

# Capline System

## Approved Assay List

### Crude Oil Properties And Quality Indicators

### Third Quarter 2002

Report Creation Date: 10/24/2002

## Approved Assay List

### Group Swt - LMtIs

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)				TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)	
										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch	Whole Naphtha	Naphtha				
82337	BONNY LIGHT		Nigeria	8/12/2002	32.9	3.8	0.17	32.0	1.1	60.2	46.0	41.2	<1	1.2	3.8	6.4	39.0	0.26	15	<1.0	<1.0
82325	BRASS RIVER		Nigeria	7/11/2001	40.8	6.3	0.20	<-27.4	0.7	38.1	35.6	34.1	<1	1.8	19.0	1.4	6.0	0.23	15	<1.0	1.1
82288	BRENT		U.K.	1/6/2001	39.5	6.3	0.32	10.4	1.6	47.0	42.4	36.7	<1	4.9	43.0	0.9	8.3	0.05	21	<1.0	<1.0
82345	CABINDA	*	Angola	6/25/2002	32.3	3.1	0.14	75.2	3.3			71.3	<1	1.8	5.6	16.0	56.0	0.16	13	<1.0	<1.0
82921	COCODRIE CONDENSATE		USA	7/27/2001	48.8	6.5	0.12	<-27.4	0.2	32.5			<1	0.6		0.5		0.16	93	<1.0	<1.0
82419	CUSIANA	*	Columbia	9/19/2002	42.6	8.9	0.15	32.0	0.7	39.7	34.6	32.9	<1	2.6	27.0	0.8	7.0	0.13	73	<1.0	<1.0
82602	DJENO	*	Congo	7/5/1997	27.0	2.5	0.47	32.0	5.3	695.1	284.3	173.9	<1	6.7	22.0	12.3	62.0	0.82	10	<1.0	2.4
82575	DRAUGEN		Norway	4/26/2002	39.1	7.3	0.16	<-27.4	0.7	42.1	39.2	35.5	<1	1.1	16.0	1.0	13.0	0.18	29	<1.0	<1.0
82307	EKOFISK		Norway	6/6/2002	37.3	3.9	0.23	26.6	0.9		46.0	40.8	<1	1.4	9.7	2.2	16.0	0.10	4	<1.0	<1.0
82338	ESCRAVOS		Nigeria	7/21/2001	36.4	5.2	0.18	42.8	1.3	68.0	44.1	39.1	<1	1.4	13.0	3.6	33.0	0.16	6	<1.0	<1.0
82424	FOINAVEN	*	U.K.	6/12/2000	26.6	0.6	0.40	42.8	2.0	478.5	188.6	110.6	<1	4.6	18.8	2.7	10.3	0.16	8	<1.0	2.0
82331	FORCADOS		Nigeria	8/8/2002	30.1	2.5	0.24	-0.4	1.3	69.1	57.3	46.1	<1	3.6	14.0	8.7	33.0	0.39	30	<1.0	<1.0
82270	GULLFAKS		Norway	7/23/2001	36.9	4.4	0.30	5.0	1.3	48.8	44.5	38.6	<1	2.8	27.0	1.5	14.0	0.08	10	<1.0	<1.0
82720	HEAVY LOUISIANA SWEET		USA	9/17/2002	32.5	2.3	0.36	<-27.4	1.9	72.9	55.6	48.9	<1	2.1	11.0	3.2	15.0	0.93	129	<1.0	<1.0
82773	JAY COND/LT MS SR BLEND (90/10)		USA	2/21/2001	49.0	6.2	0.45	<-27.4	0.7	32.2	31.2	30.6	<1	1.2	22.0	0.3	4.1	0.25	39	<1.0	<1.0
82580	KITINA	*	Congo	9/21/2002	36.4	4.2	0.11	59.0	2.3		56.8	48.5	<1	1.0	4.7	9.1	38.0	0.10	4	<1.0	<1.0
82722	LIGHT LOUISIANA SWEET		USA	8/12/2002	37.6	3.7	0.34	-22.0	1.1	46.6	42.8	38.7	<1	1.3	6.7	1.0	7.6	0.37	15	<1.0	2.2
82723	LOUISIANA MISSISSIPPI SWEET	*	USA	2/27/2002	41.8	4.5	0.64	<-27.4	1.7	43.5	38.4	34.4	<1	1.8	15.0	1.2	8.0	0.09	88	1.0	2.8
82161	NAPHTHA - KOCH		USA	8/3/2002	57.8	3.1	0.11	<-27.4	0.2	<32.0	<32.0	<32.0	<1	1.2		0.4		0.11	10	<1.0	<1.0
82255	NEMBA		Angola	6/27/2000	38.6	6.2	0.19	-11.2	1.4	45.3	42.2	38.7	<1	2.3	18.0	2.0	15.0	0.07	106	<1.0	<1.0
82135	N'KOSSA	*	Congo	3/23/2000	47.5	8.8	0.12	<-27.4	0.2	36.1	34.2	33.7	<1	1.5	21.0	0.7	8.7	0.04	8	<1.0	<1.0
82430	NORNE	*	Norway	3/18/2002	32.4	1.5	0.17	21.2	0.8		65.4	48.5	<1	0.7	4.8	0.9	3.8	0.11	134	<1.0	<1.0
82271	OSEBERG		Norway	6/8/1999	36.8	5.0	0.25	10.4	1.9	49.2	41.5	31.0	<1	1.3	8.6	1.1	6.9	0.14	17	<1.0	<1.0
82403	OSO CONDENSATE	*	Nigeria	9/16/2002	45.7	8.9	0.06	64.4	0.3	38.2	32.6	<32.0	<1	<0.1		0.7		0.11	10	<1.0	<1.0

