Annexure I

to

RFP No. KGD6/CONDENSATE/2026/11

Assay Report







CRUDE ASSAY REPORT

Report Number: IDL-CA-0017_r2-2026

SAMPLE DESCRIPTION: Condensate outlet from seawater cooler to Hull Storage

Bureau Veritas Commodities Division
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LABORATORY REPORT NO: IDL-CA-0017_r2-2026

Date: October 30, 2026

Company details	:	Reliance Industries Ltd KGD6 Gadimoga AP
For the Attention of	:	Dr.B.Senthilmurugan
Sample(s) Location	:	Reliance East Godavari
Sample(s) submitted as	:	Stabilized Condensate
Sample Point	:	020-SP-267
Description(s) on Label(s)	:	Condensate outlet from seawater cooler to Hull Storage
Sample collection date	:	21-07-2026 @ 04:00 hrs
Seals on Sample(s)	:	Not Available
Sample(s) received on	:	14 August, 2026

The above sample(s) was/were examined and the following results obtained:

Please refer attached sheets for analysis report.

Reported By,	Reviewed By,	AUTHORIZED SIGNATURE
Rejeesh Reghu	**George Idicula**	**Biju GEORGE**
Sr. Chemist	Head of Laboratories	Laboratory Manager
		

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

Condensate outlet from seawater cooler to Hull Storage

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CONDENSATE OIL -DETAILED ASSAY ALL CUTS OVERVIEW

Properties	Method	Unit	WHOLE CRUDE OIL	LPG	LIGHT NAPHTHA C5 -105°C	HEAVY NAPHTHA 105°C - 165°C	LIGHT KEROSENE 165°C - 227°C	HEAVY KEROSENE 227°C - 270°C	DIESEL 270°C - 370°C	HEAVY DIESEL 370°C - 390°C	LIGHT VGO 390°C - 410°C	HEAVY VGO 410°C - 490°C	ATM RESIDUE 370°C + Res	VACUUM RESIDUE 490°C + Res
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %		2.07	24.39	20.10	12.33	9.24	18.62	3.04	2.62	5.40	13.25	2.19
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %		2.82	26.53	20.30	12.13	8.72	17.34	2.82	2.43	4.96	12.16	1.95
Cumulative	ASTM D2892 + ASTM D5236	Wt %		2.07	26.46	46.56	58.89	68.13	86.75	89.79	92.41	97.81	100.00	100.00
Cumulative	ASTM D2892 + ASTM D5236	Vol %		2.82	26.53	49.65	61.78	70.50	87.84	90.66	93.09	98.05	100.00	100.00
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %		2.07	14.26	36.51	52.72	63.51	77.44	88.27	91.10	95.11	93.37	98.90
Density at 15 °C	ASTM D1298	g/cm3	0.7856	0.5758	0.7222	0.7780	0.7983	0.8327	0.8435	0.8460	0.8472	0.8566	0.8562	0.8837
Specific Gravity at 15.6°C	ASTM D1298	-	0.786		0.7224	0.7783	0.7987	0.8331	0.8439	0.8464	0.8476	0.8571	0.8567	0.8842
API Gravity	ASTM D1298	-	48.53		64.37	50.31	45.66	38.35	36.17	35.68	35.44	33.59	33.67	28.53
Basic Sediment & Water	ASTM D4007	Vol %	<0.05											
Water Content	ASTM D4377	ppm Wt	225											
Total Chloride	UOP 779	ppm Wt	<1						0.05	0.07	0.86	0.18		
Organic Chloride	ASTM D4929(B)	ppm Wt	<1		<1	<1	<1	<1						
Basic Nitrogen	UOP 269	ppm Wt	5				<1							
Cold Filter Plugging Point	ASTM D6371	°C	+4						+7					
Doctor Test	UOP 41	--	Negative		Negative	Negative	Negative	Negative	Negative					
Copper Strip Corrosion	ASTM D130	--	1a				1a	1a						
Mono Aromatics	IP 391	Wt %	11.48						9.1					
Di Aromatics	IP 391	Wt %	2.5						6.0					
Tri + Aromatics	IP 391	Wt %	0.2						1.1					
Poly Aromatics	IP 391	Wt %	2.6						7.1					
Total Aromatics	IP 391	Wt %	14.1						16.2					
Mercury	UOP 938	ppb Wt	<1 (ND)		<1 (ND)	<1 (ND)	<1 (ND)	<1 (ND)	<1 (ND)	<1 (ND)	<1 (ND)	<1 (ND)	<1 (ND)	<1 (ND)
Sodium	ASTM D5863	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	0.27	0.47	0.43	0.86	0.97
Nickel	ASTM D5863	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.35	2.0	0.37
Vanadium	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.53	3.0	0.56
Arsenic	UOP 946	ppb Wt	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead	ICP-MS	ppb Wt	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	ASTM D5863	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.34	0.3	0.37
Iron	ASTM D5863	ppm Wt	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	0.03	0.42	0.31	0.6	0.61
Trace Metals - Si	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	0.02	0.09	0.14	0.2	0.33
Trace Metals - Ca	ICP-MS	ppm Wt	0.4		<0.1	<0.1	<0.1	<0.1	<0.1	0.01	0.28	0.37	0.2	0.47
Trace Metals - P	ICP-MS	ppb Wt	0.02		<1	<1	<1	<1	<1	<1	<1	<1	<1	0.29
Trace Metals - Al	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	0.05	0.1	0.18	0.3	0.25
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.01	0.01	<0.01	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.01	0.01	<0.01	<0.1
Potassium - K	ASTM D5863	ppm Wt	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.17	0.1	0.21
Trace Metals - Mn	ICP-MS	ppm Wt	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0	0.12
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0	0.23
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Sulphur	ASTM D4294 / ASTM D5453	ppm Wt	199		0.3	1.4	7.0	94	572	598	595	647	664	974
Total Nitrogen	ASTM D4629 / ASTM D5762	ppm Wt	29		1	2	3	4.5	39	54	111	169	164	330
Total Acid Number	ASTM D664	mgKOH	0.04		0.0135	0.03	0.05	0.05	0.06	0.06	0.06	0.08	0.07	0.08
Smoke Point	ASTM D1322	mm					23	20	17					
Flash Point (Abel)	IP 170	°C	Below -5		Below -5	Below -5	58							
Flash Point	ASTM D 93/ ASTM D92	°C						+104	+148	+198	+216	+234	+226	+262
Freezing Point	ASTM D2386	°C						-21						
Salt Content	ASTM D3230	lb/1000l	<1											
Aniline Point	ASTM D611	°C						65.0	83	88.6	102.0	105.0	110.0	115.0
Cloud Point	ASTM D2500	°C							+13	+38	+40	+43	+48	>+50
Pour Point	ASTM D97	°C	+6					-18	+12			+42	+47	+57
Colour Saybolt	ASTM D156	-			+30	+30	+30	+30						
ASTM Colour	ASTM D6045	-	L 1.0						L0.5	L2.0	L1.5	L2.0	L4.5	D8
Research Octane Number	ASTM D2699	-			73	63.1	37							
Kinematic Viscosity at - 20°C	ASTM D445	cSt						10.210						
Kinematic Viscosity at 40°C	ASTM D445	cSt	1.122					1.372	4.752	10.63	17.04			
Kinematic Viscosity at 50°C	ASTM D445	cSt						1.207	3.874	8.192	12.47	15.08	NA	NA
Kinematic Viscosity at 70°C	ASTM D445	cSt	0.786											
Kinematic Viscosity at 75°C	ASTM D445	cSt									6.669	7.719		21.51
Kinematic Viscosity at 100°C	ASTM D445	cSt									4.027	4.546		10.76
Reid Vapour Pressure at 37.8°C	ASTM D5191	kPa	34.3		42.5	5.5	1.4							
Cetane Index	ASTM D976	-						46.9	56.4	49.3	N/P	N/P	N/P	N/P
MCRT - 100% Sample	ASTM D4530	% Wt	<0.1										0.12	0.68
Ramsbottom Carbon Residue	ASTM D524	Wt %											0.11	0.64
Wax Content	UOP 46	% Wt	7.6											
Ash Content	ASTM D482	% Wt	<0.01					<0.001	<0.001				0.001	
Refractive Index at 70°C	ASTM D1218	-									1.4542	1.4580		1.4708
Mercaptan Sulphur	ASTM D3227	ppm Wt			<3	<3	<3	<3	<3					
Aromatics	ASTM D1319/ IP 469	% Vol							15.3	17.9	18.8	17.1	22.2	19.1
Olefins	ASTM D1319/ IP 469	% Vol							3.9					
Saturates	ASTM D1319/ IP 469	% Vol							80.8	82.1	81.2	82.9	77.8	80.9
Paraffins	ASTM D6730/ D6839	% Vol			55.122	50.113	52.521	71.150						
Olefins	ASTM D6730/ D6839	% Vol			0.000	2.824	5.959	9.420						
Naphthenes	ASTM D6730/ D6839	% Vol			33.307	20.250	23.401	0.050						
Aromatics	ASTM D6730/ D6839	% Vol			11.571	26.813	18.119	19.380						
Naphthalene Content	ASTM D1840	% Vol						0.63	1.51	0.85	1.83	1.67	2.03	
Characterization Factor	UOP 375	-	11.59			10.78	11.41	11.16		11.24	12.32	12.38		
Gross Calorific Value	ASTM D240	MJ/kg	46.47											
Asphaltenes	IP 143	% Wt	<0.5											
Wax Appearance Temperature	ASTM D8420	°C	21.3											
Wax Disappearance Temperature	ASTM D8420	°C	25.1											
Distillation	ASTM D86	°C	Page No: 23		Page No: 23	Page No: 23	Page No: 23	Page No: 23	Page No: 23					

