

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		(mg KOH/g)	(lb/MB)	Whole	Naphtha
															Whole	Pitch	Whole	Pitch				
Sweet - Low Metals Group																						
ABO		ABO	82909	Nigeria	07/05/2005	39.5	6.2	0.136	<-27.4	1.1	38.9	36.5	34.3	<1	0.4	6.2	3.7	54	0.76	8	<1	1.2
ACS		ALBA CONDE NSATE AND SAHARAN BLEND (66/33)	83020	Equatorial Guinea	09/01/2010	55.2	8.9	.04	-64	----	35	36	34.2	---	< 0.5	----	< 0.5	----	< 0.1	---	----	---
AKLL		AKPO AND LLS BLEND	50584	USA	09/15/2010	40.5	5.45	0.38	-5	1.75	40	38	35	<1	2.35	---	3.27	---	0.45	---	---	---
AKPO		AKPO BLEND	83371	Nigeria	12/22/2008	46.2	6.67	0.06	3	-	47	-	-	-	1.6	-	0.1	-	0.05	-	-	-
ALCO		ALBA CONDE NSATE	82951	Equatorial Guinea	05/05/2010	51.7	8	0.02	-60	0.02	30	29	28	<1	<0.1	0.2	<0.1	2	0.07	1	-	-
AME	<input checked="" type="checkbox"/>	AMENAM BLEND	82985	Nigeria	11/19/2008	40.2	5.64	0.102	53.6	0.79	75.5	35.9	33.9	<1	1.3	22	2.7	43	0.28	5	<1	-
AQB		ALBA CONDE NSATE/QUA IBO 50/50 BLEND.	83014	New Guinea Nigeria	01/11/2006	42.5	6.2	0.07	0	0.56	36	34	32	<1	0.2	41.8	2	6.3	0.2	3	-	-
ASGD		AASGARD	82790	Norway	04/21/2010	47.6	9.3	0.172	<-27.4	0.43	32.4	<32	<32	<1	1.7	44	0.4	9.7	<0.05	127	<1	<1
ATB		ALBA/TXC MIDDLE DISTILLATE (75/25)	50582	USA	11/03/2003	47.96	8.09	0.22	-43	----	31	30	30	----	0.04	8.62	0.06	13.1	0.08	----	----	----
AZE		AZERI LIGHT	83015	Azerbaijan	04/01/2006	34.8	5.89	0.15	-8	1.399	66	55	48	<5	0.24	1.59	3.27	21.73	0.26	7	-	-
BCSW	<input checked="" type="checkbox"/>	BAYOU CHOCTAW - SWEET	82268	USA	09/08/2005	36	4.26	0.398	32	1.1	54.7	45.49	41.2	<1	5.49	31	3.8	21	0.16	25	<1	<1
BONGA		BONGA	82396	Nigeria	08/01/2008	30.3	2.81	0.252	<-27.4	0.94	64.4	50.7	44	<1	0.3	3.2	3	25	0.4	5	<1	<1
BRN	<input checked="" type="checkbox"/>	BRENT	82288	U. K.	05/08/2004	38.6	5.61	0.38	5	1.6	47.4	41.8	37.6	<1	5.5	39	1.1	7.6	<0.05	3	<1	1.1
BSR		BRASS RIVER	82325	Nigeria	11/01/2005	35.2	3.61	0.141	-0.4	0.8	43.8	39.7	36.6	<1	0.4	6.6	2.4	36	0.29	13	<1	<1
CAB	<input checked="" type="checkbox"/>	CABINDA	82345	Angola	03/03/2003	32.4	2.66	0.132	59	3.5	-	-	73.5	<1	1.7	6	17	63	0.17	3	<1	<1
COS		COSSACK	50021	Australia	10/16/2006	47.3	6.4	0.03	-18	0.4	65	54	47	-	0.02	3	0.13	27	0.04	-	-	-
CUS	<input checked="" type="checkbox"/>	CUSIANA	82419	Columbia	05/23/2007	43.3	7.51	0.144	32	0.6	37.34	34.58	32.64	<1	3.1	58	1.2	18	<0.05	4	<1	1.1
