Memorandum

TO: Ted Heintz

FROM: Bob Berman

SUBJECT: Comparison of NYMEX Futures and Refiner Posted Prices

DATE: September 9, 1986

Attached are recent tabulations of comparisons of NYMEX monthly average and closing futures prices for West Texas Intermediate crude oil and corresponding postings by Exxon, Cities and Conoco. Data are for the period June 1985 through August 1986. The data tend to support the claim that posted prices tend to lag futures, and are, therefore, somewhat above futures in falling markets, and below in rising markets. The particular period examined suggests that futures-based-valuation gains in rising markets tend to exceed losses in falling markets; and this is expected to become more pronounced as the recovery continues. This expectation is reinforced by the observation that short-term price advances tend to be ignored.

From a policy and/or program perspective, I believe the data are suggestive of a number potential program modifications; and, at a minimum, indicate that some further, more detailed analysis is indicated. The data tend to contradict the frequently heard assertion that the government would always do better by assessing royalties based on posted prices rather than on spot or futures prices. It might be desirable, therefore, in future regulations to include a provision, applicable to non-arm's length transactions, that would require an upward adjustment to royalties if, over some period of time, the posted prices under which they were valued fell short, on average, of futures and/or spot prices.

In the near term, a simple monitoring and analysis system would likely enhance public confidence by providing a check against relying on the result of a non-arm's length sale. It could also provide the Secretary with a strong response to critics who may charge that resources are under-valued for royalty purposes; as well as to provide an "early warning" of divergence of posted and market prices. If regulatory change were deemed desirable in the future, the monitoring system would provide the basis.

In the following pages I describe the empirical observations leading to the conclusions supporting the above recommendations.

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Empirical Observations

The data show that although the market value of WTI increased during most of the fourth quarter of 1985, Exxon did not respond to this increase, and the response by Cities and Conoco was delayed until the end of the quarter, and marginal at that.

Although the down-turn that began late in December 1985 was initially "recognized" by refiners at about the same time as noted in the market, refiners were slower in recognizing the magnitude of the down-turn. The attached graphs showing monthly (day weighted) average posted prices compared with the NYMEX closing price from the prior month (for current deliveries) clearly show the lagging nature of posted prices, as well as the strong relationship between futures prices and refiner postings.

The short-term price advance during the fourth quarter of 1985 went unnoticed by Exxon, and received little attention from Cities and Conoco. Similarly, there was a brief price run-up during the second quarter of 1986 which was virtually ignored by Exxon and only marginally recognized by Cities and Conoco in setting posted prices. The subsequent down-turn, at the beginning of the third quarter, however, appeared to have been recognized almost immediately.

Posted prices were stable (unresponsive?) during 1985, going several months without change; but were much less stable (more responsive?) during 1986, sometimes changing 4 or more times during a month.

The lagging behavior of spot prices is also shown by the table and corresponding graph of **Price Differences from NYMEX Relative to Market Movement.** The graph shows that, for all three of the refiners examined, differences between (lagged) futures prices and posted prices tended to be positive in bull markets and negative in bear markets. That the bullish markets tended to be associated with with greater differentials is somewhat visable on this graph, and quantified on the accompanying table. This phenomenon is also shown by the comparisons of **Monthly Price Changes.**

Analysis and Tentative Conclusions

The usual caveats must, of course, apply to drawing conclusions about general behavior from the limited experience over the last 15 months. One conclusion, however, appears irrefutable. The claim that "we will **always** do better by basing our valuation for royalty purposes on postings rather than spot or futures market prices" is most certainly false, as shown by the actual history.

The valuation approach offered is based on the notion that the NYMEX closing price in month t is the value of the commodity in month t+1. This is true because:

- Prices associated with trades prior to the final trade are prices in a disequilibrium transactions market (ala Marshall). The price associated with the last trade of the last day has the properties of a Marshallian final settlement price, and in this sense should be regarded as an equilibrium price.

- All open positions for the month are closed at the final settlement price.

- The final settlement price in month t is for deliveries during month t+1.

Two variations on this approach are offered. In the simple case, the differentials are calculated between the NYMEX closing price and the average price "offered" by refiners (on existing contracts, not to all suppliers) during the following month. These differentials were then totaled and averaged over the indicated periods. The results show that, whether for the latter half of 1985, 1986 (except for Exxon), or the combined period, market valuations exceeded the refinery postings examined. Exxon's postings tended to be above futures during the sharp decline that characterized the first half of 1986.

Tentatively, this may suggest a resistance on the part of the larger, integrated majors (and mini-majors) to drop postings in the face of a market decline. Empirically, this is suggested by the greatest (positive) differential, on balance, being that of Cities, the company with least (of the three) relative orientation to production (relative to refining or distribution). Exxon, the largest of the three, and the most relatively production oriented, exhibited the greatest resistance to the price decline.

A resistance to price declines by major, integrated oil companies is consistent with the relative concentration of tax advantages upstream in the process, as well as the undesirable balance sheet impact of the lower price resulting in a decline in the value of the reserves asset.

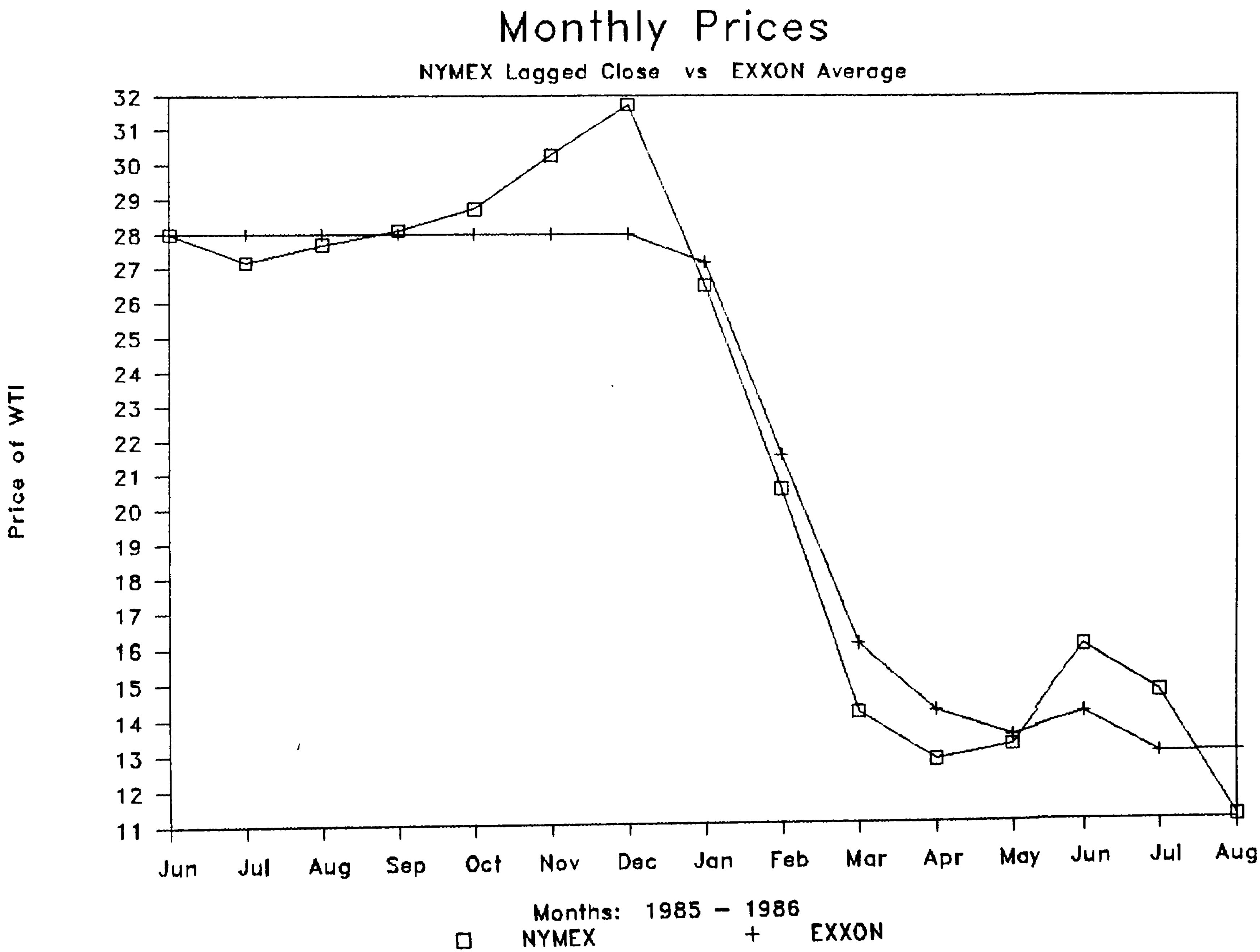
As a variation on this approach, I attempted to adjust for an arguable timing differential between purchases under postings of varying lives and NYMEX hedging on random days during month t as compared to the final settlement price in month t. Specifically, I calculated the differentials between the the NYMEX monthly average and the closing price, and averaged these values over the indicated periods. The average differential was then subtracted from the average posting differentials to obtain the value less the adjustment. The particular adjustment does not affect any of the overall conclusions, but simply reduces the impact.

The "longer-term" view ascribed to majors, with respect to price postings appears to be somewhat asymmetrical. That is, postings seem to ignore upward movements in the market price that may be relatively short-lived (e.g., 3 to 6 months) but respond more quickly to market indications of a down-turn. This pattern would seem to be consistent with risk aversion if risk is associated with earnings as opposed to crude availability.

This "conclusion", however, should also be "tested" by the events of the last few weeks. The recently announced OPEC cut-back resulted in a rapid run-up of both spot and futures prices. It has also been reported that refiner postings also were quickly adjusted upwards. Early data, however, tend to be consistent with a notion of somewhat asymmetrical behavior, as posted prices do not seem to be increasing rapidly as futures prices.

