OIL AND GAS PRODUCTION FORECAST, ESTIMATED PRICES, AND STATE MINERAL REVENUE

By Manuel Lam

The forecast of Louisiana's oil and gas production shows a continuing decline for the near future. The decline rate over the past few years has been lower than had originally been expected, but without future increases in oil and gas field activity the decline may become much more rapid. The average decline rate over the past ten years was 3.2% for oil and 1.1% for gas. In the near future, Louisiana's oil and gas production is forecasted to decline faster than in the past ten years. The recent low decline rate was a product of high levels of drilling in the 1980's that created surplus production capacity today, improvement in drilling techniques and tools, high prices, and development of new exploration technology. The recent decline in oil and gas prices will cause a drop in state mineral revenue.

PRODUCTION: The Department of Natural Resources, Technology Assessment Division (DNR-TAD) has two models to forecast production. The **long term** model is used for long periods (10 to 30 years). The **short term** model is used to forecast over periods of 1 to 5 years, because of the wide fluctuation from year to year. In recent months, the price of oil and gas has been dropping; whereas, the cost of drilling has been falling at a slower pace. These factors will cause oil and gas production to drop. The oil and gas short term production forecast predicts a decline rate of 4.2% per year for oil and 4.5% per year for gas over the next few years, while the long term production forecast models predict a decline rate of 4.4% per year for oil and 3.8% per year for gas. DNR-TAD short term forecast models projected, in December 2000, the following Louisiana oil and gas production, excluding federal OCS regions:

YEAR	CRUDE OIL (Barrels)	NATURAL GAS (MCF)
FY2001/02	102,736,139	1,465,550,832
FY2002/03	99,179,860	1,385,603,648
FY2003/04	95,210,139	1,299,730,720
FY2004/05	90,869,802	1,244,214,832
FY2005/06	85,488,752	1,195,063,041

PRICES: Oil and gas prices are difficult to predict, and gas prices act differently than oil prices. Oil prices are driven by the international oil market. Gas prices are driven by factors such as weather, demand for gas not satisfied by the pipeline system, availability of spot supplies, and competing fuel prices. The average price for oil has been dropping since November 2000. At today's conditions, oil prices are expected to be between $13 and $27 per barrel for the next five years. The average gas price has been on a roller coaster over the past few years. Average gas prices are expected to be between $1.80 and $3.60 for the next five years. DNR-TAD projected, on December 2000, the following oil and gas price and severance tax rates for the next five years:

			SEVERANCE TAX	
YEAR	OIL PRICE ($/Barrel)	GAS PRICE ($/MCF)	OIL FULL RATE (% of value)	GAS FULL RATE ($/MCF)
FY2001/02	21.20	2.600	12.25%	$0.199
FY2002/03	20.80	2.700	12.25%	$0.100
FY2003/04	20.30	2.400	12.25%	$0.104
FY2004/05	20.20	2.400	12.25%	$0.093
FY2005/06	20.30	2.600	12.25%	$0.093

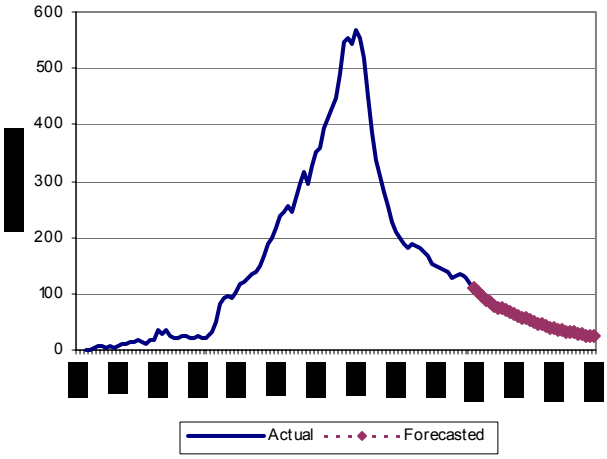
Submitted to the Comprehensive Energy Policy Advisory Commission
The Department of Natural Resources Technology Assessment Division

REVENUE: Louisiana revenue from minerals can be divided into three categories: 1) royalty, 2) severance tax, and 3) bonus, rental, and overriding royalty (BR&O). Royalty and severance tax are solely dependent on production and prices. The BR&O is principally dependent on market outlook. Because market outlook can vary widely, there is greater uncertainty in predicting BR&O revenue. The historical revenue data is assumed to be representative of future revenue for BR&O. Based on the above production and prices, the projected state mineral revenue in million dollars, excluding federal OCS, is as follows:

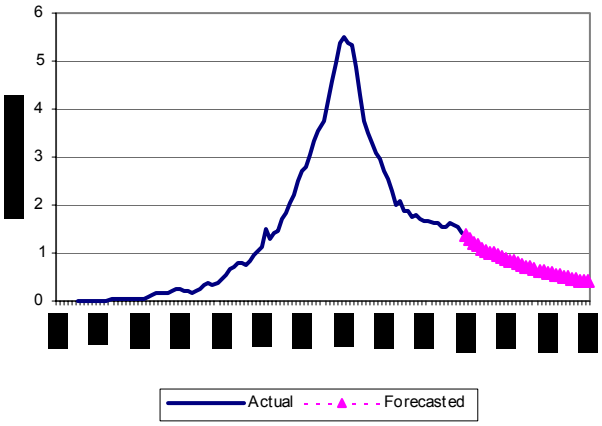
YEAR	SEVERANCE	ROYALTY	BONUS, RENTAL & OVERRIDE	TOTAL REVENUE	PERCENT CHANGE
FY2001/02	458.57	231.29	33.91	723.77	-22.10%
FY2002/03	327.37	223.67	33.91	584.95	-19.18%
FY2003/04	311.53	196.50	33.91	541.94	-7.35%
FY2004/05	286.29	187.93	33.91	508.13	-6.24%
FY2005/06	272.86	194.55	33.91	501.32	-1.34%

All of these revenue projections depend on how close actual production and prices follow the DNR-TAD model projections. Future price or production changes will directly affect the actual revenue collected. It is difficult to say anything about the oil and gas market with much certainty. However, we feel our forecast results are conservative, and that any improvement in prices and production will improve the State revenue projections.

LOUISIANA STATE OIL PRODUCTION
Actual and Forecasted Through Year 2030



LOUISIANA STATE GAS PRODUCTION
Actual and Forecasted Through Year 2030



HISTORICAL PRODUCTION AND LONG TERM FORECAST

For a more detailed analysis of the above projections, please see the attached
Louisiana Short Term Oil and Gas Forecast - 2002

LOUISIANA SHORT TERM OIL AND GAS FORECAST

with Production, Severance, & Royalty Price Sensitivity

2002 Report

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Baton Rouge
January 17, 2002

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The *Louisiana Short Term Oil and Gas Forecast* report provides the following information. The oil and gas price chapter shows projected prices for the next five years. The oil and gas production chapter shows short term and long term production forecasts. The mineral royalty revenue chapter shows projected royalty revenue by source. The severance tax revenue chapter shows projected severance revenue by source. The bonus, rentals, and overriding royalty (BR&O) revenue chapter shows projected revenue by source. The last chapter is a summary of the royalty, severance tax, and BR&O historical and projected state mineral revenue, and proceeds from federal lands and the Outer Continental Shelf (OCS) area. Appendix A shows the definition of abbreviations and acronyms. Appendix B shows the definition of terms used in the Forecast. Appendix C shows some Louisiana severance tax exemptions. Appendix D lists state oil and gas severance tax rates. Appendix E shows royalty and severance tax for FY2002/03 through FY2004/05 at multiple assumed prices. Appendix F shows oil and gas historical data on price, production, bonus, rental, royalty, and severance tax by calendar year.

The Department of Natural Resources, Technology Assessment Division (TAD) short term forecast models projected the following Louisiana oil and gas productions, excluding federal OCS regions.

Forecasted state production for FY2001/02 through FY2005/06:

YEAR	CRUDE OIL (Barrels)	NATURAL GAS (MCF)
FY2001/02	102,736,139	1,465,550,832
FY2002/03	99,179,860	1,385,603,648
FY2003/04	95,210,139	1,299,730,720
FY2004/05	90,869,802	1,244,214,832
FY2005/06	85,488,752	1,195,063,041

Projected prices and tax rates for FY2001/02 through FY2005/06:

			SEVERANCE TAX	
YEAR	OIL PRICE ($/Barrel)	GAS PRICE ($/MCF)	OIL FULL RATE (% of value)	GAS FULL RATE ($/MCF)
FY2001/02	21.20	2.600	12.25%	$0.199
FY2002/03	20.80	2.700	12.25%	$0.100
FY2003/04	20.30	2.400	12.25%	$0.104
FY2004/05	20.20	2.400	12.25%	$0.093
FY2005/06	20.30	2.600	12.25%	$0.093

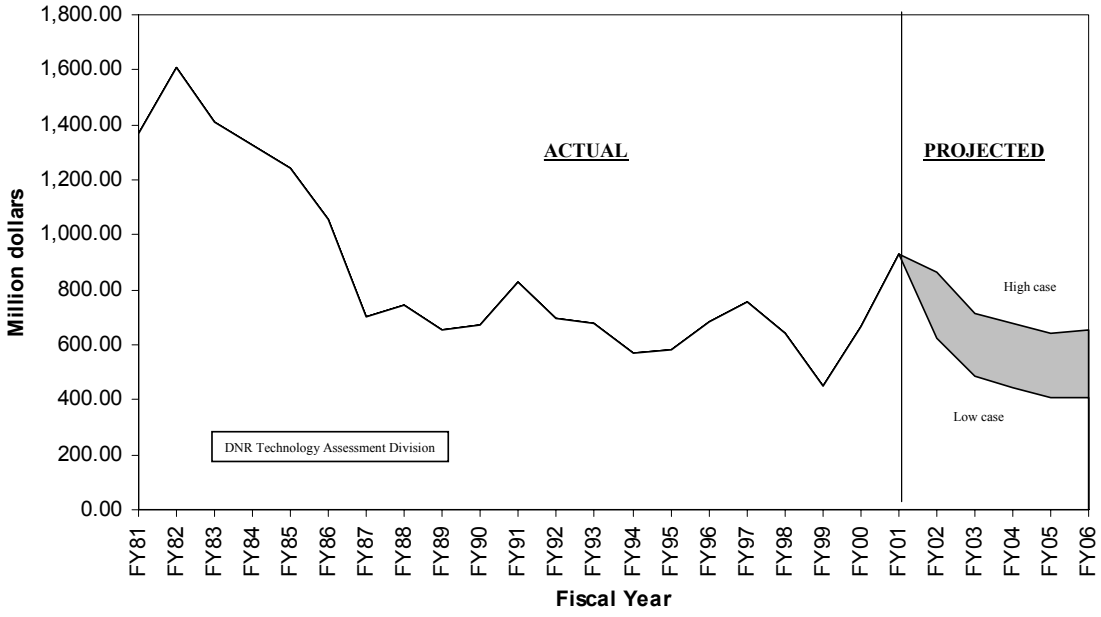
Using the above data and empirical equations we can project the state mineral revenue, excluding revenue from federal regions (Louisiana federal lands and federal offshore-outer continental shelf).

State mineral revenue in million of dollars for FY2001/02 through FY 2005/06:

YEAR	SEVERANCE	ROYALTY	BONUS, RENTAL & OVERRIDE	TOTAL REVENUE	PERCENT CHANGE
FY2001/02	458.57	231.29	33.91	723.77	-22.10%
FY2002/03	327.37	223.67	33.91	584.95	-19.18%
FY2003/04	311.53	196.50	33.91	541.94	-7.35%
FY2004/05	286.29	187.93	33.91	508.13	-6.24%
FY2005/06	272.86	194.55	33.91	501.32	-1.34%

Figure 1

LOUISIANA TOTAL REVENUE FROM
ALL MINERAL PRODUCTION
Excluding Federal Lands & OCS



OIL AND GAS PRICES

CRUDE OIL PRICE PROJECTION

Oil prices are determined in the international markets and are difficult to project. As the historical data shows great swings in the price of oil, there is also considerable uncertainty about future prices. The future price of oil is linked to the unpredictability of world oil supplies and world economics. Major factors affecting oil prices are: a) political stability of producing countries, b) world environmental issues, c) industrialized countries' conservation practices, d) weather related demand for petroleum products, e) production restraints by OPEC countries, f) economy changes in consumer nations, and g) stability in labor forces. If crude oil supply and demand for petroleum products are well balanced and refiners have the sufficient downstream capacity to process difficult crudes, the price of crude oil will seek a stable market condition.

