

FINAL REPORT

DOE/FE/64202-T3

STUDY OF ALTERNATIVES FOR  
FUTURE OPERATIONS OF  
THE NAVAL PETROLEUM AND  
OIL SHALE RESERVES

— NPR-2 —

Kern County, California  
as of October 1, 1996

for



U.S. DEPARTMENT OF ENERGY

December 1996



MASTER

GUSTAVSON ASSOCIATES  
GEOLOGISTS • ENGINEERS

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STUDY OF ALTERNATIVES**

**FOR**  
**FUTURE OPERATIONS OF  
THE NAVAL PETROLEUM  
AND OIL SHALE RESERVES  
NPR-2, CALIFORNIA**

**for the**

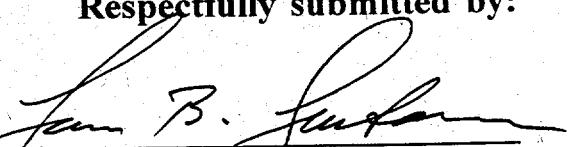
**U.S. DEPARTMENT OF ENERGY**

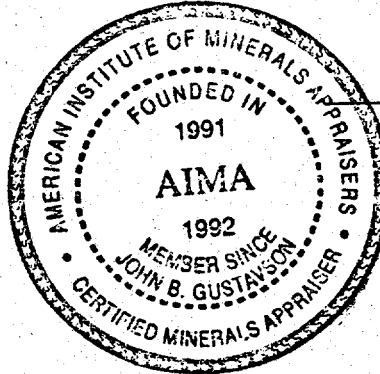
**Contract No. DE-AC01-96FE64202**

**December, 1996**

**GUSTAVSON ASSOCIATES, INC.  
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**Respectfully submitted by:**

  
**John B. Gustavson, President  
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## EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) has asked Gustavson Associates, Inc. to serve as an Independent Petroleum Consultant under contract DE-AC01-96FE64202. This authorizes a study and recommendations regarding future development of Naval Petroleum Reserve No. 2 (NPR-2) in Kern County, California (Figure 0.1). The report that follows is the Phase II Final Report for that study. Additional details are provided in the Addendum (the Phase I Property Description and Fact Finding Report).

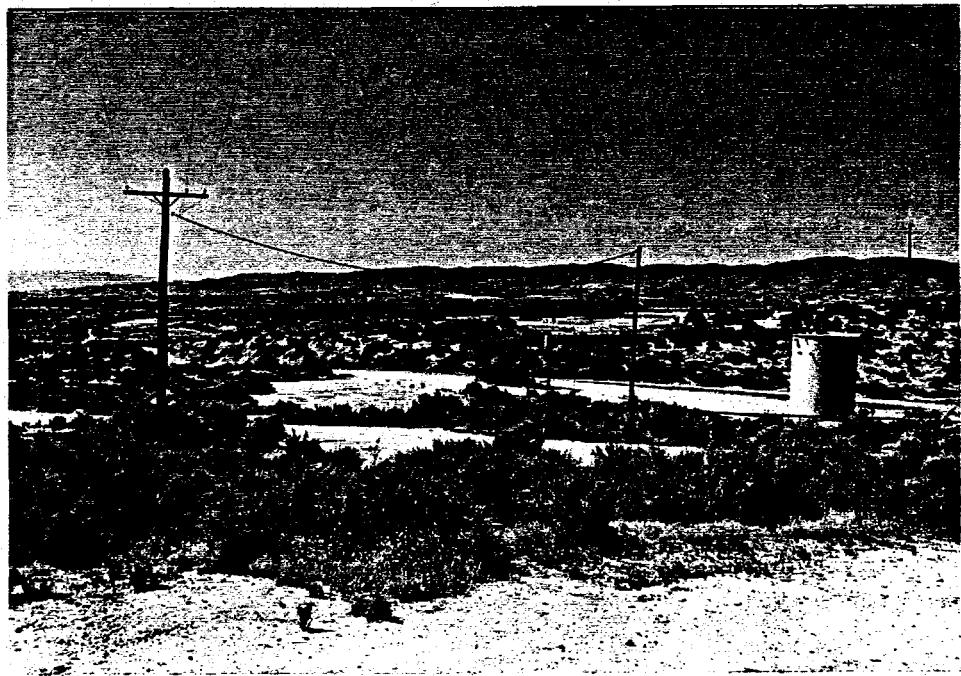
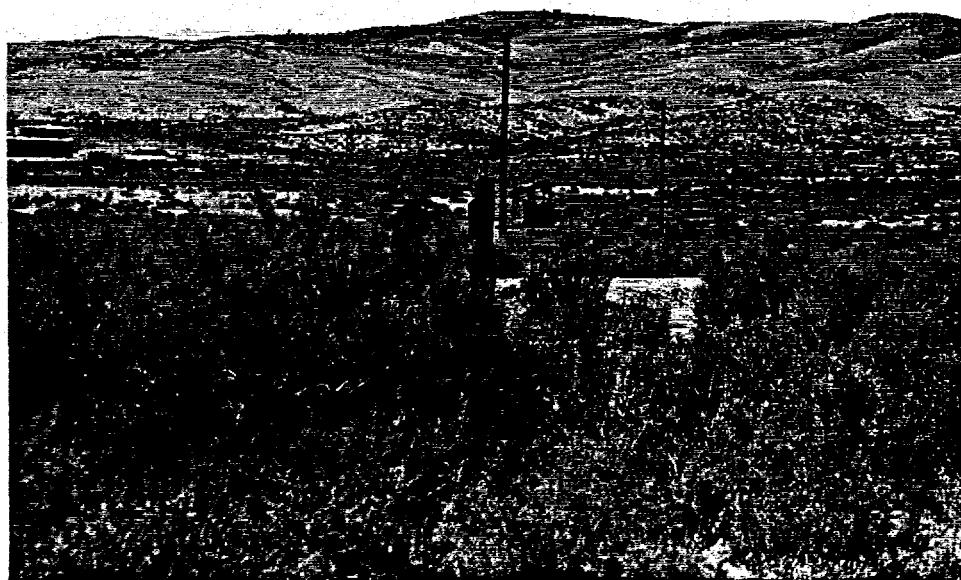
The key property elements that positively affect the estimated value of NPR-2 include the following: royalty income from producing oil and gas leases, rental income from non-producing oil and gas leases, income from grazing or leasing of grazing rights, potential income from oil and gas leasing on exploratory (or nonprospective) acreage, potential value of trading surface real estate as ranch land for sheep grazing (10,044 acres), and town lots for residential or commercial development (16.7 acres). Key elements that negatively impact the estimated value include: environmental assessment costs, operating budgets, and lease sale expenses.

The United States of America owns 100 percent of the mineral rights and about 96 percent of the surface rights in 10,447 acres of NPR-2. Private citizens own the other four percent of the surface. Of this, 9227 acres have been leased by private oil companies, and 1220 are unleased and undeveloped. Another 19,735 acres within NPR-2 are owned in fee private oil companies. This 30,182-acre tract was set aside as an oil reserve for the U.S. Navy by an Executive Order of President Wilson in 1916. Management of NPR-2 is the responsibility of DOE.

Gustavson Associates has conducted a study and made recommendations regarding which of the following options, or combination of options, would maximize the value of NPR-2 to the United States:

Option 1: Retention and operation of all or part of NPR-2 by the Secretary of Energy under Chapter 641 of Title 10, United States Code.

**FIGURE 0.1**  
**NPR-2 PHOTOGRAPHS**



**TOPOGRAPHY AND VEGETATION**

Option 2: Transfer of all or a part of NPR-2 to the Department of the Interior for leasing in accordance with the Mineral Leasing Act (30 U.S.C. 181 et seq.) and surface management in accordance with the Federal Land Policy and Management Act (43 U.S.C. 1701 et seq.).

Option 3: Transfer of all or part of NPR-2 to the jurisdiction of another federal agency for administration under Chapter 641 of Title 10, United States Code.

Option 4: Sale of the interest of the United States of all or a part of NPR-2.

About 435 wells in the field are producing 2819 barrels of oil per day. Of this the government's royalty share is 200 barrels of oil per day and 750 thousand cubic feet per day. Revenues are about \$1.7 million per year. Estimated net reserves to the government's interest include 407 thousand barrels of oil, 1.6 billion cubic feet of gas, and 630 thousand gallons of natural gas liquids. Five leases, comprising 840 acres, are not producing and are held indefinitely by rental payments of \$1 per acre per year. The 1220 acres of unleased DOE property has potential for deeper oil and gas production from zones producing nearby at NPR-1, however, no specific drilling prospects have been identified.

Although significant plugging and abandonment and environmental remediation liabilities are associated with the oil and gas operations on Government-owned land at NPR-2, the lessees are responsible for these liabilities. The chance that the liability would come to rest with the Government is considered negligible.

The *highest and best use* of the mineral estate at this time is for continued generation of income from oil and gas production from currently producing leases, continued generation of income, from rentals, from non-producing leases, and from generation of income on the balance of the unleased acreage by leasing (bonus and rentals). There is a reasonably active market of recent producing property transactions, and of recent leasing of nearby federal, state, and private mineral rights. These data have been utilized, with production and economic forecasts for the producing leases, in estimating the Fair Market Value of the mineral rights at NPR-2.

Continued oil and gas production is currently the most economically important use of NPR-2. This is managed by the DOE and provides a revenue stream to the United States through royalties.

The *highest and best use* of the surface and water rights is generation of income from grazing sheep. Comparable sales of similar types of lands have been utilized to estimate the Fair Market Value of the surface and water rights at NPR-2. This use is considered to be compatible with, though somewhat diminished by, ongoing oil and gas production operations.

The *highest and best use* of NPR-2 is for a combination of activities related principally to generation of income from production of oil and gas and livestock grazing. These uses are compatible with each other, provide minimal interference and tend to be additive in valuation.

The option recommended to maximize value to the United States is Option 4, sale of the interest of the United States of all or part of NPR-2. Evaluation of this option results in an estimated value of \$6.013 million which is about 20 percent higher than the next highest value of \$5.025 million for Option 2, transfer of all or part of NPR-2 to the Department of Interior.

## TABLE OF CONTENTS

	<u>PAGE</u>
<b>EXECUTIVE SUMMARY</b> .....	i
<b>TABLE OF CONTENTS</b> .....	v
<b>1. INTRODUCTION</b> .....	1-1
1.1 AUTHORIZATION .....	1-1
1.2 TYPE OF APPRAISAL .....	1-1
1.3 PROPERTY SUMMARY .....	1-2
1.4 DESCRIPTION OF SCENARIOS .....	1-3
1.5 GENERAL SCOPE OF REPORT .....	1-5
1.6 ORGANIZATION OF REPORT .....	1-6
1.7 ACKNOWLEDGEMENTS .....	1-6
1.8 CONFIDENTIALITY .....	1-7
<b>2. RETENTION AND CONTINUED OPERATION BY DEPARTMENT OF ENERGY</b> .....	2-1
2.1 RETENTION OVERVIEW .....	2-1
2.1.1 Introduction .....	2-1
2.1.2 Summary of Current Operations .....	2-1
2.1.3 Specific Scope of Review .....	2-4
2.1.4 Assumptions and Limiting Conditions .....	2-5
2.2 VALUATION METHODOLOGY .....	2-9
2.2.1 Standards .....	2-9
2.2.1.1 Unit Rule .....	2-9
2.2.1.2 Reserve Reporting .....	2-9
2.2.2 Income Approach .....	2-10
2.3 EXAMINATION AND DISCUSSION OF VALUE .....	2-10
2.3.1 Minerals .....	2-10
2.3.2 Surface and Water Rights .....	2-12
2.3.3 Opinion of Value .....	2-14

	<u>PAGE</u>
<b>3. TRANSFER TO THE DEPARTMENT OF INTERIOR . . . . .</b>	<b>3-1</b>
3.1 TRANSFER OVERVIEW . . . . .	3-1
3.1.1 Introduction . . . . .	3-1
3.1.2 Scope of Review . . . . .	3-1
3.1.3 Assumptions and Limiting Conditions . . . . .	3-2
3.2 VALUATION METHODOLOGY . . . . .	3-3
3.2.1 Income Approach Applied to Potential Mineral Uses under the Mineral Lands Leasing Act . . . . .	3-3
3.2.2 Income Approach Applied to Potential Surface Uses under the Federal Land and Policy Act . . . . .	3-8
3.3 EXAMINATION AND DISCUSSION OF VALUE . . . . .	3-9
3.3.1 Income from Mineral Leasing and Production . . . . .	3-9
3.3.2 Income from Surface Leases . . . . .	3-9
3.3.3 Opinion of Value . . . . .	3-10
<b>4. TRANSFER TO ANOTHER GOVERNMENT AGENCY . . . . .</b>	<b>4-1</b>
4.1 INTRODUCTION . . . . .	4-1
4.2 NATIONAL FOREST SERVICE . . . . .	4-1
4.3 FISH AND WILDLIFE REFUGE . . . . .	4-1
<b>5. SALE OF PROPERTY . . . . .</b>	<b>5-1</b>
5.1 INTRODUCTION . . . . .	5-1
5.2 APPRAISAL OVERVIEW . . . . .	5-1
5.2.1 Assumptions and Limiting Conditions . . . . .	5-1
5.2.2 Scope of Appraisal . . . . .	5-3
5.2.3 Purpose of Appraisal . . . . .	5-3
5.2.4 Summary of Appraisal Problems . . . . .	5-4
5.3 APPRAISAL PROPERTY PROFILE . . . . .	5-4
5.3.1 Description of the Property being Appraised . . . . .	5-4
5.3.1.1 Mineral Rights Developments . . . . .	5-4
5.3.1.2 Surface Description . . . . .	5-9

	<u>PAGE</u>
5.3.2 Owner Contact and Property Inspection .....	5-10
5.3.3 Division of Ownership .....	5-11
5.4 HIGHEST AND BEST USE .....	5-11
5.4.1 Tests .....	5-11
5.4.2 Highest and Best Use .....	5-13
5.4.2.1 Mineral Rights .....	5-13
5.4.2.2 Surface Rights .....	5-13
5.4.3 Highest and Best Use of Property .....	5-15
5.5 FAIR MARKET VALUE DEFINITION .....	5-15
5.6 APPRAISAL METHODS .....	5-16
5.6.1 General .....	5-16
5.6.2 Standards .....	5-16
5.6.3 Obeyance of the Unit Rule .....	5-16
5.6.4 Approach to Value .....	5-18
5.6.4.1 Mineral Rights .....	5-18
5.6.4.2 Surface Rights .....	5-29
5.7 ANALYSIS OF WHOLE PROPERTY .....	5-31
5.8 FAIR MARKET VALUES .....	5-32
6. COMPARATIVE ANALYSIS .....	6-1
7. RECOMMENDATIONS .....	7-1

## APPENDICES

- A DETAILED OUTPUT OF ECONOMIC MODEL FOR RETENTION BY DOE**
- B DETAILED OUTPUT OF ECONOMIC MODEL FOR TRANSFER TO DOI**
- C DETAILED OUTPUT OF ECONOMIC MODEL FOR SALE**
- D DETAILED ROYALTY CALCULATIONS**
- E DISCUSSION OF DISCOUNT RATES**

## LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
0.1	NPR-2 Photograph . . . . .	ii
1.1	Location Map . . . . .	1-4
2.1	Interest Rate for Government Securities . . . . .	2-6
3.1	Lease Map of NPR-2 . . . . .	3-5
3.2	Federal Lease Data Histogram . . . . .	3-7
5.1	Federal, State, and Fee Lease Data Histogram . . . . .	5-25

## LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
2.1	Annual Forecast of Oil Production . . . . .	2-11
5.1	Comparable Sales of Producing Properties . . . . .	5-20
5.2	Mineral Conveyances . . . . .	5-21
5.3	Fair Market Value Worksheet . . . . .	5-28

## 1. INTRODUCTION

### 1.1 AUTHORIZATION

The U.S. Department of Energy has asked Gustavson Associates, Inc. to serve as an Independent Petroleum Appraiser under contract DE-AC01-96FE64202. This authorizes a study and recommendations regarding future development of Naval Petroleum Reserve No. 2 (NPR-2) in Kern County, California. The report that follows is the Phase II Final Report for that study.

### 1.2 TYPE OF APPRAISAL

The scope of this appraisal engagement or study refers to the extent of the process of collecting, verifying, analyzing, and reconciling relevant data. The U.S. Department of Energy could engage an appraiser to perform either a Complete or Limited Appraisal. In this particular case, it is considered that the requested appraisal or study falls under the designation of a Limited Appraisal. This is mainly due to the fact that a Limited Appraisal was conducted for the surface rights which, when considered for the entire property, does not allow for the designation for the entire property of a Complete Appraisal. When considering just the mineral rights, it is the opinion of this Appraiser that a Complete Appraisal was conducted. A Complete Appraisal is the act or process of estimating value without invoking any departure provisions.

This Appraiser has utilized all applicable approaches to value for the mineral rights. Our value conclusion reflects all known information about the subject property, market conditions and available data.

The type of appraisal performed here, namely a Limited Appraisal, is the act or process of estimating value performed under and resulting from invoking substantial departure provisions. In that hypothetical case, both the appraiser and the client would have agreed prior to the engagement that the appraiser will not use all applicable approaches to value or that the value conclusion will not reflect all known information. In the case of appraising the surface, some departure provisions were invoked and are discussed below. Hence, this is a Limited Appraisal.

In the process of preparing the surface appraisal, the work completed has gone beyond the typical definition of a limited appraisal and would approach a complete appraisal, limited though by the fact that (a) only the market approach was used (the income approach could have been marginally useful but was left out because of schedule constraints), and (b) some of the comparable sales data was furnished by others and not independently verified. It is the opinion of this Appraiser that the market data approach provides a reasonable estimate of value for the surface which can be relied upon for valuing the property in its entirety.

This self-contained report is prepared under USPAP Standard 2-2(A) to document this Appraiser's Complete Appraisal and consulting service. This self-contained report contains to the fullest extent possible and practicable, full and complete explanations of the data, reasoning and analyses that were used to develop the opinion of value and the results of our consulting service. It also includes thorough descriptions of the subject property, the property's locale, the market for the property type and this Appraiser's opinion of the *highest and best use*.

This appraisal report provides enough information on each topic so that the reader of the report can follow the reasoning without having to make leaps of faith. In cases where additional details may be necessary the reader will, at each occasion, be referred to the Property Description and Fact Finding Report for each of the NPR and NOSR properties dated 30 June 1996 and submitted on 18 July 1996, for further substantiation. The intention has therefore been that the reader should understand solely on the basis of what is herein written how this Appraiser has arrived at the conclusions and recommendations.

### 1.3 PROPERTY SUMMARY

The United States of America owns 100 percent of the mineral rights and 96.1 percent of the surface rights in 10,447 acres of the 30,182 acres contained within NPR-2. This property comprises the Buena Vista Hills oil field (Figure 1.1). Oil and gas companies have leased out 9,227 acres in 17 separate leases. Discovered in 1909, this field has approximately 435 active wells producing 2,819 gross barrels of oil and 8.6 million cubic feet of gas per day. Net

production to the government royalty interests includes 200 barrels per day and 750 thousand cubic feet of gas per day. Royalty income from this production is about \$1.7 million per year.

Significant plugging and abandonment (P&A) liabilities are present. The current operators are responsible for the plugging and abandonment of the existing operations on NPR-2. However, if they default, then ultimate or contingent liability rests with the United States. This risk may increase as the leases are sold to smaller and smaller operators.

#### 1.4 DESCRIPTION OF SCENARIOS

As authorized in contract DE-AC01-96FE64202, Gustavson Associates was retained by DOE to serve as an Independent Petroleum Appraiser as specified in Section 3416 of the National Defense Authorization Act for Fiscal Year 1996, P.L. 104-106 (110 Stat. 186). As stated in the Act, we have conducted a study and made recommendations regarding which of the following options, or combination of options, would maximize the value of NPR-2 to the United States:

- Retention and operation of all or part of NPR-2 by the Secretary of Energy under Chapter 641 of Title 10, United States Code.
- Transfer of all or part of NPR-2 to the jurisdiction of another federal agency for administration under Chapter 641 of Title 10, United States Code.
- Transfer of all or a part of NPR-2 to the Department of the Interior for leasing in accordance with the Mineral Leasing Act (30 U.S.C. 181 et seq.) and surface management in accordance with the Federal Land Policy and Management Act (43 U.S.C. 1701 et seq.).
- Sale of the interest of the United States of all or a part of NPR-2.

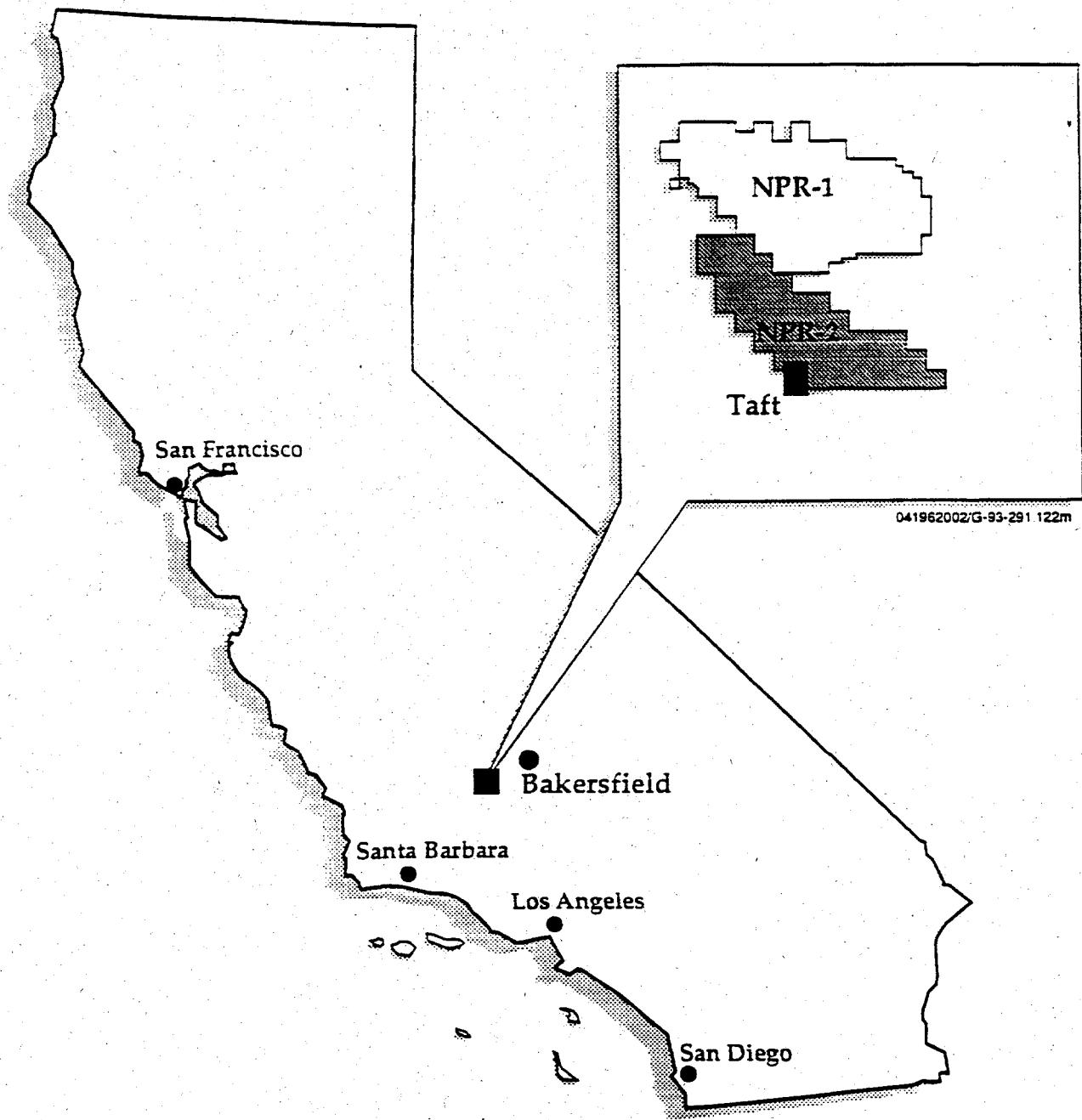


Figure 1-1. Location of NPR-2

Our study includes an examination of the value to be derived by the United States from the retention, transfer or sale of NPR-2. The study includes an assessment and estimate of the Fair Market Value of the interest of the United States in this property. The assessment and estimate were made in a manner consistent with customary property valuation practices in the oil and gas industry.

### 1.5 GENERAL SCOPE OF REPORT

This Report reflects the following general scope of work performed by this Appraiser from April to August, 1996:

1. Delivery of an *Implementation Plan* in May, 1996, containing an initial review of documents, a time frame and schedule for project completion, and identification of additional work and studies required.
2. Meetings with DOE personnel in Washington, D.C. and Tupman, California and a personal inspection of the property.
3. Research for, and preparation of, a Phase I report, titled *Property Description and Fact-Finding Report* for NPR-2, which was previously submitted to DOE in draft format, dated June 30, 1996. It is included with this Phase II Final Report as an Addendum. The research was described in detail in the Phase I Report. Corrections to the draft, based on information provided by DOE (and subsequent research), have been made and incorporated in the Addendum.
4. Completion of Task II, a review of the government's mineral estate in the Buena Vista Hills oilfield. (Appendix I of the Addendum).
5. Upon completion of Phase I, research for, and preparation of, this Phase II Final Report, which is consistent with the *Implementation Plan* and contains the relevant findings,

supporting data, underlying assumptions and recommendations. The research is described in detail later in this Report.

### 1.6 ORGANIZATION OF REPORT

This Report is organized in seven major sections. Preceding this Introduction (Section 1) is an Executive Summary which highlights the methodologies utilized and the recommendations provided. Following the Introduction is a section on each of the alternatives for future operations at NPR-2 that DOE authorized us to consider. These are:

- Section 2: Retention and Continued Operation by DOE
- Section 3: Transfer to the Department of Interior
- Section 4: Transfer to Another Government Agency
- Section 5: Sale of the Property.

Section 6 provides a Comparative Analysis of the four alternatives listed above. Section 7 includes our Recommendations for future operations of NPR-2.

A number of Appendices follow Section 7, so that the body of the Report can be kept relatively brief. The original Phase I *Property Description and Fact-Finding Report* is included as an Addendum to this Final Report.

### 1.7 ACKNOWLEDGEMENTS

Gustavson Associates gratefully acknowledges the gracious cooperation of DOE personnel in Washington, D.C. and in Tupman, California; and Evans, Carey and Crozier, in Bakersfield, California.

## 1.8 CONFIDENTIALITY

The findings of this Report are considered confidential to our Client, the U.S. Department of Energy. We have not released these findings to any other party.

## **2. RETENTION AND CONTINUED OPERATION BY DEPARTMENT OF ENERGY**

### **2.1 RETENTION OVERVIEW**

#### **2.1.1 Introduction**

As authorized in contract DE-AC01-96FE64202, Gustavson Associates was retained by DOE to serve as an Independent Petroleum Appraiser as specified in Section 3416 of the National Defense Authorization Act for Fiscal Year 1996, P.L. 104-106 (110 Stat. 186). As stated in the Act, we have conducted a study and made recommendations regarding which option, or combination of options, would maximize the value of NPR-2 to the United States, including the following:

- Retention and operation of all or part of NPR-2 by the Secretary of Energy under Chapter 641 of Title 10, United States Code.

Our study includes an examination of the value to be derived by the United States from the retention of NPR-2 and includes an assessment of the interest of the United States in this property. The assessment was made in a manner consistent with the customary property valuation practices in the oil and gas industry.

#### **2.1.2 Summary of Current Operations**

Of the 10,447 acres of land owned by the government at NPR-2, 9,227 acres have been leased out to oil and gas production companies in 17 separate parcels. Private sector companies conduct all oil and gas production and development activities on NPR-2, with the government receiving income from production royalties.

Over the past 40 years, six units have been formed in NPR-2. There are nine specific producing groups into which NPR-2 has been divided for production accounting purposes. These are listed below with the year of discovery of each producing horizon.

Shallow Pool	1912
27-B Pool	1944 (unit formed in 1949)
Antelope Shale Zone Unit	1952 (unit formed in 1954)
Antelope Shale Non-Unit	1952
555 Stevens Zone Unit	1957 (unit formed in 1962)
Stevens Pool Non-Unit	1957
2-D Unit (portion of Shallow Pool)	Unit formed in 1969
11-D Unit (portion of Shallow Pool)	Unit formed in 1961
Calidom Gas Sands Unit	1958 (unit formed in 1966)

The California Gas Sands Unit is no longer productive and has been terminated. The DOE's lease and unit records at NPR-2 were reviewed as Task II of this study to determine applicable royalty rates for the above producing groups. Results of this research are included in the Addendum to this Report.

The government agencies and private companies that conduct oil and gas activities on DOE-owned NPR-2 lands include Chevron USA, Inc.; DOE; Fred S. Holmes Western Oil Corp.; Mobil Oil Corporation; Oakland Petroleum Operating Company; Phillips Petroleum Company; Texaco, USA; UNOCAL Corporation; and Vintage Petroleum Company. (Note: the four different townships containing parts of NPR-2 have been designated with letters for convenience: sections in T 31S, R.23E are referred to as "B"; T 31S, R24E is "G"; T32S, R23E is "C"; and T 32S, R24E is "D").

**Chevron USA, Inc.** Chevron leases a total of 1,490 acres of DOE land in Sections 22B, 26B, 28B, 34B, 12C, 2D, and 18D. Chevron has 31 active oil and gas wells on these sections, producing about 200 barrels of oil per day (BOPD) and 225,000 cubic feet of gas per day (MCFGD).

**Department of Energy.** DOE maintains operations on unleased lands in Sections 8B, 12C, and 18H; however, DOE does not currently have any active oil production wells on NPR-2. There is one abandoned well on Section 18H and one abandoned well in Section 12C.

**Fred S. Holmes Western Oil Corp.** Fred S. Holmes operates 80 acres of land in Section 32G through a DOE-approved farm-out agreement with Phillips Petroleum Company. Holmes has four active oil wells producing 119 BOPD in this section.

**Mobil Oil Corporation/Oakland Petroleum Operating Company.** Mobil has three leases totaling 280 acres in Section 32G. Mobil has reassigned one of these leases totaling 80 acres to the Oakland Petroleum Operating Company and has not conducted operations on lands under the other two leases for over 30 years.

**Phillips Petroleum Company.** Phillips leases 2,280 acres of DOE land in Sections 18B, 28B, 2D, 12D, 30G, and 32G. Most of Phillips' oil production activity occurs on Section 32G. Three oil wells and one gas well. Phillips' lease on Section 18B has been inactive for more than 30 years. Phillips is in the process of relinquishing their non-productive leases encompassing Sections 18B and 30G.

**Texaco USA.** Texaco leases 4,520 acres of DOE land in 11 sections. The majority of Texaco's operating facilities are on Sections 6D, 8D, and 14D. Texaco operates approximately 124 oil and gas wells and produces approximately 447 BOPD, 6,857 MCFGD of gas per day, and 150 barrels of natural gas liquids per day. Texaco's leases in Sections 22B, 28B, 34B, 2D, 4D, and 12D have no production.

Texaco has a gas plant located on Section 8D with one fractionation and one compression system. The fractionation portion of the plant is currently idle.

**UNOCAL Corporation.** UNOCAL leases 360 acres of DOE land on Sections 34B and 32G; however, UNOCAL is not currently operating any equipment or facilities on these sections.

UNOCAL has recently agreed to sell this lease as part of a package deal to NUEVO with Torch Energy as operator.

**Vintage Petroleum Company.** Vintage leases 400 acres of DOE land in Sections 20B and 28B. The lease on Section 28B is inactive. Vintage operates approximately 26 producing wells on Section 20B. Vintage's wells produce approximately 1,000 BOPD and 3,000 MCFGD.

### 2.1.3 Specific Scope of Review

To evaluate this option, a review has been conducted of all activities generating income or expense currently carried out by DOE at NPR-2 for the mineral and surface estates. These include receiving royalties from oil and gas production by lessees, overseeing and auditing the payment of these royalties, receiving income from an agricultural lease, and managing the surface of non-leased acreage.

Forecast of future income of oil and gas production was based on production forecasts made previously on a reservoir-by-reservoir and lease or accounting entity (a portion of a lease) basis, as described in detail in Section 7 of the Addendum to this Report. Some of these forecasts have been revised based on input from DOE personnel. Detailed royalty calculations and the effects of sliding-scale royalties have been incorporated based on the findings of this Appraiser's Task II effort to review the mineral estate at NPR-2. Economic limit has been estimated based on expected operating costs for wells of various depths in the Buena Vista Hills and Buena Vista Front Fields, as published by the County of Kern Assessor-Recorder in "1996 - 1997 Oil and Gas Division Appraisal Parameters." These economic limits have been applied to the production forecasts to approximate the likely economic life of future production at NPR-2.

Current income and expenses from surface activities at NPR-2 were estimated based on information provided by personnel with the DOE and BLM in California. Assumptions are discussed in the following section.

#### 2.1.4 Assumptions and Limiting Conditions

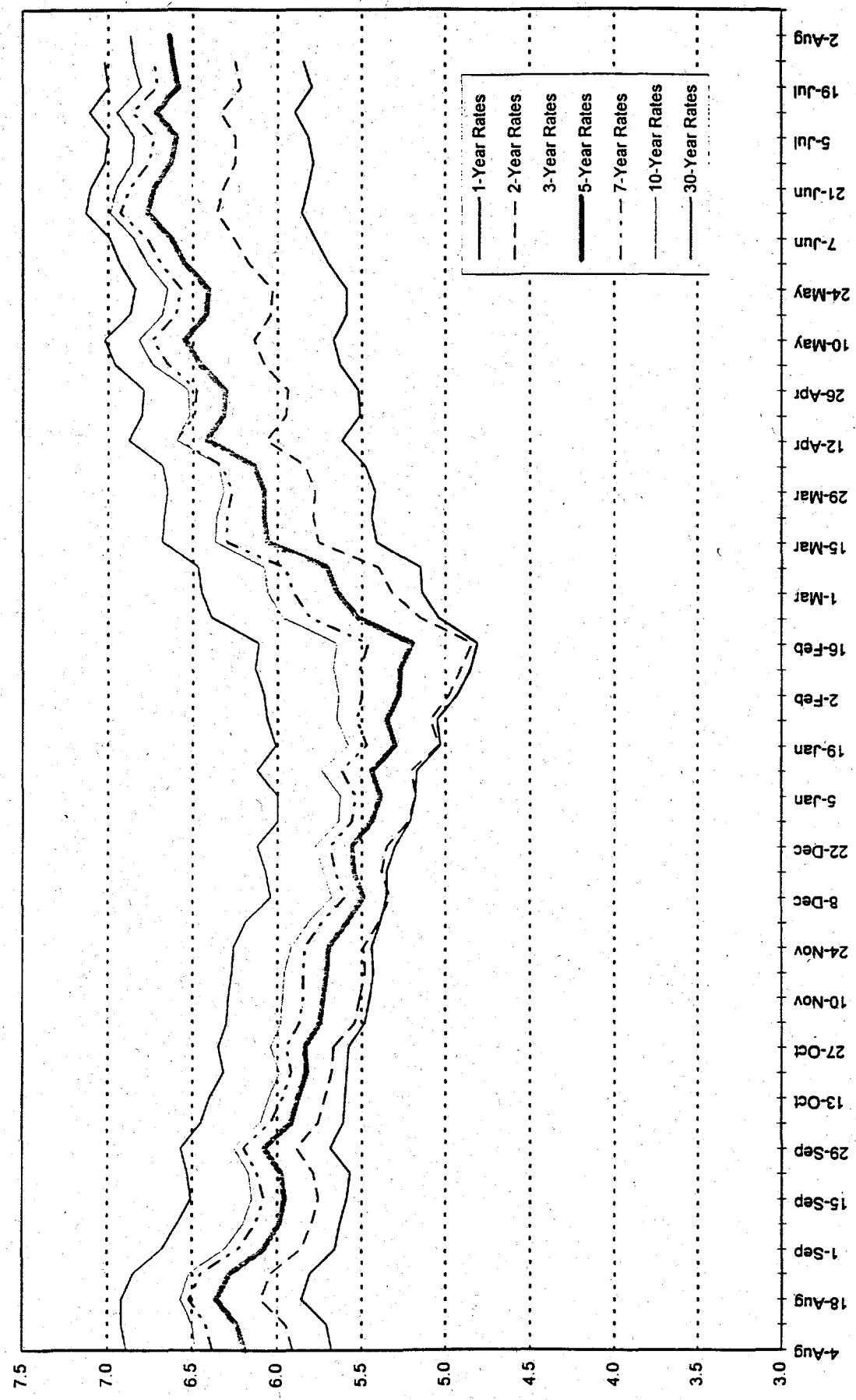
Information provided by the Bureau of Land Management regarding number of animal unit months has been relied upon by this Appraiser for the purpose of an analysis of income from surface activities for the subject properties.

