

CAPLINE SYSTEM

CRUDE OIL PROPERTIES AND QUALITY INDICATORS

Approved Crude List - 3rd Quarter, 2003

Updated
10/07/03

Section I. Crudes Approved, Moved and Capline Assay Reported																						
MnMn	See Foot-notes	Crude Name	Product Code	Country	Assay Date	Density	RVP	Sulfur	a)Pour Point	Carbon Residue	Viscosity (SSU)			H2S (ppm)	Metals (ppm)				TAN E (mg KOH/g)	SALT (lb/MB)	Organic Chlorides (ppm)	
						(API@60)	(psia)	(%)	(degF)	(%)	@60 F	@80 F	@100 F		Whole	Pitch	Whole	Pitch			Whole	Naphtha
Sweet - Low Metals Group																						
BNL		BONNY LIGHT	82337	Nigeria	08/12/02	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	<1
BSR	☑	BRASS RIVER	82325	Nigeria	05/07/03	40.0	5.4	0.09	<-27.4	0.5	36.9	34.8	33.1	<1	0.3	5.8	1.0	26.0	0.15	6	<1	1.3
BRN		BRENT	82288	U. K.	05/08/03	38.2	5.2	0.41	26.6	1.9	50.5	41.7	37.6	<1	6.7	38.0	1.3	7.9	0.05	17	<1	<1
CAB	☑	CABINDA	82345	Angola	03/03/03	32.4	2.7	0.13	59.0	3.5	-	-	73.5	<1	1.7	6.0	17.0	63.0	0.17	3	<1	<1
COCO		COCODRIE CONDENSATE	82921	USA	07/27/01	48.8	6.5	0.12	<-27.4	0.2	32.5			<1	0.6		0.5		0.16	93	<1	<1
DJEN	☑	DJENO	82602	Congo	07/05/97	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	2.4
DRAUG		DRAUGEN	82575	Norway	04/26/02	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	<1
EKO		EKOFISK	82307	Norway	06/06/02	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	<1
ESC		ESCRAVOS	82338	Nigeria	07/21/01	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	<1
FON	☑	FOINAVEN	82424	U. K.	06/12/00	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	2.0
FOR		FORCADOS	82331	Nigeria	03/30/03	30.3	2.5	0.22	-16.6	1.0	66.1	51.5	45.9	<1	1.2	14.0	3.2	39.0	0.39	10	<1	<1
GAL		GALEOTA	82314	Trinidad	08/24/03	37.8	6.0	0.19	53.6	0.2		37.7	35.1	<1	0.1	-	0.1	-	0.60	4	-	-
GIR		GIRASSOL	82583	Angola	02/13/03	31.1	2.7	0.34	<-27.4	3.2	112.4	79.7	58.1	<1	4.1	19.0	10.0	44.0	0.27	25	<1	<1
GFAK		GULLFAKS	82270	Norway	07/17/03	36.9	3.6	0.19	37.4	0.1	66.4	39.4	36.0	<1	0.2	2.0	0.1	2.3	0.29	63	<1	<1
HLS	☑	HEAVY LA SWEET	82720	USA	08/26/03	33.3	2.6	0.36	<-27.4	2.0	68.3	54.1	39.7	<1	1.8	12.0	2.9	19.0	0.77	133	<1	<1
HBA		HIBERNIA	82139	Canada	08/16/03	34.4	3.2	0.41	42.8	2.3		52.0	49.9	<1	1.0	4.5	1.0	4.3	<0.05	12	<1	<1
KIT	☑	KITINA	82580	Congo	09/21/02	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	<1
LMS	☑	LA MISSISSIPPI SWEET	82723	USA	09/03/03	40.8	3.5	0.41	16.6	1.5	41.8	37.9	35.4	<1	2.1	20.0	0.7	8.1	0.55	78	<1	<1
LLS		LIGHT LOUISIANA SWEET	82722	USA	08/22/03	37.5	4.1	0.34	-11.2	1.1	47.4	42.2	39.0	<1	2.0	22.0	1.3	14.0	0.43	232	<1	3.0
LION	☑	LION CRUDE	82604	Ivory Coast	04/18/03	43.0	5.6	0.26	-17.0	1.0	38.1	34.9	33.3	<1	3.1	39.0	1.8	24.0	0.08	2	<1	<1
NAK		NAPHTHA - KOCH	82161	USA	08/03/02	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	<1
NBA		NEMBA	82255	Angola	07/17/03	40.9	7.1	0.18	26.6	1.4	41.7	37.7	35.8	<1	1.5	14.0	1.5	12.0	<0.05	34	<1	<1
NKS	☑	N'KOSSA	82135	Congo	03/23/00	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	<1
