Department of Energy
Strategic Petroleum Reserve Project Management Office
900 Commerce East
New Orleans, Louisiana 70123

NOTICE OF SALE
DE-NS96-05PO96000

Gentlemen:

Pursuant to Presidential authorization, the Secretary of Energy has directed the drawdown and distribution of the Strategic Petroleum Reserve (SPR) through a sale of SPR oil. You are invited to submit offers for the purchase of crude oil from the United States Department of Energy, SPR. Contracts resulting from this sale shall be subject to contract price adjustment as set forth in the Supplements and Amendments to the Standard Sales Provisions. Further, offerors are advised that the Secretary of the Department of Homeland Security has issued a general ("blanket") waiver of the "Jones Act" for the marine delivery of crude oil purchased in this sale. The terms and conditions of the sale and specific instructions for preparation and submittal of offers are contained in this Notice of Sale.

As stated in this Notice of Sale, you are required to submit your offer using the Crude Oil Sales Offer Program. **Manual offers will NOT be accepted.**

Offers are due at 4:00 p.m., Central Daylight Time, September 9, 2005.

Please read this solicitation carefully. Questions regarding this Notice of Sale should be addressed to:

Contact	Telephone	E-Mail
Joyce B. Francois Contracting Officer	(702) 794-1299/1177	Joyce.Francois@spr.doe.gov
Anne Quern	(702) 794-1198	Anne.Quern@spr.doe.gov

Collect calls will not be accepted.

Date: September 6, 2005

Michael McWilliams
Assistant Project Manager
Office of Management and
Administration

NOTICE OF SALE
DE-NS96-05PO96000

TABLE OF CONTENTS

NOTICE OF SALE
DE-NS96-05PO96000

INSTRUCTIONS

GENERAL REQUIREMENTS

1. Offer must be submitted via the Crude Oil Sales Offer Program (COSOP) by the date/time specified in the Notice of Sale. **Manual offers will NOT be accepted.**

2. Offerors are required to submit an Offer Guarantee (See SSP B.12).

   Failure to submit the above document or to comply with material requirements of the Notice of Sale may be cause for rejection of the offer.

SALE-SPECIFIC REQUIREMENTS

The following sales requirements are established for this sale:

1. The sale will be by price competition and shall be conducted pursuant to the **Standard Sales Provisions (SSPs)**, except as may be modified by this Notice of Sale.

2. The quantity of SPR crude oil offered for sale is 30 million barrels for delivery to successful offerors over a 31-day delivery period commencing October 1, 2005, and ending October 31, 2005. Early delivery may be requested in accordance with SSP C.5 (d).

3. The crude oil streams, delivery modes and periods, and the quantities offered in this sale, as well as minimum contract quantities, are shown on Attachment A.

4. Offers MUST be received by 4:00 p.m., Central Daylight Time, September 9, 2005; any offers received after 4:00 p.m. will be determined to be late and will be rejected, except as provided in SSP B.11, "Late offers, modifications of offers, and withdrawals of offers." Fully Executed Offer Guarantee shall be faxed to (225) 692-6281/6308 or (702) 794-1140 or may be scanned and emailed to Gary.Durel@spr.doe.gov, and MUST be received not later than the time/date for receipt of offers. The original hardcopy must be received within 24 hours of the closing date for receipt of offers.

   The mailing address for the original Offer Guarantee is:

SPR Bayou Choctaw Site
Highway 1148 (Off LA1)
Plaquemine, LA 70764
Attn: Gary Durel or Joyce Francois

5. Pursuant to SSP B.7, by submission of a binding offer, the State of Hawaii, for this sale, is entitled to purchase up to 900,000 barrels of SPR petroleum.

6. Pursuant to SSP B.9 (e), DOE will inform simultaneously all offerors and other interested parties of the successful and unsuccessful offerors and their offer data by means of a public 'offer posting.' This offer posting will occur approximately one week after receipt of offers. This information will be provided by a posting on the Internet at the following address: https://www.spr.doe.gov

NOTICE OF SALE
DE-NS96-05PO96000

SUPPLEMENTS AND AMENDMENTS
TO THE STANDARD SALES PROVISIONS

For this sale only, the Standard Sales Provisions (SSPs) are supplemented or amended as follows:

1. The following refers to SSP B.4:

   The Secretary of the Department of Homeland Security has issued a general ("blanket") waiver of the "Jones Act" for the marine delivery of crude oil purchased in this sale. Consequently, it is unnecessary for an Apparently Successful Offeror or purchaser to follow the procedures of SSP C.7, except that notification must be provided as stated in C.7(g). For further information about this waiver, contact:

   U. S. Bureau of Customs and Border Protection
   Office of Regulations and Rulings
   Chief, Entry Procedures and Carriers Branch
   Washington, D. C. 20229
   Telephone No. (202) 572-8724

2. Pursuant to SSP B.5, the Superfund and Oil Spill Liability Trust Fund taxes are currently not imposed.

3. SSP B.17 "SPR Crude Oil Streams and Delivery Points" is supplemented with the following information:

   Minimum delivery lot sizes for vessels are 350,000 barrels, for barges are 40,000 barrels, and for pipelines are 100,000 barrels. Offerors are reminded, however, of their responsibility to comply with (1) any minimum tender provision of any pipelines by which they take delivery from an SPR terminal, and (2) the vessel usage and load rate restrictions specified in SSP C.8(c), "Vessel loading procedures."

4. SSP B.18 (h) "Notice of Sale line item schedule – petroleum quantity, quality, and delivery method" is supplemented with the following information.

   The quality characteristics of the crude oil streams offered for sale are those cited in Attachment D to this Notice of Sale.

5. SSP B.19 "Line item information to be provided in the offer". Paragraph (d) (3), 3rd sentence is modified as follows:

(3) Price. "If the offeror has the same price for two or more DLIs, … if the offeror does not indicate a preference, … DOE will select the DLIs to be awarded in alphabetical order."

6. SSP C.5, "Delivery and transportation scheduling", is supplemented with the following information:

(a) Crude Oil Scheduling:
DynMcDermott Petroleum Operations Company
New Orleans, Louisiana
Chuck Costanza, (702) 794-1299 (Primary)___
Ned Scheppegrell (702) 794-1177 (Secondary)
DMCOL@spr.doe.gov

(b) Pipeline and Terminal contacts:

(i) TEPPCO (Seaway) Freeport, TX
Brian Deal, Scheduler (405) 239-5725

(ii) TEPPCO (Seaway) Texas City, TX
Jimmy Nealy, (409) 949-3701

(iii) TEPPCO (Jones Creek Tank Farm) Jones Creek, TX
Liz Allen, (979) 237-6751 or (405) 239-5795

(iv) Shell Pipeline (Shell Tie-in @ LCMS and Big Hill to East Houston)
John Dubois, (713) 241-8742
(713) 858-0557 (cell)

(v) Sun Marine Terminal, Nederland, TX
Wayne Turner, Operations (409) 721-4843
Control Room (409) 721-4845
Bill Wheeler, Scheduler (409) 721-4813

(vi) UNOCAL (Beaumont Terminal) Nederland, TX
Tim Fournier, Supervisor (409) 724-3311
Nikki Morris, Oil Movements Supervisor (409) 724-3215
Kim Haygood, Oil Movements Coordinator (409) 724-3209

(vi) ExxonMobil (Bryan Mound Pipeline to Texas City and Jones Creek)
Donny Pitts (713) 656-6063

7. SSP C.5, “Delivery and transportation scheduling” is modified as follows:

In the fourth sentence of paragraph (a), change “highest offered price” to “highest Price Adjustment Factor (PAF)”.

In the fourth sentence of paragraph (c), change “highest-priced offer” to “highest PAF”.