DOE receives an adjusted average of the three highest prices which are posted by regional refineries. The adjustment is based upon gravity and transportation charges in the form of a \$/bbl bonus. Based upon a summary of royalty invoices prepared by DOE from March 1996, DOE received \$18.53/bbl, \$1.20/mcf for gas, and \$0.31 per gal for a weighted average price for liquids from the gas plant. Oil and liquids prices are increased using an annual escalation factor of 2.27 percent, while gas prices are escalated at 2.57 percent per year. The escalation factor are obtained from the Society of Petroleum Evaluation Engineers (SPEE) "Fifteenth Annual Survey of Economic Parameters Used in Property Evaluations".

The discount rate is a key variable in the income method that is used in determining the net present value (NPV). In the income approach to valuation, a discount rate is applied to future net income to determine the present value of the cash stream. The discount rate is a function of the recipient's cost of capital and its perception of risk associated with realizing the predicted cashflow.

Cost of Capital - The office of NPOSR, as a part of the Federal Government, has the same cost of capital as the U. S. Government. The Federal Government raises capital through the sale of Treasury bonds and bills (T-bonds and T-bills). The weighted average of the portion of debt in each of the various denominations determines government's cost of capital. As shown in the attached Figure 2.1, the resulting value ranges between five and seven percent. In addition, Treasury rates are shown to vary over time. An estimated cost of capital is based upon the mean average for all government interest rates, that is, the five year T-bond. The rate for the five year T-bond has risen from a low of 5.25 percent to rate over 6.5 percent between mid-February and the first of August. This analysis assumes the Federal Government's cost of capital to be 6.5 percent.

**FIGURE 2.1**  
**Interest Rates for Government Securities**



Perception of Risk - To determine the applicable discount rate, the various components of the perception of risk are added to the cost of capital. The risk of achieving the predicted cashflow from producing oil and gas operations can be divided into three major components, the combination of which yield the cashflow risk. These three components are the price, production and operating cost risks.

Price risk is estimated to equal three percent. The efforts by industry to protect themselves from oil and gas price fluctuations -- through the use of hedging, future selling and other activities -- has historically resulted in adding three percent to cost of capital. In other words, those who use these risk reducing instruments are able to lower their cost of capital approximately three percent.

There is production risk in obtaining oil and gas that is unique to the petroleum industry. As opposed to other sectors of the mineral extraction industry, oil and gas production declines significantly over time. Historically, the sale of mineral extraction operations for other types of minerals, such as aggregate stone, marble quarries, etc., are purchased based upon a lower discount rate than petroleum production operations. For comparable examples, the difference -- approximately two percent -- is assumed to be attributable to the uncertainty in forecasting oil and gas production.

Increases in operating cost result in lowering the NPV. The risk of higher than forecast operating cost results increasing the discount rate by two percent. This difference is apparent when two similar property sales are compared where the only difference between the two sales is the type of interest being purchased. Historically, a working interest purchase is based upon a discount rate that is approximately two percent higher than a similar purchase of only the royalty interest.

Since DOE holds only a non-participating royalty interest in these producing properties, its revenue is not subject to operating risk. The result of combining the government's cost of capital (6.5 percent) with the five percent for the perception of risk provides NPR-2 with a nominal discount rate of 11.5 percent. This is in line with OMB guidelines which allow the government's cost of capital to be increased by the industry risk to determine the proper discount rate (OMB Circular A-94).

OMB recommends using a nominal seven percent discount rate to evaluate the NPV of government programs. There are three cash streams which are considered government programs. The first is the maintenance cost of \$5,000 per year. The second is the income from an agricultural lease of \$100 per year. The third are the rentals from existing mineral leases. The maintenance expense is discounted at the nominal seven percent. However, leasing activities include price risk. As such, three percent for perception of risk is added to the nominal seven percent government program discount rate discussed above. The resulting ten percent nominal discount rate is then used to estimate NPV of the leasing activities.

Future oil and gas production has been forecast based on decline curve analysis of past production. It should be noted that different interpretations of decline curve performance are possible, resulting in different reserve estimates. The numbers used herein reflect the best engineering judgment of this Appraiser, and were estimated using the most accurate approach of forecasting on a lease-by-lease basis. Because no clear trend in yields of natural gas liquids per unit volume of gas produced from NPR-2, production of natural gas liquids has been forecast based on the March 1996 yields held flat into the future. No new drilling is assumed to take place, and no renewal of activity is assumed for currently non-productive leases.

Lessee's operating costs have been estimated and used in calculating a minimum oil production rate at which continued operations can be economically sustained (economic limit). These calculations included the benefit of income from sales of natural gas and natural gas liquids based on the current producing ratios. For leases or accounting entities producing only gas, a minimum gas production rate was calculated, and the published expected operating costs on a per well basis were reduced by 50 percent to reflect the lower costs typically associated with the production of gas alone. In some cases, projected Fiscal Year production rates were already below the calculated economic limit. Because it is impossible to calculate economic limit precisely without an operator's specific cost records, no leases or accounting entities were assumed to be shut down due to uneconomic production until after two full years of forecast production.

Overhead for the DOE of \$100,000 per year to oversee and audit royalty collections has been assumed, based on current levels of spending. Overhead expenses are escalated by 3.04 percent annually based upon the SPEE survey.

The Federal Government is currently receiving federal income taxes which are paid by the operators based upon the operators taxable income from the producing properties. The present value of this future income stream has value to the Federal Government. Since this income will not change whether DOE retains, transfers or sells their interest in the properties, its value is not included in this analysis.

Although significant plugging and abandonment and environmental liabilities are associated with this property, these are the responsibility of the lessees. If current lessees default on their obligations, their predecessors are liable. The chance of these obligations ultimately falling on the Government is therefore considered negligible. If the Government does become liable for these costs, the chance and dollar amount would be expected to be the same under any scenario evaluated herein. Therefore, these contingent liabilities have not been quantified.

## 2.2 VALUATION METHODOLOGY

### 2.2.1 Standards

#### 2.2.1.1 Unit Rule

The standards for using the unit rule are described in detail in Section 5 of this Report. The unit rule will need to be considered when combining the various components of the fee simple estate.

#### 2.2.1.2 Reserve Reporting

Reserves are estimated volumes of hydrocarbons anticipated to be recoverable from known accumulations from a given date forward. The estimation of reserves is predicated upon certain

historically-developed principles of petroleum engineering. The application of such principles involves extensive judgments and is subject to change based on existing knowledge data and technology, economic conditions, statutory and regulatory provisions, and the purposes for which the reserve estimate is to be used. The Society of Petroleum Engineers (SPE) has adopted standards pertaining the estimation of oil and gas reserves. The SPE standards include reserve definitions by which all oil and gas reserves should be categorized. All of the reserve estimates included as part of the valuation of the subject property conform to the SPE standards and definitions pertaining to oil and gas reserves.

### 2.2.2 Income Approach

The income approach bases the value of an asset upon the present worth of the asset's future net income. This approach is common to industry and recommended by the Office of Management and Budget Circular No. A-94 Section 8.b.1). The present worth is obtained by discounting the asset's future net income to the current year. A nominal discount rate of seven percent plus three percent, adjusted for risk, is used as described in Section 2.1.4. This results in a total discount rate of ten percent. The midyear discounting method is used to reflect income and/or expenditures occurring over the course of the year. In the case of retention of NPR-2 by the DOE, the income approach is applied to the expected revenue. Using the income approach to the cashflow results in a net present value (NPV) as described in Section 2.3.

For this scenario, all expected future net income from continuation of currently existing activities is evaluated. Although other income-generating activities may be possible, the initiation of new activities is not speculated upon for valuation.

## 2.3 EXAMINATION AND DISCUSSION OF VALUE

### 2.3.1 Minerals

The government's royalty share of future production of oil, gas, and natural gas liquids has been projected as described above. The annual forecast is shown in Table 2.1. This includes net

TABLE 2.1

**SUMMARY OF NPR-2 PRODUCTION FORECAST**  
**By Fiscal Year**

	OIL, barrels	GAS, MCF	GASOLINE, gallons	PROPANE, gallons	BUTANE, gallons	TOTAL NGL's, gallons	NET ROYALTY
FY97	54,355	258,636	94,072	13,779	14,908	122,759	
FY98	47,487	213,010	74,501	12,263	13,219	99,982	
FY99	40,009	178,009	59,322	9,983	10,328	79,633	
FY00	30,149	113,626	29,893	8,957	9,242	48,092	
FY01	26,450	102,760	25,226	7,710	7,812	40,748	
FY02	24,146	94,355	22,742	6,934	7,006	36,682	
FY03	21,414	82,552	18,635	5,489	5,585	29,709	
FY04	18,804	71,338	14,677	4,080	4,208	22,965	
FY05	17,129	64,015	11,662	3,373	3,241	18,276	
FY06	15,956	59,527	10,759	3,123	2,995	16,907	
FY07	14,874	55,360	9,987	2,893	2,770	15,650	
FY08	13,912	51,628	9,273	2,688	2,569	14,531	
FY09	12,948	47,889	8,568	2,485	2,372	13,424	
FY10	12,091	44,552	7,941	2,304	2,197	12,442	
FY11	11,296	41,452	7,364	2,137	2,036	11,537	
FY12	10,585	38,673	6,849	1,988	1,893	10,730	
FY13	9,868	35,886	6,337	1,840	1,751	9,928	
FY14	9,229	33,397	5,863	1,708	1,625	9,215	
FY15	8,633	31,084	5,462	1,586	1,508	8,556	
FY16	8,100	29,009	5,087	1,477	1,405	7,968	
<b>TOTAL</b>	<b>407,437</b>	<b>1,646,758</b>	<b>434,269</b>	<b>96,797</b>	<b>98,668</b>	<b>629,735</b>	

reserves of 407,437 barrels of oil, 1,647 million cubic feet of gas, and 629,734 gallons of natural gas liquids. This production stream with pricing assumptions and overhead costs as described above have been evaluated using the economic model described in detail in the Addendum to this Report. The resulting estimated value is \$5.084 million, based on a NPV at 11.5 percent. The detailed output of this evaluation is included as Appendix A to this Report. (Note: The main page of output shows a discounted cashflow of \$4.753 million. This cashflow is discounted at 13.5 percent in the economic model for the other NPOSR properties that include DOE-operated production. However, DOE's interests in NPR-2 are non-participating royalty interests. Therefore, the DOE income from production for this case must be discounted at 11.5 percent. The resulting value is \$5.084 million, as shown above.)

In addition to the royalties, DOE receives \$480 per year in rentals on non-productive mineral leases. This rental income is expected to continue for the next thirty years and has a net present value of \$4,796 or \$4,800, based upon a nominal interest rate of 10 percent as described in Section 2.1.4. Combining this value with the \$5.084 million from royalties yields a total mineral value of \$5.089 million.

### 2.3.2 Surface and Water Rights

We have been informed by the DOE that the only current income from surface uses at NPR-2 is that resulting from 167 acres leased for agricultural purposes to the City of Taft. Final payment has been made prior to the termination of the lease in 1997. The City of Taft would like to renew the lease for alfalfa production for a five-year lease term. Therefore, the annual income to DOE of \$100 has been carried forward.

Unleased NPR-2 acreage includes eight 1/2 block lots comprising 16.735 acres in Ford City, just north of the City of Taft. Presently, these lots are designated drill sites; however, their proximity to an urban setting impedes oil and gas development. The City of Taft has requested ownership of the tracts to be used for affordable housing. The DOE declined their request in 1991, indicating that these lots will continue to be held as drilling sites. The DOE incurs costs related

to management of the surface of the unleased acreage within NPR-2, and has future surface remediation liabilities associated with this acreage. Maintenance for unleased lands is necessary for firebreaks, weed control, surface subsidence, fencing, encroachment, etc., at an estimated annual cost of \$5,000. Therefore, a negative value is attributed to the surface rights if NPR-2.

Property adjacent to NPR-2 is used for sheep and cattle grazing in the winter months. According to the Bakersfield BLM office, grazing does not occur on the NPR-2 property. Therefore, in the case of retention of ownership by the DOE, grazing is not assumed to be initiated.

Endangered species inhabit the lands at NPR-2; therefore, continued development by the DOE could result in the loss or alteration of habitat for threatened, endangered or candidate species as determined by the Endangered Species Act. According to a 1994 Environmental Assessment conducted by the DOE, development activities may affect the San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, Hoover's wooly star, Kern mallow and the habitats of these species.

Mitigation strategies have been proposed and are believed to minimize the impacts to these species under a continued development scenario. Continued surface management of NPR-2 by the DOE would result in a continuation of aggressive habitat preservation programs for endangered species and their habitats.

Lessees on NPR-2 purchase water from the West Kern County Water District. (The cost of purchasing water does not impact DOE as a non-participating royalty interest owner). The water is part of an allotment from the California Water Project aqueduct system. Due to this allotment, surface and ground water rights were never adjudicated for NPR-2. Retention of ownership by the DOE would constitute continuation of the current water program for oil and gas development and other site activities on NPR-2. No income nor expenses are expected.

The NPV of the maintenance program has a negative value of \$65,400. The agricultural lease has a positive value of \$1,000. The net resulting value to the Federal Government from the surface rights is a negative \$64,400.

### 2.3.3 Opinion of Value

The mineral and surface activities described in the preceding sections are not expected to interfere with each other and are expected to continue concurrently. Therefore the values determined separately for mineral and surface rights are additive. The expected value to the U.S. Government under the scenario of retention and continued operation of NPR-2 by the DOE is estimated as follows:

Mineral Rights -	\$5,088,700
<u>Surface Rights -</u>	<u>(\$64,400)</u>
<b>TOTAL VALUE</b>	<b>\$5,024,300</b>

### **3. TRANSFER TO THE DEPARTMENT OF INTERIOR**

#### **3.1 TRANSFER OVERVIEW**

##### **3.1.1 Introduction**

As authorized in contract DE-AC01-96FE64202, Gustavson Associates was retained by DOE to serve as an Independent Petroleum Appraiser as specified in Section 3416 of the National Defense Authorization Act for Fiscal Year 1996, P.L. 104-106 (110 Stat. 186). As stated in the Act, we have conducted a study and made recommendations regarding which options, or combination of options, would maximize the value of NPR-2 to the United States, including the following:

- Transfer of all or a part of NPR-2 to the Department of the Interior for leasing in accordance with the Mineral Leasing Act (30 U.S.C. 181 et seq.) and surface management in accordance with the Federal Land Policy and Management Act (43 U.S.C. 1701 et seq.).

Through the Bureau of Land Management (BLM), the Department of the Interior has the responsibility for leasing and administering federal mineral rights. In the case of a transfer to the Department of Interior, mineral leasing activity at NPR-2 would typically fall under the jurisdiction of the BLM.

##### **3.1.2 Scope of Review**

As part of the Addendum, this Appraiser researched and identified standard terms for oil and gas leasing on federal lands. In addition, data were obtained on market bonuses and rentals in order to estimate the future income from oil and gas leasing.

Research was also conducted for surface uses of public lands as it pertains to Federal Land Policy Act. Certain officials at the Colorado State office of the BLM were interviewed regarding DOI

rules and regulations for oil and gas leasing and surface uses under the Federal Land Policy and Management Act of 1976 (FLPMA).

To evaluate this option, a review has been conducted of all activities expected to generate income or expense if management of the mineral and surface estates of NPR-2 were carried out by the Bureau of Land Management. These include receiving royalties from oil and gas production by lessees on existing leases, overseeing and auditing the payment of these royalties, receiving bonuses and rental from leasing out acreage that is currently unleased, receiving income from an agricultural lease and new surface leases for grazing sheep, and managing the surface of government-owned acreage.

The projection of income from royalties on future oil and gas production was the same for this scenario as for that of DOE retention. A review of federal leasing activity in the area was carried out and described in the Addendum to this Report. Data obtained from this review were analyzed in the Phase of the study in order to estimate expected lease bonuses and frequency of leasing for the currently unleased acreage.

An evaluation was made of the expected income from issuing grazing leases for sheep on government-owned surface within NPR-2, based on information provided by the BLM office in Sacramento.

### 3.1.3 Assumptions and Limiting Conditions

Many of the assumptions and limiting conditions pertaining to tax impact, oil and gas prices and escalation, oil and gas production forecast, overhead expenses, and surface activities that were described in Section 2.1.4 pertain here as well. The seven percent nominal discount rate used in Section 2.1.4 is applicable with the addition of three percent for price risk for the mineral leasing program. The three percent is based upon an assumption about the relationship between oil and gas prices and the impact of price risk as seen in the industry. The efforts by industry members to protect themselves from oil and gas price fluctuations -- through the use of hedging,

futures selling and other activities -- has historically resulted in adding three percent to cost of capital. In other words, those who use these risk-reducing instruments are able to lower their cost of capital approximately three percent. Therefore, the three percent is added to the recommended seven percent for a total nominal discount rate of ten percent.

Future income taxes paid by current leases would be expected to be the same under all scenarios and so are not valued here.

Based on discussions with Robert Lopes in BLM's Salt Lake City, Utah office, leasing costs BLM approximately \$0.82 per acre for the 250,000 to 300,000 acres this office currently leases annually. We assume that the additional 2500 acres would increase the cost of BLM by \$0.75/acre. Furthermore, Mr. Lopes stated that costs to maintain their lease records were minimal. We assumed no additional cost for these 2500 acres for record keeping. Expected costs are thus calculated as follows: Acres leased (2500) times \$0.75/acre = \$1875. The BLM cost per acre is an agency-wide policy and would apply to all of their leasing costs.

The cost to the BLM of administering the receipt of royalties from the existing producing leases is assumed to be similar to the costs currently incurred by the DOE, or approximately \$100,000 per year.

### 3.2 VALUATION METHODOLOGY

#### 3.2.1 Income Approach Applied to Potential Mineral Uses under the Mineral Leasing Act

As discussed in detail in the Addendum, the Mineral Leasing Act of 1920, as amended, 30 U.S.C. §§ 181 *et seq.*, and the Mineral Leasing Act for Acquired Lands of 1947, as amended, 30 U.S.C. §§ 351 *et seq.*, give the BLM responsibility for oil and gas leasing on BLM, national forest and other federal lands where mineral rights have been retained by the Federal Government. regulations that govern the BLM's oil and gas leasing program are found in 43 C.F.R. §§ 3100.0 *et seq.*

According to the director of the Real Estate and Appraisal Section of the Colorado State Office of the BLM, since Congress enacted legislation in 1977 creating DOE and transferred to it jurisdiction over the Naval Petroleum and Oil Shale Reserves, Congressional approval will be required for the transfer of full jurisdiction over the reserves from DOE to DOI. The director stated that existing lease and other contractual arrangements in effect at the NPOSRs could be grandfathered under the legislation authorizing the transfer to DOI. Consequently, the rules and regulations presently governing the leases and agreements in effect at NPR-2, including royalty rates, would continue in effect for the duration of said leases and related agreements. Since the leases and agreements currently in effect are not subject to the 1920 or 1947 Mineral Leasing Acts, the provisions of those acts will not apply to the leases transferred from DOE to DOI. For example, the requirement that 50 percent of the royalties payable under any oil and gas lease issued thereunder be paid to the state in which the leased lands are located in order to compensate the state for the impact of the federal leasing activities on those lands will not apply to the current leases and related agreements which are transferred to DOI. Future leases issued by the BLM on any portion of the NPOSRs would, however, be subject to the applicable Mineral Leasing Act and would be subject to the provisions of the act requiring payment of the 50 percent state impact fee described above, and would be subject to all other BLM rules and regulations currently applicable to leasing activity, both surface and mineral, conducted by BLM.

The 1220 acres of unleased government-owned land within NPR-2 (Figure 3.1) were assumed to be issued for leasing under this scenario. Although this acreage is in the vicinity of productive acreage, a criteria which frequently results in high lease bonuses, no defined prospects exist on any of this acreage. Potential for production from deeper reservoirs which are productive nearby at NPR-1 may be considered by prospective lessees of this acreage, but no specific prospective deeper reservoirs have yet been defined at NPR-2. Thus the lease bonuses for the majority of this acreage are expected to be in the mid-range of bonuses paid in the area: better than those received for rank wildcat acreage, but not as high as highly prospective acreage near existing production.

# D.O.E. LEASES IN NPR NO. 2

## LEGEND (LEASES)

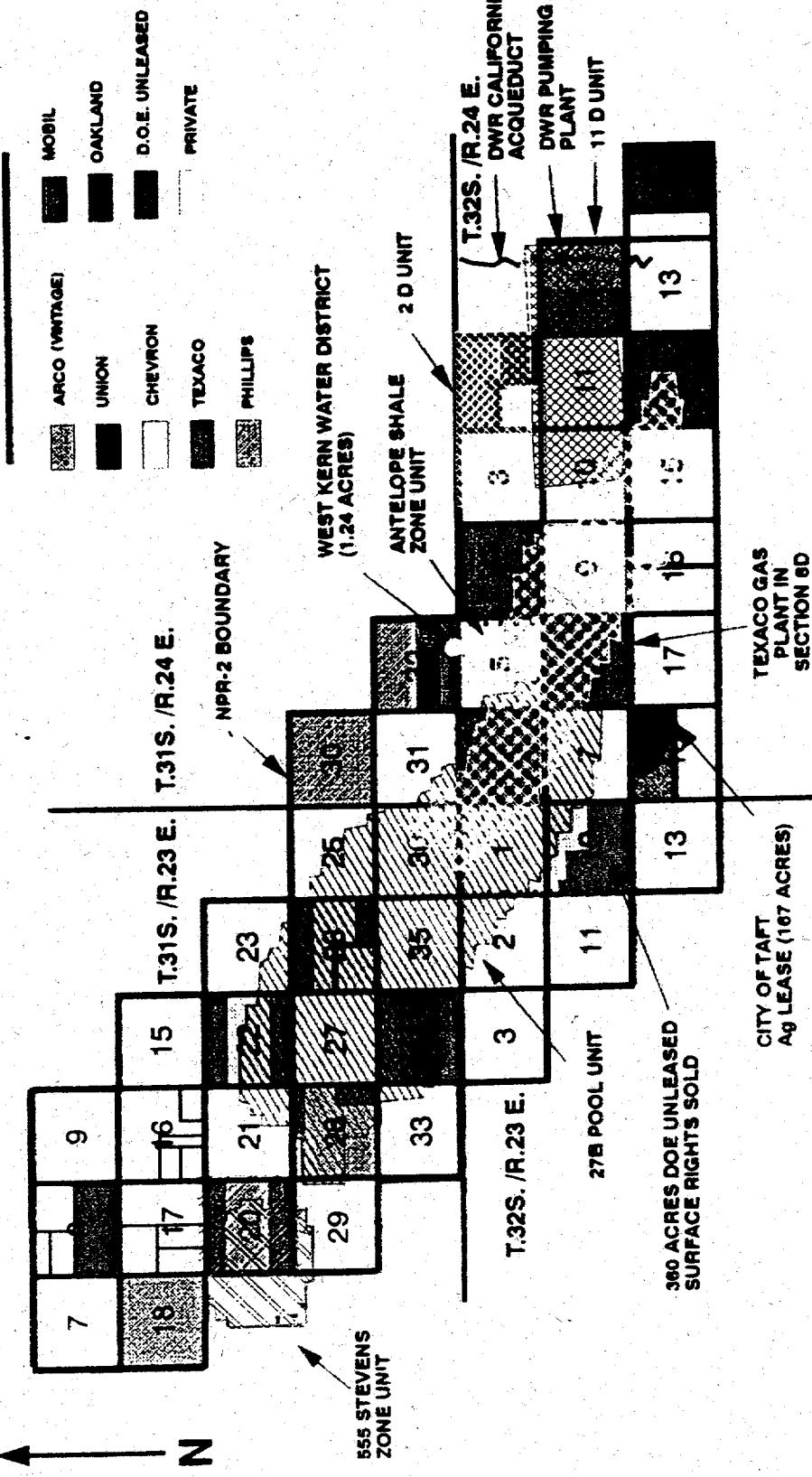


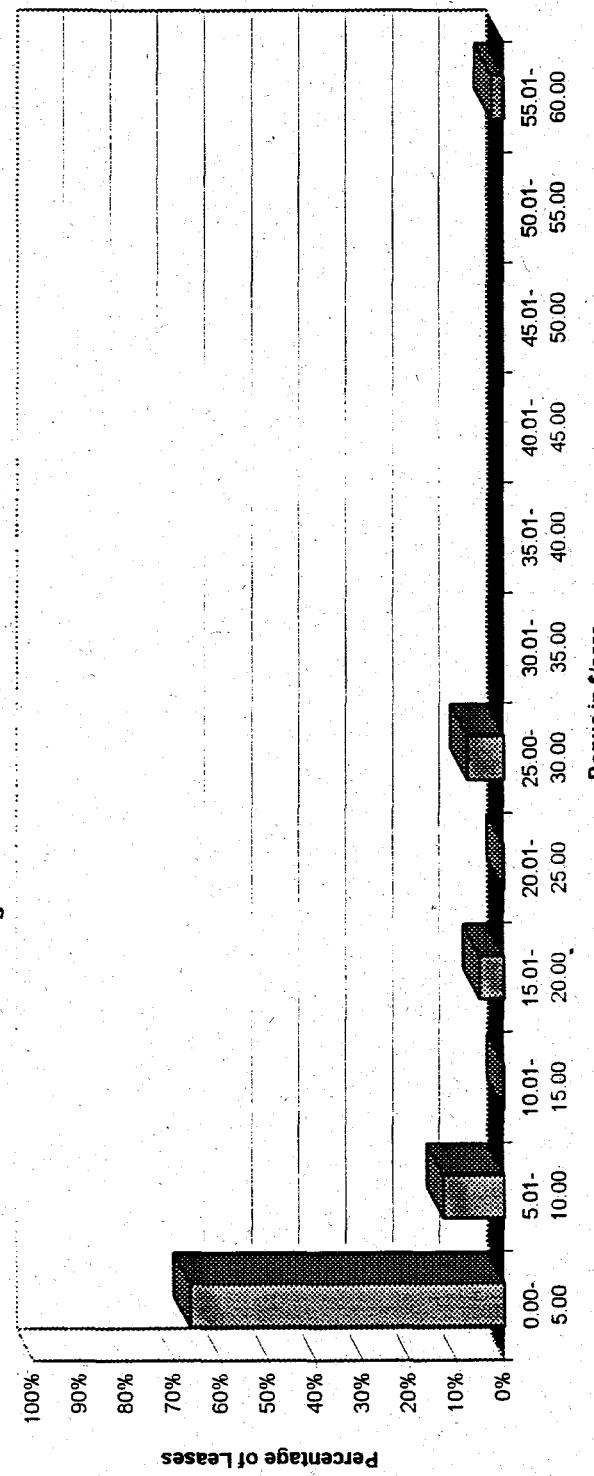
FIGURE 1.1-Lease map of the study area.

One of the unleased areas owned by the DOE (420 acres in Section 12 T32S, R23E) underlies the City of Taft. The majority of the surface rights (about 403 acres) has been sold, and access to the minerals from the surface is limited to eight half-block drill sites within the city, totalling about 17 acres of land. It would be expected that the difficulty in obtaining drilling permits, objections by local citizens, and, if permits are successfully obtained, the probable requirements for expensive noise reduction and other mitigating equipment associated with any potential drilling operations, would be considered as a detriment to the value of this acreage by a potential lessee. In the opinion of this Appraiser, the lease bonuses likely to be received for this acreage are expected to be about the same as those received for rank wildcat acreage.

Additionally, 1,280 acres of land leased to Phillips Petroleum are in the process of being relinquished by Phillips. The relinquishment awaits final approval by DOE, pending final conclusion that no additional environmental remediation work is required to be performed by Phillips. We are assuming for purposes of this valuation that those relinquishments will be approved and this land will be made available for re-leasing under the BLM management scenario. This acreage includes several depleted, abandoned wells, but is in the vicinity of existing production, and has the defined deeper potential similar to the unleased acreage described above. Therefore, lease bonuses expected for this acreage would be similar: in the mid-range of bonuses paid in the area: better than those received for rank wildcat acreage, but not as high as highly prospective acreage near existing production.

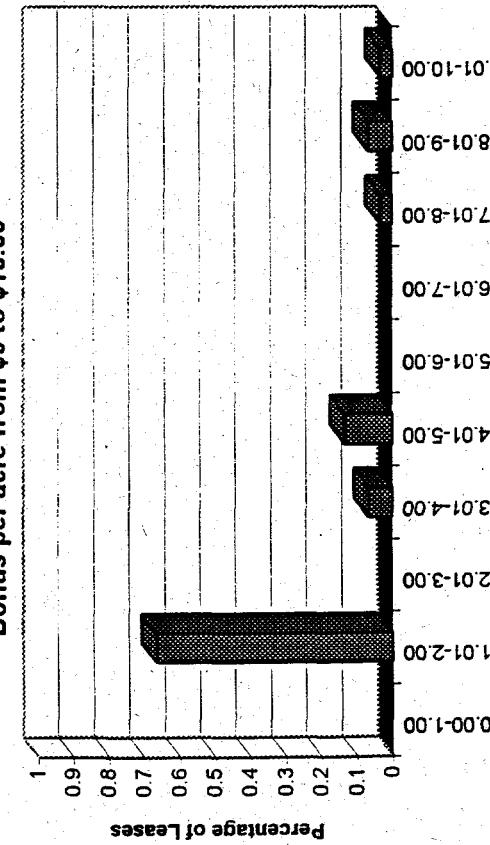
Figure 3.2 displays a statistical analysis of the federal lease bonus data over the past three years in this area of California. The minimum bid required for bonuses on federal leases is \$2.00 per acre. The mean, median, and mode of the federal leases issued in the area of NPR-2 for the last three years are \$9.10, \$2.00, and \$2.00, respectively. This Appraiser estimates a lease bonus of \$5.00 per acre for the 800 acres of unleased DOE land at NPR-2, which excludes the 420 acres underlying the City of Taft, and for the 1280 acres formerly leased by Phillips. The 420 acres underlying Taft are expected to receive the minimum bid of \$2.00 per acre. The weighted average of these bonus amounts results in an estimate of \$4.50 per acre. Lease rental payments of \$1.50 per acre per year for the first five years and \$2.00 per acre for the remaining five years.

**NPR 2**  
**Percentage of Leases as a Function of Bonus**

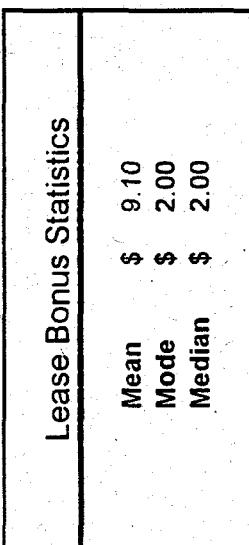


**FIGURE 3.2A -Federal Lease Bonus Bids**

**NPR 2**  
**Bonus per acre from \$0 to \$10.00**



**FIGURE 3.2B -Federal Lease Bonus bids \$10 and under (expanded from Figure 3.2 A)**



**FIGURE 3.2C - Statistical Data**

**Figure 3.2**

are expected over the ten-year term of the leases, based on the standard terms of federal lease data described in the Addendum to this Report. Seventy-six percent of the acreage is assumed to be leased, based on the percentage of leases taken out of those offered in recent federal lease sales in California.

### 3.2.2 Income Approach Applied to Potential Surface Uses under the Federal Land Policy and Management Act

The Federal Land Policy and Management Act of 1976 (FLPMA), 43 U.S.C. §§ 1701 *et seq.* directs the Secretary of the Interior to develop and maintain "land use plans which provide by tracts or areas for the use of the public lands." FLPMA declares a general policy that the United States should "receive Fair Market Value of the use of the public lands and their resources." *Id.* §§ 1716(a). FLPMA further impacts BLM land management by reaffirming the management principle of "multiple use" by imposing the substantive duty "to manage the public lands under principles of multiple use and sustained yield." The BLM implements these FLPMA directives through various statutes, including, among numerous other acts, the Mineral Leasing Acts discussed in the previous section of this Report, and the Taylor Grazing Act, 43 U.S.C. §§ 315 *et seq.*, which authorized the Secretary of the Interior to establish "grazing districts ... from any part of the public domain ... which in his opinion are chiefly valuable for grazing and raising forage crops." In these grazing districts, the privilege of grazing livestock is regulated through a system of allocating grazing permits, as discussed below in Section 3.3.2.

Therefore, for valuation of the option of transfer of NPR-2 to DOI, it is assumed that the BLM would pursue the issuance of grazing permits as a surface use of the government-owned land. Income from this usage has been projected as described in Section 3.3.2 below.

Other income and expenses related to surface ownership at NPR-2 are not expected to change under BLM management.

### 3.3 EXAMINATION AND DISCUSSION OF VALUE

#### 3.3.1 Income from Mineral Leasing and Production

The projected income from receiving royalty payments from the productive acreage at NPR-2, less the expected costs of administering the royalties, as described above, has been evaluated using the economic model described in the Addendum to this Report. (See Appendix B for detailed output from the economic model for this scenario.) Resulting NPV to the government discounted at 11.5 percent is \$5.084 million. (Note: The main page of output shows a discounted cashflow of \$4.753 million. This cashflow is discounted at 13.5 percent in the economic model for the other NPOSR properties that include DOE-operated production. However, DOE's interests in NPR-2 are non-participating royalty interests. Therefore, the DOE income from production for this case must be discounted at 11.5 percent. The resulting value is \$5.084 million, as shown above.)

The projected income from receiving bonuses and rental payments for the currently unleased acreage at NPR-2, less the expected costs of issuing the leases, as described above, has been evaluated using the economic model. (See Appendix B for detailed output from the economic model for this scenario.) Resulting NPV to the government discounted at 10 percent is \$18,600. Offsetting this income is the expected cost for the Government to perform an updated Environmental Assessment which would likely be required under the National Environmental Policy Act (NEPA) under the scenario of leasing this acreage, resulting in a net value of this leasing program of a negative \$10,000. Additional income from rental payments on active but non-producing lease is expected to continue at \$480 per year. The NPV of this cashflow is \$4,800. Combining this with the NPV of the mineral leasing and the continued royalty stream results in a total from mineral income under this scenario of \$5,078,700.

#### 3.3.2 Income from Surface Leases

According to the Bakersfield BLM office, sheep and cattle grazing does not occur on the NPR-2 property. However, there is grazing on adjacent property in the winter months. In the case of

a transfer of NPR-2 to the Department of Interior, grazing is assumed to generate a nominal income of \$1.35 per animal unit month (AUM). An animal unit month is defined as the amount of forage required to maintain one animal unit (one cow or five sheep) for one month. The average number of acres required per aum in this area is 6 acres. The aridity of this region would allow for no more than six months of grazing annually. Approximately 800 acres of unleased acreage is available for development of agriculture and grazing. Therefore, an annual income of \$1,080 could be realized by the BLM for grazing. Agricultural leases could potentially add a nominal revenue to the annual income from agriculture and grazing; but this more speculative revenue has not been included.

