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A REPORT ON A PROPOSED REPRESSURING PROJECT IN THE LANGLIE POOL, LEA COUNTY, NEW MEXICO.

The area to be discussed in this Report surrounds and includes the Culbertson & Irwin, Inc., Liberty Royalties lease located in the Northeast part of the Langlie Pool, Lea County, New Mexico. This lease is described as the West One-half of the West One-half (W/2 of W/2) of Section No. 3, Township 25-South, Range 37-East, Lea County, New Mexico, and is shown on Figure 1 of this Report.

There are three producing wells on this lease. The #1 well is located 330' from the North line and 990' fr. the West line of the lease. This well was completed on March 25, 1938, at a total depth of 3396' for initial production of 322 barrels daily. Later this well was deepened to 3470' and completed as a natural producer, however, production declined and on April 13, 1941, the well was shot with 120 qts. of solidified glycerin from 3400-3460'.

The #2 well is located 1650' from the North line and 660' from the West line of the lease. This well was drilled to a total depth of 3467' and completed on May 19, 1938, for a natural production of 370 barrels daily. This well was later shot with 150 qts. of solidified glycerin from 3385-3461'.

The #3 well is located 2310' from the South line and 660' from the West line of the lease. This well was drilled to a total depth of 3468' and was completed on July 1, 1938, for 166 barrels daily after shooting with 160 qts. of glycerin from 3400-3467'.

The Langlie and Mattix Pools are located on the West flank of a sub-surface structure which has a Northwest-Southeast strike. The producing zones are sandstone members of the Queen formation. There are several individual sand zones producing in this field. The gas-oil contact is encountered at approximately -190' and the oil water contact at approximately -330'. The accumulation in the individual sands is controlled by structure, gradation and pinch-out of the sand members.

Figure #2 of this Report shows the approximate outline of the productive limits of the sand which is producing in the three wells on the Liberty Royalties lease. Referring to Figure #3, it can be readily seen that the productive area of this sand is controlled on the West by the structural dip of the formation and on the East by the pinch-out of the pay section.

The pay section apparently grades into shale and becomes contaminated and non-porous on the South end of the Liberty Royalties lease. This conclusion is based on the type of section encountered in the Culbertson & Irwin, Inc. #1 Humphrey dry hole located 1980' from the West line and 660' from the South line of Section 3, Township 25-South, Range 37-East, and the two dry holes drilled in the Southeast One-fourth of the Southeast One-fourth (SE/4 of SE/4) of Section No. 4, Township 25-South, Range 37-East. As shown on the structural map, Figure #1, these tests were well located structurally and would have made producers if the pay section had not been contaminated with shale and silt. This pay section, however, becomes a clean sand again to the Southeast and as is shown on Figure #2, is the producing zone in the wells located on the West One-half (W/2) of Section No. 10, Township 25-South, Range 37-East.

The sand producing in the Liberty Royalties wells produces to the Northwest of and on strike with these wells for a distance of approximately two miles. At this point the axis of the structure takes more of a Northwest-Southeast strike and the Eastern limits of the Liberty Royalties sand zone becomes too high to produce oil and is included in the gas cap area, and becomes bentonitic and non-porous down dip.

It is our opinion that a repressuring or pressure maintenance program covering all or a portion of a sand zone of this nature would greatly increase the ultimate recovery, and lower the lifting cost over a period of years.

As shown on Figure #2, the Liberty Royalties lease is located on the South end of the North lense of this particular sand zone. It is our opinion that if a well on the South end of this lense is used as an input well, the input gas would be controlled in every direction except in the direction of the producing wells. Thus an increase in pressure and production should be noted in wells nearest the input well.

