BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

TRANS ALASKA PIPELINE SYSTEM ) DOCKET NOS. OR78-1-014
and OR78-1-016
(PHASE I REMAND)

REBUTTAL TESTIMONY
AND EXHIBIT
OF
JOHN D. LICHTBLAU
ON BEHALF OF
ALL RESPONDENTS

December 23, 1983
REBUTTAL TESTIMONY OF JOHN H. LICHTBLAU
ON BEHALF OF ALL RESPONDENTS

1. Q. Please state your name and business address.
2. A. My name is John H. Lichtblau. My business address is 122 East 42nd Street, New York, New York.
3. Q. Did you prepare and submit written direct testimony in this proceeding?
4. A. Yes, I submitted direct testimony on November 1, 1983. The testimony addressed Issues III and IV of the Phase I Remand proceedings, as set out in the Prehearing Stipulation, pp. 19-20 and p. 29, respectively.
5. Q. What is the purpose of your rebuttal testimony?
6. A. Several of protestants' witnesses testify as to the effects of a change in the TAPS tariff levels on activity on the North Slope and on the price of crude oil paid by domestic refiners. The protestants' conclusion is that a decrease in the TAPS tariff rates of $3.00/bbl will result in an increase of 150 thousand barrels per day (MB/D) in ANS production in the period 1991-2010. They claim that if such an increase in production were all marketed East of the Rockies, it would result in a reduction in world oil prices, which in turn would reduce prices of crude and refined products East of the Rockies. Further, it is contended that if there were any net increase in sales to the West Coast, the result will be a larger decrease in the West Coast price for oil products.
7. My rebuttal testimony is intended first to place protestants' estimates in perspective. An assumed production
change of 150 MB/D when multiplied over 20 years can appear
to be quite large as can alleged billion dollar savings to
consumers. In fact, placed in context, these numbers would
not have any significance. My testimony will counter several
major points made by Dr. Leitzinger about the actual workings
of the oil pricing system. For example, I question Dr.
Leitzinger's findings regarding the relationship between ANS
prices at the West Coast and the Gulf Coast, particularly his
conclusion that (1) there is currently no direct link between
ANS prices in these two markets; and (2) that the netback
value of ANS crude at Valdez will indefinitely remain higher
for shipments to the West Coast than to the Gulf Coast unless
there is an increase in ANS shipments to the West Coast by
companies other than the principal TAPS owners. My testimony
will examine the validity of Dr. Netschert's prediction that
ANS production will increase as a result of a decrease in the
TAPS tariffs and will also examine his world oil price
assumption. My testimony will also consider the
macroeconomic effects, which Dr. Leitzinger and Dr. Kahn
postulate will occur from the hypothetical ANS production
increase, especially the reduction in imported crude oil.
Lastly, it will examine Dr. Levin's premise that TAPS
affiliates have an inherent advantage over non-affiliates in
the competition for leases in the North Slope and his
contention that lower TAPS rates will always increase the
1. incentive of TAPS owners to obtain incremental crude production.

3. Q. Turning first to the protestants' conclusions about the downstream market, could you summarize their contentions regarding the effect of a 150,000 b/d increase in ANS crude supply on the East of the Rockies market?

7. A. Protestants' testimony concludes that a difference in TAPS tariff rates of $3.00/bbl will result in an increase of ANS production of 150 MB/D. If that increased production is marketed solely East of the Rockies, protestants' witness Leitzinger concludes that the price of crude oil in that market will drop. In his words: "In principle, the qualitative proposition that more ANS production shipped East of the Rockies should lead to lower world prices is straightforward. The immediate impact of increased ANS shipments East of the Rockies should be a reduction in foreign imports. As that happens, more oil is pushed back into the world markets, and that should lead to downward pressure on world prices." (p. 17)

20.Q. Does recent experience in regard to the effect of increases in non-OPEC production on the world price of oil support Dr. Leitzinger's contention that an additional 150 MB/D of ANS crude marketed East of the Rockies would lead to a reduction in the world price of oil?

25.A. No, I would say that recent evidence strongly suggests that
1. the world price of oil would not react in that way to the
2. volume and type of production increase assumed by Dr.
3. Leitzinger. Non-OPEC oil supplies have increased by vastly
4. larger volumes in much shorter periods without bringing about
5. the sort of changes assumed by Dr. Leitzinger.

6. Let us look at the relationship between non-OPEC crude
7. oil production and price levels since 1979, as set out in
8. Table I. Non-OPEC crude production outside the communist bloc
10. Further, in 1982, non-OPEC crude production outside the
11. communist bloc increased by 1.05 million barrels a day
12. (MMB/D). During these three years, OPEC was also under
13. pressure from falling consumption of oil and from increasing
14. communist net exports. Faced with these circumstances, OPEC
15. reduced its production by 4.00 MMB/D in 1980, by 4.31 MMB/D,
16. in 1981 and by 2.59 MMB/D in 1982, dropping much more sharply
17. than non-OPEC production increased.
<table>
<thead>
<tr>
<th>Year</th>
<th>Increase in Non-OPEC Production (MB/D)</th>
<th>Increase (decrease) in OPEC Prices (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>620</td>
<td>65</td>
</tr>
<tr>
<td>1981</td>
<td>550</td>
<td>12</td>
</tr>
<tr>
<td>1982</td>
<td>1050</td>
<td>(2.5)</td>
</tr>
<tr>
<td>1983</td>
<td>900</td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1. Changes are for average annual production or price.
2. Non-OPEC production is Free World only.
3. OPEC prices are measured by composite OPEC crude oil official sales price (OSP), CIA International Energy Statistical Review.

Oil prices, as measured by the composite OPEC crude oil official sales price (OSP), responded by increasing by 65% in 1980 and by a further 12% in 1981. In 1982, the OPEC marker price continued to rise but the realignment of the other crudes about the marker price resulted in a decrease in the composite OPEC crude oil OSP by a slight 2.5%. It was not until 1983 that crude oil prices dropped significantly.

In March 1983, after a cumulative OPEC crude oil production decline of nearly 11 MMB/D, or 35% over the previous three years, the marker price was reduced by 15%, the first cut in the marker price since OPEC became the price setter in 1971. Since then, although non-OPEC production has increased by a further estimated .90 MMB/D and OPEC production is expected to decrease by 1.5 MMB/D compared with 1982, most OPEC prices have not changed. The only exceptions
1. are Ecuador crude, 1% of OPEC production, which continues to be priced in relation to the spot market, and Iranian and Venezuelan heavy crudes, whose OSP's have been increased. The oil price increases in 1980 and 1981, and even the price maintenance since March 1983, could not have occurred in a market where price is determined according to the classical laws of supply, demand and price which Dr. Leitzinger uses in his calculations, rather than being determined by a cartel through manipulation of production levels.