The \$100 from the agricultural lease (described in Section 2.3.2) is expected to continue under supervision by DOI. Thus the combined income from grazing (\$1,080/year) and agricultural (\$100/year) leasing is forecast to be \$1,180 per year. This income continues for 32 years in the NPV calculation, which results in a value of \$11,800.

General maintenance for the drillsite acreage in Ford City is estimated to continue at annual cost of \$5,000. This results in a negative NPV of \$65,400. The total NPV from surface activities is thus a negative \$53,600.

Endangered species inhabit the lands at NPR-2 as described in Section 2.3.2. Under BLM management, the mitigation measures would remain the same and habitat preservation would continue to be a high priority for surface management of NPR-2.

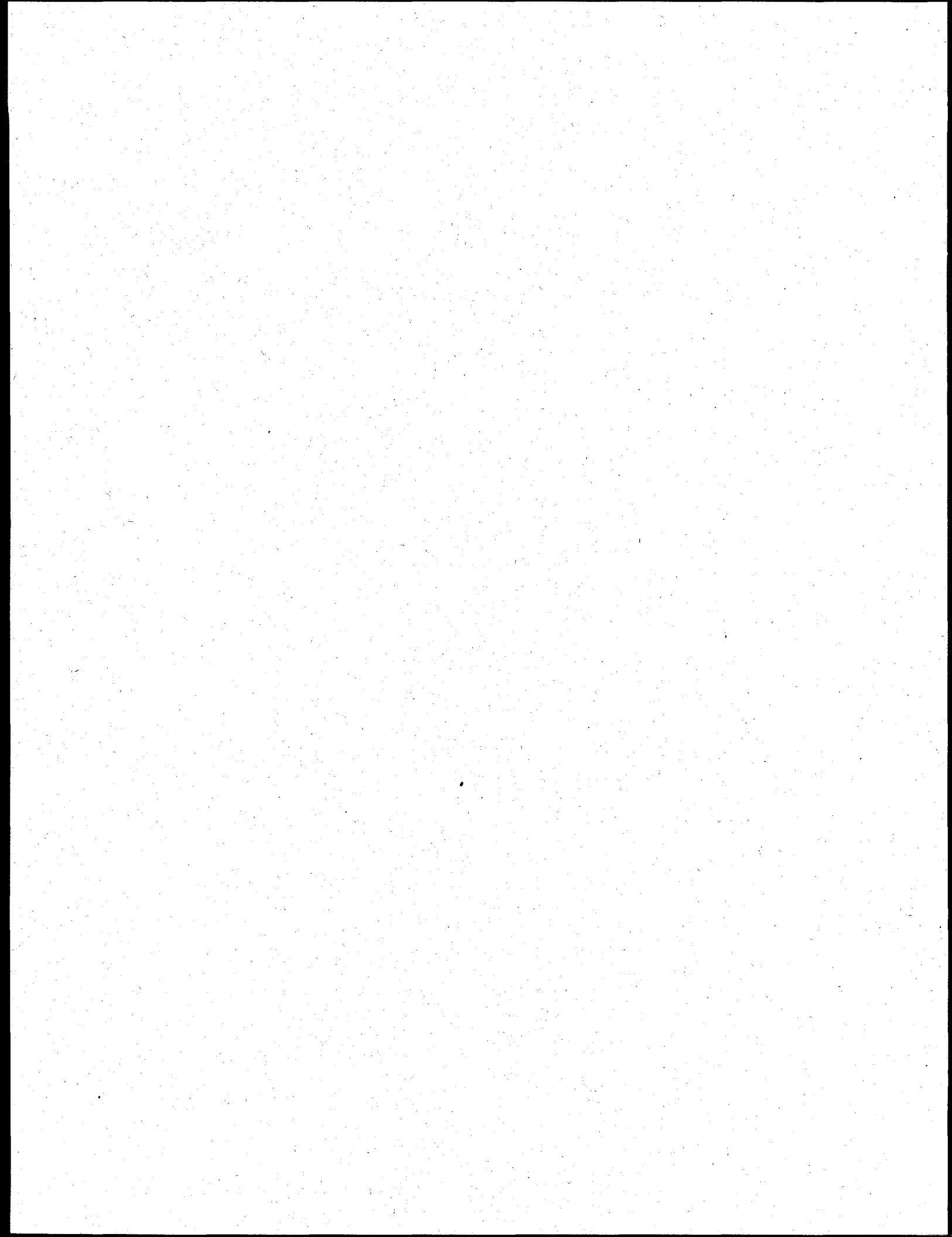
Surface or ground water rights do not exist for NPR-2; therefore, in the case of a transfer to the Department of Interior an income will not be realized from water rights for this property.

### 3.3.3 Opinion of Value

In this case, none of the anticipated surface uses of the property interfere with the anticipated mineral uses and vice-versa. Therefore, the values described in the two preceding sections are

additive. This yields a total expected value to the government for transfer of NPR-2 to the Department of Interior for leasing as follows:

Mineral Rights -	\$5,078,700
<u>Surface Rights -</u>	<u>(\$53,600)</u>
<b>TOTAL VALUE</b>	<b>\$5,025,100</b>



## **4. TRANSFER TO ANOTHER GOVERNMENT AGENCY**

### **4.1 INTRODUCTION**

As authorized in contract DE-AC01-96FE64202, Gustavson Associates was retained by DOE to serve as an Independent Petroleum Appraiser as specified in Section 3416 of the National Defense Authorization Act for Fiscal Year 1996, P.L. 104-106 (110 Stat. 186). As stated in the Act, we have conducted a study and made recommendations regarding the following option to maximize the value of NPR-2 to the United States:

- Transfer of all or part of NPR-2 to the jurisdiction of another federal agency for administration under Chapter 641 of Title 10, United States Code.

In this regard several other federal agencies were considered for transfer, but none were found to be suitable for this purpose. This alternative for the future operations of NPR-2 was considered inappropriate. No assessment of the value to be derived by the United States from the transfer to another federal agency was made. The other federal agencies considered are briefly discussed below.

### **4.2 NATIONAL FOREST SERVICE**

One federal agency considered for transfer is the Department of Agriculture's National Forest Service (NFS). Mineral rights under NFS-zoned surface are administered by the Bureau of Land Management. Therefore, Option 2, transfer to the Department of the Interior, applies directly to this option, as well.

### **4.3 FISH AND WILDLIFE SERVICE**

Another possible use for the NPR-2 property that merits some consideration is that of a wildlife refuge. Because of the several endangered species which inhabit the lands at NPR-2, continued

development could result in the further degradation or alteration of habitat for the endangered plants and animals.

The Bureau of Land Management would presumably administer and manage the minerals under such a scenario whereas the Fish and Wildlife Service would administer the refuge. It is presumed that existing oilfield operations could continue under such a scenario and also that grazing permits could be issued as described in Section 3.3.1. Leasing of unleased acreage would not be expected to occur under this option. Therefore, this option would have the same dollar value as that described in Section 3.3.3 or \$5,025,100, less the income from leasing of \$18,600, or a total of \$5,006,500. This option would have the added benefit of preserving critical wildlife habitat.

## 5. SALE OF THE PROPERTY

### 5.1 INTRODUCTION

As authorized in contract DE-AC01-96FE64202, Gustavson Associates was retained by DOE to serve as an Independent Petroleum Appraiser as specified in Section 3416 of the National Defense Authorization Act for Fiscal Year 1996, P.L. 104-106 (110 Stat. 186). As stated in the Act, we have conducted a study and made recommendations regarding the following options to maximize the value of NPR-2 to the United States:

- Sale of the interest of the United States of all or a part of NPR-2.

Our study includes an examination of the value to be derived by the United States from the sale of NPR-2. The study includes an assessment and estimate of the Fair Market Value of the interest of the United States in this property. The assessment and estimate were made in a manner consistent with customary property valuation practices in the oil and gas industry.

### 5.2 APPRAISAL OVERVIEW

#### 5.2.1 Assumptions and Limiting Conditions

The assumptions discussed in Section 2.1.4 regarding product pricing, inflation, and production forecasts are consistent through this scenario as well. Overhead for a private company already monitoring royalty income would be expected to be considerably lower, and is estimated at \$40,000 per year. This includes an assumed \$25,000 per year for external auditing and \$15,000 per year for a portion of the costs associated with one full-time employee.

These numbers reflect the minimal added cost for an existing petroleum company to administer this income.

The purchaser of these mineral royalties will be subject to local, state, and federal taxes as discussed in the Addendum to this Report. The purchaser is expected to take full advantage of any benefits available under current IRS tax code by considering this royalty income as "active income".

As opposed to using the Federal Government's cost of capital, the purchase price, under the NPV method, is estimated using industry cost of capital. Based upon the SPEE survey, the industry cost of capital is 10.2 percent. The perception of risk for price risk (three percent) and production risk (two percent) is combined with industry cost of capital to derive a 15.2 percent discount rate. This rate is applied to the expected future cashflow from the royalties to determine its present value. The value to the government of the expected income from taxes remains at 13.5 percent for reasons discussed in Section 2.1.4 regarding income from royalties.

This Report is based on documents and information obtained from the Department of Energy, the Department of the Interior Bureau of Land Management, various parties involved in market transactions, and other sources available in our firm's library. We have relied on data supplied by these sources and have not verified information obtained from these sources.

Acreage totals and land descriptions for the appraisal tract were obtained from the Department of Energy, and we have relied on this information as presented to us.

The water rights were not valued separately from the value of the land because they are considered to be part of the inherent value of the land which supports the user for the designated use at the time of the water appropriation. Water can be severed from property and sold in most states; however, reappropriating an existing water right for an alternative use is difficult and expensive to accomplish. Therefore, this Appraiser assumes that the water rights will remain with the subject properties in the case of retention, transfer or sale of the properties. The value of the water rights is reflected in the land value as part of its overall utility.

### 5.2.2 Scope of Appraisal

This Appraiser met with DOE officials in Tupman, California and Washington D.C. and with personnel from Evans, Carey, and Crozier (Appraisers to the DOE) over the course of the project. The property was also visited in April for the purposes of inspecting production operations.

This Appraiser has analyzed the *highest and best use* of both the surface and mineral components of the property. All relevant reports provided by the DOE were reviewed and considered as part of this appraisal.

Copies of records were obtained from the county records of Kern County in order to review transactions involving the purchase and sale of mineral properties. This Appraiser made a diligent effort to contact affected parties involved in the relevant transactions in order to establish the terms of each sale.

Oil and gas production data and lease provisions were obtained from the DOE files. These data were used as a basis for making projections of future production from NPR-2 leases.

Market data used in the surface appraisal were obtained from research within Kern county and the surrounding area, contact with other appraisers, realtors, lenders and others familiar with the market.

### 5.2.3 Purpose of Appraisal

The purpose of the appraisal is to provide the DOE with an estimate of the Fair Market Value for both the mineral and surface components of the NPR-2 should the property be considered for sale. This value will then be compared to the other options analyzed in this Report to make a recommendation as to which option maximizes the value to the USA.

#### 5.2.4 Summary of Appraisal Problems

Difficulty was initially encountered defining and confirming the complicated royalty provisions of the leases and units within NPR-2. A Task II study was conducted by this Appraiser, including a detailed review of DOE lease and unit files, which resolved this problem.

Further difficulties were related to surface appraisal of the eight half-block lots within Ford City. Specific comparable sales data were unavailable for vacant property within Ford City or Taft. Further, the any such comparable sales would have to be severely adjusted to account for the fact that these eight drill sites contain the equivalent of about 96 standard city lots of approximately 7,000 square feet each. The flood of 96 lots onto the market all at once in a small town area such as this would undoubtedly severely depress the market; however, this is difficult to quantify. This Appraiser has taken the approach of adjusting the market opinion obtained from a local real estate agent familiar with the market for mobile home lots by estimating a percentage decrease in value due to flooding of the market. This estimate of Fair Market Value was then compared with the assessed value of the land obtained from the office of the Kern County Tax Assessor, and the numbers were reconciled.

### 5.3 APPRAISAL PROPERTY PROFILE

#### 5.3.1 Description of the Property being Appraised

##### 5.3.1.1 Mineral Rights Developments

###### Producing Acreage

The 30,181 acre Naval Petroleum Reserve No. 2 encompasses most of the Buena Vista Hills Oil and Gas Field. The field was discovered in 1910 with a well that produced from the Shallow Pool. Since then, the deeper Antelope Shale Zone and the Stevens Zone have been discovered. Cumulative oil production from all leases and fee lands within NPR-2 is just over 650 million

barrels. Current production (as of December, 1995) from the DOE leases is 1,827 barrels of oil per day and 8.62 million cubic feet of gas per day, of which DOE's royalty share is 200 barrels of oil per day and 750 MCF of gas per day.

Although the Navy was unable to utilize the whole area of NPR-2, a 1935 "Plan Agreement" established spacing regulations for the development of the Shallow Pool and other potential deeper zones. Since then development has been orderly. Several operating units have been formed and the following units are presently producing today:

- 27-B Pool Unit
- Antelope Shale Zone Unit
- 555 Stevens Pool Unit
- 11-D Unit
- 2-D Unit

There is also production from these zones outside these operating units. The Etchegoin formation (or shallow pool) is produced throughout the Buena Vista Hills Field and much of this production is non-unitized. Much of the Antelope Shale is non-unitized also. Most of the Stevens Zone is unitized but there is a small amount of production from outside the unit.

#### 27-B Pool Unit

The 27-B Pool was discovered in 1944, and consists of four different sands at the base of the Etchegoin. Cumulative production from the 27-B Unit, as of December 1995, is nearly 100 million barrels of oil. Current production as of December 1995 is 179,000 cubic feet of gas per day, and no oil. The Government's share of production is 4 MCF per day.

Initial development prior to unitization resulted in notable pressure depletion and gas cap expansion. The 27-B Pool was unitized in 1949. Gas injection was begun immediately, and continued until 1958 when the injection became unjustifiable.

A full-scale waterflood was implemented in 1961. Over the next five years nearly 2,700,000 barrels of water were injected and it was estimated that only 14,000 barrels of incremental oil were recovered. The waterflood was discontinued.

Unit participants have been filing for the release of many unit wells so that they could recomplete those wells in the Upper Etchegoin under non-unit terms. It is uncertain how many 27-B Pool wells were released for recompletion. Chevron continues to be the operator of this unit.

#### Antelope Shale Zone Unit

The Antelope Shale Zone was discovered in 1952 and extends over two main structures in the Buena Vista Hills Field, the East Dome and the West Dome. These structures are not in pressure communication; hence, only the East Dome has been unitized. The "West Zone" was never unitized but was developed in compliance with the 1936 Plan Agreement.

Texaco is now the operator of the Antelope Shale Zone. Production as of December 1995 is 188 barrels of oil per day and 4.1 million cubic feet of gas per day, of which the Government share is 10 BOPD and 214 MCF/D. Cumulative production from the unit is 22.6 million barrels of oil.

This zone is an unconventional petroleum reservoir with sand lenses intermixed in fractured shales. Gas injection was never attempted, and a pilot waterflood proved inconclusive. Acid treatment is the only successful method of stimulation in this zone.

#### Antelope Shale Zone Non-Unit

The non-unit production from the Antelope Shale comes from the area northwest of the Antelope Shale Zone Unit on Sections 25B, 26B, 27B, 35B, and 36B. Most of the non-unitized production comes from Section 26B. Texaco and Chevron operate all of the non-unitized wells with DOE royalty interest. Production as of December 1995 from the fractured Antelope Shale in this section is 86 barrels of oil per day and 0.7 million cubic feet of gas per day, with the

Government royalty share at 11 BOPD and 93 MCF/D. Cumulative production from all leases, Government and non-Government, is 10.3 million barrels of oil. Chevron is evaluating a pilot CO<sub>2</sub> flood in Section 26B.

#### 555 Stevens Pool Unit

In 1957, the Stevens Pool was discovered in the northwest area of NPR-2. Most of the reservoir was unitized in 1962. The Stevens Pool is comprised of sandstone interbeds within the Antelope Shale on the flank of the West Dome. Production as of December 1995 is 705 barrels of oil per day and 1.23 million cubic feet of gas per day. The DOE's share is 68 BOPD and 119 MCF/D. Nearly 51 million barrels of oil have been produced from the 555 Stevens Zone unit.

Most of the reservoir was unitized in 1961. Gas reinjection began early in the development of the Stevens Zone and continued until 1968 when gas sales were started. Over 51 billion cubic feet of gas had been reinjected into the Stevens Zone unit. Vintage Oil Company recently acquired operatorship of this unit from ARCO, the original operator.

#### Stevens Pool Non-Unit

The Non-Unit area produces primarily in Sections 21B, 28B and 29B. Total production to date from the non-unitized Stevens Zone is estimated at 4.4 million barrels of oil. DOE has royalty interest in production from Section 28B. Production as of December 1995 from the Stevens Zone in this section is 39 barrels of oil per day and 59,000 cubic feet of gas per day with the DOE's share at 5 BOPD and 7 MCF/D. Texaco and Chevron operate Stevens Zone wells in this section.

#### 11-D Unit

Production in the 11-D Unit comes from the "Top Oil" interval. Cumulative oil production as of December 1995 is 972,954 barrels of oil. Production from the 11-D Unit is 32 barrels of oil per day, with 1BOPD DOE-royalty share.

The 11-D Unit was formed in response to an apparently successful waterflood pilot in the Shallow Pool. Three units were produced -- the 11-D, the 2-D and the 14-D -- in order to flood these three separate fault blocks. The initial waterflood in 11-D proved to be uneconomical but the unit has remained with Texaco as the operator today.

### 2-D Unit

Production in the 2-D Unit comes from the "Top Oil" interval. Cumulative oil production as of December 1995 is 475,072 barrels of oil. Production from the 2-D Unit is 17 barrels of oil per day, with DOE-royalty share at 1 BOPD.

Even though the waterflood that prompted the formation of the 2-D Unit was never implemented, the unit continued to be produced under primary methods with Chevron as operator.

### Shallow Pool

The Shallow Pool includes all the production intervals above the Antelope Shale including the 27-B Pool, the 11-D Pool and the 2-D Pool. With the exception of these three units, the Shallow Pool remains a competitive operation across most of NPR-2.

Several gas injection and waterflood projects have been attempted in the Shallow Pool with none of these projects continuing for long. There has also been some steamflooding activity but no results are available at this time.

Cumulative total production from all leases from the Shallow Pool is 462.5 million barrels of oil. Production as of December 1995 from DOE leases is 761 barrels of oil per day and 2.34 million cubic feet of gas per day. The DOE's share is 105 BOPD and 313 MCF/D.

## Calidon Gas

The Calidon Gas Sands were discovered to be productive in 1958. Commerciality and unitization were reviewed and negotiated for some time, and the zone was finally unitized in 1965 with Texaco as the operator. The Calidon Gas Unit has not produced since 1987 and is not expected to have any remaining potential.

### **Nonprospective Acreage**

NPR-2 also includes acreage which would fall into the nonprospective acreage designation. Generally, this includes that acreage between the Buena Vista Hills structural closures (domes) and the Buena Vista Front Area. The swath of nonprospective acreage runs northwest-southeast along trend with the field itself.

The nonprospective acreage is structurally too low and consequently below the oil/water contact at both the West Dome and East Dome areas. Additionally, the acreage is too far up the structure and therefore structurally higher than the stratigraphic pinchout trap that forms the Buena Vista front.

#### **5.3.1.2 Surface Description**

The Buena Vista Hills Oil and Gas Field (NPR-2) is approached from Bakersfield, California by traveling approximately 30 miles southwest on Highway 119. The nearest city is Taft, which is located directly south of NPR-2 (part of Taft is actually located within the NPR-2 boundary). There is free entry to NPR-2 with Midway Road and Highway 119 providing the main paved access within the Reserve. Movement between the various DOE leases and fee acreage is unrestricted, though advising the various operators before visiting facilities is the generally observed procedure. Chevron is particularly sensitive to this procedure.

The surface is relatively barren and gently rolling. There are few trees and the vegetation is mainly sagebrush, typical of an arid, desert-like environment. The well spacing is very close throughout much of the Buena Vista Hills field and well access roads cover the terrain.

Public and private parties have been issued revocable permits by the government for surface rights to conduct the following activities on leased and unleased lands at NPR-2: agricultural and produced water disposal activities; maintaining oil, gas and water pipelines; operating the California Aqueduct and a pumping plant; and maintaining television cables, telephone lines, and powerlines.

NPR-2 comprises approximately 30,180 acres. About 10,447 acres belong to the U.S. Government, most of which (9,227 acres) has been leased to various oil companies. The remainder of the land within the boundary is privately owned.

### 5.3.2 Owner Contact and Property Inspection

Representatives from Gustavson Associates initially visited the DOE NPR-2 office facility in Tupman, California on April 29 and 30, 1996. At that time this Appraiser met with key DOE personnel and was provided with an overview of operations at NPR-2. No contact was made with operators in the Buena Vista Field other than an occasional phone call to clarify some production-related issues.

This Appraiser performed a visual surface inspection of the Buena Vista Field and had an opportunity to view some of the equipment and local topography. The surface part of the leasehold estate was briefly viewed and found to be in slightly better condition than the standard for the oil industry in this area. On the Government leases in NPR-2, less abandoned equipment was observed lying around than on the fee leases in the same area, apparently due to DOE efforts encouraging the lessees to keep the leases in good condition. Because the mineral property being appraised is deep in the subsurface, a physical inspection of the hydrocarbons present there was not possible. Subsequent to the initial two-day data gathering/technical fact finding trip to the site, this Appraiser dispatched a landman to the Kern County courthouse to research lease records.

### 5.3.3 Division of Ownership

The lengthy, convoluted history of the formation and development of NPR-2 has resulted in a checkerboard of land ownership, mineral leases and land uses. DOE administers 10,447 acres which are owned by the U.S. Government. The remaining acreage is owned by the City of Taft, Ford City, private companies and private individuals.

The oil and gas rights associated with 9,227 acres of the DOE properties have been leased to seven oil companies under 17 leases. Two of these leases are in the process of relinquishment by the lessee, Phillips Petroleum. Oil and gas rights on the remaining 1,220 acres have been retained by DOE. The surface rights of about 403 acres on these lands have been sold.

## 5.4 HIGHEST AND BEST USE

### 5.4.1 Tests

The Appraisal Institute (1992) defines *highest and best use* as: "The reasonable probable and legal use of vacant land or improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value." Each of these criteria must be met sequentially.

For oil, gas and mineral properties the comparable definition can be applied by testing the candidate uses sequentially against each of five criteria:

1. **Physically possible.** The property must possess adequate size, dimension, shape, quality of reservoir and resource, and geotechnical quality to support the proposed use. As an example, an oil reservoir consisting of many, very thin interfingering sands and shales may not be physically possible to produce; a) *Continued production from NPR-2 is physically possible*; and b) *Leasing of the unleased lands is physically possible at NPR-2 is physically possible*;

2. Legally permissible. The proposed use of the property must conform to all local, state and federal zoning and use restrictions for the property. A negative example is an otherwise well-tested stone quarry, ready to develop except for the lack of a mining permit; a) *Continued production from NPR-2 is legally permissible*; and b) *Additional legislation may be required to enable leasing of unleased acreage at NPR-2, but passage would be considered likely.*
3. Leasing of the Phillips Petroleum acreage in process of relinquishment is not legally permissible at this point in time, however, it is reasonably certain that the acreage will be legally permissible in the near future. Financially feasible. The proposed use must be capable of providing a net return to the property owner or leaseholder. Here, the uncertainty of, for example, the amount and category of gas reserves could reduce an undeveloped location to an exploratory drilling prospect; a) *Generation of income from continued production from NPR-2 is financially feasible*; and b) *Income from leasing at NPR-2 is financially feasible.*
4. Maximally productive. Of those physically possible, legally permissible, and financially feasible uses, the *highest and best use* for a property is that use which results in the highest value; that is, the use that provides the greatest net return to the property owner and leaseholder in combination, and as of the date of the evaluation or firmly planned for the immediate future; a) *Continued production will provide the highest value to the owner of NPR-2*; and b) *Leasing of unleased oil and gas rights will provide the highest value to the owner of NPR-2.*
5. Economically fitting. This fifth criterion adds: the proposed use must fit with the constraints with regard to oil and mineral development of relevant firms, institutions, governments, and markets. For example, impending environmental or surface access regulations on the area as a whole may make the proposed use of a mineral property problematic; a) *Continued production satisfies this criterion*; and b) *Leasing of the unleased acreage satisfies this criterion.*

## 5.4.2 Highest and Best Use

### 5.4.2.1 Mineral Rights

The *highest and best use* for the mineral rights under currently producing leases is continuation of generating royalty income by oil and gas production. For the unleased DOE acreage within NPR-2, the *highest and best use* is to generate income from lease bonuses and rental payments through issuance of mineral leases. For the Phillips leases in process of relinquishment, the *highest and best use* is to complete the relinquishment process, followed by the generation of income from lease bonuses and rental payments through issuance of mineral leases.

It should be noted that five of the fifteen active leases on NPR-2 are currently nonproductive and are held by continuation of rental payments. The use of these mineral rights which would generate the most income to the Government, issuing of new oil and gas leases, is not legally permissible, and so fails the test of *highest and best use*. The *highest and best use* of these rights is thus to continue to receive rental payments.

### 5.4.2.2 Surface Rights

The land use pattern across Kern County is influenced by the variety of flat, hilly, and mountainous terrain and by proximity and access to water. About 90 percent of Kern County's total land area is devoted to agriculture, including sheep and cattle grazing and crop production. The region has most of the characteristics of a semi-arid subtropical climate, including mild, moist winters and hot, dry summers.

When considering the *highest and best use* of the Government-owned surface estate at NPR-2, the area must be subdivided into the 10,044 rural acres and the 16.7 acres of reserved drill sites within Ford City.

Potential surface uses considered as the *highest and best use* for the rural portion of NPR-2 surface include agriculture and grazing. Industrial development might be a potential use, despite the presence of endangered species and the need for mitigation measures. As long as mitigation strategies are proposed, very few development plans are denied due to the presence of critical habitat. The limiting factor for surface development by industry in this area will be its distance from a major urban area.

Much of the area surrounding NPR-2 consists of agricultural land and open space. Agricultural activities located east of NPR-2 consist of irrigated crops in the Buena Vista Lake Bed areas to area of interspersed crop production and livestock grazing immediately adjacent to the site. Alfalfa production is a current agricultural use on 167 acres of unleased lands on NPR-2. However, due to the hilly topography throughout the majority of NPR-2, combined with the need for irrigation and the fact that the surface acreage is encumbered with oil production facilities, widespread commercial use for growing crops is not feasible.

Although grazing is not a current surface use on NPR-2, sheep and cattle are grazed on open space to the north, west, and south of the site on BLM-managed land in the winter months. Cattle grazing and mineral production are not compatible because cattle require extensive fencing and cross-fencing. Cattle ranching also requires extensive water development. The land could, however, be used for sheep grazing because extensive fencing is not required, and water requirements are lower. Sheep grazing meets all the criterion, and is therefore considered to be the highest and best use of the rural portion of the surface at NPR-2.

Unleased NPR-2 acreage includes eight half-block lots in the Ford City comprising 16.735 acres. Presently, these lots are designated drill sites; however, their proximity to an urban setting impedes oil and gas development, along with the lack of a specific drilling prospect on the acreage. Agricultural uses are not feasible due to the urban location. For those 16.735 acres, the *highest and best use* is to sell as town lots for residential or commercial development.

#### 5.4.3 Highest and Best Use of Property

For the majority of the Government-owned property within NPR-2, the mineral rights represent the dominant estate, and the *highest and best use* of the property is for continued generation of income from the production of oil and gas. However, the highest and best use of the surface of generating income from leasing out grazing rights is not incompatible with the surface mineral use, as described in Section 5.4.2.1.

For the nonproducing and unleased DOE lands within NPR-2, the surface is the dominant estate. This includes the 480 acres held by nonproducing leases, the 1280 acres being relinquished by Phillips, and the unleased acreage, both rural and within Ford City. For all this acreage except the 16.735 surface acres in Ford City, the surface and mineral uses do not conflict and can be conducted concurrently.

For those 16.735 acres, the *highest and best use* is to sell as town lots for residential or commercial development. This use essentially precludes the highest and best use of the mineral estate, to generate income from leasing of oil and gas rights, since development of the surface drill sites would leave no feasible way for drilling and accessing the minerals, other than expensive directional drilling techniques from possible surface drilling locations outside of the town. The minimal value of these poorly prospective minerals would be reduced to a negligible value when burdened with the expense of directional drilling.

#### 5.5 FAIR MARKET VALUE DEFINITION

The guidelines set out in the *Uniform Appraisal Standards for Federal Land Acquisition*, Interagency Land Acquisition Conference, Washington, D.C., 1992, state the definition of "Fair Market Value" is set forth as, "...the amount in cash, or in terms reasonably equivalent to cash, for which in all probability the property would be sold by a knowledgeable owner willing but not obligated to sell to a knowledgeable purchaser who desires but is not obligated to buy. In ascertaining that figure, consideration should be given to all matters that might be brought

forward and reasonably given substantial weight in bargaining by persons of ordinary prudence, but no consideration whatever should be given to matters not affecting market value" (pp. 3-4).

## 5.6 APPRAISAL METHODS

### 5.6.1 General

Analysis of geologic, engineering and economic factors was necessary for this Appraiser's choice of which appraisal method(s) to use in appraising the subject acreage. Research of the courthouse records in Kern County, California, was also conducted in order to check for data on recent leasing activity that might be used to establish market bonuses. Because of the nature of the appraisal tract, the Market Data Approach, the Income Approach, and the Lease Bonus methods were all used to estimate the Fair Market Value of the property.

A minerals appraiser must estimate the Fair Market Value as of a specific date using information available as of that date. The as of date for this Appraisal was October 1, 1996. The minerals appraiser must use research data to create an accurate market model. This model is then used to estimate the Fair Market Value of the subject property.

### 5.6.2 Standards

This appraisal has been conducted according to the guidelines set out in the *Uniform Standards of Professional Appraisal Practice*, The Appraisal Institute, 1992, and the *Uniform Standards for Federal Land Acquisition*, Interagency Land Acquisition Conference, 1992.

### 5.6.3 Obeyance of the Unit Rule

All appraisal standards require adherence to the Unit Rule. It is a principle designed to reflect the true situation in the market for Fair Market estimation. The rule has two main aspects.

First, the Rule requires the property to be valued as a whole (as a "bundle of sticks") rather than summing the value of the various portions of ownership (the individual "sticks"). Value of the constituent parts (the "sticks") are to be considered to the extent of their contribution to the value of the whole. The essence of this principle is that it is the property and not the various titles which is being considered for Fair Market appraisal.

Second, the Rule requires that "different elements of a tract of land are not to be separately valued and added together. The property is to be valued as a whole and its constituent parts considered only in light of how they enhance or diminish to value of the whole, with care being exercised to avoid so-called "cumulative appraisals". (Uniform Appraisal Standards for Federal Land Acquisition A-12, pp. 25-28.)

The values of buildings and improvements, timber, crops, mineral rights, oil and gas production, and other rights are considered to the extent that Fair Market Value of the property as a whole is enhanced. It is stated in the Standards that the mere possibility of the existence of minerals, oil, or gas is not sufficient to affect market value. It is further stated that such a possibility can be given consideration only when there is sufficient likelihood of the presence of minerals, such as oil or gas, as to affect market value and when that likelihood would be given weight by a prudent person in bargaining.

These guidelines should be followed when valuing the mineral and surface components of a given property. The quantity of minerals must be estimated by a qualified expert along with a determination of the market for the mineral commodity in question.

It must be understood that under the Unit Rule, technically there can be only one appraiser. Appraisers are often employed by this overall appraiser to estimate Fair Market Value of producing and nonproducing mineral rights, equipment, timber rights, and other rights. Results of secondary valuation reports prepared by them cannot be added to the value of the land in order to arrive at a value of the property as a whole without proper analysis by the overall appraiser.

The appraiser must consider the value of the components of the property only in light of how the components contribute to the value of the property as a whole. Thus, it is improper to simply multiply the mineral quantity by a unit value or gross multiplier and then add it to the value of the land. This results in a summation or cumulative appraisal which is not reflective of market. The various components (surface, mineral and otherwise) of the fee simple property must be considered by the appraiser as factors in arriving at the market value of the property as a whole (Eaton, 1989).

In this particular case it will be shown that the value of the mineral component is the greatest, it is classified as the "dominant estate". Yet, this Appraiser has followed the Unit Rule. From a skill and expertise standpoint it is important to make full disclosure and state (a) that Gustavson Associates is primarily a mineral appraisal firm, (b) that surface and water appraisers are less frequently performed wherefore we have utilized qualified appraisal consultants for those components, as needed, and (c) that the overall appraisal under the Unit Rule and for the purpose of this Study has been performed by Gustavson Associates in accordance with the standards of the appraisal profession.

Thus, inaccuracies, even if inadvertently introduced, are not likely to occur in the major and most valuable component of the property, namely the mineral component due to the expertise of this Appraiser. Likewise, we have taken utmost care in evaluating the effects of the surface and water components in the overall appraisal and recommendation.

#### 5.6.4 Approach to Value

##### 5.6.4.1 Mineral Rights

###### Market Data/Sales Comparison Approach

###### Prior Sales of Identical Property

There were not direct sales of the identical property appraised herein which could be used to estimate Fair Market Value of the subject property.

### Prior Sales of Comparable Property

There are no prior sales of reasonably comparable property that could be used directly for appraising the subject property. However, several sales of reasonably comparable property have been identified from which purchase price in dollars per barrel of oil equivalent reserves (\$/BOE) has been derived. These sales are listed on Table 5.1.

Several mineral conveyances were identified during the fact-finding effort. The terms of these conveyances, as far as they could be determined, are summarized in Table 5.2.

This approach to appraisal of oil and gas properties is referred to as the "Dollars per BOE-in-the-ground" method, and is generally based on determining a national or regional average value per barrel of oil equivalent reserves from similar property transactions. The advantages of this method are that it is very simple to apply and understand, and that it provides for convenient comparison among property transactions. The major disadvantage is that it has no sensitivity to cashflow timing, and may tend to overvalue long-lived properties such as the one appraised herein. The factor derived for this method for the producing acreage at NPR-2 is \$4.00 per BOE.

### Cost Approach

The cost approach bases the Fair Market Value of an asset on either the costs invested in it or its replacement cost. This approach is sometimes useful for facilities and equipment. Also, in some cases, the Fair Market Value of a drilling prospect can be estimated based on the various costs which have been spent in developing it: the costs of obtaining seismic data, conducting geological and geophysical analysis, and the cost of obtaining a land position. This method is not considered applicable to any portion of the mineral estate at NPR-2.