Referring to Figure #2 and using the Culbertson & Irwin, Inc. #3 Liberty Royalties well as the input well, it will be seen that the wells that would be expected to be first effected would be the Culbertson & Irwin, Inc. #1 and #2 Liberty Royalties and the Weiner #1, #2 and #3 Smith wells. Inasmuch as these are similar wells and, as shown on Figure #3, are producing from the same sand, it would appear that the unitization of these two leases would be the ideal manner in which to operate such a project. However, due to the fact that this is an experiment we do not wish to unitize until we are satisfied that the project will be successful. However, the owners of the Weiner-Smith lease are willing to cooperate with us on this project and have given us permission to check these wells from time to time with reference to production, bottom hole pressure and gas-oil ratio change.

By a periodic check of Weiner-Smith wells and Culbertson & Irwin, Inc. Liberty Royalties wells, we should be able to ascertain the results of the input gas on the production and operation of the various wells, and whether it will be practical to operate the leases separately or as a unit.

In submitting this Report we beg that the Oil Conservation Commission of New Mexico:

(1) Authorize Culbertson & Irwin, Inc., to convert their #3 Liberty Royalties well from a producing oil well to an input gas well for the purpose of maintaining or repressuring the sand zone which is producing on this lease.

(2) That the monthly allowable be allocated to the lease as a whole, instead of to the 40-acre units, with authority to produce the same in the most efficient manner.

Yours very truly,

CULBERTSON & IRWIN, INC.

By Wallace W. Irwin

Wallace W. Irwin.

WWI;lw

Petitioners Ex 2 CB2

ILLEGIBLE

GAS-OIL RATIO TESTS

Company: C + Irwin

Lease: Liberty Roy Well No.: # 3

Location:

Beginning of Test:

Date: Time:

End of Test:

Date: Time:

Vent line size:

Orifice Plate size: 1.00" orifice in 9.00" [illegible]

Gas Measuring Device & No.:

Separator Pressure:

	Gauge Feet	Gauge Inches	Oil Prod.	% B.S. & W.	
1st. Gauge	1'	5/8"		# 240	12:00
Stabilization Period					
2nd. Gauge	1'	5/8"		240	11:45
Test Period					
3rd. Gauge	1'	10 1/8"	1st day	240	12:00
Net Volume of Oil			12.80 2nd day		
Net Volume of Water					
Volume of Gas			11,073 MCF		1' 10 9/16
Gas-Oil Ratio					1' 5 4/8
Method of Producing	Stepcocking				4 5/8
Choke Setting	3/4" wide open				
Remarks	Flowed 4 Times in 4 hr.				