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										@60 F	@80 F	@100 F		Vanadium	Nickel			Whole Naphtha			
										Whole	Pitch	Whole		Pitch							
82339	QUA IBOE	*	Nigeria	4/15/2002	36.6	4.3	0.16	42.8	1.1	41.6	36.7	<1	1.2	15.6	4.2	61.0	0.28	4	<1.0	<1.0	
82298	SAHARAN BLEND		Middle East	11/18/2001	44.4	6.9	0.12	<-27.4	0.9	36.9	34.6	21.9	<1	0.6	8.9	0.4	6.7	0.05	13	<1.0	<1.0
82441	SCHIEHALLION	*	Scotland	2/12/2001	26.5	0.9	0.48	26.6	2.6	238.7	140.5	88.7	<1	6.3	33.0	3.8	18.0	0.30	3	<1.0	1.7
82402	SOYO BLEND		Angola	11/15/2001	37.0	4.0	0.26		1.7	54.8	46.9	40.5	<1	6.6	69.0	2.2	18.0	0.15	30	<1.0	<1.0
82421	TROLL EXPORT	*	Norway	8/23/2002	27.4	1.7	0.27	<-27.4	1.7	123.2	84.8	64.1	<1	1.4	10.0	1.0	7.7	1.20	15	<1.0	<1.0
82573	WILLIAMS SUGARLAND BLEND		USA	7/14/2001	40.9	6.4	0.20	37.4	0.7	38.5	36.4	34.3	<1	1.2	22.0	0.8	19.0	0.19	39	<1.0	1.1
82576	ZUATA SWEET		Venezuela	8/13/2002	32.0	3.4	0.26	<-27.4	0.1	53.9	46.5	41.0	<1	0.7	37.0	0.4	21.0	0.10	8	<1.0	1.9

### Group Int

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)			
										@60 F	@80 F	@100 F		Vanadium	Nickel			Whole Naphtha			
										Whole	Pitch	Whole		Pitch							
82743	BONITO SOUR	*	USA	8/12/2002	37.3	5.4	0.85	<-27.4	1.7	49.6	44.7	40.0	<1	6.4	34.0	2.4	14.0	0.47	>300	<1.0	1.0
82725	EUGENE ISLAND SOUR		USA	8/9/2002	36.2	5.0	0.88	-22.0	2.0	54.5	46.6	41.1	<1	10.0	47.0	4.2	20.0	0.61	60	<1.0	<1.0
82385	OLMECA		Mexico	3/26/2001	38.6	5.3	0.86	<-27.4	2.0	43.3	39.6	36.8	7	6.3	72.0	2.5	23.0	0.26	14	3.2	<1.0
82251	SANTA BARBARA		Venezuela	11/27/2000	38.1	5.0	0.52	<-27.4	0.6	43.1	38.8	36.4	2	3.1	30.0	0.9	8.5	0.14	6	<1.0	<1.0