8. SSP C.13, “Title and risk of loss” is supplemented as follows:

TEPPCO (Seaway) Texas City - Title and risk of loss pass to the purchaser when the petroleum passes through the Bryan Mound meter station.

TEPPCO (Seaway) Freeport Terminal – Title and risk of loss pass to the purchaser when the petroleum passes through the Seaway Freeport dock meters.

Jones Creek – Title and risk of loss pass to the purchaser when the petroleum passes into the Bryan Mound meter.

DOE Lake Charles Meter Station (Shell 22-inch Pipeline) - Title and risk of loss pass to the purchaser when the petroleum passes through the DOE Lake Charles (Shell 22) meter station.

SPR site or SUN (DOE) tank to purchaser’s tank at SUN -Title and risk of loss pass to the purchaser at the purchaser’s receiving tank flange at SUN.

Shell 20-inch (Port Arthur to East Houston)/ DOE 36-inch Big Hill connection - Title and risk of loss pass to the purchaser when the petroleum passes through the Channelview Meter Station.

Unocal Terminal to Pipeline - Title and risk of loss pass to the purchaser when the petroleum passes from the Unocal shore tank flange.

Unocal Terminal to Vessel – Title and risk of loss pass to the purchaser when the petroleum passes through the Unocal dock meters.

9. SSP C.16, Price adjustments for quality differentials for crude oil:

The applicable per barrel quality price adjustments for variances exceeding plus or minus one-half degree API gravity are:

(a) plus or minus 1.5 cents per barrel per one-tenth degree API gravity for the sour crude oil streams, and

(b) plus or minus 2 cents per barrel per degree of API gravity, or part thereof, for the sweet crude oil streams.

10. Reference Exhibit C – Instructions For Offer Letter Of Credit:

Item 3. Banks shall fill in blanks except those in the drawing statement, the text of which appears below:

"THIS DRAWING OF U.S. $_____ (_____) AGAINST YOUR LETTER OF CREDIT NUMBERED _____, DATED _____, IS DUE THE U.S. GOVERNMENT BECAUSE OF THE FAILURE OF _(CONTRACTOR)_ TO HONOR ITS OFFER TO ENTER INTO A CONTRACT FOR THE PURCHASE OF PETROLEUM FROM THE STRATEGIC PETROLEUM RESERVE, IN ACCORDANCE WITH THE U.S. GOVERNMENT'S NOTICE OF SALE NO., _____INCLUDING ANY AMENDMENTS THERETO."

11. Reference Exhibit D – Instructions For Payment and Performance Letter Of Credit:

Item 3. Banks shall fill in blanks except those in the drawing statement, the text of which appears below:

a. "I HEREBY CERTIFY THAT THE UNITED STATES GOVERNMENT HAS DELIVERED CRUDE OIL UNDER THE TERMS OF CONTRACT NUMBER _____ AND THAT _(CONTRACTOR)_ HAS NOT PAID UNDER THE TERMS OF THAT CONTRACT, AND AS A RESULT OWES THE U.S. GOVERNMENT U.S. $_____."

AND/OR

b. "I HERBY CERTIFY THAT _(CONTRACTOR)_ HAS FAILED TO TAKE DELIVERY OF CRUDE OIL UNDER THE TERMS OF CONTRACT NUMBER _____, AND AS A RESULT OWES THE U.S. GOVERNMENT U.S. $_____."

12. Contract Price Adjustment

(a) The unit price for crude oil under the contract shall be the Delivery Reference Price (DRP) adjusted by the Price Adjustment Factor (PAF) as provided in this provision, subject to any additional adjustments provided for elsewhere in the contract.

(b) The terms used in this provision are defined as follows:

Base Reference Price (BRP)

(1) The BRP for all SPR sweet crude oil streams offered for sale is the average (to the $0.0001) of the Daily Index Prices for the sweet crude oil streams as computed by the Government from prices published for the most recent four days on which trading activity occurred, ending two days before the date of the Notice of Sale.

(2) The BRP for all SPR sour crude oil streams offered for sale is the average (to the $0.0001) of the Daily Index Prices for the sour crude oil streams as computed by the Government from prices published for the most recent four days on which trading activity occurred, ending two days before the date of the Notice of Sale.

(3) For this Notice of Sale, the BRP is $68.6663 for SPR sweet crude oil streams and $61.6625 for SPR sour crude oil streams.

Daily Index Price (DIP)

(1) The DIP applicable to all SPR sweet crude oil streams offered for sale is the average (to the $0.0001) of the daily high and low spot quotes for the date as published by Reuters News Service for West Texas Intermediate crude oil at Cushing, OK.

(2) The DIP applicable to all SPR sour crude oil streams offered for sale is the daily closing spot quote for the date as published by Reuters News Service for Mars crude oil at Clovelly, LA.

Delivery Reference Price (DRP) - The DRP is the average (to the $0.0001) of the Daily Index Prices for the five days surrounding the delivery "price date" as stated in Block 7, "PRICE DATE", on the Strategic Petroleum Reserve Crude Oil Delivery Report SPRPMO-F-6110.2-14 b (Exhibit E to SSPs).

(i) For pipeline deliveries, the "price date" shall be the midpoint of the five-day delivery window established in accordance with SSPs C.5 and C.12.

For vessel deliveries, where the vessel arrives within the contractual three-day loading window, the "price date" shall be the "firm agreed upon date of arrival" (see SSP C.8(f)). If the vessel arrives outside of the contractual three-day loading window, but the Government loads the vessel, the mid point of the contractual three-day loading window will be the "price date."

(ii) In the event that either the Government, or any of its contracted terminals, or any circumstances beyond the Government's control delays a pipeline delivery or vessel loading, the "price date" as determined above for each type of delivery shall remain effective for the oil price computation.

(iii) The "five days surrounding the price date" means the following five days: The midday, day three, is the price date as determined above (unless such day is a day on which trading activity did not occur, in which case the midday shall be the succeeding day on which trading activity did occur), the two days preceding the midday of the five day period on which trading activity occurred and the two days succeeding the midday on which trading activity occurred.

Price Adjustment Factor (PAF) - The PAF is the purchaser's offered price minus the Base Reference Price (BRP). The PAF may be either positive or negative.

(c) For purposes of this provision, "spot quote" means the price quote for the most prompt month of delivery, regardless of date of delivery.

GENERIC EXAMPLES

Delivery Reference Price + Price Adjustment Factor = Unit Price Per Barrel (subject to any additional adjustments provided for elsewhere in the contract):

Example 1:
Assume: Offered Price = $61.2534
BRP = $61.0012 (5-day average specified in Notice of Sale)
PAF = + $0.2522
DRP = $61.5056 (5-day average surrounding price date)
Unit Price/bbl = $61.5056 + $0.2522, or $61.7578

Example 2:
Assume: Offered Price = $60.7564
BRP = $61.0012 (5-day average specified in Notice of Sale)
PAF = - $0.2448
DRP = $61.5056 (5-day average surrounding price date)
Unit Price/bbl = $61.5056 + (-$0.2448), or $61.2608

ATTACHMENT A
CRUDE OIL QUANTITIES OFFERED FOR SALE
U. S. DEPARTMENT OF ENERGY - STRATEGIC PETROLEUM RESERVE

The crude oil streams, delivery mode and periods, daily maximum delivery capability, and quantities of crude oil offered in this sale are as follows:

MLI = Master Line Item/Crude Oil Stream
DLI = Delivery Line Item/Maximum Quantity per Delivery Mode and Period
MINQ = Minimum Contract Quantity Per DLI
MB = Thousand of Barrels
MBD = SPR's estimated daily maximum delivery limit capability for each delivery line item, consistent with current capabilities.