60,84 / 133 = 61,19

61,19 / 48,39 / 12,80

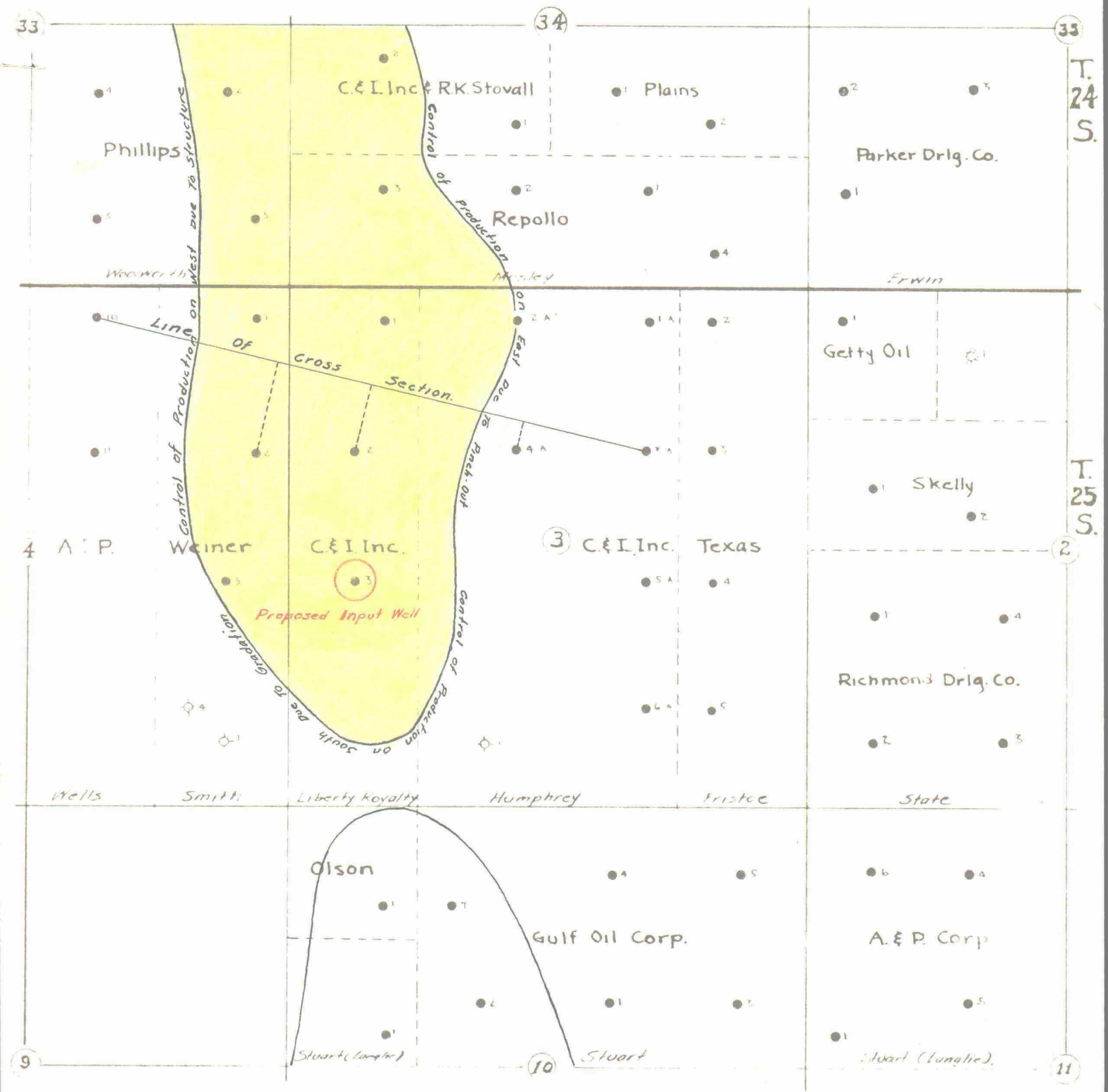
12.05 / 11.45

$\frac{5d}{6p} = \frac{1}{3}$

