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* KEY ISSUES: Economic Confiscation/   *
*             Economic Waste           *
*               Reasonable location    *
*                                      *
* FINAL ORDER: R37 EXCEPTION DENIED    *
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Rule 37 Case No. 0206334

APPLICATION OF ENRON OIL & GAS COMPANY FOR AN EXCEPTION TO STATEWIDE RULE 37 TO DRILL ITS NO. 17 WELL, FRANK REED 117 LEASE, SAWYER (CANYON) FIELD, SUTTON COUNTY, TEXAS

APPEARANCES:	**REPRESENTING:**
APPLICANT	
Flip Whitworth	Enron Oil & Gas Company
James Clayton	"
Johnny Jordan	"
PROTESTANT	
Lloyd Muennink	American Exploration, Inc.
Sarah Stanley	"
David Dennard	"

PROCEDURAL HISTORY

Application Filed:	August 16, 1994
Notice of Hearing:	October 27, 1994
Hearing Held:	January 5, 1995
PFD Circulated	May 30, 1995
Heard by:	Larry Borella, Hearings Examiner
	Doug Johnson, P.E. Technical Examiner

STATEMENT OF THE CASE

Enron Oil & Gas Company ("Enron") has applied to drill its Well No. 17 ("subject well") on its Frank Reed 117 Lease ("subject lease"), Sawyer (Canyon) Field, 350 feet from the north and west lines of the subject lease. Field rules for the Sawyer (Canyon) Field require a lease-line offset of 500 feet and 320/40 acre spacing. Enron asserts that the exception is needed to protect its correlative rights and to prevent waste. The application is protested by American Exploration Company ("American") who offsets the subject lease to the west, north and northwest.

APPLICANT'S EVIDENCE AND POSITION

Enron's evidence, and the conclusions it draws from that evidence, is summarized as follows. The 640 acre subject tract, purchased by Enron in late 1991 or early 1992, has 15 producing wells and one shut-in well. The shut-in well has been shut-in for approximately 10 years. No density exception is required for the subject well but no regular location exists.

The Canyon Sand in the area of interest is a thick (≈1200 feet) section of interbedded sand and shale. The sand lenses are discontinuous and have very low permeability. Because of the limited areal extent of individual sand bodies, any in-field drilling will likely encounter some sand lenses that are at original reservoir pressure. However, some sands are correlative over a larger area and can be traced from well to well. Consequently, an in-field well can be expected to encounter both reduced and original reservoir pressures. Well pressure tests will, because of wellbore crossflow, be a mixture of these pressures and will not be accurate. Furthermore, shut-in times for pressure tests cannot, due to cost associated with downtime, be sufficiently long for an accurate pressure determination.

By using field averages for water saturation and original reservoir pressure and a log-derived average porosity of 8%, Enron calculated a recovery factor of 242 MCF/ACRE/FOOT. Enron estimates that the tract's existing wells will recover approximately 12.8 BCF. Using gamma-ray log data adjusted for shale content (V_{shale} cutoff <33%), Enron calculated net pay (i.e. sand from which gas can be produced) for the subject lease. By assuming that 50% of the gamma-ray derived net sand is productive (to compensate for not determining porosity and water saturation for each pay sand), Enron estimated the original recoverable reserves in place for the tract to have been 29 BCF. Enron concludes that 16.2 BCF of recoverable reserves cannot be recovered from existing wells.

Enron asserts that, due to topography, drillsite preparation cost for the applied-for location is $22,000 less than preparation cost for a well location 500 feet from the nearest lease-line. An estimated ultimate recovery ("EUR") for the applied-for well, based on an average of the estimated EUR of all wells drilled by Enron during 1994 (presumably in the Sawyer (Canyon) Field) was estimated to be .35 BCF. Enron contends that the additional cost of building the location at a regular location will make the well uneconomic. The cost of directional drilling would add $70,000 and

would, likewise, render the well uneconomic. Enron concludes that denial of the applied-for location will deny it an opportunity to recover the tract's hydrocarbons because Enron will not drill the well at a regular location.

Enron presented evidence showing that its in-field drilling program has resulted in increased volume recovery and not simply increased production rate. Enron then asserts that similar incremental production will occur from the applied-for location and that this incremental production will go unrecovered if the application is denied.

PROTESTANT'S EVIDENCE AND POSITION

American presented evidence to show the following. The Upper Canyon sandstones are the principal source of production in this area. The Lower Canyon contributes little to a well's production because of high water saturation. Regular, or near regular, locations exist in several locations on the subject tract that yield approximately the same potential pay thickness. Structure does not play an important role in drillsite selection in this area.

Little or no variation in topography between the applied-for location and a regular location 500 feet from the northwest corner of the tract is shown on the U.S.G.S. topographic map of the area.

