	30
FROM BEG. INJECTION:	11,428	319
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	28,300	356
WATER PRODUCTION:		
CURRENT (1977):	2,283	39
CUMULATIVE TO 1/78:	15,645	522
CURRENT (1977) INJECTION:	2851 SW; 4889 FW	179SW; 596 FW
CUMULATIVE INJECTION:	24,578 SW;39,242FW	13,655SW; 5034FW

FROM: Occurrence of Oil & Gas in West Texas, Texas Bureau of Econ. Geology

12c

ADAIR FIELD, Gaines and Terry Counties, Texas

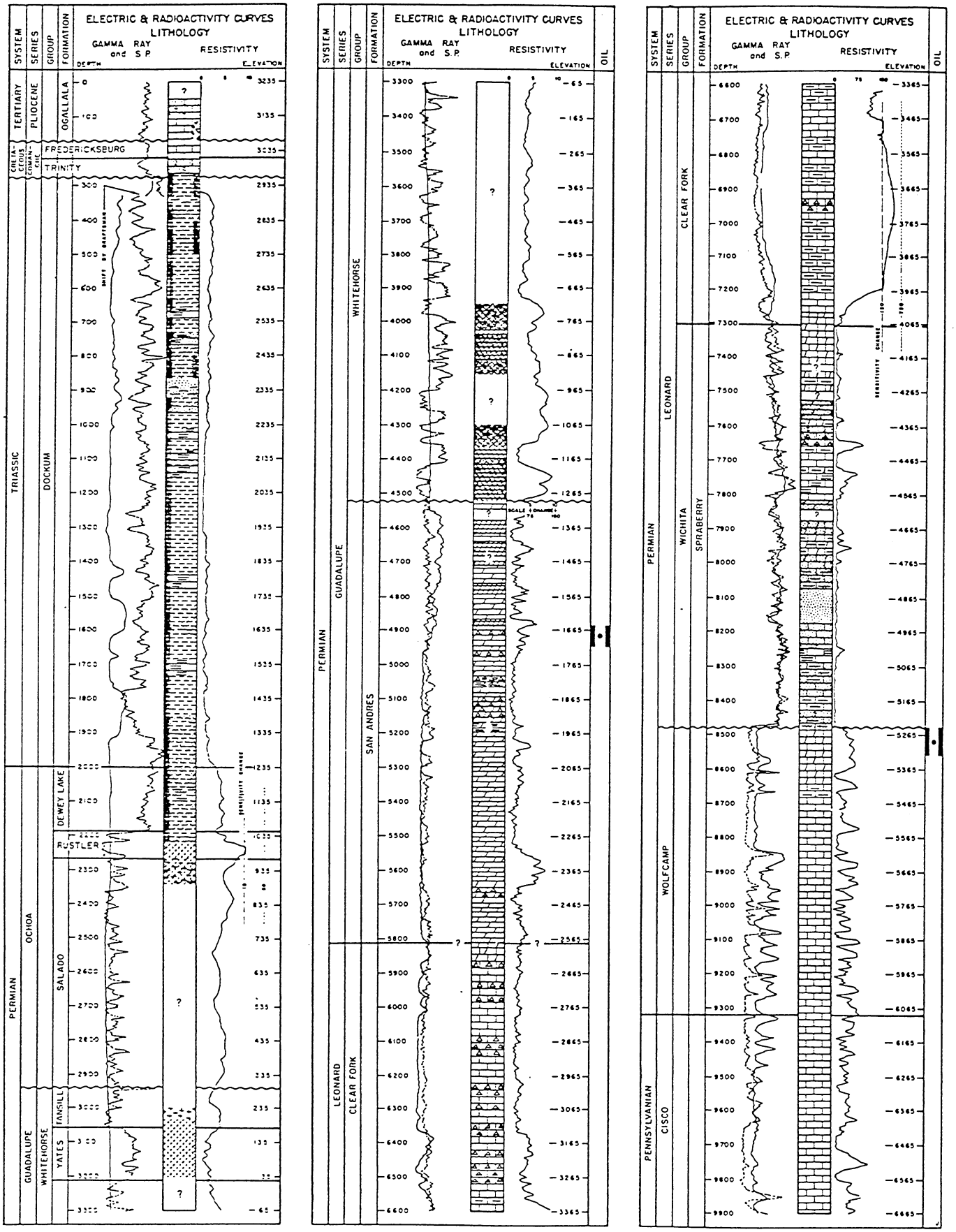
Publication No. 5716, August, 1957



ADAIR FIELD, Gaines and Terry Counties, Texas

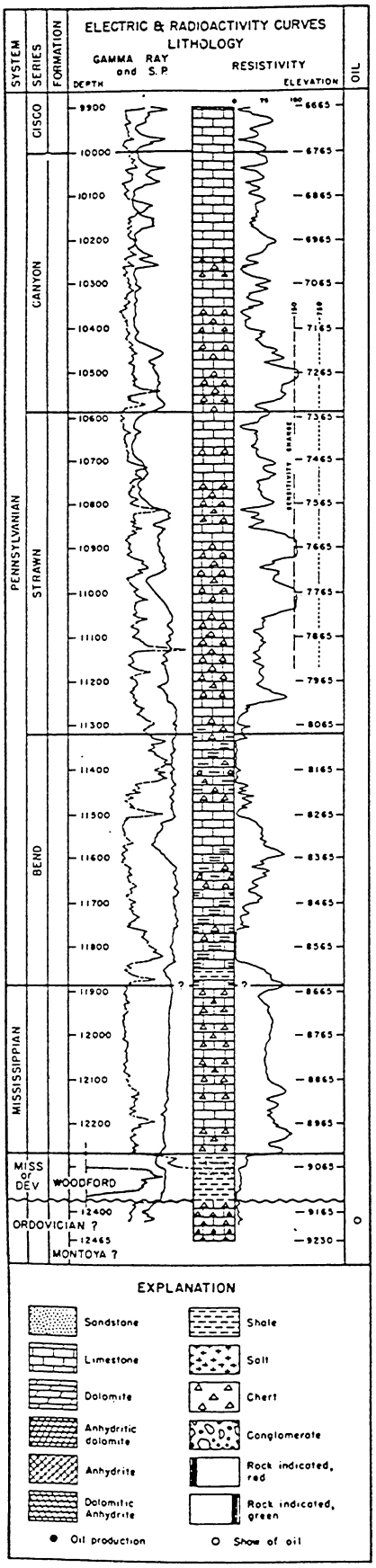
Source 12c.

TYPICAL SECTION OF ROCKS PENETRATED



ADAIR FIELD, Gaines and Terry Counties, Texas

TYPICAL SECTION OF ROCKS PENETRATED



ELEVATION AND RELIEF OF PRODUCTIVE ZONES

	Feet
San Andres:	
Elevation of top of oil	-1,549
Elevation of bottom of oil	Between -1,675 and -1,700
Relief	Between 126 and 151
Wolfcamp reef:	
Elevation of top of oil	-5,126
Elevation of bottom of oil	-5,340
Relief	214

PRODUCTIVE AREAS

	Acres
San Andres	4,583
Wolfcamp reef	2,560
Adair field	6,543

CHARACTER OF OIL

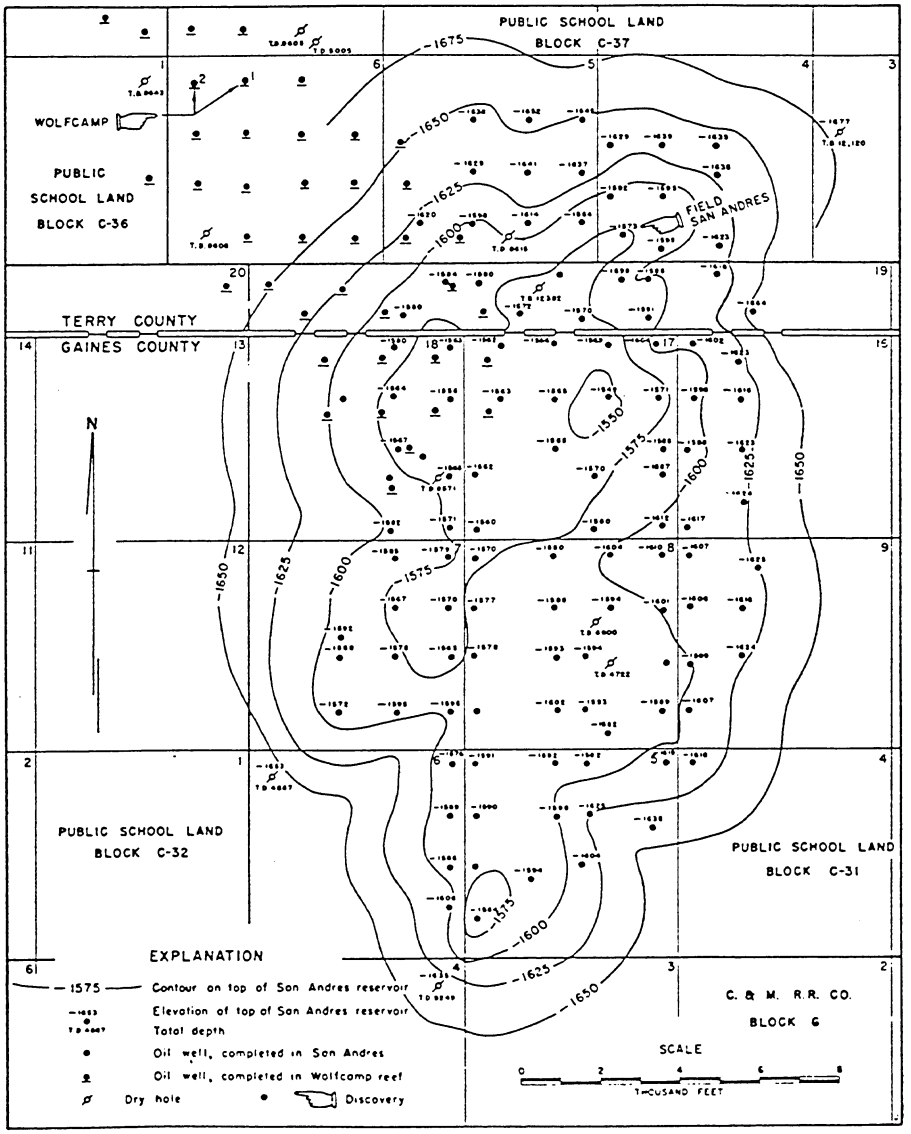
	San Andres	Wolfcamp reef
Gravity, A.P.I. @ 60° F.		
Range	28.7 - 34	?
Average	33.3	44
Sulphur	2.04%	0.4%
Base	Paraffin	?
Color	Green-black	?

For analysis of San Andres oil see:
U. S. Bureau of Mines Lab. ref. No. 51052
Analyses of Crude Oil from Some West Texas Fields R.I. 4959 (1953) Item 6

PRODUCTION HISTORY

Year	WELLS PRODUCING at end of year: Flowing	Pumping	OIL PRODUCTION (barrels): Yearly	Cumulative
Field totals				
1947	0	40	156,886	156,886
1948	0	86	894,849	1,051,735
1949	0	110	882,094	1,933,829
1950	8	114	1,009,483	2,943,312
1951	33	115	1,859,064	4,802,376
1952	16	162	2,689,113	7,491,489
1953*	11	159	2,866,725	10,358,214
San Andres				
1947	0	40	156,886	156,886
1948	0	86	894,849	1,051,735
1949	0	110	882,094	1,933,829
1950	0	114	945,079	2,878,908
1951	0	115	1,050,262	3,929,170
1952	0	114	904,319	4,833,489
1953*	0	108	838,991	5,672,480
Wolfcamp reef				
1950	8	0	64,404	64,404
1951	33	0	808,802	873,206
1952	16	48	1,784,794	2,658,000
1953*	11	51	2,027,734	4,685,734

*1953 data added by amendment.



Adair
Wolfcamp
Midland

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Terry M
1	REGULATORY DISTRICT	8A
1	BASIN	Permian
15	SUB-BASIN	Midland
1	FIELD	Adair
1	RESERVOIR	Wolfcamp
1	GEOLOGIC AGE	Wolfcamp
1	AAPG STRATIGRAPHIC AGE CODE	319
2, 1,12c	RESERVOIR LITHOLOGY	Limestone, dolomite, reef limestone-dolomitic, finely crystalline to chalky, fossiliferous
12c	TRAPPING MECHANISM	Accumulation in higher portions of reef mass.
2,1	DISCOVERY YEAR	9-1950; 1950
2,1,16c	PROVED ACREAGE	2550, 500, 2844; acreage unitized 2536
1	REGULAR WELL SPACING (acres/well)	40
2,3,1	RESERVOIR DEPTH	8500, 8505, 8505
	RESERVOIR THICKNESS	
2, 1, 12c	NET PAY	70, 60, 80
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
12c	TYPE	V, IC, F,
2,1	FRACTION	.124
	PERMEABILITY	
	RANGE	
2,1	AVERAGE	28 md, 13 md
	HORIZONTAL	
	VERTICAL	
2	OTHER INFORMATION	est. aban. sec. res. projects, F1722 by 1/93; F1721 by 12/98.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2,1	TOTAL NUMBER OF WELLS	26; 73 (26P-10I-37A)
1	PRODUCTION 1976 oil (cum)	41,471
	PRODUCTION 1977 oil (cum)	43,818
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	45,566
3	PRODUCTION 1-1-79 to 1-1-80	1,078 mbbls oil; 397.4 mmcf gas
	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
12c	STRUCTURE CONTOUR?	Yes
12c	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
1	FIELD:	Adair
	RESERVOIR:	Wolfcamp
2, 1, 16c	PROD. ACRES:	2550, 500, 2844
2, 1	AVG. THICKNESS (FT.):	70, 60
1, 16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	.12, 1.264
	FORMATION VOLUME FACTOR LATEST (FVF):	
1, 16c	WATER SATURATION (S_w):	24.5, 48
16c	OIL SATURATION (S_o):	.52 (DY)
1	PRIMARY DRIVE MECHANISM:	water drive
	PRIMARY GAS CAP?:	
16c	TEMPERATURE (°F):	133
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1130
2, 1	RESERVOIR PRESSURE INITIAL (psi):	3513
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	456
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 1, 3	STOCK TANK OIL GRAVITY (°API):	42.5, 43, 43
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1639
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	101,500 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	25,000 mbbls

OTHER INFORMATION:

1 Primary recoverable: 125 bbl/acre-ft

12c Reference: Glaze, F. L., 1957, Adair Field in Occurrence of Oil and Gas in West Texas: Univ. of Texas, Bureau of Economic Geology, Publ. No. 5716, August, p. 12-16.

Myers, D. A., Stafford, P. T., and Burnside, R. J., 1956, Geology of the Late Paleozoic Horseshoe Atoll in West Texas: Univ. of Texas, Bureau of Economic Geology, Publ. No. 5607, April.

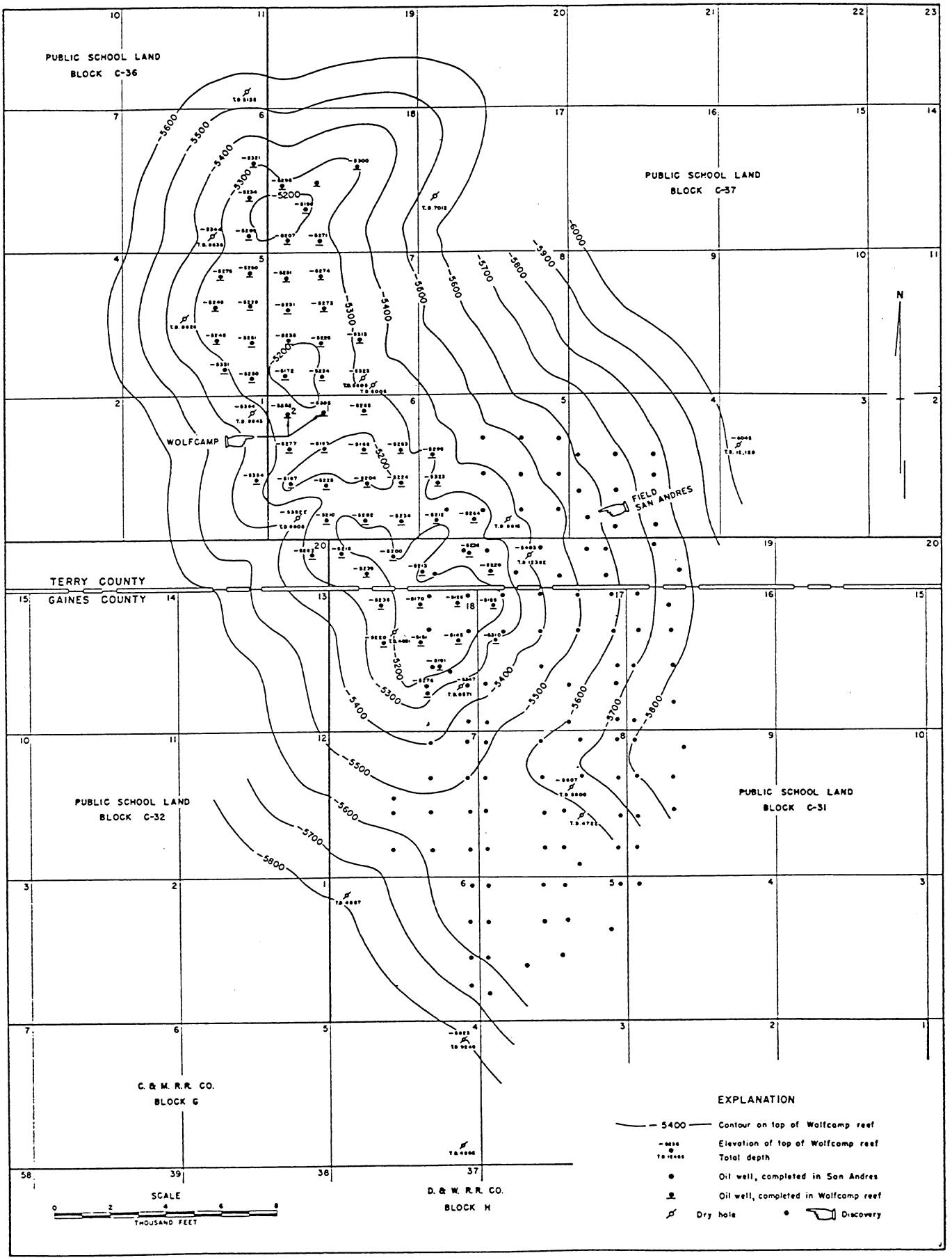
ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Adair RESERVOIR: Wolfcamp TOTAL NO. PROJECTS: PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	1725	41,471
1977 PROD. (this project):	1651	
CUM. PROD. FROM DISC. TO 1/78:	43,818	
PROJECT NO.	F1723	
LEASE NO.(s):	09892	
OPERATOR:	Amerada-Hess	
RESERVOIR:	Wolfcamp	Wolfcamp
DEPTH PRODUCING ZONE:	8500	8505
PRODUCTIVE ACREAGE IN RESERVOIR:	2550	500?
ACREAGE IN PROJECT:	2550	2536
PILOT OR FIELD WIDE:	FW	
TYPE:	WF/BW-FW	WF
PATTERN:	LD	
YEAR BEGAN:	11-56	1956
YEAR TERMINATED OR STATUS:	BW-ICP, FW,INS	
RESERVOIR PRESSURE INITIAL:	3513	
BEG. INJECTION:	1160	
LATEST:	2907	
NUMBER OF WELLS TOTAL:	73	
PRODUCING WELLS:	26	26
INJECTION WELLS:		7
MAXIMUM:	10	
LATEST:	10	
SHUT-IN/ABANDONED WELLS:	37	
SURFACE INJECTION PRESSURE:	2400	
EFFECTIVENESS OF INJECTION:	ME	
OPERATOR PROBLEMS:	CR	
ESTIMATED PRODUCTION DUE TO INJ.:		
1977:	1651	
FROM BEG. INJECTION:	18,125	
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	28,000	
WATER PRODUCTION:		
CURRENT (1977):	1813	
CUMULATIVE TO 1/78:	15,706	
CURRENT (1977) INJECTION:		
CUMULATIVE INJECTION:	71,139 BW	

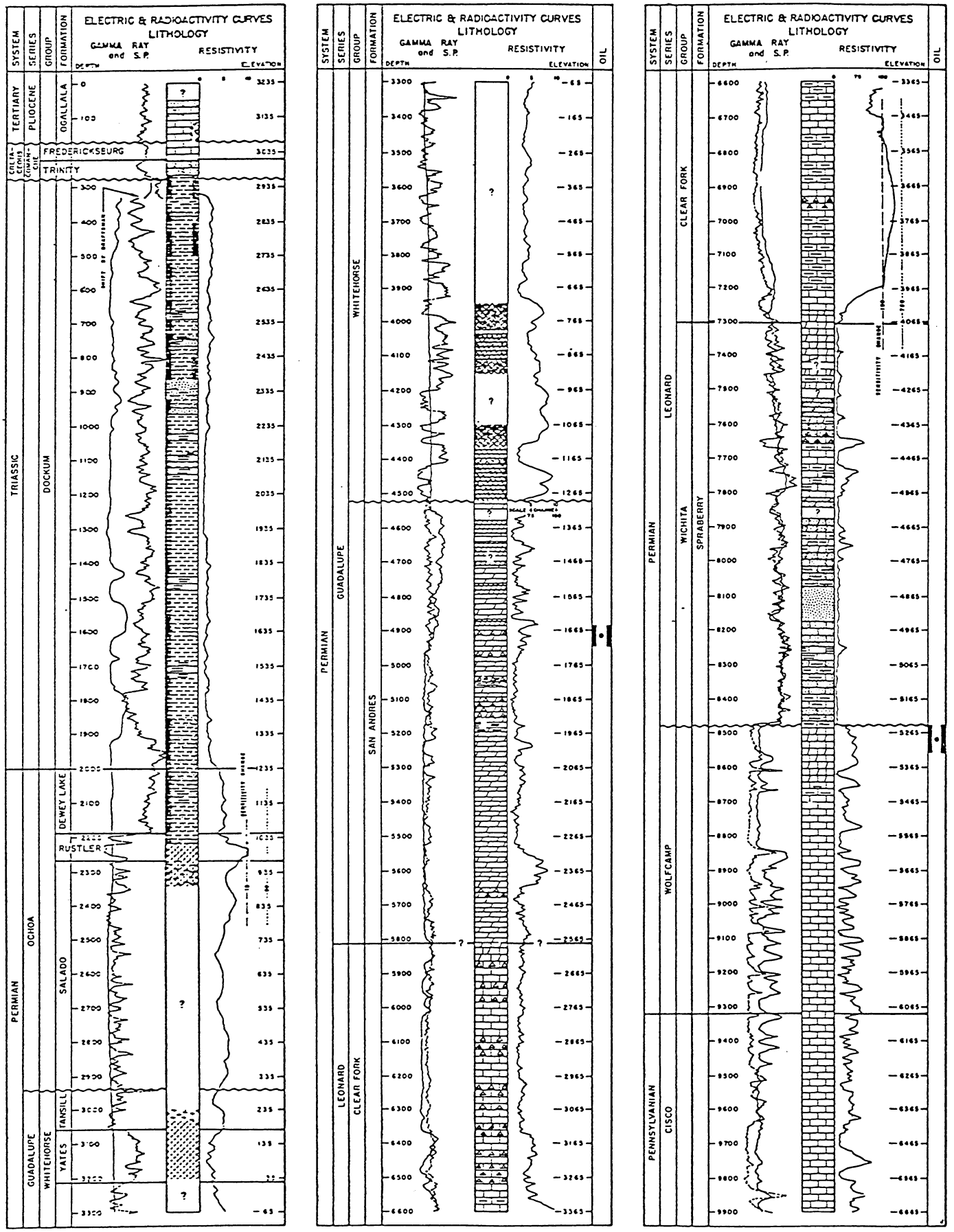
FROM: Occurrence of Oil & Gas in West Texas, Texas Bureau of Econ. Geology
Publication No. 5716, Auguat, 1957 12c

ADAIR FIELD, Gaines and Terry Counties, Texas



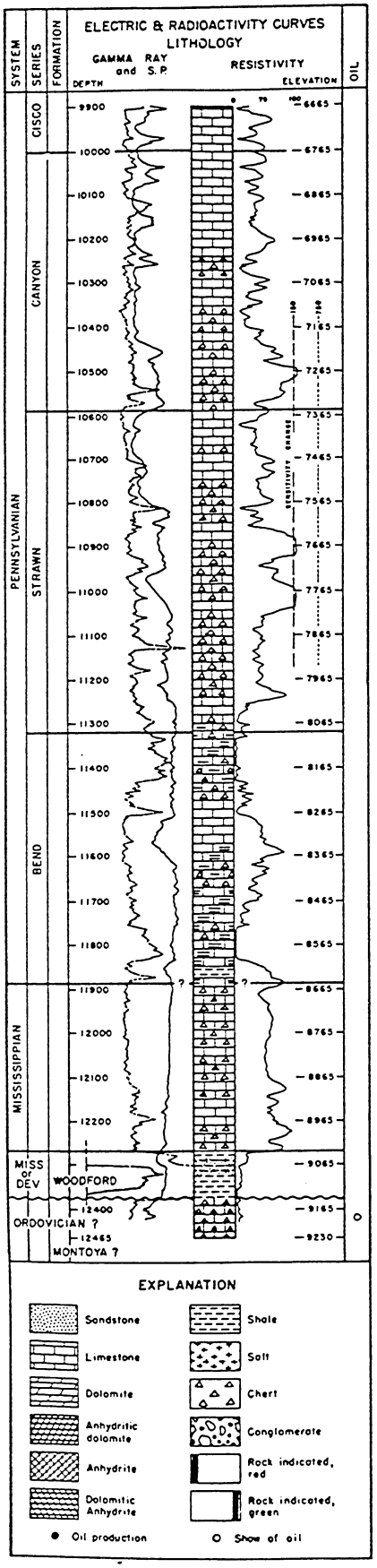
ADAIR FIELD, Gaines and Terry Counties, Texas

TYPICAL SECTION OF ROCKS PENETRATED



ADAIR FIELD, Gaines and Terry Counties, Texas

TYPICAL SECTION OF ROCKS PENETRATED



ELEVATION AND RELIEF OF PRODUCTIVE ZONES

	Feet
San Andres:	
Elevation of top of oil	-1,549
Elevation of bottom of oil	Between -1,675 and -1,700
Relief	Between 126 and 151
Wolfcamp reef:	
Elevation of top of oil	-5,126
Elevation of bottom of oil	-5,340
Relief	214

PRODUCTIVE AREAS

	Acres
San Andres	4,583
Wolfcamp reef	2,560
Adair field	6,543

CHARACTER OF OIL

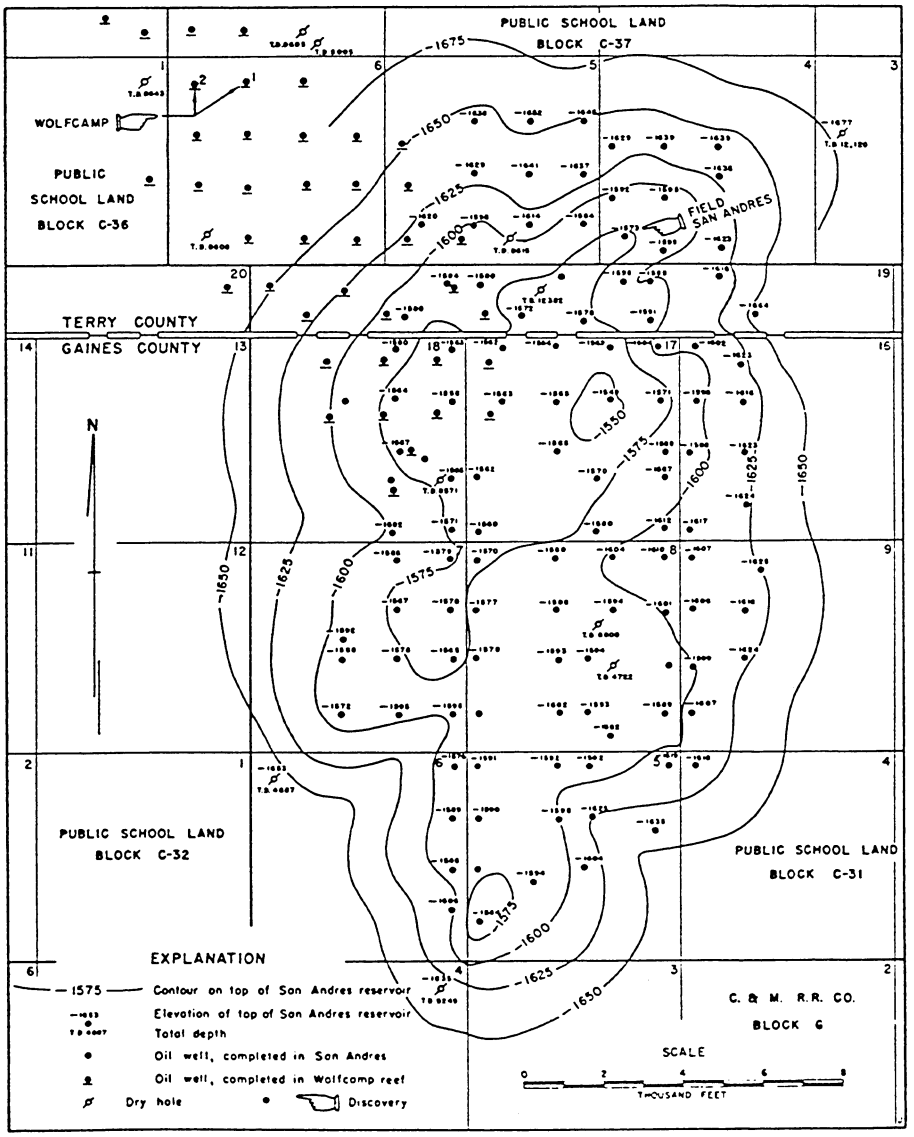
	San Andres	Wolfcamp reef
Gravity, A.P.I. @ 60° F.		
Range	28.7 - 34	?
Average	33.3	44
Sulphur	2.04%	0.4%
Base	Paraffin	?
Color	Green-black	?

For analysis of San Andres oil see:
U. S. Bureau of Mines Lab. ref. No. 51052
Analyses of Crude Oil from Some West Texas Fields R.I. 4959 (1953) Item 6

PRODUCTION HISTORY

Year	WELLS PRODUCING at end of year: Flowing	Pumping	OIL PRODUCTION (barrels): Yearly	Cumulative
Field totals				
1947	0	40	156,886	156,886
1948	0	86	894,849	1,051,735
1949	0	110	882,094	1,933,829
1950	8	114	1,009,483	2,943,312
1951	33	115	1,859,064	4,802,376
1952	16	162	2,689,113	7,491,489
1953*	11	159	2,866,725	10,358,214
San Andres				
1947	0	40	156,886	156,886
1948	0	86	894,849	1,051,735
1949	0	110	882,094	1,933,829
1950	0	114	945,079	2,878,908
1951	0	115	1,050,262	3,929,170
1952	0	114	904,319	4,833,489
1953*	0	108	838,991	5,672,480
Wolfcamp reef				
1950	8	0	64,404	64,404
1951	33	0	808,802	873,206
1952	16	48	1,784,794	2,658,000
1953*	11	51	2,027,734	4,685,734

*1953 data added by amendment.



Amacker-Tippet, So.
Bend*
Midland

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Upton
1	REGULATORY DISTRICT	7C
1	BASIN	Permian
15	SUB-BASIN	Midland
1	FIELD	Amacker-Tippett, South
1	RESERVOIR	Bend
1	GEOLOGIC AGE	Pennsylvanian Middle-Atoka
1	AAPG STRATIGRAPHIC AGE CODE	326
1	RESERVOIR LITHOLOGY	Limestone
	TRAPPING MECHANISM	
3, 1	DISCOVERY YEAR	12-61, 1961
16C	PROVED ACREAGE	4300
1	REGULAR WELL SPACING (acres/well)	80
3, 1	RESERVOIR DEPTH	8,596 - 9,848
1, 16C	RESERVOIR THICKNESS	25, 41
	NET PAY	
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
1	FRACTION	.06
	PERMEABILITY	
	RANGE	
1	AVERAGE	10 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	* five other reservoirs in Amacker-Tippet, South; they include: Bend, Upper; Detrital; Devonian; Strawn 8750; Strawn 9250; Wolfcamp.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS---producing	24
1	PRODUCTION 1976 oil (cum)	5,797
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	6,116.5 m bbls.
3	PRODUCTION 1-1-79 to 1-1-80	98.6 m bbls. oil, 340 MMCF gas
	SECONDARY RECOVERY RECORDS?	no
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	no
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Amacker-Tippett, So.
1	RESERVOIR:	Bend
16C	PROD. ACRES:	3,360, 4,300
1	AVG. THICKNESS (FT.):	25, 41
1, 16C	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	2.4
16C	FORMATION VOLUME FACTOR LATEST (FVF):	2,106/67
1, 16C	WATER SATURATION (S_W): (avg.)	.33
	OIL SATURATION (S_O):	
1	PRIMARY DRIVE MECHANISM:	depletion
	PRIMARY GAS CAP?:	
16C	TEMPERATURE (°F):	162
16C	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	4,290
1	RESERVOIR PRESSURE INITIAL (psi):	4,256
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	10,594 (76)
1, 3	STOCK TANK OIL GRAVITY (°API):	52.5
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1957
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

Andrews
Wolfcamp
Central Basin Platform

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Andrews
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Andrews
1	RESERVOIR	Wolfcamp
1	GEOLOGIC AGE	Wolfcamp, Lower Permian
1	AAPG STRATIGRAPHIC AGE CODE	319
1	RESERVOIR LITHOLOGY	Limestone
1	TRAPPING MECHANISM	Stratigraphic/Structural Biostrome/Anticline
3, 1	DISCOVERY YEAR	7-1953; 1953
16c, 1	PROVED ACREAGE	3360, 460
1	REGULAR WELL SPACING (acres/well)	40
1, 3	RESERVOIR DEPTH	8596
	RESERVOIR THICKNESS	
16c, 1	NET PAY	25, 12
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
1	TYPE	1C
1	FRACTION	.088
	PERMEABILITY	
	RANGE	
1	AVERAGE	18 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	59
1	PRODUCTION 1976 oil (cum)	16,423
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	17,560
3	PRODUCTION 1-1-79 to 1-1-80	352.2 mbbls oil; 377 mmcf gas
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Andrews
1	RESERVOIR:	Wolfcamp
16c, 1	PROD. ACRES:	3360, 460
16c, 1	AVG. THICKNESS (FT.):	25, 12
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.35
	FORMATION VOLUME FACTOR LATEST (FVF):	
1	WATER SATURATION (S_w):	.17
	OIL SATURATION (S_o):	
1	PRIMARY DRIVE MECHANISM:	depletion
	PRIMARY GAS CAP?:	
16c	TEMPERATURE (°F):	127 (GG=.70)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	3023
1	RESERVOIR PRESSURE INITIAL (psi):	3707
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	606
1, 17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	828 (76)
1	STOCK TANK OIL GRAVITY (°API):	37.5
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1587
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

1 Primary Recoverable: 84 bbl/acre-ft.

Andrews, S.
Wolfcamp
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
	COUNTY	Andrews
	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
	FIELD	Andrews, South
	RESERVOIR	Wolfcamp
	GEOLOGIC AGE	Wolfcamp, Lower Permian
1	AAPG STRATIGRAPHIC AGE CODE	319
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
3	DISCOVERY YEAR	9-1953
16c	PROVED ACREAGE	4960
	REGULAR WELL SPACING (acres/well)	
3	RESERVOIR DEPTH	9183
	RESERVOIR THICKNESS	
	NET PAY	
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
	FRACTION	.04
	PERMEABILITY	
	RANGE	
	AVERAGE	11 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
	TOTAL NUMBER OF WELLS	50
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	11,772
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	12,089
3	PRODUCTION 1-1-79 to 1-1-80	151 mbbls oil; 368.5 mmcf gas
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Andrews, South
	RESERVOIR:	Wolfcamp
	PROD. ACRES:	4960
	AVG. THICKNESS (FT.):	
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	138
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2900
1	RESERVOIR PRESSURE INITIAL (psi):	3865
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
3	STOCK TANK OIL GRAVITY (°API):	40
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1712
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

	OTHER INFORMATION:

DATA SOURCE CODE		
	STATE	Texas
	COUNTY	Andrews
	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
	FIELD	Andrews, South
2	RESERVOIR	Devonian
2	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
2	DISCOVERY YEAR	1953
2	PROVED ACREAGE	7840
	REGULAR WELL SPACING (acres/well)	
2	RESERVOIR DEPTH	10,700
	RESERVOIR THICKNESS	
2	NET PAY	22
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.056
	PERMEABILITY	
	RANGE	
2	AVERAGE	2 md
	HORIZONTAL	
	VERTICAL	
2	OTHER INFORMATION	abandoned SRP on 5/68
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2	TOTAL NUMBER OF WELLS	21
	PRODUCTION 1976 oil (cum)	
2	PRODUCTION 1977 oil (cum)	6,622
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	9,920
3	PRODUCTION 1-1-79 to 1-1-80	56.5 mbbls oil; 519 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Andrews, South
2	RESERVOIR:	Devonian
2	PROD. ACRES:	7840
2	AVG. THICKNESS (FT.):	22
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
	TEMPERATURE (^oF):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2	RESERVOIR PRESSURE INITIAL (psi):	4390
2	RESERVOIR PRESSURE LATEST (psi):	2000
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2	STOCK TANK OIL GRAVITY (^oAPI):	47
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	11,200 mbbls
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Andrews, South RESERVOIR: Devonian TOTAL NO. PROJECTS: 2 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	----	----
1977 PROD. (this project):	----	----
CUM. PROD. FROM DISC. TO 1/78:	3309	3313
PROJECT NO.	F4276	F3396
LEASE NO.(s):	19845	19845
OPERATOR:	Shell	Shell
RESERVOIR:	Devonian	Devonian
DEPTH PRODUCING ZONE:	10,700	10,900
PRODUCTIVE ACREAGE IN RESERVOIR:	7840	7840
ACREAGE IN PROJECT:	566	----
PILOT OR FIELD WIDE:	P	P
TYPE:	WF/SW	WF/SW
PATTERN:	M5	M5
YEAR BEGAN:	4-1964	4-1964
YEAR TERMINATED OR STATUS:	IPD-1968	IPD
RESERVOIR PRESSURE INITIAL:	4390	4390
BEG. INJECTION:	2000	2000
LATEST:		
NUMBER OF WELLS TOTAL:		
PRODUCING WELLS:	21	21
INJECTION WELLS:		
MAXIMUM:		
LATEST:		
SHUT-IN/ABANDONED WELLS:		
SURFACE INJECTION PRESSURE:	NA	NA
EFFECTIVENESS OF INJECTION:	NA	NA
OPERATOR PROBLEMS:	EG	---
ESTIMATED PRODUCTION DUE TO INJ.:		
1977:	NA	NA
FROM BEG. INJECTION:	NA	NA
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	NA	NA
WATER PRODUCTION:		
CURRENT (1977):		
CUMULATIVE TO 1/78:		
CURRENT (1977) INJECTION:		
CUMULATIVE INJECTION:	3936	3936

Anton-Irish
Matador Uplift
Clear Fork

DATA SOURCE CODE		
	STATE	Texas
5a	COUNTY	Hale (Lamb & Lubbock)
5a	REGULATORY DISTRICT	8A
	BASIN	Permian
15	SUB-BASIN	Matador Uplift
	FIELD	Anton-Irish
5a	RESERVOIR	Clear Fork
5a	GEOLOGIC AGE	Permian, Leonardian
1	AAPG STRATIGRAPHIC AGE CODE	318
5a	RESERVOIR LITHOLOGY	oolitic dolomite, shelf edge carbonate bank
5a	TRAPPING MECHANISM	east-west trending elongated anticlinal segment of the Matador Arch
2,5a	DISCOVERY YEAR	12-1944; 1-1945
2,5a	PROVED ACREAGE	9000
5a	REGULAR WELL SPACING (acres/well)	40
2,5a	RESERVOIR DEPTH	5900, 5342, 6050
	5a: dis. well Humble oil & Ref. No. 1 Jackson, Lamb Co. 1-1945	
	RESERVOIR THICKNESS	
2	NET PAY	141
5a	GROSS	400
	NET/GROSS RATIO	
	POROSITY	
5a	TYPE	IC
2,5a	FRACTION	.08, .094
	PERMEABILITY	
	RANGE	
2,5a	AVERAGE	7md, 16.2 md pay zone
	HORIZONTAL	
	VERTICAL	
2	OTHER INFORMATION	est. abandoned SRP F1724 on 1-2019
14e	BETC/RI-78/15 list as being most suitable for polymer EOR because it was assumed that polymers will be more readily available than carbon dioxide.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
5a, 2	TOTAL NUMBER OF WELLS	188; 341 (185P-62SWI-94FWI-0A)
	PRODUCTION 1976 oil (cum)	
2	PRODUCTION 1977 oil (cum)	101,943
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	123,512
3	PRODUCTION 1-1-79 to 1-1-80	10,254 mbbls oil; 1,351.9 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5a	STRUCTURE CONTOUR?	Yes, L.CF
5a	LOGS?	Yes
5a	STRUCTURE SECTION?	Yes
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Anton-Irish
5a	RESERVOIR:	Clear Fork
2, 5a	PROD. ACRES:	9000
2	AVG. THICKNESS (FT.):	141
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
5a	WATER SATURATION (S_W):	*
	OIL SATURATION (S_O):	
5a	PRIMARY DRIVE MECHANISM:	solution gas
14e	PRIMARY GAS CAP?:	no
17, 14e	TEMPERATURE (°F):	127 (GG=1.0), 107 BHT
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2, 5a	RESERVOIR PRESSURE INITIAL (psi):	2020, 2040 (1946)
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 5a	STOCK TANK OIL GRAVITY (°API):	28, 30 sour crude
14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	2.73 cp
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1612
2	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	no estimate
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

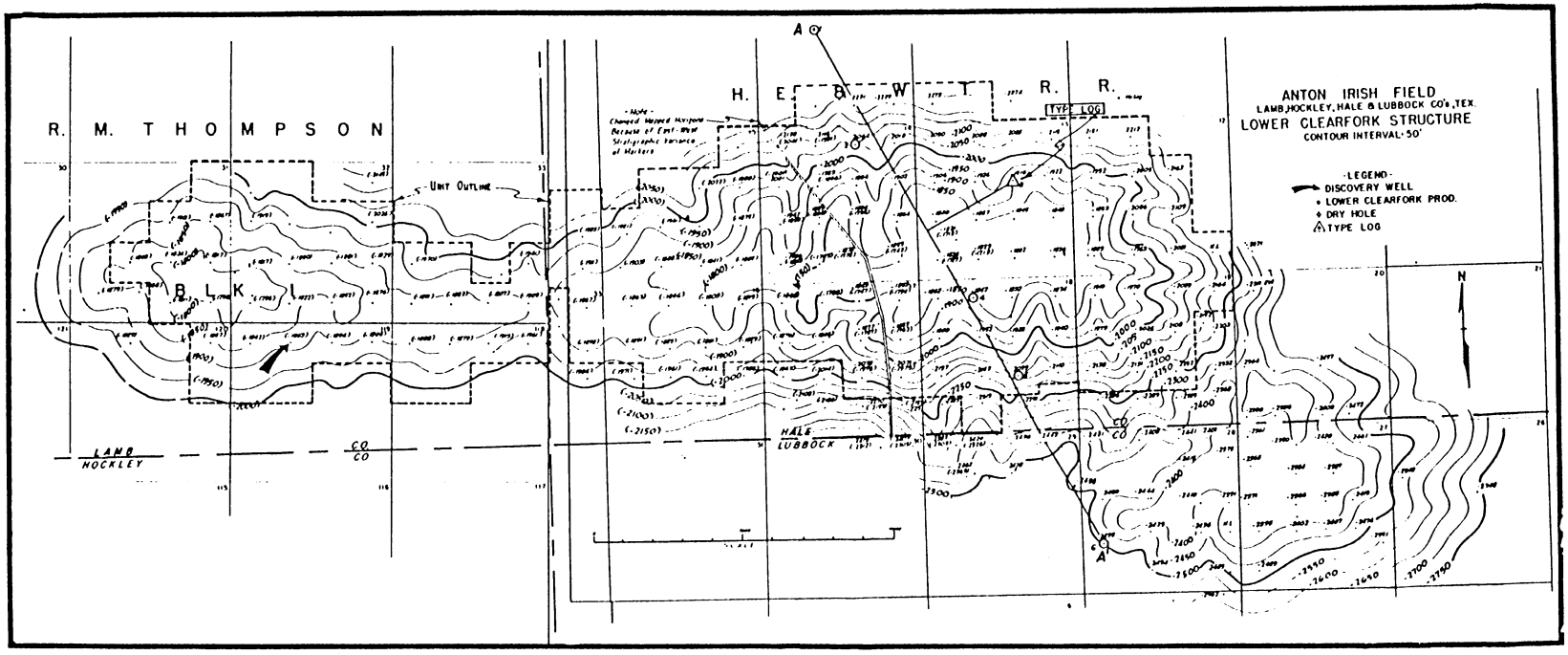
OTHER INFORMATION:

* initial S_W from discovery well described as sulphur water @ 224 BOPD to 11 BSWPD.

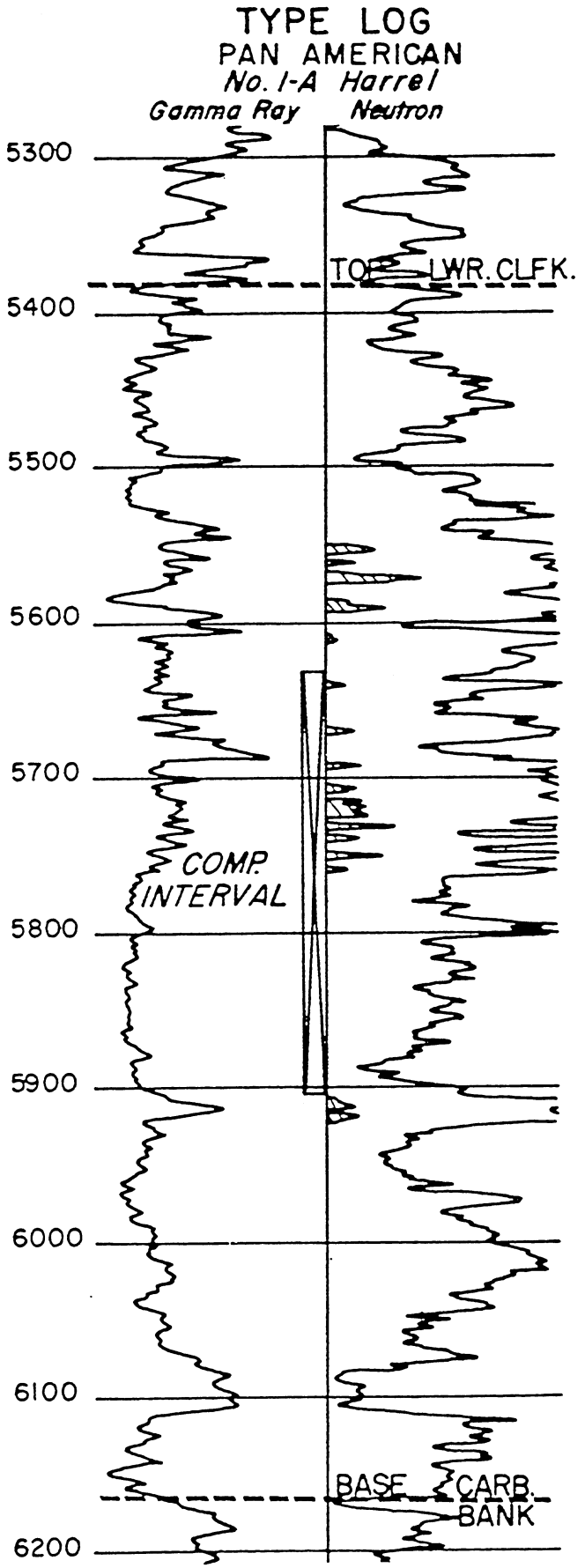
ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Anton-Irish RESERVOIR: Clear Fork TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	7821
1977 PROD. (this project):	9581
CUM. PROD. FROM DISC. TO 1/78:	101,943
PROJECT NO.	F1724
LEASE NO.(s):	00304
OPERATOR:	Amoco
RESERVOIR:	Clear Fork
DEPTH PRODUCING ZONE:	5900
PRODUCTIVE ACREAGE IN RESERVOIR:	9000
ACREAGE IN PROJECT:	9000
PILOT OR FIELD WIDE:	FW
TYPE:	WF/SW, FW; gas
PATTERN:	5S
YEAR BEGAN:	5-55 SW, 12-69 FW, 1-52 gas
YEAR TERMINATED OR STATUS:	SW,FW-ICP, gas IPD-5/72
RESERVOIR PRESSURE INITIAL:	2020
BEG. INJECTION:	800
LATEST:	672
NUMBER OF WELLS TOTAL:	341
PRODUCING WELLS:	185
INJECTION WELLS:	62 SW, 94 FW
MAXIMUM:	
LATEST:	
SHUT-IN/ABANDONED WELLS:	----
SURFACE INJECTION PRESSURE:	100
EFFECTIVENESS OF INJECTION:	SW-VE, Gas-NE
OPERATOR PROBLEMS:	CR,CH,IP,EP
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	
FROM BEG. INJECTION:	
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	
WATER PRODUCTION:	
CURRENT (1977):	10,904
CUMULATIVE TO 1/78:	45,381
CURRENT (1977) INJECTION:	10,904 SW; 16,492 FW
CUMULATIVE INJECTION:	39,448 SW; 95,605 FW; 16,183 gas

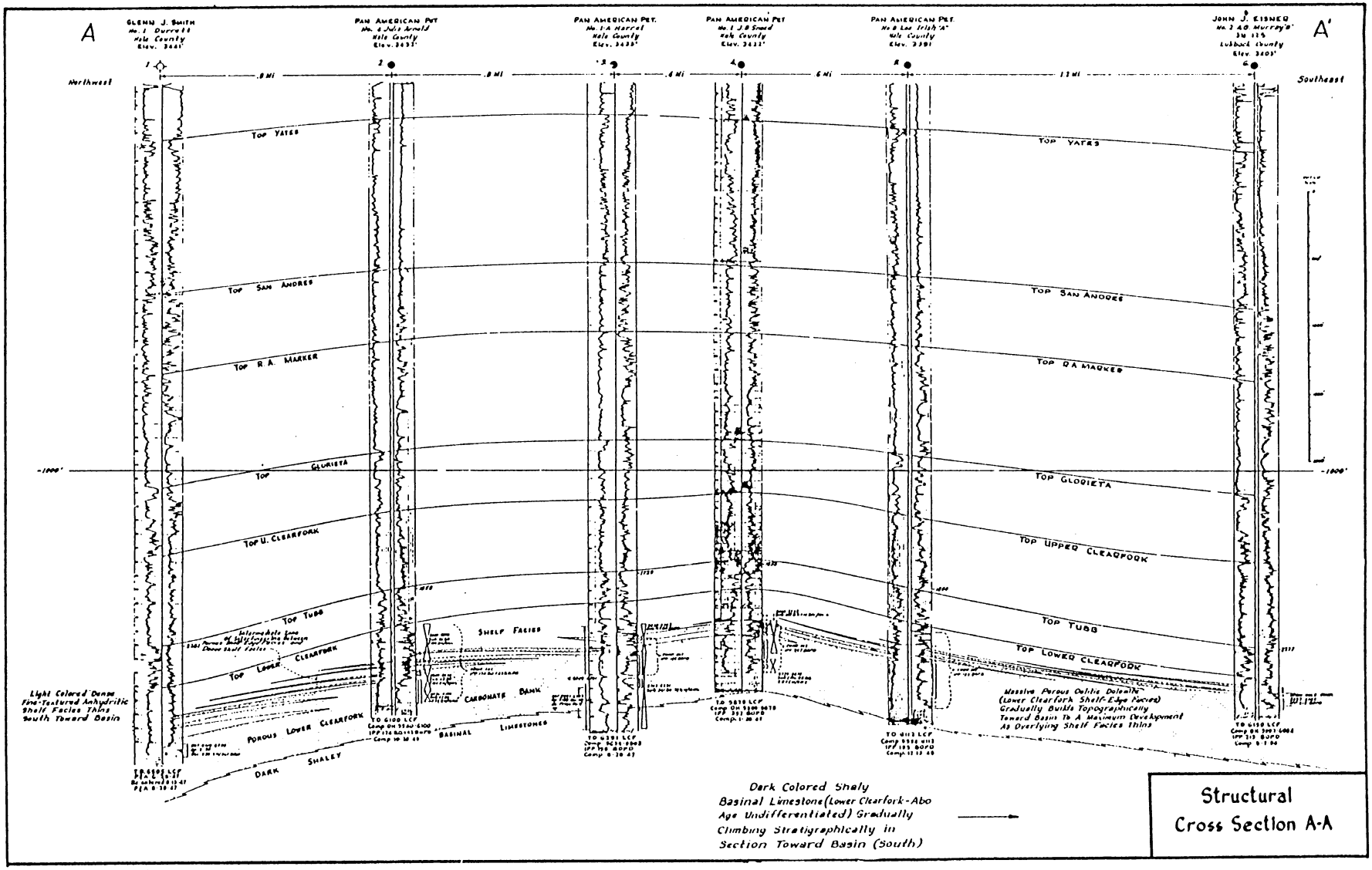


FROM: ROBINSON, J.D., 1966, ANTON-IRISH in OIL & GAS FIELDS IN WEST TEXAS - SYMPOSIUM: West Texas Geological Society, Publ. No. 66-52. Source 5a.



SOURCE 5a

ROBINSON, J.D., 1966, Anton-Irish in OIL AND GAS FIELDS IN WEST TEXAS: West Texas Geological Society, Publ. No. 66-52.



FROM: Robinson, J.D., 1966, Anton-Irish in OIL & GAS FIELDS IN WEST TEXAS - SYMPOSIUM: West Texas Geological Society, Publ. No. 66-52. Source 5a.

Allison
Pennsylvanian
Tatum Basin

DATA SOURCE CODE		
	STATE	New Mexico
1, 6a	COUNTY	Lea and Roosevelt
1	REGULATORY DISTRICT	Southeast
1, 6a	BASIN	Permian
15	SUB-BASIN	Tatum Basin
1, 6a	FIELD	Allison
1, 6a	RESERVOIR	Pennsylvanian
1, 6	GEOLOGIC AGE	Pennsylvanian
1, 6a	AAPG STRATIGRAPHIC AGE CODE	322
6a, 1	RESERVOIR LITHOLOGY	Bough "C"-fine crystalline vuggy limestone; limestone
6b, 1	TRAPPING MECHANISM	Combined anticlinal and stratigraphic trap; anticline plus lateral change in porosity and permeability.
1, 6a	DISCOVERY YEAR	2-16-54
1, 6c	PROVED ACREAGE	12,175
1, 6a	REGULAR WELL SPACING (acres/well)	80
6b, 6c, 1	RESERVOIR DEPTH	9673 (60), 9666 (67)-5600 datum, 9670
	RESERVOIR THICKNESS	
6	NET PAY	10.5
6, 1	GROSS	27,30
6a	NET/GROSS RATIO	10.5/27
	POROSITY	
6a,6b,6c	TYPE	IC, V
6a,6b,6c	FRACTION	.066, .09, .077
	PERMEABILITY	
1	RANGE	95-281 md
1	AVERAGE	200 md
6a,6b,6c	HORIZONTAL	281 md, 200 md, 200 md
6a, 6b	VERTICAL	191 md, 125 md
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	31 total-16Pump, 9Flow, 6Shut-in; 26P,7A.
	PRODUCTION 1976 oil (cum)	
1	PRODUCTION 1977 oil (cum)	20,893
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	21,291
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a,6b,6c	STRUCTURE CONTOUR?	yes
6a,6b,6c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	yes

RESERVOIR DATA

DATA SOURCE CODE		
6	FIELD:	Allison
	RESERVOIR:	Penn
1, 6c	PROD. ACRES:	12,175
6c, 1	AVG. THICKNESS (FT.):	10.5, 30
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
6a,1,6b,6c	WATER SATURATION (S_W):	.358, .26, .35, .26
6a,1,6b,6c	OIL SATURATION (S_O):	.05, .10, .07, .10
1,6a,6b,6c	PRIMARY DRIVE MECHANISM: H_2O in 6a&6b; sol.gas	& gravity & H_2O in 6c
	PRIMARY GAS CAP?:	
1, 6a, 17	TEMPERATURE (°F):	154 (GG = .83)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	4,220
1, 6a	RESERVOIR PRESSURE INITIAL (psi):	3,363 @ 5,600 datum
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1,659
6a, 1	STOCK TANK OIL GRAVITY (°API):	48-49, 47-49, 48 avg.
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1,876
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION: References:

6a Keene, K. K., 1956 in Oil and Gas Fields in Southeast New Mexico

6b Savage, G. J., and Kelliher, T. G., 1960, in Oil and Gas Fields in Southeast New Mexico

6c Ingram, T. L., 1966, in Oil and Gas Fields in Southeast New Mexico.

WATER ANALYSIS RECORD

FIELD: Allison RESERVOIR: Penn TOTAL NO. PROJECTS:

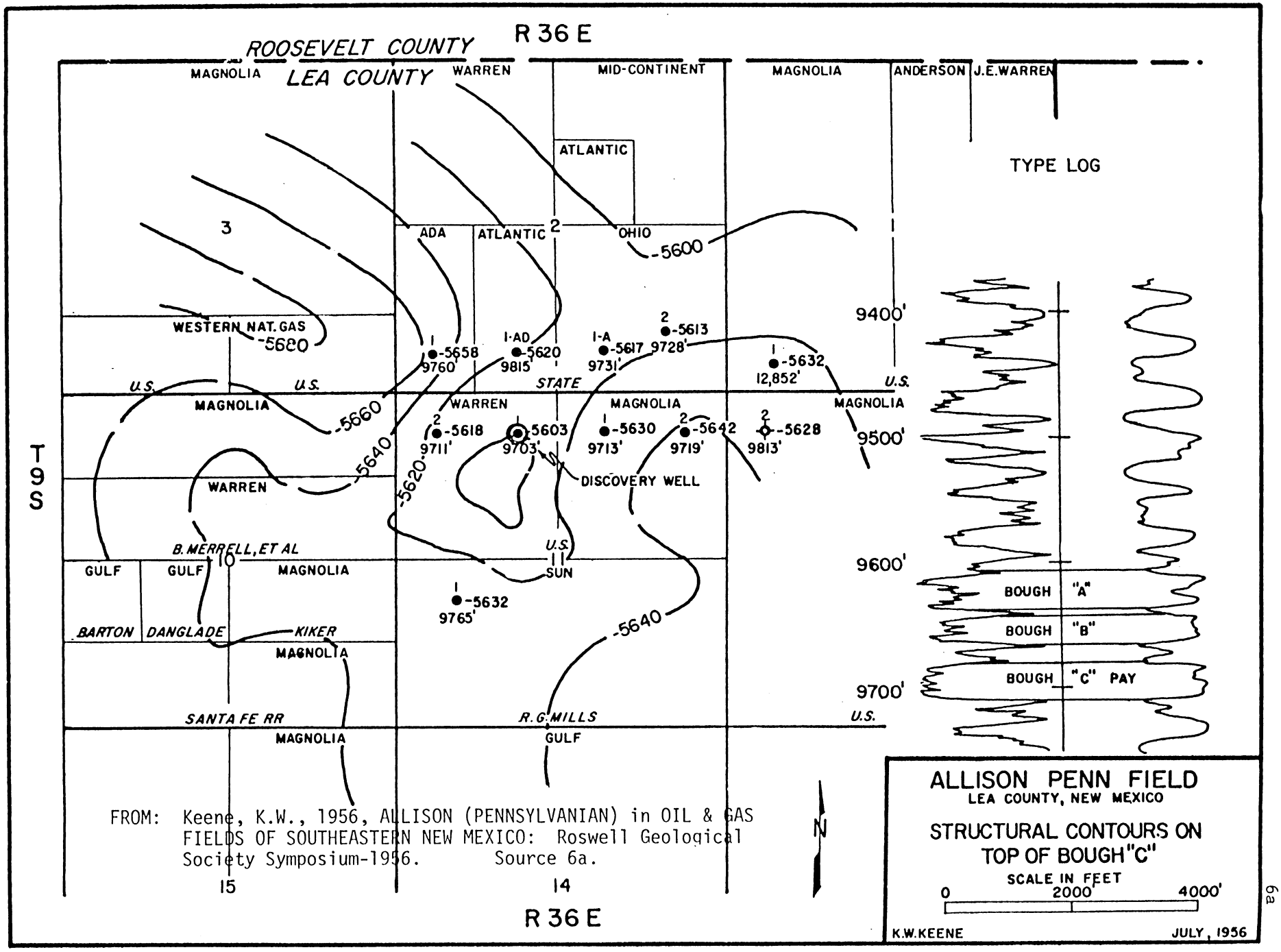
DATA SOURCE:	6a	6b	1
TOTAL SOLIDS (ppm):			
NA + K	37,600	37,300	37,800
Ca	6,080	6,080	8,330
Mg	1,895	1,895	948
Fe	trace	trace	-
SO_4	675	675	1200
Cl	73,120	73,120	72,400
CO_2	377	377	
HCO_3			
OH			
H_2S			
CO_3			634

6a,1 RESISTIVITY: .07 ohm/meters @ 75°F; .059 @ 85°F

SPECIFIC GRAVITY:

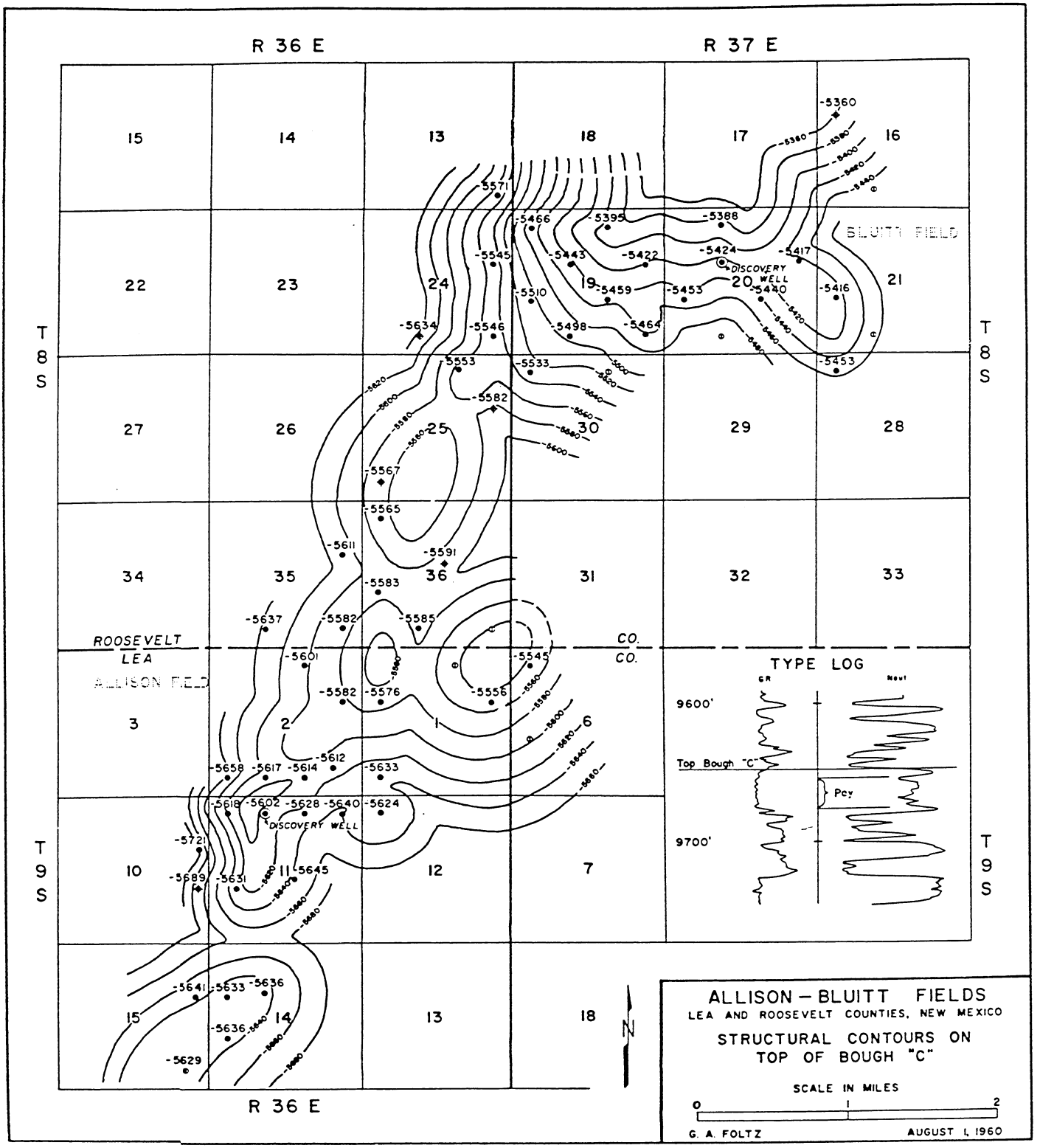
6a, 1 sweet/Sp.G.=.870; 1.080 @ 68°F

OTHER WATER QUALITY DATA:



FROM: Keene, K.W., 1956, ALLISON (PENNSYLVANIAN) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium-1956. Source 6a.

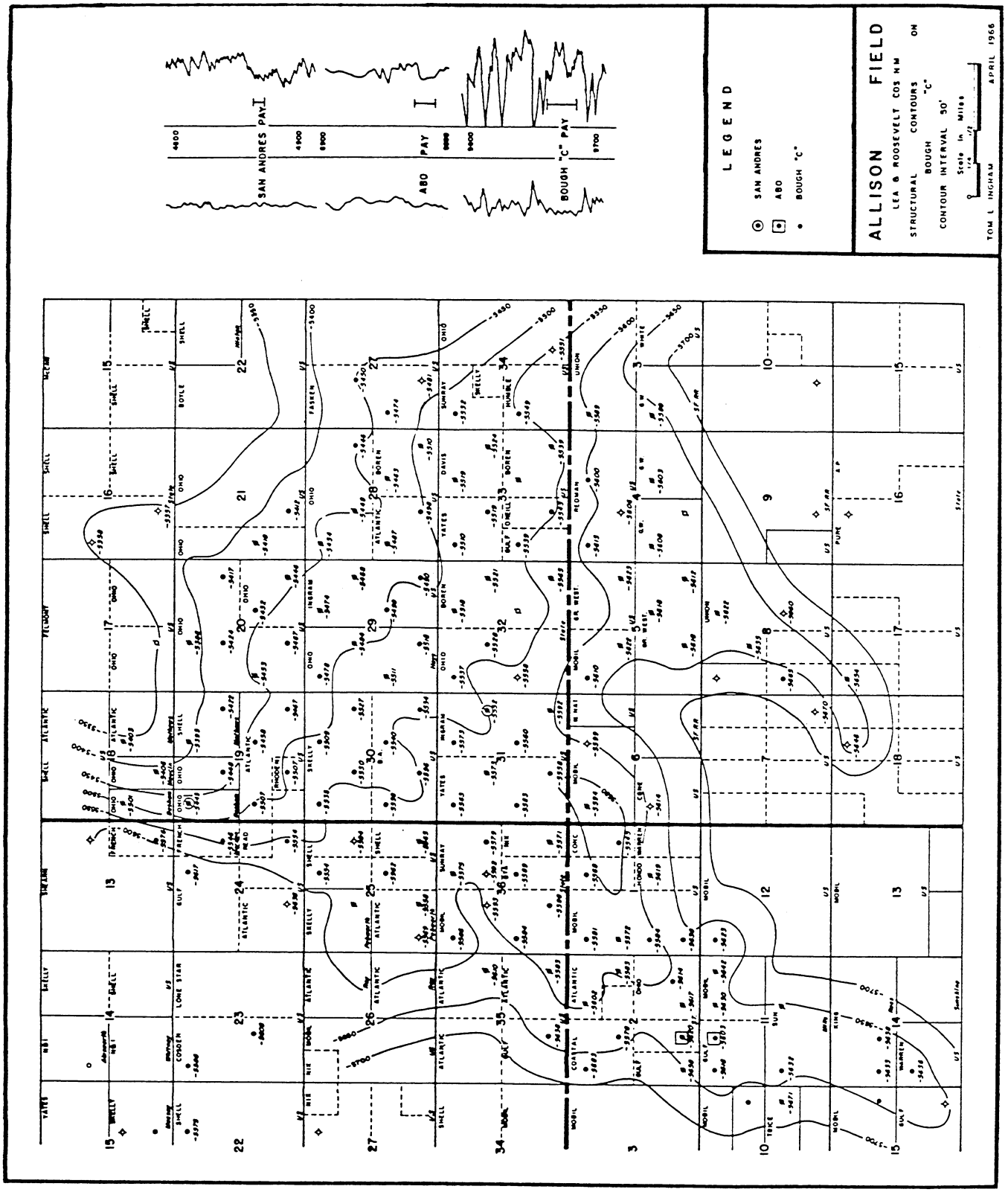
Source 6b



FROM: Savage, G.J., and Kelliher, T.G., Jr., 1960, ALLISON PENNSYLVANIAN in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium, 1960.

Source 6c

FROM: Ingram, T.L., 1966, ALLISON PENNSYLVANIAN in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium-1967.



DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Crane
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Armer
1	RESERVOIR	6350 (Fusselman)
1	GEOLOGIC AGE	Silurian
1	AAPG STRATIGRAPHIC AGE CODE	354
1	RESERVOIR LITHOLOGY	Dolomite
	TRAPPING MECHANISM	
3, 1	DISCOVERY YEAR	9-1955, 1955
1	PROVED ACREAGE	960
1	REGULAR WELL SPACING (acres/well)	40
1,3	RESERVOIR DEPTH	6340
	RESERVOIR THICKNESS	
1	NET PAY	34.0
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
1	FRACTION	.06
	PERMEABILITY	
	RANGE	
1	AVERAGE	20 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	35
1	PRODUCTION 1976 oil (cum)	3715
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	3,915
3	PRODUCTION 1-1-79 to 1-1-80	61.9 mbbls oil; 188.6 mmcf gas
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Armer
1	RESERVOIR:	6350 Fusselman
1	PROD. ACRES:	960
1	AVG. THICKNESS (FT.):	34
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.4
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	125 (GG=.8)
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2631
	RESERVOIR PRESSURE INITIAL (psi):	
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	843
1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	3578.8 (76)
1,3	STOCK TANK OIL GRAVITY (°API):	38
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1561
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

1 Primary recovery 90 bbl/acre-ft.

Arrowhead
Grayburg
Central Basin Platform

DATA SOURCE CODE		
	STATE	New Mexico
6a	COUNTY	Lea
	REGULATORY DISTRICT	
13c	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
13c,6a,13b	FIELD	Arrowhead
13b,13c,6a	RESERVOIR	Arrowhead-Grayburg; Queen-Grayburg
	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
6a,13c,13b	RESERVOIR LITHOLOGY	Queen--fine grained well cemented SS with porous dolomite stringers. Grayburg--dolomite, fine crystalline to dense, highly oolitic productive zones, exceptionally porous & permeable; sandstone/limestone; sandstone/limestone.
6a	TRAPPING MECHANISM	Anticline
18,13b	DISCOVERY YEAR	1938
17	PROVED ACREAGE	8320 Queen
18	REGULAR WELL SPACING (acres/well)	40
13c,13b	RESERVOIR DEPTH	3650
	RESERVOIR THICKNESS	
13c, 13b	NET PAY	50
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
13b	FRACTION	.12
	PERMEABILITY	
	RANGE	
13b	AVERAGE	poor
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	74 (50P, 24A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	27,162
18	PRODUCTION 1-1-79 to 1-1-80	214 mbbls oil; 607 mmcf gas; 1253 mbbls H_2O
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	yes, for Queen
6a	LOGS?	yes, for Queen
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
13c,6a,13b	FIELD:	Arrowhead
	RESERVOIR:	Grayburg
	PROD. ACRES:	
13c,13b	AVG. THICKNESS (FT.):	50
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
6a	PRIMARY DRIVE MECHANISM:	solution gas
6a	PRIMARY GAS CAP?:	yes
	TEMPERATURE (^oF):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6a	RESERVOIR PRESSURE INITIAL (psi):	1460
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6a,13c,13b	STOCK TANK OIL GRAVITY (^oAPI):	34
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

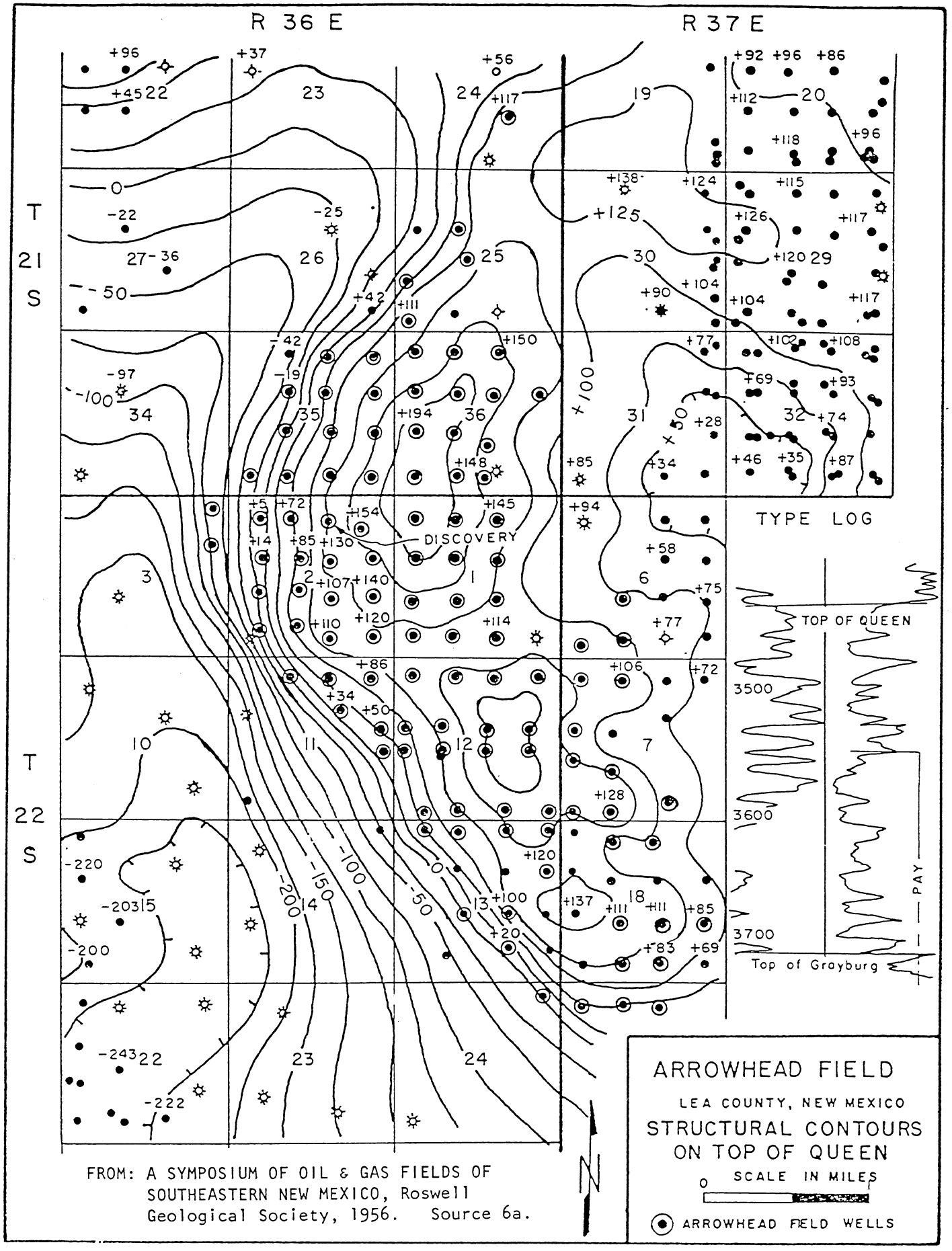
13c Recommended for CO_2,polymer flood

WATER ANALYSIS RECORD

FIELD: Arrowhead RESERVOIR: Grayburg TOTAL NO. PROJECTS:
DATA SOURCE:

TOTAL SOLIDS (ppm):	7840
NA	2000
Ca	175
Mg	
Fe	3
SO_4	105
Cl	2950
CO_2	
HCO_3	1903
OH	nil
H_2S	8
RESISTIVITY:	0.972
SPECIFIC GRAVITY:	

OTHER WATER QUALITY DATA:



FROM: A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, Roswell Geological Society, 1956. Source 6a.

Artesia
San Andres-Grayburg
Northwest Shelf

DATA SOURCE CODE		
	STATE	New Mexico
1, 6a	COUNTY	Eddy
1	REGULATORY DISTRICT	Southeast
1, 6a	BASIN	Permian
15	SUB-BASIN	Northwest Shelf
1, 6a	FIELD	Artesia
6a	RESERVOIR	San Andres-Grayburg, Grayburg-San Andres
1, 6	GEOLOGIC AGE	Guadalupian
1, 6a	AAPG STRATIGRAPHIC AGE CODE	313
6a, 1	RESERVOIR LITHOLOGY	San Andres oolitic dolomite, limestone dolomite
1, 6a, 7	TRAPPING MECHANISM	Grayburg sands alternate in 300' interval of dolomite. Stratigraphic due to updip lensing out of effective porosity.
1, 6a	DISCOVERY YEAR	8-1923
1	PROVED ACREAGE	17,760
	REGULAR WELL SPACING (acres/well)	
1	RESERVOIR DEPTH	1,875
	RESERVOIR THICKNESS	
6a	NET PAY	25
6a	GROSS	300
	NET/GROSS RATIO	
	POROSITY	
1	TYPE	intergranular
6a, 1	FRACTION	.21
	PERMEABILITY	
	RANGE	
1	AVERAGE	90 md
6a, 1	HORIZONTAL	90 md
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	525 Total; 331Pump, 3Flow, 141Inj., 50 Shu In; 338P, 132S.I., 133Inj.
1	PRODUCTION 1977 oil (cum)	23,581
	PRODUCTION 1978 oil (cum)	
	PRODUCTION 1979 oil (cum)	24,572 (SA, Grbg., & Q)
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	yes
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

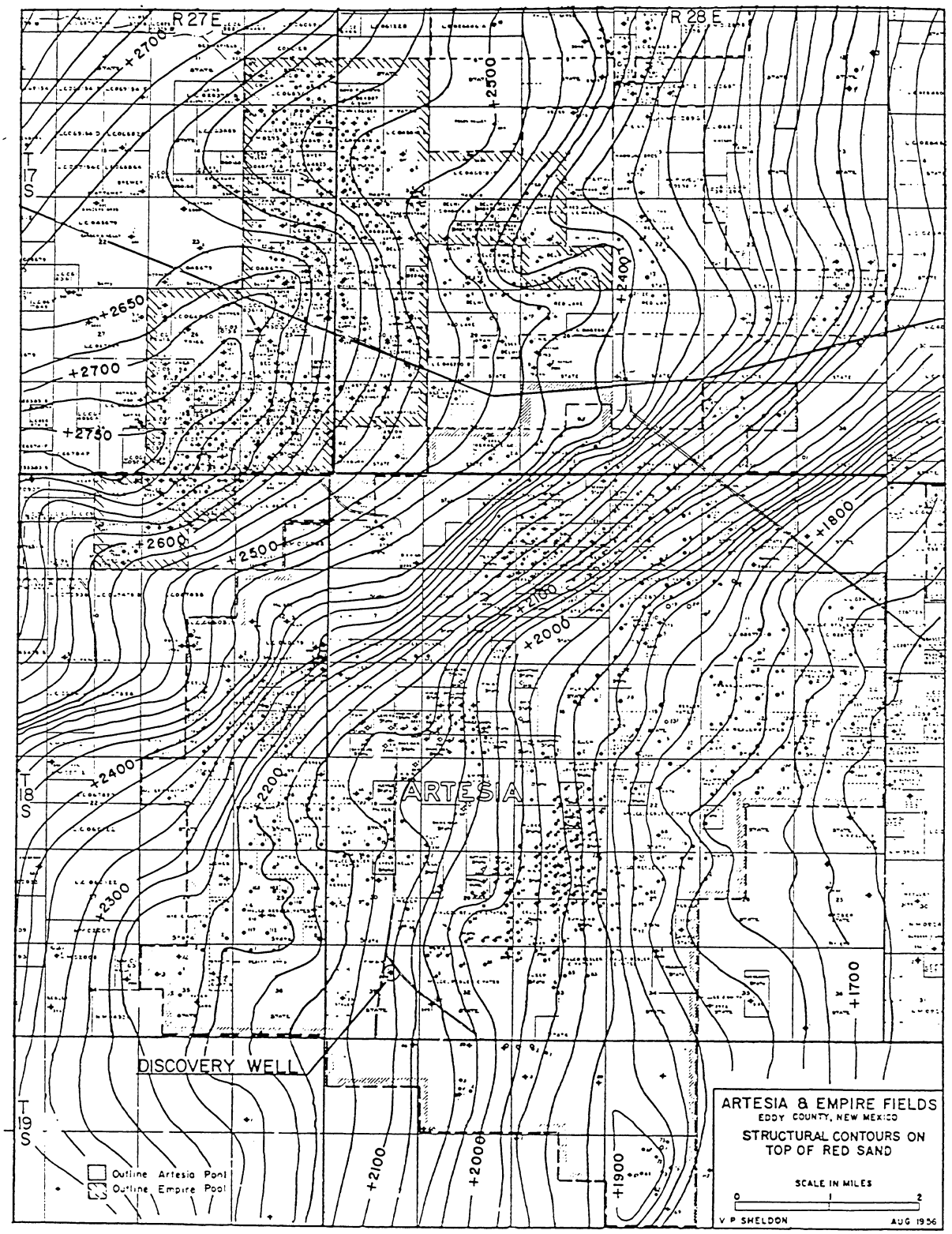
RESERVOIR DATA

DATA SOURCE CODE		
6a	FIELD:	Artesia
1	RESERVOIR:	San Andres
1	PROD. ACRES:	17,760
	AVG. THICKNESS (FT.):	35
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
6a, 1	WATER SATURATION (S_W):	.20
6a, 1	OIL SATURATION (S_O):	.30
1, 6a	PRIMARY DRIVE MECHANISM:	gas solution
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	97 (GG = 1.2)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	939
1, 6a	RESERVOIR PRESSURE INITIAL (psi):	1,000
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	212
1, 6a	STOCK TANK OIL GRAVITY (°API):	36
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1,226
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: Artesia	RESERVOIR: San Andres		TOTAL NO. PROJECTS:
DATA SOURCE:	6a	1	
TOTAL SOLIDS (ppm):	187,762	187,762	
NA + K	73,896	73,896	
Ca			
Mg			
Fe			
SO_4			
Cl	113,866	113,866	
CO_2			
HCO_3			
OH			
H_2S	neg		
RESISTIVITY:	N/A		
SPECIFIC GRAVITY:	1.13	1.13 @ 68°F	
OTHER WATER QUALITY DATA:	Ph - 7.1	7.1	



FROM: Fryman, A.D., 1956, ARTESIA (GRAYBURG-SAN ANDRES) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium-1956.

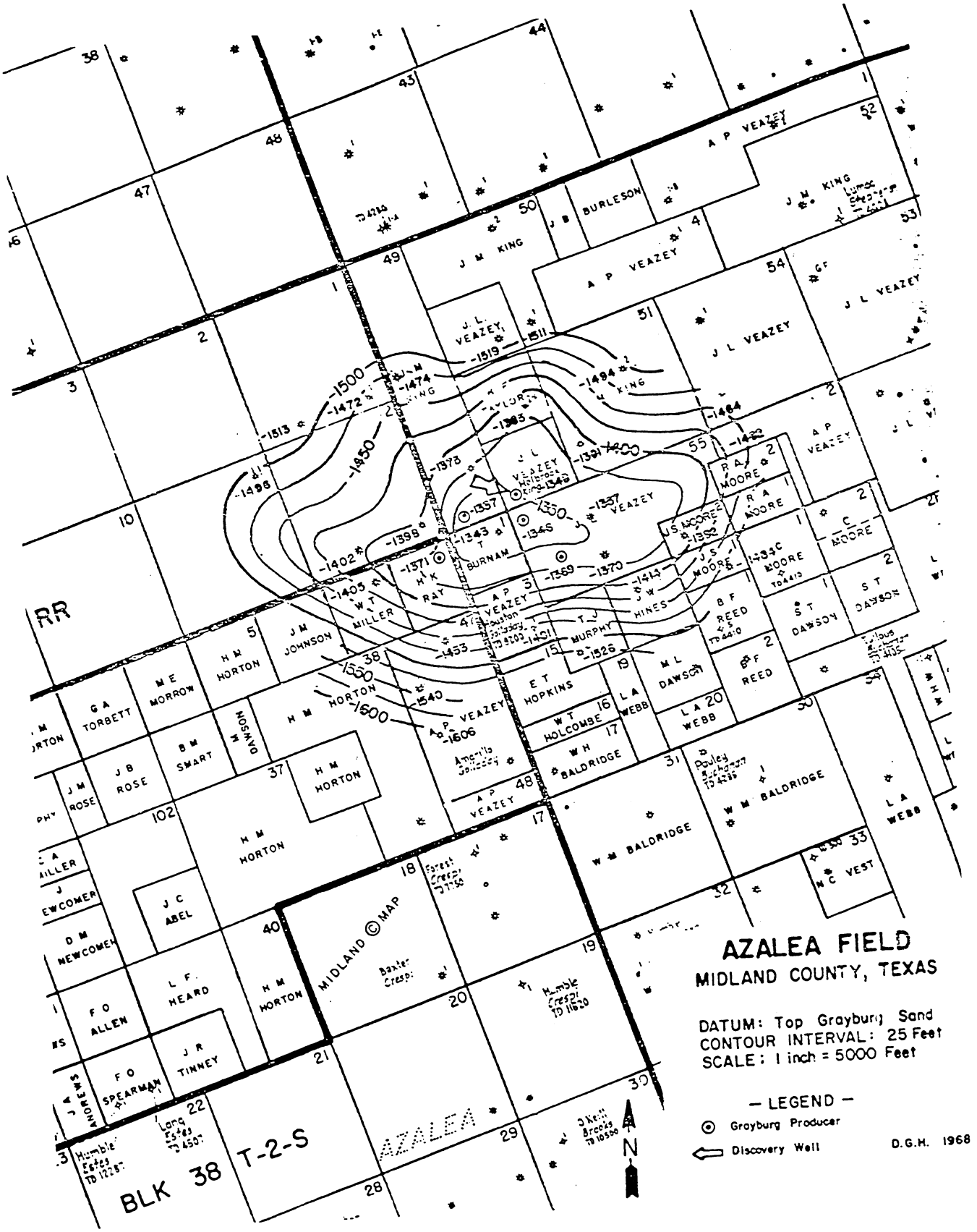
Azalea
Midland Basin
Grayburg

DATA SOURCE CODE		
	STATE	Texas
5b	COUNTY	Midland
5b	REGULATORY DISTRICT	8
5b	BASIN	Permian
15	SUB-BASIN	Midland
5b	FIELD	Azalea
5b	RESERVOIR	Grayburg
5b	GEOLOGIC AGE	Lower Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
5b	RESERVOIR LITHOLOGY	Sand & dolomite. Grayburg sand is continuous. The dolomite pay zone is discontinuous, very fine grained laminated sand and finely sucrosic dolomite.
5b	TRAPPING MECHANISM	Anticline
3, 5b	DISCOVERY YEAR	10-1967
5b	PROVED ACREAGE	400+
5b	REGULAR WELL SPACING (acres/well)	80
5b, 3	RESERVOIR DEPTH	4070, 4088
	RESERVOIR THICKNESS	
5b	NET PAY	18
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
5b	TYPE	IC
5b	FRACTION	.12
	PERMEABILITY	
	RANGE	
5b	AVERAGE	4 md
	HORIZONTAL	
	VERTICAL	
5b	OTHER INFORMATION	disc. well: FW Holbrook King No.1
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
5b	TOTAL NUMBER OF WELLS	5 in 1967
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	817
3	PRODUCTION 1-1-79 to 1-1-80	63.6 mbbls oil; 1.3 mmcf gas
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	
5b	STRUCTURE CONTOUR?	Yes
5b	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

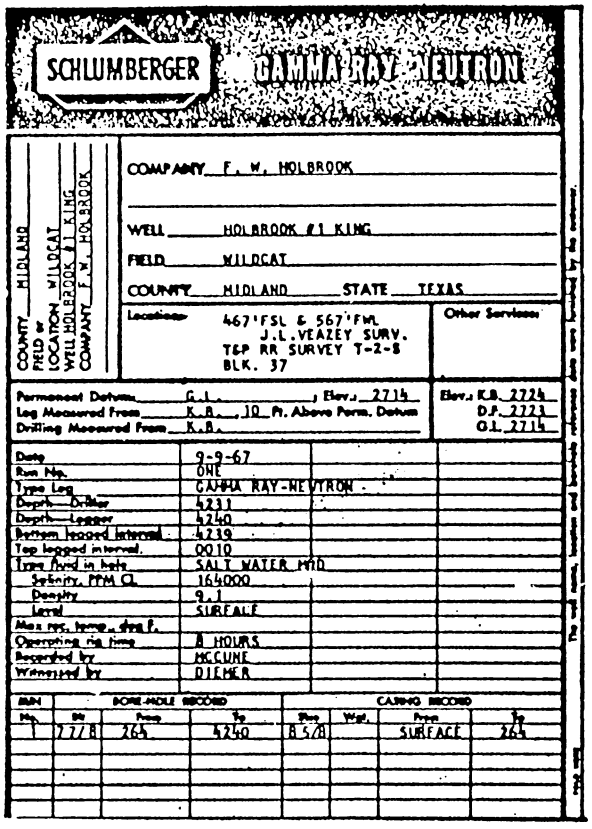
RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Azalea
5b	RESERVOIR:	Grayburg
5b	PROD. ACRES:	400+
5b	AVG. THICKNESS (FT.):	18
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
5b	PRIMARY DRIVE MECHANISM:	solution gas
	PRIMARY GAS CAP?:	
	TEMPERATURE (^oF):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
5b	RESERVOIR PRESSURE INITIAL (psi):	1827
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
3, 5b	STOCK TANK OIL GRAVITY (^oAPI):	30, 32
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

	OTHER INFORMATION:



FROM: Hardy, D.G., 1969, AZALEA (GRAYBURG) in OIL & GAS FIELDS OF WEST TEXAS-A SYMPOSIUM: WEST TEXAS GEOLOGICAL SOCIETY, PUBL. NO. 69-57.



SCHLUMBERGER GAMMA RAY-NEUTRON

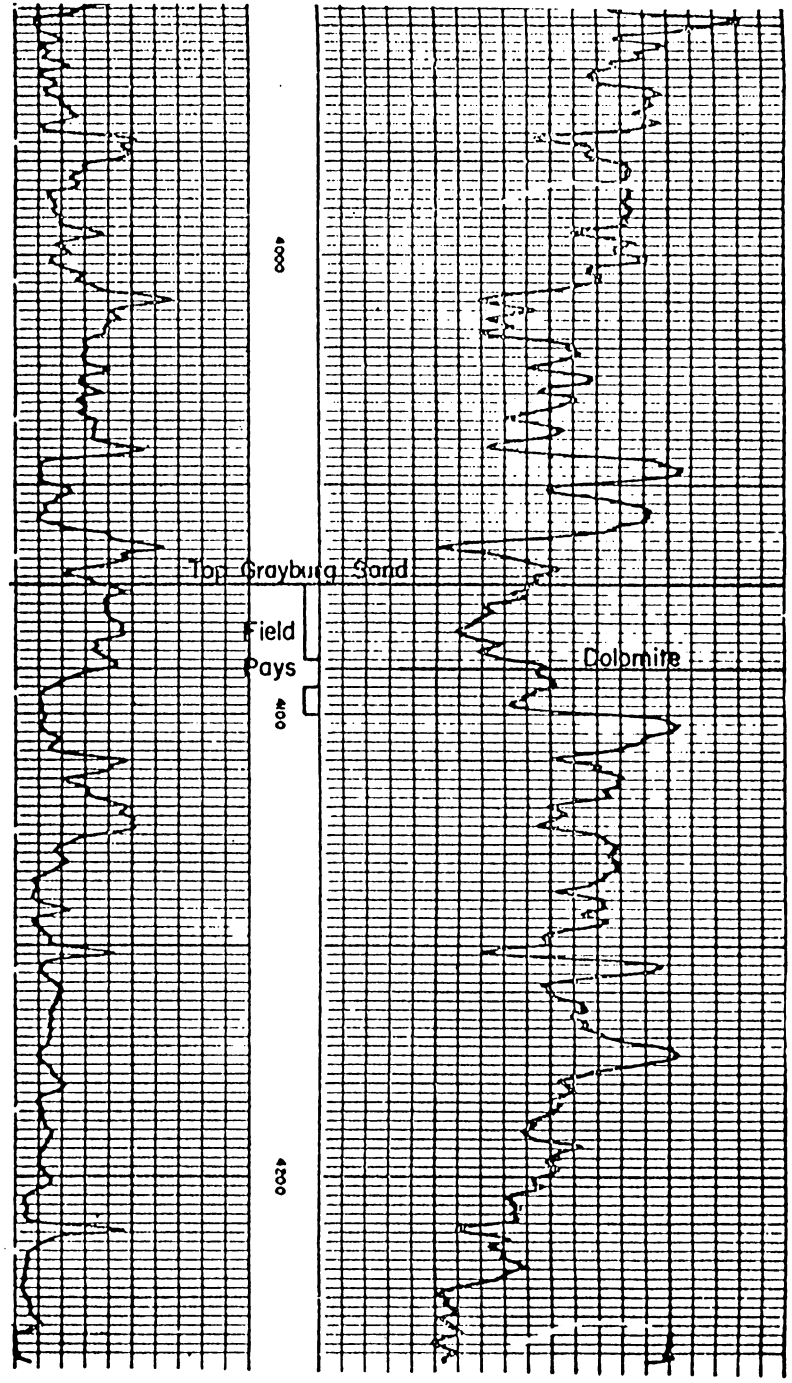
COUNTY MIDLAND
FIELD or LOCATION WILDCAT
WELL HOLBROOK #1 KING
COMPANY F. W. HOLBROOK

COMPANY F. W. HOLBROOK
WELL HOLBROOK #1 KING
FIELD WILDCAT
COUNTY MIDLAND STATE TEXAS
Location: 467'FSL & 567'FWL J.L.VEAZEY SURV. T&P RR SURVEY T-2-S BLK. 37
Other Services:

Permanent Datum G.L. Elev.: 2714
Log Measured From K.B. 10 Ft. Above Perm. Datum
Drilling Measured From K.B.
Elev.: K.B. 2724 D.F. 2723 G.L. 2714

Date	9-9-67
Run No.	ONE
Type Log	GAMMA RAY-NEUTRON
Depth—Driller	4231
Depth—Logger	4240
Bottom logged interval	4239
Top logged interval	0010
Type fluid in hole	SALT WATER MUD
Salinity, PPM Cl	164000
Density	9.1
Level	SURFACE
Max rec. temp., deg. F.	
Operating rig time	8 HOURS
Recorded by	MCCUNE
Witnessed by	DIEMER

BORE-HOLE RECORD				CASING RECORD			
No.	Bit	From	To	Size	Wgt.	From	To
1	7 7/8	265	4240	8 5/8		SURFACE	265



FROM: Hardy, D.G., 1969, AZALEA (GRAYBURG) in OIL & GAS FIELDS OF WEST TEXAS - A SYMPOSIUM: West Texas Geological Society, Publ. No. 69-57. Source 5b.