Calendar year data is provided in Appendix F. The historical and projected fiscal year average Louisiana wellhead crude oil prices are as follows:

Table 1

Louisiana Crude Oil Price Projections

(Dollars per barrel)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	17.88	4.16%		
Historical	FY1996/97	21.70	21.41%		
Historical	FY1997/98	16.56	-23.69%		
Historical	FY1998/99	12.47	-24.73%		
Historical	FY1999/00	23.24	86.44%		
Historical	FY2000/01	29.48	26.83%		
Projected	FY2001/02	21.20	-24.36%	16.00	26.00
Projected	FY2002/03	20.80	-3.14%	15.50	25.00
Projected	FY2003/04	20.30	-3.70%	15.00	25.50
Projected	FY2004/05	20.20	-2.16%	14.50	25.50
Projected	FY2005/06	20.30	1.72%	13.50	27.00

The base case assumed that: a) world oil demand will grow at an average annual rate of 1.8 percent between 2002-2006; b) OPEC will keep their daily production quotas and other producing countries will restrain their production (OPEC production quotas does not include Iraq's humanitarian crude oil sales); c) weather demand will be normal with normal heating

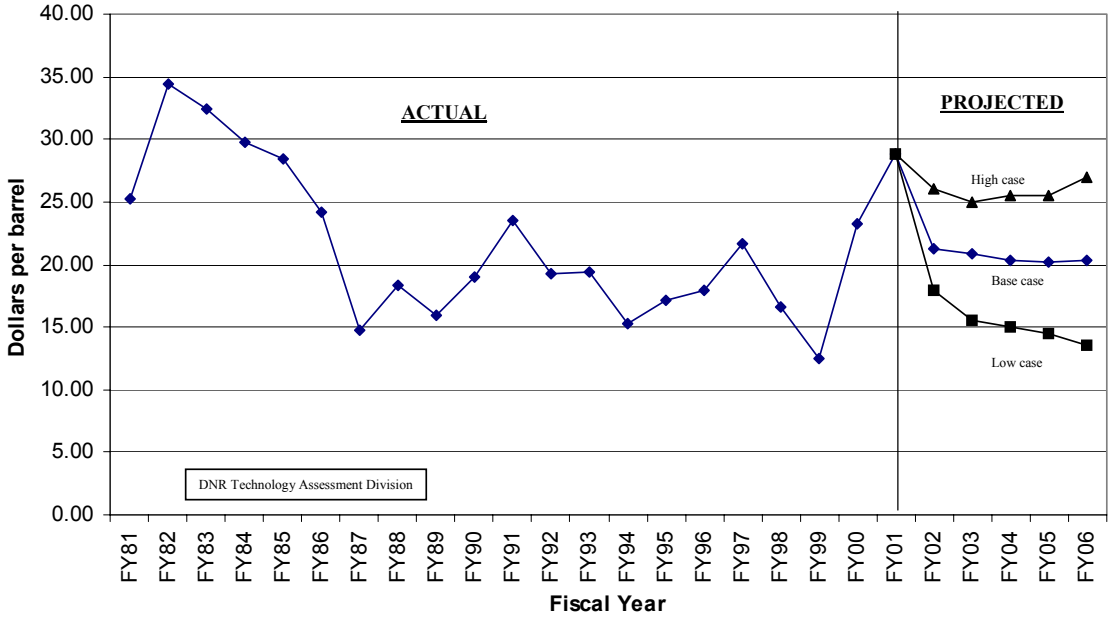
demand in winter and normal cooling demand in late spring and early summer; and d) production will not be disrupted in non-OPEC producing countries.

The low case assumed that: a) world oil demand will grow less than 1 percent annually between 2002-2006; b) OPEC countries will produce more than their allowed quotas, and Iraq will be producing more than the proposed UN limit of 1 million barrels per day; and c) weather will be mild.

The high case assumed that: a) world oil demand will grow at a rate higher than 1.8 percent per year between 2002-2006, fueled by the economic recovery in Southeast Asia; b) OPEC countries will self impose lower production rates than their quotas; and c) production will be disrupted in non-OPEC producers due to weather, accidents or workers' strikes.

Figure 2

LOUISIANA AVERAGE CRUDE OIL WELLHEAD PRICE HISTORICAL AND PROJECTED



NATURAL GAS PRICE PROJECTION

Natural gas prices act differently than crude oil prices. Oil prices are driven by the international oil market. Gas prices are driven by factors such as weather, demand for gas not satisfied by the pipeline system, availability of spot supplies, and competing fuel prices. Natural gas is less traded internationally than oil. It is harder to transport and store, and needs the proper infrastructure (pipelines, compression stations, LNG tanks, etc.). The major cost components of natural gas prices are: cost of infield production, cost of transportation, cost of marketing, and investment rate of return. As the historical data shows, most components of natural gas prices are stable with the exception of marketing cost. Marketing cost is the only cost that oscillates widely. Gas prices increased as regulations faded out in the early 80's. With deregulation, natural gas started trading in the spot and commodity markets. Since 1985, this spot market for gas has grown in importance and today it is the major player in the determination of gas prices. In April 1990, natural gas futures contracts started trading in the New York Mercantile Exchange (NYMEX). A NYMEX gas future contract calls for delivery of 10,000 MCF of gas during a specific month, 1 to 12 months in the future. The contract delivery point of the gas is Sabine Pipe Line Co.'s Henry Hub terminal near Erath, Louisiana.

Factors that could affect prices are weather, storage levels, curtailments, market changes, new consumption and NAFTA (North America Free Trade Agreement). Gas prices are also affected by psychological factors. The expectation of soft prices often is enough to bring them about. A good dose of cold winter weather will usually erase much of the psychological element of low gas prices.

Table 2

Louisiana Natural Gas Price Projections

(Dollars per MCF)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	2.36	35.63%		
Historical	FY1996/97	2.58	9.35%		
Historical	FY1997/98	2.36	-8.57%		
Historical	FY1998/99	1.93	-18.02%		
Historical	FY1999/00	2.73	41.55%		
Historical	FY2000/01	5.26	92.15%		
Projected	FY2001/02	2.60	-50.57%	2.20	3.30
Projected	FY2002/03	2.70	3.85%	2.20	3.50
Projected	FY2003/04	2.40	-11.11%	1.80	3.30
Projected	FY2004/05	2.40	0.00%	1.80	3.30
Projected	FY2005/06	2.60	8.33%	2.00	3.60

The above table is a list of historical and projected fiscal year average of Louisiana wellhead natural gas prices. Calendar year data is provided in Appendix F.

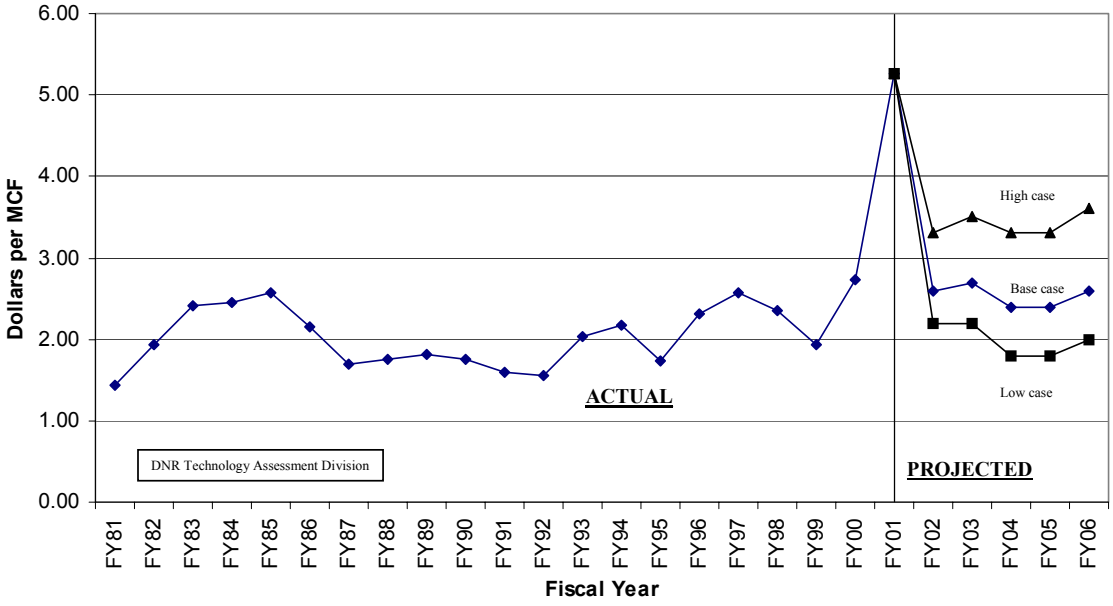
The base case assumed that: a) U.S. gas demand will grow at an average annual rate of 1 percent between 2002-2006; b) LNG imports will be insignificant; c) weather demand will be relatively normal, high heating demand in winter and high cooling in late spring and early summer; and d) total U.S. gas imports will be only 10-15 percent of total U.S. consumption.

The low case assumed that: a) U.S. gas demand will grow less than half of a percent between 2002-2006; b) total U.S. gas imports will be more than 15 percent of total U.S. consumption; c) inventory levels in storages will be high; and d) weather demand will be low because of mild temperatures.

The high case assumed that: a) U.S. gas demand will grow at a rate higher than 1.5 percent between 2002-2006; b) total U.S. gas imports will be less than 10 percent of total U.S. consumption; c) inventory in storage will be at low levels; and d) some production or distribution disruption will occur due to weather or accidents.

Figure 3

LOUISIANA AVERAGE NATURAL GAS WELLHEAD PRICE HISTORICAL AND PROJECTED



OIL AND GAS PRODUCTION

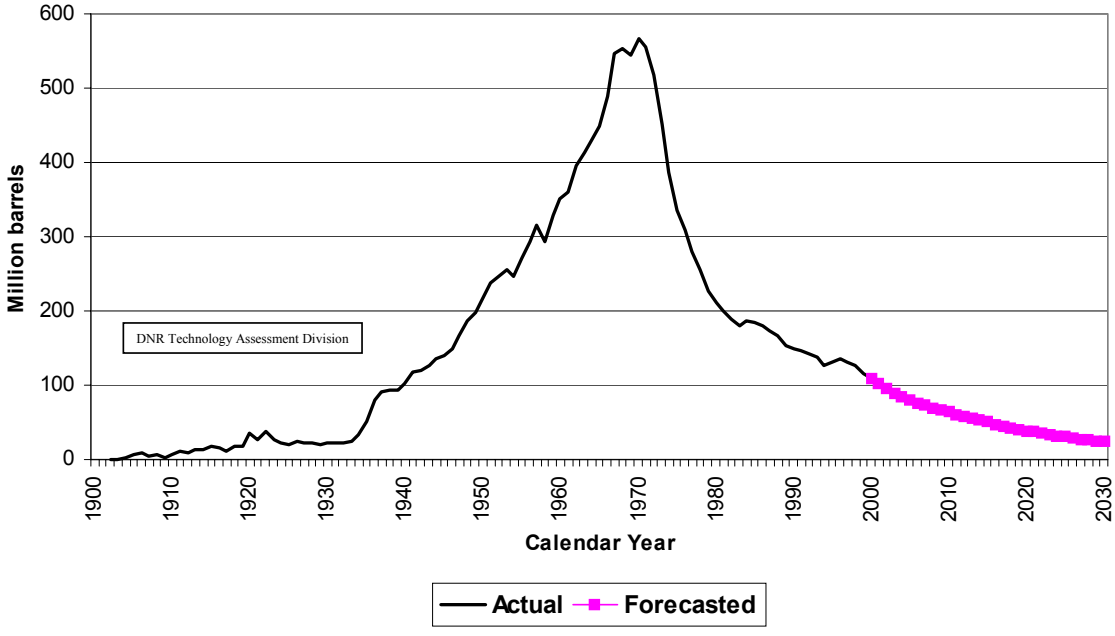
Louisiana ranks among the top four states in oil and gas production, and is second in per capita energy consumption. It has produced oil and gas for almost a century. The following section presents forecast data for oil (crude oil and condensate) and gas (casinghead gas and natural gas) production from state regulated land and water bottoms. Calendar year data is provided in Appendix F.

OIL PRODUCTION FORECAST

The annual rate of decline over the past ten year period was 3.2%, and the DNR Technology Assessment Division **long term** model is projecting a 4.4% decline per year. The **long term** model is accurate over long periods (10 to 30 years). The **short term** model is needed to forecast production over periods of 1 to 5 years, because of the wide fluctuations from year to year as shown in Table 3.

Figure 4

LOUISIANA STATE LONG TERM CRUDE OIL PRODUCTION FORECAST



Condensate oil included, Federal OCS excluded

Factors contributing to the year to year deviations in oil production are:

- Changes in wildcat drilling and development of marginal fields within the state
- Early capping of stripper wells by major producers
- Unstable prices of crude oil
- Changes in environmental laws, especially those concerning salt water discharge
- World crude oil supply growing faster than demand, causing an oil glut similar to the gas bubble
- The number of active rigs in the region
- Military conflicts or political instability in some producing countries (OPEC members and the former the Soviet Union)
- Application of advanced technology such as 3-D and 4-D seismic
- State and local tax incentives

The **short term** forecast model is predicting a 4.2% per year decline in oil production for the next five years, FY2001/02 to FY2005/06. The forecasted production rates may be low depending on factors such as crude oil prices, number of active drilling rigs, consumer demand, exploration activities, OPEC production curtailment, non-OPEC producers' production capacity improvement, and Iraq returning to the crude oil market.