Comparison of NYMEX futures prices and refiners' postings for WTI

Date		NYMEX Futures		EXXON Postings		CITGO Postings		CONOCO Postings		NYMEX Close
		Average	Close	Average	EOM	Average	EOM	Average	EOM	Lagged
1985	Jun	26.95	27.20	28.00	28.00	27.25	27.25	27.05	27.05	28.00
	Jul	27.27	27.70	28.00	28.00	27.25	27.25	26.75	26.75	27.20
	Aug	27.75	28.09	28.00	28.00	27.25	27.25	26.75	26.75	27.70
	Sep	28.22	28.72	28.00	28.00	27.25	27.25	26.75	26.75	28.09
	Oct	29.48	30.28	28.00	28.00	27.25	27.25	27.60	27.60	28.72
	Nov	30.73	31.72	28.00	28.00	28.00	28.00	28.35	28.35	30.28
	Dec	27.15	26.53	28.00	28.00	28.00	28.00	29.00	29.00	31.72
1986	Jan	22.97	20.59	27.20	25.00	25.32	21.00	26.30	24.50	26.53
	Feb	15.46	14.17	21.58	18.75	16.75	15.00	19.68	17.00	20.59
	Mar	12.62	12.78	16.11	15.00	13.86	13.00	15.00	14.00	14.17
	Apr	12.76	13.20	14.21	13.50	12.66	13.00	13.00	13.00	12.78
	May	15.26	16.04	13.45	14.00	14.00	15.00	13.87	15.00	13.20
	Jun	13.38	14.69	14.12	14.00	13.93	13.50	14.14	14.00	16.04
	Jul	11.58	11.07	12.93	12.25	11.75	11.25	11.89	11.25	14.69
	Aug	15.12	15.26	12.96	14.25	13.13	14.25	13.06	14.25	11.07


Monthly Prices
NYMEX Lagged Close vs EXXON Average
Price of WTI
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Months: 1985 – 1986
NYMEX
EXXON

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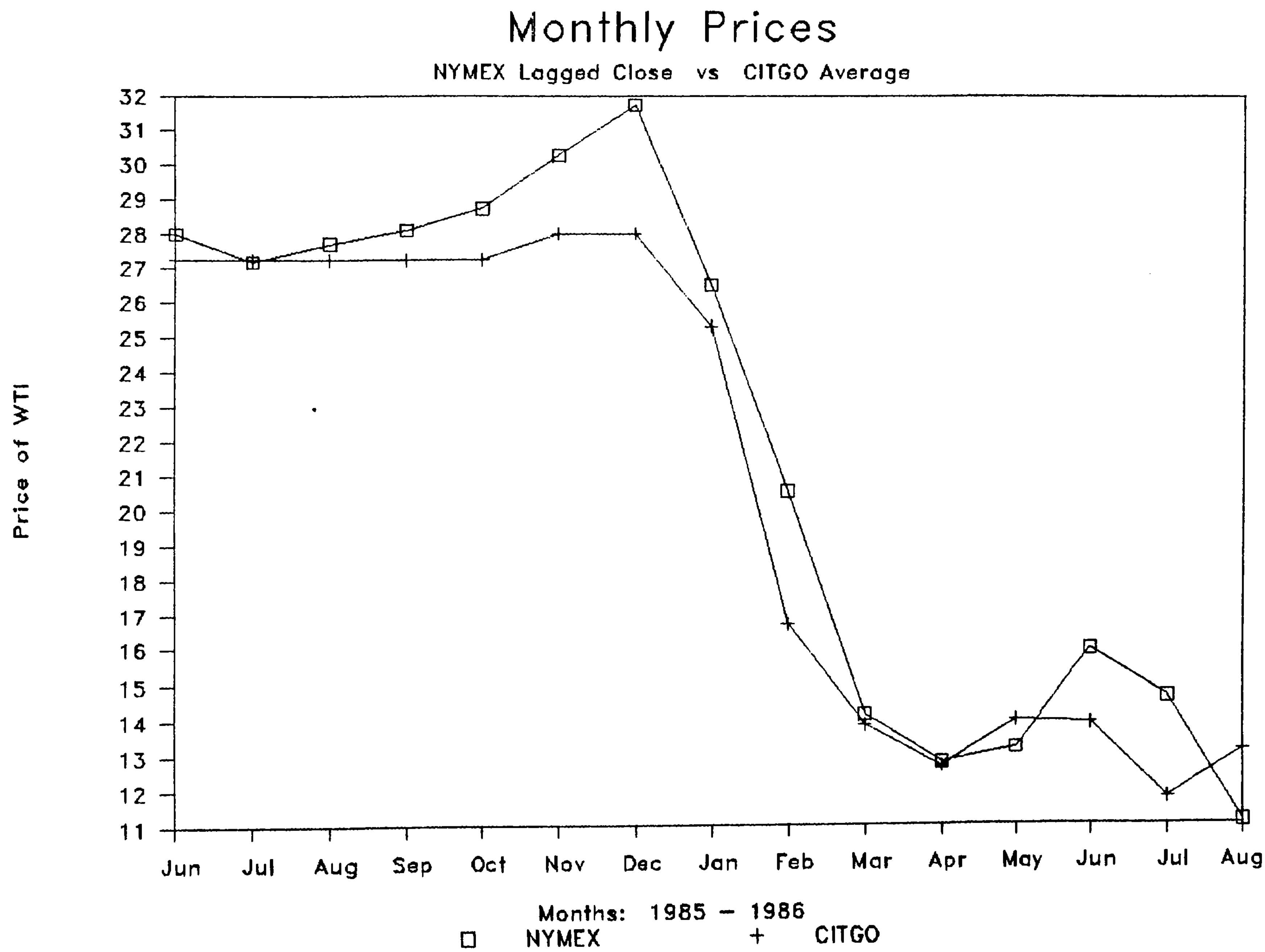
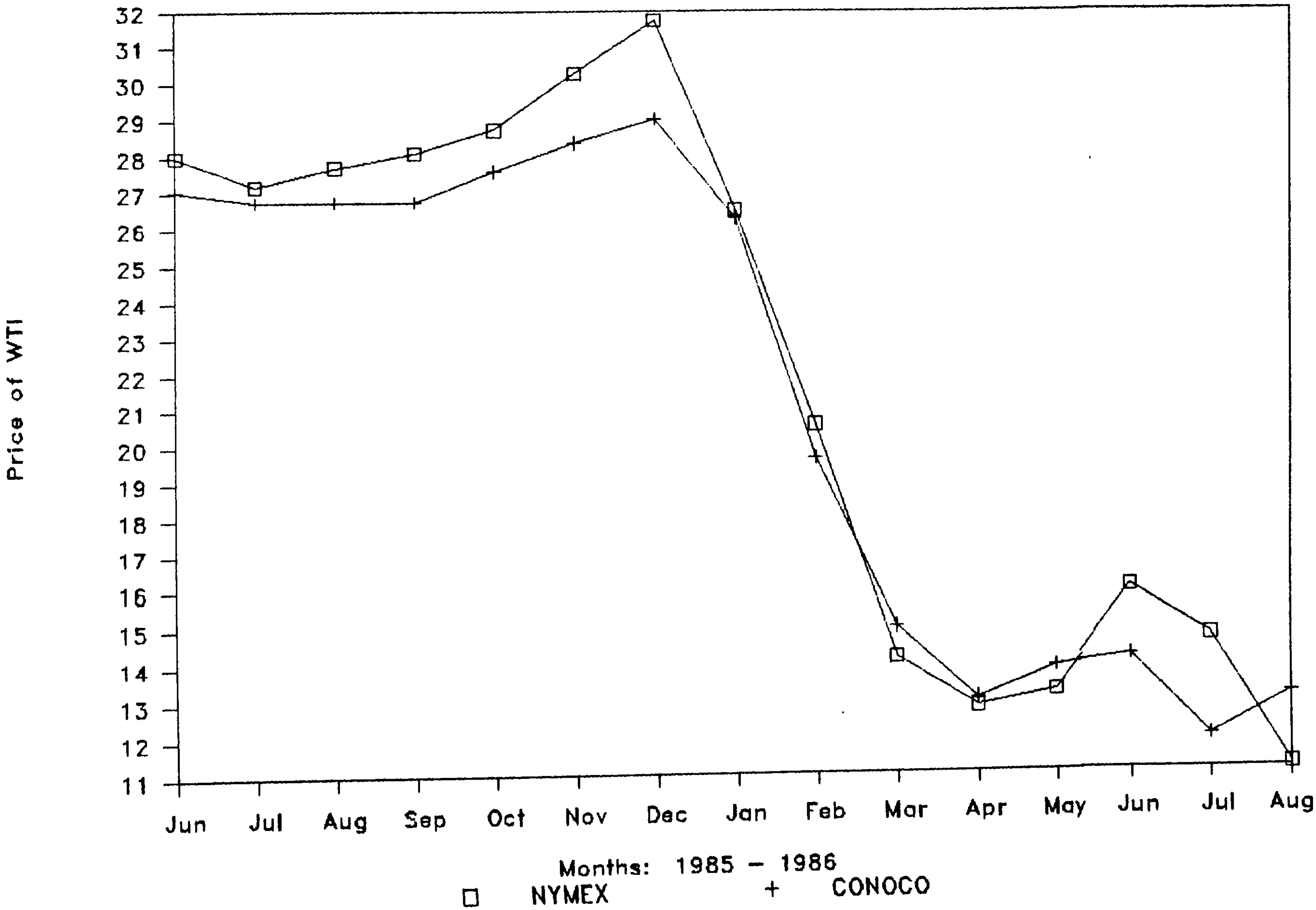

Monthly Prices
NYMEX Lagged Close vs CITGO Average
Price of WTI
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Months: 1985 – 1986
NYMEX
CITGO