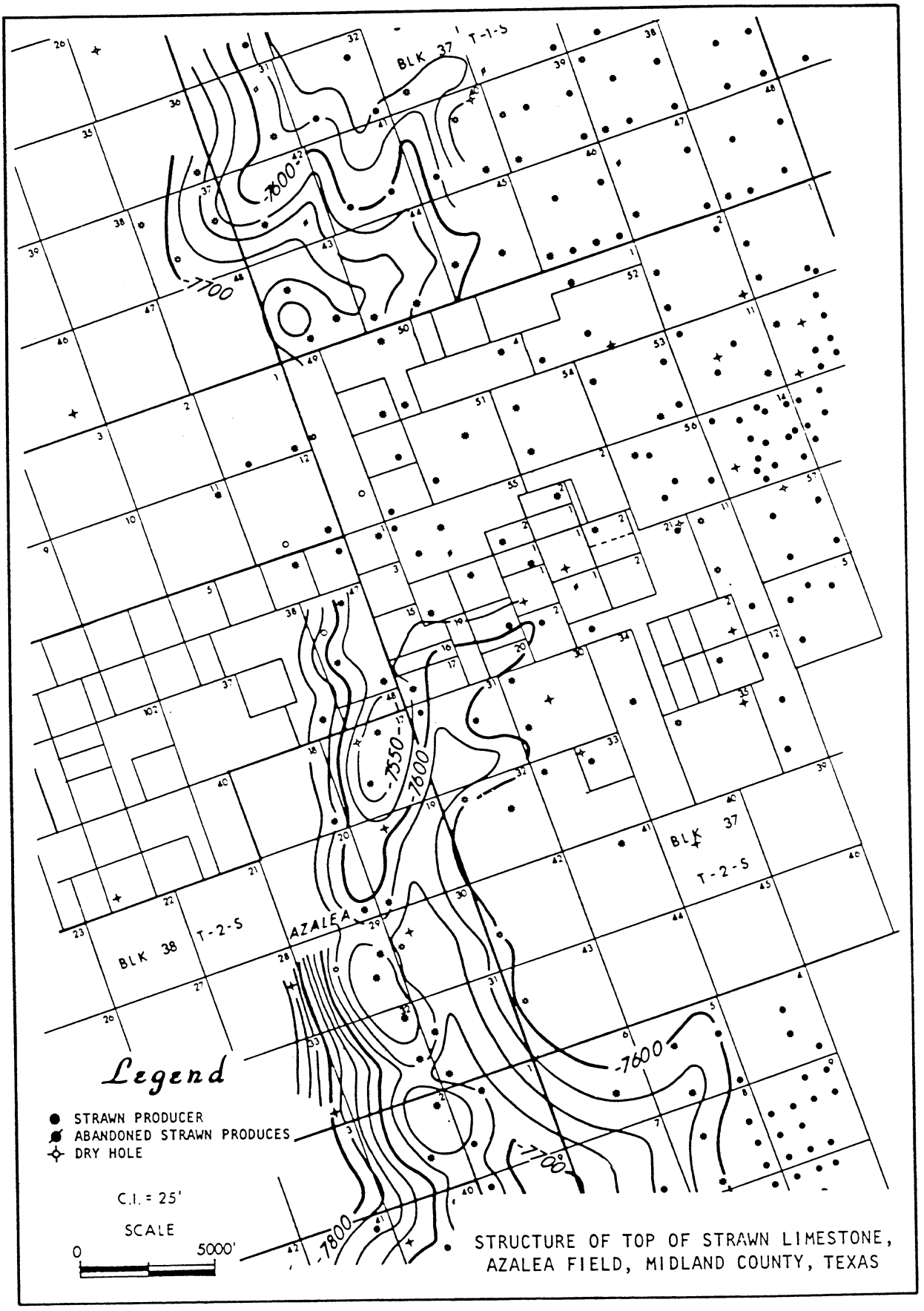
Azalea
Midland Basin
Strawn

DATA SOURCE CODE		
	STATE	Texas
5b	COUNTY	Midland
5b	REGULATORY DISTRICT	8
5b	BASIN	Permian
5b	SUB-BASIN	Midland
5b	FIELD	Azalea
5b	RESERVOIR	Strawn
5b	GEOLOGIC AGE	Pennsylvanian
1	AAPG STRATIGRAPHIC AGE CODE	325
5b	RESERVOIR LITHOLOGY	Limestone; pay zone is porous and fossiliferous limestone stringers.
5b	TRAPPING MECHANISM	Biostromal reef
5b, 3	DISCOVERY YEAR	3-1966, 6-1977
5b	PROVED ACREAGE	8000
5b	REGULAR WELL SPACING (acres/well)	320
5b, 3	RESERVOIR DEPTH	10,320; 10,366
	RESERVOIR THICKNESS	
	NET PAY	
5b	GROSS	160'
	NET/GROSS RATIO	
	POROSITY	
5b	TYPE	IC
5b	FRACTION	.08
	PERMEABILITY	
	RANGE	
5b	AVERAGE	7 md
	HORIZONTAL	
	VERTICAL	
5b	OTHER INFORMATION	Disc. well: Murphy H. Baxter, Heidelberg No. 1
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
5b	TOTAL NUMBER OF WELLS	22 in 1967
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	49
3	PRODUCTION 1-1-79 to 1-1-80	24.3 mbbls oil; 42.6 mmcf gas
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5b	STRUCTURE CONTOUR?	Yes
5b	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

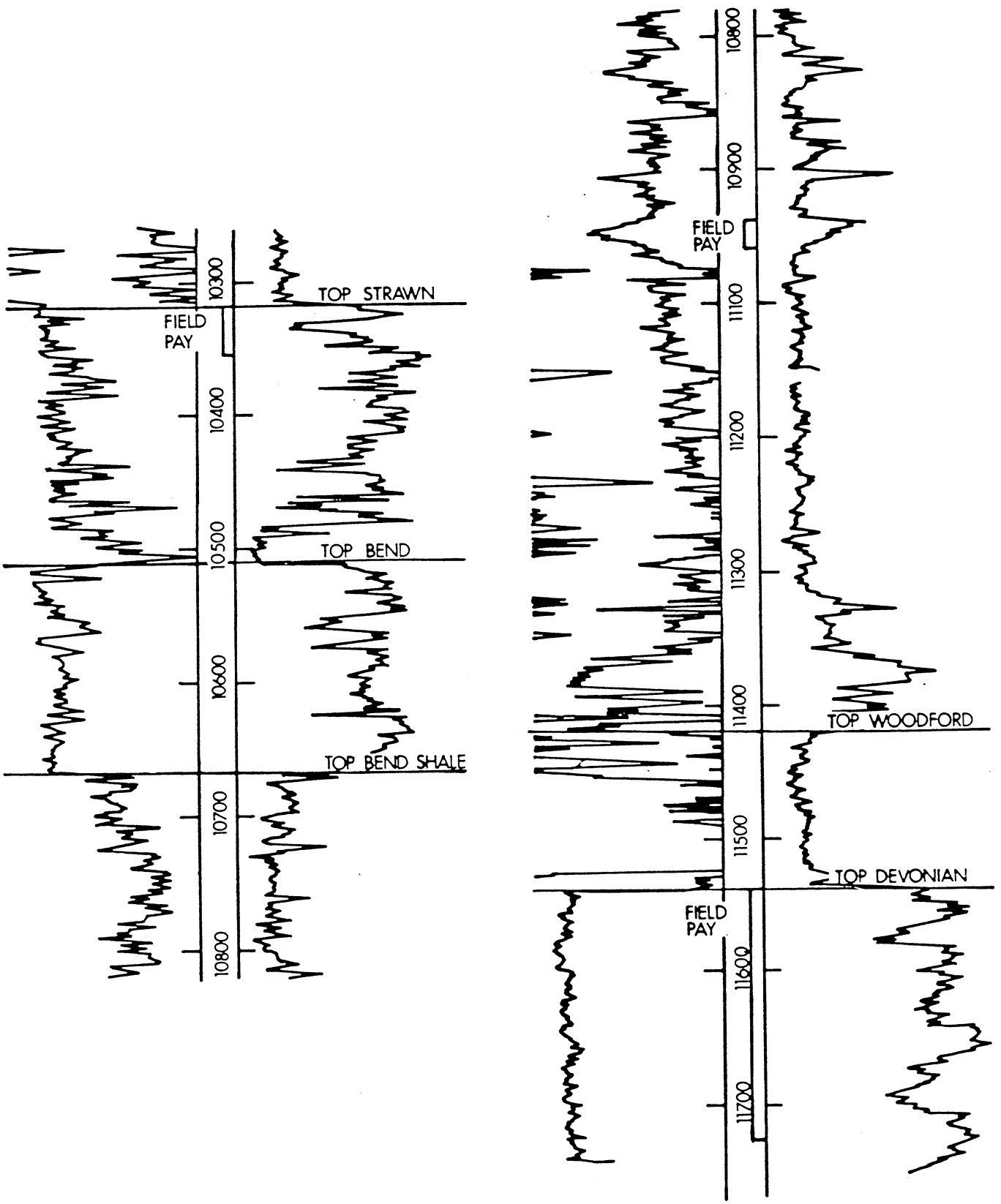
RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Azalea
5b	RESERVOIR:	Strawn
5b	PROD. ACRES:	8000
5b	AVG. THICKNESS (FT.):	160
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
5b	PRIMARY DRIVE MECHANISM:	expansion gas
	PRIMARY GAS CAP?:	
	TEMPERATURE (°F):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
5b	RESERVOIR PRESSURE INITIAL (psi):	5713
	RESERVOIR PRESSURE LATEST (psi):	
5b	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	7600
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
5b, 3	STOCK TANK OIL GRAVITY (°API):	60, 58
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

	OTHER INFORMATION:
5b	1967 no water produced



FROM: Hardy, D.G., Azalea (Strawn) in Oil & Gas Fields in West Texas, Pub. No. 60-57, 1969. Source 5b



TYPE LOG OF AZALEA FIELD

FROM: Hardy, D.G., Azalea (Strawn) in Oil & Gas Fields in West Texas, Pub. No. 60-57, 1969. Source 5b.

Azalea
Midland Basin
Devonian

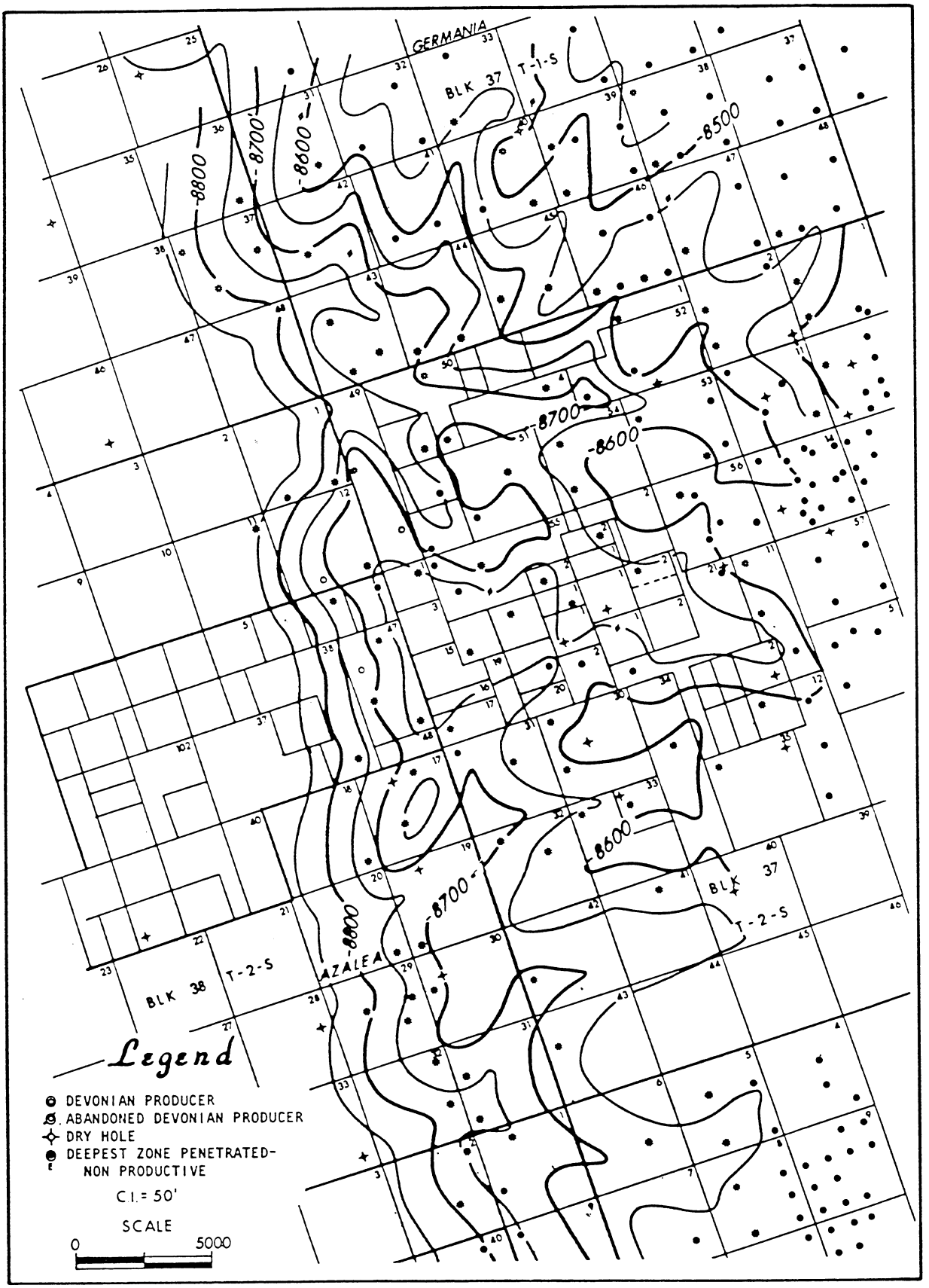
DATA SOURCE CODE		
	STATE----------	Texas
5b, 1	COUNTY----------	Midland
5b, 1	REGULATORY DISTRICT----------	8
5b, 1	BASIN----------	Permian
15, 1	SUB-BASIN----------	Midland
5b, 1	FIELD----------	Azalea
5b, 1	RESERVOIR----------	Devonian
5b, 1	GEOLOGIC AGE----------	Devonian
1	AAPG STRATIGRAPHIC AGE CODE----------	347
5b, 1	RESERVOIR LITHOLOGY----------	Limestone, slightly fractured, med. to coarsly crystalline, partially dolomitized-heterogeneous porosity & permeability developed by ground water activity in pre-Woodford pd.of erosion. (dolomite, limestone, chert)
5b, 1	TRAPPING MECHANISM----------	Updip wedgeout of pay interval on a north-south trending monicline; lateral change in porosity & permeability-stratigraphic.
5b, 1	DISCOVERY YEAR----------	3-1957; 1957
5b, 16c	PROVED ACREAGE----------	36,000
5b, 1	REGULAR WELL SPACING (acres/well)-----	320
5b, 3,1	RESERVOIR DEPTH----------	11,460, 11,520, 11,360
	RESERVOIR THICKNESS	
5b,1,16c	NET PAY----------	30-130', 60, 63
5b	GROSS----------	30-130'
	NET/GROSS RATIO----------	
	POROSITY	
5b, 1	TYPE----------	V, F, IC, VF
5b, 1	FRACTION----------	.037, .04
	PERMEABILITY	
	RANGE----------	
5b, 1	AVERAGE----------	6.3 md
	HORIZONTAL----------	
	VERTICAL----------	
5b	OTHER INFORMATION----------	disc. well: Murphy H. Baxter, Crespi Unit #1
1	According to PDS, Azalea-Devonian is a gas field.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 5b	TOTAL NUMBER OF WELLS----------	86
	PRODUCTION 1976 oil (cum)----------	
	PRODUCTION 1977 oil (cum)----------	
	PRODUCTION 1978 oil (cum)----------	
3	PRODUCTION 1979 oil (cum)----------	381.5
3	PRODUCTION 1-1-79 to 1-1-80----------	96.8 mbbls oil; 2,022.7 mmcf gas
	SECONDARY RECOVERY RECORDS?----------	No
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
5b	STRUCTURE CONTOUR?----------	Yes
5b	LOGS?----------	See Azalea-Strawn
	STRUCTURE SECTION?----------	
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Azalea
5b, 1	RESERVOIR:	Devonian
5b, 16c	PROD. ACRES:	36,000
5b, 1, 16c	AVG. THICKNESS (FT.):	30-130, 60, 63
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1	WATER SATURATION (S_W):	.40
	OIL SATURATION (S_O):	
5b, 1	PRIMARY DRIVE MECHANISM:	expansion gas
	PRIMARY GAS CAP?:	
1	TEMPERATURE (°F):	208
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	36,963
5b,1	RESERVOIR PRESSURE INITIAL (psi):	5100, 550
1	RESERVOIR PRESSURE LATEST (psi):	192 (76)
5b, 1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	3650
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	25,045
5b, 3, 1	STOCK TANK OIL GRAVITY (°API):	56, 47.5, 55, 54.5
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	2510
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

1	gas field-state designation
1	gas producing-present status of pool
5b	no water produced



STRUCTURE ON TOP OF DEVONIAN AZALEA
FIELD, MIDLAND COUNTY, TEXAS

FROM: Hardy, D.G., Azalea (Devonian) in Oil & Gas Fields in West Texas, Pub. No. 60-57, 1969. Source 5b

Bakke
Midland Basin
Wolfcamp

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Andrews
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Midland Basin
1	FIELD	Bakke
1	RESERVOIR	Wolfcamp
5, 1	GEOLOGIC AGE	Wolfcamp, Lower Permian
1	AAPG STRATIGRAPHIC AGE CODE	319
1	RESERVOIR LITHOLOGY	Limestone
1	TRAPPING MECHANISM	Stratigraphic/structural Lat.Por.Perm.Cng./anticline
2, 1	DISCOVERY YEAR	12-56, 1956
2, 1	PROVED ACREAGE	5,370, 560
1	REGULAR WELL SPACING (acres/well)	40
1, 2	RESERVOIR DEPTH	8,492 & 8,956
1	Acreage unitized	5,886
	RESERVOIR THICKNESS	
2, 1	NET PAY	23, 46
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2, 1	FRACTION	.115, .031
	PERMEABILITY	
	RANGE	
2, 1	AVERAGE	40 md, 10 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	55, 39
1	PRODUCTION 1976 oil (cum)	16,178
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	18,030.8
3	PRODUCTION 1-1-79 to 1-1-80	652.5 M bbls, 252.5 MMCF
	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	no
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
1	FIELD:	Bakke
1	RESERVOIR:	Wolfcamp
2, 1	PROD. ACRES:	5,370, 560
2, 1	AVG. THICKNESS (FT.):	23, 46
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
1	PRIMARY DRIVE MECHANISM:	depletion
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	133
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	8,943
1, 2	RESERVOIR PRESSURE INITIAL (psi):	3,678, 3,685
2	RESERVOIR PRESSURE LATEST (psi):	725
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	727
17, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	3,309, 3,308.9 (76)
1, 2, 3	STOCK TANK OIL GRAVITY (°API):	40.4, 40.4, 41
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP); (psia)	1,649
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	76,606 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	12,605 mbbls

1 OTHER INFORMATION: Primary recoverable: 75 bbl/acre ft.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Bakke RESERVOIR: Wolfcamp TOTAL NO. PROJECTS: 1 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	421				
1977 PROD. (this project):	422				
CUM. PROD. FROM DISC. TO 1/78:	26,265				
PROJECT NO.	F1098				
LEASE NO.(s):	20882				
OPERATOR:	Amoco				
RESERVOIR:	Wolfcamp				Wolfcamp
DEPTH PRODUCING ZONE:	8,492 & 8,956				8,492
PRODUCTIVE ACREAGE IN RESERVOIR:	5,370				560
ACREAGE IN PROJECT:	4,830				5,886
PORTION OR FIELD WIDE	FW				
TYPE:	WF/SW, FW				WF
PATTERN:	MI9				
YEAR BEGAN:	8-70				
YEAR TERMINATED OR STATUS:	ICP				
RESERVOIR PRESSURE INITIAL:	3,685				3,678
BEG. INJECTION:	466				
LATEST:	725				
NUMBER OF WELLS TOTAL:					
PRODUCING WELLS:	39 1-78				55
INJECTION WELLS:					
MAXIMUM:	16				
LATEST:					
SHUT-IN/ABANDONED WELLS:	158				
SURFACE INJECTION PRESSURE:	1600				
EFFECTIVENESS OF INJECTION:	ME				
OPERATOR PROBLEMS:	EB, CR, EW, SC				
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	492				
FROM BEG. INJECTION:	5446				
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	13,300				
WATER PRODUCTION:					
CURRENT (1977):	1,973				
CUMULATIVE TO 1/78:	22,073				
CURRENT (1977) INJECTION:	3,481 SW, 35 FW				
CUMULATIVE INJECTION:	17,444 SW, 21,118 FW				

Barnhart
Ellenburger
Reagan Uplift

DATA SOURCE CODE		
	STATE	Texas
2	COUNTY	Reagan
2	REGULATORY DISTRICT	7C
	BASIN	Permian
15	SUB-BASIN	Reagan Uplift
7, 2	FIELD	Barnhart
7, 2	RESERVOIR	Ellenburger Dolomite
5a	GEOLOGIC AGE	Ordovician Ellenburger
1	AAPG STRATIGRAPHIC AGE CODE	360
5a	RESERVOIR LITHOLOGY	Crystalline, vuggy, highly fractured dolomite.
5a	TRAPPING MECHANISM	Truncated anticline.
2, 3	DISCOVERY YEAR	8-1941
2, 5a	PROVED ACREAGE	9600, 9100
5a	REGULAR WELL SPACING (acres/well)	40
2, 3	RESERVOIR DEPTH	9000, 9008
	RESERVOIR THICKNESS	
2	NET PAY	78
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.032
	PERMEABILITY	
	RANGE	
2	AVERAGE	6 md
2	HORIZONTAL	6 md
	VERTICAL	
3	OTHER INFORMATION	Other production from Canyon, Grayburg, Wolfcamp
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2, 5a	TOTAL NUMBER OF WELLS	9P; 57P, 23A in 1966
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	15,856.9
3	PRODUCTION 1-1-79 to 1-1-80	35.6 mbbls oil; 156.5 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5a	STRUCTURE CONTOUR?	yes
5a	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

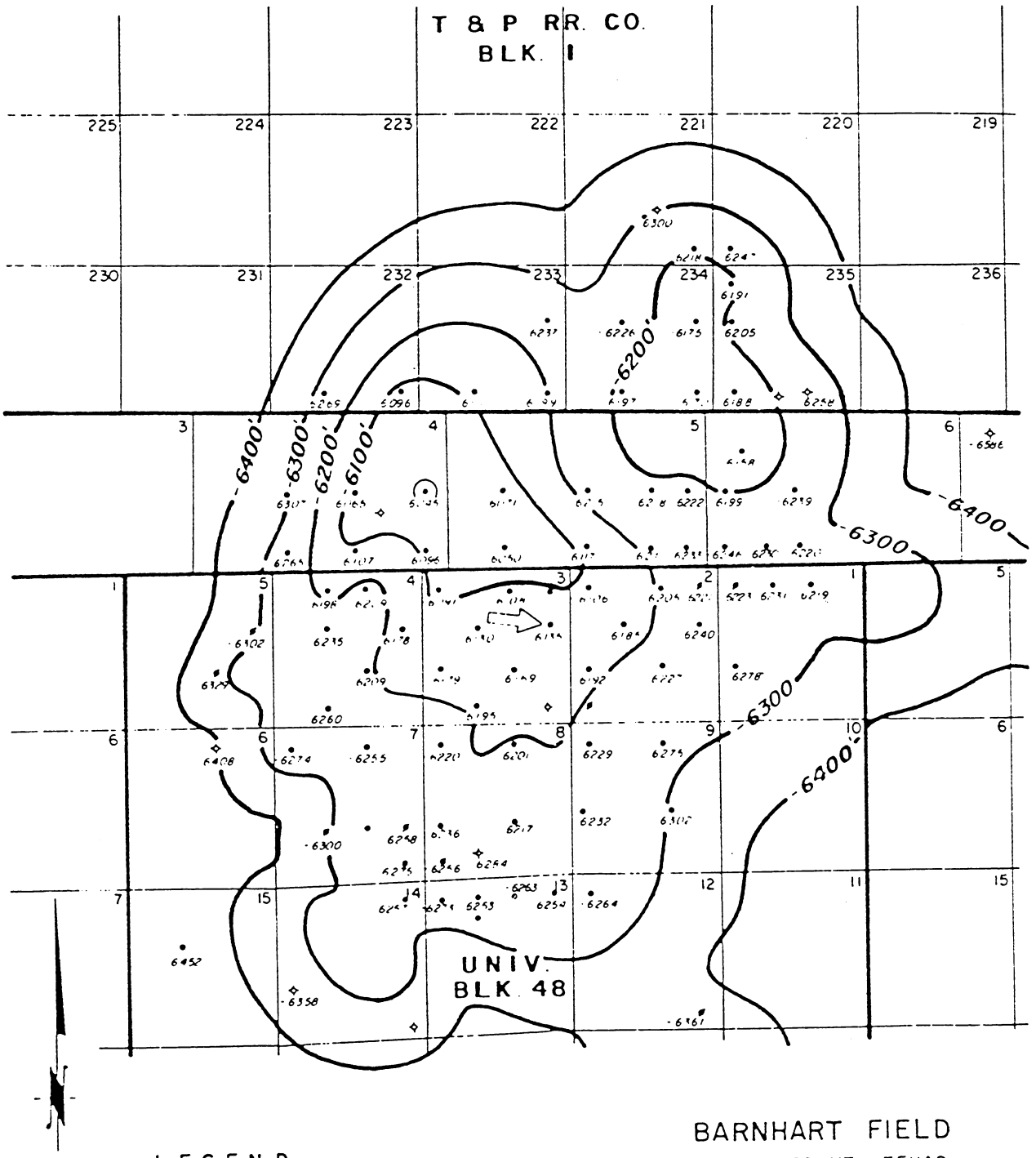
DATA SOURCE CODE		
2, 7	FIELD:	Barnhart
2	RESERVOIR:	Ellenburger
2	PROD. ACRES:	9600
2	AVG. THICKNESS (FT.):	78
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
5a	WATER SATURATION (S_W):	.20
	OIL SATURATION (S_O):	
5a	PRIMARY DRIVE MECHANISM:	solution gas-water
	PRIMARY GAS CAP?:	
	TEMPERATURE (°F):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2, 5a	RESERVOIR PRESSURE INITIAL (psi):	3920, 3920
2	RESERVOIR PRESSURE LATEST (psi):	1270
5a	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	2140-1
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2,3,5a	STOCK TANK OIL GRAVITY (°API):	44.2
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Barnhart RESERVOIR: Ellenburger TOTAL NO. PROJECTS: 1 Abandoned PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	---
1977 PROD. (this project):	---
CUM. PROD. FROM DISC. TO 1/78:	3506
PROJECT NO.	F1004
LEASE NO.(s):	04982
OPERATOR:	Regal Pet. Co.
RESERVOIR:	Ellenburger
DEPTH PRODUCING ZONE:	9000
PRODUCTIVE ACREAGE IN RESERVOIR:	9600
ACREAGE IN PROJECT:	1639
PORTION OR FIELD WIDE:	P
TYPE:	WF/SW
PATTERN:	I5
YEAR BEGAN:	2-67
YEAR TERMINATED OR STATUS:	IPD/1-72
RESERVOIR PRESSURE INITIAL:	3920
BEG. INJECTION:	1000
LATEST:	1270
NUMBER OF WELLS TOTAL:	9
PRODUCING WELLS:	9
INJECTION WELLS:	---
MAXIMUM:	---
LATEST:	---
SHUT-IN/ABANDONED WELLS:	0
SURFACE INJECTION PRESSURE:	---
EFFECTIVENESS OF INJECTION:	---
OPERATOR PROBLEMS:	---
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	---
FROM BEG. INJECTION:	---
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	---
WATER PRODUCTION:	
CURRENT (1977):	---
CUMULATIVE TO 1/78:	1
CURRENT (1977) INJECTION:	---
CUMULATIVE INJECTION:	133

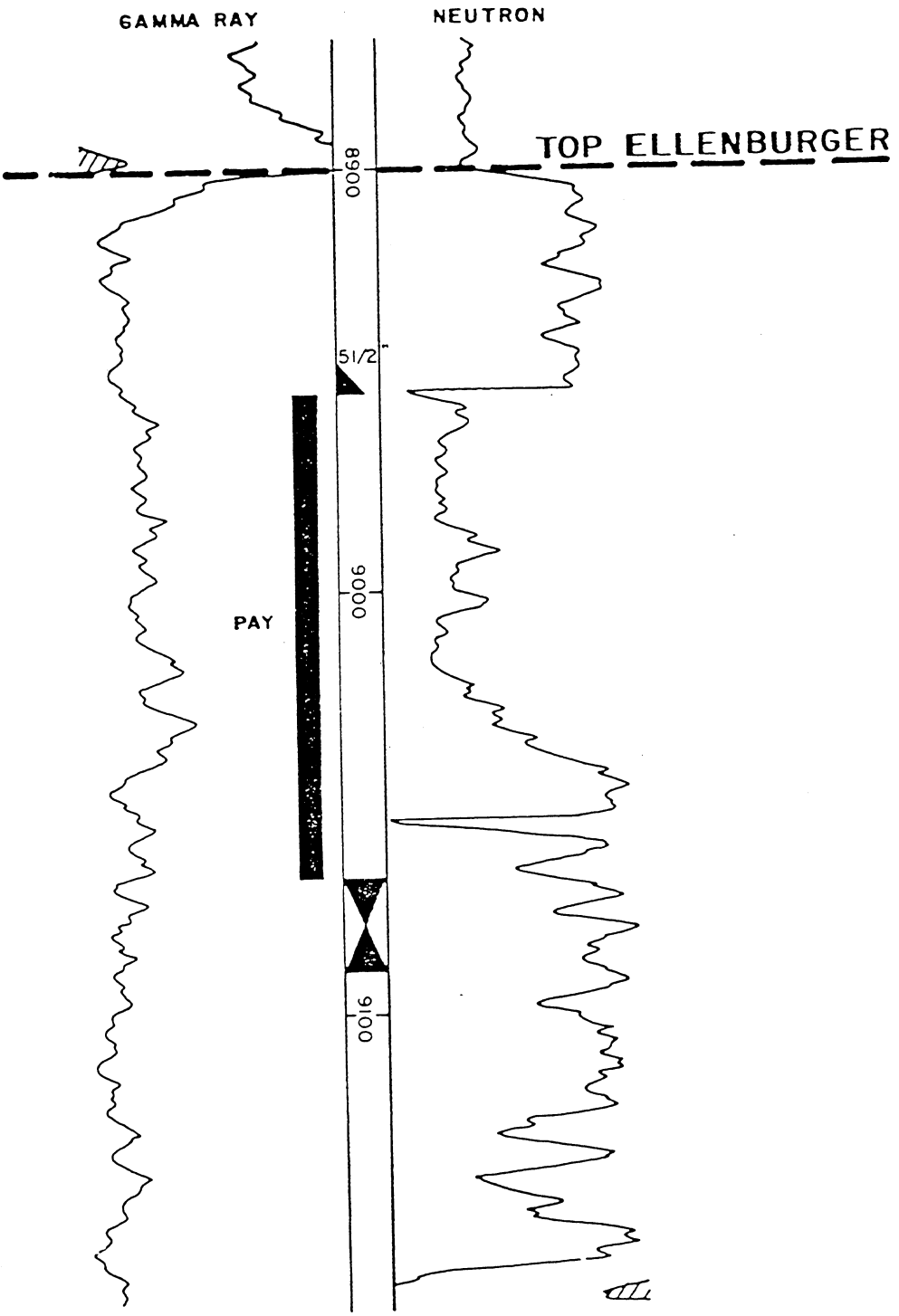


BARNHART FIELD
REAGAN COUNTY, TEXAS
ELLENBURGER STRUCTURE
CONTOUR INTERVAL 100'

FROM: OIL & GAS FIELDS IN WEST TEXAS - SYMPOSIUM: West Texas Geological Society, Publ. No. 66-52, 1966.

TYPICAL LOG
GENERAL AMERICAN No. 1-C UNIVERSITY
BARNHART FIELD
REAGAN COUNTY, TEXAS

SCALE 1 in = 40 ft.



FROM: Oil & Gas Fields in West Texas - Symposium: West Texas Geol. Soc. Publ. No. 66-52, 1966. Source 5a

Benson, North
Queen-Grayburg
Northwest Shelf

DATA SOURCE CODE		
	STATE	New Mexico
6a	COUNTY	Eddy
	REGULATORY DISTRICT	
6a	BASIN	Permian
15	SUB-BASIN	Northwest Shelf
6a	FIELD	Benson, North
6a	RESERVOIR	Queen ss
6	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
6a, 6c	RESERVOIR LITHOLOGY	Queen-medium grained sandstone with intergranular slightly dolomitic and anhydritic. Grayburg-slightly dolomitic sand.
6a	TRAPPING MECHANISM	stratigraphic
6a, 6c	DISCOVERY YEAR	9-1-54
6c	PROVED ACREAGE	1,760
	REGULAR WELL SPACING (acres/well)	
6c	RESERVOIR DEPTH	2,488
	RESERVOIR THICKNESS	
6c	NET PAY	24
6c	GROSS	98
	NET/GROSS RATIO	
	POROSITY	
6c	TYPE	intergranular
6c	FRACTION	.130
	PERMEABILITY	
6c	RANGE	.5 - 19 md
6c	AVERAGE	5 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	active field development began in 62-63
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	65 total, 41pump, 3flow, 21 inj.
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
18	PRODUCTION 1978 oil (cum)	
	PRODUCTION 1979 oil (cum)	(Queen-Grbg) 2,360
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a, 6c	STRUCTURE CONTOUR?	yes
6a, 6c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
6c	FIELD:	Benson, North
6c	RESERVOIR:	Queen-Grayburg
6c	PROD. ACRES:	1,760
	AVG. THICKNESS (FT.):	24
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
6a	WATER SATURATION (S_W):	42%
6a	OIL SATURATION (S_O):	17.0 %
6b, 6c	PRIMARY DRIVE MECHANISM:	waterdrive, solution gas
	PRIMARY GAS CAP?:	
	TEMPERATURE (°F):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
	RESERVOIR PRESSURE INITIAL (psi):	
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6a	STOCK TANK OIL GRAVITY (°API):	32
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

	OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: Benson, North RESERVOIR: Queen ss TOTAL NO. PROJECTS:
DATA SOURCE:

TOTAL SOLIDS (ppm):

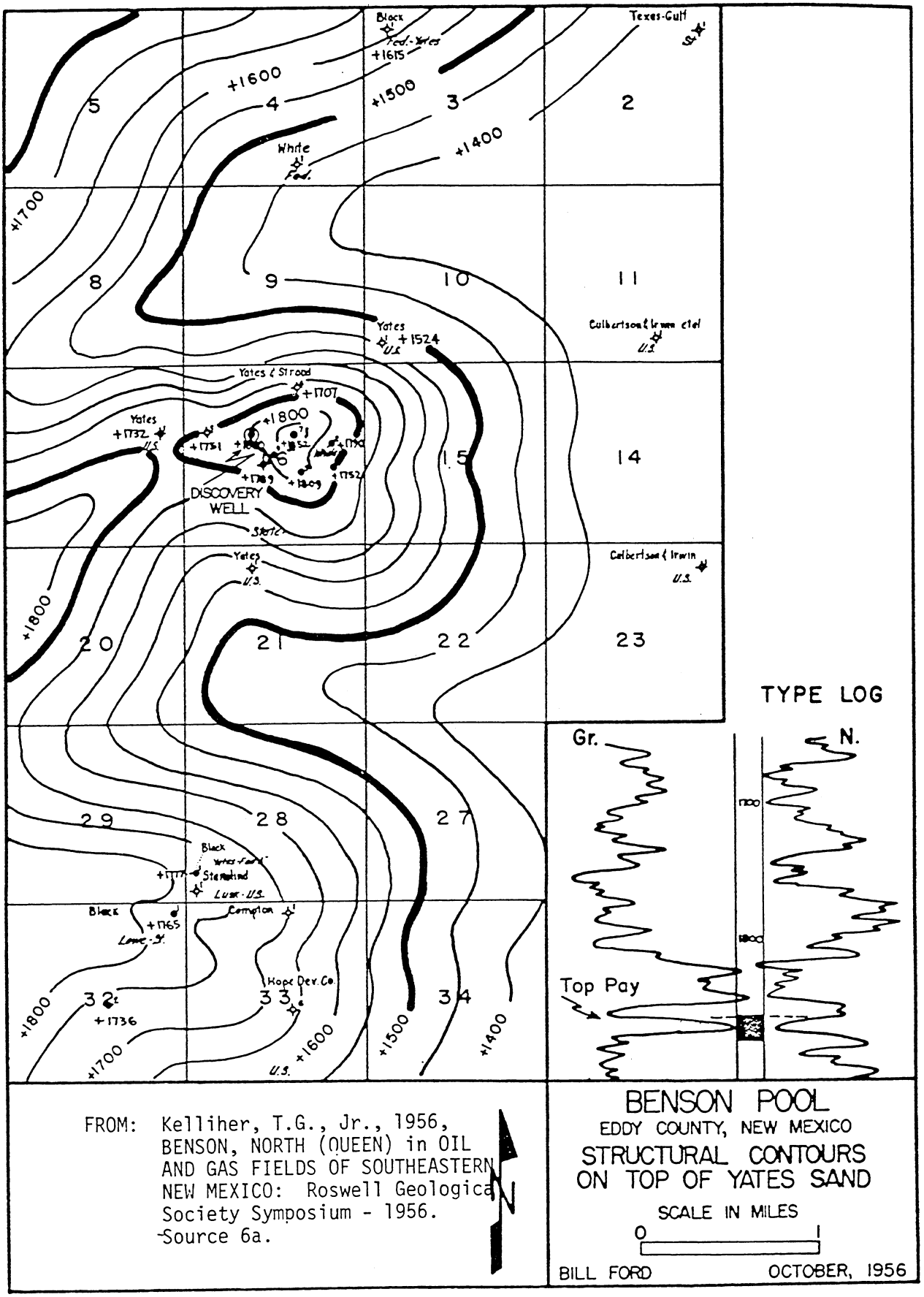
NA + K	40,000
Ca	3,320
Mg	671
Fe	
SO_4	2,340
Cl	67,700
CO_2	
HCO_3	101
OH	
H_2S	

RESISTIVITY: .049 r @ 75°F.
SPECIFIC GRAVITY: 1.086 @ 77°F

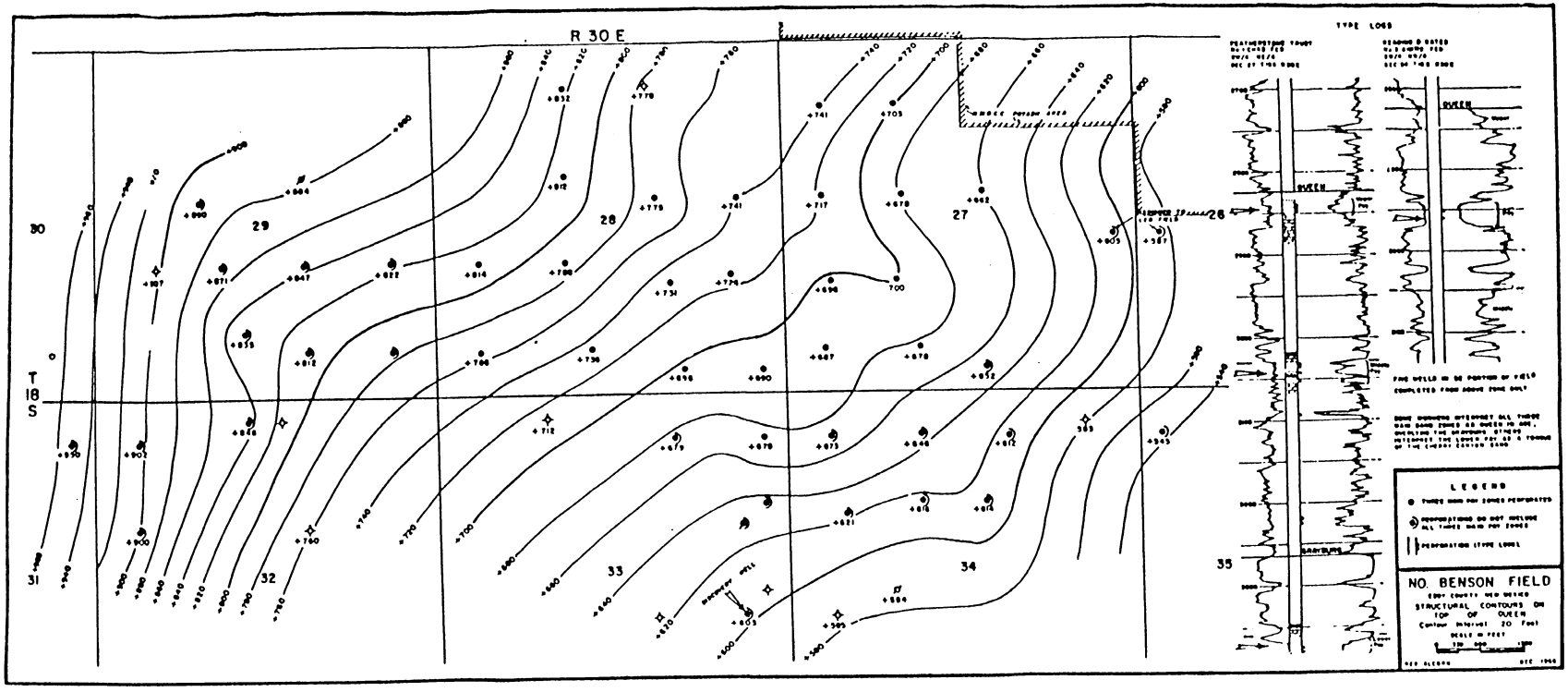
OTHER WATER QUALITY DATA:

R 30 E

T 19 S



FROM: Kelliher, T.G., Jr., 1956, BENSON, NORTH (QUEEN) in OIL AND GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium - 1956. Source 6a.



FROM: Alcorn, Rex, 1966, BENSON QUEEN-GRAYBURG, NORTH in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium - 1967. Source 6c.

Big Lake
Reagan Uplift
Grayburg-San Andres

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Reagan
3, 1	REGULATORY DISTRICT	7C
1	BASIN	Permian
15	SUB-BASIN	Reagan Uplift in Midland Basin
1	FIELD	Big Lake
3	RESERVOIR	Grayburg-San Andres, Queen
5	GEOLOGIC AGE	Upper Leonardian and Lower Guadalup
1	AAPG STRATIGRAPHIC AGE CODE	313
7, 1	RESERVOIR LITHOLOGY	Porous oolitic dolomite, dolomite
7, 12c	TRAPPING MECHANISM	Structural, dome.
3,3,1	DISCOVERY YEAR	1923 @ 3,000', 1957 @ 2,985'
17	PROVED ACREAGE	6400
1	REGULAR WELL SPACING (acres/well)	20
1	RESERVOIR DEPTH	3,000'
	RESERVOIR THICKNESS	
1,7,16C	NET PAY	8, 22, 30-50
7	GROSS	250
	NET/GROSS RATIO	
	POROSITY	
7	TYPE	IC
1	FRACTION	.17
	PERMEABILITY	
	RANGE	
1 ,14e	AVERAGE	63 md ,20 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	other production from Dean sand, Ellenburger 1-11, Fusselman.
14e	BETC/RI-78/15 list as unsuitable for surfactant, polymer or carbon dioxide EOR because of water drive.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	105, 111
1	PRODUCTION 1976 oil (cum)	123,979
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	125.99
3	PRODUCTION 1-1-79 to 1-1-80	465.4 mbbls oil, 389.9 MMCF gas
	SECONDARY RECOVERY RECORDS?	no
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
12c 2	STRUCTURE CONTOUR?	Yes
12c 2	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

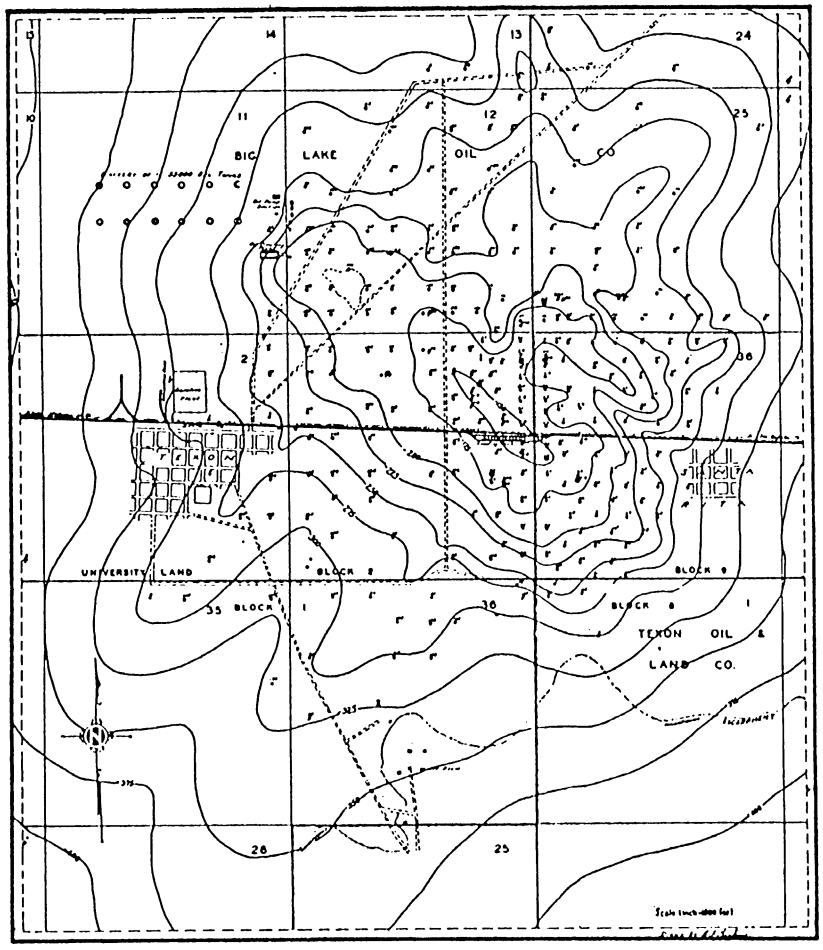
RESERVOIR DATA

DATA SOURCE CODE		
3	FIELD:	Big Lake
	RESERVOIR:	Grayburg-San Andres
	PROD. ACRES:	
1,7,16C	AVG. THICKNESS (FT.):	8, 22, 30-50
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
1 , 14e	PRIMARY DRIVE MECHANISM:	depletion, H_2O drive
14e	PRIMARY GAS CAP?:	no
17 , 14e	TEMPERATURE (^oF):	104 (GG=1.0), 125 BHT
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2939
1	RESERVOIR PRESSURE INITIAL (psi):	1250
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	925
1,3	STOCK TANK OIL GRAVITY (^oAPI):	40
14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	1.5 cp
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1296
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

$12c_1$ Reference: Hennen, Ray V., 1929, Big Lake Oil Fields, Reagan County, Texas in Structures of Typical American Oil Fields, AAPG, v. 2, p.500-541.

$12c_2$ Sellards, E. H., Bybee, H. P., and Hemphill, H. A., 1930, Producing Horizons in the Big Lake Oil Field, Reagan County, Texas, in: Contribution to Geol., 1930, Univ. of Texas Bull. no. 3001, January.



Map showing location of all wells in the Big Lake oil field and structure contours at the level of the Texon pay.

FROM: Sellards, et. al, 1930, BIG LAKE OIL FIELD, REAGAN COUNTY, TEXAS in CONTRIBUTIONS TO GEOLOGY: Univ. of Texas Bull. No. 3001, January. Source

System.	Columnar Section.	Thickness in Ft.	CHARACTER OF ROCKS.
CRETACEOUS COMANCHEAN		300-600	Mostly massive, white or gray limestone. Gray sand
			UNCONFORMITY.
TRIASSIC		100-500	Dark red sandy shale; gray, white, and red sand, and some conglomerates.
			UNCONFORMITY.
PERMIAN		100-575	Brick red shales, fine grained, more or less shaly, brick red sandstones and some anhydrite.
		270-360	Thick beds of salt interstratified with anhydrite.
		300-800	Beds of anhydrite brick red sandy shale and brick red sandstone.
		0-250	Beds of salt interstratified with anhydrite, red sandstone and shale.
		0-150	Anhydrite.
		100-400	Red sandstone red sandy shale, and anhydrite. Shallow pay.
		0-200	Red sandstone.
		0-150	Anhydrite.
		20-100	Salt interstratified places with anhydrite sand & shale.
		70-250	Dolomite passing gradually upwards into sandy dolomite, dolomite and anhydrite and pure anhydrite. Some shale and sandstone.
		10-60	Oolitic dolomite. Texon pay.
		250±	Dolomite, sandy dolomite and some sandstone.
		20±	Oolitic dolomite.
		1150±	Black shale with some fine sand and black limestone.
		280±	Gray and dark gray sandy shale black shale and gray sandstone.
		600±	Dark, almost black, carbonaceous shale.

Generalized section in Big Lake oil field to depth 6,000 feet. Vertical scale 1 in. = 1,000 feet. Modified from Sellards and Patton (7, p. 369).

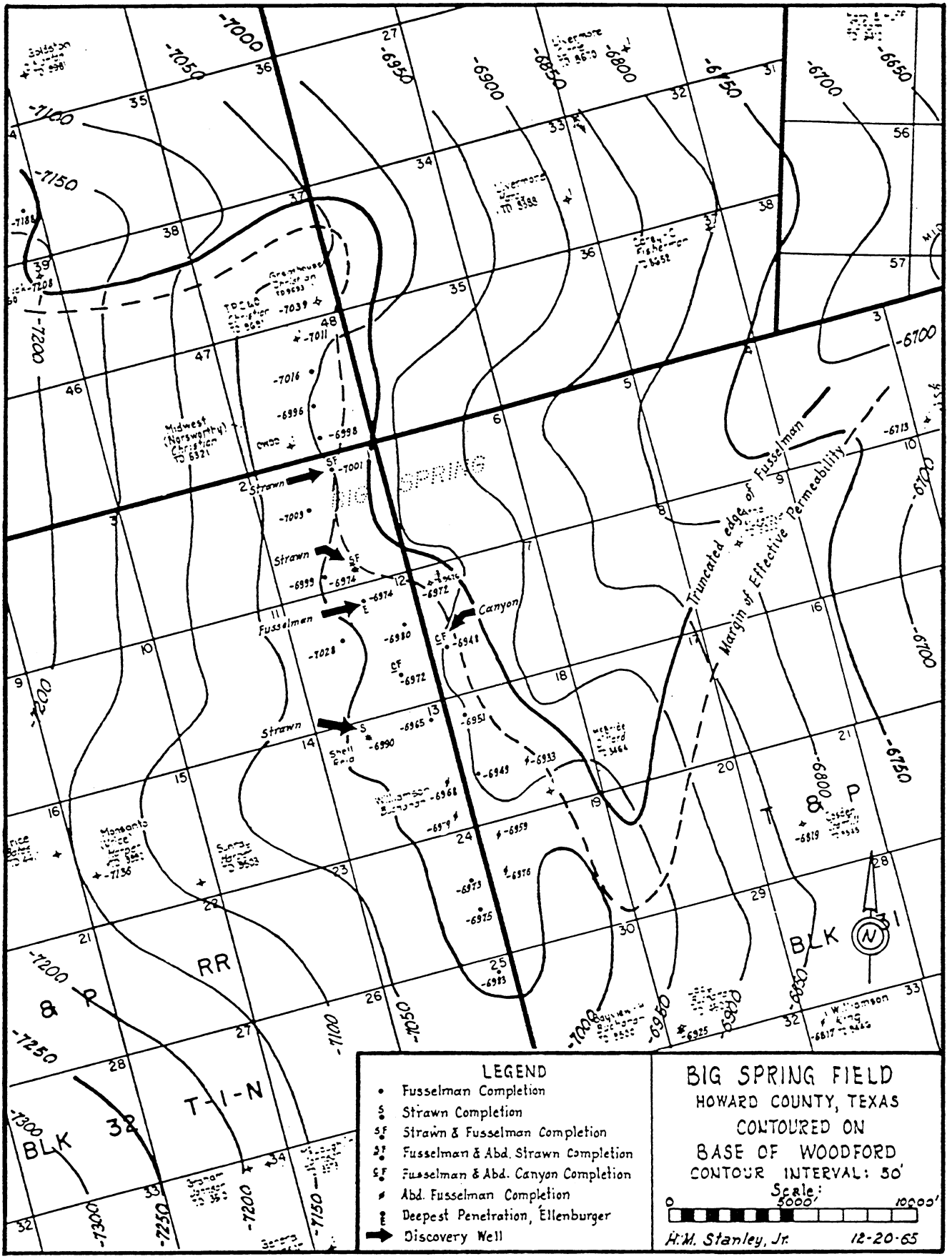
Big Spring
Midland Basin
Fusselman *

DATA SOURCE CODE		
	STATE	Texas
1, 5a	COUNTY	Howard
1, 5a	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Midland
5a, 1	FIELD	Big Spring
1, 5a	RESERVOIR	Fusselman
1, 5a	GEOLOGIC AGE	Silurian
1	AAPG STRATIGRAPHIC AGE CODE	354
5a, 1	RESERVOIR LITHOLOGY	"Sucrosic" limestone, dolomite
1, 5a	TRAPPING MECHANISM	Strat.-nose & lat. por. perm. CNG. Stratigraphic trap formed by updip termination of porous Fusselman across SW plugging nose.
5a, 1	DISCOVERY YEAR	10-1955, 1955
1, 5a	PROVED ACREAGE	1600, 1840
5a, 1	REGULAR WELL SPACING (acres/well)	80
1, 5a	RESERVOIR DEPTH	9,589, 9,592
	RESERVOIR THICKNESS	
1, 5a	NET PAY	14.0
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	IC
1, 5a	FRACTION	.119
	PERMEABILITY	
	RANGE	
1, 5a	AVERAGE	5 md, 4.7 md
	HORIZONTAL	
	VERTICAL	
5a	OTHER INFORMATION	discovery well-Phillips Pet. Co. #1 Satterwhite. *Minor production from Strawn and other reservoirs (Canyon Lime)
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
5a, 1	TOTAL NUMBER OF WELLS	18P; 5A; 4D.H.; 27
1	PRODUCTION 1976 oil (cum)	5,341
1	PRODUCTION 1977 oil (cum)	5,515
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	5,807.5
3	PRODUCTION 1-1-79 to 1-1-80	149.5 mbbls oil, 336.5 MMCF gas Fusselman
	SECONDARY RECOVERY RECORDS?	no
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5a	STRUCTURE CONTOUR?	yes
5a	LOGS?	yes
	STRUCTURE SECTION?	no
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

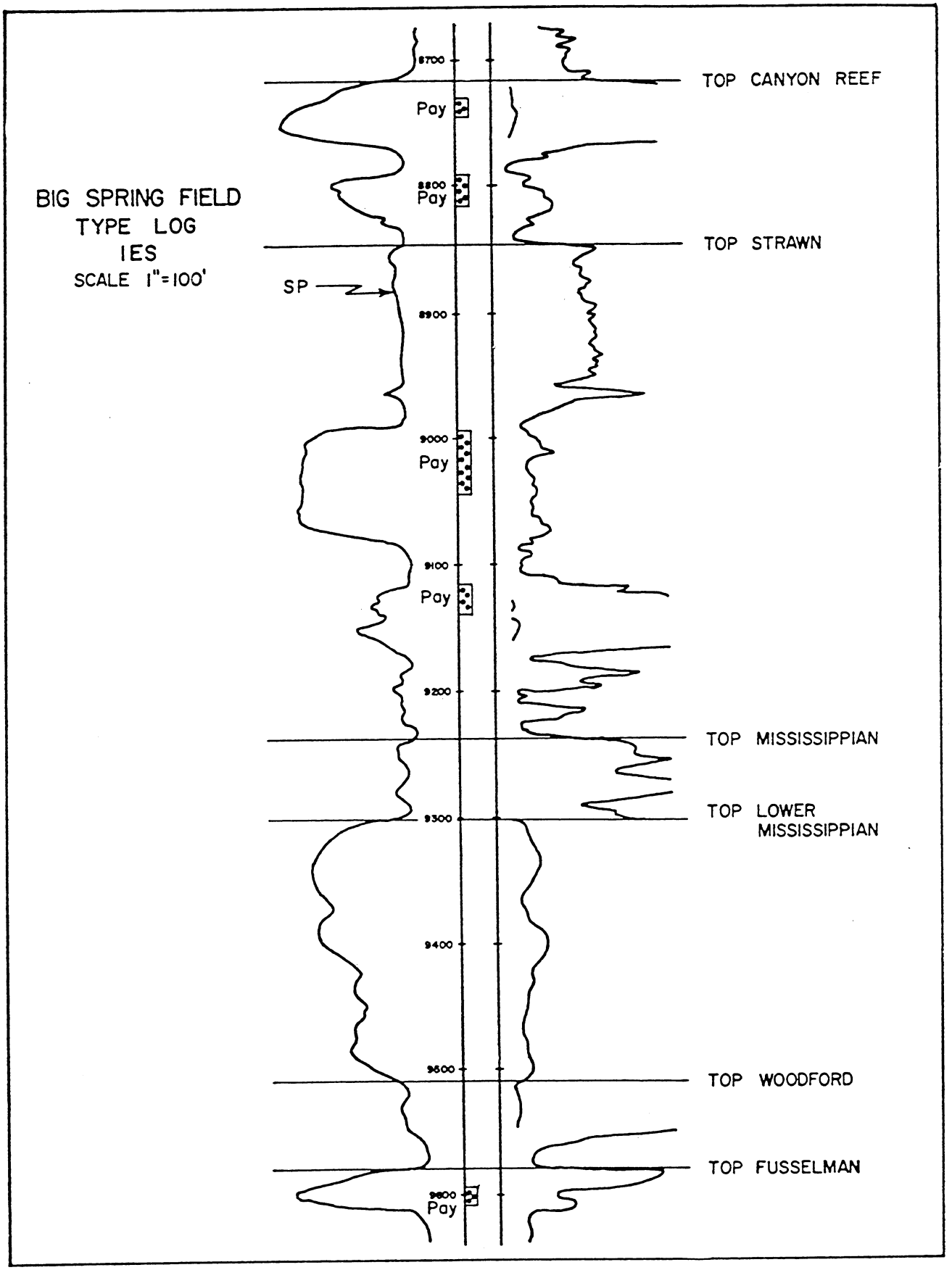
RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Big Spring
1, 5a	RESERVOIR:	Fusselman
1, 5a	PROD. ACRES:	1600, 1840
1	AVG. THICKNESS (FT.):	14
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.5
	FORMATION VOLUME FACTOR LATEST (FVF):	
1	WATER SATURATION (S_W): (avg.)	.30
	OIL SATURATION (S_O):	
1, 5a	PRIMARY DRIVE MECHANISM:	depletion
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	165 (GG=.95)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	4967
1, 5a	RESERVOIR PRESSURE INITIAL (psi):	4,495, 4,495 (1955)
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	2059, 2058.6
1, 5a	STOCK TANK OIL GRAVITY (°API):	49.4, 48.3
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	2006
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

1, 5a OTHER INFORMATION: Est. ult. recovery 4,450,000 bbls.



FROM: Stanley, H.M., Jr., 1966, BIG SPRING in OIL & GAS FIELDS IN WEST TEXAS - SYMPOSIUM: West Texas Geological Society, Publ. No. 66-52. Source 5a.



FROM: Stanley, H.M., Jr., 1966, BIG SPRING in OIL & GAS FIELDS IN WEST TEXAS - SYMPOSIUM: West Texas Geological Society Publ. No. 66-52, Source 5a.

Blinebry
Yeso
Central Basin Platform

DATA SOURCE CODE		
	STATE----------	New Mexico
1, 6a	COUNTY----------	Lea
	REGULATORY DISTRICT----------	Southeast New Mexico
1, 6a	BASIN----------	Permian
15	SUB-BASIN----------	Central Basin Platform
6a	FIELD----------	Blinebry
6a, 1	RESERVOIR----------	Yeso "Blinebry", Yeso
6	GEOLOGIC AGE----------	Leonardian
1	AAPG STRATIGRAPHIC AGE CODE----------	318
6a, 1	RESERVOIR LITHOLOGY----------	Finely crystalline dolomite & limestone. Blinebry is a zone of the Upper Yeso formation - Leonard series.
6a, 1	TRAPPING MECHANISM----------	anticline
6a, 1	DISCOVERY YEAR----------	10-12-45
1	PROVED ACREAGE----------	11,720
	REGULAR WELL SPACING (acres/well)-----	
6a, 1	RESERVOIR DEPTH----------	5600; 5560
1	RESERVOIR THICKNESS	60 avg.
	NET PAY----------	
	GROSS----------	
	NET/GROSS RATIO----------	
	POROSITY	
6a	TYPE----------	intercrystalline
6a, 1	FRACTION----------	.084
	PERMEABILITY	
	RANGE----------	
1	AVERAGE----------	4.5 md
6a	HORIZONTAL----------	4.5 md
	VERTICAL----------	
	OTHER INFORMATION----------	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS----------	620 Total, 206 pump, 327 flow, 1 inject., 9 gas lift, 77 shut-in; 287 producing, 29 shut-in.
	PRODUCTION 1977 oil (cum)----------	
	PRODUCTION 1978 oil (cum)----------	
18	PRODUCTION 1979 oil (cum)----------	38,811
	PRODUCTION 1-1-79 to 1-1-80----------	
	SECONDARY RECOVERY RECORDS?----------	
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
	STRUCTURE CONTOUR?----------	no
	LOGS?----------	no
	STRUCTURE SECTION?----------	
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
1	FIELD:	Blinebry
1	RESERVOIR:	Yeso
	PROD. ACRES:	11,720
	AVG. THICKNESS (FT.):	
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1, 6a	WATER SATURATION (S_W):	.244
1, 6a	OIL SATURATION (S_O):	.135
1, 6a	PRIMARY DRIVE MECHANISM:	solution gas
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	130 (GG = 1.0)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	28,329
1, 6a	RESERVOIR PRESSURE INITIAL (psi):	882
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	117,000
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	13,624
1, 6a	STOCK TANK OIL GRAVITY (°API):	41.0
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1,610
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: Blinebry RESERVOIR: Yeso TOTAL NO. PROJECTS:

DATA SOURCE: 6a,1

TOTAL SOLIDS (ppm):	209,000
NA + K	52,000
Ca	11,400
Mg	
Fe	nil
SO_4	1,900
Cl	103,000
CO_2	nil
HCO_3	380
OH	nil
H_2S	nil

RESISTIVITY:

SPECIFIC GRAVITY:

OTHER WATER QUALITY DATA:

Block 11
Central Basin Platform
Devonian*

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Andrews
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Block 11
1	RESERVOIR	Devonian
1	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	390
5b, 1	RESERVOIR LITHOLOGY	limestone; fine to medium crystalline cherty limestone, lower one-quarter is white tripolitic chert; dolomite.
5b, 1	TRAPPING MECHANISM	faulted, stratigraphic trap; structural, anticline - fault
5b, 3, 1	DISCOVERY YEAR	12-1951, 12-1951, 1951
2, 5b	PROVED ACREAGE	1735, 1753
5b	REGULAR WELL SPACING (acres/well)	40
5b, 1, 3	RESERVOIR DEPTH	8230
	RESERVOIR THICKNESS	
2, 5b	NET PAY	45
5b	GROSS	436
	NET/GROSS RATIO	
	POROSITY	
5b	TYPE	IC
1, 2, 5b	FRACTION	.252, .252, .243
	PERMEABILITY	
	RANGE	
5b	AVERAGE	46.8 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	*other reservoirs include Connell, 8714', Ellenburger, 8798', Fusselman, 7956', McKee, 8400', Wichita, 6962', Wichita, lower 7506' for an additional 12+ mbbls.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
5b, 2	TOTAL NUMBER OF WELLS	45 (30P-9I-6A)
	PRODUCTION 1976 oil (cum)	
1, 2	PRODUCTION 1977 oil (cum)	6531.8, 9764 (1 SRP)
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	7319
	PRODUCTION 1-1-79 to 1-1-80	378 mbbls oil; 266.3 MMCF gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5b	STRUCTURE CONTOUR?	yes
5b	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Block 11
1	RESERVOIR:	Devonian
2, 5b	PROD. ACRES:	1735, 1753
2, 5b	AVG. THICKNESS (FT.):	45
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
5b	PRIMARY DRIVE MECHANISM:	solution gas
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	132
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2, 5b	RESERVOIR PRESSURE INITIAL (psi):	3311, 3200
2	RESERVOIR PRESSURE LATEST (psi):	2300
1,5b	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	613
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
1, 3, 5b	STOCK TANK OIL GRAVITY (°API):	42, 42.3, 42.3
5b	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	.34 @ 2500 psi
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1629
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	47,600 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	6,730 mbbls

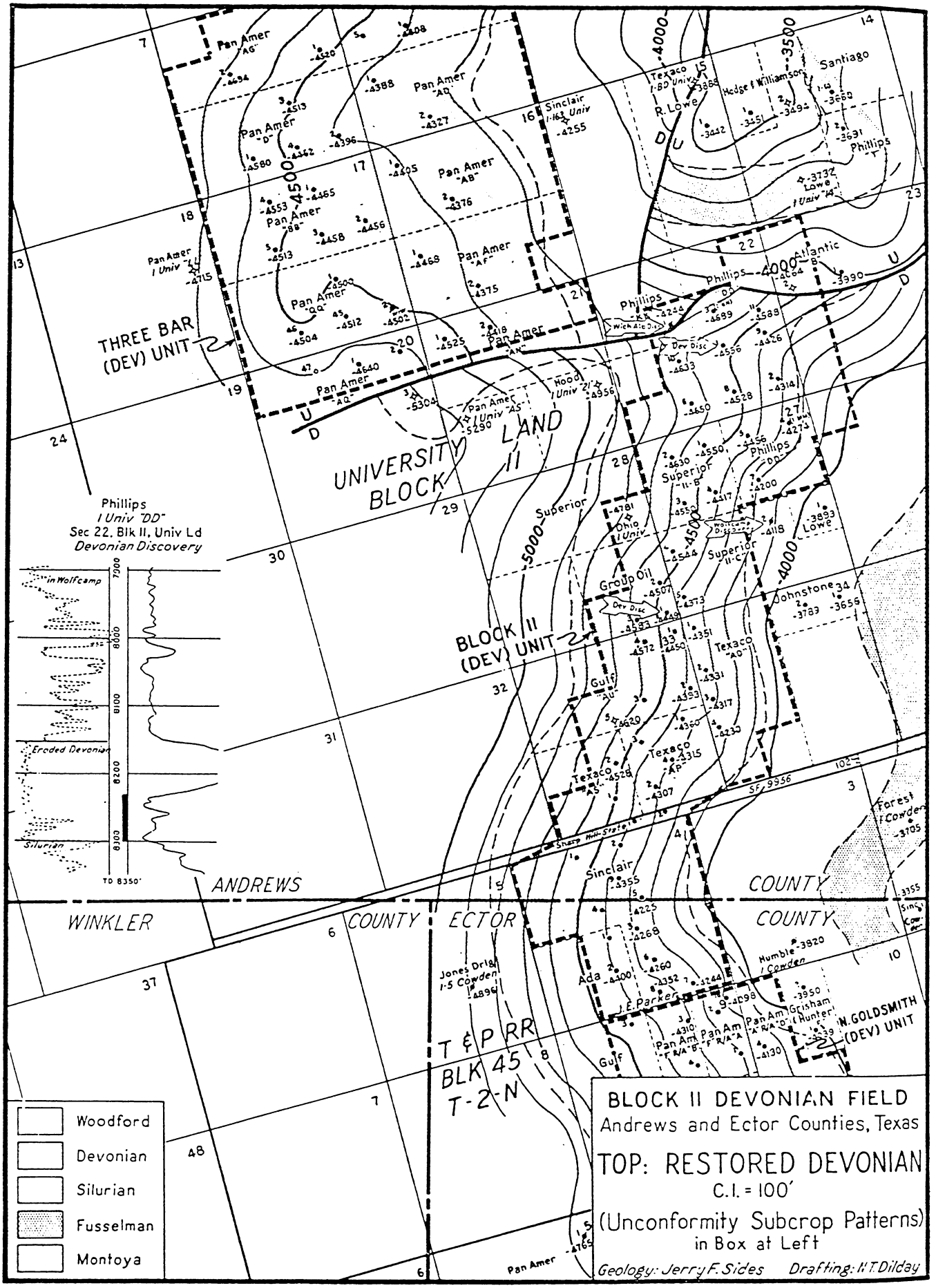
5b	OTHER INFORMATION:	Estimated ultimate recovery: 8,528,000 bbls.
1		Present status: oil abandoned
5b		Water: resistivity 0.047 ohm-m @ 74°F
		chlorides 108,400 ppm

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Block 11 RESERVOIR: Devonian TOTAL NO. PROJECTS: 1 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	477	
1977 PROD. (this project):	459	
CUM. PROD. FROM DISC. TO 1/78:	9764	
PROJECT NO.	F1101	
LEASE NO.(s):	20149	
OPERATOR:	Phillips	
RESERVOIR:	Devonian	Devonian
DEPTH PRODUCING ZONE:	8125	8230
PRODUCTIVE ACREAGE IN RESERVOIR:	1735	
ACREAGE IN PROJECT:	1660	
PORTION OR FIELD WIDE	FW	
TYPE:	WF/SW-BW	
PATTERN:	C	
YEAR BEGAN:	1-67	
YEAR TERMINATED OR STATUS:	ICP	
RESERVOIR PRESSURE INITIAL:	3311	3311
BEG. INJECTION:	600	
LATEST:	2300	
NUMBER OF WELLS TOTAL:	45	
PRODUCING WELLS:	34 mx; 30 1-78	
INJECTION WELLS:	9	
MAXIMUM:	---	
LATEST:	---	
SHUT-IN/ABANDONED WELLS:	6	
SURFACE INJECTION PRESSURE:	1200	
EFFECTIVENESS OF INJECTION:	-	
OPERATOR PROBLEMS:		
ESTIMATED PRODUCTION DUE TO INJ.:		
1977:	459	
FROM BEG. INJECTION:	3034	
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	2553	
WATER PRODUCTION:		
CURRENT (1977):	1973	
CUMULATIVE TO 1/78:	16412	
CURRENT (1977) INJECTION:	2301 SW, 2033 BW	
CUMULATIVE INJECTION:	8393 SW, 30529 BW	



FROM: OIL & GAS FIELDS IN WEST TEXAS - SYMPOSIUM: West Texas Geological Soc. Pub. 69-57.

Block 31
Grayburg
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
2	COUNTY	Crane
2	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
13c,14c	FIELD	Block 31
2,13c,14c	RESERVOIR	Grayburg
8a	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
12c	RESERVOIR LITHOLOGY	Dolomite
12c	TRAPPING MECHANISM	Domal fold
2,3	DISCOVERY YEAR	6-56
2	PROVED ACREAGE	1710
	REGULAR WELL SPACING (acres/well)	
2,3	RESERVOIR DEPTH	3100, 3200
	RESERVOIR THICKNESS	
2	NET PAY	7
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.16
	PERMEABILITY	
	RANGE	
2	AVERAGE	100 md
2	HORIZONTAL	100 md
	VERTICAL	
3	OTHER INFORMATION	Other production from Devonian, Atoka, Clear Fork, Connel, Ellenburger, McKee
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2	TOTAL NUMBER OF WELLS	45(19P, 26I, 0A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	3,499.8 mbbls
3	PRODUCTION 1-1-79 to 1-1-80	188.4 mbbls oil; .012 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
12c	STRUCTURE CONTOUR?	yes
12c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
13c,14c,2	FIELD:	Block 31
2	RESERVOIR:	Grayburg
2	PROD. ACRES:	1710
	AVG. THICKNESS (FT.):	7
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
	TEMPERATURE (^oF):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2	RESERVOIR PRESSURE INITIAL (psi):	1219
2	RESERVOIR PRESSURE LATEST (psi):	950
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2,3	STOCK TANK OIL GRAVITY (^oAPI):	27, 26
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	10,500 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	3,250 mbbls

OTHER INFORMATION:

12c Reference: Hardwick, J. V., 1953, Block 31 Field, in Occurrence of Oil and Gas in West Texas: Bureau of Economic Geology, Pub. No. 5716.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Block 31 RESERVOIR: Grayburg TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	124
1977 PROD. (this project):	272
CUM. PROD. FROM DISC. TO 1/78:	3038
PROJECT NO.	F4230
LEASE NO.(s):	09684
OPERATOR:	Atlantic Rich.
RESERVOIR:	Grayburg
DEPTH PRODUCING ZONE:	3100
PRODUCTIVE ACREAGE IN RESERVOIR:	1710
ACREAGE IN PROJECT:	1710
PORTION OR FIELD WIDE:	FW
TYPE:	WF/SW, BW
PATTERN:	P
YEAR BEGAN:	SW/1-69; BW/7-71
YEAR TERMINATED OR STATUS:	ICP
RESERVOIR PRESSURE INITIAL:	1219
BEG. INJECTION:	950
LATEST:	950
NUMBER OF WELLS TOTAL:	45
PRODUCING WELLS:	19
INJECTION WELLS:	13SW
MAXIMUM:	13BW
LATEST:	---
SHUT-IN/ABANDONED WELLS:	0
SURFACE INJECTION PRESSURE:	1000
EFFECTIVENESS OF INJECTION:	VE
OPERATOR PROBLEMS:	EW
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	185
FROM BEG. INJECTION:	956
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	2000
WATER PRODUCTION:	
CURRENT (1977):	2371
CUMULATIVE TO 1/78:	19067
CURRENT (1977) INJECTION:	2371SW; 1381BW
CUMULATIVE INJECTION:	16874SW; 5203BW

DATA SOURCE CODE		
	STATE	Texas
2	COUNTY	Crane
2	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
13c,14c,e	FIELD	Block 31
13c,14c,e	RESERVOIR	Devonian
8a	GEOLOGIC AGE	Lower Devonian
1	AAPG STRATIGRAPHIC AGE CODE	347
9c,12c	RESERVOIR LITHOLOGY	Tripolitic chert and fine crystalline, sucrosic limestone.
9c,12c	TRAPPING MECHANISM	Northeast-Southwest trending anticline bounded on south & southeast by normal faults.
2,3	DISCOVERY YEAR	11-1945; 10-1945
2	PROVED ACREAGE	8700
	REGULAR WELL SPACING (acres/well)	
2,3,9c	RESERVOIR DEPTH	8000 & 8600, 8812, 8500
	RESERVOIR THICKNESS	
2, 9c	NET PAY	103, 170
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
9c	TYPE	IC
2, 9c	FRACTION	.15
	PERMEABILITY	
9c	RANGE	1 - 10 md
2,9c,14e	AVERAGE	1 md
2	HORIZONTAL	1 md
	VERTICAL	
3, 14e	OTHER INFORMATION	Other production from Atoka-7900, Clear Fork, Connell, Ellenburger, Grayburg, McKee. EIA-BETC/RI-78/15 lists as being most suitable for CO2 enhanced recovery.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2,9c	TOTAL NUMBER OF WELLS	145(114P, 31I, 0A); 104P, 31 Gas I.
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	162,729.1 mbbls
3	PRODUCTION 1-1-79 to 1-1-80	6,010.4 mbbls oil; 68,455.2 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
9c,12c	STRUCTURE CONTOUR?	yes
9c,12c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
13c,14c,2	FIELD:	Block 31
2	RESERVOIR:	Devonian
2	PROD. ACRES:	8700
	AVG. THICKNESS (FT.):	103
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
14e	PRIMARY GAS CAP?:	No
9c,14e	TEMPERATURE (°F):	140, 139
9c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2760
2,9c,14e	RESERVOIR PRESSURE INITIAL (psi):	4145, 4105, 4145
2	RESERVOIR PRESSURE LATEST (psi):	3671
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
14e,2,3,9c	STOCK TANK OIL GRAVITY (°API):	41, 46, 41.3, 48
14e, 9c	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	0.25 cp, 0.3 cp
	MINIMUM MISCIBILITY PRESSURE (MMP):	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	312,000 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	47,000 mbbls

OTHER INFORMATION:

9c Table 2 of 9c reference gives live reservoir oil composition.

9c Gas injected consists of 88 mol% nitrogen and 12 mol% carbon dioxide.

9c Reference: Warner, H.R., Jr., Robertson, N., Barnes, A. L., and Hardy, J. H., 1979, University Block 31 Field Study, Part I--Middle Devonian Reservoir History Match: Jour. of Pet. Tech, August, p.962-970.

12c Harwick, J. V., 1953, Block 31 Field in Occurrence of Oil and Gas in West Texas: Univ. of Texas, Bureau of Economic Geology, Pub. No. 5716, August, 1957.

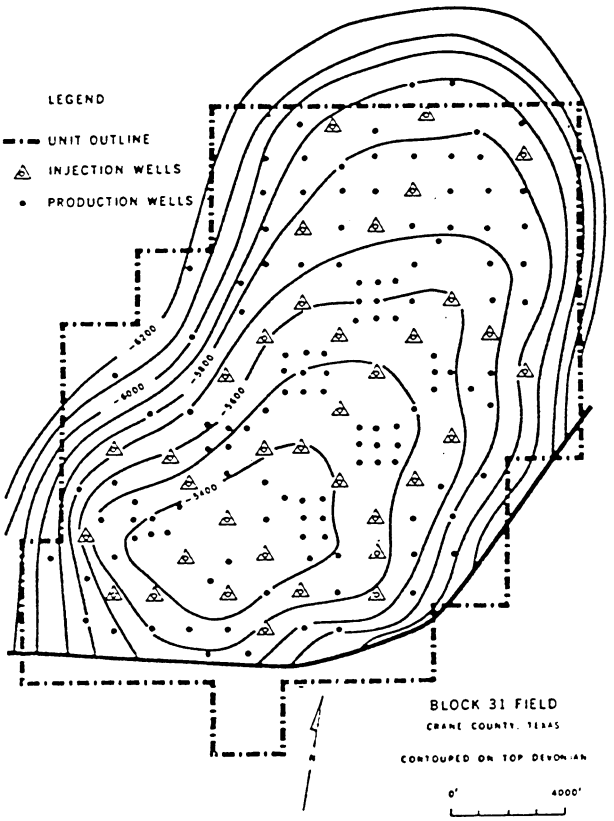
14e Energy Information Administration, Evaluation of Target Oil in the 50 Major Oil Fields of the Permian Basin for Enhanced Oil Recovery, BETC/RI-78/15, October 1978.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Block 31 RESERVOIR: Devonian TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	5979
1977 PROD. (this project):	6496
CUM. PROD. FROM DISC. TO 1/78:	150133
PROJECT NO.	F1103
LEASE NO.(s):	00442, etc.
OPERATOR:	Atlantic Rich.
RESERVOIR:	Devonian
DEPTH PRODUCING ZONE:	8000 & 8600
PRODUCTIVE ACREAGE IN RESERVOIR:	8700
ACREAGE IN PROJECT:	7200
PORTION OR FIELD WIDE:	FW
TYPE:	MD/FG; PM/Gas
PATTERN: 9c:	320 acre 9-S
YEAR BEGAN:	MD/3-66; PM/6-49
YEAR TERMINATED OR STATUS:	ICP
RESERVOIR PRESSURE INITIAL:	4145
BEG. INJECTION:	3700
LATEST:	3671
NUMBER OF WELLS TOTAL:	145
PRODUCING WELLS:	114
INJECTION WELLS:	8FG
MAXIMUM:	23Gas
LATEST:	---
SHUT-IN/ABANDONED WELLS:	0
SURFACE INJECTION PRESSURE:	4000
EFFECTIVENESS OF INJECTION:	VE
OPERATOR PROBLEMS:	PA
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	6496
FROM BEG. INJECTION:	106,740
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	123,000
WATER PRODUCTION:	
CURRENT (1977):	234
CUMULATIVE TO 1/78:	2433
CURRENT (1977) INJECTION:	15641FG; 42009 Gas
CUMULATIVE INJECTION:	169462FG; 516612 Gas

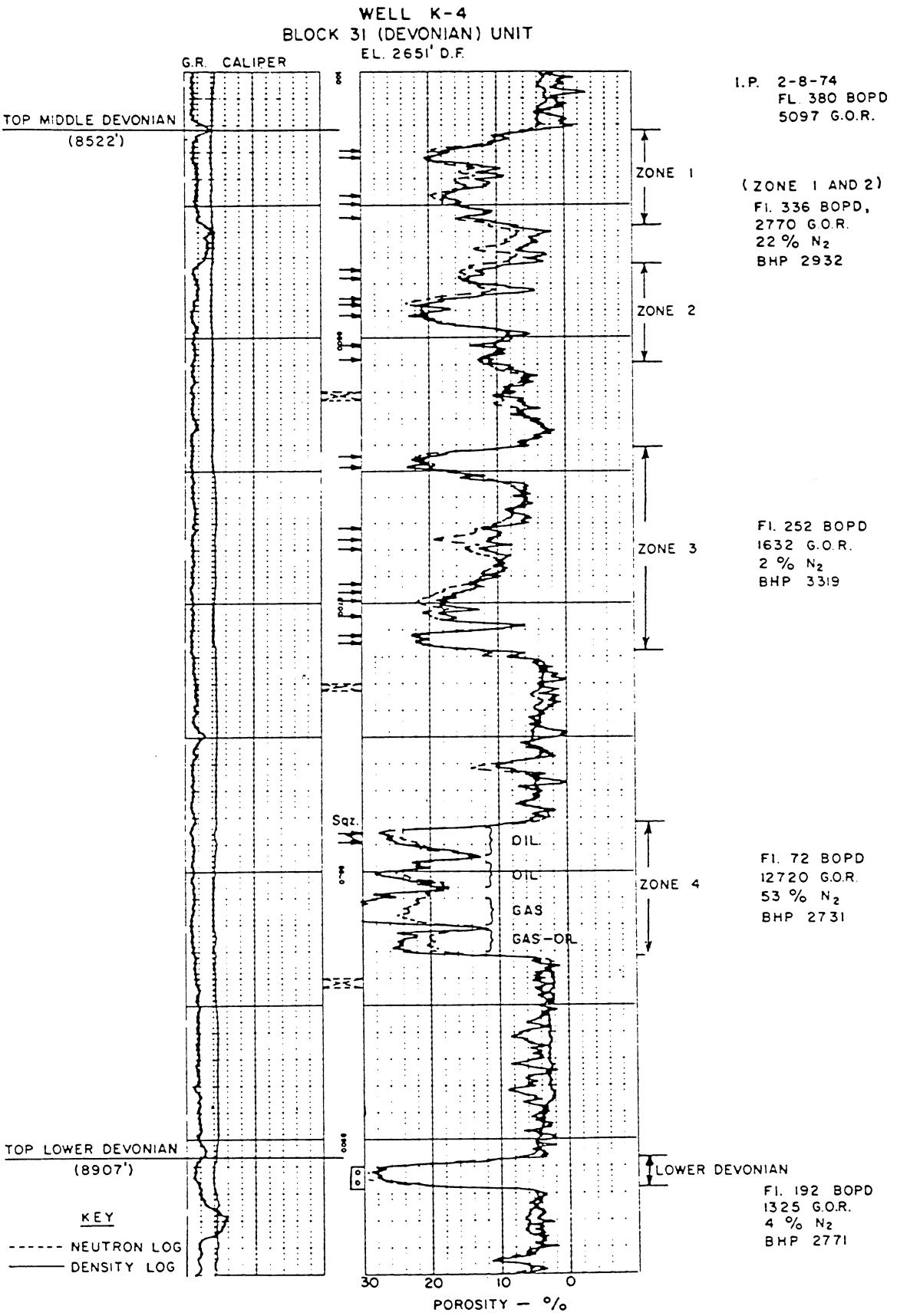
SOURCE 9c



Structure map for Devonian formation.

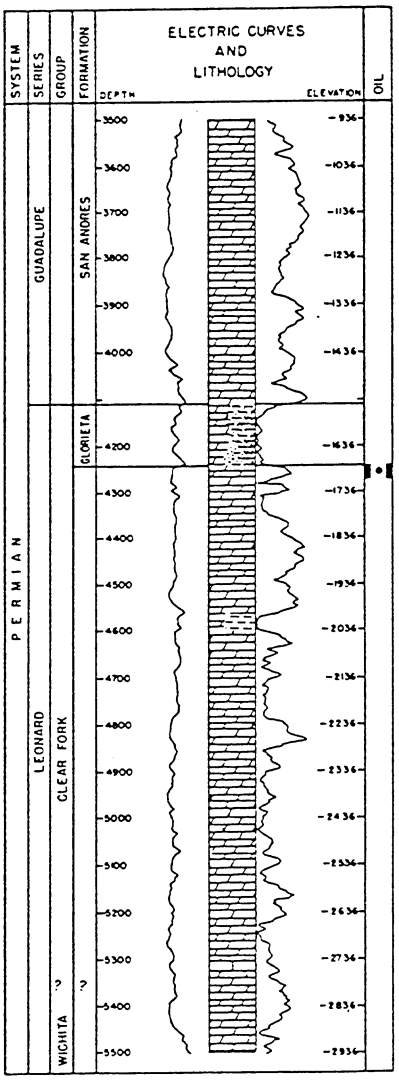
FROM: WARNER, H.R., JR., ROBERTSON, N., BARNES, A.L., AND HARDY, J.H., 1979, University Block 31 Field Study, Part I -- Middle Devonian Reservoir History Match: Journal of Petroleum Technology, August, p. 962-970.

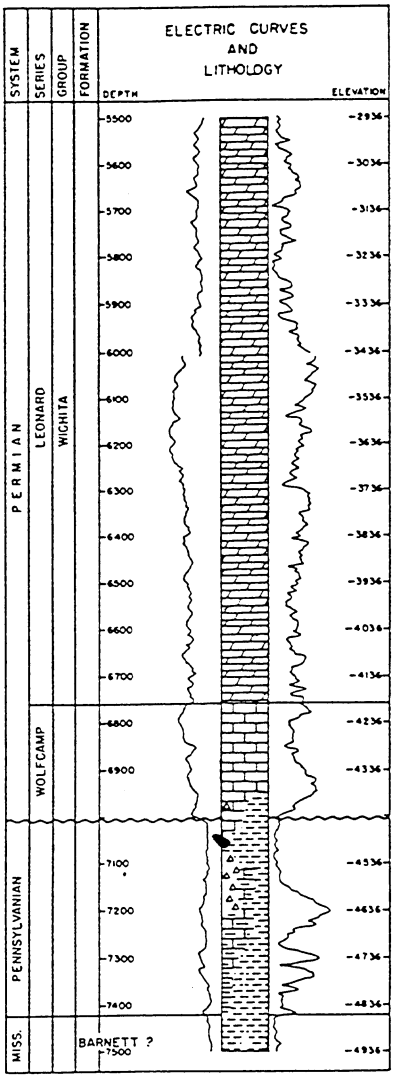
SOURCE 9c

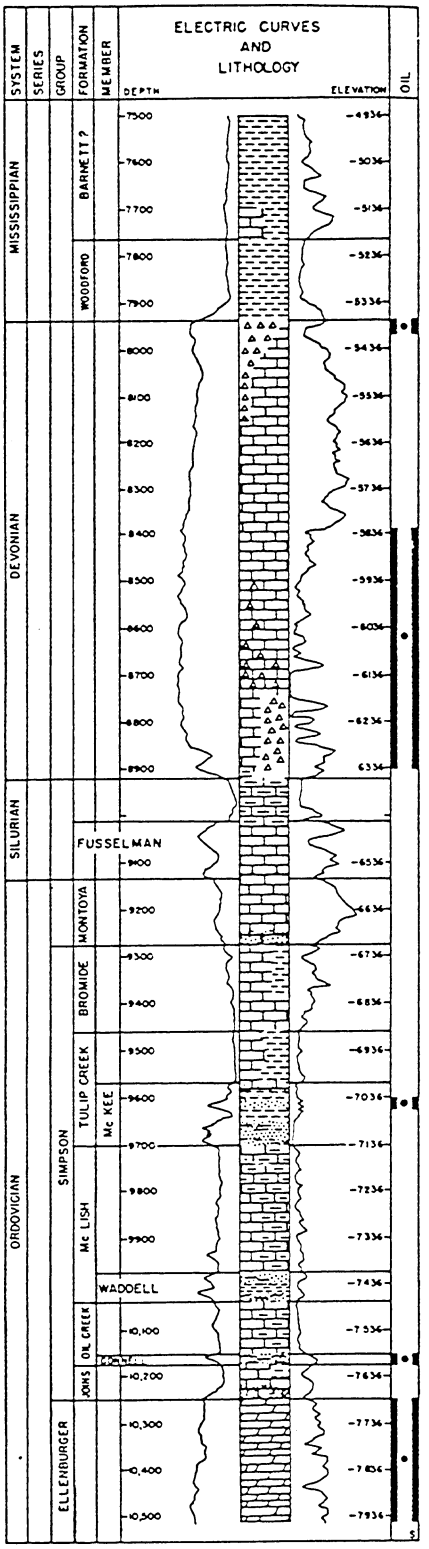


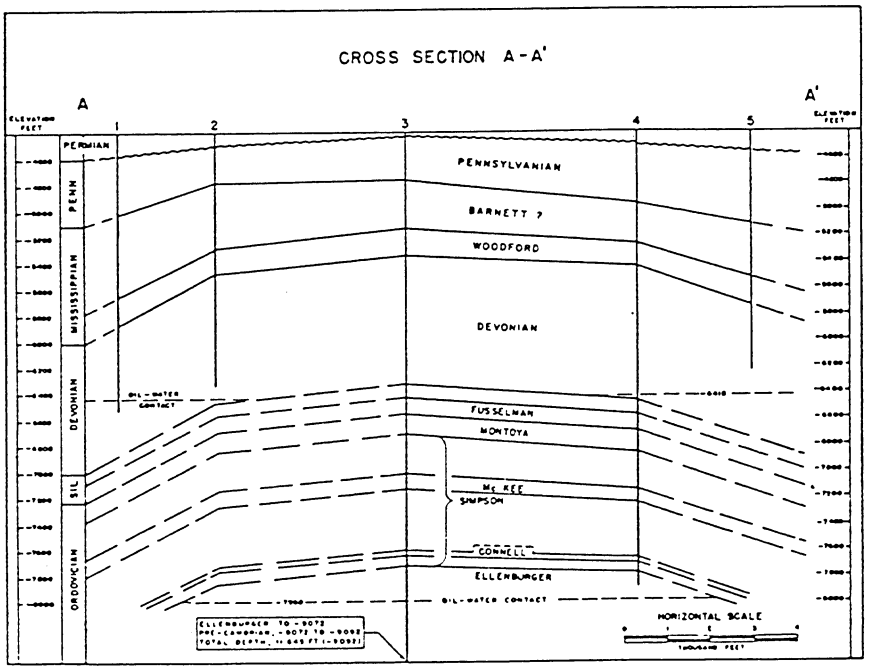
FROM: WARNER, H.R., JR., ROBERTSON, N., BARNES., AND HARDY, J.H., 1979.

TYPICAL SECTION OF ROCKS PENETRATED







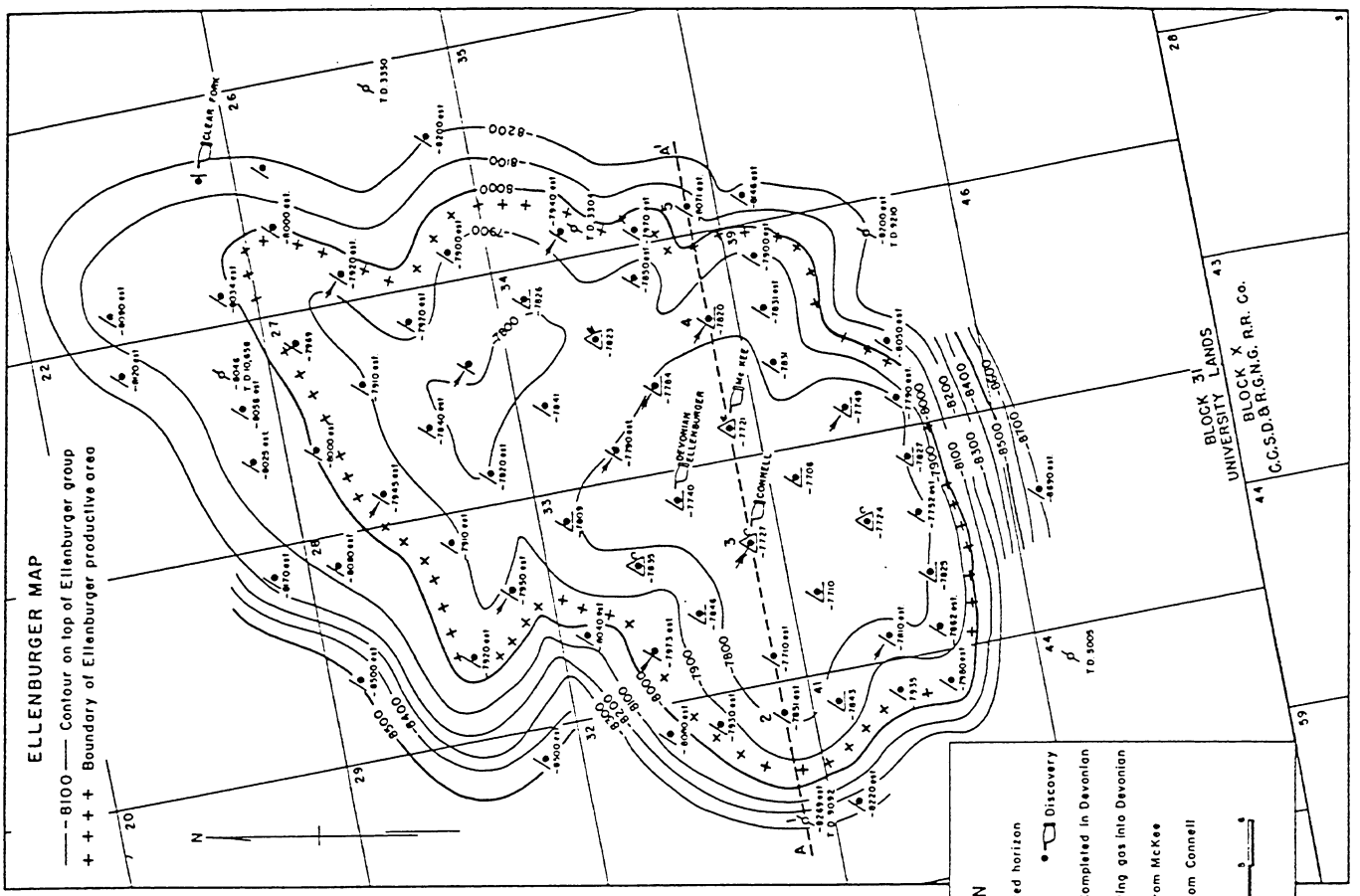


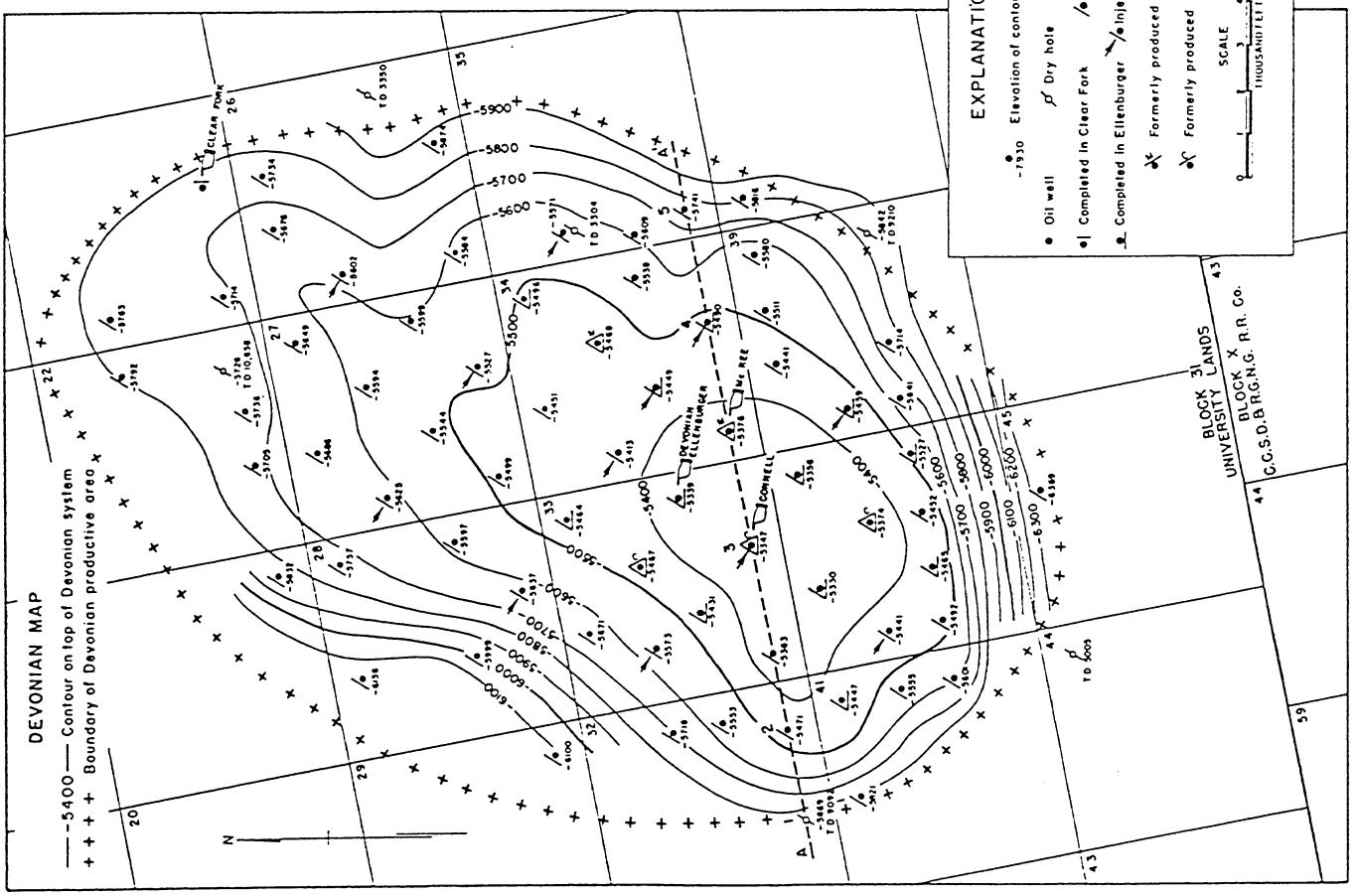
EXPLANATION

- Dolomite
- Limestone
- Oil production
- Sandstone
- Shale
- Chert

FROM: SOURCE 12c.