Crude Oil Stream MLI	DLI - Mode of Delivery	Delivery Period (Days)	MLI Qty (MB)	MBD Limit	DLI Qty (MB)	MIN Qty (MB)
Bryan Mound Sweet 001			6,000			
	DLI-A Pipeline @ Jones Creek Tank Farm	01-31		450	6000	200
	DLI-B Vessel @ Freeport	01-31		400	6000	350
	DLI-H Pipeline @ Texas City	01-31		880	6000	200

Crude Oil Stream MLI	DLI - Mode of Delivery	Delivery Period (Days)	MLI Qty (MB)	MBD Limit	DLI Qty (MB)	MIN Qty (MB)
Bryan Mound Sour 002			6,000			
	DLI-A Pipeline @ Jones Creek Tank Farm	01-31		450	6000	200
	DLI-B Vessel @ Freeport	01-31		400	6000	350
	DLI-H Pipeline @ Texas City	01-31		880	6000	200

Crude Oil Stream MLI	DLI - Mode of Delivery	Delivery Period (Days)	MLI Qty (MB)	MBD Limit	DLI Qty (MB)	MIN Qty (MB)
West Hackberry Sweet 004			6,000			
	DLI-A Pipeline @ Sun	01-31		725	6000	200
	DLI-B Vessel @ Sun	01-31		1090	6000	350
	DLI-E Barge @ Sun	01-31		90	1350	120
	DLI-H Pipeline @ Lake Charles Meter Station	01-31		500	6000	200

Crude Oil Stream MLI	DLI - Mode of Delivery	Delivery Period (Days)	MLI Qty (MB)	MBD Limit	DLI Qty (MB)	MIN Qty (MB)
West Hackberry Sour 005			3,000			
	DLI-A Pipeline @ Sun	01-31		725	3000	200
	DLI-B Vessel @ Sun	01-31		1090	3000	350
	DLI-H Pipeline @ Lake Charles Meter Station	01-31		500	3000	200

Crude Oil Stream MLI	DLI - Mode of Delivery	Delivery Period (Days)	MLI Qty (MB)	MBD Limit	DLI Qty (MB)	MIN Qty (MB)
Big Hill Sweet 009			3,000			
	DLI-A Pipeline @ Sun	01-31		725	3000	200
	DLI-B Vessel @ Sun	01-31		1090	3000	350
	DLI-H Pipeline @ Unocal	01-31		200	3000	200
	DLI-I Vessel @ Unocal	01-31		200	3000	350
	DLI-L Pipeline @ Big Hill East Houston	01-31		180	3000	200

Crude Oil Stream MLI	DLI - Mode of Delivery	Delivery Period (Days)	MLI Qty (MB)	MBD Limit	DLI Qty (MB)	MIN Qty (MB)
Big Hill Sour 010			6,000			
	DLI-A Pipeline @ Sun	01-31		725	6000	200
	DLI-B Vessel @ Sun	0131		1090	6000	350
	DLI-E Barge @ Sun	01-31		90	1350	120
	DLI-H Pipeline @ Unocal	0-31		200	6000	200
	DLI-I Vessel @ Unocal	01-31		200	6000	350
	DLI-L Pipeline @ Big Hill East Houston	01-31		150	4500	200

Attachment B

INSTRUCTIONS FOR WIRE TRANSFER OF FUNDS

Purchasers may pay invoices by wire transfer of funds over the Fedwire Deposit System Network (FDS). Purchasers will provide the information in items 5, 7, and 8 to the sending bank, and the sending bank will provide the information in items 3, 4, and 6. All items MUST appear on all transfers as they appear below.

	FIELD NAME	LENGTH	VALUE
Item 1	Treasury Department Code	9	021030004
Item 2	Type-subtype-code	4	1000
Item 3	Sender-dfi#	9	Sender ABA-number
Item 4	Sender-ref-#	16	Filled by sender
Item 5	Amount	18	use dollar sign, commas, and decimal point
Item 6	Sender-dfi-info	80	Filled by sender
Item 7	Receiver-dfi-info	80	TREAS NYC/CTR/BNF=/AC-89000001

THE RECEIVER-DFI-INFO FIELD IS OF CRITICAL IMPORTANCE. IT MUST APPEAR IN THE PRECISE MANNER SHOWN TO ALLOW FOR THE AUTOMATED PROCESSING AND CLASSIFICATION OF THE FUNDS TRANSFER MESSAGE

Item 8	Free-text-line-1	80	(Contract No.)
	Free-text-line-1	80	(Invoice No.)
	Free-text-line-1	80	(SPRCODR No.)

INSTRUCTIONS FOR ELECTRONIC TRANSFER OF FUNDS (CCD+ FORMAT)

Purchasers may pay invoices using the Automated Clearing House (ACH) Network. This form has been designed as an aid for Remitters in providing complete and accurate data to their financial institutions for use in originating ACH payments. This is the Record format for CCD+ with the associated addenda record format. (A CCD format may be sent without an Addenda.)

ACH CCD+ FORMAT

Data Element Name	Contents	Size	Position
Record Type Code	'6'	1	01-01
Transaction Code	'22'	2	02-03
Receiving ABA	'05103670'	8	04-11
Check Digit	'6'	1	12-12
Account Number	303059	17	13-29
Payment Amount	$$$$$$$$cc	10	30-39
Identification No.	Invoice Number	15	40-54
Receiver Name	U.S. Department of Energy	22	55-76
Discretionary	Leave Blank	2	77-78
Addenda Indicator	'1' (addenda present) '0' (no addenda)	1	79-79
Trace Number	Assigned by your bank	15	80-94

ADDENDA RECORD FORMAT

Data Element Name	Contents	Size	Position
Record Type Code	'7'	1	01-01
Addenda Type Code	'05'	2	02-03
Payment Related	Contract Number	80	04-83
Sequence Number	Addenda number starting at 0001	4	84-87
Addenda Trace Number	Same as last seven numbers of detail trace number	7	88-94

INSTRUCTIONS FOR ELECTRONIC TRANSFER OF FUNDS (CTX FORMAT)

Purchasers may pay invoices using the Automated Clearing House (ACH) Network. This form has been designed as an aid for Remitters in providing complete and accurate data to their financial institutions for use in originating ACH payments. This is the Record format for CTX with the associated addenda record format.

ACH CTX FORMAT

Data Element Name	Contents	Size	Position
Record Type Code	'6'	1	01-01
Transaction Code	'22'	2	02-03
Receiving ABA	'05103670'	8	04-11
Check Digit	'6'	1	12-12
Account Number	303059	17	13-29
Payment Amount	$$$$$$$$cc	10	30-39
Identification No.	Invoice Number	15	40-54
No. Addenda Records	Number of Addenda Records attached	4	55-58
Receiver Name	U.S. Department of Energy	16	59-74
Reserved	Leave Blank	2	75-76
Discretionary	Leave Blank	2	77-78
Addenda Indicator	'1' (addenda present) '0' (no addenda)	1	79-79
Trace Number	Assigned by your bank	15	80-94

ADDENDA RECORD FORMAT

Data Element Name	Contents	Size	Position
Record Type Code	'7'	1	01-01
Addenda Type Code	'05'	2	02-03
Payment Related	Contract Number	80	04-83
Sequence Number	Addenda number starting at 0001	4	84-87
Addenda Trace Number	Same as last seven numbers of detail trace number	7	88-94

ATTACHMENT C

INSTRUCTION GUIDE FOR RETURN OF OFFER GUARANTEES BY ELECTRONIC TRANSFER OR TREASURY CHECK

Offer guarantees will be returned at the option of the Government by either check or electronic funds transfer (through the Treasury Fedline Payment System (FEDLINE) or the Automated Clearing House (ACH) network). Offerors shall designate a financial institution for receipt of electronic funds transfer payments and provide the following information:

(a) For payment through FEDLINE, the Offeror shall provide the following information:

(1) Name and address of the financial institution receiving payment.

(2) The American Bankers Association 9-digit identifying number for electronic transfers of the financing institution receiving payment if the institution has access to FEDLINE and the ACH network.