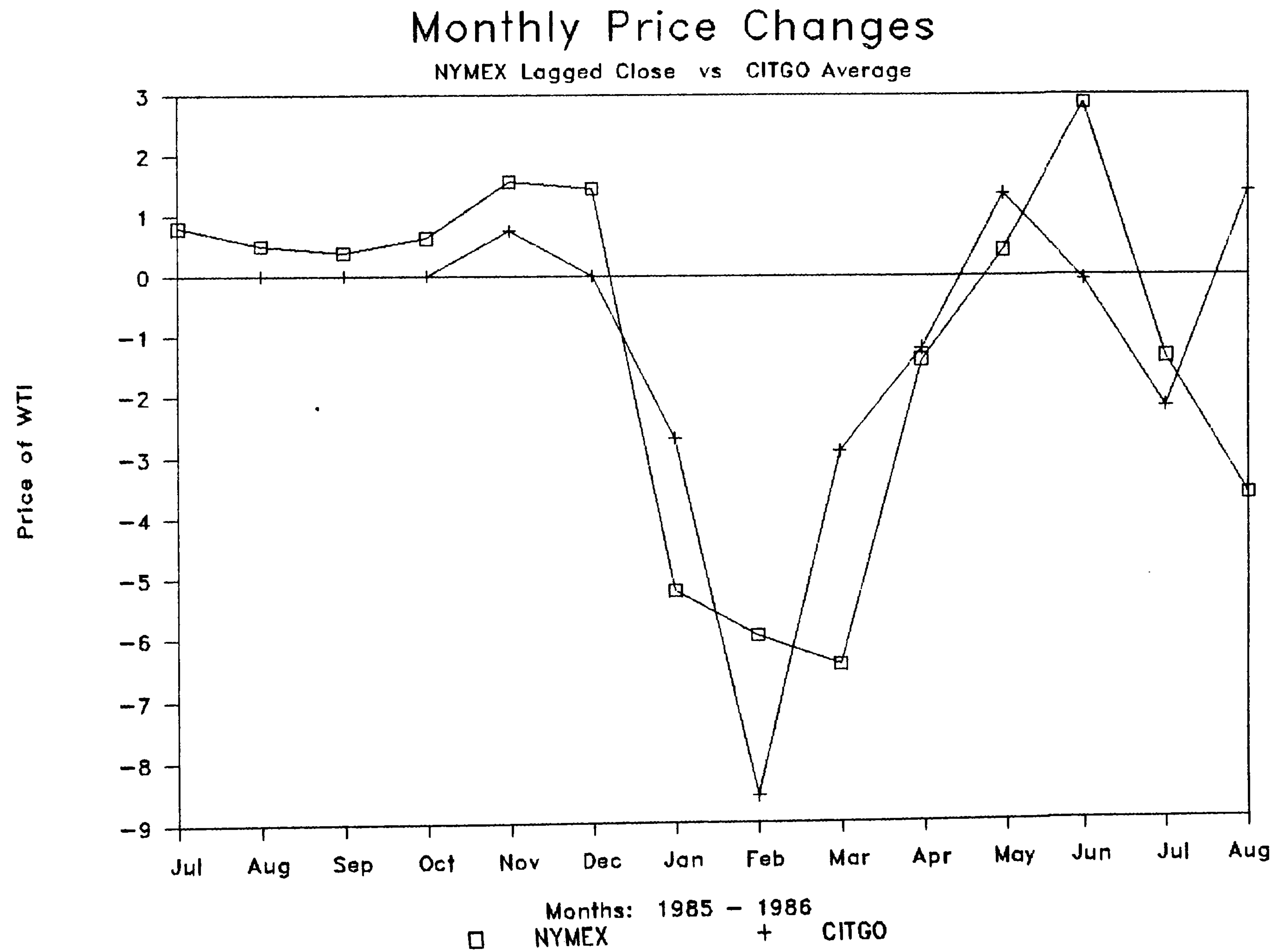
Monthly Prices

NYMEX Lagged Close vs CONOCO Average



Changes in monthly prices

Date		NYMEX Changes		EXXON Changes		CITGO Changes		CONOCO Changes		NYMEX Close
		Average	Close	Average	EOM	Average	EOM	Average	EOM	Lagged
1985	Jul	0.32	0.50	0.00	0.00	0.00	0.00	-0.30	0.95	0.80
	Aug	0.48	0.39	0.00	0.00	0.00	0.00	0.00	1.34	0.50
	Sep	0.47	0.63	0.00	0.00	0.00	0.00	0.00	1.97	0.39
	Oct	1.26	1.56	0.00	0.00	0.00	0.00	0.85	2.68	0.63
	Nov	1.25	1.44	0.00	0.00	0.75	0.75	0.75	3.37	1.56
	Dec	-3.58	-5.19	0.00	0.00	0.00	0.00	0.65	-2.47	1.44
1986	Jan	-4.18	-5.94	-0.80	-3.00	-2.68	-7.00	-2.70	-3.91	-5.19
	Feb	-7.51	-6.42	-5.62	-6.25	-8.57	-6.00	-6.62	-2.83	-5.94
	Mar	-2.84	-1.39	-5.47	-3.75	-2.89	-2.00	-4.68	-1.22	-6.42
	Apr	0.14	0.42	-1.90	-1.50	-1.20	0.00	-2.00	0.20	-1.39
	May	2.50	2.84	-0.76	0.50	1.34	2.00	0.87	1.04	0.42
	Jun	-1.88	-1.35	0.67	0.00	-0.07	-1.50	0.27	0.69	2.84
	Jul	-1.80	-3.62	-1.19	-1.75	-2.18	-2.25	-2.25	-0.18	-1.35
	Aug	3.54	4.19	0.03	2.00	1.38	3.00	1.17	1.01	-3.62



Monthly Price Changes
NYMEX Lagged Close vs CITGO Average
Price of WTI
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Months: 1985 - 1986
NYMEX
CITGO

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Monthly Price Change

NYMEX Lagged Close vs CONOCO Average

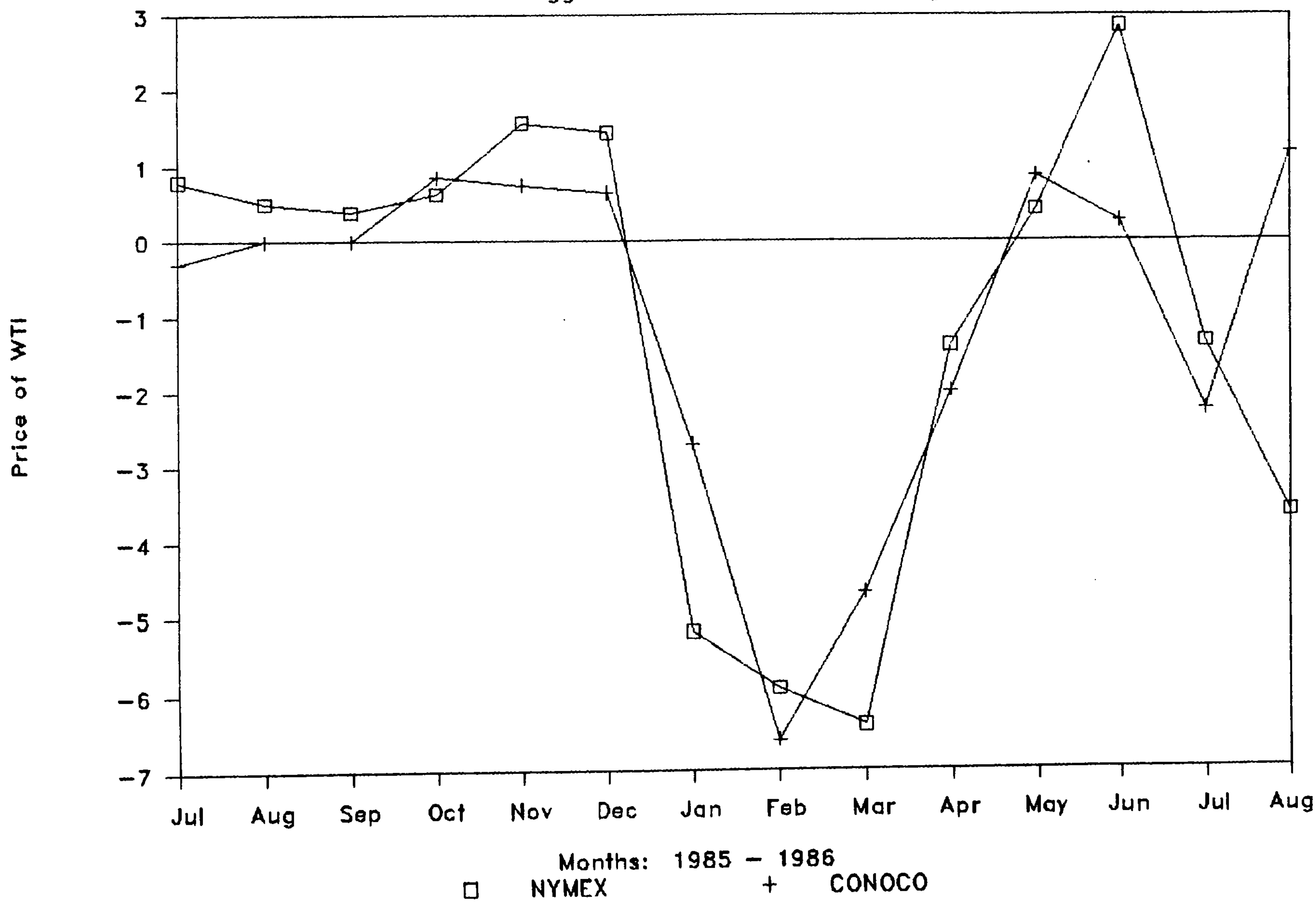

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EXHIBIT
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R. Berman
10/28/86

Crude Oil Royalty Valuation Monitoring System

MMS draft product valuation regulations suggest a number of approaches for handling non-arm's-length contracts. Industry has expressed concern about how some of the approaches would be applied and about the lack of certainty which it faces concerning the amount of royalties due the Federal government. Moreover, some of the existing or proposed methodologies are highly data intensive and involve detailed analyses that, if done properly, are likely to result in high administrative costs.

The Oil Valuation Panel is recommending that posted prices be the basis for royalty valuation, including valuation of affiliate (non-arm's-length) transactions. Representatives of the oil industry have claimed that posted prices are the only reasonable way to proceed, and that historically has resulted in the highest royalty valuations. Since the Secretary is authorized to collect royalties on the greater of value or gross proceeds, prudence would dictate the development of a monitoring / analysis system to verify that claim relative to the past, and to ensure the procedure "continues" to result in the highest royalties.

An alternative valuation procedure, particularly one that is market-based, would also be beneficial in responding to criticism by Congress and the GAO. If posted prices are, by and large, equal to or above market prices, the alternative valuation procedure serves as a continuing validation of the program. Moreover, if posted prices do not, over an extended period of time, result in higher royalties relative to free-market determinations, a regulatory change could be indicated; and the monitoring procedure would have provided an "early warning". That is, since the Secretary is authorized to collect royalties based on the greater of value or gross proceeds, a potential revision to the regulations might require an upward adjustment to royalties if, over some given period of time, the posted prices under which they were valued fell short, on average, of market values. For these reasons it may be desirable to explore alternative approaches to product value for non-arm's-length situations. That is, additional study is needed if there is reason to believe, logically and empirically, that posted prices may not reflect market value in non-arm's-length transactions; and that posted prices may sometimes understate market value.

Economic theory suggests that prices "negotiated" between affiliated parties are not, a priori, market prices. A market price results from a trade or transaction between willing, but not obligated, parties of opposing economic interests, and may not be unilateraly altered by either party. If parties are affiliated, the transfer price will be that which maximizes after-tax profits to the combined entity; may therefore reflect the corporate structure, strategic goals, and tax and royalty opportunities; and is subject to change given the needs of the entity generally. Such transfer prices may or may not coincide with market prices. There is, therefore, a logical basis for further analysis.

Crude oil futures, specifically West Texas Intermediate (WTI), are currently traded on the New York Mercantile Exchange (NYMEX) much the same as any other commodity (e.g., eggs, wheat, pork bellies). Since the NYMEX is an organized commodities market, and since commodity markets most closely conform to the classical definition of competitive markets, NYMEX prices may be regarded as a good measure of market value. In fact, the Department of Energy (DOE) used NYMEX WTI futures prices to establish minimum bid prices in its 1985 test sale of crude from the Strategic Petroleum Reserve (SPR), and has proposed to use spot market prices in determining sale prices from NPR-1. NYMEX prices are also frequently used as a basis for contracting between private parties.

Futures prices are generally believed to lead posted prices, and are, therefore, expected to be above postings in rising markets, and below postings in falling markets. Since the time period considered was predominately and dramatically a falling market, the hypothesis is that NYMEX prices should generally be below postings; and thus royalty collections based on NYMEX prices would be expected to have been lower over this period.

This paper reports the results of recent tabulations and comparisons of NYMEX monthly average and closing futures prices for WTI and corresponding postings by Exxon, Cities and Conoco. Data are for the period June 1985 through August 1986. This paper also discusses some possible approaches to crude valuation based on futures prices.

