1 of 1

ICF RESOURCESSM
INCORPORATED

9300 Lee Highway, Fairfax, Va. 22031-1207 Phone: 703 934-3000 Fax: 703 691-3349 Telex: 440126 ICF UI

February 15, 1992

MEMORANDUM

TO: John Pyrdol
FROM: Brian Wood
SUBJECT: Progress Report on the AMT Analysis

AC01-88FE61679

Our analysis of the Alternative Minimum Tax (AMT) has examined its effect on the U.S. oil and gas industry from several different perspectives, to estimate the effect of the three relief proposals and to better understand the source of the outcry about the AMT's "inequities." We delivered preliminary findings in memoranda dated December 20 and 23, 1991 and have presented our *in progress* findings in several briefings before DOE officials. This report is a brief summary of our methodology and results to date.

The complexity of the accounting mechanisms that comprise the AMT and the disparity between our analytical conclusions and claims made by the oil and gas industry (principally the IPAA) have led our analysis through several distinct phases. They are summarized below and described in greater detail in the following text:

- Project-level Analysis. To provide DOE with preliminary estimates very quickly, we used data on typical oil recovery projects, readily available from the TORIS and REPCO databases maintained for DOE by ICF Resources. A spreadsheet was developed to model the AMT as it would affect project economics. A crucial assumption underlying this analysis was that 70% of independent producers, on a revenue basis, were paying the AMT. The preliminary results provided in December indicated net federal tax revenue losses of \$0.4-3.3 billion over the next ten years, depending on the relief proposal, providing incremental production of 5-50 million barrels of oil and 70-700 million cubic feet of natural gas over the same period.
- Firm-level Analysis. The slight production response indicated by our project-level analysis was at odds with the significant impact claimed by the industry and we shifted our analysis to examine the impact of AMT at the firm level. This approach focussed on identifying the conditions that would put a firm in AMT (particularly as a result of drilling more wells). The firm-level analysis suggested that firms composed of typical REPCO projects would generally not pay AMT, but also described how a firm with less favorable projects could become an AMT payer, at least temporarily, by

MASTER

06J0862

Page 1

ICF Resources Incorporated

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

drilling more than the business-as-usual number of wells. This analysis demonstrated how AMT could appear to be confiscatory but also showed that when drilling activity induces AMT, revenues from subsequent production should restore the firm to regular taxes within a few years.

- Demographic Analysis. While the firm-level analysis identified, and verified, the problem with AMT, it could not describe the extent of the problem in terms of the population of operators. An analysis of IRS statistics and oil and gas industry demographics is in progress to delineate the AMT-paying population. We have found reliable data indicating that total AMT payments by independent oil and gas producers was less than \$80 million in the 1988-1989 tax year. This establishes an upper limit on the tax revenue impact of eliminating AMT preferences for this industry. Current efforts to extend this analysis are focused on identifying the extent of producers who are not in AMT and who may be conditioning their investment activity on avoiding AMT exposure. Removal of the preference items would stimulate drilling by this group at no cost to Treasury; the production that results would increase tax revenues. The size of this group is relevant to assessing the potential benefits of the AMT relief proposals.

Review of the Project-Level Analysis

The project-level analysis examined projects from the REPCO database that characterize the onshore resources that are economic at a \$20 per barrel oil price. Twelve characteristic projects were examined. Typical EOR and ASR projects from the TORIS database were also considered. Each "project" was defined by production and cost schedules over its life, capital requirements, state severance and income tax rates from exploration through primary development and waterflood. Using this data, a spreadsheet with detailed AMT components estimated the project's *contribution* to tax liability for a firm characterized by user-defined variables: independent or integrated (determining IDC capitalization); corporate or non-corporate; in AMT or not.

The stream of federal income tax over time was determined for each project assuming (1) no change in AMT, (2) removal of IDC preference for AMT, (3) removal of the depletion preference for AMT, and (4) removal of both IDC and depletion preference for AMT. The change in tax payments relative to case (1) was determined for each of cases (2) to (4) for each project. The resulting estimate of tax savings was extrapolated from the simple project to the amount of oil resource characterized by the project in REPCO or TORIS, then adjusted to account for (a) the share of the resource attributable to independent operators (using reserves ownership by operators other than the majors in the lower-48 onshore), and (b) the portion of independents in AMT (70%, corroborated by Treasury statistics). The resulting annual tax savings estimates were further distributed over time in accordance with the resource development schedules assumed in the Crude Oil Policy Model (COPM), consistent with ICF's recent analysis of RCRA policy impacts.