NOR	☑	NORNE	82430	Norway	03/17/03	32.6	2.4	0.20	64.4	1.0		56.8	46.5	<1	<0.5	23.5	0.9	8.6	0.07	33	<1	<1
OSB		OSEBERG	82271	Norway	04/26/03	38.7	5.2	0.22	15.8	1.8	45.1	39.4	38.5	<1	1.1	8.6	1.1	8.9	0.11	7	<1	<1
OSO	☑	OSO CONDENSATE	82403	Nigeria	09/16/02	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	<1
KWI	☑	QUA IBOE	82339	Nigeria	05/29/03	36.4	4.4	0.12	59.0	0.9	-	39.7	37.0	<1	0.7	8.0	3.8	51.0	0.46	3	<1	<1
SAH	☑	SAHARAN BLEND	82298	Middle East	03/11/03	46.0	10.7	0.08	<-27.4	1.0	36.2	34.3	32.9	<1	0.3	2.8	0.2	2.0	0.03	14	<1	<1
STB		SANTA BARBARA	82251	Venezuela	03/12/03	39.5	5.4	0.49	-22.0	0.9	38.8	36.0	34.2	<1	4.2	69.0	0.9	15.0	0.02	29	<1	<1
SLS	☑	SOUTH LOUISIANA SWEET	82586	USA	08/30/03	35.2	3.0	0.37	-11.2	1.7	53.9	46.4	40.8	<1	2.4	18.0	2.2	22.0	0.60	75	<1	<1
TROL	☑	TROLL EXPORT	82421	Norway	06/27/03	27.2	1.4	0.25	<-27.4	1.7	122.6	86.4	65.9	<1	0.6	4.3	0.8	4.3	1.10	8	<1	<1
WSB		WILLIAMS SUGARLAND BLEND	82573	USA	07/14/01	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	1.1
Sweet - High Metals Group																						
CUS	☑	CUSIANA	82419	Columbia	07/01/03	42.2	8.1	0.16	32.0	0.9	38.2	34.7	32.8	<1	7.0	98.0	2.0	28.0	<0.05	3	<1	<1
Intermediate Group																						
BS	☑	BONITO SOUR	82743	USA	03/01/03	37.5	4.5	0.85	-11.2	1.9	50.2	44.0	40.4	<1	7.0	48.0	2.9	20.0	0.49	172	<1	1.3
OMA		OLMECA	82385	Mexico	02/18/02	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	1.9
SCH	☑	SCHIEHALLION	82441	Scotland	03/27/03	25.7	1.1	0.50	42.8	3.2	491.4	190.1	106.2	<1	7.8	36.0	4.4	20.0	0.38	50	<1	<1
Sour Group																						
AXL		ARABIAN EXTRA LIGHT	82375	Saudi Arabia	03/19/03	39.4	5.1	1.09	<-27.4	1.9	42.5	38.8	36.1	<1	3.0	20.0	1.1	8.0	0.03	20	<1	<1
ABL	☑	ARABIAN LIGHT	82376	Saudi Arabia	03/15/03	32.6	3.3	1.96	-27.4	4.5	68.3	55.4	46.9	<1	19.0	78.0	5.2	22.0	0.05	3	<1	<1
BASLI		BASRAH LT/MESA 30 BLEND (35/65)	82671	Iraq/USA	02/08/01	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	<1
EMX	☑	EAST MS MIX	82521	USA	09/03/03	30.9	3.0	2.10	15.8	7.3	106.7	78.5	57.3	23	23.0	87.0	8.0	31.0	0.26	250	<1	<1
EIC		EUGENE ISLAND	82725	USA	04/08/03	34.0	4.5	1.21	<-27.4	3.3	68.1	54.7	47.0	<1	16.0	98.0	5.9	38.0	0.64	200	<1	<1
FUR		FURRIAL	82374	Venezuela	03/19/02	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	<1
MARS		MARS BLEND	82754	USA	08/27/03	31.2	4.4	1.82	<-27.4	4.7	93.9	71.4	55.6	<1	34.0	128.0	14.0	52.0	0.50	108	<1	<1
MMB		MARS/MESA BLEND (40/60)	82428	Loop	09/08/00	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	<1
MSA		MESA 30	82369	Venezuela	05/10/03	30.2	2.8	1.06	<-27.4	4.5	88.0	66.2	53.9	<1	39.0	194.0	8.2	41.0	0.05	3	<1	1.0
ORI		ORIENTE	82388	Equador	01/05/01	24.1	2.8	1.51	5.0	9.3	652.6	356.4	201.0	<1	167.0	240.0	66.0	240.0	0.13	61	<1	<1
PSD		POSEIDON	82749	USA	08/26/03	30.9	3.9	1.68	-11.2	4.0	98.6	74.6	56.1	<1	23.0	102.0	8.3	37.0	0.95	>300	<1	<1
URA		URALS	82370	C.I.S. Euro	05/23/02	32.6	4.7	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	1.4
VAS	☑	VASCONIA	82237	Colombia	02/09/02	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	<1

