

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 8672
1481 SCOM 55: JNT. SPEC. COMM. ON STATE TAX POLICY, 1986-1987

1781

1 high or low each and every year and still result in revenues
2 that have the same present value of revenues that result from
3 a more traditional methodology.
4

5 While I have calculated the present value of TSM revenues and
6 compared it to the present value of the revenues that result
7 from other methodologies, this comparison is only one analytic
8 tool useful in determining whether the Offer of Settlement
9 should be approved. It primarily measures the value of the
10 settlement to the carriers, rather than to the individual
11 shippers on TAPS. The focus of my analysis has been the
12 yearly tariffs that result from TSM. If those tariffs are so
13 high as to be outside a zone of reasonableness, then present
14 value analysis can be used to determine the impact of those
15 tariffs by measuring the excess monies paid by shippers and
16 collected by the carriers.
17

18 Q. Explain how you have calculated the present value of revenue
19 requirements for TSM and the other methodologies used in your
20 analysis.
21

22 A. In order to compare the present value of the total revenues
23 produced under TSM with the present value of total revenues
24 produced under other ratemaking methodologies introduced in my
25 testimony, I have calculated the present value of the
26 differences in revenues collected under these methodologies.
27 This is mathematically equivalent to calculating the present
28 value of the revenues produced under each methodology, and

1 then subtracting one from the other. However, I believe that
2 directly calculating the present value of the revenue
3 differences produces results that are more meaningful.
4

5 I have calculated the present value differences in 1987
6 dollars because that is the year in which the Commission will
7 be considering the Offer of Settlement. It is also the
8 dollars with which we will all be most familiar.

9
10 In order to calculate the present value difference of revenues
11 collected from 1978 to 1986, I have relied on the fact that
12 the carriers must pay interest on the refunds owed to the TAPS
13 shippers. I have used the statutory interest rates to
14 calculate the present value differences for past collections
15 of revenues. For the years 1978-1982, that interest rate is 5
16 percent. [See: Renewal of the Petition of the State of Alaska
17 for Declaratory Order Concerning TAPS Refund Interest Rates,
18 5/28/82, p. 12, in FERC Docket Nos. OR78-1 and RM77-22]. For
19 the years 1983-1986, the interest rate is based on the prime
20 rate charged by commercial banks for short-term business
21 loans. [FERC Docket No. RM77-22, Order No. 273 at 1]. I have
22 calculated these rates on a quarterly basis as reported by the
23 *New York Times*.

24
25 In order to calculate the present value difference for the
26 years 1987-2011, I have used a 0% real discount rate with
27 inflation accounted for by using the inflation rates projected
28 in TSM. I have used a 0% real discount rate because that is

1 apparently what the State used in analyzing the present value
2 of the Settlement, and it is consistent with the view that the
3 future tariff levels are as important as the past and present
4 levels. [See: A Review of the TAPS-Tariff Agreement between
5 the State of Alaska and ARCO, by ARTA, Inc., 3/15/85, p. 10].
6

7 While I believe that a 0% real discount rate is appropriate in
8 this matter, to argue over the discount rate would introduce
9 an unnecessary controversy, because the choice of a discount
10 rate does not affect the final conclusions. Later in my
11 testimony I will calculate the present value difference of
12 revenues produced by TSM and my benchmark tariff methodology
13 using 0%, 5% and 10% real discount rates. As will be seen,
14 the discount rate makes no difference in my conclusions.
15

16 Q. Why do you calculate the present value difference of the total
17 revenues, rather than just the intrastate revenues?
18

19 A. I understand that this Commission only has jurisdiction over
20 intrastate shipments on TAPS. However, I believe that the
21 easiest way to analyze the present value of TSM and other
22 methodologies is to look at the total revenues produced,
23 regardless of whether they are interstate or intrastate
24 revenues. This is the same technique used by Mr. Hildahl in
25 his analysis supporting the Offer of Settlement. In addition,
26 I have not analyzed the difference in tariffs to the GVEA mid-
27 point connection that would result from TSM as compared to
28 other methodologies. Since everyone agrees that the rolled-

1 in-barrel-mile method will be used to calculate those tariffs,
2 only the full-length tariffs are at issue.

3
4 Q. The settling parties also assert that TSM should be assessed
5 as a whole package rather than analyzing each and every
6 element. Do you agree?

7
8 A. No, I do not. The general regulatory standard is that it is
9 the end results that count, that is, that the tariffs must lie
10 within a zone of reasonableness. However, the normal
11 procedure in analyzing those tariffs is to investigate the
12 elements that go into their calculation. Therefore, I believe
13 that analyzing the separate elements of TSM is a useful and
14 necessary tool to assess the reasonableness of the Offer of
15 Settlement.

16
17
18
19 IV. TSM

20
21 Q. Please describe TSM.

22
23 A. TSM is a trended original cost (TOC) ratemaking model whose
24 most prominent feature is a hyper-accelerated depreciation
25 schedule. A detailed description of TSM appears in the
26 testimony of Dr. Horst as well as in documents filed with the
27 Commission by the settling parties. As described by Dr.
28 Horst, the prominent features of TSM include: (1) the

1 aforementioned depreciation schedule and TOC rate base; (2) a
2 capital structure consisting of 100% equity; (3) a 6.4 percent
3 real return on equity through 1988 and a return of \$0.35 per
4 barrel (1983\$) of throughput thereafter; (4) a \$450 million
5 deduction from rate base amortized from 1978 through 1984 to
6 account for a variety of Phase II issues including cost of
7 construction and the haul road; and (5) no carrier refund
8 obligation until 1982.

9
10 Using the data supplied by the settling parties and apparently
11 used by Mr. Hildahl in his testimony, viz. Appendix 5 to the
12 Explanatory Statement filed by the State and the Department of
13 Justice in the FERC settlement proceedings, and the computer
14 program "TSM-6," I have calculated the tariffs, revenues, and
15 return on rate base for the years 1978 through 2011 that
16 result from TSM. Appendix 5 and TSM-6 are supposedly based on
17 historical data and agreed-upon projections of future data.
18 The output of TSM-6 is presented in significant part in APUC
19 Staff Exhibit ____ (RLB-2).

20
21
22
23 **V. BENCHMARK TARIFF METHODOLOGY ("BTM")**

24
25 Q. Describe how you developed the model which you use as the
26 benchmark to assess the reasonableness of TSM's rates.

27
28 A. I agree with Mr. Hildahl that the depreciated original cost

1 (DOC) methodology adopted by the Commission in its *Cook Inlet*
2 decision is an appropriate benchmark to determine whether the
3 results produced by the Offer of Settlement are within a zone
4 of reasonableness. Thus, the model that I have developed is
5 generally based on the *Cook Inlet* decision methodology. As
6 discussed below, in developing the individual components of
7 that benchmark, I have been guided by the precedents
8 established by the Commission in the *Cook Inlet* decision, by
9 the APC and Judge Kane in their TAPS Phase I Initial
10 Decisions, and by the parties' litigation positions as found
11 in the evidentiary record of the TAPS proceedings.

12
13 Q. Describe the derivation of the depreciated original cost rate
14 base in BTM.

15
16 A. The depreciated original cost rate base is comprised of the
17 following elements:

- 18
19 (1) carrier property;
20 (2) adjustment for Phase II issues;
21 (3) AFUDC;
22 (4) accrued depreciation;
23 (5) working capital; and
24 (6) ADIT.

25
26 Q. Describe how you calculated the carrier property balances.

27
28 A. In order to calculate the base carrier property balances for

1 the years 1978-1982, I started with the 13-month average of
2 the balances stipulated by the parties to the TAPS proceeding
3 as found in the State's Phase II NCC brief filed with FERC,
4 deducting an amount for interest during construction. For the
5 years 1983 and beyond, I used the 1982 carrier property
6 balances adjusted for net additions as found in TSM.

7
8 Q. What adjustments did you make for the Phase II issues?

9
10 A. I adjusted the base carrier property balances to take into
11 account the Phase II issues of cost of construction and the
12 haul road. In Phase II of TAPS, all of the protestants argued
13 that a deduction from carrier property must be made due to
14 imprudent expenditures by the carriers during construction of
15 the pipeline. The State, Staff, and Arctic Slope Regional
16 Corporation ("ASRC") argued that \$1.57 billion should be
17 deducted for those imprudent expenditures. The carriers'
18 position was that no deduction was warranted.

19
20 In addition, the Staff and State argued that, since the haul
21 road was used by North Slope producers as well as the
22 carriers, a deduction from carrier property should be made to
23 recognize that use by the producers. That deduction was
24 calculated to be \$114.925 million. The carriers argued that
25 no deduction should be made.

26
27 Recognizing the wide range of possible outcomes as a result of
28 those widely disparate litigation views, for BTM I have

1 elected to deduct only half of the \$1.687 billion deduction
2 that the Staff has asserted was necessary to achieve just and
3 reasonable rates.

4
5 In order to calculate that deduction from carrier property, I
6 used data from the Appendices found in the State's Phase II
7 NCC FERC brief. The State calculated carrier property
8 balances based on a zero deduction from rate base as well as
9 on a deduction of the total \$1.687 billion. To calculate the
10 carrier property balances resulting from a deduction of half
11 of the \$1.687 billion total, I averaged the two State carrier
12 property balances. The resulting carrier property balances
13 are found in APUC Staff Exhibit ____ (RLB-3), Schedule 2.

14
15 Q. Please describe how you calculated AFUDC.

16
17 A. The AFUDC balances in BTM reflect both the amount of carrier
18 property included in rate base and the appropriate cost of
19 capital. In BTM the adjusted carrier property balances are
20 determined by taking the average of the unadjusted stipulated
21 carrier property balances reported in the State's Phase II,
22 NCC Brief, Appendix B, and the State's adjusted (\$1.687
23 billion deduction) carrier property balances shown in Appendix
24 A. The State's Brief also contains the amounts of AFUDC
25 associated with the carrier property balances shown in
26 Appendices A and B. I have averaged these amounts to
27 determine the AFUDC associated with the average carrier
28 property balances.

1 That result has been adjusted to reflect the cost of capital
2 used in BTM (12.0 percent) as opposed to that used to develop
3 the AFUDC amounts in the State's brief (11.5 percent); i.e., I
4 have increased the AFUDC to reflect this difference. The
5 results are shown in Exhibit APUC Staff ____ (RLB-3), Schedule
6 3.

7
8 The BTM AFUDC numbers are probably higher than they would be
9 if I had followed the AFUDC methodology adopted by this
10 Commission in its *Cook Inlet* decision. In that decision, the
11 Commission stated that AFUDC should only include amounts
12 actually expended and that the actual carrier capital
13 structures at the time of the construction expenditure should
14 be used to calculate AFUDC.

15
16 During construction of TAPS, the carriers' actual weighted
17 capital structure was about 89% debt and 11% equity. Because
18 debt generally costs less than equity, my use of a 50%
19 debt/50% equity capital structure may well result in AFUDC
20 numbers that are higher than those dictated by the *Cook Inlet*
21 methodology. However, I adopted that capital structure to
22 ensure that BTM tariffs are amply high, and in order to avoid
23 a theoretical economic argument over the changing costs of
24 debt and equity as a result of capital structure changes.

25
26 Q. Describe how you calculated accrued depreciation.

27
28 A. The depreciation and amortization is based on the *Cook Inlet*

1 decision, in which the Commission used a straight-line, unit-
2 of-time depreciation schedule. In addition, the parties in
3 the TAPS proceeding entered into a depreciation stipulation
4 whereby carrier property would be depreciated on a straight-
5 line basis. In accordance with that stipulation, for the
6 years 1978-1981, the annual depreciation rate is based on a
7 25-year life; and, for the years 1982 and beyond, depreciation
8 amounts are based on a 30-year life of the balance remaining
9 after 1981.

10
11 I also depreciated the net additions to carrier property, as
12 found in TSM-6, according to the stipulated depreciation rate.

13
14 Q. Describe your derivation of the working capital component of
15 the rate base.

16
17 A. Working capital consists of materials and supplies,
18 prepayments, and cash working capital. I have used the
19 working capital numbers found in TSM-6 for all years.

20
21 Q. Explain the derivation of Accumulated Deferred Income Taxes
22 ("ADIT") in the benchmark model.

23
24 A. The treatment of ADIT is derived from the *Cook Inlet* decision,
25 where the Commission decided that the ADIT balance resulting
26 from normalization should be deducted from the rate base.

27
28 The difference between straight-line book depreciation and

1 accelerated state and federal tax depreciation gives rise to
2 ADIT in the early years of TAPS life when the carriers' tax
3 expense (what is paid to tax authorities) is exceeded by the
4 tax allowance (what is charged to shippers in rates). Thus,
5 in the early years of TAPS life, the carriers receive the
6 benefit of a cost-free source of capital.

7
8 In Phase I of this proceeding the State argued that the income
9 tax allowance in the cost of service should be determined on
10 the basis of the liberalized tax depreciation rates; i.e., the
11 benefits should "flow through" to the shippers. The carriers
12 argued, on the other hand, that they should be permanent
13 recipients of the benefits of book/tax depreciation
14 differences. The Staff's position was for "normalization,"
15 which creates a book/tax timing difference where, eventually,
16 the ADIT is returned to the shippers in the form of reduced
17 rates. In the Phase I decisions, both Judge Kane and the APC
18 embraced normalization.

19
20 A subsidiary issue is what, if any, return the carriers should
21 be allowed to earn on investment supported by ADIT. In Phase
22 I, the carriers argued that they should earn a full return on
23 all invested funds, regardless of their source. The Staff
24 asserted that an amount equal to the ADIT should be deducted
25 from rate base, in effect denying the carriers any return on
26 funds not supplied by investors. Judge Kane, in his Phase I
27 decision, opted to deduct the ADIT balance from rate base.
28 The APC chose instead to reduce rates by the balance of ADIT

1 times the prevailing rate for risk-free securities.

2
3 In the benchmark model, just as in the *Cook Inlet* decision and
4 TSM-6, ADIT is normalized and deducted from rate base. The
5 computation of ADIT in my model is based on the same tax
6 depreciation rates that are employed in TSM-6. My book
7 depreciation rates are based on a straight-line, unit-of-time
8 method, such as in *Cook Inlet*, whereas TSM book depreciation
9 rates are based on a hyper-accelerated, unit-of-throughput
10 method. As a result, the early book/tax differences in my
11 model are greater than those in TSM, which lead to higher ADIT
12 balances. The results of my calculations are shown in Exhibit
13 APUC Staff ____ (RLB-3), Schedule 4.

14
15 Q. Explain the derivation of the return requirement in BTM.

16
17 A. The return requirement equals the weighted cost of capital,
18 which is a function of the capital structure, the cost of
19 debt, and the cost of equity.

20
21 Q. What capital structure have you employed in your methodology?

22
23 A. For a number of reasons, I have chosen to use a hypothetical
24 50 percent debt and 50 percent equity capital structure in
25 1978-1982. First, the Commission decided in the *Cook Inlet*
26 decision that hypothetical capital structures may be
27 appropriate. Second, it is the Staff's litigation position as
28 to the capital structure that will produce just and reasonable

1 tariffs. Third, I believe it is a fair compromise of the
2 various litigation positions of the parties. Those proposed
3 capital structures included the following: State-89% debt/11%
4 equity, or, alternatively, 75% debt/25% equity; FERC Staff --
5 parent company capital structures; ASRC -- 66.66% debt/ 33.33%
6 equity; carriers -- a range of 46% debt/54% equity to 0%
7 debt/100% equity. Fourth, the APC in its Phase I decision
8 adopted the parent company capital structures. This equaled a
9 weighted cost of capital of 53.31% equity/46.69% debt, which
10 is very close to a 50/50 capital structure. Judge Kane
11 declined to find any specific capital structure.

12
13 Q. Explain how you calculated the capital structure beyond 1982.

14
15 A. For the years between 1983 and 2011, I have followed the
16 Commission's *Cook Inlet* decision. In that case, the
17 Commission imputed a capital structure to Cook Inlet Pipeline
18 Company, specifying a beginning and ending capital structure
19 and finding intermediate values by linear interpolation. In
20 formulating BTM I have also done a straight-line interpolation
21 resulting in the imputed debt for TAPS being retired evenly
22 from year to year.

23
24 Q. What ending capital structure did you specify for TAPS?

25
26 A. I have used an ending capital structure of 100% equity. In
27 the *Cook Inlet* decision, the Commission stated that "... an
28 entity which is going out of business should be allowed to

1 retire its debt sometime prior to actual shutdown of
2 operations." (Cook Inlet decision, p. 21). This is because
3 the risk associated with a single-asset enterprise reputed to
4 be going out of business would preclude long-term debt
5 financing. Thus, it is reasonable to anticipate that by 2011,
6 the last year of TAPS stipulated life and the last year of
7 TSM, any investment in the pipeline will be 100 percent
8 equity. This is what I have specified in the benchmark model.

9
10 However, this may well result in an overstatement of equity in
11 the BTM because the evidence indicates that there is
12 reasonable assurance of TAPS operation through at least
13 2011. In fact, the life of TAPS may extend beyond 2011, and
14 the provision for "Depreciation of Eligible New Property In
15 Service" in TSM anticipates the possible use of TAPS after
16 that time.

17
18 Q. Describe the rates of return which you have included in your
19 methodology.

20
21 A. For the years 1978-1982 I have used a nominal 12% return for
22 the overall cost of capital. That return is equal to the
23 Staff's litigation position and is based on a cost of debt of
24 9% and a cost of equity of 15%. In addition, I believe a 1978
25 return of 12% is well supported by the Phase I decisions and
26 is a reasonable compromise of the parties' litigation
27 positions.