DRAUG		DRAUGEN	82575	Norway	11/16/2005	37.6	6.24	0.191	<-27.4	1.7	44	39.4	36.6	<1	1.4	8.9	1.1	7.1	0.32	2	<1	1.6
EAN	<input checked="" type="checkbox"/>	EACRUDE	82991	Nigeria	06/16/2004	35.1	3.92	0.084	26.6	0.03	43	39.5	36.6	<1	<0.1	0.5	0.9	22	0.14	1	<1	<1
EKO		EKOFISK	82307	Norway	11/11/2005	37.5	4.23	0.223	26.6	2	52.95	49.89	44.3	<1	1.7	9.2	2.3	13	0.1	11	<1	<1
ERHA		ERHA	82390	Nigeria	05/13/2006	32.7	2.52	0.2	0	1.24	62.82	60.73	42.61	<1	0.3	2.7	3.7	30	0.36	8	<1	<1
ESP		ESPOIR	82983	Ivory Coast	01/01/2002	33	6.3	0.3	33.3	1.45	66	54	47	-	1.1	-	4	-	0.17	24.7	-	-
ESS	<input checked="" type="checkbox"/>	ESSIDER	82329	Libya	06/05/2006	36.5	5.4	0.402	-5	2.98	70.56	51.81	45.53	25.6	1.6	8.6	5.5	30	<0.05	13	<1	<1
FOB		FORCADOS/O SO COND BLEND	83003	Nigeria	02/28/2005	39.31	10	0.1	18	-	38	36	34	<1	0.33	6.92	2.01	42.71	0.2	<1	-	-
FON	<input checked="" type="checkbox"/>	FOINAVEN	82424	U. K.	06/12/2000	26.6	0.63	0.4	42.8	2	478.5	188.6	110.6	<1	4.6	18.8	2.7	10.3	0.16	8	<1	2
GAL	<input checked="" type="checkbox"/>	GALEOTA	82314	Trinidad	04/05/2010	42.9	4.14	0.129	<-27.4	0.12	32.9	<32	<32	<1	<0.1	3.9	0.1	4.1	0.25	3	<1	-
GIR		GIRASSOL	82583	Angola	11/13/2008	29.8	2.12	0.331	10.4	2.82	134.7	91.9	66.5	<1	3.7	22	8.5	51	0.37	24	<1	-
HBA	<input checked="" type="checkbox"/>	HIBERNIA	82139	Canada	08/16/2003	34.4	3.18	0.406	42.8	2.3	-	52.03	49.94	<1	1	4.5	1	4.3	<0.05	12	<1	<1
HULL		HUNGO/LLS BLEND	82967	USA	12/11/2004	33.4	3.21	0.462	-16.6	2.7	65.46	52.92	46.1	<1	6.4	34	7.7	44	0.54	70	<1	<1
KIT	<input checked="" type="checkbox"/>	KITINA	82580	Congo	09/21/2002	36.4	4.2	0.11	59	2.3	-	56.8	48.5	<1	1	4.7	9.1	38	0.1	4	<1	<1
KWI	<input checked="" type="checkbox"/>	QUA IBOE	82339	Nigeria	10/25/2006	36.3	4.47	0.124	55	1.1	75.04	43.38	38.95	<1	0.44	7.8	3.3	59	0.36	6	<1	<1
LLSA		LLS/SAHARAN (30/70)	83008	USA	08/23/2005	42.58	8.2	0.17	-34	1.09	39	37	35	<1	1.31	14.01	1.38	14.74	0.16	-	-	-
LNAP		LLS/NAPHTHA BLEND (68/12)	84001	USA	02/05/2009	41.2	5.85	0.3	-27	1.7	40	38	35	<1	2.2	-	2.5	-	0.38	-	-	-
LSAH		LLS/SAHARAN (50/50)	83008	USA	09/07/2007	40.3	5.61	0.189	<-27.4	1.23	43.35	39.72	36.85	<1	1.6	13.1	1.3	11.4	0.28	12	<1	<1
MBS		MIXED BLEND SWEET	83994	Canada	06/10/2009	39.2	6.4	0.46	-20	1.97	48	42	37	-	9.3	56.7	6.7	31	-	3.3	-	-