Annual tax savings were assumed to be reinvested at a 100% rate into drilling oil and gas wells. The impacts on oil and gas production were estimated using ICF's Capital Model. This is a spreadsheet model that extrapolates trends in finding rates, operating costs, investment behavior, and other characteristics of the oil and gas industry to estimate future production, drilling, reserve additions, and other measures of industry activity. Investments are assumed to derive from internally

generated cash flow. The inputs to the model for this analysis were the annual tax savings under each tax scenario and the NES price tracks for oil and gas.

In addition to the preliminary estimates of AMT impacts, the project-level analysis led to important insights about how the AMT affects project economics for different types of firms, illustrated in Figure 1. The following observations were consistent across all projects:

- Under regular tax, the tax advantages available to independents add significantly to project value relative to an integrated company's assessment of the same project.
- Under AMT, the independent loses the special tax preferences, reducing the project's value to near, but still greater than, that for the integrated company when evaluated at the same discount rate. Project value increases for the integrated company in AMT because of the lower tax rate.
- The negative impact on independents is less severe for corporations than for partnerships, sole proprietorships, S corporations, and others whose tax-paying members face a higher AMT rate.
- Most of the AMT impact on project value is due to the loss of percentage depletion as a tax deduction. For a given project, the value of the IDC deduction is much smaller than the present value of the percentage depletion deduction over the life of the project (Figure 2a).
- The severity of the drop in project value under AMT varied across projects, but did not drop below the value for an integrated firm in any case. However, if capital scarcity and financial risk force independents to pay a higher cost of capital than the large integrated firms, then the AMT would reduce project value below that for an integrated firm (Figure 2b).

While AMT has a negative impact on project economics for independents, in all cases the projects were still profitable at 10%. This indicates that AMT does not cause losses at the project-level, although it does reduce a project's economic attractiveness.

Analysis of AMT Effects on Firms

Much of the rhetoric about the AMT has claimed that AMT is a "tax on capital" and is confiscatory. While a study of AMT elements refutes this claim, analysis at the level of the firm is necessary to identify the source of the "hurt" caused by this tax. Our analysis modeled a firm as a collection of E&P projects, with new projects initiated each year at a "status quo" level of constant investment that maintains the firm's reserves and production over time. The industry states that many operators constrain their drilling to avoid paying AMT (due to the IDC preference); our analysis examined the effect on tax payments and the wealth of the firm caused by expanding a single-year drilling program beyond the status quo level of investment.

Figure 1

AMT at the Margin - A Look at a Project

Figure 2a

Composition of Project Net Present Value

Figure 2b

Effect of Capital Cost Differential on Project Value

Note: Percentages refer to the cost of capital used to discount cash flows.

Effects on Investment Value

In general, a firm would continue to invest in projects as long as they add value to the firm. Constraints such as capital scarcity, rig availability, and investment opportunities would limit the amount of investment in a year. Expanding the level of investment in profitable projects should produce an upward-sloping wealth curve as in Figure 3a. We constructed an experiment in which a firm would become an AMT payer once investment increased, modeling the case described by the industry in which a firm invests to a point just short of paying AMT. We reached the following conclusions:

- Firms modeled as portfolios of typical projects from REPCO, those in the project-level analysis, would not pay AMT at the status quo (reserves sustaining) level of investment and beyond. While actual project and firm characteristics would vary considerably around these average projects, this suggests considerable resilience to AMT liability in the industry.
- By increasing tax payments, AMT reduces the rate of wealth accumulation expected with investment. This is consistent with the loss of value at the project level. Our example shows a period where new investment adds no value to the firm under the 1986-1990 AMT rules (Figure 3b).
- The special energy deduction enacted in 1991 reduced the impact of AMT on project economics considerably, particularly for firms with production from marginal wells. However, this provision offers very limited relief for the IDC preference except for a restricted definition of exploratory wells; there is little AMT relief during the year in which the investment occurs (but greater effect over project life). The lukewarm reception from the industry to the 1991 provision suggests a high sensitivity to the first year impact of AMT exposure.

Effects on Taxes Paid

Figure 4 illustrates the tax impact of increasing investment in a single year. Expensed IDCs rise with investment in drilling, causing taxable income to fall. However, the AMT definition of income (AMTI) falls less quickly as IDCs mount than does regular taxable income, because only a fraction of IDCs are permitted to be expenses. Figure 4 shows the point where the AMT (technically, tentative AMT) exceeds regular tax.