Initial bottom hole pressures taken in the vicinity of the subject tract provide a method of qualitative well performance comparison. A comparison of initial bottom hole pressures of recently (1992-1993) drilled wells with initial bottom hole pressures from wells drilled approximately 20 years earlier was made for wells around the applied-for well. The data clearly shows that the recently drilled wells have encountered significantly lower reservoir pressures meaning that the wells are draining in excess of the 1000 foot between-well spacing. A field-wide study corroborates this conclusion. Therefore the applied-for location, 350 feet from protestant's lease line, will, if granted, result in Enron's applied-for well having a competitive advantage over protestant's offsetting wells which are all 500 feet from lease lines. For instance, if the drainage radius of the applied-for well is 500 feet, approximately 19% of the well's recovery will come from American's offsetting tracts.

Gas production is not evenly distributed throughout the pay section. A relatively small portion of the producing sands contributes most of the production. Therefore assuming that the total pay thickness produces equally will yield an overly optimistic estimated ultimate recovery for a well or tract.

EXAMINERS' OPINION

The gist of Enron's case is that, if they are denied the opportunity to drill an economic well, both confiscation and waste will result. This is not, and never has been, the test for an exception to Statewide Rule 37.

Waste

To obtain an exception to prevent waste the applicant must show that, absent an exception, a significant amount of hydrocarbons will be irrevocably lost. Additionally, to preclude the argument that more wells equals more oil, the courts added the requirement that there be some unusual condition on the subject lease that makes the exception necessary. This unusual condition cannot be field-wide but must relate specifically to the subject tract. Enron has failed to meet this burden.

Enron stated that 350 MMCF would be wasted if the applied-for exception was not granted because it would not drill the well at any other location for economic reasons. In the first place, it is highly unlikely that hydrocarbons that remain unrecovered because it cost more to produce them than they are worth can be considered to have been wasted. Such a concept would mean waste occurs when a well, capable of producing any measurable quantity of oil or gas, is plugged. Secondly, Enron failed to show what amount of the estimated 350 MMCF could not be recovered from other wells. The testimony and evidence clearly show that some, if not most, of the field's pay comes from sands that are contiguous for thousands of feet. Therefore the three existing wells that are within a one thousand foot radius of the applied-for location will produce an unknown portion of the 350 MMCF. Thirdly, no unusual condition was shown. The discontinuity of pay sands is a field-wide condition. If substantial (economically significant?) quantities of gas are in these sands, the remedy is a field rule amendment to reduce the required well density. No tract-specific topographic condition was shown. Other locations, less irregular to lease lines, have slopes similar to the applied-for location and many wells in the field (and on the subject tract) are located in areas of greater slope than that of the applied-for location. One such location is 500 feet out of the northwest corner of the subject tract. This location would be irregular to Enron's 117 No. 2 well but, according to Enron's calculated drainage radius, would not interfere with the No. 2 Well.

Confiscation

To obtain an exception to Statewide Rule 37 to prevent confiscation, the applicant must show that, absent the exception, it will be denied a reasonable opportunity to recover its fair share of minerals under the tract in question. Whether that fair share is profitable is a matter of providence and business efficiency.

Protestant agrees that Enron will not recover the tract's reserves without an additional well. Therefore, the only issue is the reasonableness of the location. Determining the reasonableness of a location entails balancing the applicant's opportunity to recover its tract's reserves with the potential harm to offset mineral interest owners. Generally, a location is reasonable if no less irregular (i.e. lease-line irregular) location will give the requisite recovery opportunity. Enron did not meet its burden of proving that the applied-for location is reasonable.

Enron claims that a lease-line regular location 500 feet out of the section's northwest corner will not recover the reserves that the applied-for 350 feet location will because economic constraints

require 350 MMCF recovery and the 500 foot location will only yield 250-275 MMCF. No difference in reservoir conditions were shown for the two locations. Enron attributes the difference in estimated recovery to the 500 foot location being approximately 150 feet closer to Well 2. Enron believes that the best prediction of recovery is the between-well distance prior to the drilling of an anticipated well. Enron's expert explained the different estimates this way:

> I base that upon the statistical average that we have from when we were drilling 1320 feet between wells. At that time we were recovering about 540 MM's per well. Now we are down to 1000 feet and 350 MM's per well. So I just took that difference and then divided it by 300 and subtracted that from my 350. That is how I came up with that number.

This method of estimating recovery lacks credibility. Enron's estimate of drainage radius for the applied-for well is 305 feet. The 500 foot location would be almost 800 feet from the No. 2 well (as compared to 610 feet for a well drilled between wells 1320 feet apart) and the distance from protestant's adjoining-tract well would increase. Furthermore, the closet wells, on and off-tract, to the applied-for location have recoveries that far exceed the field average Enron uses for its approximation. For instance, the nearest well, Enron's No. 2 Well, has an estimated ultimate recovery of 1.97 BCF.