Note: NA- Unable to analyse the sample due to the nature of the sample (High Pour Point). N/P-Not possible due to the heavy nature of the sample

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TRUE BOILING POINT DISTILLATION DATA

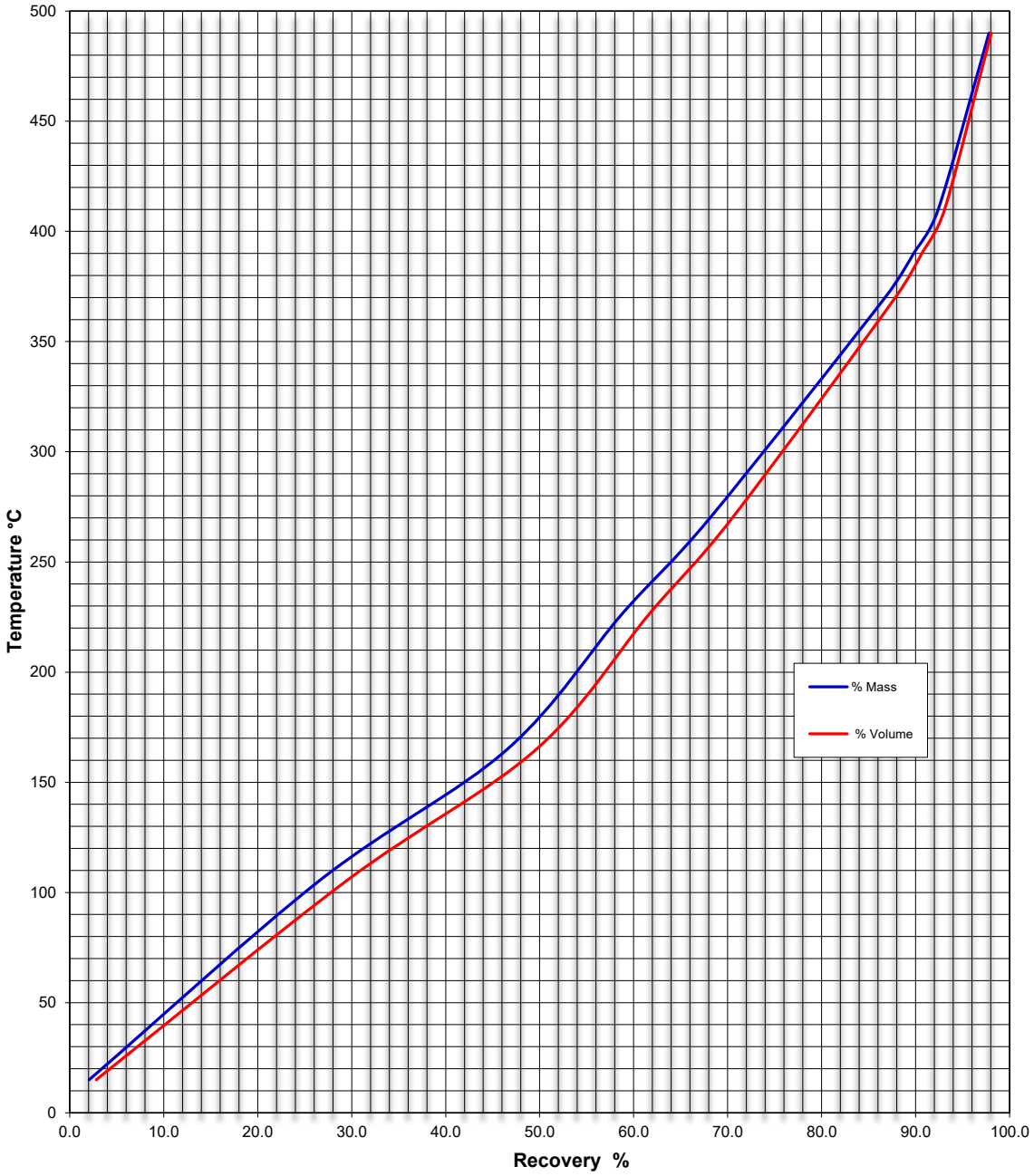
(ASTM D2892 & D5236)

Sample Descriptions: **Condensate outlet from seawater cooler to Hull Storage**

Sl. No.	Vapour Temperature °C	% mass	Cumulative % mass	% Volume	Cumulative % Volume
1	Gas	2.07	2.07	2.82	2.82
2	15 - 105	24.39	26.46	26.53	29.35
3	105 - 165	20.10	46.56	20.30	49.65
4	165 - 227	12.33	58.89	12.13	61.78
5	227 - 270	9.24	68.13	8.72	70.50
6	270 - 370	18.62	86.75	17.34	87.84
7	370 - 390	3.04	89.79	2.82	90.66
8	390 - 410	2.62	92.41	2.43	93.09
9	410 - 490	5.40	97.81	4.96	98.05
10	490 + Residue	2.19	100.00	1.95	100.00

TRUE BOILING POINT DISTILLATION CURVE
(ASTM D2892 & D5236)

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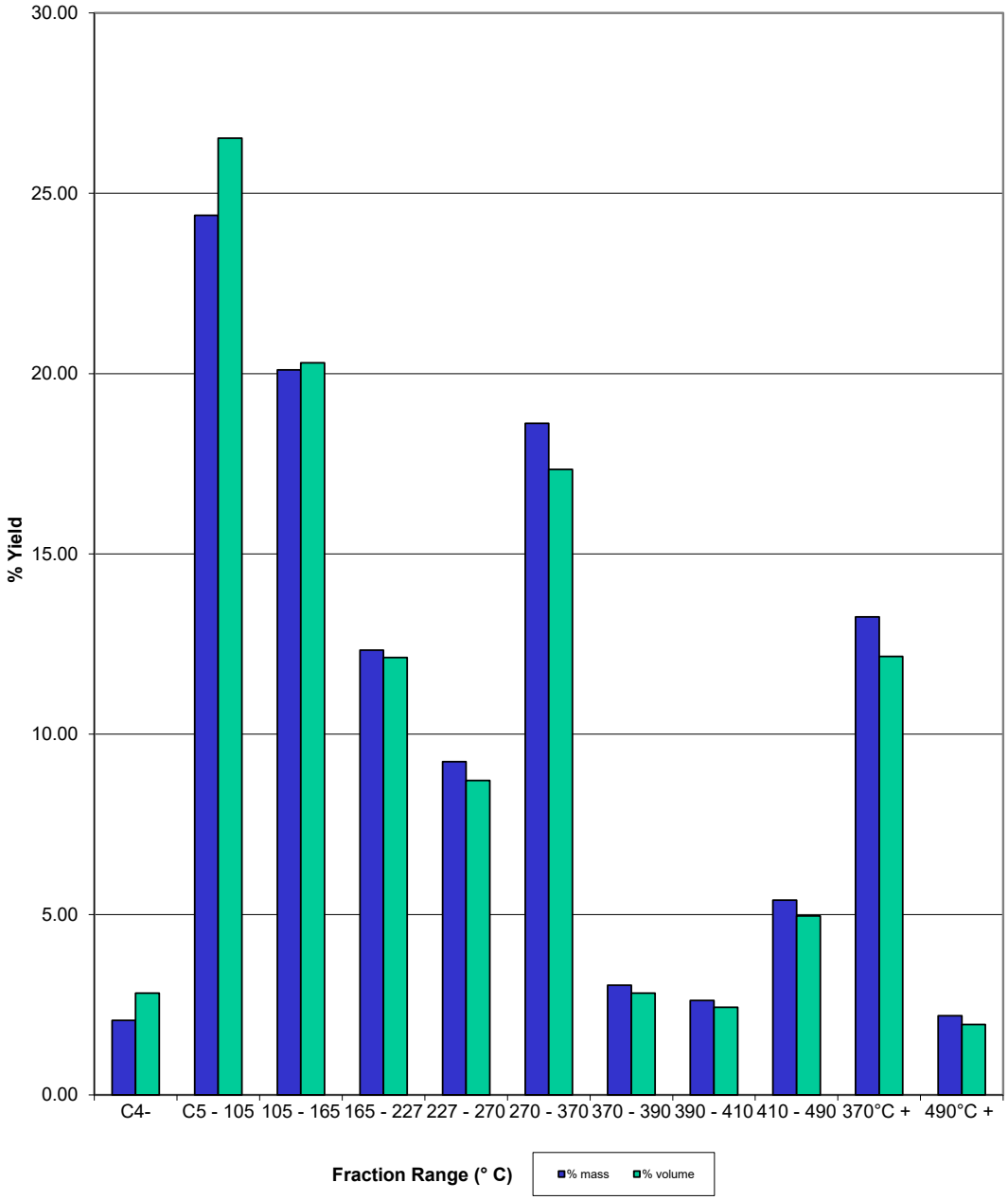
SUMMARY OF PRODUCT / RESIDUE CUT POINTS AND YIELDS