10. Q. Dr. Leitzinger cites examples of historic price movements to support his conclusion that world oil price levels would be depressed by additional production of ANS crude. (p. 18)

13. Can you explain the difference between the figures which you have just cited and Dr. Leitzinger's figures?

15. A. In describing the effects of initial ANS production on world oil prices, Dr. Leitzinger cites average landed costs for Algerian, Saudi, Venezuelan and Nigerian crudes. These costs are composite indexes. Any composite price index will always show some small fluctuations over short periods because it will be influenced by one or more of the following: the spot market, freight rates, and the mix of crudes. Such changes cannot be used to substantiate a claim that an increase in supply causes a long term reduction in prices, although that is the assumption that Dr. Leitzinger uses in his calculation of consumer savings of $500 million to $1.1 billion for consumers East of the Rockies.
For a crude oil price reduction to be permanent, the
decrease would be reflected in the contract pricing system
because, as I explained in my direct testimony, the cartel
cannot allow a disequilibrium between the spot and contract
markets to exist for an extended period. Over the months
used by Dr. Leitzinger to support his conclusion that ANS
crude has affected world oil price levels, however, the
contract pricing system did not react. The marker price was
not reduced in the September 1977-April 1978 period
considered by Dr. Leitzinger, nor in the rest of 1978. In
fact, as I have already noted, it was not reduced until early
1983.

Q. In examining the cost figures used in Dr. Leitzinger's
effect of ANS crude on world oil price levels,
did you notice anything else which would limit their
usefulness to support his conclusion?

A. Yes, there are two comments that I believe should be made
about the cited price reductions for these four crudes. In
examining the price reductions, I noted that a portion of the
decrease resulted from lower shipping costs, which was
particularly significant for sour crudes. Once that freight
reduction is accounted for, the FOB change for sour crudes is
de minimis, as noted in Table II.
<table>
<thead>
<tr>
<th></th>
<th>Sweet</th>
<th>Sour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Algerian</td>
<td>Nigeria</td>
</tr>
<tr>
<td>CIF Change as per Dr. Leitzinger</td>
<td>-0.38</td>
<td>-0.71</td>
</tr>
<tr>
<td>Change FOB*</td>
<td>-0.32</td>
<td>-0.64</td>
</tr>
</tbody>
</table>

* EIA Monthly Energy Review

The other point worth examining is the differential between sweet and sour crude prices over this period. Dr. Leitzinger's discussion of West Coast crude pricing indicates that he would expect to see sweet crudes gaining in value relative to sour crudes, i.e., for the differential to widen, if additional volumes of a sour crude are influencing market prices. (pp. 24-25) Using Dr. Leitzinger's reasoning, it would be logical to assume that the introduction of ANS, a sour crude, into the international market in his chosen period of September 1977-April 1978 would have caused the differential between sweet and sour crudes to grow. As Table II clearly shows, FOB prices for sweet crudes actually declined. Since, as would be expected, sweet crudes were generally priced above sour crudes at the start of this period, the differential between the price for the two crudes necessarily narrowed. Thus, the actual figures for the period chosen by Dr. Leitzinger...
1. strongly suggest that factors other than the entry of
2. Alaskan crude into the market were paramount in causing the
3. reported decline in price.
4. Q. In concluding that world oil prices will fall as a result of
5. an increase in ANS production, Dr. Leitzinger relies on the
6. concept that prices and demand respond freely to one another
7. in the international oil market. Do you think this concept
8. is applicable in the real world market?
9. A. No, I do not. I believe that the world price of oil will
10. continue to be determined by the OPEC cartel, or by a
11. comparable international price-setting organization, as it
12. has been since the early 1970's. Hence, I do not believe
13. that small changes in supply will affect the price of oil.
14. My belief is supported by Dr. Netschert, protestants'
15. witness, who supplied the world oil price levels for the
16. models used by Mr. Heintz. In his explanation of his
17. projection of the world oil price, Dr. Netschert clearly
18. assumes that the OPEC cartel will continue to function.
19. (pp. 30-31) In addition, Dr. Netschert states in his direct
20. testimony, "[p]roduction from any individual field cannot
21. affect the world price of oil." (p. 10) The estimated 150
22. MB/D increase in ANS supply can clearly be taken to be
23. equivalent to production from a single field, unexceptional
24. in size by world standards. Thus Dr. Netschert's assessment
25. must be that protestants' claimed 150 MB/D increase in ANS
1. production will not affect world oil prices and I heartily
2. concur with this.
3. The existence of the cartel was the reason why official
4. sales prices increased in 1980 and 1981, although demand was
5. falling. In the absence of a free market, it is
6. inappropriate to use the concept of demand elasticity over
7. small ranges of volume or price to quantify the likely price
8. effects of increased ANS shipments, as Dr. Leitzinger does.
9. OPEC could not function if it were to have to adjust its
10. prices in small steps to respond every time non-OPEC
11. production or demand changed by such a small amount.
12. Q. Do you believe that Dr. Leitzinger's assumption that an
13. increase of ANS production of 150 MB/D would cause the rest
14. of the world to reduce its own production by half that
15. amount is "as reasonable an assumption as any," as Dr. Kahn
16. put it? (p. 25)
17. A. No. Based on past performance and predicted production
18. levels, plus the common assumption that OPEC will continue
19. to act as a cartel, I would expect that the response to
20. incremental Alaskan production would be an equal cutback in
21. OPEC production; in other words, OPEC would continue to act
22. as the collective swing producer. This is in contrast to
23. Dr. Leitzinger's assumption.
24. The cartel has absorbed cutbacks in production over the
25. last few years which are many times greater than the
required cutback being discussed here. OPEC production, as
I have already mentioned, dropped by a total of 12.4 MMB/D
between 1980 and 1983. This is over eighty times the
reduction that would be required to absorb the increase in
Alaskan production claimed by the protestants. During
1991-2010, the period during which the protestants state the
extra oil would be available, the world demand for OPEC
crude oil is generally expected to be much higher than it
has been in 1983. For example, the National Energy Policy
Plan, October 1983, and The Standard Oil Company of
California's "World Energy Outlook," June 1985, both contain
such a projection, as does my paper "Oil's Role in the
Energy Future," which I presented at the World Petroleum
Congress in London in September 1983. In that paper, I
forecast that OPEC would be called upon to supply 27-29
million bbl/d of oil in 2000, compared to the 18.2 million
bbl/d that the IEA estimates OPEC will supply in 1983. In
the future, because of the higher supply that is expected to
be required from OPEC, OPEC's ability to continue to absorb
production cuts will be better than it is today.

