

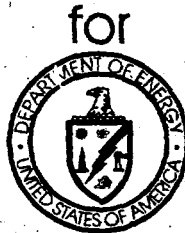
FINAL REPORT

DDE/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



U.S. DEPARTMENT OF ENERGY

December 1996



**GUSTAVSON ASSOCIATES**  
GEOLOGISTS • ENGINEERS

**MASTER**

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**FINAL REPORT  
STUDY OF ALTERNATIVES**

**FOR**

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

**for the**

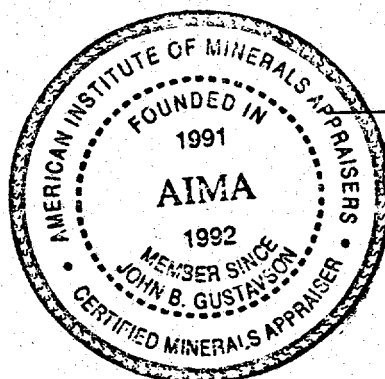
**U.S. DEPARTMENT OF ENERGY**

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

**December, 1996**

**GUSTAVSON ASSOCIATES, INC.  
5757 Central Avenue, Suite D  
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**Respectfully submitted by:**



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**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).

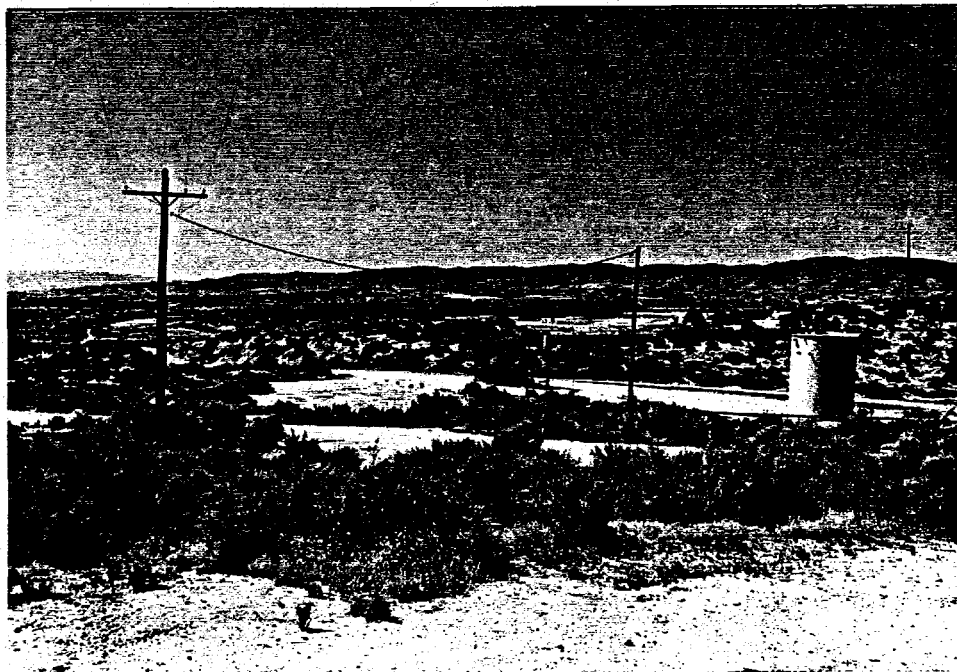
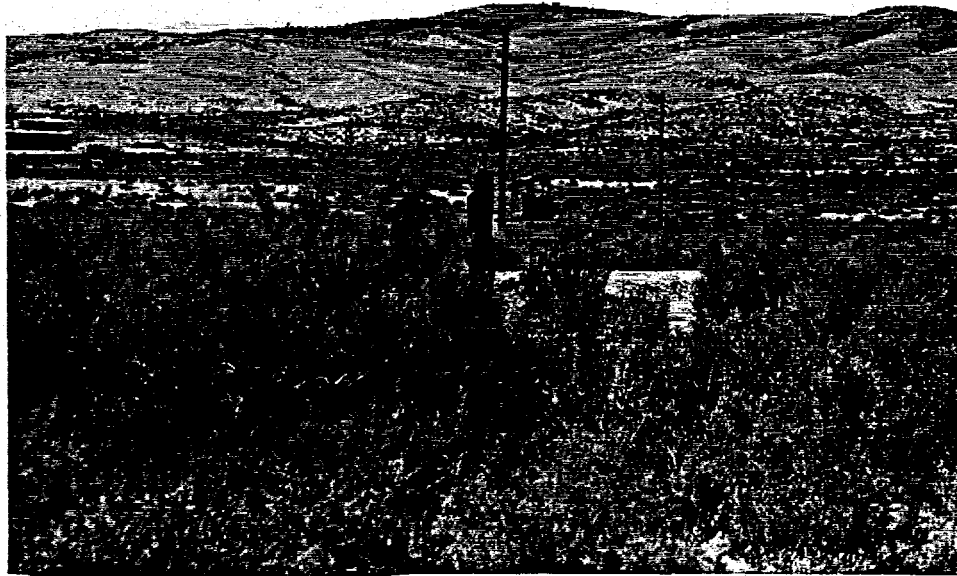
The key property elements that positively affect the estimated value of NPR-2 include the following: royalty income from producing oil and gas leases, rental income from non-producing oil and gas leases, income from grazing or leasing of grazing rights, potential income from oil and gas leasing on exploratory (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 pre 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.

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## 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.

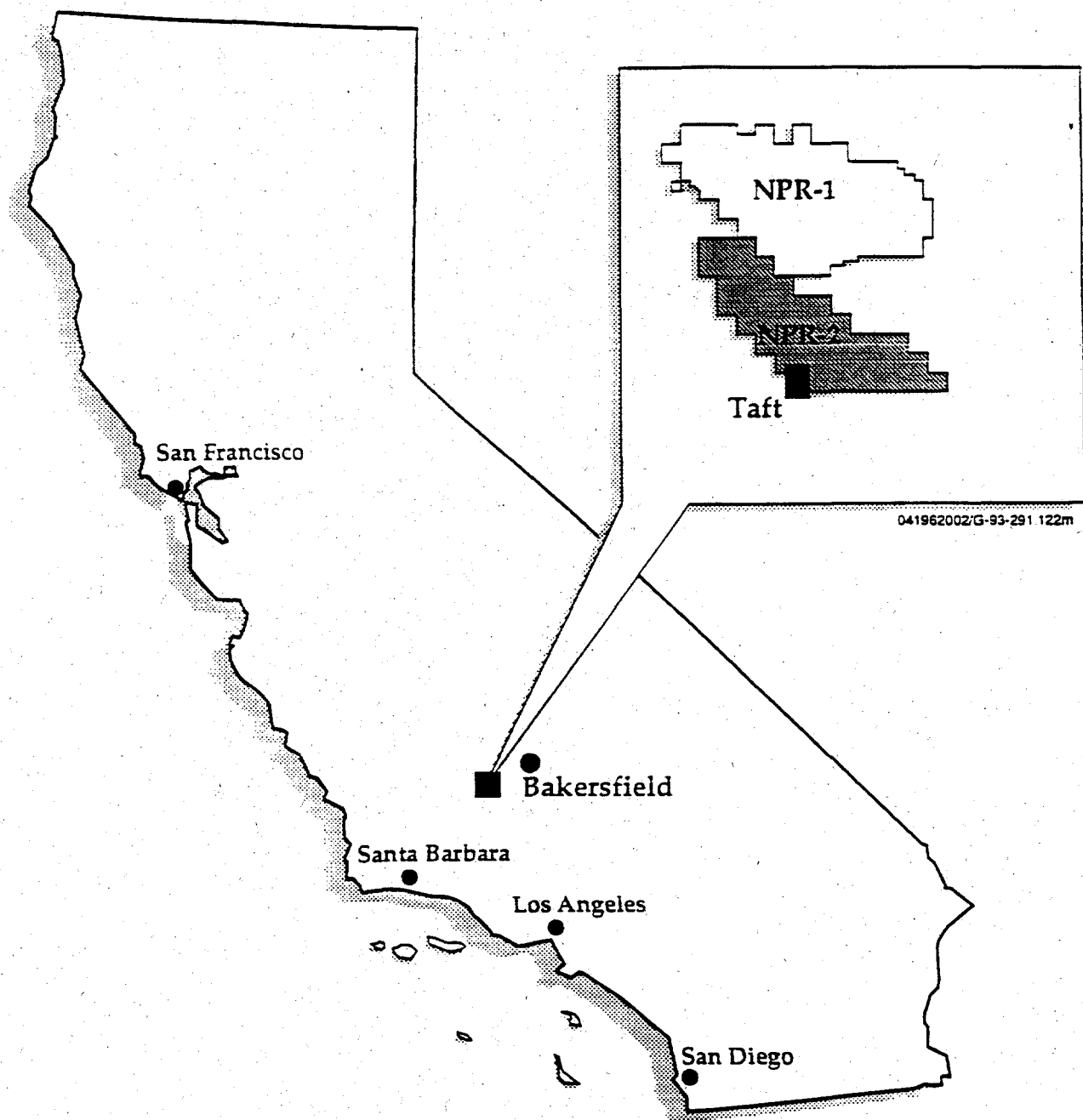


Figure 1-1. Location of NPR-2

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
Calidon 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

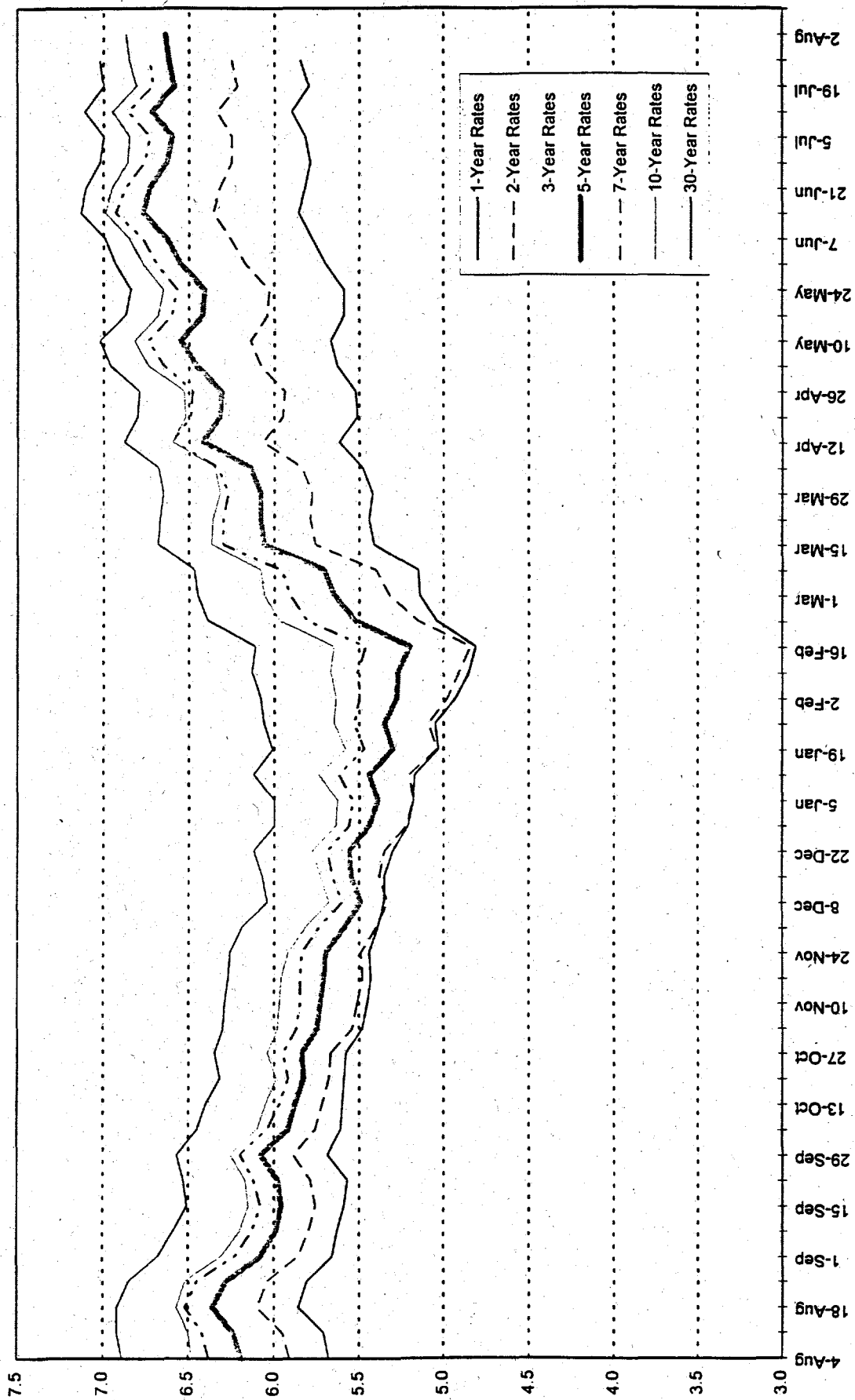
Information provided by the Bureau of Land Management regarding number of animal unit months has been relied upon by this Appraiser for the purpose of an analysis of income from surface activities for the subject properties.

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**

NET ROYALTY						
	OIL, barrels	GAS, MCF	GASOLINE, PROPANE, BUTANE, TOTAL NGLs,			
			gallons	gallons	gallons	gallons
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	10,789	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	5,883	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
TOTAL	407,437	1,646,758	434,269	96,797	98,668	629,735

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 woolly 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 offices 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 Approached 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 reservoir 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

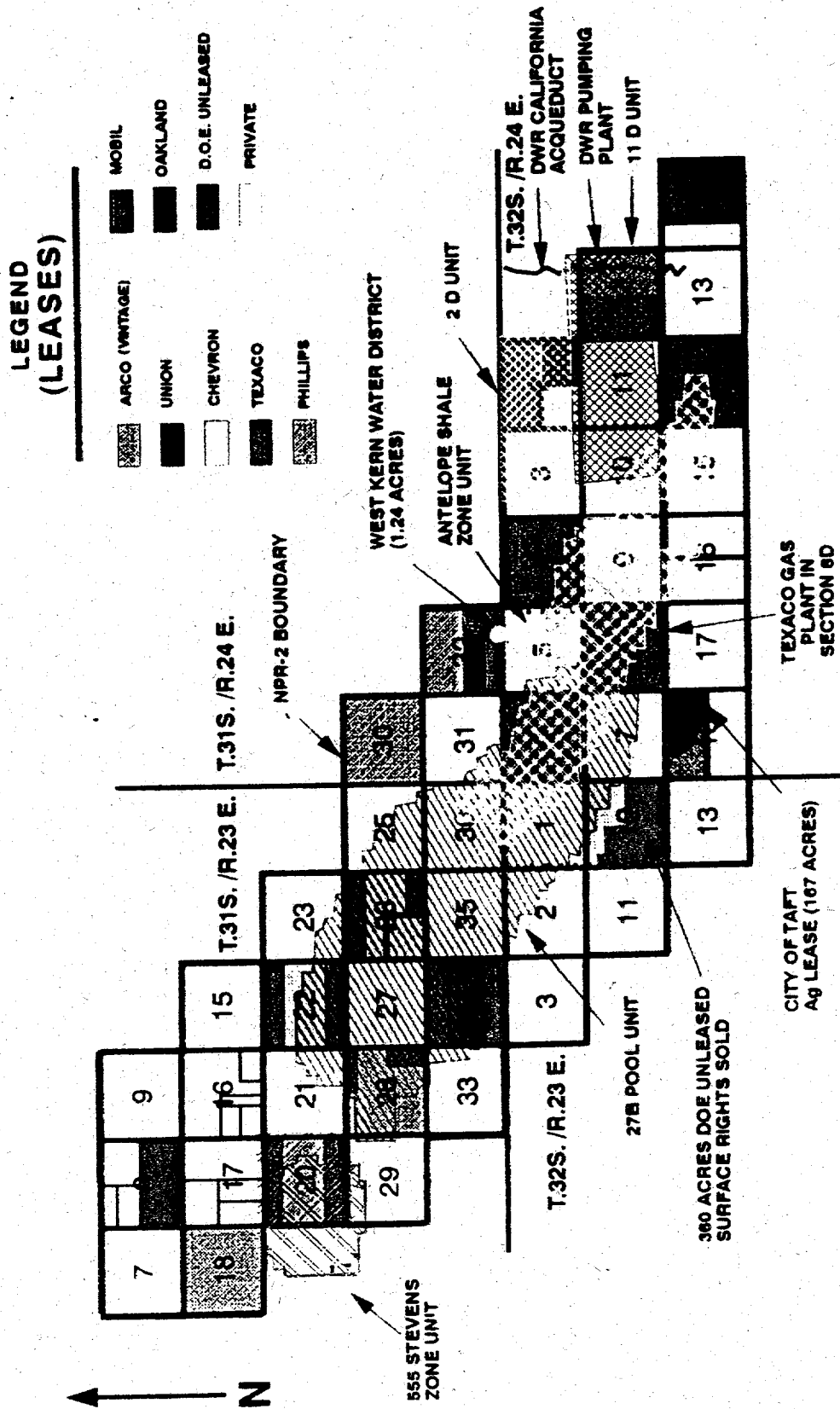


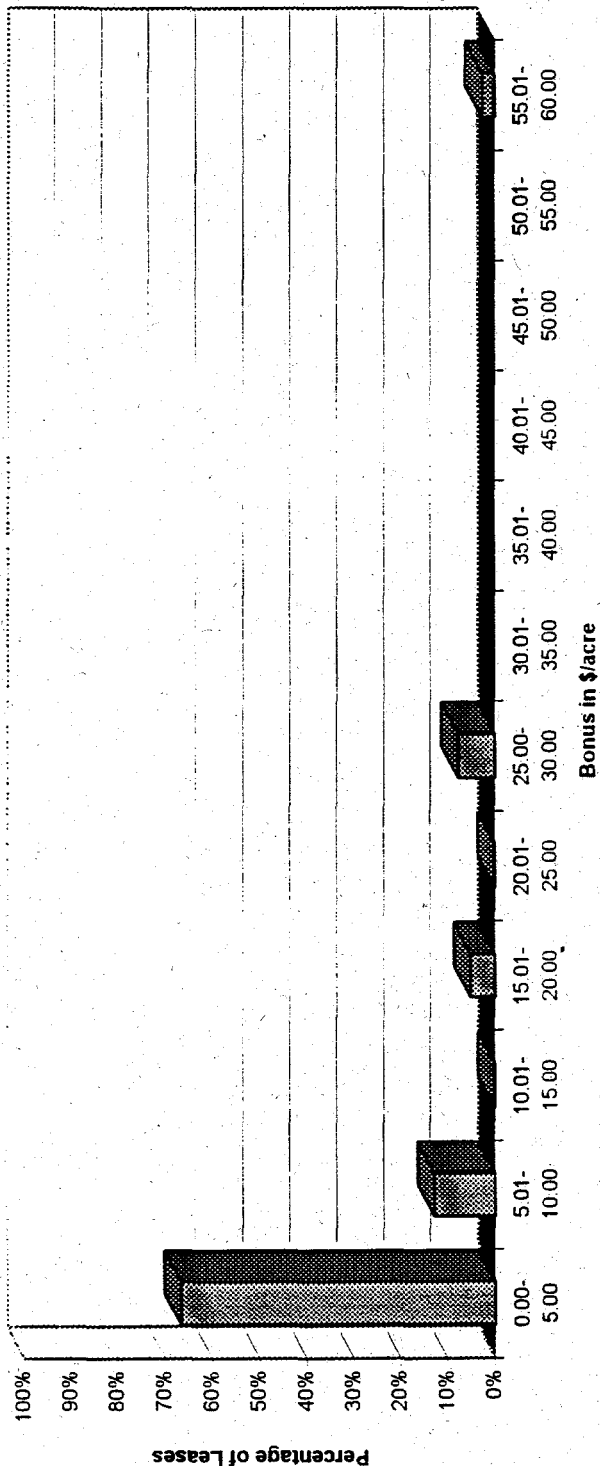
FIGURE 1.1-Lease map of the study area.

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.