Sample Descriptions: **Condensate outlet from seawater cooler to Hull Storage**

Cut Points		Yield %	
(°C)		% mass	% volume
LPG - Light Ends	C4-	2.07	2.82
Light Naphtha	C5 - 105	24.39	26.53
Heavy Naphtha	105 - 165	20.10	20.30
Light Kerosene	165 - 227	12.33	12.13
Heavy Kerosene	227 - 270	9.24	8.72
Diesel	270 - 370	18.62	17.34
Heavy Diesel	370 - 390	3.04	2.82
Light Vacuum Gas Oil	390 - 410	2.62	2.43
Heavy Vacuum Gas Oil	410 - 490	5.40	4.96
Atmospheric Residue	370°C +	13.25	12.16
Vacuum Residue	490°C +	2.19	1.95

SUMMARY OF TRUE BOILING POINT DISTILLATION WIDE CUTS

LABORATORY REPORT NO: IDL-CA-0017_r2-2026



LABORATORY REPORT NO: IDL-CA-0017 r2-2026

WHOLE CONDENSATE PROPERTIES

Sample Descriptions: **Condensate outlet from seawater cooler to Hull Storage**

TEST	METHOD	UNIT	RESULT
Density at 15°C	ASTM D1298	g/cm3	0.7856
Specific Gravity at 15.6°C	ASTM D1298	-	0.7860
API Gravity	ASTM D1298	-	48.53
Basic Sediment & Water	ASTM D4007	Vol %	<0.05
Water Content	ASTM D4377	ppm Wt	225
Total Chloride	UOP 779	ppm Wt	<1
Organic Chloride	ASTM D4929(B)	ppm Wt	<1
Basic Nitrogen	UOP 269	ppm Wt	5
Cold Filter Plugging Point	ASTM D6371	°C	+4
Doctor Test	UOP 41	--	Negative
Copper Strip Corrosion	ASTM D130	--	1a
Mono Aromatics	IP 391	Wt %	11.5
Di Aromatics	IP 391	Wt %	2.5
Tri + Aromatics	IP 391	Wt %	0.2
Poly Aromatics	IP 391	Wt %	2.6
Total Aromatics	IP 391	Wt %	14.1
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	<0.1
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	0.2
Trace Metals - Si	ICP-MS	ppm Wt	<0.1
Trace Metals - Ca	ICP-MS	ppm Wt	0.4
Trace Metals - P	ICP-MS	ppb Wt	0.02
Trace Metals - Al	ICP-MS	ppm Wt	<0.1
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	0.1
Total Sulphur	ASTM D4294	ppm Wt	199
Total Nitrogen	ASTM D4629	ppm Wt	29
Total Acid Number	ASTM D664	mgKOH/g	0.04
Flash Point (Abel)	IP 170	°C	Below -5
Salt Content	ASTM D3230	lb/1000bbl s	<1
Pour Point	ASTM D97	°C	+6
ASTM Colour	ASTM D6045	-	L 1.0
Kinematic Viscosity at 40°C	ASTM D445	cSt	1.122
Kinematic Viscosity at 70°C	ASTM D445	cSt	0.786
Reid Vapour Pressure at 37.8°C	ASTM D5191	kPa	34.3
MCRT - 100% Sample	ASTM D4530	% Wt	<0.1
Wax Content	UOP 46	% Wt	7.6
Ash Content	ASTM D482	% Wt	<0.01
Characterization Factor	UOP 375	-	11.59
Gross Calorific Value	ASTM D240	MJ/kg	46.47
Asphaltenes	IP 143	% Wt	<0.5
Wax Appearance Temperature	ASTM D8420 / IP 389A	°C	21.3
Wax Disappearance Temperature	ASTM D8420 / IP 389A	°C	25.1
Distillation	ASTM D86	°C	Page No: 23

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C4 LIGHT ENDS

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Initial BP		°C	C4
Final BP		°C	Lighter
Yield	ASTM D2892 / D5236	% Wt.	2.07
Yield		% Vol.	2.82
Density at 15°C	Calculation	kg/L	0.5758
Hydrocarbons Composition			
Methane	GC	mol%	<0.01
Ethane	GC	mol%	0.93
Propane	GC	mol%	4.95
i-Butane	GC	mol%	26.653
n-Butane	GC	mol%	66.137
i-Pentane	GC	mol%	0.776
neo-Pentane	GC	mol%	0.473
n-Pentane	GC	mol%	0.071
Hexanes	GC	mol%	<0.01

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Naphtha Fraction- I [C5-105°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	24.39
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	26.53
Cumulative	ASTM D2892 + ASTM D5236	Wt %	26.46
Cumulative	ASTM D2892 + ASTM D5236	Vol %	26.53
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	14.26
Density at 15°C	ASTM D1298	g/cm3	0.7222
Specific Gravity at 15.6°C	ASTM D1298	-	0.7224
API Gravity	ASTM D1298	-	64.37
Organic Chloride	ASTM D4929(B)	ppm Wt	<1
Doctor Test	UOP 41	-	Negative
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	<0.1
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	<0.1
Trace Metals - Si	ICP-MS	ppm Wt	<0.1
Trace Metals - Ca	ICP-MS	ppm Wt	<0.1
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	<0.1
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D5453	ppm Wt	0.3
Total Nitrogen	ASTM D4629	ppm Wt	1
Total Acid Number	ASTM D664	mgKOH/g	0.01
Flash Point	IP 170	°C	Below -5
Colour Saybolt	ASTM D156	-	+30
Research Octane Number	ASTM D2699	-	73.2
Reid Vapour Pressure at 37.8°C	ASTM D5191	kPa	42.5
Mercaptan Sulphur	ASTM D3227	ppm Wt	<3
Paraffins	ASTM D6730	% Vol	55.122
Olefins	ASTM D6730	% Vol	0.000
Naphthenes	ASTM D6730	% Vol	33.307
Aromatics	ASTM D6730	% Vol	11.571
Distillation	ASTM D86	°C	Page No: 23