(3) Payee's account number and type of account (savings or checking) at the financial institution where funds are to be transferred.

(4) If the financial institution does not have access to FEDLINE or the ACH network, name and address of the correspondent financial institution through which the financial institution receiving payment obtains electronic transfer activity. Provide the American Bankers Association identifying number for the correspondent institution.

ATTACHMENT D

STRATEGIC PETROLEUM RESERVE
CRUDE OIL ASSAYS

SPR CRUDE OIL COMPREHENSIVE ANALYSIS

Sample ID **MLI001** **BRYAN MOUND, SWEET** **Date of Assay** **9/18/2000**

Crude

Specific Gravity, 60/60° F	0.8454	Ni, ppm	3.41	RVP, psi @ 100° F		5.28
API Gravity	35.9	V, ppm	4.12	Acid number, mg KOH/g		0.10
Sulfur, Wt. %	0.33	Fe, ppm	0.822	Mercaptan Sulfur, ppm		7.26
Nitrogen, Wt. %	0.111	Cu, ppm	<1.0	H_2S Sulfur, ppm		na
Micro Car. Res., Wt. %	2.21	Org. Cl, ppm	<1.0	Viscosity: 77° F	6.99 cSt	
Pour Point, °F	25	UOP "K"	11.96	100° F	4.666 cSt	

Fraction	Gas	1	2	3	4	5	6	Residuum	Residuum
Cut Temp.	C_2 - C_4	C5 - 175° F	175° - 250° F	250° - 375° F	375° - 530° F	530° - 650° F	650° - 1050° F	650° F+	1050° F+
Vol. %	1.9	7.0	8.2	14.1	16.8	12.5	28.8	39.6	10.8
Vol. Sum %	1.9	8.8	17.0	31.1	47.9	60.4	89.2	100.0	100.0
Wt. %	1.3	5.5	7.2	12.9	16.5	12.7	31.1	43.9	12.8
Wt. Sum %	1.3	6.8	14.0	26.9	43.4	56.1	87.2	100.0	100.0
Specific Gravity, 60/60° F		0.6747	0.7391	0.7774	0.8275	0.8604	0.9143	0.9371	0.998
API Gravity		78.2	60.0	50.5	39.5	33.0	23.3	19.5	10.4
Sulfur, Wt. %		0.0013	0.0018	0.0113	0.07	0.25	0.51	0.65	0.98
Molecular Weight		96	111	134	185	245	403		
Hydrogen, Wt. %		15.88	14.73	na				12.91	10.82
Mercaptan Sulfur, ppm		3.6	8.8	27.8	19.4				
H_2S Sulfur, ppm		< 0.1	< 0.1	< 0.1	< 0.1				
Organic Cl, ppm		na	na	na	na				
Research Octane Number*		69.9	62.4	46.7					
Motor Octane Number*		67.5	60.0	44.8					
Flash Point, ° F				77	172	246	301		
Aniline Point, ° F				123.0	143.2	163.0	194.1		
Acid Number, mg KOH/g					0.04	0.10			
Cetane Index					45.5	51.0			
Diesel Index				62.1	56.6	53.7			
Naphthalenes, Vol. %					4.83	10.24			
Smoke point, mm					19.9	15.6			
Nitrogen, Wt. %					0.0006	0.010	0.154	0.276	0.572
Viscosity, cSt 77° F					2.537				
100° F					1.990	5.691			
130° F						3.814	39.07	109.5	
180° F							14.77	32.12	2923
210° F									920.6
250° F									143.5
Freezing Point, °F					-28.1				
Cloud Point, °F						31.1	105		
Pour Point, °F						27.0	101	85	
Ni, ppm								7.66	25.8
V, ppm								9.29	31.4
Fe, ppm								6.41	21.6
Cu, ppm								na	na
Micro Car. Res., Wt. %								5.00	17.25

Compositional Analysis Report (MLI001)

	Gas	1	2	3
	IBP 59° F	59 - 175° F	175° - 250° F	250° - 375° F
Paraffins, Wt.%	99.85	77.86	52.61	41.48
Naphthenes, Wt.%	0.15	20.86	40.54	36.50
Aromatics, Wt.%	0.00	1.28	6.86	22.02
Benzene Precursor Index	0.03	11.14	5.14	0.02
Composition, Wt.%				
Ethane	0.21	-	-	-
Propane	16.33	0.00	0.00	0.00
N-Butane	54.66	1.47	0.00	0.00
I-Butane	14.43	0.08	0.00	0.00
N-Pentane	4.39	18.44	0.04	0.00
I-Pentane	9.36	12.64	0.01	0.00
Cyclopentane	0.16	4.16	0.05	0.00
N-Hexane	0.05	15.87	2.93	0.00
2-Methylpentane	0.10	10.93	0.63	0.00
3-Methylpentane	0.04	6.59	0.58	0.00
2,2-Dimethtylbutane	0.01	0.16	0.00	0.00
2,3-Dimethlybutane	0.04	3.03	0.13	0.00
Methylcyclopentane	0.02	10.50	2.98	0.00
Cyclohexane	0.01	5.16	4.99	0.01
Benzene	0.00	1.54	1.37	0.00
N-Heptane	0.00	1.18	12.64	0.13
2-Methylhexane	0.00	1.39	4.82	0.02
3-Methylhexane	0.00	1.22	5.38	0.02
2-2-Dimethylpentane	0.00	0.30	0.23	0.00
2,3-Dimethylpentane	0.00	0.85	2.85	0.01
2,4-Dimethylpentane	0.00	0.32	0.30	0.00
3,3-Dimethylpentane	0.00	0.11	0.23	0.00
2,3,3-Trimethylbutane	0.00	0.04	0.04	0.00
3-Ethylpentane	0.00	0.05	0.28	0.00
1,1-Dimethylcyclopentane	0.00	0.04	0.09	0.00
1,Cis-2-DimethylcyC5	0.00	0.07	0.82	0.01
1,Cis-3-DimethylcyC5	0.00	0.57	2.48	0.01
1-Trans-2-DimethcyC5	0.00	0.92	4.08	0.02
1-Trans-3-DimethcyC5	0.00	0.80	3.08	0.01
Ethylcyclopentane	0.00	0.11	2.18	0.04
Methylcyclohexane	0.00	1.14	17.08	0.24
Toluene (Methylbenzene)	0.00	0.12	5.94	0.31
N-Octane	0.00	0.02	3.77	1.54
I-Octane	0.00	0.14	14.16	2.10
Methyl-Ethylcyclopentane	0.00	0.04	4.22	0.63
Dimethylcyclohexane	0.00	0.00	0.65	0.97
P-Xylene	0.00	0.00	0.00	0.00
M-Xylene	0.00	0.00	0.00	0.00
O-Xylene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
N-Nonane	0.00	0.00	0.00	0.00
C9 isoparaffins	0.00	0.00	0.71	1.54

SPR CRUDE OIL COMPREHENSIVE ANALYSIS

Sample ID **MLI002 BRYAN MOUND, SOUR** **Date of Assay** **5/15/1998**

Crude

Specific Gravity, 60/60° F	0.8580	Ni, ppm	10.9	RVP, psi @ 100° F		4.03
API Gravity	33.4	V, ppm	49.3	Acid number, mg KOH/g		0.10
Sulfur, Wt. %	1.38	Fe, ppm	0.760	Mercaptan Sulfur, ppm		16.0
Nitrogen, Wt. %	0.147	Cu, ppm	<1.0	H_2S Sulfur, ppm		50-100
Micro Car. Res., Wt. %	4.37	Org. Cl, ppm	0.5	Viscosity: 77° F	8.342 cSt	
Pour Point, °F	-5	UOP "K"	11.89	100° F	5.991 cSt	