BLOCK 31 FIELD, Crane County, Texas





Box
Bend Arch
Palo Pinto

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Callahan
2, 1	REGULATORY DISTRICT	7B
1	BASIN	Permian
15, 1	SUB-BASIN	Bend Arch
1	FIELD	Box
1	RESERVOIR	Palo Pinto
5, 1	GEOLOGIC AGE	Pennsylvanian-Canyon, Penn-Missouri
1	AAPG STRATIGRAPHIC AGE CODE	323
1	RESERVOIR LITHOLOGY	limestone
5d	TRAPPING MECHANISM	typical reef bioherm, anticlinal dome
5d,2,1	DISCOVERY YEAR	9-52, 1952, 1952
5d,2,1	PROVED ACREAGE	800, 1143, 1143
	REGULAR WELL SPACING (acres/well)	
5d,2,3,1	RESERVOIR DEPTH	3282, 3300, 3220, 3258, 3258
1	Acreage unitized: 790 in 1967	
	RESERVOIR THICKNESS	
2,1,5d	NET PAY	30, 10, 22
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
5d	TYPE	solution type (irregular), fractured
2, 1	FRACTION	.13, .08
	PERMEABILITY	
	RANGE	
2,1	AVERAGE	150 md, 129 md
	HORIZONTAL	
	VERTICAL	
5d	OTHER INFORMATION	discovery well No. 1 I. H. Box by Callahan Rotary Company
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1,5d,2	TOTAL NUMBER OF WELLS	33, 33P-10DH, 43 (36P-0I-9A)
1	PRODUCTION 1976 oil (cum)	5900
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	6174.5
3	PRODUCTION 1-1-79 to 1-1-80	54.5 oil 17.3 gas
	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	
5d	STRUCTURE CONTOUR?	yes
5d	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Box
1	RESERVOIR:	Palo Pinto
2, 1	PROD. ACRES:	1143
2, 1	AVG. THICKNESS (FT.):	30, 10
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
1	PRIMARY DRIVE MECHANISM:	water drive
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	126 (GG= 1.6)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	755
1,2,5d	RESERVOIR PRESSURE INITIAL (psi):	1275, 1275, 1360
2	RESERVOIR PRESSURE LATEST (psi):	600
5d	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	600
17, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	188, 187.5 (76)
1,2,3,5d	STOCK TANK OIL GRAVITY (°API):	42, 41, 40.3-42, 42
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1557
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	11,844 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	3,576 mbbls

OTHER INFORMATION:

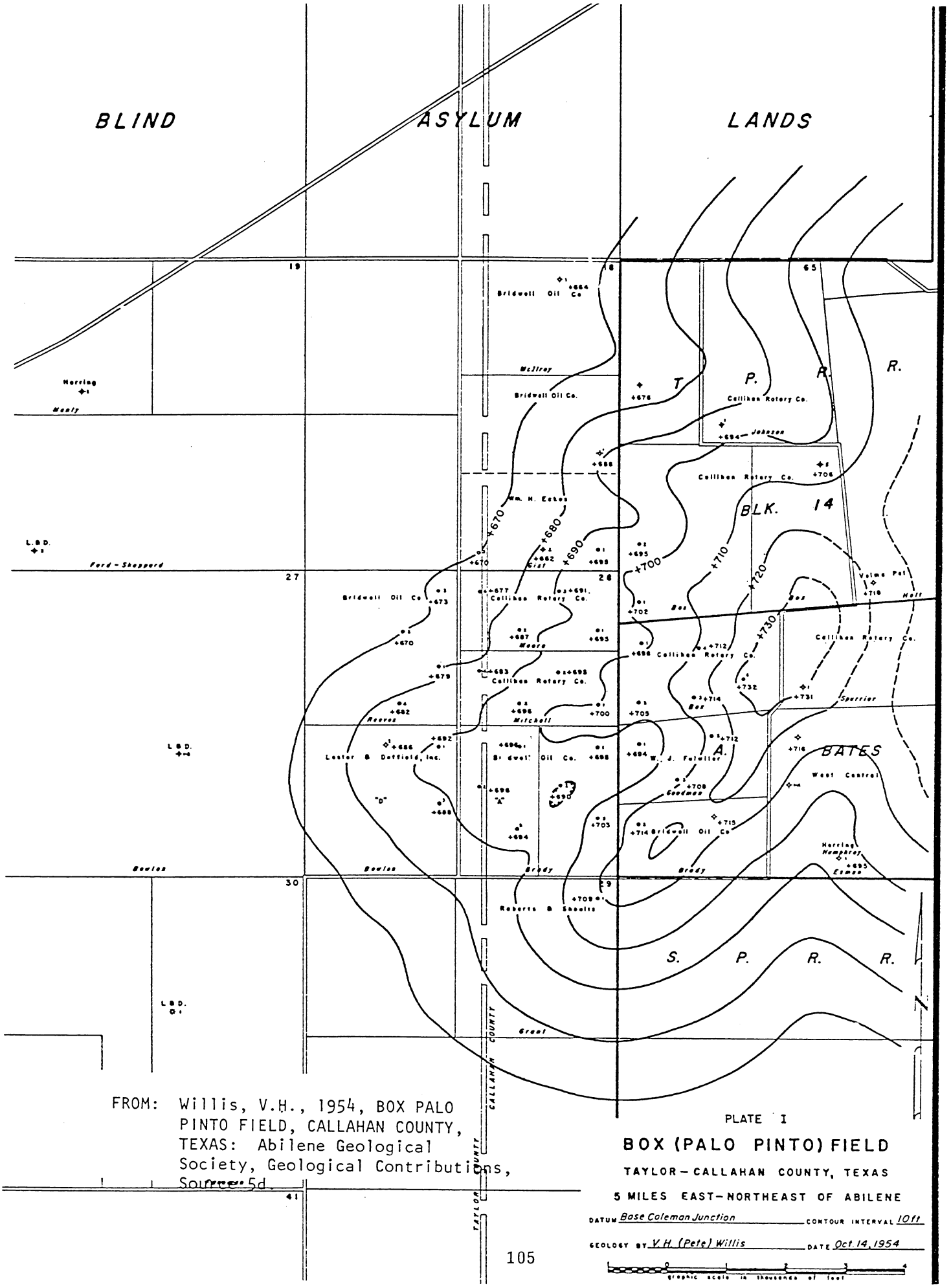
5d	recoverable oil: 5,000,000 barrels

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Box RESERVOIR: Palo Pinto TOTAL NO. PROJECTS: 1-abandoned PDS

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	N/A			
1977 PROD. (this project):	N/A			
CUM. PROD. FROM DISC. TO 1/78:	4097			
PROJECT NO.	F0646-abd			
LEASE NO.(s):	00568			
OPERATOR:	J. R. Thompson			
RESERVOIR:	Palo Pinto			Palo Pinto
DEPTH PRODUCING ZONE:	3300			3258
PRODUCTIVE ACREAGE IN RESERVOIR:	1143			1143
ACREAGE IN PROJECT:	790			790
PORTION OR FIELD WIDE:	FW			
TYPE:	WF/SW			WF
PATTERN:	I			
YEAR BEGAN:	7-67			1967
YEAR TERMINATED OR STATUS:	IPD 4-72			
RESERVOIR PRESSURE INITIAL:	1275			1275
BEG. INJECTION:	250			
LATEST:	600			
NUMBER OF WELLS TOTAL:	43			
PRODUCING WELLS:	43, 36 (1-78)			33
INJECTION WELLS:				9
MAXIMUM:				
LATEST:	0			
SHUT-IN/ABANDONED WELLS:	9			
SURFACE INJECTION PRESSURE:	N/A			
EFFECTIVENESS OF INJECTION:	N/A			
OPERATOR PROBLEMS:	N/A			
ESTIMATED PRODUCTION DUE TO INJ.:				
1977:	N/A			
FROM BEG. INJECTION:	N/A			
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	N/A			
WATER PRODUCTION:				
CURRENT (1977):	N/A			
CUMULATIVE TO 1/78:	N/A			
CURRENT (1977) INJECTION:	N/A			
CUMULATIVE INJECTION:	N/A			



FROM: Willis, V.H., 1954, BOX PALO PINTO FIELD, CALLAHAN COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

PLATE I

BOX (PALO PINTO) FIELD

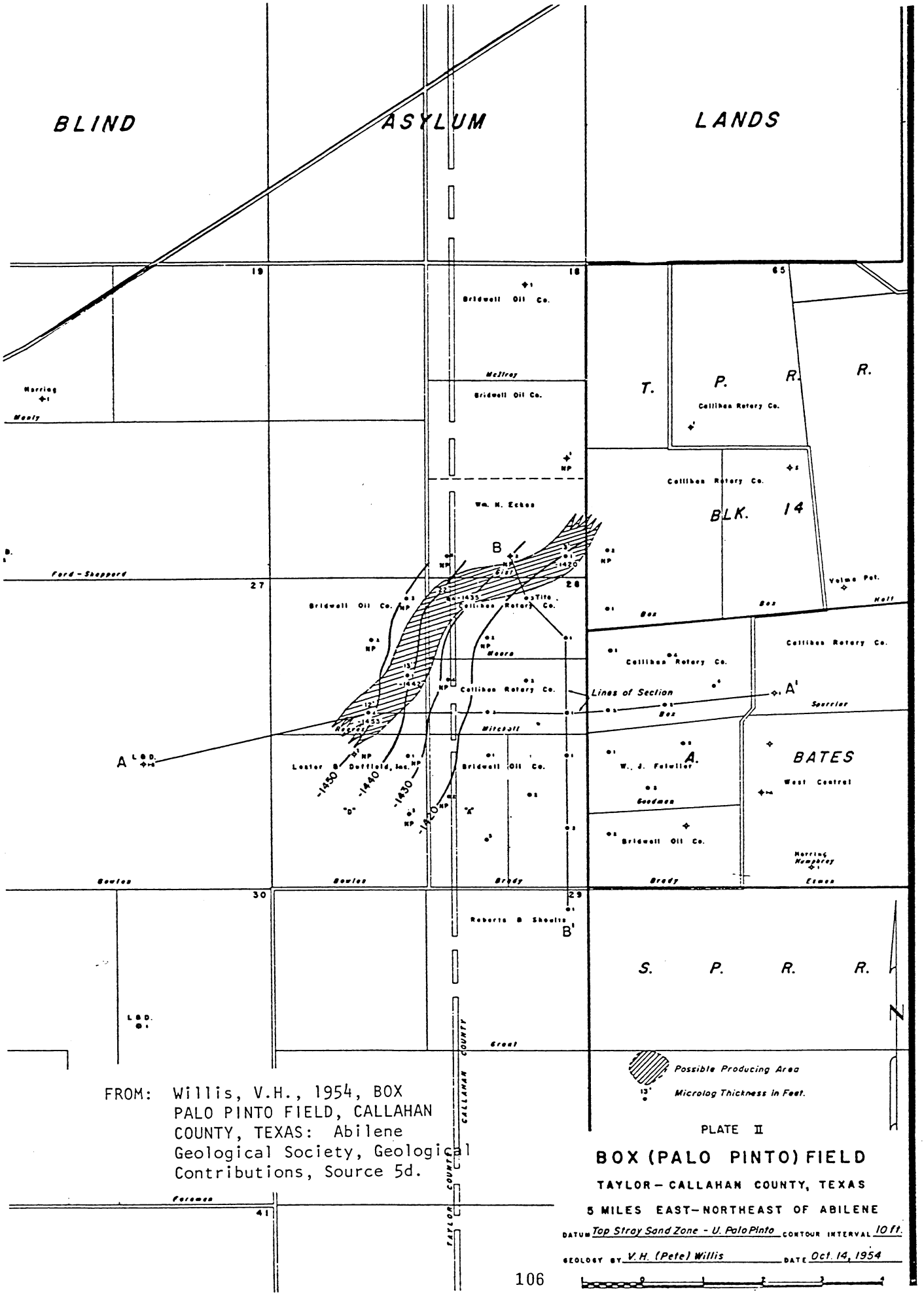
TAYLOR – CALLAHAN COUNTY, TEXAS

5 MILES EAST-NORTHEAST OF ABILENE

DATUM Base Coleman Junction CONTOUR INTERVAL 10ft

GEOLOGY BY V.H. (Pete) Willis DATE Oct 14, 1954

graphic scale in thousands of feet



FROM: Willis, V.H., 1954, BOX PALO PINTO FIELD, CALLAHAN COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

PLATE II

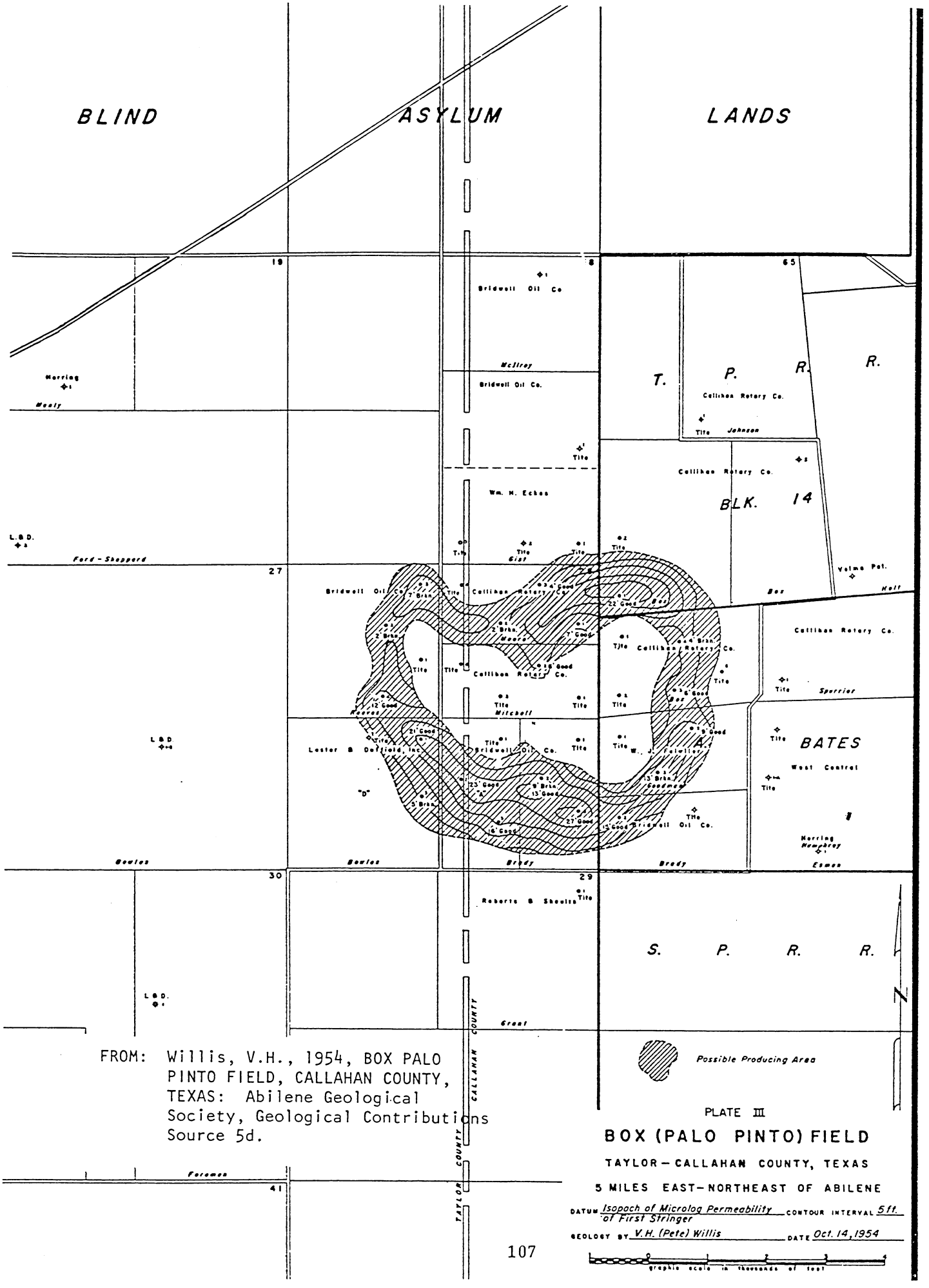
BOX (PALO PINTO) FIELD

TAYLOR – CALLAHAN COUNTY, TEXAS

5 MILES EAST–NORTHEAST OF ABILENE

DATUM Top Stray Sand Zone - U. Palo Pinto CONTOUR INTERVAL 10 ft.

GEOLOGY BY V.H. (Pete) Willis DATE Oct. 14, 1954



FROM: Willis, V.H., 1954, BOX PALO PINTO FIELD, CALLAHAN COUNTY, TEXAS: Abilene Geological Society, Geological Contributions Source 5d.

PLATE III

BOX (PALO PINTO) FIELD

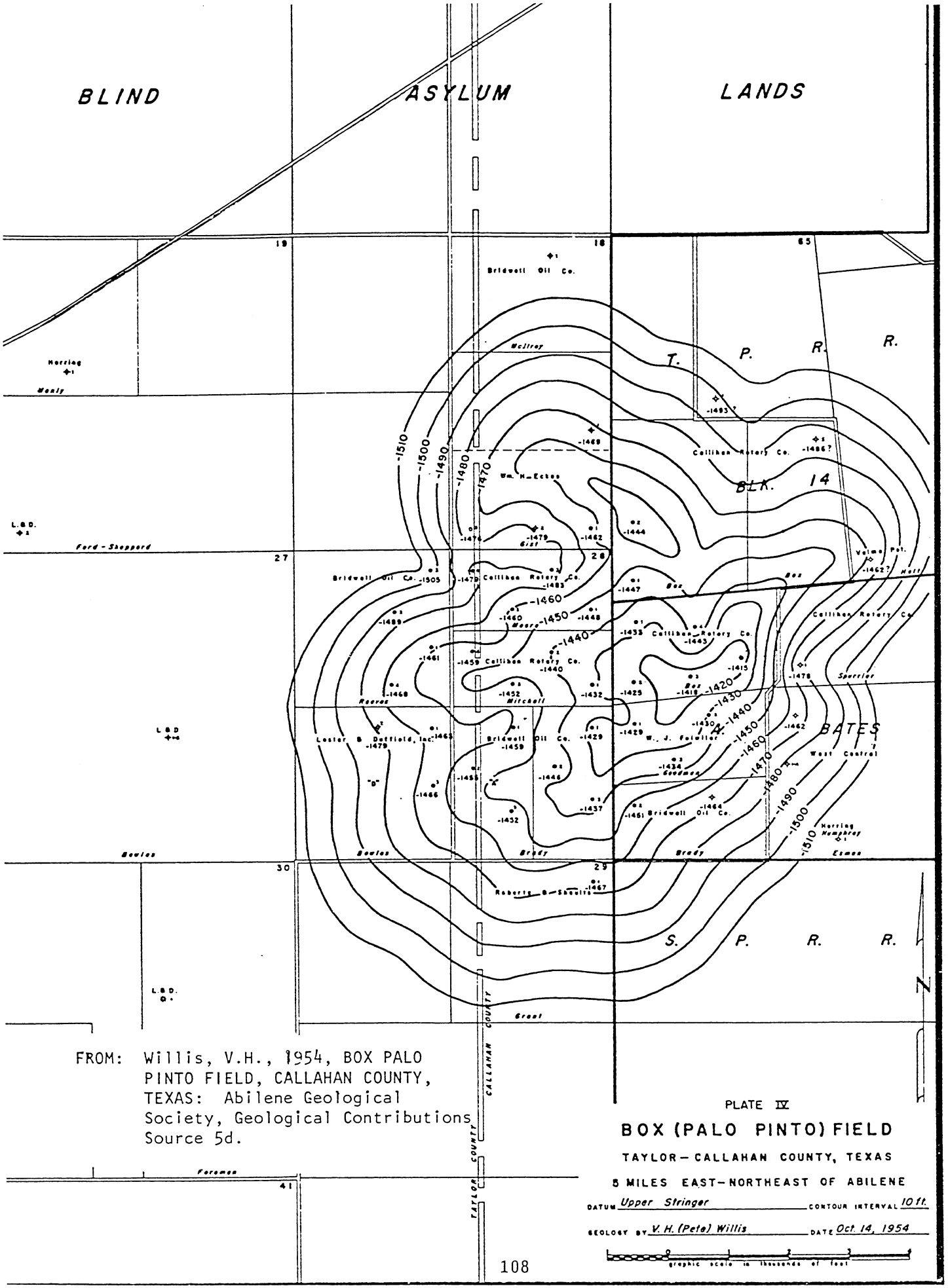
TAYLOR – CALLAHAN COUNTY, TEXAS

5 MILES EAST-NORTHEAST OF ABILENE

DATUM Isopach of Microlog Permeability of First Stringer CONTOUR INTERVAL 5 ft.

GEOLOGY BY V.H. (Pete) Willis DATE Oct. 14, 1954

graphic scale in thousands of feet



FROM: Willis, V.H., 1954, BOX PALO PINTO FIELD, CALLAHAN COUNTY, TEXAS: Abilene Geological Society, Geological Contributions Source 5d.

PLATE IV

BOX (PALO PINTO) FIELD

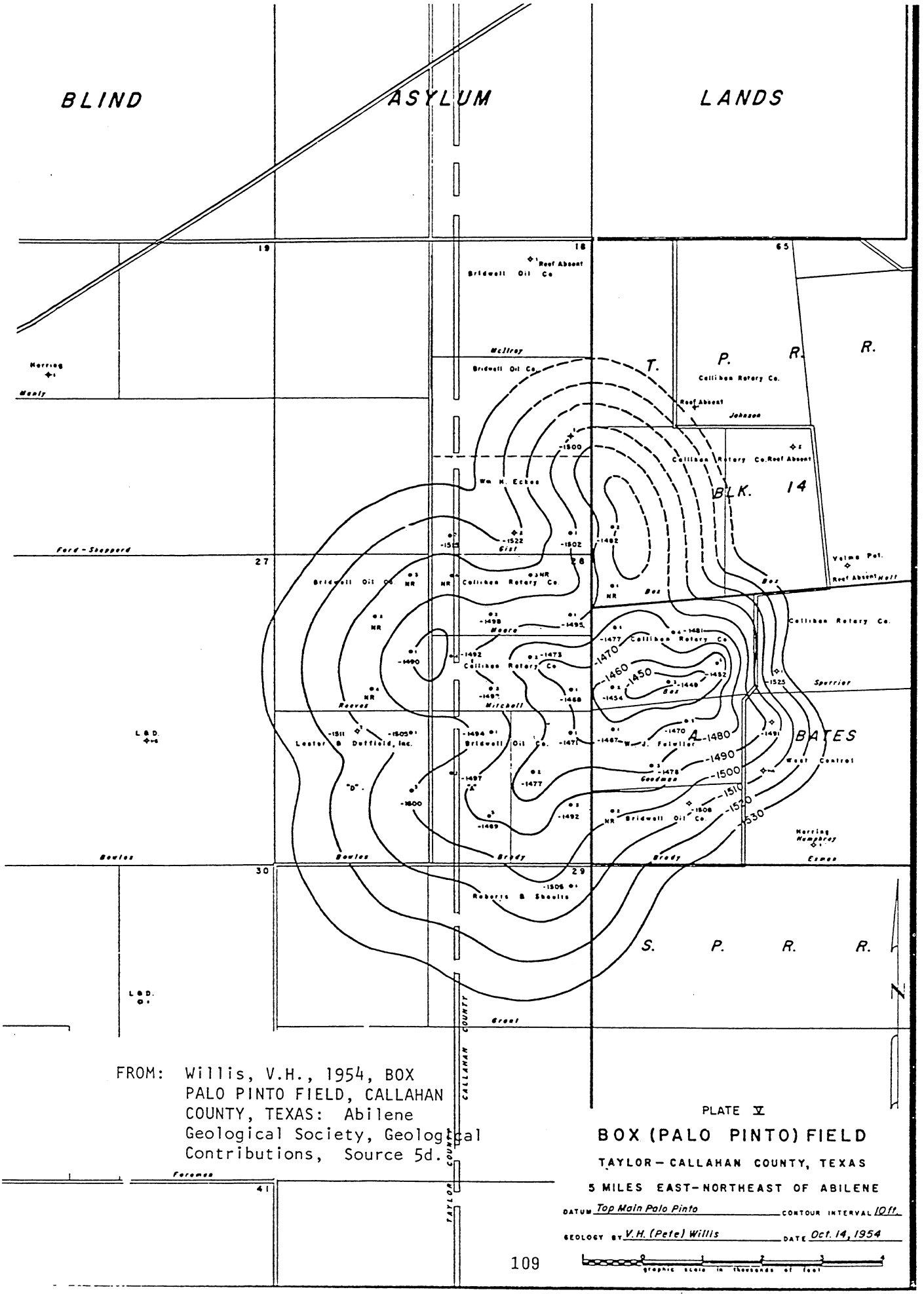
TAYLOR – CALLAHAN COUNTY, TEXAS

5 MILES EAST-NORTHEAST OF ABILENE

DATUM Upper Stringer CONTOUR INTERVAL 10 ft.

GEOLOGY BY V. H. (Pete) Willis DATE Oct. 14, 1954

graphic scale in thousands of feet



FROM: Willis, V.H., 1954, BOX PALO PINTO FIELD, CALLAHAN COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

PLATE V

BOX (PALO PINTO) FIELD

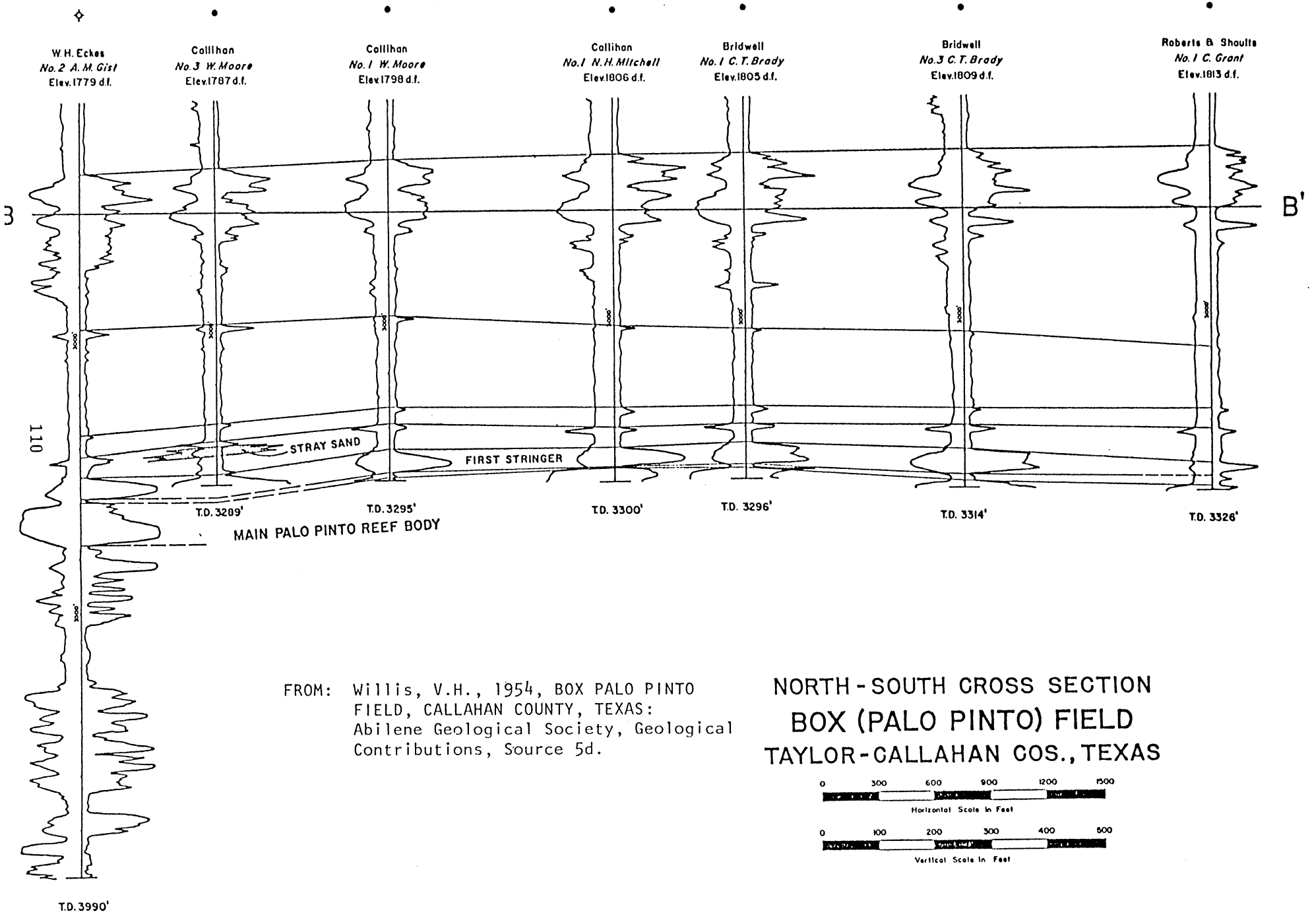
TAYLOR – CALLAHAN COUNTY, TEXAS

5 MILES EAST-NORTHEAST OF ABILENE

DATUM Top Main Palo Pinto CONTOUR INTERVAL 10 ft.

GEOLOGY BY V.H. (Pete) Willis DATE Oct. 14, 1954

graphic scale in thousands of feet

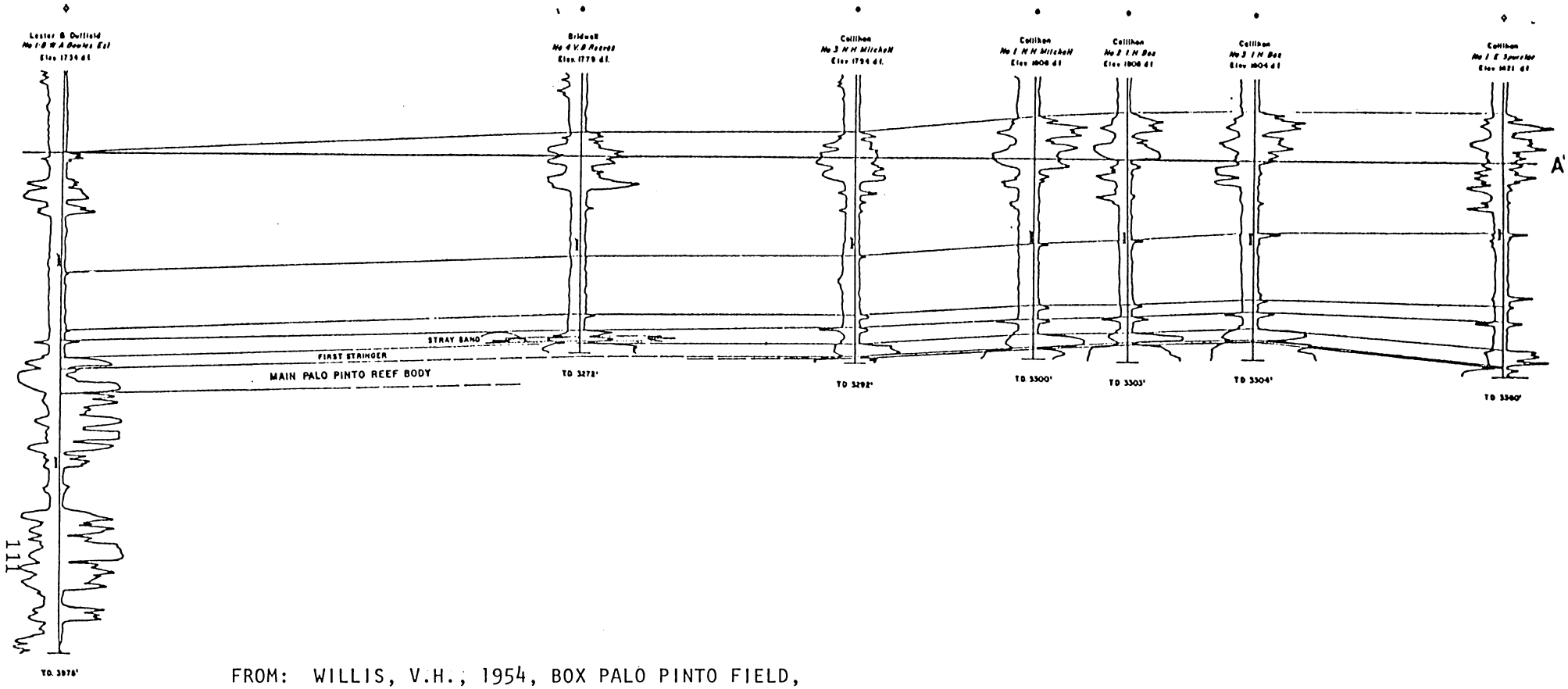


FROM: Willis, V.H., 1954, BOX PALO PINTO FIELD, CALLAHAN COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

NORTH-SOUTH CROSS SECTION
BOX (PALO PINTO) FIELD
TAYLOR-CALLAHAN COS., TEXAS

0 300 600 900 1200 1500
Horizontal Scale in Feet

0 100 200 300 400 500
Vertical Scale in Feet



FROM: WILLIS, V.H., 1954, BOX PALO PINTO FIELD, CALLAHAN COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

WEST - EAST CROSS SECTION
BOX (PALO PINTO) FIELD
TAYLOR - CALLAHAN COS., TEXAS

Boyd
Eastern Shelf
"Conglomerate"-Bend

DATA SOURCE CODE		
	STATE	Texas
1, 5d	COUNTY	Stonewall
1	REGULATORY DISTRICT	7B
1	BASIN	Permian
15	SUB-BASIN	Eastern Shelf
1	FIELD	Boyd
1, 5d	RESERVOIR	"Conglomerate"-Bend
5, 1	GEOLOGIC AGE	Bend, Lower Penn., Pennsylvanian Atoka
1	AAPG STRATIGRAPHIC AGE CODE	326
1, 5d	RESERVOIR LITHOLOGY	Dolomite, hard black to gray fossiliferous limestone
5d	TRAPPING MECHANISM	Anticlinal fault
5d,2,1	DISCOVERY YEAR	10-1951
2,5d	PROVED ACREAGE	2761, 2160
1,5d	REGULAR WELL SPACING (acres/well)	40
2,1,5d	RESERVOIR DEPTH	6000, 6032, 6032
2, 1	RESERVOIR THICKNESS	27, 16
	NET PAY	
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2, 1	FRACTION	.145, .17
	PERMEABILITY	
	RANGE	
2, 1	AVERAGE	17 md, 61 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	other production Canyon Reef 959 cum and Ellenburger 20 cum (mbbls)
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	33, 53 (33P-12I-8A)
1	PRODUCTION 1976 oil (cum)	19,633
2, 1	PRODUCTION 1977 oil (cum)	20,395, 20,282
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	21,970
3	PRODUCTION 1-1-79 to 1-1-80	894.8 oil; 313.6 gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5d	STRUCTURE CONTOUR?	yes
5d	LOGS?	yes
5d	STRUCTURE SECTION?	yes
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
1	FIELD:	Boyd
	RESERVOIR:	Conglomerate
	PROD. ACRES:	
1, 2	AVG. THICKNESS (FT.):	16, 27
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
1	PRIMARY DRIVE MECHANISM:	gas cap/gas expansion
1	PRIMARY GAS CAP?:	yes
17	TEMPERATURE (°F):	128 (GG= .9)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	4784
1, 2	RESERVOIR PRESSURE INITIAL (psi):	2581, 2600
	RESERVOIR PRESSURE LATEST (psi):	-
5d	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	872
17, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1560, 1560.5 (76)
1,2,5d	STOCK TANK OIL GRAVITY (°API):	40
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1589
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	40,115 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	22,038 mbbls

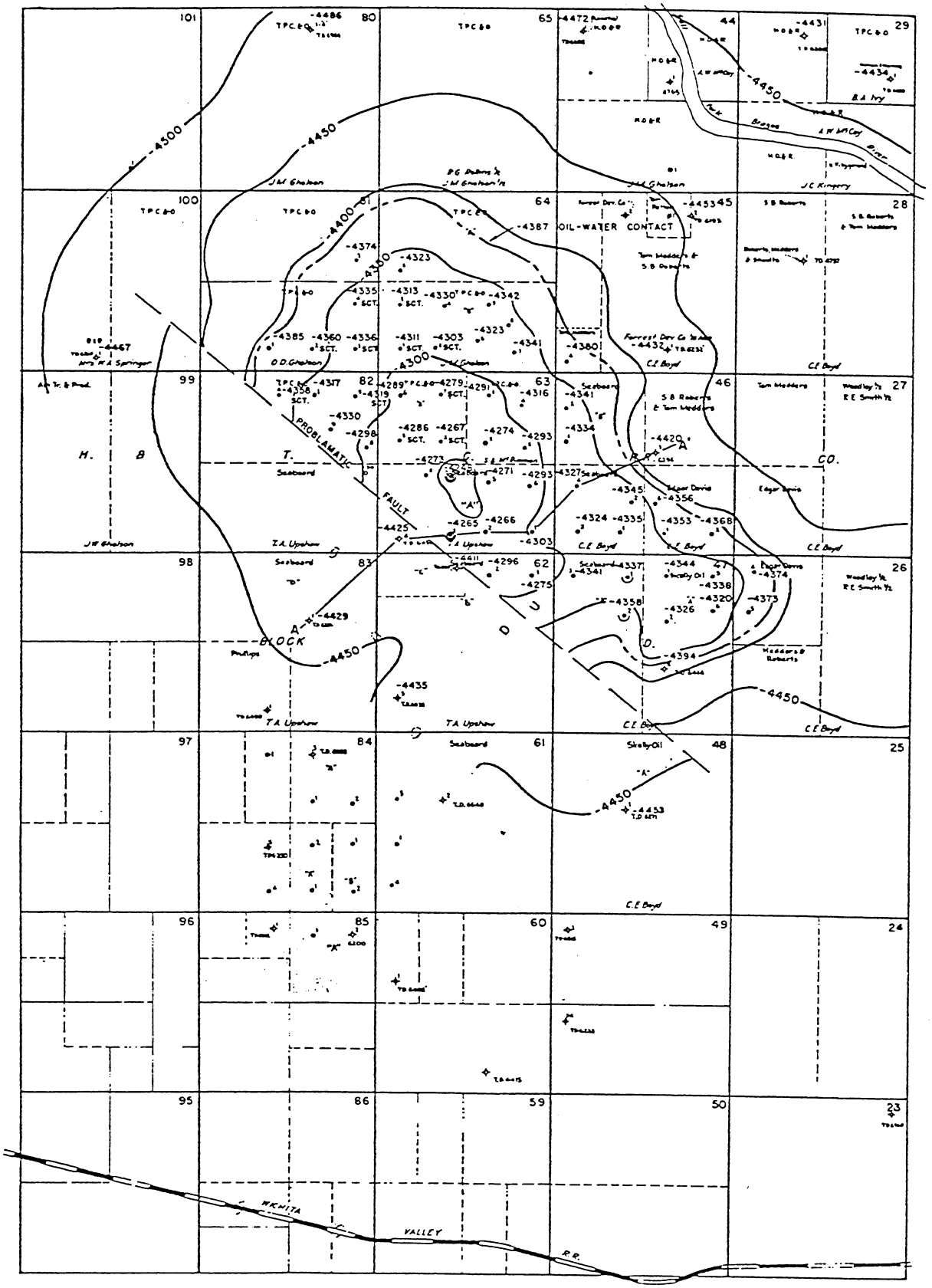
OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Boyd RESERVOIR: Conglomerate TOTAL NO. PROJECTS: 1 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	696				
1977 PROD. (this project):	649				
CUM. PROD. FROM DISC. TO 1/78:	20395				
PROJECT NO.	F0258				
LEASE NO.(s):	12346				
OPERATOR:	Texas Pacific				
RESERVOIR:	Bend Conglomerate				Conglomerate
DEPTH PRODUCING ZONE:	6000				6032
PRODUCTIVE ACREAGE IN RESERVOIR:	2761				
ACREAGE IN PROJECT:	2761				
PORTION OR FIELD WIDE:	FW				
TYPE:	WF/SW				
PATTERN:	MP				
YEAR BEGAN:	11-75				
YEAR TERMINATED OR STATUS:	ICP				
RESERVOIR PRESSURE INITIAL:	2600				
BEG. INJECTION:	640				
LATEST:	-				
NUMBER OF WELLS TOTAL:	53				
PRODUCING WELLS:					39
INJECTION WELLS:	12				
MAXIMUM:	---				
LATEST:	---				
SHUT-IN/ABANDONED WELLS:	8				
SURFACE INJECTION PRESSURE:	950				
EFFECTIVENESS OF INJECTION:	UD				
OPERATOR PROBLEMS:	CR, SL				
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	649				
FROM BEG. INJECTION:	2096				
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	7925				
WATER PRODUCTION:					
CURRENT (1977):	837				
CUMULATIVE TO 1/78:	2672				
CURRENT (1977) INJECTION:	2186				
CUMULATIVE INJECTION:	5455				



FROM: Word, C.F., 1954, BOYD CONGLOMERATE FIELD, STONEWALL COUNTY, TEXAS: Abilene Geological Society, Geological Contributuions, Source 5d.

LEGEND:
SCT. - SCOUT DATA
• BEND CONG. WELL
⊕ DUAL WELL
◡ PUMPING WELL

PLATE - C

BOYD CONGLOMERATE FIELD

STONEWALL COUNTY, TEXAS

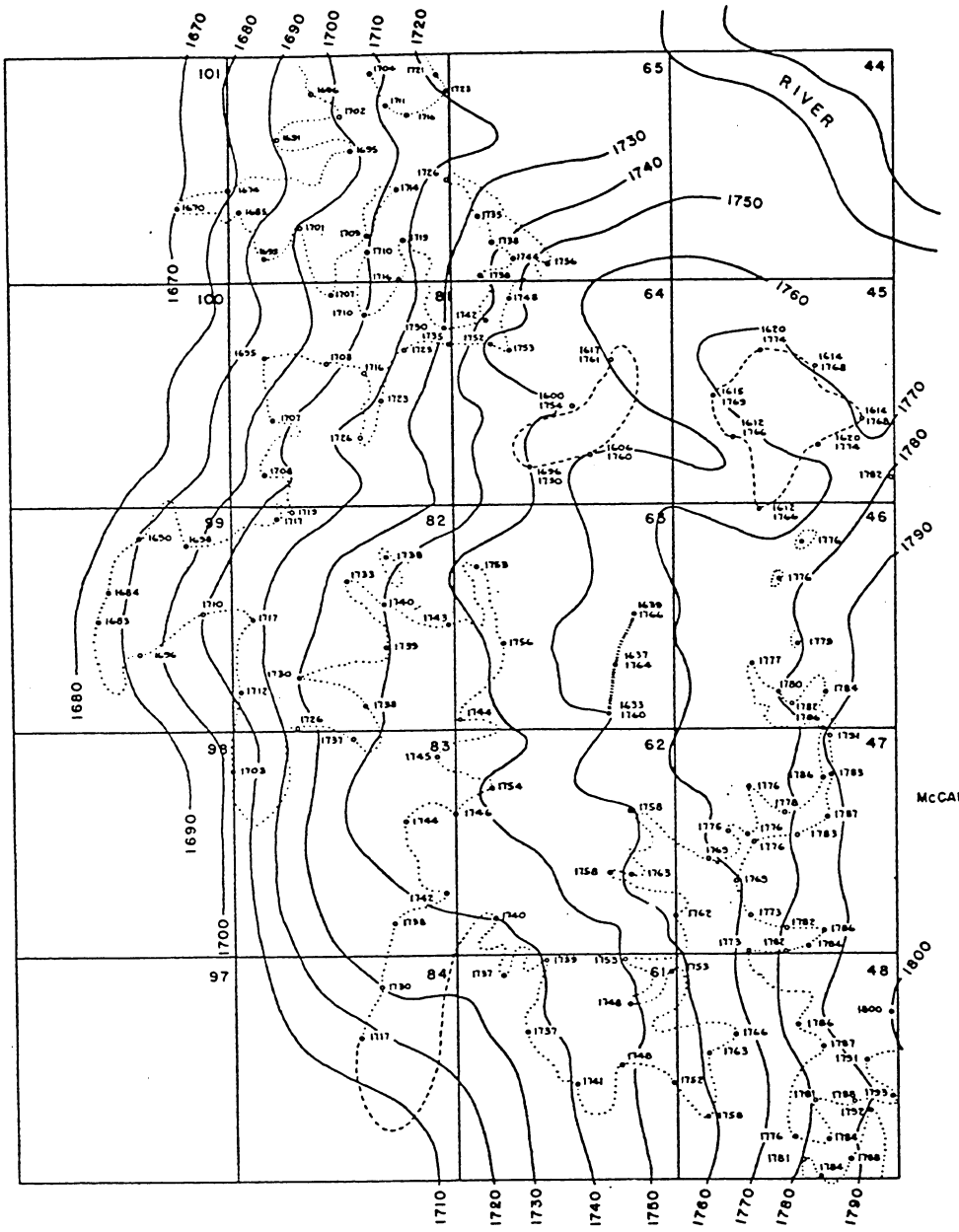
DATUM: TOP CONGLOMERATE

CONTOUR INTERVAL: 50 FEET

GEOLOGY BY: ANDERSON & WORD

DATE: OCTOBER 1, 1954

0 2000' 4000'



FROM: Word, C.F., 1954, BOYD CONGLOMERATE FIELD STONEWALL COUNTY, TEXAS: Abilene Geological Society, Geological Contributions. Source 5d.

PLATE - A

BOYD CONGLOMERATE FIELD

STONEWALL COUNTY, TEXAS

SURFACE STRUCTURAL MAP

DATUM: Mc CAULLEY DOLOMITE

CONTOUR INTERVAL: 10 FEET

GEOLOGY BY: ANDERSON & WORD

DATE: MAY, 1937

SCALE: 0 2000' 4000'

R.H.W C.F.W

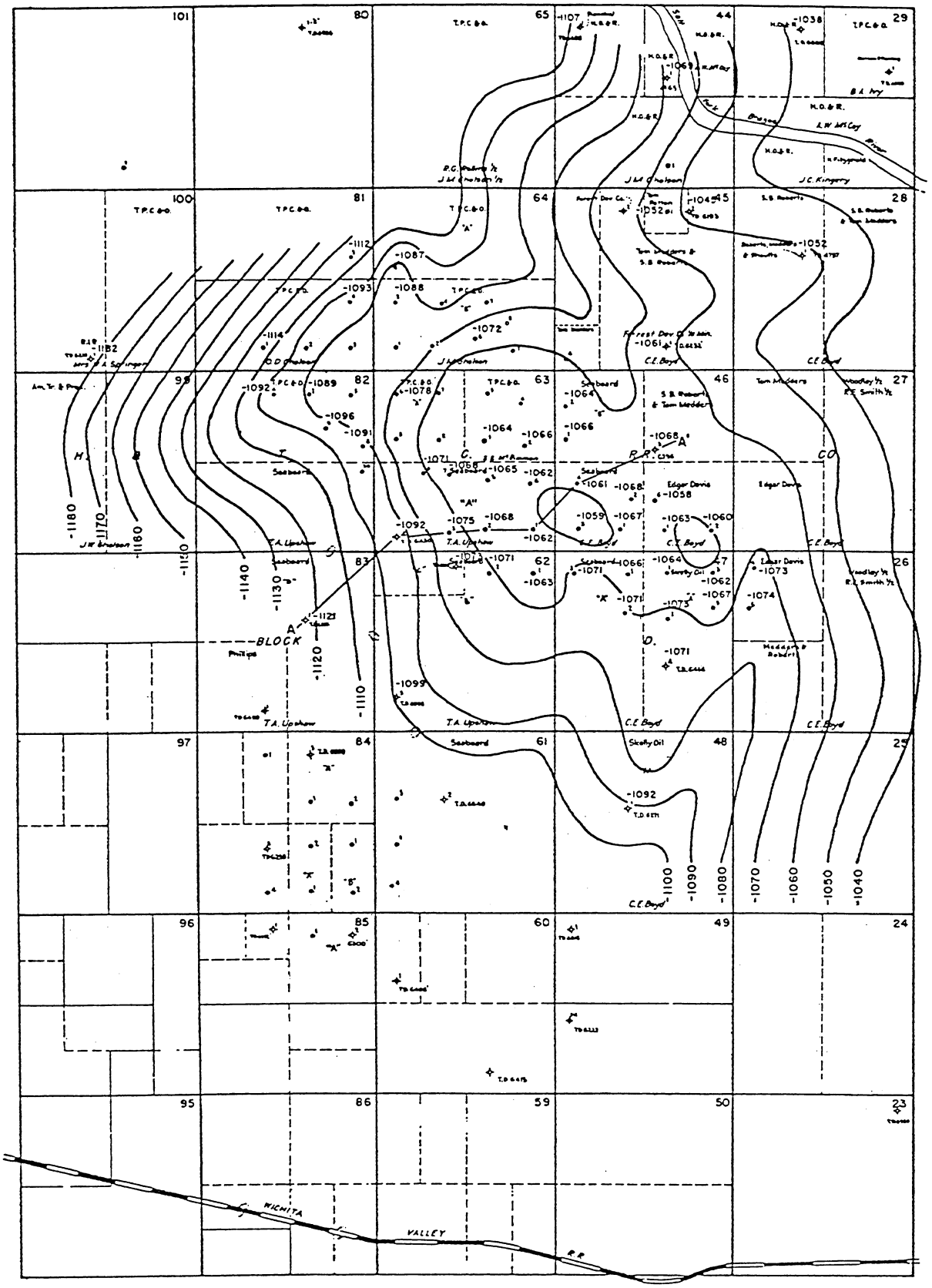


PLATE - B

BOYD CONGLOMERATE FIELD

STONEWALL COUNTY, TEXAS

DATUM: TOP CAMP COLORADO LIMESTONE

CONTOUR INTERVAL: 10 FEET

GEOLOGY BY: ANDERSON & WORD

DATE: OCTOBER 1, 1954

0 2000' 4000'

FROM: Word, C.F., 1954, BOYD CONGLOMERATE FIELD, STONEWALL COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

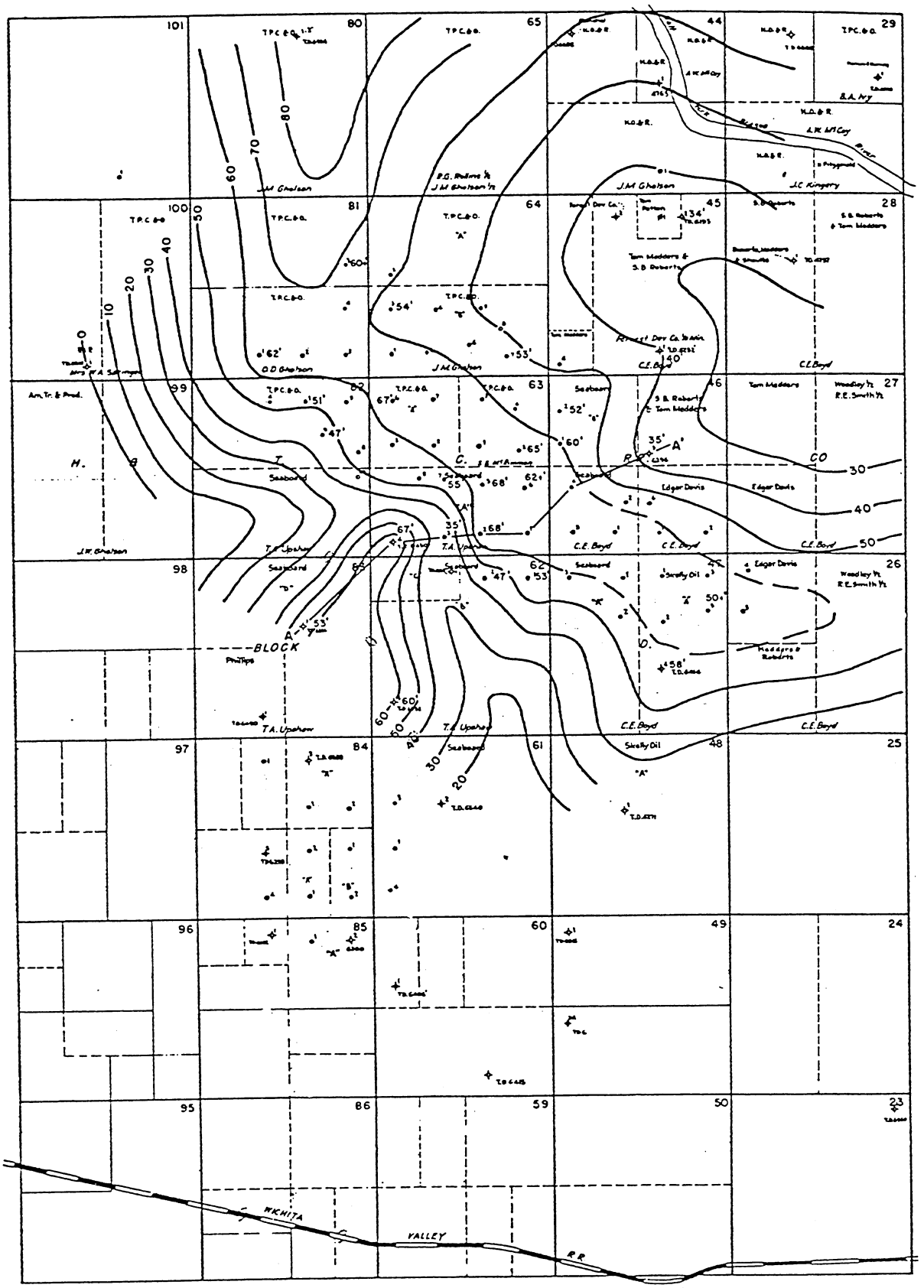


PLATE - D

BOYD CONGLOMERATE FIELD

STONEWALL COUNTY, TEXAS

ISOPACHOUS MAP OF BEND CONGLOMERATE

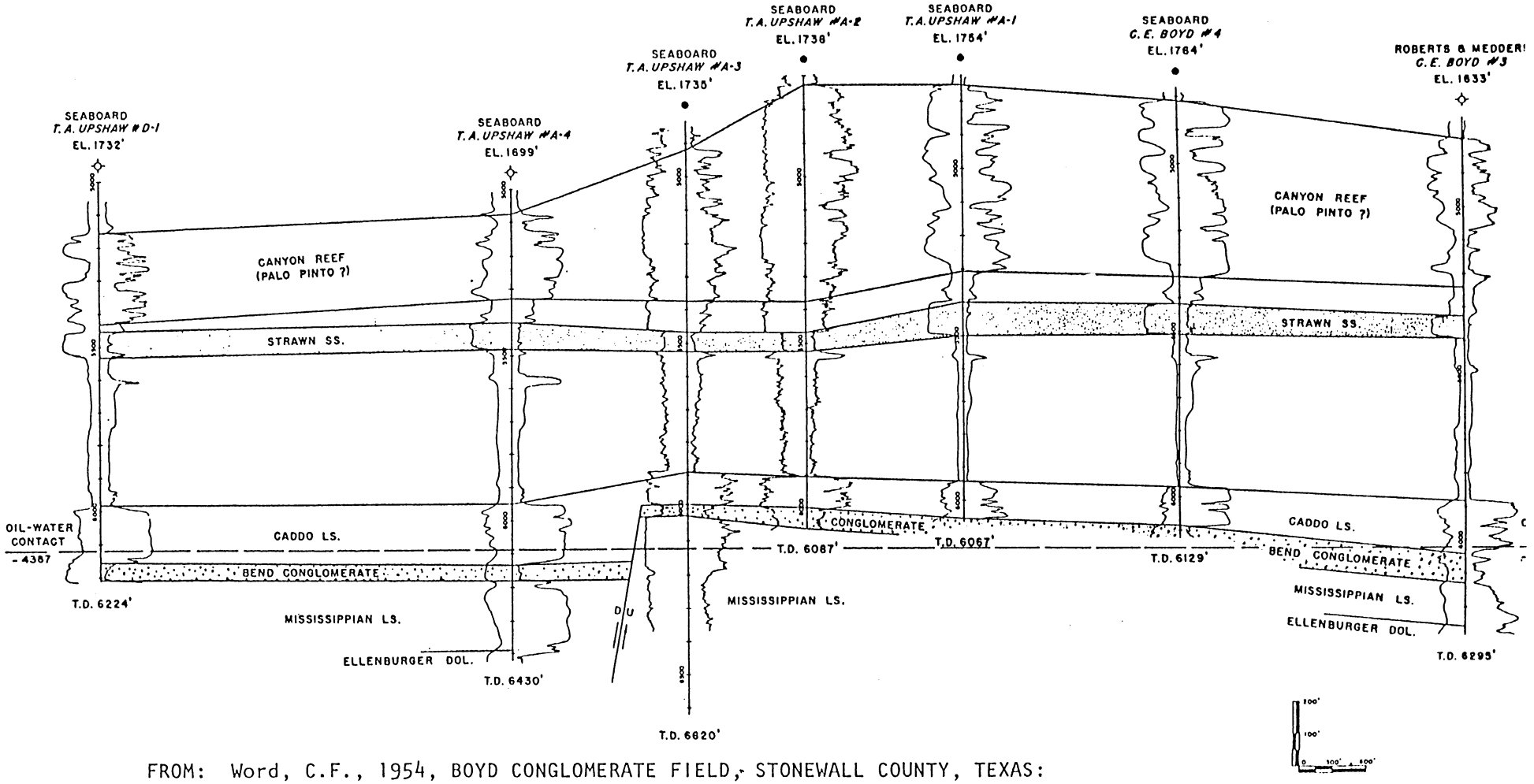
CONTOUR INTERVAL: 10 FEET

GEOLOGY BY: ANDERSON & WORD

DATE: OCTOBER 1, 1954

0 2000' 4000'

FROM: Word, C.F., 1954, BOYD CONGLOMERATE FIELD, STONEWALL COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.



FROM: Word, C.F., 1954, BOYD CONGLOMERATE FIELD, STONEWALL COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

Brahaney
North Basin Platform
San Andres

DATA SOURCE CODE		
	STATE	Texas
	COUNTY	Yoakum
	REGULATORY DISTRICT	8A
	BASIN	Permian
15	SUB-BASIN	North Basin Platform
	FIELD	Brahaney
2	RESERVOIR	San Andres
2	GEOLOGIC AGE	Permian-Upper Leonardian-Lower Guadalupe
1	AAPG STRATIGRAPHIC AGE CODE	313
12c	RESERVOIR LITHOLOGY	Dolomite, finely crystalline, with scattered chert nodules and thin streaks of bentonitic shale.
12c	TRAPPING MECHANISM	Porosity trap of a southward plunging anticlinal nose
2,12c	DISCOVERY YEAR	6-1945
16c,2,12c	PROVED ACREAGE	440, 15000, 360 (1953)
	REGULAR WELL SPACING (acres/well)	
2	RESERVOIR DEPTH	5301, 5000-5304
	RESERVOIR THICKNESS	
16c,2,12c	NET PAY	10, 35, 30
12c	GROSS	225
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.08
	PERMEABILITY	
	RANGE	
2	AVERAGE	2md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	other reservoirs include Devonian, Mississippian, and Wolfcamp.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	218; 349 (183P-134I-32A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	30,686.2
3	PRODUCTION 1-1-79 to 1-1-80	1543 oil, 573 gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	
12c	STRUCTURE CONTOUR?	yes
12c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Brahaney
	RESERVOIR:	San Andres
2	PROD. ACRES:	15,000
2	AVG. THICKNESS (FT.):	35 avg
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.22
	FORMATION VOLUME FACTOR LATEST (FVF):	
16c	WATER SATURATION (S_W): (avg)	.25
16c	OIL SATURATION (S_O):	.75
	PRIMARY DRIVE MECHANISM:	
12c	PRIMARY GAS CAP?:	no
17	TEMPERATURE (^oF):	111 (GG = .7)
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1375
2	RESERVOIR PRESSURE INITIAL (psi):	2135 avg
2	RESERVOIR PRESSURE LATEST (psi):	485-2500
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 3	STOCK TANK OIL GRAVITY (^oAPI):	32
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1413
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 6 SRPs:	158,156 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 6 SRPs:	19,664 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Brahaney RESERVOIR: San Andres TOTAL NO. PROJECTS: 6

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

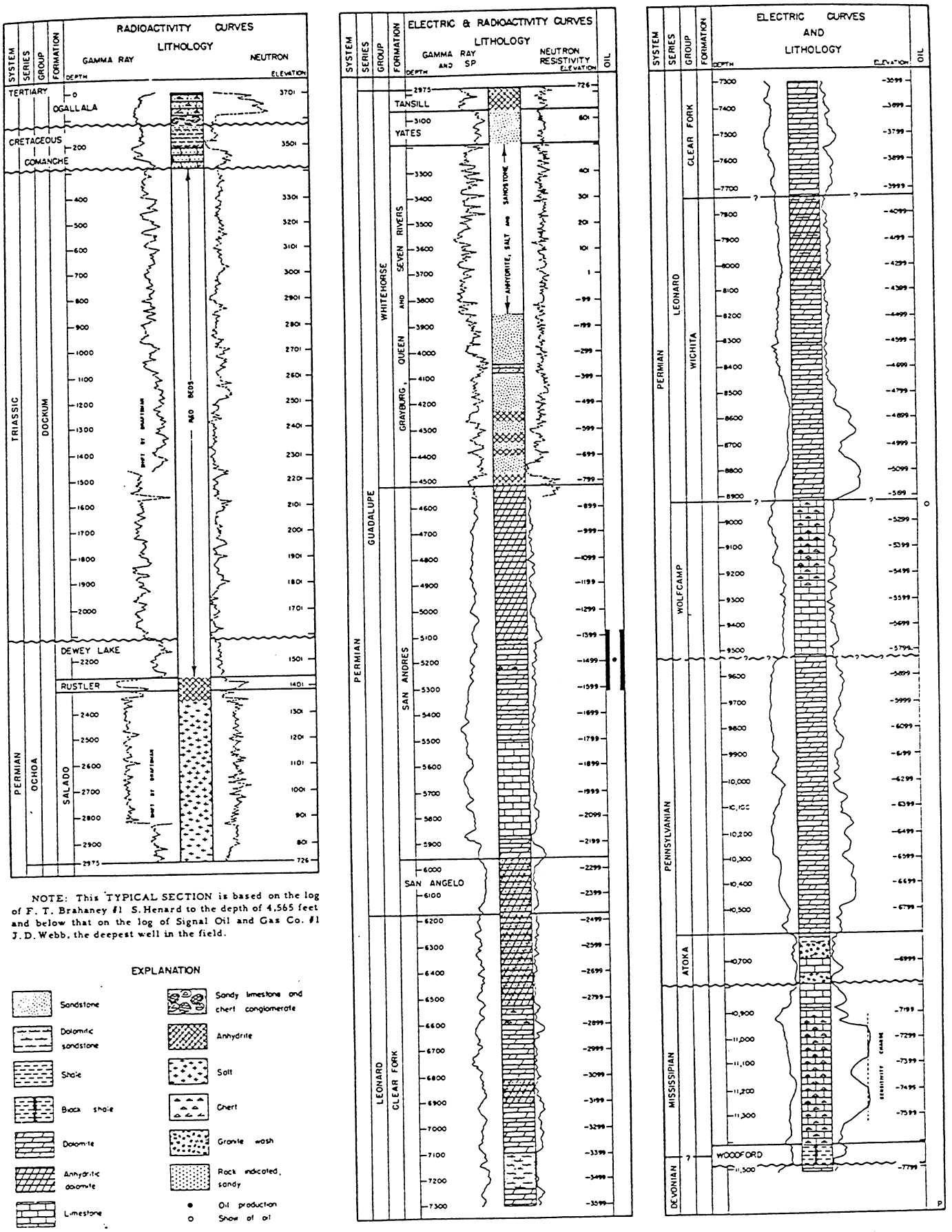
1976 PROD. (this project): MBBLS	686	373	12	14
1977 PROD. (this project):	662	418	10	15
CUM. PROD. FROM DISC. TO 1/78:	10172	7971	22	176
PROJECT NO.	F-1730	F-1727	F-6129	F-1728
LEASE NO.(s):	60407	19640	61118	14067
OPERATOR:	Amerada Hess	Atlantic Rfld.	BTA Oil Prod.	Bright & Co.
RESERVOIR:	San Andres	San Andres	San Andres	San Andres
DEPTH PRODUCING ZONE:	5300	5000	5200	5301
PRODUCTIVE ACREAGE IN RESERVOIR:	3986	15000	14000	10000
ACREAGE IN PROJECT:	3731	4240	160	4200
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P
TYPE:	WF/SW-FW	WF/SW-FW	PM/SW	WF/SW,FW
PATTERN:	5S	5S	5S	LD
YEAR BEGAN:	7-68	6-66	1-75	3-69
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP	ICP, SW,ITD FW
RESERVOIR PRESSURE INITIAL:	1940	2200	2265	-
BEG. INJECTION:	485	500	1850	-
LATEST:	485	2500	-	-
NUMBER OF WELLS TOTAL:	90	120	31	3
PRODUCING WELLS:	48	65	2	2
INJECTION WELLS:				
MAXIMUM:	41	51	2	1
LATEST:	41	51	2	1
SHUT-IN/ABANDONED WELLS:	1	4	1	0
SURFACE INJECTION PRESSURE:	1450	1800	1100	1320
EFFECTIVENESS OF INJECTION:	ME	VE	UD	NA
OPERATOR PROBLEMS:	CR	-	-	CR
ESTIMATED PRODUCTION DUE TO INJ.:				
1977:	622	417	-	8
FROM BEG. INJECTION:	3512	2745	-	38
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	7100	5000	-	60
WATER PRODUCTION:				
CURRENT (1977):	520	2802	-	6
CUMULATIVE TO 1/78:	4780	11705	-	29
CURRENT (1977) INJECTION:	520 SW, 1743 FW	2802 SW, 385 FW	29	54
CUMULATIVE INJECTION:	4789 SW, 22125 FW	117055W, 22679 FW	71	672

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Brahaney RESERVOIR: San Andres TOTAL NO. PROJECTS: 6
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	426				
1977 PROD. (this project):	421	abd 1-72			
CUM. PROD. FROM DISC. TO 1/78:	8623				
PROJECT NO.	F-1729	F-1736			
LEASE NO.(s):	60135	16001, 16435, 16021			
OPERATOR:	Getty Oil	A.F.Anding, Jr.			
RESERVOIR:	San Andres	San Andres			
DEPTH PRODUCING ZONE:	5301	5200			
PRODUCTIVE ACREAGE IN RESERVOIR:	10000	14000			
ACREAGE IN PROJECT:	4200	440			
PORTION OR FIELD WIDE:	FW/P	FW/P			
TYPE:	WF/SW, FW	WF/FW			
PATTERN:	5S	-			
YEAR BEGAN:	2-68	-			
YEAR TERMINATED OR STATUS:	ICP	IPD 1-72			
RESERVOIR PRESSURE INITIAL:	1800	1800			
BEG. INJECTION:	420	500			
LATEST:	1000	-			
NUMBER OF WELLS TOTAL:	97	8			
PRODUCING WELLS:	58	8			
INJECTION WELLS:					
MAXIMUM:					
LATEST:	39	0			
SHUT-IN/ABANDONED WELLS:	3	0			
SURFACE INJECTION PRESSURE:	2100	-			
EFFECTIVENESS OF INJECTION:	VE	-			
OPERATOR PROBLEMS:	SC, EP				
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	421	-			
FROM BEG. INJECTION:	2823	366			
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	4710	N/A			
WATER PRODUCTION:					
CURRENT (1977):	1207	N/A			
CUMULATIVE TO 1/78:	22208	N/A			
CURRENT (1977) INJECTION:	1208SW,3241FW	N/A			
CUMULATIVE INJECTION:	15355SW,131026FW	N/A			

TYPICAL SECTION OF ROCKS PENETRATED



NOTE: This TYPICAL SECTION is based on the log of F. T. Brahaney #1 S. Henard to the depth of 4,565 feet and below that on the log of Signal Oil and Gas Co. #1 J. D. Webb, the deepest well in the field.

EXPLANATION

- Sandstone
- Dolomitic sandstone
- Shale
- Black shale
- Dolomite
- Anhydritic dolomite
- Limestone
- Sandy limestone and chert conglomerate
- Anhydrite
- Salt
- Chert
- Granite wash
- Rock indicated, sandy
- Oil production
- Show of oil

Texas Bureau of Economic Geology, Pub. No. 5716. Source 12c.

BRAHANEY FIELD, Yoakum County, Texas

WATER PRODUCTION

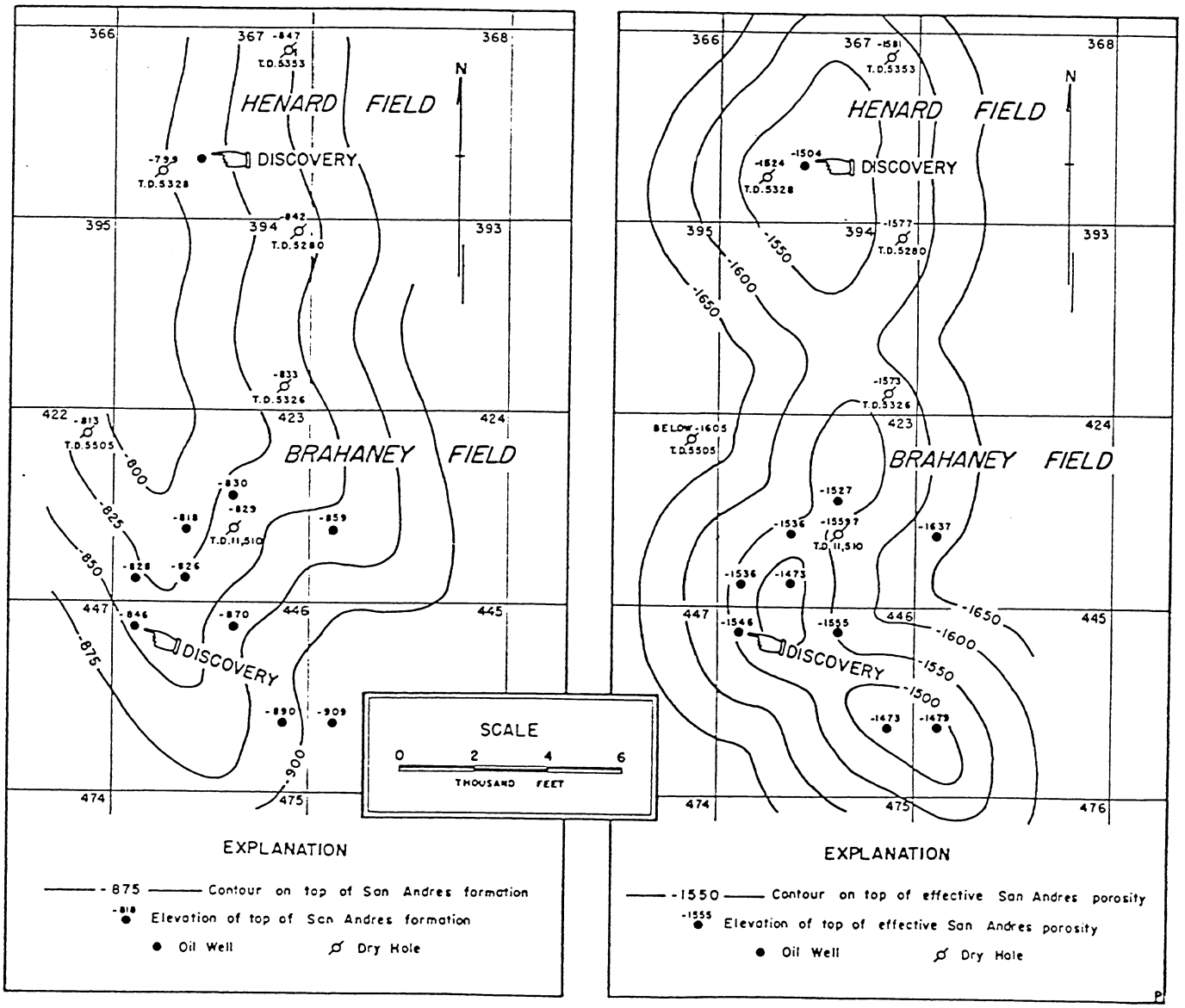
San Andres: Water constitutes an average of 20% of gross liquid produced by most wells initially, but this ratio usually decreases to 10 to 15% within a few weeks. No bottom hole water encroachment is evident at the present time.

ACID TREATMENT

San Andres: Each of the wells was treated with 3,000 to 21,000 gallons of acid. In most cases the treatment resulted in little or no increase in potential. The poor results from acid treatment are believed to be due to effects of the bentonitic shale in the reservoir rock.

PRODUCTION HISTORY

Year	WELLS PRODUCING at end of year		OIL PRODUCTION (barrels)	
	Flowing	Pumping	Yearly	Cumulative
1945	0	1	3,385	3,385
1946	0	1	6,027	9,412
1947	0	1	4,876	14,288
1948	0	1	5,577	19,865
1949	0	2	6,448	26,313
1950	0	2	6,970	33,283
1951	0	2	6,250	39,533
1952	1	6	19,765	59,298



DATA SOURCE CODE		
	STATE	Texas
1, 5a	COUNTY	Martin
1, 5a	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Midland Basin
1	FIELD	Breedlove
5a	RESERVOIR	Devonian
5a, 1	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
5a, 12c, 1	RESERVOIR LITHOLOGY	Dolomite; dense vuggy, dolomite.
5a, 12c, 1	TRAPPING MECHANISM	Northeast-southwest trending elongated structural fold. Low porosity is a limiting producing factor; structural.
5a, 1	DISCOVERY YEAR	7-1951; 1951
5a, 12c	PROVED ACREAGE	3520+, 420+ (1953)
5a, 1	REGULAR WELL SPACING (acres/well)	80
5a, 1	RESERVOIR DEPTH	12,078 - 12,118; 12078
	RESERVOIR THICKNESS	
5a, 1, 12c	NET PAY	35, 40, 46
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
5a, 12c	TYPE	V, IC
5a	FRACTION	.09
	PERMEABILITY	
	RANGE	
5a, 12c	AVERAGE	ND, 62 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	other reservoirs include Sprayberry, Strawn, Wolfcamp and Wolfcamp B.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 5a	TOTAL NUMBER OF WELLS	35P; 43P, 2A
1	PRODUCTION 1976 oil (cum)	24,143
	PRODUCTION 1977 oil (cum)	24,975
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	26,092
3	PRODUCTION 1-1-79 to 1-1-80	492.4 mbbls oil; 0.3 mmcf gas
	SECONDARY RECOVERY RECORDS?	no
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5a, 12c	STRUCTURE CONTOUR?	yes
5a, 12c	LOGS?	yes
12c	STRUCTURE SECTION?	yes
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

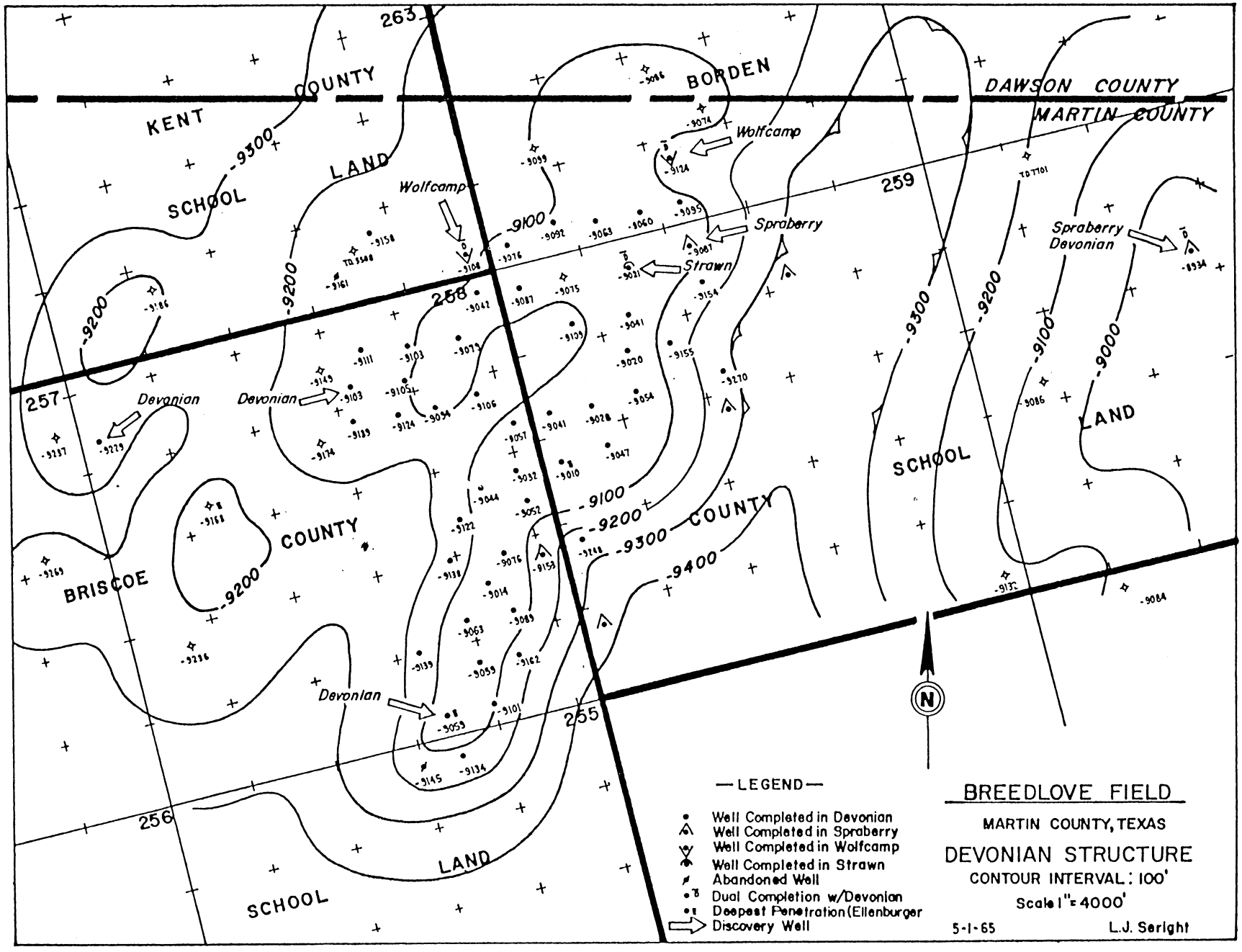
DATA SOURCE CODE		
	FIELD:	Breedlove
	RESERVOIR:	Devonian
5a	PROD. ACRES:	3520+
5a , 1	AVG. THICKNESS (FT.):	35, 40
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.09
	FORMATION VOLUME FACTOR LATEST (FVF):	
1	WATER SATURATION (S_W):	.55
	OIL SATURATION (S_O):	
5a , 1	PRIMARY DRIVE MECHANISM:	water drive/very little gas
12c	PRIMARY GAS CAP?:	no
17	TEMPERATURE (°F):	195 (GG = 1.0)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	238
5a ,1	RESERVOIR PRESSURE INITIAL (psi):	5600
	RESERVOIR PRESSURE LATEST (psi):	
5a	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	20
17 , 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	41.6 (76)
1,5a, 12c, 3	STOCK TANK OIL GRAVITY (°API):	41.3, 41.3, 40.8, 41.3
12c	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	60 sec @ 60°F, 47sec @ 75°F
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	2404 and 41 sec @100°F
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

5a OTHER INFORMATION: est. ultimate recovery 31,152 mbbls.

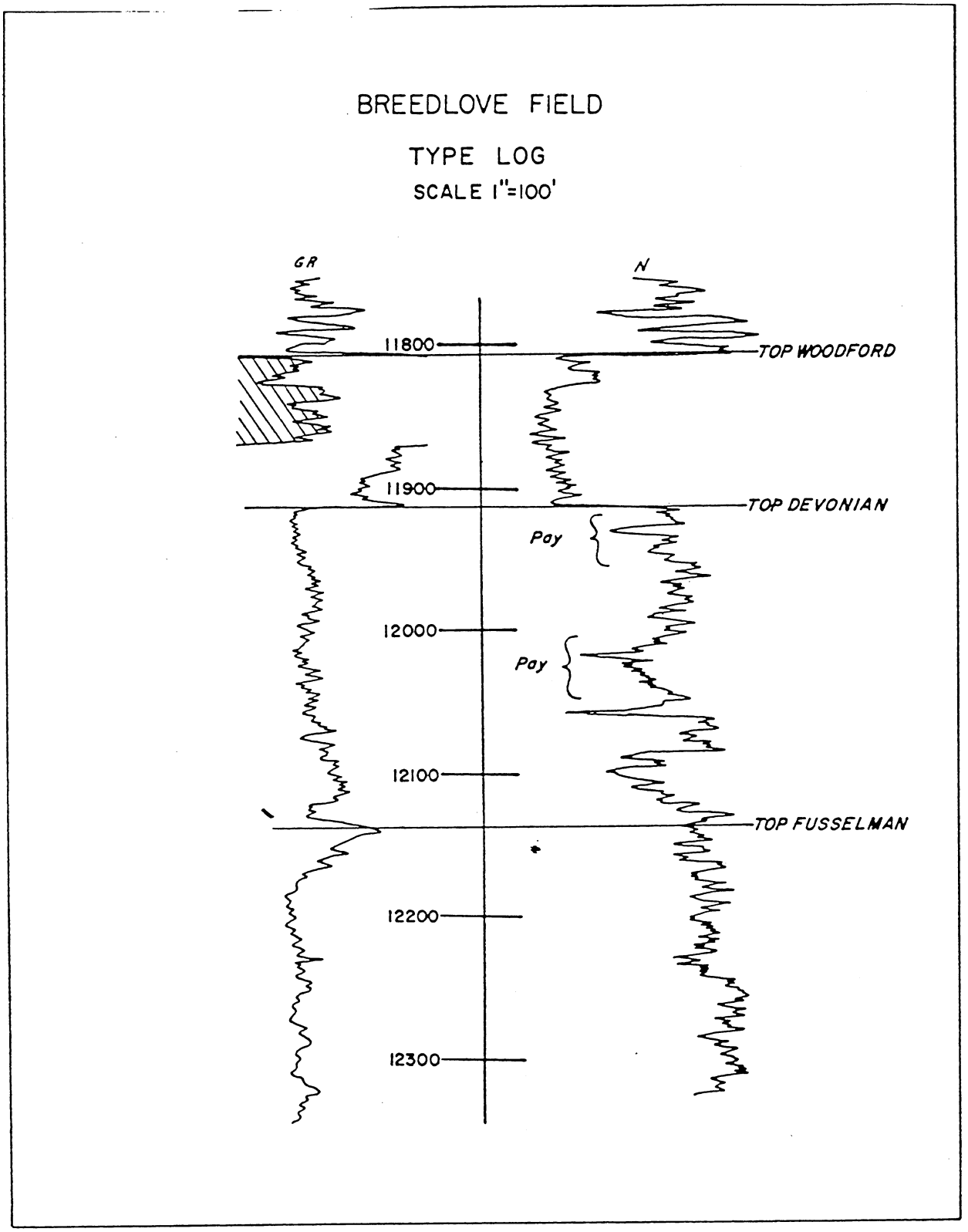
5a Salty sulphur water

$12c_1$ Reference: Munn, Jameck, 1971, Breedlove Field, Martin County, Texas: Am. Assoc. Petroleum Geologists Bull., V.55, No.3, March, p. 403-411.

$12c_2$ Thorton, Josh D., 1953, Breedlove Field in Occurrence of Oil and Gas in West Texas: Texas Bureau of Economic Geol., Publ. No. 5716, August, 1957.



FROM: Seright, L.J., 1966, BREEDLOVE in OIL & GAS FIELDS IN WEST TEXAS: West Texas Geol. Soc. Publ. No. 66-52.



FROM: Seright, L.J., 1966, BREEDLOVE in OIL & GAS FIELDS IN WEST TEXAS-SYMPOSIUM: West Texas Geological Society, Publ. No. 66-52.

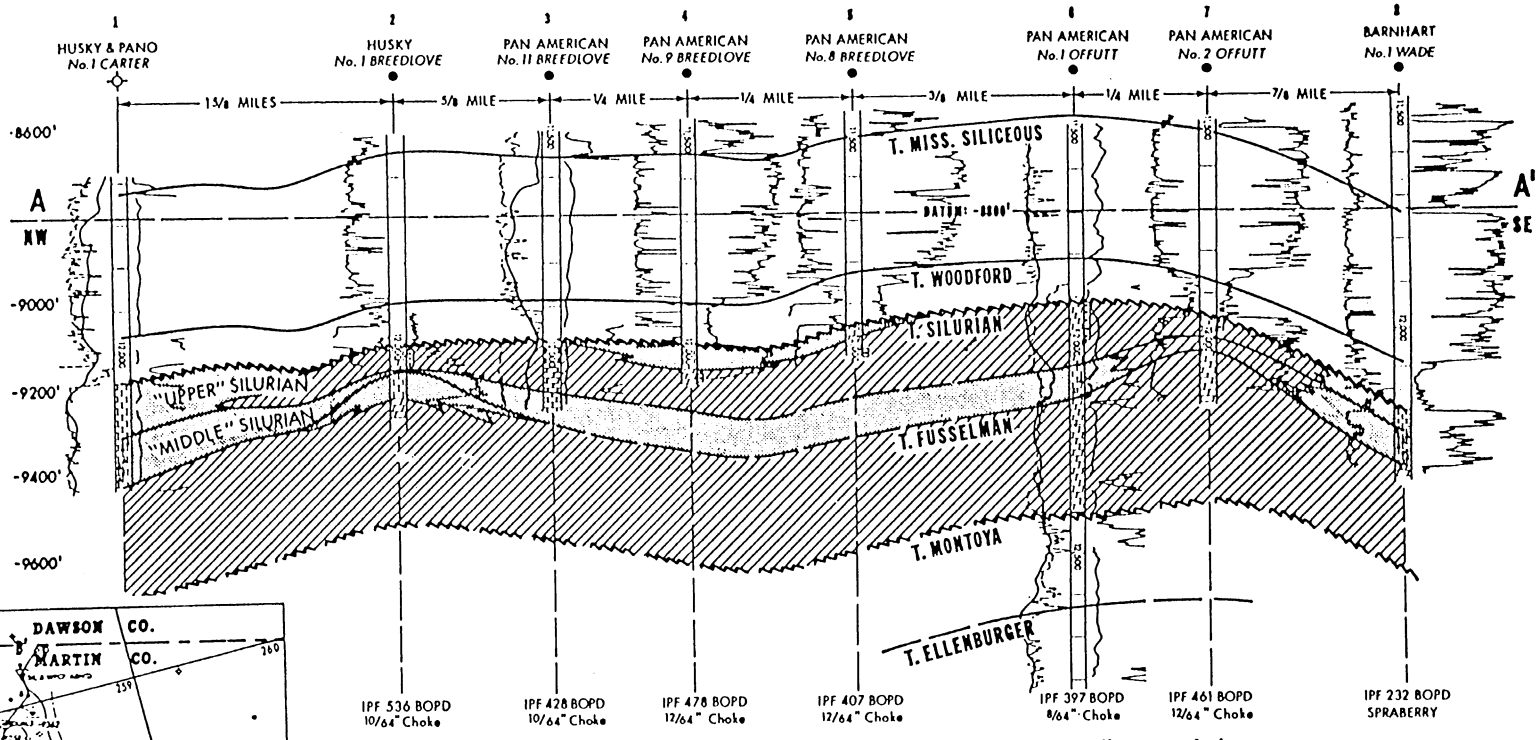
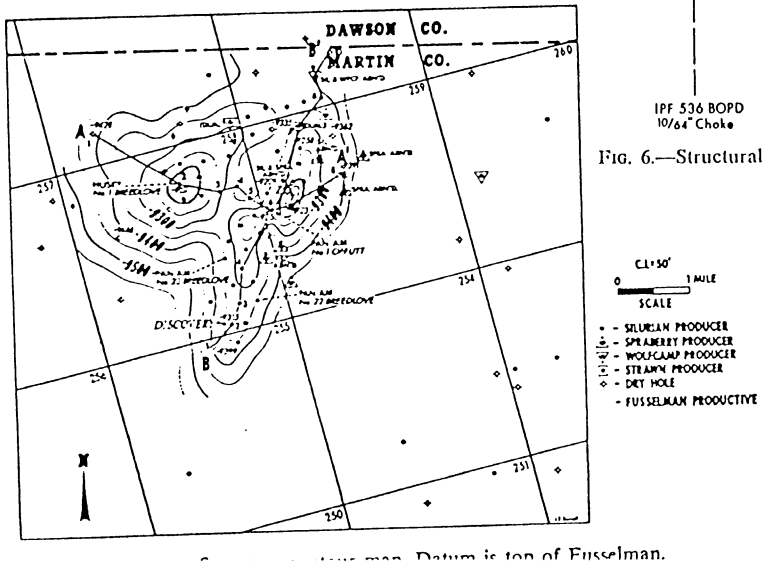


FIG. 6.—Structural cross-section A-A'. Hatched area = dolomite facies; stippled area = limestone facies.



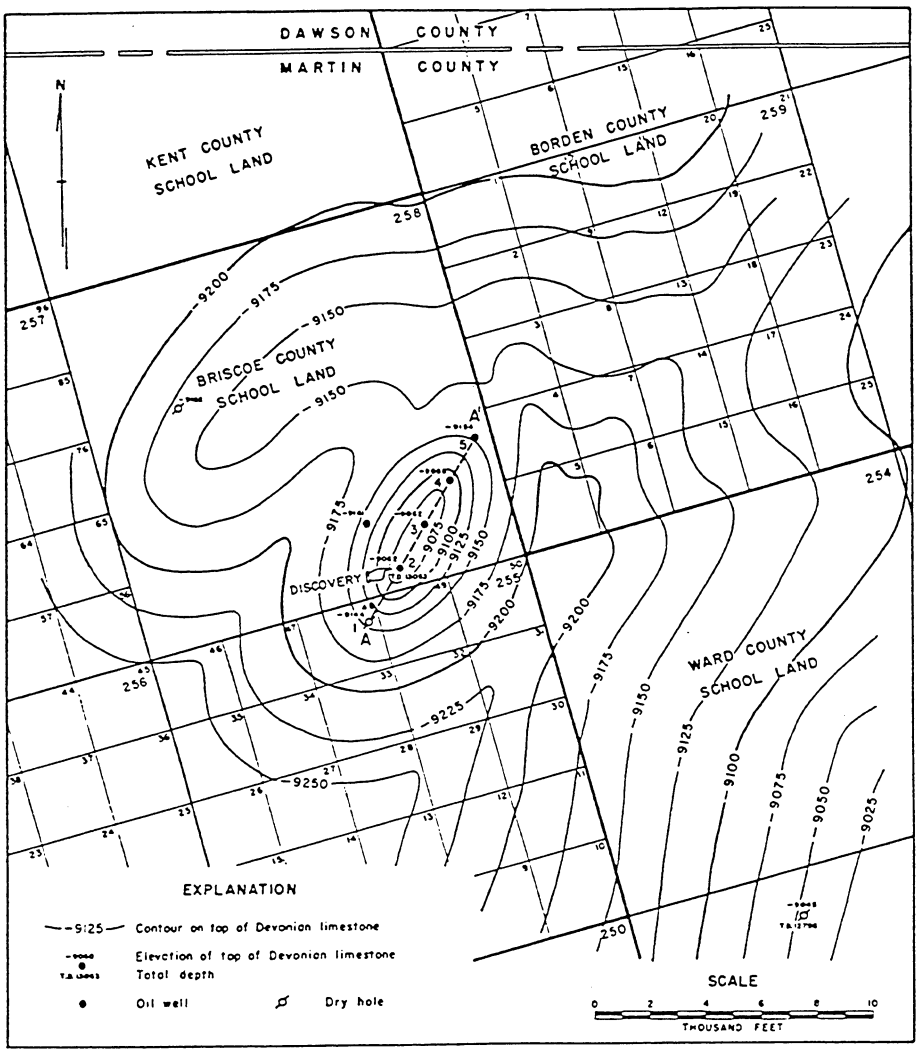
...structure map. Datum is top of Fusselman.

Munn, J.K., 1971, Breedlove Field, Martin County, Texas: American Association of Petroleum Beologists Bullentin, v. 55, no. 3, p. 403-411.