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Naphtha Fraction- II [105°C-165°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	20.10
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	20.30
Cumulative	ASTM D2892 + ASTM D5236	Wt %	46.56
Cumulative	ASTM D2892 + ASTM D5236	Vol %	49.65
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	36.51
Density at 15°C	ASTM D1298	g/cm3	0.7780
Specific Gravity at 15.6°C	ASTM D1298	-	0.7783
API Gravity	ASTM D1298	-	50.31
Organic Chloride	ASTM D4929(B)	ppm Wt	<1
Doctor Test	UOP 41	-	Negative
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	<0.1
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	<0.1
Trace Metals - Si	ICP-MS	ppm Wt	<0.1
Trace Metals - Ca	ICP-MS	ppm Wt	<0.1
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	<0.1
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D5453	ppm Wt	1.4
Total Nitrogen	ASTM D4629	ppm Wt	2.0
Total Acid Number	ASTM D664	mgKOH/g	0.03
Flash Point	IP 170	°C	Below -5
Colour Saybolt	ASTM D6045	-	+30
Research Octane Number	ASTM D2699	-	63.1
Reid Vapour Pressure at 37.8°C	ASTM D5191	kPa	5.5
Mercaptan Sulphur	ASTM D3227	ppm Wt	<3
Paraffins	ASTM D6730	% Vol	50.113
Olefins	ASTM D6730	% Vol	2.824
Naphthenes	ASTM D6730	% Vol	20.250
Aromatics	ASTM D6730	% Vol	26.813
Characterization Factor	UOP 375	-	10.78
Distillation	ASTM D86	°C	Page No: 23

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LIGHT KEROSENE -III [165°C-227°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	12.33
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	12.13
Cumulative	ASTM D2892 + ASTM D5236	Wt %	58.89
Cumulative	ASTM D2892 + ASTM D5236	Vol %	61.78
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	52.72
Density @ 15°C	ASTM D1298	g/cm3	0.7983
Specific Gravity @ 15.6°C	ASTM D1298	-	0.7987
API Gravity	ASTM D1298	-	45.66
Organic Chloride	ASTM D4929(B)	ppm Wt	<1
Basic Nitrogen	UOP 269	ppm Wt	<1
Doctor Test	UOP 41	-	Negative
Copper Strip Corrosion	ASTM D130	-	1a
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	<0.1
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	<0.1
Trace Metals - Si	ICP-MS	ppm Wt	<0.1
Trace Metals - Ca	ICP-MS	ppm Wt	<0.1
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D5453	ppm Wt	7.0
Total Nitrogen	ASTM D4629	ppm Wt	3.0
Total Acid Number	ASTM D664	mgKOH/g	0.05
Smoke Point	ASTM D1322	mm	23
Flash Point	IP 170	°C	58
Colour Saybolt	ASTM D156	-	+30
Research Octane Number	ASTM D2699	-	37
Reid Vapour Pressure @ 37.8°C	ASTM D5191	kPa	1.4
Mercaptan Sulphur	ASTM D3227	ppm Wt	<3
Paraffins	ASTM D6839	% Vol	52.521
Olefins	ASTM D6839	% Vol	5.959
Naphthenes	ASTM D6839	% Vol	23.401
Aromatics	ASTM D6839	% Vol	18.119
Characterization Factor	UOP 375	-	11.41
Distillation	ASTM D86	°C	Page No: 23

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HEAVY KEROSENE FRACTION - [227°C-270°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	9.24
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	8.72
Cumulative	ASTM D2892 + ASTM D5236	Wt %	68.13
Cumulative	ASTM D2892 + ASTM D5236	Vol %	70.50
Position in Crude Oil	ASTM D2892 + ASTM D5236	Wt %	63.51
Density at 15°C	ASTM D1298	g/cm3	0.8327
Specific Gravity at 15.6°C	ASTM D1298	-	0.8331
API Gravity	ASTM D1298	-	38.35
Organic Chloride	ASTM D4929(B)	ppm Wt	<1
Doctor Test	UOP 41	-	Negative
Copper Strip Corrosion	ASTM D130	-	1a
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	<0.1
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	<0.1
Trace Metals - Si	ICP-MS	ppm Wt	<0.1
Trace Metals - Ca	ICP-MS	ppm Wt	<0.1
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	<0.1
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D4294	ppm Wt	94.0
Total Nitrogen	ASTM D4629	ppm Wt	4.5
Total Acid Number	ASTM D664	mgKOH/g	0.05
Smoke Point	ASTM D1322	mm	20
Flash Point (PMCC)	ASTM D93	°C	+104
Freezing Point	ASTM D2386	°C	-21
Aniline Point	ASTM D611	°C	65.0
Pour Point	ASTM D97	°C	-18
Colour Saybolt	ASTM D156	-	+30
Kinematic Viscosity at -20°C	ASTM D445	cSt	10.21
Kinematic Viscosity at 40°C	ASTM D445	cSt	1.372
Kinematic Viscosity at 50°C	ASTM D445	cSt	1.207
Cetane Index	ASTM D976	-	46.9
Ash Content	ASTM D482	% Wt	<0.001
Mercaptan Sulphur	ASTM D3227	ppm Wt	<3
Paraffins	ASTM D6839	% Vol	71.150
Olefins	ASTM D6839	% Vol	9.420
Naphthenes	ASTM D6839	% Vol	0.050
Aromatics	ASTM D6839	% Vol	19.380
Naphthalene Content	ASTM D1840	% Vol	0.63
Characterization Factor	UOP 375	-	11.16
Distillation	ASTM D86	°C	Page No: 23

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DIESEL FRACTION - [270°C-370°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	18.62
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	17.34
Cumulative	ASTM D2892 + ASTM D5236	Wt %	86.75
Cumulative	ASTM D2892 + ASTM D5236	Vol %	87.84
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	77.44
Density at 15°C	ASTM D1298	g/cm3	0.8435
Specific Gravity at 15.6°C	ASTM D1298	-	0.8439
API Gravity	ASTM D1298	-	36.17
Total Chloride	UOP 779	ppm Wt	0.05
Cold Filter Plugging Point	ASTM D6371	°C	+7
Doctor Test	UOP 41	-	Negative
Mono Aromatics	IP 391	Wt %	9.1
Di Aromatics	IP 391	Wt %	6.0
Tri + Aromatics	IP 391	Wt %	1.1
Poly Aromatics	IP 391	Wt %	7.1
Total Aromatics	IP 391	Wt %	16.2
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	<0.1
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	<0.1
Trace Metals - Si	ICP-MS	ppm Wt	<0.1
Trace Metals - Ca	ICP-MS	ppm Wt	<0.1
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	<0.1
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D4294	ppm Wt	572
Total Nitrogen	ASTM D4629	ppm Wt	39
Total Acid Number	ASTM D664	mgKOH/g	0.06
Smoke Point	ASTM D1322	mm	17
Flash Point (PMCC)	ASTM D93	°C	+148
Aniline Point	ASTM D611	°C	83.0
Cloud Point	ASTM D2500	°C	+13
Pour Point	ASTM D97	°C	+12
ASTM Colour	ASTM D1500	-	L0.5
Kinematic Viscosity at 40°C	ASTM D445	cSt	4.752
Kinematic Viscosity at 50°C	ASTM D445	cSt	3.874
Cetane Index	ASTM D976	-	56.4
Ash Content	ASTM D482	% Wt	<0.001
Mercaptan Sulphur	ASTM D3227	ppm Wt	<3
Aromatics	ASTM D1319	% Vol	15.3
Olefins	ASTM D1319	% Vol	3.9
Saturates	ASTM D1319	% Vol	80.8
Naphthalene Content	ASTM D1840	% Vol	1.51
Distillation	ASTM D86	°C	Page No: 23

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

ATMOSPHERIC RESIDUE - 370°C + RES

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	13.25
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	12.16
Cumulative	ASTM D2892 + ASTM D5236	Wt %	100.0
Cumulative	ASTM D2892 + ASTM D5236	Vol %	100.0
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	93.37
Density at 15°C	ASTM D1298	g/cm3	0.8562
Specific Gravity at 15.6°C	ASTM D1298	-	0.8567
API Gravity	ASTM D1298	-	33.67
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	0.86
Nickel	ASTM D5863	ppm Wt	2.0
Vanadium	ICP-MS	ppm Wt	3.0
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	0.29
Iron	ASTM D5863	ppm Wt	0.64
Trace Metals - Si	ICP-MS	ppm Wt	0.16
Trace Metals - Ca	ICP-MS	ppm Wt	0.18
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	0.26
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.01
Trace Metals - Cr	ICP-MS	ppm Wt	<0.01
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	0.06
Trace Metals - Mn	ICP-MS	ppm Wt	0.02
Trace Metals - Mo	ICP-MS	ppm Wt	0.03
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D4294	ppm Wt	664
Total Nitrogen	ASTM D5762	ppm Wt	164
Total Acid Number	ASTM D664	mgKOH/g	0.07
Flash Point	ASTM D92	°C	+226
Cloud Point	ASTM D2500	°C	+48
Pour Point	ASTM D97	°C	+47
Aniline Point	ASTM D611	°C	110.0
ASTM Colour	ASTM D6045	-	L4.5
Kinematic Viscosity at 50°C	ASTM D445	cSt	NA
Cetane Index	ASTM D976	-	N/P
Micro Carbon Residue	ASTM D4530	Wt %	0.12
Ramsbottom Carbon Residue	ASTM D524	Wt %	0.11
Ash Content	ASTM D482	% Wt	0.001
Aromatics	IP 469	% Vol	22.2
Saturates	IP 469	% Vol	77.8
Naphthalene Content	ASTM D1840	% Vol	2.03