Calendar year oil production data is provided in Appendix F. Louisiana state, federal OCS excluded, fiscal year crude oil and condensate production is as follows:

Table 3

Louisiana Crude Oil Production Forecast

(Barrels)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	127,107,138	1.79%		
Historical	FY1996/97	127,935,454	0.65%		
Historical	FY1997/98	125,929,003	-1.57%		
Historical	FY1998/99	113,828,399	-9.61%		
Historical	FY1999/00	107,917,382	-5.19%		
Historical	FY2000/01	105,987,045	-1.79%		
Projected	FY2001/02	102,736,139	-3.07%	89,270,077	119,126,733
Projected	FY2002/03	99,179,860	-3.46%	85,639,804	115,486,967
Projected	FY2003/04	95,210,139	-4.00%	81,980,710	111,715,170
Projected	FY2004/05	90,869,802	-4.56%	77,969,433	107,361,001
Projected	FY2005/06	85,488,752	-5.92%	73,303,187	101,989,769

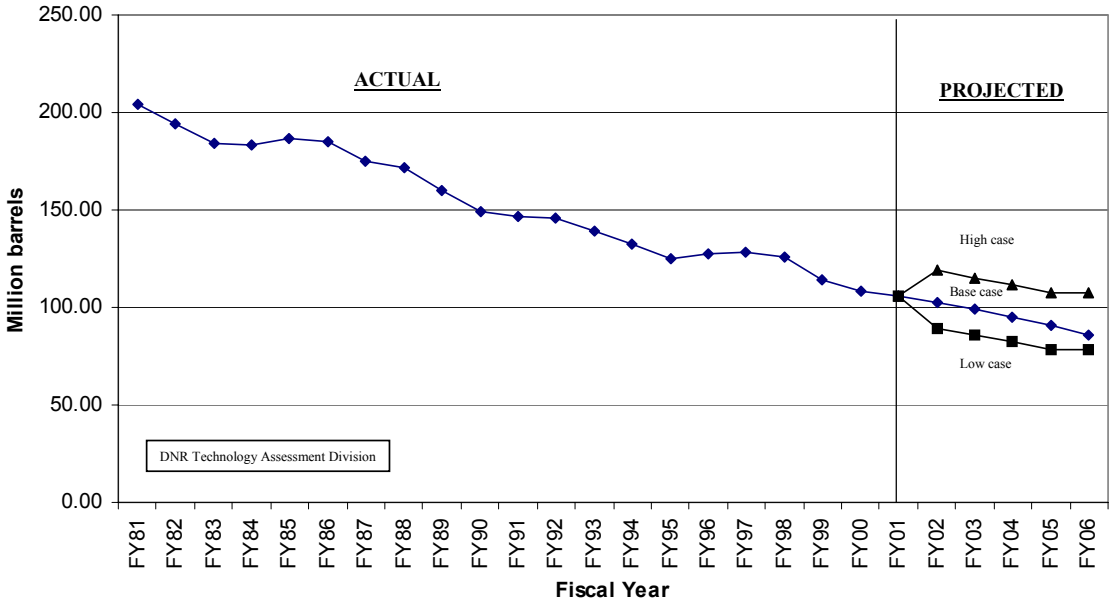
The base case assumed that: a) the price of crude oil will be as shown in the base case crude oil price projection; and b) drilling activities will remain low (average running rigs in Louisiana onshore and offshore should be around 90 rigs, and around 100 drilling permits issued per month).

The low case assumed that: a) the price and pricing assumptions for crude oil will be as shown in the low case crude oil price forecast; and b) drilling activities will drop further than present levels.

The high case assumed that: a) the price and pricing assumptions for crude oil will be as shown in the high case crude oil price forecast; and b) drilling activities will increase from present levels.

Figure 5

LOUISIANA CRUDE OIL AND CONDENSATE HISTORICAL PRODUCTION AND SHORT TERM FORECAST

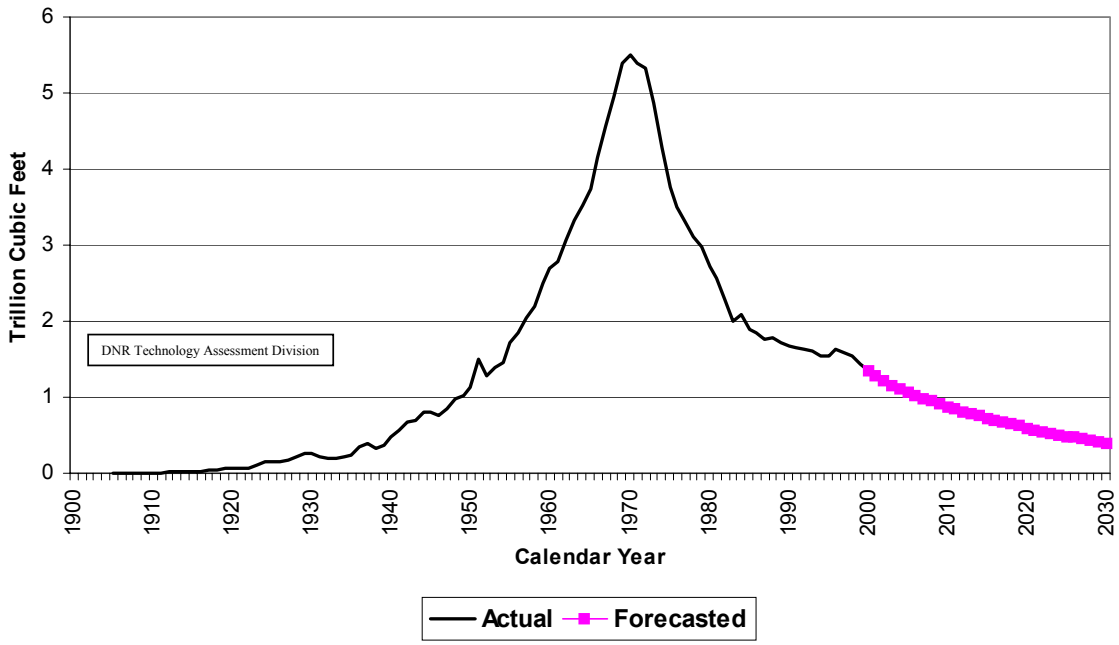


GAS PRODUCTION FORECAST

The average annual rate of decline over the last 10 years was 1.1% which is less than the DNR Technology Assessment Division **long term** model projection of 3.8% per year. Year to year production rate changes in this period were from a 5.8% decline to 4.5% increase in production. Four years out of the last ten have shown production increases. Even though the long term model is accurate over a 10 to 30 year period, these short term fluctuations illustrate why a separate **short term** model is required to forecast production over periods of one to five years.

Figure 6

LOUISIANA STATE LONG TERM NATURAL GAS PRODUCTION FORECAST



Casinghead gas included, Federal OCS excluded

Factors contributing to the year to year deviations are:

- Effects on industrial gas demand from chemical industry activity
- Growth in use of natural gas to meet clean air requirements in electric power generation and transportation

- Changes in environmental laws, especially the Clean Air Act Amendments of 1990
- Production capacity higher than demand
- Price of gas relative to fuel oil and the amount of switching between these two fuels
- Peak day deliver ability of the U.S. pipeline system
- Foreign imports
- State and local tax incentives

The average annual rate of decline predicted by the **long term** forecast model is 3.8% per year. The **short term** forecast model predicts a 4.5% per year decline for FY2001/02 through FY2005/06. The natural gas production forecast may be low if gas demand in the U.S. is higher than the U.S. consumption predicted by the U.S. Department of Energy, Energy Information Administration, cheaper fuel substitutes are not available for users capable of fuel switching, and more new drilling targets gas. The demand for gas may increase as the manufacturing and utilities industries switch to gas for cleaner energy and if natural gas prices remain competitive.

Calendar year gas production data is provided in Appendix F. Louisiana natural gas and casinghead gas production are as follows:

Table 4

Louisiana Natural Gas Production Forecast

(MCF)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	1,580,378,914	3.804%		
Historical	FY1996/97	1,637,643,014	3.623%		
Historical	FY1997/98	1,596,078,016	-2.538%		
Historical	FY1998/99	1,503,207,708	-5.819%		
Historical	FY1999/00	1,438,129,792	-4.329%		
Historical	FY2000/01	1,503,298,187	4.531%		
Projected	FY2001/02	1,465,550,832	-2.511%	1,344,079,619	1,589,059,083
Projected	FY2002/03	1,385,603,648	-5.455%	1,263,662,564	1,504,467,287
Projected	FY2003/04	1,299,730,720	-6.198%	1,181,425,603	1,416,617,392
Projected	FY2004/05	1,244,214,832	-4.271%	1,125,913,257	1,359,649,582
Projected	FY2005/06	1,195,063,041	-3.950%	1,076,825,135	1,309,611,706

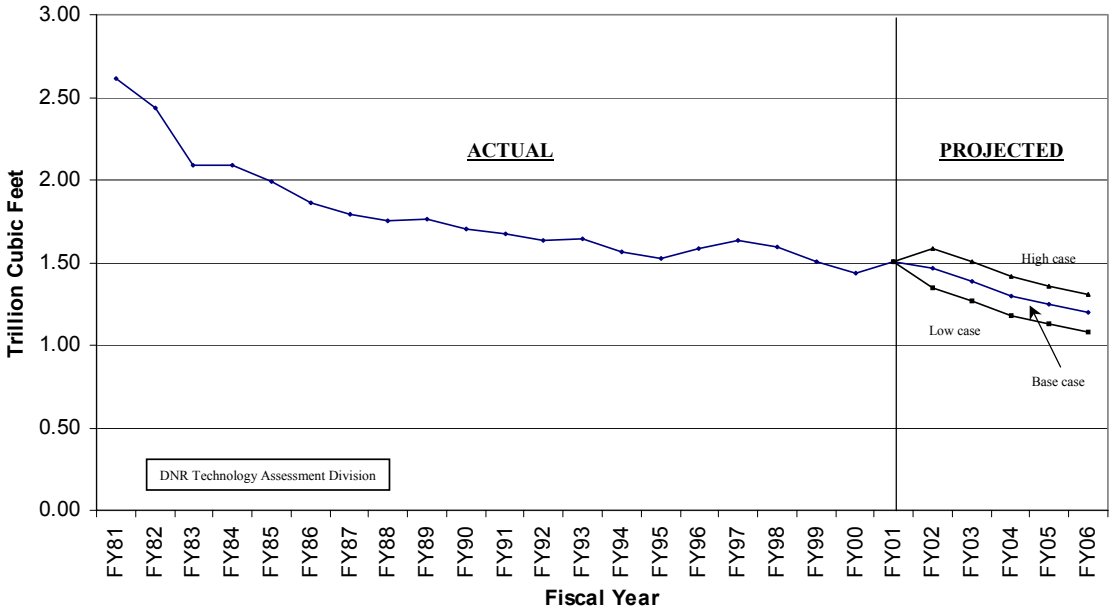
The base case assumed that: a) the price and pricing assumptions for natural gas will be as shown in the base case natural gas price forecast; and b) drilling activities will remain low (average running rigs in Louisiana onshore and offshore should be around 90 rigs, and around 100 drilling permits issued per month).

The low case assumed that: a) the price and pricing assumptions for natural gas will be as shown in the low case natural gas price forecast; and b) drilling activities will drop further than present levels.

The high case assumed that: a) the price and pricing assumptions for natural gas will be as shown in the high case natural gas price forecast; and b) drilling activities will increase from present levels.

Figure 7

LOUISIANA NATURAL GAS AND CASINGHEAD GAS HISTORICAL PRODUCTION AND SHORT TERM FORECAST



MINERAL ROYALTY REVENUE

Royalty is the payment, in value (cash) or in kind (a portion of the commodity), of a stated share of production from mineral deposits by the lessee to the lessor. In other words, royalty is the property owner's (lessor's) share of revenue from minerals produced on his land. Royalty may be an established minimum, a sliding-scale, or a step-scale. A step-scale royalty rate increases by steps as the average production on the lease increases. A sliding-scale royalty rate is based on average production and applies to all production from the lease. State royalties are a combination of established minimum and sliding-scale types.

The following table shows a base, low, and high cases of total mineral royalty revenue estimated for FY2001/02 through FY2005/06, and historical mineral royalty revenue for FY1990/91 through FY2000/01.