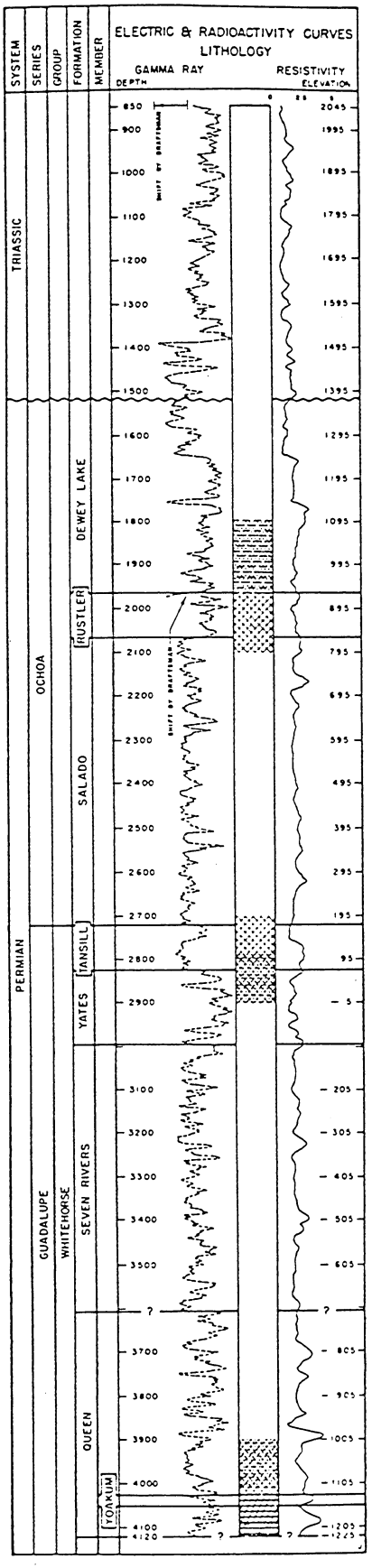
Source 12c1

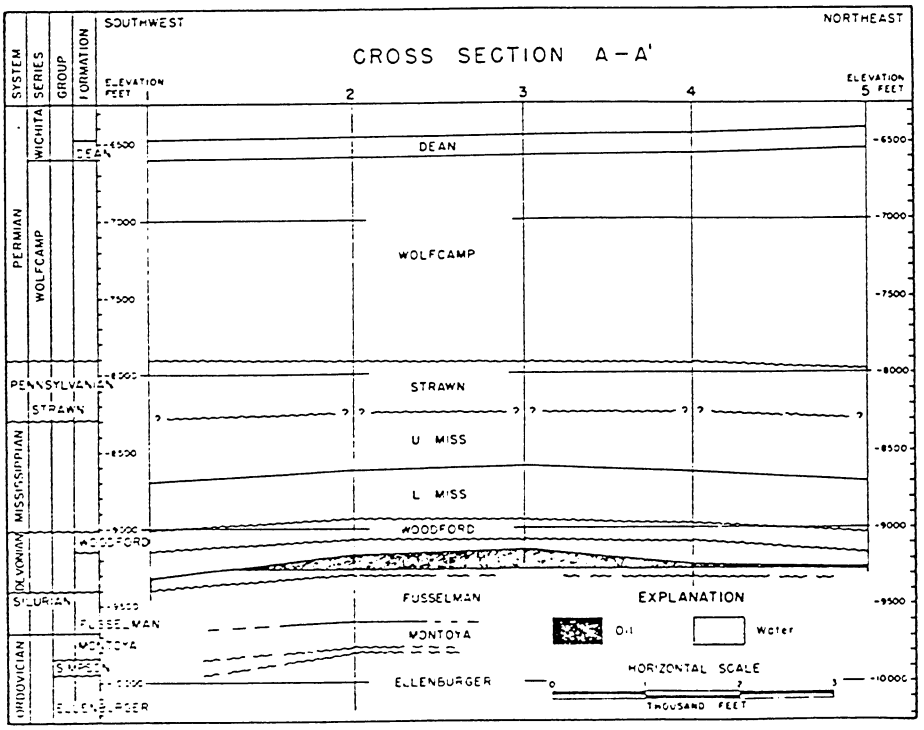
Texas Bureau of Economic Geology Publication No. 5716, August, 1957. Source 12c

BREEDLOVE FIELD, Martin County, Texas



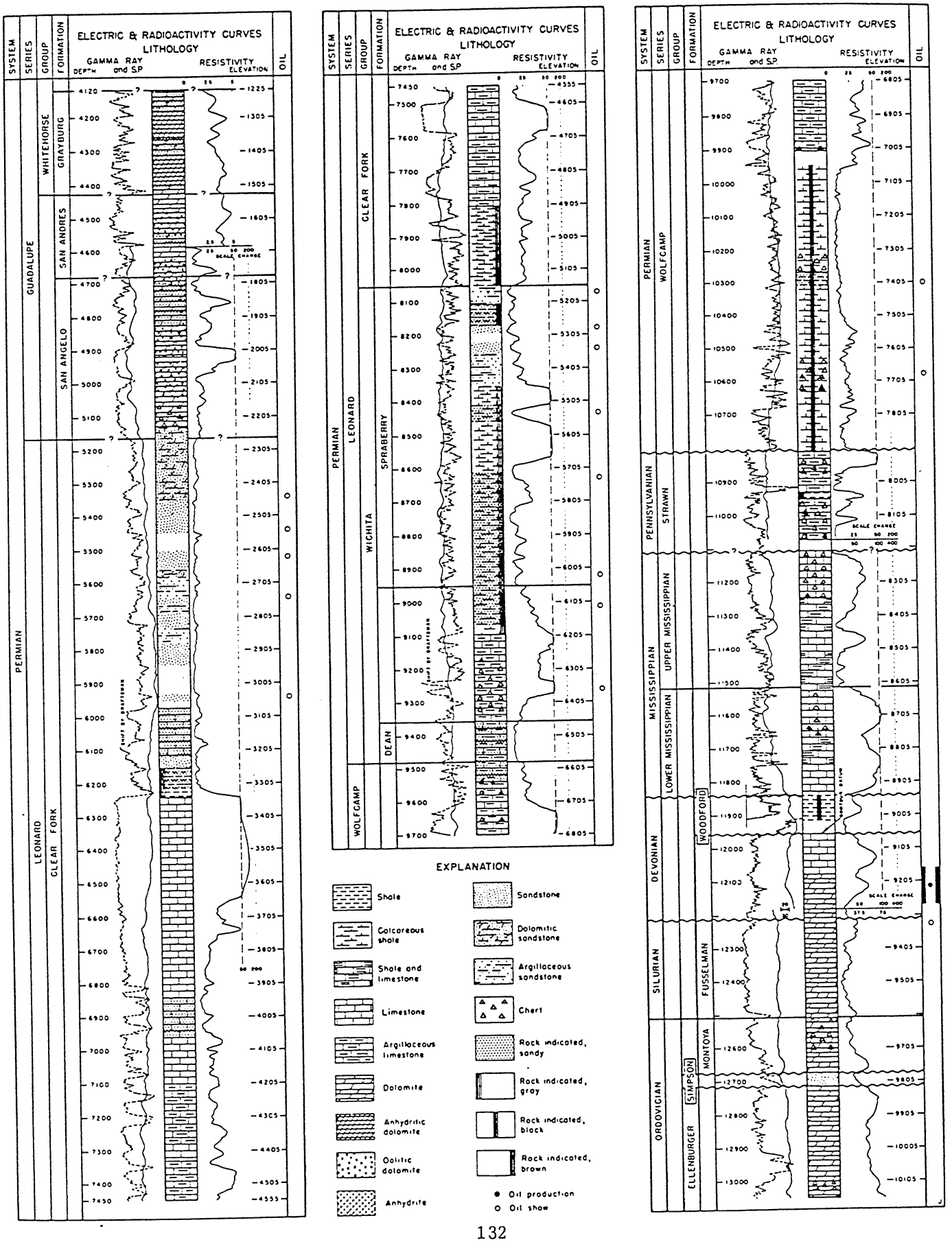
TYPICAL SECTION OF ROCKS PENETRATED





BREEDLOVE FIELD, Martin County, Texas

TYPICAL SECTION OF ROCKS PENETRATED



Buckshot
San Andres
North Basin Platform

DATA SOURCE CODE		
	STATE	Texas
	COUNTY	Cochran
	REGULATORY DISTRICT	8A
	BASIN	Permian
15	SUB-BASIN	North Basin Platform
	FIELD	Buckshot
	RESERVOIR	San Andres
5	GEOLOGIC AGE	Upper Leonardian, Lower Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
2	DISCOVERY YEAR	8-1956
2,16c	PROVED ACREAGE	7650 avg., 12,800
	REGULAR WELL SPACING (acres/well)	
2,3	RESERVOIR DEPTH	4975 avg., 5010
	RESERVOIR THICKNESS	
2,16c	NET PAY	22 avg., 20
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.085a
	PERMEABILITY	
	RANGE	
2	AVERAGE	8a
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1,2	TOTAL NUMBER OF WELLS	146, 179 (81P-42I-56A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	9,421
3	PRODUCTION 1-1-79 to 1-1-80	183.1 mbbls oil; 264.4 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Buckshot
2,16c	RESERVOIR:	San Andres
2, 16c	PROD. ACRES:	7650 avg., 12,800
2, 16c	AVG. THICKNESS (FT.):	22 avg., 20
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1,247
16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.095/76
16c	WATER SATURATION (S_W):	24.8
16c	OIL SATURATION (S_O):	.41-.58
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	104 (GG=.6)
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1650
2	RESERVOIR PRESSURE INITIAL (psi):	1630
2	RESERVOIR PRESSURE LATEST (psi):	610-1200
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 3	STOCK TANK OIL GRAVITY (°API):	26 + 31, 21
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1331
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 2 SRPs:	47,261 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 2 SRPs:	1,231 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Buckshot RESERVOIR: San Andres TOTAL NO. PROJECTS: 2 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	188	5
1977 PROD. (this project):	16	11
CUM. PROD. FROM DISC. TO 1/78:	7879	283
PROJECT NO.	F1734	F1733
LEASE NO.(s):	60,189	12,999
OPERATOR:	Atlantic Rich.	Dyco Pet. Corp.
RESERVOIR:	San Andres	San Andres
DEPTH PRODUCING ZONE:	5000	4950
PRODUCTIVE ACREAGE IN RESERVOIR:	7600	7700
ACREAGE IN PROJECT:	6520	240
PORTION OR FIELD WIDE:	FW/P	FW/P
TYPE:	WF/SW-FW	WF/SW
PATTERN:	9S	SW
YEAR BEGAN:	6-67	9-67
YEAR TERMINATED OR STATUS:	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1630	1635
BEG. INJECTION:	430	330
LATEST:	610	1200
NUMBER OF WELLS TOTAL:	172	7
PRODUCING WELLS:	76	5
INJECTION WELLS:	41	1
MAXIMUM:	---	---
LATEST:	---	---
SHUT-IN/ABANDONED WELLS:	55	1
SURFACE INJECTION PRESSURE:	---	----
EFFECTIVENESS OF INJECTION:	VE	----
OPERATOR PROBLEMS:	----	----
ESTIMATED PRODUCTION DUE TO INJ.:		
1977:	163	11
FROM BEG. INJECTION:		
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	4330	186
WATER PRODUCTION:		
CURRENT (1977):	1254	21
CUMULATIVE TO 1/78:	9356	258
CURRENT (1977) INJECTION:	1254	183
CUMULATIVE INJECTION:	9356	591

Brown & Thorp
Clear Fork
Central Basin Platform

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Pecos
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Brown & Thorp
1	RESERVOIR	Clear Fork
5, 1	GEOLOGIC AGE	Leonardian
1	AAPG STRATIGRAPHIC AGE CODE	318
1	RESERVOIR LITHOLOGY	Dolomite
1	TRAPPING MECHANISM	Anticline
2, 1	DISCOVERY YEAR	4-1950; 1951
2, 1	PROVED ACREAGE	3900+, 2000
1	REGULAR WELL SPACING (acres/well)	40
2,11,3	RESERVOIR DEPTH	3000±, (2550 to 3050), 3028
1	Acreage Unitized:	320, year 1968
	RESERVOIR THICKNESS	
2, 1	NET PAY	42a, 23
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2, 1	FRACTION	.086a, .12
	PERMEABILITY	
	RANGE	
2, 1	AVERAGE	2.33 md avg., 13 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	Other producing reservoirs include Ellenburger 66 mbbls cum., Glorietta 17mbbls cum.; also fields extending east, north and west.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	59P, 1I; 20 (14P-5I-1A)
1	PRODUCTION 1976 oil (cum)	5893
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	3028'-6,008 mbbls; 2562'-1.3 mbbls
3	PRODUCTION 1-1-79 to 1-1-80	35.8 mbbls oil; 1.1 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	No
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Brown & Thorp
1	RESERVOIR:	Clear Fork
2, 1	PROD. ACRES:	3900+, 2000
2, 1	AVG. THICKNESS (FT.):	42, 23
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.16
	FORMATION VOLUME FACTOR LATEST (FVF):	
1	WATER SATURATION (S_W):	.35
	OIL SATURATION (S_O):	
1	PRIMARY DRIVE MECHANISM:	depletion
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	92 (GG=.6)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2017
2	RESERVOIR PRESSURE INITIAL (psi):	2000-4000
2	RESERVOIR PRESSURE LATEST (psi):	100-300
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	580, 580, 3(76)
1, 3	STOCK TANK OIL GRAVITY (°API):	38.6
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1154
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 3 SRPs:	18,912 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 3 SRPs:	1,451 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Brown & Thorp RESERVOIR: Clear Fork TOTAL NO. PROJECTS: 3 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	10	3	10		
1977 PROD. (this project):	8	3	8		
CUM. PROD. FROM DISC. TO 1/78:	1164	255	234		
PROJECT NO.	F5263	F1106	F4234		
LEASE NO.(s):	22,482	21,012	14,058		
OPERATOR:	Gulf Oil	Latch Operator	Dorland, D.L.		
RESERVOIR:	Clear Fork	Clear Fork	Clear Fork		Clear Fork
DEPTH PRODUCING ZONE:	3000	3050	2550		3028
PRODUCTIVE ACREAGE IN RESERVOIR:	3900	2000	4000		2000
ACREAGE IN PROJECT:	640	320	640		320
PORTION OR FIELD WIDE:	P	P	P		320
TYPE:	WF/SW	WF/BW	WF/SW		WF
PATTERN:	I	SW	SW		
YEAR BEGAN:	9-72	10-68	11-69		1968
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP		
RESERVOIR PRESSURE INITIAL:	3900	2000	4000		
BEG. INJECTION:	100	300	100		
LATEST:	----	----	----		
NUMBER OF WELLS TOTAL:	4	6	10		
PRODUCING WELLS:	1	5	8		59
INJECTION WELLS:					
MAXIMUM:					
LATEST:	3	1	1		
SHUT-IN/ABANDONED WELLS:	0	0	1		
SURFACE INJECTION PRESSURE:	550	---	1200		
EFFECTIVENESS OF INJECTION:	VE	---	---		
OPERATOR PROBLEMS:					
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	8	---	---		
FROM BEG. INJECTION:	36	---	---		
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	30	---	---		
WATER PRODUCTION:					
CURRENT (1977):	28	4	48		
CUMULATIVE TO 1/78:					
CURRENT (1977) INJECTION:	70	4	47		
CUMULATIVE INJECTION:	678	44	---		

Caprock
Queen
Tatum Basin

DATA SOURCE CODE		
	STATE	New Mexico
1, 6a	COUNTY	Chaves and Lea
1	REGULATORY DISTRICT	Southeast
1, 6a	BASIN	Permian
15	SUB-BASIN	Tatum Basin
1, 6a	FIELD	Caprock
1, 6a	RESERVOIR	Queen
1, 6	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
6a, 1	RESERVOIR LITHOLOGY	fine to medium gray, red sand anhydrite sand. Not a carbonate reservoir.
7, 1	TRAPPING MECHANISM	sand wedge-out; stratigraphic
1, 6a	DISCOVERY YEAR	11-40
1	PROVED ACREAGE	29,360
	REGULAR WELL SPACING (acres/well)	
1	RESERVOIR DEPTH	2,871
1	RESERVOIR THICKNESS	9 avg.
6a	NET PAY	9.9
6a	GROSS	20
	NET/GROSS RATIO	
6a	POROSITY	intergranular
	TYPE	porosity restricted by salt and
6a, 1	FRACTION	.210 anhydrite porefill
	PERMEABILITY	
1	RANGE	150 to 250 md
1	AVERAGE	200 md
6a	HORIZONTAL	250 md
6a	VERTICAL	150 md
6a	OTHER INFORMATION	stain in sand and dolomites above Queen sand. Shows in San Andres dolomite. Wolfcamp production in northeast edge of pool.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	328T, 133P, 159I, 36SI; 136 producing, 486 shut in, 135 injection
	PRODUCTION 1976 oil (cum)	
1	PRODUCTION 1977 oil (cum)	71,711
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	72,135
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	yes
6a	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
6a	FIELD:	Caprock
1	RESERVOIR:	Queen
1	PROD. ACRES:	29,360
	AVG. THICKNESS (FT.):	9
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1, 6a	WATER SATURATION (S_W):	.35
1, 6a	OIL SATURATION (S_O):	.14
	PRIMARY DRIVE MECHANISM:	
6a, 1	PRIMARY GAS CAP?:	dissolved gas
17	TEMPERATURE (^oF):	66 = 1.0
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6a, 1	RESERVOIR PRESSURE INITIAL (psi):	850-965; 900
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	260
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	4
6a, 1	STOCK TANK OIL GRAVITY (^oAPI):	36 - 40, 38
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION: resistivity of zone water .44 ohm-meter at 75^oF

WATER ANALYSIS RECORD

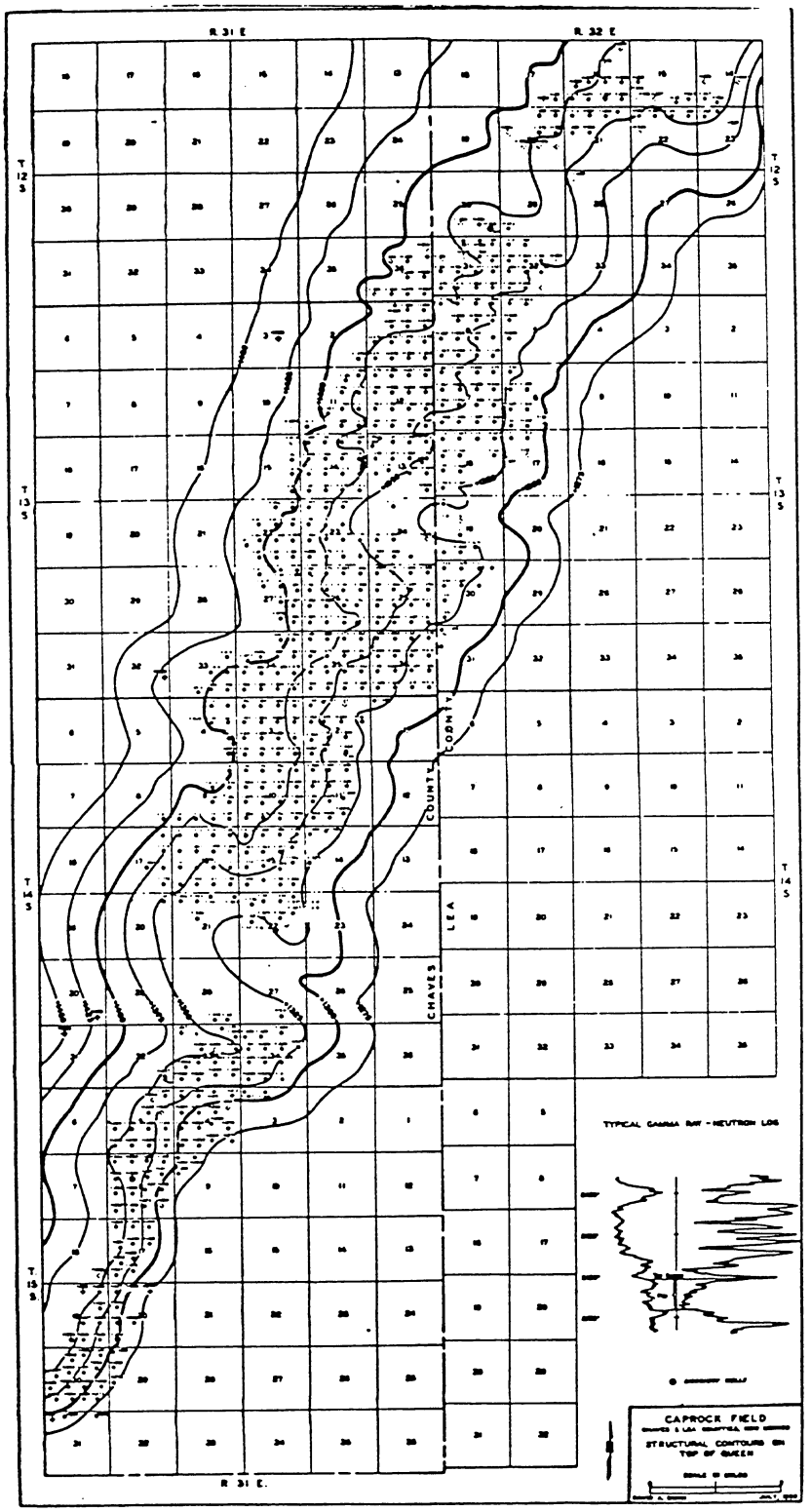
FIELD: Caprock RESERVOIR: Queen TOTAL NO. PROJECTS:
DATA SOURCE: 6a

TOTAL SOLIDS (ppm):
- NA + K
- Ca
- Mg
- Fe
- SO_4
- Cl
- CO_2
- HCO_3
- OH
- H_2S

RESISTIVITY: .44r @ 75°F
SPECIFIC GRAVITY:

OTHER WATER QUALITY DATA:

FROM: Dunn, D.A., 1956, CAPROCK (QUEEN) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO - 1956.



Caprock, East
Devonian
Tatum Basin

DATA SOURCE CODE		
6a	STATE	New Mexico
	COUNTY	Lea
	REGULATORY DISTRICT	
	BASIN	Permian
15	SUB-BASIN	Tatum Basin
14c,6a,13c	FIELD	Caprock, East
14c,6a,13c	RESERVOIR	Devonian
6a	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
6a,13c	RESERVOIR LITHOLOGY	White to tan sucrosic to rhombic, vuggy dolomite with minor amounts of white chert--cores show vertical and horizontal fracture; limestone
6a	TRAPPING MECHANISM	Anticline and fault closure
18	DISCOVERY YEAR	11-51
17	PROVED ACREAGE	1920
18	REGULAR WELL SPACING (acres/well)	40
6a,13c	RESERVOIR DEPTH	10450-11300; 11240
	RESERVOIR THICKNESS	
13c	NET PAY	30
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
6a	TYPE	V, F
	FRACTION	
	PERMEABILITY	
	RANGE	
	AVERAGE	
	HORIZONTAL	
	VERTICAL	
13c	OTHER INFORMATION	Recommended for CO_2 and polymer flood in GURC Report 153.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	12 (7P, 5A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	22,311
18	PRODUCTION 1-1-79 to 1-1-80	114 mbbls oil; 1.1 mmcf gas; 3595 mbbls water
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	yes
6a	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
14c,6a,13c	FIELD:	Caprock, East
	RESERVOIR:	Devonian
	PROD. ACRES:	
13c	AVG. THICKNESS (FT.):	30
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
6a	PRIMARY DRIVE MECHANISM:	water drive
	PRIMARY GAS CAP?:	
	TEMPERATURE (°F):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6a	RESERVOIR PRESSURE INITIAL (psi):	4454
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6a,13c	STOCK TANK OIL GRAVITY (°API):	43.6, 43
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

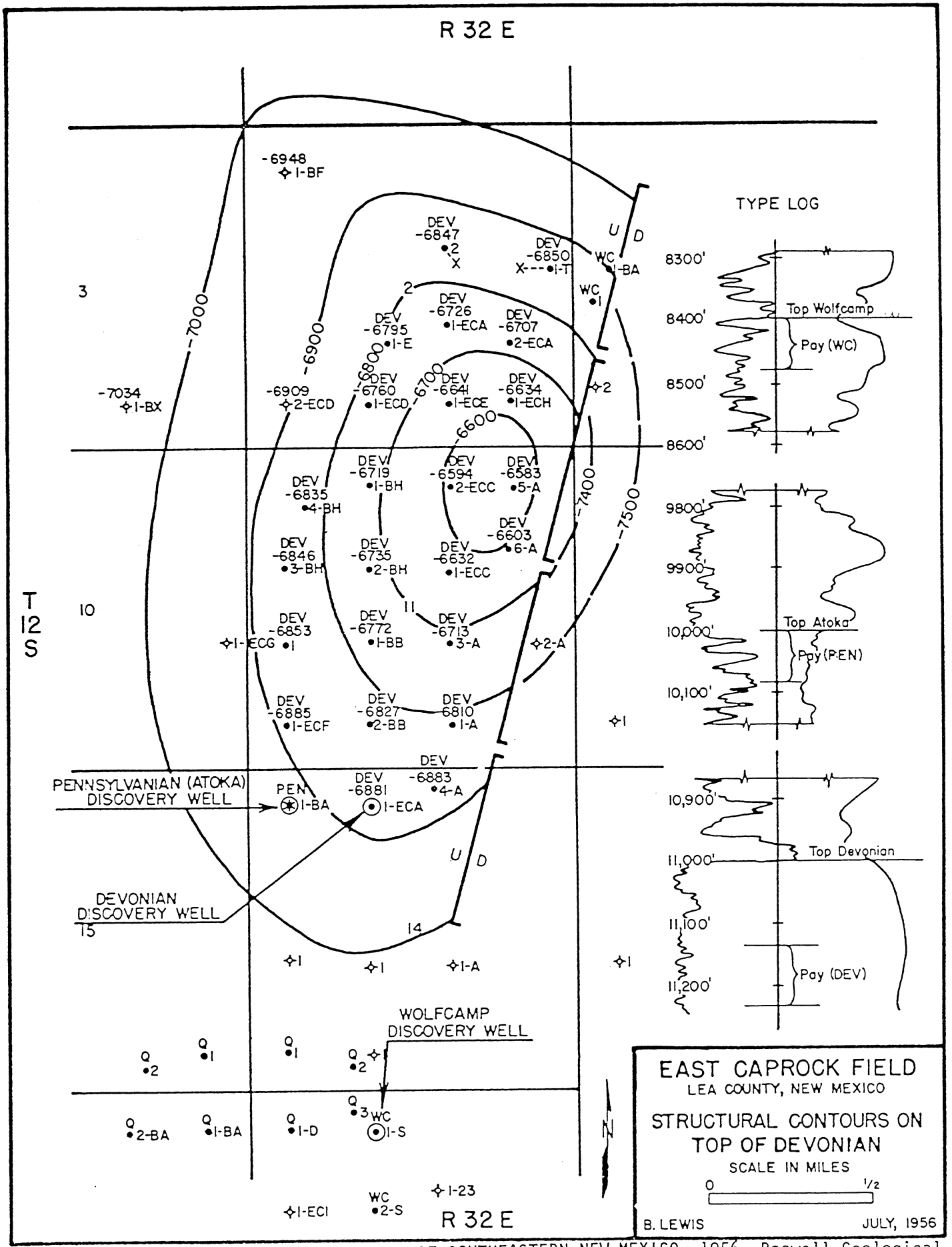
13c Recommended for CO_2,polymer flood

WATER ANALYSIS RECORD

FIELD: Caprock, East RESERVOIR: Devonian TOTAL NO. PROJECTS:
DATA SOURCE:

TOTAL SOLIDS (ppm):	42,028
NA	13,589
Ca	1,748
Mg	485
Fe	
SO_4	1,775
Cl	23,760
CO_2	
HCO_3	671
OH	
H_2S	
RESISTIVITY:	0.154
SPECIFIC GRAVITY:	

OTHER WATER QUALITY DATA:



FROM: A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1956, Roswell Geological Society, Source 6a.

Cato
San Andres
Northwest Shelf

DATA SOURCE CODE		
6c	STATE	New Mexico
6c	COUNTY	Chaves
	REGULATORY DISTRICT	
	BASIN	Permian
15	SUB-BASIN	Northwest Shelf
14c,6c	FIELD	Cato
14c,6c	RESERVOIR	San Andres
	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
6c,6d	RESERVOIR LITHOLOGY	Buff to brown anhydritic dolomite with pinpoint and fractured porosity; anhydritic dolomite, intercrystalline and fractured porosity.
6c	TRAPPING MECHANISM	Stratigraphic-structural, gradual loss of permeability, updip.
18	DISCOVERY YEAR	9-1966
6c,6d	PROVED ACREAGE	1120, 9240
18,6c,6d	REGULAR WELL SPACING (acres/well)	40
6c, 6d	RESERVOIR DEPTH	3414, 3496
	RESERVOIR THICKNESS	
6c,6d	NET PAY	33, 30
6c,6d	GROSS	111, 100
	NET/GROSS RATIO	
	POROSITY	
6c,6d	TYPE	pinpoint, F; IC
6c,6d	FRACTION	.075-.085; .075
	PERMEABILITY	
6c,6d	RANGE	1-1.5 md; 5-40 md
6c,6d	AVERAGE	1.25 md; 22.5 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	251 (202P, 15I, 34A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	14,472
18	PRODUCTION 1-1-79 to 1-1-80	231 mbbls oil; 674 mmcf gas; 1248 mbbls water
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6c,6d	STRUCTURE CONTOUR?	Yes
6c	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Cato
14c,6c	RESERVOIR:	San Andres
6c,6d	PROD. ACRES:	1120, 9240
6c,6d	AVG. THICKNESS (FT.):	33, 30
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
6c,6d	WATER SATURATION (S_W):	.34
6c,6d	OIL SATURATION (S_O):	.11
6c,6d	PRIMARY DRIVE MECHANISM:	combination solution gas & wtr
	PRIMARY GAS CAP?:	
6d, 6c	TEMPERATURE (°F):	100
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6c,6d	RESERVOIR PRESSURE INITIAL (psi):	1116
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6c	STOCK TANK OIL GRAVITY (°API):	25-27
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

WATER ANALYSIS RECORD

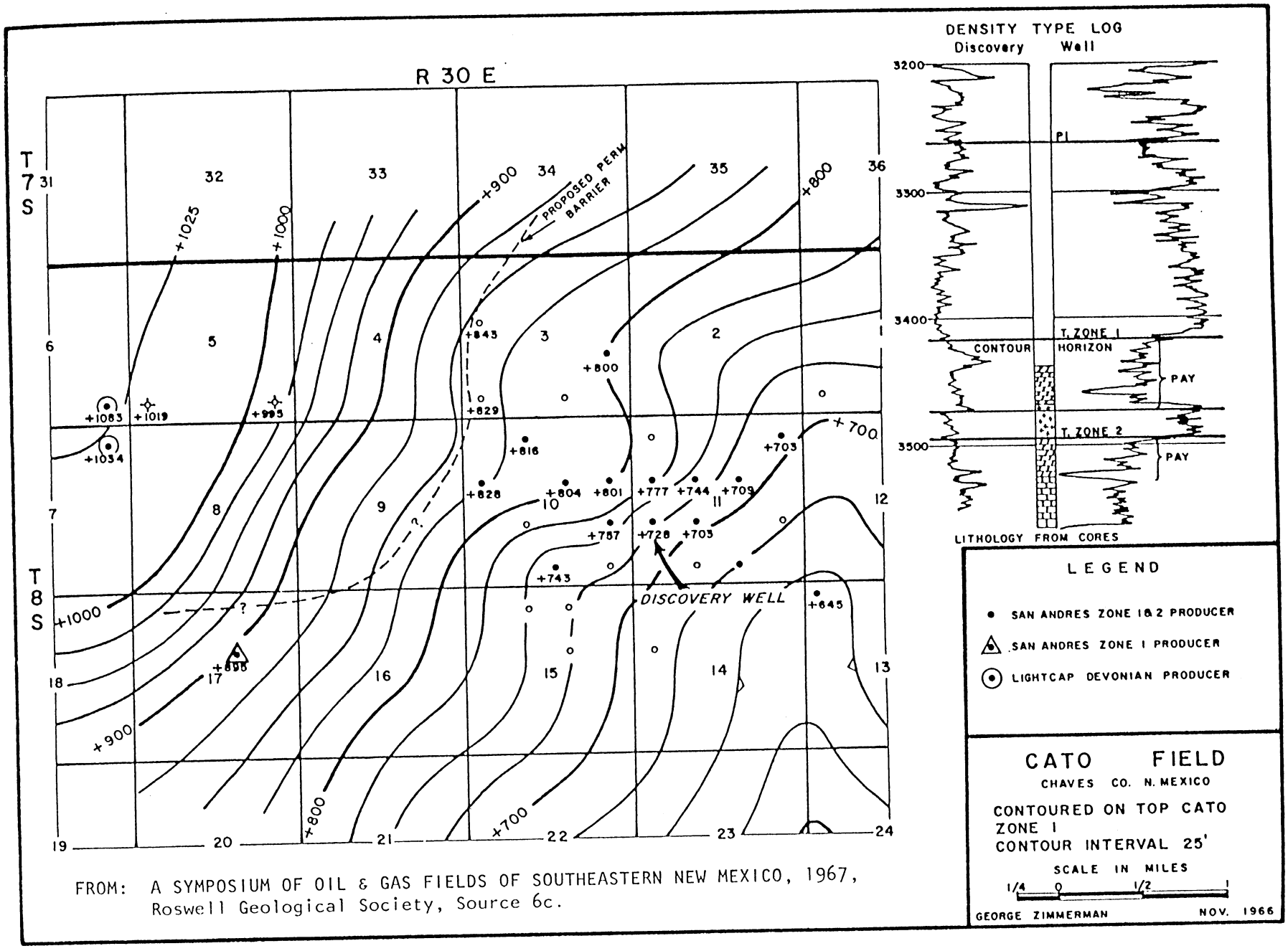
FIELD: Cato RESERVOIR: San Andres TOTAL NO. PROJECTS:
DATA SOURCE: 6c, 6d

TOTAL SOLIDS (ppm):

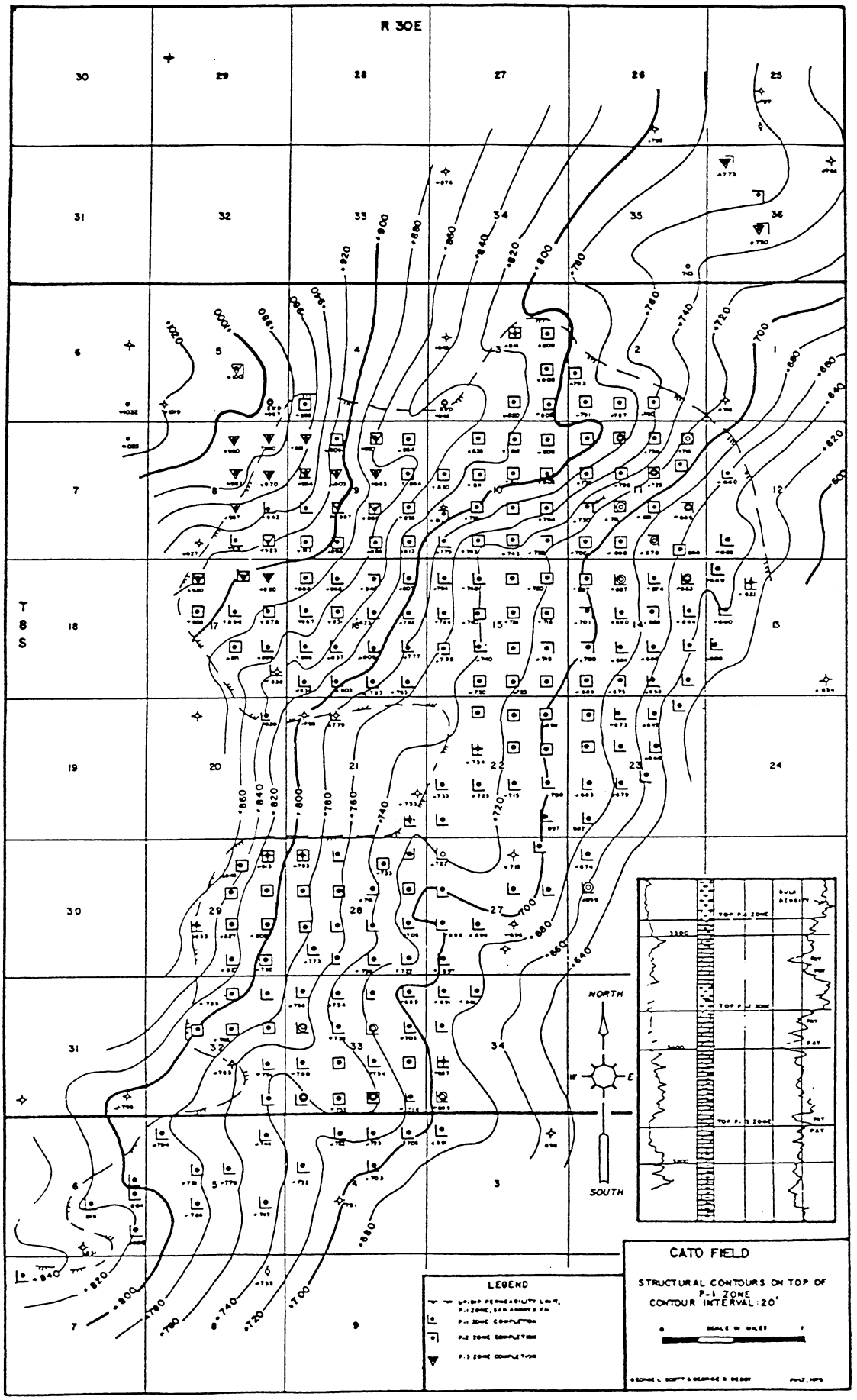
NA	57,754
Ca	26,400
Mg	4,310
Fe	145
SO_4	149,800
Cl	
CO_2	2,180
HCO_3	
OH	
H_2S	

RESISTIVITY: .038
SPECIFIC GRAVITY: 1.185

OTHER WATER QUALITY DATA:



FROM: A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1967, Roswell Geological Society, Source 6c.



FROM: THE OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1977 SUPPLEMENT. Source 6d.

C-Bar
San Andres
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
	COUNTY	Crane
	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
	FIELD	C-Bar
	RESERVOIR	San Andres
5, 1	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
12c	RESERVOIR LITHOLOGY	Dolomite, fine to medium crystalline, oolitic in part.
12c	TRAPPING MECHANISM	Combination of convex fold and termination of favorable porosity.
2,3	DISCOVERY YEAR	2-1949
16c,12c	PROVED ACREAGE	5600, 1840
	REGULAR WELL SPACING (acres/well)	
2,3	RESERVOIR DEPTH	3500, 3520
	RESERVOIR THICKNESS	
2	NET PAY	35
12c	GROSS	100 max.
	NET/GROSS RATIO	
	POROSITY	
12c	TYPE	V, IC
2	FRACTION	.080
	PERMEABILITY	
	RANGE	
2	AVERAGE	5 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	Cum. 1979 prod. from Tubb=1,894.3; other reservoirs are Connel (36 mbbls cum.), S. Wren (394 mbbls cum.)
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2	TOTAL NUMBER OF WELLS	171 (104P-47I-20A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	15,455.8
3	PRODUCTION 1-1-79 to 1-1-80	548 mbbls oil; 223.3 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
12c	STRUCTURE CONTOUR?	Yes
12c	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	C-Bar
	RESERVOIR:	San Andres
16c	PROD. ACRES:	5600
2	AVG. THICKNESS (FT.):	35
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.19
	FORMATION VOLUME FACTOR LATEST (FVF):	
16c	WATER SATURATION (S_W):	.35
16c	OIL SATURATION (S_O):	.54
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
16c	TEMPERATURE (°F):	85
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1427
2	RESERVOIR PRESSURE INITIAL (psi):	1412
2	RESERVOIR PRESSURE LATEST (psi):	1180
2	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	1412
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2,3,12c	STOCK TANK OIL GRAVITY (°API):	33, 33, 34
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1090
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 2 SRPs:	27,540 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 2 SRPs:	4,064 mbbls

OTHER INFORMATION:

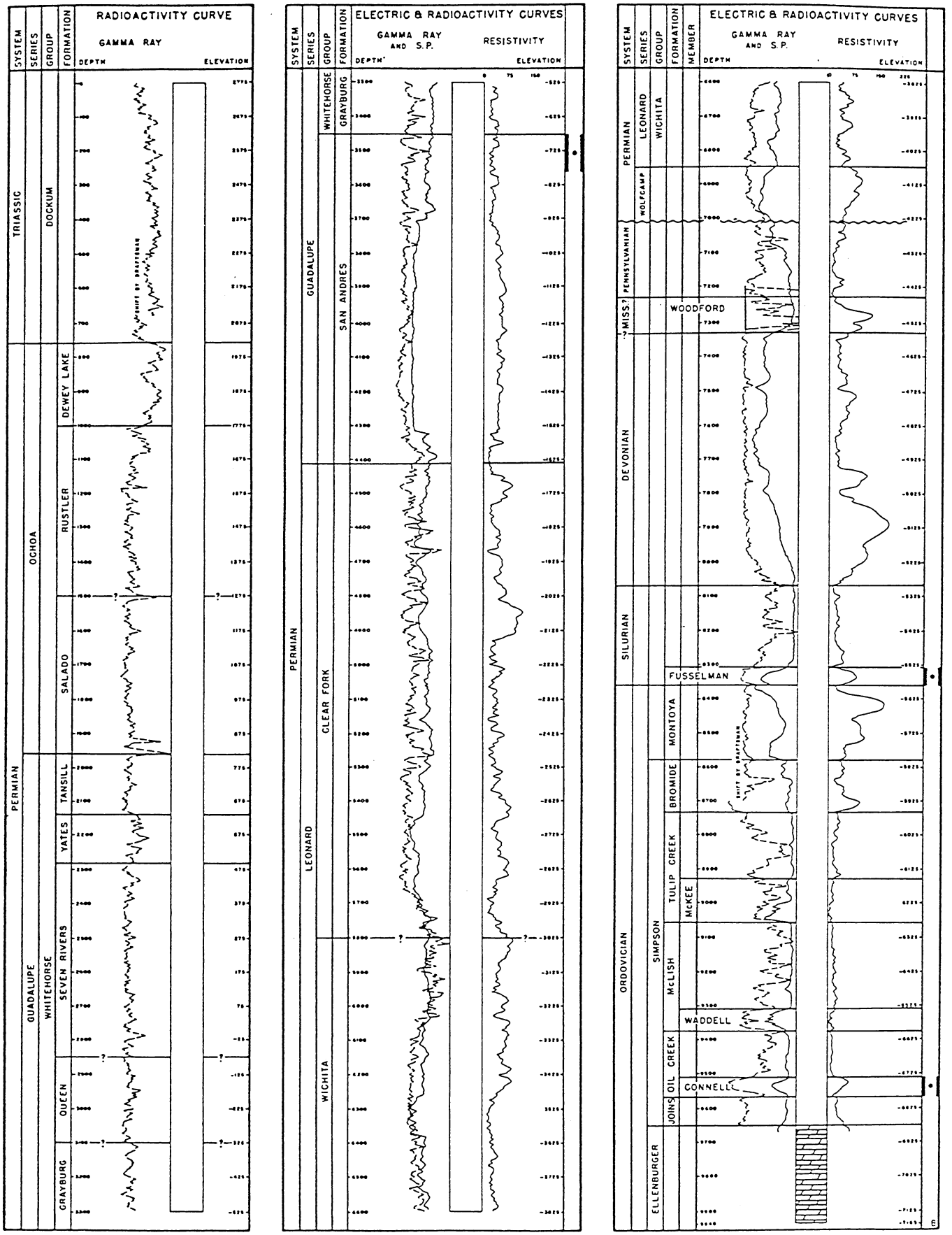
ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: C-Bar RESERVOIR: San Andres TOTAL NO. PROJECTS: 2 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	8	----
1977 PROD. (this project):	3695	7524
CUM. PROD. FROM DISC. TO 1/78:	F1109	F1110
PROJECT NO.	21,215	19,910; 19,908; 19,980
LEASE NO.(s):	Atlantic Rich.	Gulf Oil
OPERATOR:	San Andres	San Andres
RESERVOIR:	3400	3500
DEPTH PRODUCING ZONE:	6000	6000
PRODUCTIVE ACREAGE IN RESERVOIR:	2200	3441
ACREAGE IN PROJECT:	FW/P	FW/P
PORTION OR FIELD WIDE:	WF/SW-BW	WF/BW
TYPE:	I	LD
PATTERN:	2-70	11-69
YEAR BEGAN:	ICP	ICP
YEAR TERMINATED OR STATUS:	1412	1412
RESERVOIR PRESSURE INITIAL:	1180	1180
BEG. INJECTION:	1412	----
LATEST:	53	118
NUMBER OF WELLS TOTAL:	18	86
PRODUCING WELLS:	15	32
INJECTION WELLS:	---	---
MAXIMUM:	---	---
LATEST:	20	0
SHUT-IN/ABANDONED WELLS:	UD	VE
SURFACE INJECTION PRESSURE:	1100	780
EFFECTIVENESS OF INJECTION:	PI, CR	CR, CH, SC, IP
OPERATOR PROBLEMS:		
ESTIMATED PRODUCTION DUE TO INJ.:		
1977:	8	----
FROM BEG. INJECTION:	55	----
EST. INCREASE IN ULTIMATE PROD.		
DUE TO INJECTION:	2000	----
WATER PRODUCTION:		
CURRENT (1977):	126	1322
CUMULATIVE TO 1/78:	1065	4178
CURRENT (1977) INJECTION:	141 SW; 614 BW	3463
CUMULATIVE INJECTION:	751 SW; 9083 BW	22,575

C-BAR FIELD, Crane County, Texas

TYPICAL SECTION OF ROCKS PENETRATED



C-BAR FIELD, Crane County, Texas

ELEVATION OF SURFACE

At well locations: Highest, 2,798 feet; lowest, 2,722 feet.

SURFACE FORMATION

Recent wind-blown sands

PRODUCTIVE AREAS

	Acres
San Andres	1,840
Fusselman	320
Connell	160
C-Bar field	1,840

ELEVATION AND RELIEF OF PRODUCTIVE ZONES

	San Andres	Fusselman	Connell
Highest known elev. of oil, ft.	-630	-5,579	-6,735
Lowest known elev. of oil, ft.	-730	-5,624	-6,790
Known relief	100	45	55

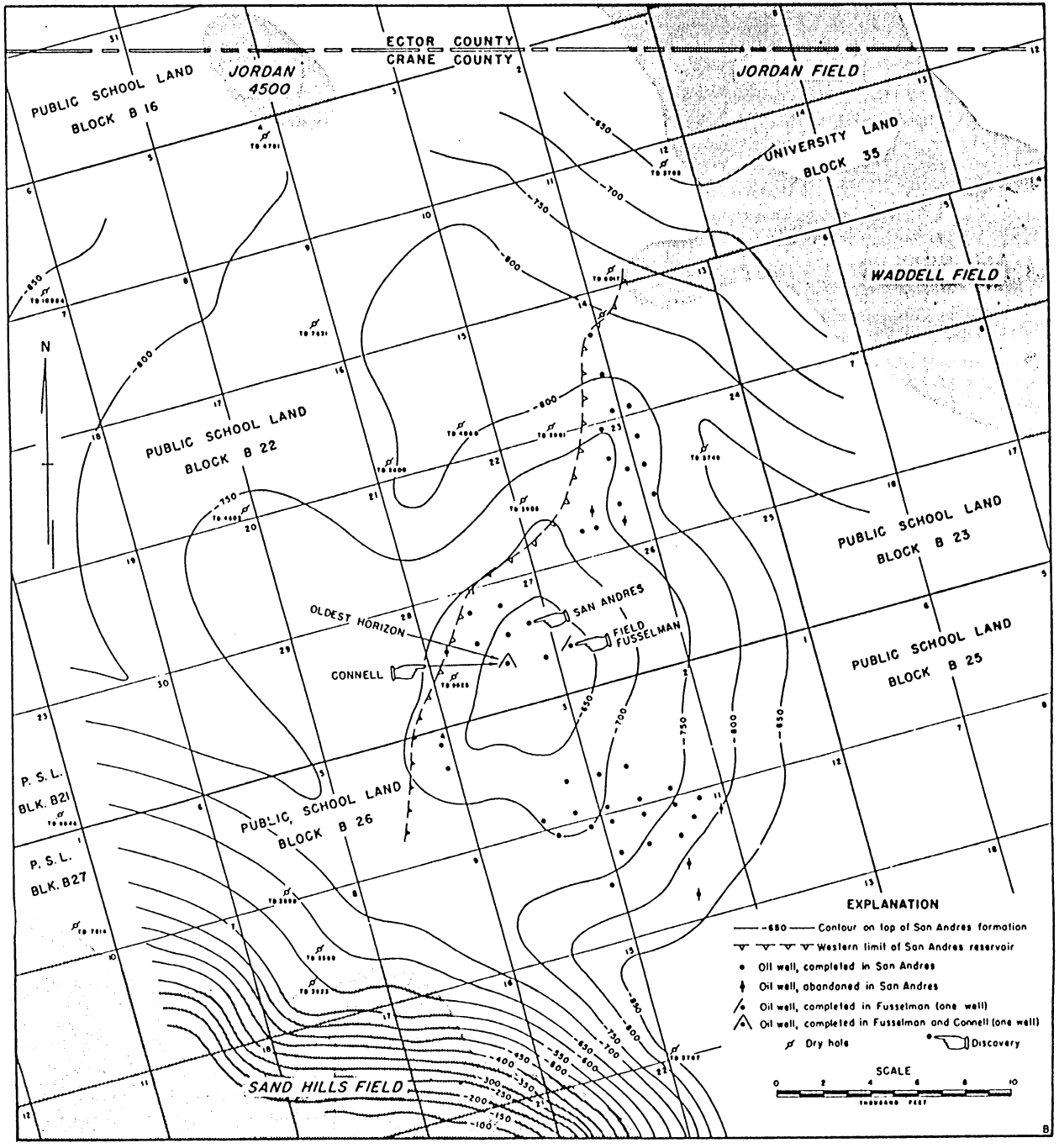
The elevation of the oil-water contact has not been determined in the Fusselman reservoir nor in the Connell reservoir.

PRODUCTION HISTORY

	WELLS PRODUCING at end of year			OIL PRODUCTION (barrels)	
	Flow.	Pump.	Total*	Yearly	Cumulative
Field totals					
1948	3	0	2	45,880	45,880
1949	3	2	4	48,794	94,674
1950	4	31	34	176,759	271,433
1951	3	43	46	247,210	518,643
1952	6	36	42	180,781	699,424
1953**	2	40	42	165,699	865,123
1954**	3	39	42	194,114	1,059,237
San Andres					
1949	2	0	2	13,889	13,889
1950	3	29	32	159,239	173,128
1951	1	42	43	222,154	395,282
1952	6	35	41	161,389	556,671
1953**	2	39	41	139,298	695,969
1954**	3	38	41	172,198	868,167
Fusselman					
1948	2	0	2	35,404	35,404
1949	0	2	2	20,672	56,076
1950	0	2	2	6,483	62,559
1951	1	1	2	20,133	82,692
1952	0	1	1	19,392	102,084
1953**	0	1	1	26,401	128,485
1954**	0	1	1	21,916	150,401
Connell*					
1948	1	0	1	10,476	10,476
1949	1	0	1	14,233	24,709
1950	1	0	1	11,037	35,746
1951	0	0	0	4,923	40,669

*Gulf Oil Corp. #1-C-G Hattie Connell was dually completed and produced from both Fusselman and Connell. It was abandoned in Connell in 1951.

**1953 and 1954 data added by amendment.



Texas Bureau of Economic Geology Publication No. 5716, August 1957. Source 12c.

Cedar Lake
San Andres
Midland Basin

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Gaines
1	REGULATORY DISTRICT	8A
1	BASIN	Permian
15	SUB-BASIN	Midland Basin
1	FIELD	Cedar Lake
	RESERVOIR	San Andres
5, 1	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
1	RESERVOIR LITHOLOGY	Dolomite
1	TRAPPING MECHANISM	Stratigraphic/Structural Por. Perm. Cng/Anticline
2, 1	DISCOVERY YEAR	8-1939; 1939
16c,2,1	PROVED ACREAGE	8600, 8600, 7538
1	REGULAR WELL SPACING (acres/well)	40
2,1,3	RESERVOIR DEPTH	4650, 4800, 4800, 4800
1	Acreage Unitized	8040, year 1959
	RESERVOIR THICKNESS	
2,1	NET PAY	53 avg., 160
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2,1	FRACTION	.12 avg., .17
	PERMEABILITY	
	RANGE	
2,1	AVERAGE	6 md avg., 12 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	152P, 1I; 252 (140P-66I-46A)
1	PRODUCTION 1976 oil (cum)	57,107
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	63,233.2
3	PRODUCTION 1-1-79 to 1-1-80	1,947.8 mbbls oil; 360.8 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	No
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
1	FIELD:	Cedar Lake
16c, 2, 1	RESERVOIR:	San Andres
2, 1	PROD. ACRES:	8600, 8600, 7538
1	AVG. THICKNESS (FT.):	53, 160
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.086
1, 16c	FORMATION VOLUME FACTOR LATEST (FVF):	
16c	WATER SATURATION (S_W):	.13,.28
1	OIL SATURATION (S_O):	.72
	PRIMARY DRIVE MECHANISM:	depletion
17	PRIMARY GAS CAP?:	
16c	TEMPERATURE (°F):	103
1, 2	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	341
	RESERVOIR PRESSURE INITIAL (psi):	1954
1	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	200
1, 2, 3	GAS OIL RATIO LATEST (GOR) (cf/bbl):	165.4 (76)
	STOCK TANK OIL GRAVITY (°API):	36, 29.3-33, 36
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
2	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1299
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 4 SRPs:	3,750 mbbls
	ESTIMATED PRIMARY OIL RECOVERED FOR 4 SRPs:	568 mbbls
	OTHER INFORMATION:	

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cedar Lake RESERVOIR: San Andres TOTAL NO. PROJECTS: 4 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	46	2095	93	33	
1977 PROD. (this project):	45	1982	91	29	
CUM. PROD. FROM DISC. TO 1/78:	797	54,697	2969	1169	
PROJECT NO.	F1737	F1736	F1738	F1739	
LEASE NO.(s):	00579	00577	17406	16746	
OPERATOR:	Amoco	Amoco	Washoe Co.	Byers Eng.	San Andres
RESERVOIR:	San Andres				
DEPTH PRODUCING ZONE:	4650	4800-4650	4700	4950	4800
PRODUCTIVE ACREAGE IN RESERVOIR:	8600	8600	6720	840	7538
ACREAGE IN PROJECT:	402	6798	840	720	6798
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	
TYPE:	WF/SW-FW	WF/FW-Gas	WF/FW-SW	WF/BW	WF
PATTERN:	P	SLD	P	I5	
YEAR BEGAN:	5-66	1-59	10-63	5-62	1959
YEAR TERMINATED OR STATUS:	SW-INS;FW-ICP	FW-ICP; Gas-IPD	ICP	ICP	
RESERVOIR PRESSURE INITIAL:	1954	---	1950	1650	1954
BEG. INJECTION:	400	400	---	350	
LATEST:	500	800	----	1800	
NUMBER OF WELLS TOTAL:	13	203	23	13	152
PRODUCING WELLS:	5	113	14	8	45
INJECTION WELLS:	4	50	7	5	
MAXIMUM:	---	---	---	---	
LATEST:	---	---	---	---	
SHUT-IN/ABANDONED WELLS:	4	48	2	---	
SURFACE INJECTION PRESSURE:	1450	1200	1329	1425	
EFFECTIVENESS OF INJECTION:	ME	VE	----	VE	
OPERATOR PROBLEMS:	CH	----	SC	SC	
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	45	1982	91	29	
FROM BEG. INJECTION:	620	35,702	1278	653	
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	----	----	----	850	
WATER PRODUCTION:					
CURRENT (1977):	35	4291	262	25	
CUMULATIVE TO 1/78:	351	28,348	2472	391	
CURRENT (1977) INJECTION:	129FW	8065 FW; 0 gas	995SW	257 BW	
CUMULATIVE INJECTION:	1073 FW	118,789FW;3163 gas	13,610 SW	7541 BW	

Claytonville
Pennsylvanian-Canyon
Eastern Shelf

DATA SOURCE CODE		
1	COUNTY	Fisher
1	REGULATORY DISTRICT	7B
1	BASIN	Permian
15	SUB-BASIN	Eastern Shelf
1	FIELD	Claytonville
2, 1	RESERVOIR	Canyon Lime
5, 1	GEOLOGIC AGE	Pennsylvanian, Penn-Missouri
1	AAPG STRATIGRAPHIC AGE CODE	320
5q,1,5d	RESERVOIR LITHOLOGY	Reef limestone with 'pinpoint' to vuggy porosity. Many wells show extreme fracture porosity; limestone; reef limestone.
5g	TRAPPING MECHANISM	"Claytonville Reef" buildup NE-SW trend for 4-5 miles in length & 1 mile width; total reef thickness of 1200' with maximum gross oil thickness of 680'.
5q,1,5d	DISCOVERY YEAR	1-1952; 1-1952
5g,2	PROVED ACREAGE	3360, 2875
5d,5g,1	REGULAR WELL SPACING (acres/well)	80
5g,3,1	RESERVOIR DEPTH	5393-5612, 5695, 5695
	Acreage unitized	
	RESERVOIR THICKNESS	
1	NET PAY	19
5c	GROSS	680
	NET/GROSS RATIO	
	POROSITY	
5g,5d	TYPE	IC, V, F; Pinpoint--F, V,
5d,5g,2,1	FRACTION	.07, .070, .085 avg., .07
	PERMEABILITY	
	RANGE	
5d,5g,2,1,	AVERAGE	9 md, 9 md, 10 md, 10 md
2	HORIZONTAL	10 md
	VERTICAL	
5g, 3	OTHER INFORMATION	Disc. well: Gen. Crude No. 1, Mrs. G. T. Webb, 1-1H952; other reservoirs include Canyon Sand (1,707.6 cum), Canyon 5400 (8.7); SRP include PM-Gas.
	PRODUCTION STATISTICS	
	(oil in mbbls, gas in mmcf)	
1,5g,2	TOTAL NUMBER OF WELLS	54, 46, 55 (45P-9I-2A)
1	PRODUCTION 1976 oil (cum)	49,827
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	57,817.8
3	PRODUCTION 1-1-79 to 1-1-80	1,477.9 mbbls oil; 2,355.9 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5g	STRUCTURE CONTOUR?	Yes
5g	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

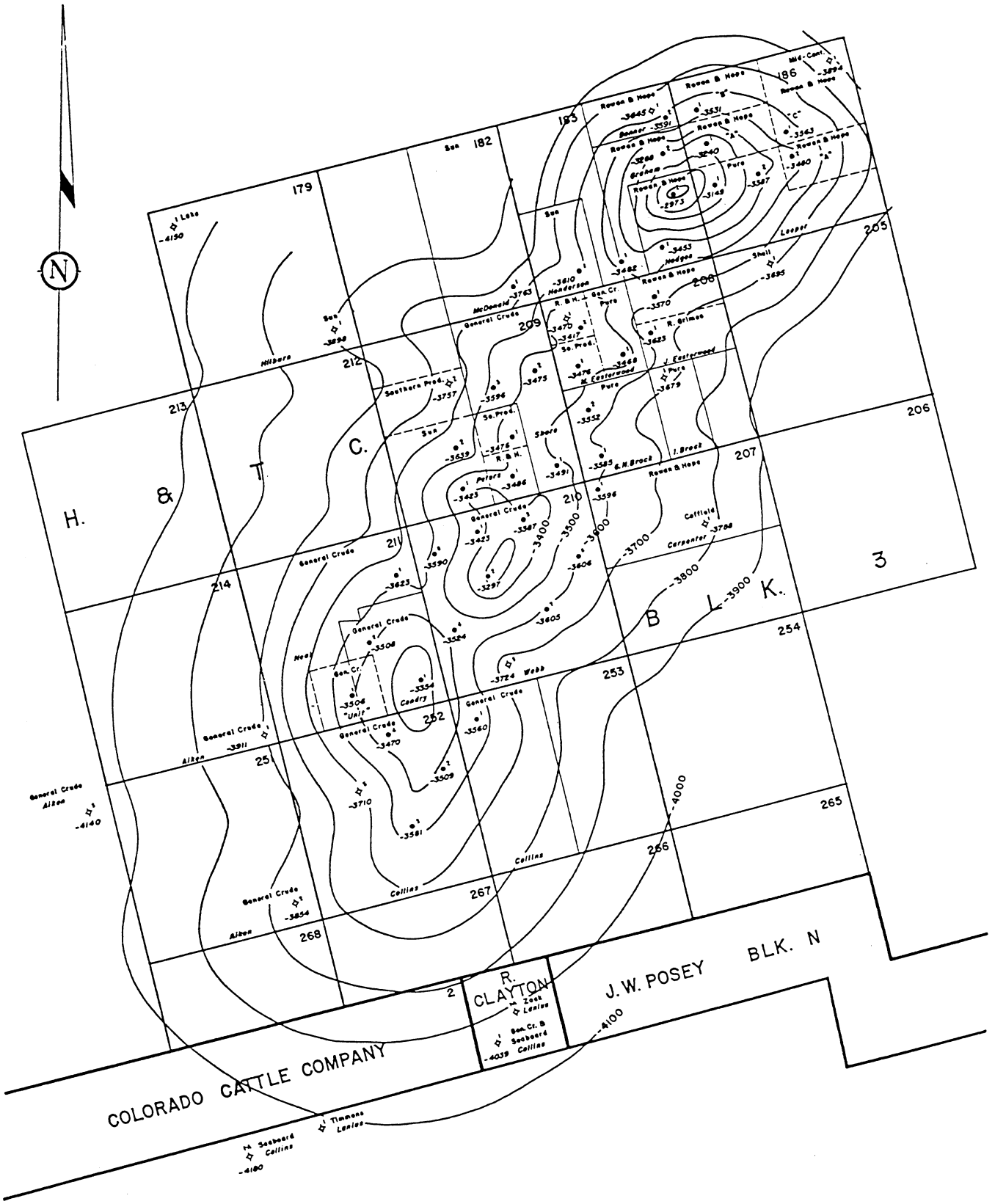
DATA SOURCE CODE		
5g	FIELD:	Claytonville
5g	RESERVOIR:	Canyon Lime
5g, 2	PROD. ACRES:	3360, 2875 avg.
1	AVG. THICKNESS (FT.):	19
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1	WATER SATURATION (S_W):	.20
	OIL SATURATION (S_O):	
5g	PRIMARY DRIVE MECHANISM:	gas solution
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	142 (GG=1.2)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	3441
5g, 2, 5d	RESERVOIR PRESSURE INITIAL (psi):	2275, 2335, 2335
5d, 2	RESERVOIR PRESSURE LATEST (psi):	2200, 2086
5g	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	900-1
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1015
5d, 2, 3, 1, 5g	STOCK TANK OIL GRAVITY (°API):	42.9, 43, 40, 40, 43
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1761
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 2 SRPs:	44,000 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 2 SRPs:	25,428 mbbls

	OTHER INFORMATION:	
5g	Est. Ultimate Recovery	66,000,000 bbl
5g	salt water	

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Claytonville RESERVOIR: Penn-Canyon TOTAL NO. PROJECTS: 2 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	5420	2				
1977 PROD. (this project):	3955	3				
CUM. PROD. FROM DISC. TO 1/78:	53786	109				
PROJECT NO.	F0694	F0690				
LEASE NO.(s):	01756, 07959	08178				
OPERATOR:	General Crude	Adams Bros.				
RESERVOIR:	Canyon Lime	Canyon SS				Canyon Lime
DEPTH PRODUCING ZONE:	5900	5100				5695
PRODUCTIVE ACREAGE IN RESERVOIR:	3213	2560				
ACREAGE IN PROJECT:	3213	240				
PORTION OR FIELD WIDE:	FW/P	FW/P				
TYPE:	PM/SW, FW, gas	WF/SW				
PATTERN:	I	SW				
YEAR BEGAN:	6-60	4-69				
YEAR TERMINATED OR STATUS:	ICP-FW,SW,IPD-gas	ICP				
RESERVOIR PRESSURE INITIAL:	2335	----				
BEG. INJECTION:	3027	500				
LATEST:	2086	----				
NUMBER OF WELLS TOTAL:	55	---				
PRODUCING WELLS:	45	---				54
INJECTION WELLS:	8	---				
MAXIMUM:	---	---				
LATEST:	---	---				
SHUT-IN/ABANDONED WELLS:	2	1				
SURFACE INJECTION PRESSURE:	1500SW, 1750FW	----				
EFFECTIVENESS OF INJECTION:	VE	UD				
OPERATOR PROBLEMS:	----	----				
ESTIMATED PRODUCTION DUE TO INJ.:						
1977:	3955	46,885				
FROM BEG. INJECTION:	1	17				
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	41,248	25				
WATER PRODUCTION:						
CURRENT (1977):	6041	----				
CUMULATIVE TO 1/78:	13,810	22				
CURRENT (1977) INJECTION:	9416SW;3666FW;754gas	44				
CUMULATIVE INJECTION:	36,799SW;50,875FW;2895gas	371				



FROM: Galbraith, G.S., 1954, ABILENE GEOLOGICAL SOCIETY, GEOLOGICAL CONTRIBUTIONS.

CLAYTONVILLE FIELD

FISHER COUNTY, TEXAS

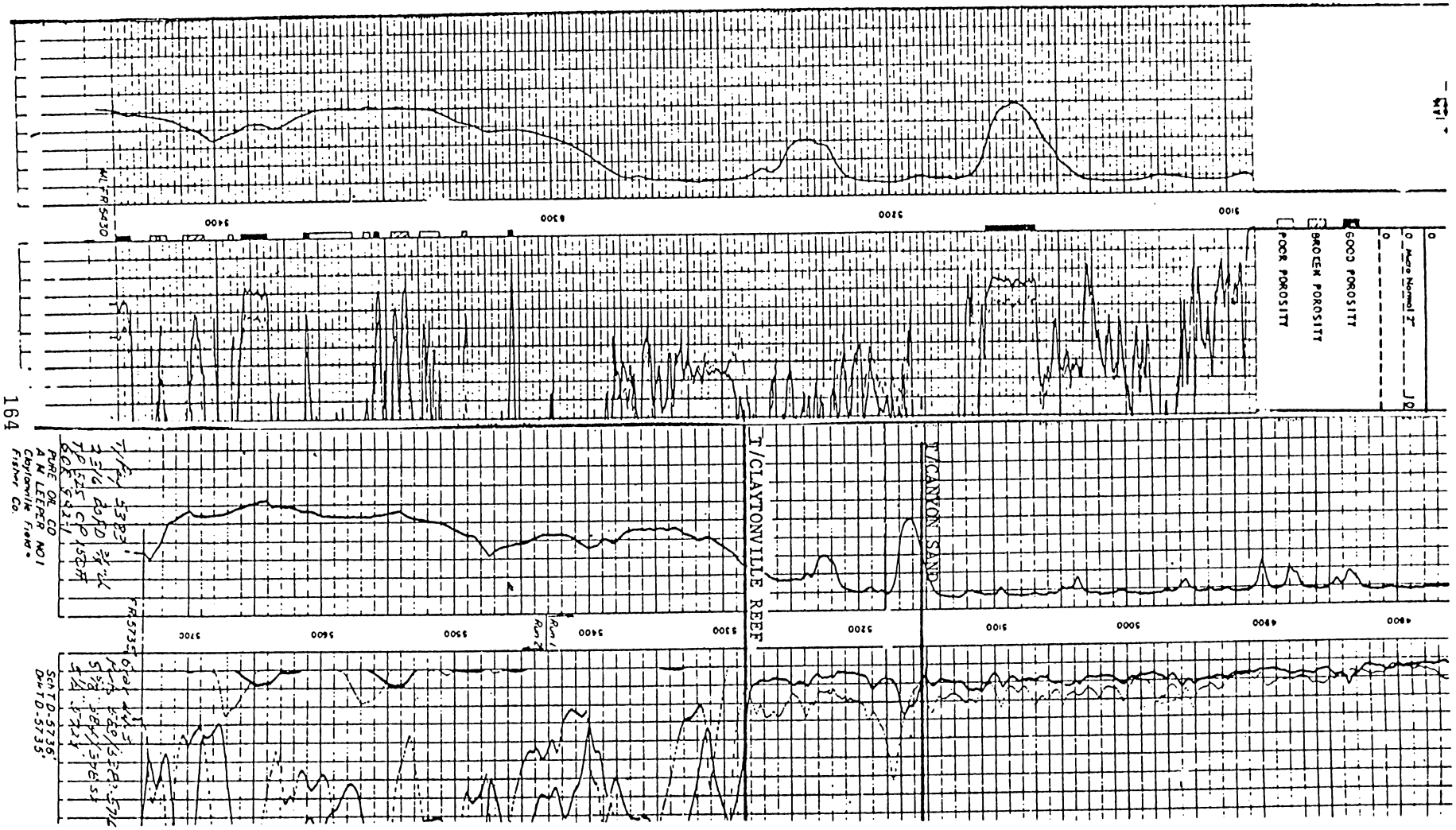
DATUM: TOP REEF LIMESTONE

CONTOUR INTERVAL: 100 FT.

JULY, 1954

0 2000' 3000' 4000'

GEOLOGY BY: GEORGE S. GALBRAITH



FROM: Spiva, F.L., Jr., CLAYTONVILLE CANYON LIME IN ABILENE GEOLOGICAL SOCIETY, GEOLOGICAL CONTRIBUTIONS, 1976. Source 5g.

Chaveroo
San Andres
Tatum Basin

DATA SOURCE CODE		
6c	STATE	New Mexico
	COUNTY	Chaves, Roosevelt
	REGULATORY DISTRICT	
	BASIN	Permian
15	SUB-BASIN	Tatum Basin
14c,6c	FIELD	Chaveroo
14c,6c	RESERVOIR	San Andres
	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
6c	RESERVOIR LITHOLOGY	Fine to medium crystalline dolomite with scattered anhydritic inclusions, vugular, intercrystalline and fracture porosity.
6c	TRAPPING MECHANISM	Stratigraphic, permeability and porosity fail updip along north and west margin of field.
18	DISCOVERY YEAR	7-1965
6c	PROVED ACREAGE	11000
18,6c	REGULAR WELL SPACING (acres/well)	40
6c	RESERVOIR DEPTH	4184
	RESERVOIR THICKNESS	
6c	NET PAY	40
6c	GROSS	210
	NET/GROSS RATIO	
	POROSITY	
6c	TYPE	IC, F
6c	FRACTION	.06
	PERMEABILITY	
	RANGE	
6c	AVERAGE	7 md
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	385 (345P,9I , 31A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	19,519
18	PRODUCTION 1-1-79 to 1-1-80	637 mbbls oil; 5059 mmcf gas; 1263 mbbls wate
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6c	STRUCTURE CONTOUR?	yes
6c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Charveroo
14c, 6c	RESERVOIR:	San Andres
6c	PROD. ACRES:	11,000
6c	AVG. THICKNESS (FT.):	40
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
6c	WATER SATURATION (S_W):	.25
6c	OIL SATURATION (S_O):	.16
6c	PRIMARY DRIVE MECHANISM:	solution gas
	PRIMARY GAS CAP?:	
6c	TEMPERATURE (°F):	110
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6c	RESERVOIR PRESSURE INITIAL (psi):	1340
	RESERVOIR PRESSURE LATEST (psi):	
6c	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	400 to 1000
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6c	STOCK TANK OIL GRAVITY (°API):	26
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	
	OTHER INFORMATION:	

WATER ANALYSIS RECORD

FIELD: Chaveroo RESERVOIR: San Andres TOTAL NO. PROJECTS:
DATA SOURCE:

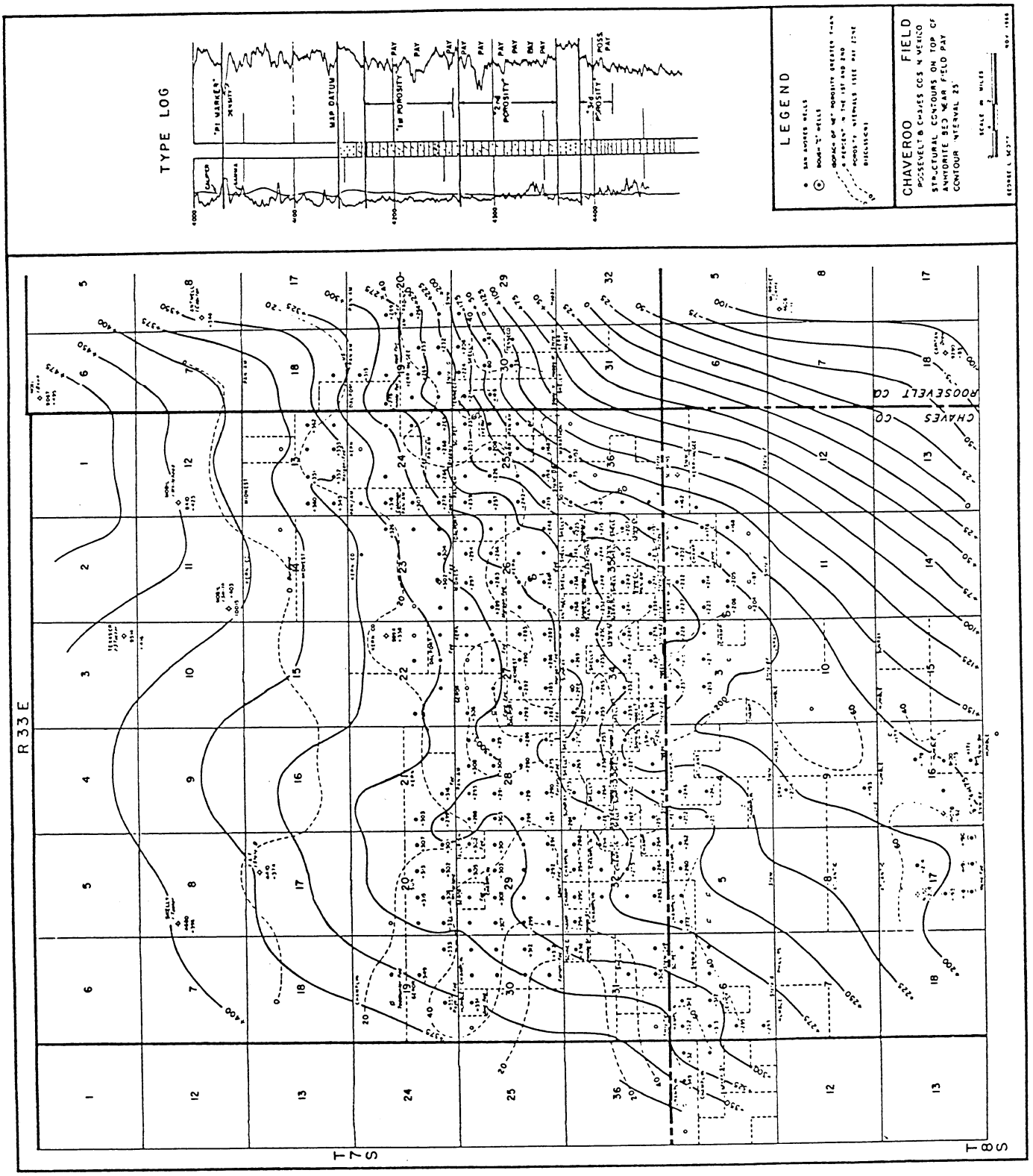
TOTAL SOLIDS (ppm):

NA	66,000
Ca	27,608
Mg	4,860
Fe	
SO_4	200
Cl	165,600
CO_2	
HCO_3	240
OH	
H_2S	

RESISTIVITY: .035
SPECIFIC GRAVITY: 1174

OTHER WATER QUALITY DATA:

FROM: A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1967
Roswell Geological Society, Source 6c.



Clairemont
Lower Penn
Eastern Shelf

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Kent
1	REGULATORY DISTRICT	8A
1	BASIN	Permian
15, 12c	SUB-BASIN	Eastern Shelf, Horseshoe Atoll
2, 1	FIELD	Clairemont
2,1,12c	RESERVOIR	Pennsylvanian-Lower/Strawn
2,1	GEOLOGIC AGE	Penn, Lower
1	AAPG STRATIGRAPHIC AGE CODE	320
1,5d,12c	RESERVOIR LITHOLOGY	Limestone; reef limestone; crystalline, granular in part, coralliferous oolitic limestone with vuggy porosity.
1, 12c	TRAPPING MECHANISM	Structural; simple convex trap resulting from reef topography.
2,1,5d	DISCOVERY YEAR	4-1950, 1950, 4-1950
2,1,16,5d	PROVED ACREAGE	5900, 1350, 5560, 1800
1	REGULAR WELL SPACING (acres/well)	80
2,3,1,5d	RESERVOIR DEPTH	6700, 6742, 6742, 6734-6751
1	Acreage Unitized	300, date 1964
	RESERVOIR THICKNESS	
2,1,12c	NET PAY	23, 10, 13
5d	GROSS	200
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2,1	FRACTION	.07, .10
	PERMEABILITY	
	RANGE	
2,1	AVERAGE	5,9
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
12c	Oil production in reef rock of the Horseshoe Atoll.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	45, 49 (35P-3I-10A)
1	PRODUCTION 1976 oil (cum)	12,441
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	13,512.4
3	PRODUCTION 1-1-79 to 1-1-80	300.1 mbbls oil; 231.1 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5d,12c	STRUCTURE CONTOUR?	Yes
5d,12c	LOGS?	Yes
5d,12c	STRUCTURE SECTION?	Yes
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
2, 1	FIELD:	Clairemont
2,1,16c	RESERVOIR:	Lower Penn
2,1	PROD. ACRES:	5900, 1350, 5560
16c	AVG. THICKNESS (FT.):	23, 10
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.333
1	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	.37
1	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	water drive
16c	PRIMARY GAS CAP?:	
16c	TEMPERATURE (°F):	144
2, 1	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1347
2	RESERVOIR PRESSURE INITIAL (psi):	.3026
1	RESERVOIR PRESSURE LATEST (psi):	1950
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	400
2, 3, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	652.4(76)
12c	STOCK TANK OIL GRAVITY (°API):	39, 38.7, 38.7
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	59 sec.SU @ 60°F, 43 sec(10
2	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1790
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	15,500 mbbls
	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	9,400 mbbls

OTHER INFORMATION:

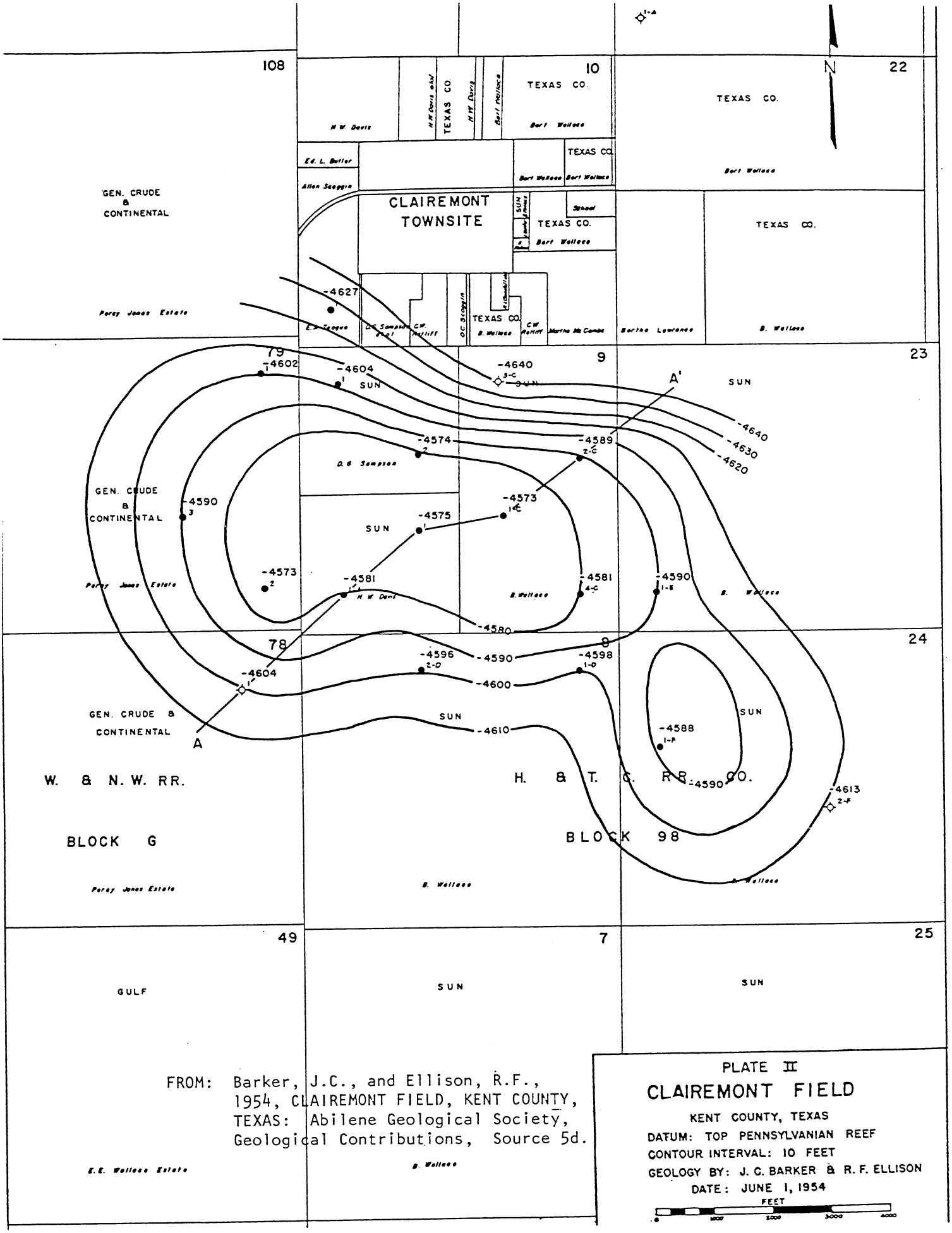
12c

Reference: Stine, E. V., and Waldrep, J. L., 1954, Clairmont Field in Occurrence of Oil and Gas in West Texas: Univ. of Texas, Bureau of Economic Geology, Publ. No. 5716, August.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Clairemont RESERVOIR: Lower Pennsylvanian TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	290				
1977 PROD. (this project):	265				
CUM. PROD. FROM DISC. TO 1/78:	2623				
PROJECT NO.	F1740				
LEASE NO.(s):	00610-19638				
OPERATOR:	Sun Oil				
RESERVOIR:	Lower Penn				Lower Penn
DEPTH PRODUCING ZONE:	6700				6742
PRODUCTIVE ACREAGE IN RESERVOIR:	5900				300
ACREAGE IN PROJECT:	5900				
PORTION OR FIELD WIDE:	FW				
TYPE:	PM-SW				WF,Press.Ma
PATTERN:	I				
YEAR BEGAN:	1-61				1964
YEAR TERMINATED OR STATUS:	ICP				
RESERVOIR PRESSURE INITIAL:	3026				3026
BEG. INJECTION:	1736				
LATEST:	1950				
NUMBER OF WELLS TOTAL:	49				
PRODUCING WELLS:	35				45
INJECTION WELLS:	3				5
MAXIMUM:	M3				
LATEST:	11				
SHUT-IN/ABANDONED WELLS:	100				
SURFACE INJECTION PRESSURE:	NE				
EFFECTIVENESS OF INJECTION:	EB				
OPERATOR PROBLEMS:					
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	265				
FROM BEG. INJECTION:	5987				
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	210				
WATER PRODUCTION:					
CURRENT (1977):	2079				
CUMULATIVE TO 1/78:	24,366				
CURRENT (1977) INJECTION:	1099				
CUMULATIVE INJECTION:	24,109				



FROM: Barker, J.C., and Ellison, R.F., 1954, CLAIREMONT FIELD, KENT COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

PLATE II

CLAIREMONT FIELD

KENT COUNTY, TEXAS

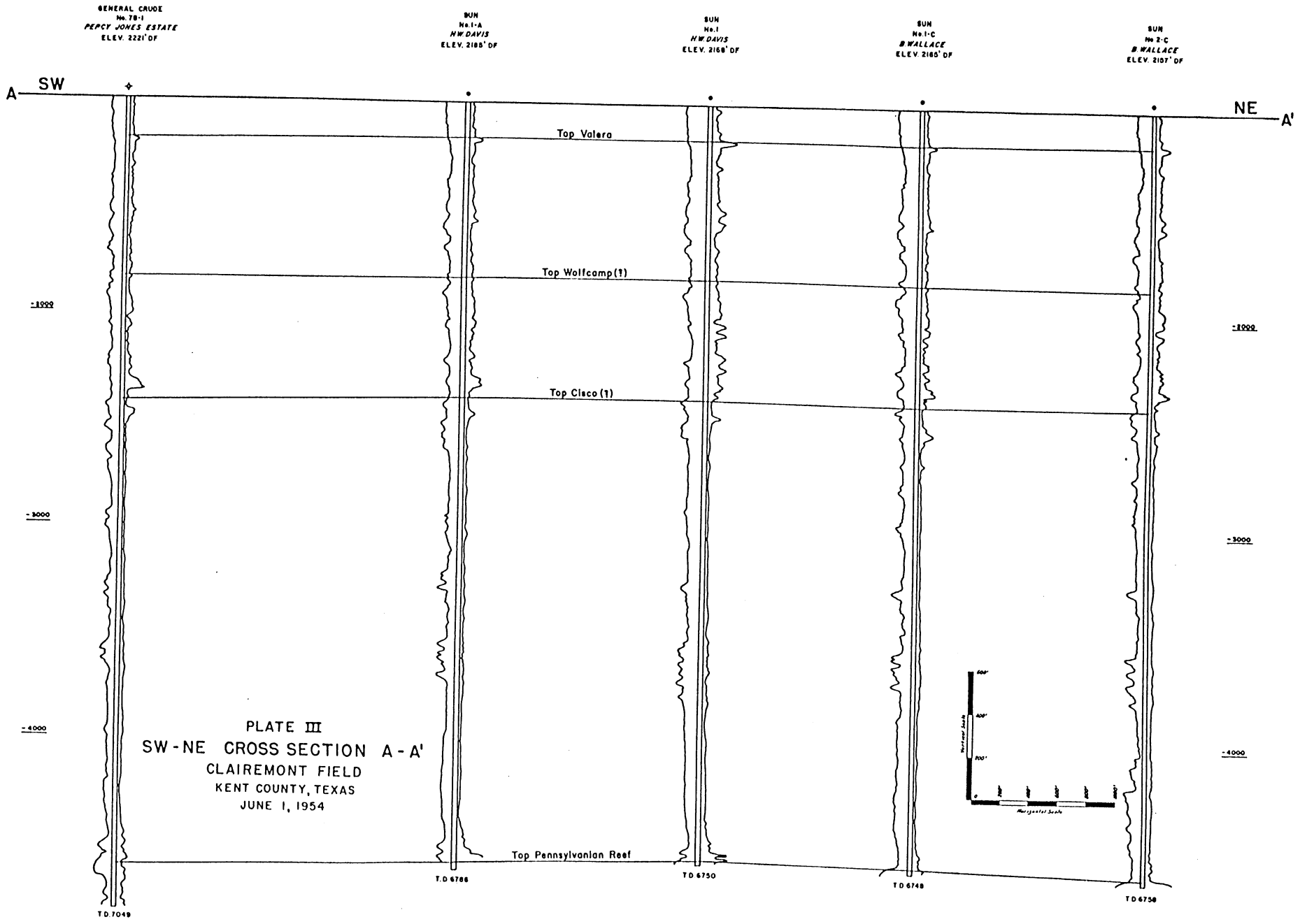
DATUM: TOP PENNSYLVANIAN REEF

CONTOUR INTERVAL: 10 FEET

GEOLOGY BY: J. C. BARKER & R. F. ELLISON

DATE: JUNE 1, 1954

FEET



FROM: Barker, J.C., and Ellison, R.F., 1954,CLAIREMONT FIELD, KENT COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

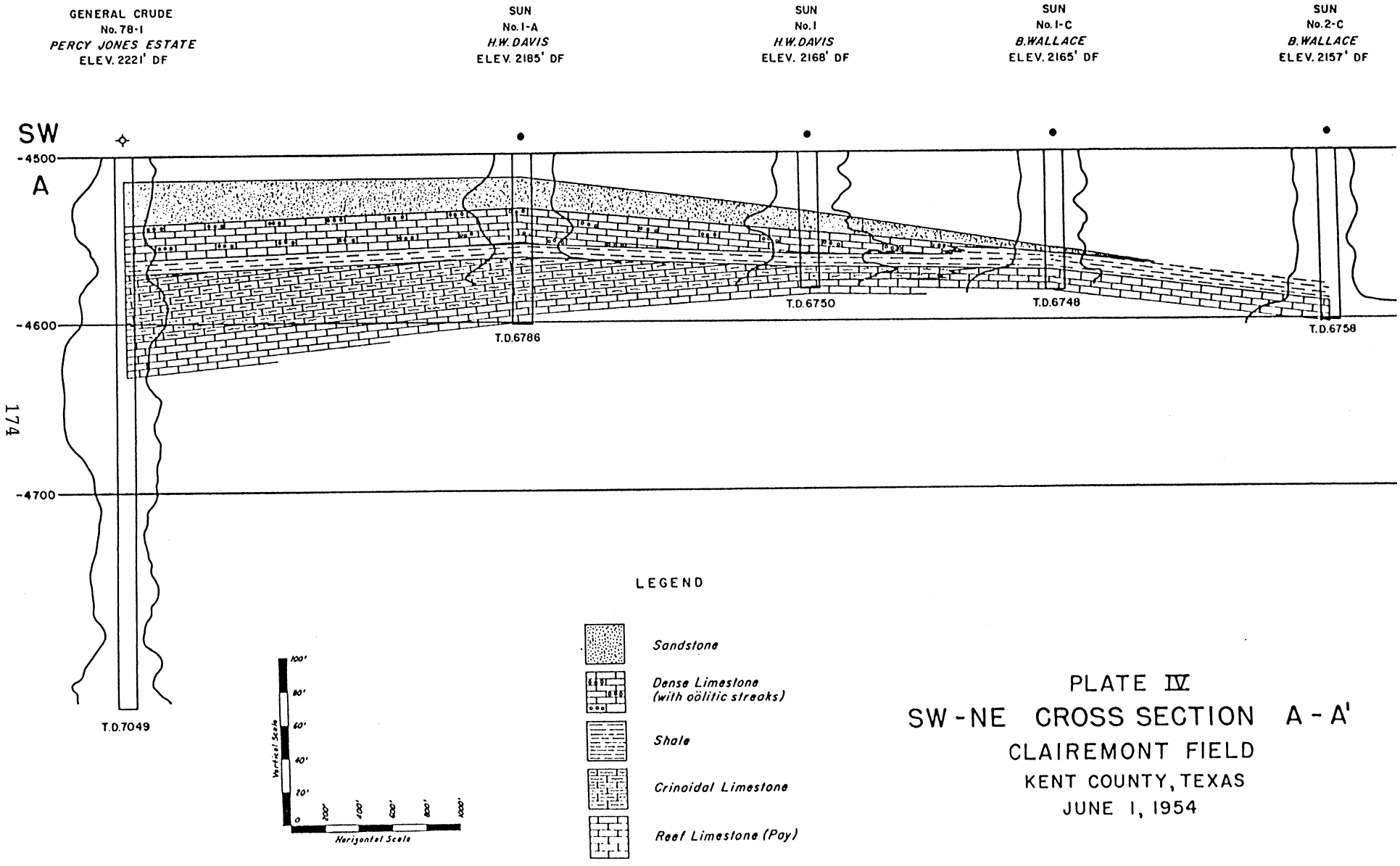


PLATE IV

SW-NE CROSS SECTION A-A'

CLAIREMONT FIELD

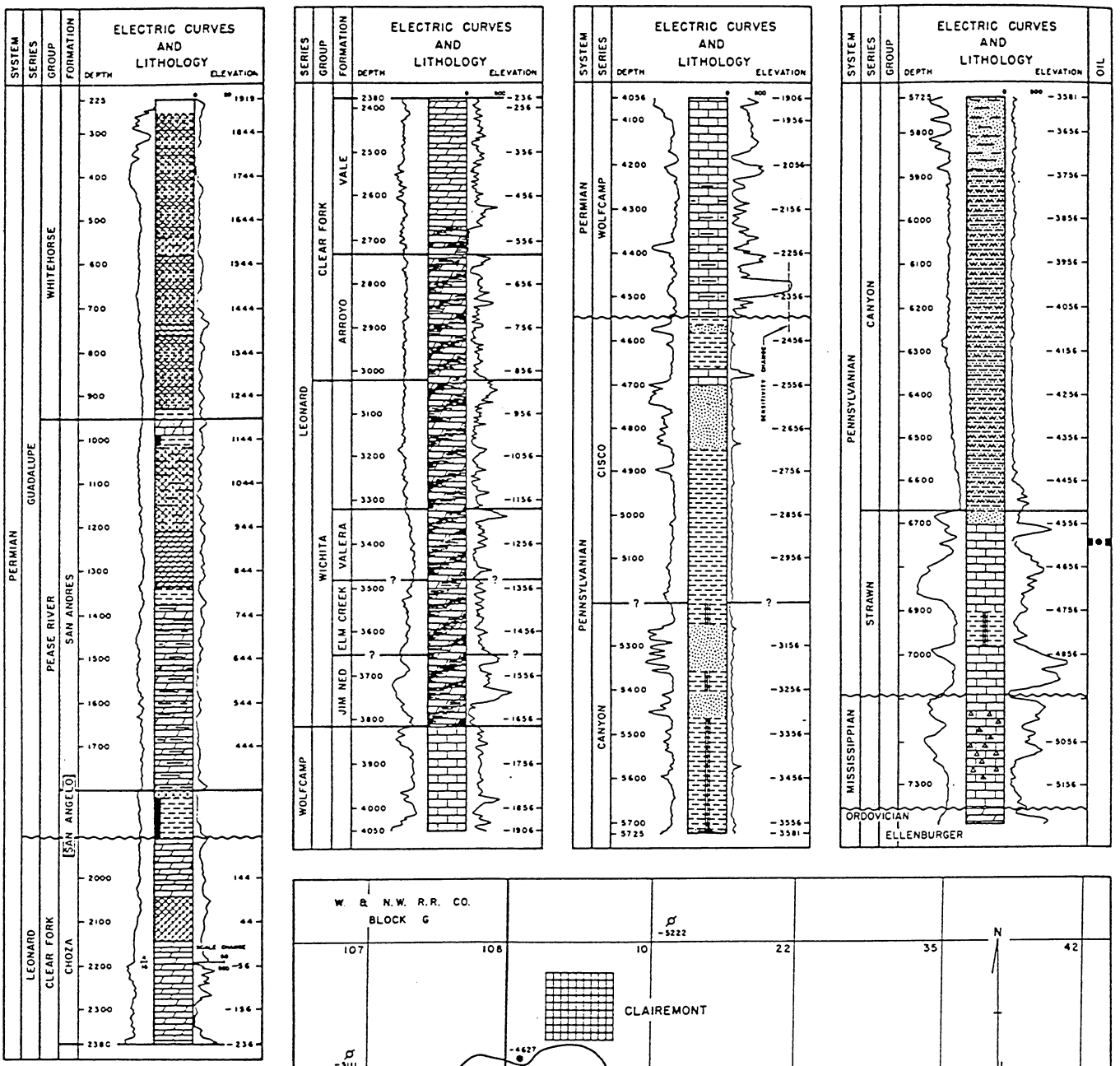
KENT COUNTY, TEXAS

JUNE 1, 1954

FROM: Barker, J.C., and Ellison, R.F., 1954, CLAIREMONT FIELD, KENT COUNTY, TEXAS: Abilene Geological Society, Geological Contributions, Source 5d.