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HEAVY DIESEL FRACTION - [370°C-390°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	3.04
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	2.82
Cumulative	ASTM D2892 + ASTM D5236	Wt %	89.79
Cumulative	ASTM D2892 + ASTM D5236	Vol %	90.66
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	88.27
Density at 15°C	ASTM D1298	g/cm3	0.8460
Specific Gravity at 15.6°C	ASTM D1298	-	0.8464
API Gravity	ASTM D1298	-	35.68
Total Chloride	UOP 779	ppm Wt	0.07
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	0.27
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	0.03
Trace Metals - Si	ICP-MS	ppm Wt	0.02
Trace Metals - Ca	ICP-MS	ppm Wt	0.01
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	0.05
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.01
Trace Metals - Cr	ICP-MS	ppm Wt	<0.01
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D4294	ppm Wt	598
Total Nitrogen	ASTM D5762	ppm Wt	54
Total Acid Number	ASTM D664	mgKOH/g	0.06
Flash Point (PMCC)	ASTM D93	°C	+198
Cloud Point	ASTM D2500	°C	+38
Aniline Point	ASTM D611	°C	88.6
ASTM Colour	ASTM D6045	-	L2.0
Kinematic Viscosity at 40°C	ASTM D445	cSt	10.63
Kinematic Viscosity at 50°C	ASTM D445	cSt	8.192
Cetane Index	ASTM D976	-	49.3
Aromatics	IP 469	% Vol	17.9
Saturates	IP 469	% Vol	82.1
Naphthalene Content	ASTM D1840	% Vol	0.85
Characterization Factor	UOP 375	-	11.24

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LIGHT VACUUM GAS OIL FRACTION - [390°C-410°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	2.62
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	2.43
Cumulative	ASTM D2892 + ASTM D5236	Wt %	92.41
Cumulative	ASTM D2892 + ASTM D5236	Vol %	93.09
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	91.10
Density at 15°C	ASTM D1298	g/cm3	0.8472
Specific Gravity at 15.6°C	ASTM D1298	-	0.8476
API Gravity	ASTM D1298	-	35.44
Total Chloride	UOP 779	ppm Wt	0.86
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	0.47
Nickel	ASTM D5863	ppm Wt	<0.1
Vanadium	ICP-MS	ppm Wt	<0.1
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	<0.1
Iron	ASTM D5863	ppm Wt	0.42
Trace Metals - Si	ICP-MS	ppm Wt	0.09
Trace Metals - Ca	ICP-MS	ppm Wt	0.28
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	0.10
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	0.01
Trace Metals - Cr	ICP-MS	ppm Wt	0.01
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	<0.1
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D4294	ppm Wt	595
Total Nitrogen	ASTM D5762	ppm Wt	111
Total Acid Number	ASTM D664	mgKOH/g	0.06
Flash Point (PMCC)	ASTM D 93	°C	+216
Cloud Point	ASTM D2500	°C	+40
Aniline Point	ASTM D611	°C	102
ASTM Colour	ASTM D6045	-	L1.5
Kinematic Viscosity at 40°C	ASTM D445	cSt	17.04
Kinematic Viscosity at 50°C	ASTM D445	cSt	12.47
Kinematic Viscosity at 75°C	ASTM D445	cSt	6.669
Kinematic Viscosity at 100°C	ASTM D445	cSt	4.027
Cetane Index	ASTM D976	-	N/P
Refractive Index at 70°C	ASTM D1218	-	1.4542
Aromatics	IP 469	% Vol	18.8
Saturates	IP 469	% Vol	81.2
Naphthalene Content	ASTM D1840	% Vol	1.83
Characterization Factor	UOP 375	% Vol	12.32

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VACUUM GAS OIL FRACTION - [410-460°C]

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	5.40
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	4.96
Cumulative	ASTM D2892 + ASTM D5236	Wt %	97.81
Cumulative	ASTM D2892 + ASTM D5236	Vol %	98.05
Position in Crude Oil	ASTM D2892 + ASTM D5236	Wt %	95.11
Density at 15°C	ASTM D1298	g/cm3	0.8566
Specific Gravity at 15.6°C	ASTM D1298	-	0.8571
API Gravity	ASTM D1298	-	33.59
Total Chloride	UOP 779	ppm Wt	0.18
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ASTM D5863	ppm Wt	0.43
Nickel	ASTM D5863	ppm Wt	0.35
Vanadium	ICP-MS	ppm Wt	0.53
Arsenic	UOP 946	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ASTM D5863	ppm Wt	0.34
Iron	ASTM D5863	ppm Wt	0.31
Trace Metals - Si	ICP-MS	ppm Wt	0.14
Trace Metals - Ca	ICP-MS	ppm Wt	0.37
Trace Metals - P	ICP-MS	ppb Wt	<1
Trace Metals - Al	ICP-MS	ppm Wt	0.18
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	0.01
Trace Metals - Cr	ICP-MS	ppm Wt	0.01
Potassium - K	ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	0.17
Trace Metals - Mn	ICP-MS	ppm Wt	<0.1
Trace Metals - Mo	ICP-MS	ppm Wt	<0.1
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D4294	ppm Wt	647
Total Nitrogen	ASTM D5762	ppm Wt	169
Total Acid Number	ASTM D664	mgKOH/g	0.08
Flash Point (PMCC)	ASTM D93	°C	+234
Cloud Point	ASTM D2500	°C	+43
Aniline Point	ASTM D611	°C	105
Pour Point	ASTM D97	°C	+42
ASTM Colour	ASTM D6045	-	L2.0
Kinematic Viscosity at 50°C	ASTM D445	cSt	15.08
Kinematic Viscosity at 75°C	ASTM D445	cSt	7.719
Kinematic Viscosity at 100°C	ASTM D445	cSt	4.546
Cetane Index	ASTM D976	-	N/P
Refractive Index at 70°C	ASTM D1218	-	1.4580
Aromatics	IP 469	% Vol	17.1
Saturates	IP 469	% Vol	82.9
Naphthalene Content	ASTM D1840	% Vol	1.67
Characterization Factor	UOP 375	-	12.38