Table 5

Louisiana Total Royalty Revenue

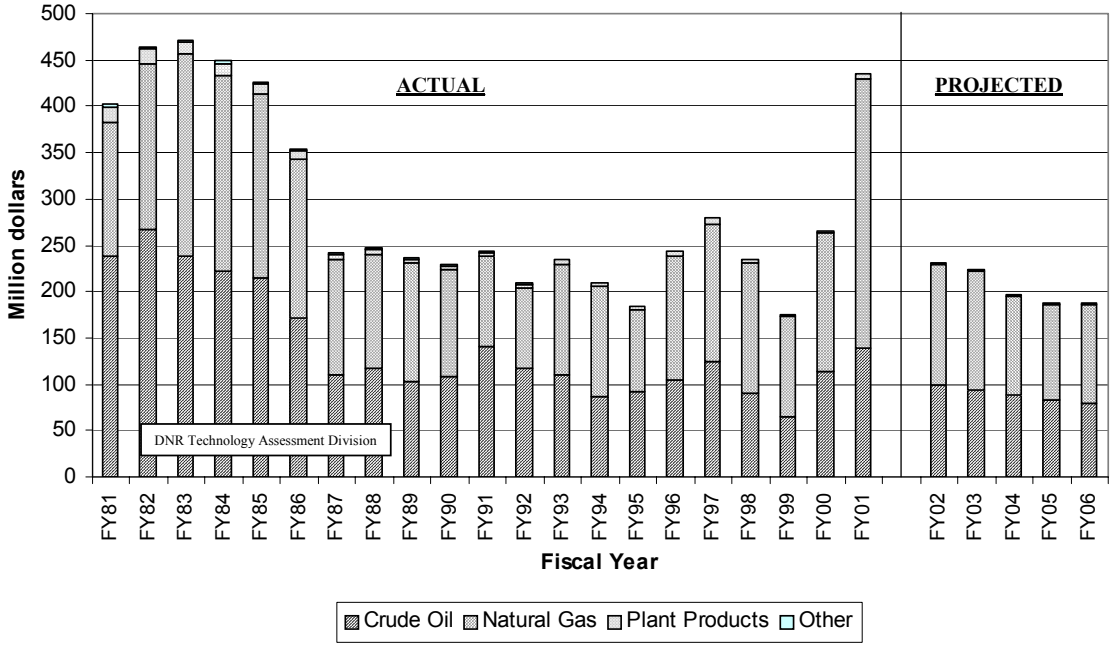
(Dollars)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1990/91	242,253,177	6.28%		
Historical	FY1991/92	208,419,705	-13.97%		
Historical	FY1992/93	234,365,597	12.45%		
Historical	FY1993/94	209,368,028	-10.67%		
Historical	FY1994/95	184,895,929	-11.69%		
Historical	FY1995/96	295,046,831	59.57%		
Historical	FY1996/97	291,198,854	-1.30%		
Historical	FY1997/98	239,034,071	-17.91%		
Historical	FY1998/99	166,233,302	-30.46%		
Historical	FY1999/00	268,686,949	61.63%		
Historical	FY2000/01	440,445,895	63.93%		
Projected	FY2001/02	231,290,366	-47.49%	176,324,288	321,904,464
Projected	FY2002/03	223,668,525	-3.30%	157,476,896	313,069,596
Projected	FY2003/04	196,501,067	-12.15%	130,695,642	291,155,996
Projected	FY2004/05	187,513,505	-4.57%	122,740,618	279,680,116
Projected	FY2005/06	187,069,577	-0.24%	123,322,105	295,695,850

The following plot, Figure 8, shows historical and estimated future fiscal year mineral royalty revenue by source. Calendar year historical royalty revenue from 1991 through 2000 and projected royalty revenue from 2001 through 2006 are listed in Appendix F.

Figure 8

LOUISIANA MINERAL ROYALTY REVENUE BY SOURCE,
Excluding Federal OCS



CRUDE OIL ROYALTY

The estimated crude oil royalty revenue was calculated using the forecasted oil production from the DNR Technology Assessment Division **short term** models and oil price projections discussed in the price chapter. The fiscal year projected base, low, and high cases of crude oil royalty revenue from FY2001/02 through FY2005/06, and historical crude oil royalty revenue from FY1995/96 through FY2000/01 are listed in Table 6.

We believe our estimates of production and prices are conservative. As always, changing world events might cause demand to rise or fall sharply and supply to remain constant or decrease. Given this possibility, prices can also fluctuate faster than expected. Changes in any of the listed parameters, it will change our base case projection.

Calendar year historical crude oil royalty revenue from 1991 through 2000 and projected crude oil royalty revenue from 2001 through 2006 are listed in Appendix F. Also, the

percentage changes from the previous period are listed. Crude oil royalty revenue estimates for FY2002/03 through FY2004/05 at multiple assumed oil prices are listed in Appendix E.

Table 6

Louisiana Crude Oil Royalty

(Dollars)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	104,444,918	12.95%		
Historical	FY1996/97	126,949,707	21.55%		
Historical	FY1997/98	90,687,030	-28.56%		
Historical	FY1998/99	63,502,511	-29.98%		
Historical	FY1999/00	119,722,284	88.53%		
Historical	FY2000/01	141,363,530	18.08%		
Projected	FY2001/02	99,499,969	-29.61%	73,661,440	141,191,559
Projected	FY2002/03	94,243,341	-5.28%	60,852,049	131,614,711
Projected	FY2003/04	88,296,418	-6.31%	56,373,743	129,864,400
Projected	FY2004/05	83,856,126	-5.03%	51,828,954	124,804,541
Projected	FY2005/06	79,280,953	-5.46%	48,075,852	133,047,127

NATURAL GAS ROYALTY

The gas royalty revenue estimates are highly speculative due to the probability of significant market factor influences and changes that cannot be accurately predicted. The projected natural gas royalty revenue was calculated using the gas production volumes forecasted by the DNR Technology Assessment Division models, and gas price projections discussed in the price chapter.

Table 7 lists the historical fiscal year natural gas royalty revenue from FY1995/96 through FY2000/01, and projected natural gas royalty revenue from FY2001/02 through FY2005/06. Also, the percentage changes from the previous period are listed. Natural gas royalty revenue estimates for FY2002/03 through FY2004/05 at multiple assumed gas prices are listed in Appendix E. Calendar year historical natural gas royalty revenue from 1991 through 2000 and projected crude oil royalty revenue from 2001 through 2006 are listed in Appendix F.

The natural gas royalty projections may be low if average gas prices are higher than projected, gas production goes higher than forecasted by DNR Technology Assessment Division models, oil prices recover from the present slump, or U.S. gas demand increases faster than predicted by the Energy Information Administration, US Department of Energy.

Table 7

Louisiana Natural Gas Royalty

(Dollars)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	185,221,179	110.37%		
Historical	FY1996/97	157,025,790	-15.22%		
Historical	FY1997/98	144,190,691	-8.17%		
Historical	FY1998/99	100,986,252	-29.96%		
Historical	FY1999/00	145,892,844	44.47%		
Historical	FY2000/01	294,422,858	101.81%		
Projected	FY2001/02	130,045,858	-55.83%	100,918,310	178,968,367
Projected	FY2002/03	127,680,647	-1.82%	94,880,309	179,710,348
Projected	FY2003/04	106,460,111	-16.62%	72,577,361	159,547,058
Projected	FY2004/05	101,912,841	-4.27%	69,167,126	153,131,037
Projected	FY2005/06	106,044,086	4.05%	73,501,715	160,904,185

NON-HYDROCARBON MINERALS ROYALTY

Royalty revenue produced from salt, sulfur and other non-hydrocarbon minerals was: $1.9 million in 1986, $1.6 million in 1987, $1.3 million in 1988, $1.4 million in 1989, $0.9 million in 1990, and $0.4 million in 1991. The last active non-hydrocarbon lease on state owned land or water bottom was in Jefferson Parish. It ceased operations on September 30, 1991. No royalty revenue is expected from salt, sulfur and other non-hydrocarbons in the near future.

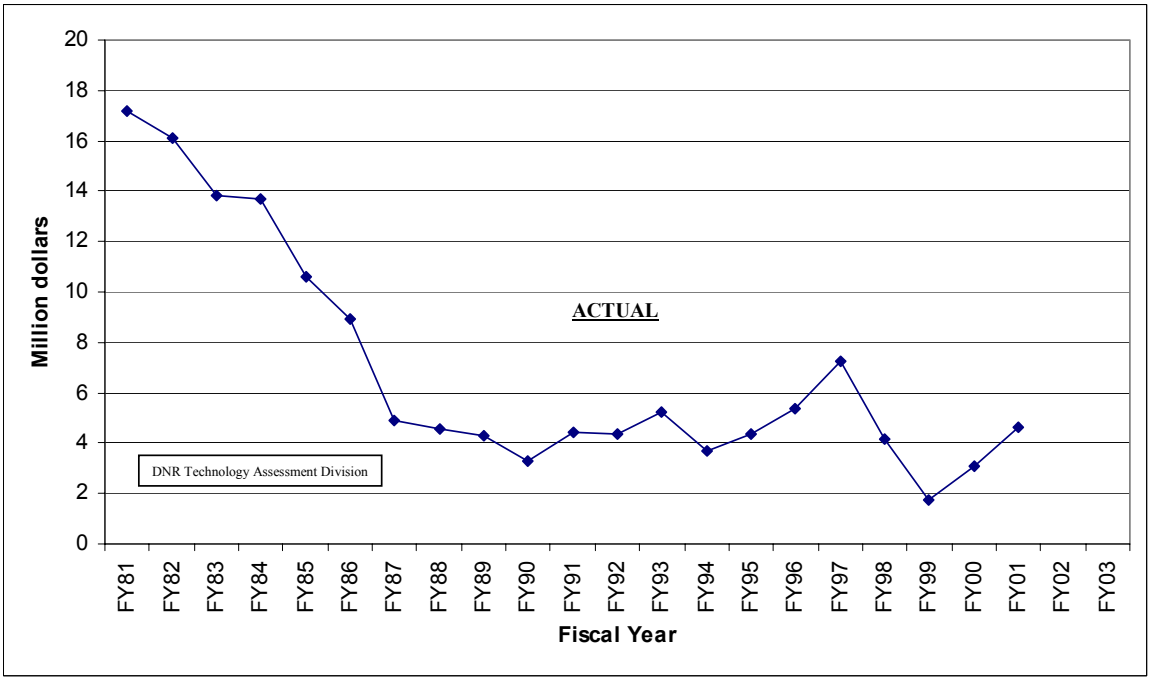
PLANT PRODUCTS ROYALTY

The plant products (natural gas liquids) royalty revenue is dependent on oil for its value and gas production for its volume. The forces that control oil prices and gas production will also control plant products production and its royalty revenue. The Technology Assessment Division has not developed a mathematical model or empirical equation for projecting gas liquids production. Therefore, no definitive estimate of plant products royalty revenue is available. The lowest of the past five years plant products royalty revenue is assumed to be the revenue from plant products royalty each year for projected period. It is expected that the state can at least reach this level of royalty revenue from plant products.

The following plot shows historical fiscal year plant products royalty revenue from FY1990/91 through FY2000/01.

Figure 9

LOUISIANA PLANT PRODUCTS ROYALTY REVENUE, Excluding Federal OCS



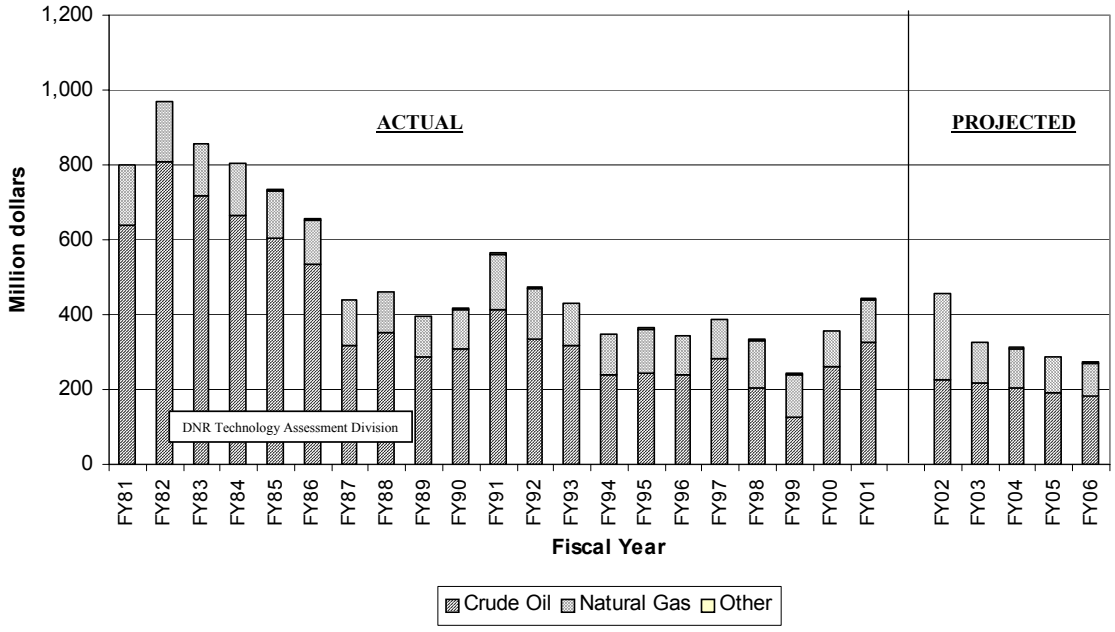
SEVERANCE TAX REVENUE

Severance tax is levied on production of natural resources taken from land or water bottoms within the territorial boundaries of the state. The state collects no severance from production in federal waters in the Gulf which start three miles from the Louisiana coast line. Natural resources are minerals, other natural deposits, rock salt and salt content in brine, and all forms of timber, including pulp woods, and turpentine and other forest products. Severance tax is paid by the owners of the natural resources at the time of severance. Only revenue from minerals such as oil, gas, natural gasoline, distillate, condensate, casinghead gas, sulphur, salt, coal, lignite, and ores are considered in this chapter.