Although the data tend to support the belief that posted prices tend to lag futures, the data do not support the expectation that that NYMEX prices would be below postings. Specifically the particular period examined suggests that futures-based-valuation gains in rising markets tend to exceed losses in falling markets; and this is expected to become more pronounced if the current recovery continues. This expectation is reinforced by the observation that short-term market price advances tend not to be reflected in posted prices.

More importantly, the data tend to contradict the frequently heard assertion that the government would **always** do **better** by assessing royalties based on posted prices rather than on spot or futures prices. On the contrary, for the time period examined -- a period over which posted prices might be expected to exceed futures prices -- royalty collections associated with non-arm's-length transactions, could have been higher had valuation been on the basis of futures prices. Thus, in addition to theoretical support for further analysis, there is also definite empirical support.

The empirical observations and analyses leading to the above conclusions are described below.

Empirical Observations

The data show (see Exhibits 1 and 2) that although the market value of WTI increased during most of the fourth quarter of 1985, this increase was not reflected in postings by Exxon, and only marginally reflected in postings by Cities and Conoco, late in the quarter.^

Although the down-turn that began late in December 1985 was initially reflected in refinery postings at about the same time as it occured in the futures market, the **magnitude** of the price decline was reflected in the futures market sooner than in refinery postings. The attached graphs showing monthly (day weighted) average posted prices compared with the NYMEX closing price from the prior month (for current deliveries) clearly show the lagging nature of posted prices, as well as the strong relationship between futures prices and refiner postings.

The short-term NYMEX price advance during the fourth quarter of 1985 was not reflected in Exxon's posted prices, and and only marginally reflected in those of Cities and Conoco. Similarly, there was a brief market price advance during the second quarter of 1986 which was not reflected in Exxon's posting, and had only a small impact on the prices posted by Cities and Conoco. The subsequent market price decline, at the beginning of the third quarter, however, appeared to have been reflected immediately.

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^The three companies were selected to represent the broadest possible spectrum of refiners. Exxon was selected as the classic integrated major -- strongly oriented towards production, and a strong crude supply position. Cities was selected as the classic independent, with weak native crude availability. Conoco is in the middle -- a "mini major" or "major independent".

Exhibit 1

Comparison of NYMEX futures prices and refiners' postings for WTI

	NYMEX Futures		EXXON Postings		CITGO Postings		CONOCO Postings		NYMEX Close
Date	Average	Close	Average	EOM	Average	EOM	Average	EOM	Lagged
1985 Jun	26.95	27.20	28.00	28.00	27.25	27.25	27.05	27.05	28.00
Jul	27.27	27.70	28.00	28.00	27.25	27.25	26.75	26.75	27.20
Aug	27.75	28.09	28.00	28.00	27.25	27.25	26.75	26.75	27.70
Sep	28.22	28.72	28.00	28.00	27.25	27.25	26.75	26.75	28.09
Oct	29.48	30.28	28.00	28.00	27.25	27.25	27.60	27.60	28.72
Nov	30.73	31.72	28.00	28.00	28.00	28.00	28.35	28.35	30.28
Dec	27.15	26.53	28.00	28.00	28.00	28.00	29.00	29.00	31.72
1986 Jan	22.97	20.59	27.20	25.00	25.32	21.00	26.30	24.50	26.53
Feb	15.46	14.17	21.58	18.75	16.75	15.00	19.68	17.00	20.59
Mar	12.62	12.78	16.11	15.00	13.86	13.00	15.00	14.00	14.17
Apr	12.76	13.20	14.21	13.50	12.66	13.00	13.00	13.00	12.78
May	15.26	16.04	13.45	14.00	14.00	15.00	13.87	15.00	13.20
Jun	13.38	14.69	14.12	14.00	13.93	13.50	14.14	14.00	16.04
Jul	11.58	11.07	12.93	12.25	11.75	11.25	11.89	11.25	14.69
Aug	15.12	15.26	12.96	14.25	13.13	14.25	13.06	14.25	11.07

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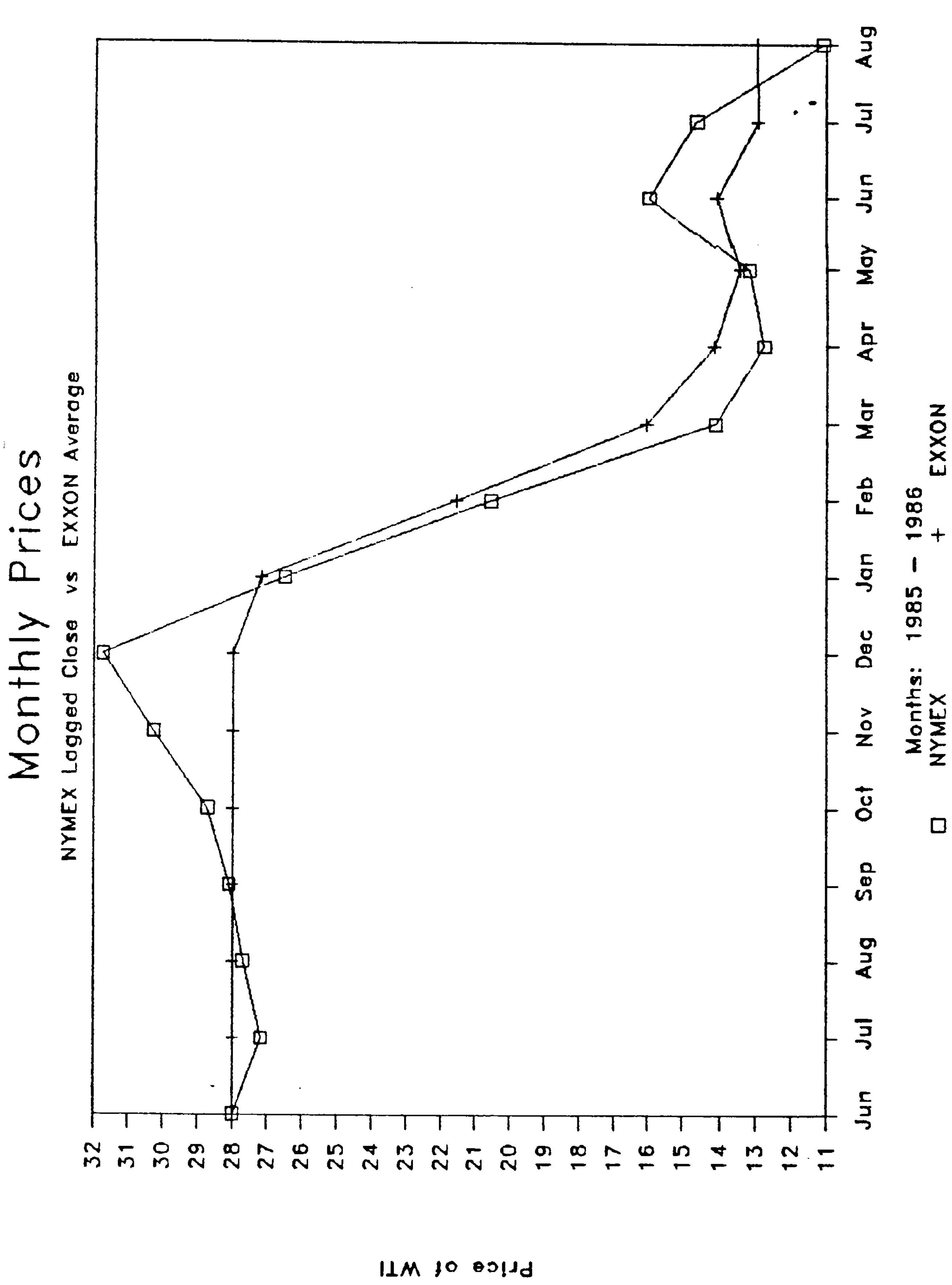
EXHIBIT 2