NKS	<input checked="" type="checkbox"/>	N'KOSSA	82135	Congo	09/22/2005	42	5.53	0.0549	53.6	2.2	48.6	40.3	37.1	<1	0.2	1.1	1.7	14	0.04	2	<1	<1
OKON	<input checked="" type="checkbox"/>	OKONO	82584	Nigeria	02/09/2002	41.9	7.7	0.06	64.4	0.4	39	35	33	-	<2	4	2	57	0.34	13	-	-
OSB		OSEBERG	82271	Norway	04/26/2003	38.7	5.19	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	<input checked="" type="checkbox"/>	OSO CONDE NSATE	82403	Nigeria	09/26/2008	45.8	8.85	0.0496	26.6	0.3	-	32.6	31.6	<1	0.4	17	0.6	11	0.1	6	<1	<1

PAL		PALANC A	82266	Angola	02/19/2005	36.8	4.54	0.183	37.4	1.6	57.4	48	42.3	<1	1.4	7.8	1.2	9.5	<0.05	4	<1	<1
PHD		PORT HUDSON	82864	USA	03/03/2005	41.6	3.05	0.15	-11.2	0.75	38.8	36.3	34.3	<1	1.3	21	1.6	26	0.22	31	<1	<1
PURC	<input checked="" type="checkbox"/>	PUROVSKIY	83782	Russia	08/19/2010	61.1	7.74	0.0137	<-27.4	<0.1	28.3	28.1	27.8	<1	<0.1	-	<0.1	-	<0.05	<1	<1	<1
RABL	<input checked="" type="checkbox"/>	RABI LIGHT	82999	Gabon	07/15/2004	37.67	3.8	0.15	71.6	-	88	65	54	<1	1.2	3	10	69	0.08	-	-	-
SAH	<input checked="" type="checkbox"/>	SAHARAN BLEND	82298	Middle East	09/12/2009	43.6	6.82	0.0725	<-27.4	1.15	40.1	38	35.4	<1	0.5	4.3	0.4	3.7	0.13	123	<1	-
SCH	<input checked="" type="checkbox"/>	SCHIEH ALLION	82441	Scotland	04/23/2005	25.6	1.1	0.456	37.4	3	372.2	186.6	110.9	2	7.2	30.2	4.4	18.2	0.31	22	<1	<1
TROL	<input checked="" type="checkbox"/>	TROLL EXPORT	82421	Norway	07/20/2004	28.4	1.86	0.24	10.4	1.59	121.6	75.2	62.2	<1	0.8	3.9	0.8	3.5	1	<1	<1	<1
XIK	<input checked="" type="checkbox"/>	XIKOMBA	82982	Angola	09/27/2004	34.6	5.02	0.406	32	3.6	84.9	51.4	42.1	<1	5.3	13	28	65	0.15	18	<1	<1
YOHO	<input checked="" type="checkbox"/>	YOHO CRUDE	82810	Nigeria	01/04/2007	39.6	4.96	0.0743	55	0.551	71.01	35.25	33.34	<1	0.36	13	0.72	18.1	0.27	9	<1	<1
ZFR		ZAFIRO	82252	Equatorial Guinea	12/23/2004	30.7	2.33	0.272	10.4	2.8	73.6	57.7	48.4	<1	2.5	16	13	82	0.73	6	<1	<1
ZUASW		ZUATA SWEET	82576	Angola	08/18/2005	30.8	2.31	0.135	<-27.4	<0.1	63.11	50.2	44.31	<1	0.8	-	0.2	-	<0.05	2	<1	3.4
ZUE		ZUEITINA	83016	Libya	03/16/2006	37.89	4.41	0.47	32	2.4	60	49	43	-	1.57	9.88	7.28	45.79	0.379	5	-	-
Sweet - High Metals Group																						
MONDO		MONDO	83990	Angola	07/23/2009	30	4.4	0.498	-11.2	5.56	130.4	113.4	67.3	<1	7.3	33	21	92	0.69	52	<1	-