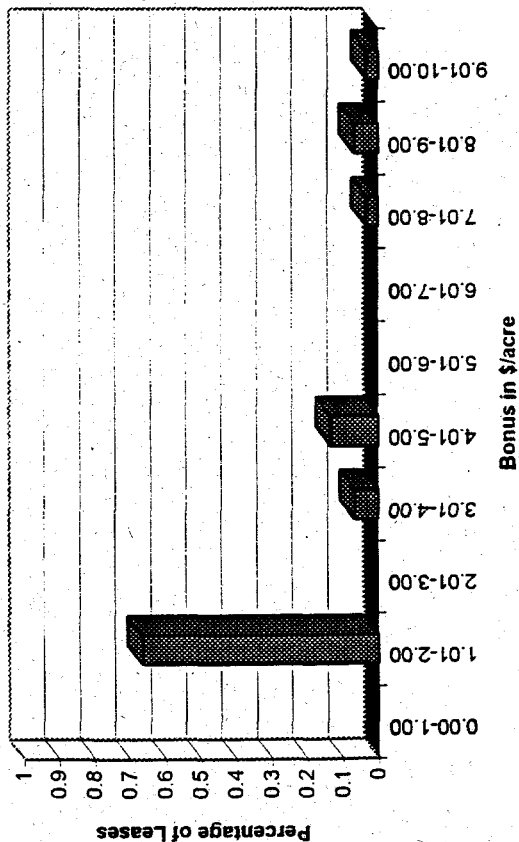
Figure 3.2 displays a statistical analysis of the federal lease bonus data over the past three years in this area of California. The minimum bid required for bonuses on federal leases is \$2.00 per acre. The mean, median, and mode of the federal leases issued in the area of NPR-2 for the last three years 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 3.2 A -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)**

**Lease Bonus Statistics**

Mean	\$	9.10
Mode	\$	2.00
Median	\$	2.00

**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.

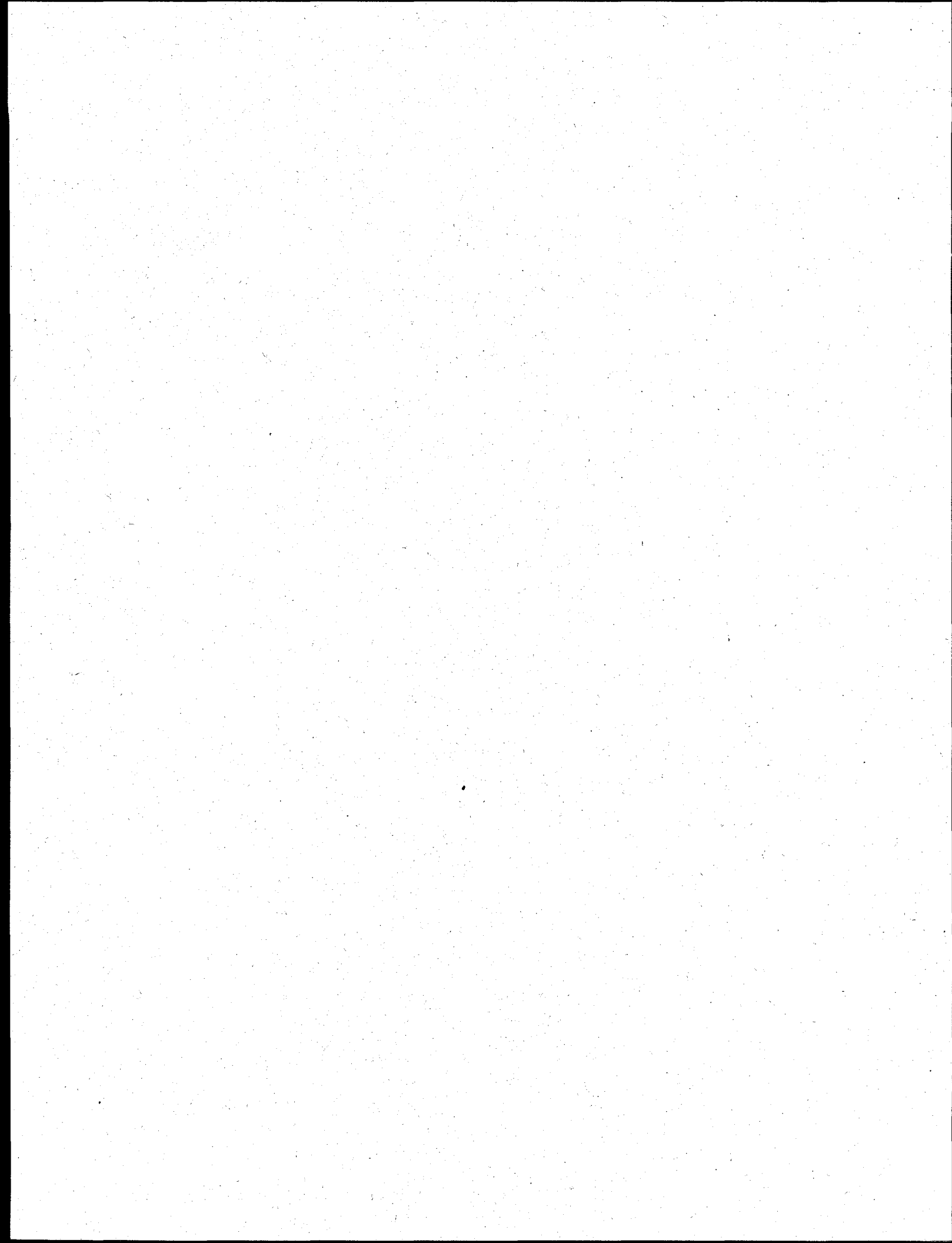
### 3.3.3 Opinion of Value

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 IBOPD 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 or 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 Obedience 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 appraisals 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	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 MMBO @ 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 MMBO	\$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 MMBO, @ 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
Santa Fe Energy	National Petroleum Associates	T28S R28E SEC 23	Non-Producing Minerals held by a producing lease	Oct-94	N/A	\$8 M	N/A	Located in shark's tooth field. 1BO per acre
Kurt E. Sickles dba Petroleum Technical Services	Bree Oil Company	T29S R26E SEC 23	Producing Minerals	Apr-94	Unknown	\$12.2 M	N/A	Received \$2,100 for each percentage point of interest in the S. Rosedala Operating unit No. 1 well
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	Annual Income was \$3,976 in '92, \$2,720 in '93 and they usually sell for 3 or 4 times annual Income.
	Saba Energy of Texas	27S R20E SEC 36	Producing and Non-Producing Minerals	Mar-92	Unknown	\$100 M	N/A	Also covers interest in Ventura County



### 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

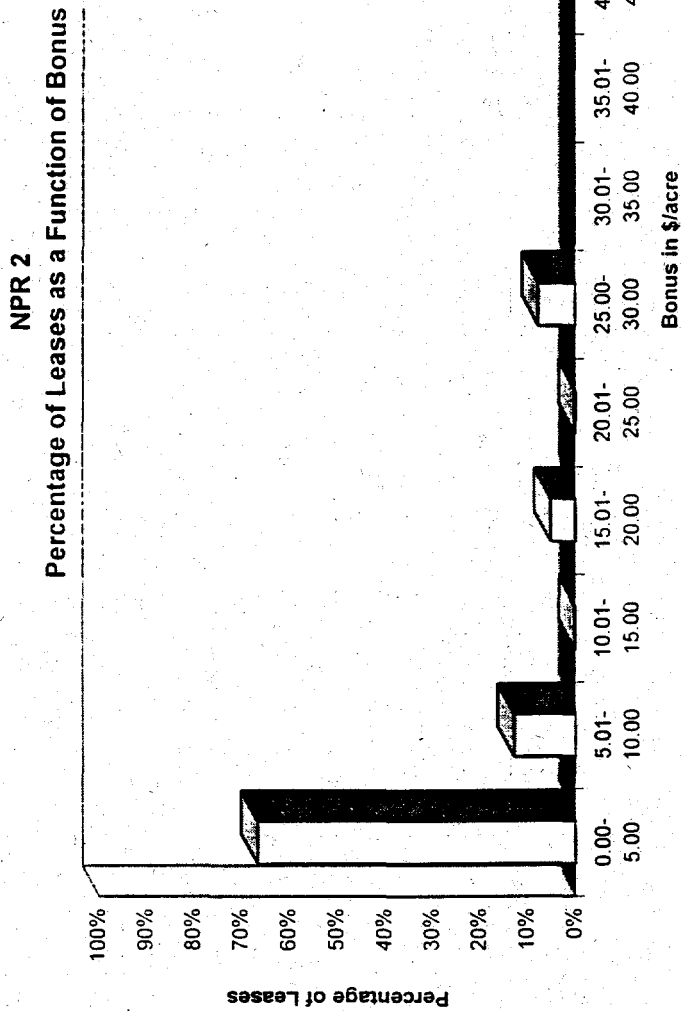


FIGURE 5.1A -Federal and Fee Lease Bonus Bids

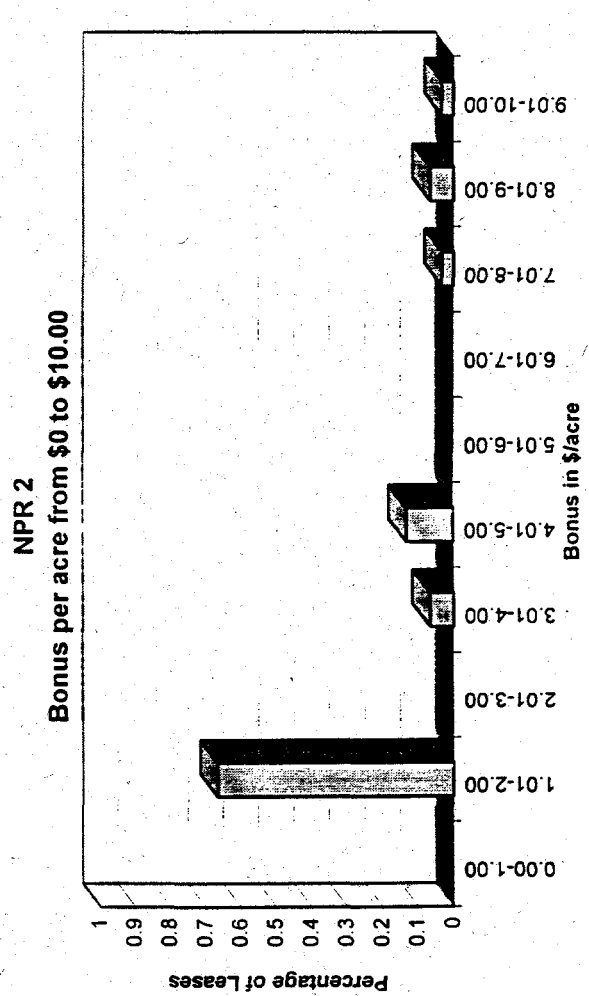


FIGURE 5.1B -Federal and Fee Lease Bonus bids \$10 and under (expanded from Figure 5.1A)

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

FIGURE 5.1C - Statistical Data

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
Method One Value of Property				<u>\$2,435,865</u>

**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.)	\$4,026,045
Capital Costs		\$0
Method Two Value of Property		<u>\$4,026,045</u>

**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.)	\$4,658,400
Less Capital Costs (at 100%)		\$0
Method Three Value of Property		<u>\$4,658,400</u>

**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.)	\$4,797,000
Less Capital Costs (at 100%)		\$0
Method Four Value of Property		<u>\$4,797,000</u>

**5) FAIR MARKET VALUE**

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

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

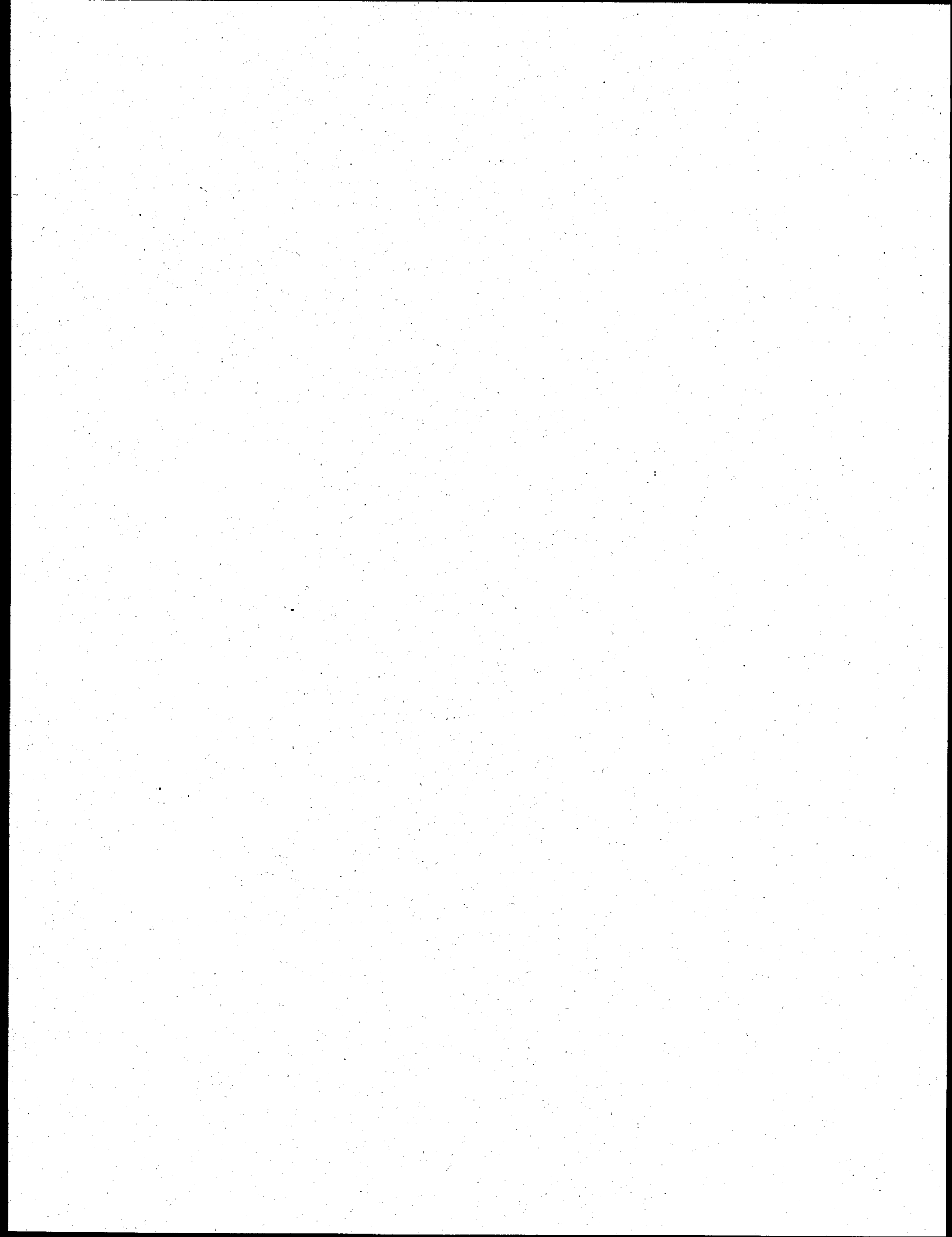
These mineral and surface values are not additive under the unit rule. The value of the rural surface is considered to be impacted by the intensive oil production operations. The mineral rights represent the dominant estate, and contribute at 100 percent. The portion of the rural surface value contributing 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.

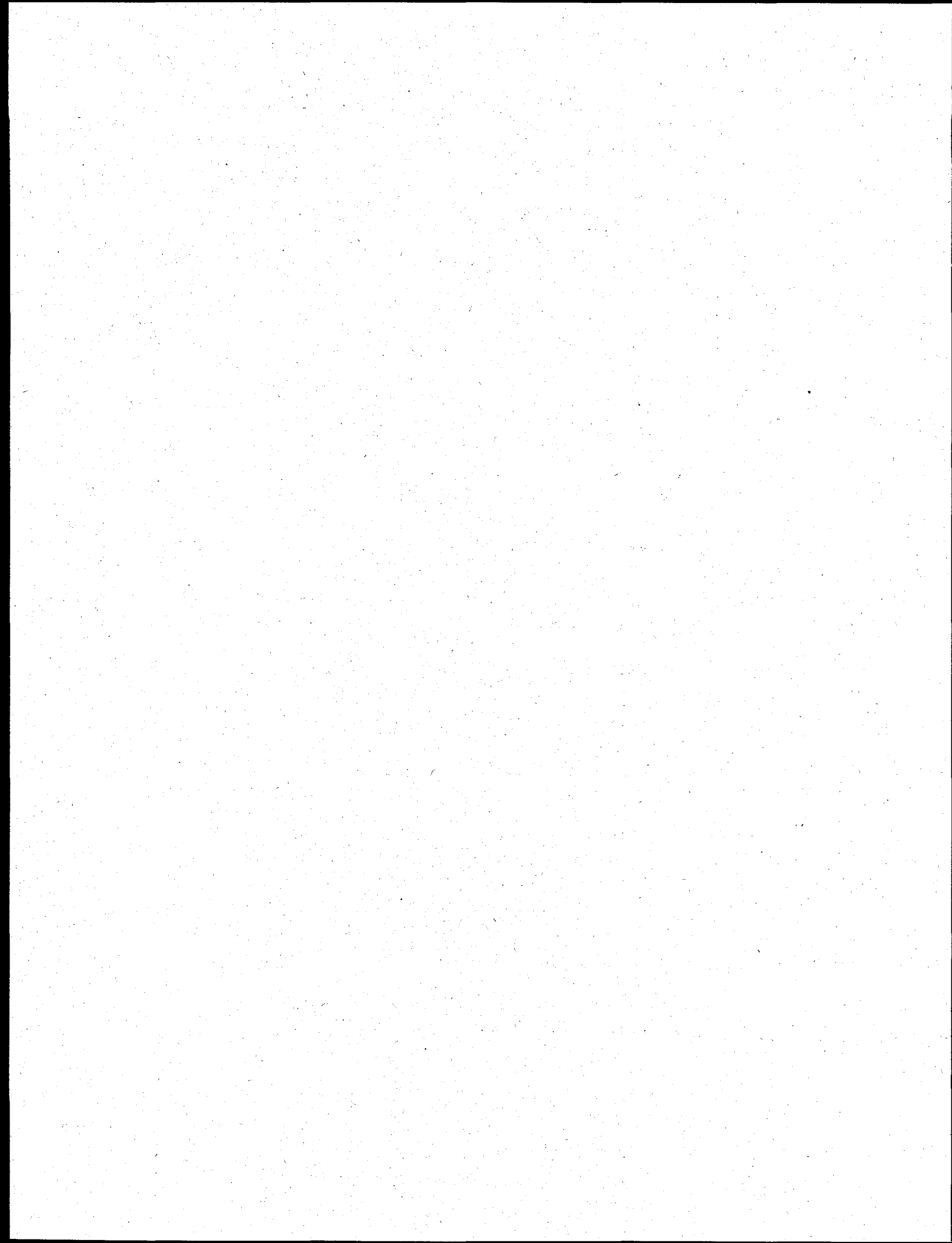
The value to the government would also include revenue from federal income taxes paid by the purchaser on subsequent income from NPR-2 operations. This projected tax stream has an estimated NPV discounted at 13.5 percent of \$801,770. Additionally, sales costs would be expected to be incurred associated 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:

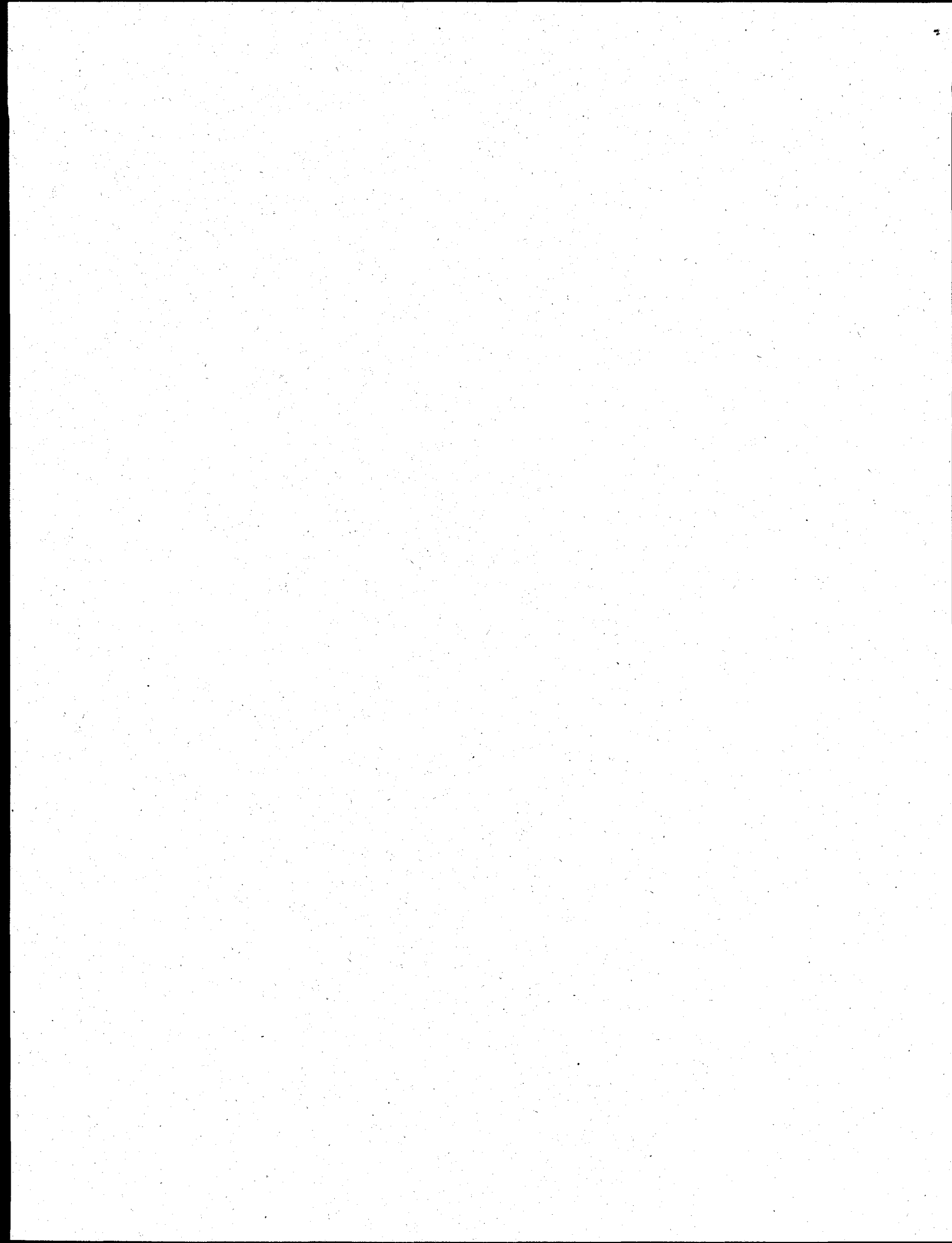
- Option 1:** Retention and operation of all or part of NPR-2 by the Secretary of Energy under Chapter 641 of Title 10, United States Code. **Value = \$5,024,300.**
- Option 2:** Transfer of all or a part of NPR-2 to the Department of the Interior for leasing in accordance with the Mineral leasing Act (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**