TABLE 5.1

## NPR-2 Area Producing Property Transactions

Purchaser	Seller	Description of Property Sold	Type of Interest & fee	Date of Transaction	Reserves	Sales Price	\$/BOE	Comments/ Other Information
Vintage Petroleum Inc.	Texaco Exploration & Production Co.	various California oil & gas properties	working interest & fee	Jun-95	?	\$29.7 MM	?	2600 BOPD, 4800 MCFPD, includes property within NPR-2
Nuevo Energy Corp.	Union Oil of California	properties in various CA fields, 33 onshore, 9 offshore, "primarily" heavy oil	working interest & fee	Oct-95	183.8 MMBOE (70 % PDP)	\$480 MM	\$2.61	PW10 reported as \$587.8 MM, purchase price = 82 % PW10, includes property within NPR-2
HarCor Energy Co.	Bakersfield Energy Resources	various Kern Co. properties, plus natural gas processing plant	75 % WI	Jun-94	46.8 BCF, 6.6 MMBBO. @ 8MCF/BOE, 12.45 MMBOE	\$42 MM cash + ~\$4 MM in securities	\$2.50 - \$3.50	\$/BOE depends on value of securities and gas plant. Bakersfield Energy retained 25 % interest.
Berry Petroleum	Mobil Oil	Alpine Fee Lease, Midway Sunset Field	fee	Dec-94	920 MBO	~\$1MM	\$1.09	heavy oil
McFarland Energy Inc.	M. H. Whittier Corp. & Whittier Trust	Star Fee Lease, Midway Sunset Field	100 % fee	Mar-94	3.1 MMBBO	\$7 MM cash + \$4 MM debt	\$3.55	under steamflood
Nuevo Energy Corp.	Union Oil of California	various interests in Cymric and Midway Sunset Fields	working interest & fee	Apr-96	162 BCF, 120 MMBBO, @ 8MCF/BOE, 140.25 BOE	\$480.5 MM	\$3.43	producing wells
Gilbert Wilson	Larry Rowland	20 acres fee in Midway Sunset Field	fee	Feb-95	unknown	\$55,000	?	purchased based on a 3-yr payout, producing 4 - 5 BOPD

TABLE 5.2

## MINERAL CONVEYANCES IN KERN COUNTY CALIFORNIA

Grantor	Grantee	Description of Property Sold	Type of Interest	Date of Transaction	Reserves	Sales Price	\$/BOE	Comments/ Other Information
Rodney K. Potter, Trustee		T24S R21E T31S R26E	Producing Minerals (royalty)	Apr-93	Unknown	\$3 M \$100 per net mineral acre	N/A	Price was based on projected cash flow discounted at 15%
The Termo Co.	Top Brass Oil Properties	T27S R28E SEC 5	Non-Producing Minerals	Aug-93	N/A		N/A	Parcel covered 2.4 net mineral acres
National Petroleum Associates		T28S R28E SEC 23	Non-Producing Minerals held by a producing lease	Oct-94	N/A		N/A	Located in shark's tooth field. 1BO per acre
Santa Fe Energy								Received \$2,100 for each percentage point of interest in the S. Rosedale Operating unit No. 1 well
Kurt E. Sickles dba Petroleum Technical Services	Bree Oil Company	T29S R26E SEC 23	Producing Minerals	Apr-94	Unknown	\$12.2 M	N/A	Annual Income was \$3,976 in '92, \$2,720 in '93 and they usually sell for 3 or 4 times annual Income.
Chemical Bank Union Oil Company of California	World Producers Inc.	T12N R22W SEC 34	Producing Minerals 1.504683% royalty interest	Mar-94	Unknown	\$14 M	N/A	Also covers interest in Ventura County
	Saba Energy of Texas	27S R20E SEC 36	Producing and Non-Producing Minerals	Mar-92	Unknown	\$100 M	N/A	

### Engineering (Income) Approach

This approach makes use of an estimate of oil and gas reserves of the appraised tracts, and of an analysis of production therefrom and from surrounding tracts, if appropriate. This estimate is sometimes determined by volumetric computations involving thickness of producing formations, porosity of source rocks, water saturation levels, drainage areas, etc. In some cases the reserves are estimated by analogy or the average of oil and gas reserves for other wells in the area. Probabilities of success are sometimes introduced wherefore the confidence level in the estimate reduces with the distance away from actual production.

Oil and gas production exists in the appraisal tract. Therefore, the Engineering (Income) Approach is considered applicable for appraising those portions of the fee mineral estate. Projected future production and income and costs associated with that production have been estimated as described in previous sections of this Report. These projections have been evaluated using the economic model described in the Addendum. (See Appendix A for detailed output from the economic model for this scenario).

Although there may be infill drilling potential on the existing leases, the likelihood is rather small (see Addendum) and impossible to quantify.

This Appraiser utilized three methods for the Engineering Income Approach. The first of these methods is the "Cumulative Cashflow" method, which is used in individual transactions among operators in various oil 'patches'. This method represents a Fair Market Value that results in the return of the purchaser's investment within a certain amount of time. While this is a classic income approach, it does not consider time value of money. To attempt to compensate for this, a longer recovery period can be used for long-lived properties, or a shorter period for short-lived properties. In this case, this Appraiser considered a four-year cashflow.

The second method is the "Risked Present Worth" method. This approach begins with a present worth representing the effects of the time value of money on the expected cashflow stream, and further adjusts the value by a factor representing risk/desire for profit. In general, it is expected

that the higher the risk associated with an oil or gas property, the higher the profit desired by the investor, and so the lower the Fair Market Value. To use this method, the Appraiser must assess the mechanical/operator risks associated with operating and producing the property. Adjustments are made to a base risk/profit factor determined by general market analysis, accounting for the relative risk/lack of risk for a specific property. This Appraiser currently uses a base factor of 71 percent, applied to the present worth of a property discounted at 10 percent. After review of the type of operations at NPR-2, this Appraiser adjusted the mechanical/operator risk factor upward to 77 percent. Based on information obtained on comparable sales in the area from Table 5.1, the risk factor was further adjusted upward to 80 percent.

The third and final appraisal method is the "Rate-of-Return-Targeted Present Worth" method. This method is frequently used by financial institutions or large institutional investors. It is based on targeting an internal rate of return typical for the oil industry, and approximating that by discounting the cashflow expected from a property at that discount rate. Typically a royalty interest would require a lower discount rate. The rate used by this Appraiser for this method is 15.2 percent.

Each method used in this appraisal allows for the consideration of a geologic/development risk factor. The risk to capital in this analysis was applied to the cashflow before making the Fair Market Value analysis.

#### Lease Bonus Method

This method is a derivative of the Income Approach, being based on the income from a different *highest and best use* of the property than that represented by oil or gas production. The value of interests to be appraised under this method derive from the actual or potential future income stream from the receipt of bonus and rentals through leasing, which represents the *highest and best use* of the exploratory oil and gas rights. This method is based on a present value analysis of that future income stream. The Lease Bonus method will be applied to 2,080 acres (1,220 acres currently unleased and 1280 acres being relinquished by Phillips less the 420 acres underlying Ford City) containing nonprospective mineral rights within NPR-2, since there is no

production and only speculative potential therefor. In contrast, leases are executed, sold and bargained in the market.

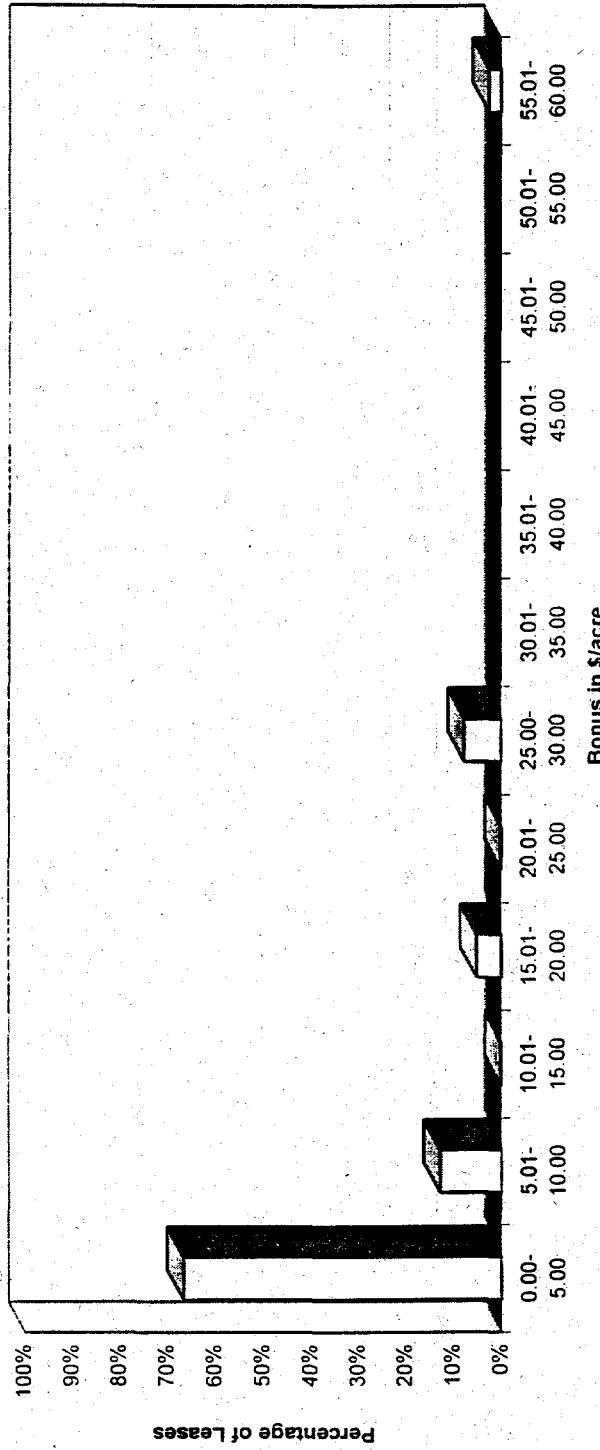
Large amounts of acreage in the vicinity of the subject property are federal and state owned and as a result provide accessible data on bonuses, rentals and lease terms. Additionally, several fee mineral leases in the area were identified through courthouse research. A summary of the leasing activity for the area is provided in the Addendum. Figure 5.1 illustrates the distribution of the bonus amounts that were paid in the area of study. These data establish market trends and value patterns which can be used for appraising that portion of the mineral estate involving oil and gas exploratory potential. The value of this potential is additive to the value estimated for the remainder of the mineral estate.

Figure 5.1 is a histogram showing a high concentration of leases in a) the \$1 to \$2 per-acre range; a few leases in b) the \$10 to \$30 per-acre range; and c) one lease at \$110 to \$120 per acre. Examination of the specific conditions involved in these transactions reveals that a) the low range represents the value paid for rank exploratory acreage. The higher bonus amounts b) are typically paid for fairly good prospective leases; and the highest bonus at c) is paid for acreage closer to production. In short, the bonuses represent a tri-modal distribution.

These data can now be used to appraise the subject property. The nature of this property is such that, although it is close to existing production, the likelihood of extending that production to the subject property is quite small, based on engineering and geologic assessments of available data. Therefore, bonus values paid for the subject property would be somewhat higher than rank exploratory acreage, but still in the low range of comparable bonuses. Therefore, the market lease terms would be as follows:

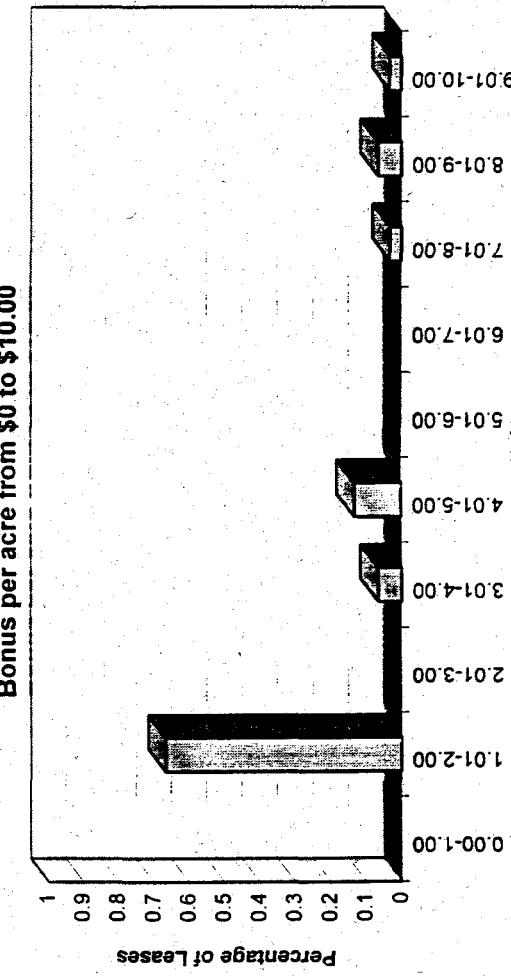
Bonus. The bonus is the consideration initially paid in exchange for an oil and gas lease. Usually the Lease Bonus is a one-time payment made to an owner of the mineral estate upon the owner's execution of a lease. Although bonuses are occasionally paid in installments, and sometimes paid in forms other than U.S. dollars, we have determined from market data for this

**NPR 2**  
**Percentage of Leases as a Function of Bonus**



**FIGURE 5.1A -Federal and Fee Lease Bonus Bids**

**NPR 2**  
**Bonus per acre from \$0 to \$10.00**



**FIGURE 5.1B -Federal and Fee Lease Bonus bids \$10 and under (expanded from Figure 5.1A)**

Lease Bonus Statistics	
Mean	\$ 10.24
Mode	\$ 2.00
Median	\$ 2.00

**FIGURE 5.1C - Statistical Data**

**FIGURE 5.1 -Federal and Fee Lease Bonus bids \$10 and under (expanded from Figure 5.1A)**

**Figure 5.1**

appraisal that a leasehold bonus is a one-time payment made in its entirety to the mineral owner upon the owner's execution of an oil and gas lease. The current market leasehold bonus for the oil and gas leasehold estate (commonly referred to within an oil and gas lease as "oil, gas, and related hydrocarbons") on the subject property is in the range of \$5 per mineral acre.

Royalty. Landowner's royalty is a percentage of the value of production made payable to a landowner through contractual provisions within an oil and gas lease. Landowner's royalty is usually expressed as a fraction of total production removed from the leasehold premises that will be stored for the lessor's account, or paid in dollar equivalents to the lessor. The landowner's royalty share is paid "off the top," or without being subject to drilling or lifting costs. The market landowner's royalty is one-eighth, or 12.5 percent, for leases similar to this tract.

Annual (or Delay) Rentals. Oil and gas leases for more than one year's duration usually contain provisions for an annual rental amount to be paid to the lessor's credit at a specified bank or address in order to compensate for delay of drilling. Annual rentals may sometimes be consolidated into an addition to the initial leasehold bonus (and thereby comprising total payment obligations under a "paid-up" oil and gas lease).

If delay rentals are not paid on time, and pursuant to the general instructions given in a lease, the lease will often expire under its own terms. We have assumed that leases on the present tract will be for the market term of years shown below and that all rentals will be paid. The market annual (delay) rental for oil and gas leases similar to this tract is \$1.50 per mineral acre for the first five years and \$2.00 per acre for the next five years. We have also assumed that the first delay rental payment will be paid on the first anniversary of lease execution.

Term of Years. This is the length of time that a typical oil and gas lease will be in effect. Usually the term of years specified in an oil and gas lease will be automatically extended for so long as oil or gas are produced from the lands under lease, or for so long as drilling and development operations are conducted on the leasehold property.

The term of years for which this acreage could be expected to be leased is five to ten years (state and federal leases, respectively). We have assumed that such a lease would expire at the end of five years and a new lease would be granted within a reasonable time.

#### Percentage of the Acreage Expected to be Leased

Based on a review of recent federal lease sales in the area, this Appraiser has estimated that 76 percent of available land is leased each year. This same percentage is assumed to occur for the nonprospective acreage at NPR-2.

The estimated future income from hypothetical leasing of the subject acreage is shown in Appendix C. This income would approximate the value of the cashflow from the exploratory acreage as a prospect that the landowners would receive from oil companies interested in exploring and possibly developing the acreage.

In short, the cashflow in Appendix C reflects the market. The future income is based on expected market bonuses of \$5 per acre and rentals as described above. The net present value at 13.2 percent discount rate of this future income stream is \$27,900 (rounded). This amount represents the Fair Market Value for the mineral ownership in the nonprospective acreage at NPR-2. Offsetting this value is the expected expense of an environmental assessment at \$30,000.

#### Reconciliation

Four different methods were used to value the mineral interest in the producing portion of the subject property. The Comparable Sales Approach and three different methods of applying the Income Approach were used to value the reserves and future income therefrom. Table 5.3 summarizes these calculations, based on calculations detailed in Appendix C. The three income-based methods are considered to be more reliable. This Appraiser has reconciled the four different values and estimated Fair Market Value of the producing royalty interest at \$4,250,000 as of October 1, 1996.

**TABLE 5.3**  
**FAIR MARKET VALUE WORKSHEET**

NPR-2

Category: Proved Developed Producing

**1) METHOD ONE (\$ per BOE-in-the-ground):**

Total Net Oil and NGLs				417,970 BOE
Total Net Gas			1,646,758 MCF	
5 Years, @ 1/	15.3	BOE/MCF x	823,379 MCF	53,766 BOE
15 Years, @ 1/	6.0	BOE/MCF x	823,379 MCF	137,230 BOE
Total Gas				190,996 BOE
Total Oil and Gas				608,966 BOE
Value @	4 \$/BOE			\$2,435,865
Value Risked at	100%	(for geol./devt.)		\$2,435,865
Capital Costs				\$0
<b>Method One Value of Property</b>				<b>\$2,435,865</b>

**2) METHOD TWO (Return of Purchase Price):**

First Year Net Cash	(12 months)	\$1,207,499
Second Year Net Cash	(12 months)	\$1,105,998
Third Year Net Cash	(12 months)	\$991,322
Fourth Year Net Cash	(12 months)	\$721,226
Fifth Year Net Cash	(0 months)	\$0
Total Net Cash		\$4,026,045
Value Risked at	100%	(for geol./devt.)
Capital Costs		\$0
<b>Method Two Value of Property</b>		<b>\$4,026,045</b>

**3) METHOD THREE (Risk-Discounted Present Worth):**

Present Worth		\$5,823,000
at a discount rate of		10%
Mechanical/Operator Risk Factor		80%
Value of Property (at production stage)		\$4,658,400
Plus Capital Costs		\$0
Value (before Capital Load)		\$4,658,400
Value Risked at	100%	(for geol./devt.)
Less Capital Costs (at 100%)		\$0
<b>Method Three Value of Property</b>		<b>\$4,658,400</b>

**4) METHOD FOUR (15% Present Worth):**

Future Net Cash Flow Discounted @	15.2%	\$4,797,000
Plus Capital Costs		\$0
Value (before Capital Load)		\$4,797,000
Value Risked at	100%	(for geol./devt.)
Less Capital Costs (at 100%)		\$0
<b>Method Four Value of Property</b>		<b>\$4,797,000</b>

**5) FAIR MARKET VALUE**

After reconciliation of above methods:	<b>\$4,250,000</b>
--	--------------------

The Lease Bonus method was used to value the speculative oil and gas potential from exploration of the nonproductive acreage, and provided a value of \$27,900 (rounded) as of the date of this appraisal. The Income Approach was used to value the rental stream from the nonproducing leases at \$3,800. The three portions of the mineral estate are physically separate, and therefore are additive. This Appraiser's Fair Market estimate of the total DOE-owned mineral estate is therefore \$4,281,700 as of October 1, 1996.

#### 5.6.4.2 Surface Rights

##### Market Data/Sales Comparison Approach

###### Prior Sales of Identical Property

There were not direct sales of the identical property appraised herein which could be used to estimate Fair Market Value of the subject property.

###### Prior Sales of Comparable Property

For the rural property, seven prior sales of reasonably comparable property were found that could be used directly for appraising the subject property. These sales described in detail in Section 4 of the Addendum to this Report. The three sales described below are considered most comparable to NPR-2:

###### Sale No. 1:

This sale is located in the same mountain range as the subject property. The sale price was \$125 per acre. This is an operating cattle ranch. It is fenced and has developed livestock water. This ranch was in poor condition at the time of sale.

A downward adjustment is required to this sale for three reasons: fencing, developed livestock water, and lack of impediments due to oil field surface operations. The adjusted sale price is \$100 per acre.

Sale No. 2:

This is a sale of an 8,132.66-acre cattle ranch located in San Luis Obispo County, east from Paso Robles. Sale price was \$261.30 per acre. This is a good quality ranch. It is fenced and it has developed livestock water. This parcel is superior to the subject property.

Downward adjustments were made for the same reasons as for #1. The adjusted sale price is estimated to be \$209 per acre.

Sale No. 3:

This is a sale of an 11,560-acre cattle ranch located north from the subject property. Sale price was \$173 per acre. This is an operating cattle ranch. It's fenced and it has a developed water supply.

Downward adjustments were made for the same reasons as for #1 and #2. The adjusted sale price is estimated to be \$138 per acre.

These comparable sales are reconciled by this Appraiser to yield an estimated sales price for the rural surface acreage at NPR-2 of \$125 per acre. Multiplied by the 10,044 acres yields a total estimated Fair Market Value using the Market Data Approach of \$1,255,500.

For the surface acreage within Ford City, specific comparable sales information was not available. However, discussions with a real estate agent familiar with the local market, and personnel at the Kern County Assessor's office indicate a value of approximately \$15,000 per city lot of approximately 7,000 square feet. No appraised values for the actual lots owned by DOE are

carried on the Kern County tax records due to the non-taxable Federal ownership. Approximately 96 lots could be subdivided from the drill site acreage. The impact of flooding the market with this many lots at once would be significant. This Appraiser estimates the lots would trade at about 20 cents on the dollar. Thus the Fair Market Value of the DOE-owned surface acreage within the town of Ford City is estimated as follows:

$$96 \text{ lots} \times \$15,000 \text{ per lot} \times 20 \text{ percent} = \$288,000$$

The two portions of the surface estate are physically separate, and therefore are additive. This Appraiser's Fair Market estimate of the total surface property owned by the DOE at NPR-2 is therefore \$1,543,500 as of October 1, 1996.

#### Cost Approach

The cost approach is discussed in the previous section of this Report. This method is not considered applicable to any portion of the surface estate at NPR-2.

#### Income Approach

This approach makes use of an estimate of future income and expenses resulting from the highest and best use of the subject property. As a Limited Appraisal, this appraisal did not consider this method of estimating the Fair Market Value of the surface.

### 5.7 ANALYSIS OF WHOLE PROPERTY

The surface value of the rural property is calculated as follows:

$$\$125 \text{ per acre} \times 10,044 \text{ acres} = \$1,255,500$$

The mineral value of this property consists of the following:

Producing leases -	\$4,250,000
Nonproducing leases -	3,800
Unleased acreage -	<u>27,900</u>
<b>TOTAL</b>	<b>\$4,281,700</b>

This unleased acreage excludes the 420-acre tract underlying Ford City. For that 420-acre tract, the surface estate is dominant and precludes feasible development of the minerals. Thus, applying the unit rule, the mineral value of these 420-acres does not contribute to the value of the whole. The estimated value of the 16.735 surface acres in Ford City is as follows:

$$96 \text{ town lots} \times \$15,000 \text{ per lot per 20 percent} = \$288,000$$

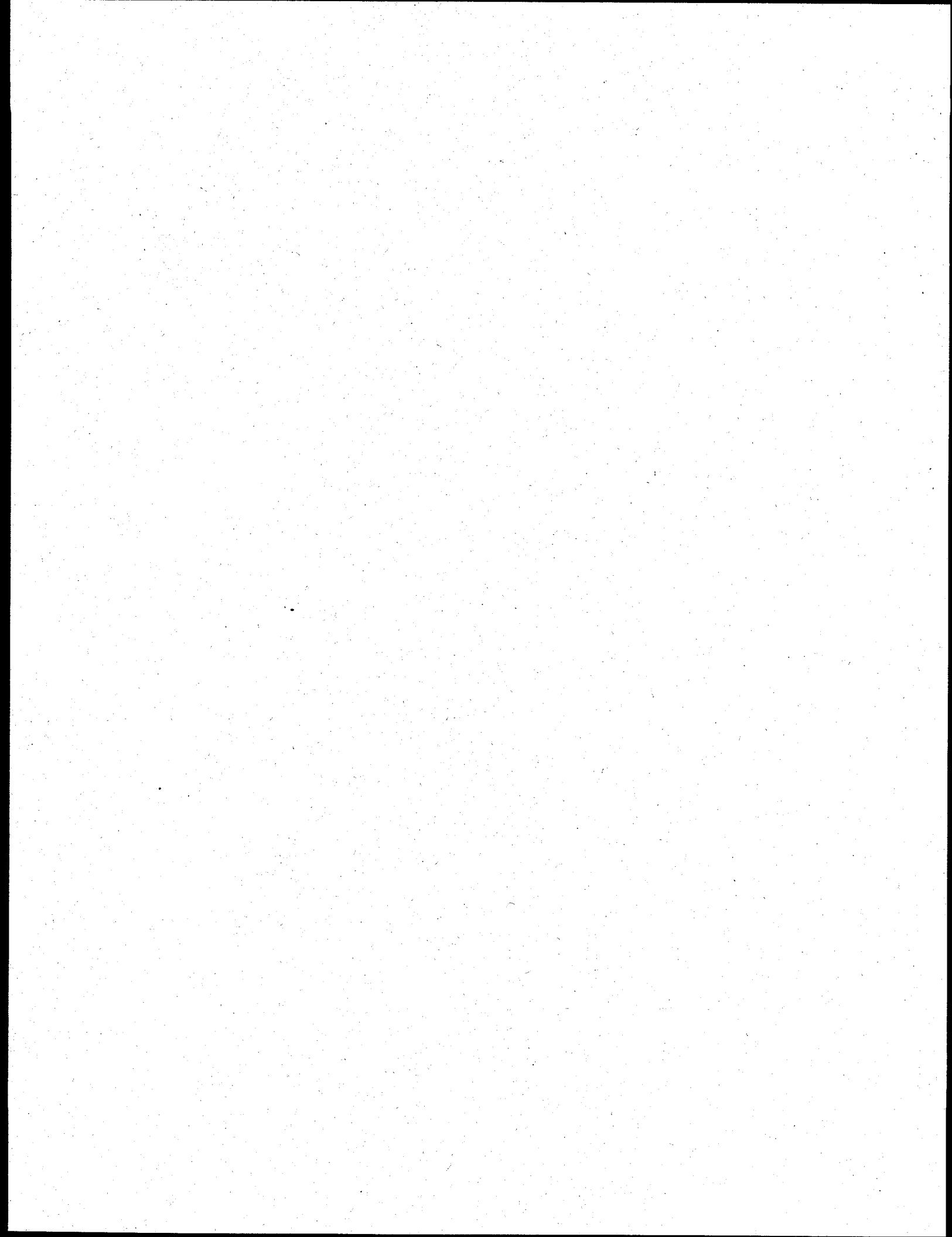
These mineral and surface values are not additive under the unit rule. The value of the rural surface is considered to be impacted by the intensive oil production operations. The mineral rights represent the dominant estate, and contribute at 100 percent. The portion of the rural surface value contributing to the whole is estimated at 75 percent. For the acreage underlying Ford City, the surface is the dominant estate, and the contribution from the mineral value is negligible. The total value is thus estimated as follows:

Rural Surface value at 75% -	\$941,625
Urban Surface Value	\$288,000
Mineral value, less 420 acres	<u>\$4,281.700</u>
<b>GRAND TOTAL</b>	<b>\$5,511,325</b>

### 5.8 FAIR MARKET VALUE

Based on the analysis described above, the Fair Market Value of the mineral, surface, and water rights of NPR-2 is estimated at \$5,511,325 as of October 1, 1996. This is the amount that could be expected to be realized if the option of sale of NPR-2 is carried out.

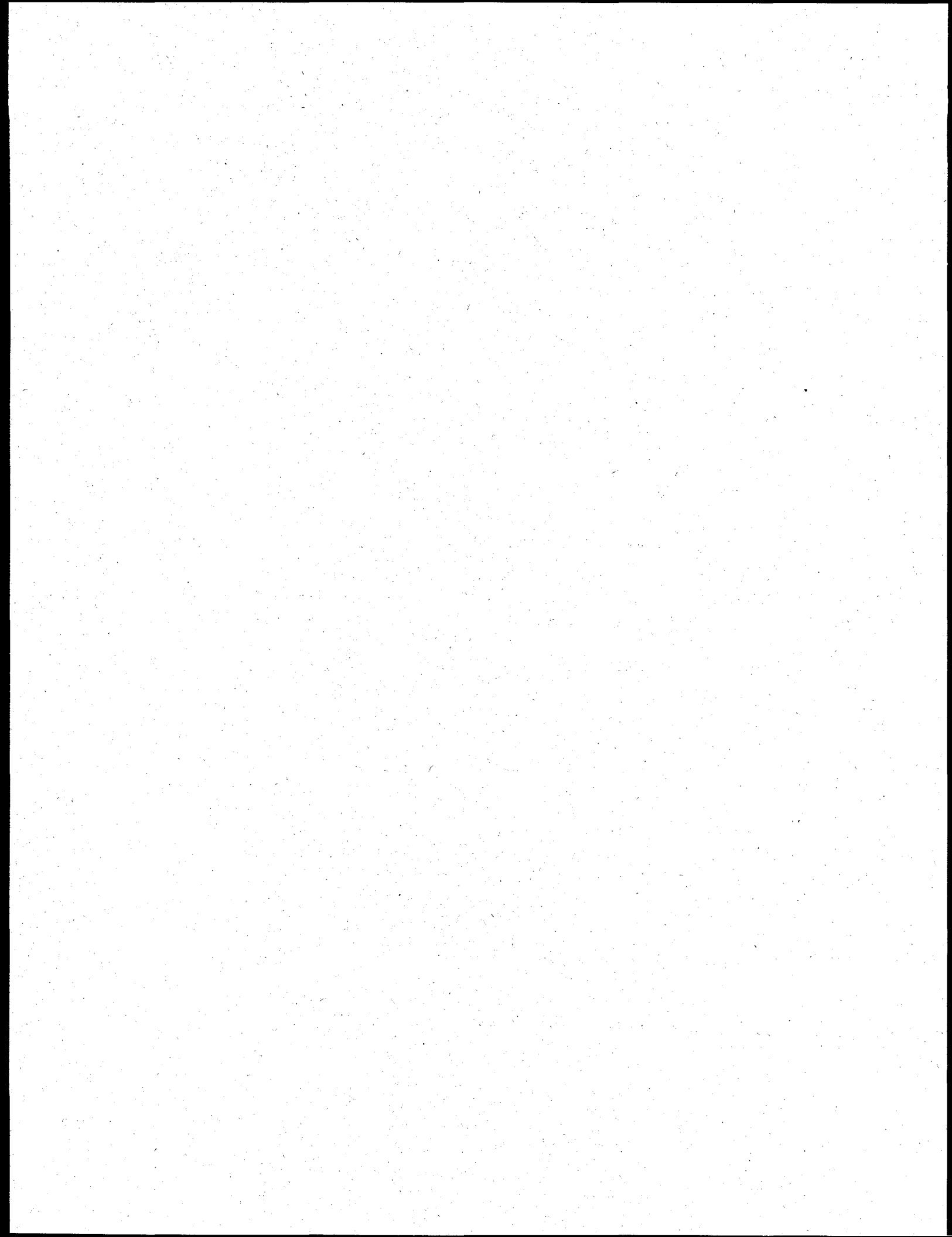
The value to the government would also include revenue from federal income taxes paid by the purchaser on subsequent income from NPR-2 operations. This projected tax stream has an estimated NPV discounted at 13.5 percent of \$801,770. Additionally, sales costs would be expected to be incurred associated with this option. The amount of these costs is estimated at \$300,000, which is about six percent of the value of the property, or about three years of projected overhead expenses. (An estimate of divestiture cost of \$1,300,000 was provided by DOE, but this is considered unrealistically high because (1) NPR-2 personnel are directly related to employment at NPR-1 and (2), the non-operated nature of the property demands far less staff time than NPR-1 and the other NPOSR properties.) Therefore, the total value to the government under the sale option is \$6,013,095.



