

Capline System

Approved Assay List

Crude Oil Properties And Quality Indicators

Second Quarter 2002

Report Creation Date: 7/22/2002

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	Whole Naphtha				
82337	BONNY LIGHT	*	Nigeria	2/15/2001	30.8	2.3	0.19	32.0	1.4	71.7	57.1	48.2	<1	1.0	7.8	4.7	36.0	0.33	35	<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	7/24/2001	31.9	3.4	0.30	53.6	3.4	221.0	96.0	72.5	<1	3.9	17.0	13.0	57.0	0.07	15	<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	2/16/2002	41.1	7.6	0.24	37.4	0.9	42.4	36.5	34.7	<1	2.3	30.0	1.0	13.0	0.27	35	<1.0	2.2
82602	DJENO	*	Congo	7/5/1997	27.0	2.5	0.47	32.0		150.4	61.3	37.2	<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	7/12/2001	31.0	3.7	0.18	-0.4	0.8	55.9	50.7	44.2	<1	0.6	7.0	2.8	40.0	0.34	6	<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	2/18/2002	33.2	2.1	0.34	<-27.4	1.8	69.4	54.8	46.7	<1	1.1	6.1	2.0	12.0	0.98	94	1.5	4.5
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
82722	LIGHT LOUISIANA SWEET		USA	7/11/2001	39.9	4.2	0.25	-0.4	0.7	66.7	53.8	37.9	<1	0.9	10.0	0.8	7.3	0.32	75	<1.0	<1.0
82137	LIVERPOOL BAY		U.K.	6/7/1999	44.9	4.7	0.21	21.2	0.9		36.7	34.5	<1	<0.1	0.8	<0.1	0.9	0.03	34	<1.0	1.1
82723	LMS	*	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
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	NKOSSA	*	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	4/5/2001	45.1	7.4	0.27	10.4	0.6		38.2	32.5	<1	0.6	14.0	0.5	13.0	<1.00	23	<1.0	<1.0
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

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Group Swt - LMtls

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										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			WholeNaphtha	WholeNaphtha		
82298	SAHARAN BLEND		Middle East	11/18/200	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	51.5	29.8	17.8	<1	6.3	33.0	3.8	18.0	0.30	3	<1.0	1.7
82402	SOYO BLEND		Angola	11/15/200	37.0	4.0	0.26	-37.4	1.7	54.8	46.9	40.5	<1	6.6	69.0	2.2	18.0	0.15	30	<1.0	<1.0
82218	TRINIDAD		Trinidad	7/6/1999	37.7	3.2	0.25	21.2	0.4	6.5	4.1	3.2	<1	0.6	10.0	0.5	8.3	0.31	209	<1.0	<1.0
82421	TROLL EXPORT	*	Norway	6/5/2002	27.1	1.2	0.27	<27.4	1.6	134.5	88.6	65.9	<1	0.6	3.7	0.6	3.8	1.21	30	<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

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 Whole Pitch	Nickel Whole Pitch			WholeNaphtha	WholeNaphtha		
82743	BONITO SOUR		USA	2/12/2002	38.0	4.9	0.59	<-27.4	1.7	48.8	43.1	39.1	<1	5.7	48.0	2.4	21.0	0.69	129	<1.0	<1.0
82543	CANO LIMON		Columbia	5/17/1995	29.5	1.1	0.52	-27.4	5.3	42.2	21.8	14.6	<1	13.0	62.0	36.0	172.0	0.15	6	<1.0	<1.0
82725	EUGENE ISLAND SOUR		USA	2/12/2002	35.8	3.8	0.87	<-27.4	2.3	56.1	48.1	41.6	<1	9.2	62.0	3.7	26.0	0.61	106	<1.0	1.8
82385	OLMECA		Mexico	2/18/2002	37.3	6.2	0.84	10.4	2.4	48.6	43.1	39.5	<1	11.0	66.0	5.0	26.0	0.15	10	<1.0	1.9
82251	SANTA BARBARA		Venezuela	11/27/2000	38.1	5.0	0.52	<-27.4	0.6	5.3	3.9	3.1	2	3.1	30.0	0.9	8.5	0.14	6	<1.0	<1.0

Group Sr

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										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch			WholeNaphtha	WholeNaphtha		
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	18.9	14.5	8.6	<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	2/13/2002	30.3	2.9	1.90	-22.0	4.7	105.0	77.0	59.7	<1	55.0	155.0	21.0	59.0	0.64	7	<1.0	3.9
82428	MARS/MESA BLEND (40/60)		Venezuela/	9/8/2000	30.1	3.1	1.65	-22.0	5.1	20.6	13.3	9.6	<1	48.0	156.0	14.0	49.0	0.27	85	<1.0	<1.0
82369	MESA 30		USA	8/6/2000	30.1	3.5	1.09	<-27.4	4.6	20.1	12.4	9.0	<1	42.0	159.0	10.0	36.0	0.09	14	<1.0	<1.0
82388	ORIENTE		Ecuador	1/5/2001	24.1	2.8	1.51	5.0	9.3	141.2	77.0	43.1	<1	167.0	587.0	66.0	240.0	0.13	61	<1.0	<1.0
82749	POSEIDON		USA	2/15/2002	31.7	4.1	1.41	<-27.4	3.6	90.3	66.1	53.1	<1	19.0	82.0	7.7	34.0	0.86	114	<1.0	1.0
82370	URALS		C.I.S. Euro	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	<1.00	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	60.3	37.5	22.5	<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			WholeNaphtha	WholeNaphtha