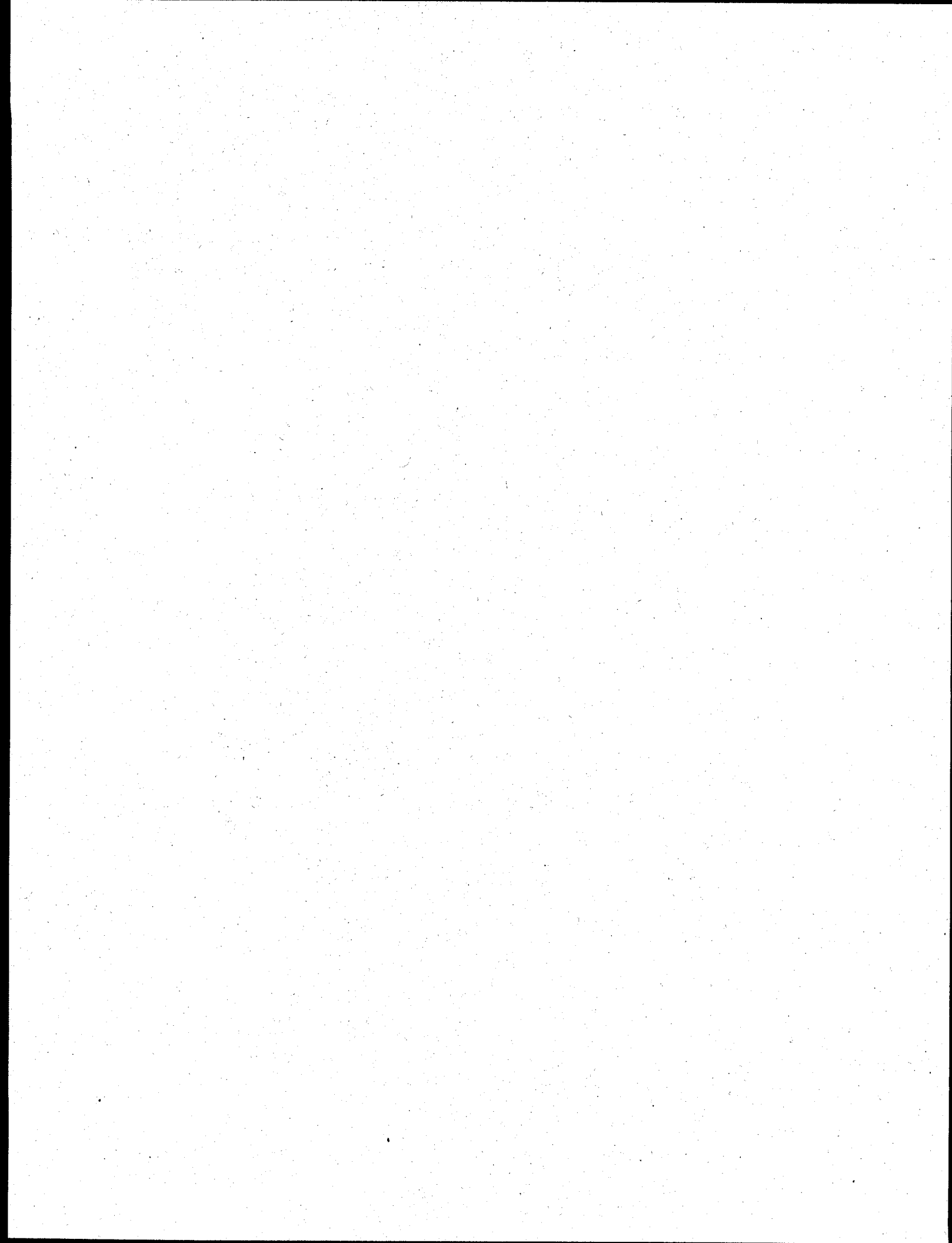
This option recommended to maximize value to the United States is Option 4, sale of the interest of the United States of all or part of NPR-2. Evaluation of this option results in a value of \$6,013,095 which is about 20 percent higher than the next highest value of \$5,025,100 for Option 2, transfer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

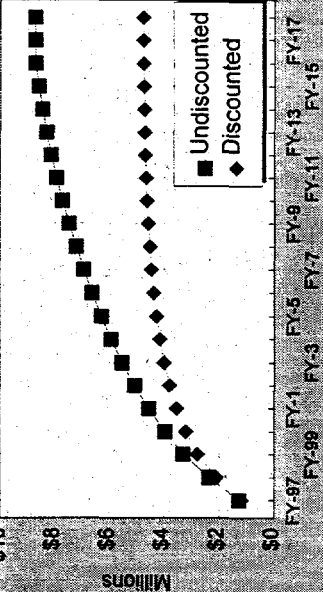
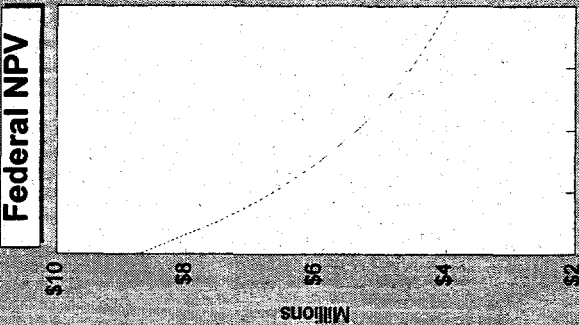




# **APPENDIX A**

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



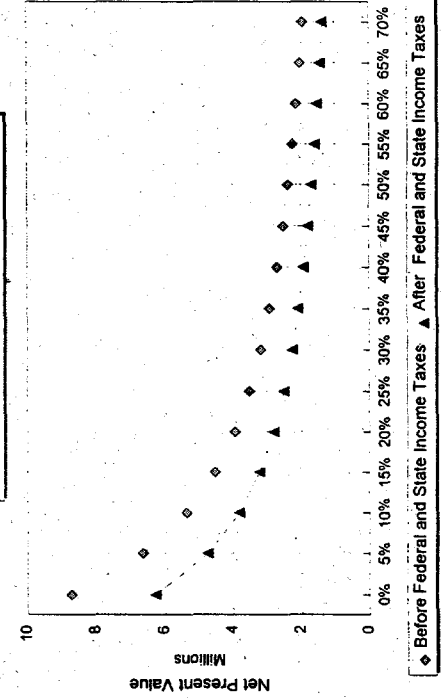
Current Parameters		Cumulative Federal Income										Operator Concerns																																																																																																																																
Price=INFL												<table><tr><th></th><th>PDP</th><th>PD-NP</th><th>PUD</th><th>Unproven</th></tr><tr><td>Production</td><td>100.0%</td><td>0.0%</td><td>0.0%</td><td>0.0%</td></tr><tr><td>Expenses</td><td>100.0%</td><td>0.0%</td><td>0.0%</td><td>0.0%</td></tr></table>					PDP	PD-NP	PUD	Unproven	Production	100.0%	0.0%	0.0%	0.0%	Expenses	100.0%	0.0%	0.0%	0.0%																																																																																																														
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# Federal Income Tax Calculations

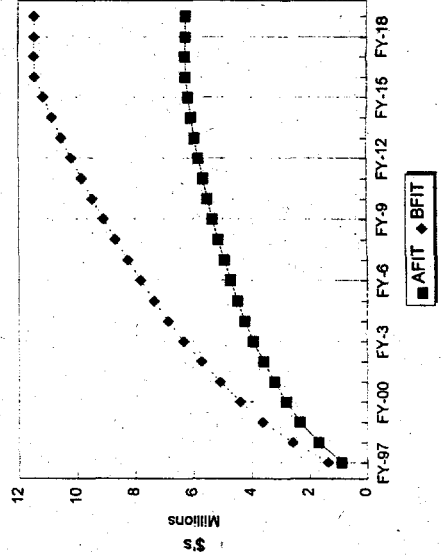
	Revenue	Royalty, 80% Cap. OpEx and Prod. Tax	Allocated Overhead	Depreciation	Depletion	Total Deductions	Taxable Income	State Income Taxes	Federal Income Taxes	After Tax Cash Flow	Cumulative \$000	Discounted @ 14.2%	Cumulative Discounted \$000
FY-97	1,371,510	0	101,509	0	205,727	307,235	1,064,275	0	372,496	897,505	898	839,854	840
FY-98	1,210,488	0	104,594	0	181,573	286,168	924,320	0	323,512	782,381	1,680	641,091	1,481
FY-99	1,041,382	0	107,774	0	156,207	263,981	777,401	0	272,090	661,518	2,341	474,653	1,956
FY-00	772,055	0	111,050	0	115,808	226,859	545,196	0	190,819	470,186	2,812	295,419	2,251
FY-1	696,755	0	114,426	0	104,513	218,940	477,815	0	167,235	415,093	3,227	228,375	2,479
FY-2	631,457	0	117,905	0	97,719	215,624	435,833	0	152,542	381,010	3,608	183,558	2,663
FY-3	598,593	0	121,489	0	88,289	209,778	378,815	0	132,585	334,519	3,942	141,121	2,804
FY-4	526,067	0	125,183	0	78,910	204,093	321,974	0	112,691	288,193	4,230	106,460	2,911
FY-5	487,926	0	128,988	0	73,189	202,177	285,749	0	100,012	258,926	4,489	83,755	2,994
FY-6	464,892	0	132,909	0	69,734	202,643	262,249	0	91,787	240,196	4,730	68,036	3,062
FY-7	443,211	0	136,950	0	66,482	203,431	239,780	0	83,923	222,338	4,952	55,147	3,117
FY-8	423,913	0	141,113	0	63,587	204,700	219,213	0	76,725	206,075	5,158	44,758	3,162
FY-9	403,420	0	145,403	0	60,513	205,916	197,504	0	69,126	188,891	5,347	35,924	3,198
FY-10	385,167	0	149,823	0	57,775	207,598	177,569	0	62,149	173,195	5,520	28,843	3,227
FY-11	367,888	0	154,378	0	55,183	209,561	158,327	0	55,414	158,096	5,678	23,055	3,250
FY-12	352,423	0	159,071	0	52,863	211,934	140,489	0	49,171	144,181	5,822	18,411	3,268
FY-13	335,861	0	163,907	0	50,379	214,286	121,575	0	42,551	129,403	5,952	14,470	3,283
FY-14	321,085	0	168,889	0	48,163	217,052	104,033	0	36,411	115,784	6,067	11,337	3,294
FY-15	307,012	0	174,024	0	46,052	220,075	86,937	0	30,428	102,561	6,170	8,793	3,303
FY-16	294,428	0	179,314	0	44,164	223,478	70,950	0	24,832	90,282	6,260	6,778	3,310
FY-17	0	0	0	0	0	0	0	0	0	0	6,260	0	3,310
FY-18	0	0	0	0	0	0	0	0	0	0	6,260	0	3,310
Thereafter	0	0	0	0	0	0	0	0	0	0	6,260	0	3,310
TOTAL	11,445,533	0	2,738,700	0	1,716,830	4,455,530	6,990,003	0	2,446,501	6,260,332		3,309,837	

Discount Factor	Before Federal and State Income Taxes	After Federal and State Income Taxes
17.20%	4,254,000	3,310,000
14.20%	8,707,000	6,260,000
0%	6,633,000	4,747,000
5%	5,369,000	3,830,000
10%	4,535,000	3,228,000
15%	3,949,000	2,807,000
20%	3,517,000	2,497,000
25%	3,184,000	2,259,000
30%	2,919,000	2,070,000
35%	2,703,000	1,916,000
40%	2,523,000	1,788,000
45%	2,371,000	1,680,000
50%	2,240,000	1,586,000
55%	2,126,000	1,505,000
60%	2,026,000	1,434,000
65%	1,937,000	1,371,000
70%		

Industry Net Present Value



Cumulative Income to Industry



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

PRODUCTION				REVENUE				COSTS				Future Net Income			
Oil	Gas	NPGL	Gas	Oil	Gas	NPGL	Total	Capex	Opex	Total	NPGL	Net Revenue before bonus/price	Cumulative	Discounted @ 13.80%	Cumulative Discounted
bbls	mod	gals		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$000	\$000	\$000
4,530	21,553	10,230		83,933	25,984	3,171	112,968	0	0	112,968	0	112,968	113	112,968	113
4,530	21,553	10,230		84,106	25,924	3,178	113,208	0	0	113,208	0	113,208	226	111,949	225
4,530	21,553	10,230		84,278	25,984	3,184	113,446	0	0	113,446	0	113,446	336	110,936	336
4,530	21,553	10,230		84,452	26,044	3,191	113,687	0	0	113,687	0	113,687	453	109,935	446
4,530	21,553	10,230		84,625	26,105	3,197	113,927	0	0	113,927	0	113,927	567	108,941	555
4,530	21,553	10,230		84,799	26,166	3,204	114,169	0	0	114,169	0	114,169	681	107,958	663
4,530	21,553	10,230		84,973	26,227	3,211	114,411	0	0	114,411	0	114,411	796	106,983	770
4,530	21,553	10,230		85,148	26,288	3,217	114,653	0	0	114,653	0	114,653	910	106,017	876
4,530	21,553	10,230		85,323	26,349	3,224	114,896	0	0	114,896	0	114,896	1,025	105,060	981
4,530	21,553	10,230		85,498	26,410	3,230	115,138	0	0	115,138	0	115,138	1,141	104,110	1,085
4,530	21,553	10,230		85,673	26,471	3,237	115,381	0	0	115,381	0	115,381	1,256	103,169	1,188
4,530	21,553	10,230		85,849	26,533	3,244	115,626	0	0	115,626	0	115,626	1,372	102,238	1,290
54,355	258,636	122,758		1,018,557	314,365	38,488	1,371,510	0	0	1,371,510	0	1,371,510	1,471	1,290,264	1,290
3,957	17,751	8,332		75,156	21,903	2,647	99,706	0	0	99,706	0	99,706	1,471	81,180	1,377
3,957	17,751	8,332		75,310	21,954	2,653	99,917	0	0	99,917	0	99,917	1,571	86,393	1,464
3,957	17,751	8,332		75,465	22,005	2,658	100,128	0	0	100,128	0	100,128	1,671	88,612	1,549
3,957	17,751	8,332		75,620	22,056	2,664	100,340	0	0	100,340	0	100,340	1,772	84,839	1,634
3,957	17,751	8,332		75,776	22,108	2,669	100,553	0	0	100,553	0	100,553	1,872	84,073	1,718
3,957	17,751	8,332		75,931	22,159	2,675	100,765	0	0	100,765	0	100,765	1,973	83,313	1,802
3,957	17,751	8,332		76,087	22,211	2,680	100,978	0	0	100,978	0	100,978	2,074	82,561	1,884
3,957	17,751	8,332		76,244	22,262	2,686	101,192	0	0	101,192	0	101,192	2,175	81,815	1,966
3,957	17,751	8,332		76,400	22,314	2,691	101,405	0	0	101,405	0	101,405	2,276	81,075	2,047
3,957	17,751	8,332		76,557	22,366	2,697	101,620	0	0	101,620	0	101,620	2,378	80,343	2,127
3,957	17,751	8,332		76,714	22,418	2,702	101,834	0	0	101,834	0	101,834	2,480	79,617	2,207
3,957	17,751	8,332		76,872	22,470	2,708	102,050	0	0	102,050	0	102,050	2,582	78,898	2,286
47,487	213,010	98,983		912,132	266,226	32,130	1,210,488	0	0	1,210,488	0	1,210,488	3,623	955,719	3,045
40,009	178,009	79,633		786,728	228,457	26,197	1,041,382	0	0	1,041,382	0	1,041,382	4,395	758,788	3,540
30,149	113,626	48,092		608,300	149,575	16,180	772,055	0	0	772,055	0	772,055	5,092	495,636	3,540
26,450	102,760	40,748		543,997	138,748	14,020	696,755	0	0	696,755	0	696,755	5,744	394,093	3,934
24,146	94,355	36,682		507,875	130,674	12,908	651,457	0	0	651,457	0	651,457	6,332	324,645	4,259
21,414	82,552	29,709		460,636	117,266	10,691	588,593	0	0	588,593	0	588,593	6,858	258,429	4,518
18,804	71,338	22,965		413,674	103,941	8,452	526,067	0	0	526,067	0	526,067	7,346	203,504	4,721
17,129	64,015	18,276		385,379	95,668	6,879	487,926	0	0	487,926	0	487,926	7,811	166,299	4,867
15,956	59,527	16,907		367,137	91,247	6,508	464,892	0	0	464,892	0	464,892	8,254	139,602	5,027
14,874	55,360	15,650		350,010	87,040	6,161	443,211	0	0	443,211	0	443,211	8,678	117,261	5,144
13,912	51,628	14,530		334,804	83,259	5,850	423,913	0	0	423,913	0	423,913	9,082	98,915	5,243
12,948	47,889	13,425		318,678	79,214	5,528	403,420	0	0	403,420	0	403,420	9,467	82,853	5,326
12,091	44,552	12,442		304,340	75,588	5,239	385,167	0	0	385,167	0	385,167	9,835	69,696	5,396
11,296	41,452	11,537		290,784	72,136	4,968	367,888	0	0	367,888	0	367,888	10,187	58,651	5,454
10,585	38,673	10,730		278,667	69,030	4,726	352,423	0	0	352,423	0	352,423	10,523	49,503	5,504
9,868	35,886	9,928		265,688	65,701	4,472	335,861	0	0	335,861	0	335,861	10,844	41,565	5,545
9,229	33,397	9,216		254,124	62,718	4,245	321,085	0	0	321,085	0	321,085	11,151	35,010	5,580
8,633	31,084	8,556		243,109	59,872	4,031	307,012	0	0	307,012	0	307,012	11,446	29,494	5,610
8,100	29,009	7,969		233,277	57,311	3,840	294,428	0	0	294,428	0	294,428	11,748	24,921	5,635
0	0	0		0	0	0	0	0	0	0	0	0	11,446	0	5,635
0	0	0		0	0	0	0	0	0	0	0	0	11,446	0	5,635
0	0	0		0	0	0	0	0	0	0	0	0	11,446	0	5,635
407,435	1,646,758	628,737		8,875,986	2,348,034	221,513	11,445,533	0	0	11,445,533	0	11,445,533	5,635	5,634,748	5,635
TOTAL															