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Mnmn	See Foot- notes	Crude Name	Product Code	Country	Assay Date	Density	RVP	Sulfur	a)Pour Point	Carbon Residue	Viscosity (SSU)			b) H2S	Metals (ppm)				TAN E	SALT	Organic Chlorides (ppm)	
						(API@60)	(psia)	(%)	(degF)	(%)	@60 F	@80 F	@100 F	(ppm)	Vanadium	Nickel	Whole	Pitch	Whole	Pitch	(mg KOH/g)	(lb/MB)
High Sulfur Sour Group																						
ABH		ARABIAN HEAVY	82378	Saudi Arabia	05/19/01	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	<1
ABM		ARABIAN MEDIUM	82377	Saudi Arabia	06/20/03	30.4	3.5	2.57	<-27.4	6.1	104.8	77.1	61.3	<1	41.0	136.0	13.0	41.0	0.25	2	<1	<1
BAS	☑	BASRAH LIGHT	82383	Iraq	04/23/03	30.5	5.4	2.90	<-27.4	6.2	92.2	73.0	60.7	<1	45.0	163.0	12.0	45.0	0.37	14	<1	<1
KIR		KIRKUK	82384	IRAQ	03/11/03	33.9	4.6	2.26	-0.4	4.9	62.9	52.3	45.6	<1	31.0	128.0	13.0	53.0	0.12	75	<1	<1
KUW		KUWAIT	82380	Kuwait	03/17/03	30.3	4.5	2.67	-0.4	6.4	115.5	78.9	62.0	<1	32.0	121.0	10.0	37.0	0.15	3	<1	<1
Section II. Crudes Approved, Moved, Pending Capline Assay																						
Sweet - Low Metals Group																						
LLC		CUSIANA/LLS BLEND	82756	Colombia	05/15/00	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	<1
FOT		FORTIES	82308	U.K.	12/01/01	43.4	5.5	0.20	5.0	1.0	37.4	35.1	32.8		<2	15.0	<2	10.0	0.10	46		
MARB	☑	MARIB LIGHT (ALIF)	82352	North Yem	05/12/98	48.9	8.6	0.07	-22.0	0.6	32.1	31.4	30.4	<1	1.0	<1	1.0	<1	0.16	<1	<1	<1
ODU		ODUDU	82110	Nigeria	11/27/98	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
OKON	☑	OKONO	82584	Nigeria	02/09/02	41.9	7.7	0.06	64.4	0.4	39.0	35.0	33.0	-	<2	4.0	2.0	57.0	0.34	13	-	-
PSOYO		PALANCA/SOYO	82460	Angola	01/01/99	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	<1
WHSW		WEST HACKBERRY SWEET	82267	USA	10/10/00	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		
Sweet - High Metals Group																						
ZFR		ZAFIRO	82252	Eq. New G	10/15/97	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	<1
Sour Group																						
BCSR	☑	BAYOU CHOCTAW - SOUR	82174	USA	05/01/98	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	
ITM		ISTHMUS	82387	Mexico	07/01/97	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	<1
Section III. Crudes Approved, Not Moved																						
Sweet - Low Metals Group																						
ASGD		AASGARD CRUDE	82790	Norway	03/28/01	41.9	7.7	0.18	16.0	0.6	41.0	37.3	34.0	<1	0.1	2.2	0.1	0.6	<0.02	4	-	-
KUMK		KUMKOL	82908	Azerbaijan	01/01/01	40.9	4.4	0.08	75.0	1.5	50.0	44.0	39.5	<2	0.2	-	3.8	-	0.17	18	-	-
YOHO	☑	YOHO CRUDE OIL	82810	Nigeria	12/01/02	39.6	4.8	0.12	64.0	0.7	39.2	36.5	34.2	<2	0.1	0.5	1.8	5.7	0.34	4	-	-

