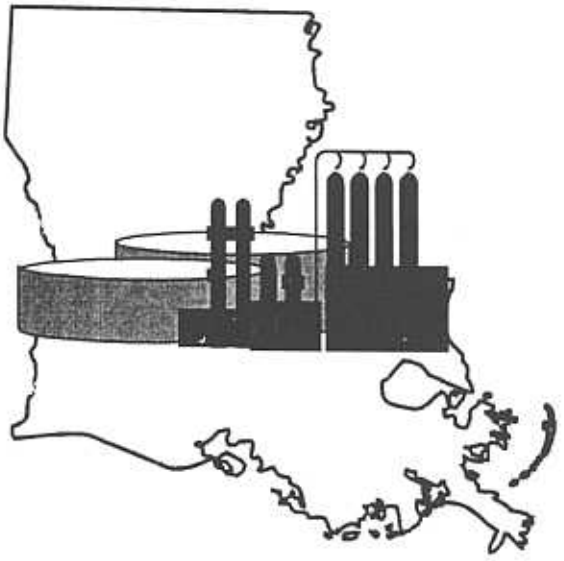
LOUISIANA CRUDE OIL REFINERY SURVEY REPORT

Tenth Edition

Louisiana Fiscal Year 1998 Survey

by Sam Stuckey, P.E.

Refining, Alternative Energy & Power Systems Program



LOUISIANA DEPARTMENT OF NATURAL RESOURCES

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Baton Rouge, Louisiana
April 16, 1999

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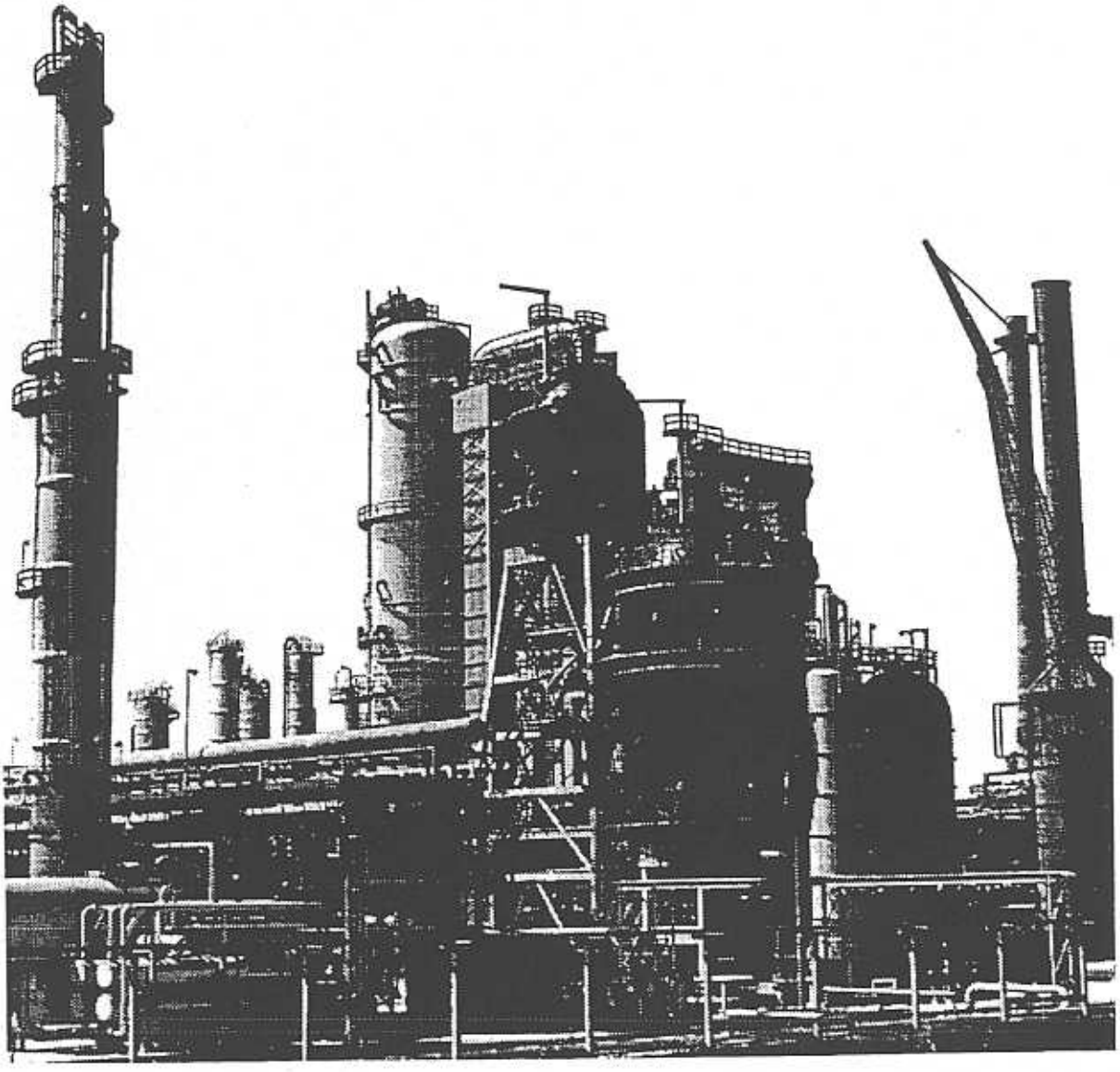


A catalytic cracking unit, used to increase the yield of gasoline from crude oil.

FOREWORD

Since 1989 the Technology Assessment Division of the Louisiana Department of Natural Resources (DNR) has periodically conducted a survey of Louisiana crude oil refineries. The results of the survey are compiled into a report focusing on developments that have occurred since the previous survey. These include an overview of the general direction of the industry and updated information on the current status of refinery ownership, mailing addresses, operating status and key personnel. Tabulated statistical data, charts, and graphs relating to oil production, refinery crude oil sources, refinery margins, capacities, operating rates, and product slate are also presented. Information on both operating and non-operating refineries that are still intact is included. The previous survey was accomplished in January 1998 for the State's fiscal year 1997 (FY97) and published May 28, 1998.

The information contained in this annual report is designed to complement the information presented in the refinery section of the Department of Energy/Energy Information Administration (DOE/EIA) Petroleum Supply Annual, now published biennially for the previous two calendar years. Generally, the period covered by DNR is the twelve months ending June 30, so this report is ordinarily about six months out of cycle with DOE/EIA data.

The operating refining capacities, operating rates, and product slate statistics presented in this report are prepared from data supplied by survey respondents. The information on the non-operating refineries is obtained from their owners, trustees, or management personnel and is current within a few weeks of publication. The data used to construct the charts and graphs on oil production, refinery margins, and crude oil sources is obtained from DNR's database.

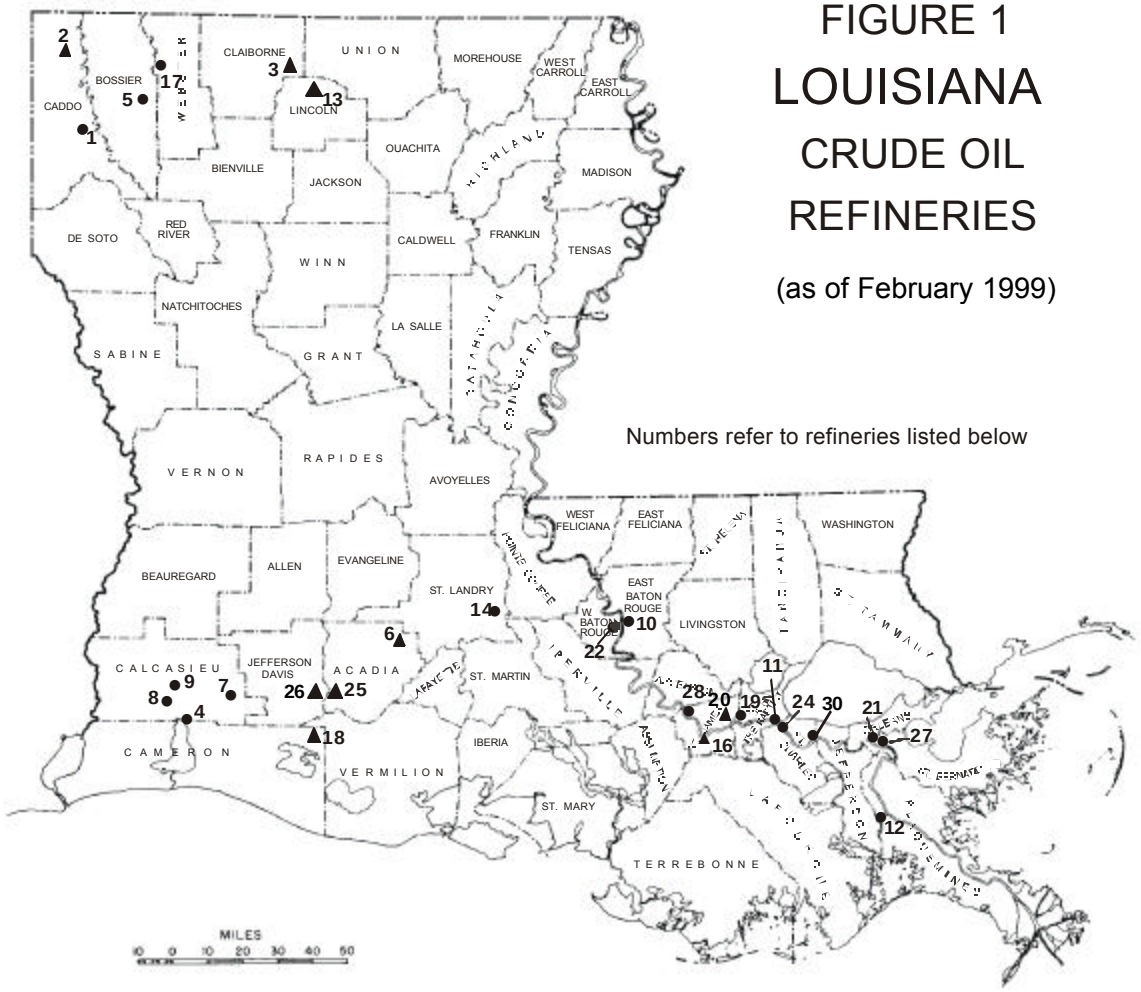
The principal terms and phrases used in this report are the same as used in DOE/EIA publications. It is important to note the slight difference in meaning between oper*able* versus oper*ating* when used to specify capacity or utilization rate. Definitions of principal terms are located in the last section of this report.

The Department of Natural Resources uses the information in this report to enhance the economic development efforts of the State by

- developing information on State and Federal energy policies that affect the oil and gas production and refining industries located in the State;
- helping crude suppliers locate refining sources and refined petroleum product buyers locate sources of supply;
- assisting new industries desiring to site facilities near refineries; and,
- providing information to parties evaluating refineries for possible purchase.

FIGURE 1
LOUISIANA
CRUDE OIL REFINERIES

(as of February 1999)



Technology Assessment Division

OPERATING REFINERIES ●	
1	Pennzoil Products Co./Shreveport
4	Calcasieu Refining Company/Lake Charles
5	Calumet Lubricants Co., L.P./Princeton
7	American International Refinery/Lake Charles
8	CITGO Petroleum Corp./Lake Charles
9	Conoco Inc./Lake Charles
10	Exxon Co., U.S.A./Baton Rouge
11	Orion Refining Corp./Norco
12	B.P. Oil Co./Belle Chasse
14	Valero Refining Company - Louisiana/Krotz Springs
17	Calumet Lubricants Co., L.P./Cotton Valley
19	Marathon Ashland Petroleum LLC/Garyville
21	Murphy Oil U.S.A., Inc./Meraux
22	Placid Refining Co./Port Allen
24	Motiva Enterprises LLC/Norco
27	Mobil Oil Corp./Chalmette
28	Motiva Enterprises LLC/Convent
30	Shell Chemical/St. Rose

NON-OPERATING REFINERIES ▲	
2	Bayou State Oil Corp./Hosston
3	Lisbon Refinery J.V., LLC/Lisbon
6	Canal Refining Co./Church Point
13	El Paso Field Services./Dubach
16	St. James Company LLC/St. James
18	Tina Resources, Inc./Talen's Landing
20	Petroleum Fuel & Terminal Co./Mt. Airy
25	U.S. Refining Co./Egan
26	Gold Line Refining, Ltd./Jennings

DISCUSSION

Overview

During this reporting period, Louisiana refineries completed projects and process reconfigurations to improve efficiency or alter the product mix to include more higher value products. Since June 1997, these projects have resulted in a total crude capacity increase of almost 65,000 barrels per calendar day (bcd).