## 6. COMPARATIVE ANALYSIS

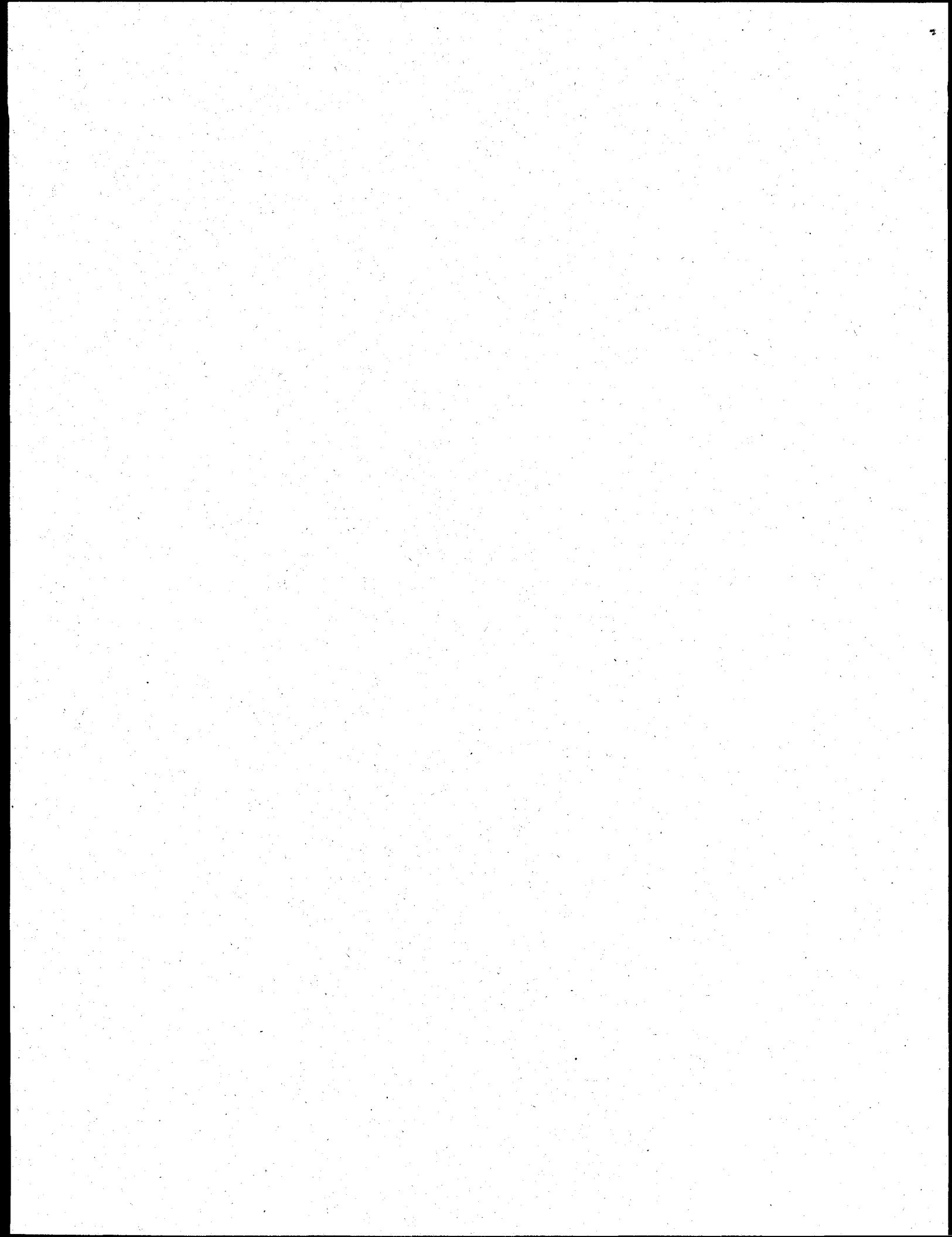
The value of NPR-2 to the United States under each of the specified options is as follows:

- Option 1: Retention and operation of all or part of NPR-2 by the Secretary of Energy under Chapter 641 of Title 10, United States Code. **Value = \$5,024,300.**
- Option 2: Transfer of all or a part of NPR-2 to the Department of the Interior for leasing in accordance with the Mineral leasing Act (30 U.S.C. 181 et seq.) and surface management in accordance with the Federal Land Policy and Management Act (43 U.S.C. 1701 et seq.). **Value = \$5,025,100.**
- Option 3: Transfer of all or part of NPR-2 to the jurisdiction of another Federal agency for administration under Chapter 641 of Title 10, United States Code. The agency considered here was the Fish and Wildlife Service under the Department of the Interior as a wildlife refuge. **Value = \$5,006,500.**
- Option 4: Sale of the interest of the United States of all or a part of NPR-2. **Value = \$6,013,095.**



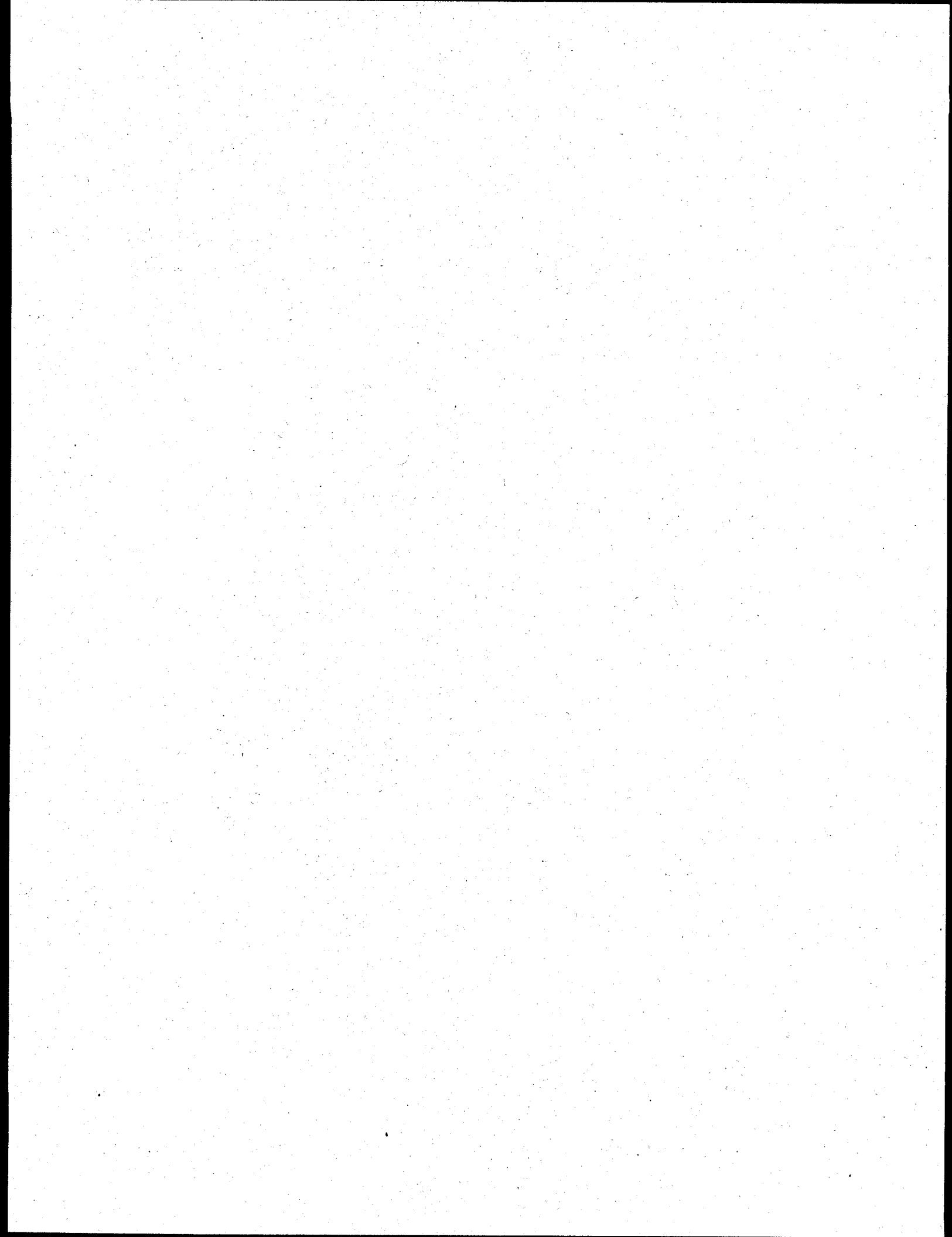
## **7. RECOMMENDATIONS**

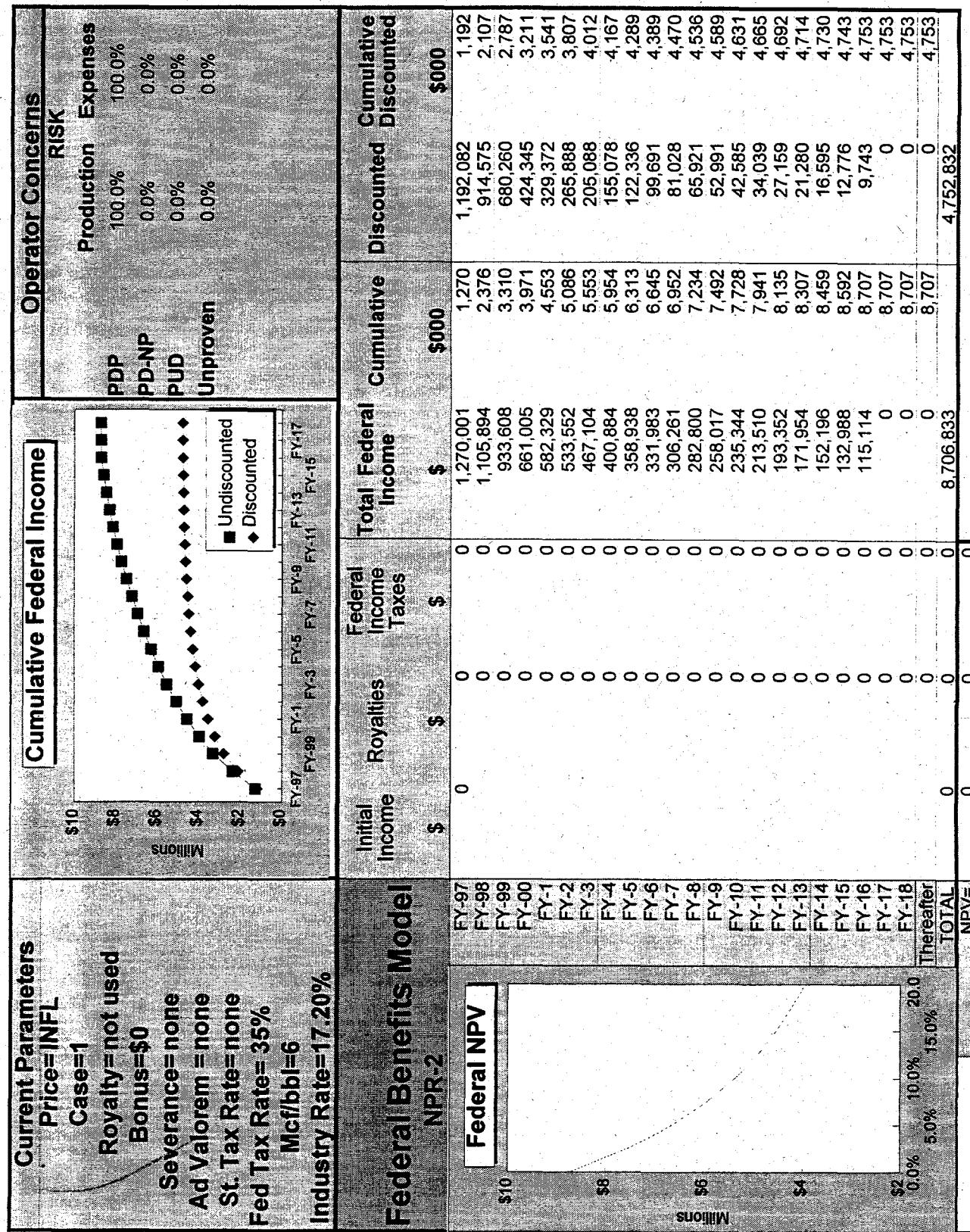
This option recommended to maximize value to the United States is Option 4, sale of the interest of the United States of all or part of NPR-2. Evaluation of this option results in a value of \$6,013,095 which is about 20 percent higher than the next highest value of \$5,025,100 for Option 2, transfer of all or part of NPR-2 to the Department of Interior.



## **APPENDIX A**

### **DETAILED OUTPUT OF ECONOMIC MODEL FOR RETENTION BY DOE**



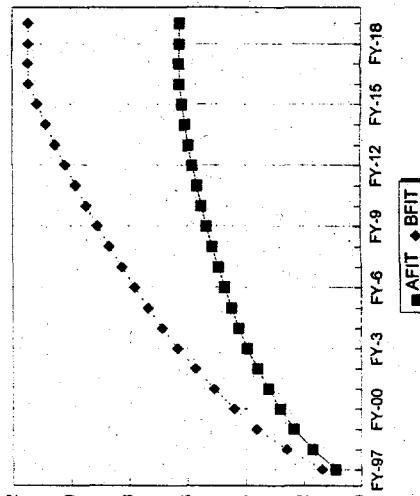


## Federal Income Tax Calculations

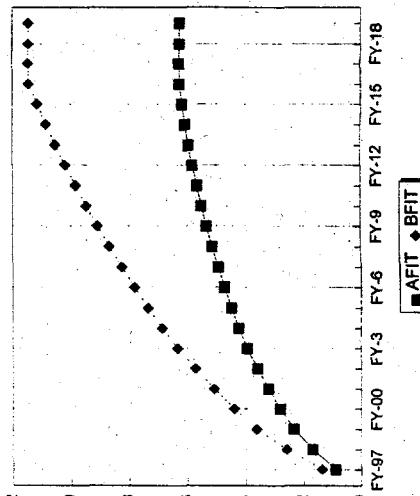
Revenue	80% Cap. OpEx and Prod. Tax			Allocated Overhead			Depreciation			Depletion			Total Deductions			Taxable Income			State Income Taxes			Federal Income Taxes			After Tax Cash Flow			Cumulative \$000			Discounted @ 14.2%			Cumulative Discounted \$000		
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$				
FY-97	1,371,510	0	101,509	0	205,727	307,235	1,064,275	0	0	372,496	0	897,505	898	839,854	840	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481		
FY-98	1,210,488	0	104,594	0	181,573	286,168	924,320	0	0	323,512	0	782,381	1,680	641,091	641,091	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956		
FY-99	1,041,382	0	107,774	0	156,207	263,981	777,401	0	0	272,090	0	661,518	2,341	474,653	474,653	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251		
FY-00	772,055	0	111,050	0	115,808	226,859	545,196	0	0	190,819	0	470,186	2,812	295,419	295,419	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479		
FY-1	698,755	0	114,426	0	104,513	218,940	477,815	0	0	167,235	0	415,093	3,227	228,375	228,375	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663	2,663		
FY-2	651,457	0	117,905	0	97,719	215,624	435,833	0	0	152,542	0	381,010	3,608	183,558	183,558	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084	2,084			
FY-3	588,593	0	121,489	0	88,289	204,778	378,815	0	0	132,585	0	334,519	3,942	141,121	141,121	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804			
FY-4	526,067	0	125,183	0	78,910	204,093	321,974	0	0	112,691	0	288,193	4,230	106,460	106,460	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911	2,911			
FY-5	487,926	0	128,988	0	73,189	202,177	285,749	0	0	100,012	0	258,926	4,489	83,755	83,755	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994	2,994			
FY-6	464,892	0	132,909	0	69,734	202,643	262,249	0	0	91,787	0	240,196	4,730	68,036	68,036	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062	3,062			
FY-7	443,211	0	136,950	0	66,482	203,431	239,780	0	0	83,923	0	222,338	4,952	55,147	55,147	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117	3,117				
FY-8	423,913	0	141,113	0	63,587	204,700	219,213	0	0	76,725	0	206,075	5,158	44,758	44,758	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162	3,162				
FY-9	403,420	0	145,403	0	60,513	205,916	197,504	0	0	69,126	0	188,891	5,347	35,924	35,924	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198			
FY-10	385,167	0	149,823	0	57,775	205,598	177,569	0	0	62,149	0	173,195	5,520	28,843	28,843	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227	3,227			
FY-11	367,888	0	154,378	0	55,183	200,327	158,327	0	0	55,444	0	158,096	5,678	23,055	23,055	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250			
FY-12	352,423	0	159,071	0	52,863	211,934	140,489	0	0	49,171	0	144,181	5,822	18,411	18,411	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268	3,268			
FY-13	335,861	0	163,907	0	50,379	214,286	121,575	0	0	42,551	0	129,403	5,952	14,470	14,470	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283	3,283			
FY-14	321,085	0	168,889	0	48,163	217,052	104,033	0	0	36,411	0	115,784	6,067	11,337	11,337	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294	3,294			
FY-15	307,012	0	174,024	0	46,052	220,075	86,937	0	0	30,428	0	102,561	6,170	8,793	8,793	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303			
FY-16	294,428	0	179,314	0	44,164	223,478	70,950	0	0	24,832	0	90,282	6,260	6,778	6,778	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310			
FY-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
FY-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Thereafter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>TOTAL</b>	<b>11,445,533</b>	<b>0</b>	<b>2,738,700</b>	<b>0</b>	<b>1,716,830</b>	<b>4,455,530</b>	<b>6,980,003</b>	<b>0</b>	<b>0</b>	<b>2,446,501</b>	<b>0</b>	<b>6,260,332</b>	<b>6,260</b>	<b>0</b>	<b>0</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>	<b>3,310</b>		

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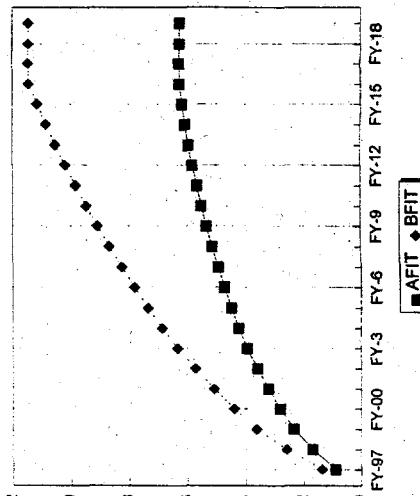
## Cumulative Income to Industry



## Industry Net Present Value



## Before and After Federal and State Income Taxes



## PD, PD-NP, PUD plus Unproven Before Federal Income Tax

PRODUCTION	REVENUE						COSTS						Future Net Income					
	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas
Oct-98	4,530	21,553	10,230	\$3,933	25,984	\$3,171	112,968	0	0	0	0	0	0	112,968	\$113	112,968	113	
Nov-98	4,530	21,553	10,230	84,106	25,924	3,178	113,208	0	0	0	0	0	0	113,208	226	111,949	225	
Dec-98	4,530	21,553	10,230	84,279	25,384	3,184	113,446	0	0	0	0	0	0	113,446	340	110,936	336	
Jan-99	4,530	21,553	10,230	84,452	26,044	3,191	113,687	0	0	0	0	0	0	113,687	453	109,935	446	
Feb-99	4,530	21,553	10,230	84,625	26,105	3,197	113,927	0	0	0	0	0	0	113,927	567	108,941	555	
Mar-99	4,530	21,553	10,230	84,799	26,168	3,204	114,169	0	0	0	0	0	0	114,169	681	107,958	663	
Apr-99	4,530	21,553	10,230	84,973	26,227	3,211	114,411	0	0	0	0	0	0	114,411	796	106,983	770	
May-99	4,530	21,553	10,230	85,148	26,288	3,217	114,653	0	0	0	0	0	0	114,653	910	106,017	876	
Jun-99	4,530	21,553	10,230	85,323	26,349	3,224	114,896	0	0	0	0	0	0	114,896	1,025	105,060	981	
Jul-99	4,530	21,553	10,230	85,498	26,410	3,230	115,138	0	0	0	0	0	0	115,138	1,141	104,110	1,085	
Aug-99	4,530	21,553	10,230	85,673	26,471	3,237	115,381	0	0	0	0	0	0	115,381	1,256	103,169	1,188	
Sep-99	4,530	21,553	10,230	85,849	26,533	3,244	115,626	0	0	0	0	0	0	115,626	1,372	102,238	1,290	
FY-99	54,355	258,636	122,756	1,018,657	314,355	38,485	1,371,510	0	0	0	0	0	0	1,371,510	0	1,290,264	1,377	
Oct-99	3,957	17,751	8,332	75,156	21,903	2,641	98,708	0	0	0	0	0	0	98,708	1,471	87,106	1,377	
Nov-99	3,957	17,751	8,332	75,310	21,854	2,653	99,917	0	0	0	0	0	0	99,917	1,571	86,393	1,464	
Dec-99	3,957	17,751	8,332	75,465	22,005	2,668	100,128	0	0	0	0	0	0	100,128	1,671	85,612	1,549	
Jan-99	3,957	17,751	8,332	75,620	22,056	2,684	100,340	0	0	0	0	0	0	100,340	1,772	84,839	1,534	
Feb-99	3,957	17,751	8,332	75,775	22,108	2,698	100,553	0	0	0	0	0	0	100,553	1,872	84,073	1,718	
Mar-99	3,957	17,751	8,332	75,931	22,159	2,715	100,755	0	0	0	0	0	0	100,755	1,973	83,313	1,802	
Apr-99	3,957	17,751	8,332	76,087	22,211	2,680	100,978	0	0	0	0	0	0	100,978	2,074	82,561	1,884	
May-99	3,957	17,751	8,332	76,244	22,262	2,695	101,192	0	0	0	0	0	0	101,192	2,175	81,816	1,966	
Jun-99	3,957	17,751	8,332	76,400	22,314	2,691	101,405	0	0	0	0	0	0	101,405	2,276	81,075	2,047	
Jul-99	3,957	17,751	8,332	76,557	22,366	2,697	101,620	0	0	0	0	0	0	101,620	2,378	80,343	2,127	
Aug-99	3,957	17,751	8,332	76,714	22,418	2,702	101,834	0	0	0	0	0	0	101,834	2,490	79,617	2,207	
Sep-99	3,957	17,751	8,332	76,872	22,470	2,708	102,050	0	0	0	0	0	0	102,050	2,582	78,898	2,286	
FY-99	47,487	213,010	99,983	912,132	32,130	266,226	32,130	0	0	0	0	0	0	1,210,488	0	986,719	986,719	
FY-99	40,009	178,069	79,633	786,728	228,457	28,197	1,041,382	0	0	0	0	0	0	1,041,382	3,623	758,768	3,045	
FY-99	30,449	113,626	48,092	608,300	149,575	16,180	772,055	0	0	0	0	0	0	772,055	4,395	495,536	3,540	
FY-99	26,450	102,760	40,748	543,987	138,748	14,020	886,755	0	0	0	0	0	0	886,755	5,092	394,093	3,934	
FY-1	4,530	21,553	10,230	84,106	25,924	3,178	113,208	0	0	0	0	0	0	113,208	226	111,949	225	
FY-1	4,530	21,553	10,230	84,279	25,384	3,184	113,446	0	0	0	0	0	0	113,446	340	110,936	336	
FY-1	4,530	21,553	10,230	84,452	26,044	3,191	113,687	0	0	0	0	0	0	113,687	453	109,935	446	
FY-1	4,530	21,553	10,230	84,625	26,105	3,197	113,927	0	0	0	0	0	0	113,927	567	108,941	555	
FY-1	4,530	21,553	10,230	84,799	26,168	3,204	114,169	0	0	0	0	0	0	114,169	681	107,958	663	
FY-1	4,530	21,553	10,230	84,973	26,227	3,211	114,411	0	0	0	0	0	0	114,411	796	106,983	770	
FY-1	4,530	21,553	10,230	85,148	26,288	3,217	114,653	0	0	0	0	0	0	114,653	910	106,017	876	
FY-1	4,530	21,553	10,230	85,323	26,349	3,224	114,896	0	0	0	0	0	0	114,896	1,025	105,060	981	
FY-1	4,530	21,553	10,230	85,498	26,410	3,230	115,138	0	0	0	0	0	0	115,138	1,141	104,110	1,085	
FY-1	4,530	21,553	10,230	85,673	26,471	3,237	115,381	0	0	0	0	0	0	115,381	1,256	103,169	1,188	
FY-1	4,530	21,553	10,230	85,849	26,533	3,244	115,626	0	0	0	0	0	0	115,626	1,372	102,238	1,290	
FY-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Thereafter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	407,495	1,646,758	629,737	8,875,986	2,348,034	221,513	11,445,633	0	0	0	0	0	0	11,445,533	0	0	5,635	



PD-NP		Proved Developed Non-Producing										Future Net Income	
		GROSS REVENUE					COSTS						
Y	M	PRODUCTION	PRICES	PRICES	PRICES	PRICES	PRICES	PRICES	PRICES	PRICES	PRICES	PRICES	PRICES
Oct '96		0	\$18.33	\$1.20	\$0.31	\$0.31	\$1.20	\$0.31	\$0.31	\$1.20	\$0.31	\$0.31	\$0.31
Nov '96		0	\$18.57	\$1.20	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$0.31
Dec '96		0	\$18.61	\$1.21	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$0.31
Jan '97		0	\$18.64	\$1.21	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$0.31
Feb '97		0	\$18.66	\$1.21	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$1.21	\$0.31	\$0.31	\$0.31
Mar '97		0	\$18.72	\$1.21	\$0.31	\$0.31	\$1.22	\$0.31	\$0.31	\$1.22	\$0.31	\$0.31	\$0.31
Apr '97		0	\$18.76	\$1.22	\$0.31	\$0.31	\$1.22	\$0.31	\$0.31	\$1.22	\$0.31	\$0.31	\$0.31
May '97		0	\$18.80	\$1.22	\$0.31	\$0.31	\$1.22	\$0.31	\$0.31	\$1.22	\$0.31	\$0.31	\$0.31
Jun '97		0	\$18.84	\$1.22	\$0.32	\$0.32	\$1.22	\$0.32	\$0.32	\$1.22	\$0.32	\$0.32	\$0.32
Jul '97		0	\$18.88	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$0.32
Aug '97		0	\$18.91	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$0.32
Sep '97		0	\$18.95	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$0.32
FY '97		0											
Oct '97		0	\$18.99	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$1.23	\$0.32	\$0.32	\$0.32
Nov '97		0	\$19.03	\$1.24	\$0.32	\$0.32	\$1.24	\$0.32	\$0.32	\$1.24	\$0.32	\$0.32	\$0.32
Dec '97		0	\$19.07	\$1.24	\$0.32	\$0.32	\$1.24	\$0.32	\$0.32	\$1.24	\$0.32	\$0.32	\$0.32
Jan '98		0	\$19.11	\$1.24	\$0.32	\$0.32	\$1.24	\$0.32	\$0.32	\$1.24	\$0.32	\$0.32	\$0.32
Feb '98		0	\$19.15	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$0.32
Mar '98		0	\$19.19	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$0.32
Apr '98		0	\$19.23	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$0.32
May '98		0	\$19.27	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$1.25	\$0.32	\$0.32	\$0.32
Jun '98		0	\$19.31	\$1.26	\$0.32	\$0.32	\$1.26	\$0.32	\$0.32	\$1.26	\$0.32	\$0.32	\$0.32
Jul '98		0	\$19.35	\$1.26	\$0.32	\$0.32	\$1.26	\$0.32	\$0.32	\$1.26	\$0.32	\$0.32	\$0.32
Aug '98		0	\$19.39	\$1.26	\$0.32	\$0.32	\$1.26	\$0.32	\$0.32	\$1.26	\$0.32	\$0.32	\$0.32
Sep '98		0	\$19.43	\$1.27	\$0.32	\$0.32	\$1.27	\$0.32	\$0.32	\$1.27	\$0.32	\$0.32	\$0.32
FY '98		0											
Oct '98		0	\$19.46	\$1.28	\$0.33	\$0.33	\$1.28	\$0.33	\$0.33	\$1.28	\$0.33	\$0.33	\$0.33
Nov '98		0	\$20.11	\$1.32	\$0.34	\$0.34	\$1.32	\$0.34	\$0.34	\$1.32	\$0.34	\$0.34	\$0.34
Dec '98		0	\$20.57	\$1.35	\$0.34	\$0.34	\$1.35	\$0.34	\$0.34	\$1.35	\$0.34	\$0.34	\$0.34
Jan '99		0	\$21.03	\$1.38	\$0.35	\$0.35	\$1.38	\$0.35	\$0.35	\$1.38	\$0.35	\$0.35	\$0.35
Feb '99		0	\$21.51	\$1.42	\$0.36	\$0.36	\$1.42	\$0.36	\$0.36	\$1.42	\$0.36	\$0.36	\$0.36
Mar '99		0	\$22.00	\$1.46	\$0.37	\$0.37	\$1.46	\$0.37	\$0.37	\$1.46	\$0.37	\$0.37	\$0.37
Apr '99		0	\$22.50	\$1.49	\$0.38	\$0.38	\$1.49	\$0.38	\$0.38	\$1.49	\$0.38	\$0.38	\$0.38
May '99		0	\$23.01	\$1.53	\$0.38	\$0.38	\$1.53	\$0.38	\$0.38	\$1.53	\$0.38	\$0.38	\$0.38
Jun '99		0	\$23.53	\$1.57	\$0.39	\$0.39	\$1.57	\$0.39	\$0.39	\$1.57	\$0.39	\$0.39	\$0.39
Jul '99		0	\$24.07	\$1.61	\$0.40	\$0.40	\$1.61	\$0.40	\$0.40	\$1.61	\$0.40	\$0.40	\$0.40
Aug '99		0	\$24.61	\$1.65	\$0.41	\$0.41	\$1.65	\$0.41	\$0.41	\$1.65	\$0.41	\$0.41	\$0.41
Sep '99		0	\$25.17	\$1.70	\$0.42	\$0.42	\$1.70	\$0.42	\$0.42	\$1.70	\$0.42	\$0.42	\$0.42
FY '99		0	\$25.74	\$1.74	\$0.43	\$0.43	\$1.74	\$0.43	\$0.43	\$1.74	\$0.43	\$0.43	\$0.43
Oct '99		0	\$26.33	\$1.78	\$0.44	\$0.44	\$1.78	\$0.44	\$0.44	\$1.78	\$0.44	\$0.44	\$0.44
Nov '99		0	\$26.92	\$1.83	\$0.45	\$0.45	\$1.83	\$0.45	\$0.45	\$1.83	\$0.45	\$0.45	\$0.45
Dec '99		0	\$27.54	\$1.88	\$0.46	\$0.46	\$1.88	\$0.46	\$0.46	\$1.88	\$0.46	\$0.46	\$0.46
Jan '00		0	\$28.16	\$1.93	\$0.47	\$0.47	\$1.93	\$0.47	\$0.47	\$1.93	\$0.47	\$0.47	\$0.47
Feb '00		0	\$28.80	\$1.98	\$0.48	\$0.48	\$1.98	\$0.48	\$0.48	\$1.98	\$0.48	\$0.48	\$0.48
Mar '00		0	\$29.45	NA	NA								
Apr '00		0	\$30.12	NA	NA								
May '00		0	\$30.81	NA	NA								
Total		0											

## Cash Flows

PUD	PRODUCTION		PRICES		GROSS REVENUE		COSTS		NET REVENUE		Future Net Income	
	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas
Oct '96	0	0	\$18.53	\$1.20	\$0.31	0	0	0	\$0	\$0	\$0	\$0
Nov '96	0	0	\$18.57	\$1.21	\$0.31	0	0	0	\$0	\$0	\$0	\$0
Dec '96	0	0	\$18.61	\$1.21	\$0.31	0	0	0	\$0	\$0	\$0	\$0
Jan '97	0	0	\$18.64	\$1.21	\$0.31	0	0	0	\$0	\$0	\$0	\$0
Feb '97	0	0	\$18.68	\$1.21	\$0.31	0	0	0	\$0	\$0	\$0	\$0
Mar '97	0	0	\$18.72	\$1.21	\$0.31	0	0	0	\$0	\$0	\$0	\$0
Apr '97	0	0	\$18.76	\$1.22	\$0.31	0	0	0	\$0	\$0	\$0	\$0
May '97	0	0	\$18.80	\$1.22	\$0.31	0	0	0	\$0	\$0	\$0	\$0
Jun '97	0	0	\$18.84	\$1.22	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Jul '97	0	0	\$18.88	\$1.23	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Aug '97	0	0	\$18.91	\$1.23	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Sep '97	0	0	\$18.95	\$1.23	\$0.32	0	0	0	\$0	\$0	\$0	\$0
FY '97	0	0	\$18.99	\$1.23	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Oct '97	0	0	\$19.03	\$1.24	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Nov '97	0	0	\$19.07	\$1.24	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Dec '97	0	0	\$19.11	\$1.24	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Jan '98	0	0	\$19.15	\$1.25	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Feb '98	0	0	\$19.19	\$1.25	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Mar '98	0	0	\$19.23	\$1.25	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Apr '98	0	0	\$19.27	\$1.25	\$0.32	0	0	0	\$0	\$0	\$0	\$0
May '98	0	0	\$19.31	\$1.26	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Jun '98	0	0	\$19.35	\$1.26	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Jul '98	0	0	\$19.39	\$1.26	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Aug '98	0	0	\$19.43	\$1.27	\$0.32	0	0	0	\$0	\$0	\$0	\$0
Sep '98	0	0	\$19.47	\$1.27	\$0.32	0	0	0	\$0	\$0	\$0	\$0
FY '98	0	0	\$19.56	\$1.28	\$0.33	0	0	0	\$0	\$0	\$0	\$0
FY '99	0	0	\$20.11	\$1.32	\$0.34	0	0	0	\$0	\$0	\$0	\$0
FY '00	0	0	\$20.57	\$1.35	\$0.34	0	0	0	\$0	\$0	\$0	\$0
FY '01	0	0	\$21.03	\$1.39	\$0.35	0	0	0	\$0	\$0	\$0	\$0
FY '02	0	0	\$21.51	\$1.42	\$0.35	0	0	0	\$0	\$0	\$0	\$0
FY '03	0	0	\$22.00	\$1.46	\$0.37	0	0	0	\$0	\$0	\$0	\$0
FY '04	0	0	\$22.50	\$1.49	\$0.38	0	0	0	\$0	\$0	\$0	\$0
FY '05	0	0	\$23.01	\$1.53	\$0.38	0	0	0	\$0	\$0	\$0	\$0
FY '06	0	0	\$23.53	\$1.57	\$0.39	0	0	0	\$0	\$0	\$0	\$0
FY '07	0	0	\$24.07	\$1.61	\$0.40	0	0	0	\$0	\$0	\$0	\$0
FY '08	0	0	\$24.61	\$1.65	\$0.41	0	0	0	\$0	\$0	\$0	\$0
FY '09	0	0	\$25.17	\$1.70	\$0.42	0	0	0	\$0	\$0	\$0	\$0
FY '10	0	0	\$25.74	\$1.74	\$0.43	0	0	0	\$0	\$0	\$0	\$0
FY '11	0	0	\$26.33	\$1.78	\$0.44	0	0	0	\$0	\$0	\$0	\$0
FY '12	0	0	\$26.92	\$1.83	\$0.45	0	0	0	\$0	\$0	\$0	\$0
FY '13	0	0	\$27.54	\$1.86	\$0.46	0	0	0	\$0	\$0	\$0	\$0
FY '14	0	0	\$28.16	\$1.93	\$0.47	0	0	0	\$0	\$0	\$0	\$0
FY '15	0	0	\$28.80	\$1.98	\$0.48	0	0	0	\$0	\$0	\$0	\$0
FY '16	0	0	\$29.45	NA	NA	0	0	0	\$0	\$0	\$0	\$0
FY '17	0	0	\$30.12	NA	NA	0	0	0	\$0	\$0	\$0	\$0
Thereafter	0	0	\$30.81	NA	NA	0	0	0	\$0	\$0	\$0	\$0
Total	0	0	0	0	0	0	0	0	0	0	0	0