CLAIREMONT FIELD, Kent County, Texas

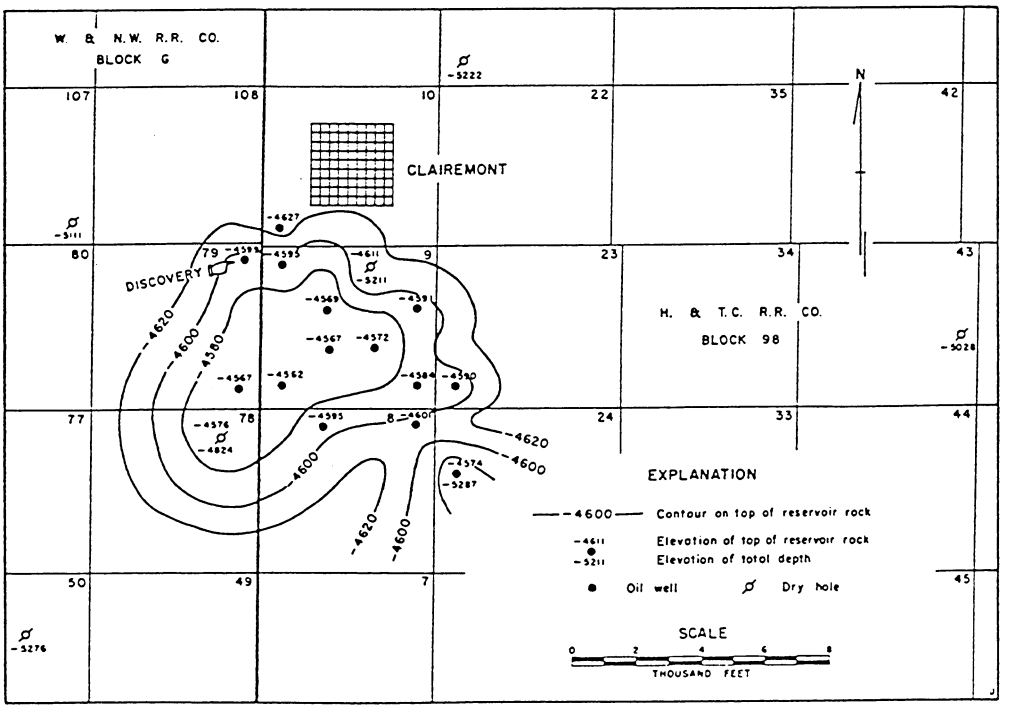
TYPICAL SECTION OF ROCKS PENETRATED



NOTE: This TYPICAL SECTION is based on the log of the discovery well (TD 6752) to the depth of 6740 feet, and, below that depth, with adjusted depths and elevations, on the log of the dry hole in Sec. 9, where actual total depth is 7384 feet (elevation of total depth, 5211).

EXPLANATION

- Dolomite
- Anhydritic dolomite
- Anhydrite
- Dolomitic anhydrite
- Dolomite & limestone
- Shale and dolomite
- Chert
- Sandstone
- Rock indicated, argillaceous
- Rock indicated, red
- Rock indicated, black or gray
- Oil production



Cogdell Area
Canyon Reef
Eastern Shelf

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Kent & Scurry
1	REGULATORY DISTRICT	8A
1	BASIN	Permian
15	SUB-BASIN	Eastern Shelf
2	FIELD	Cogdell
2,15c	RESERVOIR	Canyon Reef Area, Canyon Reef
5, 1	GEOLOGIC AGE	Pennsylvanian
1	AAPG STRATIGRAPHIC AGE CODE	320
1	RESERVOIR LITHOLOGY	Limestone
1	TRAPPING MECHANISM	Stratigraphic-Bioherm (Reef)
2, 1	DISCOVERY YEAR	12-1949, 1949
2, 1	PROVED ACREAGE	15,050; 15,052
1	REGULAR WELL SPACING (acres/well)	40
2,1,5c	RESERVOIR DEPTH	6796
1	Acreage Unitized	Date: 1953
	RESERVOIR THICKNESS	
1,2	NET PAY	61, 40 avg.
5c	GROSS	700
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2,1,5c	FRACTION	.10
	PERMEABILITY	
	RANGE	
2,1,5c	AVERAGE	18 md, 8 md, 100 md
	HORIZONTAL	
	VERTICAL	
2, 3	OTHER INFORMATION	Add. prod. from San Andres, SR record listed; other prod. from Fuller sand (1,555.8 cum), San Andres (707.6), Strawn (236.4), Wolfcamp (101.8), 4900 (972.8). BETC/RI-78/15 list as suitable for polymer because it was assumed polymer was more readily available than carbon dioxide.
14e	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	158 P, 102I; 555 (141P-200I-219A)
1	PRODUCTION 1976 oil (cum)	211,825
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	232,033
3	PRODUCTION 1-1-79 to 1-1-80	5,345.8 mbbls oil; 3,202.8 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5c	STRUCTURE CONTOUR?	Yes
5c	LOGS?	Yes
5c	STRUCTURE SECTION?	Yes
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
2, 1	FIELD:	Cogdell
2, 1	RESERVOIR:	Canyon Lime area
2, 1	PROD. ACRES:	15,050; 15,052
2, 1	AVG. THICKNESS (FT.):	40, 61
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1494
	FORMATION VOLUME FACTOR LATEST (FVF):	
16c, 1	WATER SATURATION (S_W):	.35,.37
	OIL SATURATION (S_O):	
1	PRIMARY DRIVE MECHANISM:	depletion
14e	PRIMARY GAS CAP?:	no
16c , 14e	TEMPERATURE (°F):	136
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1715
2, 1	RESERVOIR PRESSURE INITIAL (psi):	3120
2	RESERVOIR PRESSURE LATEST (psi):	250
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	534
1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	536 (76)
2, 1, 14e	STOCK TANK OIL GRAVITY (°API):	41.7, 41.7, 43
14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	0.44cp
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1681
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	not given
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	not given

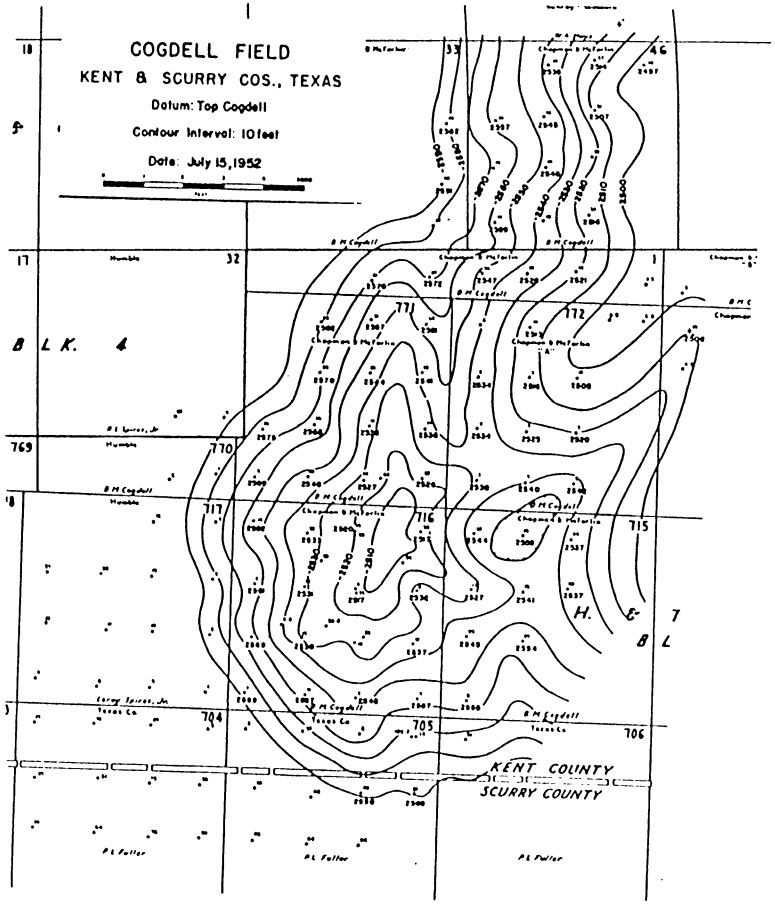
OTHER INFORMATION:

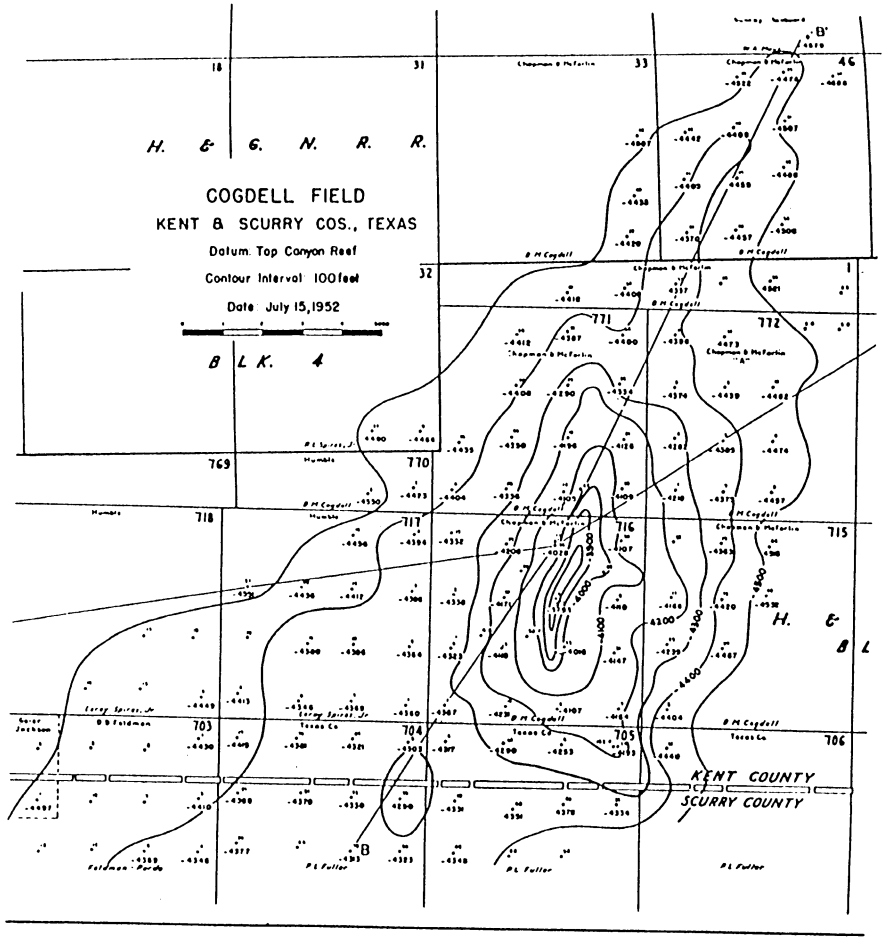
ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cogdell RESERVOIR: Canyon Reef TOTAL NO. PROJECTS: 2 PDS:

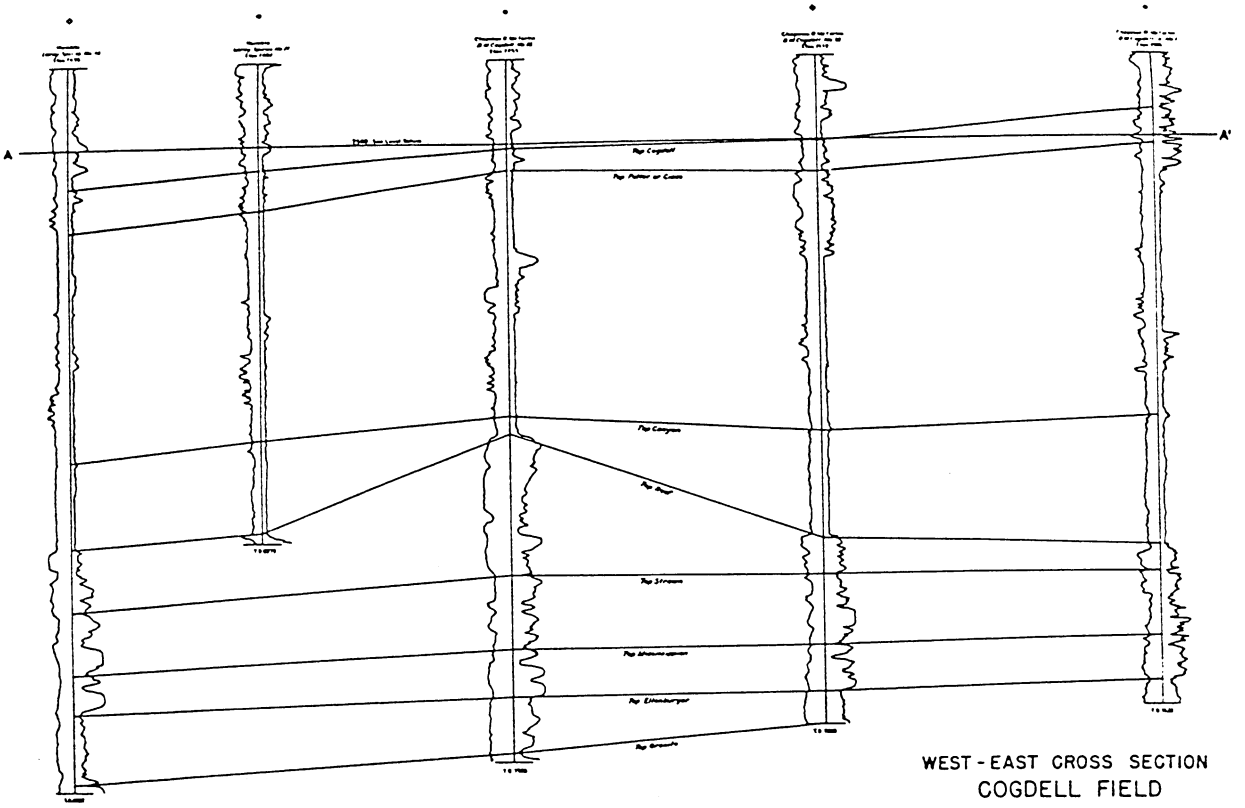
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	10,861	13				
1977 PROD. (this project):	8,410	13				
CUM. PROD. FROM DISC. TO 1/78:	220,040	659				
PROJECT NO.	F1742	F4452				
LEASE NO.(s):	08325	00651, 00652				
OPERATOR:	Texaco	V-F Petroleum Inc.				
RESERVOIR:	Canyon Reef	San Andres				area
DEPTH PRODUCING ZONE:	6796	1520				6796
PRODUCTIVE ACREAGE IN RESERVOIR:	15,050	720				15,052
ACREAGE IN PROJECT:	15,050	720				
PORTION OR FIELD WIDE:	FW	FW				
TYPE:	PM/SW, FW gas	WF/SW				press. maint.
PATTERN:	P	5S				
YEAR BEGAN:	4-56SW,FW;1-53gas	8-53				1953
YEAR TERMINATED OR STATUS:	ICP-SW,FW;9-72 gas	ICP				
RESERVOIR PRESSURE INITIAL:	3120	550				3120
BEG. INJECTION:	1150	150				
LATEST:	----	250				
NUMBER OF WELLS TOTAL:	555	33				
PRODUCING WELLS:	141					158
INJECTION WELLS:	----	----				102
MAXIMUM:		3				
LATEST:	200					
SHUT-IN/ABANDONED WELLS:	214	5				
SURFACE INJECTION PRESSURE:	3225	250				
EFFECTIVENESS OF INJECTION:	----	UD				
OPERATOR PROBLEMS:	----	CH, EB				
ESTIMATED PRODUCTION DUE TO INJ.:						
1977:	----	351				
FROM BEG. INJECTION:	----	13				
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	----	725				
WATER PRODUCTION:						
CURRENT (1977):	31,517	34				
CUMULATIVE TO 1/78:	115,690	1424				
CURRENT (1977) INJECTION:	31,517SW;16,103FW	34SW				
CUMULATIVE INJECTION:	307,760SW; 1,238,058FW; 991 SW 31,136 gas					

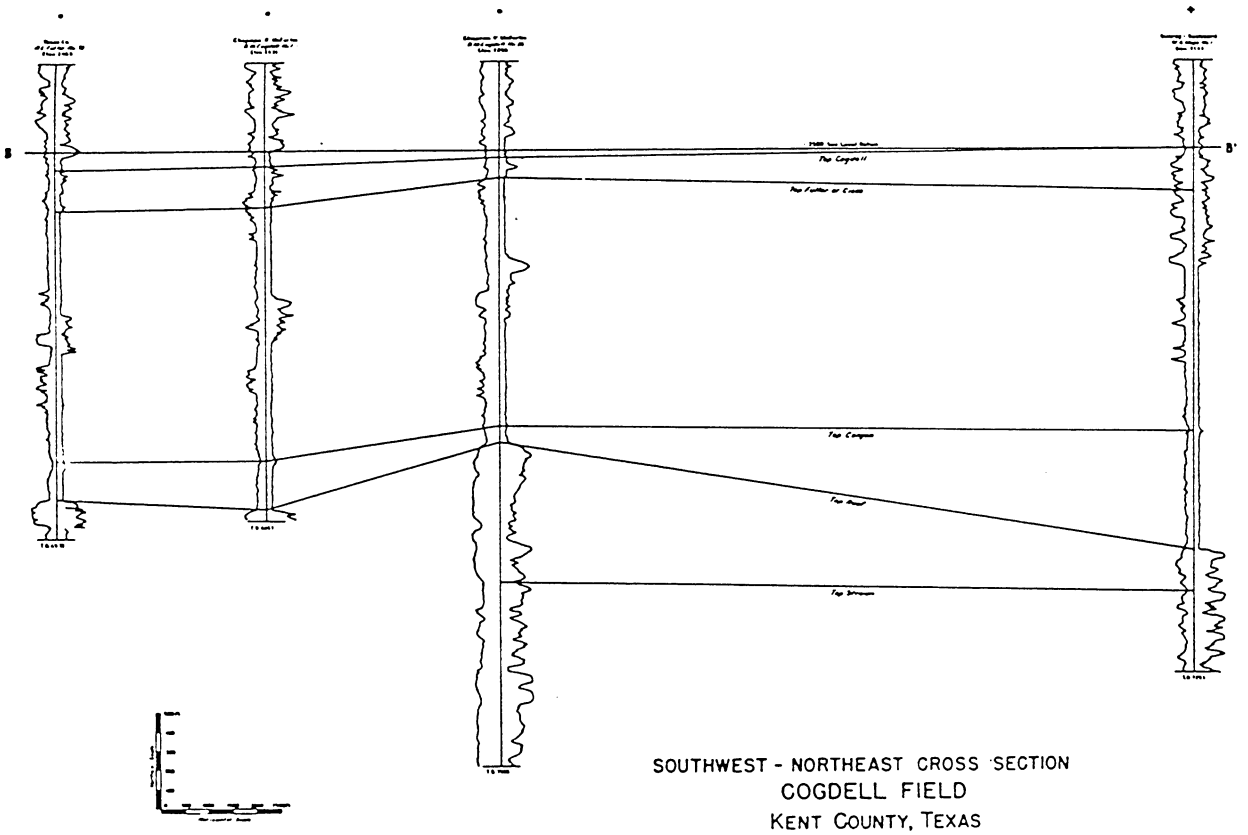




FROM: Potter, G.C., 1952, D.M. COGDELL LEASE, KENT COUNTY, TEXAS: Abilene Geological Society, Geological Contributions. Source 5c.



WEST - EAST CROSS SECTION
COGDELL FIELD
KENT COUNTY, TEXAS



SOUTHWEST - NORTHEAST CROSS SECTION
COGDELL FIELD
KENT COUNTY, TEXAS

FROM: Potter, G.C., 1952, D.M. COGDELL LEASE, KENT COUNTY, TEXAS: Abilene Geological Society, Geological Contributions. Source 5c.

Corazon
San Andres
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
	COUNTY	Scurry
	REGULATORY DISTRICT	8A
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
	FIELD	Corazon
	RESERVOIR	San Andres
5,1	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
2,3	DISCOVERY YEAR	8-1953
16c	PROVED ACREAGE	4540
	REGULAR WELL SPACING (acres/well)	
2,3	RESERVOIR DEPTH	2140, 2139
	RESERVOIR THICKNESS	
2,16c	NET PAY	20, 26
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.08
	PERMEABILITY	
	RANGE	
2	AVERAGE	1
	HORIZONTAL	
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2	TOTAL NUMBER OF WELLS	16 (9P-4I-3A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	3,738.9
3	PRODUCTION 1-1-79 to 1-1-80	143.8 mbbls oil; 5.9 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	No
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Corazon
	RESERVOIR:	San Andres
16c	PROD. ACRES:	4540
2, 16c	AVG. THICKNESS (FT.):	20, 26
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.2
	FORMATION VOLUME FACTOR LATEST (FVF):	
16c	WATER SATURATION (S_W):	.44
16c	OIL SATURATION (S_O):	.45(1963)
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
16c	TEMPERATURE (°F):	93
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2	RESERVOIR PRESSURE INITIAL (psi):	550
2	RESERVOIR PRESSURE LATEST (psi):	300
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2	STOCK TANK OIL GRAVITY (°API):	35.1
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1189
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	not given
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	not given

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Corazon RESERVOIR: San Andres TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	9
1977 PROD. (this project):	7
CUM. PROD. FROM DISC. TO 1/78:	825
PROJECT NO.	F1743
LEASE NO.(s):	10963
OPERATOR:	Texaco
RESERVOIR:	San Andres
DEPTH PRODUCING ZONE:	2140
PRODUCTIVE ACREAGE IN RESERVOIR:	----
ACREAGE IN PROJECT:	1000
PORTION OR FIELD WIDE:	P
TYPE:	WF/SW
PATTERN:	5S
YEAR BEGAN:	4-67
YEAR TERMINATED OR STATUS:	ICP
RESERVOIR PRESSURE INITIAL:	550
BEG. INJECTION:	300
LATEST:	----
NUMBER OF WELLS TOTAL:	13
PRODUCING WELLS:	9
INJECTION WELLS:	4
MAXIMUM:	---
LATEST:	---
SHUT-IN/ABANDONED WELLS:	3
SURFACE INJECTION PRESSURE:	1360
EFFECTIVENESS OF INJECTION:	----
OPERATOR PROBLEMS:	
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	----
FROM BEG. INJECTION:	----
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	----
WATER PRODUCTION:	
CURRENT (1977):	38
CUMULATIVE TO 1/78:	216
CURRENT (1977) INJECTION:	87 SW
CUMULATIVE INJECTION:	1223 SW

Corbin
Abo
Northwest Shelf

DATA SOURCE CODE		
1, 6b	STATE----------	New Mexico
1	COUNTY----------	Lea
	REGULATORY DISTRICT----------	Southeast
1, 6b	BASIN----------	Permian
1, 15	SUB-BASIN----------	Northwest Shelf
1, 6b	FIELD----------	Corbin
1, 6b	RESERVOIR----------	Abo (Reef dolomite)
6, 1	GEOLOGIC AGE----------	Leonardian, Leonard
1, 6b	AAPG STRATIGRAPHIC AGE CODE----------	318
6b, 1	RESERVOIR LITHOLOGY---------- dolomite; anhydrite, dolomite	medium to coarse crystalline anhydritic
1, 6b	TRAPPING MECHANISM----------	stratigraphic - reef
6b, 1	DISCOVERY YEAR----------	12-24-59
6c, 1	PROVED ACREAGE----------	1400
6c, 1	REGULAR WELL SPACING (acres/well)-----	40
6b, 6c, 1	RESERVOIR DEPTH----------	8400 (4600 datum); 8582
1	RESERVOIR THICKNESS	70 avg.
6c	NET PAY----------	-
6b, 6c	GROSS----------	300, 165
	NET/GROSS RATIO----------	
	POROSITY	
	TYPE----------	
	FRACTION----------	
	PERMEABILITY	
	RANGE----------	
	AVERAGE----------	
	HORIZONTAL----------	
	VERTICAL----------	
	OTHER INFORMATION----------	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS----------	39T, 31P, 4F, 4GL; 39 producing, 4 SI
	PRODUCTION 1976 oil (cum)----------	
1	PRODUCTION 1977 oil (cum)----------	12,536
	PRODUCTION 1978 oil (cum)----------	
18	PRODUCTION 1979 oil (cum)----------	13,052
	PRODUCTION 1-1-79 to 1-1-80----------	
	SECONDARY RECOVERY RECORDS?----------	
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
6b, 6c	STRUCTURE CONTOUR?----------	yes
6b, 6c	LOGS?----------	yes
	STRUCTURE SECTION?----------	
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
6b, 1	FIELD:	Corbin
6b, 1	RESERVOIR:	Abo
1	PROD. ACRES:	1400
	AVG. THICKNESS (FT.): 70	
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1, 6c	WATER SATURATION (S_W):	.30
1, 6b	OIL SATURATION (S_O):	.10
1, 6c	PRIMARY DRIVE MECHANISM:	solution gas and H_2O drive; solution gas
	PRIMARY GAS CAP?:	
1, 6c, 17	TEMPERATURE (°F):	128 (GG = .63)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	5016
6b, 1	RESERVOIR PRESSURE INITIAL (psi):	3146, 3220
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	780
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1488
6b, 1	STOCK TANK OIL GRAVITY (°API):	37.8; 37
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1601
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: Corbin RESERVOIR: Abo TOTAL NO. PROJECTS:

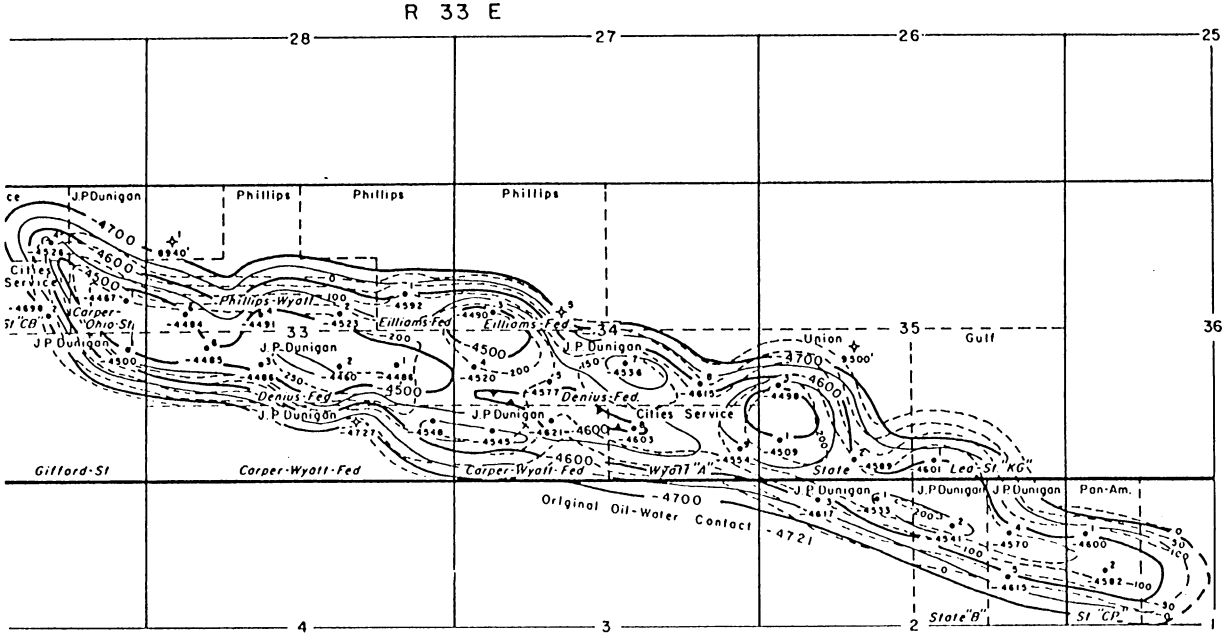
DATA SOURCE:	1	6b
TOTAL SOLIDS (ppm):		
NA + K	55,800	59,700
Ca	14,400	14,540
Mg	5,000	5,000
Fe	320	320
SO_4	400	500
Cl	125,200	131,000
CO_2		
HCO_3	733	733
OH		
H_2S		neg
CO_3	920	

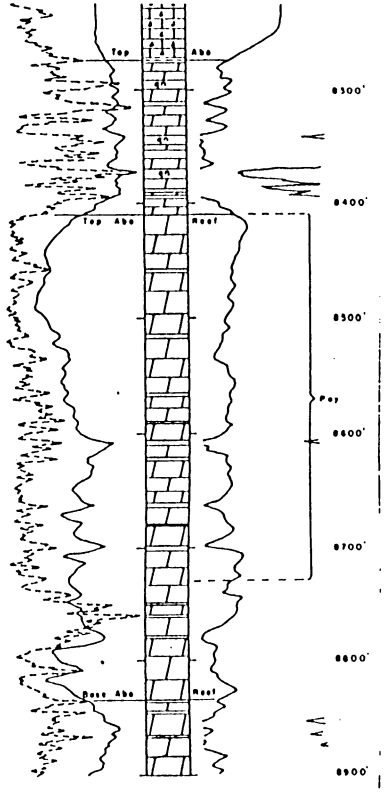
RESISTIVITY: .055 ohm-m @ 72°F - .97 ohm - meters @ 72°F

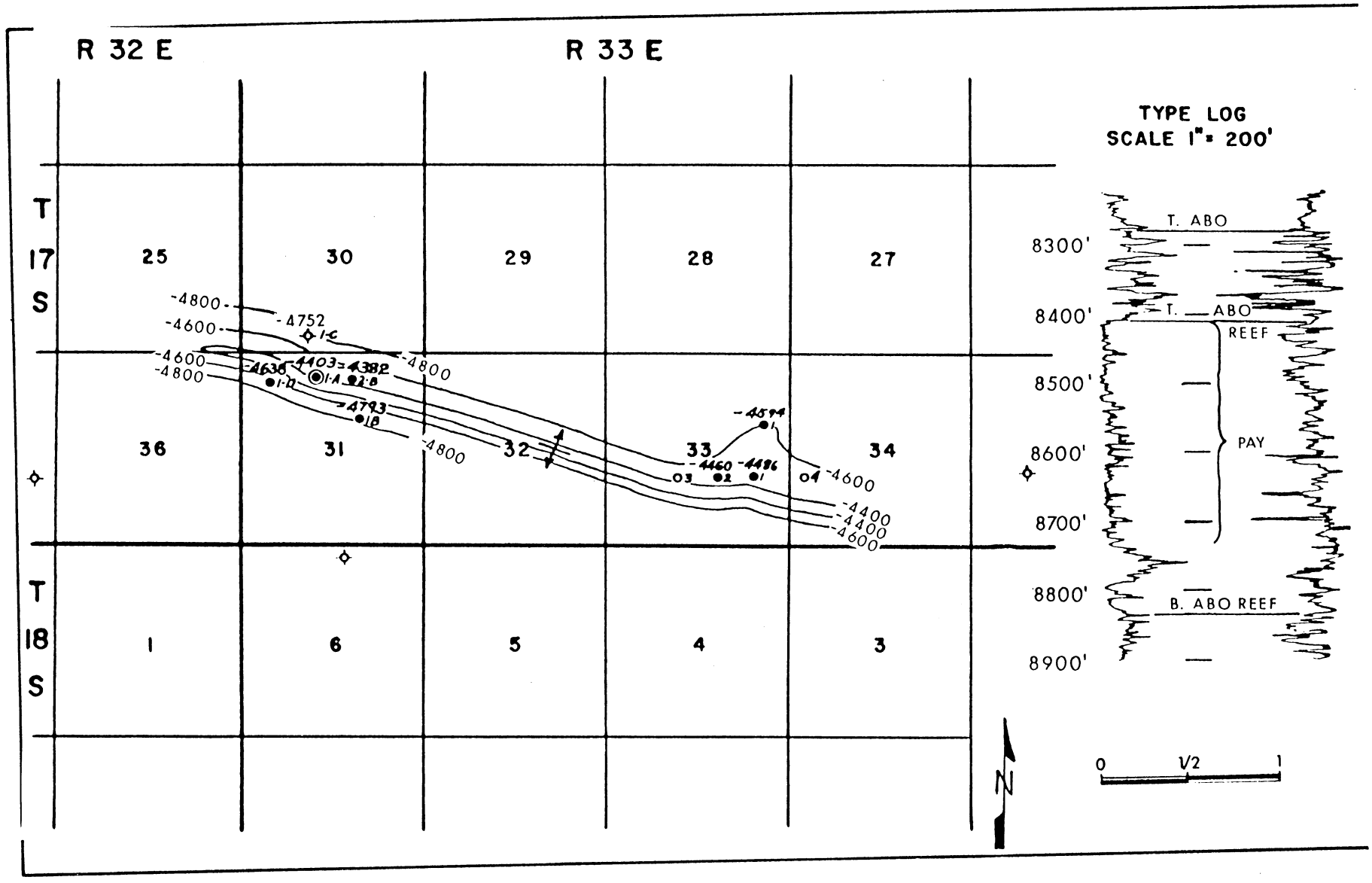
SPECIFIC GRAVITY: 1.15 @ 68°F

OTHER WATER QUALITY DATA:

FROM: Clark, T.P., 1966, CORBIN ABO in OIL & GAS FIELDS OF SOUTHEASTER NEW MEXICO: Roswell Geological Society Symposium - 1967. Source 6c.

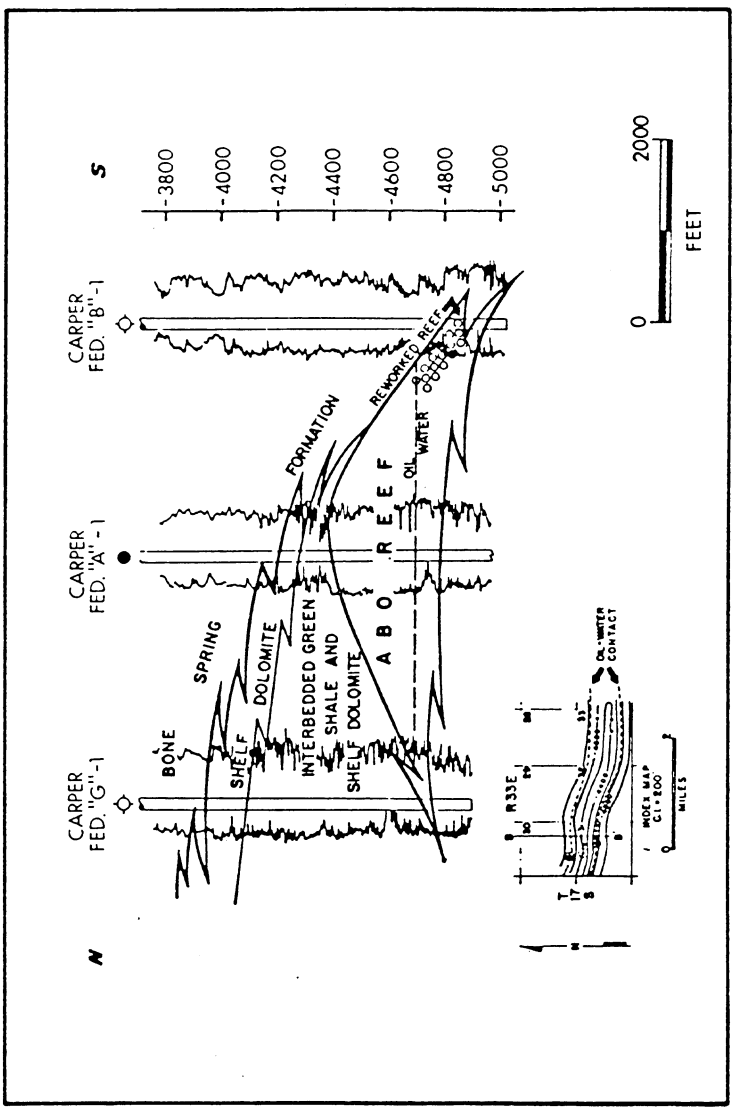






STRUCTURE MAP OF THE CORBIN FIELD DRAWN ON
THE TOP OF THE ABO REEF TREND

FROM: Clark, T. P., 1960, CORBIN ABO in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium - 1960, Source 6b.



CROSS SECTION SHOWING REEF BUILDUP AND SHELF SEDIMENTS PROGRADING OVER CREST OF REEF AT CORBIN FIELD

Cowden, North
Grayburg San Andres
Central Basin Platform

DATA SOURCE CODE		
	STATE----------	Texas
1	COUNTY----------	Ector
1,	REGULATORY DISTRICT----------	8
1	BASIN----------	Permian
15	SUB-BASIN----------	Central Basin Platform
1	FIELD----------	Cowden, North
2	RESERVOIR----------	Grayburg, San Andres
5	GEOLOGIC AGE----------	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE----------	313 (310 in PDS)
1, 9a	RESERVOIR LITHOLOGY----------	Dolomite; anhydritic sand/dolomite/ sandy dolomite.
	TRAPPING MECHANISM----------	
2,1	DISCOVERY YEAR----------	9-1930; 1930
2,1	PROVED ACREAGE----------	39,300; 980
1	REGULAR WELL SPACING (acres/well)-----	40
2,1,9a	RESERVOIR DEPTH----------	variable 4150 to 4700; 4400; 4137
	RESERVOIR THICKNESS	
2,1,9a	NET PAY----------	variable 120 avg.; 200; 125
9a	GROSS----------	409
	NET/GROSS RATIO----------	
	POROSITY	
	TYPE----------	
2,1	FRACTION----------	.06 - .132, .12
	PERMEABILITY	
2	RANGE----------	1-24 md
1,14e	AVERAGE----------	3md ,10 md
	HORIZONTAL----------	
	VERTICAL----------	
3,2	OTHER INFORMATION----------	Other prod. from Holt-Deep, Clear Fork, Cisco
14e	BETC/RI-78/15 list as most suitable for carbon dioxide EOR.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS----------	994P, 134I; 1609 (944P-67I-598A)
	PRODUCTION 1976 oil (cum)----------	
1	PRODUCTION 1977 oil (cum)----------	286,467
	PRODUCTION 1978 oil (cum)----------	
3	PRODUCTION 1979 oil (cum)----------	314,161
3	PRODUCTION 1-1-79 to 1-1-80----------	13,749 mbbls oil; 7,852.8 mmcf gas
2	SECONDARY RECOVERY RECORDS?----------	Yes
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
9a	STRUCTURE CONTOUR?----------	Yes
9a	LOGS?----------	Yes
	STRUCTURE SECTION?----------	
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
2	FIELD:	Cowden, North
2, 1	RESERVOIR:	Grayburg-San Andres
2 , 1	PROD. ACRES:	39300, 980
1, 9a	AVG. THICKNESS (FT.):	24-276, 200
16c, 9a	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.26, 1.68
9a , 1	FORMATION VOLUME FACTOR LATEST (FVF):	1.1(1976)
9a	WATER SATURATION (S_W):	0.287, .15
1, 9a	OIL SATURATION (S_O):	0.713
1, 14e	PRIMARY DRIVE MECHANISM:	depletion, gas cap
17, 9a ,14e	PRIMARY GAS CAP?:	yes
16c	TEMPERATURE (°F):	114 (GG=.9), 94, 93 BHT
2, 1, 9a	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1857, 1090 initial
9a	RESERVOIR PRESSURE INITIAL (si):	1800
9a	RESERVOIR PRESSURE LATEST (psi):	614
17, 1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	360
1, 2	STOCK TANK OIL GRAVITY (°API):	2739, 2738.8(77)
9a , 14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}): cp	33, 30-34
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1.43 initial , 1.75
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 10 SRPs:	1445
2	ESTIMATED PRIMARY OIL RECOVERED FOR 10 SRPs:	401,333 mbbls
		75,562 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cowden, North RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 10
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	701	149	651	52	164
1977 PROD. (this project):	679	216	926	53	165
CUM. PROD. FROM DISC. TO 1/78:	15619	5990	25791	1406	1441
PROJECT NO.	F1121	F1122	F5855	F1123	F5856
LEASE NO.(s):	20538	20661	00725, 22927	20417	00716
OPERATOR:	Cities Service	Continental Oil	Continental Oil	Gulf Oil	Southland
RESERVOIR:	Grayburg	Grayburg	Grayburg	Grayburg-San An.	Grayburg
DEPTH PRODUCING ZONE:	4200	4150	4180	4700	4400
PRODUCTIVE ACREAGE IN RESERVOIR:	37000	37000	37000	1040?	37000
ACREAGE IN PROJECT:	1840	3880	736	1120?	159
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	FW/P
TYPE:	WF/SW, BW/gas	WF/SW	PM/BW	WF/SW, BW	WF/SW, BW
PATTERN:	5S	I9	5S	I	5S
YEAR BEGAN:	12-67	8-68	4-74	7-65	11-73
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP	ICP	ICPSW,INS BW
RESERVOIR PRESSURE INITIAL:	1800	1800	1800	1800	1800
BEG. INJECTION:	500	500	600	200	650
LATEST:	1150	---	---	---	---
NUMBER OF WELLS TOTAL:	47	104	47	21	5
PRODUCING WELLS:	29	67	29	12	4
INJECTION WELLS:	18	29	18	5	1
MAXIMUM:	---	---	---	---	---
LATEST:	---	---	---	---	---
SHUT-IN/ABANDONED WELLS:	0	8	0	4	0
SURFACE INJECTION PRESSURE:	800	775	---	5000	---
EFFECTIVENESS OF INJECTION:	ME	---	VE	VE	ME
OPERATOR PROBLEMS:	CR, SC, PA, EP	---	CH, PA	SC, CR	---
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	506	208	793	52	75
FROM BEG. INJECTION:	2513	846	1341	481	181
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	15100	1374	6148	650	156
WATER PRODUCTION:					
CURRENT (1977):	1720	530	397	346	142
CUMULATIVE TO 1/78:	8467	2839	6705	1716	754
CURRENT (1977) INJECTION:	1720SW; 306BW	4372	3328	346SW; 271BW	142 SW
CUMULATIVE INJECTION:	8467SW; 21,483 BW	38982	8201	2098SW; 5886 BW	682SW;346BW

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cowden, North RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 10

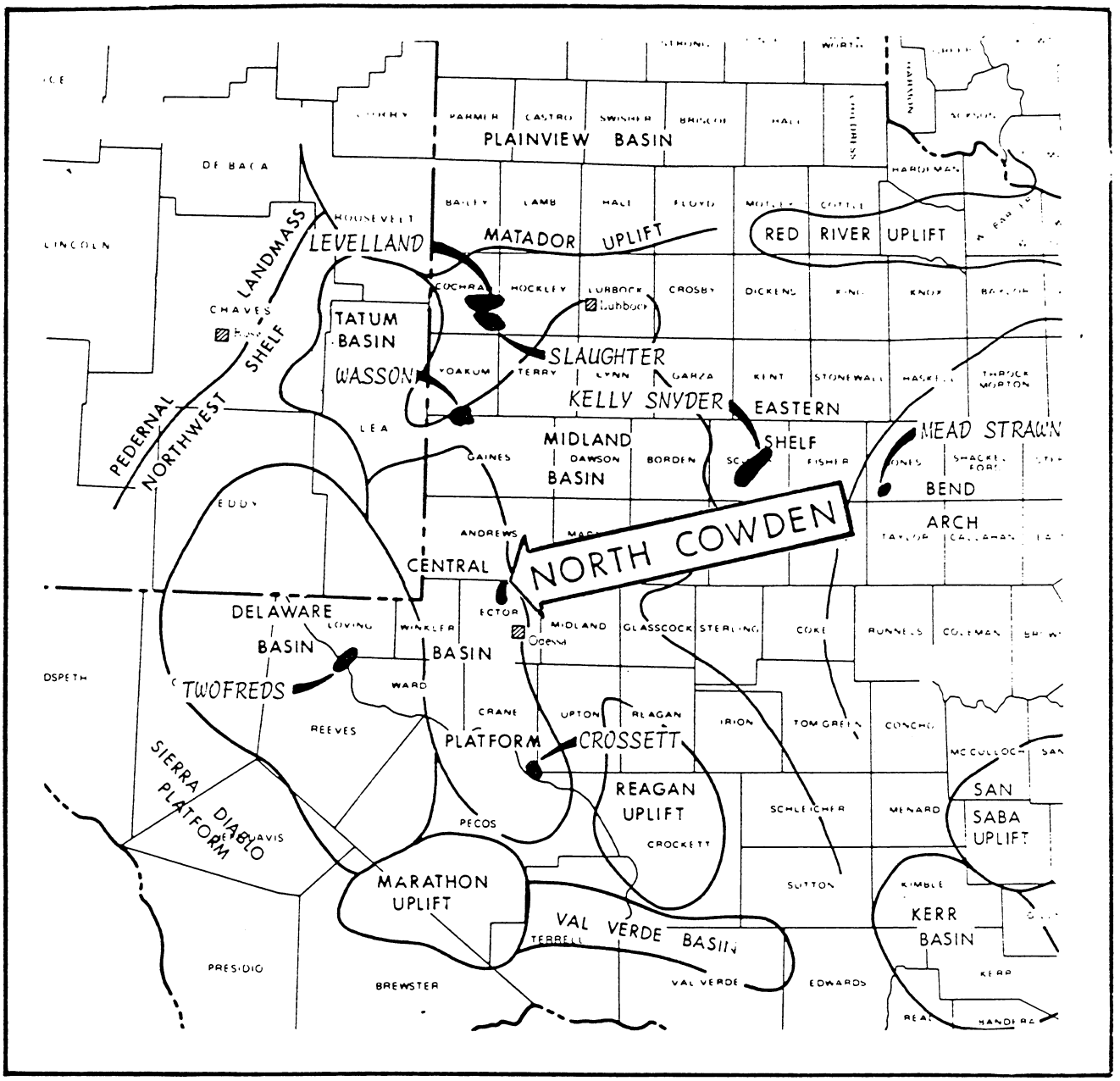
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	181	---	411	165	440
1977 PROD. (this project):	211	---	491	164	452
CUM. PROD. FROM DISC. TO 1/78:	7674	---	14940	4795	7106
PROJECT NO.	F1118	F7158	F1125	F5267	F1631
LEASE NO.(s):	20398	12448	23396	00798	00797
OPERATOR:	Sun Oil	Sun Oil	Texaco	Texas Pacific	Texas Pacific
RESERVOIR:	Grayburg	Grayburg-San An.	Grayburg-San An.	Grayburg-San An.	Grayburg-SanAn.
DEPTH PRODUCING ZONE:	4450	4450	4300	4300	4600
PRODUCTIVE ACREAGE IN RESERVOIR:	37000	3700	30870	30870	30870
ACREAGE IN PROJECT:	2742	320	640	480	480
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	FW/P
TYPE:	PM/SW, BW, gas	WF/SW	PM/BW, gas	WF/SW, BW	PM/SW, BW
PATTERN:	LD	5S	5S	5S	5S
YEAR BEGAN:	4-50	3-77	4-73 BW;6-50 gas	11-72	6-71
YEAR TERMINATED OR STATUS:	ICP-MSWBW/IPD-gas	ICP	ICP BW, IPD gas	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1800	1800	1800	1800	1800
BEG. INJECTION:	500	500	---	517	526
LATEST:	480	480	478	517	526
NUMBER OF WELLS TOTAL:	102	17	104	33	35
PRODUCING WELLS:	47	7	72	11	12
INJECTION WELLS:	49	10	15	21	21
MAXIMUM:	----	----	----	2SW	5SW
LATEST:	----	----	----	19BW	16BW
SHUT-IN/ABANDONED WELLS:	6	0	17	1	2
SURFACE INJECTION PRESSURE:	4000	150	237	---	---
EFFECTIVENESS OF INJECTION:	VE	UD	VE	NE	ME
OPERATOR PROBLEMS:					
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	---	14	---	164	452
FROM BEG. INJECTION:	---	43	---	594	1840
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	---	800	---	4380	7685
WATER PRODUCTION:					
CURRENT (1977):	621	---	1619	803	561
CUMULATIVE TO 1/78:	4819	---	7114	4709	2007
CURRENT (1977) INJECTION:	661	199	6101	182SW, 793BW	1182SW,881BW
CUMULATIVE INJECTION:	365 SW, 4382G	199	13535BW, 9063 G	1582SW,5540 BW	5800SW,5624BW

ENHANCED AND SECONDARY RECOVERY DATA:

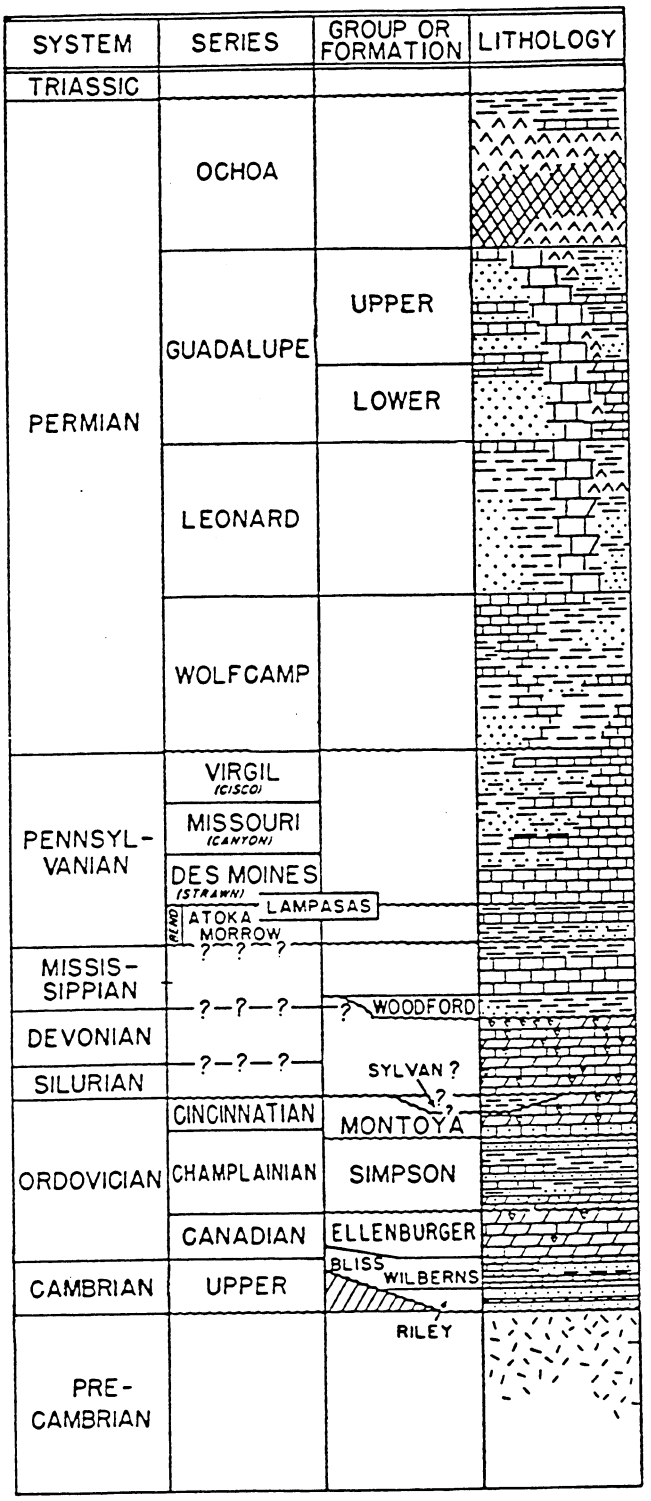
FIELD: Cowden, North RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 10 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	9405	137	655	1	
1977 PROD. (this project):	8679	112	711	1	
CUM. PROD. FROM DISC. TO 1/78:	184,379	7006	5798	39	
PROJECT NO.	F1124	F6862	F1119	F1120	
LEASE NO.(s):	20164	24118	14262	15502	
OPERATOR:	Amoco	Atlantic Rich.	BTA Oil Prod.	BTA Oil Prod.	
RESERVOIR:	Grayburg	Grayburg-San And.	Grayburg	Grayburg	
DEPTH PRODUCING ZONE:	4400	4200	4530	4530	4400
PRODUCTIVE ACREAGE IN RESERVOIR:	39300	28000	38000	3800	980
ACREAGE IN PROJECT:	20406	480	960	80	20,406 U
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	
TYPE:	WF/SW,BW;PM/gas	WF/SW	WF/SW, BW	WF/SW	WF
PATTERN:	5S	5S	I	I	
YEAR BEGAN:	7-76WF, 6-50PM	12-76	2-67SW, 12-75BW	5-67 SW	1952
YEAR TERMINATED OR STATUS:	WF-ICP, PM-IPD10-72	ICP	ICP	ICP	
RESERVOIR PRESSURE INITIAL:	1800	1477	1800	1800	1800
BEG. INJECTION:	862	700	450	450	
LATEST:	659	----	450	450	
NUMBER OF WELLS TOTAL:	1032	26	30	2	
PRODUCING WELLS:	544	12	20	1	994
INJECTION WELLS:	----	14	10	1	134
MAXIMUM:		14	10	0	
LATEST:	481	0	0	0	
SHUT-IN/ABANDONED WELLS:	7				
SURFACE INJECTION PRESSURE:	100	0	750	UD	
EFFECTIVENESS OF INJECTION:	VE-WF, ME-Gas	UD	VE	UD	
OPERATOR PROBLEMS:	----	----	----	----	
ESTIMATED PRODUCTION DUE TO INJ.:	----	----	----	----	
1977:					
FROM BEG. INJECTION:					
EST. INCREASE IN ULTIMATE PROD.					
DUE TO INJECTION:					
WATER PRODUCTION:					
CURRENT (1977):	27,999	52	1428	15	
CUMULATIVE TO 1/78:	109,488	871	4375	39	
CURRENT (1977) INJECTION:	27,999FW;39,299 BW	1687	1428 SW,1234BW	5 SW	
CUMULATIVE INJECTION:	109,488FW;315,162 BW	1726	4718SW;2303 BW	59SW	

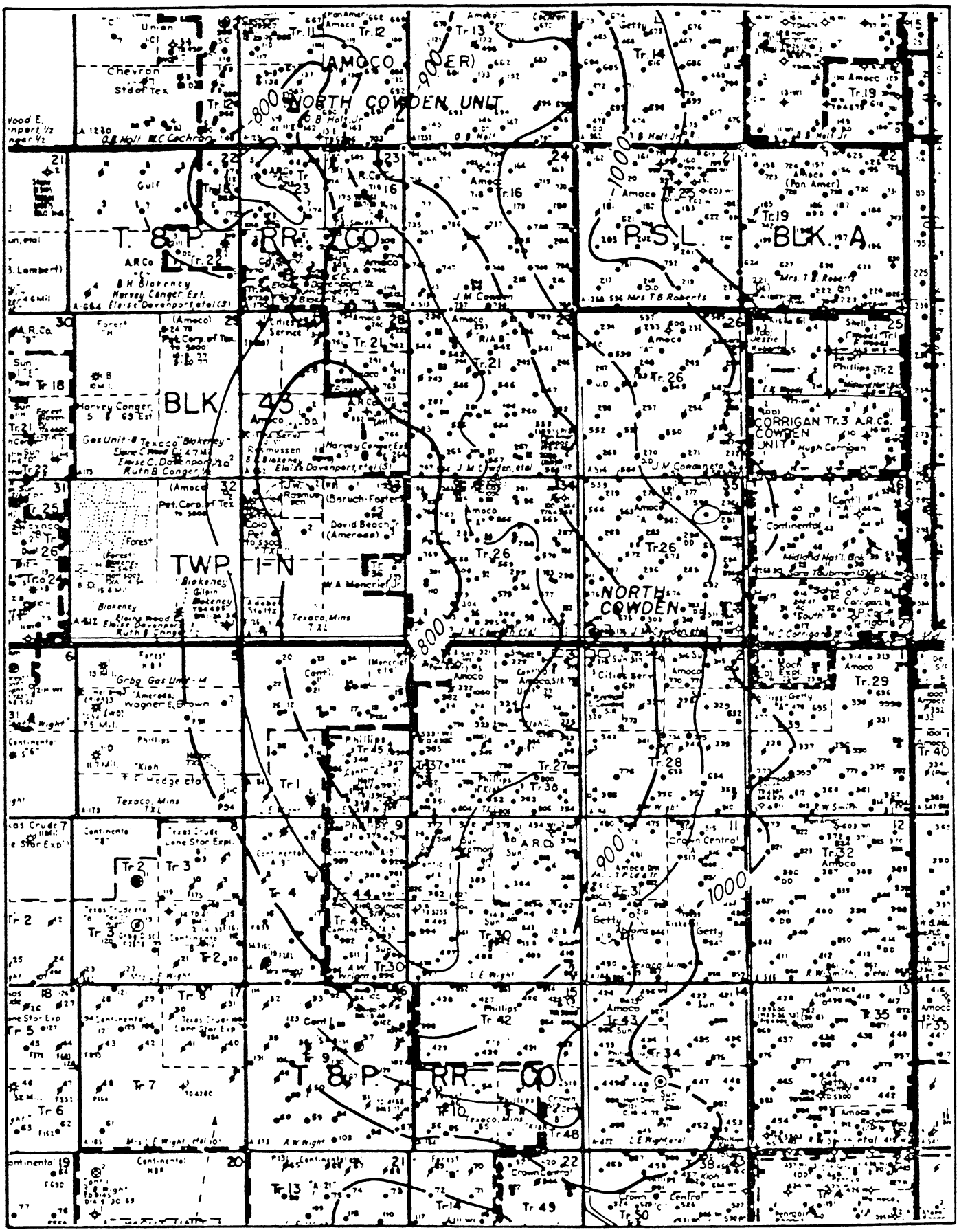


GRUY FEDERAL, INC.

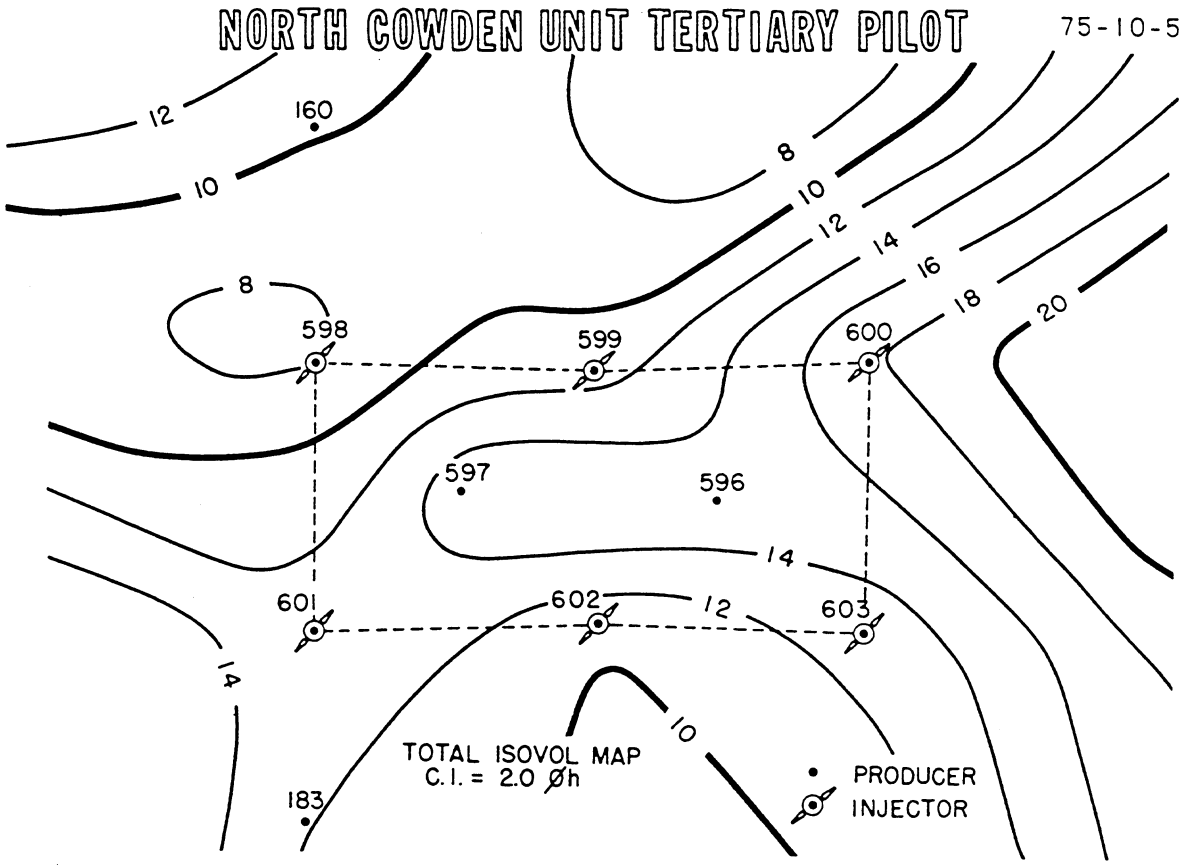
INDEX MAP
CO_2 PROJECTS IN WEST TEXAS

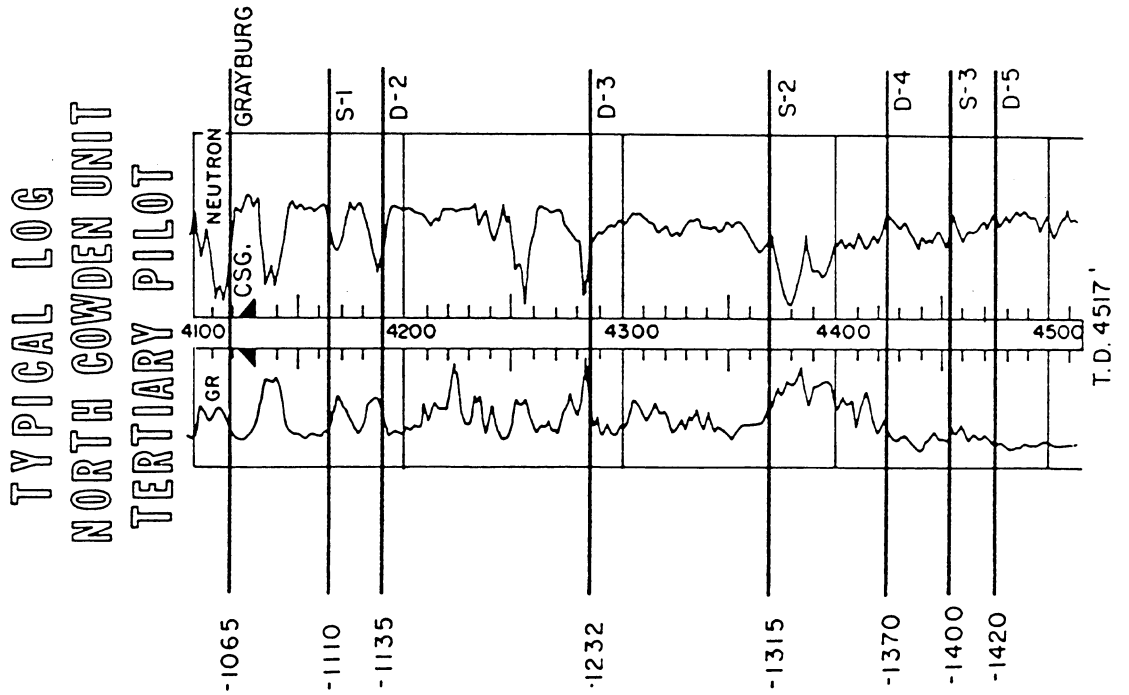


GENERALIZED STRATIGRAPHIC COLUMN
WEST TEXAS



STRUCTURE OF GRAYBURG FORMATION
OF NORTH COWDEN FIELD


NORTH COWDEN UNIT TERTIARY PILOT
75-10-5
12
160
10
8
10
12
14
16
18
20
8
598
599
600
597
596
14
601
602
12
603
14
10
183
TOTAL ISOVOL MAP
C.I. = 2.0 øh
PRODUCER
INJECTOR


TYPICAL LOG
NORTH COWDEN UNIT
TERTIARY PILOT
GRAYBURG
S-1
D-2
D-3
S-2
D-4
S-3
D-5
NEUTRON
CSG.
4100
4200
4300
4400
4500
T.D. 4517'
GR
-1065
-1110
-1135
-1232
-1315
-1370
-1400
-1420

Cowden, South
Central Basin Platforr
Grayburg-San Andres

DATA SOURCE CODE		
1	STATE----------	Texas
1	COUNTY----------	Ector
1	REGULATORY DISTRICT----------	8
1	BASIN----------	Permian
15	SUB-BASIN----------	Central Basin Platform
1,12c	FIELD----------	Cowden, South-continuous w/Addis-Johnson-
2,1	RESERVOIR----------	Grayburg,San Andres Foste
5	GEOLOGIC AGE----------	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE----------	313
1,12c	RESERVOIR LITHOLOGY----------	Limestone, dolomite in part finely crystalline, in part aphanitic, commonly oolitic.
12c	TRAPPING MECHANISM----------	Porosity controlled in Grayburg and samll dome of low relief in the San Andres.
1,2,3	DISCOVERY YEAR----------	1932
2,1,12c	PROVED ACREAGE----------	21600, 25000, 30960
1	REGULAR WELL SPACING (acres/well)-----	40
2,3,1 12c	RESERVOIR DEPTH----------	range 4100 to 4600, 5050, 5050 Grayburg-3800 to 4100, San Andres-4220 tc 4310.
	RESERVOIR THICKNESS	
2,1, 12c	NET PAY----------	range 20 to 120, 225 , G-70 and SA-40
12c	GROSS----------	260 max.Grayburg and 65 max San Andres
	NET/GROSS RATIO----------	
	POROSITY	
12c	TYPE----------	IC
2,1	FRACTION----------	range .055 to .13, .12
	PERMEABILITY	
2	RANGE----------	range 1-4
1, 14e	AVERAGE----------	100 md , 4 md
	HORIZONTAL----------	
	VERTICAL----------	
3	OTHER INFORMATION----------	Other reservoirs include Canyon 8790 (18,288.2 cum), Canyon 8900 (8,472.9 cum), Cisco 8640 (1,027.9), DEV (378.7), Ellenburger (5233.7), Pennsylvanian (925.6 cum), 13800 (2036.3).
14e	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	Source 14 e list as being most suitable for carbon dioxide EOR.
1	TOTAL NUMBER OF WELLS----------	497P, 134I; 718 (452P-251I-15A)
1	PRODUCTION 1976 oil (cum)----------	109,904
	PRODUCTION 1977 oil (cum)----------	
	PRODUCTION 1978 oil (cum)----------	
3	PRODUCTION 1979 oil (cum)----------	121,676.9
3	PRODUCTION 1-1-79 to 1-1-80----------	3,673.8 mbbls oil; 1,392.4 mmcf gas
2	SECONDARY RECOVERY RECORDS?----------	Yes
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
12c	STRUCTURE CONTOUR?----------	Yes
12c	LOGS?----------	Yes
12c	STRUCTURE SECTION?----------	Yes
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Cowden, South
2	RESERVOIR:	Grayburg-San Andres
2 , 1	PROD. ACRES:	21,600, 25,00
2 , 1	AVG. THICKNESS (FT.):	55, 225
16c , 1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.077, 1.07
16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.1(76)
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
1	PRIMARY DRIVE MECHANISM:	depletion
12c	PRIMARY GAS CAP?:	yes-Grayburg
17	TEMPERATURE (°F):	119
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	402
2, 1	RESERVOIR PRESSURE INITIAL (psi):	1214-1760, 1842
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1930.9 (76)
2, 3, 1	STOCK TANK OIL GRAVITY (°API):	32 - 36, 36, 36
12c	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	41-46 sec @ 100°F(SU)
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1495
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 22 SRPs:	385,011 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 22 SRPs:	105,501 mbbls
	OTHER INFORMATION:	

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cowden, South RESERVOIR: Grayburg- San Andres TOTAL NO. PROJECTS: 22 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	6	42	27	14	
1977 PROD. (this project):	3	35	26	12	
CUM. PROD. FROM DISC. TO 1/78:	49	1807	932	412	
PROJECT NO.	F1632	F1129	F1138	F1141	
LEASE NO.(s):	10877	00856	00884	08793	
OPERATOR:	El Ran, Inc.	Flag-Redfern	Gen.Am.Oil Co.	MWJ Prod. Co.	
RESERVOIR:	Grayburg	Grayburg	Grayburg-San An	Grayburg	San And
DEPTH PRODUCING ZONE:	4450	4200	4150	4280	5050
PRODUCTIVE ACREAGE IN RESERVOIR:	160	21600	18240	1900	25000
ACREAGE IN PROJECT:	160	320	225	160	3370
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	
TYPE:	WF/SW	WF/SW, BW, FW	WF/BW	WF/SW	WF
PATTERN:	SW	I	P	I5	
YEAR BEGAN:	3-71	8-64	1-70	6-67	
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP	ICP	
RESERVOIR PRESSURE INITIAL:	----	1485	----	1700	1842
BEG. INJECTION:	----	350	----	400	
LATEST:	----	----	----	----	
NUMBER OF WELLS TOTAL:	6	12	6	5	
PRODUCING WELLS:	2	9	4	4	497
INJECTION WELLS:	2	3	2	1	198
MAXIMUM:	---	---	---		
LATEST:	---	---	---	---	
SHUT-IN/ABANDONED WELLS:	2	0	0	0	
SURFACE INJECTION PRESSURE:	600	980	---	1250	
EFFECTIVENESS OF INJECTION:	NE	----	VE	----	
OPERATOR PROBLEMS:	SC	CR,IP	----	----	
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	----	35	18	12	
FROM BEG. INJECTION:	----	1033	76	73	
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	----	----	----	100	
WATER PRODUCTION:					
CURRENT (1977):	13	102	6	37	
CUMULATIVE TO 1/78:	78	2648	12	127	
CURRENT (1977) INJECTION:	14	102 SW	242 SW	37 SW	
CUMULATIVE INJECTION:	78	2657 SW, 3384 BW	1757 SW	652 SW	

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cowden, South RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 22

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	1640	4	1	356	4
1977 PROD. (this project):	1574	4	1	362	4
CUM. PROD. FROM DISC. TO 1/78:	25088	204	60	17876	141
PROJECT NO.	F1144	F1145	F1135	F1136	F1137
LEASE NO.(s):	19297	00868	00874	00875	00876
OPERATOR:	Phillips Pet.	Reading & Bates	Sun Oil	Sun Oil	Sun Oil
RESERVOIR:	Grayburg	Grayburg-San An.	Grayburg	Grayburg	Grayburg
DEPTH PRODUCING ZONE:	5050	4150	4050	4050	4050
PRODUCTIVE ACREAGE IN RESERVOIR:	19200	----	21600	21600	21600
ACREAGE IN PROJECT:	2050	320	40	3370	80
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	FW/P
TYPE:	WF/SW, BW	WF/SW, FW	WF/BW	WF/SW, BW	WF/SW, BW
PATTERN:	P5	SW	LD	5S	LD
YEAR BEGAN:	7-65	11-70	8-68	2-55	2-67
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1700	----	1485	1760	1485
BEG. INJECTION:	400	500	200	350	200
LATEST:	1680	----	200	----	----
NUMBER OF WELLS TOTAL:	60	9	2	139	3
PRODUCING WELLS:	53	8	1	102	2
INJECTION WELLS:	7	1	1	37	1
MAXIMUM:	----	----	----	----	----
LATEST:	10	----	----	----	----
SHUT-IN/ABANDONED WELLS:	----	0	0	0	4
SURFACE INJECTION PRESSURE:	500		1000	1000	1100
EFFECTIVENESS OF INJECTION:	VE	UD	NE	NE	ME
OPERATOR PROBLEMS:	----	----	SC,CR	SC,CR	SC,CR
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	1579	----	1	362	4
FROM BEG. INJECTION:	14813	----	20	1045	141
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	17610	----	100	10000	200
WATER PRODUCTION:					
CURRENT (1977):	2939	6	1	4123	11
CUMULATIVE TO 1/78:	16681	33	49	28110	608
CURRENT (1977) INJECTION:	1283	11	142	6175SW, 0 BW	196
CUMULATIVE INJECTION:	16624	291	1336	72799SW, 43804 BW	2570SW,708BW

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cowden, South RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 22

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	106	930	87	14	15
1977 PROD. (this project):	76	922	82	17	11
CUM. PROD. FROM DISC. TO 1/78:	2240	11629	2758	417	11416
PROJECT NO.	F1126	F1127	F1143	F1140	F1131
LEASE NO.(s):	00905	00906	20416	00889	20089
OPERATOR:	Am. Petrofina	Am. Petrofina	Amoco	Atlantic Rich.	Cities Servi
RESERVOIR:	San Andres	San Andres	Grayburg	Grayburg	Grayburg-San A
DEPTH PRODUCING ZONE:	4600	4500-4600	4100	4125	3921
PRODUCTIVE ACREAGE IN RESERVOIR:	20,000	20,000	20,000	17,100	14,000
ACREAGE IN PROJECT:	160	666	892	157	400
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	FW/P
TYPE:	PM/SW, BW	PM/SW, BW	WF/SW, BW	WF/SW	WF/SW, BW
PATTERN:	LD	I5	MP	I	7S
YEAR BEGAN:	6-67	3-70	9-68	9-61	7-66
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1760	1760	1214	1740	1400
BEG. INJECTION:	400	400	200	325	----
LATEST:	636	950	1600	----	1100
NUMBER OF WELLS TOTAL:	9	25	33	5	14
PRODUCING WELLS:	5	18	21	4	9
INJECTION WELLS:	1 SW	2 SW	12	1	5
MAXIMUM:	3 BW	5 BW	---	---	0
LATEST:	---	---	---	---	
SHUT-IN/ABANDONED WELLS:	---	1	0	0	1
SURFACE INJECTION PRESSURE:	825SW,900BW	825SW,560BW	565	480	400
EFFECTIVENESS OF INJECTION:	VE	VE	VE	ME	ME
OPERATOR PROBLEMS:	CR,SC	CR,SC	---	CR,SC	---
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	58	577	---	17	11
FROM BEG. INJECTION:	1418	3848	---	64	416
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	1753	5640	---	300	1299
WATER PRODUCTION:					
CURRENT (1977):	120	491	390	117	14
CUMULATIVE TO 1/78:	1171	3702	2535	489	559
CURRENT (1977) INJECTION:	120SW, 268 BW	491SW, 743BW	390SW, 52BW	185	14SW, 612BW
CUMULATIVE INJECTION:	1229SW, 2252BW	3512SW, 4128BW	2535SW, 1701BW	2141	559SW, 6648BW

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Cowden, South RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 22
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	108	17	52	39
1977 PROD. (this project):	89	14	43	28
CUM. PROD. FROM DISC. TO 1/78:	4677	855	353	2054
PROJECT NO.	F1130	F1132	F1132	F1134
LEASE NO.(s):	19371	19372	08302	00881 , 00882
OPERATOR:	Cities Ser.	Cities Ser.	Continental	Deck Oil
RESERVOIR:	Grayburg-San An	Grayburg-San An	San Andres	Grayburg-San An
DEPTH PRODUCING ZONE:	4150	4250	----	4305
PRODUCTIVE ACREAGE IN RESERVOIR:	14000	14000	14000	20000
ACREAGE IN PROJECT:	1960	488	200	320
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P
TYPE:	WF/SW, BW	WF/SW, BW	WF/SW, BW	WF/SW, BW
PATTERN:	7S	7S	I	I
YEAR BEGAN:	6-65	7-67	11-65	3-66
YEAR TERMINATED OR STATUS:	ICP	ICP	SW-ICP, BW-IPD	ICP
RESERVOIR PRESSURE INITIAL:	1400	1400	1400	1400
BEG. INJECTION:	---	---	---	---
LATEST:	1000	1000	---	---
NUMBER OF WELLS TOTAL:	66	15	16	13
PRODUCING WELLS:	37	8	11	9
INJECTION WELLS:	22	3	5	---
MAXIMUM:	---	---	---	---
LATEST:	---	---	---	0
SHUT-IN/ABANDONED WELLS:	7	4	0	925
SURFACE INJECTION PRESSURE:	400	400	800	---
EFFECTIVENESS OF INJECTION:	ME	ME	VE	
OPERATOR PROBLEMS:	---	---	CR, SC	CR
ESTIMATED PRODUCTION DUE TO INJ.:				
1977:	89	14	43	28
FROM BEG. INJECTION:	2080	244	180	1013
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	4237	920	51	1100
WATER PRODUCTION:				
CURRENT (1977):	200	47	559	286
CUMULATIVE TO 1/78:	3772	642	2488	2500
CURRENT (1977) INJECTION:	200SW, 2235BW	47SW, 347BW	596 SW	286 SW
CUMULATIVE INJECTION:	3772SW, 27336BW	642SW, 6055BW	2714SW, 924BW	7383 SW

ENHANCED AND SECONDARY RECOVERY DATA:

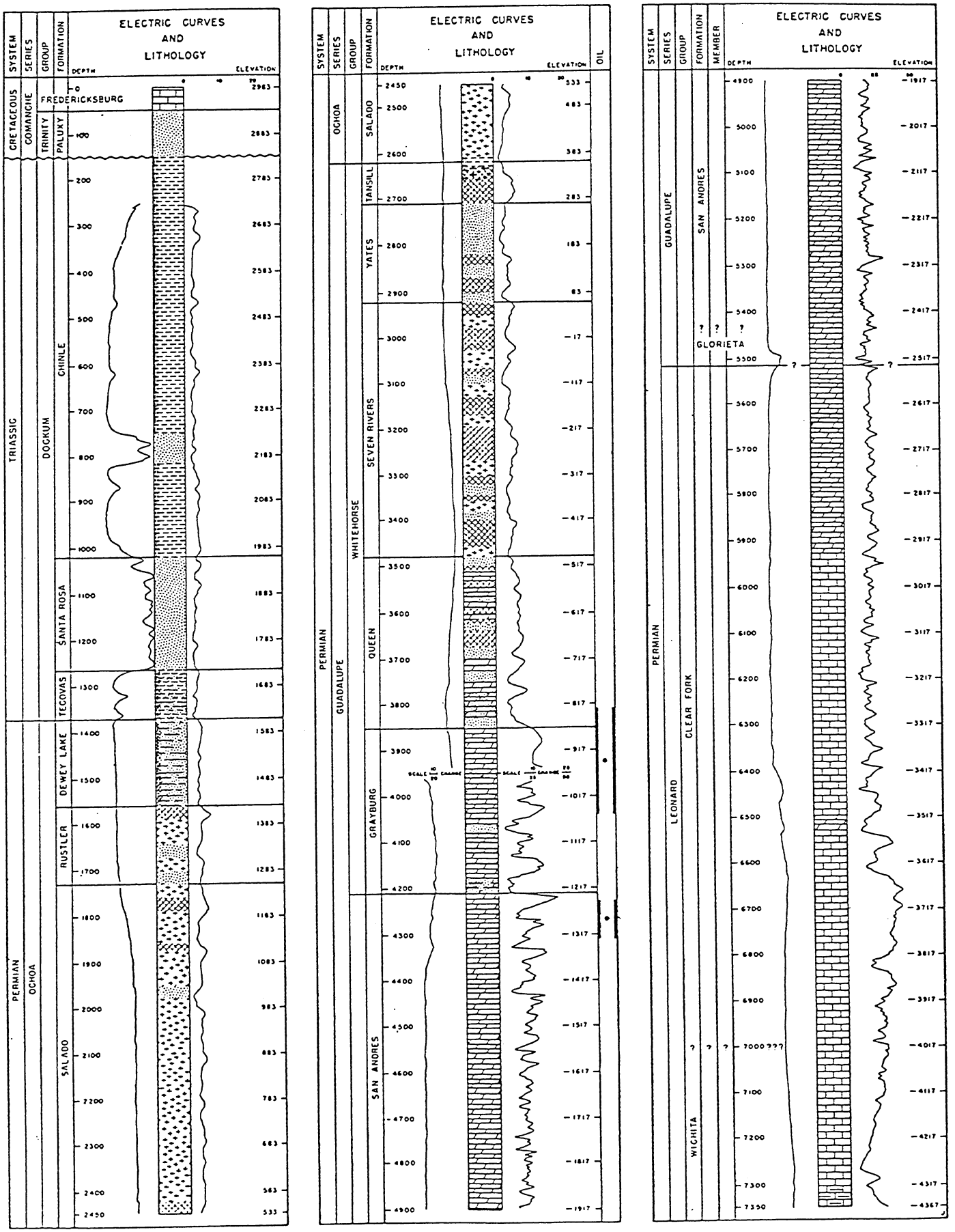
FIELD: Cowden, South RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 22
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	73	116	9	594
1977 PROD. (this project):	66	135	8	523
CUM. PROD. FROM DISC. TO 1/78:	1223	3104	332	20132
PROJECT NO.	F1146	F1147	F1148	F1149
LEASE NO.(s):	19466, 00920, 08643, 09641,	20415	00871	16433
OPERATOR:	Texaco	Thompson, J.	Union Oil	Union Oil
RESERVOIR:	Grayburg	Grayburg-San An.	Grayburg	Grayburg
DEPTH PRODUCING ZONE:	5050	4000	4500	4500
PRODUCTIVE ACREAGE IN RESERVOIR:	19200	14000	20000	15880
ACREAGE IN PROJECT:	328	2385	164	3280
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P
TYPE:	WF/SW, BW	WF/FW	WF/BW	WF/SW, BW
PATTERN:	P	7S	P	P5
YEAR BEGAN:	3-66	2-67	8-66	3-62
YEAR TERMINATED OR STATUS:	ICP	ICP	ITD	ICP
RESERVOIR PRESSURE INITIAL:	1760	1760	1760	1760
BEG. INJECTION:	---	500	325	400
LATEST:	---	750	325	2000
NUMBER OF WELLS TOTAL:	43	102	4	106
PRODUCING WELLS:	26	53	3	63
INJECTION WELLS:	6	42	0	26
MAXIMUM:	---	---	0	9 SW
LATEST:	---	---	0	37 BW
SHUT-IN/ABANDONED WELLS:	17	7	0	17
SURFACE INJECTION PRESSURE:	925	750	---	950
EFFECTIVENESS OF INJECTION:	VE	ME	NE	ME
OPERATOR PROBLEMS:	---	SC,PA,CR	SC,ED	CH,SC,PA
ESTIMATED PRODUCTION DUE TO INJ.:				
1977:		135	2	346
FROM BEG. INJECTION:	---	900	19	7907
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	---	2680	71	10971
WATER PRODUCTION:				
CURRENT (1977):	78	192	6	1067
CUMULATIVE TO 1/78:	4540	1522	47	14103
CURRENT (1977) INJECTION:	78SW, 855BW	3222	0	1067SW, 4249BW
CUMULATIVE INJECTION:	4852SW, 3291BW	23895	1789	13417SW, 55360BW

18 ADDIS-JOHNSON-FOSTER-SOUTH COWDEN FIELD, Ector County, Texas

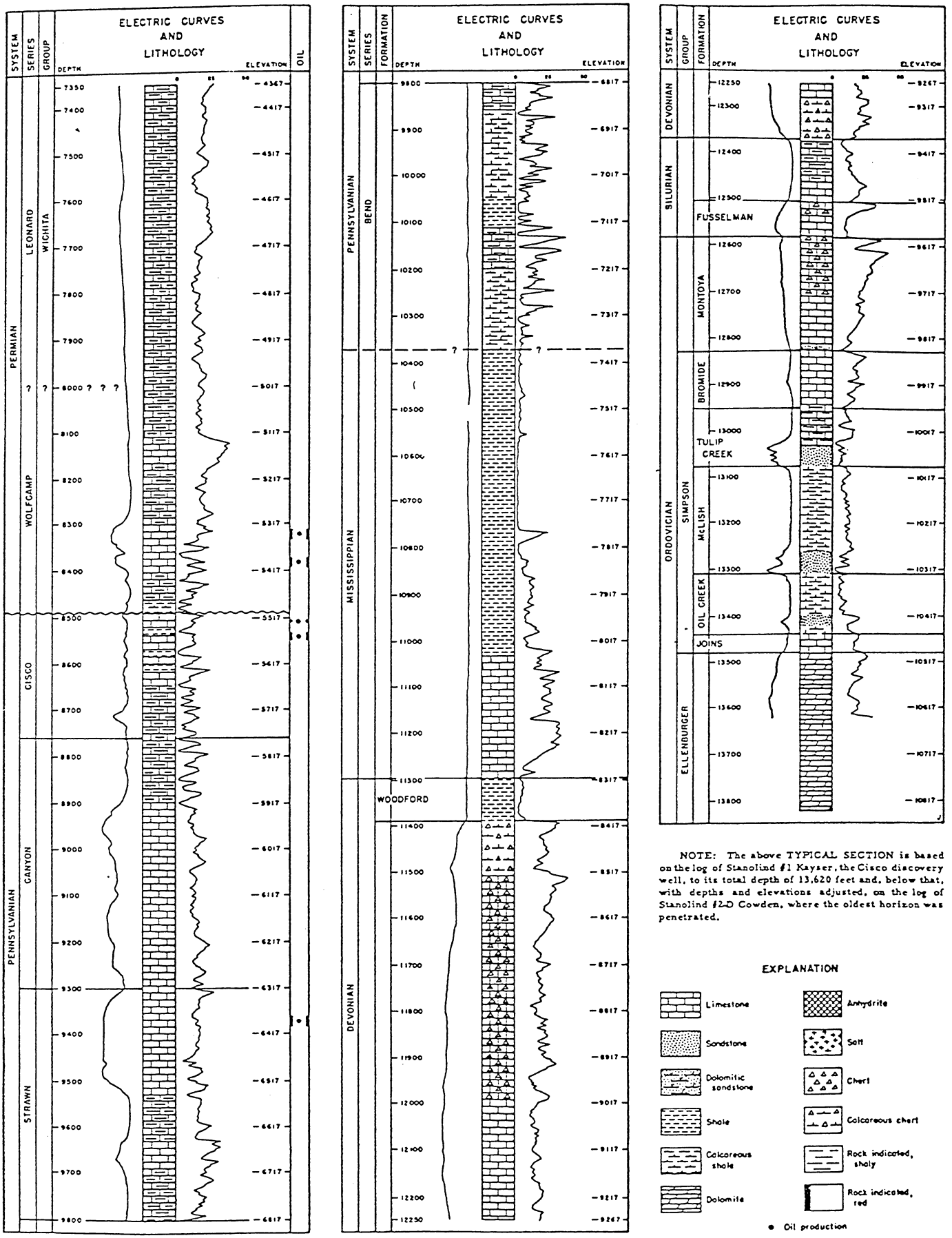
TEXAS Bureau of Economic Geology, Publication No. 5716. Source: IZc.

TYPICAL SECTION OF ROCKS PENETRATED



TEXAS Bureau of Economic Geology Publication No. 5716. Source 12c.

TYPICAL SECTION OF ROCKS PENETRATED



NOTE: The above TYPICAL SECTION is based on the log of Stanolind #1 Kayser, the Cisco discovery well, to its total depth of 13,620 feet and, below that, with depths and elevations adjusted, on the log of Stanolind #2-D Cowden, where the oldest horizon was penetrated.

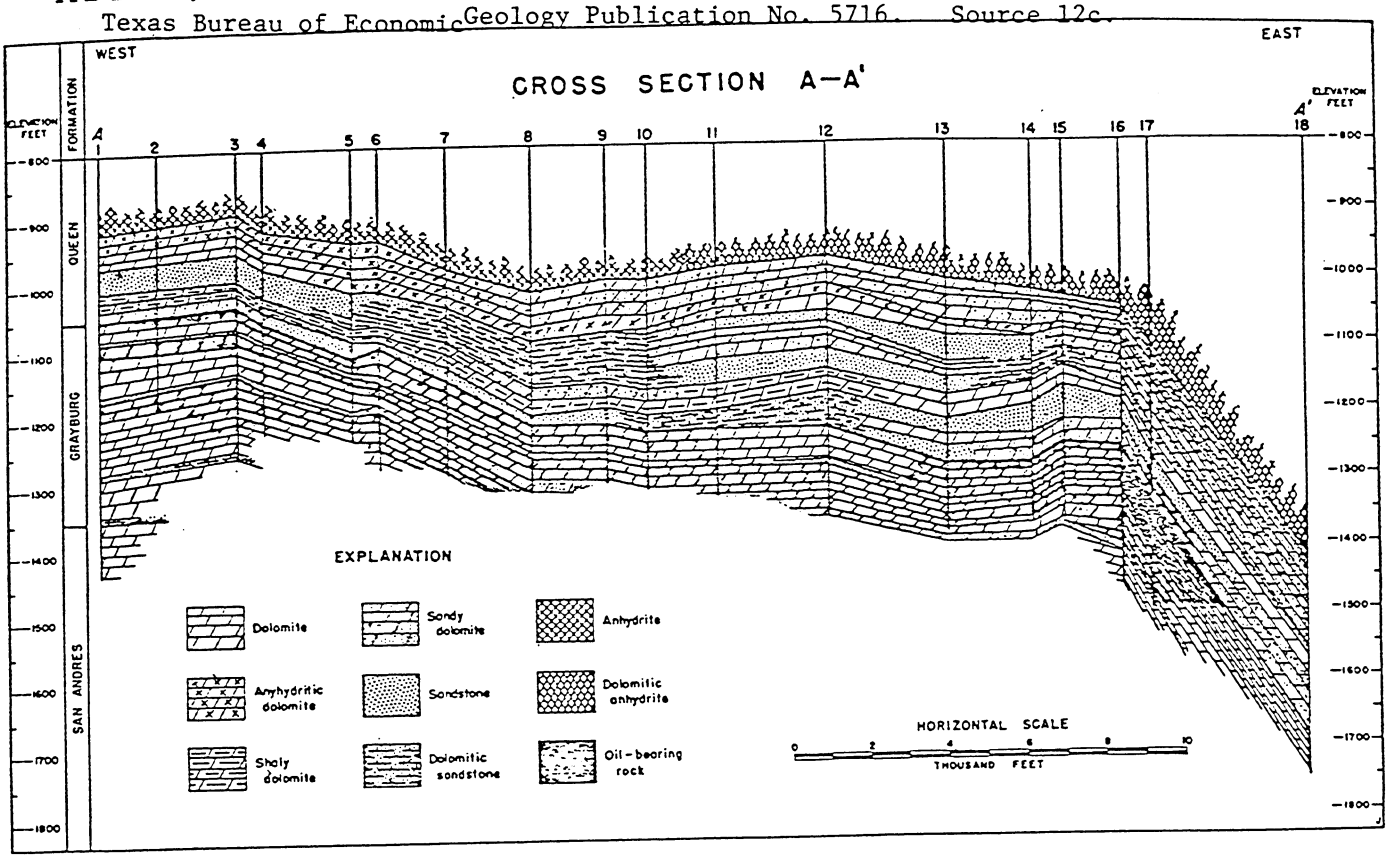
EXPLANATION

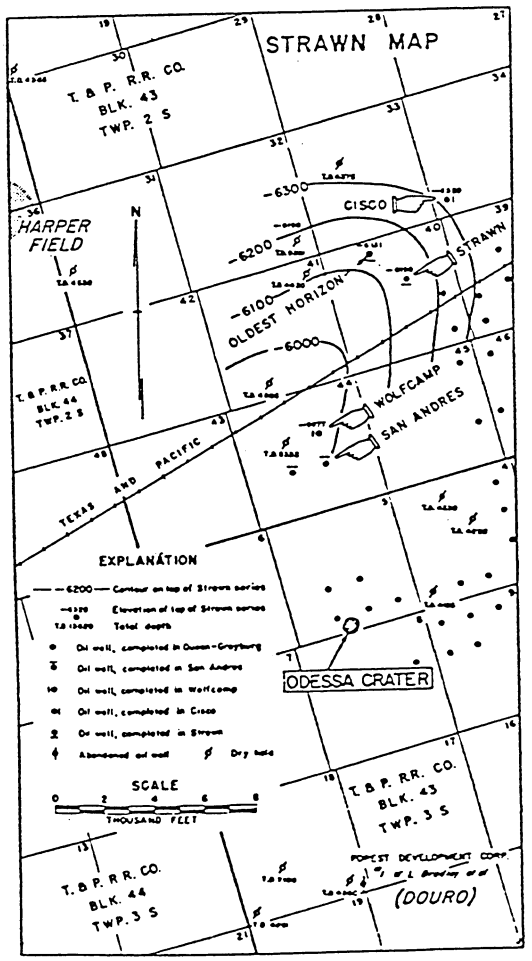
- Limestone
- Sandstone
- Dolomitic sandstone
- Shale
- Calcareous shale
- Dolomite
- Anhydrite
- Salt
- Chert
- Calcareous chert
- Rock indicated, shaly
- Rock indicated, red

● Oil production

ADDIS-JOHNSON-FOSTER-SOUTH COWDEN FIELD

Texas Bureau of Economic Geology Publication No. 5716. Source 12c.





THICKNESSES OF RESERVOIR ROCKS

	Feet		
	Min.	Max.	Avg.
Queen-Grayburg:			
From top to bottom	10	260	95
Net productive	10	200	70
San Andres: (2 wells)			
From top to bottom	65	65	65
Net productive	40	40	40
Wolfcamp: (1 well)			
From top to bottom	110	110	110
Net productive	40	40	40
Cisco: (1 well)			
From top to bottom	50	50	50
Net productive	20	20	20
Strawn: (2 wells)			
From top to bottom	20	20	20
Net productive	20	20	20

ELEVATION AND RELIEF OF PRODUCTIVE ZONES

	Elevation of oil, feet		Known relief
	Top	Bottom	
Queen-Grayburg*	-900	-1,170 to 1,850±	*
San Andres (2 wells)	-1,199	-1,264	65
Wolfcamp (1 well)	-5,167	-5,277	110
Cisco (1 well)	-5,517	-5,567	50
Strawn (2 wells)	-6,190	-6,216	26

*Queen-Grayburg: Elevation of top of gas, -794 ft.; elevation of bottom of gas, -900 ft.; relief of gas column, 106 ft. The water table is not horizontal. Water has been found at various elevations up to as high as -1,170 feet and oil has been found as low as about -1,850 feet, but it is unlikely that there is a continuous oil-water contact through such range of elevation. The base of the oil corresponds roughly to structure.

CHARACTER OF OIL

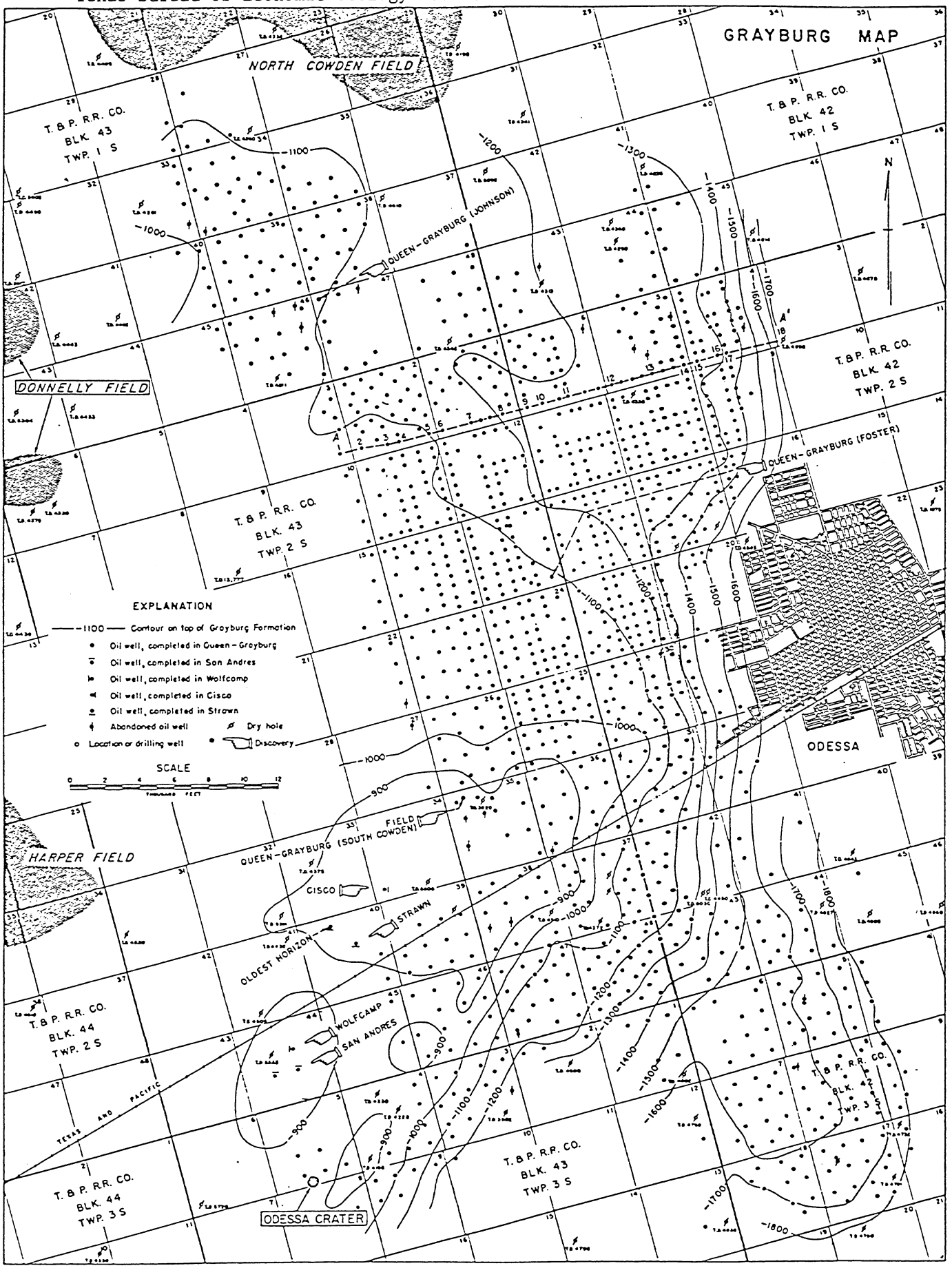
	Queen-Grayburg*	San Andres	Wolfcamp	Cisco	Strawn
Gravity, A.P.I. @ 60° F.	33° - 36.4°	32.8°	34.4°	33°	39° - 41°

*Queen-Grayburg: Color, greenish black; sulphur, 1.07 - 1.38%; viscosity, Saybolt universal @ 100° F., 41 - 46 sec.; base, intermediate. For analyses see:

Railroad Commission of Texas	Foster	Johnson	South Cowden
Analyses of Texas Crude Oils (1940), pp.	32 and 63	33 and 64	
U. S. Bureau of Mines Lab. ref. No.	40009	41240	34004
Tabulated Analyses of Texas Crude Oils T. P. 607 (1939) Item			1, Group 2
Analyses of Crude Oils from Some Fields of Texas. R. I. 3699 (1943) Item	34	35	
Analyses of Crude Oils from Some West Texas Fields. R. I. 3744 (1944) Page	10	11	
Analyses of Crude Oils from 283 Important Oil Fields of the United States R. I. 4289 (1948) Item	204		198

20 ADDIS-JOHNSON-FOSTER-SOUTH COWDEN FIELD, Ector County, Texas

Texas Bureau of Economic Geology Publication No. 5716. Source 12c.