Fraction	Gas	1	2	3	4	5	6	Residuum	Residuum
Cut Temp.	C_2 - C_4	C5 - 175° F	175° - 250° F	250° - 375° F	375° - 530° F	530° - 650° F	650° - 1050° F	650° F+	1050° F+
Vol. %	1.4	6.7	7.3	15.5	15.8	9.9	28.6	43.5	14.9
Vol. Sum %	1.4	8.1	15.4	30.8	46.6	56.5	85.1	100.0	100.0
Wt. %	1.0	5.2	6.2	13.9	15.1	10.0	30.8	48.7	17.9
Wt. Sum %	1.0	6.1	12.3	26.2	41.3	51.3	82.1	100.0	100.0
Specific Gravity, 60/60° F		0.6652	0.7279	0.7716	0.8205	0.8608	0.9247	0.9616	1.033
API Gravity		81.2	62.9	51.9	41.0	32.9	21.5	15.7	5.5
Sulfur, Wt. %		0.0057	0.0074	0.0457	0.40	1.10	1.93	2.46	3.38
Molecular Weight		97	111	135	184	244	413		
Hydrogen, Wt. %		16.11	14.94	na				12.03	9.72
Mercaptan Sulfur, ppm		25.8	30.9	56.4	19.8				
H_2S Sulfur, ppm		3.3	6.4	4.0	< 0.1				
Organic Cl, ppm		0.8	0.8	0.7	1.6				
Research Octane Number*		64.6	53.6	46.6					
Motor Octane Number*		63.5	52.0	43.0					
Flash Point, ° F				79	172	246	303		
Aniline Point, ° F				125.9	146.7	160.3	180.8		
Acid Number, mg KOH/g					0.02	0.04			
Cetane Index					49.2	50.6			
Diesel Index				65.3	60.1	52.7			
Naphthalenes, Vol. %					4.06	10.40			
Smoke point, mm					20.1	15.1			
Nitrogen, Wt. %					0.0015	0.016	0.161	0.313	0.574
Viscosity, cSt 77° F					2.336				
100° F					1.874	4.970			
130° F						3.360	30.21	193.7	
180° F							11.96	50.97	27920
210° F									5708
250° F									469.6
Freezing Point, °F					-26.03				
Cloud Point, °F						26.6	97		
Pour Point, °F						22.0	87	56	
Ni, ppm								22.7	61.6
V, ppm								102	277
Fe, ppm								2.792	7.87
Cu, ppm								na	na
Micro Car. Res., Wt. %								9.03	24.41

Compositional Analysis Report (MLI002)

	Gas	1	2	3
	IBP 59° F	59 - 175° F	175° - 250° F	250° - 375° F
Paraffins, Wt.%	99.90	87.22	67.40	62.27
Naphthenes, Wt.%	0.10	11.68	25.12	13.59
Aromatics, Wt.%	0.00	1.11	7.49	24.14
Benzene Precursor Index	0.03	8.45	3.53	0.01

Composition, Wt.%

Ethane	0.17	-	-	-
Propane	12.96	0.00	0.00	0.00
N-Butane	56.18	1.24	0.00	0.00
I-Butane	12.90	0.06	0.00	0.00
N-Pentane	6.26	21.46	0.05	0.00
I-Pentane	10.91	12.04	0.01	0.00
Cyclopentane	0.11	2.30	0.03	0.00
N-Hexane	0.08	20.89	4.07	0.00
2-Methylpentane	0.14	12.82	0.78	0.00
3-Methylpentane	0.06	8.04	0.74	0.00
2,2-Dimethtylbutane	0.01	0.18	0.00	0.00
2,3-Dimethlybutane	0.03	1.77	0.08	0.00
Methylcyclopentane	0.02	6.22	1.86	0.00
Cyclohexane	0.00	2.81	2.86	0.01
Benzene	0.00	1.34	1.25	0.00
N-Heptane	0.00	1.74	19.68	0.27
2-Methylhexane	0.00	1.55	5.68	0.03
3-Methylhexane	0.00	1.36	6.35	0.04
2-2-Dimethylpentane	0.00	0.33	0.27	0.00
2,3-Dimethylpentane	0.00	0.95	3.36	0.02
2,4-Dimethylpentane	0.00	0.36	0.35	0.00
3,3-Dimethylpentane	0.00	0.13	0.27	0.00
2,3,3-Trimethylbutane	0.00	0.04	0.05	0.00
3-Ethylpentane	0.00	0.06	0.33	0.00
1,1-Dimethylcyclopentane	0.00	0.02	0.05	0.00
1,Cis-2-DimethylcyC5	0.00	0.04	0.46	0.01
1,Cis-3-DimethylcyC5	0.00	0.30	1.39	0.01
1-Trans-2-DimethcyC5	0.00	0.49	2.29	0.01
1-Trans-3-DimethcyC5	0.00	0.43	1.73	0.01
Ethylcyclopentane	0.00	0.06	1.22	0.03
Methylcyclohexane	0.00	0.64	10.14	0.19
Toluene (Methylbenzene)	0.00	0.13	6.47	0.45
N-Octane	0.00	0.04	6.56	3.58
I-Octane	0.00	0.14	15.08	3.00
Methyl-Ethylcyclopentane	0.00	0.04	4.46	0.89
Dimethylcyclohexane	0.00	0.00	0.57	1.12
P-Xylene	0.00	0.00	0.00	0.00
M-Xylene	0.00	0.00	0.00	0.00
O-Xylene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
N-Nonane	0.00	0.00	0.00	0.00
C9 isoparaffins	0.00	0.00	1.23	3.56

SPR CRUDE OIL COMPREHENSIVE ANALYSIS

Sample ID **MLI004** **WEST HACKBERRY, SWEET** **Date of Assay** **5/15/1998**

Crude

Specific Gravity, 60/60° F	0.8397	Ni, ppm	2.61	RVP, psi @ 100° F		5.27
API Gravity	37.0	V, ppm	4.07	Acid number, mg KOH/g		0.09
Sulfur, Wt. %	0.29	Fe, ppm	1.50	Mercaptan Sulfur, ppm		3.8
Nitrogen, Wt. %	0.102	Cu, ppm	<1.0	H_2S Sulfur, ppm		na
Micro Car. Res., Wt. %	1.89	Org. Cl, ppm	<1.0	Viscosity: 77° F	5.714 cSt	
Pour Point, °F	28	UOP "K"	11.95	100° F	3.913 cSt	

Fraction	Gas	1	2	3	4	5	6	Residuum	Residuum
Cut Temp.	C_2 - C_4	C5 - 175° F	175° - 250° F	250° - 375° F	375° - 530° F	530° - 650° F	650° - 1050° F	650° F+	1050° F+
Vol. %	2.5	8.8	8.7	13.9	17.6	10.4	28.2	38.0	9.8
Vol. Sum %	2.5	11.4	20.1	34.0	51.6	62.1	90.3	100.0	100.0
Wt. %	1.7	7.1	7.7	12.9	17.4	10.7	30.7	42.3	11.6
Wt. Sum %	1.7	8.8	16.5	29.4	46.9	57.5	88.3	99.8	99.8
Specific Gravity, 60/60° F		0.6710	0.7422	0.7794	0.8306	0.8593	0.9148	0.9351	0.995
API Gravity		79.4	59.2	50.1	38.9	33.2	23.2	19.8	10.8
Sulfur, Wt. %		0.0012	0.0010	0.0064	0.07	0.20	0.47	0.60	0.95
Molecular Weight		96	111	133	184	244	415		
Hydrogen, Wt. %		15.91	14.55	na				12.99	10.91
Mercaptan Sulfur, ppm		2.5	5.4	10.9	8.9				
H_2S Sulfur, ppm		0.0	0.0	0.1	0.0				
Organic Cl, ppm		na	na	na	na				
Research Octane Number*		69.2	62.1	52.0					
Motor Octane Number*		67.3	59.5	48.6					
Flash Point, ° F				77	173	245	302		
Aniline Point, ° F				120.5	144.2	163.4	192.5		
Acid Number, mg KOH/g					0.04	0.11			
Cetane Index					45.5	51.1			
Diesel Index				60.3	56.0	54.2			
Naphthalenes, Vol. %					5.29	9.73			
Smoke point, mm					19.0	15.4			
Nitrogen, Wt. %					0.0007	0.009	0.166	0.271	0.551
Viscosity, cSt 77° F					2.693				
100° F					2.108	5.357			
130° F						3.607	36.99	92.87	
180° F							14.22	27.84	2527
210° F									834.2
250° F									139.5
Freezing Point, °F					-23.9				
Cloud Point, °F						29.3	106		
Pour Point, °F						22.5	102	92	
Ni, ppm								6.40	23.3
V, ppm								9.73	35.4
Fe, ppm								6.48	22.9
Cu, ppm								na	na
Micro Car. Res., Wt. %								4.52	16.20