### Group Sr

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)			
										@60 F	@80 F	@100 F		Vanadium	Nickel			Whole Naphtha			
										Whole	Pitch	Whole		Pitch							
82375	ARABIAN EXTRA LIGHT (BERRI)		Saudi Arabi	2/15/2002	38.1	5.5	1.20	-27.4	2.3	50.0	43.4	40.1	<1	4.9	31.0	1.8	11.0	0.24	17	<1.0	3.0

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										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			Whole Naphtha	Whole Naphtha		
82376	ARABIAN LIGHT	*	Saudi Arabi	2/12/2002	33.2	7.6	1.85	-27.4	4.3	67.1	53.0	46.5	<1	16.0	96.0	6.6	29.0	0.14	19	<1.0	<1.0
82671	BASRAH LIGHT/MESA 30 BLEND (35/65)		Iraq/USA	2/8/2001	30.5	3.5	1.63	<-27.4	5.0	92.8	75.5	54.2	<1	39.0	181.0	9.6	43.0	0.09	4	<1.0	<1.0
82521	EAST MS MIX	*	USA	2/26/2002	32.3	2.8	1.99	5.0	6.6	93.7	65.7	53.3	23	8.4	36.0	5.5	24.0	0.11	56	<1.0	<1.0
82374	FURRIAL		Venezuela	3/19/2002	30.0	2.8	1.06	<-27.4	4.3	93.5	69.0	53.6	<1	38.0	179.0	8.2	35.0	0.09	3	<1.0	<1.0
82745	MARS BLEND		USA	8/12/2002	31.2	5.6	1.83	<-27.4	4.6	93.5	67.3	55.8	<1	38.0	273.0	15.0	112.0	0.52	294	<1.0	<1.0
82428	MARS/MESA BLEND (40/60)		Venezuela/	9/8/2000	30.1	3.1	1.65	-22.0	5.1	100.0	70.9	57.6	<1	48.0	156.0	14.0	49.0	0.27	85	<1.0	<1.0
82369	MESA 30		USA	9/8/2002	30.1	2.9	1.06	<-27.4	4.1	90.1	66.6	56.8	<1	29.0	216.0	5.5	48.0	0.06	6	<1.0	<1.0
82388	ORIENTE		Ecuador	1/5/2001	24.1	2.8	1.51	5.0	9.3	652.6	356.4	201.0	<1	167.0	587.0	66.0	240.0	0.13	61	<1.0	<1.0
82749	POSEIDON		USA	8/11/2002	32.8	4.2	1.44	<-27.4	3.2	75.7	61.1	50.3	<1	23.0	120.0	8.9	47.0	0.90	155	<1.0	1.3
82370	URALS		C.I.S. Europ	5/23/2002	32.6	4.6	1.09	-11.2	3.1	88.2	61.4	52.1	<1	42.0	202.0	13.0	63.0	0.66	7	<1.0	1.4
82237	VASCONIA	*	Columbia	2/9/2002	24.5	1.9	1.01	37.4	6.0	440.8	229.5	130.6	<1	144.0	349.0	67.0	171.0	0.78	6	<1.0	<1.0

### Group HSr

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)			
										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			Whole Naphtha	Whole Naphtha		
82378	ARABIAN HEAVY		Saudi Arabi	5/19/2001	27.7	4.3	2.87	<-27.4	7.8	226.2	145.8	99.6	<1	49.0	181.0	15.0	59.0	<0.10	6	<1.0	<1.0
82377	ARABIAN MEDIUM	*	Saudi Arabi	2/12/2002	30.9	4.2	2.23	-11.2	5.7	96.1	62.2	58.0	<1	29.0	102.0	11.0	39.0	0.35	33	1.1	5.1
82383	BASRAH LIGHT		Iraq	7/13/2001	31.8	4.3	2.50	<-27.4	5.6	87.3	67.4	56.5	<1	29.0	150.0	8.9	46.0	0.02	11	<1.0	3.2
82384	KIRKUK		Iraq	1/30/2002	34.8	5.1	2.01	<-27.4	4.0	57.1	48.4	43.0	<1	46.0	266.0	19.0	118.0	0.20	6	<1.0	<1.0
82380	KUWAIT		Kuwait	4/15/2002	30.4	5.1	2.76	-22.0	5.8	138.6	77.9	61.6	<1	31.0	141.0	10.0	44.0	0.14	91	<1.0	<1.0
82626	MAYA/OLMECA BLEND		Mexico/US	4/14/2000	26.5	3.2	2.64	<-27.4	8.9	279.1	175.2	108.3	<1	154.0	495.0	16.0	85.0	0.19	26	<1.0	3.2