Of the eighteen refineries that operated during the fiscal year ending June 30, 1998, five produced reformulated gasoline (RFG) for sale in those markets where the U.S. Environmental Protection Agency (EPA) had mandated its use. None of these areas are in Louisiana. RFG accounted for 10.8% of all gasoline production by Louisiana refineries. Total gasoline production remained virtually the same as the previous twelve month period, up only 0.1%.

For the twelve month period ending June 30, 1998, the average Louisiana refinery operating rate increased to 93.9%. While there were some changes in the product mix of individual refineries, the overall mix remained about the same and the trend to less mid-grade gasoline production continued. Crude capacity, operating rates, and product slate for each operating refinery are shown in Table 1. Tables 2 and 3 provide additional complementary information on downstream charge and production capacity, based on data published by the U.S. Department of Energy (DOE). Because Table 2 and Table 3 data are more than a year old, permission was obtained from the editor of *The Oil and Gas Journal* to add Table 4 to provide a more current independent comparison with DNR survey results.

Recent Changes

The Lisbon refinery previously operated by Padre Refining Company has remained idle since July 1997, but now has a new name: Lisbon Refinery J.V., LLC. It is for sale or lease; see Table 8 for contact information.

Canal Refining Company's facility at Church Point was shut down in May 1997, but is expected to restart in June or July 1999.

TransAmerican Refining Company (Good Hope) has a new name effective in February 1999: Orion Refining Corp. The facility restarted its vacuum and crude units in June 1998 and began processing heavy, sour feedstocks. Although the rated capacity is reported to be 200,000 bcd elsewhere, it is currently operating at 110,000 bcd until the fluid catalytic cracking unit and alkylation unit come online. It is worth noting that the facility has been shut down since 1983, operating only intermittently from 1994 to June 1998.

The Gold Line Company shut down and vacated its Lake Charles facility in March 1997. American International Refinery, Inc., took over the Lake Charles facility, completed an expansion project, and resumed production in January 1998.

Gold Line transferred operations to the Jennings refinery and initiated startup in April or May 1997 but reportedly had no measurable production. Gold Line subsequently shut down the Jennings refinery in February 1998.

Operating Refineries

The total operating capacity of 2,625,606 barrels per calendar day (bcd) reported as of June 30, 1998, is up 3.2% from our FY97 survey. The overall operating rate improved to 93.9% from 91.4%. This compares with the national rate of 97.9% for calendar year 1997. The graph of Figure 2 plots the overall operating rates of Louisiana refineries as compared to Texas Gulf Coast refineries and U.S. refineries beginning with the first DNR survey in September 1989. Figure 3 shows the trend of Louisiana and U.S. operating capacity from 1947-1998.

The following changes to refinery operating capacities were reported:

Company/Refinery	Previous Operating Capacity (BCD)	Previous Idle Capacity (BCD)	New Operating Capacity (BCD)	New Idle Capacity (BCD)	Net Increase (Decrease) (BCD)
American Intl - Lake Ch.	(E)17,500	(E)2,500	35,000	0	17,500
BP Oil - Alliance	250,600	9,400	245,300	14,700	0
Calcasieu - Lake Charles	13,500	0	15,300	0	1,800
Calumet - Cotton Valley	9,000	0	7,700	2,500	1,200
Calumet - Princeton	8,000	1,415	5,546	2,754	(1,115)
Exxon - Baton Rouge	432,000	0	450,000	0	18,000
Chalmette (Mobil Oil)	175,000	10,000	175,560	14,440	5,000
Motiva Ent. - Convent	232,400	0	225,000	0	(7,400)
Motiva Ent. - Norco	225,000	0	235,000	0	10,000
Shell - St.Rose	40,000	0	55,000	0	15,000
Orion (TransAmerican)	70,000	130,000	110,000	90,000	0
Valero - Krotz Springs	65,000	0	70,000	0	5,000
Net Change					**64,985**

(E) means DNR estimate based on previous reports.

Louisiana refineries continued to obtain most of their crude supply from outside the state as oil production within the state continued to decline. Only about 16% came from Louisiana. This trend is depicted in the graph of Figure 4, which shows Louisiana refinery operable capacity and oil production since 1900. Of the outside sources supplying crude to Louisiana refineries, foreign countries provide the most at 57%, the Offshore Continental Shelf (OCS) is next at 22%, and other states at 5%. These percentages are essentially unchanged from the previous edition of this report. Figure 5 shows the historical sources of crude oil for Louisiana refineries for the period 1981-1997.

Generally, the smaller refineries use a greater percentage of Louisiana crude than the large refineries to satisfy their total requirements. Figures 6A and 6B show the percentage crude source for each Louisiana refinery for FY98.

The monthly Gulf Coast Refinery Margin has remained positive for FY98. The cash operating margin in calendar year 1998 reached a maximum of $2.07 per barrel in May, and remained positive through September at $0.84 per barrel. Figure 7 shows the yearly average cash margins for the period 1976-1997, and calendar year 1998 months for which data is available.

Shell/Texaco/Aramco Refining Merger

This merger, which was described in the previous report, resulted in name changes for the two Louisiana refineries involved. The Star Enterprise facility at Convent and the Shell Oil Co. refinery at Norco are now operating as Motiva Enterprises, LLC.

Mobil - Lagoven Agreement

The most notable change as a result of this agreement, described in the last report, is that the Mobil refinery is now properly known as Chalmette Refining, LLC.

Mobil - Exxon Merger

This merger, announced December 1, 1998, would result in a U.S. gasoline market share of 22%, compared to 16% for the BP - Amoco merger. According to trade publications, approval of this merger is expected to take more time than the BP - Amoco combine. Impact on the Chalmette and Baton Rouge refineries is not known at this time.

Gasoline Additive: Methylcyclopentadienyl Manganese Tricarbonyl (MMT)

The gasoline additive methylcyclopentadienyl manganese tricarbonyl (MMT), produced by Ethyl Corporation, was approved for sale in the U.S. in 1995. MMT improves the burning efficiency and octane of gasoline. Ethyl claims that the new additive will reduce millions of pounds of smog-related pollutants per year from the environment. The additive will reduce carbon monoxide and nitrogen oxide emissions.

However, the Environmental Protection Agency (EPA) considers MMT a possible health risk because it contains the metal, manganese. EPA points out that exposure to manganese dust has been found to cause neurological and respiratory damage. Ethyl claims that tailpipe emissions are low and would not pose a health hazard. MMT was approved when a federal appeals court ruled in 1995 that the federal government, without evidence of a significant public health risk, had no authority under the Clean Air Act to block the sale of MMT.

EPA has determined that further testing of long-term health effects, as well as the effects of the additive on emissions-control equipment, is required before MMT can be used in the U.S. without restriction. A three to four year test program has been initiated by Ethyl Corporation to satisfy EPA requirements. During the test period, MMT can be used by refiners. However, U.S. refiners are

using caution in deciding to use MMT because of the controversy regarding its health risks.

A developing concern in California on the use of methyl tertiary butyl ether (MTBE) in reformulated gasoline may serve to encourage the consideration of MMT as a replacement constituent. Although the debate is not yet settled, California refiners would not be able to quickly switch blending agents without some facility modifications. Whether MMT could more easily replace MTBE than ethanol or other oxygenates such as ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), or tertiary-butyl alcohol (TBA) remains to be determined.

In Canada, the trade ban on MMT was withdrawn following a determination that there was no proof that MMT interferes with operation of antipollution devices or that MMT harms the environment and is a health hazard. According to an Ethyl Corporation contact, Canadian refiners have resumed use of the product, which has been used in Canadian gasoline since 1977.

Non-Operating Refineries

There was no change to the El Paso Field Services facility at Dubach, which consists of a crude oil refinery and a gas liquids fractionating plant. The refinery remains shut down, but the gas plant is operating although the liquids fractionating unit was shut down in January 1998.

The Canal Refining Co. facility at Church Point is listed as non-operating for this report. However, the refinery expects to restart in June or July 1999 after completing maintenance and process projects that are expected to result in somewhat greater capacity.

The Jennings refinery that was last operated by Gold Line remains shut down since February 1998. The owner of this facility desires to sell or lease the facility.

At Lisbon, the refinery remains shutdown since July 1997 and is available for lease or sale.

Litigation involving the Texas NAPCO facility in St. James has been settled, with the refinery changing names to St. James Co., LLC. The owner states that eight storage tanks with 350,000 barrels capacity are available for lease; docking facilities and pipeline access are controlled by Koch Petroleum Group, LP, on adjacent property.

The U.S. Refining Co. facility at Egan is now being operated by Quantum Fuel and Refining Co. The refinery was not producing during this period, but was being evaluated for possible production of jet fuel.

There was no response from Tina Resources, Inc., at Cameron to the current survey. The last information received over two years ago was that the refinery was shut in and available for sale.

The identity and location of each of the non-operating refineries is shown on the map of Figure 1. Mailing addresses and contacts are listed in Table 8. Physical locations, last known crude capacity, date last operated, and present status are described in Table 9.

Conclusion

Louisiana refineries operated at higher capacity rates during this period, even though product demand resulted in remarkably low prices. The larger facilities have been able to absorb proportionally larger inputs of heavy crude while maintaining positive margins. For this reporting period, eight refineries (44%) of the eighteen that operated processed 85% of the total crude input. But Louisiana refineries continue to exceed U.S. national import rates for crude oil. It is likely that long-term crude supply agreements with state oil firms in Venezuela, Mexico, and Saudi Arabia provided capital for some facility upgrades needed to process the foreign heavy stuff. However, the worldwide absence of demand along with continued unrestricted production may cause some of these agreements to be reconsidered. For example, Venezuela's economic situation might result in adjustments to agreements between Petroleos de Venezuela SA (PdVSA) and Conoco, Mobil, Exxon, and Citgo.

Louisiana refinery operators again face some hard decisions. According to industry publications, several of the big name integrated firms have announced layoffs in response to low earnings. The loss of experienced staff will be a significant detriment to resumption of more normal refinery operations in the future when prices begin to recover. Some small refineries may yet be forced to shut down because they don't have the deep pockets needed to initiate capital improvements and additions which would enable operations with a wider variety of crude input or a more profitable product slate. Even though State and Federal government agencies are attempting to provide some relief for oil and gas well operators, refinery operators will probably not benefit directly from those efforts.

More joint ventures and alliances seem likely to be announced in the coming months. Resulting effects on Louisiana crude oil refinery operations will be reported in the next edition of this report.

TABLE 1
LOUISIANA OPERATING REFINERIES
CRUDE CAPACITY (Barrels per Calendar Day, BCD) AND PERCENT PRODUCT SLATE
Louisiana FY 1998 DNR Survey

Data in this table may differ from data reported elsewhere for a different time period.

REFINERY NAME	DNR FAC. CODE	OPERATING CAPACITY As of June 30, 1998 (BCD)	OPERATING RATE * (%)	IDLE CAP. (BCD)	OPERABLE RATE (%)	12-MONTH THROUGHPUT 1 July 97-30 June 98 (Barrels)
American International Refinery, Lake Charles *Note A*	LKC	35,000	2.2	0	2.2	280,151
B. P. Oil Co. - Alliance	STN	245,300	99.9	14,700	94.4	89,606,307
Calcasieu Refining Co.	CLC	15,300	93.2	0	93.2	5,206,404
Calumet Lubricants - Cotton Valley	CTT	7,700	84.5	2,500	63.8	2,375,304
Calumet Lubricants - Princeton	CLM	5,546	106.3	2,754	71.1	2,152,405
Citgo Petroleum Corp.	CTS	310,000	91.7	0	91.7	103,723,118
Conoco, Inc. - Lake Charles	CNB	236,000	83.0	0	83.0	71,593,618
Exxon Co. U.S.A.	EXX	450,000	100.5	0	100.5	165,053,000
Marathon Ashland Petroleum, LLC	MRT	255,000	87.9	0	87.9	81,769,250
Chalmette Refining, LLC (was Mobil Oil)	TNN	175,560	97.6	14,440	92.4	62,546,639
Motiva Enterprises, LLC - Convent (was Star Enterprise)	TXC	225,000	98.8	0	98.8	81,104,400
Motiva Enterprises, LLC - Norco (was Shell Oil)	SHL	235,000	81.8	0	81.8	70,186,900
Murphy Oil U.S.A., Inc.	MRP	101,000	101.7	2,000	99.8	37,504,500
Pennzoil Products Co.	ATL	46,200	89.0	0	89.0	15,003,292
Placid Refining Co.	PLC	48,000	95.2	0	95.2	16,678,539
Shell Chemical Co. - St. Rose	INT	55,000	100.0	0	100.0	20,075,000
Orion Refining Corp. (was TransAmerican) *Note A*	GDH	110,000	1.6	0	1.6	622,758
Valero Refining Co. - La.	HLL	70,000	99.9	0	99.9	25,533,641
WEIGHTED STATE AVERAGE (%)			93.9		92.5	
TOTAL LA. CAPACITY		2,625,606		36,394		851,015,226

Footnotes are located on page 10.