Q. Do you have any other reason for concluding it is
unreasonable to assume, as Dr. Leitzinger did, that world
oil prices would be reduced because OPEC would not absorb a
50-100 MB/D increase in non-OPEC oil production?

A. Dr. Leitzinger's assumption that OPEC would not absorb
1. 50-100 MB/D of the incremental ANS production suggests
2. irrational economic behavior by OPEC. If OPEC only absorbs
3. half of the incremental ANS production, Dr. Leitzinger
4. projects that world oil prices will fall by 13-26
cents/bbl. This would cost OPEC, in total, $2.4 to $4.7
6. million a day at the 1983 production level of 18.2 MMB/D.
7. Yet by shutting in the extra 50-100 MB/D, OPEC's daily loss
8. would amount to only $1.3-$2.7 million, if we assume that
9. $1.50-$2.00 of OPEC's current average OSP of $28.50
10. represents actual operating expenses. Hence, it would be in
11. OPEC's interest to maintain its role of swing producer by
12. reducing output rather than price. Thus, Dr. Leitzinger's
13. choice of response for OPEC is uneconomic compared with the
14. alternative of a reduction in its production in proportion
15. to an ANS production increase.
16.Q. Do you see any other problems associated with trying to
17. apply Dr. Leitzinger's theoretical calculations of price and
18. demand effects to the real world?
19.A. Yes, I do. Dr. Leitzinger projects a price decrease of
20. 13-26 cents/barrel on refined products East of the Rockies.
21. That equates to 0.3-0.6 cents/gallon. The majority of the
22. products produced from a barrel of crude are ultimately sold
23. on a "per gallon" basis. There is a threshold level for
24. price changes for any commodity and until that level is
25. reached, consumers will not respond. It is improbable that
1. a decrease of 0.3 to 0.6 cents/gallon in a market such as
2. the gasoline market would be above the threshold, i.e., an
3. individual would not switch from a car pool to driving his
4. own car, or from single-location holiday to a touring
5. holiday for a price change averaging less than half a cent a
6. gallon. Thus, in my view, the reduction that Dr. Leitzinger
7. estimates would occur in world prices will be insufficient
8. to influence consumption behavior, and the required
9. additional average 75 MB/D of demand will not be created.
10. This invalidates the relationship between world oil prices
11. and demand proposed by Dr. Leitzinger and suggests that no
12. price change will occur.
13. Q. Assuming, arguendo, that Dr. Leitzinger's method for
14. estimating a change in the world price of oil is correct, do
15. you see any problems with how he has calculated the price
16. change?
17. A. The first problem I see relates to the source of his
18. estimate of the demand elasticity. Dr. Leitzinger explains
19. that his demand elasticity for crude is an average of the
20. values shown in Exhibit JJL-10. In the source from which
21. the table was taken, Energy Modeling Forum, the authors
22. describe their studies as confirming that these estimates of
23. the elasticity of demand were "too undependable" and they
24. made no further use of them. I believe Dr. Leitzinger's
25. reliance on this source is misplaced. In addition, the
elasticities are referred to as crude oil demand by Dr. Leitzinger. They obviously are not; in most cases they relate to energy demand, in some cases to just a particular sector and in all cases they relate solely to the U.S. market. In clarifying testimony Dr. Leitzinger admits this, but continues to rely on the figures.

The second problem with Dr. Leitzinger's methodology relates to his oil production assumption. The 39 MMB/D free world production level cited by Dr. Leitzinger (p. 20) is presumably being used as a proxy for world oil demand. This oil demand is also supplied by stock changes, communist net exports and refinery gains, which are currently 3-4 MMB/D. This figure should have been added to the 39 MMB/D if production level and world oil demand are to be used interchangeably. Also, the 39 MMB/D is a current figure. It would be more appropriate to use an estimate of supply representative of the time period in which the protesters claim the additional oil would be produced, i.e., 1991-2010. A number of forecasts, including the ones I have already mentioned, have predicted substantial increases in supply requirements during that period. My own projections in "Oil's Role in the Energy Future" are that free world oil supply requirements will be 55 MMB/D in 2000, the mid-point of this period. Based on this volume, the price cut calculated by Dr. Leitzinger would be 30% lower or only 9-18
1. cents/bbl, which is just 0.2 to 0.4 cents/gallon.

2. Q. What, then, would you conclude would be the effect on world oil price levels of protestants' assumed 150 MB/D of ANS crude in the East of the Rockies market?

3. A. The effect would be so insignificant that it could be described as trivial.

4. Q. Would you summarize Dr. Leitzinger's conclusion about the effect of increased volumes of ANS crude being sold on the West Coast?

5. A. Assuming a net increase in ANS crude oil sales on the West Coast, Dr. Leitzinger concluded that the netback differential at Valdez between East of the Rockies and West Coast would narrow due to a reduction in the West Coast crude prices. According to Dr. Leitzinger, this assumed reduction would be fully passed on to West Coast consumers in the form of lower product prices. He bases this conclusion on his assumption that a three dollar change in the tariff would bring in new producers of ANS crude who would not be affiliated with TAPS and who would, therefore, be more likely to sell their crude on the West Coast where the present netback is higher. Dr. Leitzinger's calculations of potential savings to West Coast oil consumers depend on the assumption that the average historic difference in ANS crude oil netbacks between West Coast and East of the Rockies shipments will continue unless and until
some of the hypothesized 150 MB/D of additional Alaskan

1. crude is sold on the West Coast.

2. Q. How do you understand the West Coast/Gulf Coast netback
differential to have evolved?

3. A. As I indicated in my direct testimony, West Coast-ANS prices
must be set within a range bounded by a ceiling equal to the
quality-adjusted price of imported barrels and a floor equal
to the Gulf Coast ANS price, less transportation costs. The
ceiling price is that obtained by a seller negotiating at
arm's-length with an independent third party refiner whose
next alternate supply is a foreign barrel. The floor price
is that obtained by a seller faced with no alternative
disposition other than transportation to the Gulf Coast. It
is also used by at least one producer as the transfer value
for processing ANS within that producer's own refining
system. Given the changes in composition in ANS West Coast
market participation, it is not surprising that the data
cited by Dr. Leitzinger reflect aggregate prices fluctuating
between these bounds.

