# ESTIMATED STATE AND LOCAL REVENUE FROM THE ALASKA HIGHWAY NATURAL GAS PIPELINE PROJECT

# ESTIMATED STATE AND LOCAL REVENUE

# FROM THE

# ALASKA HIGHWAY NATURAL GAS PIPELINE PROJECT

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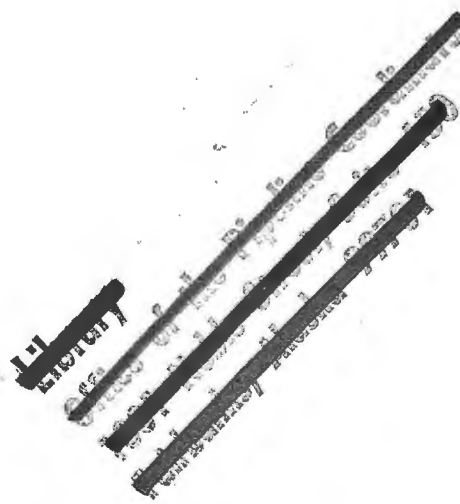

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PREFACE

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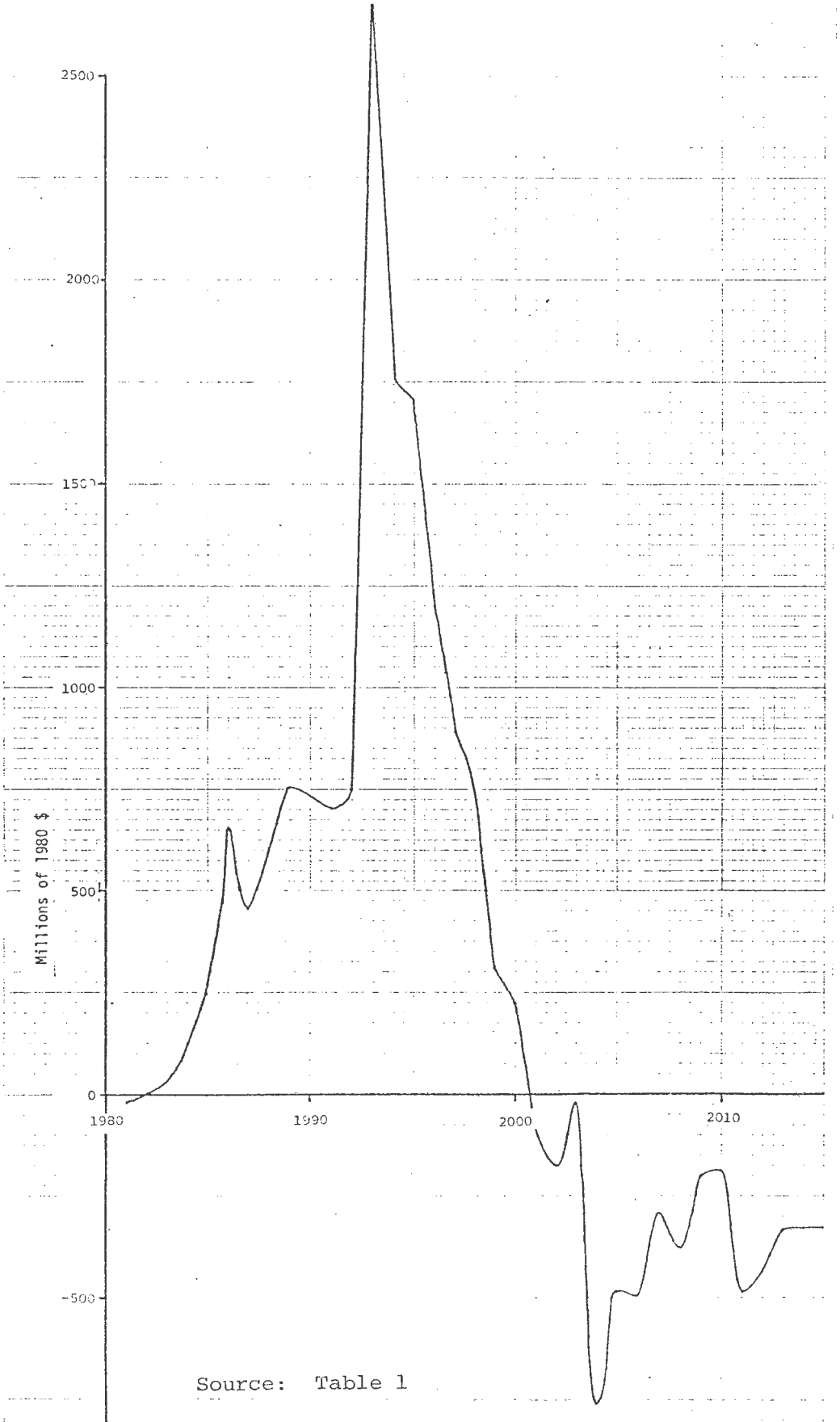
## SUMMARY

Construction and operation of the Alaska Highway Natural Gas Pipeline Project will allow the State of Alaska and its local governments to collect approximately $9.5 billion, at 1980 price levels, between 1981 and 2015. As envisioned by its sponsors, the project will bring an average net change in revenues of $272 million per year in 1980 dollars during this period. As shown in Figure 1, however, the incremental stream of revenue from all sources fluctuates considerably over time.

During the period of pipeline construction, from 1981 to 1985, estimated revenues from all sources average about $76 million per year in 1980 dollars. From 1986, the first full year the pipeline is assumed to operate, until 2000, revenues including the impact of gas sales on oil production are forecast to average $942 million per year. Around the turn of the century, as Prudhoe Bay oil reserves are depleted, the incremental stream of revenues resulting from operation of the gas pipeline becomes negative, averaging a $333 million deficit (1980 dollars) between 2001 and 2015.

State and local revenues, for the purpose of this study, are divided into three categories for analysis. Estimated direct state revenues from pipeline construction, including income and

Figure 1: Total Change in State and Local Revenues Expected from the Alaska Highway Natural Gas Pipeline Project




Source: Table 1

property taxes on the line itself, average just over $100 million per year (1980 dollars) between 1981 and 2010. As shown in both Table 1 and Figure 2, these revenues are expected to peak at $276 million in 1986, as the pipeline is completed, then decline gradually over the next 25 years. The share of these revenues accruing directly to local governments is expected to rise to $30 million (1980 dollars) in 1985.

The greatest impact on state revenues derived from the gas pipeline comes from the change in petroleum taxes resulting from sales of gas to the pipeline. The estimates shown in Table 1 and Figure 2 for these revenues, in addition to the value of royalties, production taxes and income taxes on North Slope gas, include the estimated change in the pattern of royalties, production taxes, conservation taxes and income taxes on Prudhoe Bay oil from the reservoir effects of gas sales. The net change in petroleum revenues rises to a peak of over $2 billion (1980 dollars) in 1993, then falls rapidly to a significant net revenue loss after 2000.

The third category of revenues comprises state and local revenues accruing indirectly, as a result of the general increase in the level of economic activity associated with pipeline construction. These indirect revenues were forecast

Table 1
Total Change in State and Local Revenues Expected from the Alaska Highway Natural Gas Pipeline Project
(in millions of 1980 $)

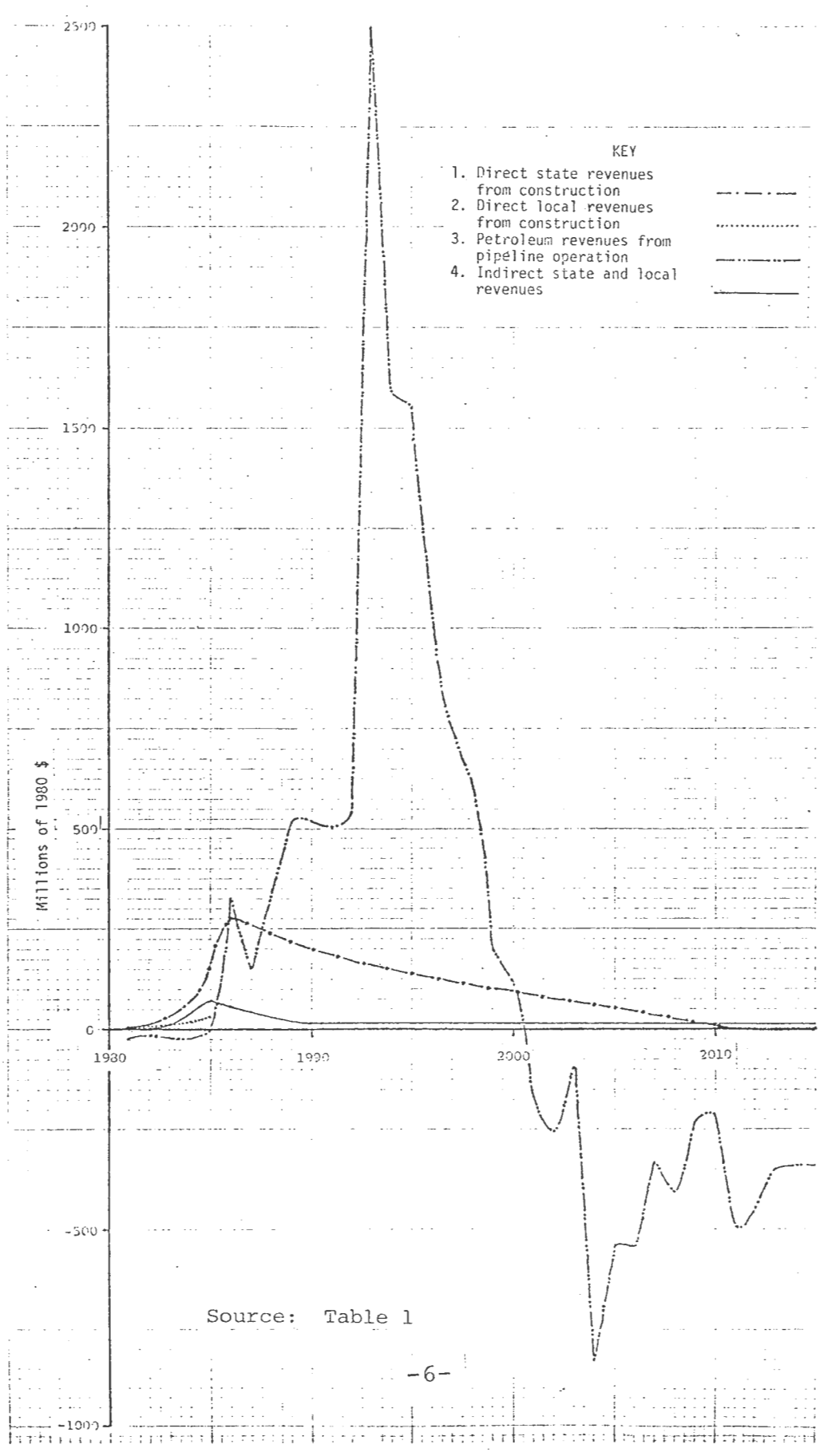
| Year | Direct Revenues from Construction | | Petroleum Revenues from Pipeline Operation | Indirect State & Local Revenues | TOTAL |
|---|---|---|---|---|---|
| | State | Local | | | |
| 1981 | 3 | 2 | -25 | 1 | -19 |
| 1982 | 13 | 3 | -16 | 2 | 2 |
| 1983 | 28 | 6 | -19 | 11 | 26 |
| 1984 | 88 | 22 | -23 | 38 | 125 |
| 1985 | 151 | 30 | -6 | 72 | 247 |
| 1986 | 276 | a | 330 | 54 | 660 |
| 1987 | 263 | a | 156 | 43 | 462 |
| 1988 | 236 | a | 341 | 29 | 606 |
| 1989 | 219 | a | 518 | 18 | 755 |
| 1990 | 205 | a | 518 | 13 | 736 |
| 1991 | 191 | a | 505 | 11 | 707 |
| 1992 | 178 | a | 537 | 10 | 725 |
| 1993 | 166 | a | 2,499 | 10 | 2,675 |
| 1994 | 154 | a | 1,582 | 10 | 1,746 |
| 1995 | 143 | a | 1,557 | 10 | 1,710 |
| 1996 | 132 | a | 1,056 | 10 | 1,198 |
| 1997 | 122 | a | 751 | 10 | 883 |
| 1998 | 112 | a | 616 | 10 | 738 |
| 1999 | 101 | a | 197 | 10 | 308 |
| 2000 | 91 | a | 121 | 10 | 222 |
| 2001 | 82 | a | -171 | 10 | -79 |
| 2002 | 73 | a | -260 | 10 | -177 |
| 2003 | 65 | a | -97 | 10 | -22 |
| 2004 | 56 | a | -828 | 10 | -762 |
| 2005 | 47 | a | -539 | 10 | -482 |
| 2006 | 39 | a | -542 | 10 | -493 |
| 2007 | 32 | a | -332 | 10 | -290 |
| 2008 | 24 | a | -411 | 10 | -377 |
| 2009 | 15 | a | -231 | 10 | -206 |
| 2010 | 8 | a | -208 | 10 | -190 |
| 2011 | - | | -494 | 10 | -484 |
| 2012 | - | | -452 | 10 | -442 |
| 2013<br>2014<br>2015 | - | | -1,024 | 30 | -994 |
| TOTAL | 3,313 | 62 | 5,606 | 533 | 9,514 |