28 ///

1 In its Phase I decision, the APC concluded that the cost of
2 debt should be 8.89% and the cost of equity should be 15%, for
3 an overall weighted cost of capital of 12.15%. Judge Kane
4 decided on an 11.5% overall return. The State argued for an
5 overall return of 10.0-10.25%. The carriers' overall cost of
6 capital positions ranged from 12.4-20.0%. In the FERC
7 proceeding, FERC Staff argued for a 10.8% overall cost of
8 capital, and ASRC advocated an 8.86% overall cost of capital.

9
10 Q. Why have you used a 12% nominal return only for the years
11 1978-1982?

12
13 A. While the Staff in its evidentiary presentation used a 12%
14 return for the years 1978-1982, and while I believe it is
15 reasonable to assume that the APC and Judge Kane envisioned
16 that the rates of return that they ordered would be in effect
17 prospectively for several years, I don't believe that it is
18 reasonable to assume that the same rate of return would be in
19 effect over the life of TAPS. It was therefore necessary in
20 deriving BTM to calculate rates of return for the years 1983-
21 2011.

22
23 In order to derive rates of return for those years, I decided
24 to follow the TSM methodology of using a real rate of return
25 in order to arrive at a nominal rate of return. Since my
26 methodology uses a DOC rate base rather than a TOC rate base,
27 I needed to add an inflation factor to the real rate of return
28 to derive a nominal rate of return. I therefore added the

1 annual inflation factors found in TSM-6 to the real return to
2 arrive at the nominal cost of capital for each year for 1983-
3 2011.

4
5 Since all of the parties and both Commissions looked at only
6 nominal returns in the TAPS proceedings, there is no record
7 evidence as to just and reasonable real returns. Therefore, I
8 converted the 12% nominal return in 1978 to a real return to
9 arrive at a real rate of return. In order to do that, I
10 looked at the inflation at that time. As found in TSM-6,
11 inflation for 1977 was 6.452% and for 1978 it was 7.658%.
12 Therefore, I chose to use 7% as the inflation component of the
13 12% nominal return. Use of a 12% cost of capital converts to
14 a imputed 5% real cost of capital, with a real debt cost of 2%
15 and an equity cost of 8%. By way of comparison, the use of 7%
16 inflation results in a real cost of debt of 1.89% and a real
17 cost of equity of 8% in the APC Phase I decision and a 4.5%
18 real overall cost of capital in Judge Kane's decision.

19
20 The real overall cost of capital found in BTM gradually
21 changes between 1983-2011 from 5% to 8% as the equity ratio
22 increases from 50% to 100%. Consequently, the cost of capital
23 may well be too high in the later years, in that the changing
24 capital structure may not necessarily affect the overall cost
25 of capital. However, once again, I wanted to ensure that BTM
26 results in tariffs that are on the high side.

27
28 The overall cost of capital for each year can be found in

1 Exhibit APUC Staff ____ (RLB-3), Schedule 1, Line 42.
2

3 Q. Please explain the derivation of the operations and
4 maintenance expense component of your benchmark methodology.
5

6 A. For all the years 1978-2011, I have used the numbers found in
7 TSM-6. The benchmark operations and maintenance expense
8 numbers can be found in Exhibit APUC Staff ____ (RLB-3),
9 Schedule 1, Line 49.
10

11 Q. How have you specified depreciation expense in the benchmark
12 model?
13

14 A. As noted above in discussing the provision for accumulated
15 depreciation, book depreciation amounts through 1981 are
16 calculated on a straight-line, 25-year life basis, and are a
17 function of the allowed cost of carrier property in rate
18 base. Subsequent to 1981, depreciation expense is calculated
19 on a straight-line, 30-year basis.
20

21 TSM-6 posits a series of net additions to rate base occurring
22 between 1978 and 2011, and by means of an "Eligibility
23 Fraction" allocates the cost to be recovered through
24 depreciation to periods extending beyond 2011. In the
25 benchmark model, book depreciation associated with net
26 additions is computed on a straight-line basis. This results
27 in a relatively small balance of undepreciated carrier
28 property at the end of 2011, an assumption similar to that

1 evident in TSM-6.

2
3 The annual depreciation expense for the years 1978-2011 is
4 shown in Exhibit APUC Staff ____ (RLB-3), Schedule 1, line 68.

5
6 Q. How have you calculated the income tax allowance in the
7 benchmark model?

8
9 A. The income tax allowance results from the gross-up of the
10 carriers' equity return, the equity portion of AFUDC, and the
11 current collection of funds for DR&R.

12
13 For the years 1977-1978, the gross-up factor is 1.1226, based
14 on a marginal federal income tax rate of 48 percent and a
15 state income tax rate of 9.4 percent. For 1981, the gross-up
16 factor is 1.0807, based on a marginal federal income tax rate
17 of 46 percent and a state income tax rate of 11 percent.

18
19 For all other years, the gross-up factor is 1.0440, based on a
20 marginal federal income tax rate of 46 percent and a state
21 income tax rate of 9.4 percent. In order to maintain
22 consistency with TSM-6 on the issue of tax rates, I have not
23 attempted to incorporate the newly enacted federal tax code
24 revisions into the benchmark model.

25
26 Q. Please explain the derivation of the DR&R component of your
27 benchmark methodology.

28 ///

1 A. I have used the Staff's litigation position methodology and
2 numbers for the years 1978-2011. That position was based on
3 the cost estimate of DR&R made by the Army Corps of Engineers,
4 a projected 7% inflation rate, normalization of the tax
5 deduction associated with the DR&R expense, a return on
6 accumulated DR&R funds resulting from their actual investment
7 in government securities, and, perhaps most importantly, a
8 periodic review of the aforementioned and other factors to
9 ensure that the DR&R allowance remained cost-based at all
10 times.

11
12 The Army Corps estimate of \$602 million in 1977\$ was sponsored
13 by the FERC staff and adopted by the State. The carriers'
14 estimate for DR&R was \$1,049 billion in 1977\$.

15
16 The carriers argued that the tax-timing difference related to
17 DR&R should be construed as a permanent difference and
18 therefore should not be used to offset rates. All other
19 parties argued that the timing difference should be treated as
20 a temporary difference to be normalized so that shippers would
21 share the benefit of the tax savings associated with the DR&R
22 expense.

23
24 As to the return imputed to the accumulated DR&R funds, the
25 carriers argued that the earning rate for an internal fund
26 should be an after-tax risk-free rate. The State held that an
27 internal fund should be credited with income at a rate equal
28 to the carriers' parents' return on equity. APUC staff argued

1 that the carriers' parents' cost of capital was the
2 appropriate earnings rate for an internal fund, but held as
3 its preferred position that the DR&R funds should be
4 administered by an independent trustee and should be credited
5 with the income actually earned on a portfolio of government
6 securities.

7
8 The calculation of DR&R was a Phase II issue and thus neither
9 the APC Phase I decision nor Judge Kane's decision gives any
10 guidance as to the probable result of litigation on this
11 point. I still believe that the Staff's position results in
12 just and reasonable tariffs and thus have used it.

13
14 Q. What is the basis for your throughput numbers in your
15 benchmark methodology?

16
17 A. For all years 1978-2011, I have used the same throughput
18 numbers as are found in TSM-6.

19
20 Q. What are the tariffs and revenues that result from your
21 benchmark methodology?

22
23 A. Exhibit APUC Staff ____ (RLB-3), Schedule 1, sets forth the
24 calculation of tariffs and revenues generated as a result of
25 the benchmark methodology for the years 1978-2011.

26
27 In Table 1, below, I have compared the tariffs that result
28 from BTM in 1978-1981 with the weighted average tariffs that

1 the Staff recommended would be just and reasonable for those
2 years. It is important to note, however, that the Staff
3 tariffs do not include any rate base deduction for any Phase
4 II issues, and thus the actual Staff litigation position as to
5 a level of just and reasonable tariffs would now be
6 substantially lower. Nonetheless, the tariffs that result
7 from the benchmark methodology are nearly as high as the
8 Staff's unadjusted tariffs.

9
10 In addition, I have compared the BTM tariffs with the 1978 and
11 1979 weighted average just and reasonable tariffs that result
12 from Judge Kane's Initial Decision. Like the Staff's
13 litigation tariffs, they do not include any deduction from
14 rate base for any Phase II issues, but the benchmark tariffs
15 are still higher than those tariffs. Thus, given the fact
16 that Judge Kane used a DOC methodology, it is likely that
17 tariffs resulting from his methodology would be at least as
18 low as the BTM tariffs through 2011, even though they contain
19 no Phase II adjustments.

20
21 TABLE 1

22

<u>YEAR</u>	<u>BTM</u>	<u>STAFF</u>	<u>JUDGE KANE</u>
23 1978	\$6.45	\$6.52	\$5.67
24 1979	\$4.99	\$5.19	\$4.93
25 1980	\$4.20	\$4.40	
26 1981	\$4.12	\$4.33	

27
28

1 The tariffs and revenues resulting from the benchmark
2 methodology are certainly on the high side, and may even be so
3 high as to be outside a zone of reasonableness. Consequently,
4 it is important to bear in mind that for the remainder of my
5 testimony I will be comparing TSM tariffs and revenues to
6 tariffs and revenues that may themselves be so high as to be
7 outside a zone of reasonableness.
8
9

10 VI. COMPARISON OF TSM AND BTM 11

12 Q. Please compare the results produced using TSM and those
13 produced using the benchmark model you have described.
14

15 A. Exhibit APUC Staff ____ (RLB-4) is a side-by-side comparison of
16 the revenues, real tariffs, and rates of return produced under
17 TSM and the benchmark model. Schedule 1 is a tabulation of
18 these data. Schedule 2 is a bar chart which shows the revenue
19 streams. Schedule 3 shows the cumulative present value of
20 revenue requirements for TSM and BTM from 1978-2011. Schedule
21 4 is a bar chart which shows the real tariffs. Schedule 5 is
22 a bar chart which shows the rates of return.
23

24 Table 2, below, displays the present value of revenue
25 requirements (PVRR) for the two methodologies.
26
27
28

///

TABLE 2

PRESENT VALUE OF REVENUE REQUIREMENTS
(1,000's of 1987 \$)

<u>PERIOD</u>	<u>TSM</u>	<u>BTM</u>	<u>DIFFERENCE</u>
1978-1986	\$40,986,202	\$26,582,109	\$14,404,093
1987-2011	\$25,262,692	\$19,611,116	\$ 5,651,576
1978-2011	\$66,248,894	\$46,193,225	\$20,055,669

The differences in results between BTM and TSM are substantial. As can be seen, the present value difference between the revenues produced by BTM and TSM is over \$20 billion. These excess revenues will be paid by the shippers in the form of tariffs. In light of the fact that the present value of the BTM tariffs is \$46 billion, the \$20 billion excess is a huge percentage revenue overrun.

As shown in Schedule 3, the tariffs and revenues resulting from TSM are so high that the PVRR for 1978-1986 is almost as great as the PVRR that results from a more traditional regulatory approach for the entire life of the settlement. Thus, under TSM, the carriers have already collected almost as much money as BTM calculates that they should collect over the entire life of the settlement. In fact, by the end of 1988,

1 TSM revenues will be greater than the total BTM revenues.
2 Schedules 1 and 2 show that the revenues produced by TSM are
3 higher for most years than those produced by BTM. In 1978 BTM
4 shows a revenue requirement greater than TSM, and in the
5 period 1996 to 2011 the revenue requirements are very similar,
6 with BTM's being marginally higher in 1997-2004 and 2009-
7 2011. TSM produces revenues that are substantially higher
8 than BTM revenues for the years 1979-1995. In fact, they are
9 as much as twice as great in certain years.

10
11 Q. How is your analysis affected by the choice of discount rate?

12
13 A. As I stated earlier in my testimony, given the magnitude of
14 the numbers involved, the choice of discount rate in computing
15 the present value of the revenue differences makes little
16 difference in the results. Table 3, below, compares the total
17 present value difference between BTM and TSM revenues using
18 0%, 5%, and 10% real discount rates. As can be seen, the
19 differences between TSM and BTM are large, regardless of the
20 discount factor.

21 ///

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TABLE 3

<u>Discount Factor</u>	<u>Present Value Difference</u>
	(1,000's of 1987 \$)
0% real	\$20,055,669
5% real	\$19,344,233
10% real	\$18,757,009

Q. What impact do these revenue differences have on the State of Alaska?

A. As a result of the huge differences in revenues, the State of Alaska stands to lose substantial revenues as a result of TSM. The wellhead price for Alaska North Slope ("ANS") crude oil is calculated as the oil's price in the lower-48 states less transportation costs, which include TAPS tariffs. This imputed "net-back" price forms the basis for computing taxes and royalties on ANS crude oil. For a given oil price in the lower-48 market, higher TAPS tariffs result in lower ANS wellhead prices, and therefore lost revenue to the State of Alaska.

Because of the "net-back" pricing mechanism used to compute State of Alaska severance taxes and royalties, the State stands to lose income equal to about 25% of the carriers' excess revenues, or about \$5 billion in today's dollars. If

1 the State had that \$5 billion today and invested it in the
2 Alaska Permanent Fund, it would nearly double the size of the
3 Fund. Furthermore, if that \$5 billion earned a real return of
4 7% in 1987, which is the Permanent Fund return for 1987
5 projected by the Alaska Department of Revenue in June 1986,
6 the earnings on the \$5 billion for 1987 alone would be \$350
7 million. This equals \$671 for every one of the approximately
8 521,000 men, women, and children in the State of Alaska.

9
10 Q. What is the difference in the tariffs that result from BTM and
11 TSM?

12
13 A. Exhibit APUC Staff __ (RLB-4), Schedules 1 and 4 show that the
14 real (1987\$) tariffs follow the same general pattern as
15 revenues. Acceptance of TSM would result in securely
16 established tariffs, but it would not result in low tariffs.

17
18 One of the purported advantages of the settlement accruing to
19 the State is the certainty of low tariffs into the next
20 century, which is intended to encourage new exploration and
21 production of ANS crude oil. However, examination of Exhibit
22 APUC Staff __ (RLB-4), Schedules 1 and 4 shows that the
23 tariffs developed under BTM and TSM are nearly identical after
24 1996. The most that may be said for acceptance of TSM,
25 therefore, is that it would create some certainty as to the
26 level of tariffs. It does not secure rates significantly
27 different than those calculated under BTM, and because BTM
28 rates are probably higher than just and reasonable rates, it

1 is possible that the true opportunity for the State to secure
2 lower rates after 1995 will have been needlessly sacrificed.
3

4 Q. Describe the returns that result from BTM and TSM.
5

6 A. Schedules 1 and 4 indicate a return on rate base under BTM
7 which varies within a relatively narrow band. Any variation
8 is due to changes in the assumed inflation rates and a
9 steadily increasing equity ratio. In marked contrast, the
10 return on rate base earned under TSM begins to grow after 1988
11 and reaches triple-digit values by 2010. As explained below,
12 this results from TSM's hyper-accelerated depreciation
13 schedule and the real \$0.35 (1983\$) per barrel margin
14 guaranteed to carriers beginning in 1989. The rapidly
15 depreciated rate base allegedly creates the need for an
16 inducement to the carriers to continue to operate TAPS. The
17 large double- and triple-digit returns on rate base are one
18 measure of that inducement.
19

20 Q. What conclusion have you reached as a result of your
21 comparison?
22

23 A. I have concluded that the results of TSM are so radically
24 different from the results obtained from a more traditional
25 regulatory approach that they are not remotely within a zone
26 of reasonableness. Thus, the tariffs and revenues that result
27 from TSM are not just and reasonable, and the Offer of
28 Settlement is not in the public interest.

1 The size of the TSM tariffs as compared to the BTM tariffs is
2 striking, and the excess revenues that the carriers will be
3 earning is enormous. Not only are the tariffs too high in the
4 early years, which even the State appears to admit, but they
5 continue to be too high well into the 1990's. Thus, the
6 State's purpose of low tariffs in the 1990's does not appear
7 to have been achieved. These differences result even though
8 BTM itself may result in tariffs and revenues that are so high
9 as to be outside a zone of reasonableness.

10
11 As the carriers and Mr. Hildahl acknowledge in their brief and
12 testimony, respectively, if the results from TSM are radically
13 different from the results obtained from a more traditional
14 regulatory approach, then it could well be a patently
15 unreasonable methodology, and the Commission would have to
16 deem it inconsistent with the public interest. I believe that
17 my analysis shows that TSM results in such radically different
18 tariffs, revenues, and returns, that to accept the Offer of
19 Settlement would not be in the public interest. Thus, the
20 Offer of Settlement should be rejected because it results in
21 tariffs, revenues, and returns that are not just and
22 reasonable, and because it is inconsistent with the public
23 interest.

24
25 Q. In Exhibit ____ (RNH-2), Mr. Hildahl also presented a
26 comparison of present value revenue requirements between TSM
27 and a depreciated original cost methodology. His results are
28 considerably different than yours. Have you analyzed his

1 methodology and results?

2
3 A. I have not analyzed them to any great extent, primarily
4 because he has not presented sufficient supporting material to
5 analyze either his methodology or results in detail. I do
6 have a few general comments, however.

7
8 First, in tabulating his TSM revenues, for the years 1978-
9 1981, Mr. Hildahl used the revenues found in Appendix 5 of the
10 Explanatory Statement rather than the revenues actually
11 collected under the Offer of Settlement, i.e., revenues based
12 on the carriers' actual filed tariffs. For the years 1985-
13 1988, Mr. Hildahl used the same TSM revenues as I do, that is,
14 those found in TSM-6. For the years 1989-2011, Mr. Hildahl
15 used revenue numbers different than those found in TSM-6. I
16 have no idea from where those numbers are derived.