Compositional Analysis Report (MLI004)

	Gas	1	2	3
	IBP	59 -	175° -	250° -
	59° F	175° F	250° F	375° F
Paraffins, Wt.%	99.88	80.11	50.92	28.89
Naphthenes, Wt.%	0.11	18.14	39.93	45.85
Aromatics, Wt.%	0.00	1.75	9.15	25.26
Benzene Precursor Index	0.03	10.61	6.18	0.02

Composition, Wt.%

Ethane	0.17	-	-	-
Propane	14.12	0.00	0.00	0.00
N-Butane	57.43	1.66	0.00	0.00
I-Butane	13.41	0.08	0.00	0.00
N-Pentane	4.94	22.27	0.06	0.00
I-Pentane	9.50	13.76	0.01	0.00
Cyclopentane	0.12	3.39	0.05	0.00
N-Hexane	0.05	15.59	3.33	0.01
2-Methylpentane	0.09	11.22	0.75	0.00
3-Methylpentane	0.04	6.73	0.68	0.00
2,2-Dimethtylbutane	0.01	0.20	0.00	0.00
2,3-Dimethlybutane	0.01	1.12	0.05	0.00
Methylcyclopentane	0.02	9.18	3.02	0.01
Cyclohexane	0.01	5.18	5.79	0.02
Benzene	0.00	2.16	2.22	0.01
N-Heptane	0.00	1.10	13.68	0.34
2-Methylhexane	0.00	1.06	4.27	0.04
3-Methylhexane	0.00	0.93	4.77	0.05
2-2-Dimethylpentane	0.00	0.23	0.21	0.00
2,3-Dimethylpentane	0.00	0.65	2.52	0.02
2,4-Dimethylpentane	0.00	0.24	0.26	0.00
3,3-Dimethylpentane	0.00	0.09	0.20	0.00
2,3,3-Trimethylbutane	0.00	0.03	0.03	0.00
3-Ethylpentane	0.00	0.04	0.25	0.00
1,1-Dimethylcyclopentane	0.00	0.03	0.08	0.00
1,Cis-2-DimethylcyC5	0.00	0.05	0.68	0.02
1,Cis-3-DimethylcyC5	0.00	0.40	2.04	0.02
1-Trans-2-DimethcyC5	0.00	0.65	3.35	0.04
1-Trans-3-DimethcyC5	0.00	0.57	2.53	0.02
Ethylcyclopentane	0.00	0.07	1.79	0.09
Methylcyclohexane	0.00	1.03	17.81	0.61
Toluene (Methylbenzene)	0.00	0.13	7.60	0.96
N-Octane	0.00	0.02	4.36	4.35
I-Octane	0.00	0.09	11.37	4.13
Methyl-Ethylcyclopentane	0.00	0.04	4.47	1.62
Dimethylcyclohexane	0.00	0.00	0.63	2.27
P-Xylene	0.00	0.00	0.00	0.00
M-Xylene	0.00	0.00	0.00	0.00
O-Xylene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
N-Nonane	0.00	0.00	0.00	0.00
C9 isoparaffins	0.00	0.00	0.94	4.97

SPR CRUDE OIL COMPREHENSIVE ANALYSIS

Sample ID **MLI005 WEST HACKBERRY, SOUR** **Date of Assay** **9/18/2000**

Crude

Specific Gravity, 60/60° F	0.8575	Ni, ppm	7.74	RVP, psi @ 100° F			4.48
API Gravity	33.5	V, ppm	33.6	Acid number, mg KOH/g			0.11
Sulfur, Wt. %	1.41	Fe, ppm	0.325	Mercaptan Sulfur, ppm			26.2
Nitrogen, Wt. %	0.137	Cu, ppm	<1.0	H_2S Sulfur, ppm			na
Micro Car. Res., Wt. %	4.11 ppm	Org. Cl,	<1.0	Viscosity: 77° F	8.278	cSt	
Pour Point, °F	-5	UOP "K"	11.86	100° F	5.632	cSt	

Fraction	Gas	1	2	3	4	5	6	Residuum	Residuum
Cut Temp.	C_2 - C_4	C5 - 175° F	175° - 250° F	250° - 375° F	375° - 530° F	530° - 650° F	650° - 1050° F	650° F+	1050° F+
Vol. %	1.4	6.2	7.0	16.4	15.8	10.2	29.1	43.1	14.0
Vol. Sum %	1.4	7.6	14.6	31.0	46.7	56.9	86.0	100.0	100.0
Wt. %	0.9	4.8	5.9	14.8	15.1	10.2	31.4	48.2	16.8
Wt. Sum %	0.9	5.7	11.7	26.4	41.5	51.7	83.1	99.9	99.9
Specific Gravity, 60/60° F		0.6654	0.7281	0.7717	0.8194	0.8610	0.9263	0.9583	1.025
API Gravity		81.2	62.8	51.9	41.2	32.8	21.3	16.2	6.6
Sulfur, Wt. %		0.0061	0.0119	0.0523	0.39	1.09	2.03	2.55	3.53
Molecular Weight		97	111	135	184	245	411		
Hydrogen, Wt. %		16.11	14.96	na				12.15	9.97
Mercaptan Sulfur, ppm		28.7	56.6	110.6	45.2				
H_2S Sulfur, ppm		4.8	9.2	7.9	0.5				
Organic Cl, ppm		<1.0	<1.0	<1.0	<1.0				
Research Octane Number*		64.6	53.6	34.4					
Motor Octane Number*		63.4	51.9	34.2					
Flash Point, ° F				77	170	246	302		
Aniline Point, ° F				124.3	144.9	159.1	180.8		
Acid Number, mg KOH/g					0.02	0.05			
Cetane Index					49.2	50.6			
Diesel Index				64.5	59.7	52.3			
Naphthalenes, Vol. %					3.83	10.82			
Smoke point, mm					20.2	14.8			
Nitrogen, Wt. %					0.0009	0.013	0.173	0.295	0.525
Viscosity, cSt 77° F					2.372				
100° F					1.900	4.934			
130° F						3.365	36.47	173.9	
180° F							14.07	46.73	12560
210° F									3128
250° F									340.4
Freezing Point, °F					-25.7				
Cloud Point, °F						24.1	99		
Pour Point, °F						20.7	95	47	
Ni, ppm								16.5	47.1
V, ppm								69.3	198
Fe, ppm								2.82	8.20
Cu, ppm								na	na
Micro Car. Res., Wt. %								8.50	23.44

Compositional Analysis Report (MLI005)