NBA	<input checked="" type="checkbox"/>	NEMBA	82255	Angola	09/20/2008	39.4	5.51	0.219	15.8	2.4	45.6	40.9	38.1	<1	4.7	43	11	95	0.11	9	<1	<1
PLU	<input checked="" type="checkbox"/>	PLUTONIO	83785	Angola	07/01/2008	33.3	3.16	0.371	48.2	3.4	117.8	64.7	52.7	<1	5.6	29	19	99	0.27	56	<1	<1
Intermediate Group																						
CPC	<input checked="" type="checkbox"/>	CPC BLEND	CAP00	Kazakhstan	07/17/2006	43.6	6.18	0.54	<-27.4	0.84	37.49	34.98	33.21	<1	1.8	30	0.85	19	<0.05	2	<1	<1
FOT		FORTIES	82308	U.K.	02/13/2010	39.7	7.56	0.686	10.4	1.63	49.7	39.2	37.6	<1	7.6	61	2.6	20	0.1	54	<1	<1
HUN	<input checked="" type="checkbox"/>	HUNGO	82965	Angola	03/20/2007	29.5	3.05	0.583	<-27.4	4.9	141.6	98.55	69.75	<1	12	47	17	63	0.53	35	<1	<1
MTHB		MARS/T HUNDE RHORSE BLEND (25/75)	84003	USA	01/01/2009	33.3	6	0.94	-29	4.5	70	56	48	-	16.4	72	11.3	52	0.17	18	-	-
OMA		OLMECA	82385	Mexico	09/17/2005	38.7	4.79	0.891	<-27.4	0.9	42.5	38.9	36.2	4	8.9	58	1.5	8.5	0.05	7	<1	1.9
RCL		RONCADOR LIGHT	50567	Brazil	05/23/2010	28.5	2.09	0.542	-5.8	3.72	199.2	125.8	73.6	<1	11	50	5.9	30	0.15	14	<1	2.2
VAS	<input checked="" type="checkbox"/>	VASCONIA	82237	Colombia	04/20/2010	28	2.34	0.703	42.8	5.26	165.3	97.3	70.4	<1	65	324	28	134	0.3	7	<1	<1
YKB		YK BLEND	83995	Russia	07/20/2009	33.7	0.92	0.756	10.4	0.85	55.9	49.2	41	<1	3.1	53	1.7	27	<0.05	5	<1	-
Sour Group																						
ALMB		ARAB LIGHT/MARS BLEND (75/25)	00299	USA	01/01/2006	32.3	4.9	1.96	-79	5	72	58	50	-	21.2	91	7.5	31	0.2	18	-	-
BASLI		BASRA HLT/MESA 30 BLEND (35/65)	82671	USA	02/08/2001	30.5	3.5	1.63	<-27.4	5	92.8	75.5	54.2	<1	39	181	9.6	43	0.09	4	<1	<1
BCSR		BAYOU CHOCTAW - SOUR	82174	USA	05/01/1998	32.2	3.6	1.43	11	4	76.8	57	47.3	100	40.3	240	11.1	66	0.13	<50	<0.1	-
FUR		FURRIAL	82374	Venezuela	03/19/2002	30	2.76	1.06	<-27.4	4.3	93.5	69.02	53.6	<1	38	179	8.2	35	0.087	3	<1	<1
HAM		HAMACA	83002	Venezuela	03/30/2004	25.5	2	1.6	-40	7.4	430	260	160	<1	200	706	46	164	0.64	<1	-	-
HUMB		HUNGO/MARS BLEND	83018	USA	07/01/2006	28.4	3.3	1.24	-16	1.24	133.6	97.2	73	-	28	120	18	77	0.66	-	-	-
ITM		ISTHMUS	82387	Mexico	10/19/2005	32.7	3.41	1.57	<-27.4	4.9	68.3	55.7	50.2	23	74	300	14	57	0.1	6	<1	<1
KMB2		KUWAIT/MARS BLEND (33/67)	82187	USA	09/30/2004	30.5	5.2	2	-40	5.3	106	76	59	1	37	74	14	28	0.4	175	-	-