17
18 Second, although there is insufficient supporting material to
19 fully analyze his depreciated original cost methodology, the
20 information presented shows that there are substantial
21 problems with it. For example, he used the parent company
22 capital structures as of December 31, 1985 as the appropriate
23 capital structure. However, the exhibit does not indicate
24 what that capital structure is, nor is there any explanation
25 as to why it is a reasonable capital structure over the entire
26 life of TAPS. In addition, Mr. Hildahl used a 17% nominal
27 cost of equity, apparently because that is what the Commission
28 decided would be appropriate for Cook Inlet Pipeline Company

1 in January 1985. I am totally at a loss as to why Mr. Hildahl
2 believes that that is an appropriate cost of equity for TAPS,
3 especially for its entire life. Even if the assumption is
4 made that a 17% nominal return is reasonable for TAPS in 1985,
5 this Commission in its *Cook Inlet* decision specifically stated
6 the limitation of its finding regarding the 17% return on
7 equity:

8
9 It should be noted that this return is based
10 on 1981 and 1982 data and on a record which is
11 also not entirely satisfactory. However, CIPL
12 has two pending tariff filings which relate to
13 periods after 1982 which will be adjudicated
14 in the near future. It is expected that in
15 these proceedings the carrier will present
16 current and complete data supporting its
17 requested return on equity. In short, CIPL is
18 placed on notice that the 17 percent allowed
19 herein will not have any precedential value in
20 future determinations of the appropriate cost
21 of equity capital.

22 P-82-1 (12), p. 27, n. 1.

23 The 17% return included an inflation provision, but Mr.
24 Hildahl made no attempt to adjust his return on equity for
25 changes in inflation. In sum, I believe that his use of 17%
26 return on equity alone makes his analysis extremely suspect.

27 Third, it is impossible to determine from his exhibit how
28 DR&R is treated under his depreciated original cost
methodology. I don't know whether he took the DR&R amounts
directly from TSM-6, which are based on a hyper-accelerated
depreciation schedule, or whether he changed them to match
his straight-line depreciation.

1 Fourth, although his discount rate of 15% is quite a bit
2 different than mine, as I said earlier in my testimony, the
3 choice of discount rates does not make a great deal of
4 difference in this analysis. I might add, however, that I
5 don't agree with Mr. Hildahl's justifications for his choice
6 of 15%. I don't agree that 15% is a commonly used discount
7 rate, nor do I agree that because it is equal to the cost of
8 capital in *Cook Inlet*, it is appropriate to use as the
9 discount rate in an analysis of TAPS. One has nothing to do
10 with the other.

11
12 Q. Have you attempted to reconcile the disparate results of TSM
13 and those of BTM, and to explain why TSM results in such high
14 tariffs and revenues?

15
16 A. Yes. In order to explain the wide variations in revenues and
17 tariffs produced by TSM and BTM, I have compared each
18 method's treatment of the essential components of cost of
19 service. Those include the following:

20
21 I. Rate Base

- 22 A. Carrier Property
- 23 B. Phase II Adjustments
- 24 C. AFUDC
- 25 D. Accumulated Depreciation
- 26 E. ADIT
- 27 F. Working Capital

28 ///

1 II. Return

2 A. Capital Structure

3 B. Real Return

4 C. Inflation

5 III. Expenses

6 A. Operating and Maintenance Expense

7 B. Depreciation and Amortization

8 C. DR&R

9 D. Income Taxes

10 IV. Throughput

11
12 Q. Please compare the rate bases of BTM and TSM.

13
14 A. TSM is a variant of a trended original cost rate base
15 ("TOC"), whereas BTM is a depreciated original cost
16 methodology ("DOC").

17
18 All the parties seem to agree that at least a somewhat front-
19 loaded tariff is desirable on TAPS, to allow the carriers to
20 more quickly recover their investment, and to have low
21 tariffs in the out-years to enhance further exploration.
22 This effect is achieved under a DOC methodology, but not
23 under a TOC methodology.

24
25 Under TOC, the inflation component of return is deferred each
26 year and added to the rate base. Consequently, other things
27 being equal, tariffs in the early years under a TOC
28 methodology will be lower than those under a DOC methodology.

1 Because TSM is based on a TOC methodology, in order to
2 achieve the settling parties' desire for front-loaded
3 tariffs, TSM had to include the hyper-accelerated
4 depreciation schedule to counterbalance the undesirable
5 effects of TOC. Thus, the tariff stream resulting from TSM
6 is more similar to a DOC tariff stream than it is to a TOC
7 tariff stream.

8
9 In the FERC Williams II decision, which sets forth a TOC-type
10 methodology, FERC specifically stated that TOC was a
11 necessary methodology for pipelines in the lower-48 states in
12 a competitive setting. However, TAPS clearly doesn't fit
13 that description, and there is no evidence that FERC intended
14 to apply Williams II to TAPS. Therefore, given the record
15 evidence and the precedents of *Cook Inlet* and the Phase I
16 TAPS decisions, I believe that a DOC methodology is the most
17 appropriate methodology with which to analyze the results
18 produced by TSM. Apparently, Mr. Hildahl agrees because that
19 is what he used in his analysis of TSM.

20
21 Both Mr. Hildahl and I used a DOC methodology to determine if
22 the results produced by the Offer of Settlement are within a
23 zone of reasonableness. I used a DOC rate base in BTM
24 because that was what was used by this Commission in *Cook*
25 *Inlet*, and by the APC and Judge Kane in their TAPS Phase I
26 decisions. There is no evidence in the record to support a
27 TOC rate base.
28

1 Q. What differences have you observed in the specification of
2 carrier property accounts under TSM and BTM?

3
4 A. In 1978, the unadjusted base carrier property balance under
5 BTM is \$7.939 billion. For TSM, the comparable figure is
6 \$7.805 billion. Thus, BTM begins with a somewhat higher
7 carrier property balance. All other things being equal, this
8 would result in higher tariffs. Thus, the differences in
9 revenues for BTM and TSM cannot be considered a function of
10 the unadjusted carrier property balances.

11
12 Q. What are the differences in the treatment of the Phase II
13 issues of cost of construction and the haul road?

14
15 A. As I explained above, the Staff and State argued that more
16 than \$1.6 billion should be deducted from carrier property as
17 a result of imprudent construction expenditures and as a
18 result of the usage of the haul road by the North Slope
19 producers. The carriers argued that no deduction was
20 warranted. I have deducted half of the contested amounts, or
21 \$843.5 million, from carrier property in formulating BTM in
22 recognition of these Phase II issues.

23
24 TSM, on the other hand, includes a \$450 million deduction
25 from carrier property in 1976. The amount of this deduction
26 is amortized over the seven-year period from 1978 through
27 1984. (It is amortized on a throughput basis rather than a
28 unit-of-time basis.) Amortizing the amount of the deduction

1 results in the carriers being denied a return on the
2 unamortized portion of the \$450 million deduction but allows
3 them to fully recover the \$450 million itself.
4

5 In order to compare the two deductions, I have calculated the
6 permanent deduction from carrier property which would be
7 economically equivalent to the treatment specified by TSM,
8 namely the amortization of a \$450 million deduction. This
9 allows a direct comparison with the amount that was deducted
10 in BTM.
11

12 This calculation is presented in Exhibit APUC Staff ____ (RLB-
13 5). As can be seen, the TSM treatment of the deduction is
14 equivalent to a \$171.71 million permanent deduction. Thus,
15 while BTM includes a \$843.5 million deduction, TSM deducts
16 only \$171.71 million. This \$171.71 million deduction
17 compares to the zero deduction from carrier property
18 previously advocated by the carriers and the \$1.687 billion
19 deduction advocated by the Staff and the State.
20

21 Q. Have you calculated the impact of the differences in carrier
22 property deductions on tariffs and revenues?
23

24 A. Yes, I have. Exhibit APUC Staff ____ (RLB-6) is BTM with no
25 deduction from carrier property to account for Phase II
26 issues. In all other respects it is just like BTM. As is
27 shown in that exhibit, the resulting tariffs and revenues are
28 significantly higher under this variant of BTM. For example,

1 in 1987, the BTM tariff is \$2.39 and the BTM with no
2 deduction is \$2.57. It is interesting to note that even
3 though there is a significant change in the tariffs between
4 BTM and BTM with no rate base deduction, it accounts for a
5 relatively small amount of the difference between BTM and TSM
6 tariffs and revenues. For example, the 1987 tariff under TSM
7 is \$4.55, \$1.98 more than that under BTM with no deduction.
8 Inasmuch as it is the Staff's position that no deduction from
9 carrier property for Phase II issues results in unjust and
10 unreasonable rates, it is evident that TSM results in rates
11 that are too high.

12
13 Q. What are the differences between TSM and BTM with regard to
14 the calculation of AFUDC?

15
16 A. AFUDC as computed for TSM is less than that computed for
17 BTM. Under TSM the 1978 balance of AFUDC is \$1.247 billion,
18 whereas under BTM the 1978 balance of AFUDC is \$1.564
19 billion. All other things being equal, the greater amount of
20 AFUDC in BTM would result in higher revenues and tariffs than
21 those derived from TSM. Therefore, I conclude that the
22 disparity in revenues and tariffs produced by TSM and BTM is
23 not a function of the AFUDC calculations.

24
25 Q. What are the differences between TSM and BTM with regard to
26 the calculation of depreciation?

1 A. The differences between TSM and BTM with regard to
2 depreciation are central to the different results produced by
3 these methodologies. BTM uses a traditional straight-line,
4 unit-of-time depreciation schedule, based on the *Cook Inlet*
5 decision and the parties' TAPS depreciation stipulation.

6
7 On the other hand, perhaps the most distinguishing feature of
8 TSM is its hyper-accelerated depreciation schedule. The
9 radical nature of the TSM depreciation schedule is obvious
10 when it is compared to familiar standards for book and tax
11 depreciation.

12
13 Book depreciation for a pipeline enterprise would ordinarily
14 be computed on either a straight-line basis or a unit-of-
15 throughput basis. Respectively, these methods result in
16 invested capital being recovered ratably over time during the
17 pipeline's projected life, or ratably according to the
18 pipeline's projected throughput profile. Both methods
19 attempt to correctly match costs and benefits to the
20 shippers.

21
22 Tax policy over the past several decades has led to the
23 introduction of liberalized depreciation methodologies (e.g.,
24 double declining balance (DDB) and sum-of-the-years digits
25 (SYD)). In general these methods have not found widespread
26 use for book purposes, but are rather used to create tax
27 subsidies for capital-intensive industries.
28

1 Exhibit APUC Staff ____ (RLB-7) is a comparison of several
2 depreciation methods that might be applied to TAPS: (1)
3 straight-line, unit-of-time; (2) unit-of-throughput; (3)
4 DDB/SYD; and (4) TSM's depreciation methodology. It may be
5 observed that TSM's depreciation methodology represents a
6 radical departure from those commonly used for book purposes,
7 and even exceeds the liberality of methods used for tax
8 purposes.

9
10 It might be expected that TSM's hyper-accelerated
11 depreciation leads to economic distortion in the resulting
12 tariff stream. Indeed, there is ample evidence from TSM and
13 explanatory statements by the settling parties that the
14 settling parties recognized that distortion.

15
16 The cascading effects of the depreciation schedule supposedly
17 include the diminution of economic incentives for the
18 carriers to operate TAPS responsibly and to honor their legal
19 obligations. As a result, TSM grew to contain provisions to
20 counterbalance the deleterious effects of its hyper-
21 accelerated depreciation rates. According to Dr. Horst, the
22 State acceded to the carriers' unanimous opposition "to a
23 methodology under which their profit element disappeared as
24 their original investment was recovered through
25 depreciation." [Horst, p. 20] In its Explanatory Statement,
26 the State asserted that:

27
28 ///

1 . . . by 1990 the depreciated cost arising
2 from pre-operational investments in TAPS would
3 be approximately one-fifth of its initial 1977
4 historic cost, even though about two-thirds of
5 the system's economic life still remain.

6 In response to concerns that an accelerated
7 depreciation schedule would result in a
8 smaller rate base and little incentive for the
9 owners to continue to provide reliable
10 pipeline capacity and that the carriers would
11 bear the full legal responsibility for any
12 environmental damage that resulted from, for
13 example, earthquake or sabotage, the parties
14 agreed that after 1988 a per barrel allowance
15 would be allowed as a substitute for the
16 return on the 'original' rate base remaining
17 at the end of 1988. [footnote omitted]

18 Explanatory Statement at pp. 31-32.

19 Thus, after 1988, TSM provides the carriers a real after-tax
20 return of \$0.35 (1983\$) per barrel.

21 This, in turn, creates another disincentive to efficient
22 operation of TAPS:

23 The parties recognized, however, that while
24 the per barrel allowance could provide a
25 return over that otherwise allowed, and
26 thereby promote the maintenance of reliable
27 capacity sufficient to meet demand, use of the
28 allowance did not necessarily ensure that the
TAPS Carriers would employ the most efficient
means of providing pipeline capacity. By
itself, the allowance may discourage the TAPS
Carriers from making capital investments that
would enhance pipeline capacity or reduce
costs, even when those are the least costly
means of augmenting or preserving capacity.
The reason is that capacity-enhancing
additives, such as drag reduction agents, are
considered operating expenses under the TSM
and therefore can be recovered immediately and
fully through the tariffs charged in a given

1 year, whereas a capital addition, such as an
2 additional pump station, does not earn the
3 real component of the rate of return after
4 1988.

5 To rectify this possible disincentive, the
6 parties agreed to divide depreciable plant in
7 service into two subcategories: 'original'
8 and 'new.' New investments continue to earn
9 the allowed real rate of return after 1988.
Original investments and subsequent caretaker-
type investments (i.e., those designed to
perpetuate, rather than expand or improve
upon, the existing system) do not earn a real
rate of return after 1988; the per barrel
allowance provides an incentive to make these
investments.

10 *Ibid.*, pp. 32-33.

11
12 The economic distortion fostered by an unrealistic
13 depreciation schedule leads to tariffs that do not correctly
14 match costs and benefits to the shippers, and to non-cost-
15 based and awkward ratemaking devices that produce excessive
16 rates that are clearly unreasonable.

17
18 Q. You stated earlier that a unit-of-throughput depreciation
19 schedule can also be used to compute book depreciation on
20 pipelines. Have you calculated BTM based on a unit-of-
21 throughput depreciation schedule?

22
23 A. Yes, I have. As can be seen from Exhibit APUC Staff ____
24 (RLB-7), a unit-of-throughput depreciation schedule on TAPS
25 will be more accelerated than straight-line depreciation.
26 Given the settling parties' goal of front-loading the
27 tariffs, I wanted to see what tariffs and revenues would
28 result from an accelerated depreciation schedule that would

1 still rationally match costs and benefits to shippers.

2
3 The results of modifying BTM so as to use a unit-of-
4 throughput depreciation schedule are shown in Exhibit APUC
5 Staff ____ (RLB-8). As can be seen, the resulting tariffs
6 are higher than BTM in 1980-1990 as a result of the front-
7 loading, and they are lower in all the rest of the years.

8
9 When compared with TSM, unit-of-throughput BTM produces some
10 rather startling results. The BTM tariffs are lower than the
11 TSM tariffs in every year of the settlement. The present
12 value revenue difference between the two is \$21.0 billion,
13 even greater than the \$20.1 billion difference between
14 standard BTM and TSM. In addition, the tariffs in the later
15 year are substantially lower than the TSM tariffs, thus
16 further enhancing exploration incentives, as desired by the
17 settling parties.

18
19 In short, BTM depreciated on a unit-of-throughput basis
20 clearly shows that the settling parties' objectives of a more
21 front-loaded tariff stream and low tariffs in the later years
22 can be achieved with a rationally accelerated depreciation
23 schedule.

24
25 In my opinion, both a unit-of-throughput depreciation
26 schedule and a straight-line, unit-of-time depreciation
27 schedule will rationally match costs and benefits to shippers
28 on TAPS. As I stated earlier, I chose straight-line, unit-

1 of-time for BTM because of this Commission's *Cook Inlet*
2 decision, the Phase I decisions, and the depreciation
3 stipulation of the parties. As can be seen from the above
4 analysis, however, the choice of another rationally based
5 depreciation schedule does not affect my analysis or
6 conclusions regarding the level of tariffs and revenues
7 produced by TSM. Again, when compared with a more
8 traditional, regulatory approach, TSM produces radically
9 different results.

10
11 Q. How do TSM and BTM differ with respect to ADIT?

12
13 A. As discussed above, there are essentially no differences in
14 the ADIT calculations used in TSM and BTM. However, the use
15 of widely disparate book depreciation rates and somewhat
16 different carrier property balances creates very different
17 ADIT balances for BTM as compared to TSM.

18
19 In the early years the spread between book and tax
20 depreciation rates is greater under BTM than under TSM. This
21 gives rise to greater ADIT balances under BTM. All other
22 things being equal, since ADIT is deducted from rate base in
23 computing a return allowance, the greater ADIT balances in
24 BTM should result in a lower return allowance, and therefore
25 lower rates.

26
27 Q. Do the higher ADIT balances produced in BTM explain the
28 disparity in revenues and tariffs observed in BTM and TSM?