If a regular or less irregular location will give an applicant a reasonable opportunity to recover the hydrocarbons under a tract, denial of an applied-for irregular location is not confiscation simply because the applicant finds the available locations economically unattractive. Economic requirements vary from company to company (applicant to applicant), can't be evenly applied, are not specific to the property rights on a given tract, and cannot be the basis for granting an exception to Statewide Rule 37.

Enron asserts that it is entitled to a location 150 feet closer to the lease-line than the field rules allow because they must have a 10% rate of return and they can't get that at 500 feet. Does this mean that some other company that requires a 15% rate of return is entitled to be 200 feet closer to a lease-line than field rules allow? Is a very well run company that can accept 7% then required to drill a regular location? Should exceptions be based on risk-weighted rate of return or should risk be ignored? Is it a discounted rate of return and if so what discount rate is appropriate? How sensitive to future price estimates is the rate of return? Would a company that expected no price escalation be granted an exception when a company that predicted rising prices be denied because of a higher calculated rate of return? Clearly these are issues that must be addressed when deciding whether to drill a well but they are not a basis for granting an exception to a field's spacing rules.

Drillsite preparation costs are likewise not grounds for granting Rule 37 exceptions. Even if they were, Enron's testimony concerning such costs was not convincing. Accepting, for illustrative purposes, Enron's position that 350 MMCF would be recovered from any well drilled between 1000 foot spaced existing wells, any location on the tract would require the same rigorous site preparation cost analysis. Enron has staked two other locations in this area that are the subject of separate

dockets. If Enron's analysis is correct, these wells cannot be drilled if the site preparation cost is greater than $22,000. When asked for the estimated drillsite preparation cost for these locations, Enron's witness stated that he could not recall those estimated costs. Furthermore, the evidence does not indicate any variation in slope between the 350 foot and the 500 foot locations.

Finally, a nonproducing regular location exists on the tract and Enron failed to show that production from this location would not yield Enron's fair share. Enron's Well No. 1 has been shut-in since 1984. No future production was attributed to this well and no explanation was given for not considering production from this well. When asked why the well was shut-in, Enron's witness responded: "I really don't know the answer to that. We have been talking about going out there and seeing if it would produce, and I really don't know if there is a mechanical condition that prevents that. It was shut-in when we purchased it, and we haven't done anything with it since then".

FINDINGS OF FACT

1. Notice of hearing was given on October 27, 1994, to all designated operators, lessees of record for tracts that have no designated operator, and owners of record of unleased mineral interests for each adjacent tract and each tract nearer to the well than the prescribed minimum spacing distance.

2. Enron Oil and Gas Company ("applicant") has applied on Form W-1 for a permit to drill well No. 17 on the Frank Reed Lease. Applicant proposes to drill its well at a location 350' FNL and FWL. Applicant has applied for completion of its proposed well in the Sawyer (Canyon) Field, having spacing rules requiring 500' lease-line offsets.

3. Applicant's Frank Reed Lease is a tract of regular size and shape, containing 640 acres.

4. No tract-specific unusual condition was shown.

5. A well drilled at a regular distance from the northwest lease-lines of the Frank Reed Lease will recover the hydrocarbons recoverable from the applied-for location.

6. Existing wells surrounding the applied-for location will recover an undetermined portion of the reserves recoverable from the applied-for location.

7. The subject tract has recoverable reserves of approximately 1.5 BCFG that cannot be recovered by the currently active wells on the tract.

8. Enron's Frank Reed Well No. 1 has been shut-in since 1984. No evidence was presented concerning recoverable hydrocarbons from the No. 1 Well, or a similarly situated well.

9. A nonproducing well exists at a regular location that may be capable of recovering additional

hydrocarbons from the Frank Reed Lease.

10. No predictable variation in reservoir quality was established for the Frank Reed Lease.

11. A lease-line regular location, 500 feet "out of the northwest corner" will recover approximately the same quantity of gas as the applied-for location.

12. The applied-for location is not reasonable because a less lease-line irregular location exists that will give the applicant a reasonable opportunity to recover the hydrocarbons underlying the Frank Reed Lease.

CONCLUSIONS OF LAW

1. Proper notice of hearing was timely given to all persons legally entitled to notice.

2. All things have occurred and have been done to give the Commission jurisdiction to decide this matter.

3. Applicant failed to prove that approval of a permit to drill a well at the proposed location is necessary to prevent waste or to give owners of the subject tract a reasonable opportunity to recover their fair share of hydrocarbons in the applied for fields underlying the tract.

RECOMMENDATION

The examiners recommend that the subject application be denied in accordance with the attached final order.

Respectfully submitted,

Larry Borella
Hearings Examiner

Doug Johnson, P.E.
Technical Examiner

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