[a] included in figures in column 1

Notes for Table 1:

| Column | Source |
|---|---|
| 1 | Tax year figures from Table 2, column 4, minus Table 3, column 3. Includes local property taxes on pipeline (credited against state tax liability) after 1985. See note for Table 2, column 5. |
| 2 | Tax year figures from Table 3, column 5. See note for Table 2, column 1. (Totals may not add up exactly because of rounding.) |
| 3 | Fiscal year figures from Table 4, column 5. |
| 4 | Fiscal year figures from Table 5, column 7. Figures after year 1995 are projections, assuming a steady state has been achieved. (Totals may not add up exactly because of rounding.) |
| 5 | Tax year and fiscal year figures are added for comparison of total revenue stream over time. (Totals may not add up exactly because of rounding.) |

Figure 2: Expected Change in Three Types of State and Local Revenues from the Alaska Highway Natural Gas Pipeline Project




Source: Table 1

to increase to $72 million (1980 dollars) in 1985, then decline to a level of $10 million (1980 dollars) per year after 1990, as shown in Table 1 and Figure 2.

## OUTLINE OF THE STUDY

### General Assumptions

The revenue estimates contained in this study reflect the net change in annual revenues in Alaska if the project proposed by Northwest Alaskan Pipeline Company is completed on schedule, as compared to the situation that would obtain if there were no gas pipeline. Thus, there is no attempt to determine if any other method for marketing Prudhoe Bay gas would yield larger or smaller state and local revenues. While such a question is an important one from the state's perspective, the absence of current data on alternatives makes it impossible to provide any information on this subject.

The time constraint on this study necessitated that revenue estimates rely on existing data, interpreted under current state and local tax laws.

Estimates for each category of revenue assume that tax bases and tax rates will remain at 1980 levels through the next 35 years. In particular, the revenue forecasts assume that there is no Alaska individual income tax, and that business and property taxes will remain at their 1980 rates.

It is, of course, inevitable that some changes will be made in tax rates between now and 2015. Rather than attempt to predict such changes, the approach taken here is to show explicitly the calculations of estimated revenue from each source, so that the reader may easily interpret the potential impact of a particular tax law revision. For example, one can see from Table 5, discussed below, that a 50% state rebate of local property taxes would reduce the revenues from the indirect effects of pipeline construction by about $50 million total over the next 15 years.

Constant Dollar Assumption

All revenue estimates in this study are reported in constant dollars, using mid-1980 as the benchmark. Real (constant) dollars are preferred over nominal (inflated) dollars for a number of reasons. One problem with forecasting far into the future using nominal prices is that the figures tend more to represent the forecaster's assumptions about future price levels than to reflect an analysis of economic conditions regarding a particular commodity.

On a more practical level, it is possible to obtain a far more accurate estimate of revenue impacts by using real prices. North Slope natural gas prices are controlled under the Natural Gas Policy Act of 1978 by a real-price ceiling. The Application of Northwest Alaskan Pipeline Company for a Final Certificate of Public Convenience and Necessity to the Federal Energy Regulatory Commission [3] (hereafter referred to as the FERC Application) derives all cost estimates for the pipeline in 1980 dollars.

In certain cases, however, it was necessary to convert values quoted for future years to 1980 price levels. For example, income and income taxes for regulated pipelines are determined as a percentage of an estimate of depreciated capital costs (rate base) which are computed in nominal prices. Where it was necessary to convert nominal values to 1980 dollar values, the long-term inflation forecast of Data Resources, Incorporated [4] was used for the conversion. This forecast has inflation rates averaging just over 8% after 1981.

Since the revenue forecasts are presented in 1980 dollars, there has been no attempt to discount future revenues for comparison with present ones or to compute present discounted values of revenue streams. When one examines recent interest rates on tax-exempt state and local bonds, or the earnings on state permanent fund investments, these market yields have not

been higher than the rate of inflation for the same period. Interest rates set for some state loan programs are significantly lower still. If one were to define the marginal time preference of money to the state as the lowest yield the state is willing to accept for an investment of public funds, historical patterns would suggest that a negative real discount rate is appropriate.

The paths of revenues, depicted in Figures 1 and 2, show clearly that the Alaska Highway Natural Gas Pipeline will hasten the decline of Prudhoe Bay revenues, as well as adding to the intermediate-term revenue surplus expected by the state. It would probably be appropriate, from a methodological standpoint, to use a real discount rate of negative one or two percent to compare revenues in the distant future with those of the more near-term. Rather than risk the controversy that such an analysis might provoke, it was decided to make no attempt to discount future revenues. Such a decision implies, in this case, the adoption of a real rate of discount of zero.

## Uncertainty in Estimation

The revenue estimates discussed in this study are point estimates. They reflect the authors' best estimates of the expected revenue from each potential source, using available data. In other words, there is an implicit assumption that actual revenues will exceed or fall short of the estimates with equal

likelihood. No attempt has been made to estimate range, variance, or any other measure of uncertainty for these estimates.

While a quantitative estimate of uncertainty surrounding a set of estimates is desirable, there are really so many sources of uncertainty that a scientific study is difficult. Potentially the largest, and most unpredictable, source of error in estimation comes from possible changes in tax laws during the next 30 years. Another likely source of variation comes from possible delays in completion of the pipeline. Delay *per se* will have very little impact on the real revenue stream from property taxes or gas royalties and production taxes, but may have a significant (positive) impact on revenues derived from oil. Unfortunately, the only reliable study of Prudhoe Bay reservoir dynamics available to the public (van Poollen [18]) does not consider the potential impact on oil production rates of alternative commencement dates for gas sales.

Another major source of uncertainty in the revenue estimates is the wellhead price of Prudhoe Bay gas. More than two-thirds of the total net revenue estimated for the pipeline impact comes from royalties and production and income taxes on the sale of gas. These figures assume that the legal maximum price, as established by the Natural Gas Policy Act of 1978, is achieved. If the actual wellhead price is just 50¢ per thousand cubic feet less than this, the revenue may be reduced by as much as $100 million per year.

Utilities considering purchase of North Slope gas will be comparing its cost with that of other high-cost sources available in 1985 at deregulated prices (see Tussing and Barlow [15]). Recent wholesale prices reported for deregulated gas sales in the contiguous United States have reached $7.00 per million Btus in some cases [12]. Assuming 1.092 million Btus per mcf for Prudhoe Bay gas, no utility is expected to want to pay more than $8.50 per mcf (in 1980 dollars) by 1985. With a minimum total capital cost for the pipeline project of $23 billion, the initial tariff will certainly be greater than this, under FERC rules [10]. Since the pipeline tariff will decline rapidly (in 1980 dollars), a rough estimate suggests that the present real discounted value of the tariff leaves sufficient room for the assumed $2.00 price ceiling. However, there is a significant probability that prices received by the producers, and hence revenues received by the state, will fall short of the forecasts quoted here by at least $100 million per year in the initial years of operation, between 1986 and 1990.

## Comparison with Other Studies

Arlon Tussing and Connie Barlow estimated that the "measurable and predictable revenue benefits" of the pipeline project for the State of Alaska would be approximately $340 million per year in 1979 dollars ([16], p.8). In 1980 dollars, that figure is approximately $100 million greater than the estimates from

computations made in this study. Although Tussing and Barlow did not provide a detailed forecast of revenues from various sources, the difference in these two estimates is most likely due principally to the fact that their study did not analyze probable impacts of gas sales on the stream of oil revenues.

The State Department of Revenue, Division of Petroleum Revenue, prints quarterly forecasts of petroleum revenues which include certain revenues from the proposed gas pipeline. The latest forecast shows estimates of future royalties and production taxes for North Slope gas that are approximately half (in 1980 dollars) of those derived from this study ([11], p.11). This major discrepancy stems from the fact that the Division's forecasting technique is to compute the average of a Monte Carlo simulation of revenues under alternative assumptions, weighted by the assumed probability that each assumption is correct. As implied on page 8 of that publication, the estimate of expected revenues reflects an average of runs in which gas sales are included in only 60% of the scenarios. The Department of Revenue estimates do not include an examination of potential impacts of gas sales on the stream of Prudhoe Bay oil revenues or of pipeline property taxes.

## DETAILED REVENUE ESTIMATES

### Direct Effects of Pipeline Construction

Table 2 presents the estimates of direct state property and income taxes on the natural gas pipeline, including income taxes paid by pipeline engineering and construction contractors. These revenues all depend, almost exclusively, on the actual capital cost (and construction schedule) of the pipeline. The figures in Table 2 were computed assuming that the project is constructed as specified in the Northwest Alaskan Pipeline Company's FERC Application [3]. Property taxes for the pipeline were estimated using the general methodology set out in several state publications ([1,2]; see especially [2], pp. 115-116), while income taxes were estimated following the FERC tariff ruling [10], as clarified subsequently [5,7,9].