1 A. Only to a limited degree. To measure the effect of the
2 differences in revenues and tariffs produced by the different
3 ADIT balances, I have modified BTM so as to entirely
4 eliminate the ADIT deduction from the BTM rate base. As
5 discussed above, this is equivalent to the carriers' extreme
6 position in Phase I of these proceedings. However, even when
7 no deduction from rate base for ADIT is included in the
8 calculation of BTM, the revenues and tariffs, although higher
9 than those in BTM, do not rise to the level of those produced
10 by TSM. Exhibit APUC Staff ____ (RLB-9) displays the results
11 of those calculations. For example, in 1987 the BTM tariff
12 is \$2.39 and BTM with no ADIT deduction tariff is \$2.88. By
13 comparison, the 1987 tariff under TSM is \$4.55, still \$1.67
14 higher than the modified BTM.

15
16 Q. What, if any, differences are there in BTM and TSM with
17 respect to working capital?

18
19 A. There are no differences. BTM uses the same working capital
20 amounts as used in TSM.

21
22 Q. Are there differences between the return components that lead
23 to a portion of the differences between tariffs and revenues
24 resulting from BTM as opposed to TSM?

25
26 A. Yes, there are. There are differences in both the capital
27 structure and the rates of return.
28

1 Q. Explain the differences between the two methodologies as
2 regards capital structure.

3
4 A. As I explained above, I have included a beginning
5 hypothetical capital structure in BTM of 50% debt and 50%
6 equity. In making that decision, I was guided by the
7 following: the *Cook Inlet* decision; the APC Phase I decision
8 to use the parent company capital structures -- 46.69% debt
9 and 53.31% equity; the Staff's litigation position of 50%
10 debt and 50% equity; and the various litigation positions of
11 the State -- 89% debt and 11% equity, or, alternatively, 75%
12 debt and 25% equity, ASRC in the FERC proceedings -- 66.66%
13 debt and 33.33% equity, and the carriers -- ranging from 46%
14 debt and 54% equity to 0% debt and 100% equity.

15
16 For the years after 1982, I increased the equity component of
17 capital structure until 2011, when the capital structure is
18 0% debt and 100% equity. This comports with the methodology
19 adopted by the Commission in its *Cook Inlet* decision. In
20 that decision, the Commission calculated the carrier's
21 capital structure as if the debt were retired prior to
22 shutdown on a straight-line basis.

23
24 The use of a 100% equity capital structure for TAPS in 2011
25 may well overstate the equity component, since there is no
26 certainty that TAPS will be shut down at that time. It may
27 well have a service life beyond that time.
28

1 TSM, on the other hand, uses a capital structure of 0% debt
2 and 100% equity for all years, which is the carriers' extreme
3 litigation position.
4

5 Q. How do these different capital structures affect the
6 calculation of tariffs?
7

8 A. The capital structure primarily affects the calculation of
9 income taxes. Because interest payments are deductible for
10 income tax purposes, income taxes are calculated only on the
11 equity portion of the return rather than on the entire
12 return. Thus, the greater the equity portion of the return,
13 the greater will be the income tax portion of the revenue
14 requirement. This in turn leads to a higher overall revenue
15 requirement and higher tariffs.
16

17 In order to measure the impact of a 100% equity capital
18 structure on TSM tariffs and revenues, I have calculated what
19 TSM tariffs and revenues would result if the capital
20 structure which I used in BTM were used in TSM. Exhibit APUC
21 Staff ____ (RLB-10) shows the results of that calculation. As
22 can be seen from that exhibit, changing the capital structure
23 to a reasonable level of equity leads to significantly lower
24 TSM tariffs and revenues. For example, in 1987, the tariff
25 goes from \$4.55 in TSM to \$4.32. However, that tariff is
26 still far greater than the 1987 tariff of \$2.39 found in
27 BTM. Thus, even using a reasonable capital structure, TSM
28 still results in extremely high tariffs.

1 Q. Explain the differences in rates of return between the two
2 methodologies.

3
4 A. For the years 1978-1981, the rate of return in TSM is unknown
5 because the carriers collect their filed tariffs. For the
6 years 1982-1988, TSM uses a 6.4% real rate of return on a
7 trended rate base. The inflation portion of the return is
8 deferred by adding it into the rate base. BTM uses a 12%
9 nominal return for the years 1978-1981 and then for the years
10 1982-1988 uses a 2% real return on debt and an 8% real return
11 on equity inflated by the same inflation factors used in
12 TSM. Thus, the inflation factors used in both methodologies
13 are identical and will not cause any differences between the
14 tariffs and revenues.

15
16 Although the 6.4% real return found in TSM may be too high in
17 light of the Phase I decisions by the APC and Judge Kane, and
18 the Staff's litigation position, the differences between the
19 2% return on debt and the 8% return on equity, and the 6.4%
20 overall return explain only a small portion of the disparity
21 in tariffs and revenues between TSM and BTM.

22
23 Q. What return methodologies are used for the years 1989-2011?

24
25 A. The BTM return is a nominal return based on a 2% real rate of
26 return on debt, an 8% real rate of return on equity,
27 inflation rates equal to those projected in TSM-6, and the
28 changing capital structure discussed above.

1 Beginning in 1989, the methodology used in TSM to calculate
2 the return component changes radically. For old rate base,
3 which is the vast majority of the total rate base, the return
4 component is based on \$0.35 per barrel in 1983 dollars. This
5 provision of TSM is not cost-based. Thus, whereas rates of
6 return are normally cost-based; i.e., are a percentage return
7 on remaining rate base; the \$0.35 provision has nothing to do
8 with costs. It requires shippers to pay the carriers a flat
9 \$0.35 per barrel in 1983 dollars for every barrel shipped
10 regardless of the carriers' required return on net
11 investment.

12
13 Q. Is this a normal practice?

14
15 A. No, it is not. The hallmark of just and reasonable rates is
16 that they be cost-based. The \$0.35 provision of TSM violates
17 this standard. Thus, the Commission must be particularly
18 vigilant that this component of TSM is justified and produces
19 just and reasonable results.

20
21 Q. Why does the TSM switch from a cost-based rate of return to a
22 return component that has nothing to do with carrier net
23 investment?

24
25 A. As I discussed above, according to the testimony of Dr. Horst
26 and the Explanatory Statement of the State and the Department
27 of Justice, the \$0.35 provision was apparently included due
28 to the carriers' opposition to a cost-based methodology under

1 which their profit element disappeared as their original
2 investment was recovered through depreciation.

3
4 Cost-based regulation requires that the carriers not be
5 allowed to earn a return on recovered investment. In other
6 words, the return component of a cost-based tariff is based
7 on the depreciated rate base, not the portion of the rate
8 base already recovered through depreciation. The \$0.35
9 provision attempts to circumvent this basic tenet of
10 regulation.

11
12 The settling parties should not be allowed to introduce a
13 non-cost-based element into TSM in order to compensate for
14 the distorting influence which the hyper-accelerated
15 depreciation schedule has on the orderly recovery of invested
16 capital.

17
18 Q. What is the impact of the \$0.35 provision on tariffs and
19 revenues?

20
21 A. The potential impact of this provision on future shippers and
22 carriers is substantial. It allows the carriers to earn huge
23 and unwarranted rates of return and forces the tariffs that
24 the future shippers must pay to a much higher level than
25 would result from a reasonable cost-based methodology.

26
27 As shown in Exhibit APUC Staff ____ (RLB-4), Schedules 1 and
28 5, given the throughput profile assumed in TSM-6, as a result

1 of the \$0.35 provision, the carriers will be earning returns
2 in the later years of the settlement far in excess of any
3 return advocated in this proceeding by any party, including
4 the carriers. Thus, there is no evidence in the record to
5 support these returns. For example, by the year 2000, the
6 carriers will be earning a real return of 44% on their net
7 investment. This rate of return continues to increase until,
8 in the year 2011, the carriers will be earning a real return
9 of 497% on their net investment.

10
11 Shippers will be forced to pay tariffs based on those high
12 returns, rather than tariffs calculated from a cost-based
13 methodology. In the later years of TSM, when the tariffs are
14 supposed to be low to induce further oil exploration, the
15 tariffs will be substantially higher than they would be under
16 TSM with any conceivable cost-based rate of return. The
17 \$0.35 provision apparently defeats the purpose of the State's
18 primary settlement goal.

19
20 Q. What methodology is used in TSM to calculate the return
21 component for the so-called "new rate base"?

22
23 A. The return on new rate base is based on a 6.4% real return on
24 the undepreciated new rate base. However, because of the
25 \$0.35 provision for each barrel of throughput, the carriers
26 will be able to earn a "double" return on any new investment
27 which creates additional throughput before 2011. Not only
28 will they earn a 6.4% real return on the investment but will

1 also earn a return for each additional barrel of oil shipped
2 as a result of the investment.

3
4 I have prepared Exhibit APUC Staff ____ (RLB-11) to provide an
5 example of this potential "double" return.

6
7 As can be seen from that exhibit, I have assumed that a
8 \$100,000,000 addition is made to TAPS in 1995 in order to
9 increase capacity. That addition increases throughput by 25
10 million barrels a year, beginning in 1996. Although TSM
11 states that the return on New Rate Base will be 6.4%, because
12 of the \$0.35 provision, this new investment will actually
13 earn a double return of 6.4%, as well as \$0.35 (in 1983
14 dollars) for each barrel attributable to the new investment.

15
16 Consequently, the carriers would earn a return of 23.84% in
17 1996 instead of the 6.4% supposedly allowed under TSM. (In
18 this example, I have not adjusted the \$100 million investment
19 for the inflation write-up or depreciation in 1996.)

20
21 Q. Does the \$0.35 provision affect any other elements of TSM?

22
23 A. Yes, it does. The higher amount of the return component as a
24 result of the \$0.35 provision is exacerbated by the fact that
25 a 100% equity capital structure is used. Thus, the shippers
26 will be forced to pay not only the high return component, but
27 also taxes on the entire amount.

28

1 Q. Have you prepared an exhibit to quantify the impact of the
2 non-cost-based return component on TSM tariffs and returns?

3
4 A. Yes, I have. Exhibit APUC Staff ____ (RLB-12) is TSM with a
5 6.4% return included for all years on both old and new rate
6 bases. As can be seen, the tariffs after 1988, with the
7 \$0.35 provision removed, are significantly lower than those
8 under TSM. For example, in the year 2000, the TSM tariff is
9 \$2.03, whereas TSM with a 6.4% return used throughout results
10 in a tariff of \$1.34.

11
12 Q. What will happen if the actual TAPS throughput after 1988 is
13 greater than the throughput profile shown in TSM-6?

14
15 A. If actual throughput is greater than the throughput profile
16 assumed in TSM-6, the impact of the \$0.35 provision will give
17 the carriers even greater returns and will result in an even
18 greater disparity between cost-based and TSM tariffs. In
19 order to show the impact of an increase in throughput, I have
20 prepared Exhibit APUC Staff ____ (RLB-13). In that exhibit,
21 I have assumed that throughput will be 50 million barrels
22 higher than the throughput in TSM-6 for each year beginning
23 in 1989. Under cost-based regulation, the carriers' rate of
24 return would not change with various throughput levels.
25 However, as can be seen in that exhibit, the returns earned
26 by the carriers are even greater than under TSM. For
27 example, in the year 2000, the return is 51%, compared to 44%
28 under TSM.

1
2 In addition, the exhibit demonstrates that the disparity
3 between cost-based tariffs and TSM tariffs increases as the
4 throughput increases. For example, in the year 1995, the
5 difference between BTM and TSM tariffs is \$0.35, whereas the
6 difference between BTM and TSM tariffs with a 50 million
7 barrel increase in throughput is \$0.41.
8

9 Q. How likely is it that actual TAPS throughput will be greater
10 than that in TSM-6?
11

12 A. Given the recent disclosures in the public media about the
13 proposed drilling within the Arctic National Wildlife Refuge,
14 I would guess that we will see substantially higher
15 throughputs in the later years than are included in TSM-6.
16 According to the reports I have seen, the "mean" estimate for
17 the recoverable reserves is 3.2 billion barrels of oil, and
18 the oil would probably be put on the market 10-15 years from
19 now.
20

21 Obviously, accurate throughput predictions are difficult to
22 make, and I am not criticizing TSM on the basis of its
23 throughput projections. However, it is important that the
24 Commission remember that, because the Settlement Methodology
25 is not cost-based, the carriers will earn even higher returns
26 as the throughput increases.
27

28 Q. Have you prepared an exhibit to demonstrate the cumulative

1 impact of both the non-cost-based return provision and the
2 100% equity capital structure on TSM?

3
4 A. Yes, I have. As can be seen from Exhibit APUC Staff ____
5 (RLB-14), there is a significant difference between the
6 resulting tariffs and revenues and those under TSM. For
7 example, in the year 2000, the TSM tariff is \$2.03, whereas
8 TSM with both a reasonable capital structure and a 6.4% real
9 return throughout results in a tariff of \$1.33.

10
11 Q. What are your conclusions regarding the return provisions of
12 TSM?

13
14 A. It is clear to me that each of the return provisions by
15 itself -- the 100% equity capital structure and the \$0.35
16 provision -- results in tariffs that are outside the zone of
17 reasonableness. Indeed, even the 6.4% real return may be too
18 high. Yet, as can be seen by comparing the tariffs resulting
19 from BTM with the tariffs found in Exhibit APUC Staff ____
20 (RLB-14), those provisions still only account for a
21 relatively small portion of the difference between TSM and
22 BTM tariffs. I can only conclude that TSM results in unjust
23 and unreasonable tariffs.

24
25 Q. Are operating and maintenance expenses different under TSM
26 and BTM?

27
28 A. No. BTM uses the O&M expenses projected in TSM-6 for all

1 years. Therefore, O&M expenses cannot account for any of the
2 differences in revenues and rates produced under the two
3 methodologies.

4
5 Q. What are the differences between TSM and BTM with regard to
6 the calculation of depreciation expense?

7
8 A. As explained above, there are substantial differences due to
9 the different depreciation schedules used. The TSM-6
10 depreciation schedule results in very high depreciation
11 expense numbers in the early years of TAPS.

12
13 Q. How do differences in the DR&R allowances in TSM-6 and BTM
14 affect the revenues and rates produced by those
15 methodologies?

16
17 A. Until about 1989 the DR&R allowance under TSM is greater than
18 that under BTM. Thereafter the DR&R allowance under BTM
19 becomes the greater of the two. However, the magnitude of
20 the differences is relatively small and cannot account for
21 the wide difference in revenues and rates produced by TSM and
22 BTM. For example, in 1980, when the DR&R allowance is
23 greatest under TSM, shippers pay \$127.182 million (including
24 income taxes), whereas the DR&R allowance under BTM is
25 \$77.449 million (including income taxes). The difference in
26 these two DR&R allowances pales in comparison to the
27 difference in overall revenue requirements for that year.
28

1 However, there are three important differences between the
2 two DR&R methodologies.

3
4 The first difference is that the TSM DR&R methodology is not
5 cost-based. The settling parties have developed a
6 methodology to generate the DR&R amounts in TSM-6, and have
7 then stipulated to those amounts for each year of the
8 settlement. The settling parties have agreed that those
9 stipulated numbers will not change, regardless of any changes
10 in economic conditions or the physical properties of TAPS.
11 As Dr. Horst explained in his testimony, ". . . the DR&R
12 Allowances will not be adjusted on account of changes in
13 inflation rates, bond yields, state or federal tax laws, or
14 other factors underlying the DR&R schedule." (See: Horst, p.
15 13)

16
17 Thus, if any of the assumptions used to calculate the DR&R
18 amounts begins to differ radically from reality, nothing can
19 be done under the settlement to change the assumptions, and
20 the DR&R collections will not be based on the amounts
21 actually needed for DR&R work. This has already happened as
22 a result of the new tax laws. The DR&R amounts to be paid by
23 the shippers were computed based on a federal tax rate of
24 46%. However, the carriers will now only have to pay federal
25 taxes on contributions at the rate of 40% in 1987 and 34%
26 thereafter. The carriers' DR&R allowance will therefore be
27 more than they actually need. Modifying Dr. Horst's Exhibit
28 Alaska ____ (TOH-2), I have calculated the amount of this

1 excess in Exhibit APUC Staff ____ (RLB-15), Schedule 1. As
2 can be seen, the excess profit to the carriers resulting from
3 the known and measurable change in the federal tax rate is
4 \$989 million by 2015.

5
6 Likewise, any changes in the ultimate cost of DR&R, the
7 inflation rates, the life of TAPS, or any of the other DR&R
8 components will render the DR&R amounts inaccurate. In Phase
9 II, Staff argued that because of the vagaries of computing a
10 DR&R allowance, it is essential to periodically review and
11 update the data that form the basis of the allowance.
12 Without these periodic corrections it is very likely that the
13 accumulated DR&R funds will not equal the DR&R cost. Thus,
14 to treat the DR&R issue with neglect will almost certainly
15 result in the establishment of non-cost-based rates. As I
16 discussed above in relation to the \$0.35 provision, non-cost-
17 based ratemaking breaks one of the basic tenets of
18 regulation. Consequently, the Commission should be
19 particularly vigilant that this component of TSM is justified
20 and produces just and reasonable results.

21
22 The second difference is that the DR&R monies under TSM are
23 collected on the same hyper-accelerated depreciation schedule
24 that is used to depreciate carrier property. Thus, the
25 collections do not correctly match costs and benefits to the
26 shippers.