## Cash Flows

Year	Production		Prices		Gross Revenue		Costs		Net Revenue		Future Net Income	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Oct '96	0	0	\$18.53	\$1.20	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
Nov '96	0	0	\$18.57	\$1.21	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
Dec '96	0	0	\$18.61	\$1.21	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
Jan '97	0	0	\$18.64	\$1.21	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
Feb '97	0	0	\$18.68	\$1.21	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
Mar '97	0	0	\$18.72	\$1.21	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
Apr '97	0	0	\$18.76	\$1.22	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
May '97	0	0	\$18.80	\$1.22	\$30.31	\$0.31	\$0	\$0	\$0	\$0	\$0	\$0
Jun '97	0	0	\$18.84	\$1.22	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Jul '97	0	0	\$18.88	\$1.23	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Aug '97	0	0	\$18.91	\$1.23	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Sep '97	0	0	\$18.95	\$1.23	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Oct '97	0	0	\$18.99	\$1.23	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Nov '97	0	0	\$19.03	\$1.24	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Dec '97	0	0	\$19.07	\$1.24	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Jan '98	0	0	\$19.11	\$1.24	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Feb '98	0	0	\$19.15	\$1.25	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Mar '98	0	0	\$19.18	\$1.25	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Apr '98	0	0	\$19.23	\$1.25	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
May '98	0	0	\$19.27	\$1.25	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Jun '98	0	0	\$19.31	\$1.26	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Jul '98	0	0	\$19.35	\$1.26	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Aug '98	0	0	\$19.39	\$1.26	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Sep '98	0	0	\$19.43	\$1.27	\$30.32	\$0.32	\$0	\$0	\$0	\$0	\$0	\$0
Oct '98	0	0	\$19.46	\$1.28	\$30.33	\$0.33	\$0	\$0	\$0	\$0	\$0	\$0
Nov '98	0	0	\$20.11	\$1.32	\$30.34	\$0.34	\$0	\$0	\$0	\$0	\$0	\$0
Dec '98	0	0	\$20.57	\$1.35	\$30.35	\$0.35	\$0	\$0	\$0	\$0	\$0	\$0
Jan '99	0	0	\$21.03	\$1.38	\$30.35	\$0.35	\$0	\$0	\$0	\$0	\$0	\$0
Feb '99	0	0	\$21.51	\$1.42	\$30.36	\$0.36	\$0	\$0	\$0	\$0	\$0	\$0
Mar '99	0	0	\$22.00	\$1.46	\$30.37	\$0.37	\$0	\$0	\$0	\$0	\$0	\$0
Apr '99	0	0	\$22.50	\$1.49	\$30.38	\$0.38	\$0	\$0	\$0	\$0	\$0	\$0
May '99	0	0	\$23.01	\$1.53	\$30.38	\$0.38	\$0	\$0	\$0	\$0	\$0	\$0
Jun '99	0	0	\$23.53	\$1.57	\$30.39	\$0.39	\$0	\$0	\$0	\$0	\$0	\$0
Jul '99	0	0	\$24.07	\$1.61	\$30.40	\$0.40	\$0	\$0	\$0	\$0	\$0	\$0
Aug '99	0	0	\$24.61	\$1.65	\$30.41	\$0.41	\$0	\$0	\$0	\$0	\$0	\$0
Sep '99	0	0	\$25.17	\$1.70	\$30.42	\$0.42	\$0	\$0	\$0	\$0	\$0	\$0
Oct '99	0	0	\$25.74	\$1.74	\$30.43	\$0.43	\$0	\$0	\$0	\$0	\$0	\$0
Nov '99	0	0	\$26.33	\$1.78	\$30.44	\$0.44	\$0	\$0	\$0	\$0	\$0	\$0
Dec '99	0	0	\$26.92	\$1.83	\$30.45	\$0.45	\$0	\$0	\$0	\$0	\$0	\$0
Jan '00	0	0	\$27.54	\$1.88	\$30.46	\$0.46	\$0	\$0	\$0	\$0	\$0	\$0
Feb '00	0	0	\$28.16	\$1.93	\$30.47	\$0.47	\$0	\$0	\$0	\$0	\$0	\$0
Mar '00	0	0	\$28.80	\$1.98	\$30.48	\$0.48	\$0	\$0	\$0	\$0	\$0	\$0
Apr '00	0	0	\$29.45	\$2.03	\$30.49	\$0.49	\$0	\$0	\$0	\$0	\$0	\$0
May '00	0	0	\$30.12	\$2.08	\$30.50	\$0.50	\$0	\$0	\$0	\$0	\$0	\$0
Jun '00	0	0	\$30.81	\$2.13	\$30.51	\$0.51	\$0	\$0	\$0	\$0	\$0	\$0
Jul '00	0	0	\$31.50	\$2.18	\$30.52	\$0.52	\$0	\$0	\$0	\$0	\$0	\$0
Aug '00	0	0	\$32.18	\$2.23	\$30.53	\$0.53	\$0	\$0	\$0	\$0	\$0	\$0
Sep '00	0	0	\$32.86	\$2.28	\$30.54	\$0.54	\$0	\$0	\$0	\$0	\$0	\$0
Oct '00	0	0	\$33.54	\$2.33	\$30.55	\$0.55	\$0	\$0	\$0	\$0	\$0	\$0
Nov '00	0	0	\$34.22	\$2.38	\$30.56	\$0.56	\$0	\$0	\$0	\$0	\$0	\$0
Dec '00	0	0	\$34.90	\$2.43	\$30.57	\$0.57	\$0	\$0	\$0	\$0	\$0	\$0
Jan '01	0	0	\$35.58	\$2.48	\$30.58	\$0.58	\$0	\$0	\$0	\$0	\$0	\$0
Feb '01	0	0	\$36.26	\$2.53	\$30.59	\$0.59	\$0	\$0	\$0	\$0	\$0	\$0
Mar '01	0	0	\$36.94	\$2.58	\$30.60	\$0.60	\$0	\$0	\$0	\$0	\$0	\$0
Apr '01	0	0	\$37.62	\$2.63	\$30.61	\$0.61	\$0	\$0	\$0	\$0	\$0	\$0
May '01	0	0	\$38.30	\$2.68	\$30.62	\$0.62	\$0	\$0	\$0	\$0	\$0	\$0
Jun '01	0	0	\$38.98	\$2.73	\$30.63	\$0.63	\$0	\$0	\$0	\$0	\$0	\$0
Jul '01	0	0	\$39.66	\$2.78	\$30.64	\$0.64	\$0	\$0	\$0	\$0	\$0	\$0
Aug '01	0	0	\$40.34	\$2.83	\$30.65	\$0.65	\$0	\$0	\$0	\$0	\$0	\$0
Sep '01	0	0	\$41.02	\$2.88	\$30.66	\$0.66	\$0	\$0	\$0	\$0	\$0	\$0
Oct '01	0	0	\$41.70	\$2.93	\$30.67	\$0.67	\$0	\$0	\$0	\$0	\$0	\$0
Nov '01	0	0	\$42.38	\$2.98	\$30.68	\$0.68	\$0	\$0	\$0	\$0	\$0	\$0
Dec '01	0	0	\$43.06	\$3.03	\$30.69	\$0.69	\$0	\$0	\$0	\$0	\$0	\$0
Jan '02	0	0	\$43.74	\$3.08	\$30.70	\$0.70	\$0	\$0	\$0	\$0	\$0	\$0
Feb '02	0	0	\$44.42	\$3.13	\$30.71	\$0.71	\$0	\$0	\$0	\$0	\$0	\$0
Mar '02	0	0	\$45.10	\$3.18	\$30.72	\$0.72	\$0	\$0	\$0	\$0	\$0	\$0
Apr '02	0	0	\$45.78	\$3.23	\$30.73	\$0.73	\$0	\$0	\$0	\$0	\$0	\$0
May '02	0	0	\$46.46	\$3.28	\$30.74	\$0.74	\$0	\$0	\$0	\$0	\$0	\$0
Jun '02	0	0	\$47.14	\$3.33	\$30.75	\$0.75	\$0	\$0	\$0	\$0	\$0	\$0
Jul '02	0	0	\$47.82	\$3.38	\$30.76	\$0.76	\$0	\$0	\$0	\$0	\$0	\$0
Aug '02	0	0	\$48.50	\$3.43	\$30.77	\$0.77	\$0	\$0	\$0	\$0	\$0	\$0
Sep '02	0	0	\$49.18	\$3.48	\$30.78	\$0.78	\$0	\$0	\$0	\$0	\$0	\$0
Oct '02	0	0	\$49.86	\$3.53	\$30.79	\$0.79	\$0	\$0	\$0	\$0	\$0	\$0
Nov '02	0	0	\$50.54	\$3.58	\$30.80	\$0.80	\$0	\$0	\$0	\$0	\$0	\$0
Dec '02	0	0	\$51.22	\$3.63	\$30.81	\$0.81	\$0	\$0	\$0	\$0	\$0	\$0
Jan '03	0	0	\$51.90	\$3.68	\$30.82	\$0.82	\$0	\$0	\$0	\$0	\$0	\$0
Feb '03	0	0	\$52.58	\$3.73	\$30.83	\$0.83	\$0	\$0	\$0	\$0	\$0	\$0
Mar '03	0	0	\$53.26	\$3.78	\$30.84	\$0.84	\$0	\$0	\$0	\$0	\$0	\$0
Apr '03	0	0	\$53.94	\$3.83	\$30.85	\$0.85	\$0	\$0	\$0	\$0	\$0	\$0
May '03	0	0	\$54.62	\$3.88	\$30.86	\$0.86	\$0	\$0	\$0	\$0	\$0	\$0
Jun '03	0	0	\$55.30	\$3.93	\$30.87	\$0.87	\$0	\$0	\$0	\$0	\$0	\$0
Jul '03	0	0	\$55.98	\$3.98	\$30.88	\$0.88	\$0	\$0	\$0	\$0	\$0	\$0
Aug '03	0	0	\$56.66	\$4.03	\$30.89	\$0.89	\$0	\$0	\$0	\$0	\$0	\$0
Sep '03	0	0	\$57.34	\$4.08	\$30.90	\$0.90	\$0	\$0	\$0	\$0	\$0	\$0
Oct '03	0	0	\$58.02	\$4.13	\$30.91	\$0.91	\$0	\$0	\$0	\$0	\$0	\$0
Nov '03	0	0	\$58.69	\$4.18	\$30.92	\$0.92	\$0	\$0	\$0	\$0	\$0	\$0
Dec '03	0	0	\$59.37	\$4.23	\$30.93	\$0.93	\$0	\$0	\$0	\$0	\$0	\$0
Jan '04	0	0	\$60.05	\$4.28	\$30.94	\$0.94	\$0	\$0	\$0	\$0	\$0	\$0
Feb '04	0	0	\$60.73	\$4.33	\$30.95	\$0.95	\$0	\$0	\$0	\$0	\$0	\$0
Mar '04	0	0	\$61.41	\$4.38	\$30.96	\$0.96	\$0	\$0	\$0	\$0	\$0	\$0
Apr '04	0	0	\$62.09	\$4.43	\$30.97	\$0.97	\$0	\$0	\$0	\$0	\$0	\$0
May '04	0	0	\$62.77	\$4.48	\$30.98	\$0.98	\$0	\$0	\$0	\$0	\$0	\$0
Jun '04	0	0	\$63.45	\$4.53	\$30.99	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Jul '04	0	0	\$64.13	\$4.58	\$31.00	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Aug '04	0	0	\$64.81	\$4.63	\$31.01	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Sep '04	0	0	\$65.49	\$4.68	\$31.02	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Oct '04	0	0	\$66.17	\$4.73	\$31.03	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Nov '04	0	0	\$66.85	\$4.78	\$31.04	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Dec '04	0	0	\$67.53	\$4.83	\$31.05	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Jan '05	0	0	\$68.21	\$4.88	\$31.06	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Feb '05	0	0	\$68.89	\$4.93	\$31.07	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Mar '05	0	0	\$69.57	\$4.98	\$31.08	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Apr '05	0	0	\$70.25	\$5.03	\$31.09	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
May '05	0	0	\$70.93	\$5.08	\$31.10	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Jun '05	0	0	\$71.61	\$5.13	\$31.11	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Jul '05	0	0	\$72.29	\$5.18	\$31.12	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Aug '05	0	0	\$72.97	\$5.23	\$31.13	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Sep '05	0	0	\$73.65	\$5.28	\$31.14	\$0.99	\$0	\$0	\$0	\$0	\$0	\$0
Oct '05	0	0	\$74.33	\$								

NPR-2	Retention Case		Production		Prices		DOE Net Income Calculations				
	Oil (MMBO)	GAS (MMBCF)	NGLs (GPD)	Oil (\$/BO)	GAS (\$/MMBTU)	NGLs (\$/Gal)	Oil & Gas Revenue (\$'000)	Oil & Gas Costs (\$'000)	Overhead Costs (\$'000)	Cash Flow (\$'000)	Discounted Cash Flow (\$'000)
1997	54.355	258,636	123	\$18.74	\$1.22	\$0.31	\$1,371,510	\$0.000	\$101,509	\$1,270	\$1,192
1998	47.487	213,010	100	\$19.21	\$1.25	\$0.32	\$1,210,488	\$0.000	\$104,594	\$1,106	\$915
1999	40.009	178,009	80	\$19.66	\$1.28	\$0.33	\$1,041,382	\$0.000	\$107,774	\$934	\$680
2000	30.149	113,626	48	\$20.11	\$1.32	\$0.34	\$772,055	\$0.000	\$111,050	\$661	\$424
2001	26.450	102,760	41	\$20.57	\$1.35	\$0.34	\$696,755	\$0.000	\$114,426	\$582	\$329
2002	24.146	94,355	37	\$21.03	\$1.38	\$0.35	\$651,457	\$0.000	\$117,905	\$534	\$266
2003	21.414	82,552	30	\$21.51	\$1.42	\$0.36	\$588,593	\$0.000	\$121,489	\$467	\$205
2004	18.804	71,338	23	\$22.00	\$1.46	\$0.37	\$526,067	\$0.000	\$125,183	\$401	\$155
2005	17.129	64,015	18	\$22.50	\$1.49	\$0.38	\$487,926	\$0.000	\$128,988	\$359	\$122
2006	15.956	59,527	17	\$23.01	\$1.53	\$0.38	\$464,892	\$0.000	\$132,909	\$332	\$100
2007	14.874	55,360	16	\$23.53	\$1.57	\$0.39	\$443,211	\$0.000	\$136,950	\$306	\$81
2008	13.912	51,628	15	\$24.07	\$1.61	\$0.40	\$423,913	\$0.000	\$141,113	\$283	\$66
2009	12.948	47,889	13	\$24.61	\$1.65	\$0.41	\$403,420	\$0.000	\$145,403	\$258	\$53
2010	12.091	44,552	12	\$25.17	\$1.70	\$0.42	\$385,167	\$0.000	\$149,823	\$235	\$43
2011	11.296	41,452	12	\$25.74	\$1.74	\$0.43	\$367,888	\$0.000	\$154,378	\$214	\$34
2012	10.585	38,673	11	\$26.33	\$1.78	\$0.44	\$352,423	\$0.000	\$159,071	\$193	\$27
2013	9.868	35,886	10	\$26.92	\$1.83	\$0.45	\$335,861	\$0.000	\$163,907	\$172	\$21
2014	9.229	33,397	9	\$27.54	\$1.88	\$0.46	\$321,085	\$0.000	\$168,889	\$152	\$17
2015	8.633	31,084	9	\$28.16	\$1.93	\$0.47	\$307,012	\$0.000	\$174,024	\$133	\$13
2016	8.100	29,009	8	\$28.80	\$1.98	\$0.48	\$294,428	\$0.000	\$179,314	\$115	\$10
2017	0.000	0.000	0	\$29.45	NA	NA	\$0.000	\$0.000	\$0.000	\$0	\$0
2018	0.000	0.000	0	\$30.12	NA	NA	\$0.000	\$0.000	\$0.000	\$0	\$0
<b>TOTALS</b>	407,435	1646,758	630				\$11,445,533	\$0.000	\$2,738,700	\$8,707	<b>\$4,753</b>

### Surface and Mineral Leasing and Maintenance

NPR-2	Maintenance Costs			Leasing Program					Total Revenue	NPV @ 10.00%
	Annual	NPV @ 7.00%	Surface Income	NPV @ 10.00%	Ongoing Rentals	Bonus	First Sale Rentals	Costs		
FY97	(5,000)	(4,834)	100	95	480	0	0	0	480	458
FY98	(5,000)	(4,517)	100	87	480	0	0	0	480	416
FY99	(5,000)	(4,222)	100	79	480	0	0	0	480	378
FY00	(5,000)	(3,946)	100	72	480	0	0	0	480	344
FY1	(5,000)	(3,688)	100	65	480	0	0	0	480	313
FY2	(5,000)	(3,446)	100	59	480	0	0	0	480	284
FY3	(5,000)	(3,221)	100	54	480	0	0	0	480	258
FY4	(5,000)	(3,010)	100	49	480	0	0	0	480	235
FY5	(5,000)	(2,813)	100	44	480	0	0	0	480	214
FY6	(5,000)	(2,629)	100	40	480	0	0	0	480	194
FY7	(5,000)	(2,457)	100	37	480	0	0	0	480	176
FY8	(5,000)	(2,296)	100	33	480	0	0	0	480	160
FY9	(5,000)	(2,146)	100	30	480	0	0	0	480	146
FY10	(5,000)	(2,006)	100	28	480	0	0	0	480	133
FY11	(5,000)	(1,875)	100	25	480	0	0	0	480	121
FY12	(5,000)	(1,752)	100	23	480	0	0	0	480	110
FY13	(5,000)	(1,637)	100	21	480	0	0	0	480	100
FY14	(5,000)	(1,530)	100	19	480	0	0	0	480	91
FY15	(5,000)	(1,430)	100	17	480	0	0	0	480	82
FY16	(5,000)	(1,337)	100	16	480	0	0	0	480	75
FY17	(5,000)	(1,249)	100	14	480	0	0	0	480	68
FY18	(5,000)	(1,167)	100	13	480	0	0	0	480	62
FY19	(5,000)	(1,091)	100	12	480	0	0	0	480	56
FY20	(5,000)	(1,020)	100	11	480	0	0	0	480	51
FY21	(5,000)	(953)	100	10	480	0	0	0	480	46
FY22	(5,000)	(891)	100	9	480	0	0	0	480	42
FY23	(5,000)	(832)	100	8	480	0	0	0	480	38
FY24	(5,000)	(778)	100	7	480	0	0	0	480	35
FY25	(5,000)	(727)	100	7	480	0	0	0	480	32
FY26	(5,000)	(679)	100	6	480	0	0	0	480	29
FY27	(5,000)	(635)	100	5	480	0	0	0	480	26
FY28	(5,000)	(593)	100	5	480	0	0	0	480	24
<b>TOTAL</b>	<b>\$160,000</b>	<b>(\$65,408)</b>	<b>\$3,200</b>	<b>\$999</b>	<b>\$15,360</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$15,360</b>	<b>\$4,796</b>

#### Known

acres in NPR-2 w/o mineral leases

76% of acres offered for leased were actually taken.

#### Assumed

BLM can lease it in FY97

\$0 Environmental costs required to begin leasing.

\$5.00 initial bonus per acre

\$1.50 rental per bonus first 5 yrs

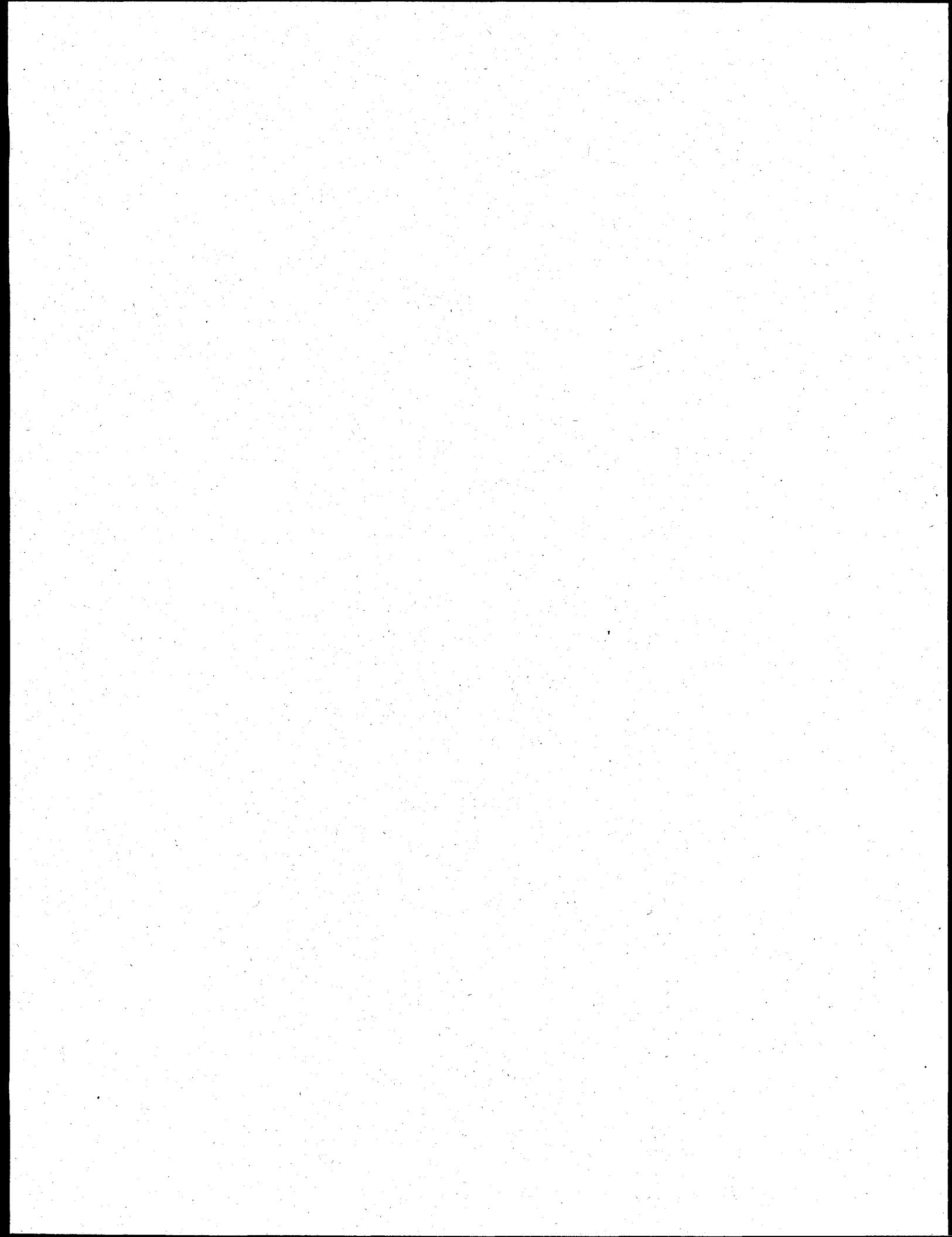
\$2.00 rental per bonus second 5 yrs

\$100 per year in surface leases

\$5,000 annual costs to maintain fee property

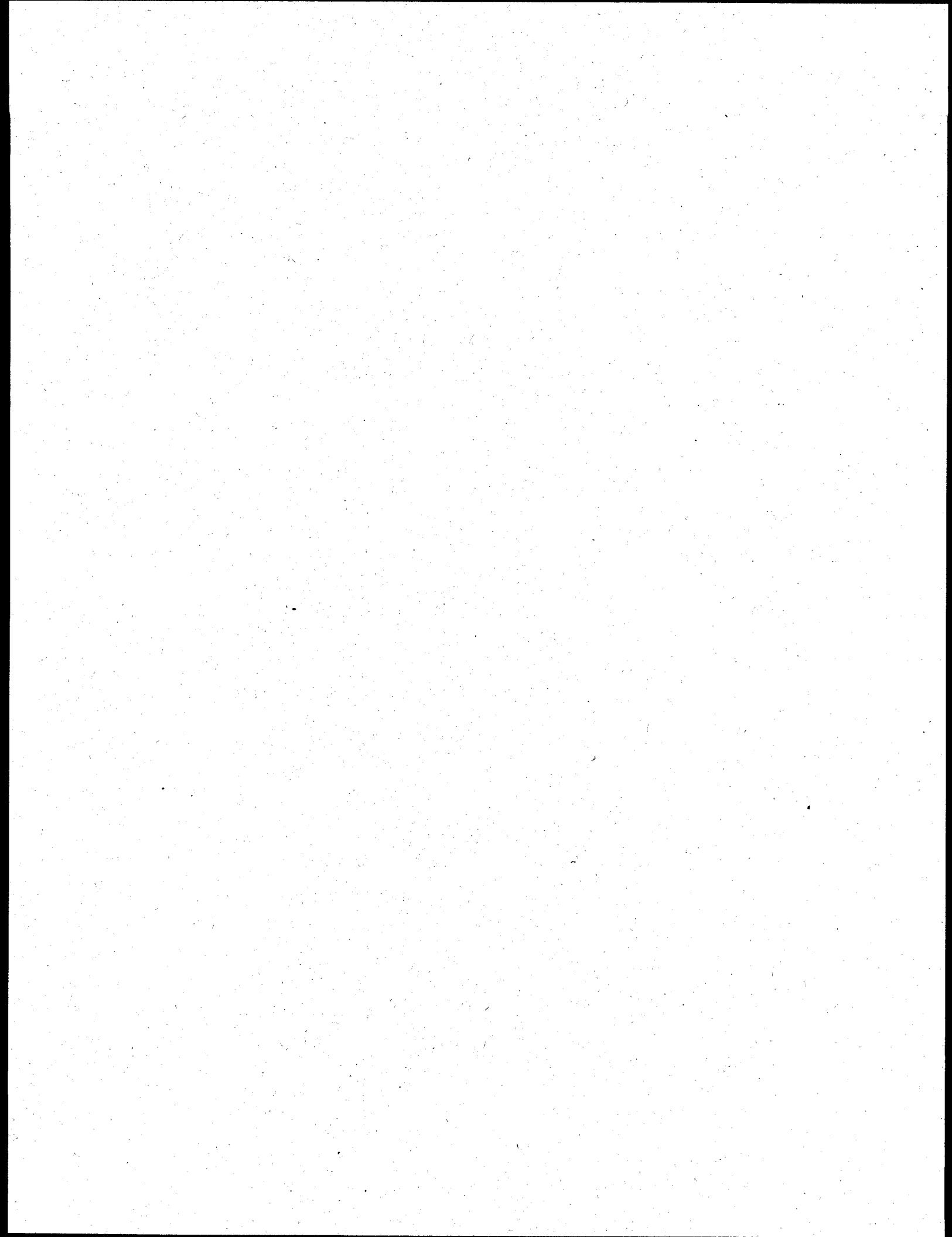
\$0 Lease sale expenses @ \$0.75/acre.

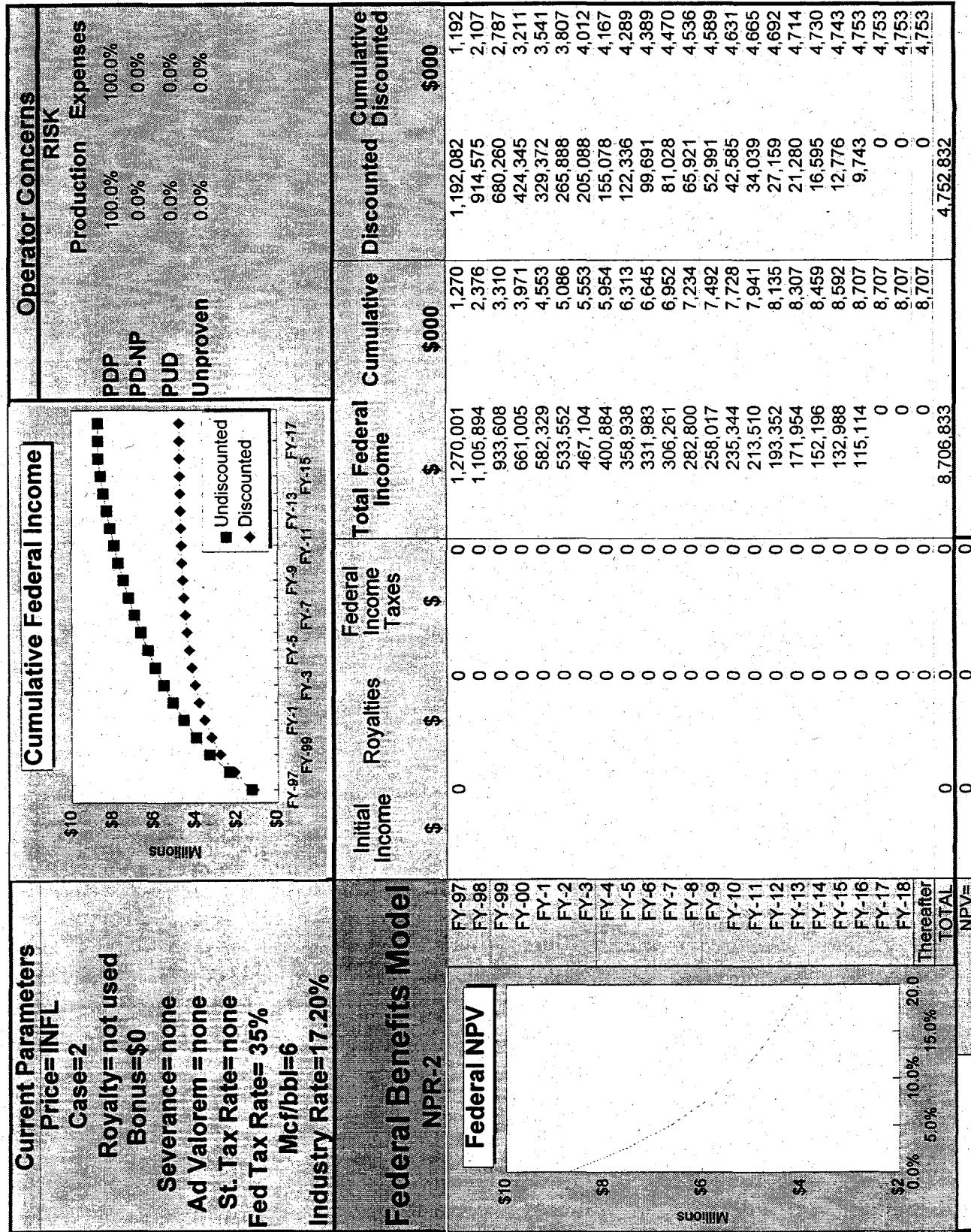
Value to DOE		
	(\$)	(\$/acre)
Maintenanc	(65,408)	ERR
Surface Inc	999	ERR
Mineral Inc.	4,796	ERR
NEPA cost	0	ERR
<b>Total</b>	<b>(\$59,614)</b>	<b>ERR</b>



## **APPENDIX B**

### **DETAILED OUTPUT OF ECONOMIC MODEL FOR TRANSFER TO DOI**





## Federal Income Tax Calculations

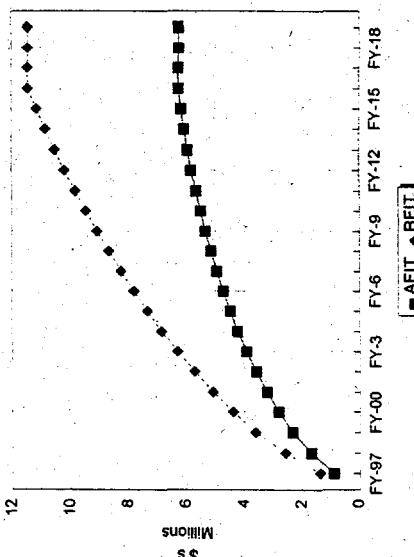
Revenue	Royalty, 80% Cap. OpEx, and Prod. Tax	Allocated Overhead	Depreciation	Depletion	Total Deductions	Taxable Income	State Income Taxes	Federal Income Taxes	After Tax Cash Flow	Cumulative Discounted @ 14.2%	Cumulative Discounted @ \$1000
	\$	\$	\$	\$	\$	\$	\$	\$	\$		
FY-97	1,371,510	0	101,509	0	205,727	307,235	1,064,275	372,496	897,505	898	839,854
FY-98	1,210,488	0	104,594	0	181,573	286,168	924,320	323,512	782,381	1,680	641,091
FY-99	1,041,382	0	107,774	0	156,207	263,981	777,401	272,090	661,518	2,341	474,653
FY-00	772,055	0	111,050	0	115,898	226,859	545,196	190,819	470,186	2,812	295,419
FY-1	696,755	0	114,426	0	104,513	218,940	477,815	167,235	415,093	3,227	228,375
FY-2	651,457	0	117,905	0	97,719	215,624	435,833	152,542	381,010	3,608	183,558
FY-3	588,593	0	121,489	0	88,289	209,778	378,815	132,519	334,519	3,942	141,121
FY-4	526,067	0	125,183	0	78,974	204,093	321,974	112,691	288,193	4,230	106,460
FY-5	487,926	0	128,988	0	73,189	202,177	285,749	100,012	258,926	4,489	83,755
FY-6	464,892	0	132,909	0	69,734	202,643	262,249	91,787	240,196	4,730	68,036
FY-7	443,211	0	136,950	0	66,482	203,431	239,780	83,923	222,338	4,952	55,147
FY-8	423,913	0	141,113	0	63,587	204,700	219,213	76,725	206,075	5,158	44,758
FY-9	403,420	0	145,403	0	60,513	205,916	197,504	69,126	188,891	5,347	35,924
FY-10	385,167	0	149,823	0	57,775	207,598	177,569	62,149	173,195	5,520	28,843
FY-11	367,888	0	154,378	0	55,183	209,561	158,327	55,414	158,096	5,678	23,055
FY-12	352,423	0	159,423	0	52,863	211,934	140,489	49,171	144,181	5,822	18,411
FY-13	335,861	0	163,907	0	50,379	214,286	121,575	42,551	129,403	5,952	14,470
FY-14	321,085	0	168,889	0	48,163	217,052	104,033	36,411	115,784	6,067	11,337
FY-15	307,012	0	174,024	0	46,052	220,075	86,937	30,428	102,561	6,170	8,793
FY-16	294,428	0	179,314	0	44,164	223,478	70,950	24,832	90,282	6,260	6,778
FY-17	0	0	0	0	0	0	0	0	0	6,260	0
FY-18	0	0	0	0	0	0	0	0	0	6,260	0
Thereafter	0	0	0	0	0	0	0	0	0	0	3,310
<b>TOTAL</b>	<b>11,445,533</b>				<b>2,738,700</b>	<b>1,716,830</b>	<b>4,455,530</b>	<b>6,990,003</b>	<b>2,446,501</b>	<b>6,260,332</b>	<b>3,309,837</b>

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## Industry Net Present Value

Discount Factor	Before Federal and State Income Taxes	After Federal and State Income Taxes	Net Present Value Millions
	17.20%	4,254,000	3,310,000
14.20%	0%	8,707,000	6,260,000
5%	6,633,000	4,747,000	8
10%	5,369,000	3,830,000	6
15%	4,535,000	3,228,000	4
20%	3,949,000	2,807,000	2
25%	3,517,000	2,497,000	0
30%	3,184,000	2,259,000	0
35%	2,919,000	2,070,000	0
40%	2,703,000	1,916,000	0
45%	2,523,000	1,768,000	0
50%	2,371,000	1,680,000	0
55%	2,240,000	1,586,000	0
60%	2,126,000	1,505,000	0
65%	2,026,000	1,424,000	0
70%	1,937,000	1,371,000	0

## Cumulative Income to Industry



## PD, PD-NP, PUD plus Unproven Before Federal Income Tax

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## Proved Developed Producing

Production	Costs												Future Net Income																												
	Prices				Gross Revenue				Selling Costs				Net Revenue				Cumulative				Discounted @																				
	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr																	
base																																									
Oct '96	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	83,933	\$3,664	\$1.17	\$12,368	\$11,965	\$11,713	\$11,494	\$11,326	\$11,208	\$11,066	\$10,925	\$10,785	\$10,646	\$10,503	\$10,362																		
Nov '96	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	84,106	26,924	3,178	113,208	113,046	112,880	112,716	112,540	112,367	112,191	111,919	111,646	111,373	111,099	110,826																		
Dec '96	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	84,278	26,984	3,184	113,465	113,302	113,137	112,971	112,805	112,630	112,454	112,280	112,106	111,935	111,762	111,589																		
Jan '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	84,452	28,044	3,191	113,877	113,727	113,567	113,404	113,230	113,067	112,901	112,731	112,567	112,401	112,231	112,067																		
Feb '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	84,625	26,105	3,197	113,927	113,777	113,617	113,454	113,284	113,119	112,954	112,784	112,620	112,454	112,284	112,120																		
Mar '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	84,798	28,165	3,204	114,169	114,011	113,851	113,689	113,511	113,343	113,174	112,999	112,833	112,667	112,501	112,331	112,165																	
Apr '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	84,973	26,227	3,211	114,411	114,253	114,085	113,917	113,749	113,581	113,411	113,243	113,075	112,907	112,739	112,569																		
May '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	85,146	26,288	3,217	114,653	114,496	114,328	114,160	113,992	113,824	113,656	113,488	113,319	113,151	112,981	112,812																		
Jun '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	85,320	26,349	3,224	114,896	114,738	114,570	114,402	114,234	114,065	113,897	113,729	113,560	113,392	113,223	113,054																		
Jul '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	85,493	26,410	3,230	115,136	115,067	114,900	114,732	114,564	114,396	114,228	114,060	113,892	113,724	113,556	113,387	113,218																	
Aug '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	85,673	26,471	3,237	115,381	115,213	115,045	114,877	114,709	114,541	114,373	114,205	114,037	113,869	113,701	113,531	113,363																	
Sep '97	4,330	21,553	10,230	18,537	\$1.20	\$1.20	\$0.31	\$0.31	85,849	26,533	3,244	115,626	115,458	115,289	115,121	114,953	114,785	114,617	114,449	114,281	114,111	113,943	113,773	113,605	113,437																
Fv '97	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	85,106	26,595	3,251	115,867	115,697	115,529	115,361	115,193	114,925	114,757	114,589	114,421	114,253	114,085	113,917	113,749	113,581	113,411															
Oct '97	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	85,171	26,658	3,257	115,928	115,760	115,592	115,424	115,256	115,088	114,920	114,752	114,584	114,416	114,248	114,080	113,912	113,744	113,576	113,408														
Nov '97	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	85,342	26,721	3,264	116,172	116,004	115,836	115,668	115,500	115,332	115,164	114,996	114,828	114,660	114,492	114,324	114,156	113,988	113,819	113,651	113,483													
Dec '97	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	85,515	26,784	3,271	116,416	116,248	116,080	115,912	115,744	115,576	115,408	115,240	115,072	114,904	114,736	114,568	114,400	114,232	114,064															
Jan '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	85,688	26,847	3,277	116,659	116,491	116,321	116,153	115,985	115,817	115,649	115,481	115,313	115,145	114,977	114,809	114,641	114,473	114,305															
Fv '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	85,861	26,910	3,284	116,893	116,722	116,554	116,386	116,218	116,050	115,882	115,714	115,614	115,446	115,278	115,110	114,942	114,774	114,606	114,438														
Mar '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	86,034	26,973	3,291	117,136	116,965	116,797	116,627	116,459	116,291	116,123	115,955	115,787	115,617	115,449	115,281	115,113	114,945	114,777	114,609	114,441													
Apr '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	86,207	27,036	3,298	117,379	117,208	117,119	116,951	116,783	116,615	116,447	116,279	116,111	115,943	115,775	115,675	115,507	115,339	115,171															
May '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	86,380	27,099	3,305	117,622	117,454	117,354	117,186	116,918	116,750	116,582	116,414	116,246	116,078	115,910	115,742	115,574	115,406	115,238	115,070														
Jun '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	86,553	27,162	3,312	117,865	117,697	117,597	117,429	117,161	116,993	116,825	116,657	116,489	116,321	116,151	115,983	115,815	115,647	115,479	115,311	115,143													
Jul '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	86,726	27,225	3,319	118,108	117,950	117,850	117,682	117,414	117,146	116,978	116,810	116,642	116,474	116,306	116,138	115,969	115,801	115,633	115,465	115,297	115,129												
Aug '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	86,899	27,288	3,326	118,351	118,181	118,081	117,913	117,645	117,477	117,309	117,141	116,973	116,805	116,637	116,469	116,301	116,133	115,965	115,797	115,629	115,461	115,293	115,125										
Sep '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	87,072	27,351	3,333	118,594	118,423	118,323	118,155	117,887	117,719	117,551	117,383	117,215	117,047	116,879	116,711	116,543	116,375	116,207	116,039	115,871	115,703	115,535	115,367	115,199	115,031								
Fv '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	87,245	27,414	3,340	118,837	118,667	118,567	118,400	118,132	117,964	117,796	117,626	117,458	117,290	117,122	116,950	116,782	116,614	116,446	116,278	116,110	115,942	115,774	115,606	115,438	115,270	115,102							
Oct '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	87,418	27,477	3,347	119,080	118,910	118,810	118,642	118,374	118,206	118,038	117,870	117,702	117,534	117,366	117,198	117,030	116,858	116,690	116,522	116,354	116,186	116,018	115,850	115,682	115,514	115,346	115,178	115,010					
Nov '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	87,591	27,540	3,354	119,323	119,153	119,053	118,885	118,617	118,449	118,281	118,113	117,945	117,777	117,609	117,441	117,273	117,105	116,933	116,765	116,597	116,429	116,261	116,093	115,925	115,757	115,589	115,421	115,253	115,085				
Dec '98	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	87,764	27,603	3,361	119,566	119,396	119,266	119,098	118,830	118,662	118,494	118,326	118,158	117,990	117,822	117,654	117,486	117,318	117,150	116,978	116,810	116,642	116,474	116,306	116,138	115,970	115,802	115,634	115,466	115,298	115,130			
Jan '99	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	87,937	27,666	3,368	119,809	119,639	119,509	119,341	119,073	118,905	118,737	118,569	118,401	118,233	118,065	117,897	117,729	117,621	117,453	117,285	117,117	116,945	116,777	116,609	116,441	116,273	116,105	115,937	115,769	115,591	115,423	115,255	115,087	
Fv '99	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	88,110	27,729	3,375	120,052	119,882	119,752	119,584	119,316	119,148	118,980	118,812	118,644	118,476	118,308	118,140	117,978	117,810	117,642	117,474	117,306	117,138	116,965	116,797	116,629	116,461	116,293	116,125	115,957	115,789	115,621	115,453	115,285	115,117
Oct '99	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	88,283	27,792	3,382	120,295	119,924	119,794	119,626	119,358	119,190	118,922	118,754	118,586	118,418	118,250	118,082	117,920	117,752	117,584	117,416	117,248	117,080	116,912	116,744	116,576	116,408	116,240	116,072	115,904	115,736	115,568	115,400	115,232	115,064
Nov '99	4,335	21,557	10,230	18,538	\$1.20	\$1.20	\$0.31	\$0.31	88,456	27,855	3,389	120,538	119,964	119,834	119,666	119,398	119,230	118,960	118,792	118,624	118,456	118,288	118,120	117,958	117,790	117,622	117,454	117,286	117,118	116,950	116,782	116,614	116,446	116,278	116,110	115,942	115,774	115,606	115,438	115,270	115,102
Dec '99	4,335	21,557</td																																							

