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MEMORANDUM ON EXXON VALUATION ISSUES

This memorandum addresses several economic issues in consideration of the proposed settlement of government claims from the Exxon Valdez oil spill. These issues include the valuation of the settlement, the valuation of the natural resources damage, some comparisons of this settlement with other natural resource damage cases, and related matters.

VALUATION OF THIS SETTLEMENT

Various sources have estimated of value of the proposed settlement at amounts ranging from a low of \$421 million (under one of six scenarios used by the Congressional Research Service, Library of Congress) to a high of \$757 million (memorandum from Jim Kelly, research and liaison officer for the Permanent Fund Corp., to staff for Rep. Barnes). The majority of the estimates cluster in the \$500-600 million range. Several uncertainties account for the range.

- Inflation will erode the real value of the large bulk of the settlement that will be received in the future, but no one can know future inflation rates with certainty.
- A similar discount is usually appropriate to reflect the real earnings that could be collected if the funds were available to use or invest now, instead of in the future. The real earnings rate varies independently of inflation.
- The dates on which payments will be made under the settlement are not in all cases certain, i.e., the date for payment of the \$72 million reimbursement of state out-of-pocket costs.
- Some payments result from calculations involving amounts that are not yet known, i.e., Exxon's clean-up costs between January 1, 1991 to the date of final approval.
- An unknown portion of the settlement covers a part of future state clean-up costs that have a high probability of being recoverable from Exxon without litigation.

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- Tax effects will lower the cost of the settlement to Exxon and reduce its value to the governments by a significant but unknown amount. Whether to include the tax effects is itself a judgement.
- The final installment payment is contingent on unknown future events.
- Additional but unknown liabilities for legal expenses and possible damages may arise as a result of entering the settlement, a factor not accounted for in any of the estimates.

There is no single correct way to deal with these uncertainties. Most economists familiar with the settlement seem to be comfortable in casual calculation and discussion with rounding its present cash value to a half-billion dollars.

NON-USE VALUES

Although the governments have attempted to keep confidential their economic valuations of the Exxon damage, the major results of those studies have been widely discussed in economic circles and with the press. Some of the economic studies attempted to evaluate losses of use values to recreationists, sports fishermen, hunters, subsistence users, and losses associated with commercial fishing. The major thrust of the economic studies, however, and the major part of the several million dollars spent by the governments on economic valuations has been devoted to determining non-use values.

Direct Measures of Non-use Values

Non-use values reflect the worth people give to things like eagles, sea otters, and pristine ecosystems that individuals don't directly use, and which are rarely bought and sold at market prices. These values may reflect a desire to preserve options for future recreational use (option value), to preserve options for future generations (bequest value), or simply because the very existence of the resource (existence value) is something an individual is willing to pay to preserve.

The concept of non-use values is widely accepted in economics. Some methods of measuring the values of non-market goods such as eagles sea otters are also well established. If people are willing to pay \$50,000 to preserve the life of an injured sea otter, as they apparently were in the case of the rescue program after the Exxon spill, it is inferred that the value of the otter to people must be at least that amount. Thus, one approach to determining the values of Exxon oil spill losses calculates known, inferred, and projected losses and multiplies those numbers by values for individual animals. In addition to looking at rescue efforts, values can be imputed from information such as the costs zoos incur to acquire animals. For example, zoos are

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estimated to be paying \$200-500 per bird for murres. The costs of transplant programs, and spending on management and protection can also be used. These relatively accepted approaches to non-use valuation have received little publicity, but studies employing the techniques, together with the emerging picture of the biological injury, reliably support claims of several hundreds of millions of dollars. Mortality to sea otters, murres, other sea birds, eagles, whales, and seals would likely account for the bulk of these values.

Contingent Valuation Measures

The biggest part of the governments' economic effort on the Exxon case has been directed toward determining non-use values using a survey technique called contingent valuation (CV). Respondents are asked how much they would pay to preserve a natural resource, assuming such a transaction were possible; the hypothetical transaction is thus *contingent* on the situation posed by the questioner. The technique is controversial within the economic profession, but has won acceptance in various applications. Although the technique has never been tested directly in a trial, it was approved in theory by a 1989 U.S. Court of Appeals decision in the Ohio case, a proceeding involving challenges to natural resource valuation regulations issued by the Dept. of the Interior. The breadth of that decision was expanded later that same year in the related Colorado case.