The following plot, Figure 10, shows historical fiscal year mineral severance tax revenue by source and projected future severance tax revenue.

Figure 10

LOUISIANA MINERAL SEVERANCE TAX REVENUE
BY SOURCE, Excluding Federal OCS



The total severance tax revenue estimates are dependent on oil and gas production volumes and their market values. The oil and gas production volumes and prices used to estimate the severance revenue were forecasted by the DNR Technology Assessment Division models. The following table is the projected base, low, and high case total mineral severance tax revenue for FY2001/02 through FY2005/06, and historical severance tax revenue for FY1990/91 through FY2000/01.

Table 8

Louisiana Total Severance Tax Revenue

(Dollars)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1990/91	565,354,061	35.67%		
Historical	FY1991/92	473,420,544	-16.26%		
Historical	FY1992/93	430,903,650	-8.98%		
Historical	FY1993/94	348,126,391	-19.21%		
Historical	FY1994/95	363,419,047	4.39%		
Historical	FY1995/96	343,412,476	-5.51%		
Historical	FY1996/97	388,779,377	13.21%		
Historical	FY1997/98	333,670,455	-14.17%		
Historical	FY1998/99	241,799,648	-27.53%		
Historical	FY1999/00	363,350,443	50.27%		
Historical	FY2000/01	442,795,242	21.86%		
Projected	FY2001/02	458,566,058	3.56%	412,499,047	514,375,998
Projected	FY2002/03	327,369,081	-28.61%	292,709,942	373,295,863
Projected	FY2003/04	311,525,756	-4.84%	277,707,854	356,504,577
Projected	FY2004/05	286,287,025	-8.10%	254,133,605	330,041,558
Projected	FY2005/06	272,858,767	-4.69%	252,448,901	330,208,993

CRUDE OIL SEVERANCE TAX

The severance tax on oil severed from the land or water bottom is levied based on the value (gross receipts received from the first purchaser, less charges for trucking, barging and pipeline fees) of the products. The standard transportation allowance is $0.25 per barrel regardless of its historical cost. The following estimated oil severance revenue was calculated using oil production volumes forecasted by the DNR Technology Assessment Division **short term** models, and oil price projections discussed in the price chapter.

Table 9

Louisiana Crude Oil Severance Tax Estimates

(Dollars)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	239,851,607	-0.95%		
Historical	FY1996/97	281,261,603	17.26%		
Historical	FY1997/98	203,551,197	-27.63%		
Historical	FY1998/99	128,077,861	-37.08%		
Historical	FY1999/00	267,598,947	108.93%		
Historical	FY2000/01	325,653,074	21.69%		
Projected	FY2001/02	226,709,105	-30.38%	199,739,012	263,101,876
Projected	FY2002/03	215,402,525	-4.99%	190,469,255	251,848,890
Projected	FY2003/04	202,465,710	-6.01%	178,442,544	237,767,231
Projected	FY2004/05	193,145,877	-4.60%	169,710,330	228,393,799
Projected	FY2005/06	183,339,710	-5.08%	171,643,025	232,248,622

Table 9 lists the projected crude oil severance tax revenue for FY2001/02 through FY2005/06, and historical severance tax revenue for FY1995/96 through FY2000/01. Crude oil severance tax revenue projected for FY2002/03 through FY2005/06 at multiple assumed oil prices are listed in Appendix E.

The projected crude oil severance tax revenue may turn out low if the price of oil increases, foreign oil imports remain at the present level, and domestic demand for oil increases. Severance tax revenue from stripper wells was included in the above estimates when average oil prices are projected to be over $20 per barrel for the year. (Act 2 of 1994 exempted stripper oil wells from severance tax when the price of oil is less than $20 per barrel.) Historical calendar year crude oil severance tax revenue is shown in Appendix F.

NATURAL GAS SEVERANCE TAX

The severance tax on natural gas severed from the land or water bottom is levied based on gas volumes or equivalent gas volumes of natural gasoline, casinghead gasoline, and other natural gas liquids, including but not limited to ethane, methane, butane or propane. Volume is measured at a base pressure of 15.025 pounds per square inch (psi) absolute and at the temperature base of 60 degrees Fahrenheit; provided that whenever the conditions of pressure and temperature differ from the above bases, conversion of the volume from these

conditions to the above bases shall be made following the Ideal Gas Law with correction for deviation from Boyle's Law.

Table 10 shows the projected natural gas severance tax revenue for FY2001/02 through FY2005/06, and historical severance tax revenue for FY1995/96 through FY2000/01. Natural gas severance tax revenue estimates for FY2002/03 through FY2004/05 at multiple assumed gas prices are listed in Appendix E.

Table 10

Louisiana Natural Gas Severance Tax Estimates

(Dollars)

		Base Case	Percent Change	Low Case	High Case
Historical	FY1995/96	101,768,379	-14.72%		
Historical	FY1996/97	105,697,695	3.86%		
Historical	FY1997/98	128,447,106	21.52%		
Historical	FY1998/99	111,976,924	-12.82%		
Historical	FY1999/00	94,193,762	-15.88%		
Historical	FY2000/01	115,689,636	22.82%		
Projected	FY2001/02	230,404,422	9.16%	211,307,503	249,821,590
Projected	FY2002/03	110,514,024	-52.03%	100,788,155	119,994,440
Projected	FY2003/04	107,607,514	-2.63%	97,812,778	117,284,814
Projected	FY2004/05	91,688,616	-14.79%	82,970,742	100,195,228
Projected	FY2005/06	88,066,525	-3.95%	79,353,343	96,507,839

The above estimated gas severance tax revenue was calculated using gas production volumes forecasted by the DNR Technology Assessment Division **short term** models, and gas price projections discussed in the price chapter. Historical calendar year natural gas severance tax revenue is shown in Appendix F.

The projected gas severance tax revenue is subject to change if the national economy changes, gas price changes which may entice users to switch to residual oil from natural gas, gas production volume deviates from the base level forecasted by the DNR Technology Assessment Division **short term** model, or gas demand increases more than predicted by the Energy Information Administration, US Department of Energy used in the projection.

PLANT PRODUCTS SEVERANCE TAX

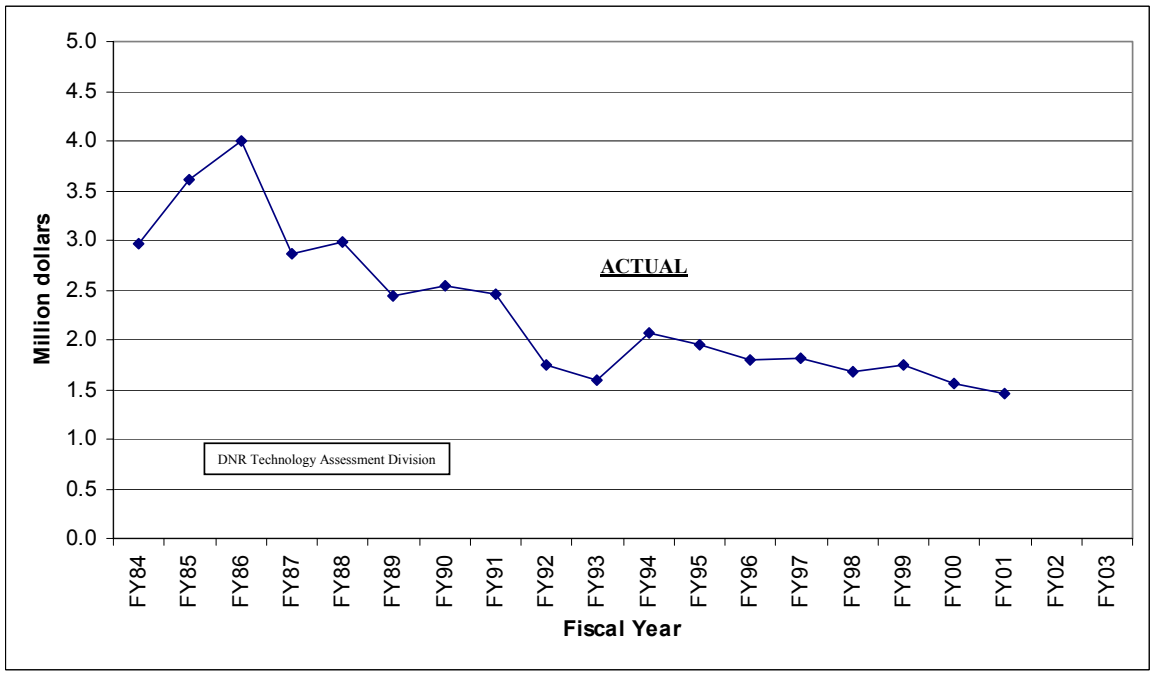
All natural gas liquids or plant products are taxed at the natural gas rate at a calculated equivalent gaseous volume. Severance tax revenue from these liquids is included with natural gas revenue figures.

NON-HYDROCARBON MINERALS SEVERANCE TAX

Other minerals that pay severance tax are coal, lignite, ore, salt and sulfur. The Technology Assessment Division has not developed a mathematical model or empirical equation for projecting non-hydrocarbon minerals severance tax. Therefore, no definitive revenue projection is available. The latest year is assumed to be the revenue for each year in the projected period. It is expected that the state can at least reach this level revenue from the non-hydrocarbon mineral's severance. The non-hydrocarbon severance tax historical revenue is shown in the following figure.

FIGURE 11

LOUISIANA NON-HYDROCARBON MINERALS SEVERANCE TAX REVENUE, Excluding Federal OCS



BONUS, RENTAL & OVERRIDING ROYALTY REVENUE

Major sources of Louisiana mineral income are royalties and severance taxes, which were discussed in the previous chapter. This chapter covers the mineral income from bonuses, rentals and overriding royalties (BR&O). The prospect of getting high bonuses or rentals is slimmer in the future than in the past, because Louisiana is an old and well developed oil and gas producing province. It is possible that Louisiana can get high bonuses for some offshore tracks, but it is not likely under the present oil and gas market conditions. The historical data on bonuses, rentals, and overriding royalties do not have a pattern. It is unlikely that it would ever be effective to try to develop mathematical models that represent their behavior.

Figure 12

LOUISIANA BONUS, RENTAL AND OVERRIDING ROYALTY REVENUE,
Excluding Federal OCS

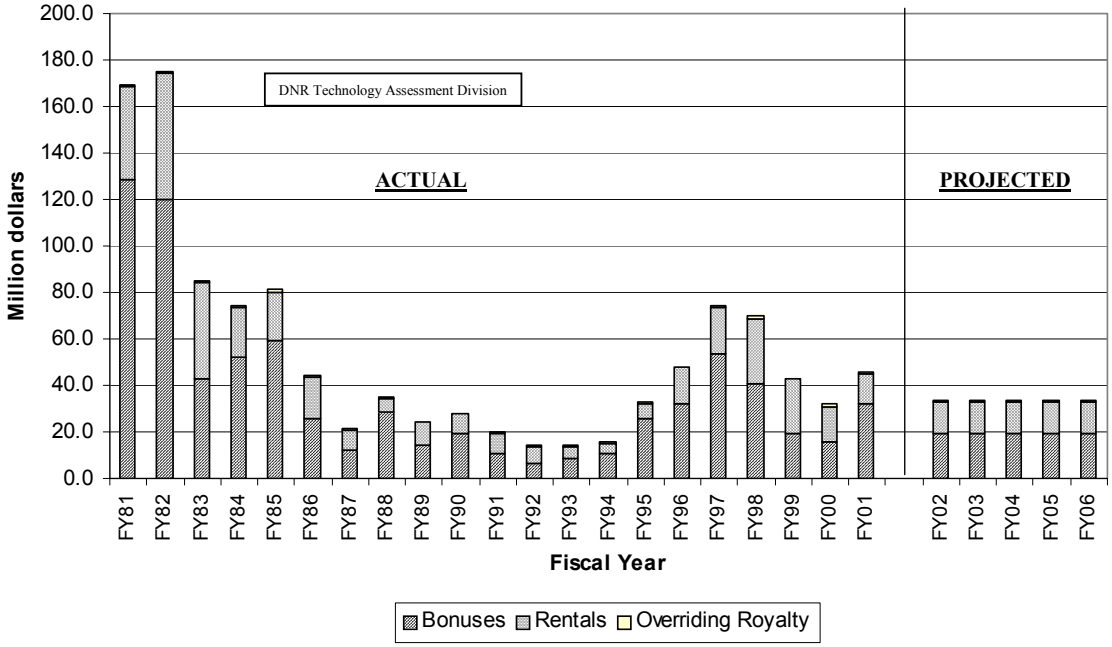


Figure 12 shows historical and projected future fiscal year bonus, rental and overriding royalty revenue by source and numeric values are shown in following table.