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LXHIBIT 2

Monthly Prices

NYMEX Lagged Close vs CITGO Average

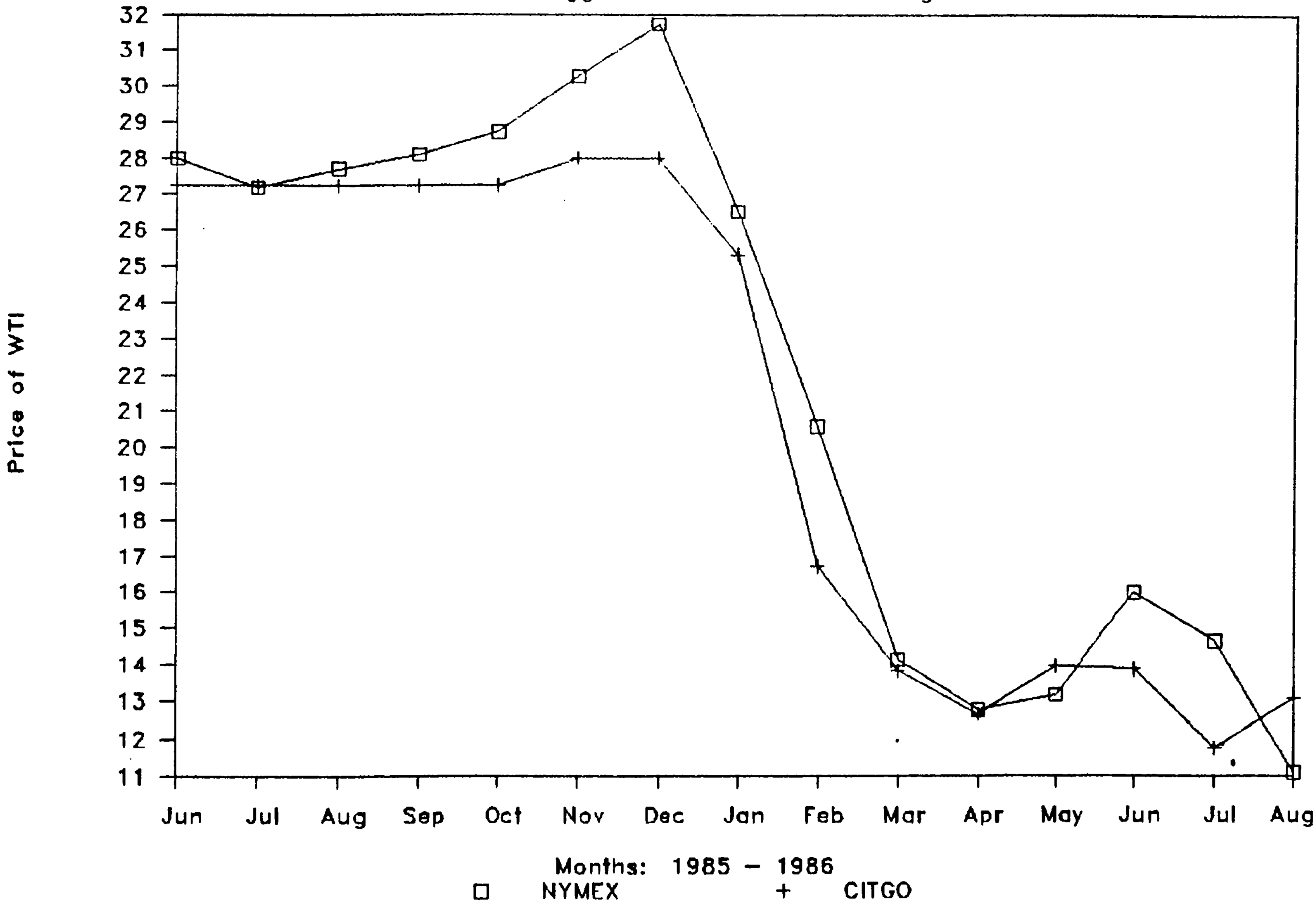

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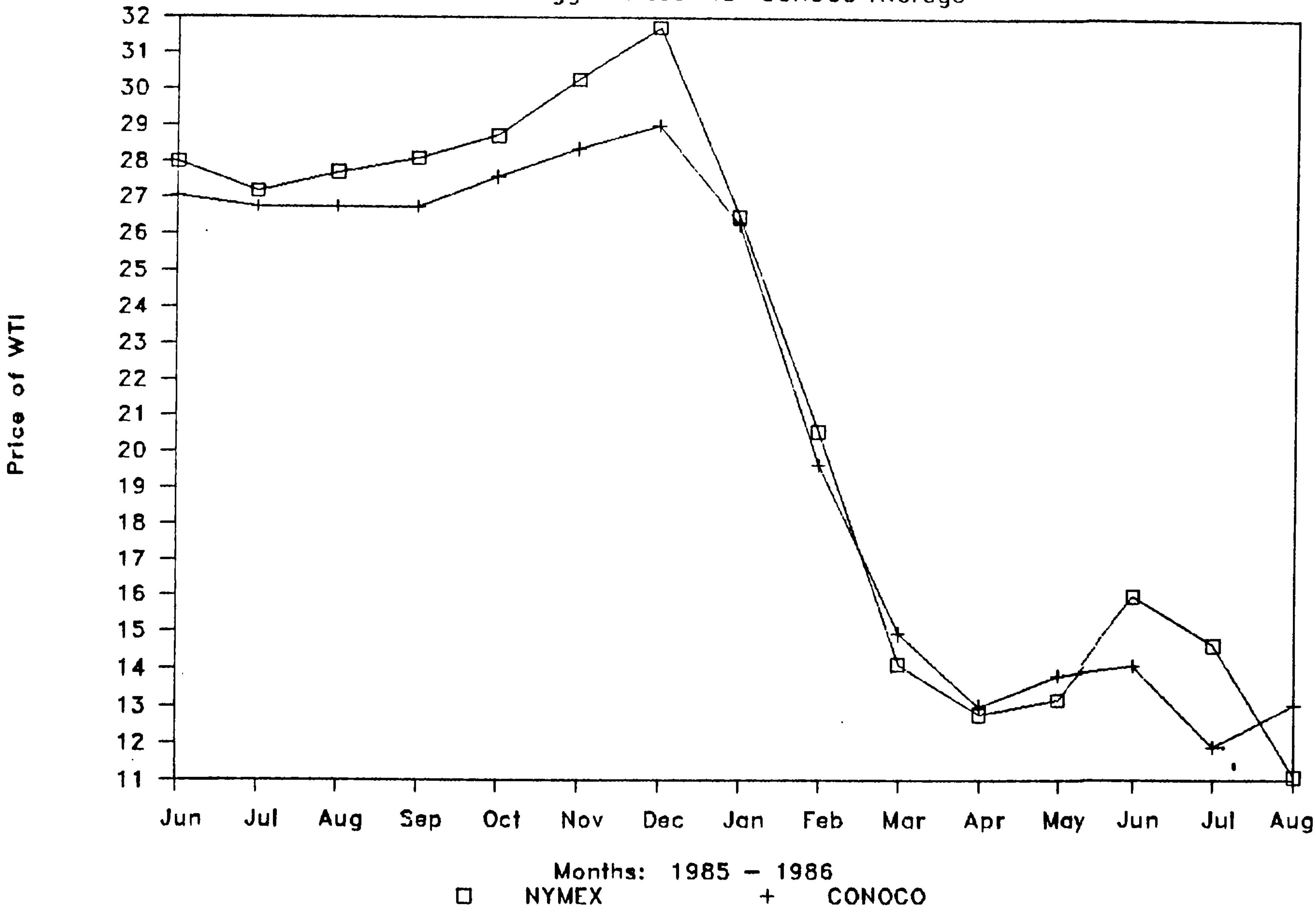
EXHIBIT 2

Monthly Prices

NYMEX Lagged Close vs CONOCO Average



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Posted prices were stable during 1985, going several months without change; but that stability also indicates a lack of responsiveness to changing short-term market conditions. Posted prices were much less stable during 1986, sometimes changing 4 or more times during a month; suggesting a much greater responsiveness to market fluctuations.

The lagging behavior of posted prices is also shown by the table and corresponding graph of **Price Differences from NYMEX Relative to Market Movement** (see Exhibits 3 and 4). The graph shows that, for all three of the refiners examined, differences between (lagged) futures prices and posted prices tended to be positive in rising markets and negative in falling markets. That the rising markets tended to be associated with with greater differences is somewhat visible on the graph (Exhibit 4), and quantified on the accompanying table (Exhibit 3). This phenomenon is also shown by the comparisons of **Monthly Price Changes** (see Exhibits 5 and 6).

Analysis and Tentative Conclusions

The usual caveats must, of course, apply to drawing conclusions about general behavior from limited data applying to three firms over the last 15 months. One conclusion, however, appears irrefutable. The claim that "we will **always** do better by basing our valuation, for royalty purposes, on postings rather than spot or futures market prices" is most certainly false, as shown by the actual history.

Prior to discussing the analysis, it is necessary to first define some terms or concepts. If posted prices (alone) are used as the measure of value, there is no confusion as to which price to use. At any given point in time, a particular refiner has only one posted price for a particular crude in a particular location. That posted price is the commodity value for transactions with that refiner during the posting life. However, in using NYMEX prices as a standard, an initial question to address is which price to use. That is, since transactions may occur at several different prices throughout a day, week, and month, it is necessary to specify which price, or combination of prices, is to be used as the measure of value. The suggested valuation approach is based on the notion that the NYMEX closing price, on near-month contracts, in month t is the value of the commodity in month t+1.^ This is true because:

^A definition of market terminology is included in the appendix to this paper. The appendix also includes a more detailed discussion of market operations relative to crude valuation.

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LXHIBIT 5

Difference between NYMEX closing price in prior month and the indicated month average prices. NYMEX values are contemporaneous differences.*

Date		NYMEX Close Delta	EXXON		CITGO		CONOCO	
========		======	======		======		======	
1985	Jun	-0.22	0.00		0.75		0.95	
	Jul	0.25	-0.80		-0.05		0.45	
	Aug	0.43	-0.30		0.45		0.95	
	Sep	0.34	0.09		0.84		1.34	
	Oct	0.50	0.72		1.47		1.12	
	Nov	0.80	2.28		2.28		1.93	
	Dec	0.99	3.72		3.72		2.72	
1986	Jan	-0.62	-0.67		1.21		0.23	
	Feb	-2.38	-0.99		3.84		0.91	
	Mar	-1.29	-1.94		0.31		-0.83	
	Apr	0.16	-1.43		0.12		-0.22	
	May	0.44	-0.25		-0.80		-0.67	
	Jun	0.78	1.92		2.11		1.90	
	Jul	1.31	1.76		2.94		2.80	
	Aug	-0.51	-1.89		-2.06		-1.99	
Means:				Less Adj		Less Adj		Less Adj
6-12 /85		0.44	0.82	0.37	1.35	0.91	1.35	0.91
1- 8 /86		-0.26	-0.44	-0.17	0.96	1.22	0.27	0.53
6/85-8/86		0.07	0.15	0.08	1.14	1.08	0.77	0.71

*Specifically, the NYMEX close delta is the contemporaneous difference (e.g., June close less June average) lagged (e.g., the June value is shown for July sinse it applies to July barrels. The adjustment is the refinery average difference less (algebraically) the NYMEX average difference. For example, .37 = .82 - .44 and -.17 = .44 --.26 .