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DATE	PRODUCTION			PRICES			GROSS REVENUE			Proved Developed Producing			COSTS			Future Net Income				
	Oil	NGLs	Gas	Oil	NGLs	Gas	Oil	NGLs	Gas	Total	Proved	Developed	Producing	Oil	NGLs	Gas	Net Revenue	Cumulative	Discounted @ 13.5%	Cumulative Discounted
Oct-96	4,530	21,553	10,230	\$18.53	\$1.20	\$0.31	\$3,933	\$3,854	\$1,171	12,958	0	0	0	0	0	0	\$12,958	\$112,958	\$113	\$113
Nov-96	4,530	21,553	10,230	18.57	1.20	0.31	84,106	25,824	3,178	13,208	0	0	0	0	0	0	\$0	\$112,968	\$113	\$113
Dec-96	4,530	21,553	10,230	18.61	1.21	0.31	84,278	25,984	3,184	13,446	0	0	0	0	0	0	\$0	\$113,046	\$113,948	\$113,948
Jan-97	4,530	21,553	10,230	18.64	1.21	0.31	84,452	26,044	3,191	13,687	0	0	0	0	0	0	\$0	\$113,446	\$114,938	\$114,938
Feb-97	4,530	21,553	10,230	18.68	1.21	0.31	84,625	26,105	3,197	13,927	0	0	0	0	0	0	\$0	\$113,687	\$115,935	\$115,935
Mar-97	4,530	21,553	10,230	18.72	1.21	0.31	84,799	26,166	3,204	14,169	0	0	0	0	0	0	\$0	\$113,927	\$116,941	\$116,941
Apr-97	4,530	21,553	10,230	18.76	1.22	0.31	84,973	26,227	3,211	14,411	0	0	0	0	0	0	\$0	\$114,169	\$117,948	\$117,948
May-97	4,530	21,553	10,230	18.80	1.22	0.31	85,148	26,288	3,217	14,653	0	0	0	0	0	0	\$0	\$114,411	\$118,955	\$118,955
Jun-97	4,530	21,553	10,230	18.84	1.22	0.32	85,323	26,349	3,224	14,896	0	0	0	0	0	0	\$0	\$114,653	\$119,962	\$119,962
Jul-97	4,530	21,553	10,230	18.88	1.23	0.32	85,498	26,410	3,230	15,138	0	0	0	0	0	0	\$0	\$114,896	\$120,970	\$120,970
Aug-97	4,530	21,553	10,230	18.91	1.23	0.32	85,673	26,471	3,237	15,381	0	0	0	0	0	0	\$0	\$115,138	\$121,978	\$121,978
Sep-97	4,530	21,553	10,230	18.95	1.23	0.32	85,849	26,533	3,244	15,628	0	0	0	0	0	0	\$0	\$115,381	\$122,986	\$122,986
Oct-97	4,535	21,553	10,230	18.99	1.23	0.32	86,025	26,595	3,257	15,875	0	0	0	0	0	0	\$0	\$115,628	\$123,994	\$123,994
Nov-97	4,540	21,553	10,230	19.03	1.24	0.32	86,201	26,657	3,270	16,122	0	0	0	0	0	0	\$0	\$115,875	\$125,002	\$125,002
Dec-97	4,545	21,553	10,230	19.07	1.24	0.32	86,377	26,719	3,283	16,369	0	0	0	0	0	0	\$0	\$116,122	\$126,010	\$126,010
Jan-98	4,550	21,553	10,230	19.11	1.24	0.32	86,553	26,781	3,296	16,616	0	0	0	0	0	0	\$0	\$116,369	\$127,018	\$127,018
Feb-98	4,555	21,553	10,230	19.15	1.25	0.32	86,729	26,843	3,309	16,863	0	0	0	0	0	0	\$0	\$116,616	\$128,026	\$128,026
Mar-98	4,560	21,553	10,230	19.19	1.25	0.32	86,905	26,905	3,322	17,110	0	0	0	0	0	0	\$0	\$116,863	\$129,034	\$129,034
Apr-98	4,565	21,553	10,230	19.23	1.25	0.32	87,081	26,967	3,335	17,357	0	0	0	0	0	0	\$0	\$117,110	\$130,042	\$130,042
May-98	4,570	21,553	10,230	19.27	1.25	0.32	87,257	27,029	3,348	17,604	0	0	0	0	0	0	\$0	\$117,357	\$131,050	\$131,050
Jun-98	4,575	21,553	10,230	19.31	1.26	0.32	87,434	27,091	3,361	17,851	0	0	0	0	0	0	\$0	\$117,604	\$132,058	\$132,058
Jul-98	4,580	21,553	10,230	19.35	1.26	0.32	87,611	27,153	3,374	18,098	0	0	0	0	0	0	\$0	\$117,851	\$133,066	\$133,066
Aug-98	4,585	21,553	10,230	19.39	1.26	0.32	87,788	27,215	3,387	18,345	0	0	0	0	0	0	\$0	\$118,102	\$134,074	\$134,074
Sep-98	4,590	21,553	10,230	19.43	1.27	0.32	87,965	27,277	3,400	18,592	0	0	0	0	0	0	\$0	\$118,349	\$135,082	\$135,082
Oct-98	4,595	21,553	10,230	19.47	1.27	0.32	88,142	27,339	3,413	18,839	0	0	0	0	0	0	\$0	\$118,596	\$136,090	\$136,090
Nov-98	4,600	21,553	10,230	19.51	1.27	0.32	88,319	27,401	3,426	19,086	0	0	0	0	0	0	\$0	\$118,843	\$137,098	\$137,098
Dec-98	4,605	21,553	10,230	19.55	1.27	0.32	88,496	27,463	3,439	19,333	0	0	0	0	0	0	\$0	\$119,090	\$138,106	\$138,106
Jan-99	4,610	21,553	10,230	19.59	1.27	0.32	88,673	27,525	3,452	19,580	0	0	0	0	0	0	\$0	\$119,337	\$139,114	\$139,114
Feb-99	4,615	21,553	10,230	19.63	1.27	0.32	88,850	27,587	3,465	19,827	0	0	0	0	0	0	\$0	\$119,584	\$140,122	\$140,122
Mar-99	4,620	21,553	10,230	19.67	1.27	0.32	89,027	27,649	3,478	20,074	0	0	0	0	0	0	\$0	\$119,831	\$141,130	\$141,130
Apr-99	4,625	21,553	10,230	19.71	1.27	0.32	89,204	27,711	3,491	20,321	0	0	0	0	0	0	\$0	\$120,078	\$142,138	\$142,138
May-99	4,630	21,553	10,230	19.75	1.27	0.32	89,381	27,773	3,504	20,568	0	0	0	0	0	0	\$0	\$120,325	\$143,146	\$143,146
Jun-99	4,635	21,553	10,230	19.79	1.27	0.32	89,558	27,835	3,517	20,815	0	0	0	0	0	0	\$0	\$120,572	\$144,154	\$144,154
Jul-99	4,640	21,553	10,230	19.83	1.27	0.32	89,735	27,897	3,530	21,062	0	0	0	0	0	0	\$0	\$120,819	\$145,162	\$145,162
Aug-99	4,645	21,553	10,230	19.87	1.27	0.32	89,912	27,959	3,543	21,309	0	0	0	0	0	0	\$0	\$121,066	\$146,170	\$146,170
Sep-99	4,650	21,553	10,230	19.91	1.27	0.32	90,089	28,021	3,556	21,556	0	0	0	0	0	0	\$0	\$121,313	\$147,178	\$147,178
Oct-99	4,655	21,553	10,230	19.95	1.27	0.32	90,266	28,083	3,569	21,803	0	0	0	0	0	0	\$0	\$121,560	\$148,186	\$148,186
Nov-99	4,660	21,553	10,230	19.99	1.27	0.32	90,443	28,145	3,582	22,050	0	0	0	0	0	0	\$0	\$121,807	\$149,194	\$149,194
Dec-99	4,665	21,553	10,230	20.03	1.27	0.32	90,620	28,207	3,595	22,297	0	0	0	0	0	0	\$0	\$122,054	\$150,202	\$150,202
Jan-00	4,670	21,553	10,230	20.07	1.27	0.32	90,797	28,269	3,608	22,544	0	0	0	0	0	0	\$0	\$122,301	\$151,210	\$151,210
Feb-00	4,675	21,553	10,230	20.11	1.27	0.32	90,974	28,331	3,621	22,791	0	0	0	0	0	0	\$0	\$122,548	\$152,218	\$152,218
Mar-00	4,680	21,553	10,230	20.15	1.27	0.32	91,151	28,393	3,634	23,038	0	0	0	0	0	0	\$0	\$122,795	\$153,226	\$153,226
Apr-00	4,685	21,553	10,230	20.19	1.27	0.32	91,328	28,455	3,647	23,285	0	0	0	0	0	0	\$0	\$123,042	\$154,234	\$154,234
May-00	4,690	21,553	10,230	20.23	1.27	0.32	91,505	28,517	3,660	23,532	0	0	0	0	0	0	\$0	\$123,289	\$155,242	\$155,242
Jun-00	4,695	21,553	10,230	20.27	1.27	0.32	91,682	28,579	3,673	23,779	0	0	0	0	0	0	\$0	\$123,536	\$156,250	\$156,250
Jul-00	4,700	21,553	10,230	20.31	1.27	0.32	91,859	28,641	3,686	24,026	0	0	0	0	0	0	\$0	\$123,783	\$157,258	\$157,258
Aug-00	4,705	21,553	10,230	20.35	1.27	0.32	92,036	28,703	3,699	24,273	0	0	0	0	0	0	\$0	\$124,030	\$158,266	\$158,266
Sep-00	4,710	21,553	10,230	20.39	1.27	0.32	92,213	28,765	3,712	24,520	0	0	0	0	0	0	\$0	\$124,277	\$159,274	\$159,274
Oct-00	4,715	21,553	10,230	20.43	1.27	0.32	92,390	28,827	3,725	24,767	0	0	0	0	0	0	\$0	\$124,524	\$160,282	\$160,282
Nov-00	4,720	21,553	10,230	20.47	1.27	0.32	92,567	28,889	3,738	25,014	0	0	0	0	0	0	\$0	\$124,771	\$161,290	\$161,290
Dec-00	4,725	21,553	10,230	20.51	1.27	0.32	92,744	28,951	3,751	25,261	0	0	0	0	0	0	\$0	\$125,018	\$162,298	\$162,298
Jan-01	4,730	21,553	10,230	20.55	1.27	0.32	92,921	29,013	3,764	25,508	0	0	0	0	0	0	\$0	\$125,265	\$163,306	\$163,306
Feb-01	4,735	21,553	10,230	20.59	1.27	0.32	93,098	29,075	3,777	25,755	0	0	0	0	0	0	\$0	\$125,512	\$164,314	\$164,314
Mar-01	4,740	21,553	10,230	20.63	1.27	0.32	93,275	29,137	3,790	26,002	0	0	0	0	0	0	\$0	\$125,759	\$165,322	\$165,322
Apr-01	4,745	21,553	10,230	20.67	1.27	0.32	93,452	29,199	3,803	26,249	0	0	0	0	0	0	\$0	\$126,006	\$166,330	\$166,330
May-01	4,750	21,553	10,230	20.71	1.27	0.32	93,629	29,261	3,816	26,496	0	0	0	0	0	0	\$0	\$126,253	\$167,338	\$167,338
Jun-01	4,755	21,553	10,230	20.75	1.27	0.32	93,806	29,323	3,829	26,743	0	0	0	0	0	0	\$0	\$126,500	\$168,346	\$168,346
Jul-01	4,760	21,553	10,230	20.79	1.27	0.32	93,983	29,385	3,842	26,990	0	0	0	0	0	0	\$0	\$126,747	\$169,354	\$169,354
Aug-01	4,765	21,553	10,230	20.83	1.27	0.32	94,160	29,447	3,855	27,237	0	0	0	0	0	0	\$0	\$126,994	\$170,362	\$170,362
Sep-01	4,770	21,553	10,230	20.87	1.27	0.32	94,337	29,509	3,868	27,484	0	0	0	0	0	0	\$0	\$127,241	\$171,370	\$171,370
Oct-01	4,775	21,553	10,230	20.91	1.27	0.32	94,514	29,571	3,881	27,731	0	0	0	0	0	0	\$0	\$127,488	\$172,378	\$172,378
Nov-01	4,780	21,553	10,230	20.95	1.27	0.32	94,691	29,633	3,894	27,978	0	0	0	0	0	0	\$0	\$127,735	\$173,386	\$173,386
Dec-01	4,785	21,553	10,230	20.99	1.27	0.32	94,868													

## Proved Developed Non-Producing

[illegible]



PUD	NPR-2	Proved Undeveloped										Future Net Income																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		PRODUCTION				PRICES				GROSS REVENUE				COSTS				Net Revenue				Discounted @ 13.59%				Cumulative Discounted \$900																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Q	Gas	NGS	bo/d	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$	Q	Gas	NGS	\$

## Cash Flows

[illegible]

NPR-2	Retention Case		DOE Summarized Output			DOE Net Income Calculations			
	Production		Prices		Oil & Gas Revenue (\$ 000)	Oil & Gas Costs (\$ 000)	Overhead Costs (\$ 000)	Cash Flow (\$ 000)	Discounted Cash Flow (\$ 000)
	OIL (MBO)	GAS (MMCF)	NGLs (GPD)	OIL (\$/BO)	GAS (\$/MMBTU)	NGLs (\$/Gal)			
1997	54,355	258,636	123	\$18.74	\$1.22	\$0.31	\$0.000	\$101,509	\$1,192
1998	47,487	213,010	100	\$19.21	\$1.25	\$0.32	\$0.000	\$104,594	\$915
1999	40,009	178,009	80	\$19.66	\$1.28	\$0.33	\$0.000	\$107,774	\$680
2000	30,149	113,626	48	\$20.11	\$1.32	\$0.34	\$0.000	\$111,050	\$424
2001	26,450	102,760	41	\$20.57	\$1.35	\$0.34	\$0.000	\$114,426	\$329
2002	24,146	94,355	37	\$21.03	\$1.38	\$0.35	\$0.000	\$117,905	\$266
2003	21,414	82,552	30	\$21.51	\$1.42	\$0.36	\$0.000	\$121,489	\$205
2004	18,804	71,338	23	\$22.00	\$1.46	\$0.37	\$0.000	\$125,183	\$155
2005	17,129	64,015	18	\$22.50	\$1.49	\$0.38	\$0.000	\$128,988	\$122
2006	15,956	59,527	17	\$23.01	\$1.53	\$0.38	\$0.000	\$132,909	\$100
2007	14,874	55,360	16	\$23.53	\$1.57	\$0.39	\$0.000	\$136,950	\$81
2008	13,912	51,628	15	\$24.07	\$1.61	\$0.40	\$0.000	\$141,113	\$66
2009	12,948	47,889	13	\$24.61	\$1.65	\$0.41	\$0.000	\$145,403	\$53
2010	12,091	44,552	12	\$25.17	\$1.70	\$0.42	\$0.000	\$149,823	\$43
2011	11,296	41,452	12	\$25.74	\$1.74	\$0.43	\$0.000	\$154,378	\$34
2012	10,585	38,673	11	\$26.33	\$1.78	\$0.44	\$0.000	\$159,071	\$27
2013	9,868	35,886	10	\$26.92	\$1.83	\$0.45	\$0.000	\$163,907	\$21
2014	9,229	33,397	9	\$27.54	\$1.88	\$0.46	\$0.000	\$168,889	\$17
2015	8,633	31,084	9	\$28.16	\$1.93	\$0.47	\$0.000	\$174,024	\$13
2016	8,100	29,009	8	\$28.80	\$1.98	\$0.48	\$0.000	\$179,314	\$10
2017	0,000	0,000	0	\$29.45	NA	NA	\$0.000	\$0.000	\$0
2018	0,000	0,000	0	\$30.12	NA	NA	\$0.000	\$0.000	\$0
TOTALS	407,435	1646,758	630				\$0.000	\$2,738,700	\$8,707
									\$4,753

# Surface and Mineral Leasing and Maintenance

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

## Known

acres in NPR-2 w/o mineral leases  
76% of acres offered for leased were actually taken.

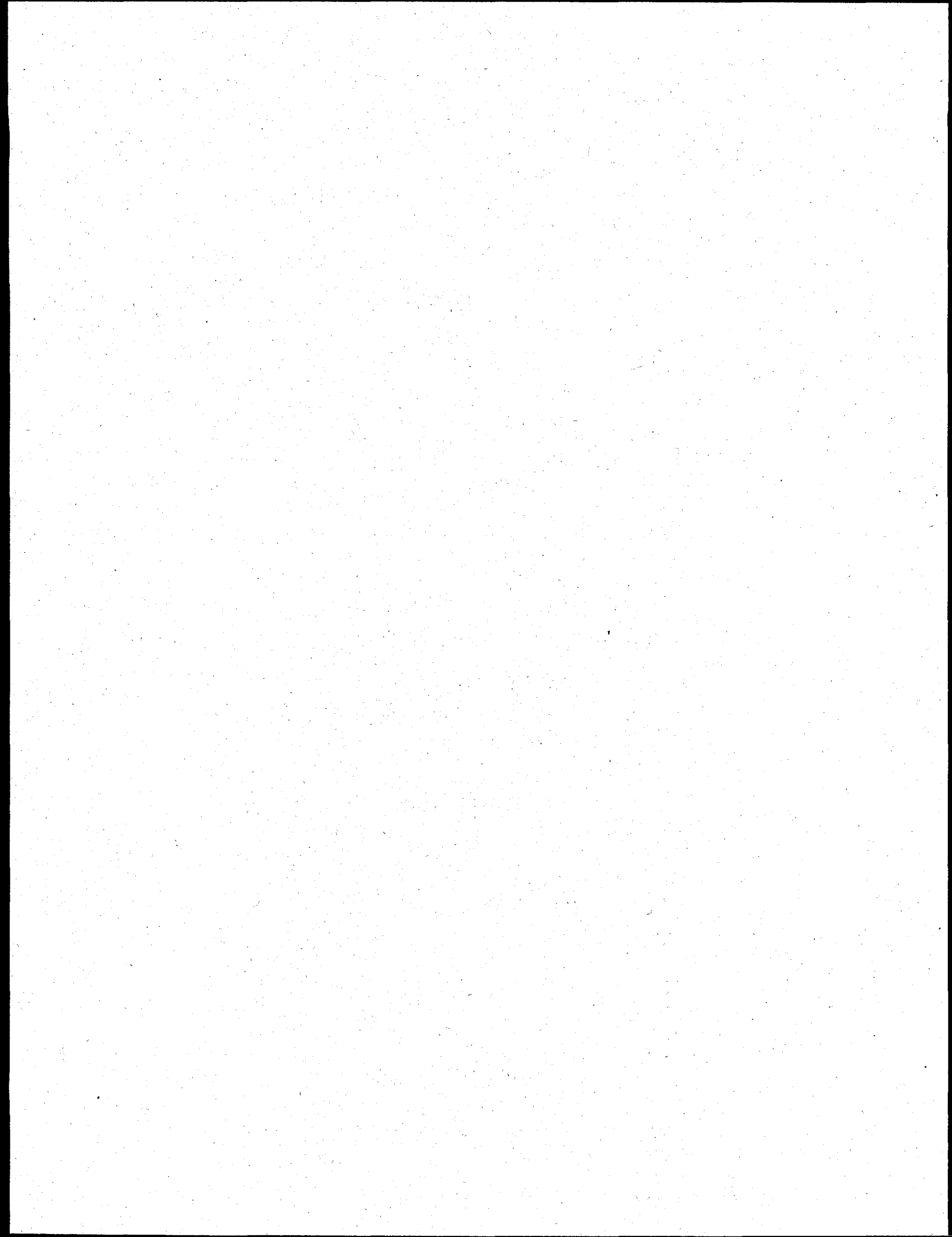
## Assumed

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.

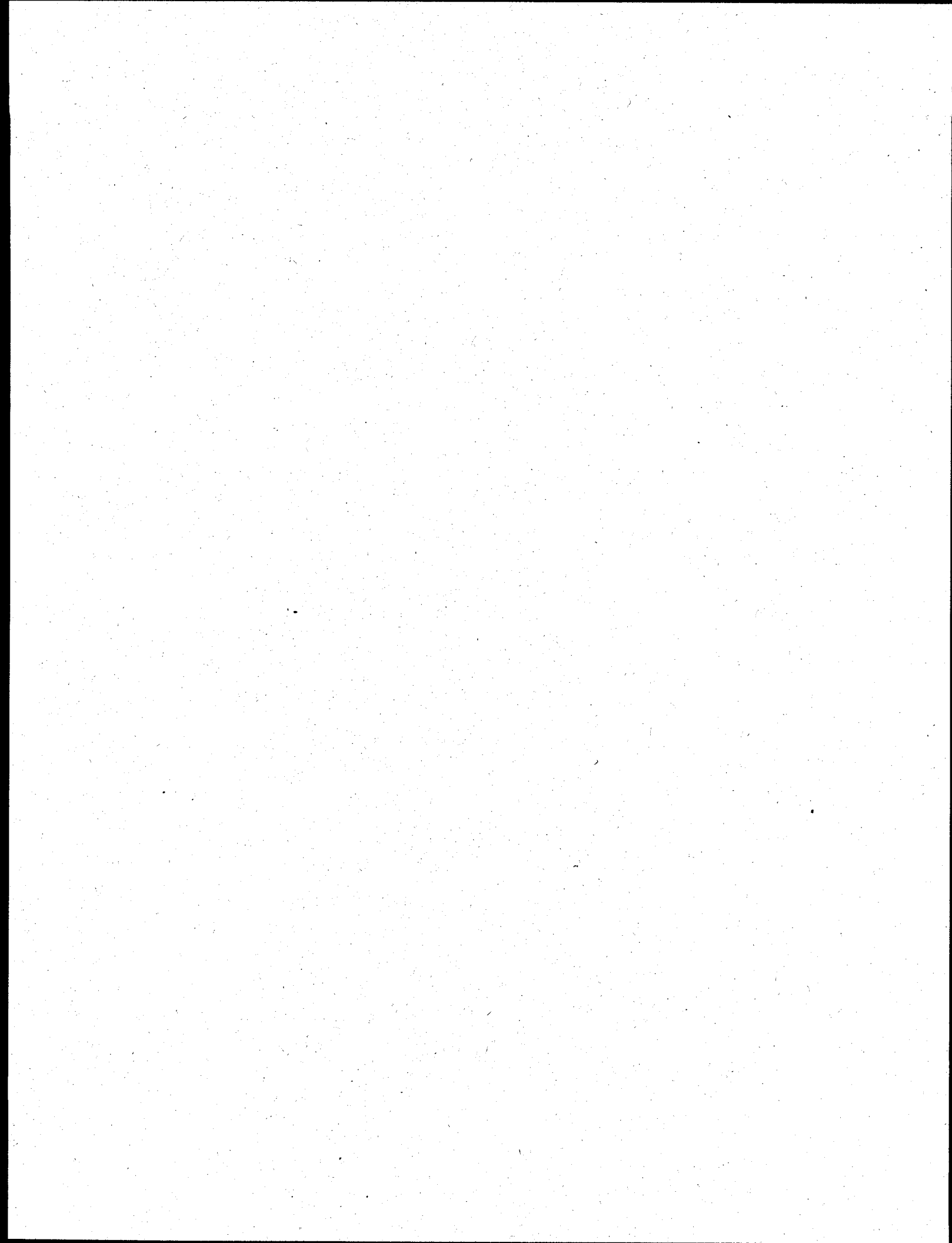
## Value to DOE

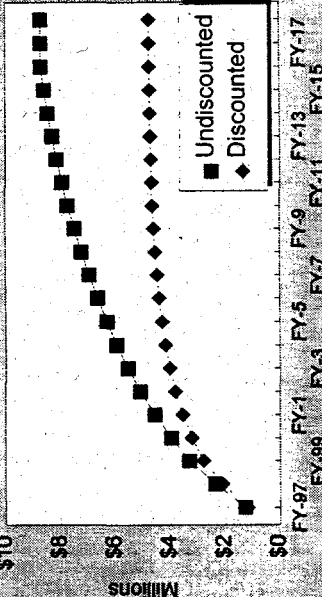
	(\$)	(\$/acre)
Maintenanc	(65,408)	ERR
Surface Inc	999	ERR
Mineral Inc.	4,796	ERR
NEPA cost	0	ERR
Total	(\$59,614)	ERR



# **APPENDIX B**

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



Current Parameters		Cumulative Federal Income		Operator Concerns	
Price=INFL				RISK	
Case=2				Production	
Royalty=not used				Expenses	
Bonus=\$0				100.0%	
Severance=none				0.0%	
Ad Valorem = none		0.0%			
St. Tax Rate=none		0.0%			
Fed Tax Rate= 35%		0.0%			
Mcf/bbl=6		Unproven			
Industry Rate=17.20%					
Federal Benefits Model		Total Federal Income		Cumulative Discounted	
NPR-2		Federal Income Taxes		Discounted	
		Royalties		Cumulative	
		Initial Income		\$000	
		\$		\$	
FY-97		0		1,270,001	
FY-98		0		2,376	
FY-99		0		3,310	
FY-00		0		3,971	
FY-01		0		4,553	
FY-02		0		5,086	
FY-03		0		5,553	
FY-04		0		5,954	
FY-05		0		6,313	
FY-06		0		6,645	
FY-07		0		6,952	
FY-08		0		7,234	
FY-09		0		7,492	
FY-10		0		7,728	
FY-11		0		7,941	
FY-12		0		8,135	
FY-13		0		8,307	
FY-14		0		8,459	
FY-15		0		8,592	
FY-16		0		8,707	
FY-17		0		8,707	
FY-18		0		8,707	
Thereafter		0		8,707	
TOTAL		0		4,752,832	
NPV=		0		4,753	