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										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			Whole Naphtha	Whole Naphtha

## Crude approved: moved, pending Capline assay

Group Swt - LMtIs

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)			
										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			Whole Naphtha	Whole Naphtha		
82159	CABINDA/FORCADOS BLEND (40/60)		USA	9/26/1999	31.5	3.1	0.22	26.6	2.1	97.6	66.6	52.5		2.8	19.6	9.2	63.5	0.27	9		
82756	CUSIANA/LLS BLEND		Colombia/U	5/15/2000	39.9	5.8	0.23	23.9	0.8	42.2	38.2	35.8	<1	1.0	17.2	0.4	5.2	0.17	44	<1.0	<1.0
82308	FORTIES		U.K.	12/1/2001	43.4	5.5	0.20	5.0	1.0	37.4	35.1	32.8		<2.0	15.0	<2.0	10.0	0.10	46		
82352	MARIB LIGHT (ALIF)		North Yeme	5/12/1998	48.9	8.6	0.07	-22.0	0.6	32.1	31.4	30.4	<1	1.0	<1.0	1.0	<1.0	0.16	<1	<1.0	<1.0
82110	ODUDU		Nigeria	11/27/1998	30.5	3.3	0.15	<-27.4		60.8	51.1	44.0	<1	1.2	8.9	6.7	59.0	0.77	65	8.0	<1.0
82460	PALANCA/SOYO		Angola	1/1/1999	37.8	7.8	0.16	45.0	1.5	48.7	42.7	40.5	<1	1.7	15.4	1.5	13.1	0.05	27	<1.0	<1.0
82357	STATFJORD		Norway	10/19/1999	38.4	6.7	0.23	21.2	1.5	68.3	41.4	38.0	<1	1.9	9.8	0.9	5.5	0.09	18	<1.0	<1.0
82267	WEST HACKBERRY SWEET		USA	10/10/2000	37.0	5.3	0.29	-2.0	1.9	51.6	43.6	38.9	<2	4.0	35.0	2.6	23.0	0.09	45		

Group Swt - HMtIs

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)			
										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			Whole Naphtha	Whole Naphtha		
82252	ZAFIRO		Eq. New Gu	10/15/1997	29.9	4.9	0.28	-22.0	2.9	90.3	66.6	53.7	<1	1.6	25.0	9.6	84.4	1.00	40	<1.0	<1.0

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**Group Swt - HMtIs**

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										@60 F	@80 F	@100 F		Vanadium	Nickel			Whole Naphtha	
										Whole	Pitch	Whole		Pitch					

**Group Sr**

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)			
										@60 F	@80 F	@100 F		Vanadium	Nickel			Whole Naphtha			
										Whole	Pitch	Whole		Pitch							
82174	BAYOU CHOCTAW - SOUR	*	USA	5/1/1998	32.2	3.6	1.43	11.0	4.0	76.8	57.0	47.3	100	40.3	240.0	11.1	66.0	0.13	<50	<0.1	
82387	ISTHMUS		Mexico	7/1/1997	33.8	3.7	1.30	-33.0	4.0	71.6	56.1	48.2	<1	37.0	129.0	7.7	27.0	0.33	2	<1.0	1.0
82209	LOOP SEGREGATION NO.11		Loop	8/7/1996	24.0	3.2	1.80	-22.0	7.5	686.3	253.6	147.6	<1	108.0	457.0	28.0	126.0	0.66	15	<1.0	<1.0

**Group HSr**

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)			
										@60 F	@80 F	@100 F		Vanadium	Nickel			Whole Naphtha			
										Whole	Pitch	Whole		Pitch							
82226	LOOP SEGREGATION NO. 17		Loop	6/4/1997	31.0	4.6	2.50	-22.0	6.0	110.2	78.8	60.6	<1	34.0	148.0	9.3	38.2	0.27	2	<1.0	<1.0

**Crude approved: not moved**

**Group Swt - LMtIs**

Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic Chlorides(ppm)	
										@60 F	@80 F	@100 F		Vanadium	Nickel			Whole Naphtha	
										Whole	Pitch	Whole		Pitch					

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Third Quarter 2002

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Report Creation Date: 10/24/2002