4. Q. Do you feel that continuation of the historic differential
in netbacks is a reasonable assumption?

5. A. No, I do not. Competition in the market has already
increased due to changing ownership patterns with the
start-up of Kuparuk at the end of 1981 and the
1. redetermination of the Prudhoe Bay field. As a result, for
2. example, Sohio's position as a seller has suffered some
3. erosion.
4. Competition is likely to continue to increase because
5. of new entrants in the market, regardless of the tariffs
6. charged by the TAPS owners. For example, protestants'
7. testimony claims that Milne Point is developable (HTH-3),
8. which should bring in several new producers. As I have
9. already discussed in my direct testimony, many other
10. companies unaffiliated with TAPS owners now own leases on
11. the North Slope and the Beaufort Sea and, if their
12. exploration programs are successful, can be expected to
13. swell the number of producers even further in the period to
14. 2010. In addition, Californian production of offshore and
15. heavy sour crudes is expected to increase. This oil will be
16. predominantly marketed on the West Coast and the companies
17. that appear to have the major shares of the new production —
18. Chevron, Phillips, Shell, Getty and Mobil — currently have
19. little or no production on the North Slope. In my opinion,
20. which is supported by protestants' witness Salop, the
21. dynamics of an increasingly competitive West Coast market
22. will tend to erode the average netback differential between
23. West Coast and Gulf Coast sales of ANS crude, for those
24. producers experiencing such differential, regardless of
25. whether an additional 150 MB/D is produced or not over a 20
The view that the two-tier market will necessarily be eroded is supported by Arlon R. Tussing, who is described in Dr. Netschert’s testimony as "a specialist in Alaskan affairs and has done much work on matters related to the oil industry in Alaska." (p. 27) In his recent paper, "ARCO and its Critics: the North Slope Crude Oil Transfer Price Controversy" Dr. Tussing concludes: "In the long run competition should produce a single well-head price for every crude oil, including that produced on Alaska’s North Slope;" and "the two-price arrangement for ANS crude oil at Valdez is unlikely to survive the intensified competition for market shares that will occur in the 1980's." If the average netback differential erodes of its own accord, as is expected, the sole basis for Dr. Leitzinger’s projection of any price savings for consumers from the hypothesized 150 MB/D disappears.

Q. Dr. Leitzinger states that West Coast crude oil prices are not linked to prices East of the Rockies, at least within a $2.00 to $3.00 range. (p. 11) Would you agree with him?

A. No, I would not. For certain companies, there is very direct link. The clearest example of this is ARCO. ARCO has testified before Congress on its methodology for determining delivered prices for ANS crude. In the market for heavy sour crude East of the Rockies, the accepted
1. "marker" crude is West Texas Sour, with approximately 2
2. MMB/D of production. ARCO sets its Gulf Coast price for ANS
3. crude equal to the West Texas Sour posting, plus an
4. adjustment to compensate for difference in quality. Then
5. ARCO sets its West Coast price for ANS crude so that the
6. netbacks from the two markets to Valdez are equal. Thus,
7. when prices change in the Gulf Coast contract market, ARCO's
8. prices for ANS change on both the Gulf Coast and the West
9. Coast.

10. Q. Dr. Leitzinger excludes ARCO's West Coast transactions from
11. his calculation of an average netback differential. What is
12. the effect of this?
13. A. The result of the exclusion of the ARCO West Coast ANS
14. transactions is to increase the netback differential at
15. Valdez. Dr. Leitzinger assumes that additional ANS crude to
16. the West Coast would lower ANS crude prices there and would
17. cause an equal reduction in average West Coast crude
18. prices. This conclusion cannot be correct because Dr.
19. Leitzinger excludes ARCO's West Coast transactions from all
20. his calculations. Thus, Dr. Leitzinger's estimated
21. reduction in West Coast ANS crude prices can only apply to
22. sellers other than ARCO.
23. ARCO would not follow this reduction because its
24. pricing methodology is based on a single wellhead price and
25. so its prices are already at the floor. In addition,
postings for Californian indigenous crudes are in line with ARCO's price and, hence, also cannot be expected to follow the reduction in West Coast prices for ANS that was calculated by Dr. Leitzinger. Therefore, the reduction in crude prices must be limited to less than half the crudes in the region. Consequently, average West Coast prices would fall by less than half the estimated $1.15/bbl. If this lower number were used throughout his calculations, Dr. Leitzinger's estimated savings to West Coast consumers would be lower by at least 50%, or $425 million a year.

Q. What does Dr. Leitzinger expect will be the effect on refined product prices if West Coast crude prices were to fall by $1.15/bbl?

A. Dr. Leitzinger expects that West Coast product prices would, on average, fall by the same amount. He then suggests that, because 20% of the barrel is exported as residual fuel oil, the $1.15/bbl cut will fall disproportionately on distillates and gasoline, which constitute the bulk of the remaining 80% of oil products consumed locally.

Q. Do you agree with Dr. Leitzinger's views on how a change in crude oil prices would affect product prices?

A. I do not agree entirely with his views. By apparently ignoring the possibility of light products exports and by assuming that the Far East residual fuel oil market is totally price inelastic, Dr. Leitzinger reaches estimates of
1. reduced product prices and of savings by West Coast
2. consumers which are larger than those I believe would follow
3. from a $1.15/bbl cut in crude prices. Such reduction in
4. crude prices would result in the West Coast having some of
5. the lowest crude prices in the world, certainly in the
6. Pacific Basin. Thus, because there is no legislative ban on
7. export of products, there would be a real possibility of
8. significant gasoline and distillate export to Pacific Basin
9. countries. The opening up of this foreign market could
10. cause refiners not to pass the full reduction in their crude
11. oil costs through to U.S. consumers.
12. 
13. As to the Far East residual fuel market, I agree with
14. Dr. Leitzinger that the West Coast price for residual fuel
15. oil is determined by exports and by bunker sales. The local
16. refiners and marketers turn to this market to solve their
17. problem of the glut of residual fuel oil on the West Coast
18. and they set their prices low enough to achieve the
19. necessary sales. In the future, competition in the Pacific
20. Rim market for residual fuel oil is expected to become
21. stronger - because of product exports by OPEC refiners in
22. the Middle East, for example. I would suggest, therefore,
23. that it is more reasonable to assume that a price cut will
24. be required in order to dispose of the additional fuel oil
25. produced from a net increase in crude refined on the West
26. Coast. By assuming no change in the export prices, Dr.
Leitzinger deduced that the crude price cut would be passed through entirely on the remaining 80% of the barrel, by price cuts of over 3 cents/gallon. However, with residual fuel oil prices also falling, his projected West Coast consumer savings would be lower, possibly by as much as $170 million per year.