For those who perceive income and taxation by historical (regular tax) conventions, the AMT appears confiscatory. The firm's perceived tax rate (see inset to Figure 4) -- the ratio of tax paid to *regular* taxable income -- increases when it begins to pay the AMT. This perceived tax rate exceeds 100% as regular taxable income falls below tentative AMT. A firm would pay zero regular tax if its IDC deductions resulted in zero or negative taxable income (a net operating loss), but could still owe AMT. (In fact, few firms with no net taxable income actually pay AMT, as discussed below).

This example shows that the first year increase in tax, relative to an operator's "expected" regular tax, may be great although the multi-year outlook indicates that net wealth will still rise (the lesson from Figure 3). The economist's model of the rational economic agent, unconstrained, would view the AMT as a maddening reduction in short-term cash flow, but would invest despite AMT so

Figure 3a

AMT at the Level of the Firm

Net Present Value

*Status Quo investment indicates the ongoing investment required to maintain reserves.

Figure 3b

*Status Quo investment indicates the ongoing investment required to maintain reserves.

Figure 4

AMT and Regular Tax with Incremental Investment (One Year Only)

*Status Quo investment indicates the ongoing investment required to maintain reserves.

long as the project added value to the firm. According to the industry, many operators do not act this way. This could be due to cash or capital constraints sensitive to the higher tax imposed by AMT. However, it seems more likely that the greatest sensitivity would be felt by operators who are most directly responsible to their investors on a year-to-year basis, i.e., partnerships and S-corporations. Their investors may still view the tax benefits of immediate IDC write-offs and percentage depletion as principal reasons for their investment. Operators may justifiably fear that AMT exposure will turn these investors away. Experience since 1986 may confirm this.¹

Figure 5 shows AMT exposure over time for a single-year drilling investment that causes AMT liability. In principal, AMT exposure would diminish until the firm pays regular tax again and the AMT credit becomes available. Note the case where the AMT increases in the tax year *after* investment (Year 1), which occurs in this example when the level of investment causes a net operating loss. Because the NOL deduction available under regular tax may disappear after AMT adjustments, the amount of AMT may actually increase in this year. While AMT credits would be available in the near future, the appearance of increasing AMT could motivate an operator to change his investment behavior to a more conservative stance. For a firm that is growing aggressively (not shown), the AMT position could persist for a longer period. Cash-strapped operators with a very short-term profit outlook could be convinced that the AMT credit is not reachable within a relevant time period.

These observations suggest that operators may perceive the learning curve for AMT differently. For corporations driven by short- and long-term earnings performance, the AMT is an unfortunate but necessary additional cost to be factored into investment decisions; for many, the earnings consequences of delaying investment would be more severe than the impact of higher taxes. Their drilling behavior would not be constrained by the AMT. However, for partnerships and S-corporations that pass through tax preferences as well as earnings to their partner/shareholders, it may be more prudent to avoid AMT as a business strategy to retain their access to capital.

The Excess IDC and Excess Depletion AMT Preferences

Both the excess IDC preference and the excess percentage depletion preferences are important aspects of AMT liability. However, in a given year the operator has control chiefly over the amount of the IDC preference. The percentage depletion preference is the result of past investment decisions; it cannot be avoided unless cost depletion is greater (unlikely) or production is shut down (more unlikely). The excess IDC preference can be avoided by constraining drilling expenditures or by capitalizing IDCs. This is why the AMT may be viewed as a constraint on drilling by operators who seek to avoid paying AMT.

Figures 6a-c illustrate the dynamics of AMT components with drilling investment for the same model firm discussed above. Percentage depletion in Figure 6b is constant with investment because, for simplicity, production from new drilling was assumed to be delayed until the following year. Due to the income limitation on percentage depletion, the excess depletion preference begins to decline

¹Note that this behavior may be at least somewhat consistent with the intention of the AMT--to discourage investment motivated primarily by the value of sheltering income from taxes, and shift capital to profitable investments with neutral or positive tax revenue impacts.

Figure 5

AMT Payments and Credits over Time

By levels of Incremental Investment compared to Status Quo

*Year 0 denotes the year in which the incremental investment occurs.

Figure 6a

Dynamics of AMTI Components

Figure 6b

Depletion

Figure 6c

IDC

when expensed IDCs drive taxable income to zero, until the preference also reaches zero.² Clearly, the excess depletion preference is the bulk of AMTI for taxpayers near the regular tax/tentative AMT crossover point (Figure 6a). Because few oil and gas corporations with no net income pay AMT (see below), most operators in AMT or near AMT are likely to have a substantial excess depletion preference if they take percentage depletion.

