

The Micronomics study uses an approach similar to the companies' methodology referenced above to conclude that posted prices for California crudes oils understate their market value. Although the team has agreed that this method should not be applied for royalty valuation purposes under MMS' 1988 oil valuation regulations, its use in prior periods remains a point of contention among team members. The differing points of view are discussed in detail in the recommendations section. Findings are discussed in section IV. B.(1).

H. Detailed Review of Long Beach Contracts--Boston, 9/95

In the fall of 1995, after reviewing the IIC report, the team elected to examine the Long Beach II records again in more detail. Especially given the company delays in the audit process, extended review of the Long Beach II records was thought to be a valuable addition to the overall investigation and an important supplement to the audit process.¹²

ANS crude could not be exported. While most major West Coast refiners had exchange contracts with Sohio, they also routinely purchased incremental supplies at spot prices (for more information, see Appendix 4).

¹²Several previous evaluations of the California pricing issue, including the MMS examination in 1986, the A.D. Little study for the IRS in 1987, the U.S. General Accounting Office report in 1988, and the two Interior Department Inspector General reports in 1991 and 1994, had not included inspections of the Long Beach II evidence. The Justice Department had access to these documents in 1989, but the extent of their review is not clear.

The primary intent was to determine the prevalence of purchases and sales at premia over postings. A secondary issue of concern was the fraction of all transactions constituted by exchanges and buy/sells. Five MMS/DOE representatives, including an MMS auditor, visited IIC in Boston to examine Long Beach II records retained by the firm. The author of the IIC report was available to locate records and help interpret them as necessary. The review took place over a three-day period.

The review began with Texaco, for which detailed records of transactions at each of its West Coast distribution points were available. The team examined virtually all the contracts for Texaco receipts and deliveries along the west side of the San Joaquin Valley for one month in 1989. The focus was on trades involving Midway Sunset crude oil and Texaco's use of its heated pipeline running from the San Joaquin Valley to San Francisco. The team then expanded the scope to include transactions involving Kern River crude oil on the east side of the San Joaquin Valley, and cross-valley trades of heavy crude made primarily for locational convenience. The largest of these trades involved Shell. While only one month was addressed in detail, most of the contracts, particularly the large exchanges, were longstanding "evergreen" contracts.

On the second day, part of the team turned its attention to Shell's activities. The focus was on 1984, the year of the IIC evaluation and audit review. Absent detailed distribution records on Shell's activities (requested but never obtained), the team examined Shell's sales and exchange contracts IIC had

flagged in its report as premia-bearing in an attempt to validate IIC's findings.

While this review lasted only three days, the team has returned to the Long Beach II records numerous times for substantiating details. IIC has readily provided follow-up information for all inquiries.

The team's observations from this review have bearing on many facets of this report. Some of the more salient findings are discussed in Section IV.

I. Audit/Team Presentation of Work, 10/95

MMS auditors and interagency team members orally presented their findings to the Assistant Secretary for Land and Minerals Management (AS/LM) and the MMS Director in October 1995.

The team characterized its findings for Shell and Texaco. Both companies are large integrated oil companies in California. Substantial volumes of their oil production never reach an open market. Much of their production is exchanged or transferred internally to their refineries. Large amounts of oil are exchanged barrel-for-barrel between oil companies to save transportation costs. Rarely is it possible to trace Federal production past the first transfer between the companies' production and trading affiliates.

Texaco controls 60% of the heated pipeline capacity that serves

the San Joaquin Valley.¹³ It also operates a large crude oil blending business that mixes heavy crude with lighter crude, thus enabling the heavy crude oil to move through unheated pipelines. Texaco is the largest blender of crude oil operating in the San Joaquin Valley.¹⁴ As a result of its blending business and pipeline operations, Texaco sells and purchases large volumes of crude oil to and from other companies. However, many of Texaco's transactions involve purchases and sales of other major companies' crude oil solely for the purpose of transporting the crude on Texaco's pipeline.

The team found that in contrast, Shell's crude oil transactions involve a much smaller volume of production. In 1984, Shell purchased about 13,500 barrels per day of California oil from other companies and sold virtually none of its California production (about 190,000 barrels per day).

The MMS oil valuation regulations utilize other arm's-length contract prices for production from the same field or area to establish value for oil that is not sold at arm's-length. Thus Texaco's large number of purchases and sales may provide important additional information to value production not sold at

¹³When Texaco transports oil for another producer, Texaco purchases the oil and then sells it back to the party after transporting the oil.