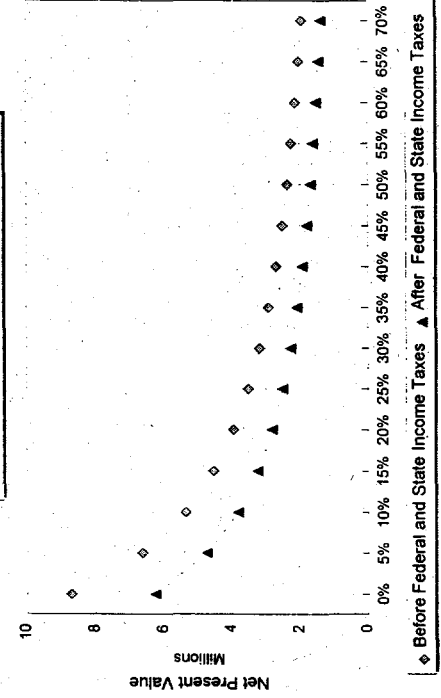


# Federal Income Tax Calculations

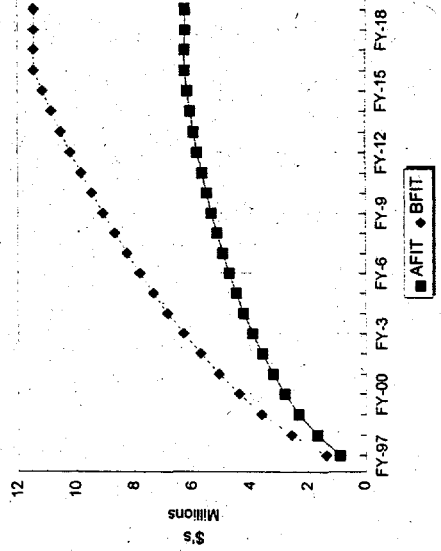
	Revenue	Royalty, 80% Cap, OpEx, and Prod. Tax	Allocated Overhead	Depreciation	Depletion	Total Deductions	Taxable Income	State Income Taxes	Federal Income Taxes	After Tax Cash Flow	Cumulative \$000	Discounted @ 14.2%	Cumulative Discounted \$000
FY-97	\$ 1,371,510	\$ 0	\$ 101,509	\$ 0	\$ 205,727	\$ 307,235	\$ 1,064,275	\$ 0	\$ 372,496	\$ 897,505	898	839,854	840
FY-98	1,210,488	0	104,594	0	181,573	286,168	924,320	0	323,512	782,381	1,680	641,091	1,481
FY-99	1,041,382	0	107,774	0	156,207	263,981	777,401	0	272,090	661,518	2,341	474,653	1,956
FY-00	772,055	0	111,050	0	115,808	226,859	545,196	0	190,819	470,186	2,812	295,419	2,251
FY-01	696,755	0	114,426	0	104,513	218,940	477,815	0	167,235	415,093	3,227	228,375	2,479
FY-02	651,457	0	117,905	0	97,719	215,624	435,833	0	152,542	381,010	3,608	183,558	2,663
FY-03	588,593	0	121,489	0	88,289	209,778	378,815	0	132,585	334,519	3,942	141,121	2,804
FY-04	526,067	0	125,183	0	78,910	204,093	321,974	0	112,691	288,193	4,230	106,460	2,911
FY-05	487,926	0	128,988	0	73,189	202,177	285,749	0	100,012	258,926	4,489	83,755	2,994
FY-06	464,892	0	132,909	0	69,734	202,643	262,249	0	91,787	240,196	4,730	68,036	3,062
FY-07	443,211	0	136,950	0	66,482	203,431	239,780	0	83,923	222,338	4,952	55,147	3,117
FY-08	423,913	0	141,113	0	63,587	204,700	219,213	0	76,725	206,075	5,158	44,758	3,162
FY-09	403,420	0	145,403	0	60,513	205,916	197,504	0	69,126	188,891	5,347	35,924	3,198
FY-10	385,167	0	149,823	0	57,775	207,598	177,569	0	62,149	173,195	5,520	28,843	3,227
FY-11	367,888	0	154,378	0	55,183	209,561	158,327	0	55,414	158,096	5,678	23,055	3,250
FY-12	352,423	0	159,071	0	52,863	211,934	140,489	0	49,171	144,181	5,822	18,411	3,268
FY-13	335,861	0	163,907	0	50,379	214,286	121,575	0	42,551	129,403	5,952	14,470	3,283
FY-14	321,085	0	168,889	0	48,163	217,052	104,033	0	36,411	115,784	6,067	11,337	3,294
FY-15	307,012	0	174,024	0	46,052	220,075	86,937	0	30,428	102,561	6,170	8,793	3,303
FY-16	294,428	0	179,314	0	44,164	223,478	70,950	0	24,832	90,282	6,260	6,778	3,310
FY-17	0	0	0	0	0	0	0	0	0	0	6,260	0	3,310
FY-18	0	0	0	0	0	0	0	0	0	0	6,260	0	3,310
Thereafter	0	0	0	0	0	0	0	0	0	0	6,260	0	3,310
TOTAL	11,445,533	0	2,738,700	0	1,716,830	4,455,530	6,990,003	0	2,446,501	6,260,332		3,309,837	

Discount Factor	Before Federal and State Income Taxes	After Federal and State Income Taxes
17.20%	4,254,000	3,310,000
14.20%	8,707,000	6,260,000
0%	6,633,000	4,747,000
5%	5,369,000	3,830,000
10%	4,535,000	3,228,000
15%	3,949,000	2,807,000
20%	3,517,000	2,497,000
25%	3,184,000	2,259,000
30%	2,919,000	2,070,000
35%	2,703,000	1,916,000
40%	2,523,000	1,788,000
45%	2,371,000	1,680,000
50%	2,240,000	1,586,000
55%	2,126,000	1,505,000
60%	2,026,000	1,434,000
65%	1,937,000	1,371,000
70%		

## Industry Net Present Value



## Cumulative Income to Industry



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

PRODUCTION			REVENUE			COSTS			Future Net Income		
Oil	Gas	NGLs	Oil	Gas	NGLs	Capex	Opex	Prod Taxes	Net Revenue before bonus/price	Cumulative	Discounted @ 13.50%
bbls	mcf	gals	\$	\$	\$	\$	\$	\$	\$	\$	\$
4,530	21,553	10,230	83,933	25,864	3,171	0	0	0	112,968	113	112,968
4,530	21,553	10,230	84,106	25,924	3,178	0	0	0	113,208	226	111,949
4,530	21,553	10,230	84,278	25,984	3,184	0	0	0	113,446	340	110,936
4,530	21,553	10,230	84,452	26,044	3,191	0	0	0	113,687	453	109,935
4,530	21,553	10,230	84,625	26,105	3,197	0	0	0	113,927	567	108,941
4,530	21,553	10,230	84,799	26,166	3,204	0	0	0	114,169	681	107,958
4,530	21,553	10,230	84,973	26,227	3,211	0	0	0	114,411	796	106,983
4,530	21,553	10,230	85,148	26,288	3,217	0	0	0	114,653	910	106,017
4,530	21,553	10,230	85,323	26,349	3,224	0	0	0	114,896	1,025	105,060
4,530	21,553	10,230	85,498	26,410	3,230	0	0	0	115,138	1,141	104,110
4,530	21,553	10,230	85,673	26,471	3,237	0	0	0	115,381	1,256	103,169
4,530	21,553	10,230	85,849	26,533	3,244	0	0	0	115,626	1,372	102,238
4,530	21,553	10,230	86,025	26,595	3,251	0	0	0	115,871	1,487	101,307
4,530	21,553	10,230	86,201	26,657	3,258	0	0	0	116,116	1,603	100,376
4,530	21,553	10,230	86,377	26,719	3,265	0	0	0	116,361	1,718	99,445
4,530	21,553	10,230	86,553	26,781	3,272	0	0	0	116,606	1,834	98,514
4,530	21,553	10,230	86,729	26,843	3,279	0	0	0	116,851	1,949	97,583
4,530	21,553	10,230	86,905	26,905	3,286	0	0	0	117,096	2,065	96,652
4,530	21,553	10,230	87,081	26,967	3,293	0	0	0	117,341	2,180	95,721
4,530	21,553	10,230	87,257	27,029	3,300	0	0	0	117,586	2,296	94,790
4,530	21,553	10,230	87,433	27,091	3,307	0	0	0	117,831	2,411	93,859
4,530	21,553	10,230	87,609	27,153	3,314	0	0	0	118,076	2,527	92,928
4,530	21,553	10,230	87,785	27,215	3,321	0	0	0	118,321	2,642	91,997
4,530	21,553	10,230	87,961	27,277	3,328	0	0	0	118,566	2,758	91,066
4,530	21,553	10,230	88,137	27,339	3,335	0	0	0	118,811	2,873	90,135
4,530	21,553	10,230	88,313	27,401	3,342	0	0	0	119,056	2,989	89,204
4,530	21,553	10,230	88,489	27,463	3,349	0	0	0	119,301	3,104	88,273
4,530	21,553	10,230	88,665	27,525	3,356	0	0	0	119,546	3,220	87,342
4,530	21,553	10,230	88,841	27,587	3,363	0	0	0	119,791	3,335	86,411
4,530	21,553	10,230	89,017	27,649	3,370	0	0	0	120,036	3,451	85,480
4,530	21,553	10,230	89,193	27,711	3,377	0	0	0	120,281	3,566	84,549
4,530	21,553	10,230	89,369	27,773	3,384	0	0	0	120,526	3,682	83,618
4,530	21,553	10,230	89,545	27,835	3,391	0	0	0	120,771	3,797	82,687
4,530	21,553	10,230	89,721	27,897	3,398	0	0	0	121,016	3,913	81,756
4,530	21,553	10,230	89,897	27,959	3,405	0	0	0	121,261	4,028	80,825
4,530	21,553	10,230	90,073	28,021	3,412	0	0	0	121,506	4,144	79,894
4,530	21,553	10,230	90,249	28,083	3,419	0	0	0	121,751	4,259	78,963
4,530	21,553	10,230	90,425	28,145	3,426	0	0	0	121,996	4,375	78,032
4,530	21,553	10,230	90,601	28,207	3,433	0	0	0	122,241	4,490	77,101
4,530	21,553	10,230	90,777	28,269	3,440	0	0	0	122,486	4,606	76,170
4,530	21,553	10,230	90,953	28,331	3,447	0	0	0	122,731	4,721	75,239
4,530	21,553	10,230	91,129	28,393	3,454	0	0	0	122,976	4,837	74,308
4,530	21,553	10,230	91,305	28,455	3,461	0	0	0	123,221	4,952	73,377
4,530	21,553	10,230	91,481	28,517	3,468	0	0	0	123,466	5,068	72,446
4,530	21,553	10,230	91,657	28,579	3,475	0	0	0	123,711	5,183	71,515
4,530	21,553	10,230	91,833	28,641	3,482	0	0	0	123,956	5,299	70,584
4,530	21,553	10,230	92,009	28,703	3,489	0	0	0	124,201	5,414	69,653
4,530	21,553	10,230	92,185	28,765	3,496	0	0	0	124,446	5,530	68,722
4,530	21,553	10,230	92,361	28,827	3,503	0	0	0	124,691	5,645	67,791
4,530	21,553	10,230	92,537	28,889	3,510	0	0	0	124,936	5,761	66,860
4,530	21,553	10,230	92,713	28,951	3,517	0	0	0	125,181	5,876	65,929
4,530	21,553	10,230	92,889	29,013	3,524	0	0	0	125,426	5,992	64,998
4,530	21,553	10,230	93,065	29,075	3,531	0	0	0	125,671	6,107	64,067
4,530	21,553	10,230	93,241	29,137	3,538	0	0	0	125,916	6,223	63,136
4,530	21,553	10,230	93,417	29,199	3,545	0	0	0	126,161	6,338	62,205
4,530	21,553	10,230	93,593	29,261	3,552	0	0	0	126,406	6,454	61,274
4,530	21,553	10,230	93,769	29,323	3,559	0	0	0	126,651	6,569	60,343
4,530	21,553	10,230	93,945	29,385	3,566	0	0	0	126,896	6,685	59,412
4,530	21,553	10,230	94,121	29,447	3,573	0	0	0	127,141	6,799	58,481
4,530	21,553	10,230	94,297	29,509	3,580	0	0	0	127,386	6,915	57,550
4,530	21,553	10,230	94,473	29,571	3,587	0	0	0	127,631	7,030	56,619
4,530	21,553	10,230	94,649	29,633	3,594	0	0	0	127,876	7,146	55,688
4,530	21,553	10,230	94,825	29,695	3,601	0	0	0	128,121	7,261	54,757
4,530	21,553	10,230	95,001	29,757	3,608	0	0	0	128,366	7,377	53,826
4,530	21,553	10,230	95,177	29,819	3,615	0	0	0	128,611	7,492	52,895
4,530	21,553	10,230	95,353	29,881	3,622	0	0	0	128,856	7,608	51,964
4,530	21,553	10,230	95,529	29,943	3,629	0	0	0	129,101	7,723	51,033
4,530	21,553	10,230	95,705	30,005	3,636	0	0	0	129,346	7,839	50,102
4,530	21,553	10,230	95,881	30,067	3,643	0	0	0	129,591	7,954	49,171
4,530	21,553	10,230	96,057	30,129	3,650	0	0	0	129,836	8,070	48,240
4,530	21,553	10,230	96,233	30,191	3,657	0	0	0	130,081	8,185	47,309
4,530	21,553	10,230	96,409	30,253	3,664	0	0	0	130,326	8,301	46,378
4,530	21,553	10,230	96,585	30,315	3,671	0	0	0	130,571	8,416	45,447
4,530	21,553	10,230	96,761	30,377	3,678	0	0	0	130,816	8,532	44,516
4,530	21,553	10,230	96,937	30,439	3,685	0	0	0	131,061	8,647	43,585
4,530	21,553	10,230	97,113	30,501	3,692	0	0	0	131,306	8,763	42,654
4,530	21,553	10,230	97,289	30,563	3,699	0	0	0	131,551	8,878	41,723
4,530	21,553	10,230	97,465	30,625	3,706	0	0	0	131,796	8,994	40,792
4,530	21,553	10,230	97,641	30,687	3,713	0	0	0	132,041	9,109	39,861
4,530	21,553	10,230	97,817	30,749	3,720	0	0	0	132,286	9,225	38,930
4,530	21,553	10,230	97,993	30,811	3,727	0	0	0	132,531	9,340	38,000
4,530	21,553	10,230	98,169	30,873	3,734	0	0	0	132,776	9,456	37,069
4,530	21,553	10,230	98,345	30,935	3,741	0	0	0	133,021	9,571	36,138
4,530	21,553	10,230	98,521	31,000	3,748	0	0	0	133,266	9,687	35,207
4,530	21,553	10,230	98,697	31,062	3,755	0	0	0	133,511	9,802	34,276
4,530	21,553	10,230	98,873	31,124	3,762	0	0	0	133,756	9,918	33,345
4,530	21,553	10,230	99,049	31,186	3,769	0	0	0	134,001	10,033	32,414
4,530	21,553	10,230	99,225	31,248	3,776	0	0	0	134,246	10,149	31,483
4,530	21,553	10,230	99,401	31,310	3,783	0	0	0	134,491	10,264	30,552
4,530	21,553	10,230	99,577	31,372	3,790	0	0	0	134,736	10,380	29,621
4,530	21,553	10,230	99,753	31,434	3,797	0	0	0	134,981	10,495	28,690
4,530	21,553	10,230	99,929	31,496	3,804	0	0	0	135,226	10,611	27,759
4,530	21,553	10,230	100,105	31,558	3,811	0	0	0	135,471	10,726	26,828
4,530	21,553	10,230	100,281	31,620	3,818	0	0	0	135,716	10,842	25,897
4,530	21,553	10,230	100,457	31,682	3,825	0	0	0	135,961	10,957	24,966
4,530	21,553	10,230	100,633	31,744	3,832	0	0	0	136,206	11,073	24,035
4,530	21,553	10,230	100,809	31,806	3,839	0	0	0	136,451	11,188	23,104
4,530	21,553	10,230	100,985	31,868	3,846	0	0	0	136,696	11,304	22,173
4,530	21,553	10,230	101,161	31,930	3,853	0	0				

## Proved Developed Producing

PDP	NPR-2	PRODUCTION			PRICES			GROSS REVENUE			COSTS			Future Net Income					
		Oil	Gas	NGLs	Oil	Gas	NGLs	Oil	Gas	NGLs	Total	Royalty @	Opex	Capex	Total	Net Revenue	Cumulative	Discounted @ 13.50%	Cumulative
		thbbls	mcf	MMBbls	\$	\$	\$	\$	\$	\$	\$	not used	\$	\$	\$	\$	\$	\$	\$
Oct-96		4,530	21,553	10,230	\$10.53	\$1.20	\$0.31	\$3,933	\$25,924	\$3,171	\$112,968	0	0	0	0	\$112,968	\$113	\$112,968	\$113
Nov-96		4,530	21,553	10,230	\$10.53	\$1.20	\$0.31	\$4,108	\$25,924	\$3,171	\$113,208	0	0	0	0	\$113,208	\$226	\$113,208	\$226
Dec-96		4,530	21,553	10,230	\$10.53	\$1.21	\$0.31	\$4,278	\$25,924	\$3,171	\$113,446	0	0	0	0	\$113,446	\$340	\$113,446	\$340
Jan-97		4,530	21,553	10,230	\$10.53	\$1.21	\$0.31	\$4,452	\$26,044	\$3,191	\$113,687	0	0	0	0	\$113,687	\$453	\$113,687	\$453
Feb-97		4,530	21,553	10,230	\$10.53	\$1.21	\$0.31	\$4,625	\$26,165	\$3,204	\$113,927	0	0	0	0	\$113,927	\$567	\$113,927	\$567
Mar-97		4,530	21,553	10,230	\$10.53	\$1.21	\$0.31	\$4,799	\$26,287	\$3,217	\$114,169	0	0	0	0	\$114,169	\$681	\$114,169	\$681
Apr-97		4,530	21,553	10,230	\$10.53	\$1.22	\$0.31	\$4,973	\$26,408	\$3,230	\$114,411	0	0	0	0	\$114,411	\$796	\$114,411	\$796
May-97		4,530	21,553	10,230	\$10.53	\$1.22	\$0.31	\$5,148	\$26,529	\$3,243	\$114,653	0	0	0	0	\$114,653	\$910	\$114,653	\$910
Jun-97		4,530	21,553	10,230	\$10.53	\$1.22	\$0.31	\$5,323	\$26,650	\$3,256	\$114,896	0	0	0	0	\$114,896	\$1,025	\$114,896	\$1,025
Jul-97		4,530	21,553	10,230	\$10.53	\$1.23	\$0.32	\$5,498	\$26,771	\$3,269	\$115,138	0	0	0	0	\$115,138	\$1,141	\$115,138	\$1,141
Aug-97		4,530	21,553	10,230	\$10.53	\$1.23	\$0.32	\$5,673	\$26,892	\$3,282	\$115,381	0	0	0	0	\$115,381	\$1,256	\$115,381	\$1,256
Sep-97		4,530	21,553	10,230	\$10.53	\$1.23	\$0.32	\$5,848	\$27,013	\$3,295	\$115,626	0	0	0	0	\$115,626	\$1,372	\$115,626	\$1,372
Oct-97		4,530	21,553	10,230	\$10.53	\$1.23	\$0.32	\$6,023	\$27,134	\$3,308	\$115,871	0	0	0	0	\$115,871	\$1,487	\$115,871	\$1,487
Nov-97		4,530	21,553	10,230	\$10.53	\$1.24	\$0.32	\$6,198	\$27,255	\$3,321	\$116,116	0	0	0	0	\$116,116	\$1,602	\$116,116	\$1,602
Dec-97		4,530	21,553	10,230	\$10.53	\$1.24	\$0.32	\$6,373	\$27,376	\$3,334	\$116,361	0	0	0	0	\$116,361	\$1,717	\$116,361	\$1,717
Jan-98		4,530	21,553	10,230	\$10.53	\$1.25	\$0.32	\$6,548	\$27,497	\$3,347	\$116,606	0	0	0	0	\$116,606	\$1,832	\$116,606	\$1,832
Feb-98		4,530	21,553	10,230	\$10.53	\$1.25	\$0.32	\$6,723	\$27,618	\$3,360	\$116,851	0	0	0	0	\$116,851	\$1,947	\$116,851	\$1,947
Mar-98		4,530	21,553	10,230	\$10.53	\$1.25	\$0.32	\$6,898	\$27,739	\$3,373	\$117,096	0	0	0	0	\$117,096	\$2,062	\$117,096	\$2,062
Apr-98		4,530	21,553	10,230	\$10.53	\$1.26	\$0.32	\$7,073	\$27,860	\$3,386	\$117,341	0	0	0	0	\$117,341	\$2,177	\$117,341	\$2,177
May-98		4,530	21,553	10,230	\$10.53	\$1.26	\$0.32	\$7,248	\$27,981	\$3,399	\$117,586	0	0	0	0	\$117,586	\$2,292	\$117,586	\$2,292
Jun-98		4,530	21,553	10,230	\$10.53	\$1.26	\$0.32	\$7,423	\$28,102	\$3,412	\$117,831	0	0	0	0	\$117,831	\$2,407	\$117,831	\$2,407
Jul-98		4,530	21,553	10,230	\$10.53	\$1.26	\$0.32	\$7,598	\$28,223	\$3,425	\$118,076	0	0	0	0	\$118,076	\$2,522	\$118,076	\$2,522
Aug-98		4,530	21,553	10,230	\$10.53	\$1.27	\$0.32	\$7,773	\$28,344	\$3,438	\$118,321	0	0	0	0	\$118,321	\$2,637	\$118,321	\$2,637
Sep-98		4,530	21,553	10,230	\$10.53	\$1.27	\$0.32	\$7,948	\$28,465	\$3,451	\$118,566	0	0	0	0	\$118,566	\$2,752	\$118,566	\$2,752
Oct-98		4,530	21,553	10,230	\$10.53	\$1.27	\$0.32	\$8,123	\$28,586	\$3,464	\$118,811	0	0	0	0	\$118,811	\$2,867	\$118,811	\$2,867
Nov-98		4,530	21,553	10,230	\$10.53	\$1.27	\$0.32	\$8,298	\$28,707	\$3,477	\$119,056	0	0	0	0	\$119,056	\$2,982	\$119,056	\$2,982
Dec-98		4,530	21,553	10,230	\$10.53	\$1.27	\$0.32	\$8,473	\$28,828	\$3,490	\$119,301	0	0	0	0	\$119,301	\$3,097	\$119,301	\$3,097
Jan-99		4,530	21,553	10,230	\$10.53	\$1.28	\$0.33	\$8,648	\$28,949	\$3,503	\$119,546	0	0	0	0	\$119,546	\$3,212	\$119,546	\$3,212
Feb-99		4,530	21,553	10,230	\$10.53	\$1.28	\$0.33	\$8,823	\$29,070	\$3,516	\$119,791	0	0	0	0	\$119,791	\$3,327	\$119,791	\$3,327
Mar-99		4,530	21,553	10,230	\$10.53	\$1.28	\$0.33	\$8,998	\$29,191	\$3,529	\$120,036	0	0	0	0	\$120,036	\$3,442	\$120,036	\$3,442
Apr-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$9,173	\$29,312	\$3,542	\$120,281	0	0	0	0	\$120,281	\$3,557	\$120,281	\$3,557
May-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$9,348	\$29,433	\$3,555	\$120,526	0	0	0	0	\$120,526	\$3,672	\$120,526	\$3,672
Jun-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$9,523	\$29,554	\$3,568	\$120,771	0	0	0	0	\$120,771	\$3,787	\$120,771	\$3,787
Jul-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$9,698	\$29,675	\$3,581	\$121,016	0	0	0	0	\$121,016	\$3,902	\$121,016	\$3,902
Aug-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$9,873	\$29,796	\$3,594	\$121,261	0	0	0	0	\$121,261	\$4,017	\$121,261	\$4,017
Sep-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$10,048	\$29,917	\$3,607	\$121,506	0	0	0	0	\$121,506	\$4,132	\$121,506	\$4,132
Oct-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$10,223	\$30,038	\$3,620	\$121,751	0	0	0	0	\$121,751	\$4,247	\$121,751	\$4,247
Nov-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$10,398	\$30,159	\$3,633	\$121,996	0	0	0	0	\$121,996	\$4,362	\$121,996	\$4,362
Dec-99		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$10,573	\$30,280	\$3,646	\$122,241	0	0	0	0	\$122,241	\$4,477	\$122,241	\$4,477
Jan-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$10,748	\$30,401	\$3,659	\$122,486	0	0	0	0	\$122,486	\$4,592	\$122,486	\$4,592
Feb-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$10,923	\$30,522	\$3,672	\$122,731	0	0	0	0	\$122,731	\$4,707	\$122,731	\$4,707
Mar-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$11,098	\$30,643	\$3,685	\$122,976	0	0	0	0	\$122,976	\$4,822	\$122,976	\$4,822
Apr-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$11,273	\$30,764	\$3,698	\$123,221	0	0	0	0	\$123,221	\$4,937	\$123,221	\$4,937
May-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$11,448	\$30,885	\$3,711	\$123,466	0	0	0	0	\$123,466	\$5,052	\$123,466	\$5,052
Jun-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$11,623	\$31,006	\$3,724	\$123,711	0	0	0	0	\$123,711	\$5,167	\$123,711	\$5,167
Jul-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$11,798	\$31,127	\$3,737	\$123,956	0	0	0	0	\$123,956	\$5,282	\$123,956	\$5,282
Aug-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$11,973	\$31,248	\$3,750	\$124,201	0	0	0	0	\$124,201	\$5,397	\$124,201	\$5,397
Sep-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$12,148	\$31,369	\$3,763	\$124,446	0	0	0	0	\$124,446	\$5,512	\$124,446	\$5,512
Oct-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$12,323	\$31,490	\$3,776	\$124,691	0	0	0	0	\$124,691	\$5,627	\$124,691	\$5,627
Nov-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$12,498	\$31,611	\$3,789	\$124,936	0	0	0	0	\$124,936	\$5,742	\$124,936	\$5,742
Dec-00		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$12,673	\$31,732	\$3,802	\$125,181	0	0	0	0	\$125,181	\$5,857	\$125,181	\$5,857
Jan-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$12,848	\$31,853	\$3,815	\$125,426	0	0	0	0	\$125,426	\$5,972	\$125,426	\$5,972
Feb-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$13,023	\$31,974	\$3,828	\$125,671	0	0	0	0	\$125,671	\$6,087	\$125,671	\$6,087
Mar-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$13,198	\$32,095	\$3,841	\$125,916	0	0	0	0	\$125,916	\$6,202	\$125,916	\$6,202
Apr-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$13,373	\$32,216	\$3,854	\$126,161	0	0	0	0	\$126,161	\$6,317	\$126,161	\$6,317
May-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$13,548	\$32,337	\$3,867	\$126,406	0	0	0	0	\$126,406	\$6,432	\$126,406	\$6,432
Jun-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$13,723	\$32,458	\$3,880	\$126,651	0	0	0	0	\$126,651	\$6,547	\$126,651	\$6,547
Jul-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$13,898	\$32,579	\$3,893	\$126,896	0	0	0	0	\$126,896	\$6,662	\$126,896	\$6,662
Aug-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$14,073	\$32,700	\$3,906	\$127,141	0	0	0	0	\$127,141	\$6,777	\$127,141	\$6,777
Sep-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$14,248	\$32,821	\$3,919	\$127,386	0	0	0	0	\$127,386	\$6,892	\$127,386	\$6,892
Oct-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$14,423	\$32,942	\$3,932	\$127,631	0	0	0	0	\$127,631	\$7,007	\$127,631	\$7,007
Nov-01		4,530	21,553	10,230	\$10.53	\$1.29	\$0.33	\$14,598	\$33,063	\$3,945	\$127,876	0	0	0	0	\$127,876	\$7,122	\$127,876	\$7,122
Dec-01		4,530	21,553																