Q. Dr. Leitzinger concludes that prices for Californian production and for ANS oil used on the West Coast must move independently from prices for the foreign crude oil that is currently imported there because of the lack of substitutability between the two kinds of crudes. Would you agree with him?

A. No. Dr. Leitzinger implies a greater rigidity and inflexibility in refinery operations than is evidenced by current practice throughout the industry. For the vast majority of refiners, the decision as to whether to run sweet or sour crude is an economic one based on crude differentials and expected product differentials. There are, of course, technical limitations to the volume of sour crude that can be run, but there are also these economic ones. Dr. Leitzinger's unqualified conclusion ignores the latter.

Q. Would you summarize your assessment of Dr. Leitzinger's assertion that a net increase in ANS crude to the West Coast will cause a quantifiable reduction in the price of crude
1. oil to domestic refiners and the price of refined products
to consumers on the West Coast?

3. A. I believe the price of ANS crude at the West Coast will
decline relative to that at the Gulf Coast regardless of
whether the postulated additional 150 MB/D are produced.
Further, even if one accepted Dr. Leitzinger's argument in
principle, the price reduction at the West Coast would be
substantially less than he has calculated.

9. Q. Dr. Leitzinger contends that lower TAPS tariffs would create
benefits for consumers in addition to the $500 million -
$1.9 billion that he expects from lower oil prices. (p.
36) Would you state what he claims these benefits are and
whether you agree with him?

14. A. Dr. Leitzinger contends that the change in ownership of ANS
crude, which protesters say would follow from a lowering of
the TAPS tariff, would result in a net increase in sales of
ANS to the West Coast with a corresponding increase in
1. wellhead value because sales on the West Coast have a higher
2. netback than sale East of the Rockies. Dr. Leitzinger claims
3. that the combined increase in value on all the barrels
4. transferred to the West Coast from East of the Rockies -
5. referred to as a transportation cost saving - would be an
6. additional consumer benefit. In my view, this increase in
7. wellhead value would have no impact on consumer prices. It
8. cannot be construed to be creating benefits to consumers and
9. society. Instead, the main beneficiaries would be the State
10. of Alaska and the federal government through their higher
11. royalty and tax receipts from the higher wellhead values.
12. Turning to the protestants' conclusions regarding the effect
13. of a change in the TAPS tariff levels on upstream activity,
14. Dr. Netschert concludes that as a result of TAPS tariff rates
15. above what protestants claim is the cost of service, "less
16. oil is found, developed and produced." (p. 16) Can you
17. comment on the certainty Dr. Netschert's ascribes to his
18. conclusion?
19. Nothing that Dr. Netschert has stated proves that less oil
20. will be found and developed. His reasoning deals only with
21. the likelihood, not the certainty, of there being some
22. negative effect on exploration and development if TAPS tariff
23. rates are not lowered. With respect to frontier areas, like
24. the Beaufort Sea and the Arctic National Wildlife Refuge
25. (ANWR), there is still enormous uncertainty over the location
of any hydrocarbon reserves and of the distribution of field sizes. This fact was clearly demonstrated by the very disappointing results recently reported by Sohio for the first well on the Mukluk structure, although predictions for Mukluk were extremely positive. For example, the Department of the Interior, in its Environmental Impact Statement for OCS Lease Sale 71, assessed the probability of discovering commercial quantities of hydrocarbons in the areas being leased at 99.3% – almost a certainty; and the Mukluk structure was generally considered the best prospect in the area being leased. Exploration in the NPRA has taken place over many years, but the overall picture relating to hydrocarbon reserves is little better defined than for the frontier areas. It is, therefore, not possible to conclude with any certainty, as Dr. Netschert did, that there will be fields that exist and that oil will be found and developed only if TAPS tariff rates are reduced.

Dr. Netschert states that, since higher tariffs cause lower wellhead prices, they will tend to reduce the bonus payments to the Arctic Slope Regional Corporation. (p. 19) Would his arguments lead to the same conclusion for bonus payments to the State of Alaska?

Yes, it would. Of course, if it is true that perceived higher tariffs (lower wellhead prices) lead to lower bonus payments, then the inverse relationship must also be true:
perceived lower tariffs lead to higher bonus payments. The benefit of perceived lower TAPS tariff rates, therefore, may not enhance the profitability of those companies involved in exploration and production and provide funding for their more extensive participation in these activities in the region. Instead, a large part of any perceived enhanced profitability, which might result from lowered tariff rates, would pass directly to the State of Alaska in the bonus bid and thus would make no contribution to aiding exploration.

Q. Do you agree with Dr. Netschert that the results of the model runs by Mr. Heintz "constitute convincing quantitative support for [his] general conclusions" as to the effects of tariffs above what protestants claim are cost-of-service TAPS tariffs on ANS operations? (p. 31-32)

A. While the results of the models, as run, may be interpreted to support Dr. Netschert's conclusions, I would take issue with his assertion that "the assumptions and interpretations ... are conservative at every stage and on every score." (p. 33) To the extent that these assumptions and assertions are less than conservative, as I shall show, the support for Dr. Netschert's conclusions becomes, I believe, significantly less convincing.

Q. Which assumptions and interpretations do you believe are inappropriately characterized as conservative?

A. First, "conservative" should be defined. In the context of
1. Dr. Netschert's testimony, I would take "conservative" to mean an assumption or interpretation which would tend to result in an underestimation, rather than an overestimation, of the predicted response. Of the key assumptions and interpretations used by protestants in the models, I believe that neither the assumptions regarding relevant production areas nor the world price of oil can be termed "conservative."

2. Q. Would you explain why protestants' choice of North Slope areas on which to measure production losses cannot be termed conservative?

3. A. The cumulative loss in production calculated by the protestants of one billion barrels includes 220 million barrels of lost production from the Arctic National Wildlife Refuge (ANWR). (Netschert, p. 32) Currently there is a legislative ban on all drilling in the ANWR and congressional action is necessary to lift the ban. Therefore I would have expected a crude oil production estimate that was "conservative at every stage and on every score" to have excluded resources in the ANWR.

4. Q. Would you say that Dr. Netschert's forecast of world oil prices is inconsistent with a description that the assumptions used in the models discussed by Mr. Heintz are "conservative at every stage and on every score"?

5. A. Protestants' own evidence indicates that for Dr. Netschert's price forecast to be conservative it would have to be at
least as high or higher than the current consensus with respect to future world oil prices. The sensitivity analyses carried out by Mr. Clark and Mr. Abbey show that increasing the forecasted world oil prices leads to a decrease in the production loss which the PADS and the TSL80 models estimate would occur due to a move from a Kane methodology to a Williams methodology.