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

VACUUM RESIDUE - 490°C +

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

TEST	METHOD	UNIT	RESULT
Yield on Crude	ASTM D2892 + ASTM D5236	Wt %	2.19
Yield on Crude	ASTM D2892 + ASTM D5236	Vol %	1.95
Cumulative	ASTM D2892 + ASTM D5236	Wt %	100.0
Cumulative	ASTM D2892 + ASTM D5236	Vol %	100.0
Position in crude Oil	ASTM D2892 + ASTM D5236	Wt %	98.90
Density at 15°C	ASTM D1298	g/cm3	0.8837
Specific Gravity at 15.6°C	ASTM D1298	-	0.8842
API Gravity	ASTM D1298	-	28.53
Mercury	UOP 938	ppb Wt	<1 (ND)
Sodium	ICP-MS / ASTM D5863	ppm Wt	0.97
Nickel	ICP-MS / ASTM D5863	ppm Wt	0.37
Vanadium	ICP-MS	ppm Wt	0.56
Arsenic	UOP 946 / ICP-MS	ppb Wt	<1
Lead	ICP-MS	ppb Wt	<1
Copper	ICP-MS / ASTM D5863	ppm Wt	0.37
Iron	ICP-MS / ASTM D5863	ppm Wt	0.61
Trace Metals - Si	ICP-MS	ppm Wt	0.33
Trace Metals - Ca	ICP-MS	ppm Wt	0.47
Trace Metals - P	ICP-MS	ppb Wt	0.29
Trace Metals - Al	ICP-MS	ppm Wt	0.25
Trace Metals - Cd	ICP-MS	ppm Wt	<0.1
Trace Metals - Co	ICP-MS	ppm Wt	<0.1
Trace Metals - Cr	ICP-MS	ppm Wt	<0.1
Potassium - K	ICP-MS / ASTM D5863	ppm Wt	<0.2
Trace Metals - Magnesium	ICP-MS	ppm Wt	0.21
Trace Metals - Mn	ICP-MS	ppm Wt	0.12
Trace Metals - Mo	ICP-MS	ppm Wt	0.23
Trace Metals - Titanium	ICP-MS	ppm Wt	<0.1
Trace Metals - Zn	ICP-MS	ppm Wt	<0.1
Total Sulphur	ASTM D4294	ppm Wt	974
Total Nitrogen	ASTM D5762	ppm Wt	330
Total Acid Number	ASTM D664	mgKOH/g	0.08
Flash Point	ASTM D92	°C	+262
Aniline Point	ASTM D611	°C	115
Cloud Point	ASTM D2500	°C	>+50
Pour Point	ASTM D97	°C	+57
ASTM Colour	ASTM D6045	-	D8
Kinematic Viscosity at 50°C	ASTM D445	cSt	NA
Kinematic Viscosity at 75°C	ASTM D445	cSt	21.51
Kinematic Viscosity at 100°C	ASTM D445	cSt	10.76
Cetane Index	ASTM D976	-	N/P
Micro Carbon Residue	ASTM D4530	Wt %	0.68
Ramsbottom Carbon Residue	ASTM D524	Wt %	0.64
Refractive Index at 70°C	ASTM D1218	-	1.4708
Aromatics	IP 469	% Vol	19.1
Saturates	IP 469	% Vol	80.9

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

DETAILED HYDROCARBON ANALYSIS

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

NO.	COMPOSITION	RESULTS			
		Light Naphtha-[C5-105°C] - %Wt	Light Naphtha-[C5-105°C] - %Vol	Heavy Naphtha-[105-165°C] - %Wt	Heavy Naphtha-[105-165°C] - %Vol
1	PARAFFINS	50.400	55.122	46.648	50.113
2	OLEFINS	0.000	0.000	2.655	2.824
3	NAPHTHENE	35.522	33.307	20.419	20.250
4	AROMATICS	14.078	11.571	30.278	26.813
5	HEAVIES	0.000	0.000	0.000	0.000
6	UNKNOWNS	0.000	0.000	0.000	0.000
	TOTAL	100.000	100.000	100.000	100.000
7	TOTAL C3	0.000	0.000	0.000	0.000
8	TOTAL C4	0.216	0.266	0.000	0.000
9	TOTAL C5	15.821	18.009	0.008	0.009
10	TOTAL C6	39.714	39.168	0.158	0.155
11	TOTAL C7	41.596	39.890	15.763	15.195
12	TOTAL C8	2.653	2.667	47.247	47.156
13	TOTAL C9	0.000	0.000	26.613	26.880
14	TOTAL C10	0.000	0.000	9.805	10.234
15	TOTAL C11	0.000	0.000	0.406	0.371
16	TOTAL C11+	0.000	0.000	0.000	0.000
17	TOTAL HEAVIES	0.000	0.000	0.000	0.000
18	TOTAL UNKNOWNS	0.000	0.000	0.000	0.000
	TOTAL	100.000	100.000	100.000	100.000
19	C3 PARAFFINS	0.000	0.000	0.000	0.000
20	C4 PARAFFINS	0.215	0.267	0.000	0.000
21	C5 PARAFFINS	14.798	17.025	0.007	0.008
22	C6 PARAFFINS	18.697	20.376	0.008	0.009
23	C7 PARAFFINS	14.553	15.271	1.798	2.018
24	C8 PARAFFINS	2.137	2.183	21.966	23.921
25	C9 PARAFFINS	0.000	0.000	13.456	14.356
26	C10 PARAFFINS	0.000	0.000	9.043	9.461
27	C11 PARAFFINS	0.000	0.000	0.367	0.337
28	C12 PARAFFINS	0.000	0.000	0.003	0.003
29	C13 PARAFFINS	0.000	0.000	0.000	0.000
30	C14 PARAFFINS	0.000	0.000	0.000	0.000
31	C5 OLEFINS	0.000	0.000	0.000	0.000
32	C6 OLEFINS	0.000	0.000	0.000	0.000
33	C7 OLEFINS	0.000	0.000	0.000	0.000
34	C8 OLEFINS	0.000	0.000	0.855	0.880
35	C9 OLEFINS	0.000	0.000	1.259	1.369
36	C10 OLEFINS	0.000	0.000	0.541	0.575
37	C11 OLEFINS	0.000	0.000	0.000	0.000
38	C12 OLEFINS	0.000	0.000	0.000	0.000
39	C5 NAPHTHENE	1.022	0.984	0.000	0.000
40	C6 NAPHTHENE	13.750	12.858	0.124	0.122
41	C7 NAPHTHENE	20.233	18.981	7.285	7.263
42	C8 NAPHTHENE	0.517	0.484	6.801	6.733
43	C9 NAPHTHENE	0.000	0.000	6.193	6.118
44	C10 NAPHTHENE	0.000	0.000	0.016	0.015
45	C11 NAPHTHENE	0.000	0.000	0.000	0.000
46	POLY NAPHTHENE	0.000	0.000	0.000	0.000
47	C6 AROMATIC	7.268	5.934	0.027	0.024
48	C7 AROMATIC	6.810	5.637	6.680	5.915
49	C8 AROMATIC	0.000	0.000	17.626	15.621
50	C9 AROMATIC	0.000	0.000	5.705	5.038
51	C10 AROMATIC	0.000	0.000	0.205	0.183
52	C11 AROMATIC	0.000	0.000	0.025	0.022
53	C12 AROMATIC	0.000	0.000	0.010	0.009
54	UNKNOWNS	0.000	0.000	0.000	0.000
	TOTAL	100.000	100.000	100.000	100.000

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

DETAILED HYDROCARBON ANALYSIS

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

NO.	COMPOSITION	RESULTS			
		Light Kerosene-[165-227°C] - %Wt	Light Kerosene-[165-227°C] - %Vol	Heavy Kerosene-[227-270°C] - %Wt	Heavy Kerosene-[227-270°C] - %Vol
1	PARAFFINS	49.810	52.521	67.801	71.150
2	OLEFINS	5.691	5.959	8.920	9.420
3	NAPHTHENE	23.829	23.401	0.050	0.050
4	AROMATICS	20.670	18.119	23.229	19.380
5	HEAVIES	0.000	0.000	0.000	0.000
6	UNKNOWNS	0.000	0.000	0.000	0.000
	TOTAL	100.000	100.000	100.000	100.000
7	TOTAL C8	0.401	0.370	0.000	0.000
8	TOTAL C9	8.560	8.140	0.000	0.000
9	TOTAL C10	29.868	29.490	0.170	0.130
10	TOTAL C11	32.240	32.357	5.260	4.330
11	TOTAL C12	18.670	19.219	15.600	13.400
12	TOTAL C13	10.261	10.424	29.010	30.210
13	TOTAL C14	0.000	0.000	24.730	26.020
14	TOTAL C15	0.000	0.000	25.120	25.800
15	TOTAL C16+	0.000	0.000	0.110	0.110
16	TOTAL HEAVIES	0.000	0.000	0.000	0.000
17	TOTAL UNKNOWNS	0.000	0.000	0.000	0.000
	TOTAL	100.000	100.000	100.000	100.000
18	C5 PARAFFINS	0.000	0.000	0.000	0.000
19	C6 PARAFFINS	0.000	0.000	0.000	0.000
20	C7 PARAFFINS	0.000	0.000	0.000	0.000
21	C8 PARAFFINS	0.000	0.000	0.000	0.000
22	C9 PARAFFINS	0.980	1.090	0.000	0.000
23	C10 PARAFFINS	10.560	11.440	0.000	0.000
24	C11 PARAFFINS	15.490	16.450	0.040	0.040
25	C12 PARAFFINS	13.690	14.270	1.690	1.820
26	C13 PARAFFINS	9.080	9.280	19.880	21.020
27	C14 PARAFFINS	0.000	0.000	23.370	24.610
28	C15 PARAFFINS	0.000	0.000	22.710	23.540
29	C16 PARAFFINS	0.000	0.000	0.110	0.110
30	C7 OLEFINS	0.000	0.000	0.000	0.000
31	C8 OLEFINS	0.000	0.000	0.000	0.000
32	C9 OLEFINS	0.090	0.100	0.000	0.000
33	C10 OLEFINS	0.660	0.700	0.000	0.000
34	C11 OLEFINS	1.910	2.010	0.350	0.380
35	C12 OLEFINS	2.280	2.370	1.640	1.750
36	C13 OLEFINS	0.750	0.780	5.590	5.890
37	C14 OLEFINS	0.000	0.000	1.340	1.400
38	C5 NAPHTHENE	0.000	0.000	0.000	0.000
39	C6 NAPHTHENE	0.000	0.000	0.000	0.000
40	C7 NAPHTHENE	0.000	0.000	0.000	0.000
41	C8 NAPHTHENE	0.010	0.010	0.000	0.000
42	C9 NAPHTHENE	1.770	1.770	0.000	0.000
43	C10 NAPHTHENE	9.970	9.840	0.000	0.000
44	C11 NAPHTHENE	10.010	9.780	0.000	0.000
45	C12 NAPHTHENE	2.060	2.000	0.050	0.050
46	C8 AROMATIC	0.390	0.350	0.000	0.000
47	C9 AROMATIC	5.730	5.190	0.000	0.000
48	C10 AROMATIC	8.670	7.510	0.170	0.130
49	C11 AROMATIC	4.820	4.110	4.870	3.920
50	C12 AROMATIC	0.640	0.560	12.210	9.780
51	C13 AROMATIC	0.440	0.390	3.540	3.290
52	C14 AROMATIC	0.000	0.000	0.010	0.010
53	C15 AROMATIC	0.000	0.000	2.430	2.260
54	UNKNOWNS	0.000	0.000	0.000	0.000
	TOTAL	100.000	100.000	100.000	100.000