Crawar
Devonian, North
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Crane
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Crawar
1	RESERVOIR	Devonian, North
1	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
1	RESERVOIR LITHOLOGY	Dolomite
	TRAPPING MECHANISM	
3,1	DISCOVERY YEAR	6-20-58, 1958
1,16a	PROVED ACREAGE	480,160
1	REGULAR WELL SPACING (acres/well)	40
3,1	RESERVOIR DEPTH	6450
	RESERVOIR THICKNESS	
1	NET PAY	30
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
1	FRACTION	.20
	PERMEABILITY	
	RANGE	
1	AVERAGE	19md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	Other reservoirs include Dev. (99.1 mbbls) and Ellenburger (927.6 mbbls).
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	31
1	PRODUCTION 1976 oil (cum)	3796
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	4,242.3
3	PRODUCTION 1-1-79 to 1-1-80	132.3 mbbls oil; 1,298 mmcf gas
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Crawar
1	RESERVOIR:	Devonian, North
1, 16a	PROD. ACRES:	480, 160
1	AVG. THICKNESS (FT.):	30
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.36
	FORMATION VOLUME FACTOR LATEST (FVF):	
1	WATER SATURATION (S_W):	.45
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
16a	PRIMARY GAS CAP?:	yes
17	TEMPERATURE (°F):	126
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	25,947
	RESERVOIR PRESSURE INITIAL (psi):	
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	10,196.3 (76)
3, 1	STOCK TANK OIL GRAVITY (°API):	35.4
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP):(psia)	1583
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

1 Status: oil producing
16c Status: gas

Crossett
Devonian
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
1,2	COUNTY	Crane
1, 2	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1,2	FIELD	Crossett
1,2	RESERVOIR	Devonian
1,5	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	347
9c, 12c	RESERVOIR LITHOLOGY	"Microscopic tripolitic chert grains found by limestone element"; cores show considerable fracturing; chert sandstone limestone.
9c, 12c,1	TRAPPING MECHANISM	Stratigraphic trap, porosity controlled. Erosional truncation of sloping reservoir rocks & sealing by relatively impervious overlying rocks; stratigraphic- unconformity.
2,3,1	DISCOVERY YEAR	5-1944, 1944
1,2,16c	PROVED ACREAGE	40, 1120, 1120
1,9c	REGULAR WELL SPACING (acres/well)	40 initial; unitized in 1964
2,3,1	RESERVOIR DEPTH	5400, 5440, 5440
	RESERVOIR THICKNESS	
2,1,16b	NET PAY	60, 60, 88
	GROSS	
9c	NET/GROSS RATIO	.70 to 1.00 (70% to 100%)
	POROSITY	
12c, 1	TYPE	F, intergranular (pinpoint)
2,9c,1	FRACTION	.22, .220, .20
	PERMEABILITY	
	RANGE	
2,9c,1	AVERAGE	5, 5, 60 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	Other prod. from Clear Fork 3200 (1,634.0 mbbls), 2200' (109.8 mbbls), 5300' (72.7 mbbls).
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
9c,1,2	TOTAL NUMBER OF WELLS	28; 18P-2I; 35 (22P-10I-3A)
1	PRODUCTION 1976 oil (cum)	9725
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	12,183.7
3	PRODUCTION 1-1-79 to 1-1-80	815.9 mbbls oil; 159.8 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
9c, 12c	STRUCTURE CONTOUR?	Yes
12c	LOGS?	Yes
12c	STRUCTURE SECTION?	Yes
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
1,2	FIELD:	Crossett
1,2,16c	RESERVOIR:	Devonian
1,2,16b	PROD. ACRES:	40, 1120, 1120
16c, 16b,1	AVG. THICKNESS (FT.):	60, 60, 88
16b	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.98, 1.984, 1.77
9c, 16c, 1	FORMATION VOLUME FACTOR LATEST (FVF):	1.74
16	WATER SATURATION (S_W):	.35, .35, .40
1, 9c	OIL SATURATION (S_O):	.57
16b, 12c	PRIMARY DRIVE MECHANISM:	depletion, solution gas
16c, 9c	PRIMARY GAS CAP?:	yes , no
16c,9c,16b	TEMPERATURE (°F):	104, 106
1,2,16b	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2328, 2328
	RESERVOIR PRESSURE INITIAL (psi):	2400, 2400, 1600
1	RESERVOIR PRESSURE LATEST (psi):	
16b	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	1900
1,3,2,9c	GAS OIL RATIO LATEST (GOR) (cf/bbl):	7700-1
9c, 16b	STOCK TANK OIL GRAVITY (°API):	43.8,43.8, 44, 44
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	0.37cp
2	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1281
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	51,000 mbbls
	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	6,560 mbbls

OTHER INFORMATION:

References:

9c "Waterflood not feasible because of the reservoirs extremely low permeability to water", CO_2 flood began in 1970.

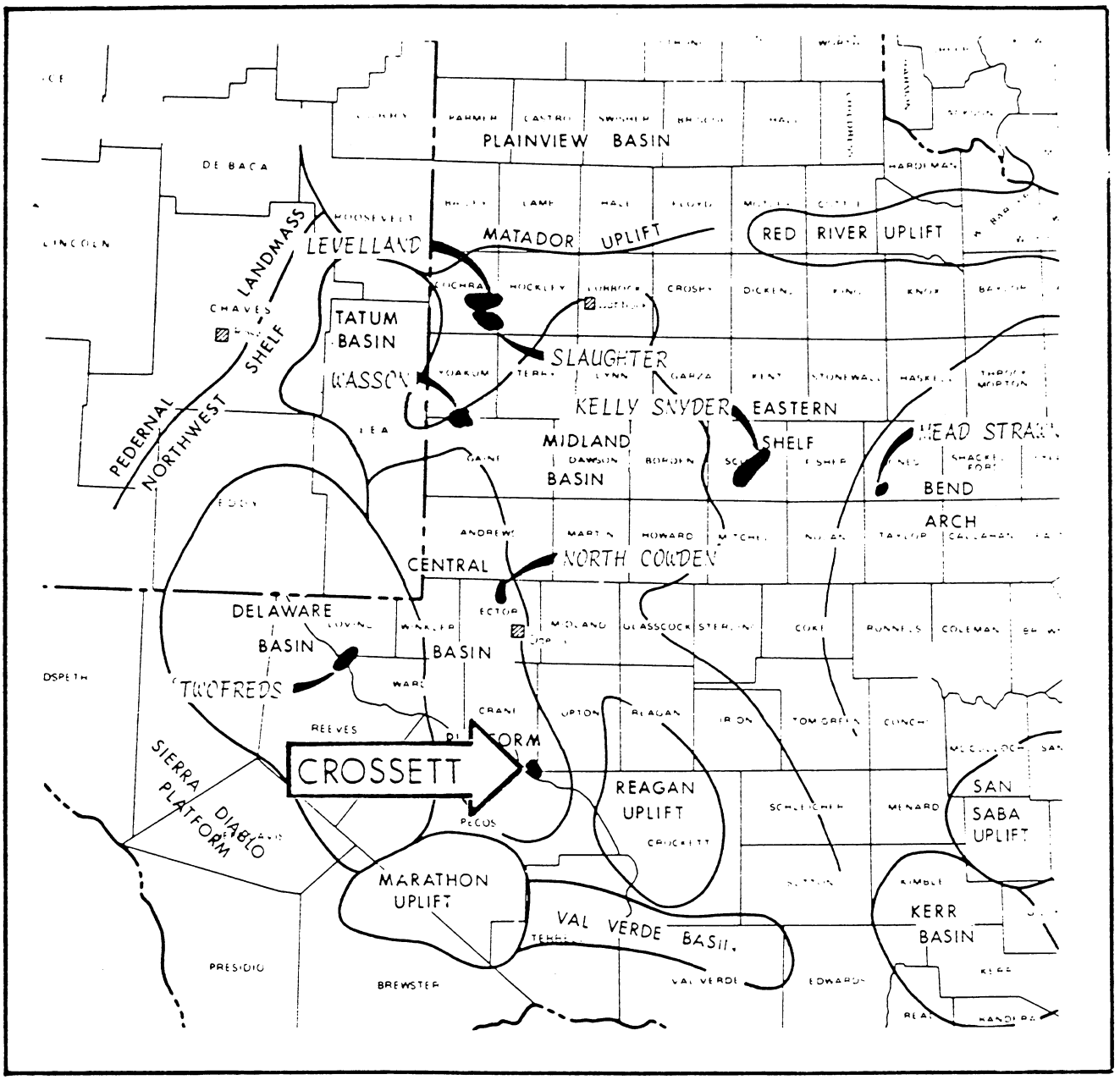
1 Primary recoverable: 50 bbl/acre-ft

12c Reference: Buthman, B. D., 1954, Crossett Field in Occurrence of Oil and Gas in West Texas: Univ. of Texas, Bureau of Economic Geology, Pub. No. 5716, August,1957.

ENHANCED AND SECONDARY RECOVERY DATA:

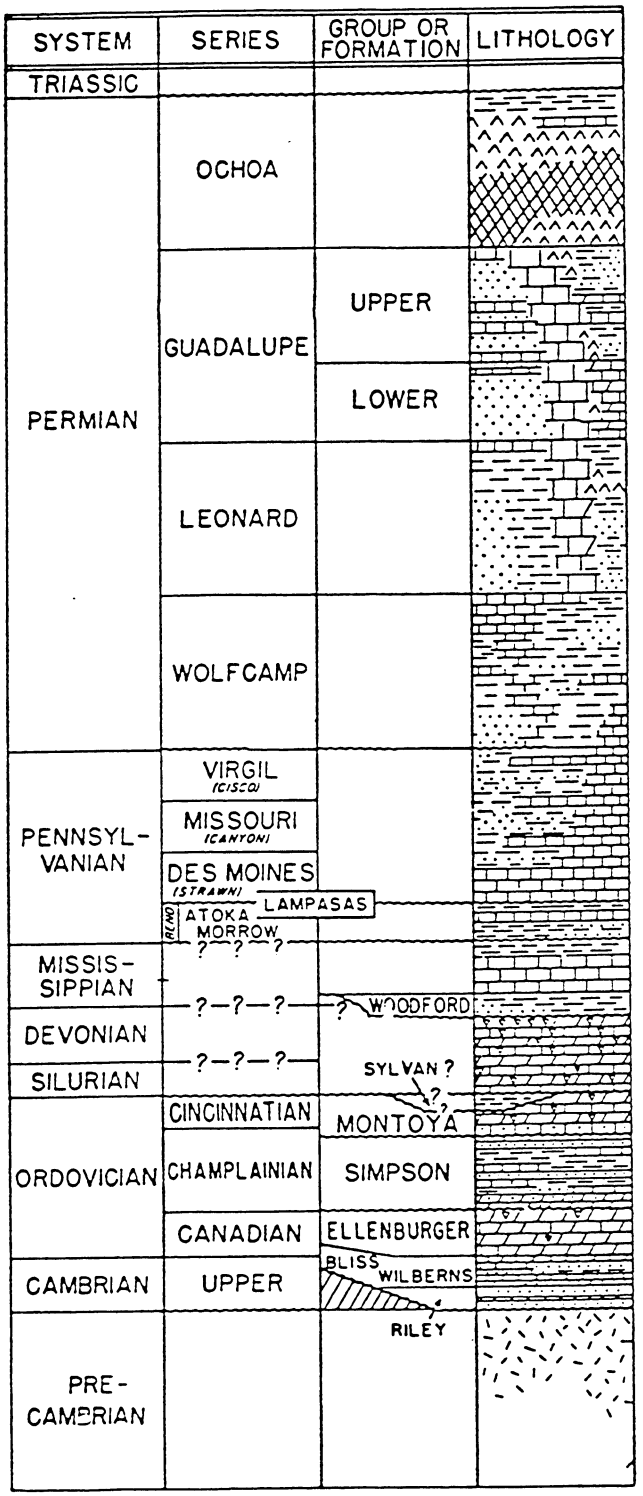
FIELD: Crossett RESERVOIR: Devonian TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	712				
1977 PROD. (this project):	789				
CUM. PROD. FROM DISC. TO 1/78:	10486				
PROJECT NO.	F1156				
LEASE NO.(s):	18696				
OPERATOR:	Shell Oil				
RESERVOIR:	Devonian				Devonian
DEPTH PRODUCING ZONE:	5400				5440
PRODUCTIVE ACREAGE IN RESERVOIR:	1120				40
ACREAGE IN PROJECT:	1120				1120
PORTION OR FIELD WIDE:	FW				
TYPE:	MD/gas;NRG/PM gas				PM
PATTERN:	I9				
YEAR BEGAN:	7-64 gas; 4-72 NRG				1964
YEAR TERMINATED OR STATUS:	Gas-ICP, NRG-ICP				
RESERVOIR PRESSURE INITIAL:	36515				2400
BEG. INJECTION:	1860				
LATEST:	1500				
NUMBER OF WELLS TOTAL:	35				
PRODUCING WELLS:	22				18
INJECTION WELLS:	10				
MAXIMUM:	3 gas				
LATEST:	7 NRG				
SHUT-IN/ABANDONED WELLS:	3				
SURFACE INJECTION PRESSURE:	2500 gas, 2408 NRG				
EFFECTIVENESS OF INJECTION:	---				
OPERATOR PROBLEMS:	---				
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	708				
FROM BEG. INJECTION:	1825				
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	20100				
WATER PRODUCTION:					
CURRENT (1977):	59				
CUMULATIVE TO 1/78:	530				
CURRENT (1977) INJECTION:	4304 gas, 6100 NRG				
CUMULATIVE INJECTION:	19921 gas, 3424 NRG				

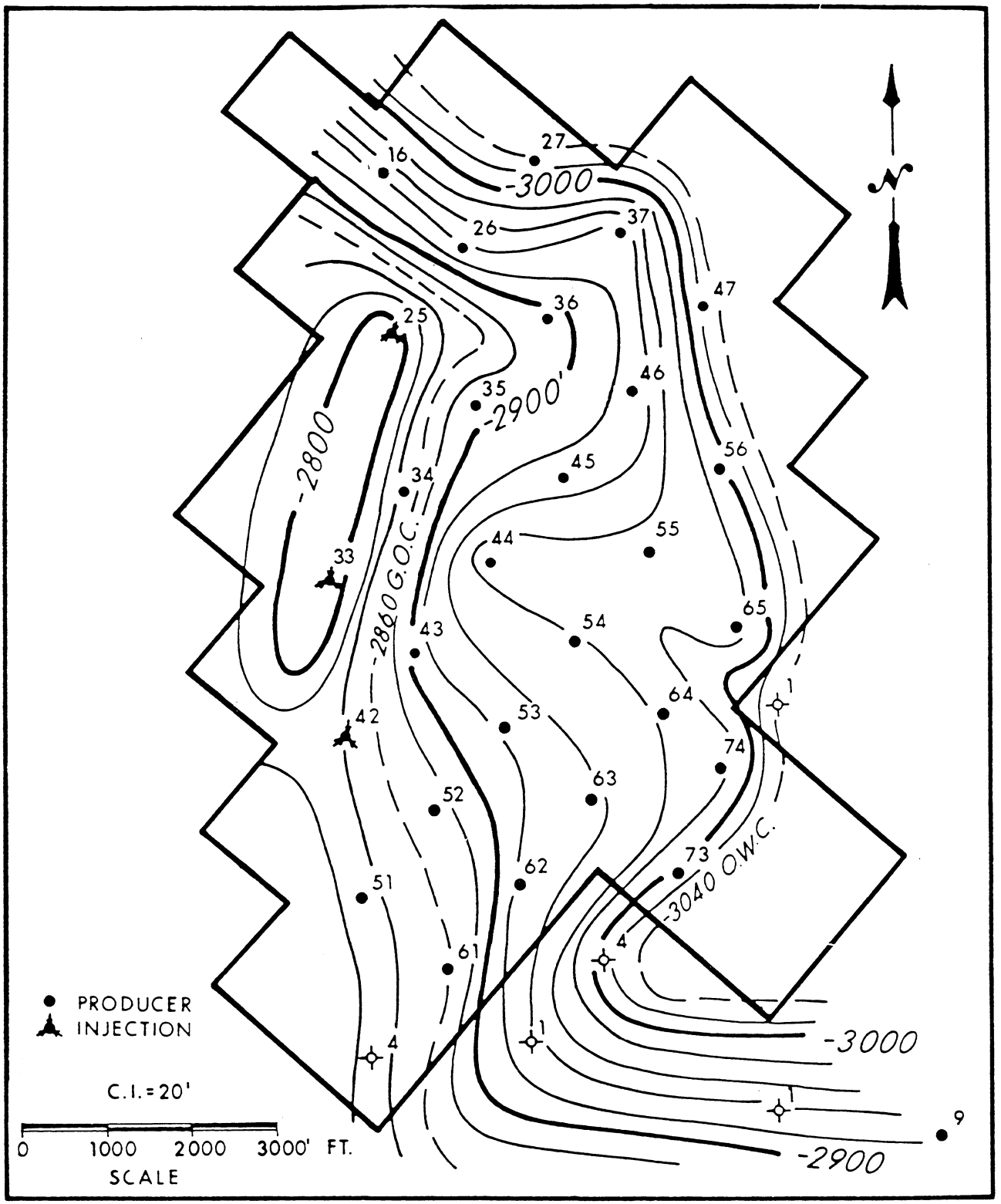


GRUY FEDERAL, INC.

INDEX MAP
CO_2 PROJECTS IN WEST TEXAS

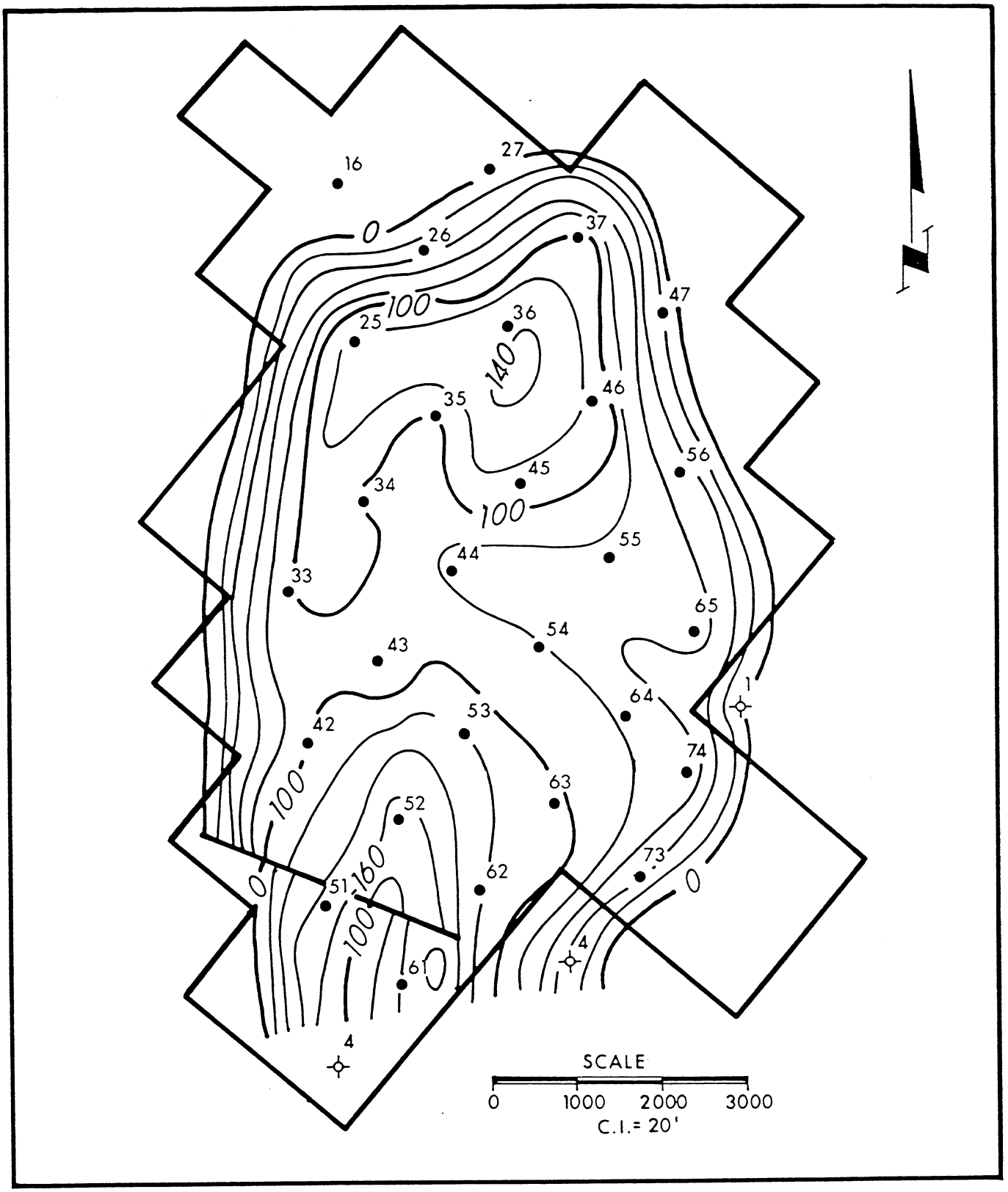


GENERALIZED STRATIGRAPHIC AND LITHOLOGIC COLUMN FOR THE PERMIAN BASIN



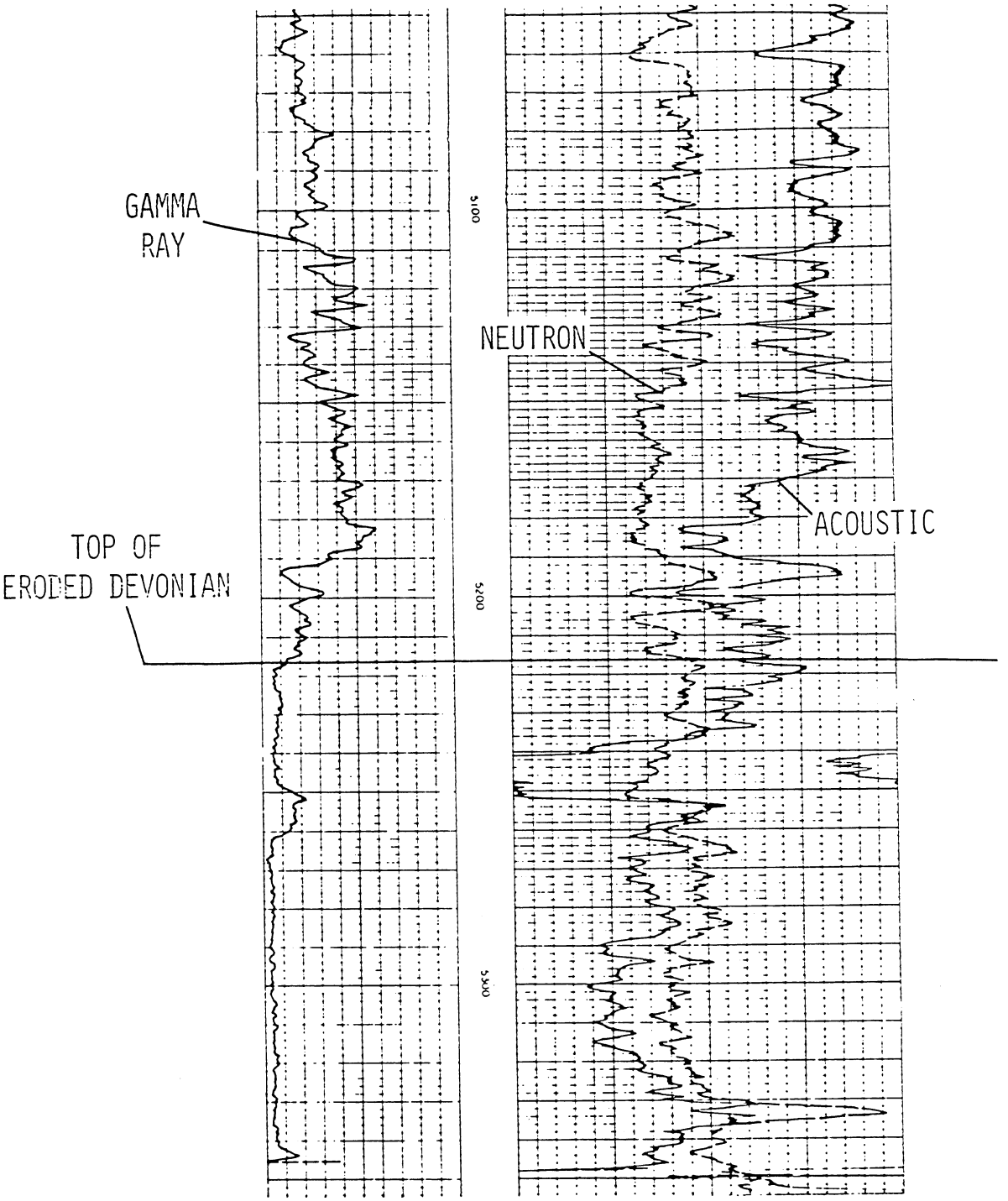
STRUCTURE MAP ON TOP OF DEVONIAN CROSSET FIELD,
CRANE AND UPTON COUNTIES, TEXAS

FROM: Pontious, S.B., and Tham, M.J., 1978, North Cross (Devonian) Unit CO_2 Flood -- Review of Flood Performance and Numerical Simulation Model: Journal of Petroleum Technology, December, p. 1706 - 1714. Source 9c

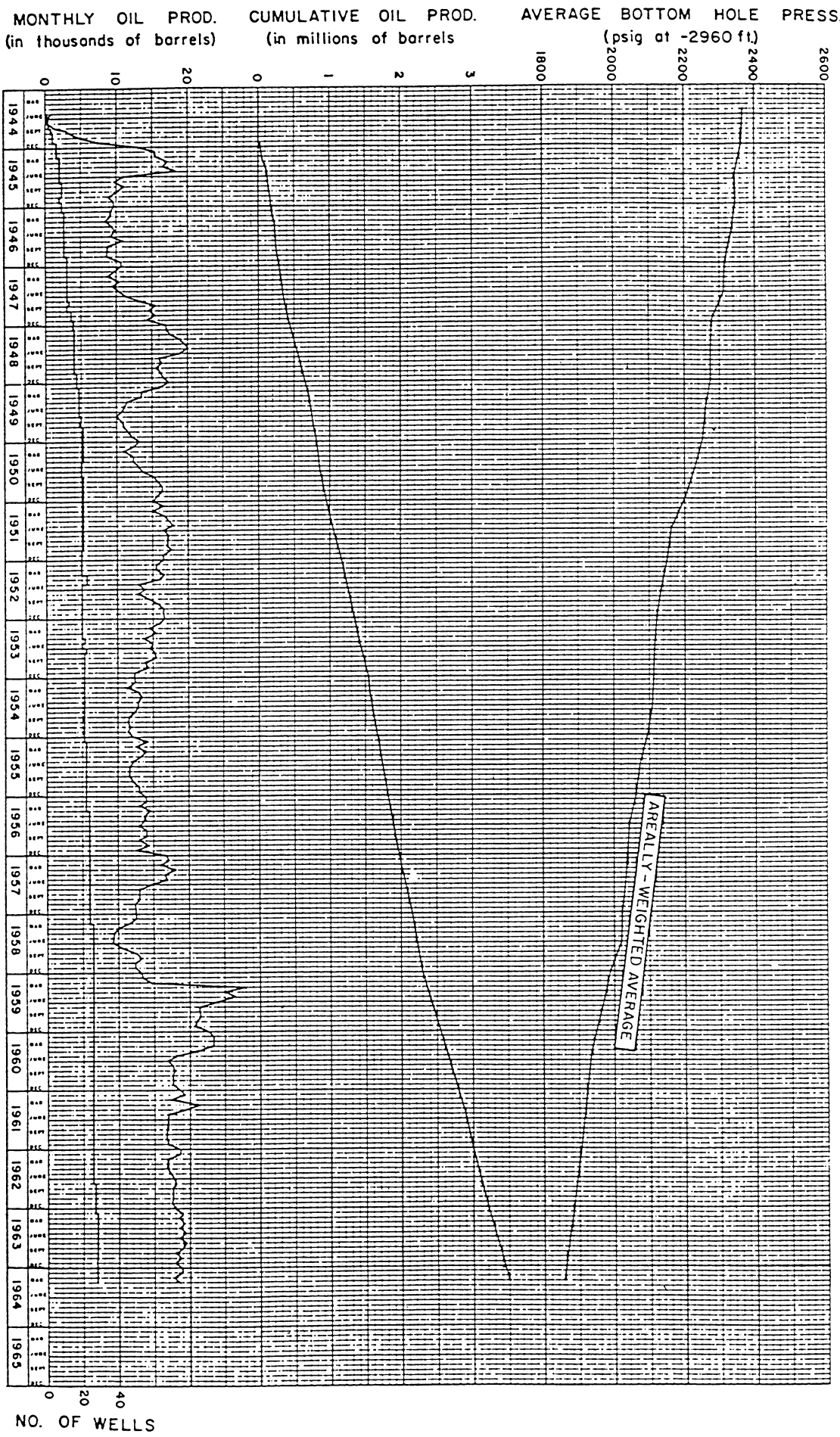


GROSS PAY ISOPACH MAP DEVONIAN
CROSSETT FIELD (NORTH CROSS DEVONIAN UNIT)
CRANE AND UPTON CO.'S TEXAS

SHELL OIL COMPANY
NORTH CROSS DEVONIAN UNIT #52

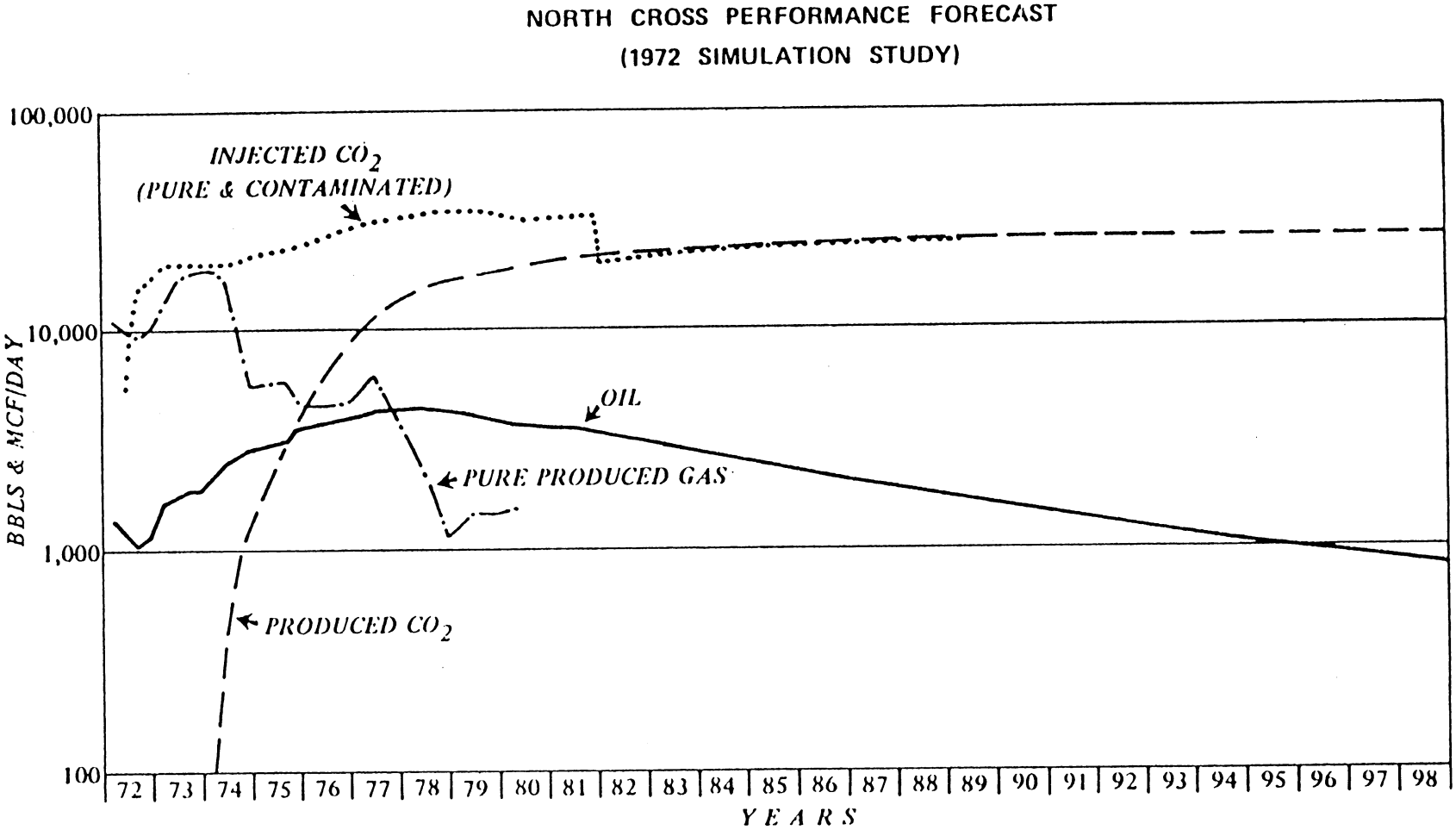


SAMPLE LOG
CROSSETT FIELD (NORTH CROSS DEVONIAN UNIT)
CRANE AND UPTON CO.'S TEXAS



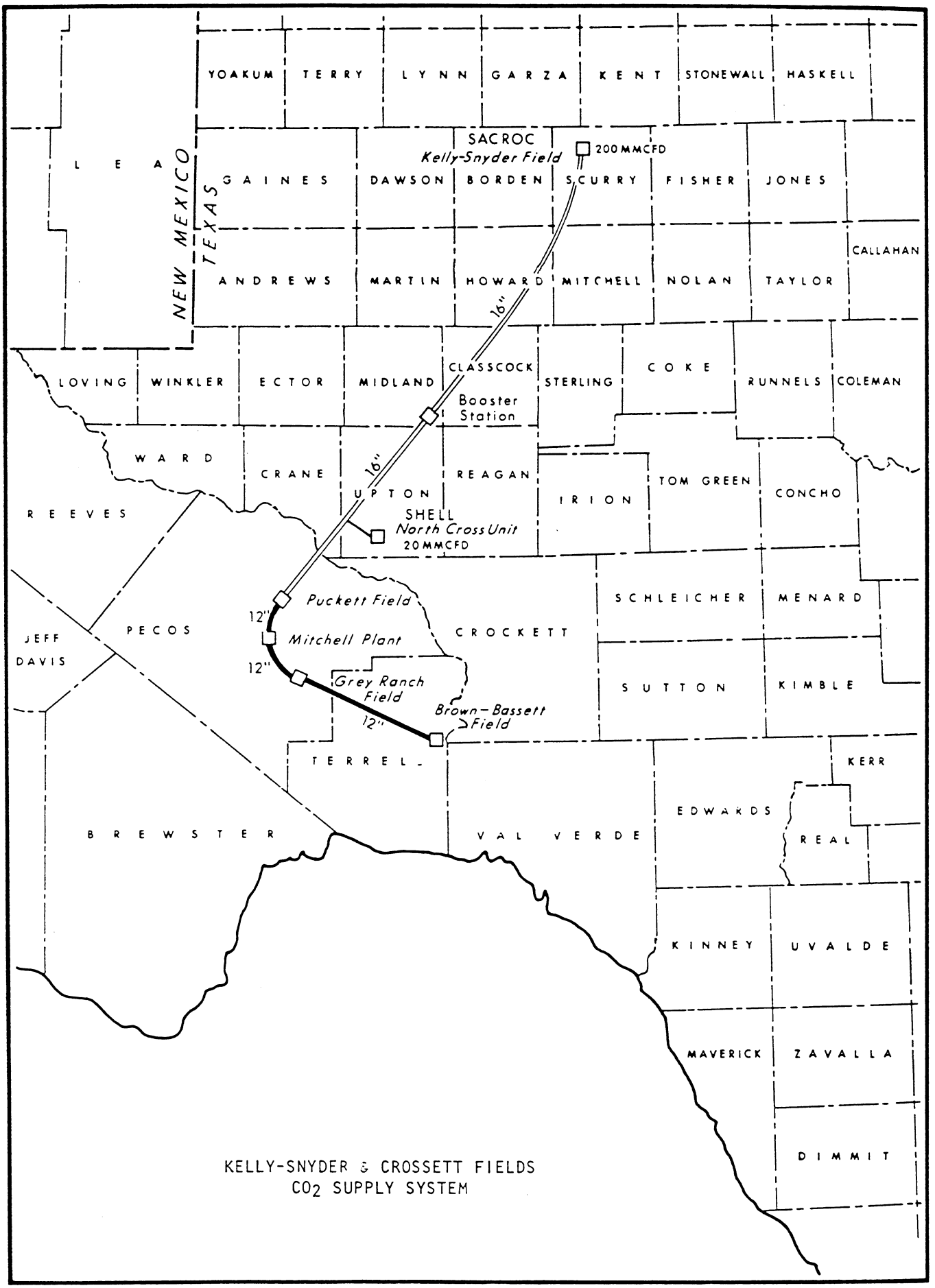
CROSSETT (DEVONIAN) FIELD
RESERVOIR PERFORMANCE CURVES

CROSSETT (DEVONIAN) FIELD
OIL, GAS & WATER PRODUCTION
NUMBER OF PRODUCING WELLS VS. TIME



NORTH CROSS PERFORMANCE FORECAST
(1972 SIMULATION STUDY)

FROM PONTIUS, S. B. AND THAM, M. J.; NORTH CROSS (DEVONIAN) UNIT CO_2 FLOOD PERFORMANCE AND NUMERICAL SIMULATION MODEL, FIG. 5, SPE 6390, J. PET. TECH., DEC. 1978, P. 1708; REPRODUCED BY PERMISSION OF SOC. PET. ENG. OF AIME.



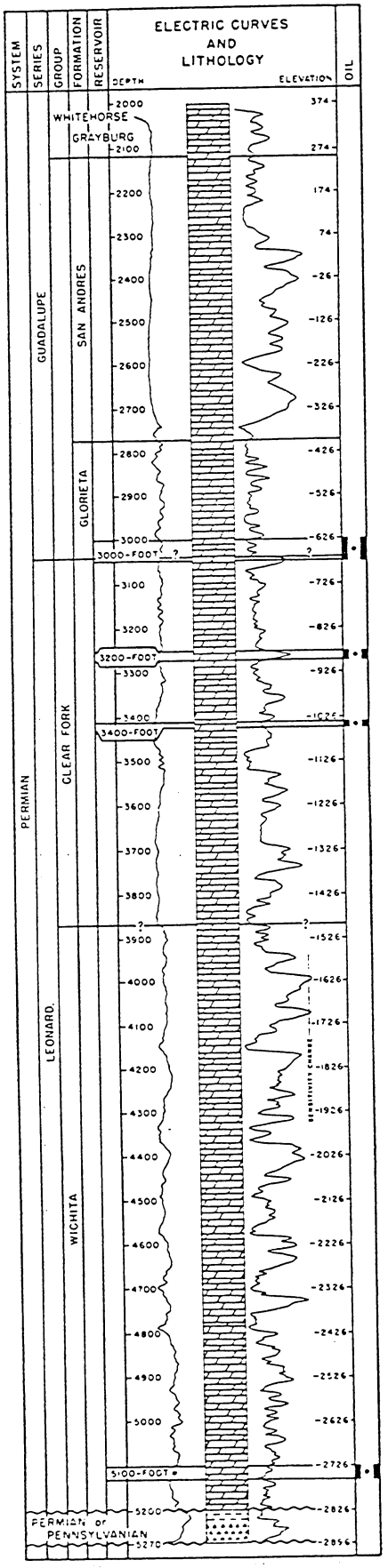
KELLY-SNYDER & CROSSETT FIELDS
CO_2 SUPPLY SYSTEM

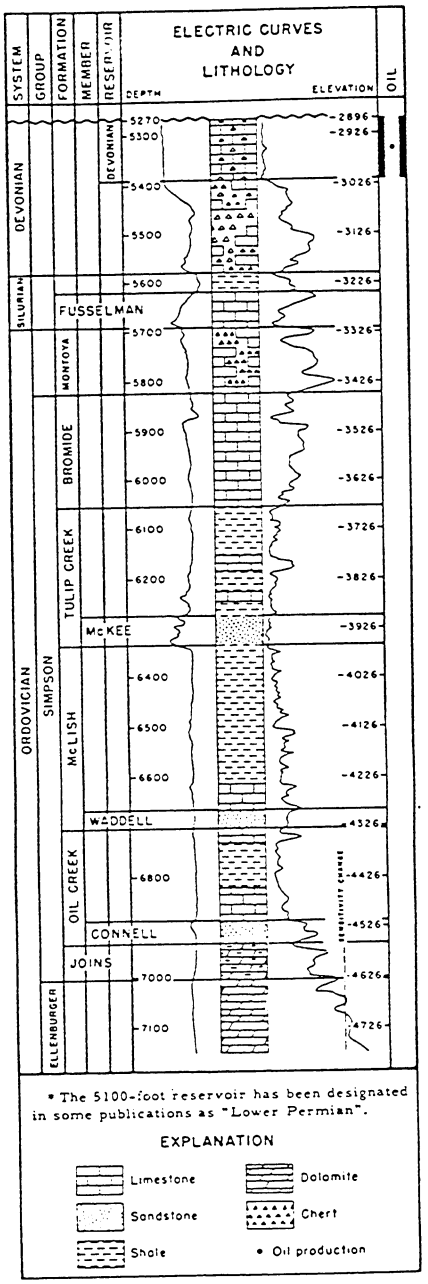
Texas Bureau of Economic Geology Publication No. 5716. Source 12-c.

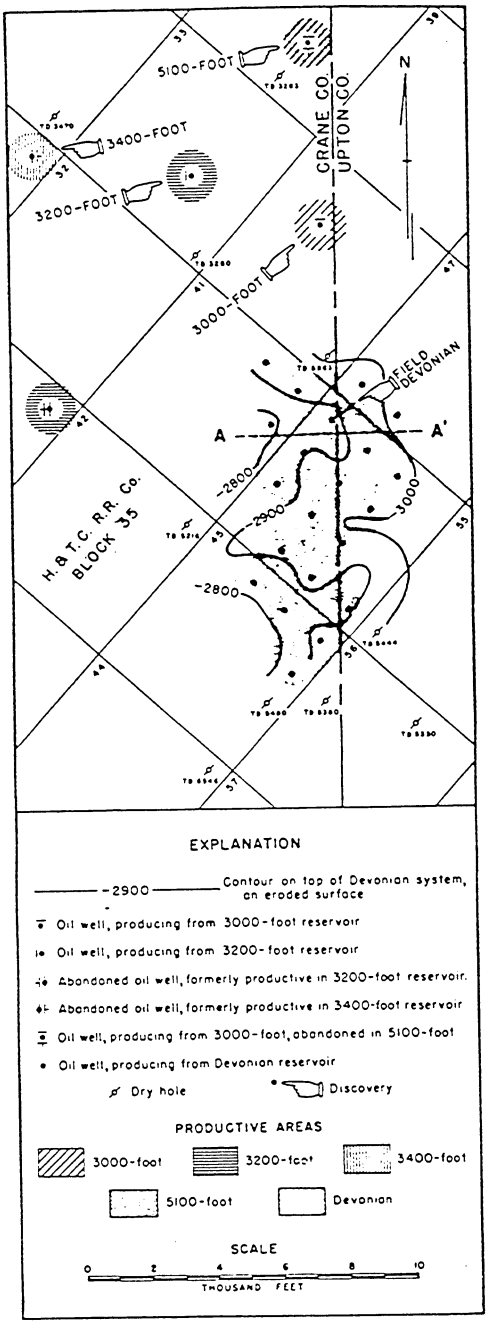
80

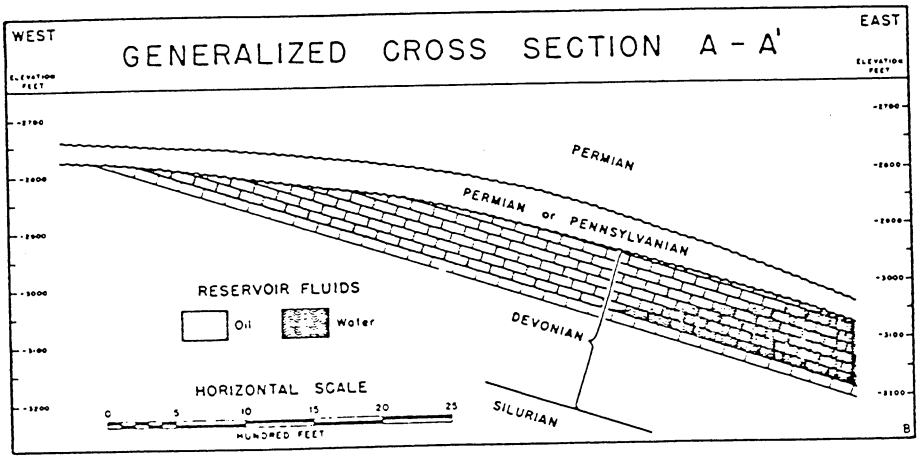
CROSSETT FIELD, Crane and Upton Counties, Texas

TYPICAL SECTION OF ROCKS PENETRATED









Crossett, South
Devonian
Central Basin Platform

DATA SOURCE CODE		
2	STATE	Texas
2	COUNTY	Crockett
2	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
2	FIELD	Crockett, South
2	RESERVOIR	Devonian
5	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
5a	RESERVOIR LITHOLOGY	Chalky, extremely fine crystalline siliceous limestone (Detrital is alluvial channel fill in Devonian).
5a, 16a	TRAPPING MECHANISM	Dev. erosional truncation of the Devonian to the southwest and a down-thrown fault to the southeast; stratigraphic trap caused by porosity and permeability pinchout along a monoclinal trend.
2, 5a	DISCOVERY YEAR	9-1956
2,5a,16a	PROVED ACREAGE	3450-6500, 5420, 1200
5a	REGULAR WELL SPACING (acres/well)	40
2,5a	RESERVOIR DEPTH	5200-5300, 5218-5340
	RESERVOIR THICKNESS	
2,16a	NET PAY	37 avg., 10
5a	GROSS	100
	NET/GROSS RATIO	
	POROSITY	
5a	TYPE	VG, IC
2, 16a	FRACTION	.175 avg., .10-.20
	PERMEABILITY	
	RANGE	
2,16a	AVERAGE	7 md, 50 md
	HORIZONTAL	
	VERTICAL	
3	OTHER INFORMATION	Prod. reservoirs include Detrital (3,067.5 mbbls cum, 1979--481.3 mbbls and 8,495.4 mmcf).
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
5a,2	TOTAL NUMBER OF WELLS	137; 152 (92P-13I-47A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	13,572.1
	PRODUCTION 1-1-79 to 1-1-80	no information
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
5a	STRUCTURE CONTOUR?	Yes
5a	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

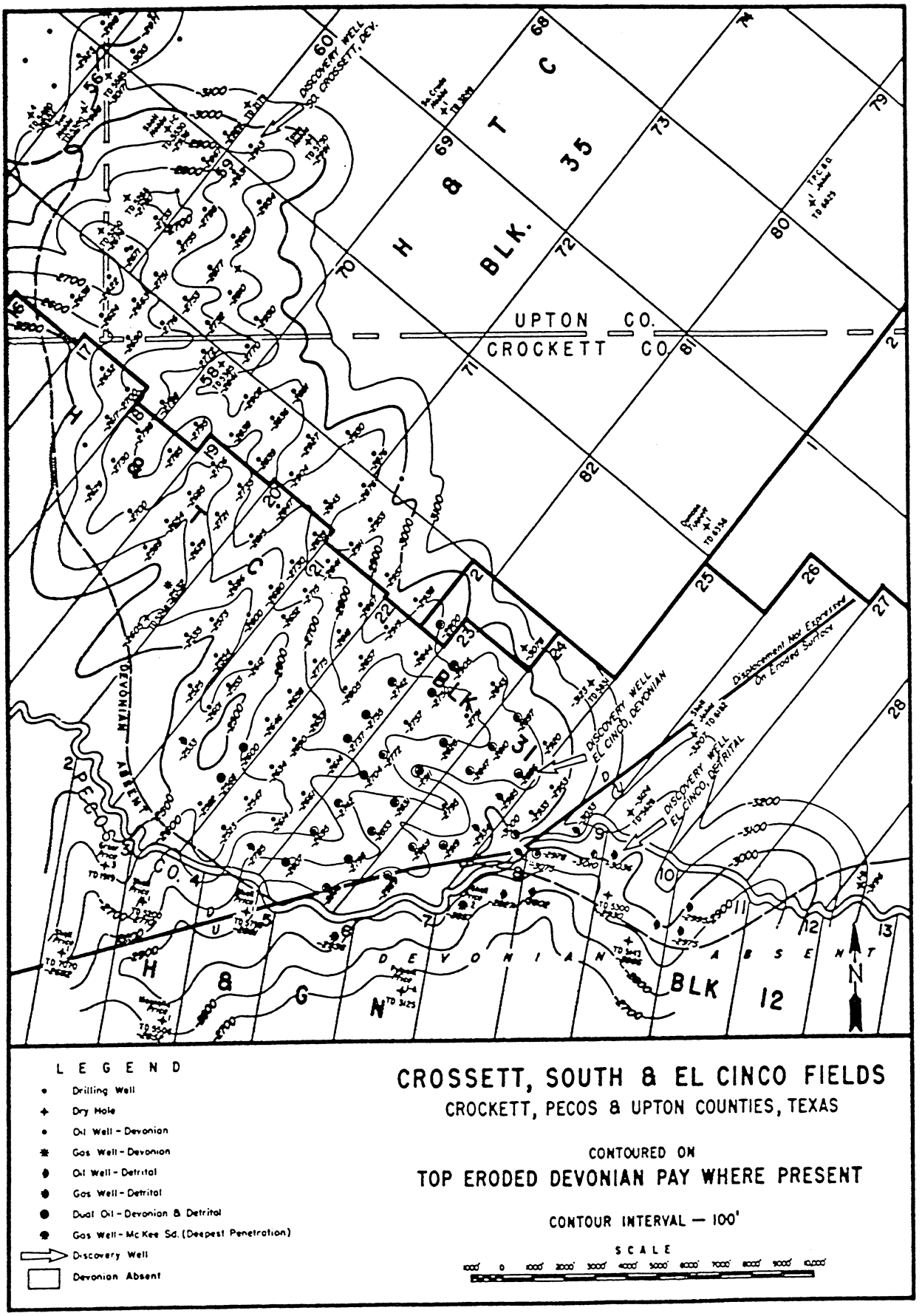
DATA SOURCE CODE		
2	FIELD:	Crossett, South
	RESERVOIR:	Devonian
5a,2,16a	PROD. ACRES:	5420, 3450 -6500, 1200
2, 16a	AVG. THICKNESS (FT.):	37, 10
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
16a	WATER SATURATION (S_W):	.25
	OIL SATURATION (S_O):	
16a	PRIMARY DRIVE MECHANISM:	solution gas
	PRIMARY GAS CAP?:	
16a	TEMPERATURE (°F):	105
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2,5a,16a	RESERVOIR PRESSURE INITIAL (psi):	2500 avg., 2480
2, 16a	RESERVOIR PRESSURE LATEST (psi):	900, 2000
5a	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	750/1 and 800/1
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 5a	STOCK TANK OIL GRAVITY (°API):	43, 42
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 3 SRPs:	98,530 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 3 SRPs:	17,541 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

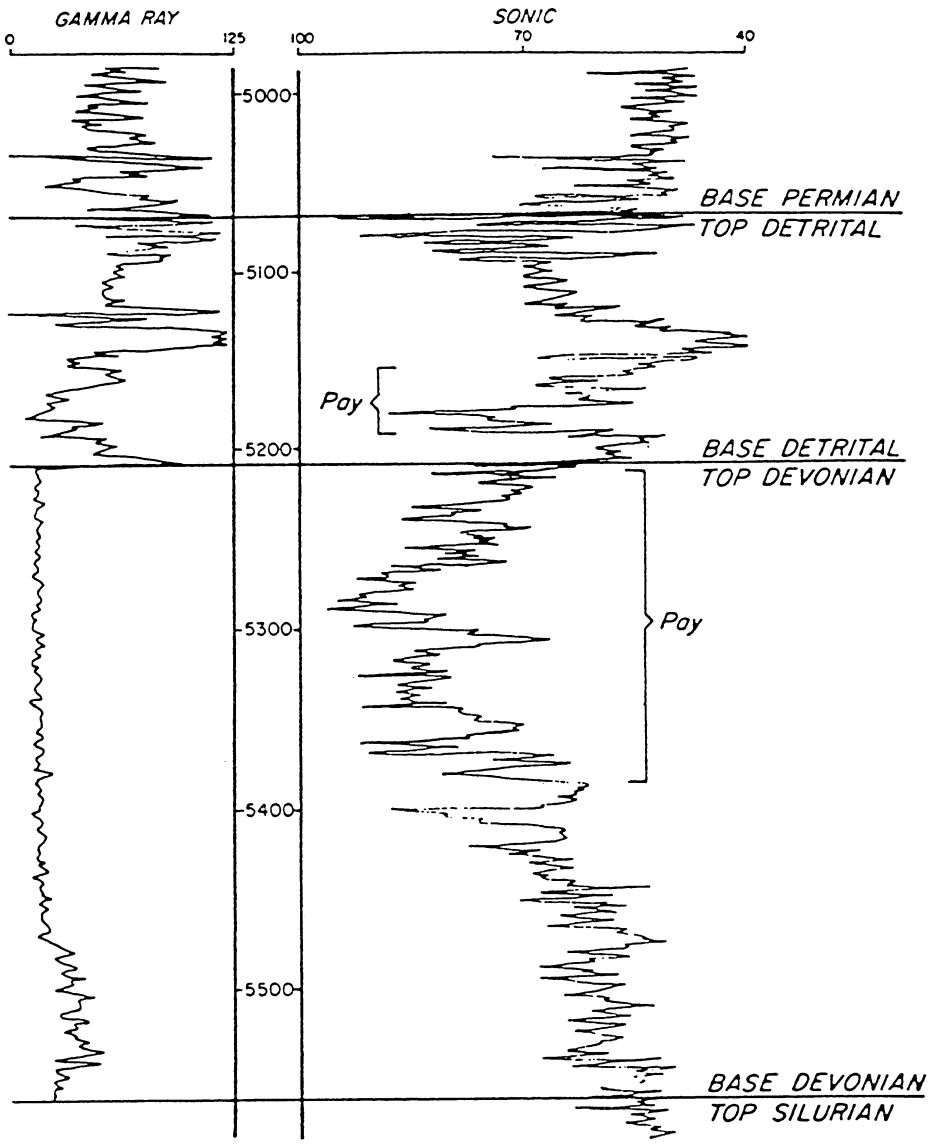
FIELD: Crossett, South RESERVOIR: Devonian TOTAL NO. PROJECTS: 3 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	49	625	111		
1977 PROD. (this project):	28	531	91		
CUM. PROD. FROM DISC. TO 1/78:	3492	13769	3381		
PROJECT NO.	F5039	F5308	F1157		
LEASE NO.(s):	21736	21737	21017		
OPERATOR:	Shell	Shell	Shell		
RESERVOIR:	Devonian/Detrital	Devonian	Devonian		
DEPTH PRODUCING ZONE:	5000	5200	5300		
PRODUCTIVE ACREAGE IN RESERVOIR:	5000	6500	3450		
ACREAGE IN PROJECT:	5000	5300	1184		
PORTION OR FIELD WIDE:	FW	FW	FW		
TYPE:	PM/Gas	PM/Gas	PM/Gas		
PATTERN:	C	C	C		
YEAR BEGAN:	4-71	4-71	10-68		
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP		
RESERVOIR PRESSURE INITIAL:	2360	2420	2530		
BEG. INJECTION:	1000	1300	1430		
LATEST:	800	900	1500		
NUMBER OF WELLS TOTAL:	28	97	27		
PRODUCING WELLS:	4	69	19		
INJECTION WELLS:	3	7	3		
MAXIMUM:	---	---	---		
LATEST:	---	---	---		
SHUT-IN/ABANDONED WELLS:	21	21	5		
SURFACE INJECTION PRESSURE:	2750	2750	2720		
EFFECTIVENESS OF INJECTION:	NE	ME	---		
OPERATOR PROBLEMS:	EG,SC,PA,SF	PA,SF,SC	SC,PA,SF		
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	---	450	80		
FROM BEG. INJECTION:	---	2343	546		
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	0	5477	723		
WATER PRODUCTION:					
CURRENT (1977):	4	66	4		
CUMULATIVE TO 1/78:	45	1063	59		
CURRENT (1977) INJECTION:	1824	5373	1627		
CUMULATIVE INJECTION:	5593	36857	12824		



FROM: Richards, J.W., 1966, CROSSETT, SOUTH - EL CINCO in OIL & GAS FIELDS IN WEST TEXAS SYMPOSIUM: West Texas Geological Society Pub. No. 66-52.

TYPE LOG



FROM: Richards, J.W., 1966, CROSSETT, SOUTH - EL CINCO in OIL & GAS FIELDS IN WEST TEXAS SYMPOSIUM: West Texas Geological Society, Publ. No. 66-52.

Denton
Wolfcamp
Tatum Basin

DATA SOURCE CODE		
	STATE	New Mexico
1, 6a	COUNTY	Lea
1	REGULATORY DISTRICT	Southeast
1, 6a	BASIN	Permian
15	SUB-BASIN	Tatum Basin
1, 6a	FIELD	Denton
1, 6a	RESERVOIR	Wolfcamp
1, 6	GEOLOGIC AGE	Wolfcamp
1	AAPG STRATIGRAPHIC AGE CODE	319
6a, 1	RESERVOIR LITHOLOGY	Dolomite and lime, porosity at the dolomite lime contact in the Wolfcamp; dolomite and limestone.
6a, 1	TRAPPING MECHANISM	Faulted anticline trap; anticline.
6a	DISCOVERY YEAR	2-24-50
1	PROVED ACREAGE	4140
	REGULAR WELL SPACING (acres/well)	
6a, 1	RESERVOIR DEPTH	9150, 9395
1	RESERVOIR THICKNESS	53' avg.
6a	NET PAY	0-50'
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
6a, 1	TYPE	IC, V
6a, 1	FRACTION	.098
	PERMEABILITY	
1	RANGE	6.6 to 13
1	AVERAGE	9.8
6a	HORIZONTAL	13
6a	VERTICAL	6.6
6a	OTHER INFORMATION	Another reservoir is the Devonian
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	95 Total, 62 pump, 14 inject., 19 shutin; 68P, 29S, 3I, 12Serv.
1	PRODUCTION 1977 oil (cum)	33,883
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	34,852
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	yes
6a	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Denton
6a	RESERVOIR:	Wolfcamp
1	PROD. ACRES:	4140
6c, 1	AVG. THICKNESS (FT.):	0-50', 53'
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1, 6a	WATER SATURATION (S_W):	.20
1	OIL SATURATION (S_O):	.58
6a, 1	PRIMARY DRIVE MECHANISM:	solution gas
	PRIMARY GAS CAP?:	
1, 17	TEMPERATURE (°F):	154; (GG=.85)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1001
6a	RESERVOIR PRESSURE INITIAL (psi):	3820
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	164
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	273
1, 6a	STOCK TANK OIL GRAVITY (°API):	45.3
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1887
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: Denton RESERVOIR: Wolfcamp TOTAL NO. PROJECTS:

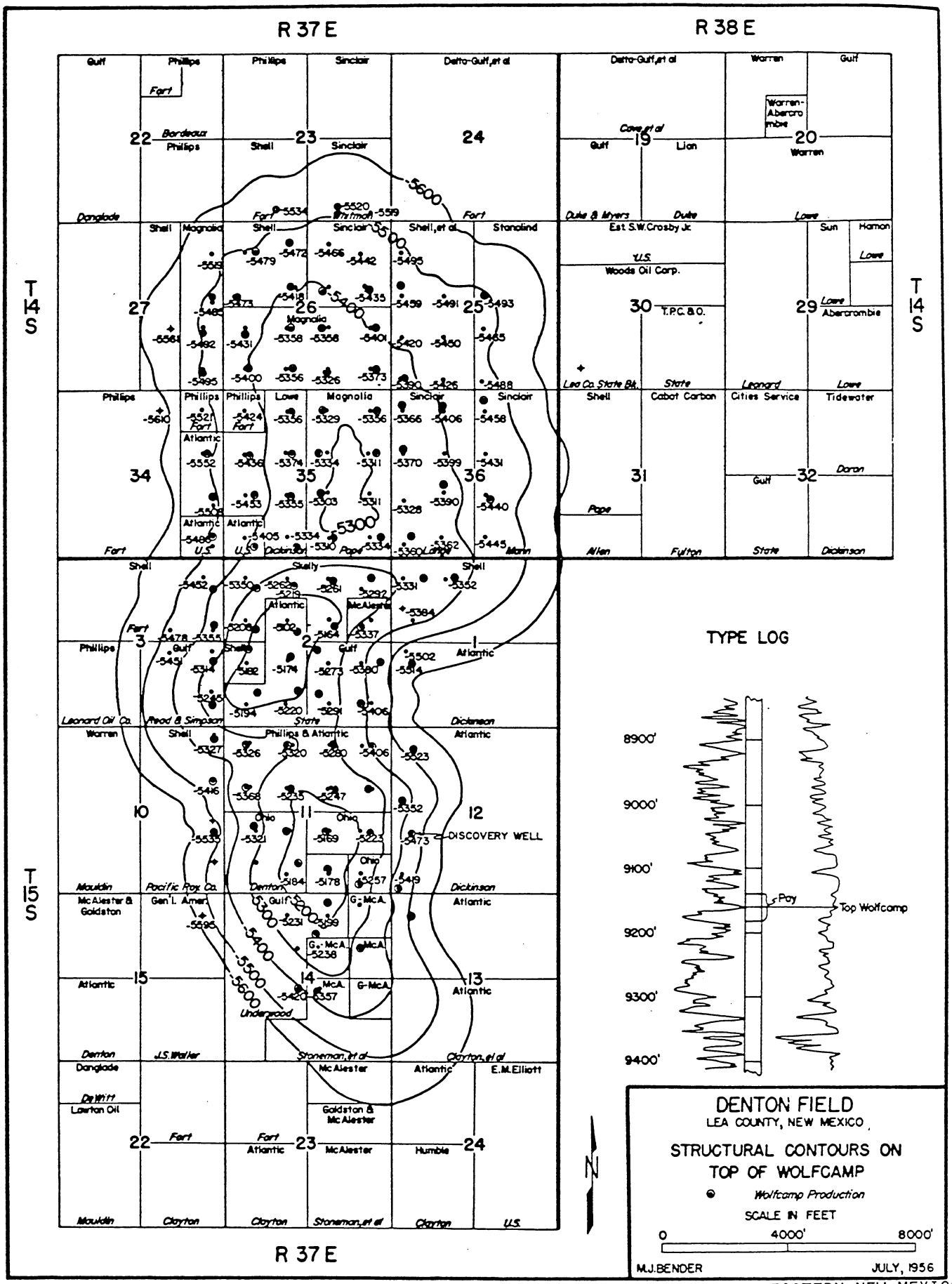
DATA SOURCE: 6a, 1

TOTAL SOLIDS (ppm):	103,784
NA	35,630
Ca	3,234
Mg	890
Fe	
SO_4	2,568
Cl	60,986
CO_2	
HCO_3	415
OH	
H_2S	43

RESISTIVITY: .07 @ 80°F

SPECIFIC GRAVITY:

OTHER WATER QUALITY DATA:



FROM: Bender, M.J., 1956, DENTON (WOLFCAMP) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium-1956.

Denton
Devonian
Tatum Basin

DATA SOURCE CODE		
1, 6a	STATE----------	New Mexico
1	COUNTY----------	Lea
	REGULATORY DISTRICT----------	Southeast
1, 6	BASIN----------	Permian
15	SUB-BASIN----------	Tatum Basin
1, 6a	FIELD----------	Denton
1, 6a	RESERVOIR----------	Devonian
1, 6	GEOLOGIC AGE----------	Devonian
1	AAPG STRATIGRAPHIC AGE CODE----------	340
6, 1	RESERVOIR LITHOLOGY----------	Medium coarse crystalline, fractured with vuggy porosity dolomite; dolomite.
1, 6a	TRAPPING MECHANISM----------	faulted anticline
1, 6a	DISCOVERY YEAR----------	9-25-49
1	PROVED ACREAGE----------	4,560
	REGULAR WELL SPACING (acres/well)-----	
6c, 1	RESERVOIR DEPTH----------	11,950 - 12,400; 11,267
1	RESERVOIR THICKNESS	388 avg.
6a	NET PAY----------	3 pay zones ≈ 100' each
	GROSS----------	
	NET/GROSS RATIO----------	
	POROSITY	
1, 6a	TYPE----------	IC V
1, 6a	FRACTION----------	.080
	PERMEABILITY	
1	RANGE----------	7.2 to 9.6
1	AVERAGE----------	8.4
6a	HORIZONTAL----------	9.6
6c	VERTICAL----------	7.2
6a	OTHER INFORMATION----------	another reservoir is the Wolfcamp
14e	BETC/RI-78/15 list as not suitable for surfactant, polymer or CO_2 because of natural water drive reservoir.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS----------	84 Total, 47 pump, 2 flow, 35 shut-in; 68 producing, 25 shut-in
1	PRODUCTION 1977 oil (cum)----------	91,285
	PRODUCTION 1978 oil (cum)----------	
18	PRODUCTION 1979 oil (cum)----------	92,722
	PRODUCTION 1-1-79 to 1-1-80----------	
	SECONDARY RECOVERY RECORDS?----------	
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
6a	STRUCTURE CONTOUR?----------	yes
6a	LOGS?----------	yes
	STRUCTURE SECTION?----------	
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
1, 6a	FIELD:	Denton
1	RESERVOIR:	Devonian
1, 6a	PROD. ACRES:	4560
	AVG. THICKNESS (FT.):	388; 3 zones ≈ 100' ea
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
1, 6a, 14e	PRIMARY DRIVE MECHANISM:	waterdrive
14e	PRIMARY GAS CAP?:	no
17, 14e	TEMPERATURE (°F):	187 (GG = 1.0), 177 BHT
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	3573
1, 6a, 14e	RESERVOIR PRESSURE INITIAL (psi):	5013
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1127
1, 6a, 14e	STOCK TANK OIL GRAVITY (°API):	45
14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	7 cp
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	2292
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

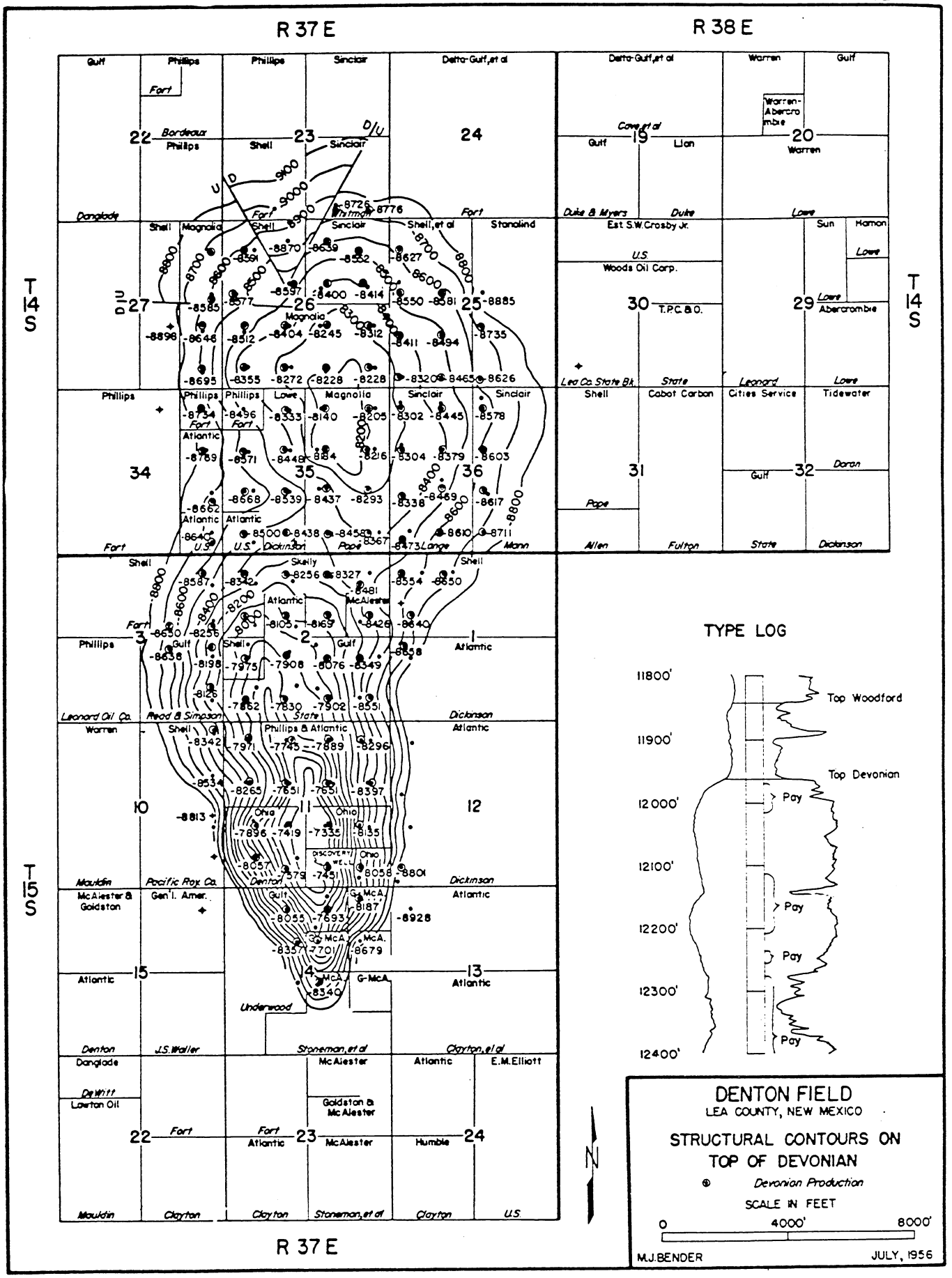
WATER ANALYSIS RECORD

FIELD: Denton RESERVOIR: Devonian TOTAL NO. PROJECTS:
DATA SOURCE: 6a , 1

TOTAL SOLIDS (ppm):	91,928
NA	30,423
Ca	3,314
Mg	676
Fe	
SO_4	
Cl	53,696
CO_2	
HCO_3	244
OH	
H_2S	2,382

RESISTIVITY:
SPECIFIC GRAVITY:

OTHER WATER QUALITY DATA:



FROM: Bender, M.J., 1956, DENTON (DEVONIAN) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium - 1956. Source 6a.

Diamond M
Canyon Lime Area
Eastern Shelf

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Scurry (M)
1	REGULATORY DISTRICT	8A
1	BASIN	Permian
15	SUB-BASIN	Eastern Shelf
1	FIELD	Diamond M
1, 2	RESERVOIR	Canyon Lime Area
1	GEOLOGIC AGE	Penn/Canyon
1	AAPG STRATIGRAPHIC AGE CODE	323, 320
1	RESERVOIR LITHOLOGY	Limestone
	TRAPPING MECHANISM	
2, 1	DISCOVERY YEAR	12-1948, 1948
16c, 2, 1	PROVED ACREAGE	13,712
1	REGULAR WELL SPACING (acres/well)	40
2, 1	RESERVOIR DEPTH	6635 avg, 6569
	RESERVOIR THICKNESS	
16c, 2, 1	NET PAY	96, 100 avg, 45
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2, 1	FRACTION	.10 avg, .05
	PERMEABILITY	
	RANGE	
1 ,14e	AVERAGE	15 md , 44md
2	HORIZONTAL	72 md
	VERTICAL	
14e	OTHER INFORMATION	BETC/RI-78/15 list as not being suitable for surfactant, polymer, and carbon dioxide EOR because of H_2O-drive.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	376P- 67I; 515 (148P-60I-307A)
1	PRODUCTION 1976 oil (cum)	202, 411
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	216,080.2
3	PRODUCTION 1-1-79 to 1-1-80	3,963.6 mbbls oil; 3,951.4 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	no
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
2, 1	FIELD:	Diamond M
16c,2,1	RESERVOIR:	Canyon Lime
2, 1, 16c	PROD. ACRES:	13,712
1, 16c	AVG. THICKNESS (FT.):	100 avg, 45, 96
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.626, 1.5308
1,16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.5523 (1970)
16c	WATER SATURATION (S_W):	.30, .28
1	OIL SATURATION (S_O):	.72 (1970)
14e	PRIMARY DRIVE MECHANISM:	depletion/water drive
16c, 14e	PRIMARY GAS CAP?:	no
16c	TEMPERATURE (°F):	128, 130 BHT
1	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1890
2	RESERVOIR PRESSURE INITIAL (psi):	3135
	RESERVOIR PRESSURE LATEST (psi):	2100-2483
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
2, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	397.5 (76)
14e	STOCK TANK OIL GRAVITY (°API):	42-44, 44
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	0.46 cp
2	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1574
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 2 SRPs:	516,000 mbbls
	ESTIMATED PRIMARY OIL RECOVERED FOR 2 SRPs:	118,000 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Diamond M RESERVOIR: Canyon Lime TOTAL NO. PROJECTS: 2 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	278	5494			
1977 PROD. (this project):	229	5103			
CUM. PROD. FROM DISC. TO 1/78:	40115	164549			
PROJECT NO.	F-1744	F-1745			
LEASE NO.(s):	01305	01037			
OPERATOR:	Monsanto	R. E. Smith			
RESERVOIR:	Canyon Lime	Canyon Lime			Canyon Lime area
DEPTH PRODUCING ZONE:	6569	6700			6569
PRODUCTIVE ACREAGE IN RESERVOIR:	5400	13712			13712
ACREAGE IN PROJECT:	5400	13712			13712
PORTION OR FIELD WIDE:	FW	FW			
TYPE:	PM/SW, FW	PM/SW,BW,FW			Press. maint.
PATTERN:	P	P			
YEAR BEGAN:	12-50	7-70			1950
YEAR TERMINATED OR STATUS:	ICP	SW-ITD;BW,FW-ICP			
RESERVOIR PRESSURE INITIAL:	3150	3135			3135
BEG. INJECTION:	1849	1583			
LATEST:	2100	2483			
NUMBER OF WELLS TOTAL:	131	384			376
PRODUCING WELLS:	30	118			67
INJECTION WELLS:	16SW	10SW			
MAXIMUM:	3FW	31FW			
LATEST:	-	-			
SHUT-IN/ABANDONED WELLS:	82	225			
SURFACE INJECTION PRESSURE:	1700	1900			
EFFECTIVENESS OF INJECTION:	ME	VE			
OPERATOR PROBLEMS:	EB,CH,EW	CR			
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	229	5103			
FROM BEG. INJECTION:	14115	72549			
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	15000	92000			
WATER PRODUCTION:					
CURRENT (1977):	2724	5071			
CUMULATIVE TO 1/78:	43938	150047			
CURRENT (1977) INJECTION:	26525W,1136FW	5071SW, 11278FW			
CUMULATIVE INJECTION:	43718SW,110643FW	53085SW, 258101FW			

Dollarhide
Clear Fork
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Andrews
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1, 2	FIELD	Dollarhide
1,2	RESERVOIR	Clear Fork
5	GEOLOGIC AGE	Leonardian
1	AAPG STRATIGRAPHIC AGE CODE	318
1, 12c	RESERVOIR LITHOLOGY	Dolomite; Dolomite with numerous thin shale partings and anhydritic streaks.
1 , 12c	TRAPPING MECHANISM	anticline; convex fold modified by permeability barriers
2, 1	DISCOVERY YEAR	6-1949, 1949
2,1,16c,12c	PROVED ACREAGE	3500, 920, 3660, 4011
1	REGULAR WELL SPACING (acres/well)	40
2,3,1,12c	RESERVOIR DEPTH	6500, 6545, 6545, 6100
	RESERVOIR THICKNESS	
2, 1	NET PAY	30-50, 105
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2,1,12c	FRACTION	.15, .10, .104
	PERMEABILITY	
	RANGE	
2,1,12c	AVERAGE	15,90, 9.2 md
	HORIZONTAL	
	VERTICAL	
12c	OTHER INFORMATION	Dollarhide-ClearFork (Texas) is continuous with Dollarhide-Tubb/Drinkard (New Mexico).
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1, 2	TOTAL NUMBER OF WELLS	43P-43I; 143 (58P-47I-38A)
1	PRODUCTION 1976 oil (cum)	28,244
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	29,743.6
3	PRODUCTION 1-1-79 to 1-1-80	455.4 oil, 52.8 gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	
12c	STRUCTURE CONTOUR?	yes
12c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
2, 1	FIELD:	Dollarhide
	RESERVOIR:	Clear Fork
2,1,16c,12c	PROD. ACRES:	3500, 920,3660,4011
2, 1	AVG. THICKNESS (FT.):	30-50, 105
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.4
16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.402
16c	WATER SATURATION (S_W):	.25
16c	OIL SATURATION (S_O):	.53-.58
1	PRIMARY DRIVE MECHANISM:	depletion
12c cross sect.	PRIMARY GAS CAP?:	no
16c	TEMPERATURE (°F):	110
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	3005
2, 1	RESERVOIR PRESSURE INITIAL (psi):	2890-3175, 3000
2	RESERVOIR PRESSURE LATEST (psi):	633-1485
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	545
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
3, 2, 1	STOCK TANK OIL GRAVITY (°API):	38.9, 35.6, 38.9
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1373
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 3 SRPs:	101,987 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 3 SRPs:	17,719 mbbls

OTHER INFORMATION:

12c

Reference: Keener, M. H. L., 1957, Dollarhide Field in Occurrence of Oil and Gas in West Texas: Univ. of Texas, Bureau of Economic Geology, Pub. No. 5716, p.87-96.

ENHANCED AND SECONDARY RECOVERY DATA:

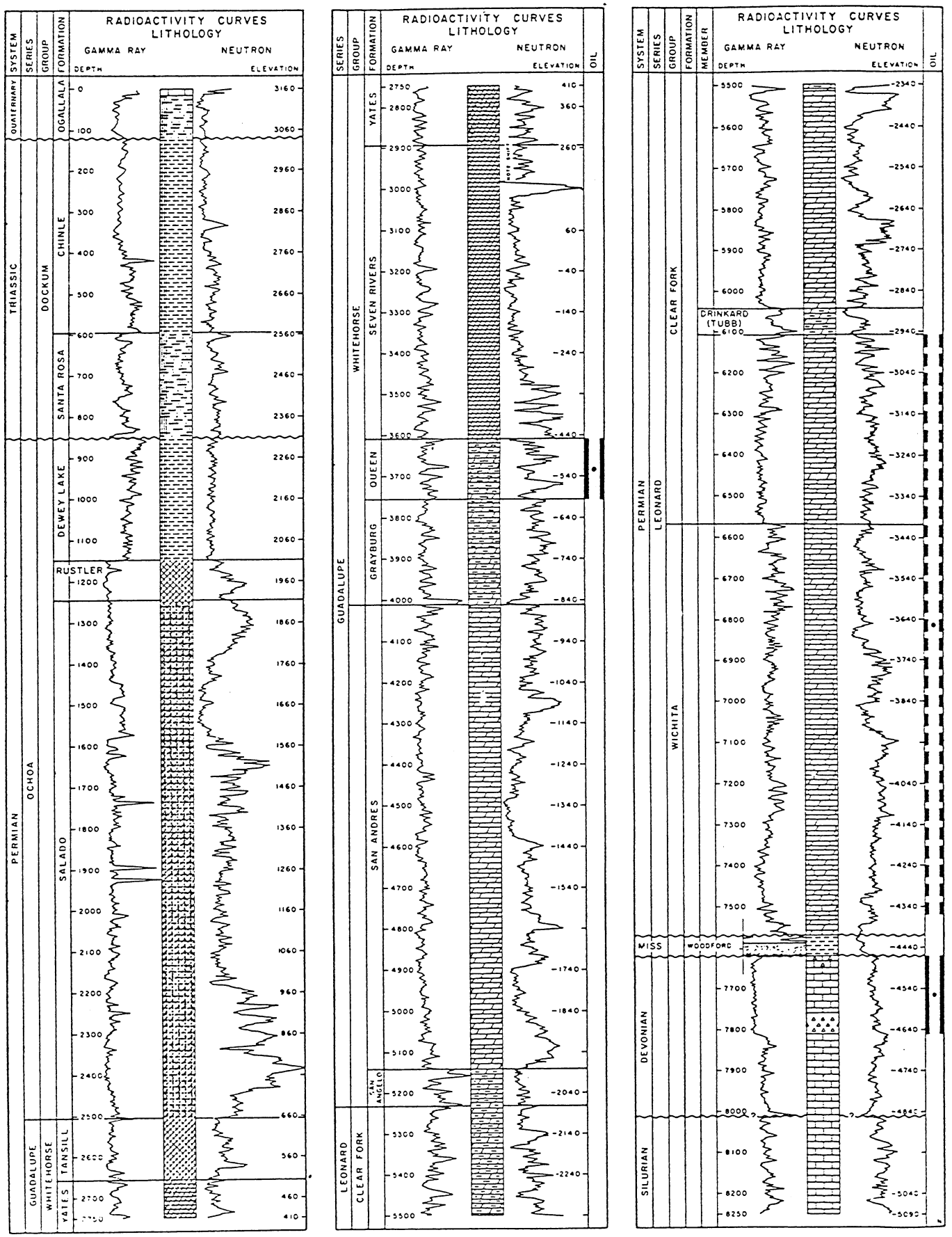
FIELD: Dollarhide RESERVOIR: Clear Fork TOTAL NO. PROJECTS: 3 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	825	587	32		
1977 PROD. (this project):	735	449	25		
CUM. PROD. FROM DISC. TO 1/78:	12908	20486	1337		
PROJECT NO.	F-1158	F-1159	F-1160		
LEASE NO.(s):	17815	13869	13869		
OPERATOR:	Cities Service	Union Oil	Union Oil		
RESERVOIR:	Clear Fork	Clear Fork	Clear Fork		Clear Fork
DEPTH PRODUCING ZONE:	6500 & 8000	6500	7200		6545
PRODUCTIVE ACREAGE IN RESERVOIR:	3500	3400	520		920
ACREAGE IN PROJECT:	900	2500	520		2500u
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P		
TYPE:	WF/SW,gas	WF/SW,BW	WF/BW		WF
PATTERN:	I9	5S	5S		
YEAR BEGAN:	1966SW,8-59gas	11-67SW,11-61BW	9-62		1959
YEAR TERMINATED OR STATUS:	SW-ICP,gasIPD	ICP	ITD		
RESERVOIR PRESSURE INITIAL:	3000	2890	3175		3000
BEG. INJECTION:	600	499	290		
LATEST:	633	1160	1485		
NUMBER OF WELLS TOTAL:	46	86	11		
PRODUCING WELLS:	17	34	7		43
INJECTION WELLS:	24	22SW	0		43
MAXIMUM:	-	1 BW	-		
LATEST:	-	-	-		
SHUT-IN/ABANDONED WELLS:	5	29	4		
SURFACE INJECTION PRESSURE:	1750	1750SW, 850BW	-		
EFFECTIVENESS OF INJECTION:	VE	VE	ME		
OPERATOR PROBLEMS:	SC,CR	CH, SC	SC,EB,CH		
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	560	499	25		
FROM BEG. INJECTION:	7359	8960	512		
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	3877	11980	689		
WATER PRODUCTION:					
CURRENT (1977):	490	661	56		
CUMULATIVE TO 1/78:	2972	6101	857		
CURRENT (1977) INJECTION:	3069	5836SW, 469BW	96		
CUMULATIVE INJECTION:	390345SW,3729gas	676OSW,96957BW	7211		

FROM: OCCURRENCE OF OIL & GAS IN WEST TEXAS: UNIV.OF TEXAS, BUREAU OF ECON. GEOL. PUBL. 5716.

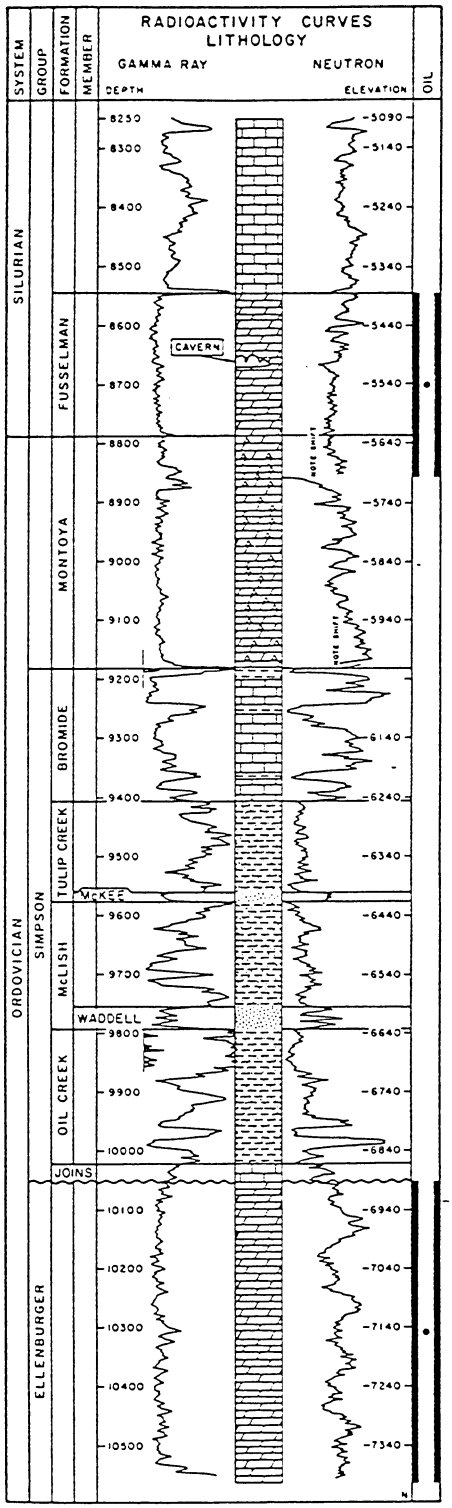
88 DOLLARHIDE FIELD, Andrews County, Texas, and Lea County, New Mexico

TYPICAL SECTION OF ROCKS PENETRATED

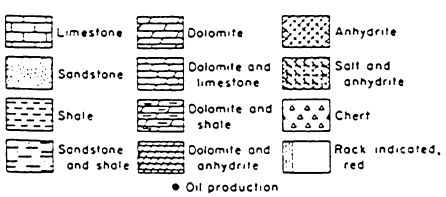


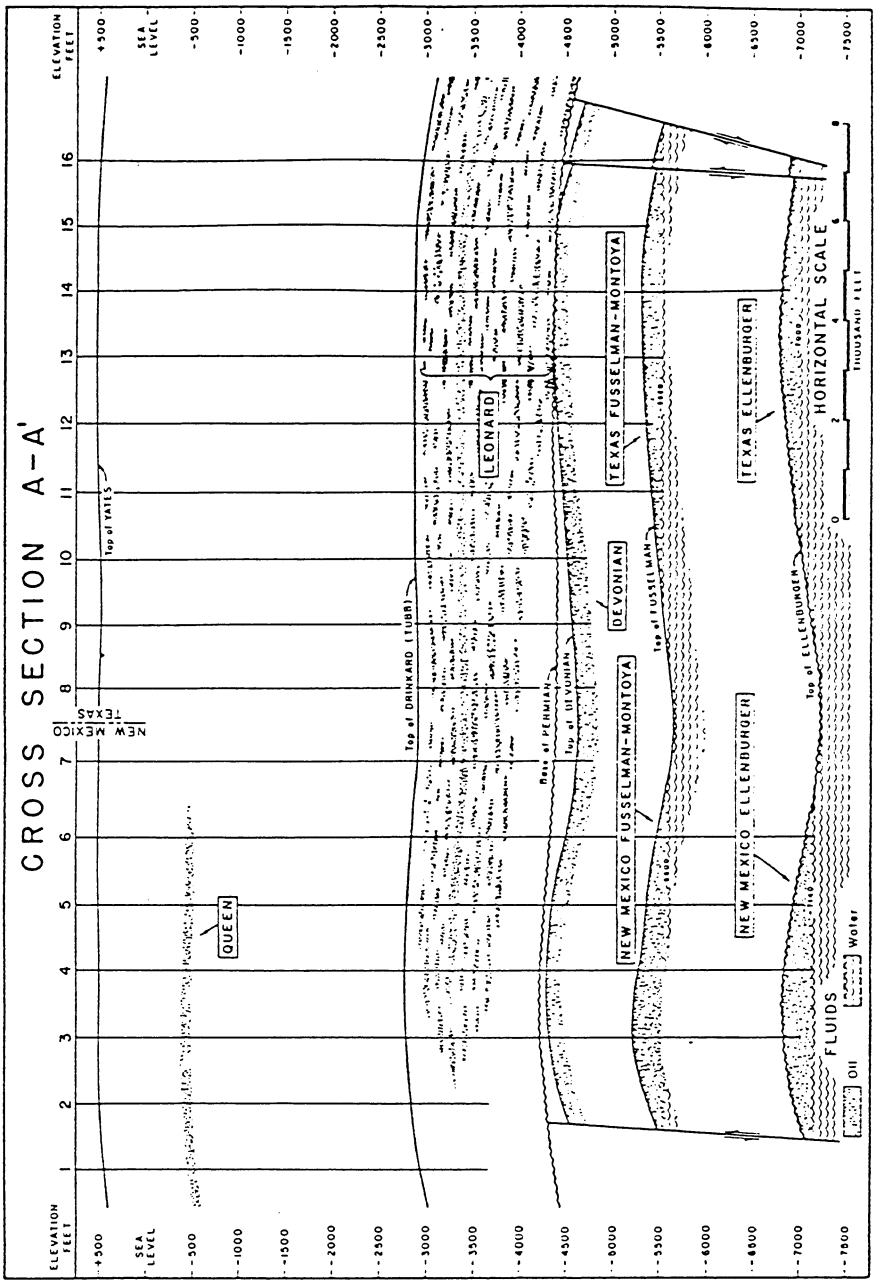
DOLLARHIDE FIELD, Andrews County, Texas, and Lea County, New Mexico 89

TYPICAL SECTION OF ROCKS PENETRATED



EXPLANATION



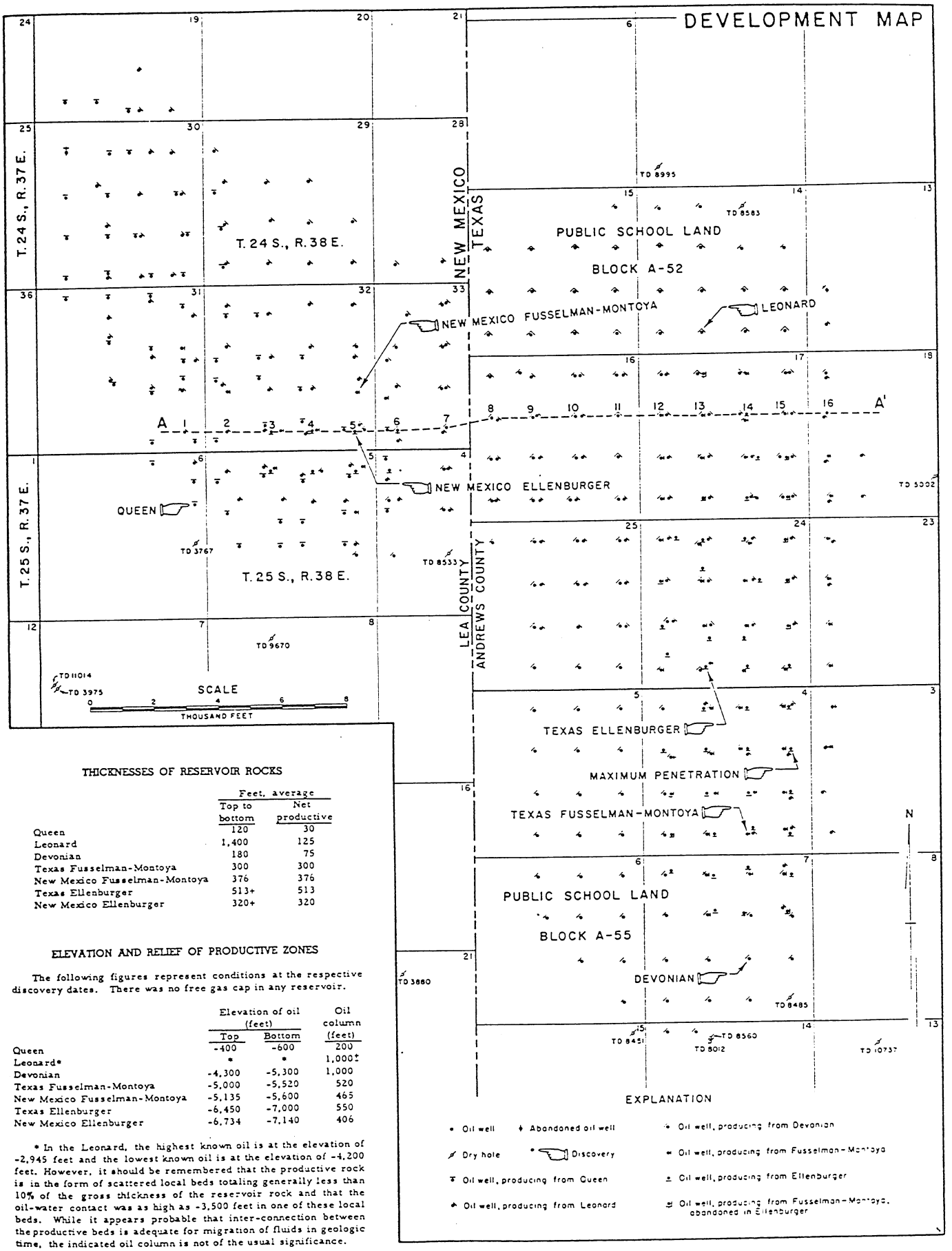


RESERVOIR PRESSURES

	Datum elevation (feet)	At time of discovery (psi.)	Saturation pressure (psi.)	At indicated recent date: Pressure (psi.)	At indicated recent date: Date
Queen	-550	1,361+	?	639	Nov. 1955
Leonard	-3,400	2,890	2,190	817	Nov. 1955
Devonian	-4,600	3,300	2,330	1,356	Nov. 1955
Texas Fusselman-Montoya	-5,200	3,555	793	2,655	Aug. 1956
New Mexico Fusselman-Montoya	-5,524	3,300*	395	3,062	March 1956
Texas Ellenburger	-6,800	4,295	1,492	2,688	Aug. 1956
New Mexico Ellenburger	-7,080	3,630*	?	2,730	March 1956

* The fact that the discovery pressures in the New Mexico Fusselman-Montoya and in the New Mexico Ellenburger were lower than the discovery pressures in the Texas reservoirs in the same reservoir rocks is attributed to the later discovery dates of the New Mexico reservoirs. The New Mexico discovery pressures, when adjusted for differences in datum elevations, were slightly higher than corresponding pressures at the same dates in the respective Texas reservoirs.