TABLE 1 (continued)
LOUISIANA OPERATING REFINERIES
CRUDE CAPACITY (Barrels per Calendar Day, BCD) AND PERCENT PRODUCT SLATE
Louisiana FY 1998 DNR Survey

Data in this table may differ from data reported elsewhere for a different time period.

DNR FAC. CODE	% OF TOTAL PRODUCT SLATE													
	GASOLINE				OTHER FUELS			MISCELLANEOUS			OTHER PRODUCTS			
	REG	MID-GRADE	PREM	ALL RFG	DIESEL	JET/ KERO	FUEL OIL	LPGs	NAPTH	COKE/ RESID	PROD. 1	PROD. 2	PROD. 3	ALL OTHER
LKC					11.0 Feedstock	9.0 Feedstk		2.0 Feedst.	11.0 Refrnr FS		15.0 HVGO	52.0 Asphalt		
STN	32.3		13.2		27.3	16.4	0.3	2.6	0.5	1.8	4.0 Petrochem.	1.7 Carbon Black Feed		
CLC					25.6	17.1	18.3	3.8	34.6					
CTT					2.3				51.2		25.6 Gas Oil	20.9 Lt. Str. Run		
CLM					11.0						71.0 Lube Oil	18.0 Asphalt		
CTS	29.0		15.0	8.6	10.2	16.0	3.1	2.1		6.5	2.8 Petrochem.	2.6 Lubes		4.1
CNB	12.0		10.0	14.0	32.0	17.0	2.0	1.0	3.0	9.0				
EXX	22.4		9.1	6.6	15.6	13.8	4.0	2.7	1.1	4.5	13.4 Chemical Feedstock	3.0 Internal Fuels	2.9 Lubes/ Waxes	0.9
MRT	41.1		11.0			1.8	29.5	4.8	0.16	10.03	0.45 Sulfur	1.12 Dry Gas		
TNN	30.7	0.7	8.2		15.5	12.7	4.1	1.2	0.25	7.3	3.8 Aromatics	0.4 Chem.	3.8 Propane/ Propylene	11.4 Byproducts
TXC	34.7	0.5	5.8	5.9	19.4	13.3		2.2		13.0	0.9 Sulfur	2.9 Propylene	0.4 MTBE	1.0 *Note B*
SHL	21.2		17.4	5.7	23.7	12.1	2.2	14.0		1.8	1.9 MTBE	0.07 Sulfur		
MRP	37.0		9.0		28.0	9.0	15.0	3.0		2.0				*Note C*
ATL	33.9	1.8	1.5		18.1	14.7		1.9	1.2	2.9	15.0 Lubes	0.6 Catfeed	1.7 Waxes	6.6
PLC	36.1		6.0		28.9	10.2	5.6 (#6)	0.5			6.4 Subgrade	3.5 Fuel Gas	2.8 Propylene	
INT					18.0	5.0				15.0	59.0 Olefin Plant Feed	3.0 Off Gas		
GDH					6.6	3.0	38.0	0.15	12.0					
HLL	29.5		2.3		20.2	12.0		1.5	11.4		21.4 Gas Oil	1.7 Lt. Str. Run		
Wtd % Total	27.4	0.1	10.1	4.5	18.1	12.6	5.6	3.3	1.3	6.0	*Note D*			1.7

Footnotes are located on page 10.

Footnotes for Table 1:

Percentages may not sum precisely due to independent rounding.

* Operating rates are calculated by dividing the 12-month total crude input by the operating capacity provided by survey respondents.

Note A. Not used in weighted average calculation.

Note B. Includes 0.4% butane.

Note C. % distribution is based on % of crude oil charged. Other charges (butane, etc.) result in total products greater than 100% of crude.

Note D. Weighted percentage of other products relative to total statewide crude throughput:

Asphalt	0.05%
Petrochemicals	0.76%
Carbon Black Feed	0.18%
Gas Oil	0.71%
Light Straight Run	0.11%
Lubes & Waxes	1.35%
Chemical Feedstock	2.60%
Internal Fuels	0.58%
Sulfur	0.13%
Dry Gas	0.11%
Aromatics	0.28%
Chemical Solvents	0.03%
Propane/Propylene	0.61%
MTBE	0.20%
Cat Feed	0.01%
Subgrade	0.13%
Fuel Gas	0.07%
Olefin Plant Feed	1.39%
Off Gas	0.07%
Total	9.37%

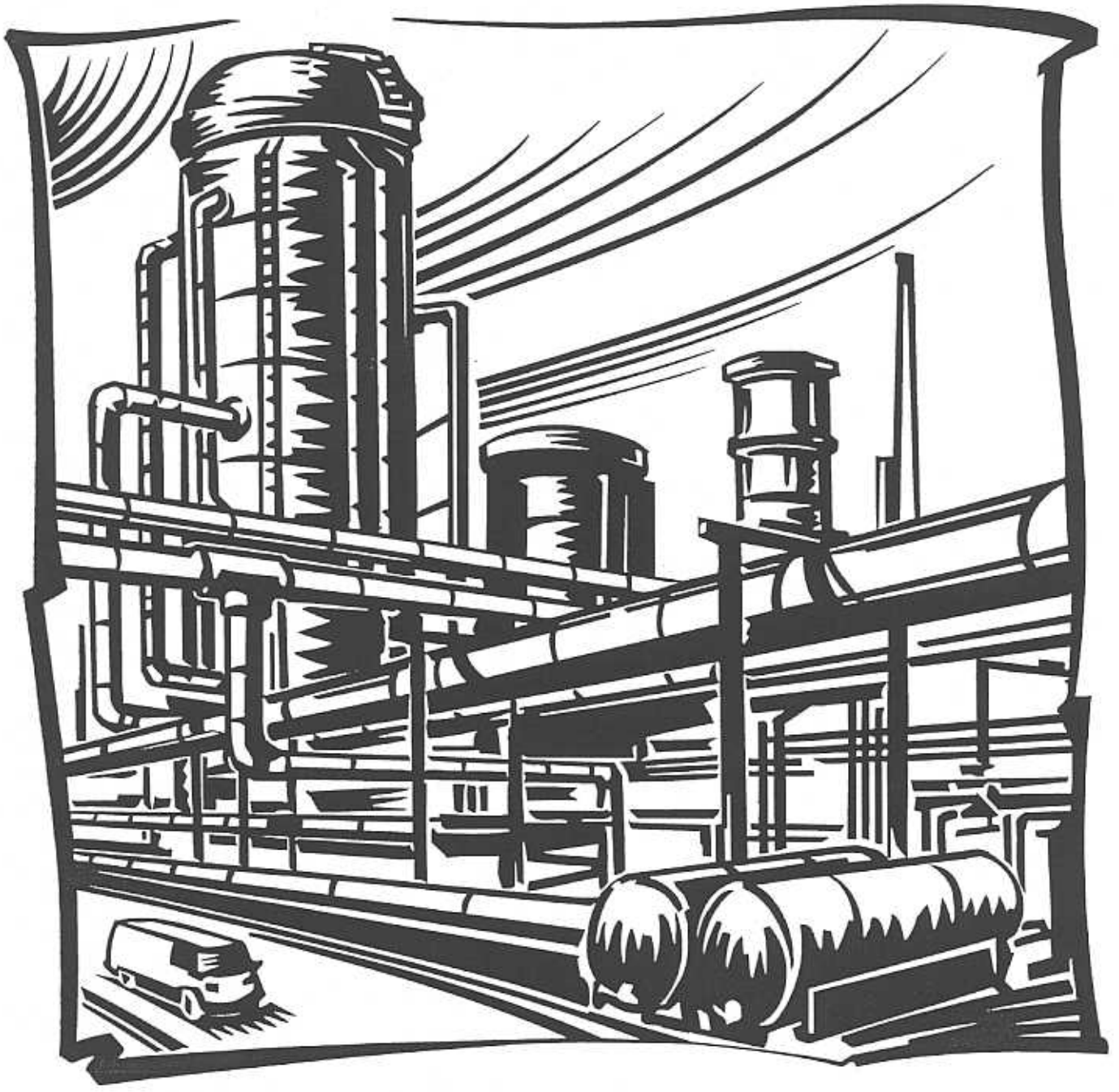


TABLE 2
U.S. DEPARTMENT OF ENERGY
CAPACITY OF LOUISIANA OPERABLE PETROLEUM REFINERIES AS OF JANUARY 1, 1997
(Barrels per Stream Day, Except Where Noted)

REFINER/ LOCATION	DNR FAC. CODE	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
		Barrels per Calendar Day		Barrels per Stream Day		Vacuum Distillation	Thermal Cracking			
		Operating	Idle	Operating	Idle		Delayed Coking	Fluid Coking	Vis-Breaking	Other/ Gas Oil
BP Oil Corp. Belle Chasse (Alliance)	STN	250,400	0	255,000	0	93,000	25,800	0	0	0
Calcasieu Refining Co. Lake Charles	CLC	14,000	0	14,500	0	0	0	0	0	0
Calumet Lubricants Co. L.P. Cotton Valley	CTT	7,800	0	8,500	0	0	0	0	0	0
Calumet Lubricants Co.L.P. Princeton	CLM	8,300	0	8,700	0	6,000	0	0	0	0
Canal Refining Co. Church Point	CNL	9,500	0	10,000	0	0	0	0	0	0
Citgo Petroleum Corp. Lake Charles	CTS	305,000	0	320,000	0	83,000	94,000	0	0	0
Conoco Inc. Westlake	CNB	226,000	0	236,000	0	115,500	65,000	0	0	12,000
Exxon Co. U.S.A. Baton Rouge	EXX	432,000	0	450,000	0	199,500	103,000	0	0	0
Gold Line Refining Ltd. [A] Lake Charles	LKC	27,600	0	30,000	0	18,000	0	0	0	0
Marathon Oil Co. Garyville	MRT	255,000	0	263,000	0	125,000	0	0	0	0
Mobil Oil Corp. Chalmette	TNN	159,000	0	190,000	0	100,000	33,000	0	0	0
Murphy Oil U.S.A. Inc. Meraux	MRP	95,000	0	100,000	0	50,000	0	0	0	0
Pennzoil Products Co. Shreveport	ATL	46,200	0	50,000	0	24,300	0	0	0	0
Placid Refining Co. Port Allen	PLC	48,500	0	49,500	0	20,000	0	0	0	0
St. Rose Refining Inc. * St. Rose	INT	38,000	0	40,000	0	24,000	0	0	0	0
Shell Oil Co. [B] Norco	SHL	218,000	0	225,000	0	78,000	26,000	0	0	0
Star Enterprise [C] Convent	TXC	230,000	0	235,000	0	119,400	0	0	13,000	0
TransAmerican Refining Co. [D] Good Hope (Norco)	GDH	0	0	0	0	240,000	0	0	0	0
Valero Refining Co. - La. Krotz Springs	HLL	60,000	0	61,500	0	0	0	0	0	0
LOUISIANA TOTALS		**2,430,300**	**0**	**2,546,700**	**0**	**1,295,700**	**346,800**	**0**	**13,000**	**12,000**

* Estimated capacities. This facility is more correctly identified as Shell Chemical plant.

Source: Energy Information Administration/Petroleum Supply Annual 1996, Volume 1, Table 38 [DOE/EIA-340(96)/1], June 1997

A - Facility now operated by American International Refinery, Inc.
B - Now known as Motiva Enterprises, LLC - Norco
C - Now known as Motiva Enterprises, LLC - Convent
D - Now known as Orion Refining Corp.