27
28 ///

1 The third difference concerns the imputed earnings rates and
2 has a tremendous impact on the revenues earned by the
3 carriers under TSM.
4

5 Q. Please explain this third difference.
6

7 A. The amounts included each year for DR&R under both BTM and
8 TSM methodologies are based on the assumption that the funds
9 collected each year by the carriers from the shippers will
10 earn a return until the funds are completely used to do the
11 actual DR&R work. Thus, the annuity formula used to
12 calculate DR&R includes an imputed earnings rate on the
13 accumulated funds. The imputed earnings rate used to
14 calculate DR&R under BTM was about a 5.5% after-tax return.
15 The imputed earnings rate under TSM is based on Moody's Aa
16 corporate bond yield. Those rates varied from 8.9% to 14.8%
17 for the years 1978-1984. After 1984, an assumed 12% return
18 was used. As can be seen from Dr. Horst's Exhibit
19 Alaska ____ (TOH-2), those yields are treated as pre-tax
20 returns. Thus, the 12.0% yield after 1984 is really about a
21 5.87% after-tax return (based on 1986 federal tax rate).
22 This is very close to the 5.5% after-tax return imputed for
23 the BTM DR&R.
24

25 However, there is one very significant difference between the
26 two imputed earnings rates. The BTM earnings rate is based
27 on the assumption that the collected DR&R monies will be
28 placed in an external fund. That is, the fund will be under

1 the control of an independent trustee, and the money will
2 actually be invested in risk-free investments that earn the
3 return used in the BTM DR&R calculation. Thus, in the years
4 2010-2015, the carriers will have no less nor any more than
5 what they need for the DR&R work.

6
7 TSM, on the other hand, assumes that the DR&R monies
8 collected from the shippers will be placed in an internal
9 fund. That is, that the carriers and their parent companies
10 will have free use of the money until 2015. During
11 litigation, both the State and Staff argued that if DR&R
12 funds were put into an internal fund then the imputed
13 earnings rate should be much higher than a risk-free rate.
14 The State argued, in its Phase II NCC brief before FERC, that
15 the parent companies' return on equity was the proper measure
16 because, since the parent companies had the ultimate DR&R
17 obligation, they would control the money and invest it in
18 their own companies. The money earned would be net income
19 and would be available to increase retained earnings or to
20 pay increased dividends. The State also argued that if any
21 rate other than the parent companies' return on equity is
22 imputed to an internal fund then, in the years 2012-2015, the
23 carriers will have more than enough money to do the DR&R
24 work. What is left over will be extra profit to the
25 carriers, above and beyond the profit they have already
26 earned on their original TAPS investment. This would result
27 in an unwarranted windfall for the carriers, based on the
28 difference between the earnings rates of the parent companies

1 and the earnings rate imputed to the DR&R funds. [State
2 Phase II NCC FERC brief, pp. 241-249]
3

4 If the DR&R methodology is based on an internal fund, then
5 any imputed earnings rate on those funds lower than the
6 return earned on the parent companies' investments will
7 result in a windfall to the carriers and their parents. It
8 would also be contrary to a basic tenet of ratemaking that
9 companies are not allowed profits on expense items, such as
10 DR&R.
11

12 Q. Have you measured this "windfall profit" to the carriers?
13

14 A. Yes, I have. I based my calculations on Dr. Horst's Exhibit
15 Alaska ____ (TOH-2). I substituted the parent companies'
16 weighted cost of equity for the Moody's Aa bond yield for the
17 imputed interest, since that is what could actually be earned
18 on the DR&R collections. For the years 1977-1985 I used
19 Standard & Poor's Standard NYSE Stock Reports, Vol. 53 as the
20 source for the parent companies' return on equity. For the
21 years 1986-2011 I used the average return over 1983-1985 as a
22 reasonable approximation for the future earnings rate.
23 Because those are after-tax returns, I then grossed-up those
24 returns by the applicable tax gross-up factors. In addition,
25 beginning in 1987, I changed the effective tax rates to
26 reflect the new federal tax rates that will be in effect. I
27 believe that my effective tax rates, at least as to the
28 earnings on the DR&R collections, are still too high, because

1 probably only a small portion of the parent companies'
2 investments would be subject to Alaska state tax.
3 Nonetheless, to be conservative, I have applied the state tax
4 rate to the entire amount.

5
6 My calculation also subtracts out the actual money needed for
7 the DR&R work, as shown in Dr. Horst's Exhibit Alaska ____
8 (TOH-2). Thus, the bottom-line numbers shown on my exhibit
9 are the monies left to the carriers and their parents after
10 they have completely performed the DR&R work.

11
12 Exhibit APUC Staff ____ (RLB-15), Schedule 2 shows the
13 results of my calculations. As can be seen, by the end of
14 the year 2015, the carriers and their parents will have
15 earned \$46.200 billion more than will be needed for DR&R.
16 This is excess profit to them. Adjusted for inflation, that
17 difference in 1987 dollars is \$7.577 billion. This is an
18 enormous sum, especially considering that it is pure profit
19 on an expense item, on which no return at all should be
20 earned.

21
22 I think of this \$7.577 billion as hidden profit in TSM, since
23 it doesn't explicitly show up in the revenue requirement of
24 TSM, even though it actually accrues to the carriers. It is
25 important to remember that this \$7.577 billion is in addition
26 to the \$20.055 billion present value difference between TSM
27 and BTM already calculated. Thus, if TSM is accepted, the
28 carriers and their parents will earn a total present value of

1 \$27.632 billion in excess profits and the shippers will pay
2 that same amount in excess tariffs.

3
4 This Commission, in its *Cook Inlet* decision, recognized that,
5 as a result of DR&R collections, the carrier might well
6 collect more than the amount actually needed. The Commission
7 clearly recognized that the carrier should not be allowed to
8 keep those overcollections. Thus, the Commission ordered the
9 carrier to maintain detailed records of the amounts actually
10 collected from each shipper so that the Commission could
11 order disbursement of any overcollections to former shippers
12 on the system. Consequently, consistent with Commission
13 precedent, the TAPS carriers should not be allowed to keep
14 the excess \$7.577 billion nor any excess they collect as a
15 result of TSM not using a cost-based DR&R methodology.

16
17 The DR&R provision of TSM results in unjust and unreasonable
18 tariffs and revenues in that it is not cost-based and is
19 based on the TSM hyper-accelerated depreciation schedule. It
20 also permits the carriers to earn enormous excess profits;
21 i.e., \$7.577 billion in 1987 dollars, due to their unlimited
22 use of the collected funds. For these reasons, the Offer of
23 Settlement should be rejected because of the DR&R provision
24 alone.

25
26 Q. How do income taxes as computed under TSM and BTM affect the
27 revenues and rates produced by each method?
28

1 A. The inequities of TSM's capital structure and its provision
2 for a guaranteed after-tax return of \$0.35 per barrel (1983\$)
3 after 1988 are manifested through the computation of the
4 income tax allowance. The difference in computed equity
5 returns under BTM and TSM leads to concomitant disparities in
6 computed income tax allowances.

7
8 This difference is partly offset by differences in treatment
9 of income taxes for DR&R between TSM and BTM. The DR&R
10 allowance under TSM includes associated income taxes, whereas
11 the DR&R allowance under BTM is included in the base on which
12 the income tax allowance is computed. Thus, all other things
13 being equal, BTM would show a higher income tax allowance
14 than TSM.

15
16 However, due to the tremendous impact of the 100% equity
17 capital structure and the \$0.35 provision found in TSM, TSM
18 has a much higher income tax component in spite of the DR&R
19 difference. For example, as can be seen in Exhibit APUC
20 Staff ____ (RLB-2), in 1990 the income tax provision in TSM
21 is \$819.737 million compared with \$339.858 million in BTM
22 attributable to taxes on return.

23
24 Q. Are there any differences in the throughput numbers in TSM
25 and BTM?

26
27 A. No, there aren't. I have used exactly the same throughput
28 numbers in BTM as are assumed in TSM-6. Thus, none of the

1 differences in tariffs and revenues between TSM and BTM can
2 be attributed to throughput differences.

3
4 It is important to remember, however, that, because of the
5 \$0.35 provision in TSM, if the throughput projections are
6 incorrect, as they almost certainly will be, there will be
7 significant changes to the revenues received from shippers
8 compared to those that would be received as determined by a
9 cost-based return provision.

10
11 Q. Summarize your findings as to the significant differences
12 between TSM and BTM that lead to the substantial differences
13 between the tariffs and revenues of the two methodologies.

14
15 A. My analysis indicates that there are six major factors that
16 lead to the differences in tariffs and revenues between TSM
17 and BTM. First, for the years 1978-1981, the tariffs and
18 revenues in TSM are the result of the carriers' litigation
19 position, i.e., their filed tariffs. Thus, those tariffs
20 give no consideration to the Phase I decisions, the *Cook*
21 *Inlet* decision, or the litigation position of any of the
22 parties besides the carriers. Even though the TSM
23 methodology itself results in tariffs in the years 1979-1981
24 which are lower than the filed tariffs, the carriers are
25 still allowed to collect their filed tariffs for those years.

26
27 The BTM methodology, on the other hand, for all years,
28 including 1978-1981, has been constructed by looking to the

1 Commission's *Cook Inlet* decision, the TAPS Phase I decisions
2 by the APC and Judge Kane, and the various parties'
3 litigation positions. Consequently, BTM is a more
4 traditional regulatory methodology which is based on the
5 evidentiary record in the TAPS proceeding and should be used
6 to assess the reasonableness of TSM.

7
8 Second, for the years 1982-2011, TSM tariffs are based on a
9 hyper-accelerated depreciation schedule. This appears to be
10 the main driving force of TSM and, in fact, leads to the need
11 to incorporate other provisions, such as the \$0.35 return per
12 barrel. It is the primary cause of the early period tariffs
13 being so much higher than the BTM tariffs, due to the high
14 depreciation expense and DR&R components of the revenue
15 requirement, as well as a smaller rate base deduction for
16 ADIT. There is no evidence in the record to support such a
17 depreciation schedule, and it fails to match costs and
18 benefits properly. BTM, for all years, uses the straight-
19 line depreciation schedule stipulated to by all the parties
20 in these proceedings.

21
22 Third, for the years 1982-2011, TSM tariffs are based on a
23 100% equity capital structure. This capital structure was
24 the carriers' extreme litigation position and was
25 specifically rejected by the APC and Judge Kane in their
26 Phase I decisions, and the APUC in its *Cook Inlet* decision.
27 As discussed above, that capital structure leads to a very
28 high income tax component.

1 BTM, on the other hand, begins with a 50/50 capital
2 structure, which takes into consideration the APC Phase I
3 decision and the parties' various litigation positions. For
4 the years after 1982, BTM uses the procedure used by the
5 Commission in its *Cook Inlet* decision to retire the debt over
6 the life of the settlement. The resulting income tax
7 component of BTM is significantly lower than the tax
8 component in TSM.

9
10 Fourth, for the years 1989-2011, TSM uses a non-cost-based
11 rate of return of \$0.35 (in 1983\$) per barrel of
12 throughput. There is no evidence in the record for such a
13 return methodology, and it results in rates of return far in
14 excess of any returns supported in the evidentiary record,
15 including those offered by the carriers. In addition, any
16 increase in throughput will result in even greater returns to
17 the carriers.

18
19 BTM uses a nominal return of 12% for the years 1978-1982 and,
20 thereafter, a real return on debt of 2% and a real return on
21 equity of 8%, with the TSM inflation rate added to arrive at
22 the total nominal return. The nominal 12% return and the
23 real returns are based on the APC's and Judge Kane's Phase I
24 decisions, and the parties' litigation positions.

25
26 Fifth, to account for the Phase II issues of the cost of
27 construction and the haul road, TSM deducts \$450 million from
28 carrier property in 1976 and amortizes that amount in 1978-

1 1984. This is equivalent to a disallowance of \$171.71
2 million. This amount is substantially closer to the
3 carriers' litigation position of a zero deduction than to the
4 Staff's and State's position of a \$1.687 billion deduction.
5 BTM, on the other hand, splits the difference between the two
6 litigation positions and deducts \$843.5 million for carrier
7 property.

8
9 Sixth, DR&R is not cost-based. In addition, in calculating
10 DR&R, TSM uses an imputed earnings rate close to a risk-free
11 rate even though the carriers and their parents have
12 unlimited use of the collections. This allows the carriers
13 to earn \$7.577 billion (1987\$) in profits on the DR&R expense
14 collections. BTM allows the carriers to collect just what
15 they need to accomplish DR&R.

16
17 Those six factors are the major reasons why the tariffs and
18 revenues that result from TSM are so much greater than those
19 that result from BTM, and are so clearly outside a zone of
20 reasonableness.

21
22 Q. Have you done any other analyses to give the Commission some
23 guidance as to the magnitude of the difference between the
24 tariffs that result from BTM and from TSM?

25
26 A. Yes. I have done two additional analyses both to assess the
27 magnitude of the difference and to further assure myself that
28 the tariffs resulting from TSM are unjust and unreasonable.

1 Q. Describe your first additional analysis.

2
3 A. I have altered BTM in order to assess how much the State and
4 Staff would have to "lose" in litigation in order to have a
5 litigated decision that resulted in tariffs at the level of
6 those obtained from TSM.

7
8 The first assumption I used to alter BTM was that the State
9 and Staff completely lost their Phase II arguments regarding
10 cost of construction and the haul road. I therefore made no
11 deduction at all from the rate base. The results of that
12 adjustment are shown in Exhibit APUC Staff ____ (RLB-6). As
13 can be seen, the BTM modified tariffs are still lower than
14 TSM tariffs in most years and the present value difference of
15 the revenues from the modified BTM and TSM is still \$16.5
16 billion.

17
18 The second adjustment I made was to assume that the State and
19 Staff also completely lost their arguments regarding capital
20 structure, and a 100% equity capital structure was adopted.
21 I therefore changed BTM so as to incorporate a 100% equity
22 capital structure. The results of that additional adjustment
23 are shown in Exhibit APUC Staff ____ (RLB-16). As can be
24 seen, the modified BTM tariffs are still substantially lower
25 than TSM tariffs in the early years, and the present value
26 difference of the revenues from the modified BTM and TSM is
27 still \$11.0 billion.

1 The third adjustment I made was to assume that the State and
2 Staff also lost all their arguments regarding ADIT. I
3 therefore changed BTM so that there is no deduction from rate
4 base and the carriers have full use of the funds. Exhibit
5 APUC Staff ____ (RLB-17) shows the results of that added
6 adjustment. As can be seen, the modified BTM tariffs are now
7 higher than the TSM tariffs in most years. However, because
8 of the huge front-loading of TSM tariffs, the present value
9 difference still results in TSM revenues being greater by
10 \$2.9 billion.

11
12 I modified BTM in one final way. First, I made no deduction
13 from rate base for Phase II issues and assumed a 100% equity
14 capital structure. However, I put the ADIT deduction back
15 in, and then calculated what rate of return BTM would have to
16 include to make the cumulative TSM and BTM PVRR equal. The
17 results of that calculation are shown in Exhibit APUC
18 Staff ____ (RLB-18). As can be seen, in order to match the
19 present value of the TSM revenues, the shippers would have to
20 pay tariffs based on a 19.33% nominal rate of return. This
21 return almost exactly matches the carriers' most extreme
22 litigation position.

23
24 Since the adoption of any of these extreme carrier litigation
25 positions would result in tariffs that are outside a zone of
26 reasonableness when compared with more traditional regulatory
27 approaches, I believe this analysis which combines these
28 various positions is helpful in understanding the magnitude

1 of the difference between TSM and BTM.

2
3 Q. Describe the second additional analysis you did.

4
5 A. In my second analysis I adopted an extremely wide zone of
6 reasonableness around the BTM tariffs. Thus, although I
7 believe that BTM results in tariffs and revenues that are
8 already on the high side and probably outside a zone of
9 reasonableness, I made an analysis to determine if the TSM
10 tariffs were within an even wider zone of reasonableness
11 about the BTM tariffs. For this analysis I assumed that any
12 TSM tariff that was within \$0.50 (1987\$) of the BTM tariff
13 for that same year was just and reasonable.

14
15 By this analysis I do not at all mean to imply that I believe
16 that tariffs \$0.50 higher than tariffs resulting from BTM
17 would be just and reasonable. However, I wanted to ensure
18 that this analysis used an extremely wide zone of
19 reasonableness. I don't believe that any of the protestants
20 during TAPS litigation, including the State, would have
21 accepted filed tariffs that were \$0.50 higher than the
22 tariffs that they believed were within a zone of
23 reasonableness. For example, during the TAPS evidentiary
24 proceedings, the parties certainly argued strongly about
25 issues that would have made only pennies difference in the
26 tariffs, such as the affiliated interest transactions
27 component of operating expenses.

1 Exhibit APUC Staff ____ (RLB-19) shows the results of my
2 analysis. Even when the TSM tariffs are compared to those
3 \$0.50 higher than the already high BTM tariffs, the tariffs
4 under TSM are still too high in 15 years and the present
5 value difference between the revenues produced and the TSM
6 revenues is still \$13.100 billion. This analysis also
7 further justifies my conclusions that TSM does not produce
8 just and reasonable tariffs.

9
10
11 VII

12 CONCLUSIONS

13
14 Q. Summarize your conclusions and recommendations.