	Gas	1	2	3
	IBP	59 -	175° -	250° -
	59° F	175° F	250° F	375° F
Paraffins, Wt.%	99.90	87.18	66.75	44.59
Naphthenes, Wt.%	0.10	11.74	26.30	37.35
Aromatics, Wt.%	0.00	1.08	6.94	18.05
Benzene Precursor Index	0.03	8.47	3.48	0.01
Composition, Wt.%				
Ethane	0.22	-	-	-
Propane	13.03	0.00	0.00	0.00
N-Butane	56.08	1.24	0.00	0.00
I-Butane	12.98	0.06	0.00	0.00
N-Pentane	6.21	21.31	0.05	0.00
I-Pentane	10.78	11.90	0.01	0.00
Cyclopentane	0.10	2.21	0.03	0.00
N-Hexane	0.08	20.77	3.88	0.00
2-Methylpentane	0.14	12.60	0.73	0.00
3-Methylpentane	0.06	8.55	0.75	0.00
2,2-Dimethtylbutane	0.01	0.23	0.00	0.00
2,3-Dimethlybutane	0.02	1.69	0.07	0.00
Methylcyclopentane	0.02	6.14	1.76	0.00
Cyclohexane	0.00	2.90	2.83	0.00
Benzene	0.00	1.31	1.18	0.00
N-Heptane	0.00	1.78	19.29	0.19
2-Methylhexane	0.00	1.57	5.52	0.02
3-Methylhexane	0.00	1.38	6.17	0.03
2-2-Dimethylpentane	0.00	0.33	0.27	0.00
2,3-Dimethylpentane	0.00	0.96	3.26	0.01
2,4-Dimethylpentane	0.00	0.36	0.34	0.00
3,3-Dimethylpentane	0.00	0.13	0.26	0.00
2,3,3-Trimethylbutane	0.00	0.05	0.05	0.00
3-Ethylpentane	0.00	0.06	0.32	0.00
1,1-Dimethylcyclopentane	0.00	0.02	0.06	0.00
1,Cis-2-DimethylcyC5	0.00	0.04	0.50	0.01
1,Cis-3-DimethylcyC5	0.00	0.35	1.52	0.01
1-Trans-2-DimethcyC5	0.00	0.56	2.51	0.01
1-Trans-3-DimethcyC5	0.00	0.49	1.89	0.01
Ethylcyclopentane	0.00	0.06	1.34	0.03
Methylcyclohexane	0.00	0.59	8.87	0.12
Toluene (Methylbenzene)	0.00	0.12	5.73	0.29
N-Octane	0.00	0.04	6.69	2.69
I-Octane	0.00	0.14	14.47	2.12
Methyl-Ethylcyclopentane	0.00	0.06	6.12	0.90
Dimethylcyclohexane	0.00	0.00	0.67	0.98
P-Xylene	0.00	0.00	0.39	0.91
M-Xylene	0.00	0.00	0.00	0.00
O-Xylene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.42	0.73
N-Nonane	0.00	0.00	0.00	0.00
C9 isoparaffins	0.00	0.01	1.90	4.05

SPR CRUDE OIL COMPREHENSIVE ANALYSIS

Sample ID **BIG HILL SWEET** **Date of Assay** **9/18/2000**

Crude

Specific Gravity, 60/60° F	0.8451	Ni, ppm	12.1	RVP, psi @ 100° F		5.22
API Gravity	35.9	V, ppm	16.3	Acid number, mg KOH/g		0.22
Sulfur, Wt. %	0.48	Fe, ppm	4.24	Mercaptan Sulfur, ppm		10.1
Nitrogen, Wt. %	0.196			H_2S Sulfur, ppm		na
Micro Car. Res., Wt. %	2.49	Org. Cl, ppm	0.6	Viscosity: 77° F	5.871 cSt	
Pour Point, °F	15	UOP "K"	11.88	100° F	4.177 cSt	

Fraction	Gas	1	2	3	4	5	6	Residuum	Residuum
Cut Temp.	C_2 - C_4	C5 - 175° F	175° - 250° F	250° - 375° F	375° - 530° F	530° - 650° F	650° - 1050° F	650° F+	1050° F+
Vol. %	2.7	8.2	9.8	15.4	15.5	10.8	27.8	37.6	9.8
Vol. Sum %	2.7	10.9	20.7	36.1	51.5	62.4	90.2	100.0	100.0
Wt. %	1.8	6.6	8.6	14.3	15.2	11.1	30.3	42.2	11.8
Wt. Sum %	1.8	8.4	17.0	31.3	46.5	57.5	87.9	99.7	99.7
Specific Gravity, 60/60° F		0.6764	0.7450	0.7815	0.8305	0.8623	0.9226	0.9477	1.019
API Gravity		77.7	58.4	49.6	38.9	32.6	21.9	17.8	7.4
Sulfur, Wt. %		0.0020	0.0033	0.0201	0.14	0.39	0.80	0.98	1.44
Molecular Weight		96	111	133	183	245	407		
Hydrogen, Wt. %		15.77	14.51	na				12.53	10.14
Mercaptan Sulfur, ppm		6.2	20.2	27.1	22.1				
H_2S Sulfur, ppm		< 0.1	< 0.1	< 0.1	< 0.1				
Organic Cl, ppm		7.3	1.0	<0.1	<0.1				
Research Octane Number*		70.0	64.7	50.4					
Motor Octane Number*		67.6	61.8	48.4					
Flash Point, ° F				77	170	246	301		
Aniline Point, ° F				122.8	144.0	162.2	186.0		
Acid Number, mg KOH/g					0.08	0.24			
Cetane Index					44.6	50.3			
Diesel Index				60.9	56.0	52.9			
Naphthalenes, Vol. %					4.60	9.61			
Smoke point, mm					18.1	15.0			
Nitrogen, Wt. %					0.0059	0.034	0.307	0.505	1.012
Viscosity, cSt 77° F					2.65				
100° F					2.093	5.416			
130° F						3.646	52.62	170.8	
180° F							18.59	44.00	25410
210° F									5419
250° F									472.6
Freezing Point, °F					-26.0				
Cloud Point, °F						23.5	105		
Pour Point, °F						22.3	101	92	
Ni, ppm								30.7	107
V, ppm								38.9	134
Fe, ppm								14.8	49.5
Micro Car. Res., Wt. %								5.88	20.84

na = not available

* = calculated from gas chromatographic data

Compositional Analysis - Big Hill Sweet

	Gas IBP 59° F	1 59 - 175° F	2 175° - 250° F	3 250° - 375° F
Paraffins, Wt.%	99.88	75.51	47.87	23.31
Naphthenes, Wt.%	0.12	22.42	43.14	52.65
Aromatics, Wt.%	0.00	2.07	8.99	24.04
Benzene Precursor Index	0.02	11.84	5.65	0.02