¹⁴According to IIC, the blended stream sold at premiums "over posted prices, reflecting the market prices prevailing for Line 63 and ANS crude oils". (Line 63 is a common carrier pipeline transporting blended oil, much of which is sold on the spot market, from the San Joaquin Valley to Los Angeles.)

arm's-length. Shell's much smaller volume of arm's-length sales provides lesser but still important information to value non-arm's-length production.

The team also summarized the contracts it reviewed at IIC's office. Significant premiums were received for many of Texaco's outright purchases and sales and Shell's outright purchases.

MMS audit staff presented preliminary findings for their review of Texaco in 1989 and 1993 and for Shell in 1984. The auditors cited Texaco and Shell contracts where premiums were received above posted prices. Under MMS regulations, these volumes may be subject to additional royalties. The auditors believed they had found cases where premiums were involved in the oil contracts, but royalties were paid on posted prices. The auditors felt that the postings plus premia should have been used to value the crude for royalty purposes.

At the conclusion of the oral presentation, the MMS Director asked the team to propose a list of options to address the crude oil valuation issue for management's consideration.

J. Presentation of Options, 12/95

In response to the direction above, the team developed options based on the auditor's and team's findings to date and presented them to Interior Department management in December 1995.

Potential collections associated with pursuing the options were estimated employing several approaches to valuing Federal crude

oil. For some options, the analysis estimated year-by-year collections for unpaid royalties from 1978 forward in an attempt to quantify the level of unpaid revenues and their timing. Some team members felt this to be particularly relevant for use by the decision makers, especially considering the uncertain impact of the statute of limitations on collection of unpaid royalties and interest.

1) Timing and Level of California Royalty Collections

Potential collections for previously unpaid royalties follow the historical pattern of overall royalty collections. Prior to 1980, crude oil prices in the United States were low due to domestic price control regulations. In the period 1980-83 three changes sharply increased royalty collections:

- First, domestic crude oil controls were removed, initially for heavy oil, then for all crude. Removal of controls on heavy crude oil allowed oil prices to increase, as well as the resulting royalties from onshore California production. Removal of the remainder of the control structure affected lighter crudes and crude oil from the OCS.
- Second, prices worldwide doubled after the Iranian revolution in 1978-79.
- Finally, OCS production rose sharply between 1980 and 1982 after several high-volume OCS leases were put into

production.

California Federal production volumes jumped from 26.4 million barrels in 1979 to 50.1 million in 1982, and increased another 4.5 million barrels by 1985. Total California Federal production then slowly declined through 1991 when several more large OCS producing fields came on-line (most notably, Point Arguello and additional developments in the Hondo field). The combined effect of higher production and rising prices increased Federal royalty collections in California from \$39 million per year in 1979 to \$222 million by 1983. Modest reductions in oil prices in 1984-85 reduced this level by about \$50 million per year, and then the price deflation of 1986 essentially cut collections in half.

2) Timing of Royalty Underpayment Collections

The team's investigations indicate that royalty underpayments are related to the level of prices no matter which method of valuation is used. World oil prices rose sharply in 1980-81 and stayed relatively high until 1986. Prior to 1986, the team observed contract premia over postings in the \$2.00 per barrel range; after prices fell in 1986, premia dropped under \$1.00. Likewise, if California crude oil is valued in comparison to ANS crude oil (as suggested by the Micronomics report), the ANS-comparable values were higher prior to 1986. It follows that, since the late 1970's, potential collections for royalty underpayments would be highest for the years 1980-85, with the peak years being 1982 and 1983.

Interest has a substantial effect on potential Federal collections. While the estimated level of royalty underpayment depends on the method of estimating premia, the magnifying effect of interest due on uncollected revenues is proportionally constant. For example, the interest on unpaid royalties originally due in 1980 would be four times the unpaid royalty; by 1983, this drops to a factor of 2.5 times the underpaid amount. The interest on unpaid royalties in 1988 would about equal the amount due for the royalty itself.

When all these factors are considered, it becomes clear that a large portion of the potentially collectable unpaid royalties and interest accrue to the 1980-85 period no matter what method of valuation is used. Of the options discussed below, if either Option I (Micronomics' method of ANS crude-based valuation) or Option II (premia based on contract data from IIC's data base) are used, 74 percent of the total unpaid royalties and interest for the years 1978-93 would accrue to 1980-85. If Option III is considered (use of the auditors' estimates of contract premia), 63 percent would be associated with 1980-85. The years 1978-79 only contribute 6 to 10 percent, and the years 1986-93 constitute 17, 21 or 31 percent for Options I, II, or III, respectively.¹⁵

¹⁵Note that while the team agreed to present these statistics, they do not agree on the statistics' importance for decision making purposes. Some team members believe the statistics are very important for deciding how far back to pursue potential royalty collections. Others believe that by themselves the statistics should not dominate this decision and that collection risk (as judged by Interior/Justice lawyers for each past period) and other impacts on RMP programs are the more relevant factors.