PRODUCTION		PRICES		COSTS		FUTURE NET INCOME		CUMULATIVE DISCOUNTED 2000	
								NET REVENUE	DISCOUNTED \$1000
Oct-96	0	0	0	\$18.55	\$1.20	\$0.31	\$0	\$0	\$0
Nov-96	0	0	0	\$18.57	\$1.21	\$0.31	\$0	\$0	\$0
Dec-96	0	0	0	\$18.61	\$1.21	\$0.31	\$0	\$0	\$0
Jan-97	0	0	0	\$18.64	\$1.21	\$0.31	\$0	\$0	\$0
Feb-97	0	0	0	\$18.68	\$1.21	\$0.31	\$0	\$0	\$0
Mar-97	0	0	0	\$18.72	\$1.21	\$0.31	\$0	\$0	\$0
Apr-97	0	0	0	\$18.76	\$1.22	\$0.31	\$0	\$0	\$0
May-97	0	0	0	\$18.80	\$1.22	\$0.31	\$0	\$0	\$0
Jun-97	0	0	0	\$18.84	\$1.22	\$0.32	\$0	\$0	\$0
Jul-97	0	0	0	\$18.88	\$1.23	\$0.32	\$0	\$0	\$0
Aug-97	0	0	0	\$18.91	\$1.23	\$0.32	\$0	\$0	\$0
Sep-97	0	0	0	\$18.95	\$1.23	\$0	\$0	\$0	\$0
Oct-97	0	0	0	\$18.99	\$1.23	\$0.32	\$0	\$0	\$0
Nov-97	0	0	0	\$19.03	\$1.24	\$0.32	\$0	\$0	\$0
Dec-97	0	0	0	\$19.07	\$1.24	\$0.32	\$0	\$0	\$0
Jan-98	0	0	0	\$19.11	\$1.24	\$0.32	\$0	\$0	\$0
Feb-98	0	0	0	\$19.15	\$1.25	\$0.32	\$0	\$0	\$0
Mar-98	0	0	0	\$19.19	\$1.25	\$0.32	\$0	\$0	\$0
Apr-98	0	0	0	\$19.23	\$1.25	\$0.32	\$0	\$0	\$0
May-98	0	0	0	\$19.27	\$1.25	\$0.32	\$0	\$0	\$0
Jun-98	0	0	0	\$19.31	\$1.26	\$0.32	\$0	\$0	\$0
Jul-98	0	0	0	\$19.35	\$1.26	\$0.32	\$0	\$0	\$0
Aug-98	0	0	0	\$19.39	\$1.26	\$0.32	\$0	\$0	\$0
Sep-98	0	0	0	\$19.43	\$1.27	\$0.32	\$0	\$0	\$0
FY-98	0	0	0	\$19.66	\$1.28	\$0.33	\$0	\$0	\$0
FY-99	0	0	0	\$20.11	\$1.32	\$0.34	\$0	\$0	\$0
FY-00	0	0	0	\$20.57	\$1.35	\$0.34	\$0	\$0	\$0
FY-01	0	0	0	\$21.03	\$1.38	\$0.35	\$0	\$0	\$0
FY-02	0	0	0	\$21.50	\$1.42	\$0.36	\$0	\$0	\$0
FY-03	0	0	0	\$22.00	\$1.46	\$0.37	\$0	\$0	\$0
FY-04	0	0	0	\$22.50	\$1.49	\$0.38	\$0	\$0	\$0
FY-05	0	0	0	\$23.01	\$1.53	\$0.38	\$0	\$0	\$0
FY-06	0	0	0	\$23.53	\$1.57	\$0.39	\$0	\$0	\$0
FY-07	0	0	0	\$24.07	\$1.61	\$0.40	\$0	\$0	\$0
FY-08	0	0	0	\$24.61	\$1.65	\$0.41	\$0	\$0	\$0
FY-09	0	0	0	\$25.17	\$1.70	\$0.42	\$0	\$0	\$0
FY-10	0	0	0	\$25.74	\$1.74	\$0.43	\$0	\$0	\$0
FY-11	0	0	0	\$26.33	\$1.78	\$0.44	\$0	\$0	\$0
FY-12	0	0	0	\$26.92	\$1.83	\$0.45	\$0	\$0	\$0
FY-13	0	0	0	\$27.54	\$1.88	\$0.46	\$0	\$0	\$0
FY-14	0	0	0	\$28.16	\$1.93	\$0.47	\$0	\$0	\$0
FY-15	0	0	0	\$28.80	\$1.98	\$0.48	\$0	\$0	\$0
FY-16	0	0	0	\$29.45	NA	NA	NA	\$0	\$0
FY-17	0	0	0	\$30.12	NA	NA	NA	\$0	\$0
FY-18	0	0	0	\$30.81	NA	NA	NA	\$0	\$0
Thereafter	0	0	0	0	0	0	0	\$0	\$0
Total	0	0	0	0	0	0	0	\$0	\$0



Unproven		Unproven Gross Revenue										Future Net Income		
		Production					Costs							
Month	Year	Units	Units	Units	Units	Units	Units	Units	Units	Units	Net Revenue	Cumulative	Discounted @	Cumulative
Oct-96	Nov-96	0	0	\$18.55	\$120	\$0.31	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-96	Jan-97	0	0	\$18.57	\$120	\$0.31	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-97	Mar-97	0	0	\$18.64	\$121	\$0.31	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-97	May-97	0	0	\$18.68	\$121	\$0.31	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-97	Jul-97	0	0	\$18.72	\$121	\$0.31	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-97	Sep-97	0	0	\$18.76	\$122	\$0.31	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-97	Nov-97	0	0	\$18.80	\$122	\$0.31	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-97	Jan-98	0	0	\$18.84	\$122	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-98	Mar-98	0	0	\$18.88	\$123	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-98	May-98	0	0	\$18.91	\$123	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-98	Jul-98	0	0	\$18.95	\$123	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-98	Sep-98	0	0	\$18.99	\$123	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-98	Nov-98	0	0	\$19.03	\$124	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-98	Jan-99	0	0	\$19.07	\$124	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-99	Mar-99	0	0	\$19.11	\$124	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-99	May-99	0	0	\$19.15	\$125	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-99	Jul-99	0	0	\$19.19	\$125	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-99	Sep-99	0	0	\$19.23	\$125	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-99	Nov-99	0	0	\$19.27	\$125	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-99	Jan-00	0	0	\$19.31	\$126	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-00	Mar-00	0	0	\$19.35	\$126	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-00	May-00	0	0	\$19.39	\$126	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-00	Jul-00	0	0	\$19.43	\$126	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-00	Sep-00	0	0	\$19.47	\$126	\$0.32	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-00	Nov-00	0	0	\$19.66	\$128	\$0.33	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-00	Jan-01	0	0	\$20.11	\$132	\$0.34	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-01	Mar-01	0	0	\$20.57	\$135	\$0.35	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-01	May-01	0	0	\$21.03	\$138	\$0.35	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-01	Jul-01	0	0	\$21.55	\$142	\$0.36	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-01	Sep-01	0	0	\$22.00	\$146	\$0.37	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-01	Nov-01	0	0	\$22.50	\$149	\$0.38	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-01	Jan-02	0	0	\$23.01	\$153	\$0.38	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-02	Mar-02	0	0	\$23.53	\$157	\$0.39	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-02	May-02	0	0	\$24.07	\$161	\$0.40	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-02	Jul-02	0	0	\$24.61	\$165	\$0.41	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-02	Sep-02	0	0	\$25.17	\$170	\$0.42	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-02	Nov-02	0	0	\$25.74	\$174	\$0.43	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-02	Jan-03	0	0	\$26.33	\$178	\$0.44	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-03	Mar-03	0	0	\$26.92	\$183	\$0.45	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-03	May-03	0	0	\$27.54	\$188	\$0.46	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-03	Jul-03	0	0	\$28.16	\$193	\$0.47	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-03	Sep-03	0	0	\$28.80	\$198	\$0.48	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-03	Nov-03	0	0	\$29.45	\$203	\$0.49	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-03	Jan-04	0	0	\$30.12	\$208	\$0.50	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-04	Mar-04	0	0	\$30.81	\$213	\$0.50	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-04	May-04	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-04	Jul-04	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-04	Sep-04	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-04	Nov-04	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-04	Jan-05	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-05	Mar-05	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-05	May-05	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-05	Jul-05	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-05	Sep-05	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-05	Nov-05	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-05	Jan-06	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-06	Mar-06	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-06	May-06	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-06	Jul-06	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-06	Sep-06	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-06	Nov-06	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-06	Jan-07	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-07	Mar-07	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-07	May-07	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-07	Jul-07	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-07	Sep-07	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-07	Nov-07	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-07	Jan-08	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-08	Mar-08	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-08	May-08	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-08	Jul-08	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-08	Sep-08	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-08	Nov-08	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-08	Jan-09	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-09	Mar-09	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-09	May-09	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-09	Jul-09	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-09	Sep-09	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-09	Nov-09	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-09	Jan-10	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-10	Mar-10	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-10	May-10	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-10	Jul-10	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-10	Sep-10	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-10	Nov-10	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-10	Jan-11	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Feb-11	Mar-11	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Apr-11	May-11	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Jun-11	Jul-11	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Aug-11	Sep-11	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Oct-11	Nov-11	0	0	\$0.00	\$0.00	\$0.00	0	0	0	0	\$0.30	\$0	30.56%	\$0
Dec-11</td														

**Surface and Mineral Leasing and Maintenance**

NPR-2 DOI Case	Maintenance Costs		Leasing Program							
	Annual	NPV @ 7.00%	Surface Income	NPV @ 10.00%	Ongoing Rentals	Bonus	First Sale Rentals	Costs	Total Revenue	NPV @ 10.00%
FY97	(5,000)	(4,834)	1,180	1,125	480	4,275	1,425	(1,875)	4,305	4,105
FY98	(5,000)	(4,517)	1,180	1,023	480		1,425	0	1,905	1,651
FY99	(5,000)	(4,222)	1,180	930	480		1,425	0	1,905	1,501
FY00	(5,000)	(3,946)	1,180	845	480		1,425	0	1,905	1,365
FY1	(5,000)	(3,688)	1,180	768	480		1,425	0	1,905	1,241
FY2	(5,000)	(3,446)	1,180	699	480		1,900	0	2,380	1,409
FY3	(5,000)	(3,221)	1,180	635	480		1,900	0	2,380	1,281
FY4	(5,000)	(3,010)	1,180	577	480		1,900	0	2,380	1,164
FY5	(5,000)	(2,813)	1,180	525	480		1,900	0	2,380	1,059
FY6	(5,000)	(2,629)	1,180	477	480		1,900	0	2,380	962
FY7	(5,000)	(2,457)	1,180	434	480			0	480	176
FY8	(5,000)	(2,296)	1,180	394	480	4,275	1,425	(1,875)	4,305	1,439
FY9	(5,000)	(2,146)	1,180	358	480		1,425	0	1,905	579
FY10	(5,000)	(2,006)	1,180	326	480		1,425	0	1,905	526
FY11	(5,000)	(1,875)	1,180	296	480		1,425	0	1,905	478
FY12	(5,000)	(1,752)	1,180	269	480		1,425	0	1,905	435
FY13	(5,000)	(1,637)	1,180	245	480		1,900	0	2,380	494
FY14	(5,000)	(1,530)	1,180	223	480		1,900	0	2,380	449
FY15	(5,000)	(1,430)	1,180	202	480		1,900	0	2,380	408
FY16	(5,000)	(1,337)	1,180	184	480		1,900	0	2,380	371
FY17	(5,000)	(1,249)	1,180	167	480		1,900	0	2,380	337
FY18	(5,000)	(1,167)	1,180	152	480			0	480	62
FY19	(5,000)	(1,091)	1,180	138	480	4,275	1,425	(1,875)	4,305	504
FY20	(5,000)	(1,020)	1,180	126	480		1,425	0	1,905	203
FY21	(5,000)	(953)	1,180	114	480		1,425	0	1,905	184
FY22	(5,000)	(891)	1,180	104	480		1,425	0	1,905	168
FY23	(5,000)	(832)	1,180	94	480		1,425	0	1,905	152
FY24	(5,000)	(778)	1,180	86	480		1,900	0	2,380	173
FY25	(5,000)	(727)	1,180	78	480		1,900	0	2,380	157
FY26	(5,000)	(679)	1,180	71	480		1,900	0	2,380	143
FY27	(5,000)	(635)	1,180	64	480		1,900	0	2,380	130
FY28	(5,000)	(593)	1,180	59	480		1,900	0	2,380	118
<b>TOTAL</b>	<b>(\$160,000)</b>	<b>(\$65,408)</b>	<b>\$37,760</b>	<b>\$11,790</b>	<b>\$15,360</b>	<b>\$12,825</b>	<b>\$49,875</b>	<b>(\$5,625)</b>	<b>\$72,435</b>	<b>\$23,425</b>

**Known**

2,500 acres in NPR-2 w/o mineral leases  
76% of acres offered for leased were actually taken.  
50% of bonus and rentals go to the lessor.

**Assumed**

BLM can lease it in FY97.

\$30,000 Environmental costs required.

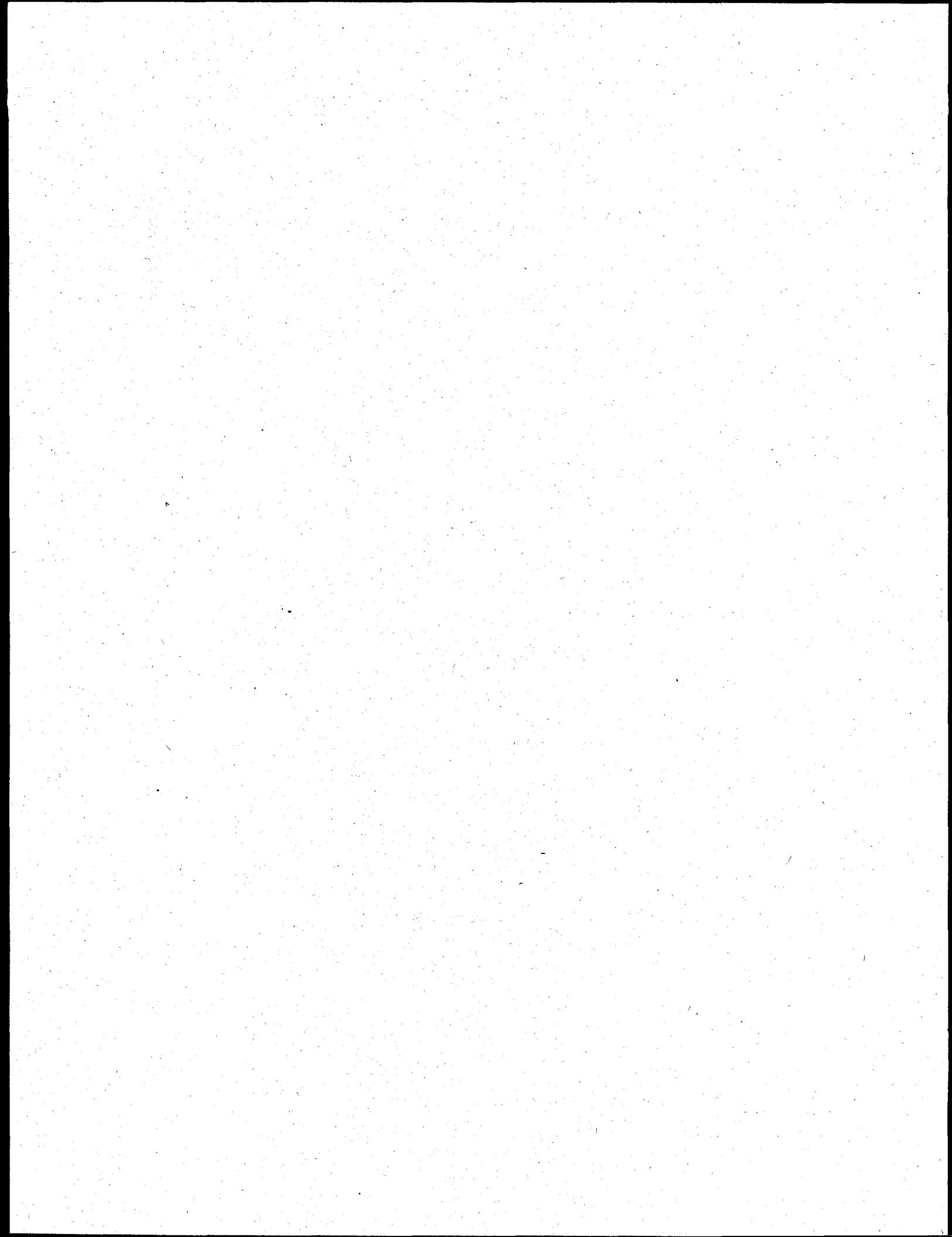
\$4.50 initial bonus per acre  
\$1.50 rental per bonus first 5 yrs  
\$2.00 rental per bonus second 5 yrs  
\$100 per year in surface leases

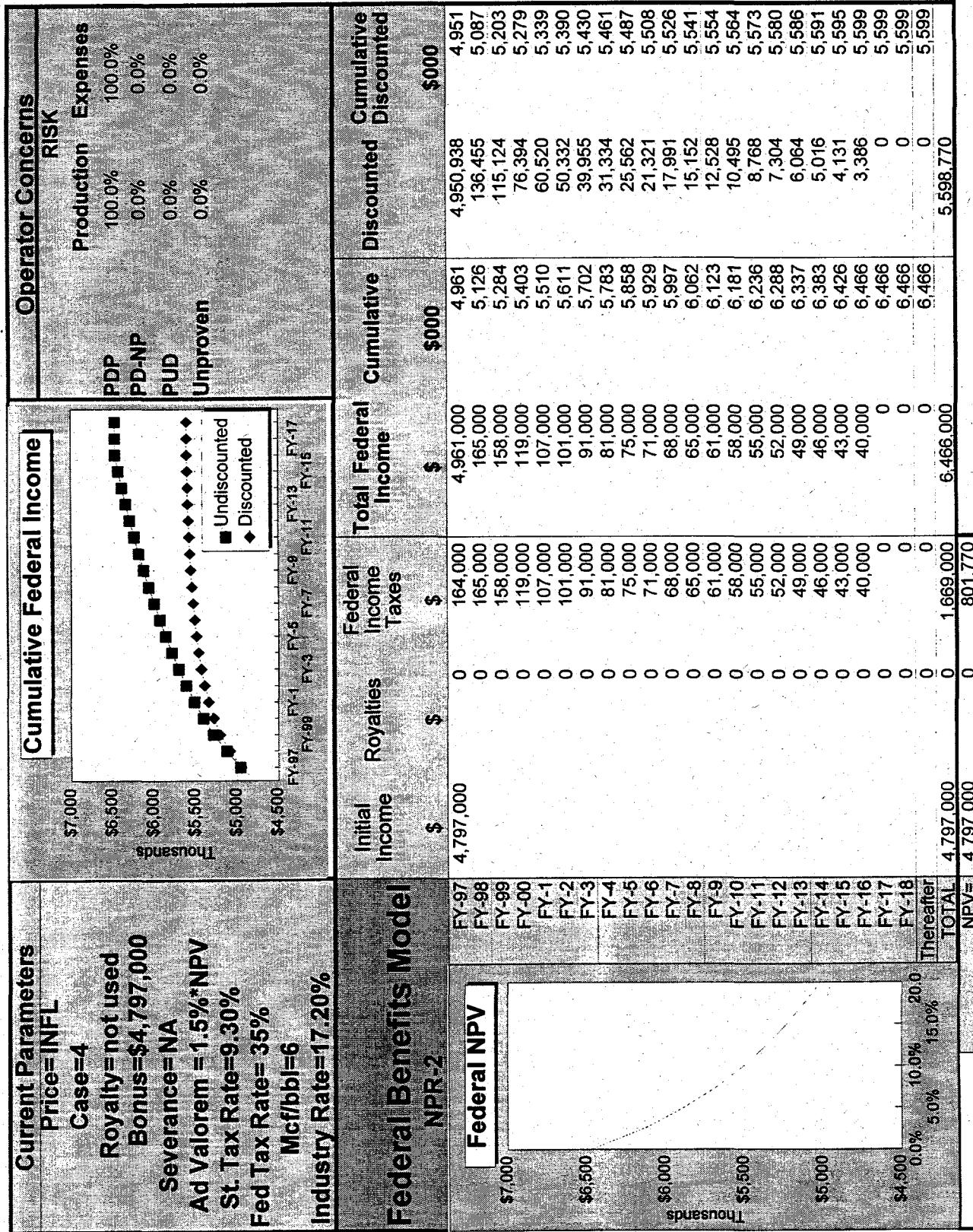
\$5,000 annual costs to maintain fee property  
\$1,875 Lease sale expenses @ \$0.75/acre.

	Value to DOE	
Maintenanc	(\$65,408)	(\$/acre)
Surface Inc	11,790	(26.16)
Mineral Inc	23,425	4.72
NEPA cost	(28,604)	9.37
<b>Total</b>	<b>(\$58,797)</b>	<b>(\$23.52)</b>

## **APPENDIX C**

### **DETAILED OUTPUT OF ECONOMIC MODEL FOR SALE**

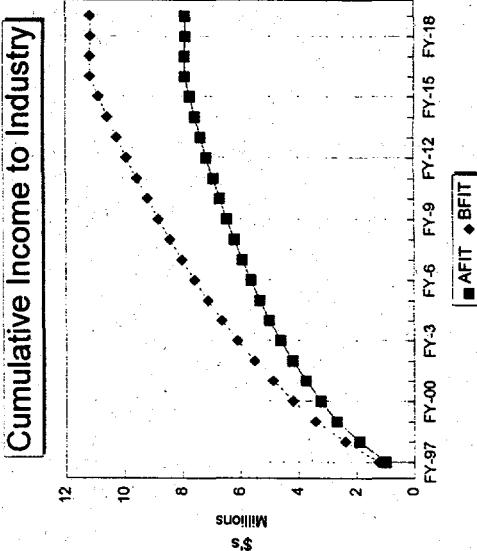




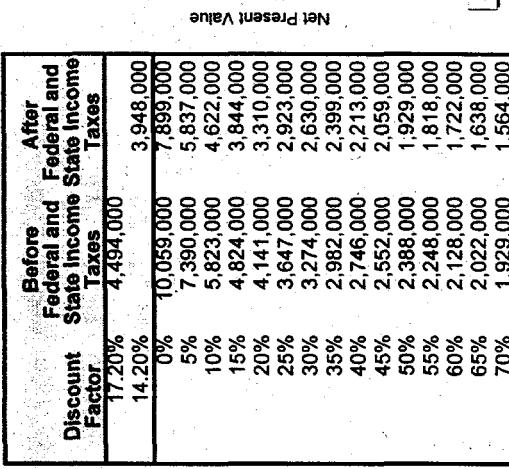
## Federal Income Tax Calculations

Revenue	Royalty, 80% Cap. OpEx and Prod. Tax	Allocated Overhead	Depreciation	Depletion	Total Deductions	Taxable Income	State Income Taxes	Federal Income Taxes	After Tax Cash Flow	Discounted \$ \$000	Cumulative Discounted \$ \$000	
FY-97	1,371,510	123,408	40,603	0	690,988	854,999	516,511	163,966	995,497	995	931,551	
1,210,488	62,652	41,838	0	587,635	692,125	518,363	48,208	164,554	893,236	1,889	731,926	
1,041,382	6,950	43,110	0	492,671	542,731	498,651	46,375	158,297	786,651	2,675	564,439	
FY-98	772,055	6,409	44,420	0	345,768	396,597	375,458	34,918	119,189	567,119	3,243	356,322
FY-99	696,755	6,250	45,771	0	306,636	358,657	338,098	31,443	107,329	505,962	3,748	278,369
FY-00	651,457	6,146	47,162	0	280,468	333,776	317,681	29,544	100,848	467,757	4,216	225,349
FY-1	588,593	6,016	48,596	0	246,979	301,580	287,003	26,691	91,109	416,181	4,632	175,571
FY-2	526,067	5,892	50,073	0	215,042	271,007	255,060	23,721	80,969	365,413	4,998	134,986
FY-3	487,926	5,812	51,595	0	194,343	257,750	236,176	21,964	74,974	333,580	5,331	107,904
FY-4	464,892	5,758	53,164	0	180,895	239,817	225,075	20,932	71,450	313,588	5,645	88,824
FY-5	443,211	5,709	54,780	0	168,461	228,950	214,261	19,926	68,017	294,779	5,940	73,114
FY-6	423,913	5,664	56,445	0	157,374	219,483	204,430	19,012	64,896	277,895	6,218	60,356
FY-7	403,420	5,620	58,161	0	146,268	210,049	193,371	17,984	61,386	260,270	6,478	49,499
FY-8	385,167	5,580	59,929	0	136,379	201,888	183,279	17,045	58,182	244,431	6,722	40,707
FY-9	367,888	5,544	61,751	0	127,202	194,497	173,391	16,125	55,043	229,425	6,952	33,457
FY-10	352,423	5,511	63,628	0	118,987	188,127	164,296	15,280	52,156	215,548	7,168	27,563
FY-11	335,861	5,478	65,563	0	110,723	181,764	154,097	14,331	48,918	201,571	7,369	22,539
FY-12	321,085	5,448	67,556	0	103,352	176,356	144,729	13,460	45,944	188,677	7,558	18,474
FY-13	307,012	5,421	69,609	0	96,488	177,518	135,494	12,601	43,012	176,368	7,734	15,122
FY-14	294,428	5,396	71,726	0	90,342	167,464	126,964	11,808	40,305	165,194	7,899	12,402
FY-15	0	0	0	0	0	0	0	0	0	0	0	3,948
FY-16	0	0	0	0	0	0	0	0	0	0	0	3,948
FY-17	0	0	0	0	0	0	0	0	0	0	0	3,948
FY-18	0	0	0	0	0	0	0	0	0	0	0	3,948
Thereafter	0	0	0	0	0	0	0	0	0	0	0	3,948
<b>TOTAL</b>	<b>11,445,533</b>	<b>290,664</b>	<b>1,095,480</b>	<b>0</b>	<b>4,797,000</b>	<b>6,188,144</b>	<b>5,282,389</b>	<b>489,402</b>	<b>1,670,545</b>	<b>7,899,441</b>	<b>3,948,474</b>	<b>3,948,474</b>

NPV



## Industry Net Present Value



PD, PD-NP, PUD plus Unproven Before Federal Income Tax

Period	Revenue										Costs										Future Net Income											
	Production					Sales					Gross Profit					Expenses					Net Revenue before Bonuses					Cumulative						
	Units	Cost	Revenue	Profit	Margin	Units	Cost	Revenue	Profit	Margin	Units	Cost	Revenue	Profit	Margin	Units	Cost	Revenue	Profit	Margin	Units	Cost	Revenue	Profit	Margin	Units	Cost	Revenue	Profit	Margin		
Oct '96	4,530	21,553	10,230	84,106	25.984	3,171	112,968	0	0	0	10,230	113,206	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Nov '96	4,530	21,553	10,230	84,106	25.984	3,171	113,206	0	0	0	10,230	113,446	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Dec '96	4,530	21,553	10,230	84,227	25.984	3,171	113,446	0	0	0	10,230	113,687	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Jan '97	4,530	21,553	10,230	84,432	25.984	3,191	113,687	0	0	0	10,230	114,005	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Feb '97	4,530	21,553	10,230	84,635	26.105	3,197	113,927	0	0	0	10,230	114,169	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Mar '97	4,530	21,553	10,230	84,799	26.166	3,204	114,169	0	0	0	10,230	114,411	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Apr '97	4,530	21,553	10,230	84,973	26.127	3,211	114,411	0	0	0	10,230	114,583	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
May '97	4,530	21,553	10,230	85,148	26.268	3,218	114,853	0	0	0	10,230	114,896	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Jun '97	4,530	21,553	10,230	85,323	26.349	3,224	115,896	0	0	0	10,230	115,438	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Jul '97	4,530	21,553	10,230	85,498	26.410	3,230	115,438	0	0	0	10,230	115,971	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Aug '97	4,530	21,553	10,230	85,673	26,533	3,237	115,971	0	0	0	10,230	116,526	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Sep '97	54,555	268,636	122,756	1,018,637	314,965	3,171	1,371,510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
FY '97	54,555	268,636	122,756	1,018,637	314,965	3,171	1,371,510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct '97	3,957	17,751	8,332	75,156	21,903	2,647	99,706	0	0	0	10,230	99,917	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
Nov '97	3,957	17,751	8,332	75,495	22,005	2,658	100,138	0	0	0	10,230	100,340	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Dec '97	3,957	17,751	8,332	75,630	22,056	2,664	100,340	0	0	0	10,230	100,553	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Jan '98	3,957	17,751	8,332	75,730	22,096	2,668	100,553	0	0	0	10,230	100,765	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Feb '98	3,957	17,751	8,332	75,736	22,108	2,668	100,765	0	0	0	10,230	100,978	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Mar '98	3,957	17,751	8,332	75,931	22,159	2,675	101,192	0	0	0	10,230	101,306	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Apr '98	3,957	17,751	8,332	76,087	22,211	2,680	101,192	0	0	0	10,230	101,314	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
May '98	3,957	17,751	8,332	76,400	22,262	2,686	101,620	0	0	0	10,230	101,834	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Jun '98	3,957	17,751	8,332	76,537	22,366	2,687	101,834	0	0	0	10,230	102,045	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Jul '98	3,957	17,751	8,332	76,714	22,418	2,692	101,834	0	0	0	10,230	102,050	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Aug '98	3,957	17,751	8,332	76,872	22,470	2,697	102,050	0	0	0	10,230	102,488	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234		
Sep '98	47,487	213,010	99,983	912,132	268,226	32,130	1,210,488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FY '98	40,009	178,009	113,626	48,092	806,300	149,375	16,180	772,055	0	0	0	10,230	772,055	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234
FY-1	26,450	102,760	40,748	543,907	138,478	14,020	696,755	0	0	0	10,230	696,755	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-2	24,146	94,355	36,882	507,875	130,747	12,908	651,457	0	0	0	10,230	651,457	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-3	21,414	82,552	29,709	460,636	117,266	10,691	588,533	0	0	0	10,230	588,533	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-4	18,804	71,398	22,985	413,674	103,941	8,452	526,507	0	0	0	10,230	526,507	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-5	17,129	64,015	18,276	385,319	9,868	4,878	487,926	0	0	0	10,230	487,926	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-6	15,958	59,527	16,907	367,317	9,427	5,508	464,852	0	0	0	10,230	464,852	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-7	14,874	55,360	15,656	330,010	8,040	6,161	443,211	0	0	0	10,230	443,211	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-8	13,912	51,628	13,455	324,804	8,359	6,850	423,913	0	0	0	10,230	423,913	10,230	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,230	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	10,234	
FY-9	12,948	47,889	13,425</td																													