The mechanism for determining the excess IDC preference is very complicated, as illustrated in Figure 6c. While IDCs increase linearly with investment, the preference does not. The preference is determined after deducting 65% of net income derived from oil and gas properties, when net income is defined without expensing IDCs. The IDC preference increases less rapidly than actual IDCs incurred. In the example shown in Figure 6c, the preference is a small portion of AMTI as the firm begins to pay AMT, but is instrumental in bringing the firm to that position. At higher levels of investment, and as the excess depletion preference declines, the excess IDC preference becomes the dominant contributor to AMTI. However, the demographic analysis (below) suggests that very few AMT-paying firms operate at net income levels that correspond to this position where the excess IDC preference is dominant.

Figure 7 illustrates the effect of removing the preferences from the AMTI calculation. When the IDC preference is removed, the excess depletion preference can still force the firm into AMT, if expensed drilling costs reduce regular taxable income sufficiently. Elimination of the depletion preference has a much greater initial impact on AMT liability, but a sufficiently high drilling level can generate enough IDC preference to impose the AMT. Depending on how the removal of both preferences is enacted, the remaining IDC- and depletion-related components of the Adjusted Current earnings (ACE) could result in AMT payments in some cases. The relative magnitude of these impacts is likely to depend on the individual characteristics of the firm, but Figure 7 is instructive for a firm with no production constraint on its percentage depletion eligibility. This demonstrates why the industry would prefer to eliminate *both* preferences.

Demographic Analysis

We have recently initiated an analysis of IRS statistics and the demographics of AMT payers and non-payers. To date, our conclusions are preliminary. However, the principal conclusion that AMT collections stemming from oil and gas E&P operations by corporations have been slight is soundly supported by IRS statistics on tax returns. This suggests that the Treasury's potential cost resulting from elimination of the preferences may be small. Further analysis is focusing on non-corporate entities, for which the scarcity of data makes analysis more difficult.

Figure 8 illustrates a useful context for this entire analysis of AMT relief proposals. Out of \$5.5 billion in corporate federal income taxes paid by the conventionally defined oil and gas industry in the 1988-89 tax year, only \$82 million was paid as AMT attributable to E&P activities. This includes all AMT paid by corporate independents, by natural gas transmission and distribution companies, and the IDC preference portion of AMT paid by integrated companies (who have no excess depletion preference). It does not include AMT paid by individuals who have preferences and income through oil and gas-related partnerships, S-corporations, or sole proprietorships.

²If production due to drilling occurred immediately, percentage depletion and the preference would rise with the drilling level, but would still decline once taxable income reached zero.

Figure 1

Effect of Changes in Tax Law on Taxes Paid

*Status Quo investment indicates the ongoing investment required to maintain reserves.

Figure 8

Context: The AMT in Perspective

Corporations with Exploration and Production Activities*

July 1, 1988 - June 30, 1989

* Mining: Oil and Gas Extraction and Field Services, Manufacturing: Petroleum Refining (including Integrated), and Transportation: Gas Production and Distribution

Sources: IRS, Sourcebook, 1988: Corporation Income Tax Returns, pp. 18, 74, 137;

IRS, Corporation Income Tax Returns: 1988, p. 67.

Further analysis of data compiled by the IRS Statistics of Income Division has led to other important observations:

- About 90% of the AMT paid by corporations in E&P (excluding integrated companies) was by those with net income in 1988-89 (Table 1). AMT does not appear to be a burden for corporations with a net operating loss according to these statistics.
- The AMT payments by smaller corporations that are independent operators remained stable from the 1987-88 to the 1988-89 tax year (Table 2). This refutes the learning curve argument that these corporations would reduce drilling to avoid AMT once they learned the impact of AMT on profits or cash flow. Large corporations increased their AMT payments substantially in the second year of the tax, which could be interpreted as a response to the slight impact of the tax. It is difficult to draw a strongly supported conclusion from just two years of data on tax returns, but the data in hand does not support the contention that firms have learned to reduce their AMT exposure by adapting investment behavior.
- Estimates shown in Table 3 for the cost of removing the preferences for non-corporations should be viewed as very preliminary and illustrative only. They were derived by extrapolating the estimates for independent corporations using data on "other" business deductions (IRS statistical code) for S-corporations, partnerships, and sole proprietorships as a proxy for the IDCs incurred by these entities. Other approaches may well be more reasonable and should at least be performed for comparison.

The preliminary estimates of production and tax revenue effects shown in Table 4 were made by ICF's Capital Model assuming that the first year tax impact estimated for each relief proposal were repeated unchanged over the next year and that 100% of the tax savings would be reinvested in drilling. The assumptions need additional time for review and the estimates are very likely to change. We do not anticipate at this time that either the estimated cost or the estimated production impact due to reinvested tax savings would change by as much as an order of magnitude, and the preliminary estimates are shown primarily to illustrate that the proposed elimination of AMT preferences are not expected to have a dramatic effect on either production or tax revenues. These numbers would not be discernible from normal fluctuations in national statistics for the industry.