3) Options for Underpayment Valuation¹⁶

The team presented options to Interior Department management that ranged from the most aggressive stance of billing companies based on prices of ANS crude, to not billing for any past royalties and revising the MMS oil valuation regulations to address future collections. These options and the methodology for calculating potentially collectable royalties and interest are included as Appendix 3. A brief synopsis of each option follows:

Option I. California Crude Oil Valuation based on Alaskan North Slope Crude Oil Market Prices.

This option would use market prices for ANS crude oil delivered to Los Angeles to estimate the extent to which posted prices understate the California crude oil royalties MMS could have received. Using this method, the team calculated unpaid royalties and accrued interest could total \$856 million for the period 1978 to 1993 inclusive. However, as stated above, this

¹⁶Estimates for the potential amounts collectable include volumes sold under MMS royalty-in-kind (RIK) procedures. RIK volumes were not considered in the original estimates. Since MMS sold RIK crude oil directly to refiners, no additional royalties are due from the producer on those volumes. The team has not investigated recoupment of additional revenues on RIK crude oil that might have been undervalued. The Department should consider the effects of RIK volumes in its decision making, including potential collections where these volumes were undervalued.

Also note that for each option where dollar estimates are given, a certain amount may not be collectable due to the MMS/Exxon settlement. Similar problems may exist for Chevron.

figure would be lower because RIK volumes were not included in arriving at this figure. Furthermore, settlements with Chevron and Exxon could reduce collections.

Option II. Apply Innovation & Information Consultants (IIC) Premia to All Royalty Production.

This option would apply the average premia above posting estimated for Shell and Texaco during the 1980's to royalty production of most of the major California producers. Using this method, the team calculated that unpaid royalties and accrued interest could total \$280 million for 1978-93.

Option III. Apply premia estimated by MMS audit to all volumes of Federal crude produced by large royalty payers.

This method would apply the approach employed by MMS auditors to Texaco and Shell during this study. That is, either booked crude oil costs would be subtracted from booked sales revenues with transportation costs disallowed, or where these records are not available, average contract premia would be applied to all Federal royalty production. Using the premia developed by MMS auditors, collections under this option could total as much as \$316 million.

Option IV. Assume that some fixed percentage of Federal production is sold at a premium and apply a selected premium to that volume.

MMS would assume that the lessee only received legitimate gross proceeds additions for some percentage of its production from Federal leases and apply a selected premium as in Option II or III to that volume. The percentage could be calculated, for example, by dividing the company's total sales and purchases at a premium by its total sales and purchases. This percentage could then be multiplied by (1) the selected premium and (2) production from each Federal lease to calculate royalties due by lease. Collection estimates ranged between \$31.3 million and \$83.2 million.

Option V. Bill additional royalties only for specific volumes where MMS audit demonstrates third-party sales by affiliate are at premium above posting--do company/lease apportionments based on field-level transactions.

This approach is similar to Option IV, but average premia would be based on specific field-level information to be developed by MMS auditors. No dollar estimates are provided here; until MMS audits demonstrate specific instances of affiliate sales at premia by field, any estimates would be speculative.

Option VI. Bill additional royalties only for specific lease volumes where audit demonstrates third-party sales by affiliate are at premium above posting.

This approach would assess additional royalties only where MMS audits show the lessee's affiliate received premia above posting for specific sales traceable directly to the Federal lease. No dollar estimates are given; until MMS audits demonstrate specific instances of affiliate sales at premia by lease, any estimates would be speculative.

Option VII. No attempt to collect additional royalties for past periods; instead, revise the MMS oil valuation rules.

MMS would not try to collect additional royalties for past periods in California. Rather, it would pursue revising its oil valuation rules for prospective application. Thus, no additional royalty collections would result until the regulations were revised, and then only prospectively.

At the conclusion of this presentation the Director and the AS/LM asked the team to prepare a final report, including its recommendations for further action. This report fulfills that request.