MMB		MARS/MESA BLEND (40/60)	82428	USA	09/08/2000	30.1	3.1	1.65	-22	5.1	100	70.9	57.6	<1	48	156	14	49	0.27	85	<1	<1
MSA		MESA 30	82369	Venezuela	05/01/2005	30.1	3.3	1.09	<-27.4	4.6	93.8	82.3	61.9	<1	42	217	9.1	46	0.18	12	<1	<1
MUB		MARS/URALS BLEND (50/50)	82998	USA	07/09/2004	31.05	5.4	1.57	-16	4.35	89	70	55	-	37.6	172.7	12.1	58.3	0.379	103.5	-	-
MUB2		MARS/URALS BLEND (33/67)	82183	USA	09/27/2004	31.2	4.9	1.53	-7.5	4.2	89	67	57	-	134.7	198.5	43.8	69.7	0.22	40	-	-
ORI		ORIENTE	82388	Equador	01/05/2001	24.1	2.83	1.51	5	9.3	652.6	356.4	201	<1	167	240	66	240	0.13	61	<1	<1
SLI	<input checked="" type="checkbox"/>	SOUTH LOUISIANA INTERMEDIATE	82779	USA	03/20/2006	29.8	4.1	0.66	-70.6	3.3	105.1	77.2	58.7	<1	6.4	-	6.4	-	1.34	8	-	-
URA		URALS	82370	C.I.S. Euro	10/24/2006	31.8	3.61	1.24	<-27.4	3.61	80.17	62.29	52.24	<1	28	127	11	50	<0.05	1	<1	1.1
High Sulfur Sour Group																						
ABH		ARABIAN HEAVY	82378	Saudi Arabia	10/22/2006	27.7	3.29	2.99	<-27.4	8	221.4	145.9	97.27	<1	45	171	13	54	0.2	1	<1	<1

ABL17		ARABIA N LIGHT / SEG 17 BLEND	82987	USA	04/21/2004	32.1	3.39	2.19	<-27.4	5.2	78.75	59.77	50.1	<1	27	110	7.8	31	0.12	3	<1	<1
AHL		ARAB HEAVY/ ARAB LIGHT (20/80)	83006	USA	06/01/2005	32.56	4.3	2.06	-10	5	77	60	51	0	26.3	107.4	7.9	32.2	0.12	23	-	-
AMMB		ARAB MEDIUM /MARS BLEND (75/25)	00301	USA	01/01/2009	30.2	6	2.36	-50	6.1	-	-	67	-	40.68	172.63	12.7	54.03	-	-	-	-
BASM		BASRA H LIGHT/MARS BLN (75/25)	82554	USA	09/30/2004	32.1	5.34	2.16	-38.2	4.7	118	74	56.7	<1	11.9	-	37.1	-	0.178	33.3	-	-
KIR		KIRKUK	82384	IRAQ	03/11/2003	33.9	4.57	2.26	-0.4	4.9	62.9	52.3	45.6	<1	31	128	13	53	0.12	75	<1	<1
KMB		KUWAIT /MARS BLEND (50/50)	82186	USA	09/30/2004	30.5	5.7	2.2	-40	5.6	110	76	59	1	36.7	142	13.2	51	0.33	135	-	-
MMBL		MARS/MAYA BLEND (20/80)	83996	USA	05/20/2009	22.6	4.2	3.1	-41	5.1	880	480	260	-	41	166	15	65	-	69.4	-	-
OGU	<input checked="" type="checkbox"/>	OGUEN DJO	82995	Gabon	06/15/2004	27.3	4.5	1.5	54	5.2	280	160	108	<5	43	135	69	233	1.7	-	-	-
SGCB		SOUTH ERN GREEN CANYO N BLD	83005	USA	04/21/2005	31.5	4.42	2.19	<-27.4	6	90.8	69.2	56.1	<1	74	291	19	74	0.56	64	<1	2.66

HYDROCARBON	HYDROCARBON
AMENAM BLEND	Viscosity at 60F not reported - too close to pour point for accurate measurement
BAYOU CHOCTAW - SWEET	!! Due to Hydrogen Sulfide results- Take safety precautions !!