However, the analysis at this stage has not yet discovered the extent of drilling that could be stimulated among operators who may have reduced drilling investments to avoid the AMT. The industry claims that this group is large. Any additional drilling among non-AMT payers that would be stimulated by removing the prospect of paying AMT would represent no cost to the Treasury. Production generated by these new wells would generate new tax revenues that might not otherwise occur. This is an important subject for further analysis.

Next Steps

The demographic analysis is only partially complete. It has opened several promising avenues for further study that is needed to develop the preliminary estimates of tax impacts, which at this point are only illustrative of the order of magnitude of the result. Areas where additional work is

Table 1

**E&P-Related AMT Paid by Corporations
1988-89 Tax Year**

Corporations	With Net Income	Zero Income or Deficit	Total
Independents	56.4	1.3	57.7
Integrated Companies	*	*	7.6
Gas Pipelines	<u>11.9</u>	<u>4.7</u>	<u>16.6</u>
Total	68.3+	6.0+	81.9

*Estimates for integrated companies are based only on the excess IDC preference, and cannot be differentiated between those with net income and those without.

Table 2

Corporation AMT Payments by Asset Size

Corporation Category	1987-1988		1988-1989	
	< \$100 million	> \$100 million	< \$100 million	> \$100 million
Independents	\$ 17	\$ 16	\$ 19	\$ 38
Integrated Companies	2	34	1	416
Gas Pipelines	<u>< 1</u>	<u>23</u>	<u>2</u>	<u>15</u>
Total	\$ 19	\$ 73	\$ 22	\$469

Table 3

Estimated Costs of Modifying AMT in 1988-89 Tax Year

	<u>Remove IDCs</u>	<u>Remove % Depletion</u>	<u>Remove Both</u>
E&P Operating Corporations			
Independents	9 ¹	9 ²	18
Integrated	8 ¹	-	8
Pipelines	5 ¹	6 ²	11
Subtotal, operating corporations	22	15	37
Non-Operating Corporations			
Financial	5 ¹	2 ¹	7
All other	2 ¹	2 ²	4
Subtotal, all corporations	29	19	48
Non-corporations			
S Corps., Partnerships, Proprietorships, Individuals	9 ³	20 ³	29
Total	38	39	77

Sources:

¹IRS, Corporate Income Tax Returns 1988, Table 15.²Extrapolated from corporate tax return data and excess IDC data.³Extrapolated from tax return data using distributions for corporations.

Table 4

Estimated Benefits and Costs of Modifying AMT

	<u>Remove IDCs</u>	<u>Remove % Depletion</u>	<u>Remove Both</u>
Benefits			
• Estimated new wells/yr	40 - 160+	30 - 120	30 - 240+
• 2002 production (MBOE/d)	5 - 10	4 - 10	4 - 20
• 10-year cumulative recovery (MMBOE)	10 - 20	7 - 20	7 - 40
Costs			
• Estimated 1993 tax savings (\$ millions)	20 - 40	15 - 40	15 - 80
• 10-year cumulative tax savings, maximum (\$ millions)	200 - 400	150 - 400	150 - 800
• Federal revenues from reinvested savings (\$ millions)	12 - 24	9 - 24	9 - 48
• Net 10-year cost to Treasury (\$ million)	190 - 380	140 - 380	140 - 750
Net Federal Cost/BOE (\$/B)	≤\$20	≤\$20	≤\$20

needed include the following:

- Estimates of excess depletion preference for oil and gas AMT payers. Although the IRS data on excess depletion preference was not disaggregated sufficiently to identify the amount attributable to oil and gas operations, some additional analysis of available statistics will help to establish reasonable boundaries. Treasury may be able to provide this through a specific request.
- Estimates of oil and gas-related AMT attributable to non-corporations. Because much of the AMT liability of partnerships, sole proprietorships, and S-corporations is assumed by individuals, for which less specific tax return data is collected, the analytical options are limited in this area. However, further statistical work is likely to be worth the effort, particularly in comparing known data items with corresponding data from corporate returns, and investigating the change in certain deductions over time that may indicate changes in behavior.
- Analysis of AMT-avoiders. The industry has claimed that the amount of drilling foregone by operators avoiding the AMT is significant. We have made some progress in correlating historical industry data, such as drilling statistics, by asset size to identify changes in drilling behavior and define the extent of this group.

**DATE
FILMED**

10 / 18 / 93

END