TABLE 2 (Continued)
U.S. DEPARTMENT OF ENERGY
CAPACITY OF LOUISIANA OPERABLE PETROLEUM REFINERIES AS OF JANUARY 1, 1997
(Barrels per Stream Day, Except Where Noted)

REFINER/ LOCATION	DNR FAC. CODE	Downstream Charge Capacity (Continued)									
		Catalytic Cracking		Catalytic Hydro-Cracking	Catalytic Reforming		Catalytic Hydrotreating				Fuel Solvent Deasphltg
		Fresh	Recycled		Low Pressure	High Pressure	Heavy Gas Oil	Naptha/ Ref. Feeds	Distillate	Other/ Residual	
BP Oil Corp. Belle Chasse (Alliance)	STN	105,000	2,000	0	0	42,000	0	48,000	58,000	0	0
Calcasieu Refining Co. Lake Charles	CLC	0	0	0	0	0	0	0	0	0	0
Calumet Lubricants Co. L.P. Cotton Valley	CTT	0	0	0	0	0	0	3,600	0	0	0
Calumet Lubricants Co.L.P. Princeton	CLM	0	0	0	0	0	0	0	0	7,000	0
Canal Refining Co. Church Point	CNL	0	0	0	2,100	0	0	0	0	0	0
Citgo Petroleum Corp. Lake Charles	CTS	130,000	0	45,000	86,0000	20,000	60,000	116,000	30,000	23,000	0
Conoco Inc. Westlake	CNB	51,000	0	28,000	47,000	0	0	50,000	128,500	13,000	0
Exxon Co. U.S.A. Baton Rouge	EXX	215,000	0	24,000	70,000	0	0	123,000	89,000	50,700	0
Gold Line Refining Ltd. Lake Charles	LKC	0	0	0	0	0	0	0	0	0	0
Marathon Oil Co. Garyville	MRT	95,000	0	0	45,0000	0	71,000	50,000	45,000	0	30,000
Mobil Oil Corp. Chalmette	TNN	68,000	0	20,000	19,000	28,000	43,000	45,000	27,000	0	0
Murphy Oil U.S.A. Inc. Meraux	MRP	38,000	0	0	18,000	0	27,500	22,000	15,000	0	0
Pennzoil Products Co. Shreveport	ATL	0	0	0	10,000	0	8,900	10,000	10,000	1,200	0
Placid Refining Co. Port Allen	PLC	19,000	2,000	0	10,000	0	0	10,000	0	0	5,000
St. Rose Refining Inc. * St. Rose	INT	0	0	0	0	0	0	0	0	0	0
Shell Oil Co. Norco	SHL	110,000	0	39,000	40,000	20,000	0	34,000	40,000	0	0
Star Enterprise Convent	TXC	87,000	0	52,000	0	40,000	32,000	41,000	96,400	0	0
TransAmerican Refining Co. Good Hope (Norco)	GDH	0	0	0	0	0	0	0	0	0	0
Valero Refining Co. - La. Krotz Springs	HLL	28,000	0	0	0	14,000	0	14,000	0	0	0
LOUISIANA TOTALS		**946,000**	**4,000**	**208,000**	**347,100**	**164,000**	**242,400**	**566,600**	**538,900**	**94,900**	**35,000**

* Estimated capacities. This facility is more correctly identified as Shell Chemical plant.

TABLE 3

U.S. DEPARTMENT OF ENERGY and LOUISIANA DEPARTMENT OF NATURAL RESOURCES
PRODUCTION CAPACITY OF LOUISIANA OPERABLE PETROLEUM REFINERIES
AS OF JANUARY 1, 1997

(Barrels per Stream Day, Except Where Noted)

Refiner/Location	DNR Fac. Code	Production Capacity								
		Alkylates	Aromatics	Asphalt & Road Oil	Isomers		Lubricants	Marketable Petroleum Coke	Hydrogen (MMcfd)	Sulfur (short tons per day)
					Isobutane	Isopentane & Isohexane				
BP Oil Corp. Belle Chasse (Alliance)	STN	38,000	8,900	0	0	0	0	5,289	40	125
*Calcasieu Refining Co. * Lake Charles*	*CLC*									
Calumet Lubricants Co. L.P. Princeton	CLM	0	0	1,700	0	0	6,600	0	5	2
*Calumet Lubricants Co. L.P. * Cotton Valley*	*CTT*									
*Canal Refining Co. * Church Point*	*CNL*									
Citgo Petroleum Corp. Lake Charles	CTS	23,000	4,000	0	0	28,000	9,600	22,500	0	690
Conoco, Inc. Westlake	CNB	8,000	0	0	0	0	18,000	18,250	0	750
Exxon Co. U.S.A. Baton Rouge	EXX	35,800	0	12,000	0	0	19,000	26,000	19	672
*Gold Line Refining Ltd. * [A] Lake Charles*	*LKC*									
Marathon Oil co. Garyville	MRT	27,000	0	40,000	12,000	10,000	0	0	0	504
Mobil Oil Corp. Chalmette	TNN	19,000	8,000	0	0	0	0	7,750	0	198
Murphy Oil U.S.A., Inc. Meraux	MRP	8,500	0	18,000	0	0	0	0	0	130
Pennzoil Producing Co. Shreveport	ATL	0	0	3,600	0	0	9,100	0	6	13
Placid Refining Co. Port Allen	PLC	4,000	0	0	0	0	0	0	0	8
*Shell Chemical Co. * St. Rose*	*INT*									
Shell Oil Co. [B] Norco	SHL	17,000	0	0	0	0	0	7,000	70	157
Star Enterprise [C] Convent	TXC	16,500	0	0	0	12,500	0	0	63	819
*TransAmerican Refining Co. * [D] Good Hope*	*GDH*									
*Valero Refining Co. - La. * Krotz Springs*	*HLL*									
LOUISIANA TOTALS		**196,800**	**20,900**	**75,300**	**14,700**	**51,300**	**62,300**	**86,789**	**203**	**4,078**

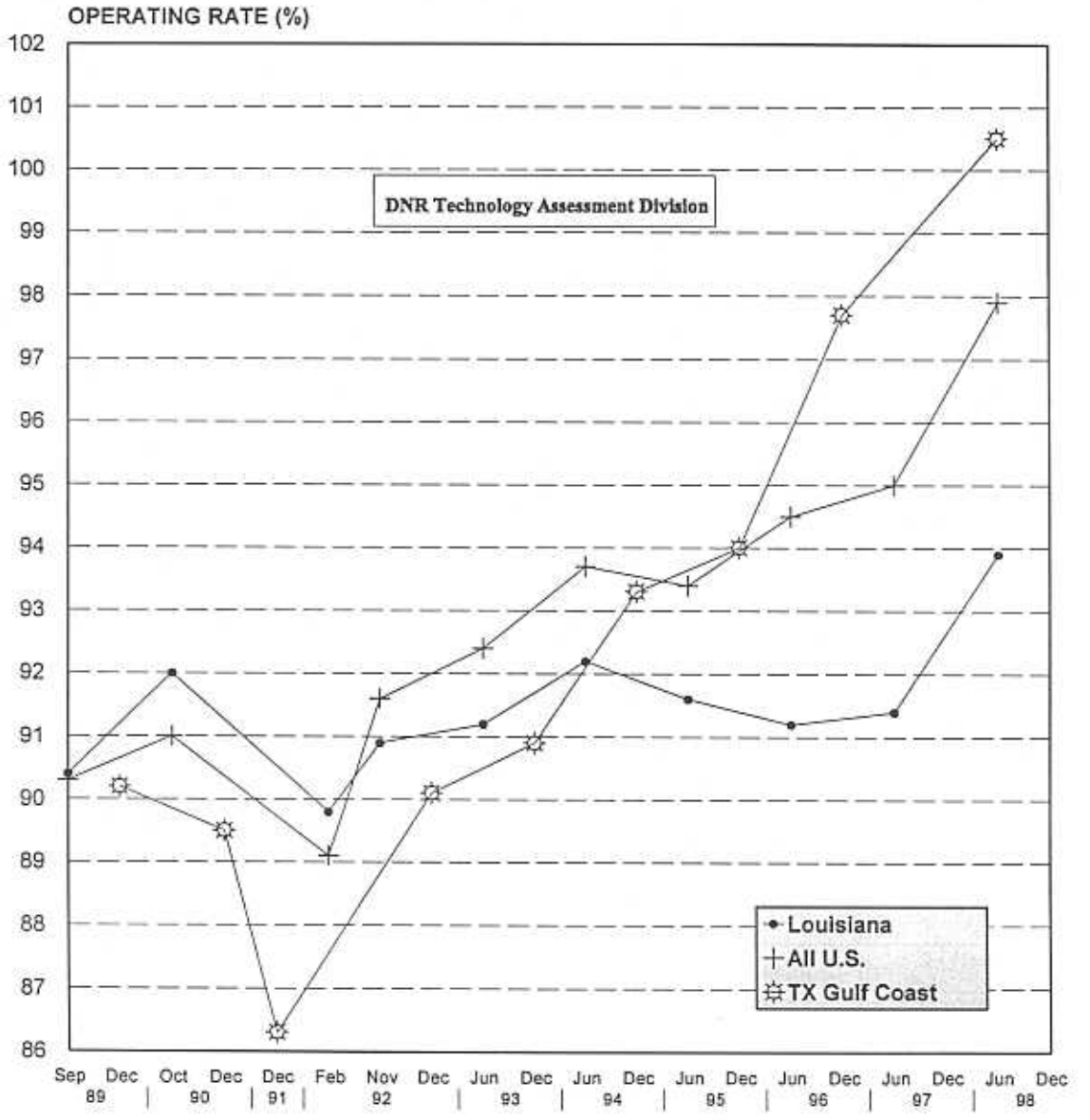
MMcfd = Million cubic feet per day
* Information not included in DOE Table 39

Source: Energy Information Administration/Petroleum Supply Annual 1996, Volume 1, Table 39 [DOE/EIA-0340(96)/1], June 1997, and La. DNR Survey, January 1998

A - Facility now operated by American International Refinery, Inc.
B - Now known as Motiva Enterprises, LLC - Norco
C - Now known as Motiva Enterprises, LLC - Convent
D - Now known as Orion Refining Corp.

FIGURE 2

OPERATING RATES (%)
OF LOUISIANA, TEXAS GULF COAST*, AND ALL U.S. REFINERIES



Source: LA Refineries-DNR Refinery Survey
TX Refineries-EIA Petroleum Supply Annuals, 1989-1996, Table 16; Monthlies, Table 28
U.S. Refineries-EIA Petroleum Supply Monthly, Vol. 1, 12/89 12/91,1/93,9/93,94-98, Table H2

*Texas Gulf Coast: The following counties of the State of Texas: Newton, Orange. Jefferson, Jasper, Tyler, Hardin, Liberty, Chambers, Polk, San Jacinto, Montgomery, Harris, Galveston, Waller, Fort Bend, Brazoria, Wharton, Matagorda, Jackson, Victoria, Calhoun, Refugio, Aransas, San Petricio, Nueces, Kleberg, Kenedy, Wilacy, and Cameron

TABLE 4
OIL AND GAS JOURNAL 1998 WORLDWIDE REFINING SURVEY
Capacities of Louisiana Refineries as of January 1, 1999

Ref: *Oil & Gas Journal*, Vol. 96, No. 51, December 21, 1998; pp 49, 84, 85

DNR FAC. CODE	Company and Refinery Location	Charge Capacity, Barrels per Calendar Day								
		Crude	Vacuum Distillation	Coking	Thermal Operations	Catalytic Cracking	Catalytic Re-forming	Cat Hydro-cracking	Cat hydro-Refining	Cat Hydro-treating
LKC	American International Refining, Inc. - Lake Charles	27,600	10,000							
STN	BP Oil Co. - Belle Chasse *	255,000	89,300	[3]22,500		[1]92,700	[1]37,800		[4]27,900	[3]43,200 [4]23,400
CLC	Calcasieu Refining Co. - Lake Charles	15,300								
CTT	Calumet Lubricants Co. - Cotton Valley	8,000								[3]3,600
CLM	- Princeton	8,000	7,150							
CNL	Canal Refining Co. - Church Point	10,000	3,000							[1]3,000
	Cit-Con Oil Corp. - Lake Charles		38,000							
CTS	Citgo Petroleum Corp. - Lake Charles	304,000	76,950	[3]84,600		[1]117,000	[1]46,800 [3]45,000	[C1]36,000	[4]35,100	[1]73,800 [2]5,400 [5]12,600
CNB	Conoco, Inc. - Westlake	231,100	154,000	[3]64,100	[1]11,300	[1]47,800	[3]43,900	[C3]29,000		[1]46,000 [4]33,300 [5]47,500 [6]37,300 [8]11,200
EXX	Exxon Co. - Baton Rouge	473,000	217,000	[3]102,000		[1]208,000	[3]69,000	[C1]22,500		[1]107,000 [3]43,000 [6]85,500 [7]2,700 [8]44,000
MRT	Marathon Ashland Petroleum LLC - Garyville [Z]	232,000	124,000			[1]102,000	[3]43,000			[1]43,700 [4]48,000 [5]83,500 [8]18,000
TNN	Mobil Oil Corp. - Chalmette	184,100	120,000	[3]33,800		[1]66,000	[1]27,000 [3]16,500	[C1]19,600	[3]43,700	[2]36,500 [6]26,500
TXC	Motiva Enterprises LLC - Convent [H]	225,000	100,000		[2]12,000	[1]85,000	[1]36,000	[4]45,000		[1]40,000 [4]88,000 [5]34,000
SHL	Motiva Enterprises LLC - Norco [H]	225,000	78,000	[3]25,500		[1]107,000	[1]19,600 [3]39,000	[C1]36,000		[1]40,000 [5]51,000
MRP	Murphy Oil USA, Inc. * [Z]	95,000	47,500			[1]34,200	[3]16,200			[1]19,800 [4]13,500 [8]24,750
ATL	Pennzoil Products Co. - Shreveport	46,200	23,085			[V2]10,080	[1]8,000			[1]10,000 [3]3,060 [8]8,500
PLC	Placid Refining Co. - Port Allen [Z]	48,000	20,000			[1]19,000	[3]9,700			[2]9,700 [6]12,000
INT	Shell Chemical Co. - St. Rose	55,000	29,000							
GDH	TransAmerican Refining Corp. - Norco	200,000	220,000	[2]75,000			[1]12,000		[3]30,000	[1]30,000 [6]30,000
HLL	Valero Energy Corp. - Krotz Springs	74,000	20,800			[1]31,000	[1]11,800			[1]14,900
Total		2,716,300	1,377,785	407,500	23,300	919,780	481,300	188,100	136,700	1,307,910

(Table continued next page)

Footnotes for Table 4 appear on page 18.