DOLLARHIDE FIELD, Andrews County, Texas, and Lea County, New Mexico



THICKNESSES OF RESERVOIR ROCKS

	Feet, average	
	Top to bottom	Net productive
Queen	120	30
Leonard	1,400	125
Devonian	180	75
Texas Fusselman-Montoya	300	300
New Mexico Fusselman-Montoya	376	376
Texas Ellenburger	513+	513
New Mexico Ellenburger	320+	320

ELEVATION AND RELIEF OF PRODUCTIVE ZONES

The following figures represent conditions at the respective discovery dates. There was no free gas cap in any reservoir.

	Elevation of oil (feet)		Oil column (feet)
	Top	Bottom	
Queen	-400	-600	200
Leonard*	*	*	1,000‡
Devonian	-4,300	-5,300	1,000
Texas Fusselman-Montoya	-5,000	-5,520	520
New Mexico Fusselman-Montoya	-5,135	-5,600	465
Texas Ellenburger	-6,450	-7,000	550
New Mexico Ellenburger	-6,734	-7,140	406

* In the Leonard, the highest known oil is at the elevation of -2,945 feet and the lowest known oil is at the elevation of -4,200 feet. However, it should be remembered that the productive rock is in the form of scattered local beds totaling generally less than 10% of the gross thickness of the reservoir rock and that the oil-water contact was as high as -3,500 feet in one of these local beds. While it appears probable that inter-connection between the productive beds is adequate for migration of fluids in geologic time, the indicated oil column is not of the usual significance.

92 DOLLARHIDE FIELD, Andrews County, Texas, and Lea County, New Mexico

ELEVATION OF SURFACE

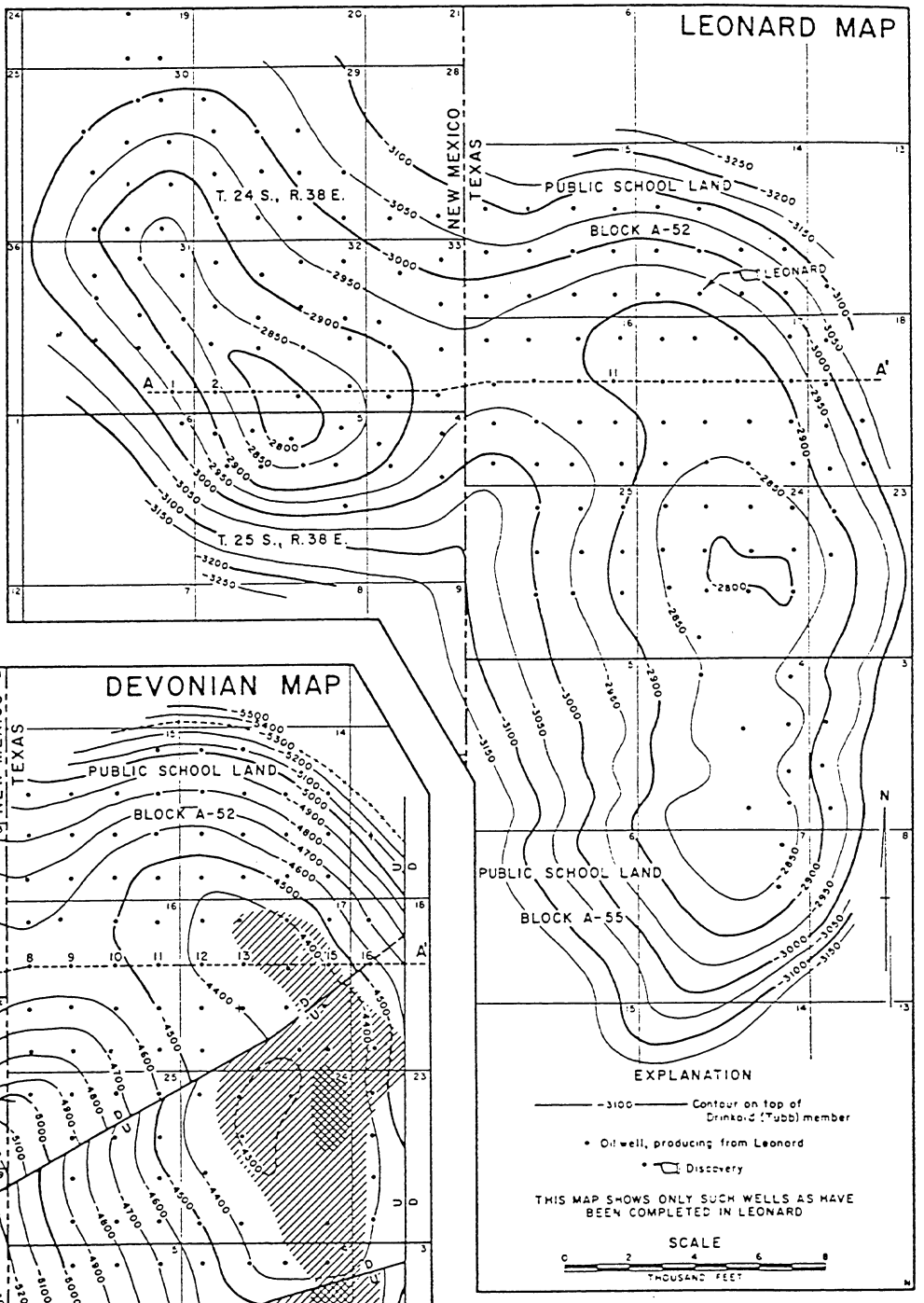
Derrick floor elevations: Highest, 3,200 feet; lowest, 3,110 feet. The higher elevations are at the north end of the field; the surface slopes southward generally.

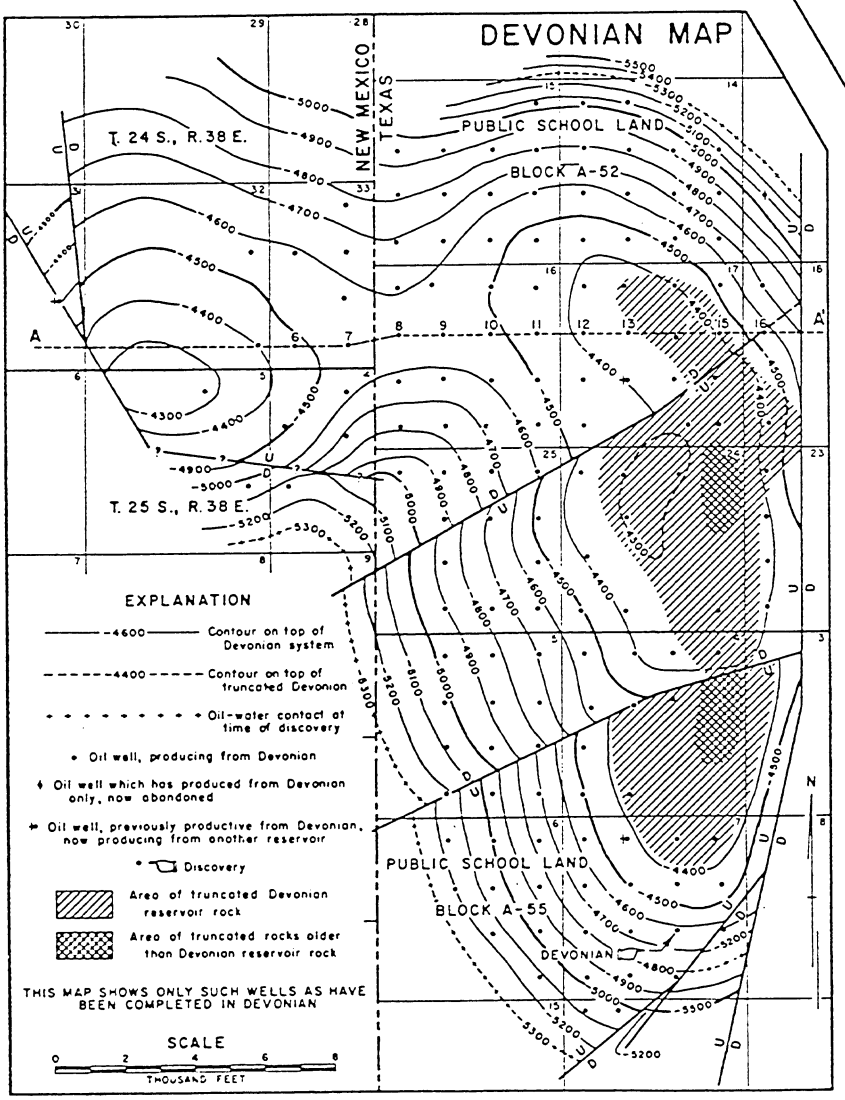
SURFACE FORMATION

Ogallala formation of the Quaternary system overlain generally by Recent wind-blown sands.

PRODUCTIVE AREAS

	Acres
Queen	2,520
Leonard	4,011
Devonian	5,632
Texas Fusselman-Montoya	2,800
New Mexico Fusselman-Montoya	970
Texas Ellenburger	2,555
New Mexico Ellenburger	705
Dollarhide field	9,040





NATURE OF TRAPS

Queen: Convex folding combined with change in character of sediments.

Leonard: Convex fold modified by permeability barriers.

Devonian: The trap is due primarily to convex folding; it is modified by faulting, by truncation and by variation in degree of permeability.

Texas Fusselman-Montoya: Convex fold modified by faulting.

New Mexico Fusselman-Montoya: Convex fold modified slightly by faulting.

Texas Ellenburger and New Mexico Ellenburger: The trap in each of the two reservoirs is due primarily to convex folding but it is modified by faulting and by truncation with sealing by relatively impervious overlying strata.

OLDEST STRATIGRAPHIC HORIZON PENETRATED

The oldest horizon penetrated within the area of the field is in the Ellenburger group. The maximum known penetration of Ellenburger is 513 feet below its eroded top. This penetration was at the total depth of 10,145 feet in Humble Oil & Refining Co. #13 E.P.Cowden, located in Sec. 4 where "MAXIMUM PENETRATION" is entered on the accompanying Development map. Since the top of the Ellenburger is an erosion surface and since exact stratigraphic positions within Ellenburger have not been determined, it is possible that some lesser penetration of Ellenburger actually reached an older horizon than penetrated by the above mentioned well.

SELECTED REFERENCES

Kastrop, J. E. (1952) Saving 2800 feet of casing per well: World Oil, October 1952, pp. 243, 244.

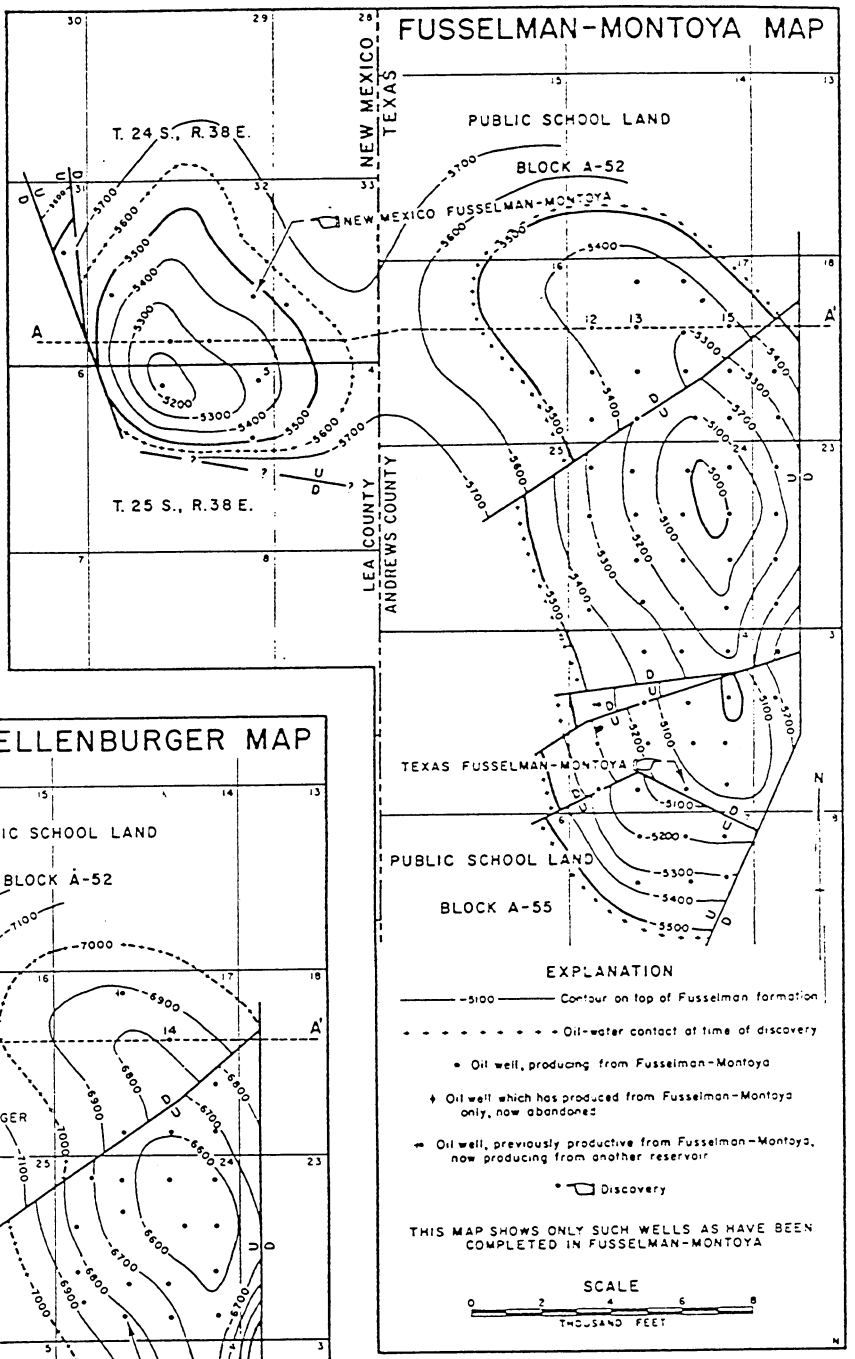
McChesney, J. R. (1952) Dollarhide's casing-head gas processed: Oil & Gas Journal, February 11, 1952, pp. 123 et seq.

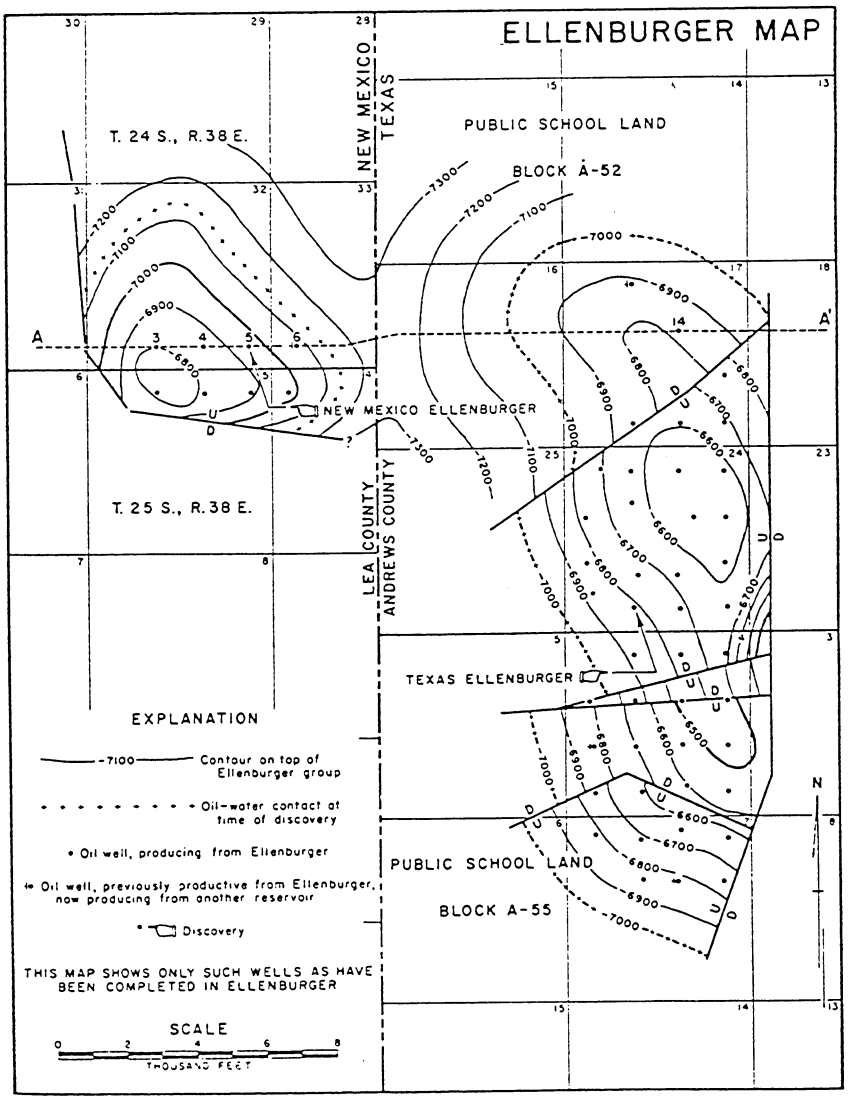
Mygdal, K. A. (1949) The geology of Dollarhide field: The Pure Oil News, January 1949, pp. 8-11.

Stormont, D. H. (1949) Huge caverns encountered in Dollarhide field: Oil & Gas Journal, April 7, 1949, pp. 66 et seq.

Thurman, E. G. (1954) In Dollarhide field--Dual gas-lift systems compared: World Oil, February 1, 1954, pp. 156-169.

Wilson, G. M. (1951) Efficient techniques used in Dollarhide completions: World Oil, September 1951, pp. 246, 248.





CHARACTER OF GAS

There was no free gas in any reservoir at time of discovery of commercial production. Such gas as has been produced has come out of solution as oil has been produced. The specific gravity and condensate content have averaged about as indicated below.

	Specific gravity	Condensate, gal/Mcf
Queen	?	?
Leonard	0.978	2.58
Devonian	0.957	2.33
Texas Fusselman-Montoya	1.170	3.26
New Mexico Fusselman-Montoya	?	?
Texas Ellenburger	0.989	3.10
New Mexico Ellenburger	?	?

Dollarhide
Tubb/Drinkard
Central Basin Platform

DATA SOURCE CODE		
	STATE	New Mexico
1, 6a	COUNTY	Lea
1	REGULATORY DISTRICT	Southeast
1, 6a	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1, 6a	FIELD	Dollarhide
1, 6a	RESERVOIR	Tubb/Drinkard, (Yeso formation)
1, 6	GEOLOGIC AGE	Leonardian
1	AAPG STRATIGRAPHIC AGE CODE	318
6a, 1	RESERVOIR LITHOLOGY	Fine to medium crystalline anhydrite dolomite; anhydrite, limestone, dolomite
12c		Dollarhide-Clear Fork (Texas) is continuous with Dollarhide-Tubb/Drinkard (NMx)
1, 6a, 12c	TRAPPING MECHANISM	Anticline; convex fold modified by permeability barriers.
6a, 1	DISCOVERY YEAR	12-1-51; 52
1	PROVED ACREAGE	3480
	REGULAR WELL SPACING (acres/well)	
6a, 1	RESERVOIR DEPTH	6580-7000; 6616
1	RESERVOIR THICKNESS	30' avg.
	NET PAY	
6a	GROSS	∿ 450
	NET/GROSS RATIO	
	POROSITY	
6a	TYPE	IC
1	FRACTION	.08
	PERMEABILITY	
	RANGE	
1	AVERAGE	10
	HORIZONTAL	
	VERTICAL	
6a	OTHER INFORMATION	Other reservoirs are the Devonian, Fusselman, Ellenburger
12c		Dollarhide-Clear Fork,Texas is continuous.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	87 Total, 39 pump, 43 inject., 6 shutin; 44P, 43I
1	PRODUCTION 1977 oil (cum)	15,847
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	16,386
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	yes - See Dollarhide-Clearfork, TX
6a	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dollarhide
1, 6a	RESERVOIR:	Tubb/Drinkard
1	PROD. ACRES:	3480
1	AVG. THICKNESS (FT.):	30
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
6a, 1	PRIMARY DRIVE MECHANISM:	volumetric
T2c cross sect.	PRIMARY GAS CAP?:	no
17	TEMPERATURE (°F):	140 (GG=1.0)
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6a, 1	RESERVOIR PRESSURE INITIAL (psi):	1735, 1733
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
1, 6a	STOCK TANK OIL GRAVITY (°API):	40
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1736
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: Dollarhide RESERVOIR: Tubb/Drinkard TOTAL NO. PROJECTS:

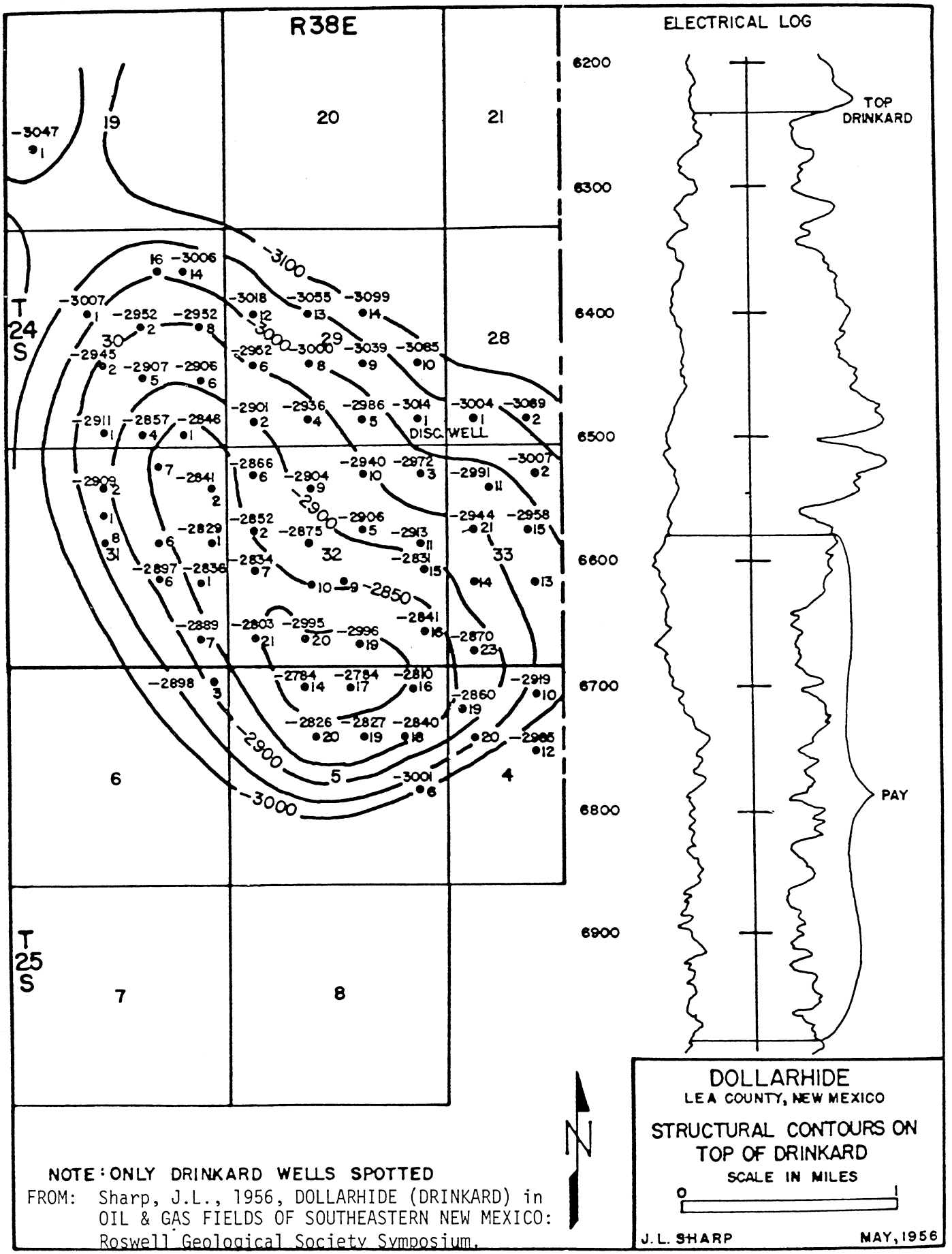
DATA SOURCE: 6a, 1

TOTAL SOLIDS (ppm):	215,086
NA	62,836
Ca	13,126
Mg	4,802
Fe	
SO_4	870
Cl	133,330
CO_2	
HCO_3	122
OH	
H_2S	

RESISTIVITY:

SPECIFIC GRAVITY:

OTHER WATER QUALITY DATA:



NOTE: ONLY DRINKARD WELLS SPOTTED

FROM: Sharp, J.L., 1956, DOLLARHIDE (DRINKARD) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium.

DOLLARHIDE
LEA COUNTY, NEW MEXICO

STRUCTURAL CONTOURS ON TOP OF DRINKARD

SCALE IN MILES

0 1

J.L. SHARP MAY, 1956

Dollarhide
Fusselman & Montoya
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Andrews
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Dollarhide
7, 1, 2	RESERVOIR	Fusselman & Montoya, Silurian
1	GEOLOGIC AGE	Silurian and Ordovician
1	AAPG STRATIGRAPHIC AGE CODE	350
1, 12c	RESERVOIR LITHOLOGY	Dolomite; coarsely crystalline limestone which grades locally into dolomite.
1	TRAPPING MECHANISM	anticline fault
2, 1	DISCOVERY YEAR	2-1947; 1947
2,1,16c	PROVED ACREAGE	2587, 400, 2587
1	REGULAR WELL SPACING (acres/well)	40
2,3,1	RESERVOIR DEPTH	8500, 8345, 8345
	RESERVOIR THICKNESS	
2,16c,12c	NET PAY	194, 210, 300
7	GROSS	250
	NET/GROSS RATIO	
	POROSITY	
7,1,12c	TYPE	IC,V, cavernous porosity locally 2-16'in
2,1,12c	FRACTION	.058 height
	PERMEABILITY	
	RANGE	
2,1,12c	AVERAGE	9, 8.9 md
2	HORIZONTAL	9 md
	VERTICAL	
3	OTHER INFORMATION	other reservoirs include Clear Fork,
12c	Dollarhide-Fusselman, Texas is continuous with Dollarhide-Fusselman, NewMexico.	Devonian, and Ellenburger
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	23P-3I; 32 (25P-3I-4A)
1	PRODUCTION 1976 oil (cum)	33,035
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	35,187.4
3	PRODUCTION 1-1-79 to 1-1-80	658.9 oil, 212.9 gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	
12c	STRUCTURE CONTOUR?	yes see Dollarhide-Clear Fork
12c	LOGS?	yes see Dollarhide-Clear Fork
12c	STRUCTURE SECTION?	yes see Dollarhide-Clear Fork
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dollarhide
2, 1,7	RESERVOIR:	Silurian
2,1,16c	PROD. ACRES:	2587, 400, 2587
2,16c	AVG. THICKNESS (FT.):	194, 210
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.157
16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.19 (1974)
	WATER SATURATION (S_W):	
16c	OIL SATURATION (S_O):	.64-.685
1	PRIMARY DRIVE MECHANISM:	waterdrive
12c	PRIMARY GAS CAP?:	no
16c	TEMPERATURE (°F):	124
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	798
2, 1	RESERVOIR PRESSURE INITIAL (psi):	3175, 3555
2	RESERVOIR PRESSURE LATEST (psi):	2817
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	270
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 3, 1	STOCK TANK OIL GRAVITY (°API):	44, 42, 42
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1533
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	180,252 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	37,853 mbbls

OTHER INFORMATION:

12c Reference: Keener, M.H.L., 1957, Dollarhide Field in Occurrence of Oil and Gas in West Texas: Univ. of Texas, Bureau of Economic Geology, Pub. No. 5716, August.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Dollarhide RESERVOIR: Silurian TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	773				
1977 PROD. (this project):	754				
CUM. PROD. FROM DISC. TO 1/78:	33790				
PROJECT NO.	F-1165				
LEASE NO.(s):	13871				
OPERATOR:	Union Oil				
RESERVOIR:	Silurian				Silurian
DEPTH PRODUCING ZONE:	8500				8345
PRODUCTIVE ACREAGE IN RESERVOIR:	2587				400
ACREAGE IN PROJECT:	2587				2587
PORTION OR FIELD WIDE:	FW				
TYPE:	PM/SW				WF
PATTERN:	F				
YEAR BEGAN:	2-68				
YEAR TERMINATED OR STATUS:	ICP				
RESERVOIR PRESSURE INITIAL:	3175				3555
BEG. INJECTION:	2600				
LATEST:	2817				
NUMBER OF WELLS TOTAL:	32				
PRODUCING WELLS:	25				23
INJECTION WELLS:	3				3
MAXIMUM:	-				
LATEST:	-				
SHUT-IN/ABANDONED WELLS:	4				
SURFACE INJECTION PRESSURE:					
EFFECTIVENESS OF INJECTION:	ME				
OPERATOR PROBLEMS:	CH, SC				
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	-				
FROM BEG. INJECTION:	-				
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	-				
WATER PRODUCTION:					
CURRENT (1977):	9008				
CUMULATIVE TO 1/78:	48422				
CURRENT (1977) INJECTION:	3356				
CUMULATIVE INJECTION:	37350				

Dollarhide
Fusselman
Central Basin Platform

DATA SOURCE CODE		
6a	STATE	New Mexico
1	COUNTY	Lea
	REGULATORY DISTRICT	Southeast
6a	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
6a	FIELD	Dollarhide
6a	RESERVOIR	Fusselman
6	GEOLOGIC AGE	Silurian
1	AAPG STRATIGRAPHIC AGE CODE	354
6a	RESERVOIR LITHOLOGY	fine to coarse crystalline dolomite
12c	Continuous with Dollarhide-Fusselman & Montoya in Andrews County, Texas.	
12c	TRAPPING MECHANISM	Faulted anticline.
6a	DISCOVERY YEAR	2-26-52
12c	PROVED ACREAGE	970
12c	REGULAR WELL SPACING (acres/well)	40
12c	RESERVOIR DEPTH	5135 - 5600
	RESERVOIR THICKNESS	
12c	NET PAY	376
12c	GROSS	376
	NET/GROSS RATIO	
	POROSITY	
6a, 12c	TYPE	intercrystalline, cavernous porosity
12c	FRACTION	.058 locally 2' to 16'
	PERMEABILITY	
	RANGE	
12c	AVERAGE	9md
	HORIZONTAL	
	VERTICAL	
6a	OTHER INFORMATION	other reservoirs are Devonian-Tubb/ Drinkard, and Ellenburger
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	10 total, 10 producing
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	5,897
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
12c	STRUCTURE CONTOUR?	yes
12c	LOGS?	yes-See Dollarhide-ClearFork, Texas
12c	STRUCTURE SECTION?	yes
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dollarhide
6a	RESERVOIR:	Fusselman
	PROD. ACRES:	
	AVG. THICKNESS (FT.):	
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
6a	PRIMARY DRIVE MECHANISM:	volumetric
12c	PRIMARY GAS CAP?:	no
	TEMPERATURE (°F):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6a	RESERVOIR PRESSURE INITIAL (psi):	3350
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6a	STOCK TANK OIL GRAVITY (°API):	38
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

Dollarhide
Devonian
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Andrews
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Dollarhide
1, 2	RESERVOIR	Devonian
1	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
7, 1	RESERVOIR LITHOLOGY	cherty, crystalline limestone and dolomite; limestone
1	TRAPPING MECHANISM	anticline (faulted)
2, 1	DISCOVERY YEAR	9-1945, 1955
2,1,16c	PROVED ACREAGE	5632, 250, 5632
1	REGULAR WELL SPACING (acres/well)	40
1,2,3	RESERVOIR DEPTH	8051, 7700, 8051
	RESERVOIR THICKNESS	
16c,2,1	NET PAY	70, 70, 120
12c	GROSS	60' upper member + 100' middle member + 70' lower member
	NET/GROSS RATIO	
	POROSITY	
1	TYPE	V, IC
2, 1	FRACTION	.135, .13
	PERMEABILITY	
	RANGE	
2, 1	AVERAGE	17, 400 md
2	HORIZONTAL	17 md
	VERTICAL	
3	OTHER INFORMATION	other Dollarhide reservoirs include Clear Fork, Ellenburger and Silurian.
12c	Dollarhide-Devonian Texas and New Mexico are a continuous reservoir.	
	PRODUCTION STATISTICS	
	(oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	67P-76I; 153 (49P-46I-58A)
1	PRODUCTION 1976 oil (cum)	63,719
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	69,418.5
3	PRODUCTION 1-1-79 to 1-1-80	1,653.8 mbbls oil; 825.4 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
12c	STRUCTURE CONTOUR?	yes
12c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
2, 1	FIELD:	Dollarhide
2, 1,16c	RESERVOIR:	Devonian
1,2,16c	PROD. ACRES:	5632, 250, 5632
16c	AVG. THICKNESS (FT.):	120, 70, 70
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.65
16c	FORMATION VOLUME FACTOR LATEST (FVF):	
16c	WATER SATURATION (S_W):	.199 - .267
	OIL SATURATION (S_O):	.46 - .674
12c	PRIMARY DRIVE MECHANISM:	
16c	PRIMARY GAS CAP?:	no
16c	TEMPERATURE (°F):	120
2, 1	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2690
2	RESERVOIR PRESSURE INITIAL (psi):	3300, 3330
1	RESERVOIR PRESSURE LATEST (psi):	713
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	2186
2, 3, 1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
	STOCK TANK OIL GRAVITY (°API):	38.0, 38.2, 38.2
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
2	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1499
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	114,101 mbbls
	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	17,400 mbbls

OTHER INFORMATION:

12c Reference: Keener, M.H.K., 1957, Dollarhide Field in Occurrence of Oil and Gas in West Texas: Univ. of Texas, Bureau of Economic Geology, Pub. No. 5716, p.87-96.

ENHANCED AND SECONDARY RECOVERY DATA:

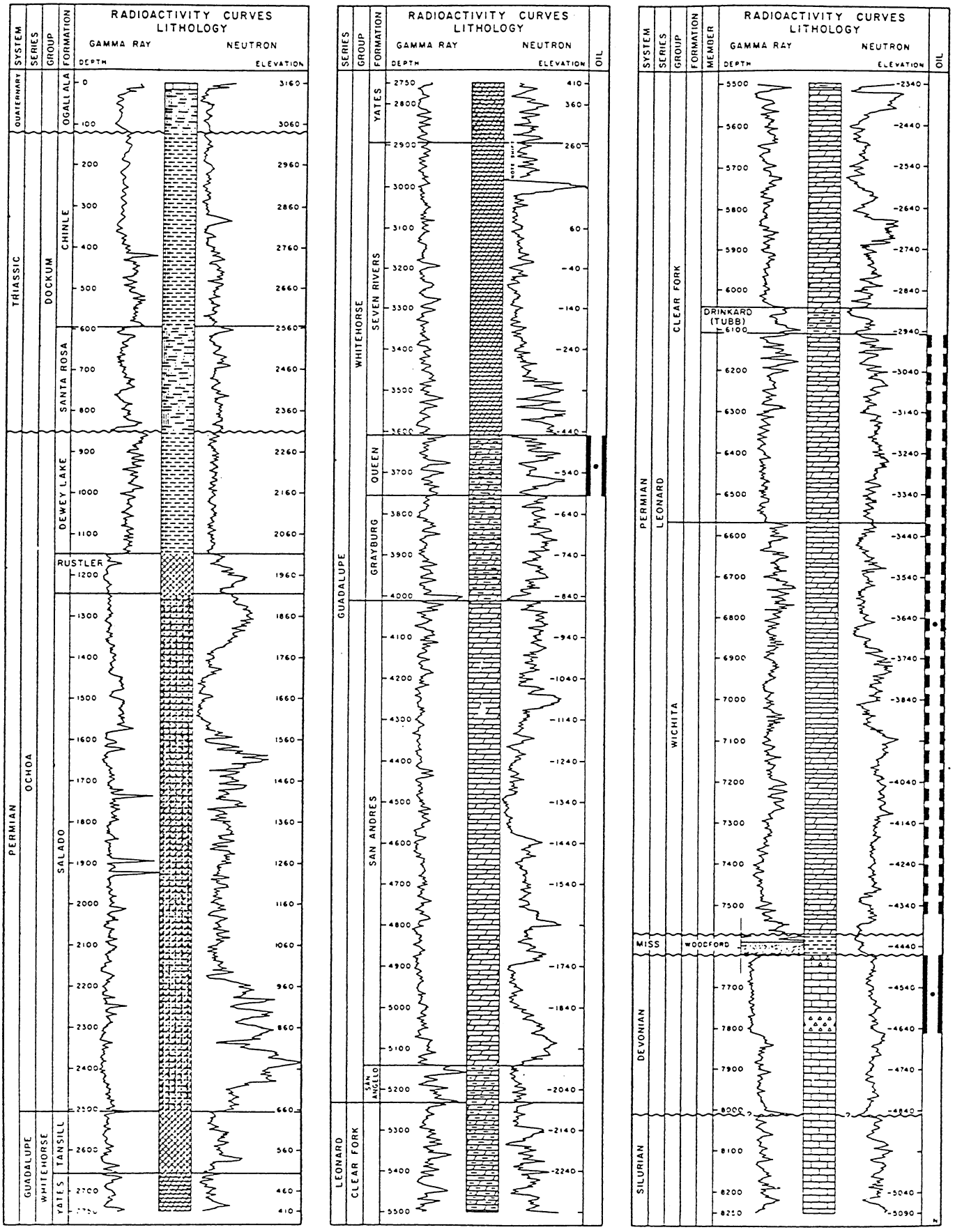
FIELD: Dollarhide RESERVOIR: Devonian TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	1885			
1977 PROD. (this project):	1451			
CUM. PROD. FROM DISC. TO 1/78:	50210			
PROJECT NO.	F-1162			
LEASE NO.(s):	13867			
OPERATOR:	Union Oil			
RESERVOIR:	Devonian			Devonian
DEPTH PRODUCING ZONE:	7700			
PRODUCTIVE ACREAGE IN RESERVOIR:	5632			250
ACREAGE IN PROJECT:	4740			1280
PORTION OR FIELD WIDE:	FW			
TYPE:	WF/SW, BW			WF
PATTERN:	5S			
YEAR BEGAN:	11-65 SW, 11-59 BW			
YEAR TERMINATED OR STATUS:	ICP			
RESERVOIR PRESSURE INITIAL:	3300			3330
BEG. INJECTION:	713			
LATEST:	-			
NUMBER OF WELLS TOTAL:	153			
PRODUCING WELLS:	49			67
INJECTION WELLS:	22SW			76
MAXIMUM:	24BW			
LATEST:	-			
SHUT-IN/ABANDONED WELLS:	58			
SURFACE INJECTION PRESSURE:	1700 SW, 1850 BW			
EFFECTIVENESS OF INJECTION:	VE			
OPERATOR PROBLEMS:	SC			
ESTIMATED PRODUCTION DUE TO INJ.:				
1977:	1451			
FROM BEG. INJECTION:	32798			
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	38509			
WATER PRODUCTION:				
CURRENT (1977):	3716			
CUMULATIVE TO 1/78:	15539			
CURRENT (1977) INJECTION:	4383 SW, 2922 BW			
CUMULATIVE INJECTION:	5093 SW, 135359 BW			

FROM: OCCURRENCE OF OIL & GAS IN WEST TEXAS: UNIV. OF TEXAS, BUREAU OF ECON. GEOL PUB.NO.5716.

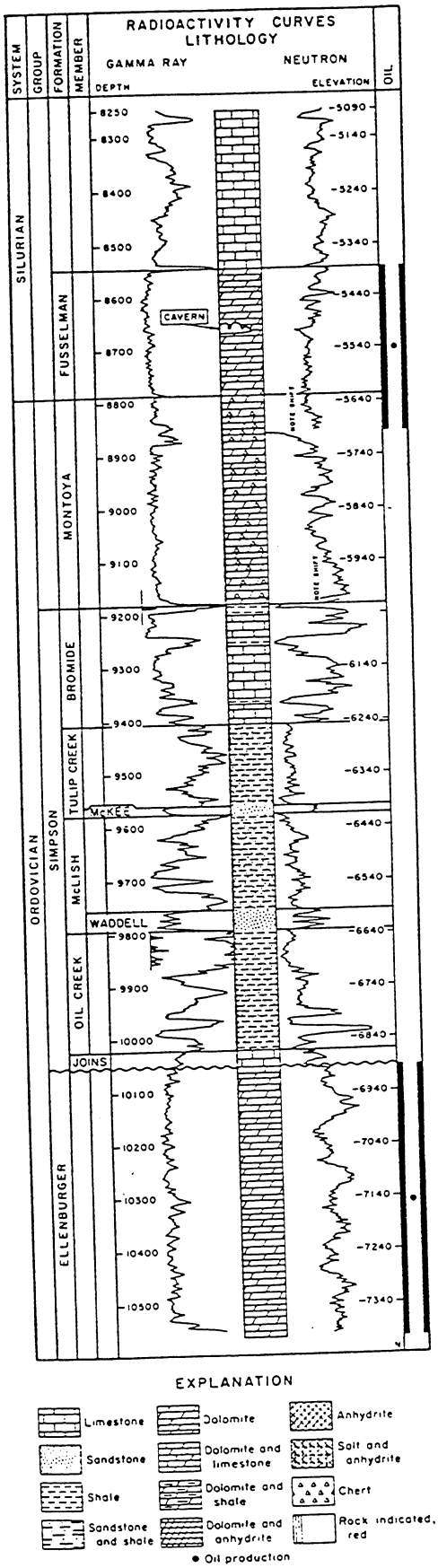
88 DOLLARHIDE FIELD, Andrews County, Texas, and Lea County, New Mexico

TYPICAL SECTION OF ROCKS PENETRATED

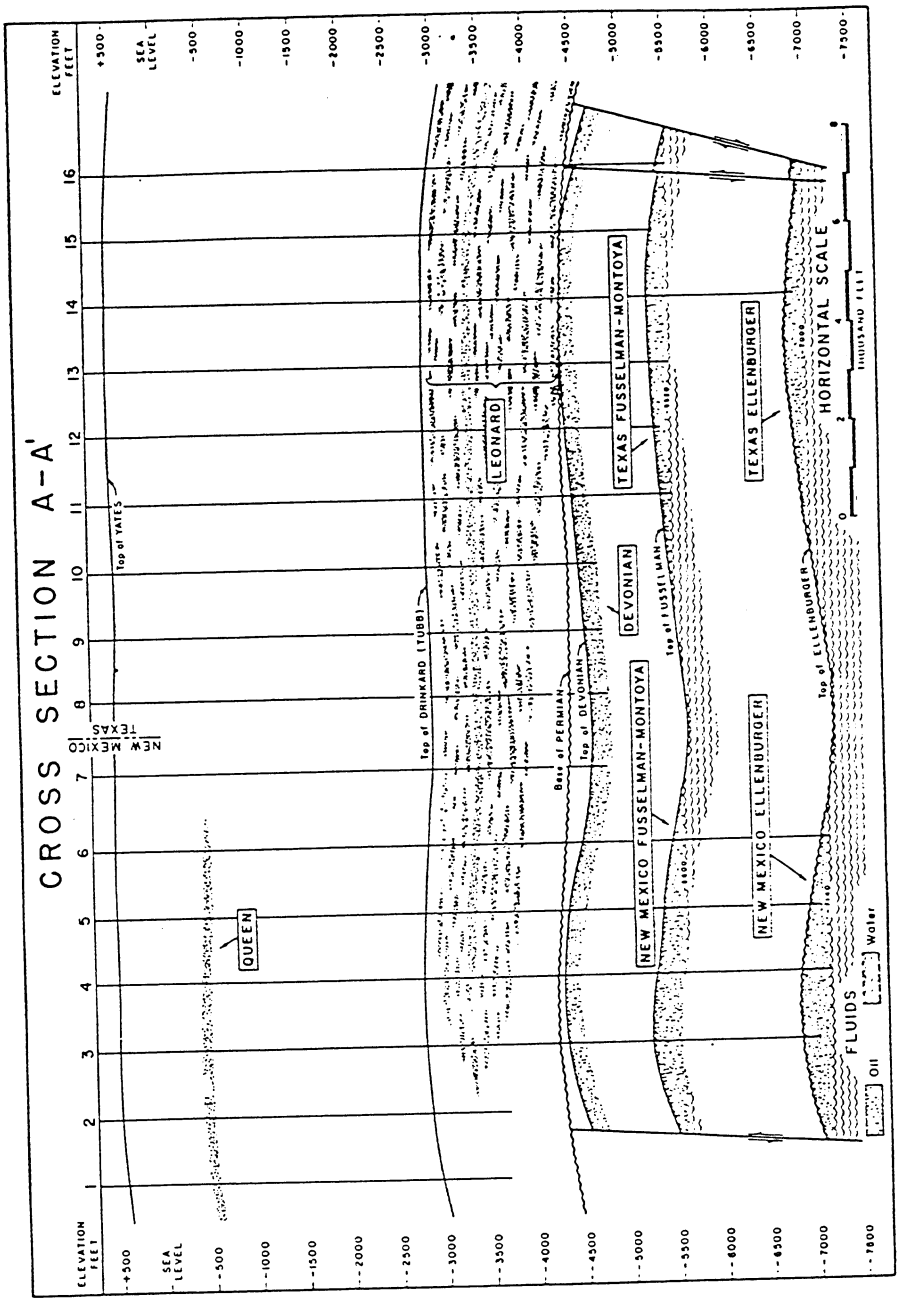


DOLLARHIDE FIELD, Andrews County, Texas, and Lea County, New Mexico

TYPICAL SECTION OF ROCKS PENETRATED



EXPLANATION

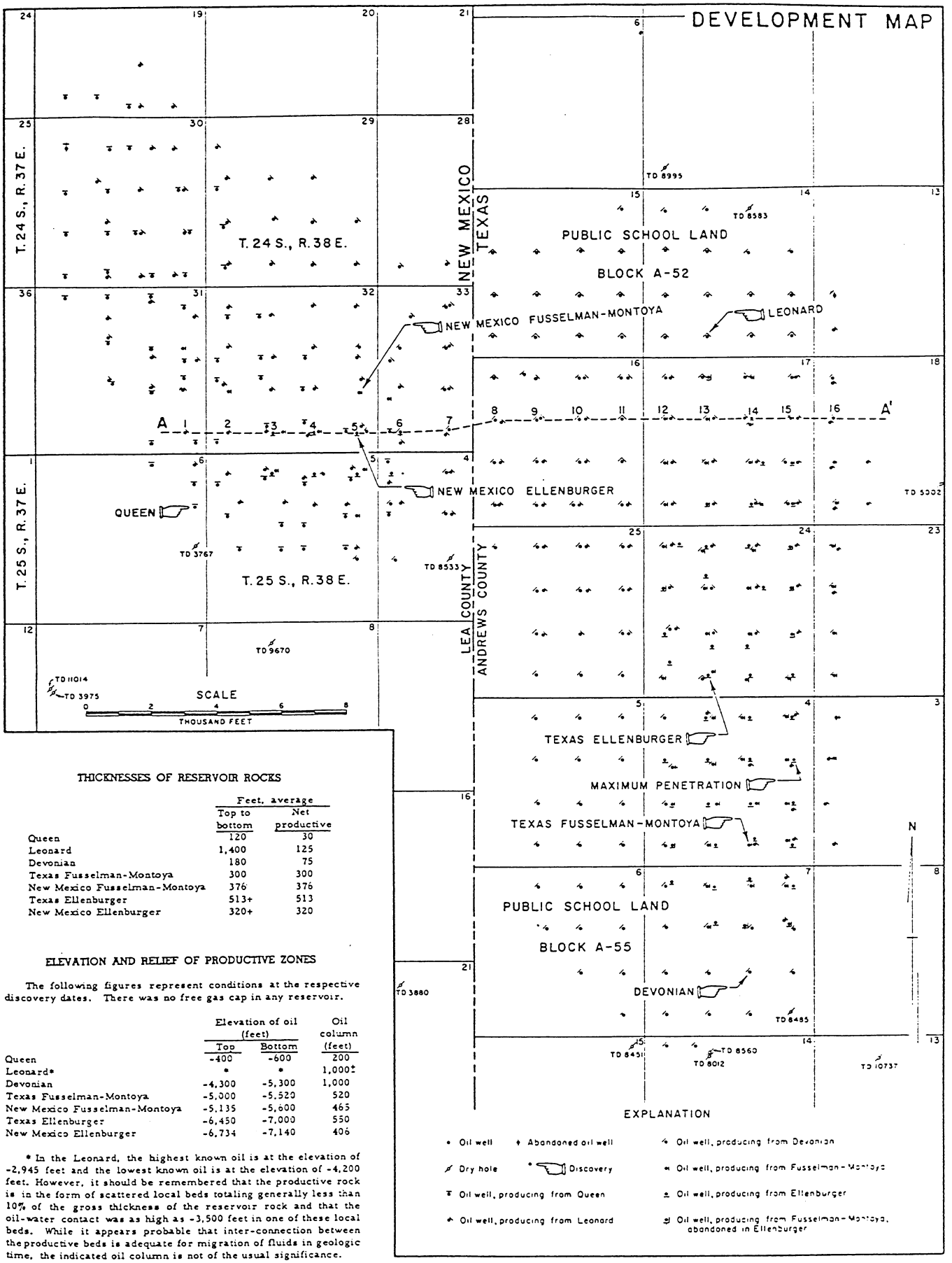


RESERVOIR PRESSURES

	Datum elevation (feet)	At time of discovery (psi.)	Saturation pressure (psi.)	At indicated recent date: Pressure (psi.)	At indicated recent date: Date
Queen	-550	1,361+	?	639	Nov. 1955
Leonard	-3,400	2,890	2,190	817	Nov. 1955
Devonian	-4,600	3,300	2,830	1,356	Nov. 1955
Texas Fusselman-Montoya	-5,200	3,555	793	2,655	Aug. 1955
New Mexico Fusselman-Montoya	-5,524	3,300*	395	3,062	March 1956
Texas Ellenburger	-6,300	4,295	1,492	2,688	Aug. 1955
New Mexico Ellenburger	-7,080	3,630*	?	2,730	March 1956

* The fact that the discovery pressures in the New Mexico Fusselman-Montoya and in the New Mexico Ellenburger were lower than the discovery pressures in the Texas reservoirs in the same reservoir rocks is attributed to the later discovery dates of the New Mexico reservoirs. The New Mexico discovery pressures, when adjusted for differences in datum elevations, were slightly higher than corresponding pressures at the same dates in the respective Texas reservoirs.

DOLLARHIDE FIELD, Andrews County, Texas, and Lea County, New Mexico 91



THICKNESSES OF RESERVOIR ROCKS

	Feet, average	
	Top to bottom	Net productive
Queen	120	30
Leonard	1,400	125
Devonian	180	75
Texas Fusselman-Montoya	300	300
New Mexico Fusselman-Montoya	376	376
Texas Ellenburger	513+	513
New Mexico Ellenburger	320+	320

ELEVATION AND RELIEF OF PRODUCTIVE ZONES

The following figures represent conditions at the respective discovery dates. There was no free gas cap in any reservoir.

	Elevation of oil (feet)		Oil column (feet)
	Top	Bottom	
Queen	-400	-600	200
Leonard*	*	*	1,000±
Devonian	-4,300	-5,300	1,000
Texas Fusselman-Montoya	-5,000	-5,520	520
New Mexico Fusselman-Montoya	-5,135	-5,600	465
Texas Ellenburger	-6,450	-7,000	550
New Mexico Ellenburger	-6,734	-7,140	406

* In the Leonard, the highest known oil is at the elevation of -2,945 feet and the lowest known oil is at the elevation of -4,200 feet. However, it should be remembered that the productive rock is in the form of scattered local beds totaling generally less than 10% of the gross thickness of the reservoir rock and that the oil-water contact was as high as -3,500 feet in one of these local beds. While it appears probable that inter-connection between the productive beds is adequate for migration of fluids in geologic time, the indicated oil column is not of the usual significance.

Source 12c.

ELEVATION OF SURFACE

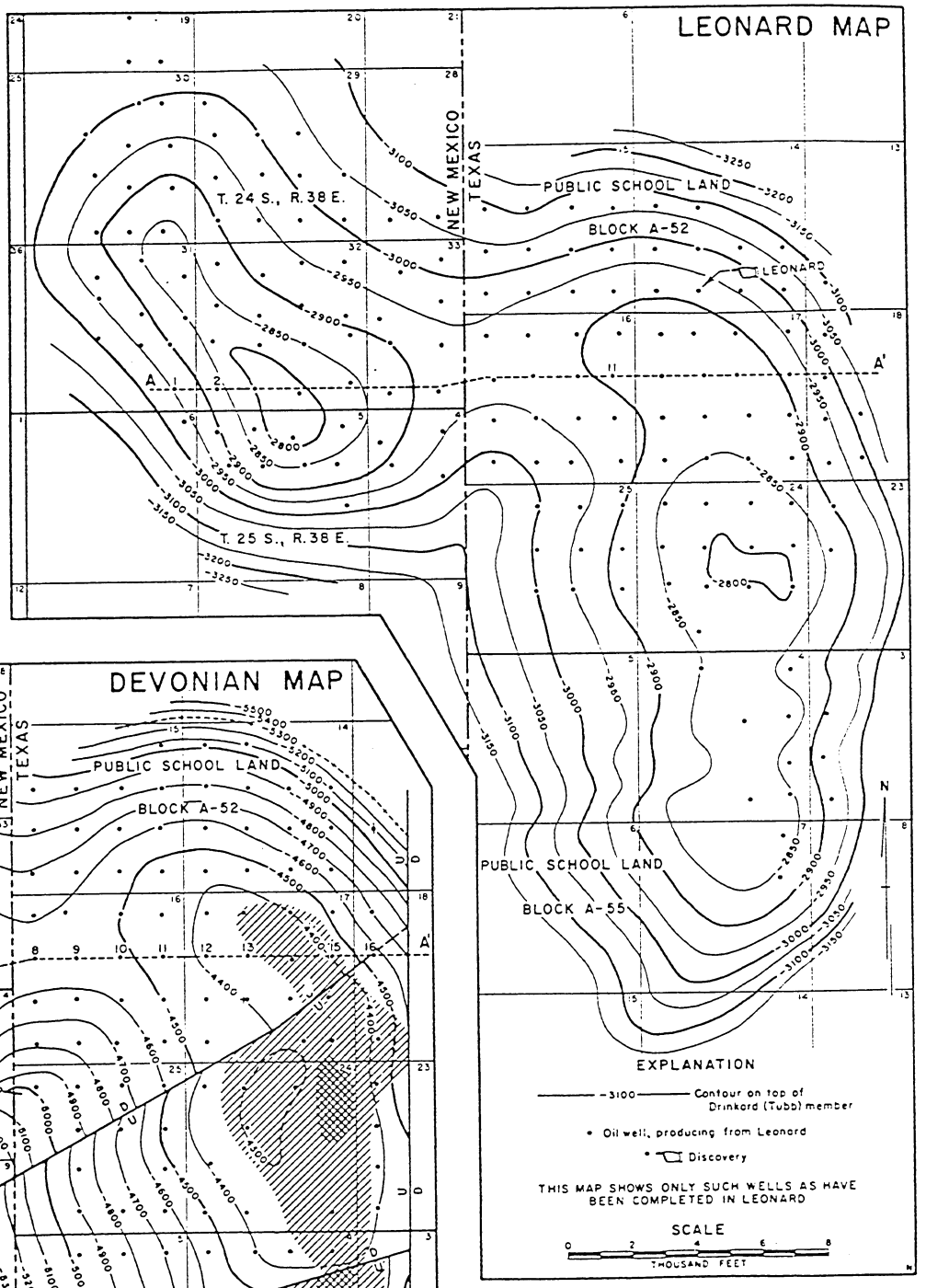
Derrick floor elevations: Highest, 3,200 feet; lowest, 3,110 feet. The higher elevations are at the north end of the field; the surface slopes southward generally.

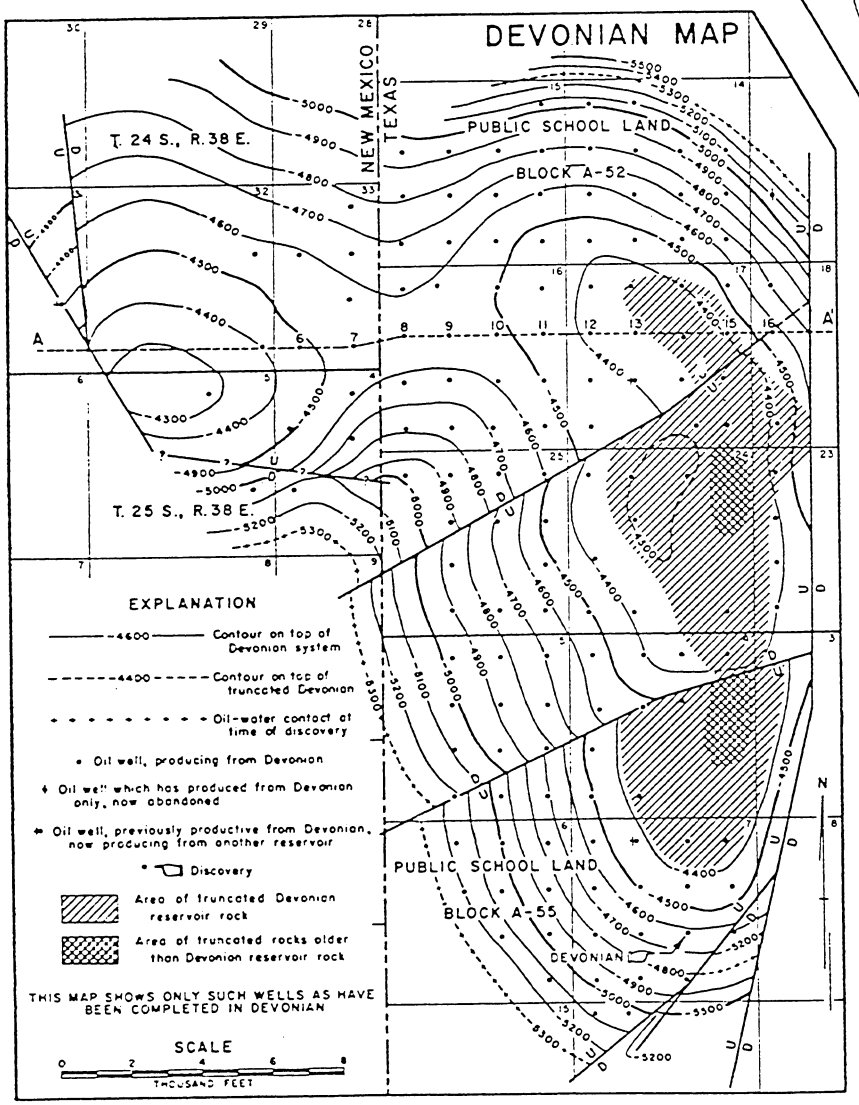
SURFACE FORMATION

Ogallala formation of the Quaternary system overlain generally by Recent wind-blown sands.

PRODUCTIVE AREAS

	Acres
Queen	2,520
Leonard	4,011
Devonian	5,632
Texas Fusselman-Montoya	2,800
New Mexico Fusselman-Montoya	970
Texas Ellenburger	2,555
New Mexico Ellenburger	705
Dollarhide field	9,040





NATURE OF TRAPS

Queen: Convex folding combined with change in character of sediments.

Leonard: Convex fold modified by permeability barriers.

Devonian: The trap is due primarily to convex folding; it is modified by faulting, by truncation and by variation in degree of permeability.

Texas Fusselman-Montoya: Convex fold modified by faulting.

New Mexico Fusselman-Montoya: Convex fold modified slightly by faulting.

Texas Ellenburger and New Mexico Ellenburger: The trap in each of the two reservoirs is due primarily to convex folding but it is modified by faulting and by truncation with sealing by relatively impervious overlying strata.

OLDEST STRATIGRAPHIC HORIZON PENETRATED

The oldest horizon penetrated within the area of the field is in the Ellenburger group. The maximum known penetration of Ellenburger is 513 feet below its eroded top. This penetration was at the total depth of 10,145 feet in Humble Oil & Refining Co. #13 E.P.Cowden, located in Sec. 4 where "MAXIMUM PENETRATION" is entered on the accompanying Development map. Since the top of the Ellenburger is an erosion surface and since exact stratigraphic positions within Ellenburger have not been determined, it is possible that some lesser penetration of Ellenburger actually reached an older horizon than penetrated by the above mentioned well.

SELECTED REFERENCES

Kastrop, J. E. (1952) Saving 2800 feet of casing per well: World Oil, October 1952, pp. 243, 244.

McChesney, J. R. (1952) Dollarhide's casing-head gas processed: Oil & Gas Journal, February 11, 1952, pp. 123 et seq.

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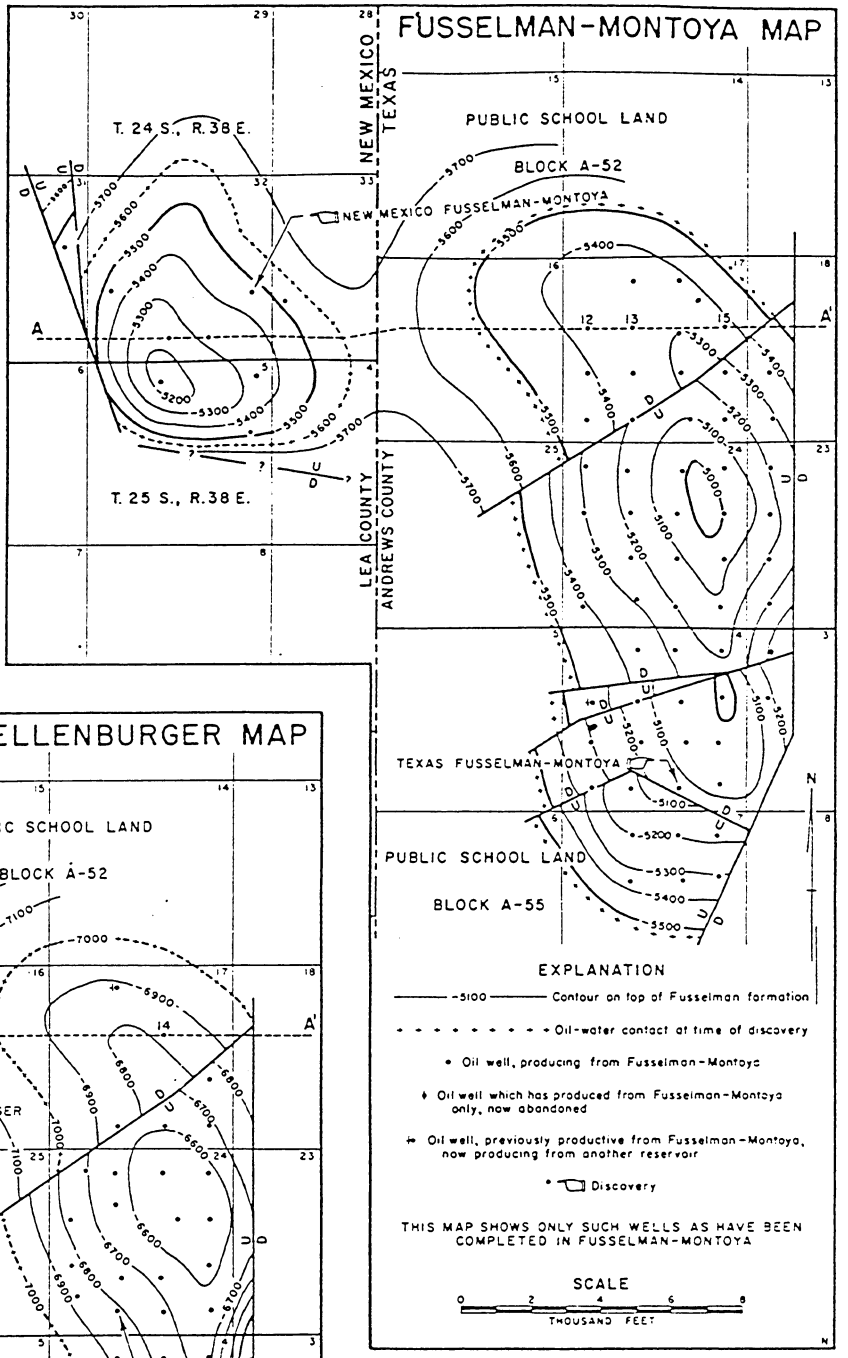
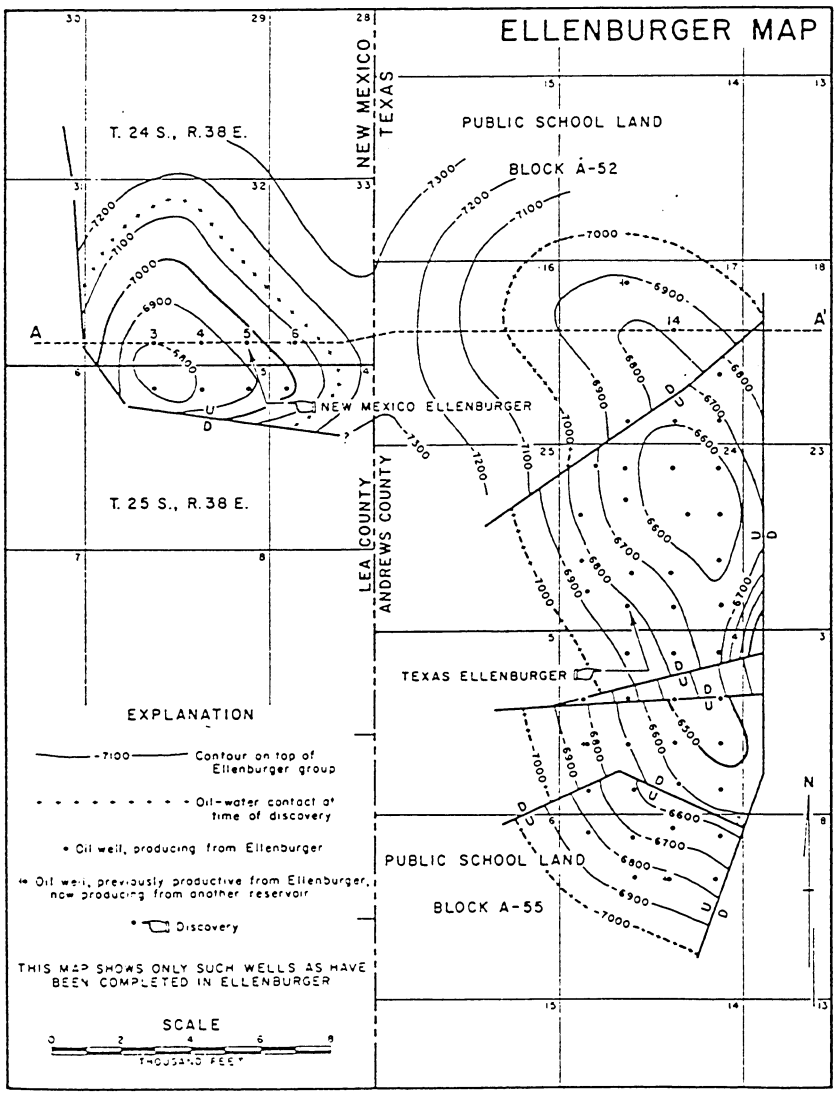




CHARACTER OF GAS

There was no free gas in any reservoir at time of discovery of commercial production. Such gas as has been produced has come out of solution as oil has been produced. The specific gravity and condensate content have averaged about as indicated below.

	Specific gravity	Condensate, gal/Mcf
Queen	?	?
Leonard	0.978	2.58
Devonian	0.957	2.33
Texas Fusselman-Montoya	1.170	3.26
New Mexico Fusselman-Montoya	?	?
Texas Ellenburger	0.939	3.10
New Mexico Ellenburger	?	?

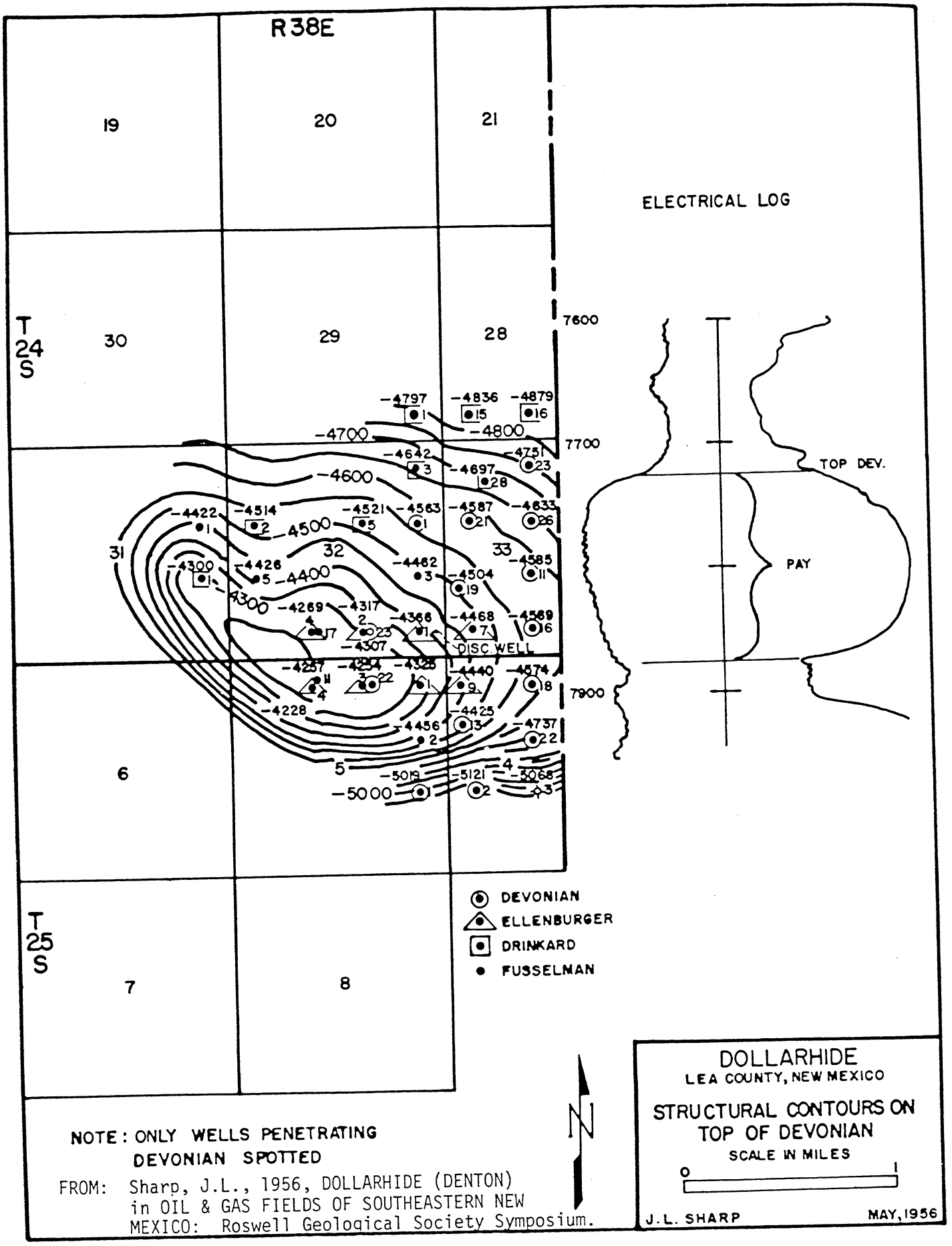
Dollarhide
Devonian
Central Basin Platform

DATA SOURCE CODE		
1, 6a	STATE	New Mexico
1, 6a	COUNTY	Lea
1, 6a	REGULATORY DISTRICT	Southeast
1, 6a	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1, 6a	FIELD	Dollarhide
1, 6a	RESERVOIR	Devonian
1, 6	GEOLOGIC AGE	Devonian
1, 6	AAPG STRATIGRAPHIC AGE CODE	340
6a, 1 12c	RESERVOIR LITHOLOGY	Medium crystalline dolomite; dolomite Dollarhide-Devonian, NMx is continuous with Dollarhide-Devonian, Tx
6a, 1	TRAPPING MECHANISM	Anticlinal trap; faulted anticline
1, 6a	DISCOVERY YEAR	4-6-52
1, 12c	PROVED ACREAGE	720, 5362 TX & NMX
	REGULAR WELL SPACING (acres/well)	
6a,1	RESERVOIR DEPTH	7720-7880 (8000); 8177
1	RESERVOIR THICKNESS	33' avg.
12c	NET PAY	75
6a, 12c	GROSS	200, 180
	NET/GROSS RATIO	
	POROSITY	
6a	TYPE	IC
1	FRACTION	.09 avg.
	PERMEABILITY	
	RANGE	
1	AVERAGE	.10
	HORIZONTAL	
	VERTICAL	
6a	OTHER INFORMATION	Other reservoirs are the Fusselman, Tubb/Drinkard, Ellenburger
12c	Dollarhide-Devonian Texas and New Mexico are a continuous reservoir.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	29 Total, 12 pump, 5 flow, 9 injec., 3 shut-in; 20P, 2I, 7 Shut-in.
1	PRODUCTION 1977 oil (cum)	6030
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	6608
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	yes
6a	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dollarhide
1, 6a	RESERVOIR:	Devonian
1	PROD. ACRES:	720
1	AVG. THICKNESS (FT.):	33
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
1, 6a	PRIMARY DRIVE MECHANISM:	water drive & vol., volumetric
12c	PRIMARY GAS CAP?:	no
17	TEMPERATURE (°F):	156 (GG=1.0)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	2883
1, 6a	RESERVOIR PRESSURE INITIAL (psi):	3300
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	793
6a, 1	STOCK TANK OIL GRAVITY (°API):	40.0
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1932
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:



NOTE: ONLY WELLS PENETRATING DEVONIAN SPOTTED

FROM: Sharp, J.L., 1956, DOLLARHIDE (DENTON) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium.

Dollarhide
Ellenburger
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
2,12c	COUNTY	Andrews
2	REGULATORY DISTRICT	8
	BASIN	Permian
15, 12c	SUB-BASIN	Central Basin Platform
2	FIELD	Dollarhide
2	RESERVOIR	Ellenburger
1	GEOLOGIC AGE	Ordovician
1	AAPG STRATIGRAPHIC AGE CODE	364
7, 12c	RESERVOIR LITHOLOGY	Dolomite-crystalline, vuggy and fractured
7, 12c	TRAPPING MECHANISM	Anticline/faulted; convex folding modified by faulting and truncation with sealing by impervious overlying strata.
2, 12c	DISCOVERY YEAR	1947, 10-47
2, 12c	PROVED ACREAGE	2227, 2555
	REGULAR WELL SPACING (acres/well)	
2,3, 12c	RESERVOIR DEPTH	9900; 10,137; 10,500
	RESERVOIR THICKNESS	
2, 12c	NET PAY	187, 513
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
7,12c	TYPE	IC, V, F
2, 12c	FRACTION	.032, .022
	PERMEABILITY	
	RANGE	
2, 12c	AVERAGE	5 md, 4.9 md
2	HORIZONTAL	5 md
	VERTICAL	
3	OTHER INFORMATION	Other reservoirs include Clear Fork and Devonian.
12c	Dollarhide-Ellenburger Texas and New Mexico are a continuous reservoir.	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2, 12c	TOTAL NUMBER OF WELLS	47 (7P-3I-37A); 44P
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	24,754
3	PRODUCTION 1-1-79 to 1-1-80	169.6 mbbls oil; 100.2 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	
12c	STRUCTURE CONTOUR?	Yes See Dollarhide-Clear Fork
12c	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dollarhide
2	RESERVOIR:	Ellenburger
2, 12c	PROD. ACRES:	2227, 2555
2, 12c	AVG. THICKNESS (FT.):	187, 513
12c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.29
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
12c	PRIMARY GAS CAP?:	no
	TEMPERATURE (°F):	
12c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1492
2, 12c	RESERVOIR PRESSURE INITIAL (psi):	4295
2, 12c	RESERVOIR PRESSURE LATEST (psi):	1806, 2688 (56)
12c	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	777
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 3, 12c	STOCK TANK OIL GRAVITY (°API):	41, 44.2, 43
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	60,133 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	25,857 mbbls

12c OTHER INFORMATION: Keener, M.H.L., 1957, Dollarhide Field in occurrence of oil and gas in West Texas: Texas Bureau of Economic Geology publication no. 5716, Aug. 1957, p. 87-96.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Dollarhide RESERVOIR: Ellenburger TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	598
1977 PROD. (this project):	449
CUM. PROD. FROM DISC. TO 1/78:	
PROJECT NO.	F1164
LEASE NO.(s):	13870
OPERATOR:	Union Oil
RESERVOIR:	Ellenburger
DEPTH PRODUCING ZONE:	9900
PRODUCTIVE ACREAGE IN RESERVOIR:	2227
ACREAGE IN PROJECT:	2227
PORTION OR FIELD WIDE:	FW
TYPE:	PM/SW
PATTERN:	F
YEAR BEGAN:	3-63
YEAR TERMINATED OR STATUS:	ICP
RESERVOIR PRESSURE INITIAL:	4295
BEG. INJECTION:	2560
LATEST:	1806
NUMBER OF WELLS TOTAL:	47
PRODUCING WELLS:	7
INJECTION WELLS:	3
MAXIMUM:	
LATEST:	
SHUT-IN/ABANDONED WELLS:	37
SURFACE INJECTION PRESSURE:	
EFFECTIVENESS OF INJECTION:	ME
OPERATOR PROBLEMS:	CH, SC
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	128
FROM BEG. INJECTION:	461
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	---
WATER PRODUCTION:	
CURRENT (1977):	1963
CUMULATIVE TO 1/78:	17,395
CURRENT (1977) INJECTION:	1230
CUMULATIVE INJECTION:	12,982

Dollarhide
Ellenburger
Central Basin Platform

DATA SOURCE CODE		
6a	STATE	New Mexico
1	COUNTY	Lea
	REGULATORY DISTRICT	Southeast
6a	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
6a	FIELD	Dollarhide
6a	RESERVOIR	Ellenburger
6	GEOLOGIC AGE	Ordovician
1	AAPG STRATIGRAPHIC AGE CODE	360
6a	RESERVOIR LITHOLOGY	light tan to tan, medium crystalline dolomite
6a ,12c	TRAPPING MECHANISM	anticline; faulted anticline
12c	Trap continuous with Dollarhide-Ellenburger, Texas.	
6a	DISCOVERY YEAR	5-24-51
12c	PROVED ACREAGE	705
	REGULAR WELL SPACING (acres/well)	
12c	RESERVOIR DEPTH	7000-10,000
	RESERVOIR THICKNESS	
12c	NET PAY	320
12c	GROSS	320+
	NET/GROSS RATIO	
	POROSITY	
6a	TYPE	intercrystalline
12c	FRACTION	.022
	PERMEABILITY	
	RANGE	
12c	AVERAGE	4.9 md
	HORIZONTAL	
	VERTICAL	
6a	OTHER INFORMATION	other reservoirs are Tubb/Drinkard, Fusselman, Devonian
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	2P
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	3,306
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dollarhide
6a	RESERVOIR:	Ellenburger
12c	PROD. ACRES:	705
12c	AVG. THICKNESS (FT.):	320
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
6a	PRIMARY DRIVE MECHANISM:	volumetric
12c	PRIMARY GAS CAP?:	no
	TEMPERATURE (°F):	
12c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1492-Texas
6a , 12c	RESERVOIR PRESSURE INITIAL (psi):	3496, 3630
12c	RESERVOIR PRESSURE LATEST (psi):	2730 (March-1956)
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6a	STOCK TANK OIL GRAVITY (°API):	42
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

	OTHER INFORMATION:

Dollarhide, East
Devonian
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Andrews
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Dollarhide, East
1,5a,16a,b	RESERVOIR	Devonian
5,1	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
1, 5a	RESERVOIR LITHOLOGY	Chert, limestone; cherty lime at the top of the Devonian and tripolitic chert about 120 ft. below top is principal pay zone.
1, 5a	TRAPPING MECHANISM	Structural, anticline fault; north-south trending anticline bound on east side by major fault.
5a, 1, 16b	DISCOVERY YEAR	10-1949, 1949
1,5a,16b	PROVED ACREAGE	1200, 1120, 833
5d, 1	REGULAR WELL SPACING (acres/well)	80
1,5a,2,3	RESERVOIR DEPTH	10,186; 10,186-201; 10,100; 10,186
	RESERVOIR THICKNESS	
5a,16b,1	NET PAY	15, 30, 15
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
5a,16b,1	FRACTION	.21, .23, .23
	PERMEABILITY	
	RANGE	
5a,16b,1	AVERAGE	5 md, 4md, 5md.
	HORIZONTAL	
	VERTICAL	
5a, 3	OTHER INFORMATION	Other production from Ellenburger, Fusselman
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
5a,1,2	TOTAL NUMBER OF WELLS	14P; 2A; 4D.H.; 10P; 13(4P-6I-3A)
1	PRODUCTION 1976 oil (cum)	3848
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	5,478.4
3	PRODUCTION 1-1-79 to 1-1-80	30.5 mbbls oil; 27.2 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	
5a	STRUCTURE CONTOUR?	Yes , also Structure Contour and Log on Fusselman.
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

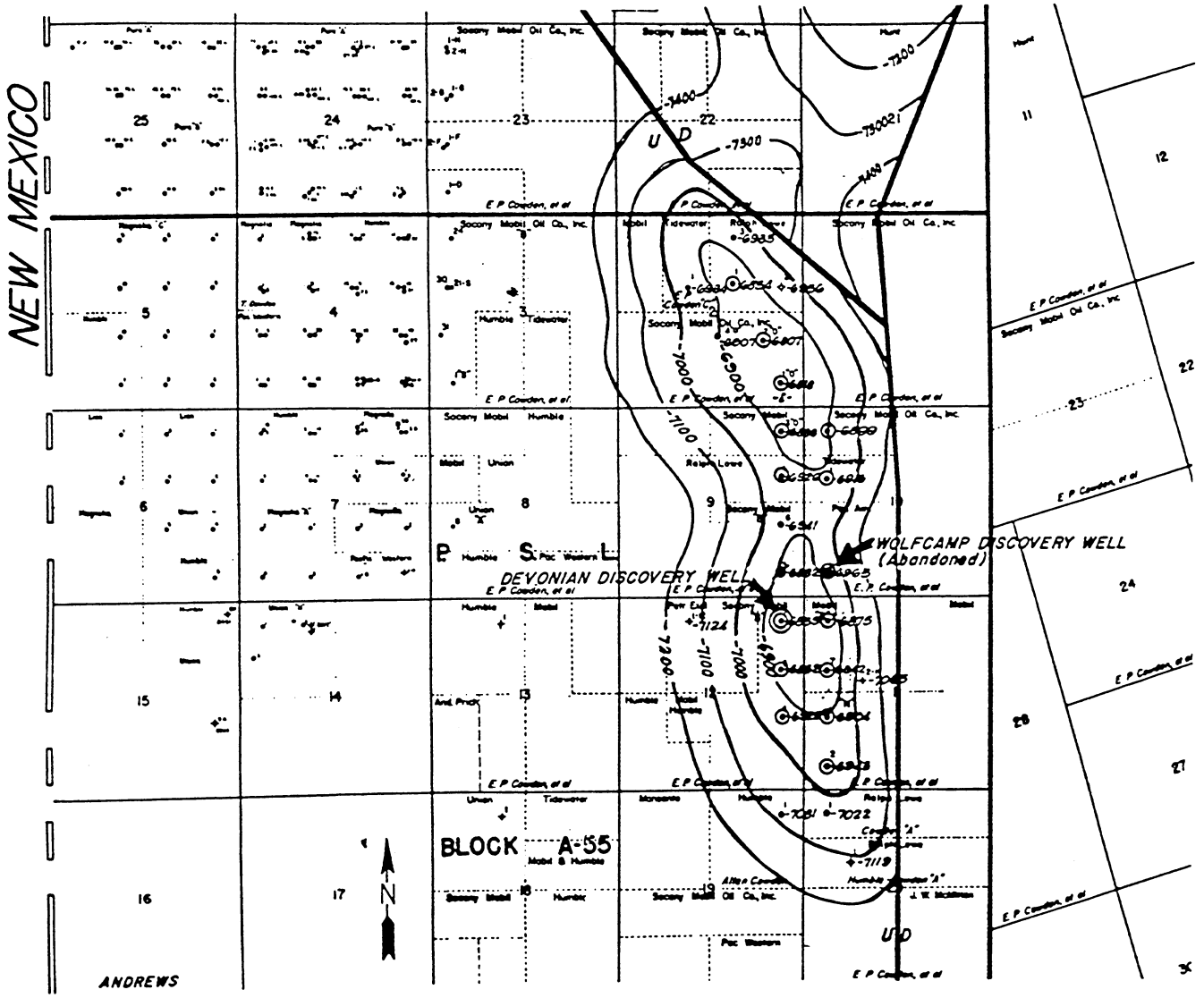
DATA SOURCE CODE		
	FIELD:	Dollarhide, East
5a, 1,16a-b	RESERVOIR:	Devonian
5a, 1,16b	PROD. ACRES:	1120, 1200, 833
5a, 1,16b	AVG. THICKNESS (FT.):	15, 15, 30
1	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.67
	FORMATION VOLUME FACTOR LATEST (FVF):	
5a, 1	WATER SATURATION (S_W):	.29
	OIL SATURATION (S_O):	
1, 5a	PRIMARY DRIVE MECHANISM:	depletion; solution gas
	PRIMARY GAS CAP?:	
	TEMPERATURE (°F):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
16b, 1, 2	RESERVOIR PRESSURE INITIAL (psi):	1200, 3967, 4250
	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	682
1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	6559.3 (76)
1,5a,2,3,16b	STOCK TANK OIL GRAVITY (°API):	41.2; 40; 40; 41.2; 40
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	10,786 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	1,500 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Dollarhide, East RESERVOIR: Devonian TOTAL NO. PROJECTS: 1 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	39
1977 PROD. (this project):	38
CUM. PROD. FROM DISC. TO 1/78:	2927
PROJECT NO.	F6227
LEASE NO.(s):	23732
OPERATOR:	Mobile
RESERVOIR:	Devonian
DEPTH PRODUCING ZONE:	10100
PRODUCTIVE ACREAGE IN RESERVOIR:	960
ACREAGE IN PROJECT:	512
PORTION OR FIELD WIDE:	P
TYPE:	WF/SW, FW
PATTERN:	P
YEAR BEGAN:	2-76
YEAR TERMINATED OR STATUS:	ICP
RESERVOIR PRESSURE INITIAL:	4250
BEG. INJECTION:	----
LATEST:	----
NUMBER OF WELLS TOTAL:	5a-20; 13
PRODUCING WELLS:	5a-14; 4
INJECTION WELLS:	3 SW
MAXIMUM:	3 FW
LATEST:	
SHUT-IN/ABANDONED WELLS:	5a-6; 3
SURFACE INJECTION PRESSURE:	825
EFFECTIVENESS OF INJECTION:	UD
OPERATOR PROBLEMS:	----
ESTIMATED PRODUCTION DUE TO INJ.:	----
1977:	----
FROM BEG. INJECTION:	----
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	
WATER PRODUCTION:	
CURRENT (1977):	2
CUMULATIVE TO 1/78:	136
CURRENT (1977) INJECTION:	62
CUMULATIVE INJECTION:	1296



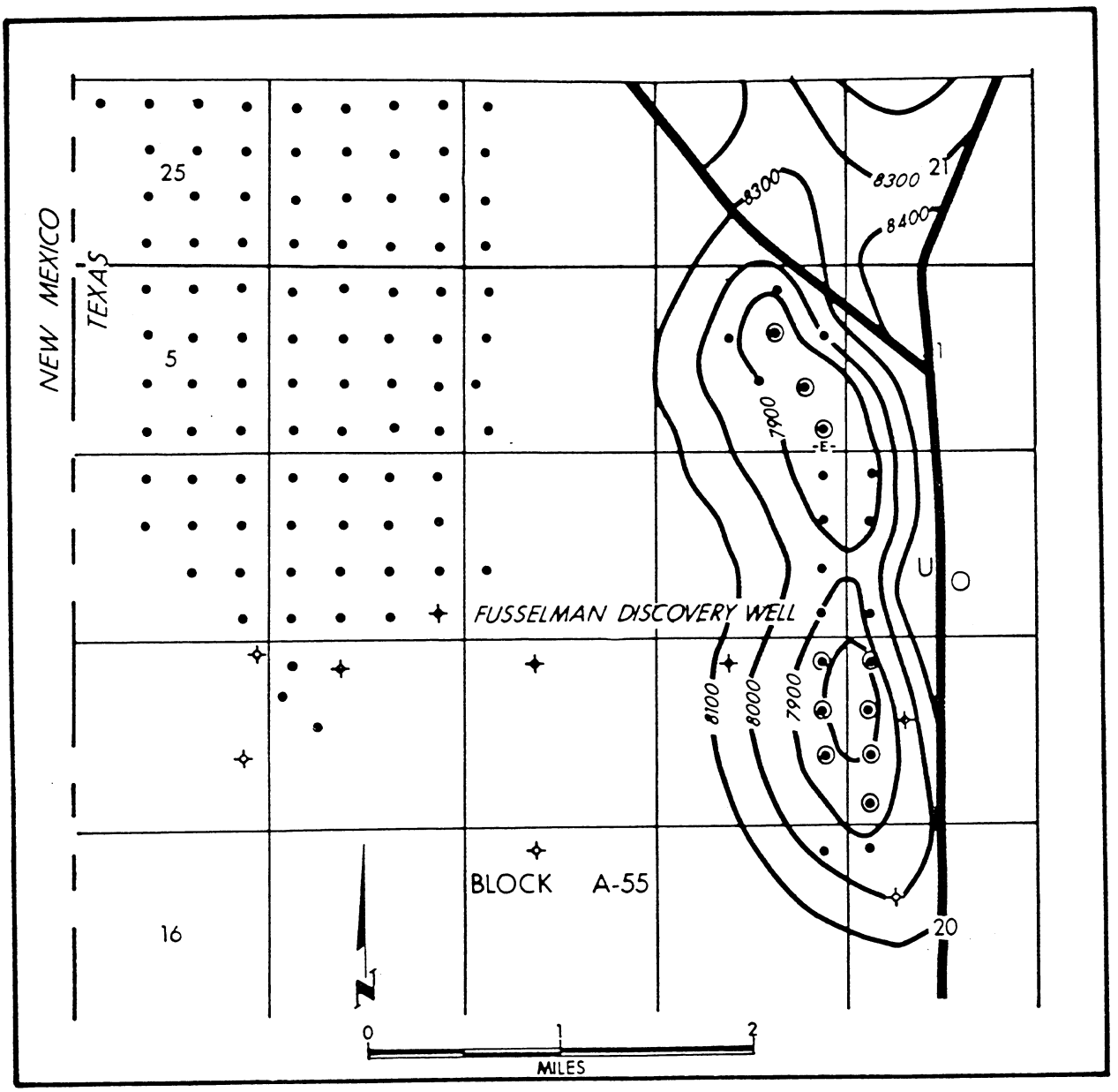
Dollarhide, East Field
STRUCTURE MAP
Devonian Datum
Andrews County, Texas
C.I.=100' C.K. Jones
November, 1965

0 ½ 1 2
Scale in Miles

LEGEND:

- Devonian Producer
- Abandoned Devonian Producer
- Deepest Penetration (Pre-G)

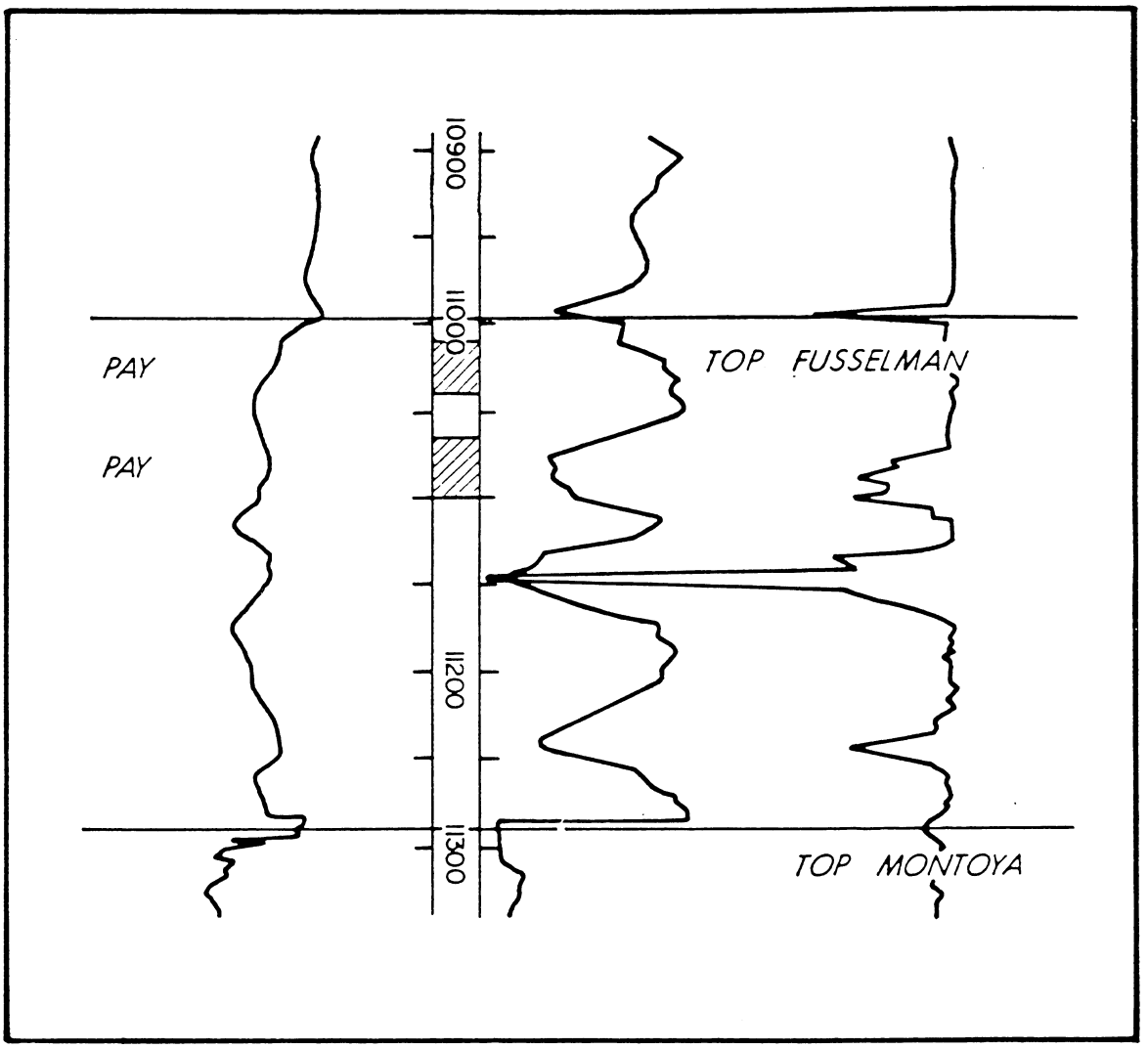
FROM: Horak, R.L., 1966, DOLLARHIDE, EAST DEVONIAN in OIL & GAS FIELDS IN WEST TEXAS SYMPOSIUM: West Texas Geological Society, Publ. No. 66-52.