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

ASTM D86 - DISTILLATION DATA

Sample Descriptions: Condensate outlet from seawater cooler to Hull Storage

Boiling range	°C	Whole Crude	C5-105°C	105-165°C	165-227°C	227-270°C	270-370°C
Initial Boiling Point	°C	44.1	43.7	104.7	165.6	228.4	270.7
5% recovered	°C	77.5	61.7	121.8	181.2	238.0	297.1
10% recovered	°C	89.1	64.9	123.6	182.2	239.0	295.7
20% recovered	°C	106.5	68.7	124.8	184.1	240.2	297.7
30% recovered	°C	122.9	72.6	126.5	186.4	241.1	300.2
40% recovered	°C	144	76.6	128.6	188.7	242.2	303.5
50% recovered	°C	176.2	80.6	131.0	191.5	243.6	307.6
60% recovered	°C	224.3	84.3	133.6	194.6	245.1	312.5
70% recovered	°C	270.9	87.9	137.0	198.6	247.0	318.5
80% recovered	°C	318.2	92.1	141.4	203.5	247.1	325.7
90% recovered	°C	378.6	96.9	147.8	209.9	253.4	334.8
95% recovered	°C	396.3	99.9	153.1	214.8	256.9	340.6
Final Boiling Point	°C	>400	105.9	164.5	226.7	270.2	369.7
Volume recovered	% Vol.	NA	98.5	98.3	98.2	98.1	98.0
Residue	% Vol.	NA	0.5	0.7	0.9	1.0	1.2
Loss	% Vol.	NA	1.0	1.0	0.9	0.9	0.8

NA: Not Available

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

WHOLE CONDENSATE SAMPLE

Sample Descriptions: **Condensate outlet from seawater cooler to Hull Storage**

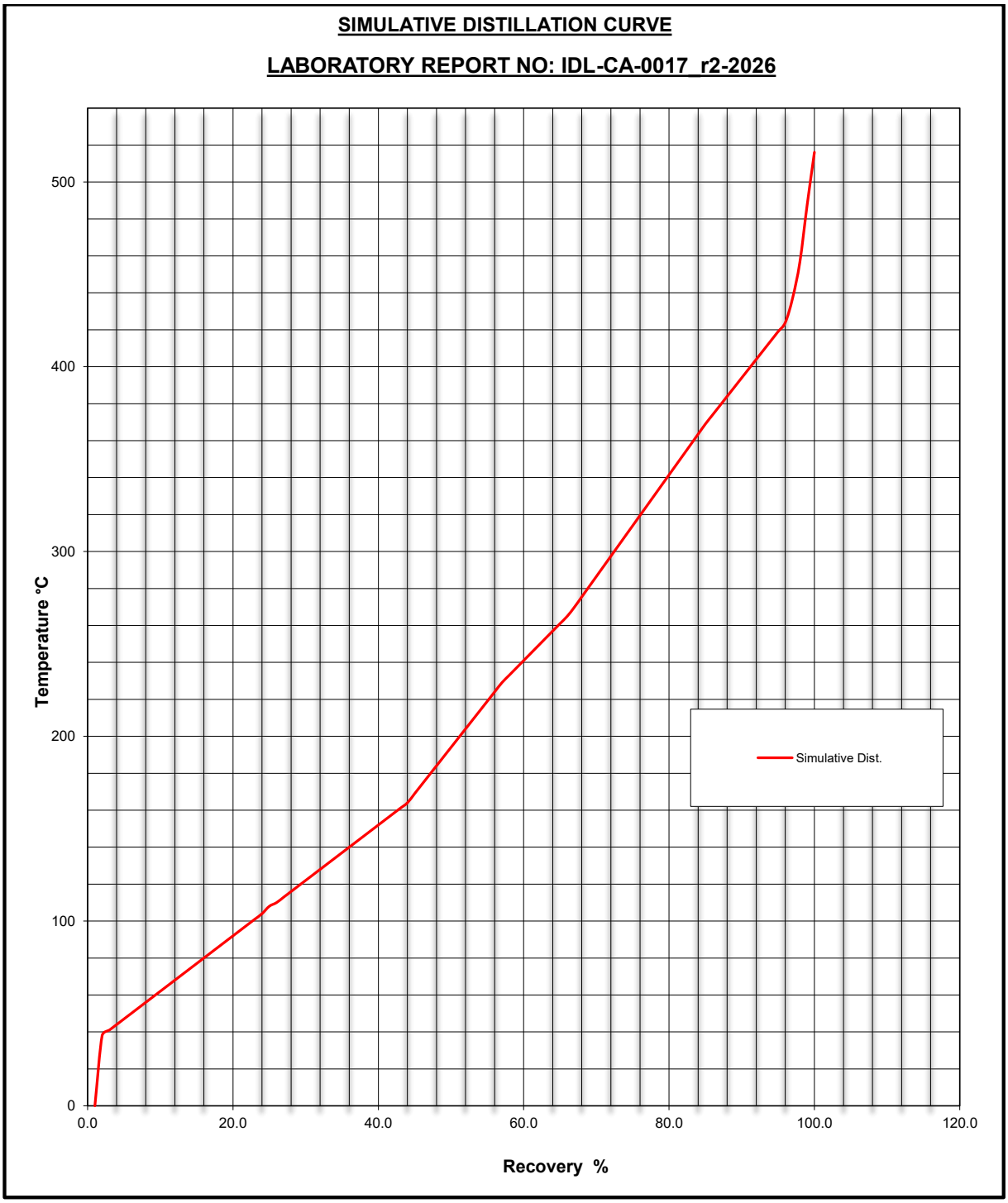
SIMULATED DISTILLATION DATA - ASTM D7169