The estimates in Table 2 include revenues paid directly to local governments during the operation phase of the gas pipeline. The state oil and gas property tax allows a credit for real property taxes assessed from the pipeline and paid to local governments. The law also contains a per capita ceiling on the amount of taxes that a local government may collect. Since the North Slope Borough has reached the ceiling, yet contains a large fraction of the proposed pipeline property, it is not possible to determine how much, if any, of the

Table 2
Estimated State of Alaska Revenues
from Direct Effects of Pipeline Construction
(in millions of 1980 $)

| Tax Year | Northwest Property Tax | Income Taxes of Pipeline Contractors | Northwest Income Tax | TOTAL |
|---|---|---|---|---|
| 1981 | 2 | 1 | - | 3 |
| 1982 | 9 | 4 | - | 13 |
| 1983 | 21 | 7 | - | 28 |
| 1984 | 72 | 18 | - | 90 |
| 1985 | 135 | 21 | - | 156 |
| 1986 | 174 | 12 | 90 | 276 |
| 1987 | 181 | 1 | 81 | 263 |
| 1988 | 164 | - | 72 | 236 |
| 1989 | 156 | - | 63 | 219 |
| 1990 | 149 | - | 56 | 205 |
| 1991 | 142 | - | 49 | 191 |
| 1992 | 135 | - | 43 | 178 |
| 1993 | 128 | - | 38 | 166 |
| 1994 | 121 | - | 33 | 154 |
| 1995 | 114 | - | 29 | 143 |
| 1996 | 107 | - | 25 | 132 |
| 1997 | 100 | - | 22 | 122 |
| 1998 | 93 | - | 19 | 112 |
| 1999 | 85 | - | 16 | 101 |
| 2000 | 78 | - | 13 | 91 |
| 2001 | 71 | - | 11 | 82 |
| 2002 | 64 | - | 9 | 73 |
| 2003 | 57 | - | 8 | 65 |
| 2004 | 50 | - | 6 | 56 |
| 2005 | 42 | - | 5 | 47 |
| 2006 | 35 | - | 4 | 39 |
| 2007 | 29 | - | 3 | 32 |
| 2008 | 22 | - | 2 | 24 |
| 2009 | 14 | - | 1 | 15 |
| 2010 | 7 | - | 1 | 8 |
| TOTAL | 2,557 | 64 | 699 | 3,320 |

Notes for Table 2:

| Column | Source |
|---|---|
| 1 | Appendix Table A-2, column 2. The state property tax estimates include property taxes paid to the North Slope Borough after 1985 and the North Star Borough after 1983, which are credited against the state tax liability. The portion of pipeline real property taxes paid directly to the North Star Borough, and deducted from the figures in column 1, Table 2, is at least 4% of the total. Since the North Slope Borough has reached the statutory maximum receipts for taxable property per capita under this law, further increases in property taxes will depend totally on population growth in the Borough; therefore, no attempt has been made to estimate this borough's share of pipeline property taxes after 1985. |
| 2 | Appendix C, Table C-4, sum of columns 2 and 4. |
| 3 | Appendix A, Table A-2, column 6. |
| 4 | Sum of columns 1,2 and 3. |

gas pipeline property tax would be paid to the Borough instead of to the state.

An estimate of revenue accruing to local governments from the direct effects of pipeline construction is shown in Table 3. These figures, derived principally from information provided with Northwest's FERC Application [3], include local sales taxes, as well as property taxes, as they are part of the construction costs of the project. The details of the calculations for Tables 2 and 3 are discussed in Appendices A and C.

Of particular importance to the estimation of the expected direct revenues from pipeline construction is the choice of estimates used for the expected cost of the project itself. The FERC Application calculates an actual cost of $7.05 billion (1980 dollars), exclusive of finance charges. However, a 12% contingency factor is then added to account for the fact that the $7 billion cost estimate is judged more likely to be an underestimate of total project costs than an overestimate (see [3], Exhibit K, section 3).

It would seem that adding the 12% contingency factor would be sufficient to bring the cost estimate up to its expected value. The FERC Application, however, in the discussion of the appropriate Center Point for the Incentive Rate of Return (as defined in [10], pp. 41-54), contains a risk analysis of

Table 3

Estimated Revenues to Alaska Local Governments
from Direct Effects of Pipeline Construction
(in millions of 1980 $)

| Tax Year | North Slope Borough | | Fairbanks - No. Star Borough | | TOTAL |
|---|---|---|---|---|---|
| | Property Taxes | Sales Taxes | Property Taxes | Sales Taxes | |
| 1981 | 0.3 | 1.2 | - | 0.04 | 1.5 |
| 1982 | 1.0 | 1.6 | - | 0.07 | 2.7 |
| 1983 | 2.4 | 3.9 | - | 0.08 | 6.4 |
| 1984 | 7.1 | 12.5 | 2.4 | 0.09 | 22.1 |
| 1985 | 11.8 | 12.8 | 5.0 | 0.08 | 29.7 |
| TOTAL | 22.6 | 32.0 | 7.4 | 0.36 | 62.4 |

Notes for Table 3:

| Column | Source |
|---|---|
| 1 | "Tax Computations Workpapers," FERC Application, Exhibit K, increased by 12% contingency factor. Includes 10.35 mill tax (Alaska Taxable [2]) on construction camps and equipment. Does not include portion of pipeline real property located in the borough which is taxable under the state oil and gas property tax statute, since the statutory per capita valuation limit has already been exceeded in the borough. |
| 2 | "Tax Computations Workpapers," FERC Application, Exhibit K, increased by 12% contingency factor, assuming current interpretation of the borough's 3% sales and services tax (see Alaska Taxable [2]). |
| 3 | Appendix A, Table A-3, column 4, times 8 mills (see Alaska Taxable [2]). |
| 4 | "Tax Computations Workpapers," FERC Application, Exhibit K, increased by 12% contingency factor. Because of exemptions from taxation of construction activities, figures include only taxes on consumables and office equipment, automobiles, etc., for Fairbanks office. |
| 5 | Sum of columns one through four. |

the impact on project costs of predictable but uncontrollable events. This analysis (described in [3], Exhibit Z-7), concludes that the expected (50% probability) impact of uncontrollable events such as labor disputes, contractor nonperformance, etc., is an overrun of 29.2% above the Certification Cost Estimate, on top of the 12% contingency factor. The combined effect of the two uncertainty factors is to increase the expected cost of the pipeline by 44.7% (1.292 x 1.12) over the sum of component costs discussed in Exhibit K [3]. For the purpose of calculating all revenue estimates except local sales tax receipts, the cost figures in Exhibit K were increased by 44.7%. In this way, the sum of costs for all components of the pipeline would add up to the expected total cost, exclusive of finance charges. Since local sales tax revenues depend only on local purchase of materials and services such as office equipment, which is not generally prone to cost overruns due to uncontrollable events, only the 12% contingency factor was assumed for this revenue component.

Petroleum Revenue Effects from Pipeline Operation

Table 4 presents estimates of the net change in petroleum revenues accruing to the state as a result of pipeline operation. A detailed description of the calculations for Table 4 is provided in Appendices A, B, and C. However, several of the more important assumptions are discussed here.

Table 4
Total Change in Petroleum Revenues from Pipeline Operation
(in millions of 1980 $)

| Fiscal Year | Royalties, Production & Conservation Taxes | | Oil & Gas Property Taxes | Corporate Income Taxes | TOTAL |
|---|---|---|---|---|---|
| | Oil | Gas | | | |
| Thru FY81 | - | - | -21 | -4 | -25 |
| FY82 | - | - | -14 | -2 | -16 |
| 83 | - | - | -18 | -1 | -19 |
| 84 | - | - | -21 | -2 | -23 |
| 85 | - | - | -5 | -1 | -6 |
| FY86 | 50 | 185 | 14 | 81 | 330 |
| 87 | -81 | 188 | 7 | 42 | 156 |
| 88 | 62 | 190 | 1 | 88 | 341 |
| 89 | 200 | 192 | -5 | 131 | 518 |
| 90 | 204 | 193 | -11 | 132 | 518 |
| FY91 | 197 | 193 | -17 | 132 | 505 |
| 92 | 224 | 194 | -23 | 142 | 537 |
| 93 | 1,721 | 201 | -29 | 606 | 2,499 |
| 94 | 1,024 | 201 | -35 | 392 | 1,582 |
| 95 | 1,008 | 202 | -41 | 388 | 1,557 |
| FY96 | 629 | 201 | -47 | 273 | 1,056 |
| 97 | 404 | 199 | -53 | 201 | 751 |
| 98 | 302 | 198 | -59 | 175 | 616 |
| 99 | -13 | 195 | -65 | 80 | 197 |
| 2000 | -66 | 193 | -71 | 65 | 121 |
| FY01 | -280 | 185 | -77 | 1 | -171 |
| 02 | -340 | 179 | -83 | -16 | -260 |
| 03 | -208 | 172 | -89 | 28 | -97 |
| 04 | -705 | 137 | -80 | -180 | -828 |
| 05 | -685 | 228 | -72 | -10 | -539 |
| FY06 | -696 | 230 | -63 | -13 | -542 |
| 07 | -545 | 232 | -55 | 36 | -332 |
| 08 | -617 | 235 | -46 | 17 | -411 |
| 09 | -489 | 237 | -38 | 59 | -231 |
| 10 | -483 | 239 | -29 | 65 | -208 |
| FY11 | -460 | - | -20 | -14 | -494 |
| 12 | -437 | - | -10 | -5 | -452 |
| 13, 14, 15 | -1,022 | - | - | -2 | -1,024 |
| TOTAL (1981-2015) | -1,102 | 4,999 | -1,175 | 2,884 | 5,606 |

Notes for Table 4:

| Column | Source |
|---|---|
| 1 | Appendix B, Table B-2, column 4. |
| 2 | Appendix B, Table B-3, sum of columns 3 and 4. |
| 3 | Appendix A, Table A-5, column 5 |
| 4 | Appendices B and C, sum of Table C-1, column 5, and Table B-3, column 5. |
| 5 | Sum of columns 1 through 6. |

All forecasts of oil production from the Prudhoe Bay field, with and without the effects of a gas pipeline, are taken from the van Poollen Three-Dimensional Sadlerochit Reservoir Study [18]. The van Poollen study confirms that sufficient natural gas is available from the reservoir to sustain a two billion cubic foot per day gas sale for 25 years, as assumed in the FERC Application. For revenue estimates in this study, it is assumed that oil reserves from Kuparuk, or other North Slope fields, will not affect the useful economic life of the Trans-Alaska Pipeline System (TAPS). Neither are other North Slope gas reserves assumed to be available for sale to the gas pipeline, since it is not known at this time whether the producers from those fields will want to sell gas in the foreseeable future (see Van Dyke [17]).