BONUS REVENUE

A bonus is a cash payment by the lessee for the execution of a lease. A lease is a contract that gives a lessee the right to: (a) search for minerals, (b) develop the surface for extraction, and (c) produce minerals within the area covered by the contract.

RENTAL REVENUE

A rental is money paid by the lessee to maintain the lease after the first year if it is not producing or under development. A lease is considered expired when the rental is not paid on time on an unproductive lease.

OVERRIDING ROYALTY REVENUE

An overriding royalty or royalty override is an interest in oil and gas produced at the surface free of any cost of production. It is royalty in addition to the usual landowner's royalty reserved to the lessor. The *Layman's Guide to Oil & Gas* by Brown and Miller defines overriding royalty as a percentage of all revenue earned by a well and carrying no cost obligation.

Table 11

LOUISIANA BONUS, RENTAL AND OVERRIDING ROYALTY REVENUE

(Dollars)

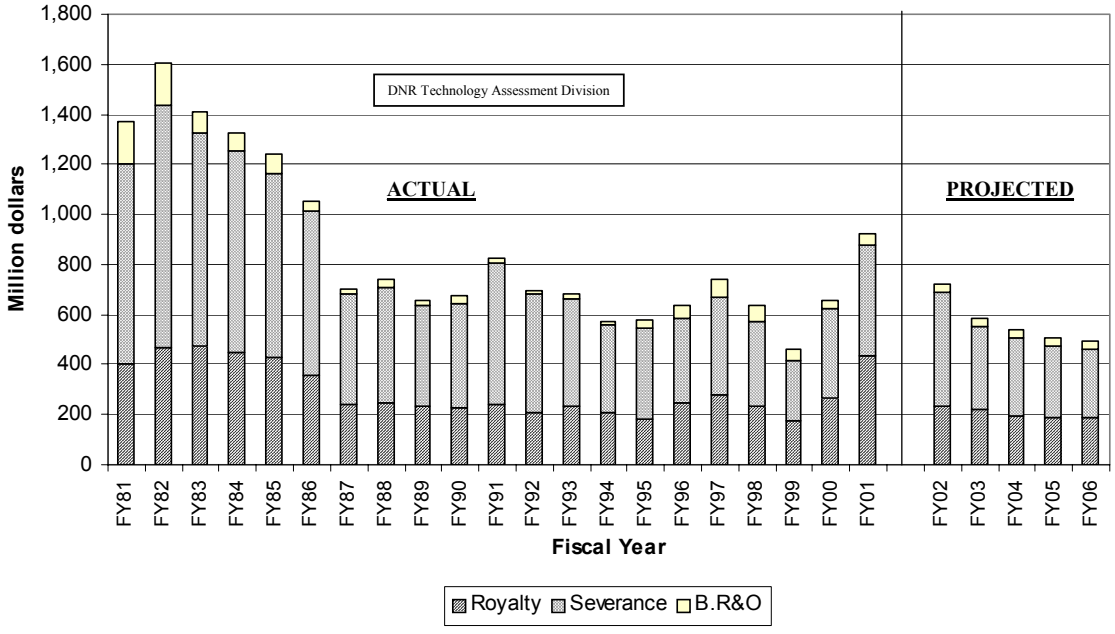
		Overriding Royalty	Rental	Bonus
Historical	FY1995/96	(381,879)	15,636,109	32,152,653
Historical	FY1996/97	327,365	20,666,495	53,234,839
Historical	FY1997/98	1,175,985	28,393,761	40,443,116
Historical	FY1998/99	233,545	23,739,122	19,062,489
Historical	FY1999/00	1,141,162	15,377,758	15,614,797
Historical	FY2000/01	1,177,876	12,828,281	31,833,691
Projected	FY2001/02	811,187	14,100,000	19,000,000
Projected	FY2002/03	811,187	14,100,000	19,000,000
Projected	FY2003/04	811,187	14,100,000	19,000,000
Projected	FY2004/05	811,187	14,100,000	19,000,000
Projected	FY2005/06	811,187	14,100,000	19,000,000

TOTAL MINERAL REVENUE

Louisiana produces crude oil, natural gas, sulfur, salt, gravel, and lignite. The state takes in revenue: 1) Directly from production of mineral resources when they are produced within the state boundaries. If the minerals are produced from lands owned by the state or from water bottoms, the state receives additional revenue. 2) Indirectly from production of mineral resources from lands owned by the federal government within state boundaries, in which case the state receives a 50% share of the royalty revenue. From the Federal OCS, Louisiana only receives revenue from the 8g section which lies between 3 miles and 6 miles from shore.

Figure 13

LOUISIANA TOTAL FISCAL YEAR REVENUE FROM MINERAL PRODUCTION,
Excluding Federal OCS



STATE BOUNDARIES

Minerals produced within the state boundaries provide direct revenues to the state in the following forms:

- Severance taxes on all minerals production.
- Bonuses before leasing the land, if on state properties.
- Rentals after leasing if it is not in production or under active development, if on state properties.
- Royalties and overrides if it is in production, if on state properties.
- A share of the mineral revenue (bonus, rental and royalty), for federal properties if the deposit is on federal public lands, lands administrated by the U.S. Army Corps of Engineers, or military lands.

The main objective of this report is to focus on oil and gas production and its effects on severance tax, royalties on state lands, and bonuses and rentals on state leases. In this report we refer to **the sum of royalties on state lands, severance taxes, and BR&O** as Total State Mineral Revenue. These revenues were discussed in previous chapters.

Total state mineral revenue will have a very hard time ever matching the FY1981/82 level because oil and gas production are declining, price increases are not proportional to production declines, most Louisiana producing fields are mature, and the cost of finding new fields are high. The preceding plot, Figure 13, shows fiscal year total mineral revenue by type.

State oil and gas production peaked in FY1970/71, at 577 million barrels for oil and 5.5 trillion cubic feet for gas. By FY1980/81, oil production was 205 million barrels and gas production was 2.6 trillion cubic feet or less than half of FY1970/71 production. By FY1990/91, gas production was less than a third of FY1970/71, 1.7 trillion cubic feet, and oil production was around a quarter of FY1970/71, 148 million barrels. By FY2000/01, oil production was 106 million barrels, less than a fifth of FY1970/71, and gas production was 1.4 trillion cubic feet, a little more than a quater of FY1970/71. Barring some kind of breakthrough in new reservoir or technology development, this decline will continue.

Mineral revenue peaked in FY1981/82 at $1.61 billion. In FY1981/82, average oil prices were around $35.00 per barrel, and average gas prices were around $2.00 per MCF. The state's $1.61 billion revenue from mineral resources in FY1981/82 will be very hard to ever repeat, even if the price of oil goes back to $35.00 per barrel tomorrow. The major dollar component in mineral revenue comes from oil production as shown in Figures 8 and 10.

The following table shows historical revenue from fiscal year FY1980/81 through FY2000/01, and estimated revenue from FY2001/02 through FY2005/06, and the percentage changes in mineral revenue from the previous year.

Table 12

Louisiana Total Fiscal Year Mineral Revenue,
Excluding Federal Lands & OCS
(Million Dollars)

YEAR	TOTAL SEVERANCE	TOTAL ROYALTY	BONUS, RENTAL & OVERRIDE	TOTAL REVENUE	PERCENT CHANGE
FY1980/81	799.97	399.72	168.94	1,368.64	28.14%
FY1981/82	968.24	462.14	175.21	1,605.59	17.31%
FY1982/83	854.98	469.71	85.24	1,409.92	-12.19%
FY1983/84	805.47	446.51	74.29	1,326.27	-5.93%
FY1984/85	734.59	423.78	81.26	1,239.63	-6.53%
FY1985/86	656.56	352.30	44.39	1,053.25	-15.04%
FY1986/87	440.76	239.87	21.19	701.82	-33.37%
FY1987/88	462.45	245.17	34.71	742.33	5.77%
FY1988/89	397.61	234.82	24.15	656.59	-11.55%
FY1989/90	416.72	227.94	28.18	672.84	2.48%
FY1990/91	565.35	242.25	19.71	827.32	22.96%
FY1991/92	473.42	208.42	14.13	695.97	-15.88%
FY1992/93	430.90	234.37	14.02	679.29	-2.40%
FY1993/94	348.13	209.37	15.38	572.87	-15.67%
FY1994/95	363.42	184.90	32.89	581.21	1.46%
FY1995/96	343.41	295.05	47.41	685.87	18.01%
FY1996/97	388.78	291.20	74.23	754.21	9.96%
FY1997/98	333.67	239.03	70.01	642.72	-14.78%
FY1998/99	241.80	166.23	43.04	451.07	-29.82%
FY1999/00	363.35	268.69	32.13	664.17	47.24%
FY2000/01	442.80	440.45	45.84	929.08	39.89%
FY2001/02*	458.57	231.29	33.91	723.77	-22.10%
FY2002/03*	327.37	223.67	33.91	584.95	-19.18%
FY2003/04*	311.53	196.50	33.91	541.94	-7.35%
FY2004/05*	286.29	187.51	33.91	507.71	-6.32%
FY2005/06*	272.86	187.07	33.91	493.84	-2.73%

* Projected

Table 13

Assumptions:

Values used in the calculation of Louisiana total mineral revenue

YEAR	OIL PRICE ($/Barrel)	GAS PRICE ($/MCF)	SEVERANCE TAX OIL FULL RATE (% of value)	SEVERANCE TAX GAS FULL RATE ($/MCF)
FY2001/02	21.20	2.600	12.25%	$0.199
FY2002/03	20.80	2.700	12.25%	$0.100
FY2003/04	20.30	2.400	12.25%	$0.104
FY2004/05	20.20	2.400	12.25%	$0.093
FY2005/06	20.30	2.600	12.25%	$0.093

FEDERAL OCS, INCLUDING 8(g)

Louisiana does not collect any severance tax on production in the federal OCS area. Louisiana only receives partial royalties, rentals and bonuses from a 3-mile wide strip defined in Section 8(g) of the Outer Continental Shelf Lands Act Amendments of 1978 and of 1985, Public Law 99-272.

Royalty revenue from Federal offshore leases on the Outer Continental Shelf (OCS) are distributed to the Land and Water Conservation Fund, the Historic Preservation Fund, and the General Fund of the U.S. Treasury. Transfers are made in each fiscal year from OCS royalties, rentals and bonuses in order to maintain the Land and Water Conservation Fund's annual authorization of $900 million. Annually, $150 million is put into the Historic Preservation Fund. The balance of offshore revenue receipts is directed to the General Fund of the U.S. Treasury.

Section 8(g) of the Outer Continental Shelf Lands Act Amendments of 1978 provided that the states were to receive a "fair and equitable" division of revenues generated from the leasing of lands within 3 miles of the seaward boundary of a coastal state that contains one or more oil and gas pools or fields underlying both the OCS and lands subject to the jurisdiction of the state. The states and the federal government, however, were unable to reach agreement concerning the meaning of the term "fair and equitable." Revenues generated in the 3-mile boundary zone were subsequently placed into an escrow fund in August 1979.

Congress resolved the dispute over the meaning of "fair and equitable" in the Outer Continental Shelf Lands Act Amendments of 1985, Public Law 99-272. The law provided for the following distribution of revenues to the states under section 8(g):

Before 1986: Louisiana did not receive any shared revenue from OCS production prior to 1986.

1986: Louisiana received a payment of $68.7 million from royalties, rentals and bonuses collected in 1986 and prior years.

1998-2000: In 1987 Louisiana received an initial settlement payment of $572 million from the escrow funds. A series of annual settlement payments have been disbursed to the states over a 15-year period along with an annual disbursement of 27 percent of royalty, rental, and bonus revenues received within each affected state's 8(g) zone. The annual settlement payments are: From 1987 through 1991, Louisiana received an annual settlement payment of $2.52 million per year. From 1992 through 1996, the state received an annual settlement payment of $5.88 million per year. Beginning in 1997 until the last payment in 2001, Louisiana will receive an annual settlement payment of approximately $8.40 million per year.

2002 and After: No further settlement payments; states receive only a recurring annual disbursement of 27 percent of royalty, rental, and bonus revenues received within each affected state's 8(g) zone. Louisiana will receive an annual disbursement of 27 percent of royalty, rental, and bonus revenues received within Louisiana's affected 8(g) zone.

Table 14

State Section 8(g) Revenues from Louisiana's OCS

(Dollars)

Year	Rentals	Bonuses	Royalties	8g Escrow	Settlement	Total
1986	610,567	1,912,734	66,176,203			68,699,504
1987	148,578	3,150,519	11,043,115	572,000,000	2,520,000	588,862,212
1988	153,561	5,528,006	8,708,079	0	2,520,000	16,909,646
1989	175,817	2,890,298	7,163,105	0	2,520,000	12,749,220
1990	430,198	5,570,375	6,239,368	0	2,520,000	14,759,941
1991	303,824	2,220,094	8,461,261	0	2,520,000	13,505,179
1992	258,787	1,189,989	6,405,279	0	5,880,000	13,734,055
1993	235,250	965,504	7,373,550	0	5,880,000	14,454,304
1994	1,016,932	1,913,682	11,780,932	0	5,880,000	20,591,546
1995	255,213	890,002	8,012,718	0	5,880,000	15,037,933
1996	292,445	4,666,400	12,283,395	0	5,880,000	23,122,240
1997	686,051	5,689,689	11,855,454	0	8,400,000	26,631,194
1998	412,229	1,744,928	9,621,860	0	8,400,000	20,179,017
1999	357,379	241,659	6,284,879	0	8,400,000	15,283,917
2000	321,695	1,268,244	12,690,937	0	8,400,000	22,680,876
2001	N/A	N/A	N/A	0	8,400,000	N/A

N/A = Not available

FEDERAL LANDS

The following list is the historical data of mineral revenue distributed to Louisiana by the Bureau of Land Management and Minerals Management Services from Federal onshore minerals leases. The data is provided by the U.S. Department of the Interior, Minerals Management Service.