PPD		PRODUCTION		PRICES		GROSS REVENUE		COSTS		Net Revenue		Cumulative		Future Net Income	
Oct-86	4,830	21,553	10,230	\$18.53	\$120	\$0.31	\$1,333	3,171	112,868	3,178	113,446	\$2,533	\$2,533	\$107,715	\$107,715
Nov-86	4,830	21,553	10,230	\$18.57	\$120	\$0.31	\$1,333	3,171	112,868	3,178	113,446	\$2,533	\$2,533	\$107,955	\$214
Dec-86	4,830	21,553	10,230	\$18.61	\$120	\$0.31	\$1,333	3,171	112,868	3,194	113,687	\$2,533	\$2,533	\$108,434	\$105,157
Jan-87	4,830	21,553	10,230	\$18.64	\$120	\$0.31	\$1,333	3,171	112,868	3,210	113,927	\$2,533	\$2,533	\$103,902	\$423
Feb-87	4,830	21,553	10,230	\$18.68	\$120	\$0.31	\$1,333	3,171	112,868	3,226	114,167	\$2,533	\$2,533	\$102,660	\$326
Mar-87	4,830	21,553	10,230	\$18.72	\$120	\$0.31	\$1,333	3,171	112,868	3,242	114,407	\$2,533	\$2,533	\$101,135	\$627
Apr-87	4,830	21,553	10,230	\$18.76	\$120	\$0.31	\$1,333	3,171	112,868	3,258	114,647	\$2,533	\$2,533	\$100,124	\$728
May-87	4,830	21,553	10,230	\$18.80	\$120	\$0.31	\$1,333	3,171	112,868	3,274	114,887	\$2,533	\$2,533	\$99,027	\$107,715
Jun-87	4,830	21,553	10,230	\$18.84	\$120	\$0.31	\$1,333	3,171	112,868	3,290	115,127	\$2,533	\$2,533	\$97,844	\$97,844
Jul-87	4,830	21,553	10,230	\$18.88	\$120	\$0.31	\$1,333	3,171	112,868	3,306	115,367	\$2,533	\$2,533	\$96,643	\$924
Aug-87	4,830	21,553	10,230	\$18.91	\$120	\$0.31	\$1,333	3,171	112,868	3,322	115,607	\$2,533	\$2,533	\$108,885	\$1,021
Sep-87	4,830	21,553	10,230	\$18.95	\$120	\$0.31	\$1,333	3,171	112,868	3,338	115,847	\$2,533	\$2,533	\$110,323	\$117
FY-87	54,355	258,636	122,759	\$18.95	\$120	\$0.31	\$1,333	3,171	112,868	3,354	116,087	\$2,533	\$2,533	\$10,373	\$1,211
Oct-87	3,987	17,751	8,332	\$18.99	\$123	\$0.32	\$1,333	3,171	94,705	2,647	94,705	0	0	\$1,210,567	\$1,210,567
Nov-87	3,987	17,751	8,332	\$19.03	\$123	\$0.32	\$1,333	3,171	94,705	2,653	94,705	0	0	\$1,403	\$1,403
Dec-87	3,987	17,751	8,332	\$19.07	\$123	\$0.32	\$1,333	3,171	94,705	2,659	94,705	0	0	\$1,381	\$1,381
Jan-88	3,987	17,751	8,332	\$19.11	\$123	\$0.32	\$1,333	3,171	94,705	2,665	94,705	0	0	\$1,359	\$1,359
Feb-88	3,987	17,751	8,332	\$19.15	\$123	\$0.32	\$1,333	3,171	94,705	2,671	94,705	0	0	\$1,337	\$1,337
Mar-88	3,987	17,751	8,332	\$19.19	\$123	\$0.32	\$1,333	3,171	94,705	2,677	94,705	0	0	\$1,315	\$1,315
Apr-88	3,987	17,751	8,332	\$19.23	\$123	\$0.32	\$1,333	3,171	94,705	2,683	94,705	0	0	\$1,293	\$1,293
May-88	3,987	17,751	8,332	\$19.27	\$123	\$0.32	\$1,333	3,171	94,705	2,689	94,705	0	0	\$1,271	\$1,271
Jun-88	3,987	17,751	8,332	\$19.31	\$123	\$0.32	\$1,333	3,171	94,705	2,695	94,705	0	0	\$1,249	\$1,249
Jul-88	3,987	17,751	8,332	\$19.35	\$123	\$0.32	\$1,333	3,171	94,705	2,701	94,705	0	0	\$1,227	\$1,227
Aug-88	3,987	17,751	8,332	\$19.39	\$123	\$0.32	\$1,333	3,171	94,705	2,707	94,705	0	0	\$1,205	\$1,205
Sep-88	3,987	17,751	8,332	\$19.43	\$123	\$0.32	\$1,333	3,171	94,705	2,713	94,705	0	0	\$1,183	\$1,183
FY-88	47,487	213,010	96,983	\$18.95	\$120	\$0.31	\$1,333	3,171	94,705	2,719	94,705	0	0	\$1,161	\$1,161
FY-89	40,009	178,009	78,633	\$18.99	\$123	\$0.32	\$1,333	3,171	786,728	22,457	786,728	0	0	\$1,034,432	\$1,034,432
FY-89	30,149	113,626	48,082	\$20.11	\$120	\$0.31	\$1,333	3,171	608,049	149,575	608,049	0	0	\$99,950	\$99,950
FY-89	26,450	102,759	40,748	\$20.57	\$120	\$0.31	\$1,333	3,171	608,049	149,575	608,049	0	0	\$4,547	\$4,547
FY-89	24,146	94,345	36,642	\$21.03	\$120	\$0.31	\$1,333	3,171	608,049	150,175	608,049	0	0	\$1,592	\$1,592
FY-89	21,414	92,652	32,719	\$21.51	\$120	\$0.31	\$1,333	3,171	608,049	150,775	608,049	0	0	\$4,057	\$4,057
FY-89	20,804	71,338	22,965	\$22.00	\$120	\$0.31	\$1,333	3,171	608,049	151,375	608,049	0	0	\$1,026	\$1,026
FY-89	17,129	64,015	18,276	\$22.50	\$120	\$0.31	\$1,333	3,171	608,049	151,975	608,049	0	0	\$1,540	\$1,540
FY-89	59,527	16,907	23,010	\$23.00	\$123	\$0.32	\$1,333	3,171	608,049	152,575	608,049	0	0	\$1,016	\$1,016
FY-89	14,874	55,360	15,650	\$23.53	\$120	\$0.31	\$1,333	3,171	608,049	153,175	608,049	0	0	\$1,584	\$1,584
FY-89	13,612	51,676	14,520	\$24.07	\$120	\$0.31	\$1,333	3,171	608,049	153,775	608,049	0	0	\$1,642	\$1,642
FY-89	12,918	47,889	12,442	\$24.61	\$120	\$0.31	\$1,333	3,171	608,049	154,375	608,049	0	0	\$1,700	\$1,700
FY-89	12,081	44,852	12,442	\$25.17	\$120	\$0.31	\$1,333	3,171	608,049	154,975	608,049	0	0	\$1,758	\$1,758
FY-89	11,286	41,452	11,637	\$25.74	\$120	\$0.31	\$1,333	3,171	608,049	155,575	608,049	0	0	\$1,816	\$1,816
FY-89	10,585	38,873	10,730	\$26.33	\$120	\$0.31	\$1,333	3,171	608,049	156,175	608,049	0	0	\$1,874	\$1,874
FY-89	9,888	35,886	9,928	\$26.92	\$120	\$0.31	\$1,333	3,171	608,049	156,775	608,049	0	0	\$1,932	\$1,932
FY-89	9,229	33,307	9,216	\$27.54	\$120	\$0.31	\$1,333	3,171	608,049	157,375	608,049	0	0	\$1,990	\$1,990
FY-89	8,683	31,004	8,556	\$28.16	\$120	\$0.31	\$1,333	3,171	608,049	157,975	608,049	0	0	\$2,048	\$2,048
FY-89	8,100	29,009	7,809	\$28.80	\$120	\$0.31	\$1,333	3,171	608,049	158,575	608,049	0	0	\$2,106	\$2,106
FY-89	0	0	0	\$29.45	\$120	\$0.31	\$1,333	3,171	608,049	159,175	608,049	0	0	\$2,164	\$2,164
Thereafter	0	0	0	\$30.12	\$120	\$0.31	\$1,333	3,171	608,049	159,775	608,049	0	0	\$2,222	\$2,222
Total	407,735	1,646,758	839,737	\$30.81	\$120	\$0.31	\$1,333	3,171	8,675,986	2,346,034	8,675,986	0	0	\$245,385	\$245,385
															\$4,829,117

PD-NP NDR	PRODUCTION	GROSS REVENUE												COSTS												Future Net Income																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
PRICES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	8010	8011	8012	8013	8014	8015	8016	8017	8018	8019	8020	8021	8022	8023	8024	8025	8026	8027	8028	8029	8030	8031	8032	8033	8034	8035	8036	8037	8038	8039	8040	8041	8042	8043	8044	8045	8046	8047	8048	8049	8050	8051	8052	8053	8054	8055	8056	8057	8058	8059	8060	8061	8062	8063	8064	8065	8066	8067	8068	8069	8070	8071	8072	8073	8074	8075	8076	8077	8078	8079	8080	8081	8082	8083	8084	8085	8086	8087	8088	8089	8090	8091	8092	8093	8094	8095	8096	8097	8098	8099	80100	80101	80102	80103	80104	80105	80106	80107	80108	80109	80110	80111	80112	80113	80114	80115	80116	80117	80118	80119	80120	80121	80122	80123	80124	80125	80126	80127	80128	80129	80130	80131	80132	80133	80134	80135	80136	80137	80138	80139	80140	80141	80142	80143	80144	80145	80146	80147	80148	80149	80150	80151	80152	80153	80154	80155	80156	80157	80158	80159	80160	80161	80162	80163	80164	80165	80166	80167	80168	80169	80170	80171	80172	80173	80174	80175	80176	80177	80178	80179	80180	80181	80182	80183	80184	80185	80186	80187	80188	80189	80190	80191	80192	80193	80194	80195	80196	80197	80198	80199	80200	80201	80202	80203	80204	80205	80206	80207	80208	80209	80210	80211	80212	80213	80214	80215	80216	80217	80218	80219	80220	80221	80222	80223	80224	80225	80226	80227	80228	80229	80230	80231	80232	80233	80234	80235	80236	80237	80238	80239	80240	80241	80242	80243	80244	80245	80246	80247	80248	80249	80250	80251	80252	80253	80254	80255	80256	80257	80258	80259	80260	80261	80262	80263	80264	80265	80266	80267	80268	80269	80270	80271	80272	80273	80274	80275	80276	80277	80278	80279	80280	80281	80282	80283	80284	80285	80286	80287	80288	80289	80290	80291	80292	80293	80294	80295	80296	80297	80298	80299	80300	80301	80302	80303	80304	80305	80306	80307	80308	80309	80310	80311	80312	80313	80314	80315	80316	80317	80318	80319	80320	80321	80322	80323	80324	80325	80326	80327	80328	80329	80330	80331	80332	80333	80334	80335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## Cash Flows

PUD	PRODUCTION		PRICES		GROSS REVENUE		COSTS		NET REVENUE		Future Net Income	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Oct-96	0.00	0.00	\$18.53	\$1.20	\$0.31	\$0.20	0.00	0.00	0.00	0.00	0.00	0.00
Nov-96	0.00	0.00	\$18.57	\$1.21	\$0.31	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Dec-96	0.00	0.00	\$18.61	\$1.21	\$0.31	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Jan-97	0.00	0.00	\$18.64	\$1.21	\$0.31	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Feb-97	0.00	0.00	\$18.68	\$1.21	\$0.31	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Mar-97	0.00	0.00	\$18.72	\$1.21	\$0.31	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Apr-97	0.00	0.00	\$18.76	\$1.22	\$0.31	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
May-97	0.00	0.00	\$18.80	\$1.22	\$0.31	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Jun-97	0.00	0.00	\$18.84	\$1.23	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Jul-97	0.00	0.00	\$18.88	\$1.23	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Aug-97	0.00	0.00	\$18.91	\$1.23	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Sep-97	0.00	0.00	\$18.95	\$1.23	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
FY-97	0.00	0.00	\$18.99	\$1.23	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Oct-97	0.00	0.00	\$19.03	\$1.24	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Nov-97	0.00	0.00	\$19.07	\$1.24	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Dec-97	0.00	0.00	\$19.11	\$1.24	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Jan-98	0.00	0.00	\$19.15	\$1.25	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Feb-98	0.00	0.00	\$19.19	\$1.25	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Mar-98	0.00	0.00	\$19.23	\$1.25	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Apr-98	0.00	0.00	\$19.27	\$1.25	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
May-98	0.00	0.00	\$19.31	\$1.26	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Jun-98	0.00	0.00	\$19.35	\$1.26	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Jul-98	0.00	0.00	\$19.39	\$1.26	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Aug-98	0.00	0.00	\$19.43	\$1.27	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Sep-98	0.00	0.00	\$19.47	\$1.27	\$0.32	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
FY-98	0.00	0.00	\$19.51	\$1.28	\$0.33	\$0.21	0.00	0.00	0.00	0.00	0.00	0.00
Oct-98	0.00	0.00	\$20.11	\$1.32	\$0.34	\$0.34	0.00	0.00	0.00	0.00	0.00	0.00
FY-1	0.00	0.00	\$21.03	\$1.38	\$0.35	\$0.34	0.00	0.00	0.00	0.00	0.00	0.00
FY-2	0.00	0.00	\$21.51	\$1.42	\$0.36	\$0.38	0.00	0.00	0.00	0.00	0.00	0.00
FY-3	0.00	0.00	\$22.00	\$1.46	\$0.37	\$0.42	0.00	0.00	0.00	0.00	0.00	0.00
FY-4	0.00	0.00	\$22.50	\$1.49	\$0.38	\$0.44	0.00	0.00	0.00	0.00	0.00	0.00
FY-5	0.00	0.00	\$23.01	\$1.53	\$0.38	\$0.45	0.00	0.00	0.00	0.00	0.00	0.00
FY-6	0.00	0.00	\$23.53	\$1.57	\$0.39	\$0.46	0.00	0.00	0.00	0.00	0.00	0.00
FY-7	0.00	0.00	\$24.07	\$1.61	\$0.40	\$0.47	0.00	0.00	0.00	0.00	0.00	0.00
FY-8	0.00	0.00	\$24.61	\$1.65	\$0.41	\$0.48	0.00	0.00	0.00	0.00	0.00	0.00
FY-9	0.00	0.00	\$25.17	\$1.70	\$0.42	\$0.49	0.00	0.00	0.00	0.00	0.00	0.00
FY-10	0.00	0.00	\$25.74	\$1.74	\$0.43	\$0.50	0.00	0.00	0.00	0.00	0.00	0.00
FY-11	0.00	0.00	\$26.33	\$1.78	\$0.44	\$0.51	0.00	0.00	0.00	0.00	0.00	0.00
FY-12	0.00	0.00	\$26.92	\$1.83	\$0.45	\$0.52	0.00	0.00	0.00	0.00	0.00	0.00
FY-13	0.00	0.00	\$27.54	\$1.88	\$0.46	\$0.53	0.00	0.00	0.00	0.00	0.00	0.00
FY-14	0.00	0.00	\$28.16	\$1.93	\$0.47	\$0.54	0.00	0.00	0.00	0.00	0.00	0.00
FY-15	0.00	0.00	\$28.80	\$1.98	\$0.48	\$0.55	0.00	0.00	0.00	0.00	0.00	0.00
FY-16	0.00	0.00	\$29.45	\$2.03	\$0.49	\$0.56	0.00	0.00	0.00	0.00	0.00	0.00
FY-17	0.00	0.00	\$30.12	\$2.08	\$0.50	\$0.57	0.00	0.00	0.00	0.00	0.00	0.00
FY-18	0.00	0.00	\$30.61	\$2.13	\$0.51	\$0.58	0.00	0.00	0.00	0.00	0.00	0.00
Theater	0.00	0.00										
Total	0.00	0.00										

Unproven Prod. N <sup>o</sup>	Production	Prices	Unproven Gross Revenue			Unproven Costs			Future Net Income		
			Q1 '96	Q2 '96	Q3 '96	Q1 '97	Q2 '97	Q3 '97	Net Revenue	Cumulative 2000	Discounted \$17.20%
Oct-96	0	0	\$18.53	\$120	\$3.31	0	0	0	\$0	\$0	\$0
Nov-96	0	0	\$18.61	\$121	\$3.31	0	0	0	\$0	\$0	\$0
Dec-96	0	0	\$18.64	\$121	\$3.31	0	0	0	\$0	\$0	\$0
Jan-97	0	0	\$18.68	\$121	\$3.31	0	0	0	\$0	\$0	\$0
Feb-97	0	0	\$18.72	\$121	\$3.31	0	0	0	\$0	\$0	\$0
Mar-97	0	0	\$18.76	\$122	\$3.31	0	0	0	\$0	\$0	\$0
Apr-97	0	0	\$18.80	\$122	\$3.31	0	0	0	\$0	\$0	\$0
May-97	0	0	\$18.84	\$122	\$3.32	0	0	0	\$0	\$0	\$0
Jun-97	0	0	\$18.88	\$123	\$3.32	0	0	0	\$0	\$0	\$0
Jul-97	0	0	\$18.91	\$123	\$3.32	0	0	0	\$0	\$0	\$0
Aug-97	0	0	\$18.95	\$123	\$3.32	0	0	0	\$0	\$0	\$0
Sep-97	0	0	\$18.99	\$123	\$3.32	0	0	0	\$0	\$0	\$0
Oct-97	0	0	\$19.03	\$124	\$3.32	0	0	0	\$0	\$0	\$0
Nov-97	0	0	\$19.07	\$124	\$3.32	0	0	0	\$0	\$0	\$0
Dec-97	0	0	\$19.11	\$124	\$3.32	0	0	0	\$0	\$0	\$0
Jan-98	0	0	\$19.15	\$125	\$3.32	0	0	0	\$0	\$0	\$0
Feb-98	0	0	\$19.19	\$125	\$3.32	0	0	0	\$0	\$0	\$0
Mar-98	0	0	\$19.23	\$125	\$3.32	0	0	0	\$0	\$0	\$0
Apr-98	0	0	\$19.27	\$125	\$3.32	0	0	0	\$0	\$0	\$0
May-98	0	0	\$19.31	\$126	\$3.32	0	0	0	\$0	\$0	\$0
Jun-98	0	0	\$19.35	\$126	\$3.32	0	0	0	\$0	\$0	\$0
Jul-98	0	0	\$19.39	\$126	\$3.32	0	0	0	\$0	\$0	\$0
Aug-98	0	0	\$19.43	\$127	\$3.32	0	0	0	\$0	\$0	\$0
Sep-98	0	0	\$19.46	\$128	\$3.33	0	0	0	\$0	\$0	\$0
FY-98	0	0	\$20.11	\$132	\$3.34	0	0	0	\$0	\$0	\$0
FY-99	0	0	\$20.57	\$135	\$3.34	0	0	0	\$0	\$0	\$0
FY-1	0	0	\$21.03	\$138	\$3.35	0	0	0	\$0	\$0	\$0
FY-2	0	0	\$21.51	\$142	\$3.36	0	0	0	\$0	\$0	\$0
FY-3	0	0	\$22.00	\$146	\$3.37	0	0	0	\$0	\$0	\$0
FY-4	0	0	\$22.50	\$149	\$3.38	0	0	0	\$0	\$0	\$0
FY-5	0	0	\$23.01	\$153	\$3.38	0	0	0	\$0	\$0	\$0
FY-6	0	0	\$23.53	\$157	\$3.39	0	0	0	\$0	\$0	\$0
FY-7	0	0	\$24.07	\$161	\$3.40	0	0	0	\$0	\$0	\$0
FY-8	0	0	\$24.61	\$165	\$3.41	0	0	0	\$0	\$0	\$0
FY-9	0	0	\$25.17	\$170	\$3.42	0	0	0	\$0	\$0	\$0
FY-10	0	0	\$25.74	\$174	\$3.43	0	0	0	\$0	\$0	\$0
FY-11	0	0	\$26.33	\$178	\$3.44	0	0	0	\$0	\$0	\$0
FY-12	0	0	\$26.92	\$183	\$3.45	0	0	0	\$0	\$0	\$0
FY-13	0	0	\$27.54	\$188	\$3.46	0	0	0	\$0	\$0	\$0
FY-14	0	0	\$28.16	\$193	\$3.47	0	0	0	\$0	\$0	\$0
FY-15	0	0	\$28.80	\$198	\$3.48	0	0	0	\$0	\$0	\$0
FY-16	0	0	\$29.45	\$203	\$3.48	0	0	0	\$0	\$0	\$0
FY-17	0	0	\$30.12	\$208	\$3.48	0	0	0	\$0	\$0	\$0
FY-18	0	0	\$30.81	\$213	\$3.49	0	0	0	\$0	\$0	\$0
Thereafter	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0

**Surface and Mineral Leasing and Maintenance**

NPR-2 Sale Case	Maintenance Costs		Leasing Program							
	Annual	NPV @ 7.00%	Surface Income	NPV @ 13.20%	Ongoing Rentals	Bonus	First Sale Rentals	Costs	Total Revenue	NPV @ 13.20%
FY97	0	0	0	0	480	7,904	2,371	(1,560)	9,195	8,642
FY98	0	0	0	0	480		2,371	0	2,851	2,367
FY99	0	0	0	0	480		2,371	0	2,851	2,091
FY00	0	0	0	0	480		2,371	0	2,851	1,847
FY1	0	0	0	0	480		2,371	0	2,851	1,632
FY2	0	0	0	0	480		3,162	0	3,642	1,841
FY3	0	0	0	0	480		3,162	0	3,642	1,627
FY4	0	0	0	0	480		3,162	0	3,642	1,437
FY5	0	0	0	0	480		3,162	0	3,642	1,269
FY6	0	0	0	0	480		3,162	0	3,642	1,121
FY7	0	0	0	0	480		0	480	131	
FY8	0	0	0	0	480	7,904	2,371	(1,560)	9,195	2,210
FY9	0	0	0	0	480		2,371	0	2,851	605
FY10	0	0	0	0	480		2,371	0	2,851	535
FY11	0	0	0	0	480		2,371	0	2,851	472
FY12	0	0	0	0	480		2,371	0	2,851	417
FY13	0	0	0	0	480		3,162	0	3,642	471
FY14	0	0	0	0	480		3,162	0	3,642	416
FY15	0	0	0	0	480		3,162	0	3,642	367
FY16	0	0	0	0	480		3,162	0	3,642	325
FY17	0	0	0	0	480		3,162	0	3,642	287
FY18	0	0	0	0	480		0	480	33	
FY19	0	0	0	0	480	7,904	2,371	(1,560)	9,195	565
FY20	0	0	0	0	480		2,371	0	2,851	155
FY21	0	0	0	0	480		2,371	0	2,851	137
FY22	0	0	0	0	480		2,371	0	2,851	121
FY23	0	0	0	0	480		2,371	0	2,851	107
FY24	0	0	0	0	480		3,162	0	3,642	120
FY25	0	0	0	0	480		3,162	0	3,642	106
FY26	0	0	0	0	480		3,162	0	3,642	94
FY27	0	0	0	0	480		3,162	0	3,642	83
FY28	0	0	0	0	480		3,162	0	3,642	73
<b>TOTAL</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$15,360</b>	<b>\$23,712</b>	<b>\$82,992</b>	<b>(\$4,680)</b>	<b>\$117,384</b>	<b>\$31,706</b>

**Known**

2,080 acres in NPR-2 w/o mineral leases  
76% of acres offered for leased were actually taken.  
100% of bonus and rentals go to the lessor.

**Assumed**

BLM can lease it in FY97.  
\$30,000 Environmental costs required.

\$5.00 initial bonus per acre  
\$1.50 rental per bonus first 5 yrs  
\$2.00 rental per bonus second 5 yrs  
\$100 per year in surface leases

\$0 annual costs to maintain fee property  
\$1,560 Lease sale expenses @ \$0.75/acre.

	Value to DOE	
	(\$)	(\$/acre)
Maintenanc	0	0.00
Surface Inc	0	0.00
Mineral Inc.	31,706	15.24
NEPA cost	(28,197)	(13.56)
<b>Total</b>	<b>\$3,509</b>	<b>\$1.69</b>

## **APPENDIX D**

### **DETAILED ROYALTY CALCULATIONS**

## **APPENDIX E**

### **DISCUSSION OF DISCOUNT RATES**

## DISCUSSION OF DISCOUNT RATES

### Concept of Discounting Cashflow vs. Market Values

Although the concept of discounting is widely accepted, the selection of the appropriate discount rate has been the source of considerable debate and much disagreement. Gustavson Associates, for the purposes of valuing the NPR-2 & 3 as well as NOSR-1,2 & 3 properties, applied different discount rates to the different sites due to (a) the relative risk associated with developing and producing them and (b) the different ownership and operator under the retention and sale scenarios. These discount rates were built up as described in detail below.

Gustavson Associates have studied the market for producing oil and gas properties. It has been found that recent market transactions (sales and purchases) have recently been conducted at net present values of the future cashflows determined at discount rates in the 17 to 18 percent range. These rates are applied on a pre-tax basis and to a cashflow based on nominal oil prices. At the same time the weighted cost of capital has been 10 to 11 percent.

Further, it has been found that the market discount rate has been varying over the last decade as a direct function of the weighted cost of capital for the oil sector. For example, in the early to mid-1980s during high inflation rates and with the cost of capital being in the 15 percent range, producing properties sold at discount rates around 22 to 23 percent, again a mark-up of about 7 percent.

It is apparent that the oil sector in general requires a reasonable reward or profit corresponding to about seven percentage points for taking the risk of putting its capital to work. The same seven point mark-up for risk has also been experienced in other extractive industries of high unit-value commodities such as copper. Interviews with financial executives have revealed that these industries target their internal rate of return at the same general level, namely 17 to 18 percent. They discount at higher rates for more risky properties such as non-producing reserves and at lower discount rates for less risky (thereby buying at higher purchase prices).

We have analyzed these seven percentage points which the oil sector wants to realize above and beyond the return of its capital, with interest. But first, we will discuss the cost of capital.

### COST OF CAPITAL

Cost of capital rates vary, but can be generalized for particular industries. This is the case with the oil industry, where the cost of capital as surveyed by the Society of Petroleum Evaluation Engineers (SPEE) is averaging 10.2 percent in 1996 (Spring). This number is weighted for debt at 30 percent. On the other hand, it was hypothesized that the government's cost of capital should approximate Treasury bill rates, that is, be weighted as 100 percent debt. Further, the financial industry will normally not make commercial oil loans much past five years due to oilfield reserve half-life generally being around five years. A rate of 6.5 percent (an average of the 5-year U.S. Treasury-bill interest rate over the last several years) was considered appropriate for this analysis. That rate (6.5 percent) is readily reconciled with the 7 percent suggested as a fall-back by the OM&B.

As mentioned above, producing U.S. oil properties sell at 7 percent above the industry cost of capital. We make the assumption that the Federal Government will be exposed to the same risks as an oil operator as will a large oil company.

In this Consultant's opinion, this risk associated with oil and gas production can be further summarized as follows. The risks relate to the realization of the predicted cashflow. Cashflow (net revenue before income taxes) is predominantly the produced net quantity of oil or gas multiplied by the market prices of the commodity less the operating cost. Local taxes play less of a role. Therefore, there are three risk categories inherent in oil and gas production, namely market price risk, operating cost risk, and production rate (quantity) risk. Market price risk is that risk associated with the rise and fall of oil and/or gas prices worldwide, in the operating region or both. The second category, operating cost risk, is that risk associated with the fluctuations in the cost of operations. Finally, there is production rate or engineering risks inherent in any oil and gas project, namely that risk associated with the ability to forecast and meet a specific rate of production subject to reservoir dynamics.

Based on market research, these various subcategories of risks have been broadly quantified as follows: market price risk weighs heavily and makes up about 3 percent of the total of 7 percent while operating cost and production rate risks are approximately 2 percent each.

A few market examples help support the numbers presented above. The 2 percent adjustment for operating cost risk can be clearly seen through the following example. Oil company and other investors are often given the choice between purchasing full working interest in a particular property, or merely a royalty interest in a producing property. Full working interest indicates that the investor will be responsible for all costs and will share in the net revenue interest from the production. A royalty interest conveys the right to receive oil or cash from the production without being responsible for any operating cost. Therefore, royalty interests usually sell at a 15 percent discount rate or expected rate of return), while total working interests sell at 17 percent discount rates as discussed above. This 2 percent difference represents the market's operating cost risk adjustment. In other words, when there is no operating cost risk the market values a producing property at a higher value corresponding to a 2 percent reduction in the discount rate.

Production rate risk can be quantified by comparing the oil industry with another extractive industry, where the rate of production of the commodity is rarely a factor, for instance, the aggregate industry. Only sand and gravel price and cost of production and transportation are major risks and not reserves or short-term rates of production. Aggregate industry operators usually experience a discount rate of around 15 percent for discounting the net cashflows associated with an operating mine or quarry. Production rate risk is again the difference between these two numbers, namely 2 percent.

Finally, the remaining three percent can in discount rate adjustment for risks be attributed to price risk. This is further proved by looking at the newly formed oil and gas derivatives market. A knowledgeable investor who understands and has experience in the derivative markets can nearly eliminate all market price risk associated with oil and gas investments, by locking into a set price for the commodity well into the future. This has had a profound effect on the valuation of oil and gas properties; the cumulative effect of efficiently using derivatives to hedge against price

fluctuations has increased the value of subject properties by about 3 percent (when applied to future net cash flow) lending further proof to the discussion above.

A summation of the three major risk factors and their corresponding effect on discounted present value yield a total of a 7 percent adjustment, equal to the difference between cost of capital and market price.

#### APPLICATION TO DOE STUDY

The composition of both the public (government) and private (US oil company) discount rates used in the DOE study are summarized in Table E-1. All of the specific discount rates used in the study for all of the different properties are summarized under different use scenarios in Table E-2. As discussed throughout the DOE study, Gustavson Associates studies four general scenarios available to the DOE for each of the five properties. The property could be retained by DOE (Scenario 1), the property could be transferred to the DOI for leasing by the BLM (Scenario 2), or to another department or agency (Scenario 3) or the property could be sold outright to the private sector (Scenario 4). For purposes of discounting future cashflow (income and expenses), Scenarios 2 and 3 can be treated as one.

Table E-2 includes eight different "income" categories for all five properties (not all are applicable to all properties), and one expense category (surface maintenance) with varying discount rates applied depending on the characteristics of the property and the owner. Each category as well as its determined discount rate can be explained as follows:

**"Royalties"** is defined as that royalty income to be received by the DOE or another government agency/department (only possible under Scenarios 1, 2 and/or 3 and/or for NPR-2, NPR-3 and NOSR-3), from existing and future production on a property currently operated by a third party; thus only those properties which are currently producing or predicted to produce are applicable. The appropriate rate to be used to discount this expected income stream would be the government's or public sector cost of capital (6.5

**TABLE E-1 COMPOSITION OF A DISCOUNT RATE**

<b>DISCOUNT RATE COMPONENT</b>	<b>ENTITY TYPE</b>	
	<b>PUBLIC (US GOVERNMENT)</b>	<b>PRIVATE (US OIL COMPANY)</b>
<b>COST OF CAPITAL</b>	6.50%	10.20%
<b>PROJECT RISK:</b>		
<b>PRICE RISK</b>	3.00%	3.00%
<b>OPERATING COST RISK</b>	2.00%	2.00%
<b>PRODUCTION RATE</b>	2.00%	2.00%
<b>TOTALS</b>	<b>13.50%</b>	<b>17.20%</b>

**TABLE E-2 DISCOUNT RATE SUMMARY**

		SCENARIO		
INCOME CATEGORY		(1) RETENTION	(2) and (3) LEASING	(4) SALE
NPR-2	Royalties	11.5	11.5	N/A
	Surface Maintenance	7	7	N/A
	Grazing	N/A	10	13.2
	Income Taxes	N/A	N/A	13.5
	Mineral Leasing (Bonuses & Rentals)	N/A	10	13.2
	Rental of Existing Leases	10	10	13.2
	Royalties (to Estimate Bonus/Sale Price)	N/A	N/A	15.2
NPR-3	Production	13.5	N/A	N/A
	Grazing	10	10	13.2
	Income Taxes	N/A	13.5	13.5
	Mineral Leasing (Bonuses & Rentals)	N/A	10	13.2
	Royalties	N/A	11.5	N/A
	Production (to Estimate Bonus/Sale Price)	N/A	17.2	17.2
NOSR-2	Royalties	N/A	N/A	N/A
	Surface Maintenance	7	7	N/A
	Grazing	10	10	13.2
	Income Taxes	N/A	N/A	N/A
	Mineral Leasing (Bonuses & Rentals)	N/A	10	13.2
	Rental of Existing Leases	N/A	N/A	N/A
NOSR-1	Production	N/A	N/A	N/A
	Surface Maintenance	7	7	N/A
	Grazing	10	10	13.2
	Income Taxes	N/A	N/A	N/A
	Mineral Leasing (Bonuses & Rentals)	N/A	10	13.2
	Royalties	N/A	N/A	N/A
	Production (to Estimate Bonus/Sale Price)	N/A	N/A	N/A
NOSR-3	Production	13.5	N/A	N/A
	Surface Maintenance	7	7	N/A
	Grazing	10	10	13.2
	Income Taxes	N/A	13.5	13.5
	Mineral Leasing (Bonuses & Rentals)	N/A	10	13.5
	Royalties	N/A	11.5	N/A
	Production (to Estimate Bonus/Sale Price)	N/A	17.2	17.2

percent, see above) plus price risk (3 percent) and production rate risk (2 percent) which relate to the amount of royalty. The total adjusted discount rate equals 11.5 percent total. Since DOE would not operate these properties, its royalty revenue is not subject to operating cost risk.

**"Royalties (to estimate bonus/sale price)"**, is the same royalty income as above; however, the property has been sold to the private sector (not the public sector) (Scenario 4 - only for NPR-2), and thus should be discounted as an investment from the private sector's perspective. Thus, instead of starting at the public sector's cost of capital, we start with the private sector's (10.2 percent, see above) and add price and production rate risks (3 and 2 percent, respectively) which equals a total of 15.2 percent. This revenue is likewise not subject to any operating cost risk.

**"Grazing"**, is considered income received by allowing ranchers grazing privileges for their livestock (Scenarios 1,2, 3 and 4 applied to all properties). A discount rate of 10 percent is used for Scenarios 1, 2 and 3. The Office of Management and Budget (OMB) Circular No. A-94 recommends using a discount rate of 7 percent for "public investments"; conveying independent rights to graze on government property is considered to constitute such an investment. To this 7 percent must be added an additional "livestock price risk" component of 3 percent, the only difference being that the commodity in question under this analysis is livestock and not oil or gas. We have not studied the commodity market and hedging for best prices, but this approach was substantiated based on interviews with a few representatives of the ranching community. For Scenario 4, however, we start with the private sector's cost of capital (10.2 percent) and account for "price risk" (3 percent) which equals 13.2 percent total.

**"Production"** is that working interest income received from produced oil and/or gas (Scenario 1 and only applicable to NPR-3 and NOSR-3) on those currently produced properties which are operated by NPOSR. The discount rate adjustment used for these scenarios is 2 percent higher than that used for royalty income (as explained above) due to the fact that the DOE is now the operator and does indeed face operating cost risk.

“Production (to estimate bonus/sale price)”, is based on the exact same income as under “Production” but as transferred to another department and leased/sold or to the private sector (Scenarios 2, 3 and 4 for NPR-3 and NOSR-3). We must account for the value to that third party. In other words, this category assumes an industry operator who continues producing the field until an economic limit is reached. The appropriate discount rate is therefore the same as the “Royalties (to estimate bonus/sale price)” plus an additional 2 percent due to the fact that operating cost risk must be accounted for, adjusting to a total of 17.2 percent for these scenarios.

“Mineral leasing (bonuses & rentals)”, are those particular scenarios whereby a party (either another government agency/department or a private investor) would lease the property out to the other oil companies for their purpose of mineral extraction (Scenarios 2, 3 and 4 for all properties). Under Scenarios 2 and 3 (another government agency/department), a discount rate is found by taking the Office of Management and Budget (OMB) recommendation for the appropriate discount rate used above for public investments, which is 7 percent. To this must added price risk, because a potential oil company lessor would be faced with commodity price risk. This is the same derivation used under the “grazing” scenario above. It is assumed that if prices for the commodity (be it livestock or oil) suddenly became depressed, the chances to lease the land for a particular use (be it grazing or oil production) is directly affected by the price of that commodity; thus, perception of price risk must be included when discounting the expected future income stream. This same methodology is also used under Scenario 4; however, since the property has been sold to the private sector under this case, we begin with *industry's* cost of capital (10.2 percent). When perception of price risk is included, as above the total selected discount rate under this income category and Scenario will equal 13.2 percent.

“Rental of existing leases”, applies to those oil and gas leases that are pre-existing (applicable under all Scenarios for NPR-2). The appropriate discount rates are derived under the exact same methodology as “Mineral leasing” described in the preceding paragraph.

"Income taxes", refers to the federal tax income accruing to the Federal Government from first transferring and leasing or outright selling a property to an oil company and then expecting that taxpayer to produce the oil and/or gas. The latter would in turn pay income taxes to the government (applicable for the three producing properties - NPR-2, NPR-3 and NOSR-3 for Scenarios 2, 3 and 4). The first component of the discount rate, therefore, would be the *government's* cost of capital, since the government is the "owner" of the tax rights. The risk components, however, should include all risk components outlined above (3 percent price risk + 2 percent operating cost risk + 2 percent production rate risk = 7 percent) because they all directly affect the net taxable total revenue generated, and therefore the perception of the risk of receiving the income tax to be paid to the government. The selected discount rate used under the "Income tax" scenario is thus 13.5 percent.

"Surface maintenance" is actually an "expense" category, and involves the perception of the government's future incurred expenses due to maintaining the surface land on all of the five properties. This future expenditure stream must be discounted in the same manner as the future income streams defined above for risk perception above the cost of capital; the appropriate discount rate is simply the base rate recommended by the OMB for public investments, namely 7 percent for each of the properties, under Scenarios 1, 2 and 3 (the government retains the property under some form). There is no probability that the surface maintenance shall not be paid.