Lacking access to information about field costs at Prudhoe Bay, an economic limit for oil production was assumed to occur when production falls to 100,000 barrels per day (following van Poollen [18], p. 11). The value of 100,000 barrels of oil per day was also used to approximate the operating cost for the field in its later production years.

Estimated annual production rates, shown in Appendix B, Table B-1, show that gas sales without a waterflood program will result in a loss of one billion barrels in recoverable reserves. The value of the state's share of a billion barrels of oil far

exceeds any conceivable benefits of the gas pipeline. Thus, the revenue estimates for this study assume waterflooding will commence prior to the sale of gas, as van Poollen has recommended.

Values are computed for the state's royalty share of oil and gas assuming that these resources will be sold at their market values. For the purpose of this study, natural gas liquids were included with the gas for royalty and severance tax estimates. It is possible that the state may exchange a portion of its royalty share of natural gas to obtain more gas liquids to support a petrochemical facility, or that sale of gas liquids may occur if the gas pipeline is not built. These scenarios, however, were not analyzed for the estimates shown in Table 4.

The figures in the third column in Table 4 represent the net difference between state oil and gas property taxes that could be collected if the gas pipeline begins operation in 1985 and those that could be collected if the pipeline is not built (excluding taxes on the pipeline itself counted in Tables 2 and 3). These taxes include those on the gas conditioning plant and the foregone opportunity to tax the entire Prudhoe Bay field investment and the TAPS property over a 35-year life instead of the 25-year field life with gas sales. The

predominantly negative numbers signify that potential taxes on the gas conditioning plant are less than the potential difference in property taxes if the Department of Revenue were to revise its assessment of Prudhoe Bay oil property (currently assuming a 25-year life) to reflect the estimated life of reserves without gas sales.

## Estimated Revenues Accruing Indirectly from the Economic Impact of Pipeline Construction

Table 5 shows the forecast of state and local revenues available from the economic activity induced by pipeline construction. These figures were derived from the economic model of Alaska (MAP model) developed by the University of Alaska, Institute of Social and Economic Research. The numbers represent the change in revenues from a scenario with pipeline construction to a scenario without pipeline construction, assuming a constant per capita state operating budget and a fixed state capital budget. The actual taxes included in the estimate for each column in Table 5 are indicated in the notes following the table.

Table 5
Estimated State and Local Revenues
from Indirect Effects of Pipeline Construction
(in millions of 1980 $)

| Fiscal Year | State Taxes | | | Local Taxes | | | TOTAL STATE AND LOCAL |
|---|---|---|---|---|---|---|---|
| | Corporate Income | Indirect | Total | Property | Other | Total | |
| FY81 | 0.1 | 0.3 | 0.4 | 0.1 | 0.2 | 0.3 | 0.7 |
| 82 | 0.6 | 0.8 | 1.4 | 0.2 | 0.4 | 0.6 | 2.0 |
| 83 | 2.4 | 4.0 | 6.4 | 2.0 | 2.5 | 4.5 | 10.9 |
| 84 | 6.6 | 12.2 | 18.8 | 9.2 | 10.0 | 19.2 | 38.0 |
| 85 | 10.2 | 20.8 | 31.0 | 20.2 | 20.5 | 40.7 | 71.7 |
| 86 | 7.4 | 16.2 | 23.6 | 16.8 | 13.2 | 30.0 | 53.6 |
| 87 | 7.0 | 13.3 | 20.3 | 14.6 | 8.2 | 22.8 | 43.1 |
| 88 | 5.9 | 8.5 | 14.4 | 9.4 | 4.9 | 14.3 | 28.7 |
| 89 | 4.6 | 5.1 | 9.7 | 5.5 | 2.7 | 8.2 | 17.9 |
| 90 | 3.4 | 3.6 | 7.0 | 4.1 | 2.0 | 6.1 | 13.1 |
| 91 | 2.8 | 2.9 | 5.7 | 3.4 | 1.7 | 5.1 | 10.8 |
| 92 | 2.6 | 2.7 | 5.3 | 3.3 | 1.7 | 5.0 | 10.3 |
| 93 | 2.5 | 2.7 | 5.2 | 3.2 | 1.7 | 4.9 | 10.1 |
| 94 | 2.5 | 2.7 | 5.2 | 3.2 | 1.7 | 4.9 | 10.1 |
| 95 | 2.5 | 2.7 | 5.2 | 3.2 | 1.7 | 4.9 | 10.1 |
| TOTAL | 61.1 | 98.5 | 159.6 | 98.4 | 73.1 | 171.5 | 331.1 |

Source: University of Alaska, Institute of Social and Economic Research.

Notes for Table 5:

| Column | Source |
|---|---|
| 1 | Includes taxes on non-petroleum corporate income from economic activity induced by pipeline construction |
| 2 | Includes motor fuels taxes, alcohol and cigarette taxes, insurance, utility and other indirect business taxes, auto licenses and fees, and other miscellaneous unrestricted state revenues |
| 3 | Sum of columns 1 and 2 |
| 4 | Statewide estimates based on weighted average municipal tax rates |
| 5 | Same as column 4 (above) |
| 6 | Sum of columns 4 and 5 |
| 7 | Sum of columns 3 and 6 |

## Appendix A

### Estimation of the Change in Oil and Gas Property Taxes

Most investments in property related to the production or transportation of crude oil and natural gas are subject to a state tax of 20 mills per year. The portion of taxable property of this type which falls within the boundaries of a local government with ad valorem taxing powers may also be taxed by the borough or municipality, in which case the local tax is credited against the tax liability for the state (AS 43.56).

Tables A-1 through A-5 present calculations of estimated revenues from this tax for the various affected parties. Tables A-1 and A-2 discuss the statewide tax burden of the Northwest Alaskan Pipeline Company. Table A-3 shows the share of Northwest's property taxes that would flow directly to the Fairbanks North Star Borough, while Tables A-4 and A-5 present the estimation of potential changes in oil and gas property taxes of other parties that would be expected from the effects of the pipeline operations.

All estimates of property tax revenues assume that the Department of Revenue revises its assessments of oil and gas property annually to reflect the impact of inflation on replacement

cost, as it may do under the statute (see [1], pp. V-60 thru 64). The estimates also assume a straight-line depreciation schedule of the assets over the expected life of Prudhoe Bay oil and gas reserves under the applicable production schedule.

Table A-1a
Northwest Alaskan Pipeline Company Estimated Tax Base
(in millions of $)

| Tax Year | Cost | | Cumulative Cost | | Tax Base | Adjusted for Expected Northwest Cost Overruns |
|---|---|---|---|---|---|---|
| | 1980 $ | Current $ | Current $ | Depreciated | 1980 $ | |
| Pre-1980 | - | - | - | - | - | - |
| 1980 | 119 | 119 | 119 | 119 | - | - |
| 1981 | 429 | 484 | 603 | 603 | 58 | 83 |
| 1982 | 801 | 994 | 1,597 | 1,597 | 296 | 428 |
| 1983 | 1,936 | 2,629 | 4,226 | 4,226 | 721 | 1,043 |
| 1984 | 2,245 | 3,309 | 7,535 | 7,535 | 2,487 | 3,598 |
| 1985 | 1,239 | 1,971 | 9,506 | 9,506 | 4,661 | 6,745 |
| 1986 | 141 | 242 | 11,180 | 10,733 | 5,975 | 8,646 |
| 1987 | 5 | 8 | 11,451 | 10,535 | 6,251 | 9,045 |
| 1988 | | | | (a) | 5,661 | 8,191 |
| 1989 | | | | | (b) | (c) |
| 1990 | | | | | | |

[a]Less 458/yr. in 1987 $
[b]Less 246.1/yr. for 23 more years
[c]Less 356.1/yr. for 23 more years

Table A-1b
Northwest Estimated Rate Base
(in millions of $)

| Tax Year | Cost | | Finance Charge to 1985 | Undepreciated, Cumulative | Depreciated Current $ | w/Projected Overrun 1980 $ |
|---|---|---|---|---|---|---|
| | 1980 $ | Current $ | | | | |
| Pre-1980 | 130 | 130 | 123 | 253 | | |
| 1980 | 119 | 119 | 88 | 460 | | |
| 1981 | 430 | 485 | 271 | 1,216 | | |
| 1982 | 802 | 995 | 394 | 2,605 | | |
| 1983 | 1,937 | 2,630 | 654 | 5,889 | | |
| 1984 | 2,246 | 3,311 | 389 | 9,589 | | |
| 1985 | 1,240 | 1,973 | | 11,562 | 11,562 | 16,730 |
| 1986 | 142 | 244 | | 11,806 | 11,344 | 16,415 |
| 1987 | 5 | 8 | | 11,814 | 10,869 | 15,727 |
| 1988 | | | | | (a) | (b) |

[a]Less 472.56/yr.
[b]Less 683.8/yr. for 23 yrs.

Notes for Table A-1a:

| Column | Source |
|---|---|
| 1 | Construction Cost Schedule, FERC Application [3], Exhibit K-16, includes all direct pipeline costs except land purchase and pre-construction period costs. |
| 2 | Column 1, inflated to current dollars, using DRI inflation projections [4]. |
| 3 | Cumulative sum of column 2, current dollars. |
| 4 | Assuming straight-line depreciation over 25-year life, beginning in 1985. |
| 5 | After 1985, figures are computed from column 4, deflated back to 1980 dollars, then moved back one year (i.e., assessed value for 1986 is cumulative cost through Dec. 31, 1985).<br><br>Figures for 1981 through 1985 are computed from FERC Application [3], Exhibit K, "Tax Computations Workpapers," from estimated State of Alaska property tax payments. |
| 6 | Column 5 is escalated by 12% (the Certification Cost Estimate factor for expected under-estimation of costs) and then increased by an additional 29.2%, to account for the expected (50% probability) cost overrun for the project, from FERC Application [3], Exhibit K, section 1, and Exhibit Z-7. |

Notes for Table A-1b:

| | |
|---|---|
| 1 | Same as for column 1, Table A-1a, but includes land purchase and pre-construction costs. |
| 2 | (see column 1 note) |
| 3 | Assumes 25% equity share, 14% return on equity, and 11% debt interest on remaining 75% of investment (from [10], p. 38). |
| 4 | Cumulative sum of columns 2 and 3. |
| 5 | Same as column 4, Table A-1a. |
| 6 | Same as column 6, Table A-1a. |