TABLE 4 (continued)
OIL AND GAS JOURNAL 1998 WORLDWIDE REFINING SURVEY
Capacities of Louisiana Refineries as of January 1, 1999

DNR FAC. CODE	Production Capacity, Barrels per Calendar Day									
	Alkylation	Pol./Dim.	Aromatics	Isomerization	Lubes	Oxygenates	Hydrogen (MMcfd)	Coke (mt/d)	Sulfur (mt/d)	Asphalt
LKC										
STN	[3]34,200		27,000				[7]10.4	800		
CLC										
CTT							[10]2.5			
CLM					5,300		[1]4.5 [4]4.5		3	1,500
CNL										
					9,500					
CTS	[1]20,700		[1]4,500	[3]25,200	9,500	[1]2,520 [3]3,420		3,800	700	
CNB	[1]10,300	[1]5,300			11,500	[1]1,300	[4]100.0	3,400	363	
EXX	[1]35,000	[1]9,000			16,000	[1]7,000	[4]11.0 [6]7.0	4,940	610	
MRT	[2]29,100			[1]21,400 [3]17,400					490	39,900
TNN	[2]11,600		[1]9,700	[3]10,700				2,205	250	
TXC	[1]13,050	[2]3,600		[3]11,250		[1]2,250 [3]2,500	[3]58.0		711	
SHL	[1]16,000					[3]7,000	[1]65.0	1,000		
MRP	[2]7,650								120	
ATL	[1]5,040			[1]4,032	7,650		[1]6.1		10	540
PLC	[2]3,800								28	
INT										
GDH								4,110	290	
HLL		[1]4,200		[1]4,300		[1]2,100				
Total	186,440	22,100	41,200	94,282	59,450	28,090	269.0	20,255	3,575	41,940

Footnotes for Table 4 appear on page 18.

TABLE 4 Footnotes and Legend

LEGEND - Numbers identify processes in table

Coking
1. Fluid coking
2. Delayed coking
3. Other

Thermal Processes
1. Thermal cracking
2. Visbreaking

Catalytic Cracking
1. Fluid
2. Other

Catalytic Reforming
1. Semiregenerative
2. Cyclic
3. Continuous regen.
4. Other

Catalytic Hydrocracking
1. Distillate upgrading
2. Residual upgrading
3. Lube oil manufacturing
4. Other

c. Conventional (high-pressure) hydrocracking: (>100 barg or 1,450 psig)

m. Mild to moderate hydrocracking: (<100 barg or 1,450 psig)

Catalytic Hydrorefining
1. Residual desulfurization
2. Heavy gas oil desulfurization
3. Catalytic cracker and cycle stock treatment
4. Mid distillate
5. Other

Catalytic Hydrotreating
1. Pretreating cat reformer feeds
2. Naptha desulfurizing
3. Naptha olefin or aromatics saturation
4. Straight-run distillate
5. Pretreating cat cracker feeds
6. Other distillates
7. Lube oil "polishing"
8. Other

Alkylation
1. Sulfuric acid
2. Hydrofluoric acid

Polymerization/Dimerization
1. Polymerization
2. Dimerization

Aromatics
1. BTX
2. Hydrodealkylation
3. Cyclohexane
4. Cumene

Isomerization
1. C_4 feed
2. C_5 feed
3. C_5 and C_6 feed

Oxygenates
1. MTBE
2. ETBE
3. TAME
4. Other

Hydrogen

Production:
1. Steam methane reforming
2. Steam naptha reforming
3. Partial oxidation

a. Third-party plant

Recovery:
4. Pressure swing adsorption
5. Cryogenic
6. Membrane
7. Other

FOOTNOTES

***

V RCC. (Resid Catalytic Cracking or Reduced Crude Conversion)

***

Z ROSE. (Residuum Oil Supercritical Extraction)

***

II Previously listed as Star Enterprise.

JJ Previously listed as Shell Norco Refining Co.

***

Capacity expressed in barrels per calendar day (b/cd) is the maximum number of barrels of input that can be processed during a 24-hr period, after making allowances for the following:
- Types and grades of inputs to be processed.
- Types and grades of products to be manufactured.
- Environmental constraints associated with refinery operations.
- Scheduled downtime such as mechanical problems, repairs, and slowdowns.

Capacity expressed in barrels per stream day (b/sd) is the amount a unit can process when running at full capacity under optimal feedstock and product slate conditions. Most U.S. capacity figures have historically been reported in b/sd, but all capacities are reported in b/cd here, as they will be in following years.

Totals

When an asterisk (*) appears beside a refinery locaiton, this indicates that the figure has been converted from b/sd to b/cd by using the conversion factor 0.95 for crude oil and vacuum distillation units, and 0.90 for all downstream cracking and conversion units. Refining processes not covered are noted here.

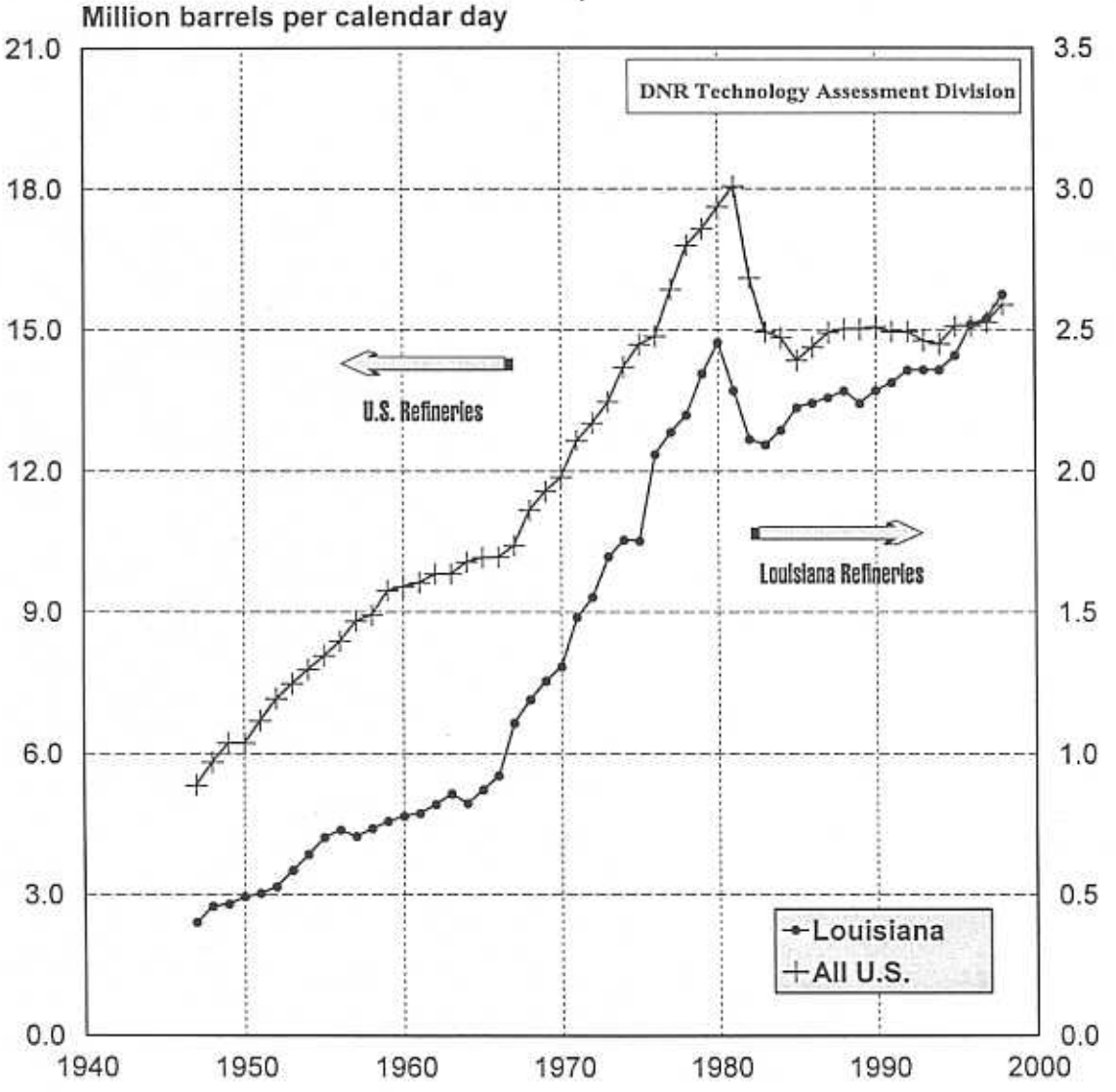
Process definitions
- Hydrocracking includes processes where 50% of the feed or more is reduced in molecular size.
- Hydrorefining includes processes where 10% of the feed or less is reduced in molecular size.
- Hydrotreating includes processes where essentially no reduction in the molecular size of the feed occurs.
- Hydrogen volumes presented here represent either generation or upgrading to 90+% purity.

Catalytic reforming definitions
- Semiregenerative reforming is characterized by shutdown of the reforming unit at specified intervals, or at the operator's convenience, for in situ catalyst regeneration.
- Cyclic regeneration reforming is characterized by continuous or continual regeneration of catalyst in situ in any one of several reactors that can be isolated from and returned to the reforming operation. This is accomplished without changing feed rate or octane.
- Continuous regeneration reforming is characterized by the continuous regeneration of part of the catalyst in a special regenerator, followed by continuous addition of this regenerated catalyst to the reactor.
- Other includes nonregenerative reforming (catalyst is replaced by fresh catalyst) and moving-bed catalyst systems.

MMcfd - Million cubic feet per day
mt/d - Metric tons per day

FIGURE 3

OPERATING CAPACITY OF LOUISIANA AND U.S. REFINERIES

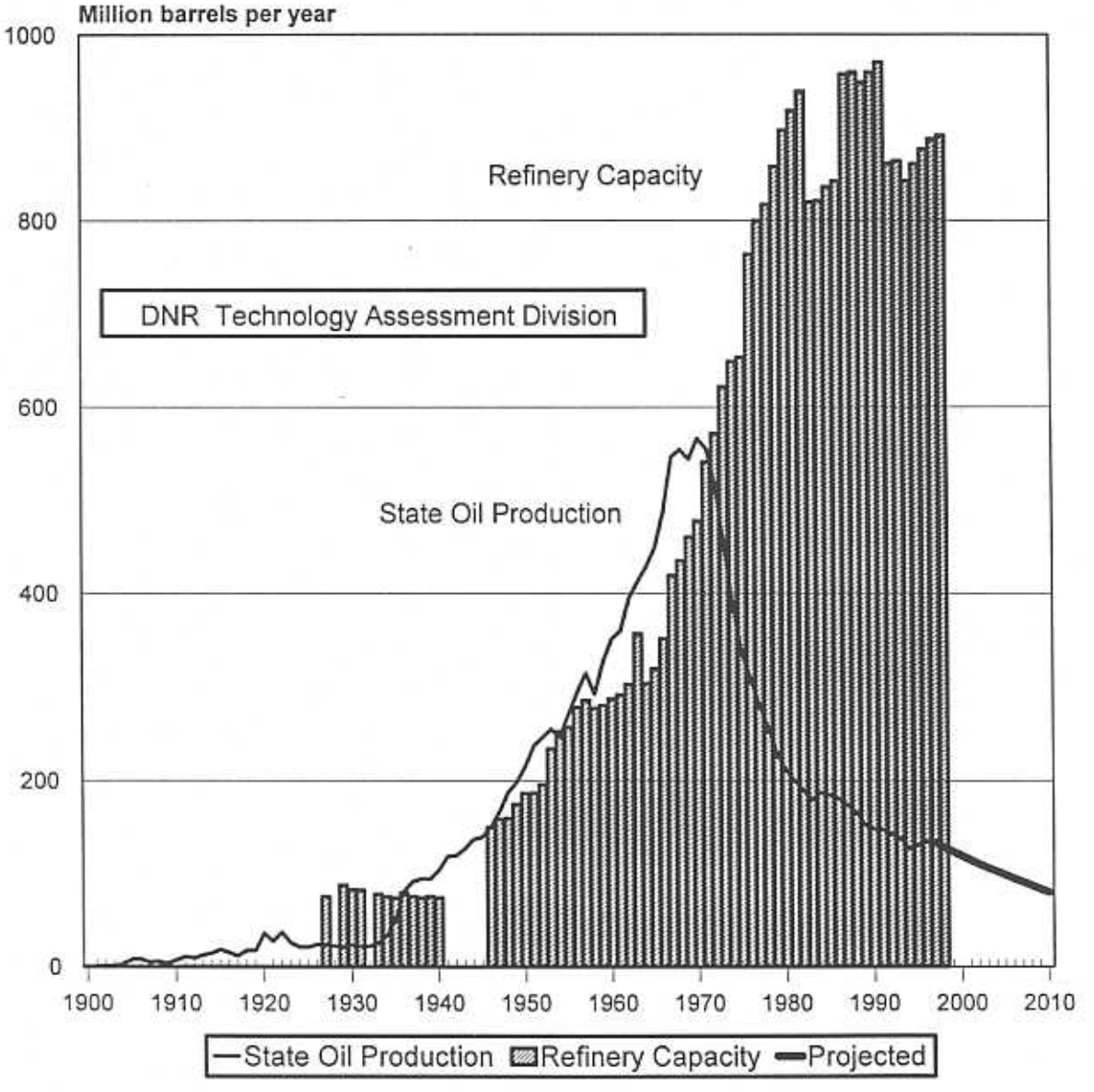


Source : LA. Refinery Capacity - DNR Energy Database and DOE, EIA Petroleum Supply Annuals, Volume I, Table 38.