IV. TEAM'S OVERALL FINDINGS

A. Summary

The team found that a large proportion of California oil production is either exchanged between the major integrated firms or moves internally between their affiliates. For the relatively small volume of oil that is sold or purchased outright, the team concludes that payment of premiums above posted prices occurred commonly. Further, the team has been informed by auditors familiar with the situation that lessees usually paid royalties on posted prices. To the extent that this is true, their royalty payments reflected less than their gross proceeds from the sales. Also, non-arm's-length sales were often undervalued because they did not reflect the price received for oil produced from the same field or area and sold under arm's-length contracts.

B. Findings

1) Crude Oil Valuation

The team's, consultants', and MMS' studies have led the team to conclude that regardless of posted price levels, companies often receive gross proceeds higher than these postings. Since the team was informed by MMS and California auditors that most Federal royalty payments are based on postings, it follows that royalties have been underpaid.

Although Texaco and Shell were the focus of preliminary investigations, the team examined in detail purchase and sale contracts these two companies had with a number of other oil companies. Both the MMS audits and the team's records research produced substantial evidence that Texaco and Shell bought and sold crude oil of the type produced on Federal leases at premia over posted prices. Typically, these transactions were carried out by the trading division of the overall company (e.g., Texaco Trading and Transportation, Inc.-TTTI), which also obtained and distributed Federal lease crude.

Shell and Texaco also produced, from non-Federal leases, crude oil of the same types as Federal crude. In exchanges and in its internal transfers to its trading affiliate, each company's common practice was to value the crude oil at posted prices. Usually this transfer has been the basis for paying royalties to the MMS. Arm's-length purchases and sales at prices over the postings show that postings do not reflect the reasonable royalty value of the crude oil under MMS' regulations, and thus the Federal Government has not received the monies to which it is entitled. The following supports this conclusion.

The consultant study performed by IIC examined California crude oil sales contracts gathered in Long Beach II. Based partially on the premia in these contracts, IIC concluded:¹⁷

¹⁷Other factors in determining the premia were Shell's and Texaco's own transactions involving California crude oils where substantial premia were paid; price comparisons between California crude oils and other comparable crude oils; prices

- In 1984, posted prices for California crude oils were underpriced between \$2.00 and \$3.00 per barrel, and
- In 1989, posted prices were underpriced from \$0.50 to \$1.00 per barrel.

The smaller 1989 premium results from lower oil prices after 1986.

In September 1995, the team spent three days at the IIC offices conducting an independent review of the contracts. In addition to reviewing a number of contracts that contained premiums in the range observed by IIC, that review both validated IIC's findings and provided additional quantitative information on Texaco and Shell trading practices.

The second consultant contract, with Micronomics, Inc., valued California crude oil by comparison to Alaska North Slope (ANS) prices. Its overall finding was that open market prices for ANS crude oil exceeded postings for comparable Ventura crude oil by about \$3 to \$6 per barrel from 1980 to the 1986 oil price crash, and \$1 to \$1.40 from 1986 to 1993. The report concluded that all California crude oil production was undervalued by comparable amounts during these periods.

Company records set forth in Appendix 4 show that the large

paid in public sales of California crude oils; and statements contained in documents produced by Shell, Texaco, and the other major oil companies covering the 1984 period.

integrated oil companies operating in California often made comparisons between California postings and ANS prices and that they purchased ANS crude regularly to fill their refineries' crude oil slates.

The different levels of undervaluation estimated by the two consultants are not incompatible. Both concluded that the market constriction imposed by proprietary pipelines¹⁶ operated by the major refiners had two critical effects. First, it greatly restricted open-market trading in California crude oil; second, it segregated the crude oil markets of the San Joaquin Valley and Ventura Basin from the refining centers in San Francisco and Los Angeles. The reports concluded that the pipeline situation contributed to postings substantially understating California crude oil values. They also concluded that while these captive prices were far below the value of California crude oil to refiners, ANS crude oil was relatively free to seek a value

¹⁶For many years, the pipelines used to transport oil in California have been owned and operated by the major integrated companies. This restricted independent refiners and producers from entering into transactions that would have effectively made the crude oil market more competitive. Since the commerce is intrastate, the Interstate Commerce Commission has no jurisdiction in forcing the pipelines to operate as common carriers. However, the Mobil M-70 heated pipeline crosses Federal right-of-way, granted pursuant to the Mineral Leasing Act. Therefore, the Department of Interior has the authority to require that Mobil operate its proprietary pipeline as a common carrier. Recently, partially as a result of the Long Beach II settlement, all pipelines except for three heated pipelines (including Mobil's M-70) now operate as common carriers.

nearer its true value.¹⁹

The relatively small number of outright purchases and sales seen in the contract files are almost always at a premium above postings. During the period 1980-1993, refiners could often justify paying a significant premium over posting compared to the alternative of making purchases of ANS crude oil. For example, one memorandum and related contract provided by IIC indicated that (in 1984) little or no crude oil was available at posting, thereby justifying a significant company purchase at prices several dollars per barrel over posting.