Table A-2
Estimated Taxes for Northwest Alaskan Pipeline Company
(in millions of 1980 $)

| Fiscal Year | 20 mill Property Tax | | 9.4% Corporate Income | | | |
|---|---|---|---|---|---|---|
| | FERC Cert. Est. | 44.7% Expected Overrun | FERC Cert. Est. Rate Base | FERC Cert. Est. Tax | w/ Expected Overruns Rate Base | w/ Expected Overruns Tax |
| FY81 | 1 | 2 | - | | - | |
| 82 | 6 | 9 | - | | - | |
| 83 | 14 | 21 | - | | - | |
| 84 | 50 | 72 | - | | - | |
| 85 | 93 | 135 | - | | - | |
| FY86 | 120 | 174 | 6,734 | 62 | 9,744 | 90 |
| 87 | 125 | 181 | 6,096 | 56 | 8,821 | 81 |
| 88 | 113 | 164 | 5,378 | 50 | 7,782 | 72 |
| 89 | 108 | 156 | 4,754 | 44 | 6,879 | 63 |
| 90 | 103 | 149 | 4,190 | 39 | 6,063 | 56 |
| FY91 | 98 | 142 | 3,685 | 34 | 5,332 | 49 |
| 92 | 93 | 135 | 3,233 | 30 | 4,678 | 43 |
| 93 | 88 | 128 | 2,828 | 26 | 4,092 | 38 |
| 94 | 83 | 121 | 2,466 | 23 | 3,568 | 33 |
| 95 | 79 | 114 | 2,143 | 20 | 3,101 | 29 |
| FY96 | 74 | 107 | 1,881 | 17 | 2,722 | 25 |
| 97 | 69 | 100 | 1,599 | 15 | 2,314 | 22 |
| 98 | 64 | 93 | 1,371 | 13 | 1,984 | 19 |
| 99 | 59 | 85 | 1,168 | 11 | 1,690 | 16 |
| 2000 | 54 | 78 | 989 | 9 | 1,431 | 13 |
| FY01 | 49 | 71 | 830 | 8 | 1,201 | 11 |
| 02 | 44 | 64 | 690 | 6 | 998 | 9 |
| 03 | 39 | 57 | 566 | 5 | 819 | 8 |
| 04 | 34 | 50 | 457 | 4 | 661 | 6 |
| 05 | 29 | 42 | 362 | 3 | 524 | 5 |
| FY06 | 24 | 35 | 279 | 3 | 404 | 4 |
| 07 | 20 | 29 | 206 | 2 | 298 | 3 |
| 08 | 15 | 22 | 142 | 1 | 205 | 2 |
| 09 | 10 | 14 | 88 | 1 | 127 | 1 |
| 10 | 5 | 7 | 40 | - | 58 | 1 |

Notes for Table A-2:

| Column | Source |
|---|---|
| 1 | 2% of Table A-1a, column 5 |
| 2 | 2% of Table A-1a, column 6 |
| 3 | Table A-1b, column 5, deflated to 1980 dollars |
| 4 | 9.4% of column 3 |
| 5 | Table A-1b, column 6, deflated to 1980 dollars |
| 6 | 9.4% of column 5 |

Table A-3
Pipeline Taxable Property Located in the Fairbanks North Star Borough
(in millions of 1980 $)

| Tax Year | Compressor Station Number 11 | Operations and Maintenance Facility No. 1 | Pipeline, 88 miles | TOTAL |
|---|---|---|---|---|
| 1984 | 36 | 2 | 263 | 301 |
| 1985 | 89 | 6 | 525 | 619 |
| 1986 | 125 | 9 | 700 | 834 |

Notes for Table A-3:

| Column | Source |
|---|---|
| 1 | FERC Application [3], location from Exhibit F, Figure F-2-1. Exhibit K, Section 7, shows construction commencement date as May 1983. Value, accrued over 28-month construction schedule, from Exhibit K-9, multiplied by combined contingency and expected cost overrun factor (see note for column 6, Table A-1a). |
| 2 | FERC Application, Exhibit K, Section 7, K-26-2. Construction commencement date is August 1983. Facility to be leased by Northwest, but increase in value of property, assumed to accrue over a 25-month schedule, is taxable by Borough. Cost from Exhibit K, Section 5, multiplied by combined contingency and expected cost overrun factor (see note for column 6, Table A-1a). |
| 3 | FERC Application, Exhibit K, Section 7, shows construction commencement during January 1983. Value, from Exhibit K, page K-13-1, accrued over a 32-month schedule, is multiplied by combined contingency and cost overrun factor (see note for column 6, Table A-1a). |

Table A-4
Prudhoe Bay Related Investments
under Alternative Depreciation Schedules
(in millions of 1980 $)

| Tax Year | PB Investment 25-yr. life | PB Investment 35-yr. life | TAPS 25-yr. life | TAPS 35-yr. life | Gas Conditioning Plant 25-yr. life | Waterflood Investment 18-yr. life | Waterflood Investment 28-yr. life |
|---|---|---|---|---|---|---|---|
| 1978 | 5,000 | 5,000 | 10,400 | 10,400 | | | |
| 1979 | 4,800 | 4,857 | 9,984 | 10,103 | | | |
| 1980 | 4,600 | 4,714 | 9,568 | 9,806 | | | |
| 1981 | 4,400 | 4,571 | 9,152 | 9,509 | | | |
| 1982 | 4,200 | 4,429 | 8,736 | 9,211 | | | |
| 1983 | 4,000 | 4,286 | 8,320 | 8,914 | | | |
| 1984 | 3,800 | 4,143 | 7,904 | 8,617 | | | |
| 1985 | 3,600 | 4,000 | 7,488 | 8,320 | 1,000 | 2,000 | 2,000 |
| 1986 | 3,400 | 3,857 | 7,072 | 8,023 | 2,100 | 1,889 | 1,929 |
| 1987 | 3,200 | 3,714 | 6,656 | 7,726 | 2,016 | 1,778 | 1,857 |
| 1988 | 3,000 | 3,571 | 6,240 | 7,429 | 1,932 | 1,667 | 1,786 |
| 1989 | 2,800 | 3,429 | 5,824 | 7,131 | 1,848 | 1,556 | 1,714 |
| 1990 | 2,600 | 3,286 | 5,408 | 6,834 | 1,764 | 1,444 | 1,643 |
| 1991 | 2,400 | 3,143 | 4,992 | 6,537 | 1,680 | 1,333 | 1,571 |
| 1992 | 2,200 | 3,000 | 4,576 | 6,240 | 1,596 | 1,222 | 1,500 |
| 1993 | 2,000 | 2,857 | 4,160 | 5,943 | 1,512 | 1,111 | 1,429 |
| 1994 | 1,800 | 2,714 | 3,744 | 5,646 | 1,428 | 1,000 | 1,357 |
| 1995 | 1,600 | 2,571 | 3,328 | 5,349 | 1,344 | 889 | 1,286 |
| 1996 | 1,400 | 2,429 | 2,912 | 5,051 | 1,260 | 778 | 1,214 |
| 1997 | 1,200 | 2,286 | 2,496 | 4,752 | 1,176 | 667 | 1,143 |
| 1998 | 1,000 | 2,143 | 2,080 | 4,457 | 1,092 | 556 | 1,071 |
| 1999 | 800 | 2,000 | 1,664 | 4,160 | 1,008 | 444 | 1,000 |
| 2000 | 600 | 1,857 | 1,248 | 3,863 | 924 | 333 | 929 |
| 2001 | 400 | 1,714 | 832 | 3,566 | 840 | 222 | 857 |
| 2002 | 200 | 1,571 | 416 | 3,269 | 756 | 111 | 786 |
| 2003 | - | 1,429 | - | 2,971 | 672 | - | 714 |
| 2004 | | 1,286 | | 2,674 | 588 | | 643 |
| 2005 | | 1,143 | | 2,377 | 504 | | 571 |
| 2006 | | 1,000 | | 2,080 | 420 | | 500 |
| 2007 | | 857 | | 1,783 | 336 | | 429 |
| 2008 | | 714 | | 1,486 | 252 | | 357 |
| 2009 | | 571 | | 1,189 | 168 | | 286 |
| 2010 | | 428 | | 891 | 84 | | 214 |
| 2011 | | 285 | | 593 | - | | 143 |
| 2012 | | 142 | | 297 | | | 71 |
| 2013 | | - | | - | | | - |

Notes for Table A-4:

| Column | Source |
|---|---|
| 1 | Investment estimate from State of Alaska, Department of Natural Resources, Division of Minerals and Energy Management. Depreciation Schedule assumes 25-year field life, following van Poolen estimates [18] assuming gas sales starting in mid-1985. |
| 2 | Same as for column 1, except depreciated over assumed 35-year field life, following van Poollen estimates [18] assuming no gas sales. |
| 3 | Trans-Alaska Pipeline System rate base [14] has interest during construction and allowance for equity return for funds used during construction (AFUDC), inflated to 1980 dollars. Depreciation schedule of 25 years corresponds to tariff assumption [14] and Prudhoe Bay field life estimate [18] with gas sales. |
| 4 | Same as for column 3, except depreciated over 35 years (see note for column 2). |
| 5 | Investment estimate from 1978 Parsons engineering study, quoted by State of Alaska, Department of Natural Resources, Division of Minerals and Energy Management, inflated to 1980 dollars. |
| 6 | Investment estimate from the Prudhoe Bay Waterflood Environmental Impact Statement [6], with depreciation schedule according to estimated field life assuming gas sales in mid-1985 [18]. |
| 7 | Same as for column 6, but with depreciation schedule according to estimated field life assuming no gas sales [18]. |

Table A-5
Potential Change in Oil and Gas Property Taxes with Pipeline Operation
(in millions of 1980 $)

| Year | Difference between 25 & 35-yr. life: PB Investment | Difference between 25 & 35-yr. life: TAPS | Gas Cond. 25-yr. life | Waterflood Difference btwn. 18 & 28-yr. life | Sum of Annual Differences |
|---|---|---|---|---|---|
| | (x 20 mills) | | | | |
| 1978 | - | - | | | - |
| 1979 | -1.1 | -2.4 | | | -3.5 |
| 1980 | -2.3 | -4.8 | | | -7.0 |
| 1981 | -3.4 | -7.1 | | | -10.6 |
| 1982 | -4.6 | -9.5 | | | -14.1 |
| 1983 | -5.7 | -11.9 | | | -17.6 |
| 1984 | -6.9 | -14.3 | | | -21.1 |
| 1985 | -8.0 | -16.6 | 20.0 | - | -4.6 |
| 1986 | -9.1 | -19.0 | 42.0 | -0.1 | 13.8 |
| 1987 | -10.3 | -21.4 | 40.3 | -1.6 | 7.1 |
| 1988 | -11.4 | -23.8 | 38.6 | -2.4 | 1.1 |
| 1989 | -12.6 | -26.1 | 37.0 | -3.2 | -4.9 |
| 1990 | -13.7 | -28.5 | 35.3 | -4.0 | -10.9 |
| 1991 | -14.9 | -30.9 | 33.6 | -4.8 | -16.9 |
| 1992 | -16.0 | -33.3 | 31.9 | -5.6 | -22.9 |
| 1993 | -17.1 | -35.7 | 30.2 | -6.4 | -28.9 |
| 1994 | -18.3 | -38.0 | 28.6 | -7.1 | -34.9 |
| 1995 | -19.4 | -40.4 | 26.9 | -7.9 | -40.9 |
| 1996 | -20.5 | -42.8 | 25.2 | -8.7 | -46.8 |
| 1997 | -21.7 | -45.1 | 23.5 | -9.5 | -52.8 |
| 1998 | -22.9 | -47.5 | 21.8 | -10.3 | -58.9 |
| 1999 | -24.0 | -49.9 | 20.2 | -11.1 | -64.9 |
| 2000 | -25.1 | -52.3 | 18.5 | -11.9 | -70.9 |
| 2001 | -26.3 | -54.7 | 16.8 | -12.7 | -76.9 |
| 2002 | -27.4 | -57.1 | 15.1 | -13.5 | -82.9 |
| 2003 | -28.6 | -59.4 | 13.4 | -14.3 | -88.8 |
| 2004 | -25.7 | -53.5 | 11.8 | -12.9 | -80.3 |
| 2005 | -22.9 | -47.5 | 10.1 | -11.4 | -71.7 |
| 2006 | -20.0 | -41.6 | 8.4 | -10.0 | -63.2 |
| 2007 | -17.1 | -35.7 | 6.7 | -8.6 | -54.7 |
| 2008 | -14.3 | -29.7 | 5.0 | -7.1 | -46.1 |
| 2009 | -11.4 | -23.8 | 3.4 | -5.7 | -37.6 |
| 2010 | -8.6 | -17.8 | 1.7 | -4.3 | -29.0 |
| 2011 | -5.7 | -11.9 | - | -2.9 | -20.4 |
| 2012 | -2.8 | -5.9 | | -1.4 | -10.2 |
| 2013 | - | - | | - | - |
| TOTAL | -499.8 | -1,039.9 | 566.0 | -199.3 | -1,173.0 |