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Exhibit 4

Price Differences from NYMEX

Relative to Market Movement

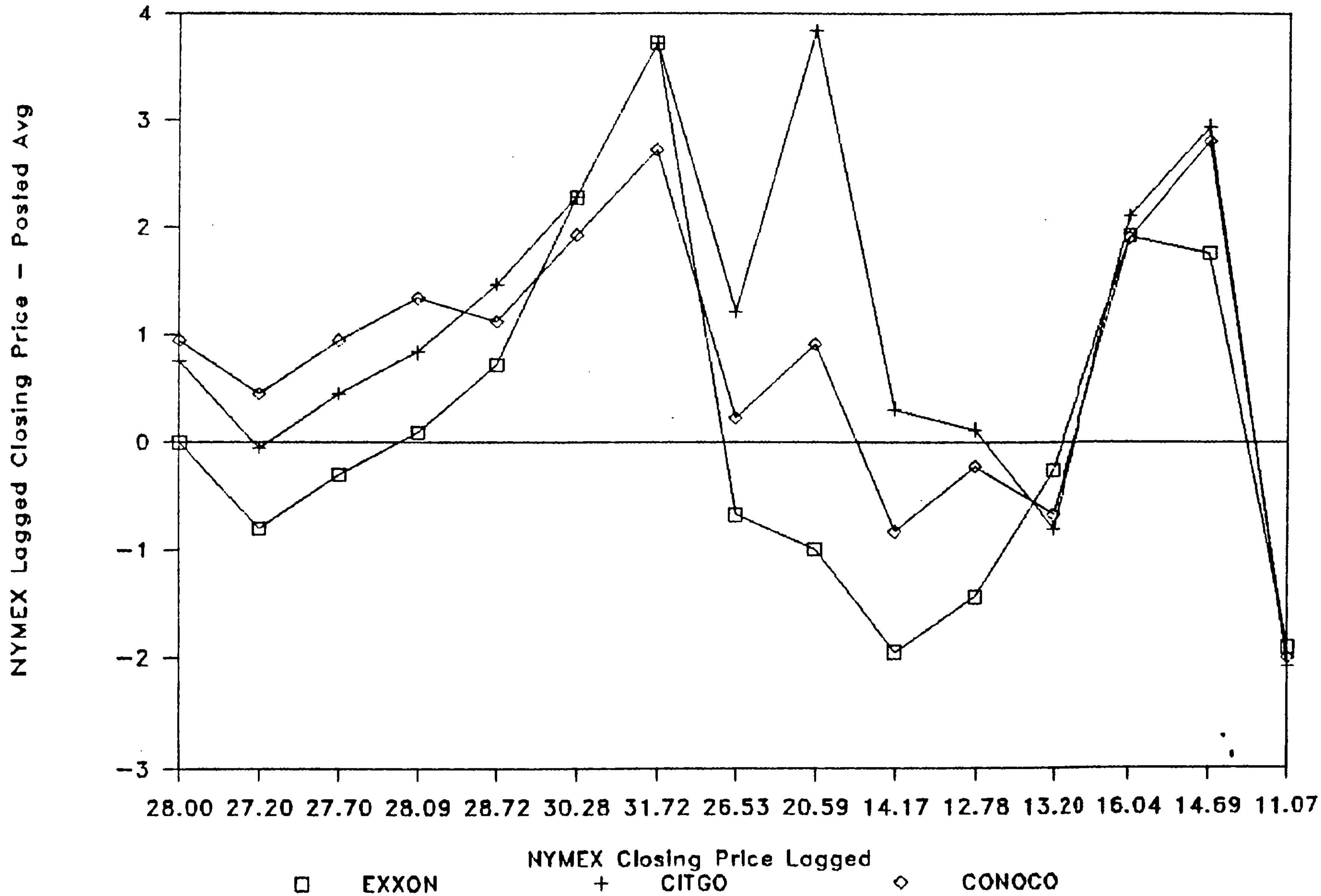

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EXHIBIT 5

Changes in monthly prices

Date		NYMEX Changes		EXXON Changes		CITGO Changes		CONOCO Changes		NYMEX Close
		Average	Close	Average	EOM	Average	EOM	Average	EOM	Lagged
1985	Jul	0.32	0.50	0.00	0.00	0.00	0.00	-0.30	0.95	0.80
	Aug	0.48	0.39	0.00	0.00	0.00	0.00	0.00	1.34	0.50
	Sep	0.47	0.63	0.00	0.00	0.00	0.00	0.00	1.97	0.39
	Oct	1.26	1.56	0.00	0.00	0.00	0.00	0.85	2.68	0.63
	Nov	1.25	1.44	0.00	0.00	0.75	0.75	0.75	3.37	1.56
	Dec	-3.58	-5.19	0.00	0.00	0.00	0.00	0.65	-2.47	1.44
1986	Jan	-4.18	-5.94	-0.80	-3.00	-2.68	-7.00	-2.70	-3.91	-5.19
	Feb	-7.51	-6.42	-5.62	-6.25	-8.57	-6.00	-6.62	-2.83	-5.94
	Mar	-2.84	-1.39	-5.47	-3.75	-2.89	-2.00	-4.68	-1.22	-6.42
	Apr	0.14	0.42	-1.90	-1.50	-1.20	0.00	-2.00	0.20	-1.39
	May	2.50	2.84	-0.76	0.50	1.34	2.00	0.87	1.04	0.42
	Jun	-1.88	-1.35	0.67	0.00	-0.07	-1.50	0.27	0.69	2.84
	Jul	-1.80	-3.62	-1.19	-1.75	-2.18	-2.25	-2.25	-0.18	-1.35
	Aug	3.54	4.19	0.03	2.00	1.38	3.00	1.17	1.01	-3.62

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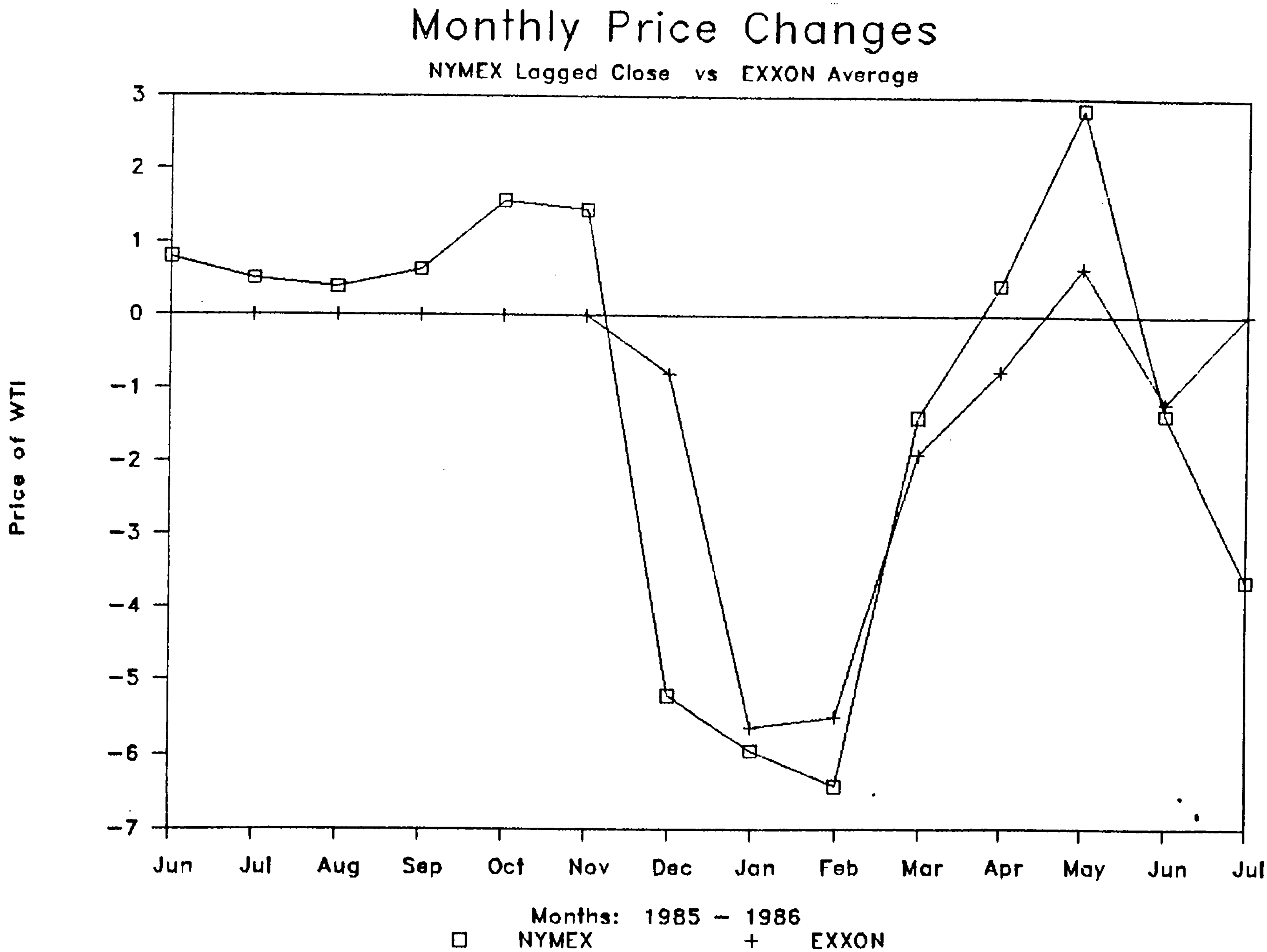
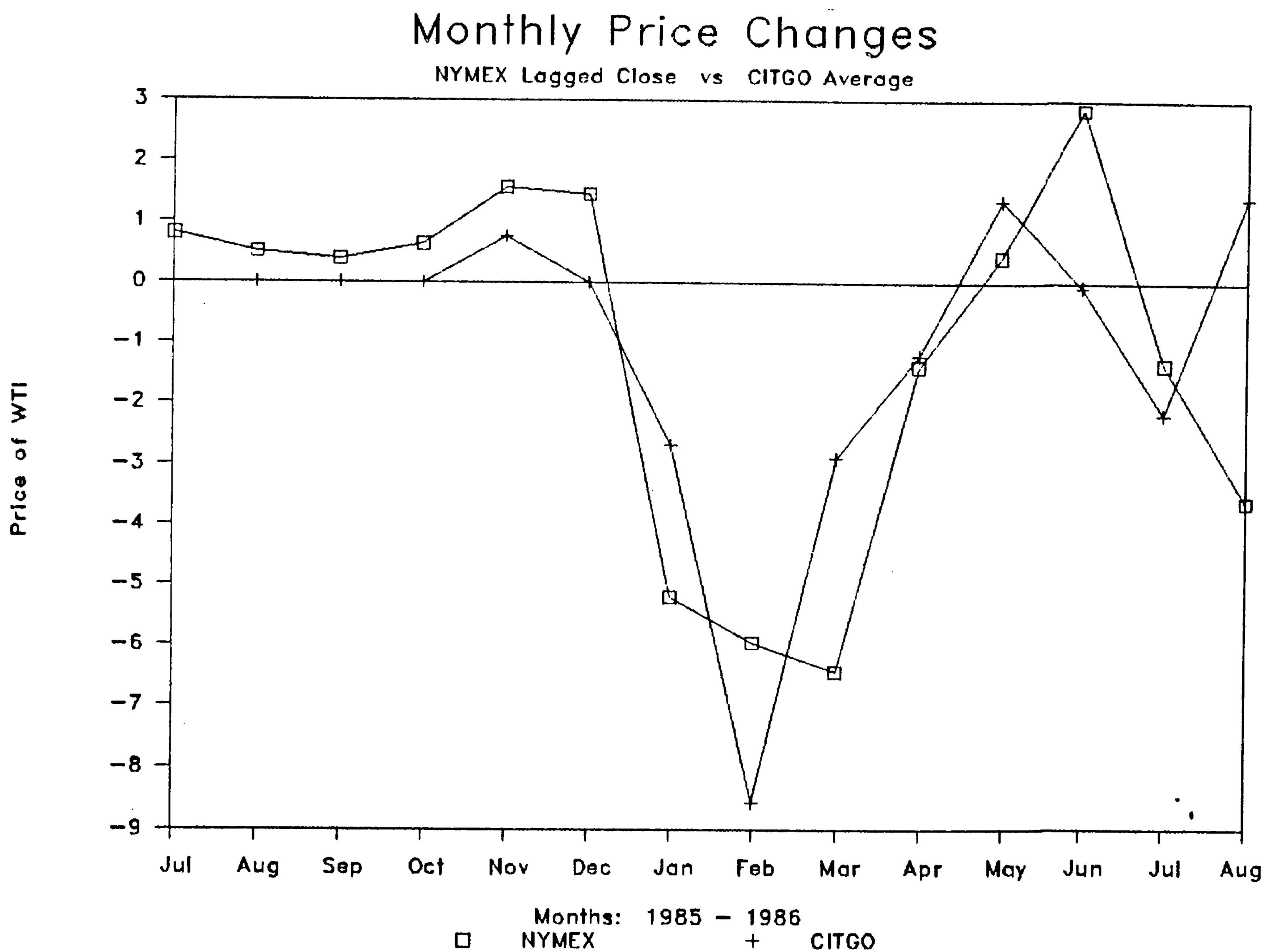
EXHIBIT 6



RB 0309

EXHIBIT 6



RB 0310

not even offers to buy. It's not only to buy if you have a contract.