15
16 A. I recommend that the Commission reject the Offer of
17 Settlement. This recommendation is based on the following
18 conclusions:

- 19
20 (1) TSM results in tariffs that are unjust and unreasonable
21 in most years of the settlement in that they are not
22 within a zone of reasonableness, as defined by
23 traditional cost-based regulatory approaches;
- 24
25 (2) The TSM results are so radically different from those
26 produced by more traditional regulatory approaches that
27 TSM's acceptance would not be in the public interest;
28

- (3) Over the life of the settlement, the carriers will receive more than \$20 billion (\$1987) in unjust and unreasonable revenues;
- (4) The State will lose more than \$5 billion in revenues as a result of the unjust and unreasonable tariffs;
- (5) The carriers will earn returns far in excess of any returns supported by record evidence, and which are patently unjust and unreasonable;
- (6) TSM's hyper-accelerated depreciation schedule does not match costs and benefits to the shippers, and there is no record evidence to support its use;
- (7) The \$0.35 per barrel return provision is unjust and unreasonable in that it is not cost-based, has no support in the record, results in excessive carrier returns, and results in tariffs that are unjust and unreasonable;
- (8) The 100% equity capital structure results in unjust and unreasonable tariffs;
- (9) The amortized \$450 million deduction from rate base for Phase II issues is too small and results in unjust and unreasonable tariffs; and

1 (10) The Dismantling, Removal and Restoration ("DR&R")
2 provision is not cost-based and allows the carriers to
3 earn billions of dollars of return on an expense item,
4 thus allowing the carriers an unjust and unreasonable
5 return.

6
7 The tariffs and revenues that result from the Offer of
8 Settlement are so radically different from those that result
9 from traditional regulatory methodologies that the Settlement
10 is unjust and unreasonable and is not in the public inter-
11 est. Therefore, it should be rejected by the Commission.

12
13 Q. Does this conclude your testimony?

14
15 A. Yes, it does.
16
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28

CURRICULUM VITA
August, 1986

Personal

Name: Rudolph L. Bertschi
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Peoria, Illinois
Business: Consulting Engineer/Economist
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Education

University of Illinois at Urbana-Champaign, B.S., 1969
Teaching Engineering Technology

University of Illinois at Urbana-Champaign, M.S., 1976
Mechanical Engineering/Thermal Systems

University of Illinois at Urbana-Champaign, post-M.S.
Studies in Engineering Systems and Economics

Professional Standing

Registered Professional Engineer
State of Illinois

Associate Member
American Society of Heating, Refrigerating and Air-Conditioning
Engineers

Publications

with W.F. Stoecker, "Designing Duct Systems for Minimum Life Cycle Cost," Proceedings of the Conference on Improving Efficiency and Proformance of HVAC Equipment and Systems for Commercial and Industrial Buildings, Purdue University, April 1976.

"A Computer Program to Optimize the Life Cycle Cost of a Fan-Duct System," Master's Thesis, University of Illinois at Urbana-Champaign, Urbana, Illinois, May 1976.

with Bruce M. Hannon and Barr Z. Segal, "Labor Cost of Living: 1960-61," CAC Technical Publication No. 99, Energy Research Group, Center for Advanced Computation, University of Illinois at Urbana-Champaign, Urbana, Illinois, June 1978.

Previous Employment

Alaska Public Utilities Commission
April 1982 to September 1985
Utility and Pipeline Common Carrier Studies and Expert
Testimony in Regulatory Affairs

Illinois Office of Consumer Services
February 1978 to March 1982
Utility Studies and Expert Testimony in Regulatory Affairs

Bertschi & Knecht, Engineers & Consultants
January 1977 to January 1978
Utility Studies and Expert Testimony in Regulatory Affairs

University of Illinois at Urbana-Champaign
Operation & Maintenance Division
Utilities Section
June 1974 to January 1977
Energy Conservation and Load Management Engineering

University of Illinois at Urbana-Champaign
Center for Advanced Computation
Energy Research Group
December 1973 to June 1974, and January 1977 to
February 1978
Contract Research for Federal Energy Agencies

University of Illinois at Urbana-Champaign
Department of Mechanical Engineering
August 1973 to December 1973
Teaching Assistant

Lincoln Trail College, Robinson, Illinois
August 1972 to August 1973
Lead Instructor for Engineering Technology Curriculum
Instructor/Management and Industrial Psychology

EIRENE/Centre de Formation Professionnelle, Oujda, Morocco
January 1970 to August 1972
Administrator of Vocational Training School for Electric
Trades

Detroit Metropolitan Water Services, Detroit, Michigan
January 1969 to January 1970
Mechanical Engineering Design
Contract Administration

N.V. Koninklijke Nederlandsche Machinefabriek v/h E.H. begemann,
Helmond, Netherlands
Summer 1968
Industrial Engineering

Frasca Aviation, Champaign, Illinois
September 1966 to January 1968
Electro-Mechanical Systems Construction and Maintenance

Woodward Iron, Inc.
Golden Foundry Co., Columbus, Indiana
Summer 1966
Industrial Engineering

Testimony Before the Illinois Commerce Commission

Docket No. 76-0435
Illinois Power Company
re: General Increase in Gas and Electric Rates
Cost of Service
Rate Design

Docket No. 78-0075
Iowa-Illinois Gas & Electric Company
re: General Increase in Gas and Electric Rates
Power Plant Availability

Docket No. 78-0457
All Electric Utilities in Illinois
re: Uniform Fuel Adjustment Clause
Incentives for Powerplant Productivity

Docket No. 78-0646
Commonwealth Edison Company
re: Investigation of Construction Program
Generation Planning and Economics

Docket No. 79-0071
Illinois Power Company
re: General Increase in Gas and Electric Rates
Load Forecasting
Financial Goals and Bond Ratings
Powerplant Cost Overruns

Docket No. 80-0318
Central Illinois Public Service Company
re: General Increase in Electric Rates
CWIP

Docket No. 80-0418
All Electric and Gas Utilities in Illinois
re: Rules for Service Termination

Docket No. 80-0544
Illinois Power Company
re: General Increase in Electric Rates
Financial Goals and Bond Ratings

Docket No. 80-0546
Commonwealth Edison Company
re: General Increase in Electric Rates
CWIP

Docket No. 82-0152
Illinois Power Company
re: General Increase in Electric Rates
CWIP

Docket No. 80-0167
Commonwealth Edison Company
re: Investigation of Construction Program
Load Forecasting

Docket No. 84-0480
Illinois Power Company
re: General Increase in Electric Rates
Policy re Abandoned Plant

Testimony Before the Alaska Public Utilities Commission

Docket P-82-001
Cook Inlet Pipeline Company
re: Oil Pipeline Dismantlement
Accounting Treatment for Dismantlement Funds

Docket P-81-001, Phase II
Trans-Alaska Pipeline System
re: Oil Pipeline Dismantlement
Accounting Treatment for Dismantlement Funds

Docket U-83-46
Alaska Power & Telephone Company
re: General Increase in Electric Rates
Evaluation of Rate Base

Docket U-83-57
Chugach Electric Association, Inc.
re: General Increase in Electric Rates
TIER Requirement

Docket U-82-47
Chugach Electric Association, Inc.
re: Formation of a G&T Cooperative

Testimony Before Other Agencies

Indiana Public Service Commission
Cause No. 34859

Indiana Statewide/Hoosier Energy Division
re: Certification of Public Convenience and Necessity
Merom Generating Station
Load and Energy Forecasting

City of Springfield (Illinois)

re: Review of Cost of Service Study for City Water Light and
Power
Rate Design/Cost of Service

Public Service Commission of Wisconsin
Docket No. 05-EP-1

re: Advance Plan of Western Wisconsin Utilities
Capital Costs for Fossil and Nuclear Generation

Massachusetts Department of Public Utilities
Docket No. DPU 19494

Boston Edison Company
re: Certification of Public Convenience and Necessity
Pilgrim Generating Station
Life Cycle Costs for Fossil and Nuclear Generation

Michigan Public Service Commission
Case No. U-62-17

Detroit Edison Company
re: Authorization to Market Securities
Life Cycle Costs for Fossil and Nuclear Generation

Michigan State Legislature

Special Joint Committee on Nuclear Energy
re: Impact on Rates and Cost Allocation of Nuclear Construction
Costs

Minnesota Public Service Commission
Docket No. E-002/D-79-956

Northern States Power Company
re: Decommissioning Nuclear Powerplants
Accounting Treatment for Decommissioning Funds

Maine Public Utilities Commission
Docket No. 80-25/80-66

Central Maine Power Company
re: General Increase in Electric Rates
Powerplant Productivity

Washington Utilities & Transportation Commission
Cause No. U-80-13

Washington Water Power Company
re: General Increase in Electric Rates
CWIP

Public Utilities Commission of the State of Colorado
Docket No. I & S 1425
Public Service Company of Colorado
re: General Increase in Electric Rates
CWIP

Idaho Public Utilities Commission
Case Nos. U-1008-155 and U-10080156
Washington Water Power Company
re: General Increase in Electric Rates
CWIP

Federal Energy Regulatory Commission
Docket No. OR78-1, Phase II
Trans-Alaska Pipeline System
re: Oil Pipeline Dismantlement
Accounting Treatment for Dismantlement Funds
Jurisdictional Cost Allocation

New York Public Service Commission
PSC Case No. 27563
Long Island Lighting Company
re: Cost of Shoreham Nuclear Generating Facility

EXHIBIT APUC STAFF (PLN 2)

ITEM/COMMENT	HOW DERIVED	LINE #	1983	1984	1985	1986	1987	1988
CPI-U	Data Entry	1	298.4	311.5	324.5	339.4	355.3	374.9
INFLATION RATE (%)	Ratio #1 to Previous #1 minus unity	2		4.390%	4.173%	4.592%	4.885%	5.516%
ORIGINAL VERSUS NEW RATE BASE ADDITIONS		3						
ADDITIONS TO LAND	Data Entry	4						
ADDITIONS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	5		0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN SERVICE RETIRED AS A CONSEQUENCE OF THOSE ADDITIONS	Data Entry	6		45.049	25.000	5.000	10.000	10.000
\$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	\$15 times ratio of #1 to #1 in 1984	7		0.000	1.000	1.000	2.000	2.000
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	8		15.000	15.628	18.343	17.109	18.053
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	9		0.000	8.374	0.000	0.000	0.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		10		45.049	16.626	5.000	10.000	10.000
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	11						
ORIGINAL DEPRECIATION	#14 times previous #20	12		0.130043	0.140910	0.154120	0.177089	0.193408
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	13		569.053	538.417	508.185	494.447	445.828
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE RETIRED	Data Entry	14		45.049	16.626	5.000	10.000	10.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	15		30.883	2.000	2.000	2.000	2.000
NET PROCEEDS FROM ORIG. DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times #18	16		1.000	1.000	0.980	1.000	1.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #16 minus #19	17		30.883	2.000	1.980	2.000	2.000
NEW DEPRECIABLE PROPERTY IN SERVICE		18	4375.883	3820.996	3297.206	2792.080	2305.634	1867.706
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	19						
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times [unity minus #18]	20			8.374	0.000	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	21			0.000	0.040	0.000	0.000
ADDITIONS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	22			1.000	1.000	1.000	1.000
NET PROCEEDS FROM ELIG. NEW DEP. PROPERTY IN SERVICE RET.	#17 times #25 times [unity minus #18]	23			8.374	0.000	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	24			0.000	0.040	0.000	0.000
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #26 minus #27 minus #28	25			0.000	1.281	1.247	1.121
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	26			8.374	7.043	6.798	4.875
NEW DEFERRED TAX		27		0.000	8.374	7.043	6.798	4.875
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	28			0.479	0.902	0.823	0.771
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #33 and cumulative #28	29			0.479	0.989	-0.314	-0.684
STATE INCOME TAX RATE	Data Entry	30		0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	31		0.460	0.460	0.460	0.460	0.460
NEW STATE DEFERRED TAX	#34 times #35 times [unity minus #36]	32			0.024	0.005	-0.017	-0.035
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	33			1.258	1.842	1.758	1.759
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #28	34			1.258	1.808	2.319	2.957
NEW FEDERAL DEFERRED TAX	#36 times #39	35			0.578	0.932	1.087	1.360
NEW DEFERRED TAX	#37 plus #40	36			0.802	0.938	1.050	1.325
CWP AT YEAR END	Data Entry	37	17.915	5.124	8.000	2.000	1.000	0.000
ADDITIONS TO ALL CARRIER PROPERTY ACCOUNTS	Data Entry	38		32.258	28.000	0.000	10.000	10.000
RETIREMENTS FROM CWP	Data Entry	39		0.000	0.000	0.000	0.000	0.000
INTERIM CWP BALANCE	Previous #45 plus #46 minus #47	40		50.173	30.124	5.000	12.000	11.000
ORIGINAL INTO SERVICE RATIO	[#5 plus #11] divided by #48	41		0.898	0.552	1.000	0.833	0.909
NEW INTO SERVICE RATIO	#10 divided by #48	42		0.000	0.278	0.000	0.000	0.000
ADDITIONS TO AFUDC	[6.4% plus #2] times [Previous #45 plus Previous #58]	43		2.059	0.577	0.587	0.222	0.124
INTERIM AFUDC	Previous #58 plus #54	44		3.226	0.906	0.721	0.222	0.161
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	45		2.896	0.500	0.721	0.185	0.146
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	46		0.000	0.252	0.000	0.000	0.000
AFUDC AT YEAR END	#55 minus #56 minus #57	47	1.167	0.329	0.154	0.000	0.037	0.015

EXHIBIT APLUC STAFF (RLR 2)

ITEM ELEMENT	HOW DERIVED	LINE #	1983	1984	1985	1986	1987	1988
ELEMENTS OF ORIGINAL DEFERRED RETURN		60						
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61		561.220	576.220	585.218	617.723	602.037
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #20 minus #61 minus #15	62		7561.263	6795.634	6000.983	5168.119	4370.451
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63		331.948	283.606	275.548	242.113	241.094
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64		2.896	0.500	0.721	0.185	0.146
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	4315.653	4089.274	3797.161	3488.209	3112.783	2751.986
ELEMENTS OF NEW DEFERRED RETURN		66						
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	67						
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #28	68			0.000	0.039	0.097	0.144
NEW INFLATION ADJUSTMENT	#2 times #69	69			0.000	7.296	8.247	5.275
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	70			0.000	0.335	0.293	0.291
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	71			0.252	0.000	0.000	0.000
ELIGIBILITY FRACTION	#25	72		0.000	0.252	0.548	0.744	0.891
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	73			1.000	1.000	1.000	1.000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #28	74			0.252	0.000	0.000	0.000
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	75			0.000	7.296	8.247	5.275
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	76			0.000	0.335	0.293	0.291
		77		0.000	0.252	0.548	0.744	0.891
NON DEPRECIABLE PROPERTY		78						
ADDITIONS TO LAND	#5	79						
NET PROCEEDS FROM LAND RETIRED	Data Entry	80		0.000	0.000	0.000	0.000	0.000
LAND AT YEAR END	Previous #82 plus #80 minus #81	81		0.000	0.000	0.000	0.000	0.000
WORKING CAPITAL AT YEAR END	Data Entry	82	16.997	16.997	16.997	16.997	16.997	16.997
MISCELLANEOUS ADJUSTMENT	Data Entry	83	37.650	37.650	37.650	37.650	37.650	37.650
NON DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	84	47.188	43.376	25.452	25.452	25.452	25.452
		85	7.459	11.271	29.195	29.195	29.195	29.195
ORIGINAL RATE BASE		86						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	87						
ORIGINAL DEFERRED RETURN AT YEAR END	#65	88	4375.883	3820.996	3297.206	2782.080	2305.624	1867.706
NON DEPRECIABLE PROPERTY AT YEAR END	#85	89	4315.653	4089.274	3787.181	3488.209	3112.783	2751.986
ORIGINAL DEFERRED TAX AT YEAR END	#176 minus #41	90		7.459	11.271	29.195	29.195	29.195
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	91	495.417	805.395	508.971	499.513	468.528	431.644
RETURN ON ORIGINAL RATE BASE	6.4% of Previous #92	92	8203.578	7418.147	6614.590	5809.971	4978.073	4217.243
ALLOWANCE PER BARREL	0.35 multiplied by ratio of #1 to #1 for 1983	93		525.029	474.633	423.324	371.838	318.661
TOTAL NET DELIVERIES	#142 plus #143 plus #144	94	0.350	0.385	0.381	0.398	0.417	0.440
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	95		807.135	613.200	620.500	653.251	640.575
AFTER TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-88, #93; after 1988, #96	96		221.828	233.392	247.015	272.277	281.679
		97		525.029	474.633	423.324	371.838	318.661
		98						
		99						
NEW RATE BASE		100						
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#30	101			8.374	7.043	6.798	4.875
NEW DEFERRED RETURN AT YEAR END	#72	102			0.252	0.548	0.744	0.891
NEW DEFERRED TAX AT YEAR END	#41	103			0.802	0.838	1.050	1.325
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	104			8.024	6.755	6.490	4.241
RETURN ON NEW RATE BASE	6.4% of Previous #104	105				0.514	0.432	0.351
		106						
AFTER TAX MARGIN	#97 plus #105	107		525.029	474.633	423.324	372.271	319.612
		108						
		109						
RECOVERY OF DEFERRED RETURN	#61 plus #68	110		561.220	576.220	585.257	617.820	602.181
		111						
INCOME TAX BASE	#107 plus #110	112		1086.249	1050.853	1009.104	990.091	921.193
COMBINED RATE OF TAX	#35 plus (#36 times [unity minus #35])	113		0.511	0.511	0.511	0.511	0.511
INCOME TAX ALLOWANCE FACTOR	#113 divided by [unity minus #113]	114		1.044	1.044	1.044	1.044	1.044
INCOME TAX ALLOWANCE	#112 times #114	115		1134.030	1097.076	1053.492	1033.642	961.713
		116						

EXHIBIT APUC STAFF (RLR 2)