Notes for Table A-5:

| Column | Source |
|---|---|
| 1 | 2% of the difference, Table A-4, column 1 less column 2 |
| 2 | 2% of the difference, Table A-4, column 3 less column 4 |
| 3 | 2% of Table A-4, column 5 |
| 4 | 2% of the difference, Table A-4, column 6 less column 7 |
| 5 | Sum of columns 1 through 4 |

## Appendix B

## Estimation of Change in Petroleum Revenues

Tables B-1, B-2, and B-3 show the details of the calculations of petroleum production revenues. Table B-1 summarizes the difference in Prudhoe Bay oil production rates, depending upon whether gas sales of two billion cubic feet per day commence in mid-1985 and whether a waterflood program is initiated in 1984. All production figures are from Tables 1, 2, 3, or 4 of the van Poollen study [18]. Oil price figures are derived from the Alaska Department of Revenue [11], with the real price assumed to escalate at 2% per year after 1985.

Table B-2 describes the calculation of oil royalties, production and conservation taxes, based on the production scenarios of Table B-1, assuming a waterflood program for the field. Table B-3 describes royalty and production tax calculations for the gas. The latter table also contains an estimate of the incremental income taxes which the producers are expected to pay from the sale of natural gas to the pipeline.

Table B-1
Prudhoe Bay Reservoir Effects from Gas Sales

| Year | Oil Production (mmbls) No Water Injection: No Gas Case A mmbls. | Gas Case C mmbls. | Lost Oil mmbls. (A-C) | Water Injection: No Gas Case B | Gas Case D | Lost Oil (B-D) | Real Oil Price (1980 $/bl.) 2% Escalation |
|---|---|---|---|---|---|---|---|
| 1985 | 529 | 529 | - | 539 | 539 | - | |
| 1986 | 519 | 535 | -16 | 553 | 558 | -5 | $42.50 |
| 1987 | 539 | 562 | -23 | 573 | 565 | 8 | 43.35 |
| 1988 | 550 | 466 | 84 | 560 | 566 | -6 | 44.22 |
| 1989 | 320 | 323 | -3 | 526 | 545 | -19 | 45.10 |
| 1990 | 249 | 235 | 14 | 403 | 422 | -19 | 46.00 |
| 1991 | 219 | 209 | 10 | 300 | 318 | -18 | 46.92 |
| 1992 | 175 | 149 | 26 | 243 | 263 | -20 | 47.86 |
| 1993 | 253 | 225 | 28 | 324 | 475 | -151 | 48.82 |
| 1994 | 233 | 174 | 59 | 283 | 371 | -88 | 49.80 |
| 1995 | 152 | 130 | 22 | 215 | 300 | -85 | 50.79 |
| 1996 | 138 | 129 | 9 | 195 | 247 | -52 | 51.81 |
| 1997 | 143 | 96 | 47 | 160 | 192 | -32 | 52.84 |
| 1998 | 110 | 80 | 30 | 133 | 157 | -24 | 53.90 |
| 1999 | 94 | 65 | 29 | 125 | 124 | 1 | 54.98 |
| 2000 | 90 | 58 | 32 | 111 | 106 | 5 | 56.08 |
| 2001 | 85 | 43 | 42 | 102 | 81 | 21 | 57.20 |
| 2002 | 75 | 12 | 63 | 94 | 69 | 25 | 58.34 |
| 2003 | 64 | | 64 | 73 | 58 | 15 | 59.51 |
| 2004 | 61 | | 61 | 74 | 14 | 60 | 60.70 |
| 2005 | 56 | | 56 | 64 | | 64 | 61.91 |
| 2006 | 53 | | 53 | 64 | | 64 | 63.15 |
| 2007 | 50 | | 50 | 53 | | 53 | 64.42 |
| 2008 | 47 | | 47 | 57 | | 57 | 65.70 |
| 2009 | 46 | | 46 | 48 | | 48 | 67.02 |
| 2010 | 40 | | 40 | 47 | | 47 | 68.36 |
| 2011 | 44 | | 44 | 45 | | 45 | 69.73 |
| 2012 | 40 | | 40 | 43 | | 43 | 71.12 |
| 2013 } 2014 } 2015 | 46 | | 46 | 103 | | 103 | 73.99 |
| TOTAL | | | 1,000 | | | 140 | |

Notes for Table B-1:

| Column | Source |
|---|---|
| 1 | van Poollen ([18], Table 1, column 2). |
| 2 | van Poollen ([18], Table 3, column 2). |
| 3 | Column 1 less column 2. |
| 4 | van Poollen ([18], Table 2, column 2). |
| 5 | van Poollen ([18], Table 4, column 2). |
| 6 | Column 4 less column 5. |
| 7 | Assumes $67/barrel wellhead price in fiscal year 1986 ([11], pp. 5-6), deflated to 1980, with DRI price forecast [4]. |

Table B-2
Change in Petroleum Revenues with Gas Sales
Assuming Water Injection
(in millions of 1980 $)

| Fiscal Year | Change in Royalties | Change in Conservation Taxes | Change in Severance Taxes | Total Difference in Tax Revenues |
|---|---|---|---|---|
| FY85 | - | - | - | - |
| FY86 | 26.6 | .01 | 23.0 | 49.6 |
| 87 | -43.4 | -.01 | -37.6 | -81.0 |
| 88 | 33.2 | .01 | 28.8 | 62.0 |
| 89 | 107.1 | .02 | 93.0 | 200.1 |
| 90 | 109.3 | .02 | 94.8 | 204.1 |
| FY91 | 105.6 | .02 | 91.6 | 197.2 |
| 92 | 119.7 | .03 | 103.8 | 223.5 |
| 93 | 921.5 | .19 | 799.1 | 1,720.8 |
| 94 | 547.8 | .11 | 476.2 | 1,024.1 |
| 95 | 539.6 | .10 | 467.8 | 1,007.5 |
| FY96 | 336.8 | .07 | 291.8 | 628.7 |
| 97 | 221.4 | .04 | 183.1 | 404.5 |
| 98 | 161.7 | .03 | 140.1 | 301.8 |
| 99 | -6.9 | - | -5.9 | -12.8 |
| 2000 | -35.1 | -.01 | -30.4 | -65.5 |
| FY01 | -150.2 | -.03 | -130.0 | -280.2 |
| 02 | -182.3 | -.03 | -157.8 | -340.1 |
| 03 | -111.6 | -.02 | -96.6 | -208.2 |
| 04 | -455.3 | -.08 | -249.5 | -704.9 |
| 05 | -495.3 | -.08 | -189.6 | -685.0 |
| FY06 | -505.2 | -.08 | -191.2 | -696.5 |
| 07 | -426.8 | -.07 | -118.4 | -545.3 |
| 08 | -468.1 | -.07 | -149.1 | -617.3 |
| 09 | -402.1 | -.06 | -86.9 | -489.1 |
| 10 | -401.6 | -.06 | -81.2 | -482.9 |
| FY11 | -392.2 | -.06 | -67.8 | -460.1 |
| 12 | -382.3 | -.05 | -53.8 | -436.2 |
| 13, 14, 15 | -952.6 | -.13 | -70.0* | -1,022.7* |

*projected

Notes for Table B-2:

| Column | Source |
|---|---|
| 1 | Table B-1, column 6 (change sign) times column 7, times 12.5%. |
| 2 | Table B-1, column 6 (change sign) times 60¢/barrel (AS 43.57.101). |
| 3 | $S_2$ minus $S_1$, where $S_i$ is computed from the formula: $(0.1072)Q_i\ [1 - (36/Q_i)]\ (P + .55)$, or 12.25% of non-royalty production, $Q_i$ ($Q_1$ is column 4 of Table B-1 and $Q_2$ is column 5 of Table B-1). The expression in brackets approximates the economic limit factor assuming a 100,000 barrel/day limit (used by van Poollen [18]), and P is column 7 of Table B-1. The price of oil assumed for the royalty payment is increased by 55¢/barrel for the assessment of severance taxes following the Settlement Agreement between the State and the producers regarding litigation over field costs [13], as interpreted by the State Dept. of Natural Resources, Division of Minerals and Energy Management. |
| 4 | Sum of columns 1, 2 and 3. |

Table B-3
Change in Gas Revenues
(in millions of 1980 $)

| Fiscal Year | Gas Sales | Conditioning Costs | Royalties | Severance Taxes | Net Gas Income | State Tax |
|---|---|---|---|---|---|---|
| FY86 | 1,460 | 562 | 112 | 73 | 713 | 67 |
| 87 | 1,460 | 551 | 114 | 74 | 721 | 68 |
| 88 | 1,460 | 540 | 115 | 75 | 730 | 69 |
| 89 | 1,460 | 529 | 116 | 76 | 739 | 69 |
| 90 | 1,460 | 518 | 118 | 75 | 749 | 70 |
| FY91 | 1,460 | 507 | 119 | 74 | 760 | 71 |
| 92 | 1,460 | 496 | 121 | 73 | 770 | 72 |
| 93 | 1,460 | 485 | 122 | 79 | 774 | 73 |
| 94 | 1,460 | 474 | 123 | 78 | 785 | 74 |
| 95 | 1,460 | 463 | 125 | 77 | 795 | 75 |
| FY96 | 1,460 | 452 | 126 | 75 | 807 | 76 |
| 97 | 1,460 | 441 | 127 | 72 | 820 | 77 |
| 98 | 1,460 | 430 | 129 | 69 | 832 | 78 |
| 99 | 1,460 | 419 | 130 | 65 | 846 | 80 |
| 2000 | 1,460 | 408 | 132 | 61 | 859 | 81 |
| FY01 | 1,460 | 397 | 133 | 52 | 878 | 83 |
| 02 | 1,460 | 386 | 134 | 45 | 895 | 84 |
| 03 | 1,460 | 375 | 136 | 36 | 913 | 86 |
| 04 | 1,460 | 364 | 137 | - | 959 | 90 |
| 05 | 1,460 | 353 | 138 | 90 | 879 | 83 |
| FY06 | 1,460 | 342 | 140 | 90 | 888 | 83 |
| 07 | 1,460 | 331 | 141 | 91 | 897 | 84 |
| 08 | 1,460 | 320 | 143 | 92 | 905 | 85 |
| 09 | 1,460 | 309 | 144 | 93 | 914 | 86 |
| 10 | 1,460 | 298 | 145 | 94 | 923 | 87 |

