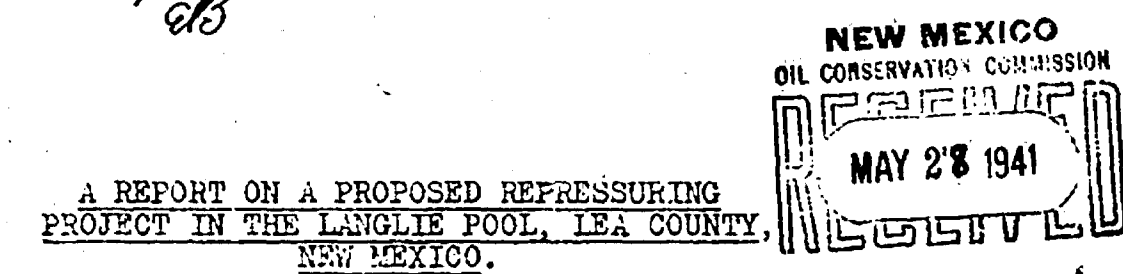


Case No.

Case 27

Large Exhibits

Section 4/8



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 La Salle Pool, La Salle County, New Mexico. This lease is described as the West One-half of the West One-half (1/2 of 1/2) 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 1300' from the North line and 990' from the West line of the lease. This well was completed on March 25, 1938, at a total depth of 3990' for initial production of 322 barrels daily. Later this well was deepened to 3475' 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 3670' 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 3385-3401'.

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 3665' and was completed on July 1, 1938, for 165 barrels daily after shooting with 150 qts. of glycerin from 3400-3467'.

The La Salle and Matrix 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 100' and the oil-water contact at approximately 330'. The accumulation in the individual sand 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. #3 Humphrey dry hole located 1380' 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 1/4 of SE 1/4) 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 (1/2) 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 anticlastic and non-porous down dip.

It is our opinion that a reperforing 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 lease of this particular sand zone. It is our opinion that if a well on the South end of this lease 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. #2 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 utilization of these two leases would be the least manner in which to operate such a project. However, due to the fact that this is an experiment we do not wish to utilize until we are satisfied that the project will be successful. However, the owners of the Weiner-Smith lease are willing to co-operate 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 reperforing 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 20-acre units, with authority to produce the zone in the most efficient manner.

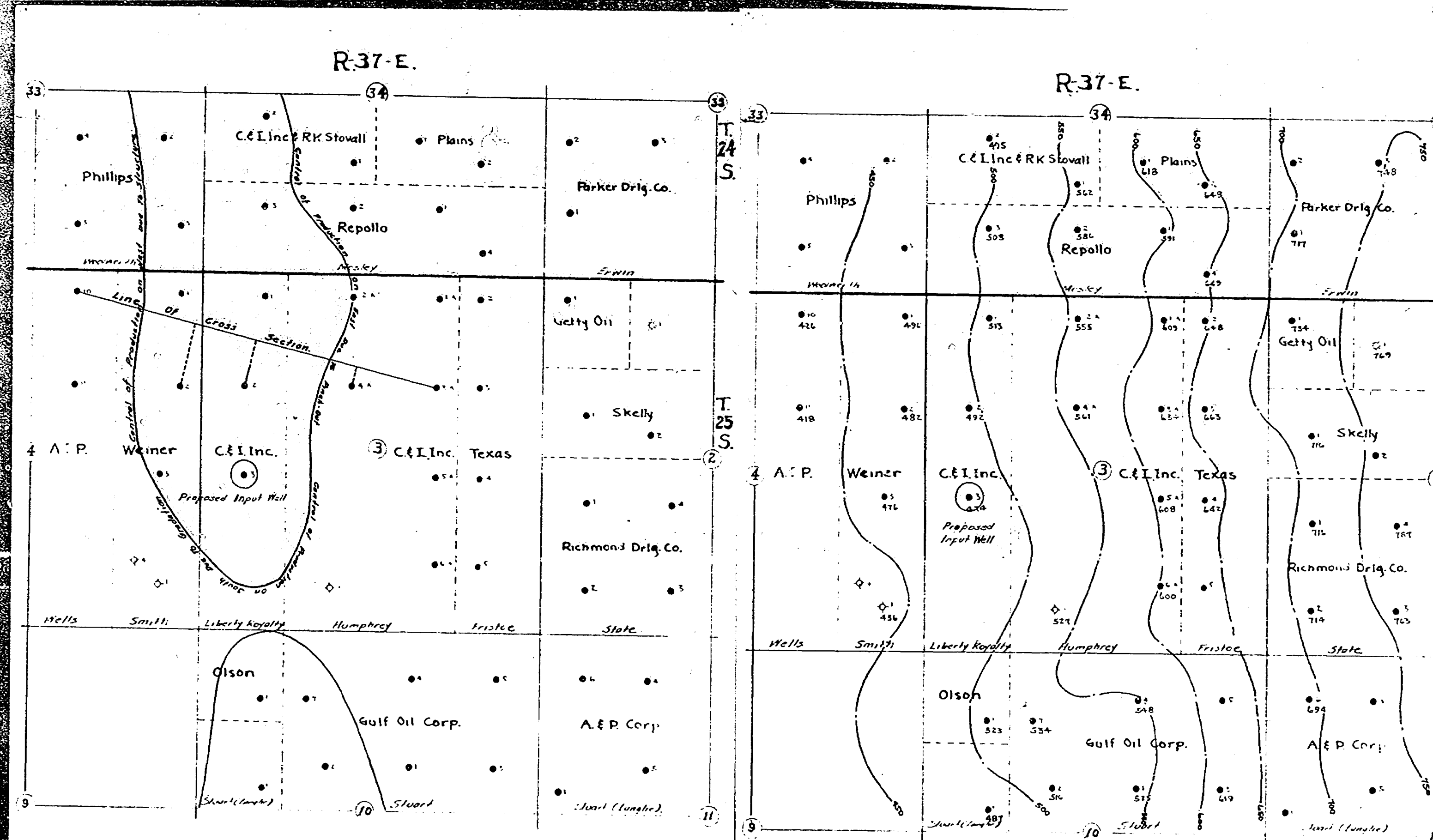
Yours very truly,
CULBERTSON & IRWIN, INC.
By *William H. Irwin*
William H. Irwin.

WHL:lv

-2-

Section 4/8

Company: *Culbertson & Irwin* Lease # *3*
 Lease: *Liberty Roy*
 Location: _____
 Beginning of Test: _____
 Date: _____
 Year first shot: _____
 Office floor level: *100' surface in 900' below*
 Gas flowing surface: _____
 Separator pressure: _____
 Test Period: _____
 Test Date: *00.13.1' 10/8* *12.00*
 Test Depth: *11.17* *12.80 2nd day*
 Test Volume: *11.0 73%* *1' 19.8*
 Volume of gas: *11.0 73%* *1' 19.8*
 Method of measuring: *Dependent*
 Shale testing: *1/4 mile 400'*
 Remarks: *House 4 times in 2 hrs*
 9 = 34.77 x 33.88 x 507.4 x 1.5 = 11073



Contours on Top Water Sand
Scale 4" = 1 Mile

19