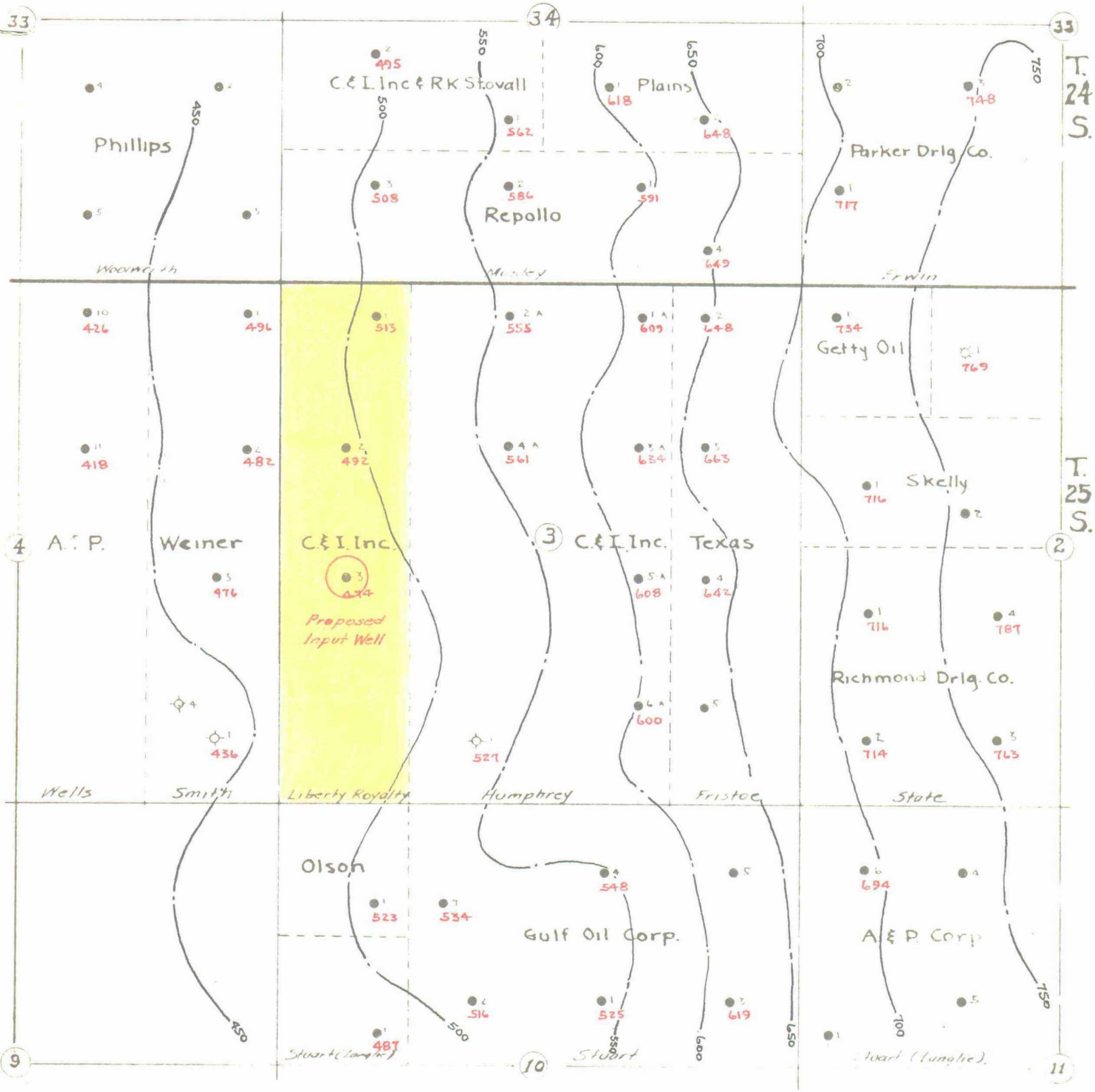
14,33

$Q = 14,949 \times 3\frac{1}{3} \times 207.6 \times 1.5$ $\frac{265,743}{24} = 11,073$

R-37-E.