For example Table A.6 in Mr. Clark's report shows that in the Base Case, i.e., Dr. Netschert's price forecast, the estimated production loss in a 800 million bbl field in the Federal Beaufort was 40 million barrels. If prices were forecast to increase at 3% p.a., the estimated production loss dropped to only 4 million barrels, or just 10% of the Base Case estimate. A higher price forecast than that used in the Base Case would have led protestors to estimate a smaller production loss than the one billion barrels now claimed by them.

Q. What is the current consensus of world oil prices?

A. The International Energy Workshop (IEW) recently completed a poll of 328 individuals and organizations involved in energy forecasting and compiled summaries of their forecasts. Of the original 328, 197 provided a forecast of the international price of crude in 1990 and 2000, and 72 extended their forecast through to 2010. Graph I clearly shows that a considerable majority of those responding expect
GRAPH I

FIGURE 1
INTERNATIONAL PRICE OF CRUDE OIL

INDEX NUMBER
(1980 = 100)

YEAR

1980 1990 2000 2010

the price of crude oil to increase in real terms over
1990-2000 and also 2000-2010. They also expect that, in real
terms, it will exceed the 1983 price by some substantial
margin. In contrast, Dr. Netschert's price for Arab Light is
constant in real terms from 1983 onwards. Measured against
this poll, Dr. Netschert's forecast cannot be said to be
conservative.

Q. How would the use of a conservative forecast for world oil
prices have altered protestants' results?

A. If protestants had used a conservative world oil price for
1991-2010, their hypothesized increase in production would
have been lower than the presently claimed 150 MB/D, thereby
reducing all the other effects, such as consumer savings,
which they conclude would stem from the higher production.

Q. Several of protestants' witnesses -- Drs. Kahn, Leitzinger,
Netschert -- cite macroeconomic effects from the increased
ANS production, which they believe will result from a change
in the TAPS tariff levels. Would you summarize those effects?

A. The economic benefits which these witnesses ascribe to lower
TAPS tariff levels can be grouped into two categories. The
first has been given the generic label of "economic
efficiency" by protestants. Apparently, it is just another
way of looking at the central thesis of protestants'
testimony - lowered TAPS tariff rates would increase the
supply of ANS oil. The other category comprises the
beneficial effects on world oil prices, domestic inflation, domestic employment, national security, the U.S. balance of payments, losses occasioned by supply interruptions, and domestic real output. According to Dr. Netschert, these benefits all result from a reduction in oil imports, due to increased domestic supplies. In essence, the sole macroeconomic benefit cited by protestants is the reduction of imports of crude oil.

Q. Do the protestants quantify the alleged reduction in imports of crude oil which would result from a change in the tariff levels?

A. The exact reduction is not clearly set out in any of their testimonies, although it is not claimed to exceed the projected increase in ANS production. Protestants consider two basic cases. In the first case, where the incremental production would be transported to markets East of the Rockies, the result would be a reduction in U.S. imports of somewhat less than 150 MB/D. In the second case, in which there would be a net gain in Alaskan oil delivered to the West Coast, the result is a reduction of U.S. imports of only 65 MB/D, on average. These calculations are based on Dr. Leitzinger's testimony and are set out in Exhibit (JHL-3).

Q. In assuming that a lower TAPS tariff would reduce imports of crude oil, should Dr. Leitzinger have taken into account the effects on domestic production of a lower U.S. price for oil?
A. Yes. Dr. Leitzinger asserts that the 150 MB/D of incremental Alaskan production will reduce U.S. oil prices by 13-26 cents/bbl East of the Rockies and by $1.15/bbl West of the Rockies. Using Dr. Netschert's reasoning, a lower wellhead price would reduce the profitability of current and future production and so would reduce the volume of oil produced. These prices would imply some reduction in lower-48 oil production. The effect would obviously be negligible East of the Rockies. However, in California, as Dr. Leitzinger points out (p. 15), new production will be coming from new high cost sources such as offshore areas or through the use of enhanced recovery techniques. In addition, the new California production will be comprised predominately of heavy crude, which has a below average price. (Netschert, p. 13) The $1.15/bbl reduction in crude prices West of the Rockies, therefore, must result in a significant loss of California production. As I just noted, to keep Dr. Leitzinger's savings intact, this reduction in California production must be offset by an increase from other sources, either imports to the West Coast or additional ANS crude to the West Coast which, in turn, would cause additional imports East of the Rockies.

Q. Do you agree that any macroeconomic benefits should be attributed to the assumed 150 MB/D ANS production increase which protesters contend will reduce U.S. imports of crude oil?
1. A. While I would not wish to disagree with the general concept that there is significant value "to U.S. society as a whole in every barrel of oil produced," I would point out that it is also a matter of scale, of alternatives to the energy source and of consideration of the overall domestic energy picture.

   The macroeconomic and political benefits cited by protestants are just as attributable to any additional oil produced in the United States, even an extra barrel/day from a stripper well in Ohio. However, below a certain point, the national benefit of an increase in domestic production becomes trivial. The main macroeconomic and political benefits are claimed to come from reduced imports. As I have just explained, based on protestants' own testimony, the average reduction would be no more than 65 MB/D, and would be considerably less if genuinely conservative assumptions had been used in the models. That is only half of one percent of current oil consumption and, reverting to my published forecast, still only around 0.5% of demand in 1990 and 2000. U.S. oil supply security will not be perceptively affected by a 1/2 of 1% higher or lower import dependency by the end of the century.

   The only significant benefit of a reduction in the tariff rate would accrue to the two protestants, the State of Alaska and the Arctic Slope Regional Corporation, whose tax
1. and royalty income would increase, not from just any incremental increase in production but from the increase in the wellhead price on all of the production from their lands. Those protestants would, therefore, reap most of their benefits, regardless of whether or not their projections of increased production are correct.

2. Q. Would you comment on Dr. Netschert's assertion that increased domestic production is intrinsically better for the nation than import dependency?

3. A. Yes. In principle, I would concur with this view. But to calculate the benefits of a barrel of domestic crude compared to a barrel of imported crude is another matter. The fact that the range of Dr. Netschert's estimate of the intrinsic benefits of domestic production over import dependency in Dr. Netschert's exhibit BCN-38 runs from $5.95 to $68.00 per barrel is, by itself, an indication of the highly speculative nature of this concept. I would also like to point out that, by and large, current official U.S. energy policy is not, and has not been, based on Dr. Netschert's concept that domestic crude oil has a significant intrinsic premium value over imported oil. The one prominent exception would be the Strategic Petroleum Reserve (SPR) program, cited by Dr. Netschert. On a national accounting basis the cost of this program would logically be charged to the cost of imported oil, since without import dependency we would not require a
1. strategic petroleum reserve. However, this calculation would raise the benefit of domestic crude oil over foreign crude oil by only a fraction of the lowest estimate shown in the table in BCN-38. More important, the SPR fill program is legally scheduled to end by 1990 at the latest and, therefore, would have no impact on the intrinsic value of incremental ANS production presumed to be brought on by a reduction in the tariff rate.