**Crude approved: not moved**

**Group** Swt - LMtIs

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Prod Co	Crude Name	Footnote	Country	Date	Density (API@260)	RVP (psia)	Sulfur (%)	Pour (degF)	Carbon Residue (%)	Viscosity (SSU)			H2S (ppm)	Metals (ppm)		TAN E (mg KOH/g)	Salt (lb/M)	Organic	
										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			Chlorides(ppm) Whole Naphtha	
82583	GIRASSOL		Angola	1/16/2002	30.9	2.8	0.38	21.0	3.2	120.0	73.0	54.0	<1	1.9	15.0	5.2	36.0	0.30	85

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**Date Printed:**

Friday, October 25, 2002

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# Capline System

Approved Assay List

Crude Oil Properties And Quality Indicators

Third Quarter 2002

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Report Creation Date: 10/24/2002

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## Crudes removed as of this listing

Crudes not moved within three (3) years will be removed from the list.

<b>Crude</b>	<b>Last Assay</b>
BONNY MEDIUM	8/14/1996
CABINDA/MARS BLEND (50/50)	3/26/1999
CANO LIMON	5/17/1999
FLOTTA	8/2/1998
LIVERPOOL BAY	6/7/1999
LLS/MARS (50/50) BLEND	
M100 / NAPHTHA (60/40) BLEND	
MARIB LIGHT / TROLL (70/30) BLEND	6/6/2002
PALANCA	6/8/1999
TRINIDAD	7/6/1999
UKPOKITI	2/1/2001

### Pour Point

Summer (Start on or after April 1 - clear by September 30)  $\leq$  +55F

Winter (Start October 1 - March 31)  $\leq$  +35F

### RVP

RVP of 8.6 or less will be accepted year-round

Winter (Start on or after October 1 - Clear by April 30)  $\leq$  9.6

Winter RVP > 9.6 Subject to Management Approval

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## Hydrocarbon Group Tests

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### Swt-LMtls

Sulfur, %w	< 0.5
V+Ni Metals in Pitch, ppm	<= 100
TAN E, mg KOH/g	<= 1
Salt, lb/1000 BBL	<= 75

### Swt-HMtls

Sulfur, %w	< 0.5
V+Ni Metals in Pitch, ppm	> 100
	<= 250
TAN E, mg KOH/g	<= 1
Salt, lb/1000 BBL	<= 75

### Int

Sulfur, %w	>= 0.5
	<= 1
V+Ni Metals in Pitch, ppm	<= 550
TAN E, mg KOH/g	<= 1
Salt, lb/1000 BBL	<= 75

### Sr

Sulfur, %w	> 1
	<= 2
V+Ni Metals in Pitch, ppm	<= 1200
TAN E, mg KOH/g	<= 1.5
Salt, lb/1000 BBL	<= 75

### HSr

Sulfur, %w	> 2
V+Ni Metals in Pitch, ppm	<= 1200
TAN E, mg KOH/g	<= 2
Salt, lb/1000 BBL	<= 75

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<b>Hydrocarbon</b>	<b>Footnote</b>
ARABIAN LIGHT	The RVP for this batch is higher than expected. Will monitor.
ARABIAN MEDIUM	Will monitor Organic Chlorides on next batches.
BAYOU CHOCTAW - SOUR	!! Due to Hydrogen Sulfide results - Take safety precautions !!
BONITO SOUR	Salt very high for Bonito Sour. Retest confirms.
CABINDA	Must be pour point depressed !
CUSIANA	Must be pour point depressed. Salt higher than usual.
DJENO	Must be pour point depressed.
EAST MS MIX	!! Due to Hydrogen Sulfide results - Take safety precautions !!
FOINAVEN	Must be pour point depressed.
KITINA	Must be pour point depressed.
LOUISIANA MISSISSIPPI SWE	Metals and sulfur are varying with each test. Will analyze several batches to determine problem.
N'KOSSA	Due to RVP - ONLY move in Winter months.
NORNE	The salt is higher than usual for Norne. Must be pour point depressed. (This batch was probably pour point depressed.)
OSO CONDENSATE	Due to RVP, must be shipped on a case by case basis and approved prior to each nomination.
QUA IBOE	Must be pour point depressed.
SCHIEHALLION	Must be pour point depressed.
TROLL EXPORT	The acid number on Troll Export continues to be higher than usual. Will continue to move with Sweet Low Metals group and will monitor acid number on future batches.
UKPOKITI	Must be pour point depressed.
VASCONIA	Must be pour point depressed.

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