ITEM	HOW DERIVED	LINE #	1983	1984	1985	1986	1987	1988
INVESTMENT ALLOWANCE	Exhibit E	117		110,377	104,048	97,766	85,023	85,401
CITY RATING EXCESS	Data Entry	118		434,330	455,779	466,873	501,517	499,952
AMORTIZATION OF EXCLUDED COSTS	Agreement Section II-3	119		72,701				
DEPRECIATION	#115 plus #28	120		569,053	538,417	509,456	495,894	447,041
IN CARRY-OUT DEFERRED RETURN	#110	121		561,220	576,220	585,257	617,820	602,181
AFTER-TAX MARGIN	#107	122		525,029	474,933	423,847	372,271	319,012
INCOME TAX ALLOWANCE	#115	123		1134,030	1097,076	1053,492	1033,642	961,713
NON-TRANSPORTATION REVENUES	Data Entry	124		0.513	2,700	2,700	2,700	2,700
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	125						
TAP'S CARRIER'S STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	126		4838,442	4888,842	4980,309	5230,850	
TAP'S CARRIER'S BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #128	127		1030,588	1040,918	1058,546	1114,171	
TAP'S CARRIER'S SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	128		0.213	0.213	0.213	0.213	
TAP'S CARRIER'S REVENUE RECEIVED FOR THE PREVIOUS YEAR	Data Entry	129		725,526	690,880	667,540	663,126	
TAP'S CARRIER'S REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	130		725,526	690,880	667,540	663,126	
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	131		0.000	0.000	0.000	0.000	
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	132		0.000	0.000	0.000	0.000	
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#133 times #132	133		11.00%	11.00%	11.00%	11.00%	
TAP'S CARRIER'S VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	134		0.000	0.000	0.000	0.000	
TAP'S CARRIER'S REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	135		0.000	0.000	0.000	0.000	
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	136		0.000	0.000	0.000	0.000	
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#133 times #137	137		0.000	0.000	0.000	0.000	
NET CARRYOVER	#132 plus #134 minus #137 minus #138	138		0.000	0.000	0.000	0.000	
TOTAL REVENUE REQUIREMENT	[Sum of #117 through #123] minus #124 minus #139	139		3408,227	3243,473	3133,891	3113,267	2912,608
INTRASTATE NET DELIVERIES (GVEA CONNECTION ONLY)	Data Entry	140		0.121	0.132	0.209	0.524	0.408
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	141		601,014	607,088	641,395	631,842	477,219
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	142		0.000	0.000	73,000	114,975	156,950
INTRASTATE PUMPABILITY FACTOR	Data Entry	143		1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	144		1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	145		1.000	1.000	1.026	1.026	1.026
INTRASTATE STANDARD BARREL MILES	4.89 times #142 times #145	146		28,797	28,759	29,101	30,644	30,644
STSP STANDARD BARREL MILES	0.0027 times #143 times #148	147		4809,735	4858,183	4931,821	4256,172	3810,040
STNSP STANDARD BARREL MILES	0.0027 times #144 times #147	148		0.000	0.000	888,388	844,033	1288,880
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	149		4838,442	4888,842	4980,309	5230,850	5127,785
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	150		0.0059332	0.0059849	0.0058669	0.0058584	0.0058477
INTRASTATE ADDITIONAL UNIT COST	Data Entry	151		0.10	0.10	0.10	0.10	0.10
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	[#152 times #140] plus [#153 times #142]	152		20,822	18,791	18,007	18,882	17,672
INTRASTATE TARIFF	#154 divided by #142	153		3.400	3.210	3.080	2.890	2.780
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	154		3385,405	3223,772	3114,884	3094,374	2894,935
INTERSTATE STANDARD BARREL MILES	#151 minus #148	155		4809,735	4858,183	4931,820	5200,305	5107,721
RATIO OF STNSP STD B.M.'S TO TOTAL INTERSTATE STD B.M.'S	#150 divided by #157	156		0.000	0.000	0.122	0.182	0.252
STNSP ADDITIONAL UNIT COST	Data Entry	157		0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	[#158 times #156] plus [#159 times #144]	158		0.000	0.000	378,825	581,748	730,394
STNSP TARIFF	#160 divided by #144	159		#N/A	#N/A	8.190	4.890	4.650
STSP REVENUE REQUIREMENT	#158 minus #160	160		3385,405	3223,772	2736,359	2532,829	2184,542
STSP TARIFF RATE	#162 divided by #143	161		5.820	5.310	5.080	4.780	4.540
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. L applied to curr. and prev. #6	162		722,355	678,983	628,248	580,709	532,489
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #6	163		573,828	632,212	476,184	419,442	358,017
INVESTMENT EXPENSED DURING CONSTRUCTION	Data Entry	164						
STATE TAXABLE INCOME	[Sum of #120 through #123] minus #165	165		2068,877	2008,383	1942,808	1938,717	1797,488
STATE INCOME TAX RATE	#35	166		0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#169 times #168	167		194,298	189,882	182,824	182,239	168,964
FEDERAL TAXABLE INCOME	[Sum of #120 through #123] minus #166 minus #170	168		2021,208	1865,252	1913,244	1917,748	1802,974
FEDERAL INCOME TAX RATE	#36	169		0.460	0.460	0.460	0.460	0.460
FEDERAL INCOME TAX	#171 times #172	170		929,756	904,016	880,092	882,163	829,368
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	171		1124,052	1092,898	1062,716	1064,402	998,332
NET INCOME TO DEFERRED TAX	#115 minus #174	172		9,978	4,179	-9,225	-30,761	-36,619
TOTAL DEFERRED TAX AT YEAR END	Previous #176 plus #175	173		495,417	505,395	509,574	469,588	432,969

EXHIBIT APUC STAFF (PLB 2)

ITEM ELEMENT	HOW DERIVED	LINE #	1989	1990	1991	1992	1993	1994
CPI-U	Data Entry	1	395.5	417.2	440.2	467.5	498.5	527.3
INFLATION RATE (%)	Ratio #1 to Previous #1 minus unity	2	5.495%	5.487%	5.513%	6.202%	6.203%	6.203%
		3						
ORIGINAL VERSUS NEW RATE BASE ADDITIONS		4						
ADDITIONS TO LAND	Data Entry	5	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	6	10.000	30.000	30.000	10.000	10.000	10.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN SERVICE RETIRED AS A CONSEQUENCE OF THOSE ADDITIONS	Data Entry	7						
\$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	Data Entry	8	2.000	0.000	4.000	2.000	2.000	2.000
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	9	19.045	20.090	21.197	22.512	23.909	25.392
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	10	0.000	9.910	4.803	0.000	0.000	0.000
		11	10.000	20.090	25.197	10.000	10.000	10.000
		12						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		13						
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	14	0.205565	0.214587	0.228137	0.234534	0.236915	0.242761
ORIGINAL DEPRECIATION	#14 times previous #20	15	383.935	320.115	269.048	221.278	173.072	137.269
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	16	10.000	20.090	25.197	10.000	10.000	10.000
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE RETIRED	Data Entry	17	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	18	1.000	1.000	1.000	1.000	1.000	1.000
NET PROCEEDS FROM ORIG. DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times #18	19	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #18 minus #19	20	1491.771	1189.746	943.998	730.522	565.450	436.181
		21						
NEW DEPRECIABLE PROPERTY IN SERVICE		22						
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	23	0.000	9.910	4.803	0.000	0.000	0.000
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times [unity minus #18]	24	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	25	1.000	1.000	1.000	1.000	1.000	1.000
ADDITIONS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	26	0.000	9.910	4.803	0.000	0.000	0.000
NET PROCEEDS FROM ELIG. NEW DEP. PROPERTY IN SERVICE RET.	#17 times #25 times [unity minus #18]	27	0.000	0.000	0.000	0.000	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	28	0.981	0.797	2.901	3.454	2.871	2.089
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #26 minus #27 minus #28	29	3.714	12.827	14.729	11.275	8.603	6.515
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	30	3.714	12.827	14.729	11.275	8.603	6.515
		31						
NEW DEFERRED TAX		32						
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	33	0.720	1.238	1.989	2.067	1.999	1.757
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #33 and cumulative #29	34	-0.925	-0.687	-1.428	-2.828	-3.599	-3.830
STATE INCOME TAX RATE	Data Entry	35	0.094	0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	36	0.480	0.480	0.480	0.480	0.480	0.480
NEW STATE DEFERRED TAX	#34 times #35 times [unity minus #36]	37	-0.047	-0.025	-0.073	-0.143	-0.183	-0.200
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	38	1.759	1.487	2.901	3.138	3.090	3.090
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #28	39	3.754	4.444	4.443	4.127	4.545	5.546
NEW FEDERAL DEFERRED TAX	#36 times #39	40	1.727	2.044	2.044	1.898	2.091	2.551
NEW DEFERRED TAX	#37 plus #40	41	1.680	2.019	1.971	1.755	1.908	2.352
		42						
		43						
		44						
CWP AT YEAR END	Data Entry	45	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ALL CARRIER PROPERTY ACCOUNTS	Data Entry	46	10.000	30.000	30.000	10.000	10.000	10.000
RETIREMENTS FROM CWP	Data Entry	47	0.000	0.000	0.000	0.000	0.000	0.000
INTERIM CWP BALANCE	Previous #45 plus #46 minus #47	48	10.000	30.000	30.000	10.000	10.000	10.000
ORIGINAL INTO-SERVICE RATIO	[#5 plus #11] divided by #48	49	1.000	0.870	0.840	1.000	1.000	1.000
NEW INTO-SERVICE RATIO	#10 divided by #48	50	0.000	0.330	0.180	0.000	0.000	0.000
		51						
		52						
		53						
ADDITIONS TO AFUDC	[6.4% plus #2] times [Previous #45 plus Previous #58]	54	0.002	0.000	0.000	0.000	0.000	0.000
INTERIM AFUDC	Previous #58 plus #54	55	0.016	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	56	0.016	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	57	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC AT YE. END	#55 minus #56 minus #57	58	0.000	0.000	0.000	0.000	0.000	0.000
		59						

EXHIBIT APUC STAFF (PLN 2)

ITEM ELEMENT	HOW DERIVED	LINE #	1989	1990	1991	1992	1993	1994
ELEMENTS OF ORIGINAL DEFERRED RETURN		60						
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61	565.712	512.423	481.934	403.091	341.831	292.991
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #20 minus #61 minus #15	62	3670.045	3047.185	2501.485	2038.121	1657.917	1329.294
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63	201.662	167.191	137.905	126.399	102.938	83.082
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64	0.016	0.000	0.000	0.000	0.000	0.000
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	2387.952	2042.719	1718.690	1441.998	1203.205	994.196
ELEMENTS OF NEW DEFERRED RETURN		66						
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	67						
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #28	68	0.183	0.204	0.214	0.210	0.420	0.478
NEW INFLATION ADJUSTMENT	#2 times #69	69	4.422	3.664	10.880	12.288	9.957	8.007
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	70	0.243	0.201	0.588	0.782	0.618	0.497
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	71	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	#25	72	0.951	0.948	1.321	1.773	1.971	1.989
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	73	1.000	1.000	1.000	1.000	1.000	1.000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #28	74	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	75	4.422	3.664	10.880	12.288	9.957	8.007
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	76	0.243	0.201	0.588	0.782	0.618	0.497
NON DEPRECIABLE PROPERTY		77	0.951	0.948	1.321	1.773	1.971	1.989
ADDITIONS TO LAND	#5	78						
NET PROCEEDS FROM LAND RETIRED	Data Entry	79	0.000	0.000	0.000	0.000	0.000	0.000
LAND AT YEAR END	Previous #82 plus #80 minus #81	80	0.000	0.000	0.000	0.000	0.000	0.000
WORKING CAPITAL AT YEAR END	Data Entry	81	18.997	18.997	18.997	18.997	18.997	18.997
MISCELLANEOUS ADJUSTMENT	Data Entry	82	37.650	37.650	37.650	37.650	37.650	37.650
NON DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	83	25.452	25.452	25.452	25.452	25.452	25.452
ORIGINAL RATE BASE		84	29.195	29.195	29.195	29.195	29.195	29.195
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	85						
ORIGINAL DEFERRED RETURN AT YEAR END	#65	86	1491.771	1189.749	843.899	730.522	685.450	438.181
NON DEPRECIABLE PROPERTY AT YEAR END	#85	87	2387.952	2042.719	1718.690	1441.998	1203.205	994.196
ORIGINAL DEFERRED TAX AT YEAR END	#176 minus #41	88	29.195	29.195	29.195	29.195	29.195	29.195
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	89	398.604	373.810	352.811	323.035	293.815	258.031
RETURN ON ORIGINAL RATE BASE	6.4% of Previous #92	90	3510.313	2887.643	2339.172	1878.879	1504.235	1201.541
ALLOWANCE PER BARREL	\$35 multiplied by ratio of #1 to #1 for 1983	91	269.904	224.660	184.922	149.707	120.235	99.271
TOTAL NET DELIVERIES	#142 plus #143 plus #144	92	0.484	0.488	0.518	0.548	0.582	0.619
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	93	804.075	656.825	618.300	478.413	428.875	402.413
AFTER TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-88, #93; after 1988, #96	94	280.225	272.381	267.609	260.889	248.758	248.885
		95	280.225	272.381	267.609	260.889	248.758	248.885
		96						
		97						
NEW RATE BASE		98						
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#30	99						
NEW DEFERRED RETURN AT YEAR END	#72	100	3.714	12.827	14.729	11.275	8.803	6.515
NEW DEFERRED TAX AT YEAR END	#41	101	0.951	0.948	1.321	1.773	1.971	1.989
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	102	1.680	2.019	1.971	1.795	1.908	2.352
RETURN ON NEW RATE BASE	6.4% of Previous #104	103	2.985	11.758	14.079	11.293	8.666	6.152
		104	0.271	0.191	0.752	0.901	0.723	0.555
AFTER TAX MARGIN	#97 plus #105	105						
		106	280.496	272.572	268.381	261.690	250.481	249.440
		107						
		108						
RECOVERY OF DEFERRED RETURN	#61 plus #68	109	565.895	512.627	482.149	403.401	342.051	292.570
		110						
INCOME TAX BASE	#107 plus #110	111						
COMBINED RATE OF TAX	#35 plus [#36 times Junty minus #35]	112	848.391	785.199	730.510	664.991	592.532	542.009
INCOME TAX ALLOWANCE FACTOR	#113 divided by Junty minus #113]	113	0.511	0.511	0.511	0.511	0.511	0.511
INCOME TAX ALLOWANCE	#112 times #114	114	1.044	1.044	1.044	1.044	1.044	1.044
		115	883.621	819.737	782.643	694.241	618.595	565.850
		116						

EXHIBIT APLC STAFF (R102)

ITEM/LEMENT	HOW DERIVED	LINE #	1989	1990	1991	1992	1993	1994
UNIT ALLOWANCE	Exhibit E	117	73,214	80,717	50,254	40,334	31,180	24,386
CRATING FEES	Data Entry	118	487,734	477,820	481,092	492,820	499,860	516,076
AMORTIZATION OF EXCLUDED COSTS	Agreement Section II.3	119						
DEPRECIATION	#15 plus #28	120	384,896	320,912	271,948	224,831	175,743	139,358
RECOVERY OF DEFERRED RETURN	#110	121	565,895	512,627	482,149	403,401	342,051	292,570
AFTER TAX MARGIN	#107	122	280,496	272,572	288,361	281,590	250,481	249,440
INCOME TAX ALLOWANCE	#115	123	883,621	819,737	762,643	694,241	618,595	565,850
NON-TRANSPORTATION REVENUES	Data Entry	124	2,700	2,700	2,700	2,700	2,700	2,700
		125						
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	126	5127,785	4850,873	4472,139	4186,324	3823,205	3450,227
TAPS CARRIERS STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	127	1094,344	1033,193	952,548	897,427	814,343	734,898
TAPS CARRIERS BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #126	128	0.213	0.213	0.213	0.213	0.213	0.213
TAPS CARR. B.M. SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	129	620,388	569,382	524,364	488,568	450,394	407,963
TAPS CARRIERS REVENUES RECEIVED FOR THE PREVIOUS YEAR	Data Entry	130	670,386	569,382	524,364	488,568	450,394	407,963
TAPS CARRIERS REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	131	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	132	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	133	11.00%	11.00%	11.00%	11.00%	11.00%	11.00%
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#132 times #132	134	0.000	0.000	0.000	0.000	0.000	0.000
TAPS CARRIERS VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	135	5.000	5.000	5.000	5.000	5.000	5.000
TAPS CARRIERS REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	136	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	137	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#137 times #137	138	0.000	0.000	0.000	0.000	0.000	0.000
NET CARRYOVER	#132 plus #134 minus #137 minus #138	139	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL REVENUE REQUIREMENT	Sum of #117 through #123 minus #124 minus #139	140	2873,157	2461,803	2293,745	2114,525	1819,317	1704,880
		141						
INTRASTATE NET DELIVERIES (OVER CONNECTION ONLY)	Data Entry	142	8,041	8,588	8,183	4,764	4,289	4,024
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	143	422,834	377,884	341,987	305,498	289,481	233,228
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	144	179,200	173,378	171,890	183,183	155,125	185,183
INTRASTATE PUMPABILITY FACTOR	Data Entry	145	1.000	1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	146	1.000	1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	147	1.026	1.026	1.026	1.026	1.026	1.026
INTRASTATE STANDARD BARREL MILES	4.89 times #142 times #145	148	39,232	39,195	34,398	22,290	20,115	19,873
STSP STANDARD BARREL MILES	8.0027 times #143 times #146	149	3383,814	3022,492	2723,488	2444,793	2186,418	1886,438
STNSP STANDARD BARREL MILES	8.0027 times #144 times #147	150	1438,527	1422,542	1408,856	1356,116	1273,998	1356,115
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	151	4050,873	4472,139	4186,324	3823,205	3450,227	3241,428
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	152	0.0058408	0.0058371	0.0058245	0.0058218	0.0058202	0.0058223
INTRASTATE ADDITIONAL UNIT COST	Data Entry	153	0.19	0.19	0.19	0.19	0.19	0.19
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#152 times #140 plus #153 times #142	154	18,218	14,927	13,991	12,807	11,899	10,795
INTRASTATE TARIFF	#154 divided by #142	155	2.890	2.890	2.890	2.890	2.700	2.880
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	156	2858,929	2446,877	2279,844	2101,718	1903,722	1774,185
INTERSTATE STANDARD BARREL MILES	#151 minus #148	157	4622,341	4448,934	4142,816	3900,808	3439,111	3222,553
RATIO OF STNSP STD B.M'S TO TOTAL INTERSTATE STD B.M'S	#150 divided by #157	158	0.298	0.320	0.340	0.387	0.371	0.421
STNSP ADDITIONAL UNIT COST	Data Entry	159	0.000	0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	#158 times #158 plus #159 times #144	160	792,877	783,447	776,287	748,888	709,909	748,613
STNSP TARIFF	#160 divided by #144	161	4.520	4.520	4.520	4.540	4.540	4.520
STSP REVENUE REQUIREMENT	#158 minus #160	162	1866,361	1863,430	1804,547	1361,852	1198,817	1027,972
STSP TARIFF RATE	#162 divided by #143	163	4.410	4.400	4.400	4.430	4.440	4.410
		164						
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. L applied to curr. and prev. #8	165	484,144	438,807	390,614	170,367	121,480	72,612
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #8	166	302,890	254,965	212,648	186,073	118,108	70,331
INVESTMENT EXPENSE DURING CONSTRUCTION	Data Entry	167						
STATE TAXABLE INCOME	Sum of #120 through #123 minus #165	168	1830,785	1488,941	1374,485	1413,886	1289,379	1174,605
STATE INCOME TAX RATE	#35	169	0.094	0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#168 times #168	170	152,292	139,880	129,202	132,887	118,948	110,413
FEDERAL TAXABLE INCOME	Sum of #120 through #123 minus #166 minus #170	171	1658,727	1530,923	1423,250	1285,102	1149,818	1068,474
FEDERAL INCOME TAX RATE	#36	172	0.460	0.460	0.460	0.460	0.460	0.460
FEDERAL INCOME TAX	#171 times #172	173	763,014	704,224	654,895	591,147	529,916	490,578
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	174	916,306	844,105	783,896	724,034	647,862	600,991
NET ADDITION TO DEFERRED TAX	#115 minus #174	175	-32,685	-24,448	-21,254	-29,793	-29,287	-35,140
TOTAL DEFERRED TAX AT YEAR END	Previous #176 plus #175	176	400,284	375,837	354,583	324,790	295,523	260,387