-- Mr. Berman's analysis speaks to "market-based" alternate valuation procedures; i.e., futures and/or spot prices. The implication that posted prices are not market prices is, of course, true to the extent that postings are offers to buy and do not always reflect prices actually paid. Posti~~ngs are~~, however, driven by the market, ~~are~~ sensitive to market changes, and are adjusted as market conditions requir~~es~~. While posted prices may, on ~~occasion,~~ vary slightly from actual market prices, they are undoubtedly ~~market based~~. The MMS would be hard pressed to defend a position that futures prices are better, more accurate, and more current measures of royalty value for current production than are concurrent posted prices. Only if you don't understand

among other things

Mkt in a sector, not basis

-- Posted prices are widely available. They exist for ~~nearly all~~ fields and areas for which royalty valuation is necessary. Further, since a field posting relates to oil with the same general quality characteristics, quality-based price adjustments are simple and accurate. The same cannot be said for application of spot or futures prices for royalty valuation purposes. why not

-- A real inconsistency would develop if prices received under arm's-length conditions were accepted for royalty valuation purposes while futures ~~prices~~ were applied to non-arm's-length transactions. Two entirely different valuation standards would exist. (We agree that non-arm's-length transactions should receive a higher monitoring priority, and generally be investigated more thoroughly than arm's-length transactions. However, the standards to which each type of transaction is held should be as similar as possible.) If arm's-length prices are acceptable for royalty valuation purposes, a reasonable proxy for current non-arm's-length prices is not a futures price, but, rather, an assessment of what is currently being obtained under arm's-length conditions. 1% doing 99%?

it a fact

how by audit

why

In summary, even though Mr. Berman's analysis is a scholarly study which provides insight into the workings of the oil futures market, we must disagree with the application of oil futures or spot prices as a basis for royalty valuation in non-arm's-length situations. We have ignored the fact that the study covered ~~a relatively short~~ period of time (15 months) during which extreme pricing volatility took place, and we have not discussed other, more minor disagreements we have with the study. More important is the basic conclusion that, even if the study results do indicate that oil futures prices "lead" posted prices, this has no bearing on our valuation responsibilities. For royalty valuation purposes, we must apply $\boxed{\text{market}}$ value existing at the time of production or sale. Whether postings are considered to lag futures prices or not, postings represent current offers to purchase oil and NO are adjusted as necessary to conform to market conditions. Further, oil futures and spot prices are available on such a limited basis as to make price adjustments for quality and/or transportation extremely difficult, if not meaningless.

Mkt value

It has been our policy in non-arm's-length situations to verify that the posting or other price to be applied for royalty purposes is consistent with prevailing arm's-length prices. This policy is, we feel, rightly extended in the proposed oil royalty valuation regulations. The continued acceptance of arm's-length postings or contract prices is seen as the most equitable, most practical, and most easily administered method of royalty valuation available. The widespread existence and acceptance of posted prices make them much more applicable to specific cases than oil futures or spot prices, both in terms of timing and necessary adjustments.

Jerry D. Hill

Jerry D. Hill

Oil Pipeline Rights-of-Way
And Royalty Valuation of Oil
In California

Bureaus: BLM / MMS	**States:** California.

Issue: Have oil pipelines failed to operate as common carriers, contrary to their certification and requirements of the Mineral Leasing Act of 1920 as amended (MLA)? Has such failure led to under-pricing of crude from Federal lands, thus denying the Government proper royalties?

Recommendation: The Office of Policy Analysis should co-ordinate and substantively participate in a study of the common carrier issue and the royalty valuation issue with the BLM and MMS (initial discussions with BLM and MMS staff indicate favorable disposition). To facilitate this, additional information should be sought and obtained as soon as possible, including information which may be under protective order issued by the California State Court.

Initial Review: An initial examination of testimony and evidence developed in connection with the *California v. Chevron, Mobil, Texaco, et. al.* litigation (hereafter referred to as the Long Beach II or LB-II litigation) appears to provide reason to suspect that certain rights-of-way holders may have improperly certified as to their common carrier status as required by Section 28 of the MLA. Moreover, the evidence further appears to provide reason to suspect that such failure to satisfy MLA common carrier obligations, in conjunction with other practices, has led to a significant under-pricing of crude oil in California. Some of this crude oil was extracted from Federal lands; and some of this was subject to Federal royalty payments. Accordingly, any under-pricing would result in valuation below fair market value and subsequent underpayment of royalty obligations. Much of the evidence developed in the LB-II litigation has not been previously available to the Department.

Congressional Interest: Congressman Philip Sharp has recently learned that some of this evidence, including evidence that may be the subject of a California Court protective order, was inadvertently provided to the Department of Commerce as part of an environmental assessment they were conducting concerning allowing the export of California heavy crudes. Congressman Sharp has communicated his interest to Secretary Brown, requesting "copies of all records relating to the operation of oil pipelines in California obtained by the Department of Commerce in the past 12 months."

Congressman Sharp has had a long-standing interest and concern in this area, and had inquired about Department knowledge such practices in the past. It is, therefore, reasonable to assume that the Congressman may wish to discuss these matters with the Department of the Interior in the near future.

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Background: Section 28 of the MLA requires that all pipelines granted rights-of-way over Federal lands be operated as a common carrier. Although no definition of a common carrier is contained in either the statute or in Department regulations implementing the statute[1], a common law definition (Black's Law Dictionary) states "Common carriers are those that hold themselves out to undertake to carry persons or goods indifferently, or of all who choose to employ it." The legislative history revels that there was concern that the only pipelines were those operated by the integrated oil companies; and, accordingly, Congress required that any oil pipelines crossing lands subject to the MLA be operated as a common carrier so that "these [independent] producers reach the market which otherwise they could never reach." The legislative history specifically identifies pipelines owned by Associated Oil and Standard Oil, and voiced the concern that "They were not common carriers; they would not take the oil of anybody <u>unless that person sold it to them at their own price</u>."[2][Emphasis added.] Section 28 of the MLA was intended to solve that problem.

In 1935, Interior Secretary Ickes expressed additional concern, and supported an amendment that, *in addition* to requiring common carriage, also included a requirement to "...accept, convey, transport, and/or purchase without discrimination...in such proportionate amounts as the Secretary of the Interior may determine to be reasonable",[3] expanding the scope of Section 28. That this 1935 amendment was intended to expand the scope of Section 28 is further demonstrated in Interior Secretary Whitaker's 1973 letter to Senator Jackson: "...The amendment was enacted not to enforce the common carrier provision, but to prevent harm to the public lands and mineral resources of the United States...."[4]

Certain integrated oil companies, by contrast, have long asserted that the effect of the 1935 amendment was to limit the common carrier provision and allow the common carriage requirement to be fulfilled by non-discriminatory purchasing (e.g., the price it paid to others when purchasing).[5] They have further asserted Department of the Interior agreement in this interpretation by quoting the Department as finding that "Arm's length

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[1] The Solicitor's office is currently preparing a memorandum addressing BLM's legal questions relative to the common carrier issue.

[2] H-16 at 2.

[3] H-11 at 2.

[4] H-6 at 10.

[5] H-2 at 62. H-5 at 25-27. H-7 at 7. H-8 at 20. H-9 at 18.

purchases and exchanges satisfy the MLA requirement of purchasing without discrimination."[6] However, the same correspondence also stated, "As to pipelines refusing to transport oil of another owner, no specific occurrence has been identified."[7] The written refusals to transport oil of another owner which surfaced in the LB-II litigation[8] appear to provide basis for reconsideration.

Although the BLM has not received any documented complaints[9], correspondence between independent producers and integrated oil companies concerning requests for common carriage through pipelines holding rights-of-way pursuant to the MLA is consistently denied. The pipeline companies consistently and unequivocally state that the pipelines are private facilities which transport only their own oil.[10] Indeed, the companies themselves have stated that "Getty and Texaco have always operated its line privately and have never carried oil for others for compensation."[11]

Separately, and independently of the common carrier issue, the MMS has unsuccessfully pursued the under-pricing / royalty valuation issue in California. The basis of prior allegations has been limited to the inconsistency between (1) posted prices and prices implied by refinery net-back analyses, and (2) gravity differentials in the California market relative to the mid-continent market. The LB-II litigation appears to offer a more compelling argument by explaining the under-pricing through linkage to the common

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[6] H-2 at 64. H-7 at 8. Reference is to a memorandum from Assistant Secretary, Land and Minerals Management, to Secretary of the Interior (February 17, 1987); and letter from James M. Hughes, Deputy Assistant Secretary, Land and Minerals Management, to Representative Philip R. Sharp (April 19, 1990).

[7] Letter from James M. Hughes, Deputy Assistant Secretary, Land and Minerals Management, to Representative Philip R. Sharp (April 19, 1990).

[8] H-12, H-14, and H-15.

[9] Burton J. Stanley in the Office of the Regional Solicitor, Pacific Southwest Region, in commenting on 1991 IG finding of lack of compliance, explained the lack of complaints as follows: "The problem arises because there is no state or federal agency capable of assuming regulatory jurisdiction over these pipeline companies. An independent oil producer is indeed unlikely to challenge the operation of a pipeline company in a proprietary manner if, in fact, he can obtain no meaningful relief even if he complained." [Memorandum BLM.PS.1308 dated January 14, 1990, contained in IG audit report no. 91-I-503 dated February 1991.]

[10] H-15. H-14.

[11] H-2 at 50.

carrier issue and other price, exchange, and purchasing practices of the integrated firms in California.

From an economic perspective, a vertically integrated firm possessing strong market or monopoly power cannot be presumed to behave as a common carrier by acting as a common purchaser; even if it stands ready to purchase all oil tendered at its offering price. That is because such a firm can exercise its market power by offering only very low prices and / or exchanging only with large location differentials. This was precisely the concern that led to section 28 in the first place.[12]

That the effect of continuing to serve only as a common purchaser has resulted in field prices significantly below fair market value is freely admitted by the integrated companies[13]; and is attested to by the difference in their practices when dealing with each other. That is, records of integrated oil companies show that they believed that the prices paid for heavy crudes, in particular, were "less than true value".[14] It is specifically this

[12] The legislative history shows that pipeline companies were behaving as common purchasers for many years prior to the MLA. It this practice were acceptable to the Congress, there would have been no reason to include section 28 at all. Indeed, the nature of the problem then, as now, is that pipeline companies act *only* as common purchasers and, by not providing to common carriage, enforce their low field price objective.

[13] B-1 at 13-26.