Non-use values are not limited to those who live in proximity to the resource; the governments' Exxon contingent valuation surveys were designed to determine the values lost by the entire population of the U.S. The state's national survey was conducted early this year, but it was preceded by extensive focus group studies used to evaluate the proposed questionnaire, and pilot studies to verify survey validity. The federal work had not reached the survey stage when it was suspended.

The state's survey essentially asked the 1000 or more respondents questions to elicit the amount they would be willing to pay in higher taxes and gasoline costs to prevent another accident like the Exxon oil spill. The total amount all U.S. residents would pay was estimate by multiplying the average among the respondents by an figure representing the entire population.

The state's approach to its CV survey has been conservative. For example, respondents were asked questions to elicit the amount they would pay this year to protect against damage over the next ten years. A more accurate (and likely higher) value would have been returned had the questions been designed to elicit the value that the respondents would have been willing to pay if they could have spread the payments over the entire ten year period.

Economists working on the federal economic studies criticized the state's approach for being too conservative. Concern was expressed that the state's economic consultants had been pressured on this point. The attorneys, it was suggested, were stunned by the real values of the damage being returned by the focus groups and pilot surveys, and were fearful that these "too large" values would be more vulnerable to methodological challenge in court. One result of this conservative approach was that the wording of the survey questions provided little or no information to respondents on the issue of long-term injury to the environment. This silence may have left the survey vulnerable to an Exxon counter strategy using a major advertising campaign to influence respondent perceptions of the severity of the natural resources damage. One of the major reasons for keeping the CV survey dates secret was to make it difficult for Exxon to employ this strategy. Nevertheless, in October 1990, the company launched a multi-million dollar television campaign designed to reach half of U.S. households in that month with video pictures of a "now almost recovered" Prince William Sound. An extensive print campaign followed.

The state's economists do not believe the Exxon strategy was successful. Comparing data from pilot surveys conducted before October with the results of the final survey suggest that the Exxon strategy had little effect on the final survey values. In any event, the state's C.V. studies nevertheless yielded significant values for the damage done by the spill to Alaska's natural resources. The CV results have been variously reported as \$2.5 billion to \$5 billion (*N.Y. Times*, March 13, 1991), \$3 billion (*Washington Post*, March 20), \$3 to \$5 billion (Tom Campbell, general counsel of the National Oceanic and Atmospheric Administration in March testimony to Congress), and \$3 billion to \$8 billion (*Anchorage Daily News*, March 31). Economists working on the studies have independently confirmed the \$3 to \$8 billion range, and suggest that because of the state's conservative approach, the actual value is likely to be in the higher end of that range.

Evaluating the Economic Studies

The academic economists and other experts who served on the two governments' litigation teams are largely, perhaps unanimously, opposed to the settlement. Experts, of course are not the final arbiters of these issues. Attorneys usually make the decisions that finally set the values in these cases. Dr. Norman Meade, a U.S. government economist who has studied the historical data, found that natural resource damage issues have generally been settled by U.S. attorneys for 25 to 40 percent of the present values of the economic damage estimated by expert economists. Applying those percentages to the values reported above suggests that the present value of the Exxon natural resources damage settlement should be between \$750

million (25 percent of \$3 billion) and \$3.2 billion (40 percent of \$8 billion). Reimbursements of government expenses, and other damage claims would have to be added to these amounts.

RECOVERIES IN OTHER CASES

Another approach to evaluating this settlement is to compare it directly to the values recovered in other oil spill cases. In terms of present value of the recovery per gallon of spilled oil, this approach tends to confirm the relative severity of the damages and penalties assessed against Exxon in the proposed settlement. On the other hand all of the spills described below differ in many respects from the Exxon Alaska spill, and none extended over as large a geographic area. The listing below is selective, but typical of recent oil spill settlements.

Shell Oil San Francisco Bay Spill

In 1988, the Shell Oil Co. spilled 400,000 gallons of crude oil from its Martinez refinery into San Francisco Bay. In December 1989, the federal and California governments announced the settlement of all state, local, and federal claims arising out of the spill for \$19.75 million, or just under \$50 per gallon. Payments were not extended. At \$50 per gallon, the comparable recovery for the 11 million gallons spilled in the Exxon case would be a present value of \$550 million, well within the range estimated to have been achieved under the Exxon settlement.