Legend

- FUSSELMAN PRODUCER
- -E- DEEPEST PENETRATION (PRE-6)

STRUCTURE MAP ON THE TOP OF THE FUSSELMAN,
EAST DOLLARHIDE FIELD, ANDREWS COUNTY, TEXAS



TYPE LOG OF FUSSELMAN IN
EAST DOLLARHIDE FIELD

Donnelly
San Andres
Central Basin Platform

DATA SOURCE CODE		
	STATE	Texas
1	COUNTY	Ector
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Donnelly
1	RESERVOIR	San Andres
5,1	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
1	RESERVOIR LITHOLOGY	Dolomite
	TRAPPING MECHANISM	
2,1	DISCOVERY YEAR	1-1950; 1950
2,1,16c	PROVED ACREAGE	1505, 80, 2305
1	REGULAR WELL SPACING (acres/well)	20
2,3,1	RESERVOIR DEPTH	4000-4300, 4305, 4305
	RESERVOIR THICKNESS	
2,1	NET PAY	23 avg., 60
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2,1	FRACTION	.07 avg.; .13
	PERMEABILITY	
	RANGE	
2,1	AVERAGE	10, 15md
2	HORIZONTAL	10md
	VERTICAL	
3	OTHER INFORMATION	Other reservoirs include Canyon, Cisco, Connell, Devonian, Grayburg, and Holt.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1,2	TOTAL NUMBER OF WELLS	71P-18I; 87(43P-25I-19A)
1	PRODUCTION 1976 oil (cum)	6936
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	7,512.6 mbbls
3	PRODUCTION 1-1-79 to 1-1-80	159.9 mbbls oil; 205.3 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	no
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
1	FIELD:	Donnelly
2,1,16c	RESERVOIR:	San Andres
2,1	PROD. ACRES:	1505, 80, 2305
	AVG. THICKNESS (FT.):	23, 60
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.25 (1966)
16c	WATER SATURATION (S_W):	.312-.35
1	OIL SATURATION (S_O):	.52 (1968)
	PRIMARY DRIVE MECHANISM:	depletion
17	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	113
2, 1	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	4384
2	RESERVOIR PRESSURE INITIAL (psi):	1150-1640, 1640
	RESERVOIR PRESSURE LATEST (psi):	600
17, 1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
2,3,1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1270, 1270.1 (76)
	STOCK TANK OIL GRAVITY (°API):	35, 36, 36
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
2	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1421
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 2 SRPs:	18,600 mbbls
	ESTIMATED PRIMARY OIL RECOVERED FOR 2 SRPs:	5,108 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Donnelly RESERVOIR: San Andres TOTAL NO. PROJECTS: 2 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	94	36			
1977 PROD. (this project):	75	38			
CUM. PROD. FROM DISC. TO 1/78:	5211	728			
PROJECT NO.	F1166	F1168			
LEASE NO.(s):	01160;01161;18138	13785;14168;14819			
OPERATOR:	Atlantic Rich.	Schlachter			
RESERVOIR:	San Andres	San Andres			San Andres
DEPTH PRODUCING ZONE:	4000	4300			4305
PRODUCTIVE ACREAGE IN RESERVOIR:	1505	800			80
ACREAGE IN PROJECT:	1505	800			1505
PORTION OR FIELD WIDE:	FW	FW			
TYPE:	PM/SW, BW	PM/BW			WF/PM
PATTERN:	P	P			
YEAR BEGAN:	11-61	3-62			1961
YEAR TERMINATED OR STATUS:	ICP	ICP			
RESERVOIR PRESSURE INITIAL:	1150	1640			1640
BEG. INJECTION:	950	700			
LATEST:	600	----			
NUMBER OF WELLS TOTAL:	72	15			
PRODUCING WELLS:	29	14			71
INJECTION WELLS:	12 SW	1			18
MAXIMUM:	12 BW	----			
LATEST:	----	----			
SHUT-IN/ABANDONED WELLS:	19	0			
SURFACE INJECTION PRESSURE:	800	----			
EFFECTIVENESS OF INJECTION:	ME	ME			
OPERATOR PROBLEMS:	CR, EW, SC, SF	CR, PA, IP			
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	75	----			
FROM BEG. INJECTION:	1259	----			
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	680?	----			
WATER PRODUCTION:					
CURRENT (1977):	247	10			
CUMULATIVE TO 1/78:	2228	94			
CURRENT (1977) INJECTION:	247SW; 1249 BW	103			
CUMULATIVE INJECTION:	2974 SW; 18083 BW	1775			

Dora Roberts
Devonian
Midland Basin

DATA SOURCE CODE		
	STATE	Texas
2	COUNTY	Midland
2	REGULATORY DISTRICT	8
2	BASIN	Permian
2	SUB-BASIN	Midland
14c, 2	FIELD	Dora Roberts
2	RESERVOIR	Devonian
5	GEOLOGIC AGE	Devonian
1	AAPG STRATIGRAPHIC AGE CODE	340
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
2,3	DISCOVERY YEAR	5-1955
2	PROVED ACREAGE	7000
	REGULAR WELL SPACING (acres/well)	
2,3	RESERVOIR DEPTH	12,010
	RESERVOIR THICKNESS	
2	NET PAY	124
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.066
	PERMEABILITY	
	RANGE	
2	AVERAGE	1 md
2	HORIZONTAL	1 md
	VERTICAL	
3	OTHER INFORMATION	Other production from Ellenburger, Fusselman, Pennsylvanian, Strawn
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	GAS RESERVOIR
2	TOTAL NUMBER OF WELLS	83(47P, 17I, 19SI)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	1,928.8
3	PRODUCTION 1-1-79 to 1-1-80	11.1 mbbls oil; 149.7 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dora Roberts
2	RESERVOIR:	Devonian
2	PROD. ACRES:	7000
2	AVG. THICKNESS (FT.):	124
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
	TEMPERATURE (^oF):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2	RESERVOIR PRESSURE INITIAL (psi):	5388
2	RESERVOIR PRESSURE LATEST (psi):	4500
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2,3	STOCK TANK OIL GRAVITY (^oAPI):	53, 45
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:*	92,000 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:*	4,259 mbbls

OTHER INFORMATION:

* 1 SRP covers 49 leases held by Cities Service Co.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Dora Roberts RESERVOIR: Devonian TOTAL NO. PROJECTS: 1 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

	GAS RESERVOIR
1976 PROD. (this project): MBBLS	---
1977 PROD. (this project):	---
CUM. PROD. FROM DISC. TO 1/78:	21616
PROJECT NO.	F1170
LEASE NO.(s):	30477-46826 (49 leases)
OPERATOR:	Cities Service
RESERVOIR:	Devonian
DEPTH PRODUCING ZONE:	12010
PRODUCTIVE ACREAGE IN RESERVOIR:	7000
ACREAGE IN PROJECT:	6000
PORTION OR FIELD WIDE:	FW
TYPE:	PM/Gas
PATTERN:	I9
YEAR BEGAN:	4-61
YEAR TERMINATED OR STATUS:	ICP
RESERVOIR PRESSURE INITIAL:	5388
BEG. INJECTION:	4700
LATEST:	4500
NUMBER OF WELLS TOTAL:	83
PRODUCING WELLS:	47
INJECTION WELLS:	17
MAXIMUM:	---
LATEST:	---
SHUT-IN/ABANDONED WELLS:	19
SURFACE INJECTION PRESSURE:	5600
EFFECTIVENESS OF INJECTION:	ME
OPERATOR PROBLEMS:	EP
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	770
FROM BEG. INJECTION:	21616
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	---
WATER PRODUCTION:	
CURRENT (1977):	77
CUMULATIVE TO 1/78:	1494
CURRENT (1977) INJECTION:	17185 Gas
CUMULATIVE INJECTION:	252856 Gas

Dora Roberts
Ellenburger
Midland Basin

DATA SOURCE CODE		
	STATE	Texas
2	COUNTY	Midland
2	REGULATORY DISTRICT	8
2	BASIN	Permian
15	SUB-BASIN	Midland
14c,2	FIELD	Dora Roberts
14c,2	RESERVOIR	Ellenburger
5	GEOLOGIC AGE	Ordovician
1	AAPG STRATIGRAPHIC AGE CODE	364
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
2,3	DISCOVERY YEAR	10-1954
2	PROVED ACREAGE	4062 avg.
	REGULAR WELL SPACING (acres/well)	
2,3	RESERVOIR DEPTH	12835-13167; 12835
	RESERVOIR THICKNESS	
2	NET PAY	204 avg.
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.024
	PERMEABILITY	
	RANGE	
2	AVERAGE	214 md
2	HORIZONTAL	214 md
	VERTICAL	
3	OTHER INFORMATION	Other production from Devonian, Fusselman, Pennsylvanian, Strawn
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2	TOTAL NUMBER OF WELLS	55 (30P, 9I, 16SI)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	47,349.6 mbbls
3	PRODUCTION 1-1-79 to 1-1-80	786.3 mbbls oil; 1,117.3 mmcf gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Dora Roberts
2	RESERVOIR:	Ellenburger
2	PROD. ACRES:	4062 avg.
2	AVG. THICKNESS (FT.):	204 avg.
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
	TEMPERATURE (^oF):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2	RESERVOIR PRESSURE INITIAL (psi):	5630
2	RESERVOIR PRESSURE LATEST (psi):	3000
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2, 3	STOCK TANK OIL GRAVITY (^oAPI):	52, 52.5
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 2 SRPs:	145,000 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 2 SRPs:	57,386 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Dora Roberts RESERVOIR: Ellenburger TOTAL NO. PROJECTS: 2 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	1173	338
1977 PROD. (this project):	1023	269
CUM. PROD. FROM DISC. TO 1/78:	27040	24558
PROJECT NO.	F1170	F1171
LEASE NO.(s):	01160	15848
OPERATOR:	Arco	Arco
RESERVOIR:	Ellenburger	Ellenburger
DEPTH PRODUCING ZONE:	13167	12835
PRODUCTIVE ACREAGE IN RESERVOIR:	3884	4240
ACREAGE IN PROJECT:	2040	2200
PORTION OR FIELD WIDE:	FW/P	FW/P
TYPE:	PM/SW, FW, Gas	PM/BW, Gas
PATTERN:	P	P
YEAR BEGAN:	3-68 gas	6-73 BW; 6-68 Gas
YEAR TERMINATED OR STATUS:	ICP	ICP-BW, IPD-Gas
RESERVOIR PRESSURE INITIAL:	5630	5630
BEG. INJECTION:	3166	3340
LATEST:	2969	3000
NUMBER OF WELLS TOTAL:	29	26
PRODUCING WELLS:	16	14
INJECTION WELLS:	6	3
MAXIMUM:	---	---
LATEST:	---	---
SHUT-IN/ABANDONED WELLS:	7	9
SURFACE INJECTION PRESSURE:	500	1050
EFFECTIVENESS OF INJECTION:	VE	ME
OPERATOR PROBLEMS:	---	---
ESTIMATED PRODUCTION DUE TO INJ.:		
1977:	1023	269
FROM BEG. INJECTION:	7087	2998
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	5000	16446
WATER PRODUCTION:		
CURRENT (1977):	827	875
CUMULATIVE TO 1/78:	6435	5106
CURRENT (1977) INJECTION:	3446	1145
CUMULATIVE INJECTION:	17315	4921BW; 16561 Gas

Drinkard
Yeso-Vivian
Central Basin Platform

DATA SOURCE CODE		
	STATE	New Mexico
6a	COUNTY	Lea
1	REGULATORY DISTRICT	Southeast
1, 6a	BASIN	Permian
1-	SUB-BASIN	Central Basin Platform
1, 6a	FIELD	Drinkard
6a, 1	RESERVOIR	Yeso-Vivian and Andrews, Yeso
1, 6	GEOLOGIC AGE	Leonardian
1	AAPG STRATIGRAPHIC AGE CODE	318
6a, 1	RESERVOIR LITHOLOGY	Vivian: fine to very fine crystalline, slightly anhydritic dolomite. Andrews: finely crystalline, slightly carbonaceous and anhydritic dolomite; limestone and dolomite.
1	TRAPPING MECHANISM	Anticlinal trap
6a, 1	DISCOVERY YEAR	10-26-45; 1944
1	PROVED ACREAGE	20650
	REGULAR WELL SPACING (acres/well)	
6a, 1	RESERVOIR DEPTH	6490-6650; 6400
	RESERVOIR THICKNESS	
1	NET PAY	100
6a	GROSS	~160
	NET/GROSS RATIO	
	POROSITY	
6a, 1	TYPE	IC; IG and V
6a, 1	FRACTION	.116
	PERMEABILITY	
	RANGE	
1	AVERAGE	5.6
6a	HORIZONTAL	5.6
	VERTICAL	
14e	OTHER INFORMATION	BETC/RI-78/15 list as not suitable for surfactant, polymer or carbondioxide EOR because of gas cap.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	817 Total, 281 pump, 454 flow, 26 inject., 4 gas lift, 52 shut-in; 729P, 83SI, 16I.
1	PRODUCTION 1977 oil (cum)	73,081
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	76,136
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a	STRUCTURE CONTOUR?	Yes
6a	LOGS?	Yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Drinkard
6a	RESERVOIR:	Yeso-Vivian & Andrews
1	PROD. ACRES:	20650
1	AVG. THICKNESS (FT.):	100
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1, 6a	WATER SATURATION (S_W):	.162
1, 6a	OIL SATURATION (S_O):	.137
1, 14e	PRIMARY DRIVE MECHANISM:	gas cap, no natural H_2O
6a, 14e	PRIMARY GAS CAP?:	yes
17, 14e	TEMPERATURE (°F):	138 (GG=1.0), 106 BHT
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	63, 231
1, 6a	RESERVOIR PRESSURE INITIAL (psi):	2660 Vivian, 812 Andrews
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	33,910
1, 6a	STOCK TANK OIL GRAVITY (°API):	40
14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	3 cp
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1712
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

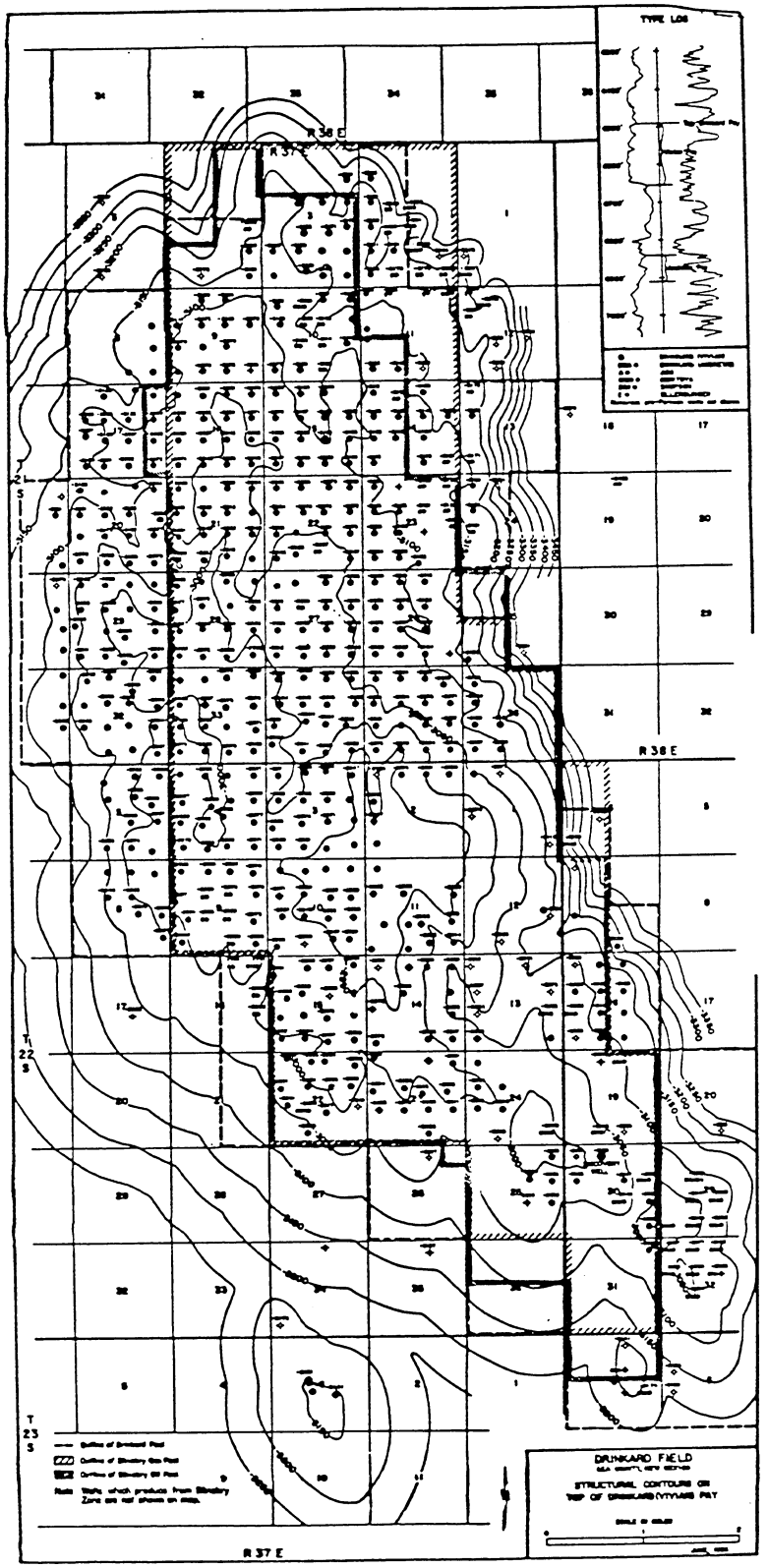
OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: Drinkard RESERVOIR: Yeso and Vivian TOTAL NO. PROJECTS:
DATA SOURCE: 6a, 1

TOTAL SOLIDS (ppm):	147,033
NA	45,743
Ca	7,615
Mg	2,356
Fe	none
SO_4	1,657
Cl	98,395
CO_2	108
HCO_3	195
OH	none
H_2S	none
CO3	108
RESISTIVITY:	0.056 ohm-meters @ 75°F
SPECIFIC GRAVITY:	

OTHER WATER QUALITY DATA:



FROM: DRINKARD (YESO) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium - 1956.

Dune
Grayburg-San Andres
Central Basin Platform

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Crane
1	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Dune
2, 1	RESERVOIR	Grayburg-San Andres, Grayburg
5	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
1	RESERVOIR LITHOLOGY	Dolomite
1	TRAPPING MECHANISM	Structural anticline
2, 1	DISCOVERY YEAR	1-1938, 1938
2, 16c	PROVED ACREAGE	29,760, 22,985
1	REGULAR WELL SPACING (acres/well)	20
1, 2	RESERVOIR DEPTH	3270, 3150-3750
	RESERVOIR THICKNESS	
2,1,16c	NET PAY	80 avg., 170, 150-300
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
1	TYPE	IC, V
2, 1	FRACTION	.11 avg., .12
	PERMEABILITY	
2	RANGE	1-11 md
2, 1,14e	AVERAGE	6, 70 md ,11md
2	HORIZONTAL	6 md
	VERTICAL	
12c	OTHER INFORMATION	Field along Horseshoe Atoll in Kent, Scurry, Borden, Howard, Dawson, Gaines, Terry and Lynn counties.
14e		BETC/RI-78/15 list as most suitable for carbon dioxide EOR.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS	993P-145I; 817 (477P-238I-102A)
1	PRODUCTION 1976 oil (cum)	128,549
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	141,820.4
	PRODUCTION 1-1-79 to 1-1-80	4200.8 oil, 2,040.7 gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	no
	OTHER DATA	no
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
2, 1	FIELD:	Dune
2, 16c	RESERVOIR:	Grayburg-San Andres,Grbg.
2,1,16c	PROD. ACRES:	29,760, 22,985
1	AVG. THICKNESS (FT.):	80, 170, 150-300
16c	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.12
1, 16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.1
16c	WATER SATURATION (S_W):	.31 initial,.25-.60
1	OIL SATURATION (S_O):	.58 (1970)
14e	PRIMARY DRIVE MECHANISM:	depletion
17, 14e	PRIMARY GAS CAP?:	no
16c	TEMPERATURE (°F):	100 , 105 BHT
1, 2	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1155
2	RESERVOIR PRESSURE INITIAL (psi):	1506, 1140-1506
1	RESERVOIR PRESSURE LATEST (psi):	107-938
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	384
1	GAS OIL RATIO LATEST (GOR) (cf/bbl):	1547.1(76)
14e	STOCK TANK OIL GRAVITY (°API):	36
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	2.92 cp
2	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1262
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 8 SRPs:	185,734 mbbls.
	ESTIMATED PRIMARY OIL RECOVERED FOR 8 SRPs:	126,219 mbbls.

OTHER INFORMATION:

12c

Reference: Myers, O. A., Stafford, P. T., and Burnside, R. J., 1956, Geology of the Late Paleozoic Horseshoe Atoll in West Texas: Univ. of Texas, Bureau of Economic Geology, Pub. No. 5607.

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Dune RESERVOIR: San Andres-Grayburg TOTAL NO. PROJECTS: 8
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	188	158	2703	9	86
1977 PROD. (this project):	171	188	2319	8	55
CUM. PROD. FROM DISC. TO 1/78:	1704	10641	78754	542	3348
PROJECT NO.	F-5270	F-1634	F-1173	F-1174	F-1175
LEASE NO.(s):	12504	21554	01224, 12903	11221	21140
OPERATOR:	Adobe	Gen.Am.	Gulf	Gulf	Gulf
RESERVOIR:	San Andres	Grayburg-San An.	Grayburg-San An	Grayburg-SanAn	San Andres
DEPTH PRODUCING ZONE:	3750	3350	3270	3400	3408
PRODUCTIVE ACREAGE IN RESERVOIR:	29760	20000	26000	29760	29760
ACREAGE IN PROJECT:	200	2186	2-13320	160	410
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	FW/P
TYPE:	PM/SW	WF/SW, BW	PM/BW	WF/SW, BW	PM/SW
PATTERN:	SW	I9	I9	I9	LD
YEAR BEGAN:	5-72	6-71	1-60	1-69SW,11-71BW	1-69
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1140	1506	1440	1506	1506
BEG. INJECTION:	600	-	587	500	600
LATEST:	600	-	938	8	107
NUMBER OF WELLS TOTAL:	8	122	537	5	27
PRODUCING WELLS:	7	58	314	1SW	16
INJECTION WELLS:	1	27SW	153	1 BW	6
MAXIMUM:	-	27BW	-	1 BW	-
LATEST:	-	-	-	-	-
SHUT-IN/ABANDONED WELLS:	0	10	70	1	5
SURFACE INJECTION PRESSURE:	700	1100	1200	780	800
EFFECTIVENESS OF INJECTION:	UD	-	-	VE	VE
OPERATOR PROBLEMS:					
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	5	158	-	8	6
FROM BEG. INJECTION:	10	466	-	23	40
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	50	5000	-	70	1500
WATER PRODUCTION:					
CURRENT (1977):	125	654	7918	29	98
CUMULATIVE TO 1/78:	880	3631	63869	233	893
CURRENT (1977) INJECTION:	125	654SW, 1917BW	19574	29SW,145BW	658
CUMULATIVE INJECTION:	631	3474SW,14516BW	194429	238SW, 951BW	4899

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Dune RESERVOIR: San Andres-Grayburg TOTAL NO. PROJECTS: 8 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	-	162	439	
1977 PROD. (this project):	-	159	403	
CUM. PROD. FROM DISC. TO 1/78:	-	3227	9373	
PROJECT NO.	F-1635	F-1636	F-3964	
LEASE NO.(s):	01229	20901	20863	
OPERATOR:	McCutchin	Mobil	Mobil	
RESERVOIR:	Grayburg-San And	Grayburg-San And	Grayburg-San Andres	Grayburg
DEPTH PRODUCING ZONE:		3150	3350	3270
PRODUCTIVE ACREAGE IN RESERVOIR:	-	800	22985	
ACREAGE IN PROJECT:	-	800	1280	
PORTION OR FIELD WIDE:		P	P	
TYPE:	PM/BW	PM/BW	PM/BW	WF
PATTERN:	-	5S	I9	
YEAR BEGAN:	1-78	5-71	3-76	1960
YEAR TERMINATED OR STATUS:	U	ICP	ICP	
RESERVOIR PRESSURE INITIAL:	-	1506	1400	1506
BEG. INJECTION:	-	500	500	
LATEST:	-	500	600	
NUMBER OF WELLS TOTAL:	0	54	61	
PRODUCING WELLS:	0	24	53	993
INJECTION WELLS:	0	14	8	145
MAXIMUM:	-	-	-	
LATEST:	-	-	-	
SHUT-IN/ABANDONED WELLS:	0		0	
SURFACE INJECTION PRESSURE:	-	1000	900	
EFFECTIVENESS OF INJECTION:	-	ME	VE	
OPERATOR PROBLEMS:	-	CH	EB	
ESTIMATED PRODUCTION DUE TO INJ.:				
1977:	-	105	69	
FROM BEG. INJECTION:	-	343	110	
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	-	2364	2549	
WATER PRODUCTION:				
CURRENT (1977):	-	207	498	
CUMULATIVE TO 1/78:	-	1742	4127	
CURRENT (1977) INJECTION:	-	893	1603	
CUMULATIVE INJECTION:	-	6182	2503	

Edwards
Grayburg-San Andres
Central Basin Platform

DATA SOURCE CODE		
2	STATE	Texas
2	COUNTY	Crane-Ector (M)
2	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
2	FIELD	Edwards
2	RESERVOIR	Grayburg-San Andres
5	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
2,3	DISCOVERY YEAR	1935
2,16c	PROVED ACREAGE	2700, 5160
	REGULAR WELL SPACING (acres/well)	
2,3	RESERVOIR DEPTH	3400
	RESERVOIR THICKNESS	
2	NET PAY	50 avg.
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.058 avg.
	PERMEABILITY	
2	RANGE	6-11 md
2	AVERAGE	8.5 md
2	HORIZONTAL	8.5 md
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
2	TOTAL NUMBER OF WELLS	171 (76P-40I-55A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	7,495.5
3	PRODUCTION 1-1-79 to 1-1-80	128.9 mbbls oil; 103.4 mmcf gas
2	SECONDARY RECOVERY RECORDS?	Yes
	WATER ANALYSIS RECORDS?	No
	OTHER DATA	No
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Edwards
2	RESERVOIR:	Grayburg-San Andres
2, 16c	PROD. ACRES:	2700, 5160
2	AVG. THICKNESS (FT.):	50
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
16c	WATER SATURATION (S_W):	.40
16c	OIL SATURATION (S_O):	.43
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	105
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2	RESERVOIR PRESSURE INITIAL (psi):	1500
2	RESERVOIR PRESSURE LATEST (psi):	200-228
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2,3	STOCK TANK OIL GRAVITY (°API):	30 & 32, 33
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1335
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 3 SRPs:	40,338 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 3 SRPs:	7,662 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Edwards RESERVOIR: Grayburg-San Andres TOTAL NO. PROJECTS: 3 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	14	58	54
1977 PROD. (this project):	14	67	51
CUM. PROD. FROM DISC. TO 1/78:	143	3353	3448
PROJECT NO.	F1180	F1181	F1179
LEASE NO.(s):	01262	01261, 07156	20424
OPERATOR:	Appling, J.B.	Mobile	Southland Realty
RESERVOIR:	Grayburg	Grayburg-San An.	Grayburg-San An.
DEPTH PRODUCING ZONE:	3400	3300	3400
PRODUCTIVE ACREAGE IN RESERVOIR:	2700	837	2700
ACREAGE IN PROJECT:	440	810	1840
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P
TYPE:	WF/SW, BW	WF/SW	WF/BW
PATTERN:	5S	I9	I
YEAR BEGAN:	2-66	12-65	8-67
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1500	1550	1500
BEG. INJECTION:	----	500	----
LATEST:	----	228	200
NUMBER OF WELLS TOTAL:	30	44	97
PRODUCING WELLS:	10	26	40
INJECTION WELLS:	6 SW	7	21
MAXIMUM:	6 BW	---	---
LATEST:	---	---	---
SHUT-IN/ABANDONED WELLS:	8	11	36
SURFACE INJECTION PRESSURE:	1100	1250	1050
EFFECTIVENESS OF INJECTION:	UD	NE	ME
OPERATOR PROBLEMS:	CH, PA	EP	CR, CH, SC, PA
ESTIMATED PRODUCTION DUE TO INJ.:			
1977:	----	31	51
FROM BEG. INJECTION:	----	314	516
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	----	309?	1000
WATER PRODUCTION:			
CURRENT (1977):	103	27	112
CUMULATIVE TO 1/78:	191	1460	1642
CURRENT (1977) INJECTION:	103SW, 91BW	710	3130
CUMULATIVE INJECTION:	3284 SW, 371Bw	12217	33747

E - K
Yates/7-Rivers/Queen
Northwest Shelf

DATA SOURCE CODE		
1, 6c	STATE	New Mexico
1	COUNTY	Lea
	REGULATORY DISTRICT	Southeast
6a	BASIN	Permian
15	SUB-BASIN	Northwest Shelf
1, 6c	FIELD	E - K
1, 6a	RESERVOIR	Yates/7-Rivers/Queen
6, 1	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
6a, 1	RESERVOIR LITHOLOGY	Fine to medium grained sandstone; anhydrite sand
6a, 1	TRAPPING MECHANISM in Porosity and permiability	Stratigraphic trap; Lateral change
1, 6a	DISCOVERY YEAR	12-54
1	PROVED ACREAGE	640
	REGULAR WELL SPACING (acres/well)	
1	RESERVOIR DEPTH	4375
1	RESERVOIR THICKNESS	21'
6a	NET PAY	~60'
6a	GROSS	≈300'
	NET/GROSS RATIO	
	POROSITY	
6a	TYPE	intergranular
6a, 1	FRACTION	.124
	PERMEABILITY	
	RANGE	
1	AVERAGE	31 md
6a	HORIZONTAL	31 md
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18, 1	TOTAL NUMBER OF WELLS	72 Total, 39 pump, 3 flow, 28 inject., 3 shut-in; 43P, 32SI, 8I.
1	PRODUCTION 1977 oil (cum)	5497
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	5636
	PRODUCTION 1-1-79 to 1-1-80	
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a,6b	STRUCTURE CONTOUR?	yes
6a,6b	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	E - K
1, 6a	RESERVOIR:	Yates/7-Rivers/Queen
1	PROD. ACRES:	640
1	AVG. THICKNESS (FT.):	21
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
1, 6a	WATER SATURATION (S_W):	.392
1, 6a	OIL SATURATION (S_O):	.131
1, 6a	PRIMARY DRIVE MECHANISM:	solution gas
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	118 (GG=1.0)
17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1515
	RESERVOIR PRESSURE INITIAL (psi):	
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	372
1,6a,6b	STOCK TANK OIL GRAVITY (°API):	37.5; 37.38, 37.5
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (PSIA)	1477
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

WATER ANALYSIS RECORD

FIELD: E - K
RESERVOIR: Yates/7-Rivers/Queen
TOTAL NO. PROJECTS: 1

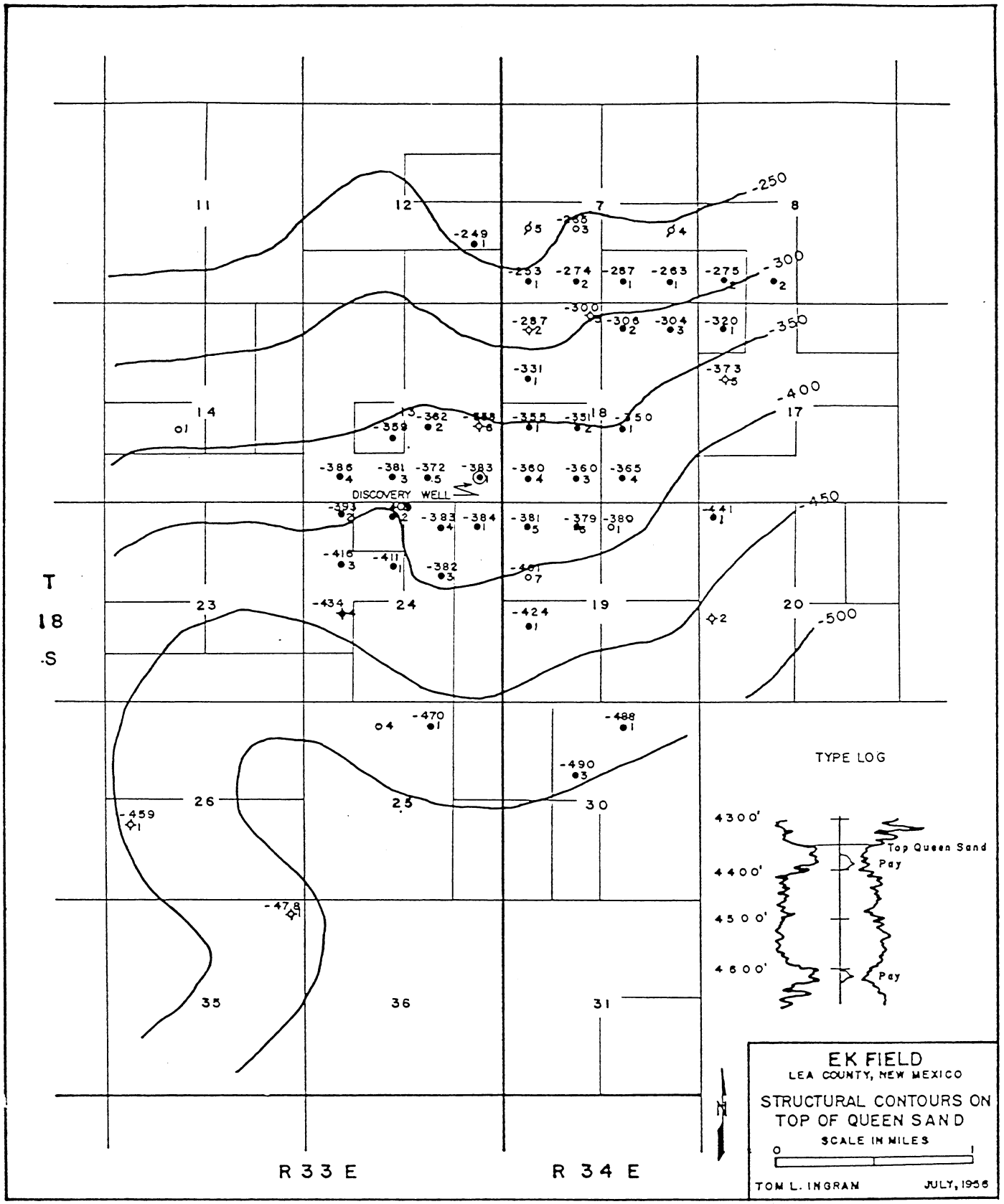
DATA SOURCE:

TOTAL SOLIDS (ppm):

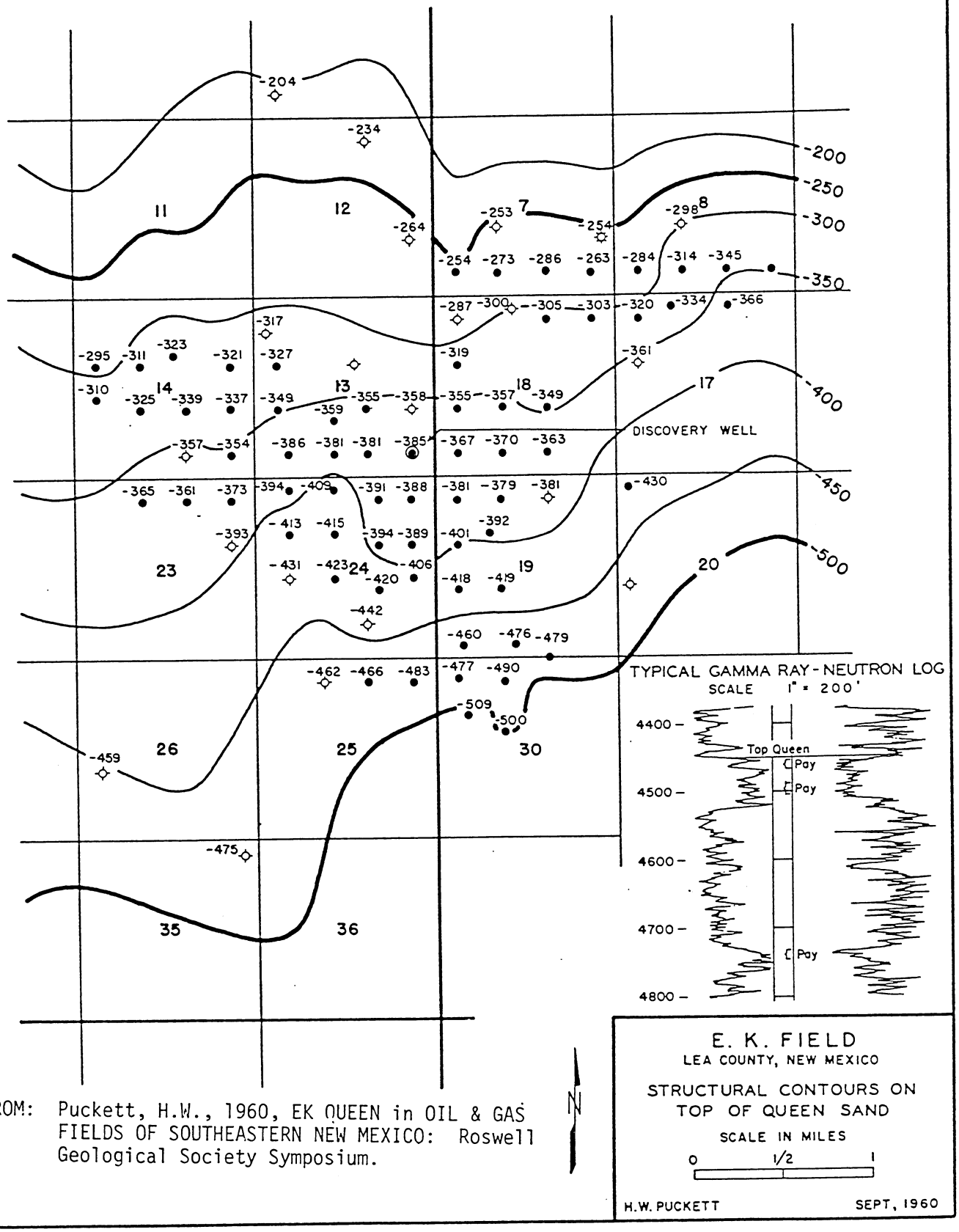
NA
Ca
Mg
Fe
SO_4
Cl
CO_2
HCO_3
OH
H_2S

RESISTIVITY: .036 ohm-meters @ 98°F
SPECIFIC GRAVITY:

OTHER WATER QUALITY DATA:



FROM: Ingram, T.L., 1956, E.K. (QUEEN) in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium.



FROM: Puckett, H.W., 1960, EK QUEEN in OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO: Roswell Geological Society Symposium.

Elkhorn
Ellenburger
Reagan Uplift in
Midland Basin

DATA SOURCE CODE		
	STATE----------	Texas
1	COUNTY----------	Crockett
1	REGULATORY DISTRICT----------	7C
1	BASIN----------	Permian
15	SUB-BASIN----------	Reagan Uplift in Midland Basin
1	FIELD----------	Elkhorn
1, 3	RESERVOIR----------	Ellenburger
5	GEOLOGIC AGE----------	Ordovician
1	AAPG STRATIGRAPHIC AGE CODE----------	364
1, 12c	RESERVOIR LITHOLOGY----------	Dolomite; contains vugs and cavities and is highly fractured throughout, generally finely crystalline dolomite.
12c	TRAPPING MECHANISM----------	Anticlinal folding, truncation and sealing by overlying relatively impervious shales and a down-to-the-east fault on the east limb.
3,1,12c	DISCOVERY YEAR----------	2-1951, 1951, 6-1951
1,12c,16c	PROVED ACREAGE----------	80, 2700, 2700
1	REGULAR WELL SPACING (acres/well)-----	40
3, 1, 12c	RESERVOIR DEPTH----------	7185, 7185, 7017
	RESERVOIR THICKNESS	
1, 16c	NET PAY----------	51, 232
12c	GROSS----------	232 avg., 455 max
	NET/GROSS RATIO----------	
	POROSITY	
12c	TYPE----------	V, F
1	FRACTION----------	.024
	PERMEABILITY	
	RANGE----------	
1	AVERAGE----------	22md
	HORIZONTAL----------	
	VERTICAL----------	
	OTHER INFORMATION----------	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS----------	26 P
1	PRODUCTION 1976 oil (cum)----------	11,166
	PRODUCTION 1977 oil (cum)----------	
	PRODUCTION 1978 oil (cum)----------	
3	PRODUCTION 1979 oil (cum)----------	11,368.1
3	PRODUCTION 1-1-79 to 1-1-80----------	62.4 oil, 89.2 gas
	SECONDARY RECOVERY RECORDS?----------	no
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
12c	STRUCTURE CONTOUR?----------	yes
12c	LOGS?----------	yes
	STRUCTURE SECTION?----------	
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
1, 3	FIELD:	Elkhorn
16c, 1, 12c	RESERVOIR:	Ellenburger
16c, 1	PROD. ACRES:	2700, 80, 2700
16c, 1, 12c	AVG. THICKNESS (FT.):	232, 51
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.4119, .14, 1.4119
16c	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	.355
1, 12c	OIL SATURATION (S_O):	
12c	PRIMARY DRIVE MECHANISM:	waterdrive, gas expansion
16c, 12c	PRIMARY GAS CAP?:	no
16c, 12c	TEMPERATURE (°F):	179 (GG = 1.0)
12c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	1729, 1714
	RESERVOIR PRESSURE INITIAL (psi):	3140
1, 12c	RESERVOIR PRESSURE LATEST (psi):	
1	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	659, 635
3, 1, 12c	GAS OIL RATIO LATEST (GOR) (cf/bbl):	765.8 (76)
	STOCK TANK OIL GRAVITY (°API):	39.7, 39.7, 37-38
17	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	2215
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

12c OTHER INFORMATION: Average chloride content: 28,971 ppm

12c Reference:

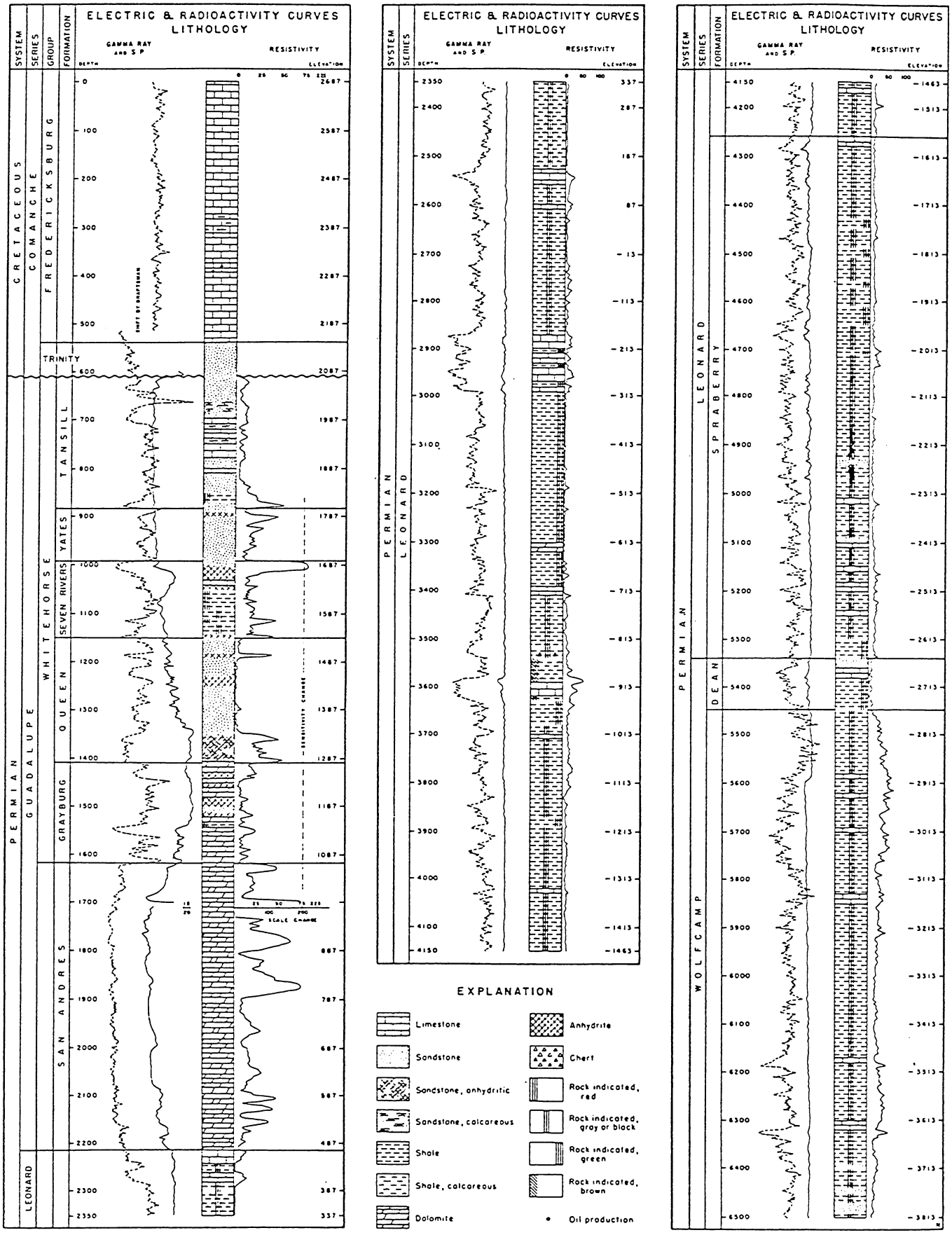
Brown, J. B., 1955 "Elkhorn Field in Occurrence of Oil and Gas in West Texas", University of Texas, Bureau of Economic Geology, Pub. No. 5716, pp 107-109.

FROM: OCCURRENCE OF OIL & GAS IN WEST TEXAS: UNIV. OF TEXAS, BUREAU OF ECON. GEOL. PUBL. 5716

108

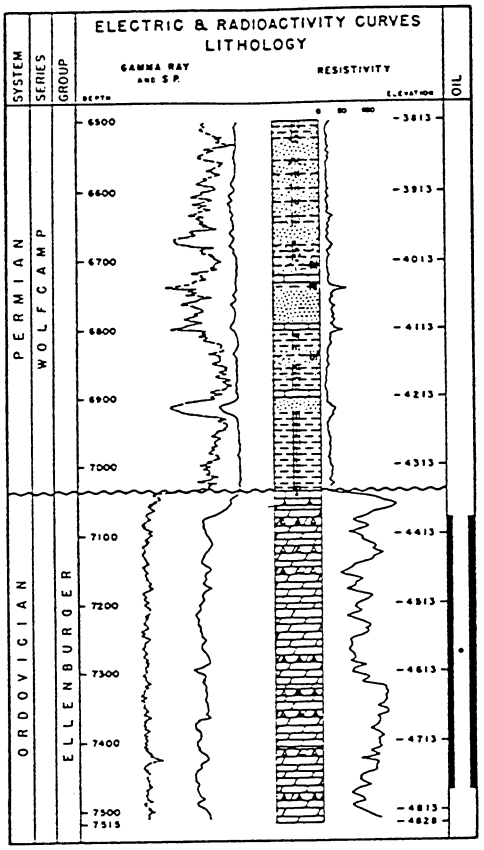
ELKHORN FIELD, Crockett County, Texas

TYPICAL SECTION OF ROCKS PENETRATED



ELKHORN FIELD, Crockett County, Texas

TYPICAL SECTION OF ROCKS PENETRATED



ELEVATION OF SURFACE

At well locations: Highest, 2,706 feet; lowest, 2,594 feet.

SURFACE FORMATION

Undifferentiated limestones of the Fredericksburg group.

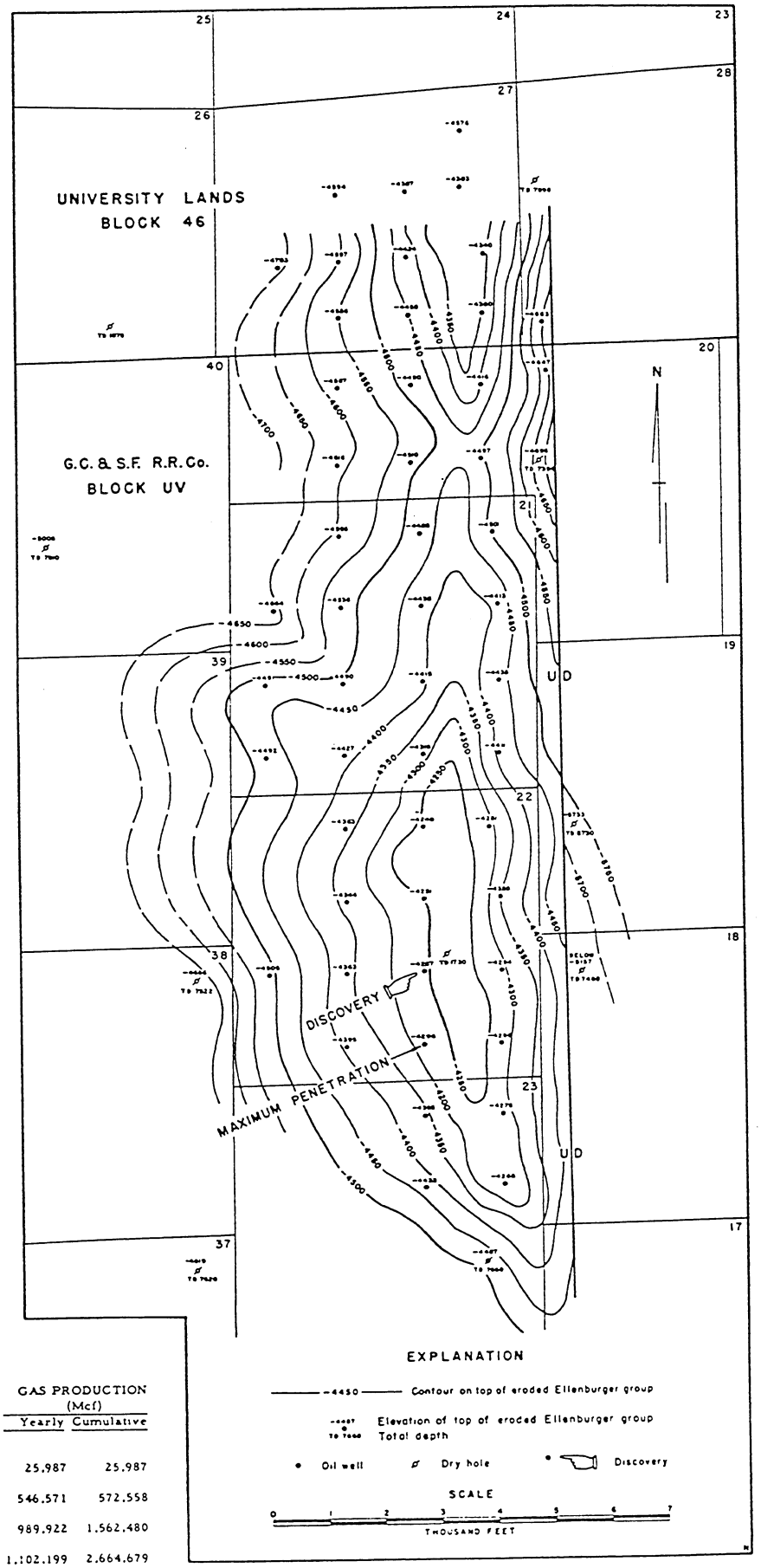
ELEVATION AND RELIEF OF PRODUCTIVE ZONE

Ellenburger:	Feet
Elevation of highest known oil	-4,330
Elevation of oil-water contact at discovery date	-4,785
Relief	455

RESERVOIR TEMPERATURE AND PRESSURE and OIL SAMPLE DATA

Ellenburger:	
Original reservoir temperature, F..	179°
Original reservoir pressure, psi..	3,140
Gravity of oil, A.P.I. @ 60° F..	37°-38°
Bubble point, psi..	1,714
Solution gas-oil ratio, cf/bbl..	635
Volume factor, surface : reservoir	1.4119

The above data were determined from bottom-hole samples.



PRODUCTION HISTORY

Year	WELLS PRODUCING at end of year: Flow.	Pump.	Total	OIL PRODUCTION (barrels): Yearly	Cumulative	GAS PRODUCTION (Mcf): Yearly	Cumulative
Ellenburger and Field total							
1951	4	0	4	49,389	49,389	25,987	25,987
1952	26	2	28	861,164	910,553	546,571	572,558
1953	37	11	48	1,550,043	2,460,596	989,922	1,562,480
1954	12	39	51	1,735,746	4,196,342	1,102,199	2,664,679

Emma
San Andres
Central Basin Platform

DATA SOURCE CODE		
2	STATE	Texas
2	COUNTY	Andrews
2	REGULATORY DISTRICT	8
	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
2	FIELD	Emma
2	RESERVOIR	San Andres
5	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
12c	RESERVOIR LITHOLOGY	Non-sandy, crystalline to dense dolomite
12c	TRAPPING MECHANISM	Anticlinal fold with some porosity control.
2, 3, 12c	DISCOVERY YEAR	1937, 1939, 1-1937
2, 16c, 12c	PROVED ACREAGE	2648, 3200, 1500
	REGULAR WELL SPACING (acres/well)	
2, 3, 12c	RESERVOIR DEPTH	4200, 4300, 4240
	RESERVOIR THICKNESS	
2, 12c	NET PAY	44, 40
12c	GROSS	180
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.08
	PERMEABILITY	
	RANGE	
2	AVERAGE	33 md
2	HORIZONTAL	33 md
	VERTICAL	
3	OTHER INFORMATION	Other reservoirs include Connell, Devonian, Ellenburger, Fusselman, Glorietta, Holt, Mississippian, Strawn, and Wolfcamp 8390.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
12c, 2	TOTAL NUMBER OF WELLS	73 (1953); 90 (34P-27I-29A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	17,601.5
3	PRODUCTION 1-1-79 to 1-1-80	545.6 oil, 180.3 gas
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
12c	STRUCTURE CONTOUR?	yes
12c	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
2	FIELD:	Emma
	RESERVOIR:	San Andres
2, 16c, 12c	PROD. ACRES:	2648, 3200, 1500
2, 12c	AVG. THICKNESS (FT.):	44, 40
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
16c	FORMATION VOLUME FACTOR LATEST (FVF):	1.15 (1974)
16c	WATER SATURATION (S_W):	.84
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
12c	PRIMARY GAS CAP?:	no
17	TEMPERATURE (^oF):	104
16c	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	805
2	RESERVOIR PRESSURE INITIAL (psi):	1550
2	RESERVOIR PRESSURE LATEST (psi):	2000
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2,3,12c	STOCK TANK OIL GRAVITY (^oAPI):	33, 33, 31.2-35.8
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP): (psia)	1323
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 1 SRPs:	40,590 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 1 SRPs:	12,897 mbbls

OTHER INFORMATION:

Reference:

Williams, J. L., 1953, "Emma Field in Occurrence of Oil and Gas in West Texas", University of Texas, Bureau of Economic Geology, Pub. No. 5716, August, 1957.

ENHANCED AND SECONDARY RECOVERY DATA:

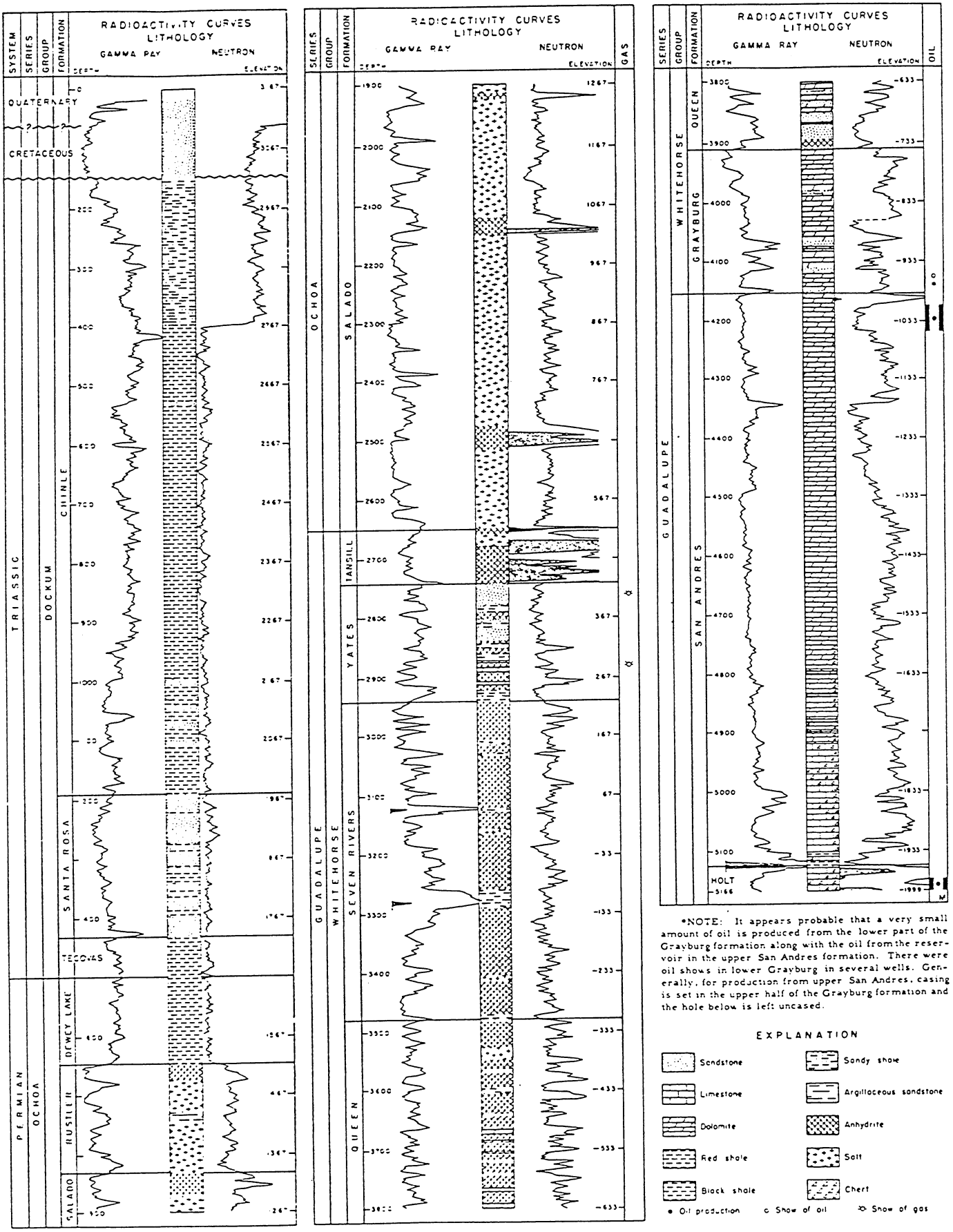
FIELD: Emma RESERVOIR: San Andres TOTAL NO. PROJECTS: 1

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	546
1977 PROD. (this project):	593
CUM. PROD. FROM DISC. TO 1/78:	16442
PROJECT NO.	F-1183
LEASE NO.(s):	19374
OPERATOR:	Atlantic Richfield
RESERVOIR:	San Andres
DEPTH PRODUCING ZONE:	4200
PRODUCTIVE ACREAGE IN RESERVOIR:	2648
ACREAGE IN PROJECT:	2360
PORTION OR FIELD WIDE:	FW
TYPE:	WF/BW
PATTERN:	P
YEAR BEGAN:	11-65
YEAR TERMINATED OR STATUS:	ICP
RESERVOIR PRESSURE INITIAL:	1550
BEG. INJECTION:	100
LATEST:	2000
NUMBER OF WELLS TOTAL:	90
PRODUCING WELLS:	34
INJECTION WELLS:	27
MAXIMUM:	-
LATEST:	-
SHUT-IN/ABANDONED WELLS:	29
SURFACE INJECTION PRESSURE:	700
EFFECTIVENESS OF INJECTION:	VE
OPERATOR PROBLEMS:	CH
ESTIMATED PRODUCTION DUE TO INJ.:	
1977:	550
FROM BEG. INJECTION:	3510
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	12900
WATER PRODUCTION:	
CURRENT (1977):	4488
CUMULATIVE TO 1/78:	20611
CURRENT (1977) INJECTION:	10936
CUMULATIVE INJECTION:	58571

EMMA FIELD, Andrews County, Texas

TYPICAL SECTION OF ROCKS PENETRATED



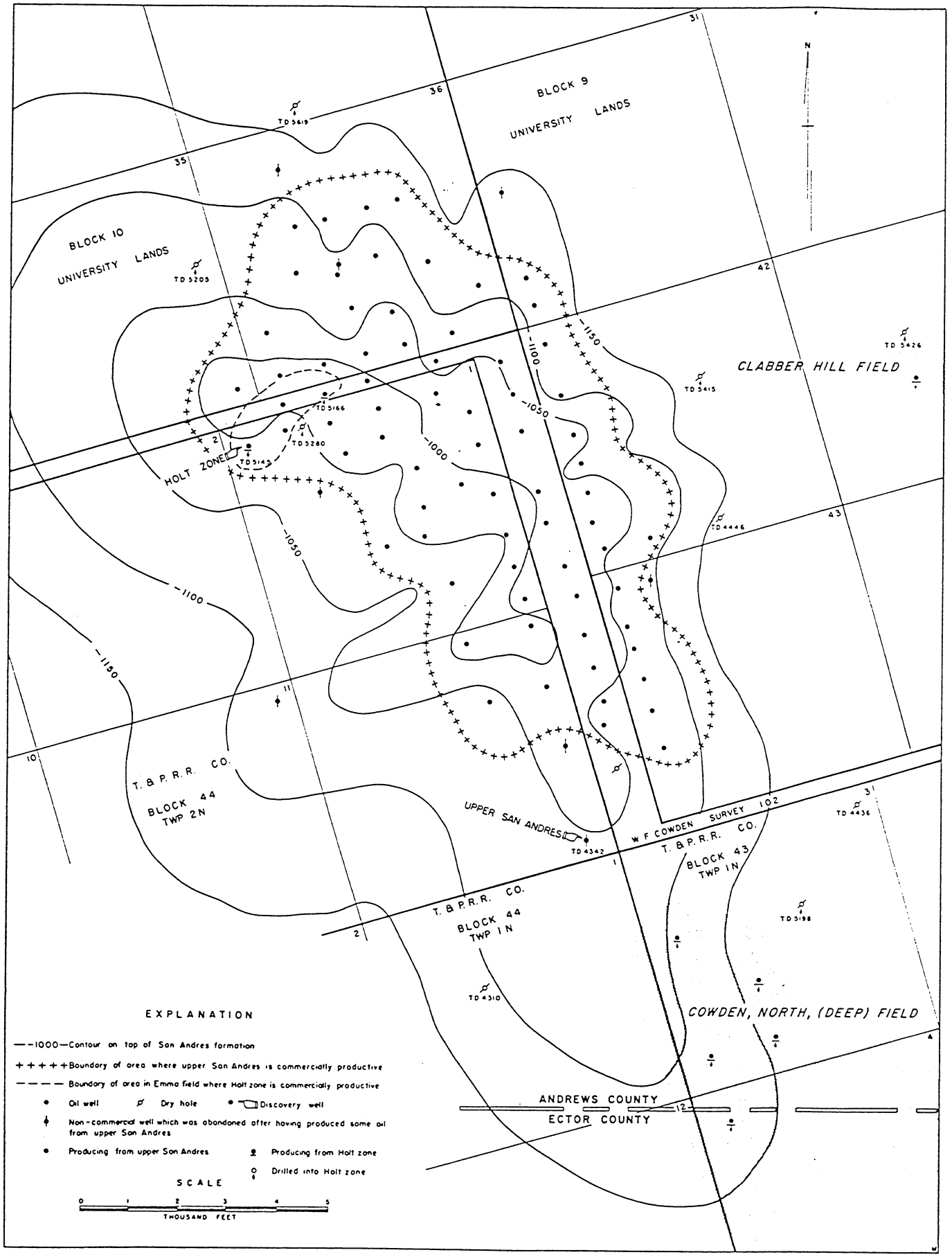
*NOTE: It appears probable that a very small amount of oil is produced from the lower part of the Grayburg formation along with the oil from the reservoir in the upper San Andres formation. There were oil shows in lower Grayburg in several wells. Generally, for production from upper San Andres, casing is set in the upper half of the Grayburg formation and the hole below is left uncased.

EXPLANATION

- Sandstone
- Limestone
- Dolomite
- Red shale
- Black shale
- Sandy shale
- Argillaceous sandstone
- Anhydrite
- Salt
- Chert
- Oil production
- Show of oil
- Show of gas

EMMA FIELD, Andrews County, Texas

SOURCE 12c.



Emperor-Deep
Deep*
Central Basin Platform

DATA SOURCE CODE		
1	STATE	Texas
1	COUNTY	Winkler
	REGULATORY DISTRICT	8
1	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
1	FIELD	Emperor-Deep
1	RESERVOIR	Deep*
5	GEOLOGIC AGE	Permian Ochoa
1	AAPG STRATIGRAPHIC AGE CODE	311
16b	RESERVOIR LITHOLOGY	sandstone
	TRAPPING MECHANISM	
2	DISCOVERY YEAR	1935
2,16 b	PROVED ACREAGE	4000, 3320
	REGULAR WELL SPACING (acres/well)	
2	RESERVOIR DEPTH	2600 to 3100 Queen, Seven Rivers, Yates
	RESERVOIR THICKNESS	
2	NET PAY	61 avg
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
2	FRACTION	.16
	PERMEABILITY	
2	RANGE	3 - 50
2	AVERAGE	20
2	HORIZONTAL	20
	VERTICAL	
	OTHER INFORMATION	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
	TOTAL NUMBER OF WELLS	
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
3	PRODUCTION 1979 oil (cum)	22,798.5
3	PRODUCTION 1-1-79 to 1-1-80	-
2	SECONDARY RECOVERY RECORDS?	yes
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

* Queen, Colby, Yates-Seven Rivers

RESERVOIR DATA

DATA SOURCE CODE		
2	FIELD:	Emperor-Deep
2	RESERVOIR:	Deep
2, 16b	PROD. ACRES:	4000, 3320
2	AVG. THICKNESS (FT.):	61
16b	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.01
	FORMATION VOLUME FACTOR LATEST (FVF):	
16b	WATER SATURATION (S_W):	45
16b	OIL SATURATION (S_O):	28.5
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
17	TEMPERATURE (°F):	92 (GG = .6)
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
2	RESERVOIR PRESSURE INITIAL (psi):	1150 - 1360
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
2	STOCK TANK OIL GRAVITY (°API):	32 - 36
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP):	1168
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 8 SRPs:	31,423 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 8 SRPs:	3,021 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Emperor RESERVOIR: Deep TOTAL NO. PROJECTS: 8 PDS:
DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	20	152	25		
1977 PROD. (this project):	25	98	23		
CUM. PROD. FROM DISC. TO 1/78:	366	841	309		
PROJECT NO.	F-1194	F-1195	F-1196		
LEASE NO.(s):	01332,01345	15231, 22883	18701		
OPERATOR:	Petroleum Corp.	Reading & Bates	Texaco		
RESERVOIR:	Colby	Yates/Queen/SR	Colby		
DEPTH PRODUCING ZONE:	3100	2600	3000		
PRODUCTIVE ACREAGE IN RESERVOIR:	640	2300	2300		
ACREAGE IN PROJECT:	400	800	231		
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P		
TYPE:	WF/SW	WF/SW, BW 1	WF/SW		
PATTERN:	I	I	I		
YEAR BEGAN:	10-61	3-65	1-65		
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP		
RESERVOIR PRESSURE INITIAL:	225	1500	-		
BEG. INJECTION:	225	800	-		
LATEST:	-	-	517		
NUMBER OF WELLS TOTAL:	22	29	10		
PRODUCING WELLS:	13	17	7		
INJECTION WELLS:	9	12	3		
MAXIMUM:	-	-	-		
LATEST:	-	-	-		
SHUT-IN/ABANDONED WELLS:	0	0	0		
SURFACE INJECTION PRESSURE:	1250	602	1207		
EFFECTIVENESS OF INJECTION:	VE	ME	MF		
OPERATOR PROBLEMS:	IP, EB	PI	-		
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	98	-	-		
FROM BEG. INJECTION:	1051	-	-		
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	950	-	-		
WATER PRODUCTION:					
CURRENT (1977):	238	600	79		
CUMULATIVE TO 1/78:	3633	3683	1407		
CURRENT (1977) INJECTION:	651	874	285		
CUMULATIVE INJECTION:	10559	4867	3850		

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Emperor RESERVOIR: Deep* TOTAL NO. PROJECTS: 8

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	21	57	21	28	15
1977 PROD. (this project):	18	54	19	27	10
CUM. PROD. FROM DISC. TO 1/78:	1545	113	346	407	721
PROJECT NO.	F-1187	F-1193	F-1191	F-1192	F-1190
LEASE NO.(s):	01311 - 12156	01343	01327 -- 15678	01336 -- 18685	13746,15238
OPERATOR:	Hudson	Amoco	Ashland	Ashland	Fields
RESERVOIR:	Yates	Seven Rivers-Qn.	Queen	Queen	Queen
DEPTH PRODUCING ZONE:	2950	3000	2700	2700	2700
PRODUCTIVE ACREAGE IN RESERVOIR:	2000	2200	1160	2270	-
ACREAGE IN PROJECT:	520	480	520	400	720
PORTION OR FIELD WIDE:	FW/P	FW/P	FW/P	FW/P	FW/P
TYPE:	WF/SW	WF/SW, BW	WF/SW	WF/SW	WF/SW,FW
PATTERN:	5S	P	M5	5S	5S
YEAR BEGAN:	3-55	4-63	9-60	3-65	6-65
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP	ICP	ICP
RESERVOIR PRESSURE INITIAL:	1360	1150	-	-	-
BEG. INJECTION:	-	200	-	-	-
LATEST:	-	1750	-	-	-
NUMBER OF WELLS TOTAL:	52	16	26	9	26
PRODUCING WELLS:	26	12	11	9	10
INJECTION WELLS:	26	4	7	10	6 SW
MAXIMUM:	-	-	-	-	1 FW
LATEST:	-	-	-	-	-
SHUT-IN/ABANDONED WELLS:	0	0	8	9	9
SURFACE INJECTION PRESSURE:	475	503	1307	-	800SW, 750 FW
EFFECTIVENESS OF INJECTION:	-	ME	ME	-	VE
OPERATOR PROBLEMS:	-	CR, SC, PA, SF	-	-	CR, CH, SC
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	18	54	18	26	10
FROM BEG. INJECTION:	3334	1323	1051	635	465
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	4038	1172	950	675	-
WATER PRODUCTION:					
CURRENT (1977):	506	405	341	343	199
CUMULATIVE TO 1/78:	4714	3186	8586	3054	10294
CURRENT (1977) INJECTION:	506	405SW, 40FW	613	723	72
CUMULATIVE INJECTION:	27436	3177SW, 1081FW	13367	8662	16284

*Queen, Colby, Yates, Seven Rivers

Emperor
Holt
Central Basin Platform

DATA SOURCE CODE		
1	STATE----------	Texas
1	COUNTY----------	Winkler
1	REGULATORY DISTRICT----------	8
1	BASIN----------	Permian
15	SUB-BASIN----------	Central Basin Platform
1	FIELD----------	Emperor
1	RESERVOIR----------	Holt
5	GEOLOGIC AGE----------	Guadalupe
1	AAPG STRATIGRAPHIC AGE CODE----------	313
8, 1	RESERVOIR LITHOLOGY----------	Limestone, massive locally cherty oolitic; dolomite
	TRAPPING MECHANISM----------	
2, 1	DISCOVERY YEAR----------	2-1946, 1946
2, 1	PROVED ACREAGE----------	2000, 960
	REGULAR WELL SPACING (acres/well)-----	
2, 1	RESERVOIR DEPTH----------	4765 - 4900, 4765
	RESERVOIR THICKNESS	
2, 1	NET PAY----------	23, 85
	GROSS----------	
	NET/GROSS RATIO----------	
	POROSITY	
	TYPE----------	
2, 1	FRACTION----------	.183, .15
	PERMEABILITY	
2	RANGE----------	1-6
2, 1	AVERAGE----------	4, 6
2	HORIZONTAL----------	4
	VERTICAL----------	
	OTHER INFORMATION----------	
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
1	TOTAL NUMBER OF WELLS----------	40, INJECTION: 7
1	PRODUCTION 1976 oil (cum)----------	5859
	PRODUCTION 1977 oil (cum)----------	
	PRODUCTION 1978 oil (cum)----------	
3	PRODUCTION 1979 oil (cum)----------	6,366.7
3	PRODUCTION 1-1-79 to 1-1-80----------	166.4 oil, 962.9 gas
2	SECONDARY RECOVERY RECORDS?----------	yes
	WATER ANALYSIS RECORDS?----------	
	OTHER DATA	
	STRUCTURE CONTOUR?----------	
	LOGS?----------	
	STRUCTURE SECTION?----------	
	ENGINEERING REPORTS?----------	
	CORE DESCRIPTIONS?----------	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Emperor
2, 1	RESERVOIR:	Holt
2, 1	PROD. ACRES:	2000, 960
2, 1	AVG. THICKNESS (FT.):	23, 85
1, 16	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	1.78, 1.2
16	FORMATION VOLUME FACTOR LATEST (FVF):	1.12
16	WATER SATURATION (S_W):	.33 - .44
16	OIL SATURATION (S_O):	.49 (1964) - .43 (1973)
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
16	TEMPERATURE (°F):	102
16, 17	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	102, 13,674
2, 1	RESERVOIR PRESSURE INITIAL (psi):	2200
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
17	GAS OIL RATIO LATEST (GOR) (cf/bbl):	6003
3,2,1	STOCK TANK OIL GRAVITY (°API):	40.6, 36.3, 40.6
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
17	MINIMUM MISCIBILITY PRESSURE (MMP):	1269
2	ESTIMATED ORIGINAL OIL IN PLACE FOR 3 SRPs:	14,395 mbbls
2	ESTIMATED PRIMARY OIL RECOVERED FOR 3 SRPs:	3,149 mbbls

OTHER INFORMATION:

ENHANCED AND SECONDARY RECOVERY DATA:

FIELD: Emperor RESERVOIR: Holt TOTAL NO. PROJECTS: 3 PDS:

DATA SOURCE: "Secondary and Enhanced Recovery Operations in Texas to 1978", Texas Railroad Commission

1976 PROD. (this project): MBBLS	15	59	57		
1977 PROD. (this project):	15	53	55		# units:3
CUM. PROD. FROM DISC. TO 1/78:	62	878	978		
PROJECT NO.	F-1758	F-1198	F-1199		
LEASE NO.(s):	09347	01349	013356		
OPERATOR:	Continental Oil	Exxon	Sun Oil		
RESERVOIR:	Holt	Holt	Holt		Holt
DEPTH PRODUCING ZONE:	4780	4765	3000-4900		4765
PRODUCTIVE ACREAGE IN RESERVOIR:	2000	1900	2000		960
ACREAGE IN PROJECT:	160	80	420		660u
PORTION OR FIELD WIDE:	P	P	P		
TYPE:	WF/SW	WF/SW	WF/SW, BW		WF
PATTERN:	SW	-	-		
YEAR BEGAN:	3-70	12-68	5-65		1965
YEAR TERMINATED OR STATUS:	ICP	ICP	ICP SW INS BW		
RESERVOIR PRESSURE INITIAL:	2200	2200	2200		2200
BEG. INJECTION:	1000	900	1214		
LATEST:	-	618	1670		
NUMBER OF WELLS TOTAL:	4	9	12		
PRODUCING WELLS:	3	8	9		40
INJECTION WELLS:	1	1	1		7
MAXIMUM:	-	-	-		
LATEST:	-	-	-		
SHUT-IN/ABANDONED WELLS:	0	0	2		
SURFACE INJECTION PRESSURE:	750	500	1200		
EFFECTIVENESS OF INJECTION:	-	ME	ME		
OPERATOR PROBLEMS:	EG, PA	-	-		
ESTIMATED PRODUCTION DUE TO INJ.:					
1977:	15	4	55		
FROM BEG. INJECTION:	49	149	112		
EST. INCREASE IN ULTIMATE PROD. DUE TO INJECTION:	57	262	438		
WATER PRODUCTION:					
CURRENT (1977):	1	7	85		
CUMULATIVE TO 1/78:	139	50	578		
CURRENT (1977) INJECTION:	215	52	76		
CUMULATIVE INJECTION:	1288	1758	1654		

Empire
Abo
Northwest Shelf

DATA SOURCE CODE		
	STATE	New Mexico
6b	COUNTY	Eddy
	REGULATORY DISTRICT	
	BASIN	Permian
15	SUB-BASIN	Northwest Shelf
13c,14c,6b	FIELD	Empire
13c,14c,6b	RESERVOIR	Abo
	GEOLOGIC AGE	Leonardian
1	AAPG STRATIGRAPHIC AGE CODE	318
6b	RESERVOIR LITHOLOGY	Biohermal reef mass, micro to coarse crystalline, sucrosic to granular, silty to very anhydritic clean dolomite.
6b	TRAPPING MECHANISM	Stratigraphic and structural
18	DISCOVERY YEAR	2-1958
17	PROVED ACREAGE	9600+
18	REGULAR WELL SPACING (acres/well)	40
6b,13c	RESERVOIR DEPTH	6022, 6014
	RESERVOIR THICKNESS	
6b,13c	NET PAY	15-726 w/370.5 avg.; 16
6b	GROSS	726
	NET/GROSS RATIO	
	POROSITY	
6b	TYPE	IC, V, F
6b	FRACTION	.015-.183
	PERMEABILITY	
6b	RANGE	.1-1970 md
6b	AVERAGE	985 md
13c	HORIZONTAL	985 md
	VERTICAL	
13c,14e	OTHER INFORMATION	Recommended for CO_2 and polymer flood in GURC Report 153. BETC/RI-78/15 list as unsuitable for surfactant polymer or carbon dioxide EOR because of water drive and fractured.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	406 (274P, 18I, 114A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	185,351
18	PRODUCTION 1-1-79 to 1-1-80	12,741 mbbls oil; 10579 mmcf gas; 1286 mbbls water
	SECONDARY RECOVERY RECORDS?	No
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6b	STRUCTURE CONTOUR?	yes
6b	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
13c,14c,6b	FIELD:	Empire
17	RESERVOIR:	Abo
6b	PROD. ACRES:	9600+
	AVG. THICKNESS (FT.):	370.5
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
6b	WATER SATURATION (S_W):	.25-.60
6b	OIL SATURATION (S_O):	.40-.80
6b	PRIMARY DRIVE MECHANISM:	gas solution, water drive
14e	PRIMARY GAS CAP?:	no
6b, 14e	TEMPERATURE (°F):	109
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6b	RESERVOIR PRESSURE INITIAL (psi):	2396
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6b, 13c,14e	STOCK TANK OIL GRAVITY (°API):	43, 44, 43
14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	2.2 cp
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

13c Recommended for CO_2, polymer flood

14e Listed as not suitable for surfactant, polymer or CO_2 EOR.

WATER ANALYSIS RECORD

FIELD: Empire RESERVOIR: Abo TOTAL NO. PROJECTS:
DATA SOURCE: 6b

TOTAL SOLIDS (ppm):	32,261
NA	
Ca	1,949
Mg	368
Fe	
SO_4	3,147
Cl	16,046
CO_2	
HCO_3	1,281
OH	
H_2S	

RESISTIVITY:
SPECIFIC GRAVITY:

OTHER WATER QUALITY DATA:

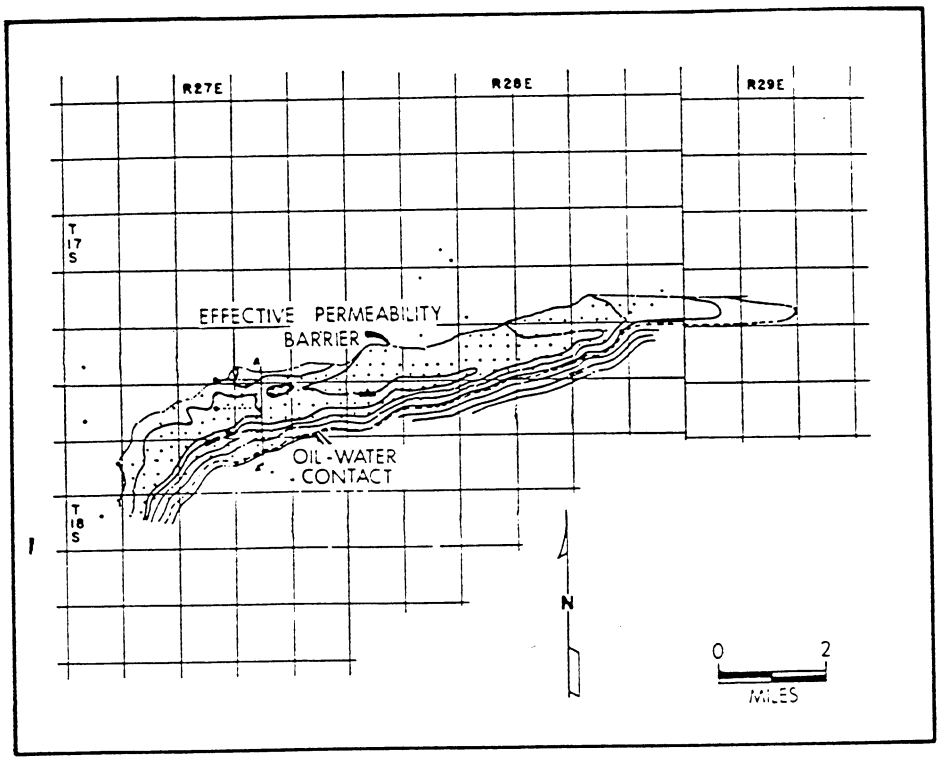
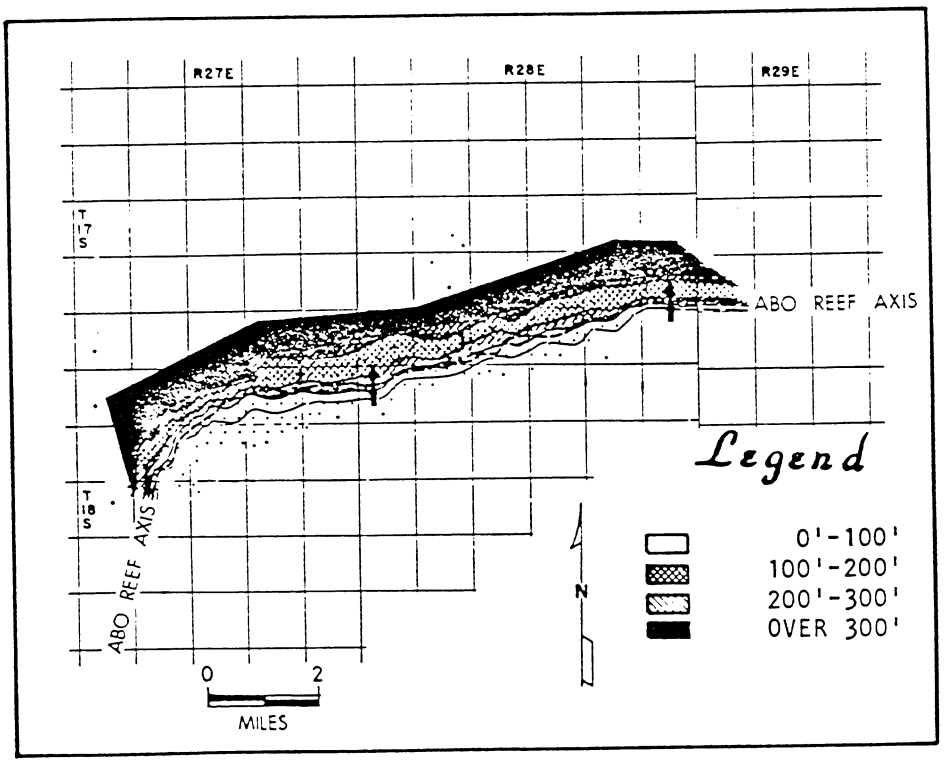
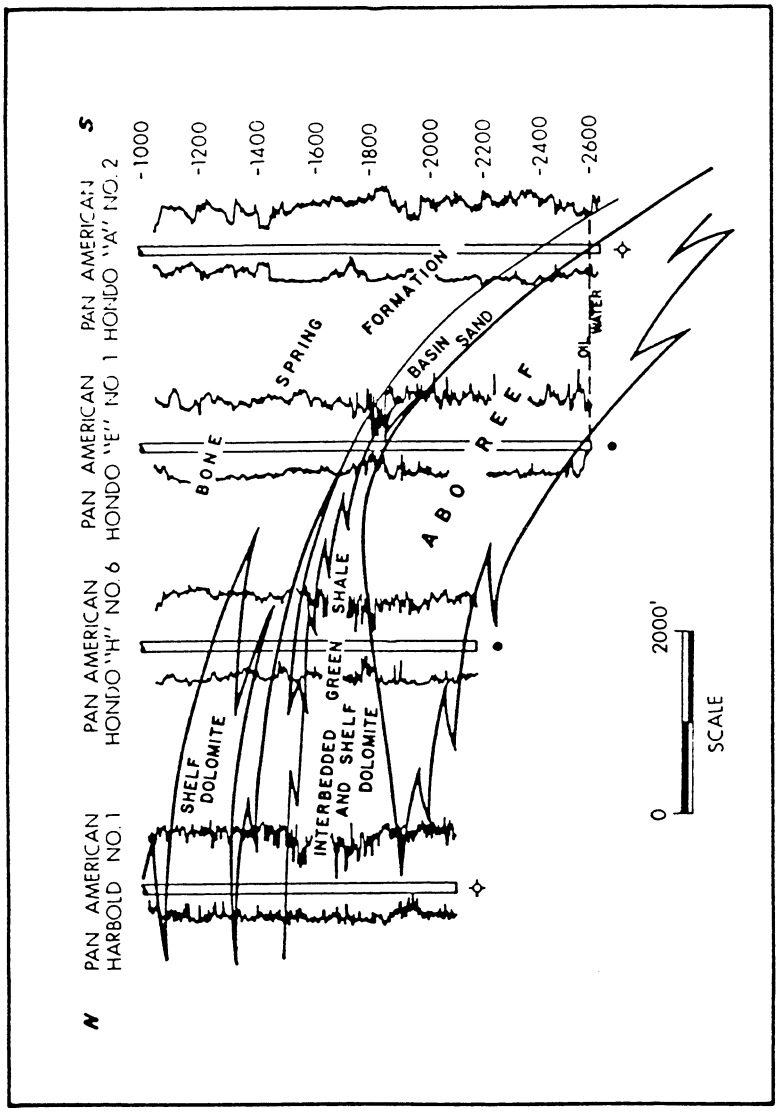


FIGURE 2-19

STRUCTURE ON TOP OF ABO
REEF EMPIRE FIELD



ISOPACHOUS MAP OF GREEN SHALE OVERLYING
ABO REEF AT EMPIRE FIELD



CROSS SECTION SHOWING REEF BUILDUP AND SHELF SEDIMENTS
PROGRADING OVER CREST OF REEF AT EMPIRE FIELD

Eunice
San Andres
Central Basin Platform

DATA SOURCE CODE		
	STATE	New Mexico
	COUNTY	Lea
	REGULATORY DISTRICT	
13c	BASIN	Permian
15	SUB-BASIN	Central Basin Platform
13c	FIELD	Eunice
13c	RESERVOIR	San Andres
	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
	RESERVOIR LITHOLOGY	
	TRAPPING MECHANISM	
18,13b	DISCOVERY YEAR	8-61
	PROVED ACREAGE	
18	REGULAR WELL SPACING (acres/well)	40
13c,13b	RESERVOIR DEPTH	4100
	RESERVOIR THICKNESS	
	NET PAY	
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
	FRACTION	
	PERMEABILITY	
	RANGE	
	AVERAGE	
	HORIZONTAL	
	VERTICAL	
13c	OTHER INFORMATION	Recommended for CO_2, steam drive and combustion in GURC Report 153.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	1P
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	32
18	PRODUCTION 1-1-79 to 1-1-80	.889 mbbls oil; 2 mmcf gas; 4 mbbls wate
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
	STRUCTURE CONTOUR?	
	LOGS?	
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE 13c		
	FIELD:	Eunice
	RESERVOIR:	San Andres
	PROD. ACRES:	
	AVG. THICKNESS (FT.):	
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
	PRIMARY DRIVE MECHANISM:	
	PRIMARY GAS CAP?:	
	TEMPERATURE (^oF):	
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
	RESERVOIR PRESSURE INITIAL (psi):	
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
	STOCK TANK OIL GRAVITY (^oAPI):	
	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	
	OTHER INFORMATION:	

13c Recommended for CO_2, steam drive, combustion

Eunice-Monument
Grayburg-San Andres
Central Basin Platform

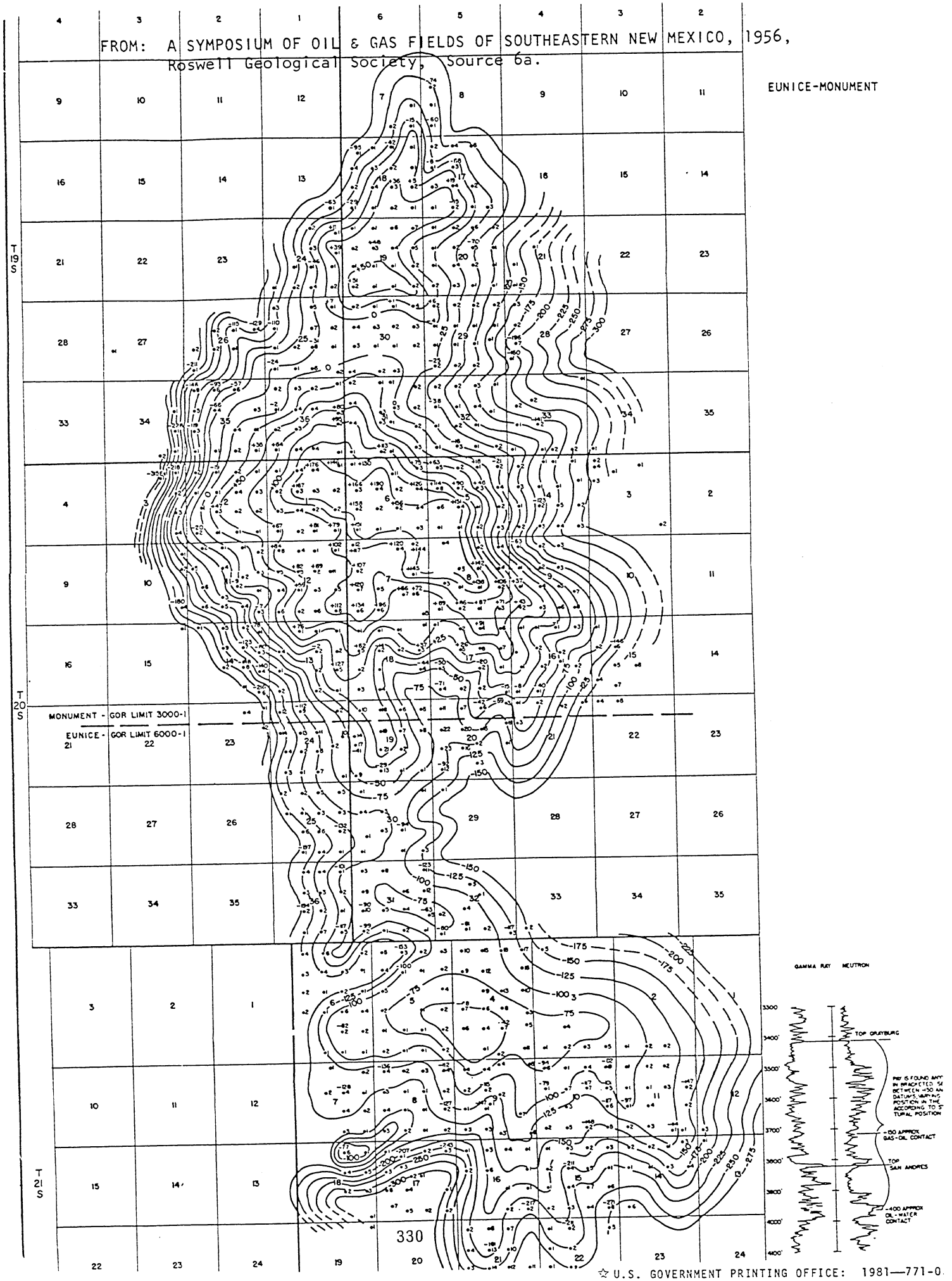
DATA SOURCE CODE		
6a,7	STATE	New Mexico
	COUNTY	Lea
	REGULATORY DISTRICT	
	BASIN	Permian
7,15	SUB-BASIN	Central Basin Platform
6a,7,14c	FIELD	Eunice-Monument
14c,6a	RESERVOIR	Grayburg-San Andres
8a,7	GEOLOGIC AGE	Guadalupian
1	AAPG STRATIGRAPHIC AGE CODE	313
14e,7	RESERVOIR LITHOLOGY	Grayburg-sandstone; dolomite
6a	TRAPPING MECHANISM	Anticline; north-south trending anticline with three major nodes but continuous production, large gathering area downdip into Delaware Basin.
18,6a,7	DISCOVERY YEAR	12-1971, 3-1929, 1929
17	PROVED ACREAGE	39680
18	REGULAR WELL SPACING (acres/well)	40
6a	RESERVOIR DEPTH	3400-4000
	RESERVOIR THICKNESS	
6a	NET PAY	250
	GROSS	
	NET/GROSS RATIO	
	POROSITY	
	TYPE	
	FRACTION	
	PERMEABILITY	
	RANGE	
14e	AVERAGE	35
	HORIZONTAL	
	VERTICAL	
14e	OTHER INFORMATION	BETC/RI-78/15 list as not suitable for surfactant, polymer or carbon dioxide due to natural water drive.
	PRODUCTION STATISTICS (oil in mbbls, gas in mmcf)	
18	TOTAL NUMBER OF WELLS	791 (646P, 6I, 139A)
	PRODUCTION 1976 oil (cum)	
	PRODUCTION 1977 oil (cum)	
	PRODUCTION 1978 oil (cum)	
18	PRODUCTION 1979 oil (cum)	334,553
18	PRODUCTION 1-1-79 to 1-1-80	3197 mbbls oil; 14413 mmcf gas; 9797 mbb water
	SECONDARY RECOVERY RECORDS?	
	WATER ANALYSIS RECORDS?	
	OTHER DATA	
6a,7	STRUCTURE CONTOUR?	yes
6a	LOGS?	yes
	STRUCTURE SECTION?	
	ENGINEERING REPORTS?	
	CORE DESCRIPTIONS?	

RESERVOIR DATA

DATA SOURCE CODE		
	FIELD:	Eunice-Monument
14c,6a	RESERVOIR:	Grayburg-San Andres
17	PROD. ACRES:	30680
6a log	AVG. THICKNESS (FT.):	250
	FORMATION VOLUME FACTOR INITIAL (FVF/INT):	
	FORMATION VOLUME FACTOR LATEST (FVF):	
	WATER SATURATION (S_W):	
	OIL SATURATION (S_O):	
6a	PRIMARY DRIVE MECHANISM:	predominantly water drive
14e, 6a log	PRIMARY GAS CAP?:	no, yes
14e	TEMPERATURE (°F):	90 BHT
	SATURATION PRESSURE/BUBBLE POINT PRESSURE (psi)	
6a,14e	RESERVOIR PRESSURE INITIAL (psi):	1450
	RESERVOIR PRESSURE LATEST (psi):	
	GAS OIL RATIO INITIAL (GOR/INT) (cf/bbl):	
	GAS OIL RATIO LATEST (GOR) (cf/bbl):	
6a	STOCK TANK OIL GRAVITY (°API):	32
14e	OIL VISCOSITIES (μ_{oi}/μ_{ob}):	8 cp
	MINIMUM MISCIBILITY PRESSURE (MMP):	
	ESTIMATED ORIGINAL OIL IN PLACE FOR ___SRPs:	
	ESTIMATED PRIMARY OIL RECOVERED FOR ___SRPs:	

OTHER INFORMATION:

FROM: A SYMPOSIUM OF OIL & GAS FIELDS OF SOUTHEASTERN NEW MEXICO, 1956, Roswell Geological Society, Source 6a.



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