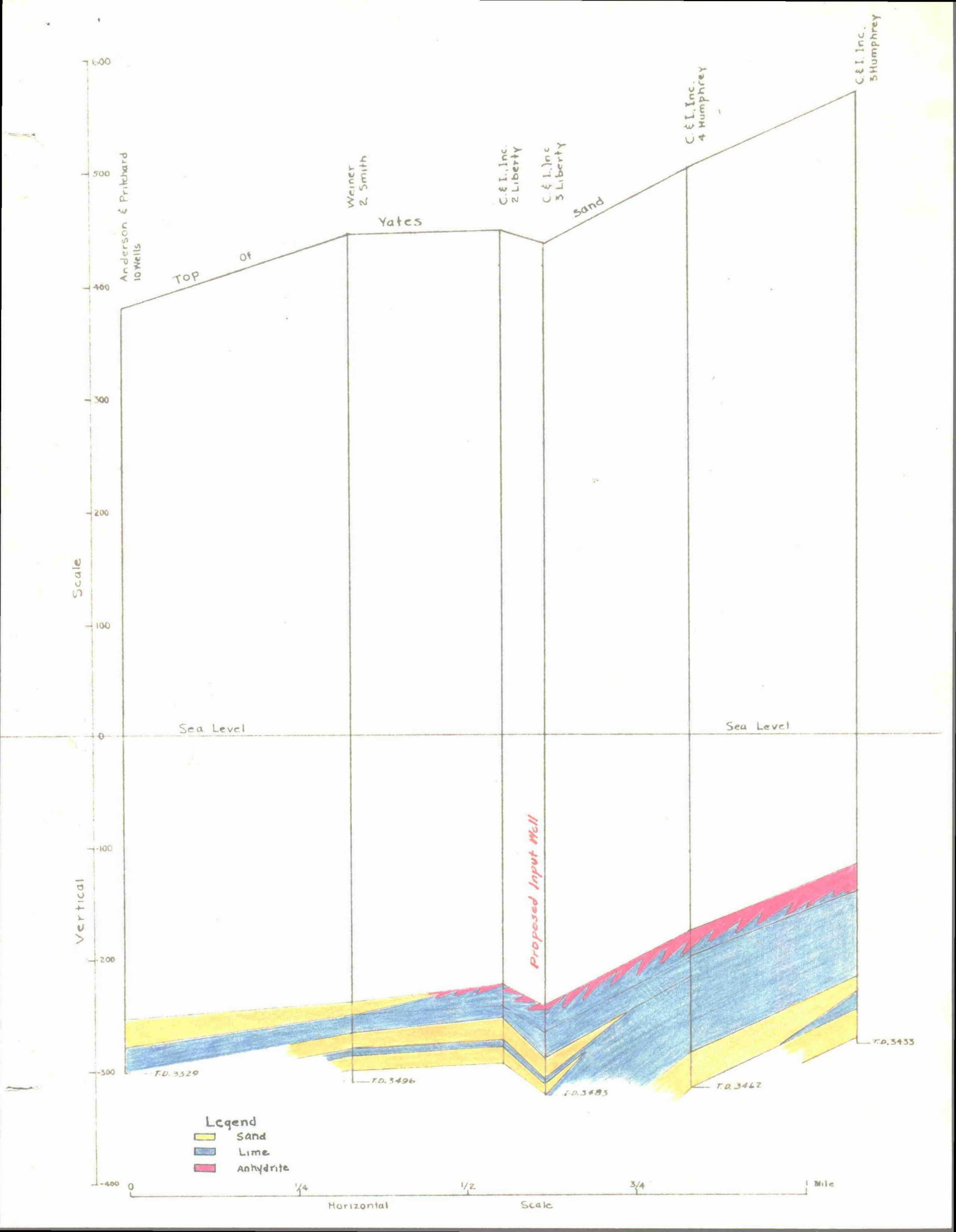

33
34
33
T. 24 S.
T. 25 S.
C. & I. Inc & R.K. Stovall
Plains
Parker Drlg. Co.
Phillips
Repollo
Control of production on West due to structure
Control of production on East due to Pinch-out
Line of Cross Section.
Woodworth
Mosley
Erwin
Getty Oil
Skelly
4 A. P.
Weiner
C. & I. Inc.
3
C. & I. Inc.
Texas
Proposed Input Well
Control of production on South due to Gradation
Richmond Drlg. Co.
Wells
Smith
Liberty Royalty
Humphrey
Fristoe
State
Olson
Gulf Oil Corp.
A. & P. Corp
Stuart (Lunatic)
Stuart
9
10
11

R-37-E.



Contours On Top Yates Sand Contour Interval = 50'

Scale 4" = 1 Mile


Anderson & Pritchard 10 Wells
TOP Of Yates Sand
Weiner 2 Smith
C.&I. Inc. 2 Liberty
C.&I. Inc. 3 Liberty
C.&I. Inc. 4 Humphrey
C.&I. Inc. 3 Humphrey
Sea Level
Sea Level
Proposed Input Well
T.D. 3529
T.D. 3496
T.D. 3483
T.D. 3462
T.D. 3433
Scale
Vertical
600
500
400
300
200
100
0
-100
-200
-300
-400
Legend
Sand
Lime
Anhydrite
0
1/4
1/2
3/4
1 Mile
Horizontal Scale