Source : U.S. Refinery Capacity - Basic Petroleum Data Book, Petroleum Industry Statistics, American Petroleum Institute, Volume XVII, No. 2, July 1997, Section VIII, Table 4; and DOE/EIA Petroleum Supply Monthly, February and August 1998, Table H2.

FIGURE 4

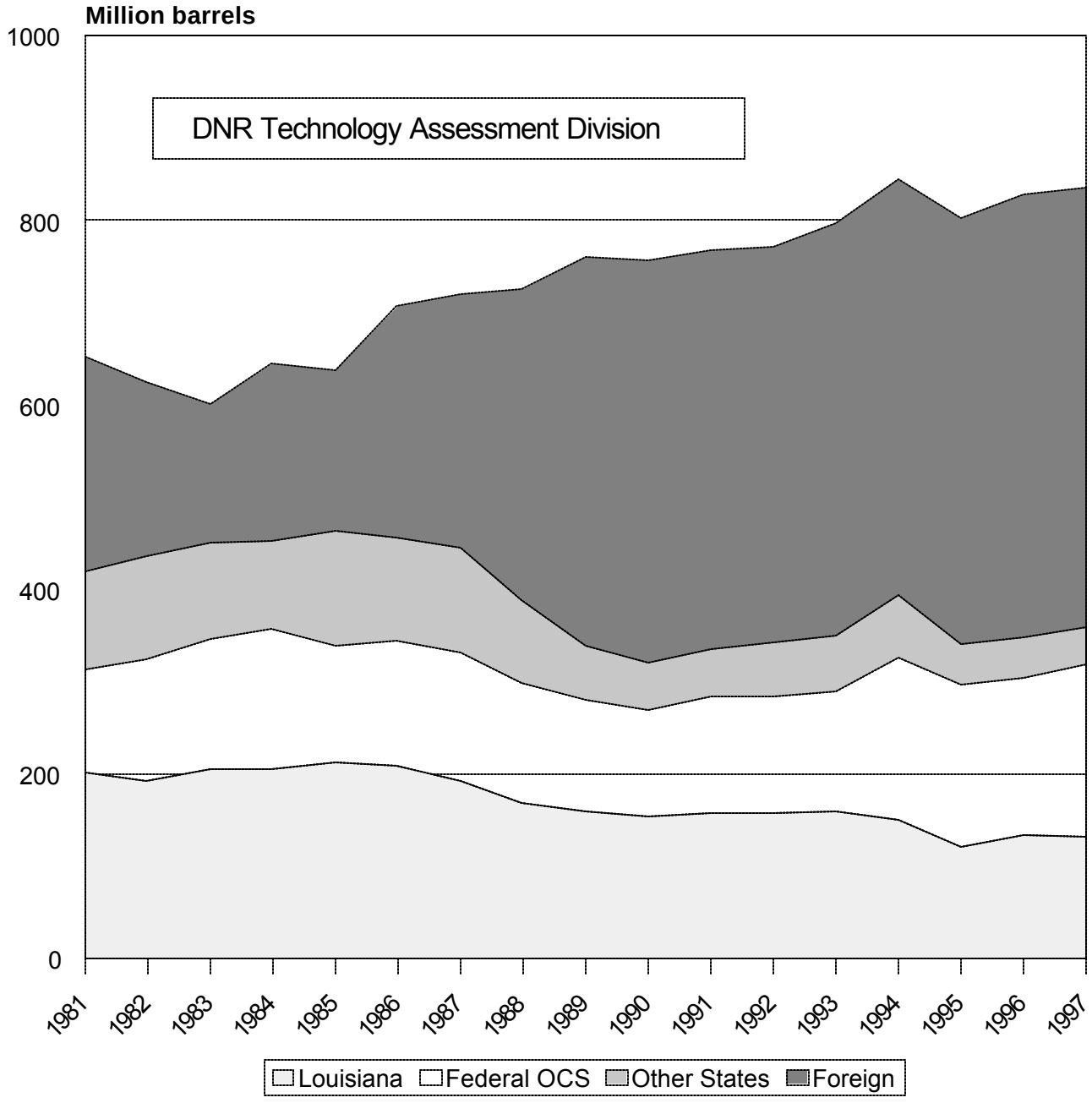
LOUISIANA OIL PRODUCTION AND REFINERY OPERABLE CAPACITY



Source: Oil Production from DNR Database
Refinery Capacity - DNR Energy Database and DOE, EIA Petroleum Supply Annual, Volume I, Table 38
NOTE: 1979 Capacity is estimated

FIGURE 5

HISTORICAL REFINERY INPUT BY SOURCE



Source: La. DNR Database

FIGURE 6A

1997/98 REFINERY CRUDE OIL INPUT PERCENTAGE BY SOURCE BY COMPANY

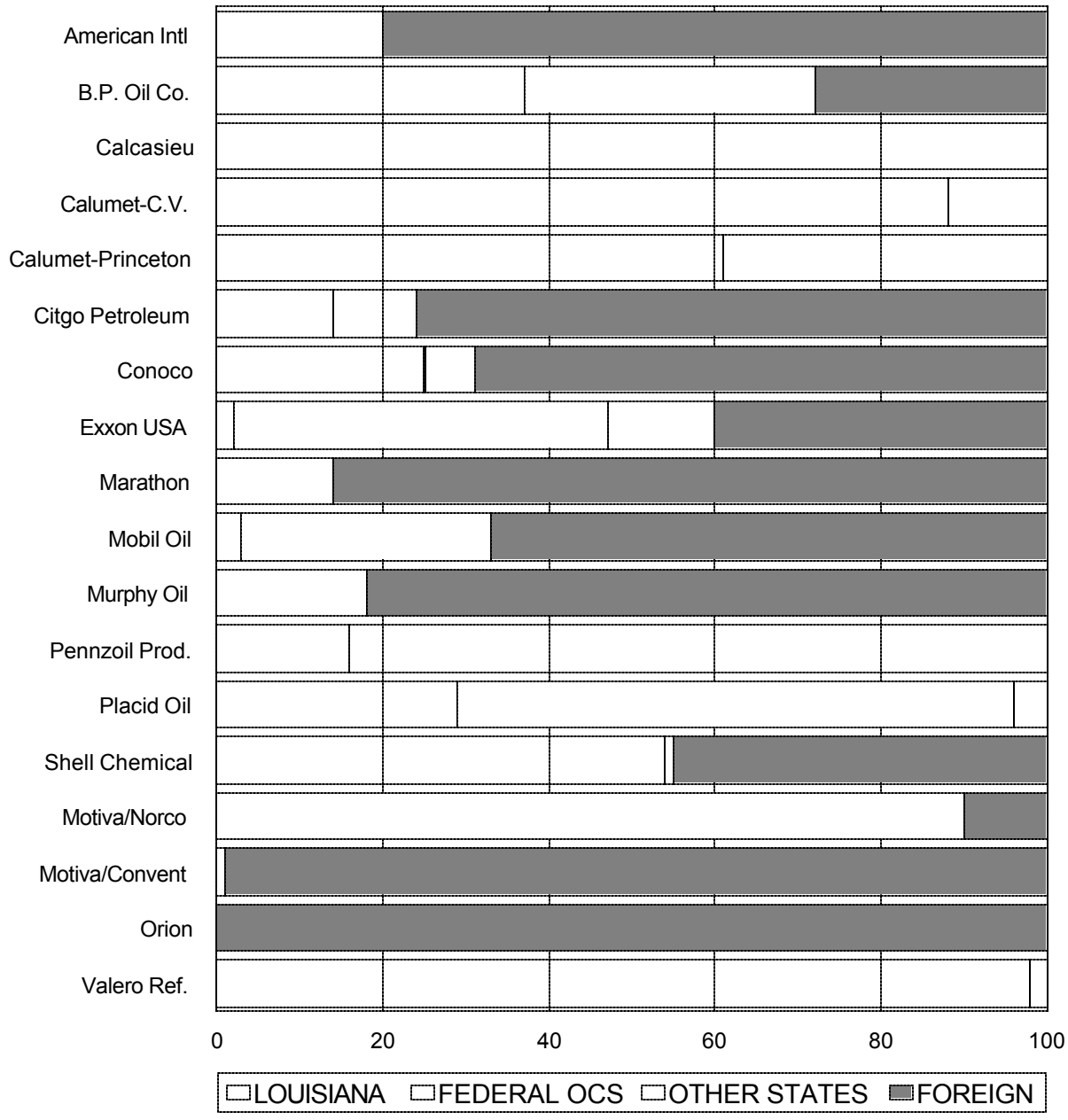
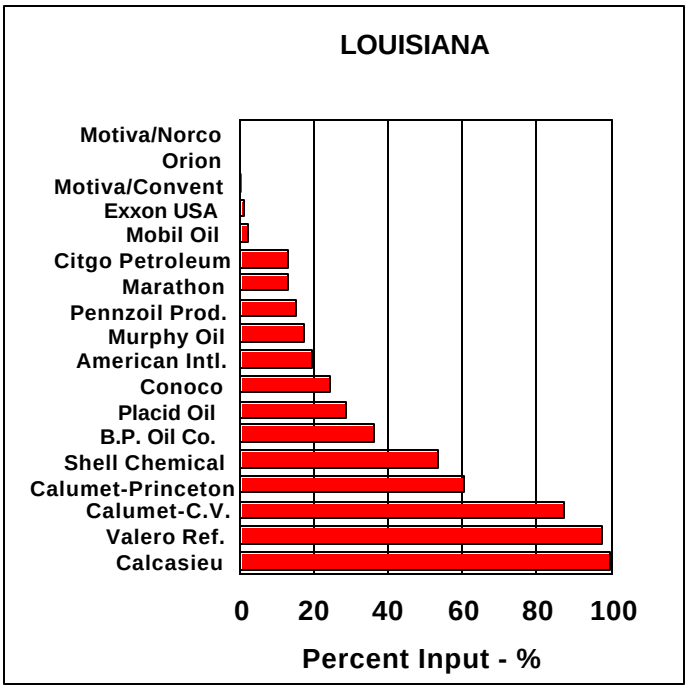
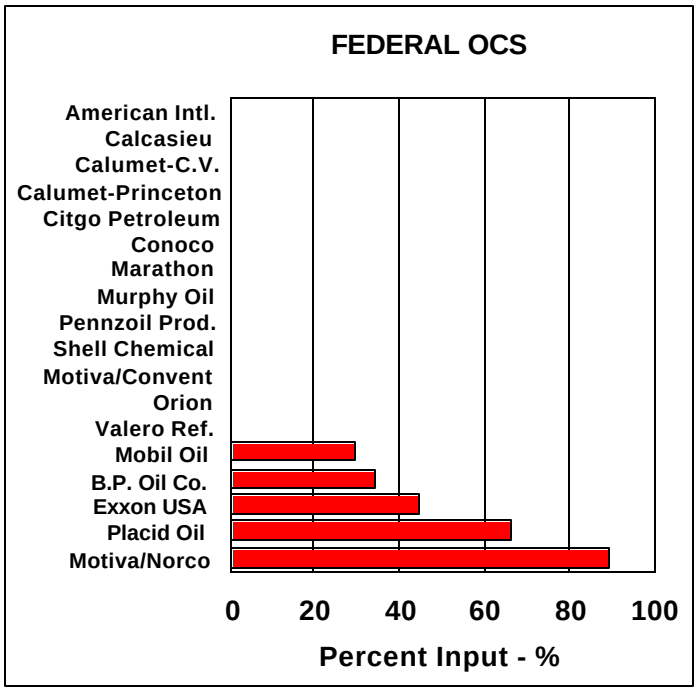
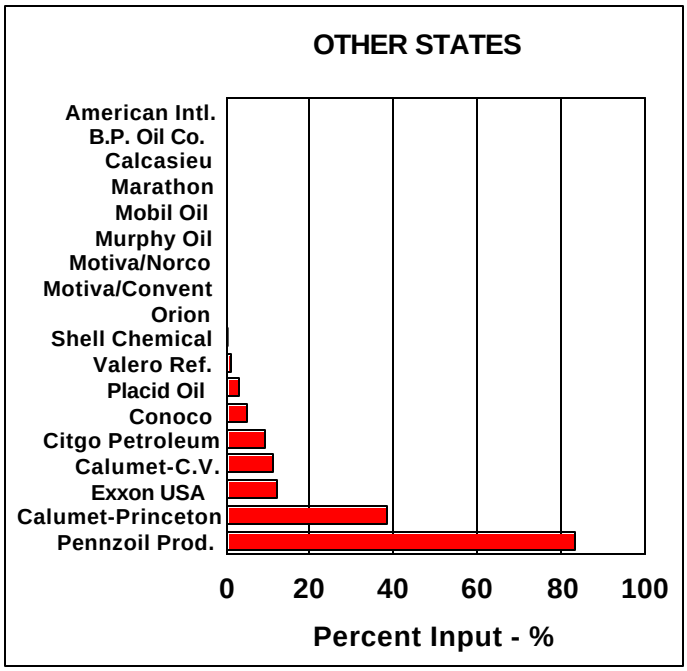