ITEM ELEMENT	HOW DERIVED	LINE #	1995	1996	1997	1998	1999	2000
CPI-U INFLATION RATE (%)	Data Entry Ratio #1 to Previous #1 minus unity	1	559.9	584.7	835.1	878.3	724.4	773.7
		2	6.182%	6.215%	6.783%	6.802%	6.756%	6.806%
		3						
ORIGINAL VERSUS NEW RATE BASE ADJUSTMENTS		4						
ADJUSTMENTS TO LAND	Data Entry	5	0.000	0.000	0.000	0.000	0.000	0.000
ADJUSTMENTS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	6	10.000	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	Data Entry	7						
SERVICE REQUIRED AS A CONSEQUENCE OF THOSE ADJUSTMENTS	Data Entry	8	2.000	2.000	2.000	2.000	2.000	2.000
\$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	\$15 times ratio of #1 to #1 in 1984	9	28.861	28.837	30.537	32.883	34.893	37.257
ADJUSTMENTS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	10	0.000	0.000	0.000	0.000	0.000	0.000
ADJUSTMENTS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	11	10.000	10.000	10.000	10.000	10.000	10.000
		12						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		13						
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	14	0.253562	0.242085	0.195374	0.112804	0.118241	0.134514
ORIGINAL DEPRECIATION	#14 times previous #20	15	110.599	81.089	50.946	24.497	23.772	24.997
ADJUSTMENTS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	16	10.000	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE REQUIRED	Data Entry	17	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	18	1.000	1.000	1.000	1.000	1.000	1.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN SERVICE RET.	Data Entry	19	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #18 minus #19	20	332.382	260.482	217.548	201.051	185.276	168.282
		21						
NEW DEPRECIABLE PROPERTY IN SERVICE		22						
ADJUSTMENTS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	23	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times unity minus #18	24	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	25	1.000	1.000	1.000	1.000	1.000	1.000
ADJUSTMENTS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	26	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM ELIG. NEW DEPR. PROPERTY IN SERVICE RET.	#17 times #25 times unity minus #18	27	0.000	0.000	0.000	0.000	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	28	1.852	1.182	0.720	0.322	0.311	0.313
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #28 minus #27 minus #28	29	4.893	3.881	2.881	2.828	2.317	2.004
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	30	4.863	3.881	2.881	2.828	2.317	2.004
		31						
NEW DEFERRED TAX		32						
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	33	1.815	1.474	1.232	1.190	1.048	0.908
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #23 and cumulative #28	34	-2.987	-2.874	-3.084	-2.207	-1.488	-0.875
STATE INCOME TAX RATE	Data Entry	35	0.094	0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	36	0.480	0.480	0.480	0.480	0.480	0.480
NEW STATE DEFERRED TAX	#34 times #25 times unity minus #36	37	-0.201	-0.187	-0.198	-0.112	-0.075	-0.044
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	38	1.009	0.900	0.900	0.900	0.900	0.900
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #28	39	4.903	3.721	3.001	2.888	2.357	2.044
NEW FEDERAL DEFERRED TAX	#38 times #39	40	2.255	1.712	1.280	1.227	1.084	0.940
NEW DEFERRED TAX	#27 plus #40	41	2.054	1.523	1.223	1.119	1.010	0.898
		42						
		43						
		44						
CWIP AT YEAR END	Data Entry	45	0.000	0.000	0.000	0.000	0.000	0.000
ADJUSTMENTS TO ALL CARRY-ON PROPERTY ACCOUNTS	Data Entry	46	10.000	10.000	10.000	10.000	10.000	10.000
RETIREMENTS FROM CWIP	Data Entry	47	0.000	0.000	0.000	0.000	0.000	0.000
INITIAL CWIP BALANCE	Previous #45 plus #46 minus #47	48	10.000	10.000	10.000	10.000	10.000	10.000
ORIGINAL INTO SERVICE RATIO	[#5 plus #11] divided by #48	49	1.000	1.000	1.000	1.000	1.000	1.000
NEW INTO SERVICE RATIO	#10 divided by #48	50	0.000	0.000	0.000	0.000	0.000	0.000
		51						
		52						
ADJUSTMENTS TO AFUDC	[#45 plus #27] times [Previous #45 plus Previous #56]	53						
INITIAL AFUDC	Previous #56 plus #54	54	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	55	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	56	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC AT YEAR END	#55 minus #56 minus #57	57	0.000	0.000	0.000	0.000	0.000	0.000
		58						
		59						

EXHIBIT APLC STAFF (MLB?)

ITEM ELEMENT	HOW DERIVED	LINE #	1995	1996	1997	1998	1999	2000
ELEMENTS OF ORIGINAL DEFERRED RETURN		60						
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61	252.090	196.441	130.132	85.969	67.205	73.836
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #20 minus #61 minus #15	62	1067.687	884.167	744.801	712.932	678.448	633.726
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63	66.009	53.711	50.597	48.494	46.110	43.129
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64	0.000	0.000	0.000	0.000	0.000	0.000
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	808.114	665.385	585.850	568.375	547.280	516.573
ELEMENTS OF NEW DEFERRED RETURN		66						
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	67						
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #26	68	0.304	0.456	0.340	0.191	0.211	0.248
NEW INFLATION ADJUSTMENT	#2 times #69	69	0.348	5.102	4.359	4.131	3.890	3.594
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	70	0.392	0.317	0.296	0.281	0.264	0.245
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	71	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	#25	72	1.877	1.728	1.694	1.784	1.838	1.834
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	73	1.000	1.000	1.000	1.000	1.000	1.000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #26	74	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	75	0.348	5.102	4.359	4.131	3.890	3.594
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	76	0.392	0.317	0.296	0.281	0.264	0.245
		77	1.877	1.728	1.694	1.784	1.838	1.834
		78						
NON DEPRECIABLE PROPERTY		79						
ADDITIONS TO LAND	#8	80	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM LAND RETIRED	Data Entry	81	0.000	0.000	0.000	0.000	0.000	0.000
LAND AT YEAR END	Previous #82 plus #80 minus #81	82	18.997	18.997	18.997	18.997	18.997	18.997
WORKING CAPITAL AT YEAR END	Data Entry	83	37.650	37.650	37.650	37.650	37.650	37.650
MISCELLANEOUS ADJUSTMENT	Data Entry	84	25.452	25.452	25.452	25.452	25.452	25.452
NON DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	85	29.195	29.195	29.195	29.195	29.195	29.195
		86						
ORIGINAL RATE BASE		87						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	88	332.982	280.493	217.948	201.061	185.278	188.282
ORIGINAL DEFERRED RETURN AT YEAR END	#65	89	808.114	665.385	585.850	568.375	547.280	516.573
NON DEPRECIABLE PROPERTY AT YEAR END	#85	90	29.195	29.195	29.195	29.195	29.195	29.195
ORIGINAL DEFERRED TAX AT YEAR END	#176 minus #41	91	210.644	175.610	155.300	148.122	141.250	133.700
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	92	960.247	779.484	677.293	650.489	620.504	590.350
RETURN ON ORIGINAL RATE BASE	0.4% of Previous #92	93	78.899	61.456	49.899	42.347	41.832	39.712
ALLOWANCE PER BARREL	\$35 multiplied by ratio of #1 to #1 for 1983	94	0.957	0.899	0.745	0.798	0.850	0.907
TOTAL NET DELIVERIES	#142 plus #143 plus #144	95	387.851	378.600	348.751	321.200	299.300	301.125
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	96	291.278	264.785	258.303	258.545	254.305	273.268
AFTER-TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-88, #93; after 1988, #96	97	241.278	264.785	258.303	255.645	254.305	273.268
		98						
		99						
NEW RATE BASE		100						
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	101	4.862	3.881	2.881	2.828	2.317	2.004
NEW DEFERRED RETURN AT YEAR END	#72	102	1.877	1.728	1.694	1.784	1.838	1.834
NEW DEFERRED TAX AT YEAR END	#41	103	2.054	1.925	1.225	1.115	1.010	0.896
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	104	4.688	3.884	2.430	2.297	2.145	2.943
RETURN ON NEW RATE BASE	0.4% of Previous #104	105	0.394	0.309	0.249	0.220	0.211	0.201
		106						
AFTER-TAX MARGIN	#97 plus #105	107	261.670	265.085	258.552	255.764	254.516	273.469
		108						
		109						
RECOVERY OF DEFERRED RETURN	#61 plus #68	110	252.595	196.867	130.472	85.180	67.416	74.084
		111						
INCOME TAX BASE	#107 plus #110	112	514.265	461.982	389.024	321.924	321.932	347.553
COMBINED RATE OF TAX	#35 plus [#36 times (unity minus #35)]	113	0.511	0.511	0.511	0.511	0.511	0.511
INCOME TAX ALLOWANCE FACTOR	#113 divided by (unity minus #113)	114	1.044	1.044	1.044	1.044	1.044	1.044
INCOME TAX ALLOWANCE	#112 times #114	115	536.885	482.303	406.136	336.084	336.093	362.841
		116						

EXHIBIT APUC STAFF (PLR 2)

ITEM ELEMENT	HOW DERIVED	LINE #	1995	1996	1997	1998	1999	2000
DEBIT ALLOWANCE	Exhibit E	117	19,288	13,802	8,405	3,893	3,628	2,650
OPERATING EXPENSES	Data Entry	118	536,262	557,033	579,420	598,851	627,260	659,642
AMORTIZATION OF EXCLUDED COSTS	Agreement Section H-3	119						
DEPRECIATION	#15 plus #28	120	112,251	82,271	51,868	24,830	24,083	25,309
RECOVERY OF DEFERRED RETURN	#110	121	252,595	196,897	130,472	88,180	87,418	74,084
AFTER-TAX MARGIN	#107	122	261,670	285,085	258,552	255,784	254,516	273,469
INCOME TAX ALLOWANCE	#115	123	536,885	482,303	406,136	336,084	338,093	362,841
NON-TRANSPORTATION REVENUES	Data Entry	124	2,700	2,700	2,700	2,700	2,700	2,700
		125						
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	126	3241,428	3209,813	3065,501	2800,889	2594,782	2418,709
TAPS CARRIERS STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	127	690,424	682,890	652,952	598,543	552,884	515,185
TAPS CARRIERS BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #126	128	0.213	0.213	0.213	0.213	0.213	0.213
TAPS CARR. B.M. SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	129	380,201	365,561	339,669	305,005	273,254	278,093
TAPS CARRIERS REVENUE RECEIVED FOR THE PREVIOUS YEAR	Data Entry	130	380,201	365,561	339,669	305,005	273,254	278,093
TAPS CARRIERS REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	131	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	132	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	133	11.00%	11.00%	11.00%	11.00%	11.00%	11.00%
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#132 times #132	134	0.000	0.000	0.000	0.000	0.000	0.000
TAPS CARRIERS VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	135	5,000	5,000	5,000	5,000	5,000	5,000
TAPS CARRIERS REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	136	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	137	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#137 times #137	138	0.000	0.000	0.000	0.000	0.000	0.000
NET CARRYOVER	#132 plus #134 minus #137 minus #138	139	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL REVENUE REQUIREMENT	[Sum of #117 through #123] minus #124 minus #139	140	1716,251	1594,890	1431,950	1282,882	1310,298	1398,295
		141						
INTRASTATE NET DELIVERIES (GVEA CONNECTION ONLY)	Data Entry	142	3,978	3,796	3,488	3,212	2,993	3,011
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	143	205,897	182,354	184,433	150,088	135,707	121,089
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	144	187,975	193,450	178,950	187,900	180,800	177,025
INTRASTATE PUMPABILITY FACTOR	Data Entry	145	1.000	1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	146	1.000	1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	147	1.026	1.026	1.026	1.026	1.026	1.026
INTRASTATE STANDARD BARREL MILES	4.89 times #142 times #145	148	18,882	17,803	16,285	15,084	14,037	14,122
STSP STANDARD BARREL MILES	0.0027 times #142 times #146	149	1847,732	1488,324	1318,908	1201,109	1088,022	969,039
STNSP STANDARD BARREL MILES	0.0027 times #144 times #147	150	1543,420	1588,373	1488,486	1378,588	1318,650	1453,812
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	151	3209,813	3065,501	2800,889	2594,782	2418,709	2418,709
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	152	0.0058128	0.0058076	0.0058075	0.0058057	0.0058038	0.0057954
INTRASTATE ADDITIONAL UNIT COST	Data Entry	153	0.10	0.10	0.10	0.10	0.10	0.10
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	[#152 times #140] plus [#153 times #142]	154	10,378	8,941	8,883	7,789	7,904	8,393
INTRASTATE TARIFF	#154 divided by #142	155	2,610	2,640	2,500	2,420	2,640	2,790
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	156	1705,875	1585,048	1423,287	1276,112	1302,392	1387,801
INTERSTATE STANDARD BARREL MILES	#151 minus #148	157	3191,151	3047,689	2784,404	2578,699	2404,972	2422,551
RATIO OF STNSP STD B.M.S. TO TOTAL INTERSTATE STD B.M.S.	#150 divided by #157	158	0.484	0.521	0.527	0.524	0.548	0.600
STNSP ADDITIONAL UNIT COST	Data Entry	159	0.000	0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	[#158 times #156] plus [#159 times #144]	160	825,057	826,083	750,643	681,419	714,193	832,730
STNSP TARIFF	#160 divided by #144	161	4,390	4,270	4,300	4,080	4,450	4,700
STSP REVENUE REQUIREMENT	#156 minus #160	162	880,818	758,987	672,645	593,994	588,199	555,171
STSP TARIFF RATE	#162 divided by #143	163	4,280	4,180	4,090	3,980	4,330	4,580
		164						
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. I applied to curr. and prev. #8	165	23,680	20,108	17,820	16,653	14,243	13,072
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #8	166	18,384	11,819	10,818	10,000	10,000	10,000
INVESTMENT EXPENSED DURING CONSTRUCTION	Data Entry	167						
STATE TAXABLE INCOME	[Sum of #120 through #123] minus #165	168	1139,721	1006,447	828,205	687,185	687,085	722,630
STATE INCOME TAX RATE	#35	169	0.094	0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#168 times #169	170	107,124	94,806	77,943	62,715	62,778	67,927
FEDERAL TAXABLE INCOME	[Sum of #120 through #123] minus #166 minus #170	171	1037,904	920,131	758,262	610,123	609,328	657,775
FEDERAL INCOME TAX RATE	#36	172	0.460	0.460	0.460	0.460	0.460	0.460
FEDERAL INCOME TAX	#171 times #172	173	477,436	423,260	348,801	280,857	280,291	302,577
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	174	584,560	517,866	428,746	343,372	343,070	370,504
NET ADDITION TO DEFERRED TAX	#115 minus #174	175	-47,684	-35,563	-20,610	-7,288	-6,978	-7,663
TOTAL DEFERRED TAX AT YEarend	Previous #176 plus #175	176	212,608	177,135	156,525	149,237	142,250	134,566