[14] B-1 at 13-15.

under-pricing that led to the development of the 3-Cut exchange.[15] Court records show, for example, a Texaco official explained the need for the 3-Cut exchange as:

> Generally speaking badger [3-Cut] exchanges are considered to be the most equitable arrangement for both parties and, in many instances, posted price or gravity barrel exchanges are very adverse economically to one of the parties to the exchange.[16]

Similarly, on deposition, ARCO's Crude Supply Manager characterized the 3-Cut:

> Q. The question I am asking you is simply, do you agree that 3-cut exchanges were utilized in California because crude oils were not priced according to their value in California?...THE WITNESS: If you are looking for a simple answer, yes.[17]

It is further important to note that the 3-cut exchanges were not "a wash", but produced very large imbalances, whether measured in barrels or dollars. The persistence of the large imbalances necessitated periodic settlements between the exchanging parties to reduce the imbalances.[18] Since such payments were the result of exchange sales, they should be viewed as a part of the payment for the crude, even though such payment may

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[15] In simple terms, the 3-Cut exchange was a mechanism allowing crude to be exchanged a cut at a time, as if it were refined product. This allowed for pricing consistent with the crudes actual market value, rather than the posted price. This exchange basis (later giving way to gravity balancing exchanges) was used by the integrated oil companies when dealing among themselves; since valuation at posted prices would severely disadvantage one of the parties, and therefore not acceptable. Posted prices (or location discounts from posted prices) were used only for dealing with independent producers (and valuation of crude for royalty purposes). Although it is easiest to understand the operation of the 3-Cut exchanges involving pipeline transportation (and the majority did appear to involve pipelines), such exchanges were used even when pipeline transportation was not involved, as when deliveries were by tanker. Although it is claimed that 3-Cut exchanges were used only ease the refiner's burden of adding and subtracting exchanged crudes without protracted negotiations, as well as providing a means for automatic maintenance of a quality balance, it is important to recognize that 3-Cut exchanges were never used outside the California market.

[16] B-1 at 14.

[17] B-1 at 16.

[18] B-1 at 19.

have occurred outside the sale contract itself. To the extent that such payments were related to the sale or exchange of crudes lifted from Federal leases (including those crudes exchanged for similar, non-Federal crudes before reaching their final destination), they are properly royalty bearing.

There are also reported to be other indicia of significant under-pricing of California crudes, including quantitative analyses indicating that the amount of such under-pricing may have been as high as $2 - $4 per barrel. These include comparison of posted prices with:

- Comparable ANS crudes;
- Crudes sold at auction, including Federal auction sales; and
- Prices obtained from traders.[19]

Program Contact: Bob Berman, Office of Policy Analysis, 208-3751.

[19] Much of the economic analyses is currently under protective order. Its existence and results are reported based on discussions with the individual who conducted the analysis.

California Common Carrier and Crude Valuation

Bureaus: BLM, MMS	States: California

Issue: Should the Department actively pursue the "common carrier" and associated crude oil product value issues in California?

Recommendation: The Department should establish an internal process and investigate (1) whether holders of pipeline rights-of-way across Federal lands are operating such pipelines as common carriers; and (2) whether the system of crude oil trading (badger or 3-Cut exchanges), monopolistic common purchasing and/or failure to provide pipeline access led to an under-valuing of crude oil resulting in deficient royalty collections. In the event the investigation results in a positive finding, the Department should (1) revoke rights-of-way of holders not providing common carriage (and not agreeing to provide such carriage); and (2) initiate action to collect royalties due.

Options:

(1) Pursue both common carrier and royalty issues.

Pro:

1. Recognizes mutual interdependence of the issues.
2. Could provide significant additional revenues.
3. Could benefit independent producers and refiners in California, thus enhancing competition.
4. Secretary would be perceived as taking positive action to resolve a long-standing problem, regardless of outcome. Action would be dispositive of issue.
5. High likelihood of Congressional hearings. Action underway would be perceived favorably.
6. Consistent with State government actions.
7. Action would be favored by independent oil producers and refiners.

Con:

1. Department has never challenged right-of-way holder on common carrier requirement of statute.
2. No regulations have ever been promulgated to address the common carrier issue, or to define a process for reviewing and revoking a right-of-way.
3. Major oil companies could perceive Secretary as being anti-oil.

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(2) Pursue only the common carrier issue.

Pro:

1. Could benefit independent producers and refiners in California, thus enhancing competition.
2. Secretary would be perceived as taking positive action to resolve a long-standing problem, regardless of outcome.
3. Some action would be viewed favorably by Congress.
4. Avoids potential embarrassment of second failure on royalty issue.
5. Viewed by the State government as at least "half a loaf" since one objective is to enhance the position of independents *vis-a-vis* integrated firms.
6. Action would be favored by independent oil producers and refiners.

Con:

1. Fails to recognize mutual interdependence of the issues.
2. Forgoes significant additional revenues.
3. Action may not be dispositive of the issues.
4. Viewed by State government as only "half a loaf" since they are very interested in the royalties.
5. Major oil companies could perceive Secretary as being anti-oil.

(3) Pursue only the royalty issue.

Pro:

1. Could provide significant additional revenues.
2. Some action would be viewed favorably by Congress.
3. Viewed by State government as at least "half a loaf" since they are very interested in the royalties, and have been requesting Department assistance for some time.

Con:

1. Failure to include common carrier issue would weaken royalty claim.
2. Action would not be dispositive of the issue.
3. No benefits to independent producers or refiners, or to competition in California.
4. May be viewed by the State government as only "half a loaf" since one objective is to enhance the position of independents *vis-a-vis* integrated firms.
5. Major oil companies could perceive Secretary as being anti-oil.

(4) Take no action.

Pro:

1. Largely consistent with Department position for last several years.

2. Option would be favored by major oil companies.
3. Avoids any potential embarrassment that might be associated with failure.

Con:

1. Forgoes significant additional revenue.
2. Congress would likely be critical of lack of action given the materials provided by the State of California.
3. State government would view non-action unfavorably.
4. No benefits to independent producers or refiners, or to competition in California.

Initial Review: An initial examination of testimony and evidence developed in connection with the *California v. Chevron, Mobil, Texaco, et. al.* litigation (hereafter referred to as the Long Beach II or LB-II litigation) appears to provide reason to suspect that certain rights-of-way holders may have improperly certified as to their common carrier status as required by Section 28 of the MLA. Moreover, the evidence further appears to provide reason to suspect that such failure to satisfy MLA common carrier obligations, in conjunction with other practices, has led to a significant under-pricing of crude oil in California. Some of this crude oil was extracted from Federal lands; and some of this was subject to Federal royalty payments. Accordingly, any under-pricing would result in valuation below fair market value and subsequent underpayment of royalty obligations. Much of the evidence developed in the LB-II litigation has not been previously available to the Department.

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[1] The Solicitor's office is currently preparing a memorandum addressing BLM's legal questions relative to the common carrier issue.

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[4] H-6 at 10.

(e.g., the price it paid to others when purchasing).[5] They have further asserted Department of the Interior agreement in this interpretation by quoting the Department as finding that "Arm's length purchases and exchanges satisfy the MLA requirement of purchasing without discrimination."[6] However, the same correspondence also stated, "As to pipelines refusing to transport oil of another owner, no specific occurrence has been identified."[7] The written refusals to transport oil of another owner which surfaced in the LB-II litigation[8] appear to provide basis for reconsideration.

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[5] H-2 at 62. H-5 at 25-27. H-7 at 7. H-8 at 20. H-9 at 18.

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From an economic perspective, a vertically integrated firm possessing strong market or monopoly power cannot be presumed to behave as a common carrier by acting as a common purchaser; even if it stands ready to purchase all oil tendered at its offering price. That is because such a firm can exercise its market power by offering only very low prices and / or exchanging only with large location differentials. This was precisely the concern that led to section 28 in the first place.[12]

That the effect of continuing to serve only as a common purchaser has resulted in field prices significantly below fair market value is freely admitted by the integrated companies[13]; and is attested to by the difference in their practices when dealing with each other. That is, records of integrated oil companies show that they believed that the prices paid for heavy crudes, in particular, were "less than true value".[14] It is specifically this under-pricing that led to the development of the 3-Cut

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[11] H-2 at 50.

[12] The legislative history shows that pipeline companies were behaving as common purchasers for many years prior to the MLA. It this practice were acceptable to the Congress, there would have been no reason to include section 28 at all. Indeed, the nature of the problem then, as now, is that pipeline companies act *only* as common purchasers and, by not providing to common carriage, enforce their low field price objective.

[13] B-1 at 13-26.

[14] B-1 at 13-15.

exchange.[15] Court records show, for example, a Texaco official explained the need for the 3-Cut exchange as:

> Generally speaking badger [3-Cut] exchanges are considered to be the most equitable arrangement for both parties and, in many instances, posted price or gravity barrel exchanges are very adverse economically to one of the parties to the exchange.[16]

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[16] B-1 at 14.

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persistence of the large imbalances necessitated periodic settlements between the exchanging parties to reduce the imbalances.[18] Since such payments were the result of exchange sales, they should be viewed as a part of the payment for the crude, even though such payment may have occurred outside the sale contract itself. To the extent that such payments were related to the sale or exchange of crudes lifted from Federal leases (including those crudes exchanged for similar, non-Federal crudes before reaching their final destination), they are properly royalty bearing.

There are also reported to be other indicia of significant under-pricing of California crudes, including quantitative analyses indicating that the amount of such under-pricing may have been as high as $2 - $4 per barrel. These include comparison of posted prices with:

- Comparable ANS crudes;
- Crudes sold at auction, including Federal auction sales; and
- Prices obtained from traders.[19]

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Footnote Codes

Index	Description
B-1	Standard Oil of California: Appellees' Reply Brief
B-2	City of Long Beach and State of California: Appellants' Brief
B-3	Decision in *Denver Petroleum v. Shell Oil* 306 F.Supp 289 (1969) Antitrust action addressing common law notion of a common carrier
B-4	Legislative history of Mineral Leasing Act

Index	Description
H-0	Cover letter dated 3/30/93
H-1 to H-10	***Excerpts from the parties' 10 briefs developing the MLA arguments (listed in chronological order):***
H-1	Plaintiffs' submission: 6/29/92
H-2	Defendants' consolidated position: 7/29/92
H-3	Plaintiff's reply submission: 8/25/92
H-4	Plaintiffs' pretrial brief: 12/15/92
H-5	Defendants' pretrial brief: 1/5/93
H-6	Plaintiffs' reply to [H-5] issues: 1/22/93
H-7	Defendant Mobil's explanatory memorandum responding to Court's MLA questions: 2/9/93
H-8	Defendant Mobil's closing argument: 3/10/93
H-9	Defendants' joint closing argument: 3/12/93
H-10	Plaintiffs' reply closing argument: 3/19/93
	Research memoranda (w/attachments) detailing the legislative history of the common carrier requirement and the 1935 amendment to same
H-11	Broad, Schultz, Larson & Winberg Office Memorandum on Legislative history of 1935 Amendment to MLA Section 28.
H-16	Broad, Schultz, Larson & Winberg Office Memorandum on MLA legislative history & related refs for use in briefs

Index	Description
H-12	Correspondence and BLM records on Texaco's S.386 right-of-way indicating that texaco had "abandoned" the portion of the pipeline which crossed government land as of June 29, 1992. This corresponded to Defendants' claim in [H-2/72] that Texaco had abandoned the right-of-way. Yet Texaco paid rental for the right-of-way on 6/2/92 through 1996.
	Correspondence between Berry Petroleum and Mobile, and between Par Petroleum and Mobile and Texaco requesting access to their pipelines pursuant to MLA.
H-13	Berry request of 7/24/90, BLM/SOL query of 10/11/90, and Mobile responses to Berry (8/29/90) and BLM/SOL (10/12/90 and 10/15/90)
H-14	Par / Mobil Correspondence
H-15	Par / Texaco Correspondence