Notes for Table B-3:

| Column | Source |
|---|---|
| 1 | Assumes gas sales of two billion cubic feet per day for 25 years at maximum legal price under the rules of the Natural Gas Policy Act, which is $2.00 per mcf in 1980 dollars (see [11], p. 7), net of gathering cost. |
| 2 | Department of Revenue ([11], p. 7), deflated to 1980 dollars (includes ad valorem taxes). |
| 3 | 12.5% of the difference between column 1 and column 2 (following the Field-Cost Settlement Agreement [13]), see note for column 3, Table B-2. |
| 4 | 10% of taxable production (column one less the sums of columns 2 and 3) times the economic limit factor for oil, assuming gas sales (see note for column 3, Table B-2), since wells are producting both oil and gas. See Department of Revenue forecasts ([11], p. 35). |
| 5 | Column 1 less the sum of columns 2, 3, and 4. |
| 6 | Column 5 times 9.4%. |

## Appendix C

## Estimation of Change in Income Taxes

Table B-3 contains an estimate of incremental income taxes the producers are expected to pay on gas sales, while Table A-2 shows estimates of income taxes paid on the gas pipeline itself. Still remaining to be discussed, however, are the computations of income taxes of construction contractors, and the taxes on incremental income (or loss) of the producers of Prudhoe Bay oil.

Tables C-1 and C-2 show the calculation of the change in oil income, taking into account the changes in property taxes resulting from adjustments in useful lives of major assets if gas sales are not realized. The actual timing of the payment of, or credit against, income taxes shown in Table C-2 is uncertain, due to the unknown depreciation schedules of these assets for tax purposes.

Tables C-3 and C-4 discuss calculation of corporate income taxes of pipeline contractors. It is assumed that there are essentially two types of contractors -- the project management contractor and the execution contractors. Each type of contractor has a different expected profit markup, based on a percentage of total costs. Table C-3a shows the calculation of Alaskan execution contracts derived from the FERC Application, while Table C-3b summarizes the Project Management Costs.

The corporate income tax estimates of the two types of contractors are shown in Tables C-4a and C-4b. The FERC Application Certification Costs were computed assuming a 14.65% markup over total costs (12.8% of contract value) for a number of execution contracts ([3], Vol. II, p. K-1-4). Since this markup was intended to represent the best estimate of industry conditions, it was applied to the sum total of all execution contracts in Tables C-4a and C-4b. The Project Management Contractor (PMC) for the Alaska portion of the Alaska Highway Natural Gas Pipeline Project is Fluor Construction, Inc. Recent income statements for The Fluor Corporation (from [8]) show an operating profit margin of approximately 5% of sales for pipeline engineering and construction contracts. This figure was assumed to hold, as well, for the Alaskan contracts summarized in Tables C-4a and C-4b.

Table C-1
Change in Prudhoe Bay Producers Income Tax from Oil
(in millions of 1980 $)

| Tax Year | Change in Oil Revenues | Less Change in Royalties, Severance Taxes, Conservation Taxes | Less Change in Property Taxes (excluding gas conditioning plant) | Equals Change in Net Income | Times 9.4% |
|---|---|---|---|---|---|
| 1979 | - | - | -4 | 4 | - |
| 1980 | - | - | -7 | 7 | 1 |
| 1981 | - | - | -11 | 11 | 1 |
| 1982 | - | - | -14 | 14 | 1 |
| 1983 | - | - | -18 | 18 | 2 |
| 1984 | - | - | -21 | 21 | 2 |
| 1985 | - | - | -25 | 25 | 2 |
| 1986 | 213 | 50 | -28 | 191 | 18 |
| 1987 | -347 | -81 | -33 | -233 | -22 |
| 1988 | 265 | 62 | -38 | 241 | 23 |
| 1989 | 857 | 200 | -42 | 699 | 66 |
| 1990 | 874 | 204 | -46 | 716 | 67 |
| 1991 | 845 | 197 | -51 | 699 | 66 |
| 1992 | 957 | 224 | -55 | 788 | 74 |
| 1993 | 7,372 | 1,721 | -59 | 5,710 | 537 |
| 1994 | 4,382 | 1,024 | -64 | 3,422 | 322 |
| 1995 | 4,317 | 1,008 | -68 | 3,377 | 317 |
| 1996 | 2,694 | 629 | -71 | 2,136 | 201 |
| 1997 | 1,691 | 404 | -76 | 1,363 | 128 |
| 1998 | 1,294 | 302 | -81 | 1,073 | 101 |
| 1999 | -55 | -13 | -85 | 43 | 4 |
| 2000 | -280 | -66 | -89 | -125 | -12 |
| 2001 | -1,201 | -280 | -94 | -827 | -78 |
| 2002 | -1,459 | -340 | -98 | -1,021 | -96 |
| 2003 | -893 | -208 | -102 | -583 | -55 |
| 2004 | -3,642 | -705 | -92 | -2,845 | -267 |
| 2005 | -1,733 | -685 | -82 | -966 | -91 |
| 2006 | -1,768 | -696 | -72 | -1,000 | -94 |
| 2007 | -1,095 | -545 | -61 | -489 | -46 |
| 2008 | -1,380 | -617 | -51 | -712 | -67 |
| 2009 | -804 | -489 | -41 | -274 | -26 |
| 2010 | -752 | -483 | -31 | -238 | -22 |
| 2011 | -628 | -460 | -20 | -148 | -14 |
| 2012 | -498 | -437 | -10 | -51 | -5 |
| 2013<br>2014<br>2015 | -1,040 | -1,022 | - | -18 | -2 |

Notes for Table C-1:

| Column | Source |
|---|---|
| 1 | Table B-1, column 6 (change sign) times column 7, through year 2004. After 2004, subtract 36 million barrels from the oil quantity, so that only production over the economic limit is assumed to be net revenue (see note for column 3, Table B-1). |
| 2 | Table B-2, column 4 |
| 3 | Table A-5, column 5 less column 3. Property taxes on the gas conditioning plant are included in the conditioning cost for gas (Table B-3) and should not be included here to avoid double-counting. |
| 4 | Column 1 less columns 2 and 3 |
| 5 | 9.4% of column 4 |

Table C-2
Change in TAPS Income Tax
(in millions of 1980 $)

| Year | Rate Base | | State Income Tax | | | |
|---|---|---|---|---|---|---|
| | 25-yr. life | 35-yr. life | 25-yr. life | 35-yr. life | Nominal $ | Deflated to 1980 $ |
| 1978 | 9,684 | 9,684 | 72 | 72 | - | - |
| 1979 | 9,297 | 9,407 | 69 | 70 | -1 | -1 |
| 1980 | 8,909 | 9,131 | 66 | 68 | -2 | -2 |
| 1981 | 8,522 | 8,854 | 63 | 66 | -3 | -3 |
| 1982 | 8,135 | 8,577 | 60 | 63 | -3 | -3 |
| 1983 | 7,747 | 8,301 | 57 | 61 | -4 | -3 |
| 1984 | 7,360 | 8,024 | 54 | 59 | -5 | -4 |
| 1985 | 6,972 | 7,747 | 52 | 57 | -5 | -3 |
| 1986 | 6,585 | 7,471 | 49 | 55 | -6 | -4 |
| 1987 | 6,198 | 7,194 | 46 | 53 | -7 | -4 |
| 1988 | 5,810 | 6,917 | 43 | 51 | -8 | -4 |
| 1989 | 5,423 | 6,640 | 40 | 49 | -9 | -4 |
| 1990 | 5,036 | 6,364 | 37 | 47 | -10 | -5 |
| 1991 | 4,648 | 6,087 | 34 | 45 | -11 | -5 |
| 1992 | 4,261 | 5,810 | 32 | 43 | -11 | -4 |
| 1993 | 3,874 | 5,534 | 29 | 41 | -12 | -4 |
| 1994 | 3,486 | 5,257 | 26 | 39 | -13 | -4 |
| 1995 | 3,099 | 4,980 | 23 | 37 | -14 | -4 |
| 1996 | 2,712 | 4,704 | 20 | 35 | -15 | -4 |
| 1997 | 2,324 | 4,427 | 17 | 33 | -16 | -4 |
| 1998 | 1,937 | 4,150 | 14 | 31 | -17 | -4 |
| 1999 | 1,549 | 3,873 | 11 | 29 | -18 | -4 |
| 2000 | 1,162 | 3,597 | 9 | 27 | -18 | -4 |
| 2001 | 775 | 3,320 | 6 | 25 | -19 | -4 |
| 2002 | 387 | 3,043 | 3 | 23 | -20 | -4 |
| 2003 | | 2,767 | | 20 | -20 | -3 |
| 2004 | | 2,490 | | 18 | -18 | -3 |
| 2005 | | 2,213 | | 16 | -16 | -2 |
| 2006 | | 1,937 | | 14 | -14 | -2 |
| 2007 | | 1,600 | | 12 | -12 | -2 |
| 2008 | | 1,323 | | 10 | -10 | -1 |
| 2009 | | 1,047 | | 8 | -8 | -1 |
| 2010 | | 770 | | 6 | -6 | - |
| 2011 | | 493 | | 4 | -4 | - |
| 2012 | | 217 | | 2 | -2 | - |

Notes for Table C-2:

| Column | Source |
|---|---|
| 1 | 1978 figure from TAPS tariff ruling 14 , in 1977 dollars, with life as assumed in the tariff proceeding (corresponds with van Poollen estimated field life with gas sales [18]). |
| 2 | Same as for column 1, except TAPS depreciated over 35-year life corresponding to van Poollen [18] estimated field life with no gas sales. |
| 3 | Estimated state income tax with rate base of column 1, assuming 11.5% after-tax return on total project, interest cost at 8% of rate base (amortized at same rate as depreciation of investment), and federal and state income taxes at 46% and 9.4%, respectively, of net pre-tax income (see [14, Appendix, Schedule C]). |
| 4 | Estimated state income tax with rate base of column 2. Same assumptions as for column 3. |
| 5 | Column 3 less column 4. |
| 6 | Column 5, deflated to 1980 dollars using DRI price forecasts [4]. |