PD-NP	Proved Developed Non-Producing														Future Net Income		
	PRODUCTION				PRICES				GROSS REVENUE				COSTS		Net Revenue	Cumulative Discounted @ 13.50%	Cumulative Discounted \$000
	q	Gas	ml	Gas	q	Gas	ml	Gas	q	Gas	ml	Gas	ml	Gas			
NPR-2	bois	mod	gas														
Oct-95					\$ 18.53	\$ 1.20	\$ 0.31									\$ 0	\$ 0
Nov-95																	\$ 0
Dec-95					\$ 18.61	\$ 1.21	\$ 0.31										\$ 0
Jan-96					\$ 18.64	\$ 1.21	\$ 0.31										\$ 0
Feb-96					\$ 18.68	\$ 1.21	\$ 0.31										\$ 0
Mar-96					\$ 18.72	\$ 1.21	\$ 0.31										\$ 0
Apr-96					\$ 18.76	\$ 1.22	\$ 0.31										\$ 0
May-96					\$ 18.80	\$ 1.22	\$ 0.31										\$ 0
Jun-96					\$ 18.84	\$ 1.22	\$ 0.32										\$ 0
Jul-96					\$ 18.86	\$ 1.23	\$ 0.32										\$ 0
Aug-96					\$ 18.81	\$ 1.23	\$ 0.32										\$ 0
Sep-96					\$ 18.95	\$ 1.23	\$ 0.32										\$ 0
FY-97																	\$ 0
Oct-97					\$ 18.95	\$ 1.23	\$ 0.32										\$ 0
Nov-97					\$ 19.03	\$ 1.24	\$ 0.32										\$ 0
Dec-97					\$ 19.07	\$ 1.24	\$ 0.32										\$ 0
Jan-98					\$ 19.11	\$ 1.24	\$ 0.32										\$ 0
Feb-98					\$ 19.15	\$ 1.25	\$ 0.32										\$ 0
Mar-98					\$ 19.19	\$ 1.25	\$ 0.32										\$ 0
Apr-98					\$ 19.23	\$ 1.25	\$ 0.32										\$ 0
May-98					\$ 19.27	\$ 1.25	\$ 0.32										\$ 0
Jun-98					\$ 19.31	\$ 1.26	\$ 0.32										\$ 0
Jul-98					\$ 19.35	\$ 1.26	\$ 0.32										\$ 0
Aug-98					\$ 19.39	\$ 1.26	\$ 0.32										\$ 0
Sep-98					\$ 19.43	\$ 1.27	\$ 0.32										\$ 0
FY-98																	\$ 0
FY-99					\$ 19.65	\$ 1.28	\$ 0.33										\$ 0
FY-00					\$ 20.11	\$ 1.32	\$ 0.34										\$ 0
FY-01					\$ 20.57	\$ 1.35	\$ 0.35										\$ 0
FY-02					\$ 21.03	\$ 1.38	\$ 0.35										\$ 0
FY-03					\$ 21.51	\$ 1.42	\$ 0.36										\$ 0
FY-04					\$ 22.00	\$ 1.46	\$ 0.37										\$ 0
FY-05					\$ 22.50	\$ 1.49	\$ 0.38										\$ 0
FY-06					\$ 23.01	\$ 1.53	\$ 0.38										\$ 0
FY-07					\$ 23.53	\$ 1.57	\$ 0.39										\$ 0
FY-08					\$ 24.07	\$ 1.61	\$ 0.40										\$ 0
FY-09					\$ 24.61	\$ 1.65	\$ 0.41										\$ 0
FY-10					\$ 25.17	\$ 1.70	\$ 0.42										\$ 0
FY-11					\$ 25.74	\$ 1.74	\$ 0.43										\$ 0
FY-12					\$ 26.33	\$ 1.78	\$ 0.44										\$ 0
FY-13					\$ 26.92	\$ 1.83	\$ 0.45										\$ 0
FY-14					\$ 27.54	\$ 1.88	\$ 0.46										\$ 0
FY-15					\$ 28.16	\$ 1.93	\$ 0.47										\$ 0
FY-16					\$ 28.80	\$ 1.98	\$ 0.48										\$ 0
FY-17					NA	NA	NA										\$ 0
FY-18					\$ 29.45	NA	NA										\$ 0
Therapist					\$ 30.12	NA	NA										\$ 0
Total					\$ 30.81	NA	NA										\$ 0

PUD	Proved Undeveloped										Future Net Income											
	PRODUCTION			PRICES			GROSS REVENUE				COSTS		Net Revenue	Cumulative	Discounted	Cumulative						
NPR-2	Oil	Gas	NGLs	Oil	Gas	NGLs	Oil	Gas	NGLs	Oil	Gas	NGLs	Royalty @	Capex	Opex	Prod. Taxes	Total	\$	\$000	\$5.50%	\$000	
Oct-96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-02	0	0	0																			

Unproven NPR-2	PRODUCTION			PRICES			Unproven GROSS REVENUE			COSTS			Future Net Income							
	Oil	Gas	NGLs	Oil	Gas	NGLs	Oil	Gas	NGLs	Total	Royalty @	Capex	Opex	Prod. Taxes	Total	Net Revenue	Cumulative \$'000	Discounted @ 13.50%	Cumulative Discounted \$'000	
	bbls	mcf	gals.	\$	\$	\$	\$	\$	\$	\$	\$	not used	\$	\$	exempt	\$	\$	\$	\$	
Oct-96	0	0	0	\$18.53	\$1.20	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-96	0	0	0	\$18.57	\$1.20	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-96	0	0	0	\$18.61	\$1.21	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-97	0	0	0	\$18.64	\$1.21	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-97	0	0	0	\$18.68	\$1.21	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-97	0	0	0	\$18.72	\$1.21	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-97	0	0	0	\$18.76	\$1.22	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-97	0	0	0	\$18.80	\$1.22	\$0.31	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-97	0	0	0	\$18.84	\$1.22	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-97	0	0	0	\$18.88	\$1.23	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-97	0	0	0	\$18.91	\$1.23	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-97	0	0	0	\$18.95	\$1.23	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-97	0	0	0	\$18.99	\$1.23	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-97	0	0	0	\$19.03	\$1.24	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-97	0	0	0	\$19.07	\$1.24	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-98	0	0	0	\$19.11	\$1.24	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-98	0	0	0	\$19.15	\$1.25	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-98	0	0	0	\$19.19	\$1.25	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-98	0	0	0	\$19.23	\$1.25	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-98	0	0	0	\$19.27	\$1.25	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-98	0	0	0	\$19.31	\$1.26	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-98	0	0	0	\$19.35	\$1.26	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-98	0	0	0	\$19.39	\$1.26	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-98	0	0	0	\$19.43	\$1.27	\$0.32	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-98	0	0	0	\$19.47	\$1.28	\$0.33	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-98	0	0	0	\$19.51	\$1.32	\$0.34	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-98	0	0	0	\$19.55	\$1.35	\$0.34	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-99	0	0	0	\$20.57	\$1.38	\$0.35	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-99	0	0	0	\$21.03	\$1.42	\$0.36	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-99	0	0	0	\$21.51	\$1.46	\$0.37	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-99	0	0	0	\$22.00	\$1.49	\$0.38	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-99	0	0	0	\$22.50	\$1.53	\$0.38	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-99	0	0	0	\$23.01	\$1.57	\$0.39	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-99	0	0	0	\$23.53	\$1.61	\$0.40	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-99	0	0	0	\$24.07	\$1.65	\$0.41	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-99	0	0	0	\$24.61	\$1.70	\$0.42	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-99	0	0	0	\$25.17	\$1.74	\$0.43	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-99	0	0	0	\$25.74	\$1.78	\$0.44	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-99	0	0	0	\$26.33	\$1.83	\$0.45	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-00	0	0	0	\$26.92	\$1.88	\$0.46	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-00	0	0	0	\$27.54	\$1.93	\$0.47	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-00	0	0	0	\$28.16	\$1.98	\$0.48	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-00	0	0	0	\$28.80	NA	NA	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-00	0	0	0	\$29.45	NA	NA	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-00	0	0	0	\$30.12	NA	NA	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-00	0	0	0	\$30.81	NA	NA	0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-00	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-00	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-00	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-00	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-00	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-01	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Mar-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Apr-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
May-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jun-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jul-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Aug-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Sep-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Oct-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Nov-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Dec-02	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Jan-03	0	0	0				0	0	0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
Feb-03	0	0	0				0	0	0	0										

Surface and Mineral Leasing and Maintenance

NPR-2 DOI Case	Maintenance Costs		Leasing Program							
	Annual	NPV @	Surface Income	NPV @ 10.00%	Ongoing Rentals	First Sale		Costs	Total Revenue	NPV @ 10.00%
		7.00%				Bonus	Rentals			
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
FY01	(5,000)	(3,688)	1,180	768	480		1,425	0	1,905	1,241
FY02	(5,000)	(3,446)	1,180	699	480		1,900	0	2,380	1,409
FY03	(5,000)	(3,221)	1,180	635	480		1,900	0	2,380	1,281
FY04	(5,000)	(3,010)	1,180	577	480		1,900	0	2,380	1,164
FY05	(5,000)	(2,813)	1,180	525	480		1,900	0	2,380	1,059
FY06	(5,000)	(2,629)	1,180	477	480		1,900	0	2,380	962
FY07	(5,000)	(2,457)	1,180	434	480			0	480	176
FY08	(5,000)	(2,296)	1,180	394	480	4,275	1,425	(1,875)	4,305	1,439
FY09	(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
TOTAL	(\$160,000)	(\$65,408)	\$37,760	\$11,790	\$15,360	\$12,825	\$49,875	(\$5,625)	\$72,435	\$23,425

**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.

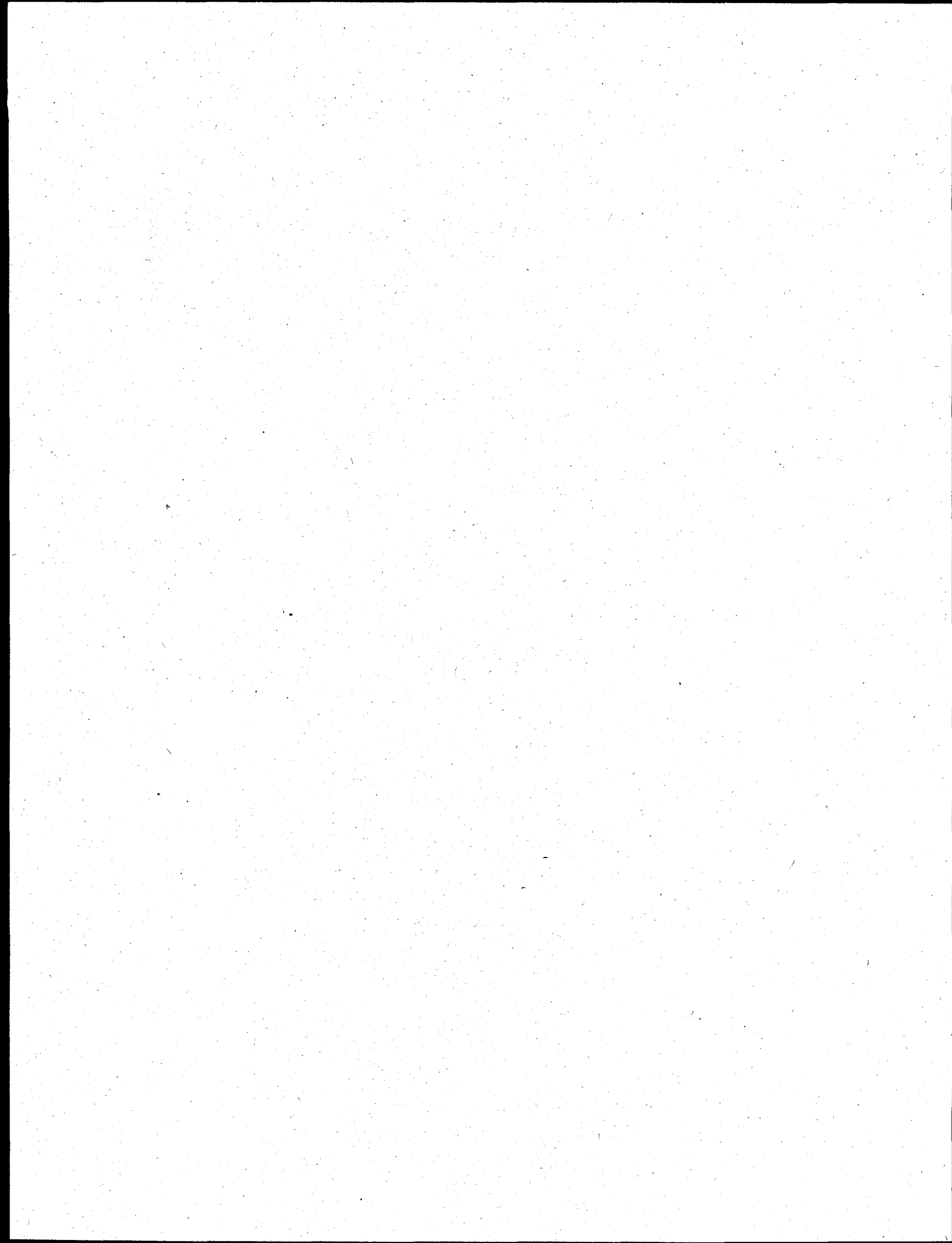
**Value to DOE**

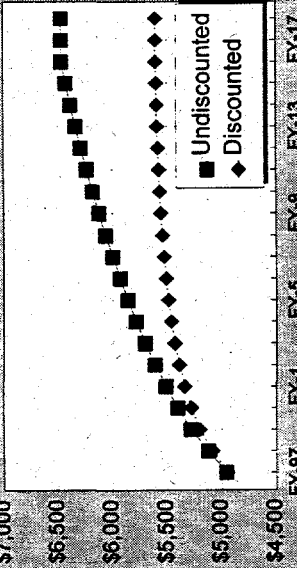
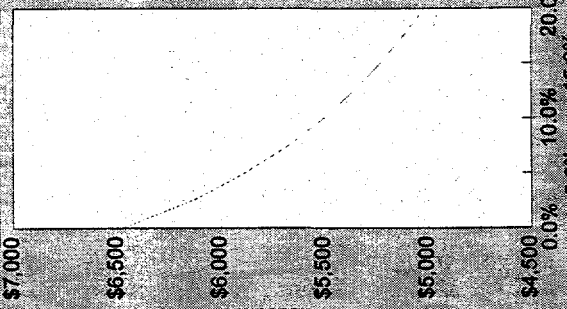
	(\$)	(\$/acre)
Maintenanc	(65,408)	(26.16)
Surface Inc	11,790	4.72
Mineral Inc.	23,425	9.37
NEPA cost	(28,604)	(11.44)
Total	(\$58,797)	(\$23.52)

## **APPENDIX C**

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





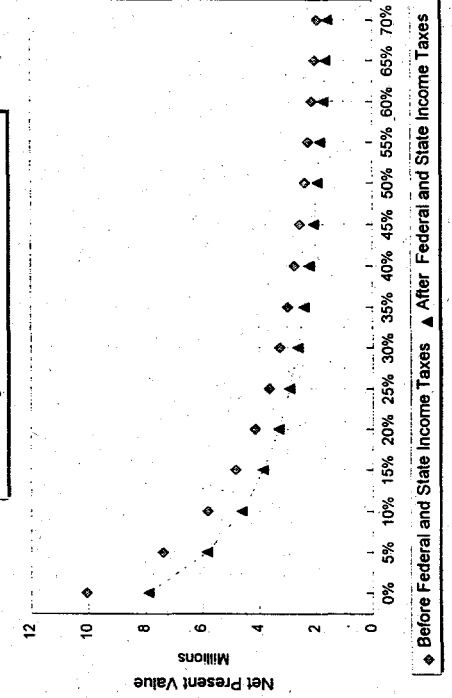
Current Parameters		Cumulative Federal Income										Operator Concerns																		
Price=INFL												<table><tr><th></th><th>PDP</th><th>PD-NP</th><th>PUD</th><th>Unproven</th></tr><tr><td>Production</td><td>100.0%</td><td>0.0%</td><td>0.0%</td><td>0.0%</td></tr><tr><td>Expenses</td><td>100.0%</td><td>0.0%</td><td>0.0%</td><td>0.0%</td></tr></table>					PDP	PD-NP	PUD	Unproven	Production	100.0%	0.0%	0.0%	0.0%	Expenses	100.0%	0.0%	0.0%	0.0%
	PDP	PD-NP	PUD	Unproven																										
Production	100.0%	0.0%	0.0%	0.0%																										
Expenses	100.0%	0.0%	0.0%	0.0%																										
Case=4																														
Royalty=not used																														
Bonus=\$4,797,000																														
Severance=NA																														
Ad Valorem = 1.5%*NPV																														
St. Tax Rate=9.30%																														
Fed Tax Rate= 35%																														
Mcf/bbl=6																														
Industry Rate=17.20%																														
Federal Benefits Model		Federal Benefits Model										Operator Concerns																		
NPR-2		Federal NPV <th colspan="4"></th>																												
																														
FY-97		Initial Income	Royalties	Federal Income Taxes	Total Federal Income	Cumulative	Discounted	Cumulative	Discounted	Expenses	RISK																			
FY-98		\$	\$	\$	\$	\$000	\$000	\$000	\$000																					
FY-99		4,797,000	0	164,000	4,961,000	4,961	4,950,938	4,951	4,951																					
FY-00			0	165,000	165,000	5,126	136,455	5,087	5,087																					
FY-01			0	158,000	158,000	5,284	115,124	5,203	5,203																					
FY-02			0	119,000	119,000	5,403	76,394	5,279	5,279																					
FY-03			0	107,000	107,000	5,510	60,520	5,339	5,339																					
FY-04			0	101,000	101,000	5,611	50,332	5,390	5,390																					
FY-05			0	91,000	91,000	5,702	39,955	5,430	5,430																					
FY-06			0	81,000	81,000	5,783	31,334	5,461	5,461																					
FY-07			0	75,000	75,000	5,858	25,562	5,487	5,487																					
FY-08			0	71,000	71,000	5,929	21,321	5,508	5,508																					
FY-09			0	68,000	68,000	5,997	17,991	5,526	5,526																					
FY-10			0	65,000	65,000	6,062	15,152	5,541	5,541																					
FY-11			0	61,000	61,000	6,123	12,528	5,554	5,554																					
FY-12			0	58,000	58,000	6,181	10,495	5,564	5,564																					
FY-13			0	55,000	55,000	6,236	8,768	5,573	5,573																					
FY-14			0	52,000	52,000	6,288	7,304	5,580	5,580																					
FY-15			0	49,000	49,000	6,337	6,064	5,586	5,586																					
FY-16			0	46,000	46,000	6,383	5,016	5,591	5,591																					
FY-17			0	43,000	43,000	6,426	4,131	5,595	5,595																					
FY-18			0	40,000	40,000	6,466	3,386	5,599	5,599																					
Thereafter			0	0	0	6,466	0	5,599	5,599																					
TOTAL		4,797,000	0	1,669,000	6,466,000	6,466	5,598,770																							
NPV=		4,797,000	0	801,770																										