Table 15

Louisiana Federal Lands' Royalty Mineral Revenue

Year	Royalty (dollars)	Year	Royalty (dollars)
1980	355,000	1991	328,000
1981	612,000	1992	376,000
1982	617,000	1993	782,000
1983	637,000	1994	532,000
1984	905,000	1995	728,000
1985	795,000	1996	943,209
1986	555,000	1997	817,329
1987	517,000	1998	996,000
1988	545,000	1999	1,276,465
1989	452,000	2000	1,024,730
1990	542,000		

APPENDIX A

ABBREVIATIONS AND ACRONYMS

AGA	American Gas Association
BCF	Billion cubic feet of gas
DNR	Louisiana Department of Natural Resources
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DRI	Data Resources, Inc.
DRT	Louisiana Department of Revenue and Taxation
EIA	Energy Information Administration, U.S. DOE
FERC	Federal Energy Regulatory Commission
FOB	Free On Board
FPC	Federal Power Commission
FY*XXX1/X2*	Fiscal Year - From July 1 of year *X1* to June 30 of year *X2*
GRI	The Gas Research Institute
MCF	Thousand cubic feet of gas
MMBTU	Million British Thermal Units
MMS	Minerals Management Service, DOI
N/A	Not Applicable
NAFTA	North America Free Trade Agreements
NGC	Natural Gas Clearinghouse, Houston, Texas
NGPA	Natural Gas Policy Act
NYMEX	New York Mercantile Exchange
OCS	Federal Offshore - Outer Continental Shelf
OPEC	Organization of Petroleum Exporting Countries
PSC	Louisiana Public Service Commission
BR&O	Louisiana bonus, rental, and override mineral revenue
SLR	South Louisiana Sweet crude oil
SPREE	Strategic Petroleum Reserve
TEAR	Total Energy Resource Analysis
UN	United Nations
WEFT	Formerly the Whatnot Econometric Forecasting Associates
WTI	West Texas Intermediate crude oil

APPENDIX B

GLOSSARY

CASINGHEAD GAS -- All natural gas released from oil during the production of oil from underground reservoirs.

CONDENSATE -- (See LEASE CONDENSATE).

CRUDE OIL -- A mixture of hydrocarbons that existed in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.

GAS -- The combination of natural gas and casinghead gas.

LEASE CONDENSATE -- A mixture consisting primarily of pentane and heavier hydrocarbons which is recovered as a liquid from natural gas in lease or field separation facilities, exclusive of products recovered at natural gas processing plants or facilities.

LOUISIANA OFFSHORE -- A 3 mile strip of submerged lands under State regulatory jurisdiction located between the State coast line and the State boundary line offshore. The OCS region and federal jurisdiction begins at the State offshore boundary line and extends seaward.

LOUISIANA ONSHORE -- Region defined between the State boundary line and the coast line.

LOUISIANA OCS -- Submerged lands under federal regulatory jurisdiction that comprise the Continental Margin or Outer Continental Shelf adjacent to Louisiana and seaward of the Louisiana Offshore region (seaward of the State boundary line offshore). Production in the OCS is under federal jurisdiction.

NATURAL GAS -- A mixture of hydrocarbon compounds and small quantities of various non-hydrocarbons existing in the gaseous phase or in solution with crude oil in natural underground reservoirs at reservoir conditions. The principal hydrocarbons usually contained in the mixture are methane, ethane, propane, butanes and pentanes. Typical non-hydrocarbon gases which may be present in reservoir natural gas are carbon dioxide, helium, hydrogen sulfide, and nitrogen. Under reservoir conditions, natural gas and the liquefiable portions occur either in a single gaseous phase in the reservoir or in solution with crude oil, and are not distinguishable at the time as separated substances.

NATURAL GAS LIQUIDS -- Lease condensate plus natural gas plant liquids.

NATURAL GAS PLANT LIQUIDS -- Those hydrocarbons remaining in a natural gas stream after field separation and later separated and recovered at a natural gas processing

plant or cycling plant through the processes of absorption, adsorption, condensation, fractionation, or other methods. Generally, such liquids consist of propane and heavier hydrocarbons and are commonly referred to as condensate, natural gasoline, or liquefied petroleum gases. Where hydrocarbon components lighter than propane (e.g., ethane) are recovered as liquids, these components are included with natural gas liquids.

NON-HYDROCARBON MINERALS -- The term non-hydrocarbon minerals in Louisiana refers to coal, lignite, salt, or sulphur

OIL -- The combination of crude oil and condensate.

OUTER CONTINENTAL SHELF (OCS) -- All submerged lands that comprise the Continental Margin adjacent to the U.S. and seaward of the state offshore boundary line. Production in the OCS is under federal regulatory jurisdiction and ownership.

APPENDIX C

LOUISIANA SEVERANCE TAX EXEMPTIONS
(Act 2 of the 1994 Regular Session)

Act 2 was enacted in the summer of 1994 to give the oil and gas industry some relief by providing economic incentives to drill new wells and to continue production from marginal wells. Some of the provisions that would have expired in 1996 were extended by Act 16 of the 1996 Regular Session. The provisions of this legislation are summarized below:

1. Any oil well certified as a stripper well (0 - 10 barrels per day) shall be exempt from severance tax in any month in which the average posted price for a 30-day period is less than $20.00 per barrel.
2. On any horizontally drilled well or any horizontal recompletion from which production commences after July 31, 1994, all severance tax shall be suspended for a period of 24 months or until payout of well cost is achieved, whichever comes first. Payout of well cost shall be the cost of completing the well to commencement of production.
3. For oil and gas wells returned to service after being inactive for 2 or more years or having 30 days or less of production during the past 2 years, production shall be exempt from severance tax for a period of 5 years. Application for this exemption must be made before commencement of production, during the period of July 31, 1994, through June 30, 1998.
4. Wells drilled to a true vertical depth of 15,000 feet or more, where production commences after July 31, 1994, shall be exempt from severance tax for 24 months from the date production begins, or until payout of well cost, whichever comes first.
5. All severance tax on production from certified new oil and natural gas discovery wells is suspended for a period of 24 months from the date of completion or until recovery of payout of well cost, whichever comes first. The well must be completed between September 30, 1994, and September 30, 2000.

These drilling and production incentives in Louisiana and similar ones in Texas and surrounding states are difficult to accurately determine their impact due to the simultaneous development of other concurrent changes, most notably the almost explosive application of 3-D seismic exploration technology during the same period. The exception is the reentry incentive which seems to have had a significant impact on reactivating inactive wells and for using old well bores as a point of entry to lateral off into new producing zones identified by new 3-D seismic data. The historical effects of the remainder of the incentives are not nearly so clear to decipher.

APPENDIX D

SEVERANCE TAX RATES

LOUISIANA OIL SEVERANCE TAX RATES
(See Appendix D for severance tax exemptions.)

a) *Full Rate*.
12-1/2 % of its value at the time and place of severance.

b) *Incapable Oil Rate*.
6-1/4 % of its value. Oil produced from a well that is incapable of producing an average of more than twenty-five barrels of oil per day during the entire taxable month, and which also produces at least fifty percent salt water per day. On multiple well leases all wells must meet the criteria to be able to qualify for the exemption.

c) *Stripper Oil Rate*.
3-1/8 % of its value. Oil produced from a well that is incapable of producing an average of more than ten barrels of oil per day during the entire taxable month.

d) *Reclaimed Oil Rate*.
3-1/8 % of its value. Reclaimed oil which has been reclaimed by class one salvage crude reclamation facilities which are permitted by the Office of Conservation - 3-1/8% of value received for the first purchase. Any person or affiliate of a person engaged in severing oil, gas or other natural resources, or operating oil or gas property, or other property from which natural resources are severed, shall not be eligible for the reduced tax rate.

NATURAL GAS TAX RATES
(See Appendix D for severance tax exemptions.)

a) *Full Rate*.
Natural gas severance tax rate has changed numerous times since it was first instituted. Act 387 of 1990 amended R.S. 47:633 to change the base severance tax on natural gas to $0.10 per MCF effective July 1, 1990, to be adjusted annually thereafter by a *gas base rate adjustment*. Act 387 further stipulated that the base rate of $0.10 per MCF would be in effect until June 30, 1992. Effective July 1, 1992 the base rate decreased to $0.07 per MCF, subject to the annual rate adjustment. The Act also provides that the tax rate shall never be less than $0.07 per MCF.

The following is a list of historical severance full tax rates since FY89/90.

YEAR	TAX RATE (cents/MCF)	BASE RATE (cents/MCF)	INDEX
FY89/90	7.0	N/A	N/A
FY90/91	10.0	10.0	1.0000
FY91/92	9.0	10.0	0.9031
FY92/93	7.0	7.0	0.7970
FY93/94	7.5	7.0	1.0679
FY94/95	8.7	7.0	1.2402
FY95/96	7.0	7.0	0.9464
FY96/97	7.7	7.0	1.0938
FY97/98	10.1	7.0	1.4446
FY98/99	9.3	7.0	1.3340
FY99/00	7.8	7.0	1.1115
FY00/01	9.7	7.0	1.3855
FY01/02	19.9	7.0	2.8403

R.S. 47:633(9)(d)(i) directs the secretary of the Department of Natural Resources to determine the *gas base rate adjustment* for the 12-month period beginning July 1 of each year as follows:

> The *gas base rate adjustment* for the applicable 12-month period is a fraction, the numerator of which shall be the average of the monthly spot market price of gas fuels delivered into the pipelines in Louisiana as reported by the Natural Gas Clearinghouse for the previous 12-month period ending on March 31, and the denominator of which shall be the average of the monthly spot market price of gas fuels delivered into the pipelines in Louisiana as reported by the Natural Gas Clearinghouse for the 12-month period ending March 31, 1990.

This *gas base rate adjustment* is then to be used by the secretary of the Department of Revenue and Taxation to adjust the annual gas tax rate for the next fiscal year beginning on July 1 by multiplying the base tax rate by the *gas base rate adjustment.*

b) *Incapable Oil Well Gas.*
3 cents per MCF for gas produced from an oil well, which has a wellhead pressure of fifty pounds per square inch gauge or less under operating conditions. To qualify for the reduced rate an oil well must have a casinghead pressure of fifty pounds or less per square inch for the entire taxable month.

c) *Incapable Gas Well Gas.*
1-3/10 cents per MCF for gas produced from a gas well, which is incapable of producing an average of 250,000 cubic feet of gas per day. To qualify for the reduced rate a gas well must be incapable of producing 250,000 cubic feet of gas per day during the entire taxable month.

d) *Contract Rate*.
Gas sold under a written agreement requiring seller to pay tax without any reimbursement or with less than fifty percent reimbursement:

♦ 3 cents per MCF for gas sold under a contract, in existence prior to May 1, 1972, at a price less than the Federal Power Commission (FPC) authorized area rate, which requires the seller to pay and bear all of the severance tax without reimbursement of any portion of it.

♦ 4 cents per MCF for gas sold at a rate less than that authorized as the area ceiling ordered by the FPC in opinion nos. 598 and 607, under contracts in existence prior to November 25, 1973, which require the seller to pay and bear more than fifty percent of any increase in severance tax.

♦ Not to exceed 7 cents per MCF for gas sold at a rate less than fifty-two cents per MCF under contract prior to July 1, 1970. This rate is effective for the duration of the contract, whether or not such contract has been amended or supplemented subsequent to July 1, 1970, provided that the gas is sold for less than the prices previously specified.

NON-HYDROCARBON MINERALS TAX RATES

The severance tax rates for these minerals are as follows:
a) *Coal* Ten cents per ton of two thousand pounds.
b) *Lignite* Twelve cents per ton of two thousand pounds.
c) *Ores* Ten cents per ton of two thousand pounds.
d) *Salt* Six cents per ton of two thousand pounds.
e) *Sulphur* One dollar and three cents per long ton of two thousand, two hundred forty pounds.