2. Q. Dr. Levin, one of the protestants' witnesses, addresses the issue of diversification of company participation in North Slope activity. Could you summarize his conclusion?

3. A. Dr. Levin concludes that if TAPS tariffs remain high, non-TAPS affiliated companies will be disadvantaged in bidding for tracts of ANS land and, as a consequence, future resource development is likely to remain concentrated in the hands of the large TAPS owners. Furthermore, firms with a comparative advantage in resource exploration and extraction may be foreclosed from North Slope activities because the real economic efficiencies of their lower production costs may be outweighed by the artificial advantages created by high TAPS tariffs.

4. Q. On what does Dr. Levin base this conclusion?

5. A. Dr. Levin calculates that companies not affiliated with TAPS suffer a substantial cost disadvantage because they pay the full tariff to transport oil but each TAPS owner bears only
1. an incremental transportation cost which depends on his 
2. ownership share and the tariffs for the other carriers. Dr. 
3. Levin then goes on to contend that the magnitude of a TAPS 
4. owner's advantage increases with the level of the tariff and 
5. with his share of pipeline capacity. Thus he claims the 
6. largest TAPS owners -- Sohio, Exxon, ARCO and BP -- enjoy a 
7. substantial cost advantage over non-TAPS affiliated 
8. producers, and an almost equally large advantage over the 
9. smaller TAPS-affiliated companies. 
10. Q. Do you agree with Dr. Levin's calculations and conclusions? 
11. A. No, I do not. In making his calculations and drawing his 
12. conclusions, Dr. Levin has apparently totally ignored the 
13. concept of opportunity cost. If he had made his calculations 
14. on this basis, he would have found that TAPS-affiliated 
15. companies do not generally have any transportation cost 
16. advantage in the bidding process. Thus, he would not have 
17. been able to conclude that future resource development on the 
18. North Slope would remain concentrated in the hands of the 
19. largest TAPS-affiliated companies to the exclusion of the 
20. non-affiliated companies and the small owners, even when 
21. these latter companies were more economically efficient. 
22. Q. Can you explain how the use of opportunity costing would 
23. eliminate the competitive advantage identified by Dr. Levin? 
24. A. Consider the situation described by Dr. Levin on p. 33 of his 
25. testimony where he looks at the alleged competitive advantage
of a vertically integrated TAPS owner. For example, if Company A, which owns a 20% interest in TAPS, saw that an ANS tract was worth bidding on, then it could assume that all the other companies saw it that way, too. Suppose that all the companies estimated production at 100 MB/D. Dr. Levin suggests that Company A could choose to attribute the benefit of that additional 20 MB/D of pipeline throughput to his assessment of the worth of developing and producing the 100 MB/D of oil, and so increase the value of the tract. In doing so, Company A would have failed to recognize that its pipeline space has an opportunity cost attached to it which means it has a value to it, whether or not its affiliate is the producer of the oil. If another company were to own the lease, that company would also have to use the TAPS pipeline, because there is no alternative transportation system. That other company would pay Company A's tariff for the 20 MB/D of oil which would go through Company A's pipeline. The opportunity cost of Company A's pipeline is its full tariff and that cost would logically be used by Company A in calculating the tract value, not the incremental transportation cost. Thus, Company A's calculation of tract value is identical to that of all the other companies, and it has no bidding advantage over the independents.

Q. You have explained why, in general, the TAPS affiliated companies should not be considered to have any transportation
1. cost advantage which they would use to give themselves a bidding advantage over non-affiliated companies. Are there any exceptions to this?
2. A. Yes, there could be an occasional exception. Consider again the situation described by Dr. Levin on p. 33, where he assumes all companies have the same knowledge about a tract.
3. Suppose the evaluations were to show that the tract was slightly subeconomic. Then, on a stand-alone basis, none of the companies should be prepared to bid on the tract. That would reduce the opportunity cost for Company A's pipeline to its incremental operating cost and that cost reduction might be sufficient to give it an acceptable estimated rate of return on the tract.
4. Q. Dr. Levin contends (pp. 26-27) that even the largest TAPS owner, if viewed on an integrated basis, would have an increase in profit on incremental crude production if TAPS tariff rates were reduced. Should one conclude from this that a reduction in the TAPS tariff would not put any incremental ANS production at risk?
5. A. No, one should not. There are definitely real circumstances where a reduction in the TAPS tariff would reduce the integrated profit on the incremental crude production for at least one of the TAPS owners, in particular, in the case of Enhanced Oil Recovery (EOR) at Prudhoe Bay where the integrated profit would be reduced for almost all the
owners. The reduced profit would result from increased payment of taxes and royalties on the increased value of the oil. Since the companies make their investment decisions based on their individual economics, it is possible that this reduction in profit could result in the elimination of incremental production that would otherwise have occurred.

This possibility is not made clear in Dr. Levin's testimony because he only considers the economics for incremental production belonging to a single company. Such a situation would appear to be the exception rather than the rule. Based on the two currently producing fields, the fields that are being considered for development, and the ownership of the undeveloped leases, the majority of decisions on incremental production will likely involve at least two companies, including an affiliate of at least one TAPS owner.

Q. Why would joint ownership of a field affect the incentive for incremental production that was calculated by Dr. Levin?

A. It would affect it because a TAPS owner would also be carrying its share of all the incremental production belonging to the other field owners. Thus, in total, it is carrying its share of all the incremental production. If the tariff were reduced, the company would have a lower profit on each of these barrels. Therefore, with joint ownership, the incentive for incremental production that would be seen by a
1. TAPS owner would be reduced by this further loss of profit on
   its pipeline operations.