# Federal Income Tax Calculations

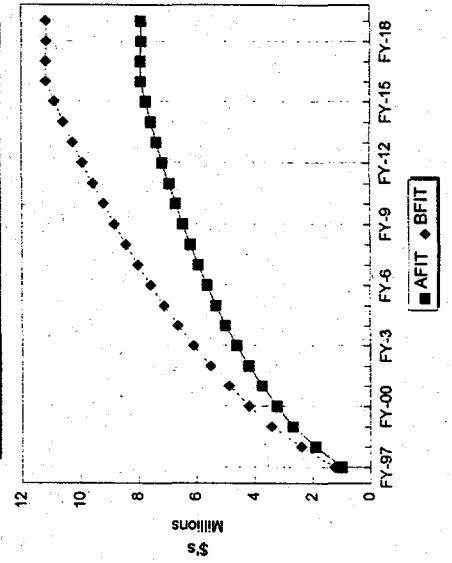
	Revenue	Royalty, 80% Cap. OpEX, and Prod. Tax	Allocated Overhead	Depreciation	Depletion	Total Deductions	Taxable Income	State Income Taxes	Federal Income Taxes	After Tax Cash Flow	Cumulative \$000	Discounted @ 14.2%	Cumulative Discounted \$000
FY-97	1,371,510	123,408	40,603	0	690,988	854,999	516,511	48,036	163,966	995,497	995	931,551	932
FY-98	1,210,488	62,652	41,838	0	587,635	692,125	518,963	48,208	164,554	893,236	1,889	731,926	1,663
FY-99	1,041,382	6,950	43,110	0	492,671	542,731	498,651	46,375	158,297	786,651	2,675	564,439	2,228
FY-00	772,055	6,409	44,420	0	345,768	396,597	375,458	34,918	119,189	567,119	3,243	356,322	2,584
FY-01	696,755	6,250	45,771	0	306,636	358,657	338,098	31,443	107,329	505,962	3,748	278,369	2,863
FY-02	651,457	6,146	47,162	0	280,468	333,776	317,881	29,544	100,848	467,757	4,216	225,349	3,088
FY-03	588,593	6,016	48,596	0	246,979	301,590	287,003	26,691	91,109	416,181	4,632	175,571	3,264
FY-04	526,067	5,892	50,073	0	215,042	271,007	255,060	23,721	80,969	365,413	4,998	134,986	3,399
FY-05	487,926	5,812	51,595	0	194,343	251,750	236,176	21,964	74,974	333,580	5,331	107,904	3,506
FY-06	464,892	5,758	53,164	0	180,895	239,817	225,075	20,932	71,450	313,588	5,645	88,824	3,595
FY-07	443,211	5,709	54,780	0	168,461	228,950	214,261	19,926	68,017	294,779	5,940	73,114	3,668
FY-08	423,913	5,664	56,445	0	157,374	219,483	204,430	19,012	64,896	277,895	6,218	60,356	3,729
FY-09	403,420	5,620	58,161	0	146,268	210,049	193,371	17,984	61,386	260,270	6,478	49,499	3,778
FY-10	395,167	5,580	59,929	0	136,379	201,888	183,279	17,045	58,182	244,431	6,722	40,707	3,819
FY-11	387,888	5,544	61,751	0	127,202	194,497	173,391	16,125	55,043	229,425	6,952	33,457	3,852
FY-12	352,423	5,511	63,628	0	118,987	188,127	164,296	15,280	52,156	215,848	7,168	27,563	3,880
FY-13	335,861	5,478	65,563	0	110,723	181,764	154,097	14,331	48,918	201,571	7,369	22,539	3,902
FY-14	321,085	5,448	67,556	0	103,352	176,356	144,729	13,460	45,944	188,677	7,558	18,474	3,921
FY-15	307,012	5,421	69,609	0	96,488	171,518	135,494	12,601	43,012	176,368	7,734	15,122	3,936
FY-16	294,428	5,396	71,726	0	90,342	167,464	126,964	11,808	40,305	165,194	7,899	12,402	3,948
FY-17	0	0	0	0	0	0	0	0	0	0	7,899	0	3,948
FY-18	0	0	0	0	0	0	0	0	0	0	7,899	0	3,948
Thereafter	0	0	0	0	0	0	0	0	0	0	7,899	0	3,948
TOTAL	11,445,533	290,664	1,095,480	0	4,797,000	6,183,144	5,262,389	489,402	1,670,545	7,899,441		3,948,474	

Discount Factor	Before Federal and State Income Taxes	After Federal and State Income Taxes
17.20%	4,494,000	3,948,000
14.20%		7,899,000
0%	10,059,000	5,837,000
5%	7,390,000	4,622,000
10%	5,823,000	3,844,000
15%	4,824,000	3,310,000
20%	4,141,000	2,923,000
25%	3,647,000	2,630,000
30%	3,274,000	2,399,000
35%	2,982,000	2,213,000
40%	2,746,000	2,059,000
45%	2,552,000	1,929,000
50%	2,388,000	1,818,000
55%	2,248,000	1,722,000
60%	2,128,000	1,638,000
65%	2,022,000	1,564,000
70%	1,929,000	

Industry Net Present Value



Cumulative Income to Industry



NPR-1

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

NPR-2	PRODUCTION			REVENUE			COSTS			Future Net Income		
	Oil bbls	Gas mcf	NGLs gals	Oil \$	Gas \$	NGLs \$	Total \$	Royalty @ none	Opex \$	Capex \$	Level \$	Total \$
Oct-96	4,530	21,553	10,230	83,933	25,864	3,171	112,968	0	0	0	10,284	10,284
Nov-96	4,530	21,553	10,230	84,106	25,924	3,176	113,206	0	0	0	10,284	10,284
Dec-96	4,530	21,553	10,230	84,278	26,044	3,184	113,446	0	0	0	10,284	10,284
Jan-97	4,530	21,553	10,230	84,452	26,165	3,191	113,687	0	0	0	10,284	10,284
Feb-97	4,530	21,553	10,230	84,625	26,286	3,197	113,927	0	0	0	10,284	10,284
Mar-97	4,530	21,553	10,230	84,799	26,407	3,204	114,169	0	0	0	10,284	10,284
Apr-97	4,530	21,553	10,230	84,973	26,527	3,211	114,411	0	0	0	10,284	10,284
May-97	4,530	21,553	10,230	85,146	26,648	3,217	114,653	0	0	0	10,284	10,284
Jun-97	4,530	21,553	10,230	85,320	26,769	3,224	114,896	0	0	0	10,284	10,284
Jul-97	4,530	21,553	10,230	85,493	26,890	3,230	115,138	0	0	0	10,284	10,284
Aug-97	4,530	21,553	10,230	85,667	27,011	3,237	115,381	0	0	0	10,284	10,284
Sep-97	4,530	21,553	10,230	85,840	27,132	3,244	115,624	0	0	0	10,284	10,284
Oct-97	4,530	21,553	10,230	86,014	27,253	3,251	115,866	0	0	0	10,284	10,284
Nov-97	4,530	21,553	10,230	86,187	27,374	3,258	116,109	0	0	0	10,284	10,284
Dec-97	4,530	21,553	10,230	86,361	27,495	3,265	116,351	0	0	0	10,284	10,284
Jan-98	4,530	21,553	10,230	86,534	27,616	3,272	116,594	0	0	0	10,284	10,284
Feb-98	4,530	21,553	10,230	86,708	27,737	3,279	116,837	0	0	0	10,284	10,284
Mar-98	4,530	21,553	10,230	86,881	27,858	3,286	117,080	0	0	0	10,284	10,284
Apr-98	4,530	21,553	10,230	87,055	27,979	3,293	117,322	0	0	0	10,284	10,284
May-98	4,530	21,553	10,230	87,228	28,100	3,300	117,565	0	0	0	10,284	10,284
Jun-98	4,530	21,553	10,230	87,402	28,221	3,307	117,808	0	0	0	10,284	10,284
Jul-98	4,530	21,553	10,230	87,575	28,342	3,314	118,051	0	0	0	10,284	10,284
Aug-98	4,530	21,553	10,230	87,749	28,463	3,321	118,294	0	0	0	10,284	10,284
Sep-98	4,530	21,553	10,230	87,922	28,584	3,328	118,537	0	0	0	10,284	10,284
Oct-98	4,530	21,553	10,230	88,096	28,705	3,335	118,780	0	0	0	10,284	10,284
Nov-98	4,530	21,553	10,230	88,269	28,826	3,342	119,023	0	0	0	10,284	10,284
Dec-98	4,530	21,553	10,230	88,443	28,947	3,349	119,266	0	0	0	10,284	10,284
Jan-99	4,530	21,553	10,230	88,616	29,068	3,356	119,509	0	0	0	10,284	10,284
Feb-99	4,530	21,553	10,230	88,790	29,189	3,363	119,752	0	0	0	10,284	10,284
Mar-99	4,530	21,553	10,230	88,963	29,310	3,370	120,000	0	0	0	10,284	10,284
Apr-99	4,530	21,553	10,230	89,137	29,431	3,377	120,243	0	0	0	10,284	10,284
May-99	4,530	21,553	10,230	89,310	29,552	3,384	120,486	0	0	0	10,284	10,284
Jun-99	4,530	21,553	10,230	89,484	29,673	3,391	120,729	0	0	0	10,284	10,284
Jul-99	4,530	21,553	10,230	89,657	29,794	3,398	120,972	0	0	0	10,284	10,284
Aug-99	4,530	21,553	10,230	89,831	29,915	3,405	121,215	0	0	0	10,284	10,284
Sep-99	4,530	21,553	10,230	89,999	30,036	3,412	121,458	0	0	0	10,284	10,284
Oct-99	4,530	21,553	10,230	90,173	30,157	3,419	121,701	0	0	0	10,284	10,284
Nov-99	4,530	21,553	10,230	90,346	30,278	3,426	121,944	0	0	0	10,284	10,284
Dec-99	4,530	21,553	10,230	90,520	30,399	3,433	122,187	0	0	0	10,284	10,284
Jan-00	4,530	21,553	10,230	90,693	30,520	3,440	122,430	0	0	0	10,284	10,284
Feb-00	4,530	21,553	10,230	90,867	30,641	3,447	122,673	0	0	0	10,284	10,284
Mar-00	4,530	21,553	10,230	91,040	30,762	3,454	122,916	0	0	0	10,284	10,284
Apr-00	4,530	21,553	10,230	91,214	30,883	3,461	123,159	0	0	0	10,284	10,284
May-00	4,530	21,553	10,230	91,387	31,004	3,468	123,402	0	0	0	10,284	10,284
Jun-00	4,530	21,553	10,230	91,561	31,125	3,475	123,645	0	0	0	10,284	10,284
Jul-00	4,530	21,553	10,230	91,734	31,246	3,482	123,888	0	0	0	10,284	10,284
Aug-00	4,530	21,553	10,230	91,908	31,367	3,489	124,131	0	0	0	10,284	10,284
Sep-00	4,530	21,553	10,230	92,081	31,488	3,496	124,374	0	0	0	10,284	10,284
Oct-00	4,530	21,553	10,230	92,255	31,609	3,503	124,617	0	0	0	10,284	10,284
Nov-00	4,530	21,553	10,230	92,428	31,730	3,510	124,860	0	0	0	10,284	10,284
Dec-00	4,530	21,553	10,230	92,602	31,851	3,517	125,103	0	0	0	10,284	10,284
Jan-01	4,530	21,553	10,230	92,775	31,972	3,524	125,346	0	0	0	10,284	10,284
Feb-01	4,530	21,553	10,230	92,949	32,093	3,531	125,589	0	0	0	10,284	10,284
Mar-01	4,530	21,553	10,230	93,122	32,214	3,538	125,832	0	0	0	10,284	10,284
Apr-01	4,530	21,553	10,230	93,296	32,335	3,545	126,075	0	0	0	10,284	10,284
May-01	4,530	21,553	10,230	93,469	32,456	3,552	126,318	0	0	0	10,284	10,284
Jun-01	4,530	21,553	10,230	93,643	32,577	3,559	126,561	0	0	0	10,284	10,284
Jul-01	4,530	21,553	10,230	93,816	32,698	3,566	126,804	0	0	0	10,284	10,284
Aug-01	4,530	21,553	10,230	93,990	32,819	3,573	127,047	0	0	0	10,284	10,284
Sep-01	4,530	21,553	10,230	94,163	32,940	3,580	127,290	0	0	0	10,284	10,284
Oct-01	4,530	21,553	10,230	94,337	33,061	3,587	127,533	0	0	0	10,284	10,284
Nov-01	4,530	21,553	10,230	94,510	33,182	3,594	127,776	0	0	0	10,284	10,284
Dec-01	4,530	21,553	10,230	94,684	33,303	3,601	128,019	0	0	0	10,284	10,284
Jan-02	4,530	21,553	10,230	94,857	33,424	3,608	128,262	0	0	0	10,284	10,284
Feb-02	4,530	21,553	10,230	95,031	33,545	3,615	128,505	0	0	0	10,284	10,284
Mar-02	4,530	21,553	10,230	95,204	33,666	3,622	128,748	0	0	0	10,284	10,284
Apr-02	4,530	21,553	10,230	95,378	33,787	3,629	128,991	0	0	0	10,284	10,284
May-02	4,530	21,553	10,230	95,551	33,908	3,636	129,234	0	0	0	10,284	10,284
Jun-02	4,530	21,553	10,230	95,725	34,029	3,643	129,477	0	0	0	10,284	10,284
Jul-02	4,530	21,553	10,230	95,898	34,150	3,650	129,720	0	0	0	10,284	10,284
Aug-02	4,530	21,553	10,230	96,072	34,271	3,657	130,000	0	0	0	10,284	10,284
Sep-02	4,530	21,553	10,230	96,245	34,392	3,664	130,243	0	0	0	10,284	10,284
Oct-02	4,530	21,553	10,230	96,419	34,513	3,671	130,486	0	0	0	10,284	10,284
Nov-02	4,530	21,553	10,230	96,592	34,634	3,678	130,729	0	0	0	10,284	10,284
Dec-02	4,530	21,553	10,230	96,766	34,755	3,685	130,972	0	0	0	10,284	10,284
Jan-03	4,530	21,553	10,230	96,939	34,876	3,692	131,215	0	0	0	10,284	10,284
Feb-03	4,530	21,553	10,230	97,113	34,997	3,699	131,458	0	0	0	10,284	10,284
Mar-03	4,530	21,553	10,230	97,286	35,118	3,706	131,701	0	0	0	10,284	10,284
Apr-03	4,530	21,553	10,230	97,460	35,239	3,713	131,944	0	0	0	10,284	10,284
May-03	4,530	21,553	10,230	97,633	35,360	3,720	132,187	0	0	0	10,284	10,284
Jun-03	4,530	21,553	10,230	97,807	35,481	3,727	132,430	0	0	0	10,284	10,284
Jul-03	4,530	21,553	10,230	97,980	35,602	3,734	132,673	0	0	0	10,284	10,284
Aug-03	4,530	21,553	10,230	98,154	35,723	3,741	132,916	0	0	0	10,284	10,284
Sep-03	4,530	21,553	10,230	98,327	35,844	3,748	133,159	0	0	0	10,284	10,284
Oct-03	4,530	21,553	10,230	98,501	35,965	3,755	133,402	0	0	0	10,284	10,284
Nov-03	4,530	21,553	10,230	98,674	36,086	3,762	133,645	0	0	0	10,284	10,284
Dec-03	4,530	21,553	10,230	98,848	36,207	3,769	133,888	0	0	0	10,284	10,284
Jan-04	4,530	21,553	10,230	99,021	36,328	3,776	134,131	0	0	0	10,284	10,284
Feb-04	4,530	21,553	10,230	99,195	36,449	3,783	134,374	0	0	0	10,284	10,284
Mar-04	4,530	21,553	10,230	99,368	36,570	3,790	134,617	0	0	0	10,284	10,284
Apr-04	4,530	21,553	10,230	99,542	36,691	3,797	134,860	0	0	0	10,284	10,284
May-04	4,530	21,553	10,230	99								