BONNY LIGHT	Must be pour point suppressed if moved through LOOP cavern
BRENT	Must be monitored for pour point depression.
CABINDA	Must be monitored for pour point depression. ! Viscosity at 60 and 80F not accurately measured - too close to pour point.
CPC BLEND	Due to RVP, must be shipped on a case by case basis and approved prior to each nomination.
CUSIANA	Must be monitored for pour point depression. . Note: Cusiana continues to have HIGH Metals. Cusiana will be moved as a Sweet/ High Metals batch unless metals return to previous low levels. Due to RVP, to move in summer months, must be shipped on a case by case basis and approved prior to each nomination.
EA CRUDE	Must be monitored for pour point depression.
Eagle Ford API 57	crude exceeds our RVP guidelines for the Summer months and each batch must be approved by Crude Oil Quality or the Manager of Oil Movements from May through September.
Eagle Ford Crude (RVP 8.6 psia or higher)	crude exceeds our RVP guidelines and each batch must be approved by Crude Oil Quality or the Manager of Oil Movements
ESCRAVOS	Must be monitored for pour point depression.
ES SIDER	!! Due to Hydrogen Sulfide results- Take safety precautions !!
FOINAVEN	Must be monitored for pour point depression.
FORCADOS	Must be pour point suppressed if moved through LOOP cavern
GALEOTA	Must be monitored for pour point depression.
HIBERNIA	Must be monitored for pour point depression.
HUNGO	Must be pour point suppressed if moved through LOOP cavern
KISSANJE	Must be pour point suppressed if moved through LOOP cavern
KITINA	Must be monitored for pour point depression.
QUA IBOE	Must be monitored for pour point depression.
NEMBA	Must be monitored for pour point depression.
N"KOSSA	Must be monitored for pour point depression.
OGUENDJO	Must be monitored for pour point depression.
OKONO	Must be monitored for pour point depression.
OSO CONDENSATE	Must be monitored for pour point depression. Due to RVP, must be shipped on a case by case basis and approved prior to each nomination.
PLUTONIO	Must be monitored for pour point depression.
PUROVSKIY	Due to RVP, must be shipped on a case by case basis and approved prior to each nomination.
RABI LIGHT	Must be monitored for pour point depression.
SAHARAN BLEND	Due to RVP, must be shipped on a case by case basis and approved prior to each nomination.
SCHIEHALLION	Must be monitored for pour point depression.
SOUTH LOUISIANA INTERMEDIATE	Put into Sour group due to Acid Number >1
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 monitored for pour point depression.
XIKOMBA	Must be monitored for pour point depression.
YOHO CRUDE	Must be monitored for pour point depression.

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.

NOTES					
CRITERIA FOR GROUPING CRUDES ON CAPLINE				POUR POINT REQUIREMENTS	
Group	Criteria			Summer	Start on or after April 1, Clear of System by September 30 <= 55F
	Sulfur	Ni + V(pitch)	TAN	Winter	Start October 1 - March 31 <= 35F
	%w	ppm	mg KOH/g		
Sweet - Low Metals	< 0.5	<= 100	<= 1.0	RVP LIMITATIONS	
Sweet - High Metals	< 0.5	<= 250	<= 1.0		
Intermediate	0.5 - 1.0	<= 550	<= 1.0	Year-Round	RVP of <= 8.6 psi accepted year-round
Sour	>1.0 - 2.0	<= 1200	<= 1.5	Winter	Start on or after October 1, Clear of System by April 30 <= 9.6
High Sulfur Sour	> 2.0	<= 1200	<= 2.0		NOTE: RVP > 9.6 Subject to Management Approval