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			WholeNaphtha	WholeNaphtha		
82317	BONNY MEDIUM		Nigeria	8/14/1996	26.6	2.2	0.18	-36.0	1.5	24.5	14.8	9.6	<1	2.0	26.0	4.0	42.0	0.61	46	<1.0	<1.0
82159	CABINDA/FORCADOS BLEND (40/60)		USA	9/26/1995	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/	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.	3/1/1998	41.0		0.29	16.0	1.3	39.4	36.6	34.6	1	1.7	18.0	0.7	7.0	0.10	53		
82352	MARIB LIGHT (ALIF)		North Yem	5/12/1998	48.9	8.6	0.07	-22.0		1.9	1.7	1.4	<1	1.0	<1.0	1.0	<1.0	0.16	<1	<1.0	<1.0
82110	ODUDU		Nigeria	12/4/1998	30.5		0.15	<-23.0		10.6	7.7	5.5	<1	1.2	8.9	6.7	59.0	0.77	65	8.0	<1.0
82266	PALANCA		Angola	6/8/1999	37.9	7.1	0.16	32.0	1.3	61.5	49.1	43.3	<3	1.1	10.0	0.5	5.0	0.13	32		<1.0
82357	STATFJORD		Norway	10/19/1994	38.4		0.23	21.2		68.3	41.4	38.0	<1	1.9	15.0	0.9	7.3	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			WholeNaphtha	WholeNaphtha

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										@60 F	@80 F	@100 F		Vanadium	Nickel	WholeNaphtha	Chlorides(ppm)				
										Whole Pitch	Whole Pitch	Whole Pitch		Whole Pitch	Whole Pitch						
82252	ZAFIRO		Eq. New G	10/15/1997	29.9	4.9	0.28	-22.0		18.3	12.2	8.5	<1	1.6	25.0	9.6	84.4	1.00	40	<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	
										@60 F	@80 F	@100 F		Vanadium	Nickel	WholeNaphtha	Chlorides(ppm)				
										Whole Pitch	Whole Pitch	Whole Pitch		Whole Pitch	Whole Pitch						
82174	BAYOU CHOCTAW - SOUR		USA	10/2/2000	32.2	3.6	1.43	11.0	4.0	76.8	57.0	47.3	50	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		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

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										@60 F	@80 F	@100 F		Vanadium	Nickel	WholeNaphtha	Chlorides(ppm)				
										Whole Pitch	Whole Pitch	Whole Pitch		Whole Pitch	Whole Pitch						
82226	LOOP SEGREGATION NO. 17		Loop	6/4/1997	31.0	4.6	2.50	-22.0		110.2	78.8	60.6	<1	34.0	148.0	9.3	32.2	0.27	2	<1.0	<1.0

Crude approved: not moved

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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
										@60 F	@80 F	@100 F		Vanadium Whole Pitch	Nickel Whole Pitch	Chlorides(ppm) WholeNaphtha				
82516	MARIB LIGHT / TROLL (70/30) BLEND		Yemen	6/6/2002	41.8	6.3	0.15	-33.0	1.1	42.0	38.0	36.0	<1	0.5	7.0	1.3	17.8	0.39	4	
82161	NAPHTHA - KOCH		USA	7/11/2000	60.0	6.0	0.05		0.0	29.5		28.0	<5	<1.0		<1.0		<0.01	<1	
82577	UKPOKITI	*	Nigeria	2/1/2001	41.7	4.9	0.10	54.0		31.3	30.5	29.2	0	<2.0	2.0	<2.0	8.0	0.30	28	
82576	ZUATA SWEET		Venezuela	12/1/2000	30.7	0.3	0.06	0.0	0.1	71.0	56.0	47.0	<1	<0.5	<0.5	<0.5	0.5	0.05	11	

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Approved Assay List

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Crudes removed as of this listing

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

Crude	Last Assay
BASRAH/MARS BLEND	2/26/2001
BOSCAN/LAGOMEDIO BLEND	2/1/1999
CABINDA/CUSIANA BLEND	12/4/1998
CABINDA/MARS BLEND (50/50)	3/26/1999
HATTERS POND/LMS BLEND	7/28/2001
HLS/QUA IBOE BLEND (30/70)	2/19/1999
JAY	7/18/2001
KOCH SOUR BLEND	7/1/1999
MARS/MESA BLEND 2	5/26/1999
MARS/NAPHTHA BLAND	12/1/2001
MAYA/QUA IBOE BLEND (60/40)	7/11/2000
MESA/PSDN BLEND	6/2/2000
SABINE PASS	2/28/2001
TENGIZ	4/14/1999

Pour Point

Summer (Start on or after April 1 - clear by September 30) <= +55F

Winter (Start October 1 - March 31) <= +35F

RVP

RVP of 8.6 or less will be accepted year-round

Winter (Start on or after October 1 - Clear by April 30) <= 9.6

Winter RVP > 9.6 Subject to Management Approval

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Hydrocarbon Group Tests

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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Hydrocarbon	Footnote
ARABIAN LIGHT	The RVP for this batch is higher than expected. Will monitor.
BASRAH/MARS BLEND	75-25 BLEND
BONNY LIGHT	Heavier than usual. Came in through LOCAP.
CABINDA	Must be pour point depressed.
CUSIANA	Must be pour point depressed.
DJENO	Must be pour point depressed.
FOINAVEN	Must be pour point depressed.
HEAVY LOUISIANA SWEET	Will monitor Organic Chlorides.
LOUISIANA MISSISSIPPI SWI	Metals and sulfur are varying with each test. Will analyze several batches to determine problem.
MAYA/QUA IBOE BLEND (60/40 BLEND	
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 this batch is higher than usual. Will continue to move with Sweet Low Metals gr will monitor acid number on future batches.
UKPOKITI	Must be pour point depressed.
VASCONIA	Must be pour point depressed.

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