The Shell spill affected waters that are among the most polluted on the Pacific Coast. It could be argued that the relatively undamaged nature of the environment affected by the Exxon spill makes it more valuable. On the other hand, the Shell spill affected an area that humans use far more intensively and directly than the Alaska environments hit by the Exxon spill, factors that could increase the likely damages in the more populous area.

Amoco Cadiz Spill

The tanker Amoco Cadiz struck the French Atlantic coast and eventually broke up, spilling an estimated 66 million gallons. The case is still on appeal, but it seems unlikely that the plaintiffs will receive much more than the equivalent of \$61 million, or 92¢ per gallon. While the trial was in the United States, it was conducted under French recovery theories, and did not include any natural resources damages.

U.S. laws and attitudes have evolved considerably since 1978. Most would argue that the precedent is not controlling. Nevertheless, the

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fact that a major oil company could be assessed such a small liability for such a large oil spill on the coast of a Western democracy is a fact that cannot be wholly dismissed in considering the vicissitudes of potential litigation.

Exxon Arthur Kill Spill

In 1990, an underwater pipeline rupture in Arthur Kill, a waterway between New York City and New Jersey, resulted in a 567,000 gallon spill of heating oil. State, federal and local government claims arising out of the spill were recently settled for \$15 million, or \$26 per gallon. At that rate the Exxon spill in Alaska would be worth only \$290 million. Comparability with Exxon's Alaska spill is clouded by the already polluted nature of the Kill, that the New York/New Jersey waterway was not heavily used or appropriate for recreation, the relatively high percentage of the oil recovered (26 percent), and the difference in the kind of oil spilled.

Glacier Bay Cook Inlet Spill

The 1987 spill from the tanker Glacier Bay into Cook Inlet resulted in a recent damage recovery by the state of \$700,000. The volume spilled was never accurately determined; based on estimates, the recovery amounted to \$14 to \$28 per gallon.

Arco Anchorage Port Angeles Spill

This was a spill of 240,000 gallons of North Slope crude oil from the Arco tanker *Anchorage* in 1985. The total state recovery was \$348,000, or \$1.45 per gallon. A relatively high percentage of the spilled oil was recovered, and relatively little biological damage resulted.

ORGANIZATION OF THE TRUSTEESHIP

Concern has been expressed regarding the organizational structure of the trusteeship proposed under the settlement. The negotiators could have chosen other models for trust organization that might have provided the public with greater confidence that the recovered funds will be put to good use. In several recent environmental pollution cases funds recovered as damages have been dedicated much more strictly and directly to environmental purposes.

- In a 1981 settlement of a federal pollution case against the Occidental Chemical Company, the defendants provided a \$1.5 million contribution to California Universities for environmental research.

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- In 1988, as part of a settlement of a case against General Electric for pollution of a Massachusetts river, the company paid the Fund for New England, a private non-profit philanthropic organization, \$100,000 to undertake projects to enhance river water quality.
- In the largest environmental criminal case up to that date, the Allied Chemical Company agreed in 1977 to put \$8 million into a Virginia Environmental Endowment, an independent grantmaking foundation whose purpose is to improve the environment in Virginia.
- In 1987, the endowment established in the Allied case received an additional \$1 million in settlement of claims against Bethlehem Steel Corp. for pollution of Chesapeake Bay, also under a federal consent decree.

ADEQUACY OF EXXON'S PUNISHMENT

The less tangible effects of the civil and criminal settlements are legitimate matters of legislative interest. Even if the civil settlement was considered the best outcome likely, it might still be rejected on the grounds that accepting it would send the wrong message to future negotiators, or would set an undesirable precedent. Certain economic factors may bear on this judgement, one of which relates to the severity of the punishment.

Exxon officers have stated that the settlement will have no significant future effect on the company's earnings. This is in part because it is largely covered by already established reserves. Had the present cost of the settlement been absorbed last year it would have lowered the corporation's 1990 profits of \$5 billion by about 10-12 percent.

In the Justice Department's 1987 Browning Ferris environmental pollution case the consent decree included a provision that barred the defendant from claiming deductibility for federal tax purposes. Had this provision been included in the settlement it would have likely increased the share of 1990 earnings taken by about three percentage points.

Total expenditures by the company as a result of the spill are likely to be about \$3 billion, all told. An estimated \$450 million of this was covered by insurance, and an estimated \$850 million was offset by tax savings, leaving a net cost to the company of about \$1.7 billion. This figure is about one-third of Exxon's 1990 net earnings, and about 7 percent of Exxon's value to its stockholders.