Composition, Wt.%

Ethane	0.28	-	-	-
Propane	18.90	0.00	0.00	0.00
N-Butane	56.25	1.82	0.00	0.00
I-Butane	12.30	0.08	0.00	0.00
N-Pentane	4.16	20.94	0.04	0.00
I-Pentane	7.71	12.47	0.01	0.00
Cyclopentane	0.12	3.82	0.05	0.00
N-Hexane	0.04	15.21	2.72	0.01
2-Methylpentane	0.08	11.01	0.61	0.00
3-Methylpentane	0.02	4.48	0.38	0.00
2,2-Dimethtylbutane	0.00	0.16	0.00	0.00
2,3-Dimethlybutane	0.01	1.09	0.04	0.00
Methylcyclopentane	0.02	12.03	3.31	0.01
Cyclohexane	0.00	5.27	4.93	0.02
Benzene	0.00	2.55	2.19	0.01
N-Heptane	0.00	1.16	12.05	0.30
2-Methylhexane	0.00	1.14	3.83	0.03
3-Methylhexane	0.00	1.00	4.28	0.05
2-2-Dimethylpentane	0.00	0.24	0.18	0.00
2,3-Dimethylpentane	0.00	0.70	2.26	0.02
2,4-Dimethylpentane	0.00	0.26	0.24	0.00
3,3-Dimethylpentane	0.00	0.09	0.18	0.00
2,3,3-Trimethylbutane	0.00	0.03	0.03	0.00
3-Ethylpentane	0.00	0.04	0.22	0.00
1,1-Dimethylcyclopentane	0.00	0.04	0.10	0.00
1,Cis-2-DimethylcyC5	0.00	0.08	0.92	0.03
1,Cis-3-DimethylcyC5	0.00	0.66	2.78	0.03
1-Trans-2-DimethcyC5	0.00	1.06	4.58	0.05
1-Trans-3-DimethcyC5	0.00	0.93	3.45	0.03
Ethylcyclopentane	0.00	0.12	2.44	0.12
Methylcyclohexane	0.00	1.11	16.07	0.55
Toluene (Methylbenzene)	0.00	0.16	7.47	0.94
N-Octane	0.00	0.02	3.60	3.59
I-Octane	0.00	0.13	12.94	4.70
Methyl-Ethylcyclopentane	0.00	0.06	6.43	2.34
Dimethylcyclohexane	0.00	0.00	0.50	1.83
P-Xylene	0.00	0.00	0.00	0.00
M-Xylene	0.00	0.00	0.00	0.00
O-Xylene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
N-Nonane	0.00	0.00	0.00	0.00
C9 isoparaffins	0.00	0.00	0.95	5.07

SPR CRUDE OIL COMPREHENSIVE ANALYSIS

Sample ID **MLI010a BIG HILL, SOUR** **Date of Assay** **5/29/1998**

Crude

Specific Gravity, 60/60° F	0.8725	Ni, ppm	11.9	RVP, psi @ 100° F		3.92
API Gravity	30.7	V, ppm	38.4	Acid number, mg KOH/g		0.11
Sulfur, Wt. %	1.41	Fe, ppm	2.14	Mercaptan Sulfur, ppm		10.0
Nitrogen, Wt. %	0.154	Cu, ppm	na	H_2S Sulfur, ppm		na
Micro Car. Res., Wt. %	4.60	Org. Cl, ppm	0.4	Viscosity: 77° F	12.46 cSt	
Pour Point, °F	11	UOP "K"	11.82	100° F	8.200 cSt	

Fraction	Gas	1	2	3	4	5	6	Residuum	Residuum
Cut Temp.	C_2 - C_4	C5 - 175° F	175° - 250° F	250° - 375° F	375° - 530° F	530° - 650° F	650° - 1050° F	650° F+	1050° F+
Vol. %	1.1	5.3	6.2	14.7	14.8	11.6	30.9	46.3	15.4
Vol. Sum %	1.1	6.4	12.5	27.2	42.0	53.7	84.6	100.0	100.0
Wt. %	0.7	4.1	5.2	13.2	14.0	11.6	33.1	51.3	18.3
Wt. Sum %	0.7	4.8	9.9	23.1	37.1	48.7	81.7	100.0	100.0
Specific Gravity, 60/60° F		0.6694	0.7345	0.7803	0.8249	0.8670	0.9340	0.9664	1.031
API Gravity		79.9	61.1	49.8	40.0	31.7	20.0	14.9	5.7
Sulfur, Wt. %		0.0047	0.0080	0.0631	0.42	1.00	1.89	2.40	3.32
Molecular Weight		97	111	134	184	244	402		
Hydrogen, Wt. %		15.98	14.71	na				11.86	9.76
Mercaptan Sulfur, ppm		11.8	31.5	57.5	19.4				
H_2S Sulfur, ppm		1.6	3.5	1.9	0.0				
Organic Cl, ppm		2.7	0.9	1.8	1.8				
Research Octane Number*		65.9	55.8	36.8					
Motor Octane Number*		64.5	53.8	36.5					
Flash Point, ° F				77	171	246	301		
Aniline Point, ° F				125.7	142.6	156.0	178.6		
Acid Number, mg KOH/g					0.03	0.07			
Cetane Index					47.2	48.8			
Diesel Index				62.7	57.1	49.5			
Naphthalenes, Vol. %					4.27	11.18			
Smoke point, mm					19.2	13.7			
Nitrogen, Wt. %					0.0013	0.010	0.179	0.310	0.548
Viscosity, cSt 77° F					2.416				
100° F					1.913	5.066			
130° F						3.451	48.00	284.6	
180° F							17.32	67.71	127800
210° F									7125
250° F									194.5
Freezing Point, °F					-25.5				
Cloud Point, °F						24.3	100		
Pour Point, °F						20.0	96	43	
Ni, ppm								23.3	66.1
V, ppm								73.0	206
Fe, ppm								6.73	19.0
Cu, ppm								na	na
Micro Car. Res., Wt. %								8.88	24.29

Compositional Analysis Report (MLI010a)

	Gas	1	2	3
	IBP 59° F	59 - 175° F	175° - 250° F	250° - 375° F
Paraffins, Wt.%	99.88	84.32	61.18	26.03
Naphthenes, Wt.%	0.12	13.99	29.58	34.13
Aromatics, Wt.%	0.00	1.69	9.24	39.83
Benzene Precursor Index	0.04	9.52	4.12	0.01
Composition, Wt.%				
Ethane	0.30	-	-	-
Propane	12.41	0.00	0.00	0.00
N-Butane	55.92	1.14	0.00	0.00
I-Butane	12.79	0.06	0.00	0.00
N-Pentane	6.50	20.63	0.04	0.00
I-Pentane	11.19	11.43	0.01	0.00
Cyclopentane	0.13	2.55	0.03	0.00
N-Hexane	0.08	19.35	3.57	0.00
2-Methylpentane	0.14	12.23	0.70	0.00
3-Methylpentane	0.07	8.39	0.73	0.00
2,2-Dimethtylbutane	0.01	0.26	0.00	0.00
2,3-Dimethlybutane	0.03	1.77	0.07	0.00
Methylcyclopentane	0.02	7.45	2.11	0.00
Cyclohexane	0.01	3.49	3.37	0.00
Benzene	0.00	2.06	1.83	0.00
N-Heptane	0.00	1.71	18.36	0.04
2-Methylhexane	0.00	1.54	5.35	0.00
3-Methylhexane	0.00	1.35	5.97	0.01
2-2-Dimethylpentane	0.00	0.33	0.26	0.00
2,3-Dimethylpentane	0.00	0.95	3.16	0.00
2,4-Dimethylpentane	0.00	0.35	0.33	0.00
3,3-Dimethylpentane	0.00	0.13	0.25	0.00
2,3,3-Trimethylbutane	0.00	0.04	0.04	0.00
3-Ethylpentane	0.00	0.06	0.31	0.00
1,1-Dimethylcyclopentane	0.00	0.02	0.06	0.00
1,Cis-2-DimethylcyC5	0.00	0.04	0.50	0.00
1,Cis-3-DimethylcyC5	0.00	0.35	1.51	0.00
1-Trans-2-DimethcyC5	0.00	0.56	2.48	0.00
1-Trans-3-DimethcyC5	0.00	0.49	1.87	0.00
Ethylcyclopentane	0.00	0.06	1.32	0.01
Methylcyclohexane	0.00	0.84	12.48	0.04
Toluene (Methylbenzene)	0.00	0.16	7.88	0.09
N-Octane	0.00	0.04	6.26	0.55
I-Octane	0.00	0.12	11.97	0.39
Methyl-Ethylcyclopentane	0.00	0.06	5.88	0.19
Dimethylcyclohexane	0.00	0.00	0.05	0.02
P-Xylene	0.00	0.00	0.00	0.00
M-Xylene	0.00	0.00	0.00	0.00
O-Xylene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
N-Nonane	0.00	0.00	0.00	0.00
C9 isoparaffins	0.00	0.00	0.92	0.43