Table C-3a

Alaska Construction and Service Subcontracts

(Thousands of 1980 $)

| COST CATEGORY | CCE |
|---|---|
| COMPRESSOR STATIONS | |
| Other Mechanical Equipment | |
| Halon | 4,207 |
| Insulation and Coating | |
| Painting | 357 |
| Insulation | 8,078 |
| Buildings | |
| Buildings | 9,442 |
| HVAC | 2,625 |
| Excavation | |
| Site Work | 42 |
| Piling | 8,257 |
| Direct Labor | 75,362 |
| Indirect Costs | 181,730 |
| Contracts - Site Preparation | 37,381 |
| METERING STATIONS | |
| Insulation and Coating | |
| Painting | 4 |
| Insulation | 162 |
| Buildings | |
| Buildings | 513 |
| HVAC | 163 |
| Excavation | |
| Site Work | 3 |
| Piling | 407 |
| Craft Direct Labor | 3,118 |
| Indirect Costs | 13,761 |
| Contracts - Site Preparation | 1,429 |
| Subtotal, Compressor/Metering Stations | 347,041 |

SUBCONTRACT VALUE ($1,000)

| | |
|---|---|
| **OPERATIONS AND MAINTENANCE FACILITIES** | |
| Installation Labor | 2,485 |
| Direct Subcontracts | 851 |
| Site Work | 634 |
| Subtotal, Operation/Maintenance Facilities, Subcontracts: | 3,970 |
| **TEMPORARY FACILITIES AND SERVICES** | |
| Airfields | |
| Renovation/Upgrading | 2,165 |
| Common Facilities | |
| Fairbanks Pipe Storage Facilities | 1,300 |
| Fairbanks Warehouse | 2,045 |
| Intermediate Storage Sites | 1,726 |
| Station Facilities | |
| Purchase Aquisition, Refurbishment and Demobilization* | 81,246 |
| Pipeline Facilities | |
| Purchase Aquisition, Refurbishment and Demobilization* | 198,430 |
| Ft. Wainwright Camp | |
| Refurbish Barracks Building | 3,334 |
| New/Relocated Facilities | 8,650 |
| End-of-Job Demobilization | 1,412 |
| Camps - Relocated | |
| Purchase Aquisition, Refurbishment and Demobilization | 78,532 |
| Relocation Costs | 4,679 |

*Based on the difference between the March 1977 Filed Estimates and the CCE

| SUBCONTRACT VALUE ($1,000) | |
|---|---|
| TEMPORARY FACILITIES/SERVICES (Cont'd) | |
| Ft. Wainwright and Other Ak. Offices | |
| Ft. Wainwright Offices | 24,388 |
| General Support Services | |
| Airfield Operations | 9,508 |
| Freight and Transportation | |
| Mainline pipe movement and other PMC - purchased materials | 201,737 |
| Subtotal, Temporary Facilities/Services, Subcontracts: | 619,152 |
| PIPELINE | |
| LABOR-CIVIL | |
| Disposal Site Development and disposal | 2,297 |
| Pipe Storage Yards | 304 |
| Culverts | 1,947 |
| Workpad Insulation | 5,141 |
| Workpad Construction | 38,246 |
| Access Roads | 3,248 |
| Workpad and Access Road Maintenance | 18,103 |
| Revegetation | 3,601 |
| Survey | 9,775 |
| Haul Backfill | 28,846 |
| Concrete Weights | 11,922 |
| Concrete Coating | 2,666 |
| Erosion Control | 4,391 |
| LABOR - PIPELINE | |
| Survey | 12,149 |
| Ditch | 59,657 |
| Haul and String | 12,422 |
| Bend | 14,438 |
| Welding | 79,545 |
| Field Coating | 11,262 |
| Insulate Field Joints | 10,098 |
| Lower-in and Tie-in | 72,657 |
| Ditch Insulation | 7,944 |
| Bedding Padding/Backfill | 16,555 |
| Cleanup | 10,402 |
| String River Weights | 4,282 |
| River Crossings | 58,077 |
| Road Crossings | 5,997 |
| Hydro Testing | 21,801 |
| As-built Survey | 22,404 |
| Atigun Pass | 7,139 |

TEMPORARY FACILITIES & SERVICES (Cont'd)

| | |
|---|---|
| LABOR - INDIRECT | |
| General Haul | 72,945 |
| Equipment Maintenance | 260,575 |
| Oil Spill Cleanup | 18,672 |
| Mobilization/Demobilization | 50,960 |
| Catering | 158,360 |
| Overhead/Profit | 445,957 |
| Contracts: | |
| Double Jointing | 29,700 |
| Epoxy Coating | 60,206 |
| Insulation | 83,898 |
| Aerial Crossings | 25,262 |
| Cathodic Protection | 6,000 |
| Welder Certification | 2,725 |
| Subtotal, Pipeline, Subcontracts: | 1,772,576 |

| | | |
|---|---|---|
| SUBCONTRACTS: | COMPRESSOR/METERING STATIONS | 347,041 |
| | OPERATION/MAINTENANCE FACILITIES | 3,970 |
| | TEMPORARY FACILITIES/SERVICES | 619,152 |
| | PIPELINE | 1,772,576 |
| Grand Total of Cost Categories: | | 2,742,739 |

Source: FERC Application, Exhibit K, Section 3

Table C-3b

Project Management Costs (PMC)

(Thousands of 1980 $)

| | |
|---|---|
| COMPRESSOR AND METERING STATIONS | |
| Project Management | 87,826 |
| OPERATIONS AND MAINTENANCE FACILITIES | |
| Project Management | 3,887 |
| TEMPORARY FACILITIES AND SERVICES | |
| Station Facilities | |
| General Engineering and Supervision | 2,338 |
| Pipeline Facilities | |
| General Engineering and Supervision | 7,110 |
| Ft. Wainwright and Other Ak. Offices | |
| General Engineering and Supervision | 389 |
| General Support and Services | |
| General Engineering and Supervision | 69,351 |
| Operations and Maintenance | 38,799 |
| Life Support | 28,701 |
| Common | |
| PMC Costs-Irvine | 2,278 |
| PMC Allocable Expenses | 27,847 |
| COMMUNICATIONS AND SUPERVISORY SYSTEMS | |
| Project Management | 6,087 |
| PIPELINE | |
| Labor-Indirect | |
| Project Office and Field Overhead | 393,785 |
| Project Management | 403,347 |
| PROJECT DIRECTORATE | |
| Total | 1,234,148 |
| GRAND TOTAL, Project Management Costs: | $2,305,893 |

Source: FERC Application, Exhibit K, Section 3

Table C-4a
Estimated Total Corporate Income Taxes
from Northwest Pipeline Construction
[1980 Dollars (thousands)]

| Summary of Contracts | 1980 $(000) |
|---|---|
| Execution Contracts in Certification Cost | $2,742,739 |
| Alaska Corporate Income Tax Share | 32,913 |
| Corporate Tax Estimate at Expected Cost | 47,625 |
| | |
| TOTAL Project Management Costs (FLUOR CONTRACTS) | $2,305,893 |
| Alaska Corporate Income Tax Share | 11,529 |
| Corporate Tax Estimate at Expected Cost | 16,683 |

Source: Appendix C, Tables C-3a and C-3b.

Table C-4b
Corporate Income Tax Revenue Accruing During Construction
[1980 Dollars (thousands)][a]

| Fiscal Year | (Percent of Total Taxes) | Taxes from Subcontractor Profits | | Taxes from PMC | |
|---|---|---|---|---|---|
| | | w/o Overruns | w/Overruns | w/o Overruns | w/Overruns |
| FY81 | (1.7%) | $ 559 | $ 810 | $ 196 | $ 284 |
| 82 | (6.2%) | 2,040 | 2,952 | 715 | 1,034 |
| 83 | (11.6%) | 3,817 | 5,525 | 1,337 | 1,935 |
| 84 | (28.0%) | 9,215 | 13,335 | 3,228 | 4,671 |
| FY85 | (32.5%) | 10,697 | 15,478 | 3,747 | 5,422 |
| 86 | (17.9%) | 5,892 | 8,525 | 2,064 | 2,986 |
| 87 | (2.0%) | 658 | 952 | 231 | 334 |
| 88 | (0.1%) | 33 | 48 | 12 | 17 |
| TOTAL | (100.0%) | $32,913 | $47,625 | $11,529 | $16,683 |

NOTE: The totals may not exactly reflect the sum of the yearly tax revenues due to the effect of rounding.

[a]Assumes profits accrue at same schedule as total pipeline contract costs with six-month delay.

Notes for Table C-4b:

| Column | Source |
|---|---|
| 1 | Based on rate of accrual of construction cost, FERC Application [3, Exhibit K-16]. |
| 2 | Total from Appendix C, Table C-3a, times column 1. |
| 3 | Column 2 times 1.447 (combined contingency and cost overrun factor). |
| 4 | Total from Appendix C, Table C-3b, times column 1. |
| 5 | Column 4 times 1.447 (combined contingency and cost overrun factor). |

REFERENCES


1. Alaska's Oil and Gas Tax Structure: A Study with Recommendations for Improvement, State of Alaska, Department of Revenue, February 1977.

2. Alaska Taxable, 1979, Municipal Property Assessments and Equalized Full Value Determinations, State of Alaska, Department of Community and Regional Affairs, Juneau, January 1980, Alaska Local Government, Vol. XIX, no. 1.

3. Application of Alaskan Northwest Natural Gas Transportation Company for a Final Certificate of Public Convenience and Necessity, Docket No. CP80, U. S. Federal Energy Regulatory Commission, Washington, D.C., July 1, 1980.

4. Data Resources Incorporated, Long Term Review, Spring 1980.

5. Determination of Incentive of Rate of Return, Tariff, and Related Issues, Order No. 31-B, Docket No. RM78-12, U.S. Federal Energy Regulatory Commission, Washington, D.C., September 6, 1979.

6. Draft Environmental Impact Statement, Prudhoe Bay Oil Field Waterflood Project, U. S. Army Corps of Engineers, Alaska District, June 1980.

7. McCullough, James D., "The FERC Regulatory Framework of the Center Point of the IROR Mechanism," Work Paper WP-1, prepared for "Comparative Cost Analysis for the Alaska Segment, ANGTS Task", Federal Energy Regulatory Commission, Contract DE-AC39-80RC-10477, Washington, D.C., September 22, 1980.

8. Moody's Industrial Manual, 1980, (Vol. 1, A-1) Moody's Investor Service, Inc., New York, 1980.

9. Order Regarding Tariff Provisions Related to Cost of Conditioning Prudhoe Bay Gas to Pipeline Quality Standards, Order No. 31-A, Docket No. RM78-12, U. S. Federal Energy Regulatory Commission, Washington, D.C., August 24, 1979.

10. Order Setting Values for Incentive Rate of Return, Establishing Inflation Adjustment and Change in Scope Procedures, and Determining Applicable Tariff Provisions, Order 31, Docket No. RM78-12, U. S. Federal Energy Regulatory Commission, Washington, D.C., June 8, 1979.

11. Petroleum Production Revenue Forecast, Quarterly Report, State of Alaska, Dept. of Revenue, September 1980.