APPENDIX E

LOUISIANA CRUDE OIL ROYALTY REVENUE ESTIMATES

At Different Possible Prices

(Million dollars)

AVERAGE OIL PRICE ($/Barrel)	FISCAL YEAR 2001/02	2002/03	2003/04	2004/05
14.00	N/A	63.43	60.89	60.89
15.00	70.40	67.96	65.24	65.24
16.00	75.09	72.49	69.59	69.59
17.00	79.79	77.03	73.94	73.94
18.00	84.48	81.56	78.29	78.29
19.00	89.17	86.09	82.64	82.64
20.00	93.87	90.62	86.99	86.99
21.00	98.56	95.15	91.34	91.34
22.00	103.25	99.68	95.69	95.69
23.00	107.95	104.21	100.04	100.04
24.00	112.64	108.74	104.39	104.39
25.00	117.33	113.27	108.74	108.74
26.00	122.03	117.80	113.09	113.09
27.00	126.72	122.34	117.44	117.44
28.00	131.42	126.87	121.79	121.79
29.00	136.11	131.40	126.14	126.14
30.00	140.80	135.93	130.49	130.49

LOUISIANA NATURAL GAS ROYALTY REVENUE ESTIMATES

At Different Possible Prices

(Million dollars)

AVERAGE GAS PRICE ($/MCF)	FISCAL YEAR 2001/02	2002/03	2003/04	2004/05
1.70	N/A	80.39	75.41	72.19
1.80	90.03	85.12	79.85	76.43
1.90	95.03	89.85	84.28	80.68
2.00	100.04	94.58	88.72	84.93
2.10	105.04	99.31	93.15	89.17
2.20	110.04	104.04	97.59	93.42
2.30	115.04	108.76	102.02	97.67
2.40	120.04	113.49	106.46	101.91
2.50	125.04	118.22	110.90	106.16
2.60	130.05	122.95	115.33	110.41
2.70	135.05	127.68	119.77	114.65
2.80	140.05	132.41	124.20	118.90
2.90	145.05	137.14	128.64	123.14
3.00	150.05	141.87	133.08	127.39
3.10	155.05	146.60	137.51	131.64
3.20	160.06	151.33	141.95	135.88
3.40	170.06	160.78	150.82	144.38
3.50	175.06	165.51	155.25	148.62
3.60	180.06	170.24	159.69	152.87

LOUISIANA CRUDE OIL SEVERANCE TAX ESTIMATES

At Different Possible Prices

(Million dollars)

AVERAGE OIL PRICE ($/Barrel)	FISCAL YEAR 2001/02	2002/03	2003/04	2004/05
14.00	N/A	137.66	133.32	128.20
15.00	153.28	149.09	144.29	138.67
16.00	165.12	160.52	155.27	149.15
17.00	176.97	171.96	166.25	159.62
18.00	188.81	183.39	177.22	170.10
19.00	200.65	194.82	188.20	180.58
20.00	212.50	206.26	199.17	191.05
21.00	224.34	217.69	210.15	201.53
22.00	236.18	229.12	221.12	212.00
23.00	248.03	240.56	232.10	222.48
24.00	259.87	251.99	243.08	232.95
25.00	271.71	263.42	254.05	243.43
26.00	283.56	274.86	265.03	253.90
27.00	295.40	286.29	276.00	264.38
28.00	307.24	297.72	286.98	274.85
29.00	319.09	309.16	297.95	285.33
30.00				

LOUISIANA NATURAL GAS SEVERANCE TAX ESTIMATES

At Different Possible Prices

(Million dollars)

Average Price for Previous 12-months Ending Mar. 31 ($/MCF)	FISCAL YEAR 2001/02	2002/03	2003/04	2004/05
1.70	N/A	77.49	72.69	69.59
1.80	N/A	77.49	72.69	69.59
1.90	N/A	81.09	76.07	72.82
2.00	N/A	85.30	80.01	76.59
2.10	N/A	89.50	83.95	80.37
2.20	N/A	93.70	87.89	84.14
2.30	N/A	97.90	91.84	87.91
2.40	N/A	102.11	95.78	91.69
2.50	N/A	106.31	99.72	95.46
2.60	229.10	110.51	103.66	99.24
2.70	N/A	114.72	107.61	103.01
2.80	N/A	118.92	111.55	106.79
2.90	N/A	123.12	115.49	110.56
3.00	N/A	127.33	119.44	114.33
3.10	N/A	131.53	123.38	118.11
3.20	N/A	135.73	127.32	121.88
3.40	N/A	144.14	135.21	129.43
3.50	N/A	148.34	139.15	133.20
3.60	N/A	152.54	143.09	136.98

APPENDIX F

Historical data for oil and gas productions, prices, royalty revenue, and severance tax revenue are listed below and on the following pages.

PRODUCTION

Calendar Year	Crude Oil & Condensate (Barrels)	% Change From Previous Year	Casinghead & Natural Gas (MCF)	% Change From Previous Year
Historical				
1980	212,185,303	-7.08%	2,671,648,270	-9.09%
1981	200,956,425	-5.29%	2,530,419,263	-5.29%
1982	190,246,801	-5.33%	2,248,296,405	-11.15%
1983	180,291,224	-5.23%	1,981,917,054	-11.85%
1984	187,898,675	4.22%	2,069,402,947	4.41%
1985	185,578,446	-1.23%	1,850,650,275	-10.57%
1986	181,316,820	-2.30%	1,826,254,364	-1.32%
1987	174,277,289	-3.88%	1,737,194,555	-4.88%
1988	166,988,109	-4.18%	1,758,319,686	1.22%
1989	153,089,128	-8.32%	1,713,149,508	-2.57%
1990	148,708,369	-2.86%	1,710,092,452	-0.18%
1991	146,675,411	-1.37%	1,648,743,048	-3.59%
1992	142,800,576	-2.64%	1,643,581,540	-0.31%
1993	137,888,118	-3.44%	1,612,473,245	-1.89%
1994	127,124,941	-7.81%	1,536,911,906	-4.69%
1995	125,225,235	-1.49%	1,536,187,030	-0.05%
1996	128,959,543	2.98%	1,630,245,594	6.12%
1997	125,753,036	-2.49%	1,603,597,306	-1.63%
1998	121,756,115	-3.18%	1,573,376,875	-1.88%
1999	109,109,554	-10.39%	1,447,759,130	-7.98%
2000	106,808,061	-2.11%	1,460,729,378	0.90%
Projected				
2001	104,672,681	-2.00%	1,497,200,806	2.50%
2002	100,952,016	-3.55%	1,441,374,260	-3.73%
2003	97,108,560	-3.81%	1,331,886,123	-7.60%
2004	93,259,723	-3.96%	1,270,972,160	-4.57%
2005	88,530,530	-5.07%	1,219,197,494	-4.07%
2006	83,078,288	-6.16%	1,171,662,438	-3.90%

LOUISIANA AVERAGE WELLHEAD PRICES

	CRUDE OIL		NATURAL GAS	
Calendar Year	Severance Tax Files ($/Barrel)	% Change From Previous Year	Royalty Files ($/MCF)	% Change From Previous Year
Historical	10.23		1.00	
1980	17.64	72.40%	1.27	27.00%
1981	33.07	87.47%	1.67	31.50%
1982	33.55	1.45%	2.21	32.34%
1983	30.38	-9.45%	2.48	12.22%
1984	29.98	-1.32%	2.56	3.23%
1985	27.18	-9.34%	2.37	-7.42%
1986	17.23	-36.61%	1.87	-21.10%
1987	17.55	1.86%	1.65	-11.76%
1988	16.38	-6.67%	1.86	12.73%
1989	17.87	9.10%	1.77	-4.84%
1990	22.54	26.13%	1.79	1.13%
1991	21.13	-6.26%	1.57	-12.29%
1992	19.31	-8.61%	1.77	12.74%
1993	17.39	-9.94%	2.14	20.90%
1994	15.46	-11.10%	1.98	-7.48%
1995	16.98	9.83%	1.82	-8.08%
1996	20.56	21.08%	2.69	47.80%
1997	19.80	-3.70%	2.73	1.49%
1998	13.47	-31.97%	2.24	-17.95%
1999	16.09	19.45%	2.44	8.93%
2000	28.10	74.64%	4.20	72.13%
Projected				
2001	25.00	-11.03%	5.64	34.29%
2002	20.30	-18.80%	2.60	-53.90%
2003	21.40	5.42%	2.70	3.85%
2004	20.20	-5.61%	2.40	-11.11%
2005	20.00	-0.99%	2.55	6.25%
2006	20.60	3.00%	2.55	0.00%

ROYALTY REVENUE

Calendar Year	Crude Oil & Condensate (Dollars)	Casinghead & Natural Gas (Dollars)	Plant Products (Dollars)	TOTAL (Dollars)	% Change From Previous Year
Historical	98,303,931	113,646,774	11,504,230	223,454,935	
1980	158,270,945	131,951,110	17,049,132	307,271,187	37.51%
1981	291,900,795	160,236,398	18,197,481	470,334,674	53.07%
1982	248,444,797	204,245,634	14,351,220	467,041,651	-0.70%
1983	224,620,681	211,838,519	12,996,985	449,456,185	-3.77%
1984	226,636,103	210,985,684	13,061,059	450,682,846	0.27%
1985	201,139,383	174,445,846	9,549,070	385,134,300	-14.54%
1986	122,219,612	154,827,720	6,335,743	283,383,075	-26.42%
1987	125,720,538	120,538,165	4,901,359	251,160,062	-11.37%
1988	98,551,047	124,056,898	4,393,263	227,001,208	-9.62%
1989	112,303,367	116,184,841	3,917,369	232,405,577	2.38%
1990	135,439,808	113,142,743	3,796,800	252,379,351	8.59%
1991	120,485,845	91,434,086	4,083,217	216,003,149	-14.41%
1992	113,289,407	97,065,683	4,685,276	215,040,366	-0.45%
1993	99,197,627	125,014,832	4,527,085	228,739,543	6.37%
1994	85,718,603	102,948,496	4,052,361	192,719,460	-15.75%
1995	95,117,664	97,951,039	4,590,386	197,659,090	2.56%
1996	123,438,139	211,225,873	6,718,508	341,382,520	72.71%
1997	112,588,879	154,453,460	5,925,727	272,968,065	-20.04%
1998	68,619,409	119,669,945	2,574,447	190,863,800	-30.08%
1999	85,950,827	114,238,501	2,095,782	202,285,111	5.98%
2000	142,735,381	207,719,947	3,594,550	354,049,878	75.03%
Projected					
2001	119,546,593	288,191,686	3,865,664	411,603,942	16.26%
2002	93,621,346	127,900,547	2,202,022	223,723,915	-45.65%
2003	94,936,919	122,730,682	1,744,538	219,412,140	-1.93%
2004	86,061,584	104,104,516	1,744,538	191,910,639	-12.53%
2005	80,888,523	106,105,167	1,744,538	188,738,228	-1.65%
2006	78,184,129	101,968,253	1,744,538	181,896,921	-3.62%

SEVERANCE TAX

Calendar Year	Casinghead & Natural Gas (Dollars)	Crude Oil & Condensate (Dollars)	Others (Dollars)	TOTAL (Dollars)	% Change From Previous Year
Historical	186,868,395	276,399,859	N/A	463,268,254	
1980	161,867,414	427,681,222	N/A	589,548,636	27.26%
1981	164,066,972	815,377,814	N/A	979,444,786	66.13%
1982	147,531,704	766,489,977	N/A	914,021,681	-6.68%
1983	131,519,589	662,004,553	2,454,485	795,978,627	-12.91%
1984	130,992,786	652,389,262	3,619,473	787,001,521	-1.13%
1985	120,960,814	598,672,895	3,733,878	723,367,587	-8.09%
1986	125,137,231	389,867,857	3,416,872	518,421,960	-28.33%
1987	111,841,773	345,183,286	2,986,654	460,011,713	-11.27%
1988	106,285,617	296,448,840	2,654,317	405,388,775	-11.87%
1989	108,844,848	312,992,383	2,427,286	424,264,517	4.66%
1990	124,609,960	373,214,518	2,753,278	500,577,757	17.99%
1991	146,830,506	367,132,174	1,970,309	515,932,989	3.07%
1992	126,242,889	326,066,648	1,631,901	453,941,438	-12.02%
1993	107,315,681	283,679,119	1,761,385	392,756,185	-13.48%
1994	114,578,389	229,404,283	2,015,210	345,997,883	-11.91%
1995	114,582,934	233,370,874	1,849,996	349,803,804	1.10%
1996	98,595,420	270,363,036	1,877,529	370,835,985	6.01%
1997	118,266,202	257,129,197	1,854,990	377,250,389	1.73%
1998	120,977,885	148,961,478	1,400,381	271,339,744	-28.07%
1999	102,478,569	171,294,511	1,824,441	275,597,521	1.57%
2000	104,319,117	337,510,808	1,502,623	443,332,548	60.86%
Projected					
2001	175,440,774	275,578,377	1,452,532.12	452,471,683	2.06%
2002	170,782,878	211,154,239	1,452,532.12	383,389,649	-15.27%
2003	108,249,655	216,284,661	1,452,532.12	325,986,848	-14.97%
2004	99,443,473	195,904,972	1,452,532.12	296,800,977	-8.95%
2005	89,845,040	184,845,040	1,452,532.12	276,142,612	-6.96%
2006	89,896,214	179,849,615	1,452,532.12	271,198,361	-1.79%