## Proved Developed Producing

PDP

Proved Developed Producing

Proved Developed Producing										Future Ref Income									
PRODUCTION										COSTS									
PRICES					GROSS REVENUE					Total					Net Revenue				
Oil	Gas	NGLs	Water	Other	Oil	Gas	NGLs	Water	Other	Oil	Gas	NGLs	Water	Other	Oil	Gas	NGLs	Water	Other
\$/bbl	\$/mcf	\$/gal	\$/bbl	\$/bbl	\$/bbl	\$/mcf	\$/gal	\$/bbl	\$/bbl	\$/bbl	\$/mcf	\$/gal	\$/bbl	\$/bbl	\$/bbl	\$/mcf	\$/gal	\$/bbl	\$/bbl
4,530	21,553	10,230	\$18.53	\$1.20	\$3.31	83,933	25,864	3,171	112,968	0	0	0	0	0	\$1,077,715	\$1,077,715	\$1,077,715	\$1,077,715	\$1,077,715
4,530	21,553	10,230	\$18.57	\$1.20	\$3.31	84,106	25,924	3,178	113,208	0	0	0	0	0	\$1,077,955	\$1,077,955	\$1,077,955	\$1,077,955	\$1,077,955
4,530	21,553	10,230	\$18.61	\$1.21	\$3.31	84,278	25,984	3,184	113,446	0	0	0	0	0	\$1,078,193	\$1,078,193	\$1,078,193	\$1,078,193	\$1,078,193
4,530	21,553	10,230	\$18.64	\$1.21	\$3.31	84,452	26,044	3,191	113,687	0	0	0	0	0	\$1,078,434	\$1,078,434	\$1,078,434	\$1,078,434	\$1,078,434
4,530	21,553	10,230	\$18.68	\$1.21	\$3.31	84,625	26,104	3,197	113,927	0	0	0	0	0	\$1,078,674	\$1,078,674	\$1,078,674	\$1,078,674	\$1,078,674
4,530	21,553	10,230	\$18.72	\$1.21	\$3.31	84,798	26,164	3,204	114,169	0	0	0	0	0	\$1,078,915	\$1,078,915	\$1,078,915	\$1,078,915	\$1,078,915
4,530	21,553	10,230	\$18.76	\$1.22	\$3.31	84,973	26,227	3,211	114,411	0	0	0	0	0	\$1,079,158	\$1,079,158	\$1,079,158	\$1,079,158	\$1,079,158
4,530	21,553	10,230	\$18.80	\$1.22	\$3.31	85,148	26,288	3,217	114,653	0	0	0	0	0	\$1,079,400	\$1,079,400	\$1,079,400	\$1,079,400	\$1,079,400
4,530	21,553	10,230	\$18.84	\$1.22	\$3.32	85,323	26,348	3,224	114,896	0	0	0	0	0	\$1,079,643	\$1,079,643	\$1,079,643	\$1,079,643	\$1,079,643
4,530	21,553	10,230	\$18.88	\$1.23	\$3.32	85,498	26,410	3,230	115,138	0	0	0	0	0	\$1,079,885	\$1,079,885	\$1,079,885	\$1,079,885	\$1,079,885
4,530	21,553	10,230	\$18.91	\$1.23	\$3.32	85,673	26,471	3,237	115,381	0	0	0	0	0	\$1,080,128	\$1,080,128	\$1,080,128	\$1,080,128	\$1,080,128
4,530	21,553	10,230	\$18.95	\$1.23	\$3.32	85,849	26,533	3,244	115,626	0	0	0	0	0	\$1,080,370	\$1,080,370	\$1,080,370	\$1,080,370	\$1,080,370
4,530	21,553	10,230	\$18.99	\$1.23	\$3.32	86,025	26,595	3,251	115,871	0	0	0	0	0	\$1,080,613	\$1,080,613	\$1,080,613	\$1,080,613	\$1,080,613
4,530	21,553	10,230	\$19.03	\$1.23	\$3.32	86,201	26,657	3,258	116,116	0	0	0	0	0	\$1,080,855	\$1,080,855	\$1,080,855	\$1,080,855	\$1,080,855
4,530	21,553	10,230	\$19.07	\$1.24	\$3.32	86,377	26,719	3,265	116,361	0	0	0	0	0	\$1,081,097	\$1,081,097	\$1,081,097	\$1,081,097	\$1,081,097
4,530	21,553	10,230	\$19.11	\$1.24	\$3.32	86,553	26,781	3,272	116,606	0	0	0	0	0	\$1,081,339	\$1,081,339	\$1,081,339	\$1,081,339	\$1,081,339
4,530	21,553	10,230	\$19.15	\$1.25	\$3.32	86,729	26,843	3,279	116,851	0	0	0	0	0	\$1,081,581	\$1,081,581	\$1,081,581	\$1,081,581	\$1,081,581
4,530	21,553	10,230	\$19.19	\$1.25	\$3.32	86,905	26,905	3,286	117,096	0	0	0	0	0	\$1,081,823	\$1,081,823	\$1,081,823	\$1,081,823	\$1,081,823
4,530	21,553	10,230	\$19.23	\$1.25	\$3.32	87,081	26,967	3,293	117,341	0	0	0	0	0	\$1,082,065	\$1,082,065	\$1,082,065	\$1,082,065	\$1,082,065
4,530	21,553	10,230	\$19.27	\$1.25	\$3.32	87,257	27,029	3,300	117,586	0	0	0	0	0	\$1,082,307	\$1,082,307	\$1,082,307	\$1,082,307	\$1,082,307
4,530	21,553	10,230	\$19.31	\$1.26	\$3.32	87,433	27,091	3,307	117,831	0	0	0	0	0	\$1,082,549	\$1,082,549	\$1,082,549	\$1,082,549	\$1,082,549
4,530	21,553	10,230	\$19.35	\$1.26	\$3.32	87,609	27,153	3,314	118,076	0	0	0	0	0	\$1,082,791	\$1,082,791	\$1,082,791	\$1,082,791	\$1,082,791
4,530	21,553	10,230	\$19.39	\$1.26	\$3.32	87,785	27,215	3,321	118,321	0	0	0	0	0	\$1,083,033	\$1,083,033	\$1,083,033	\$1,083,033	\$1,083,033
4,530	21,553	10,230	\$19.43	\$1.27	\$3.32	87,961	27,277	3,328	118,566	0	0	0	0	0	\$1,083,275	\$1,083,275	\$1,083,275	\$1,083,275	\$1,083,275
4,530	21,553	10,230	\$19.47	\$1.27	\$3.32	88,137	27,339	3,335	118,811	0	0	0	0	0	\$1,083,517	\$1,083,517	\$1,083,517	\$1,083,517	\$1,083,517
4,530	21,553	10,230	\$19.51	\$1.27	\$3.32	88,313	27,401	3,342	119,056	0	0	0	0	0	\$1,083,759	\$1,083,759	\$1,083,759	\$1,083,759	\$1,083,759
4,530	21,553	10,230	\$19.55	\$1.27	\$3.32	88,489	27,463	3,349	119,301	0	0	0	0	0	\$1,084,001	\$1,084,001	\$1,084,001	\$1,084,001	\$1,084,001
4,530	21,553	10,230	\$19.59	\$1.27	\$3.32	88,665	27,525	3,356	119,546	0	0	0	0	0	\$1,084,243	\$1,084,243	\$1,084,243	\$1,084,243	\$1,084,243
4,530	21,553	10,230	\$19.63	\$1.27	\$3.32	88,841	27,587	3,363	119,791	0	0	0	0	0	\$1,084,485	\$1,084,485	\$1,084,485	\$1,084,485	\$1,084,485
4,530	21,553	10,230	\$19.67	\$1.27	\$3.32	89,017	27,649	3,370	120,036	0	0	0	0	0	\$1,084,727	\$1,084,727	\$1,084,727	\$1,084,727	\$1,084,727
4,530	21,553	10,230	\$19.71	\$1.27	\$3.32	89,193	27,711	3,377	120,281	0	0	0	0	0	\$1,084,969	\$1,084,969	\$1,084,969	\$1,084,969	\$1,084,969
4,530	21,553	10,230	\$19.75	\$1.27	\$3.32	89,369	27,773	3,384	120,526	0	0	0	0	0	\$1,085,211	\$1,085,211	\$1,085,211	\$1,085,211	\$1,085,211
4,530	21,553	10,230	\$19.79	\$1.27	\$3.32	89,545	27,835	3,391	120,771	0	0	0	0	0	\$1,085,453	\$1,085,453	\$1,085,453	\$1,085,453	\$1,085,453
4,530	21,553	10,230	\$19.83	\$1.27	\$3.32	89,721	27,897	3,398	121,016	0	0	0	0	0	\$1,085,695	\$1,085,695	\$1,085,695	\$1,085,695	\$1,085,695
4,530	21,553	10,230	\$19.87	\$1.27	\$3.32	89,897	27,959	3,405	121,261	0	0	0	0	0	\$1,085,937	\$1,085,937	\$1,085,937	\$1,085,937	\$1,085,937
4,530	21,553	10,230	\$19.91	\$1.27	\$3.32	90,073	28,021	3,412	121,506	0	0	0	0	0	\$1,086,179	\$1,086,179	\$1,086,179	\$1,086,179	\$1,086,179
4,530	21,553	10,230	\$19.95	\$1.27	\$3.32	90,249	28,083	3,419	121,751	0	0	0	0	0	\$1,086,421	\$1,086,421	\$1,086,421	\$1,086,421	\$1,086,421
4,530	21,553	10,230	\$19.99	\$1.27	\$3.32	90,425	28,145	3,426	121,996	0	0	0	0	0	\$1,086,663	\$1,086,663	\$1,086,663	\$1,086,663	\$1,086,663
4,530	21,553	10,230	\$20.03	\$1.27	\$3.32	90,601	28,207	3,433	122,241	0	0	0	0	0	\$1,086,905	\$1,086,905	\$1,086,905	\$1,086,905	\$1,086,905
4,530	21,553	10,230	\$20.07	\$1.27	\$3.32	90,777	28,269	3,440	122,486	0	0	0	0	0	\$1,087,147	\$1,087,147	\$1,087,147	\$1,087,147	\$1,087,147
4,530	21,553	10,230	\$20.11	\$1.27	\$3.32	90,953	28,331	3,447	122,731	0	0	0	0	0	\$1,087,389	\$1,087,389	\$1,087,389	\$1,087,389	\$1,087,389
4,530	21,553	10,230	\$20.15	\$1.27	\$3.32	91,129	28,393	3,454	122,976	0	0	0	0	0	\$1,087,631	\$1,087,631	\$1,087,631	\$1,087,631	\$1,087,631
4,530	21,553	10,230	\$20.19	\$1.27	\$3.32	91,305	28,455	3,461	123,221	0	0	0	0	0	\$1,087,873	\$1,087,873	\$1,087,873	\$1,087,873	\$1,087,873
4,530	21,553	10,230	\$20.23	\$1.27	\$3.32	91,481	28,517	3,468	123,466	0	0	0	0	0	\$1,088,115	\$1,088,115	\$1,088,115	\$1,088,115	\$1,088,115
4,530	21,553	10,230	\$20.27	\$1.27	\$3.32	91,657	28,579	3,475	123,711	0	0	0	0	0	\$1,088,357	\$1,088,357	\$1,088,357	\$1,088,357	\$1,088,357
4,530	21,553	10,230	\$20.31	\$1.27	\$3.32	91,833	28,641	3,482	123,956	0	0	0	0	0	\$1,088,599	\$1,088,599	\$1,088,599	\$1,088,599	\$1,088,599
4,530	21,553	10,230	\$20.35	\$1.27	\$3.32	92,009	28,703	3,489	124,201	0	0	0	0	0	\$1,088,841	\$1,088,841	\$1,088,841	\$1,088,841	\$1,088,841
4,530	21,553	10,230	\$20.39	\$1.27	\$3.32	92,185	28,765	3,496	124,446	0	0	0	0	0	\$1,089,083	\$1,089,083	\$1,089,083	\$1,089,083	\$1,089,083
4,530	21,553	10,230	\$20.43	\$1.27	\$3.32	92,361	28,827	3,503	124,691	0	0	0	0	0	\$1,089,325	\$1,089,325	\$1,089,325	\$1,089,325	\$1,089,325
4,530	21,553	10,230	\$20.47	\$1.27	\$3.32	92,537	28,889	3,510	124,936	0	0	0	0	0	\$1,089,567	\$1,089,567	\$1,089,567	\$1,089,567	\$1,089,567
4,530	21,553	10,230	\$20.51	\$1.27	\$3.32	92,713	28,951	3,517	125,181	0	0	0	0	0	\$1,089,809	\$1,089,809	\$1,089,809	\$1,089,809	\$1,089,809
4,530	21,553	10,230	\$20.55	\$1.27	\$3.32	92,889	29,013	3,524	125,426	0	0	0	0	0	\$1,090,051	\$1,090,051	\$1,090,051	\$1,090,051	\$1,090,051
4,530	21,553	10,230	\$20.59	\$1.27	\$3.32	93,065	29,075	3,531	125,671	0	0	0	0	0	\$1,090,293	\$1,090,293	\$1,090,293	\$1,090,293	\$1,090,293
4,530	21,553	10,230	\$20.63	\$1.27	\$3.32	93,241	29,137	3,538	125,916	0	0	0	0	0	\$1,090,535	\$1,090,535	\$1,090,535	\$1,090,535	\$1,090,535
4,530	21,553	10,230	\$20.67	\$1.27	\$3.32	93,417	29,199	3,545	126,161	0	0	0	0	0	\$1,090,777	\$1,090,777	\$1,090,777	\$1,090,777	\$1,090,

PD-NP

NPR-2

## Proved Developed Non-Producing

NPR-2	PRODUCTION			PRICES			GROSS REVENUE				COSTS				Future Net Income			
	Oil	Gas	NGLs	Oil	Gas	NGLs	Oil	Gas	NGLs	Total	Royalty	Capex	Opex	Total	Net Revenue	Cumulative	Discounted @ 17.25%	Cumulative Discounted
Oct-96	0	0	0	\$18.53	\$1.20	\$0.31	0	0	0	0	not used	0	0	0	\$5,031	\$5	(\$5,031)	(\$5)
Nov-96	0	0	0	\$18.57	\$1.20	\$0.31	0	0	0	0	0	0	0	0	\$5,031	\$101	(\$4,980)	(\$10)
Dec-96	0	0	0	\$18.61	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$5,031	\$151	(\$4,890)	(\$15)
Jan-97	0	0	0	\$18.64	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$5,031	\$201	(\$4,821)	(\$20)
Feb-97	0	0	0	\$18.68	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$5,031	\$251	(\$4,753)	(\$24)
Mar-97	0	0	0	\$18.72	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$5,031	\$301	(\$4,685)	(\$29)
Apr-97	0	0	0	\$18.76	\$1.22	\$0.31	0	0	0	0	0	0	0	0	\$5,031	\$351	(\$4,619)	(\$34)
May-97	0	0	0	\$18.80	\$1.22	\$0.31	0	0	0	0	0	0	0	0	\$5,031	\$401	(\$4,554)	(\$38)
Jun-97	0	0	0	\$18.84	\$1.22	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$451	(\$4,490)	(\$47)
Jul-97	0	0	0	\$18.88	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$501	(\$4,426)	(\$52)
Aug-97	0	0	0	\$18.91	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$551	(\$4,364)	(\$57)
Sep-97	0	0	0	\$18.95	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$601	(\$4,302)	(\$56)
Oct-97	0	0	0	\$18.99	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$651	(\$4,240)	(\$56)
Nov-97	0	0	0	\$19.03	\$1.24	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$701	(\$4,178)	(\$56)
Dec-97	0	0	0	\$19.07	\$1.24	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$751	(\$4,116)	(\$56)
Jan-98	0	0	0	\$19.11	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$801	(\$4,054)	(\$56)
Feb-98	0	0	0	\$19.15	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$851	(\$3,992)	(\$56)
Mar-98	0	0	0	\$19.19	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$901	(\$3,930)	(\$56)
Apr-98	0	0	0	\$19.23	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$951	(\$3,868)	(\$56)
May-98	0	0	0	\$19.27	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$1,001	(\$3,806)	(\$56)
Jun-98	0	0	0	\$19.31	\$1.26	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$1,051	(\$3,744)	(\$56)
Jul-98	0	0	0	\$19.35	\$1.26	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$1,101	(\$3,682)	(\$56)
Aug-98	0	0	0	\$19.39	\$1.26	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$1,151	(\$3,620)	(\$56)
Sep-98	0	0	0	\$19.43	\$1.27	\$0.32	0	0	0	0	0	0	0	0	\$5,031	\$1,201	(\$3,558)	(\$56)
Oct-98	0	0	0	\$19.47	\$1.28	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,251	(\$3,496)	(\$56)
Nov-98	0	0	0	\$19.51	\$1.28	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,301	(\$3,434)	(\$56)
Dec-98	0	0	0	\$19.55	\$1.29	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,351	(\$3,372)	(\$56)
Jan-99	0	0	0	\$19.59	\$1.30	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,401	(\$3,310)	(\$56)
Feb-99	0	0	0	\$19.63	\$1.31	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,451	(\$3,248)	(\$56)
Mar-99	0	0	0	\$19.67	\$1.32	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,501	(\$3,186)	(\$56)
Apr-99	0	0	0	\$19.71	\$1.33	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,551	(\$3,124)	(\$56)
May-99	0	0	0	\$19.75	\$1.34	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,601	(\$3,062)	(\$56)
Jun-99	0	0	0	\$19.79	\$1.35	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,651	(\$3,000)	(\$56)
Jul-99	0	0	0	\$19.83	\$1.36	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,701	(\$2,938)	(\$56)
Aug-99	0	0	0	\$19.87	\$1.37	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,751	(\$2,876)	(\$56)
Sep-99	0	0	0	\$19.91	\$1.38	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,801	(\$2,814)	(\$56)
Oct-99	0	0	0	\$19.95	\$1.39	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,851	(\$2,752)	(\$56)
Nov-99	0	0	0	\$19.99	\$1.40	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,901	(\$2,690)	(\$56)
Dec-99	0	0	0	\$20.03	\$1.41	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$1,951	(\$2,628)	(\$56)
Jan-00	0	0	0	\$20.07	\$1.42	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,001	(\$2,566)	(\$56)
Feb-00	0	0	0	\$20.11	\$1.43	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,051	(\$2,504)	(\$56)
Mar-00	0	0	0	\$20.15	\$1.44	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,101	(\$2,442)	(\$56)
Apr-00	0	0	0	\$20.19	\$1.45	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,151	(\$2,380)	(\$56)
May-00	0	0	0	\$20.23	\$1.46	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,201	(\$2,318)	(\$56)
Jun-00	0	0	0	\$20.27	\$1.47	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,251	(\$2,256)	(\$56)
Jul-00	0	0	0	\$20.31	\$1.48	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,301	(\$2,194)	(\$56)
Aug-00	0	0	0	\$20.35	\$1.49	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,351	(\$2,132)	(\$56)
Sep-00	0	0	0	\$20.39	\$1.50	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,401	(\$2,070)	(\$56)
Oct-00	0	0	0	\$20.43	\$1.51	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,451	(\$2,008)	(\$56)
Nov-00	0	0	0	\$20.47	\$1.52	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,501	(\$1,946)	(\$56)
Dec-00	0	0	0	\$20.51	\$1.53	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,551	(\$1,884)	(\$56)
Jan-01	0	0	0	\$20.55	\$1.54	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,601	(\$1,822)	(\$56)
Feb-01	0	0	0	\$20.59	\$1.55	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,651	(\$1,760)	(\$56)
Mar-01	0	0	0	\$20.63	\$1.56	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,701	(\$1,698)	(\$56)
Apr-01	0	0	0	\$20.67	\$1.57	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,751	(\$1,636)	(\$56)
May-01	0	0	0	\$20.71	\$1.58	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,801	(\$1,574)	(\$56)
Jun-01	0	0	0	\$20.75	\$1.59	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,851	(\$1,512)	(\$56)
Jul-01	0	0	0	\$20.79	\$1.60	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,901	(\$1,450)	(\$56)
Aug-01	0	0	0	\$20.83	\$1.61	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$2,951	(\$1,388)	(\$56)
Sep-01	0	0	0	\$20.87	\$1.62	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,001	(\$1,326)	(\$56)
Oct-01	0	0	0	\$20.91	\$1.63	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,051	(\$1,264)	(\$56)
Nov-01	0	0	0	\$20.95	\$1.64	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,101	(\$1,202)	(\$56)
Dec-01	0	0	0	\$20.99	\$1.65	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,151	(\$1,140)	(\$56)
Jan-02	0	0	0	\$21.03	\$1.66	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,201	(\$1,078)	(\$56)
Feb-02	0	0	0	\$21.07	\$1.67	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,251	(\$1,016)	(\$56)
Mar-02	0	0	0	\$21.11	\$1.68	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,301	(\$954)	(\$56)
Apr-02	0	0	0	\$21.15	\$1.69	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,351	(\$892)	(\$56)
May-02	0	0	0	\$21.19	\$1.70	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,401	(\$830)	(\$56)
Jun-02	0	0	0	\$21.23	\$1.71	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,451	(\$768)	(\$56)
Jul-02	0	0	0	\$21.27	\$1.72	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,501	(\$706)	(\$56)
Aug-02	0	0	0	\$21.31	\$1.73	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,551	(\$644)	(\$56)
Sep-02	0	0	0	\$21.35	\$1.74	\$0.33	0	0	0	0	0	0	0	0	\$5,031	\$3,601	(\$582)	(\$56)
Oct-02	0	0	0	\$21.39	\$1.75	\$0.33	0	0	0	0								



Cash Flows

PUD	NPR-2	Proved Undeveloped										COSTS					Future Net Income		
		PRODUCTION					GROSS REVENUE					COSTS					Future Net Income		
		Q	GS	NGLS	Q	GS	Q	GS	NGLS	Total	Royalty @	Capex	Opex	Total	Net Revenue	Cumulative \$000	Discounted @ 17.20%	Cumulative Discounted \$000	
Oct-96		0	0	0	0	\$18.53	\$1.20	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Nov-96		0	0	0	0	\$18.57	\$1.20	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Dec-96		0	0	0	0	\$18.61	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jan-97		0	0	0	0	\$18.64	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Feb-97		0	0	0	0	\$18.68	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Mar-97		0	0	0	0	\$18.72	\$1.21	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Apr-97		0	0	0	0	\$18.76	\$1.22	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
May-97		0	0	0	0	\$18.80	\$1.22	\$0.31	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jun-97		0	0	0	0	\$18.84	\$1.22	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jul-97		0	0	0	0	\$18.88	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Aug-97		0	0	0	0	\$18.91	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Sep-97		0	0	0	0	\$18.95	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Oct-97		0	0	0	0	\$18.99	\$1.23	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Nov-97		0	0	0	0	\$19.03	\$1.24	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Dec-97		0	0	0	0	\$19.07	\$1.24	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jan-98		0	0	0	0	\$19.11	\$1.24	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Feb-98		0	0	0	0	\$19.15	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Mar-98		0	0	0	0	\$19.19	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Apr-98		0	0	0	0	\$19.23	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
May-98		0	0	0	0	\$19.27	\$1.25	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jun-98		0	0	0	0	\$19.31	\$1.26	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jul-98		0	0	0	0	\$19.35	\$1.26	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Aug-98		0	0	0	0	\$19.39	\$1.26	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Sep-98		0	0	0	0	\$19.43	\$1.27	\$0.32	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Oct-98		0	0	0	0	\$19.47	\$1.28	\$0.33	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Nov-98		0	0	0	0	\$19.51	\$1.29	\$0.33	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Dec-98		0	0	0	0	\$19.55	\$1.30	\$0.34	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jan-99		0	0	0	0	\$19.59	\$1.31	\$0.34	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Feb-99		0	0	0	0	\$19.63	\$1.32	\$0.35	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Mar-99		0	0	0	0	\$19.67	\$1.33	\$0.35	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Apr-99		0	0	0	0	\$19.71	\$1.34	\$0.36	0	0	0	0	0	0	0	0	\$0	\$0	\$0
May-99		0	0	0	0	\$19.75	\$1.35	\$0.36	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jun-99		0	0	0	0	\$19.79	\$1.36	\$0.37	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jul-99		0	0	0	0	\$19.83	\$1.37	\$0.37	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Aug-99		0	0	0	0	\$19.87	\$1.38	\$0.38	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Sep-99		0	0	0	0	\$19.91	\$1.39	\$0.38	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Oct-99		0	0	0	0	\$19.95	\$1.40	\$0.39	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Nov-99		0	0	0	0	\$20.00	\$1.41	\$0.40	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Dec-99		0	0	0	0	\$20.05	\$1.42	\$0.41	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jan-00		0	0	0	0	\$20.10	\$1.43	\$0.42	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Feb-00		0	0	0	0	\$20.15	\$1.44	\$0.43	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Mar-00		0	0	0	0	\$20.20	\$1.45	\$0.44	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Apr-00		0	0	0	0	\$20.25	\$1.46	\$0.45	0	0	0	0	0	0	0	0	\$0	\$0	\$0
May-00		0	0	0	0	\$20.30	\$1.47	\$0.46	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jun-00		0	0	0	0	\$20.35	\$1.48	\$0.47	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jul-00		0	0	0	0	\$20.40	\$1.49	\$0.48	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Aug-00		0	0	0	0	\$20.45	\$1.50	\$0.49	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Sep-00		0	0	0	0	\$20.50	\$1.51	\$0.50	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Oct-00		0	0	0	0	\$20.55	\$1.52	\$0.51	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Nov-00		0	0	0	0	\$20.60	\$1.53	\$0.52	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Dec-00		0	0	0	0	\$20.65	\$1.54	\$0.53	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jan-01		0	0	0	0	\$20.70	\$1.55	\$0.54	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Feb-01		0	0	0	0	\$20.75	\$1.56	\$0.55	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Mar-01		0	0	0	0	\$20.80	\$1.57	\$0.56	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Apr-01		0	0	0	0	\$20.85	\$1.58	\$0.57	0	0	0	0	0	0	0	0	\$0	\$0	\$0
May-01		0	0	0	0	\$20.90	\$1.59	\$0.58	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jun-01		0	0	0	0	\$20.95	\$1.60	\$0.59	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jul-01		0	0	0	0	\$21.00	\$1.61	\$0.60	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Aug-01		0	0	0	0	\$21.05	\$1.62	\$0.61	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Sep-01		0	0	0	0	\$21.10	\$1.63	\$0.62	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Oct-01		0	0	0	0	\$21.15	\$1.64	\$0.63	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Nov-01		0	0	0	0	\$21.20	\$1.65	\$0.64	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Dec-01		0	0	0	0	\$21.25	\$1.66	\$0.65	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jan-02		0	0	0	0	\$21.30	\$1.67	\$0.66	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Feb-02		0	0	0	0	\$21.35	\$1.68	\$0.67	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Mar-02		0	0	0	0	\$21.40	\$1.69	\$0.68	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Apr-02		0	0	0	0	\$21.45	\$1.70	\$0.69	0	0	0	0	0	0	0	0	\$0	\$0	\$0
May-02		0	0	0	0	\$21.50	\$1.71	\$0.70	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jun-02		0	0	0	0	\$21.55	\$1.72	\$0.71	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jul-02		0	0	0	0	\$21.60	\$1.73	\$0.72	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Aug-02		0	0	0	0	\$21.65	\$1.74	\$0.73	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Sep-02		0	0	0	0	\$21.70	\$1.75	\$0.74	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Oct-02		0	0	0	0	\$21.75	\$1.76	\$0.75	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Nov-02		0	0	0	0	\$21.80	\$1.77	\$0.76	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Dec-02		0	0	0	0	\$21.85	\$1.78	\$0.77	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Jan-03		0	0	0	0	\$21.90	\$1.79	\$0.78	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Feb-03		0	0	0	0	\$21.95	\$1.80	\$0.79	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Mar-03		0	0	0	0	\$22.00	\$1.81	\$0.80	0	0	0	0	0	0	0	0	\$0	\$0	\$0
Apr-03		0	0	0	0	\$22.05	\$1.82	\$0.81	0	0	0	0	0	0	0	0	\$0	\$0	\$0
May-03																			





# Surface and Mineral Leasing and Maintenance

NPR-2		Maintenance Costs		Leasing Program						
Sale Case	NPV @		Surface Income	NPV @	Ongoing Rentals	First Sale		Costs	Total Revenue	NPV @
	Annual	7.00%				Bonus	Rentals			
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
TOTAL	\$0	\$0	\$0	\$0	\$15,360	\$23,712	\$82,992	(\$4,680)	\$117,384	\$31,706

## 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)
Total	\$3,509	\$1.69

# **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
<b>NPR-2</b>	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
<b>NPR-3</b>	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
<b>NOSR-2</b>	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
<b>NOSR-1</b>	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
<b>NOSR-3</b>	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 NPOS. 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.