FIGURE 6B
1997/98 REFINERY CRUDE OIL INPUT PERCENTAGE
SORTED BY SOURCE







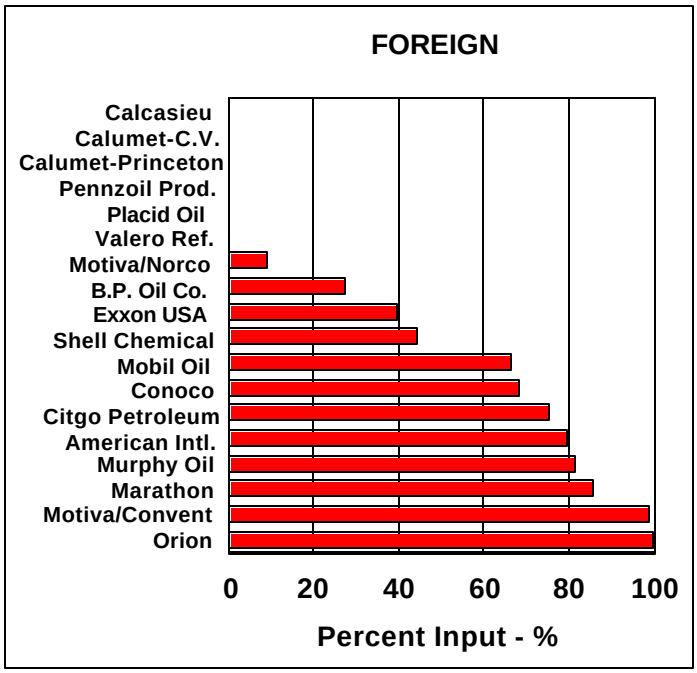
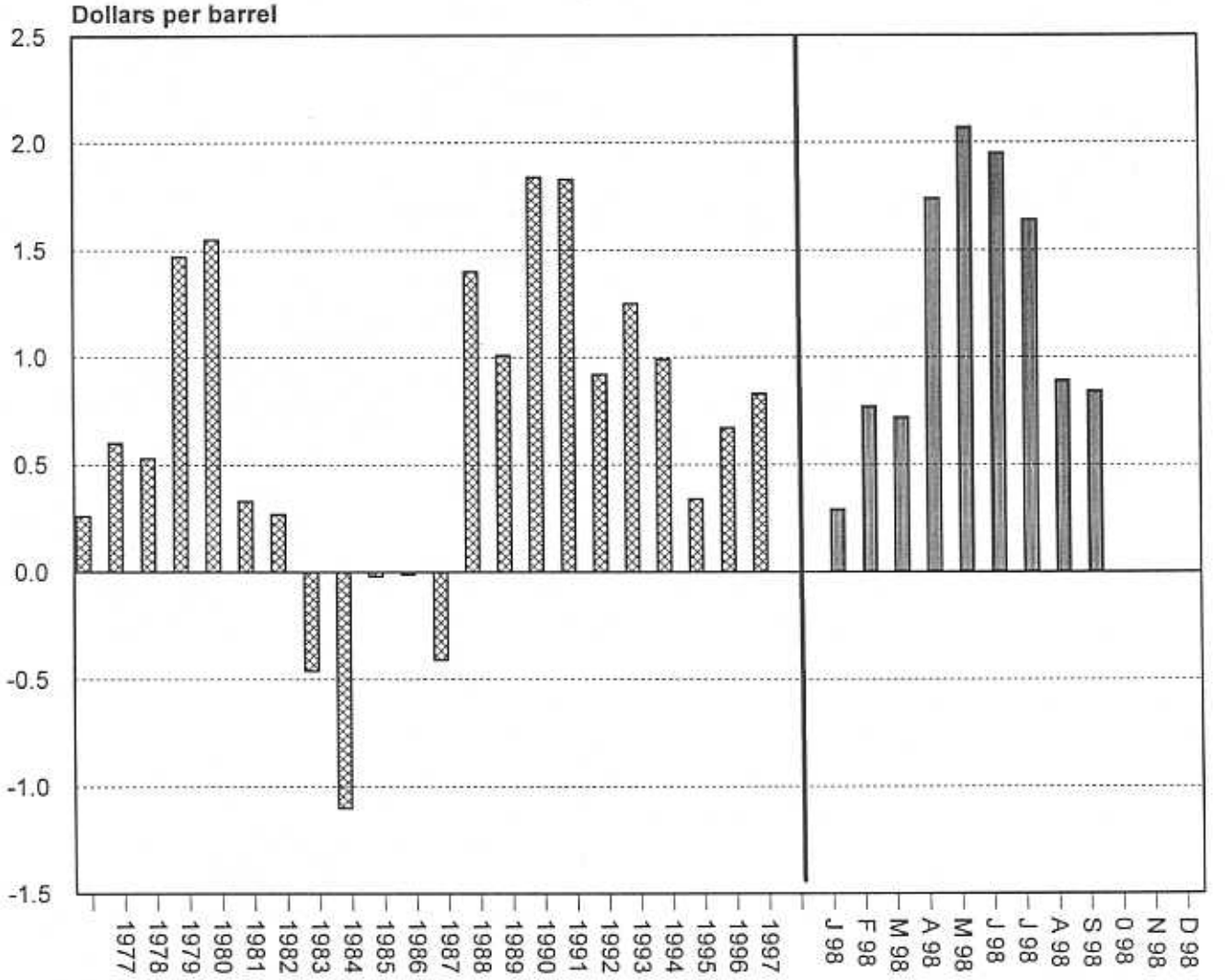


Figure 7

Gulf Coast Refinery Margins
Regional Average Cash Operating Margin *



* Product revenues less cost of feedstocks and direct operating costs; e.g., allowance for all variable and fixed-cost items associated with plant operations (wages, salaries, related overhead, maintenance, insurance and ad valorem taxes, purchased fuel, power, cooling water, catalysts, and chemicals). Costs do not include income taxes, depreciation, or financial charges. See *Oil & Gas Journal*, Nov. 19, 1984, p. 110 and Dec. 5, 1986, p. 38.

Source: Wright Killen & Co, from *Oil & Gas Journal*

TABLE 5
LOUISIANA OPERATING REFINERIES
MAILING ADDRESSES AND CONTACT LIST

NAME	MAILING ADDRESS	CONTACTS	TELEPHONE
American International Refinery, Inc. Lake Charles Refinery	P. O. Drawer 16866 Lake Charles, LA 70616	Larry Nicholson, Plant Manager	(318) 439-4066
B. P. Oil Co. Alliance Refinery	P.O. Box 395 Belle Chasse, LA 70037-0395	Felix Strater, Plant Manager Pat O'Neill, Chief Engineer	(504) 656-7711
Calcasieu Refining Company	4359 W. Tank Farm Road Lake Charles, LA 70605	Allen Lyons, Plant Manager Tom Prudhomme, Chief Engineer	(318) 478-2130
Calumet Lubricants Co. L.P. Cotton Valley Facility	P.O. Box 97 Cotton Valley, LA 71018	Jeff Lang, Plant Manager Rodney G. Butts, Sr. Process Engr.	(318) 832-4236
Calumet Lubricants Co. L.P. Princeton Refinery	10234 La. Hwy. 157 Princeton, LA 71067-9172	Jerry Arnold, Plant Manager	(318) 949-2421
Citgo Petroleum Corp.	P.O. Box 1562 Lake Charles, LA 70602	Robert J. Kostelnik, Plant Manager Joel Kieffer, Chief Engineer	(318) 497-6248
Conoco, Inc. Lake Charles Refinery	P.O. Box 37 Westlake, LA 70669	Robert J. Hassler, Plant Manager Mike Fagnant, Chief Engineer	(318) 491-5070
Exxon Co. U.S.A.	P.O. Box 551 Baton Rouge, LA 70821	Gary W. Pruessing, Plant Manager Scott J. Sullivan, Process Manager	(504) 359-7711
Marathon Ashland Petroleum, LLC Garyville Refinery	P.O. Box AC Garyville, LA 70051-0842	Larry Echelberger, Plant Manager Tracy Case, Chief Engineer	(504) 535-2241
Chalmette Refining, LLC Mobil Oil Corp. Refinery	P.O. Box 1007 Chalmette, LA 70044	Toby Coy	(504) 281-1624
Motiva Enterprises, LLC Convent Refinery	P.O. Box 37 Convent, LA 70723	Arman S. Abay, Plant Manager Wayne L. Coleman, Chief Engineer	(504) 562-7681
Motiva Enterprises, LLC Norco Refinery	P.O. Box 10 Norco, LA 70079	Allen Kirkley, Plant Manager Jack Williams, Chief Engineer	(504) 465-7823
Murphy Oil U.S.A. Inc. Meraux Refinery	P.O. Box 100 Meraux, LA 70075	Jim Kowitz, Plant Manager Darrell Lake, Chief Engineer	(504) 278-5299
Pennzoil Products Co.	P.O. Box 3099 Shreveport, LA 71133	S. L. Rowland, Plant Manager E. F. Juno, Chief Engineer	(318) 636-2711 (318) 632-4111
Placid Refining Co.	1940 La. Hwy. 1 North Port Allen, LA 70767	Gary B. Fuller, Refinery Manager	(504) 387-0278
Shell Chemical Co. St. Rose Refinery	P.O. Box 10 Norco, LA 70079	David Brignac, Plant Manager Tom Brumfield, Chief Engineer	(504) 465-6248
Orion Refining Corp.	P. O. Box 537 Norco, LA. 70079-0537	Gary L.Karr, V.P., Refining Tom Landry, Chief Engineer	(504) 764-8611
Valero Refining Co. - Louisiana Krotz Springs Refinery	P.O. Box 453 Krotz Springs, LA 70750-0453	John Edmunds, Plant Manager Greg Byers, Chief Engineer	(318) 566-2301

TABLE 6
LOUISIANA OPERATING REFINERY LOCATIONS

NAME	PHYSICAL LOCATION
American International Refinery, Inc. / Lake Charles Refinery	Lake Charles, I-10 exit 36, north to La. 3059, left 3/4 mi.
B. P. Oil Co. / Alliance Refinery	Belle Chasse, 12 mi. south on east side of La. 23.
Calcasieu Refining Company	Lake Charles, 3 mi. south at west end of Old Tank Farm Road on Ship Canal.
Calumet Lubricants Co. L.P. / Cotton Valley Facility	Cotton Valley, east side of La. 7 South at city limits.
Calumet Lubricants Co. L.P. / Princeton Refinery	Princeton, 5 mi. north of I-20 on east side of La. 157.
CITGO Petroleum Corp.	Lake Charles, I-10 exit 23, then 2 mi. south on La. 108.
Conoco, Inc. / Lake Charles Refinery	Westlake, I-10 Sampson Rd. exit; north to Old Spanish Trail.
Exxon Co. U.S.A.	Baton Rouge, 4045 Scenic Hwy.
Marathon Ashland Petroleum, LLC	Garyville, 2 mi. toward Reserve off U.S. 61.
Chalmette Refining, LLC / Mobil Oil Refinery	Chalmette, 500 W. St. Bernard Hwy.
Motiva Enterprises, LLC / Convent Refinery	Convent, on La. 44 at east bank foot of Sunshine bridge.
Motiva Enterprises, LLC / Norco Refinery	Norco, on River Road
Murphy Oil U.S.A. Inc. / Meraux Refinery	Meraux, 2500 St. Bernard Hwy.
Pennzoil Products Co. / Shreveport	Shreveport, 3333 Midway Ave., Across I-20 from State fairgrounds.
Placid Refining Co.	Port Allen, 1940 La. 1 North.
Shell Chemical Co. / St. Rose	St. Rose, 11842 River Road
Orion Refining Corp.	Norco, 257 Prospect Ave.
Valero Refining Co. - La. / Krotz Springs Refinery	Krotz Springs, La. 105 South in town.