Even though trading did occur at substantial premia over postings, it seems not to have fully eliminated the substantial refining profit margin associated with processing California crude oil. Eleven examples of company internal valuation analyses drawn from the Long Beach II records are evaluated in Appendix 4. These show that postings, even after adjusting for quality differences, offered the refiners as high as \$4 per barrel additional profit compared to the refiners' standard alternative--Alaskan North Slope crude oil. While this comparison was made independently by different California

¹⁹In actuality, ANS prices may also have been depressed by the glut of ANS crude on the West Coast. Since the ANS crude could not be exported, the alternative for Sohio/BP, its largest net seller, was to ship the excess to the Gulf or East Coasts at a substantial additional cost. This may have given West Coast refiners the market leverage to exact prices that were lower than otherwise would have been the case. (See "Exporting ANS Crude Oil: Benefits and Costs," interagency study led by DOE, June 1994.)

refiners employing differing methodologies, the refiners' results were essentially the same.

Micronomics valued California crude solely on the price of ANS crude using methods similar to the simplest of the refiner examples the team reviewed. Micronomics' estimates, therefore, implicitly capture some of the high refiners' profit margin obtained from processing California crude oil.

The findings of IIC, Micronomics, MMS and the team itself were employed in reaching the recommendations presented later in this paper.

2) Sales Distribution and Premia

IIC, Micronomics, and the MMS auditors asserted that relatively little crude oil in California was traded in an open market. The team's examination of the IIC/Long Beach II records in Boston, while not comprehensive, generally confirmed this. In reviewing records and contracts for 1989, the team found that Texaco transferred all of its production to TTTI. TTTI then traded and sold it or similar crude oil to third parties, or transferred it to Texaco Refining. Shell followed a similar procedure in 1984, although it sold negligible amounts of its production.

After transferring Federal crude of a specific type to a company's trading division, the distinction between Federal and non-Federal crude oil was lost. Federal crude oil was not specifically invoiced in companies' records after internal

transfers, so it is unlikely that gross proceeds in excess of posted prices can be traced to the production of specific Federal leases.²⁰ This implies that value imputation is necessary under either the 1988 regulations or their predecessor.

The team's contract review indicated that most of the third-party transfers were exchanges and buy/sell transactions:

- o For Texaco, of the contracts representing receipts and deliveries of 306 thousand barrels per day (mb/d), only 68 mb/d or 22 percent, were outright purchases or sales. Of the 68 mb/d, 84 percent contained a premium over posting.

- o For Shell, the data the team examined were somewhat less detailed than for Texaco. Most of Shell's production moved internally to its refineries (these contracts are not part of the Long Beach II documents). The team examined most of the 20% of Shell's exchange contracts that had implied premiums over postings (the other 80% didn't have any reference to postings). Many of these exchanges involved trading ANS or Line 63 crude (both of which are sold on the spot market) for California crude from specific fields. The field-referenced crude oil posted prices can be put on a comparable basis with ANS or Line 63 crude oil prices by adding or subtracting transportation and quality

²⁰Some offshore crude may be identifiable.

adjustments. After adjustments are made to the corresponding field posting, the resulting price is still substantially lower than spot prices for ANS or Line 63 crude oil.

The team also examined and verified the terms of Shell's outright purchase contracts. Substantial premia were present in most of these transactions.

The levels of premia observed by the team are consistent with the findings made by IIC.

3) Exchanges

For accounting purposes, exchanges fall in two classes: barrel-for-barrel exchanges where, at most, a location differential is referenced in the contract; and buy/sell exchanges where contracts carry a reference to the underlying prices of the crude oil being exchanged. In the latter case, posted prices are most commonly used. However, the parties can assign any price as long as there is a reciprocal valuation on the crude oil sent as well as the crude oil received. In short, the price--even between unrelated oil companies--is not necessarily the fair market value of the crude oil. The team believes that most buy/sells and pure exchanges are functionally the same.

In fact, the contracts examined show that both types of exchanges were used to trade the same types of crude oil between the same locations. TTTI, for example, which operates Texaco's