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HYDROCARBON

FOOTNOTES

ARABIAN LIGHT	!! Due to HIGH Hydrogen Sulfide reported via LOOP - TAKE SAFETY PRECAUTIONS !!
BASRAH LIGHT	Neutralization number higher than previously seen (approx 0.1 mg KOH/g)
BAYOU CHOCTAW - SOUR	!! Due to Hydrogen Sulfide results- Take safety precautions !!
BONITO SOUR	Salt very high for Bonito Sour. Retest confirms.
BRASS RIVER	Testing for organic chloride consistently (five out of seven previous batches) indicates trace amounts in the naphtha cut. The amount is lower than Capline specs and may be something other than organic chloride, however it does appear in most samples.
CABINDA	Must be pour point depressed ! Viscosity at 60 and 80F not accurately measured - too close to pour point.
CUSIANA	Must be pour point depressed . Note: HIGH Metals on this batch (Second batch with high metals)! Cusiana will be moved as a Sweet/ High Metals batch unless metals return to previous low levels. Next batch will be assayed.
DJENO	Must be pour point depressed.
EAST MS MIX	!! Due to Hydrogen Sulfide results- Take safety precautions !!
FOINAVEN	Must be pour point depressed.
HEAVY LA SWEET	Gravity higher than usual. Gravity for HLS has been trending upward.
HIBERNIA	Must be pour point depressed.
KITINA	Must be pour point depressed.
LOUISIANA MISSISSIPPI SWEET	Several parameters are not consistent with LMS. Carriers have been notified and stream should change soon.
NORNE	Must be pour point depressed.
NKOSSA	Due to RVP - ONLY move in winter months
OKONO	Must be 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.
SAHARAN BLEND	Due to RVP, must be shipped on a case by case basis and approved prior to each nomination.
SCHIEHALLION	Must be pour point depressed.
TROLL EXPORT	Acid number on Troll Export continues to be higher than usual. Will continue to move with Sweet Low Metals group and will monitor.
VASCONIA	Must be pour point depressed.
YOHO CRUDE OIL	Must be pour point depressed.

a) POUR POINT may have been depressed in the sample taken for this assay.

b) Due to loss of H₂S in sampling and shipping, H₂S is likely higher than stated in this assay. TAKE precautions with all crude oils - sour or sweet.

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NOTES

CRITERIA FOR GROUPING CRUDES ON CAPLINE

Group	Criteria			
	Sulfur %w	Ni + V ppm	TAN mg KOH/g	Salt lb/1000 bbl
Sweet - Low Metals	< 0.5	<= 100	<= 1.0	<= 75
Sweet - High Metals	< 0.5	<= 250	<= 1.0	<= 75
Intermediate	0.5 - 1.0	<= 550	<= 1.0	<= 75
Sour	>1.0 - 2.0	<= 1200	<= 1.5	<= 75
High Sulfur Sour	> 2.0	<= 1200	<= 2.0	<= 75

POUR POINT REQUIREMENTS

Summer Start on or after April 1 and Clear of system by September 30 <= +55F
Winter Start October 1 - March 31 <= +35F

RVP LIMITATIONS

Year-Round RVP of <= 8.6 psi accepted year-round
Winter Start on or after October 1 and Clear of system by April 30 <= 9.6
 NOTE: Winter RVP > 9.6 Subject to Management Approval

CRUDES REMOVED AS OF THIS LISTING:

Crude	Assay or Approval Date
ZAFIRO	10/15/1997
AASGARD	3/28/2001

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

Newly approved crudes that have not moved within six (6) months will be removed from the list.