TABLE 7
Operating Refineries Name History (1980-1999)

Refinery Name	Date	DNR Code & Location
Exxon Co. U.S.A.	1980-98	EXX - Baton Rouge
B.P. Oil Corp.	1989-98	STN - Belle Chasse
Standard Oil Co.	1986-88	
Gulf Refining & Marketing Co.	1985-85	
Gulf Oil Corp.	1981-84	
Gulf Oil Co. U.S.	1979-80	
Chalmette Refining, LLC	1998 -	TNN - Chalmette
Mobil Oil Corp.	1989-98	
Tenneco Oil Co.	1980-88	
Motiva Enterprises, LLC	1998-	TXC - Convent
Star Enterprise	1989-98	
Texaco Refining & Marketing	1985-88	
Texaco, Inc.	1980-84	
Calumet Lubricants Co., L.P.	1996-98	CTT - Cotton Valley
Kerr-McGee Refining Corp.	1985-95	
Kerr-McGee Corp.	1983-84	
Cotton Valley Solvents Co.	1980-82	
Marathon Ashland Petroleum, LLC	1998-	MRT - Garyville
Marathon Oil Co.	1992-98	
Marathon Petroleum Co.	1985-91	
Marathon Oil Co.	1980-84	
Orion Refining Corp.	1999-	GDH - Good Hope
TransAmerican Refining Co.	1992-98	
TransAmerica Refining Co.	1988-91	
GHR Energy Corp.	1982-87	
Good Hope Refineries, Inc.	1981-81	
Good Hope Industries, Inc.	1980-80	
Valero Refining Co. - La.	1997-98	HLL - Krotz Springs
Basis Petroleum, Inc.	1996-96	
Phibro Energy U.S.A., Inc.	1993-95	
Phibro Refining Inc.	1992-92	
Hill Petroleum Co.	1980-91	

Refinery Name	Date	DNR Code & Location
Calcasieu Refining Co.	1985-98	CLC - Lake Charles
CPI Oil & Refining, Inc.	1982-84	
Calcasieu Refining Ltd.	1980-81	
Citgo Petroleum Corp.	1984-98	CTS - Lake Charles
Cities Service Co.	1980-83	
Conoco, Inc.	1982-98	CNB - Lake Charles
Conoco	1980-81	
Continental Oil Co.	1979	
American International Refinery, Inc.	1997-98	LKC - Lake Charles
Gold Line Refining Ltd.	1992-97	
American Int'l Refining, Inc.	1989-91	
Lake Charles Refining Co.	1980-88	
Aweco	1979-79	
Murphy Oil U.S.A., Inc.	1984-98	MRP - Meraux
Murphy Oil Corp.	1980-83	
Motiva Enterprises, LLC	1998-	SHL - Norco
Shell Oil Co.	1980-98	
Calumet Lubricants Co., L.P.	1991-98	CLM - Princeton
Calumet Refining Co.	1980-90	
Placid Refining Co.	1980-98	PLC - Port Allen
Pennzoil Producing Co.	1992-98	ATL - Shreveport
Pennzoil Products Co.	1986-91	
Pennzoil Co.	1985-85	
Atlas Processing Co.	1980-84	
Shell Chemical Co.	1996-98	INT - St. Rose
St. Rose Refinery, Inc.	1994-95	
Phibro Energy U.S.A., Inc.	1993-93	
Phibro Refining, Inc.	1992-92	
Hill Petroleum Co.	1987-91	
International Processors	1981-86	

TABLE 8
LOUISIANA NON-OPERATING REFINERIES
MAILING ADDRESSES & CONTACT LIST

NAME	MAILING ADDRESS	CONTACTS	TELEPHONE
El Paso Field Services Dubach Location	400 Travis Street, Suite 1100 Shreveport, LA 71101	Martin Anthony, Marketing Director	(318) 222-2545
Bayou State Oil Corp.	Box 7886 Shreveport, LA 71137	Charles E. Brown, Sr., President	(318) 222-0737
Canal Refining Co.	P.O. Drawer 8 Church Point, LA 70525	Fred Marshall, Plant Mgr.	(318) 684-5421
Gold Line Refining, Ltd. Jennings Plant	9301 Southwest Freeway Suite 250 Houston, TX 77074	Earl Thomas, Owner	(713) 271-3550
Lisbon Refinery J.V., LLC	8613 East Wilderness Way Shreveport, LA 71106	James Ballengee	(800) 722-4127
Petroleum Fuel & Terminal Co.	Box T Garyville, LA 70051	Claude Phelps, Plant Manager	(504) 535-6256
St. James Co., LLC	P.O. Box 318 St. James, LA 70086	Charles Waguespack, Owner	(504) 265-4067
Tina Resources, Inc.	207 Firestone Drive Marble Falls, TX 78654	Leslie Vance, President	(210) 693-6923
U.S. Refining Co. (Administrative Office)	c/o Jade Petroleum P.O. Box 136 Newton, TX 75966	James Hughes, Owner	(409) 397-4221
U.S. Refining Co. (Refinery)	101 Old Ferry Road Egan, LA 70531	Elmer Lord, Caretaker	(318) 788-1300

NOTE: Directions to the physical locations of each non-operating refinery are given in Table 9.

TABLE 9
LOUISIANA NON-OPERATING REFINERIES
PHYSICAL LOCATIONS, LAST KNOWN CRUDE CAPACITY (barrels/calendar day), DATE LAST OPERATED, AND STATUS

NAME	PHYSICAL LOCATION	LAST KNOWN OPERATING CAPACITY	DATE LAST OPERATED	PREVIOUS NAME(S)	STATUS
Bayou State Oil Corp.	Hosston, U.S. 71 North at junction with La. 2 West.	3,000	2/87	NONE	No plans to reopen. Some equipment sold, but process equipment remains operable.
Canal Refining Co.	Church Point, 2 mi. north on left side of La. 178	7,500	5/97	NONE	Expecting to restart June or July 1999, processing La. crude.
El Paso Field Services Dubach Location	Dubach, 1/4 mi. west of U.S. 167 at south city limits.	10,000	6/93	Arcadia Refining & Marketing; Kerr-McGee Refining Co.; Dubach Gas Co., owned by Cornerstone Natural Gas Co., formerly known as Endevco.	Facility consists of a crude oil refinery and gas liquids fractionating plant. El Paso continues to operate the gas plant but shut down the liquids fractionating unit in January 1998.
Gold Line Refining Co. Ltd. Jennings Refinery	3-1/2 mi. east of jct. U.S. 90E & La. 102 in Jennings. On Mermentau River 1 mile north of U.S. 90E at end of gravel road.	14,800	2/98	Celeron; Slapco; CAS Refining	Owner is attempting to sell or lease the facility.
Petroleum Fuel & Terminal Co.	Mt. Airy, exit Gramercy on La.20 to La.44 (River Road) junction. Left 2 miles.	23,000	12/86	Clark Oil & Refining Mt. Airy Refinery	Terminal only in use. Actively pursuing the sale of all refinery process equipment so site can be used to expand terminal.
St. James Co., LLC	St. James, 7-1/2 miles south of Sunshine Bridge on La.18.	20,000	8/83	Texas NAPCO, Inc. LaJet	Orderly cleanup of refinery site proceeding, including demolition of steel. Eight tanks in good shape, approximately 350,000 barrels capacity. Koch Petroleum Group controls docks & pipeline access on adjacent property.
Tina Resources, Inc.	Cameron Parish. Talen's Landing on Intracoastal Waterway 9 miles south of jct. La. 14 & 26 in Lake Arthur via La. 14.	7,400	2/86	Mallard Resources, Inc.; Cameron Resources, Inc.	No response to January 1998 or January 1999 survey. Last status received was that the refinery was for sale.
U.S. Refining, Inc. Egan Refinery	Egan, 101 Old Ferry Road. Take I-10 exit 72; then 2 miles south on Old Ferry Rd.	10,000	9/87	La. Oil & Rerefining Crystal Refining, Inc.	Quantum Fuel & Refining (Houston) evaluating the facility for jet fuel production. Site includes 500,000 barrel storage capacity.

TABLE 10
Non-Operating Refineries Name History (1980 - 1998)

Refinery Name	Dates	DNR Code & Location
Sooner Refining Co.	1980-82	SNR - Darrow
Conoco, Inc.	1982-89	CNA - Egan
Conoco	1980-81	
Continental Oil Co.	1979	
U.S. Refining, Inc.	1994-96	LOR - Egan
Britt Processing & Refining Co.	1992-93	
Crystal Refining, Inc.	1989-91	
OGC Corp.	1988-88	
Louisiana Oil Refining Co. of Egan	1987-87	
El Paso Field Services	1997-98	KRR - Dubach
Arcadia Refining	1995-96	
Endevco, Inc.	1989-94	
Kerr-McGee Refining Corp.	1985-88	
Kerr-McGee Corp.	1980-84	
Tina Resources, Inc.	1993-96	MLL - Gueydon
Cameron Oil Refining Co., Inc.	1992-92	
Cameron Resources	1990-91	
Mallard Resources, Inc.	1980-89	
Bayou State Oil Corp.	1980-98	BYS - Hosston
Evangeline Refining Co.	1980-92	EVN - Jennings
Shepard Oil Co.	1980-82	SHP - Jennings
Laidlaw Environmental Systems	1992-92	TSR - Jennings
GSX Recovery Systems	1983-91	
T & S Refining Co.	1980-82	
Canal Refining Co.	1980-98	CNL - Church Pt.

Refinery Name	Dates	DNR Code & Location
Gold Line Refining Co., Ltd.	1994-98	SLP - Mermanteau
CAS Refining	1991-93	
Celeron Oil and Gas Co.	1983-90	
Slapco	1980-82	
South Louisiana Production Co.	1979	
Petroleum Fuel & Terminal Co.	1992-98	MTR- Mt. Airy
Clark Oil and Refining Corp.	1983-91	
Mt. Airy Refining	1980-82	
St. James Co., LLC	1998-	TXS - St. James
Texas NAPCO, Inc.	1983-98	
La. Jet, Inc.	1980-82	
McTan Refining Corp.	1983-96	BRN - St. James
McTan Corp.	1982-82	
Bruin Refining Co.	1980-81	
Sabine Resources Group	1990-92	PRT - Stonewall
Port Petroleum, Inc.	1980-89	
Schulze Processing, Inc.	1980-82	SCH - Tallulah
Gulf Oil Co. U.S.A.	1981-81	GLF - Venice
Gulf Oil Corp.	1980-80	
Lisbon Refinery J.V., LLC	1998	CLB - Lisbon
Padre Refining Co.	1997-98	
Arcadia Refining & Mktg. Co.	1995-96	
Dubach Gas Co.	1992-94	
Claiborne Gasoline Co.	1980-91	

DEFINITIONS

Source: DOE/EIA Petroleum Supply Annual 1997, Volume 1, June 1998

Barrels per calendar day - The maximum number of barrels of input that can be processed during a 24-hour period after making allowances for the following limitations:

the capability of downstream facilities to absorb the output of crude oil processing facilities of a given refinery. No reduction is made when a planned distribution of intermediate streams through other than downstream facilities is part of a refinery's normal operation;

the types and grades of inputs to be processed;

the types and grades of products expected to be manufactured;

the environmental constraints associated with refinery operations;

the reduction of capacity for scheduled downtime such as routine inspection, mechanical problems, maintenance, repairs, and turnaround; and

the reduction of capacity for unscheduled downtime such as mechanical problems, repairs, and slowdowns.

Barrels per stream day - The amount a unit can process running at full capacity under optimal crude oil and product slate conditions.

Idle capacity - The component of oper*able* capacity that is not in operation and not under active repair, but capable of being placed in operation within 30 days; and capacity not in operation but under active repair that can be completed within 90 days.

Operable capacity - The amount of capacity that, at the beginning of the period, is in operation; not in operation and not under active repair, but capable of being placed in operation within 30 days; or not in operation but under active repair that can be completed within 90 days. Operable capacity is the sum of the operating and idle capacity and is measured in barrels per calendar day or barrels per stream day.

Operating capacity - The component of operable capacity that is in operation at the beginning of the period.

Operable utilization rate - Represents the utilization of the atmospheric crude oil distillation units. The rate is calculated by dividing the gross input to these units by the operable refining capacity of the units.

Operating utilization rate - Represents the utilization of the atmospheric crude oil distillation units. The rate is calculated by dividing the gross input to these units by the operating refining capacity of the units.