2. Q. You mentioned that the decision to proceed with EOR in
   Prudhoe Bay is an example of this. Can you explain?

3. A. Certainly. Consider Exxon's position in this case: Exxon
   owns 21.7% of Prudhoe Bay, so I will assume that their share
   of any incremental production from investing in EOR would be
   the same. If the TAPS tariffs were reduced by $1/bbl,
   Exxon's wellhead price on its share of the incremental
   production would increase by $1/bbl. The marginal tax rate
   on EOR production from the Saddlerochit reservoir is 73%.
   Thus Exxon's increased profit on its incremental oil would be
   27 cents/barrel. However, this will be offset by lower
   profits from Exxon's pipeline affiliate. The pipeline
   affiliate owns 20.3% of TAPS. Thus, it would carry 20.3% of
   the total incremental oil from the oil project. If the TAPS
   tariffs are reduced by $1/bbl, Exxon's income from carrying
   its share of the incremental production would also be reduced
   by $1/bbl. The marginal tax rate on pipeline income is 48%.
   Thus the profit to Exxon's pipeline affiliate from carrying
   its share of the incremental production would be 52
   cents/bbl. On an integrated basis, therefore, Exxon would
   earn an additional 27 cents/bbl on 21.7% of the incremental
   production, but would lose 52 cents/bbl on 20.3% of the
   production, for an overall loss of 4.7 cents/bbl on the
1. total, incremental production.

2. The fact that lowering the TAPS tariff can be a disincentive to incremental production could be important.

3. For example, after primary and secondary recovery, about 13 billion barrels are expected to remain in the Prudhoe Bay reservoir. If EOR were to recover even 5% of this, the 650 million barrels would exceed the total reserve estimated for some of the as-yet undeveloped North Slope discoveries and represent approximately two-thirds of the oil that the protestants claim is put at risk by the higher tariffs.

11. Q. Does that conclude your testimony?
12. A. Yes, it does.
Exhibit _______ (JHL-3)
To be provided.
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Docket Nos. OR78-1-014
and OR78-1-016
(Phase I Remand)

AFFIDAVIT

STATE OF NEW YORK )
) SS:
COUNTY OF NEW YORK )

John H. Lichtblau being first duly sworn on oath, states
that he is John H. Lichtblau, whose prepared rebuttal testimony
in the above referenced proceeding accompanies this affidavit.

John H. Lichtblau further states that such prepared rebuttal
testimony is a true and accurate statement of his answers to the
questions contained therein and that he does adopt those answers
as his sworn testimony in this proceeding.

Subscribed and Sworn to
before me this 19th day of
of December, 1983.

[Signature]
John H. Lichtblau

Notary Public

VINCENT J. FARAGO
Notary Public, State of New York
My Commission Expires: March 30, 1985
Case I - Incremental Production Delivered to East of the Rockies

Based on Dr. Leitzinger's testimony, the reduction for the first case is 150 MB/D. Using Dr. Leitzinger's concept, this would be offset by the increase in consumer demand for oil products East of the Rockies which would accompany the price cut that he calculates. The net result would be a reduction in U.S. imports of somewhat less than 150 MB/D. This case is the one described by Dr. Leitzinger on page 35 as an "extreme assumption."

Case II - Net Gain in ANS Crude Delivered to West Coast

Based on Dr. Leitzinger's testimony, the actual increase in volume of West Coast shipments would range from 10 MB/D - 160 MB/D. Dr. Leitzinger's calculations of cost savings to West Coast consumers depend on the assumption that prices in the region will fall until enough demand has been created to absorb these additional shipments of ANS crude; therefore, these shipments are net increments to supply and there can be no offsetting reduction in crude imports to the West Coast. Based on the average 150 MB/D production increase claimed by protestants, the increase in West Coast shipments implies a net
change in ANS shipments East of the Rockies ranging from a reduction of 10 MB/D to a gain of 140 MB/D for an average gain of 65 MB/D. Dr. Leitzinger assumes (p. 35) the response to a net reduction in ANS shipments East of the Rockies would be an increase in prices in that region. In my opinion, a more realistic alternative to this would be an increase in imports. Overall, the case where there is a net gain in ANS shipments to the West Coast leads to U.S. imports being reduced on average by only 65 MB/D.
Incentive for Incremental Production

Based on Dr. Levin's Direct Testimony, p.26

Suppose company A owns a) all incremental production and b) S % of pipeline
and suppose the marginal tax rate on crude oil is X and the marginal tax rate on pipelines is Y
such that the differential tax rate, X-Y, is D

Then, an $1 decrease in the tariff will increase a pipeline owner's incentive to produce and ship incremental oil unless

\[ D > 1-S \]

Suppose the volume of incremental oil is V
Then, if tariff reduced by $1/Bbl
i) Company A's profit on oil increases by
\[ V \times 1 \times (1-X) \]
ii) Company A's profit on pipeline decreases by
\[ V \times S \times 1 \times (1-Y) \]

\[ \therefore \text{On an integrated basis, Company A's profit increases by} \]
\[ V (1-X) - VS (1-Y) \]

\[ \therefore \text{owner's incentive to produce is increased unless} \]
\[ S (1-Y) > (1-X) \]
or \[ X-SY > 1-S \]
i.e. \[ D + Y (1-S) > 1-S \]

\[ \therefore \text{The number of instances where the incentive is decreased for an owner is greater than Dr. Levin calculated.} \]

For example, consider a company with 100% field ownership and 20% share of TAPS.
Consider $1/Bbl reduction in the tariff.
On each barrel of oil, company A's profit increases by
\[ 1 \times (1-0.92) \text{ where 92% is marginal tax rate on crude oil, normal primary prod.} \]
= 8 cents/Bbl

On each barrel carried by pipeline subsidiary, profit decreases by
\[ 1 \times 0.2 \times (1-0.148) \text{ where 18% is marginal tax on pipeline} \]
\[ = 10.4 \text{ cents/Bbl} \]

\[ \therefore \text{integrated basis, company has loss} = 10.4 - 8.0 \times 2.4 \text{ cents/Bbl.} \]
To the extent that producers persist in shipping ANS crude oil East, a netback differential persists.

Q: What would be the effect on the netback differential of shipments to the West Coast by ANS crude oil producers with small West Coast sales volumes?

A: If ANS crude oil producers with small West Coast sales—or, for that matter, if any ANS producers—were to increase the volume of their shipments to the West Coast, there would be a tendency for West Coast prices to fall and for the netback differential to diminish.

Q: Why wouldn't ANS producers suffer the same negative price spreading effects on their sales of crude oil shipped East of the Rockies?

A: They would experience the same type of price spreading effect East of the Rockies. But, relative to the West Coast, the price spreading effect of the same additional sales volume East of the Rockies would be considerably less. As Dr. Leitzinger has testified, a given increase in West Coast shipments would reduce West Coast prices significantly more than the same increase in shipments East of the Rockies would reduce prices in the East.

Of course, if the relatively smaller price reductions in the East were spread over a relatively larger sales volume there, at some point the price spreading effect on East of the Rockies sales would equal