No.	Recovery at	Boiling Point - °C
1	Initial Boiling Point	>36
2	Temp. at 2.0% Recovery	38.0
3	Temp. at 3.0% Recovery	41.0
4	Temp. at 4.0% Recovery	44.0
5	Temp. at 5.0% Recovery	47.0
6	Temp. at 6.0% Recovery	50.0
7	Temp. at 7.0% Recovery	53.0
8	Temp. at 8.0% Recovery	56.0
9	Temp. at 9.0% Recovery	59.0
10	Temp. at 10.0% Recovery	62.0
11	Temp. at 11.0% Recovery	65.0
12	Temp. at 12.0% Recovery	68.0
13	Temp. at 13.0% Recovery	71.0
14	Temp. at 14.0% Recovery	74.0
15	Temp. at 15.0% Recovery	77.0
16	Temp. at 16.0% Recovery	80.0
17	Temp. at 17.0% Recovery	83.0
18	Temp. at 18.0% Recovery	86.0
19	Temp. at 19.0% Recovery	89.0
20	Temp. at 20.0% Recovery	92.0
21	Temp. at 21.0% Recovery	95.0
22	Temp. at 22.0% Recovery	98.0
23	Temp. at 23.0% Recovery	101.0
24	Temp. at 24.0% Recovery	104.0
25	Temp. at 25.0% Recovery	108.0
26	Temp. at 26.0% Recovery	110.0
27	Temp. at 27.0% Recovery	113.0
28	Temp. at 28.0% Recovery	116.0
29	Temp. at 29.0% Recovery	119.0
30	Temp. at 30.0% Recovery	122.0
31	Temp. at 31.0% Recovery	125.0
32	Temp. at 32.0% Recovery	128.0
33	Temp. at 33.0% Recovery	131.0
34	Temp. at 34.0% Recovery	134.0
35	Temp. at 35.0% Recovery	137.0
36	Temp. at 36.0% Recovery	140.0
37	Temp. at 37.0% Recovery	143.0
38	Temp. at 38.0% Recovery	146.0
39	Temp. at 39.0% Recovery	149.0
40	Temp. at 40.0% Recovery	152.0
41	Temp. at 41.0% Recovery	155.0
42	Temp. at 42.0% Recovery	158.0
43	Temp. at 43.0% Recovery	161.0
44	Temp. at 44.0% Recovery	164.0
45	Temp. at 45.0% Recovery	169.0
46	Temp. at 46.0% Recovery	174.0
47	Temp. at 47.0% Recovery	179.0
48	Temp. at 48.0% Recovery	184.0
49	Temp. at 49.0% Recovery	189.0
50	Temp. at 50.0% Recovery	194.0

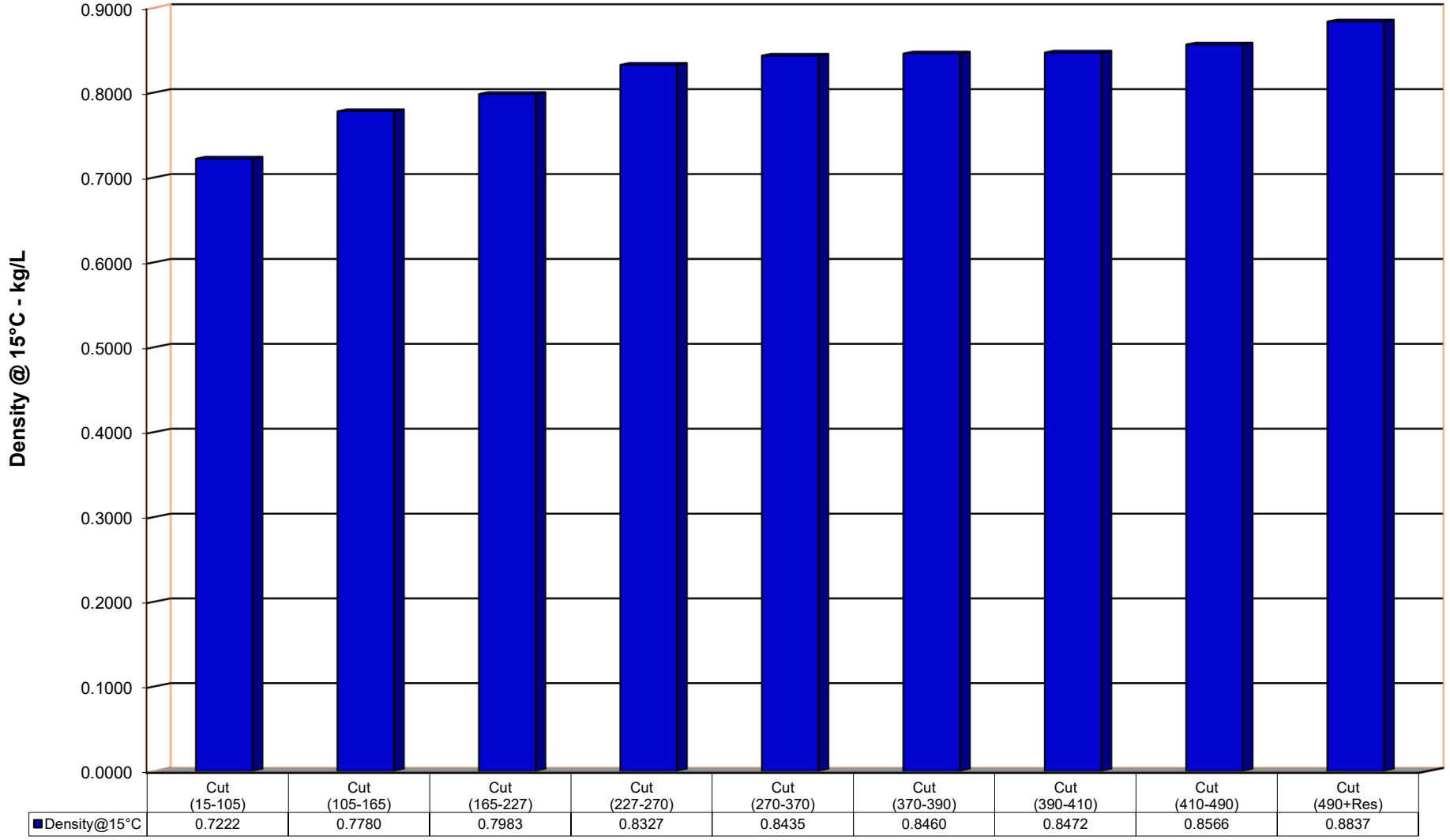
No.	Recovery at	Boiling Point °C
51	Temp. at 51.0% Recovery	199.0
52	Temp. at 52.0% Recovery	204.0
53	Temp. at 53.0% Recovery	209.0
54	Temp. at 54.0% Recovery	214.0
55	Temp. at 55.0% Recovery	219.0
56	Temp. at 56.0% Recovery	224.0
57	Temp. at 57.0% Recovery	229.0
58	Temp. at 58.0% Recovery	233.0
59	Temp. at 59.0% Recovery	237.0
60	Temp. at 60.0% Recovery	241.0
61	Temp. at 61.0% Recovery	245.0
62	Temp. at 62.0% Recovery	249.0
63	Temp. at 63.0% Recovery	253.0
64	Temp. at 64.0% Recovery	257.0
65	Temp. at 65.0% Recovery	261.0
66	Temp. at 66.0% Recovery	265.0
67	Temp. at 67.0% Recovery	270.0
68	Temp. at 68.0% Recovery	275.5
69	Temp. at 69.0% Recovery	281.0
70	Temp. at 70.0% Recovery	286.5
71	Temp. at 71.0% Recovery	292.0
72	Temp. at 72.0% Recovery	297.5
73	Temp. at 73.0% Recovery	303.0
74	Temp. at 74.0% Recovery	308.5
75	Temp. at 75.0% Recovery	314.0
76	Temp. at 76.0% Recovery	319.5
77	Temp. at 77.0% Recovery	325.0
78	Temp. at 78.0% Recovery	330.5
79	Temp. at 79.0% Recovery	336.0
80	Temp. at 80.0% Recovery	341.5
81	Temp. at 81.0% Recovery	347.0
82	Temp. at 82.0% Recovery	352.5
83	Temp. at 83.0% Recovery	358.0
84	Temp. at 84.0% Recovery	363.5
85	Temp. at 85.0% Recovery	369.0
86	Temp. at 86.0% Recovery	374.0
87	Temp. at 87.0% Recovery	379.0
88	Temp. at 88.0% Recovery	384.0
89	Temp. at 89.0% Recovery	389.0
90	Temp. at 90.0% Recovery	394.0
91	Temp. at 91.0% Recovery	399.0
92	Temp. at 92.0% Recovery	404.0
93	Temp. at 93.0% Recovery	409.0
94	Temp. at 94.0% Recovery	414.0
95	Temp. at 95.0% Recovery	419.0
96	Temp. at 96.0% Recovery	424.0
97	Temp. at 97.0% Recovery	437.1
98	Temp. at 98.0% Recovery	456.7
99	Temp. at 99.0% Recovery	487.5
100	FBP	516.1

SIMULATIVE DISTILLATION CURVE

LABORATORY REPORT NO: IDL-CA-0017_r2-2026

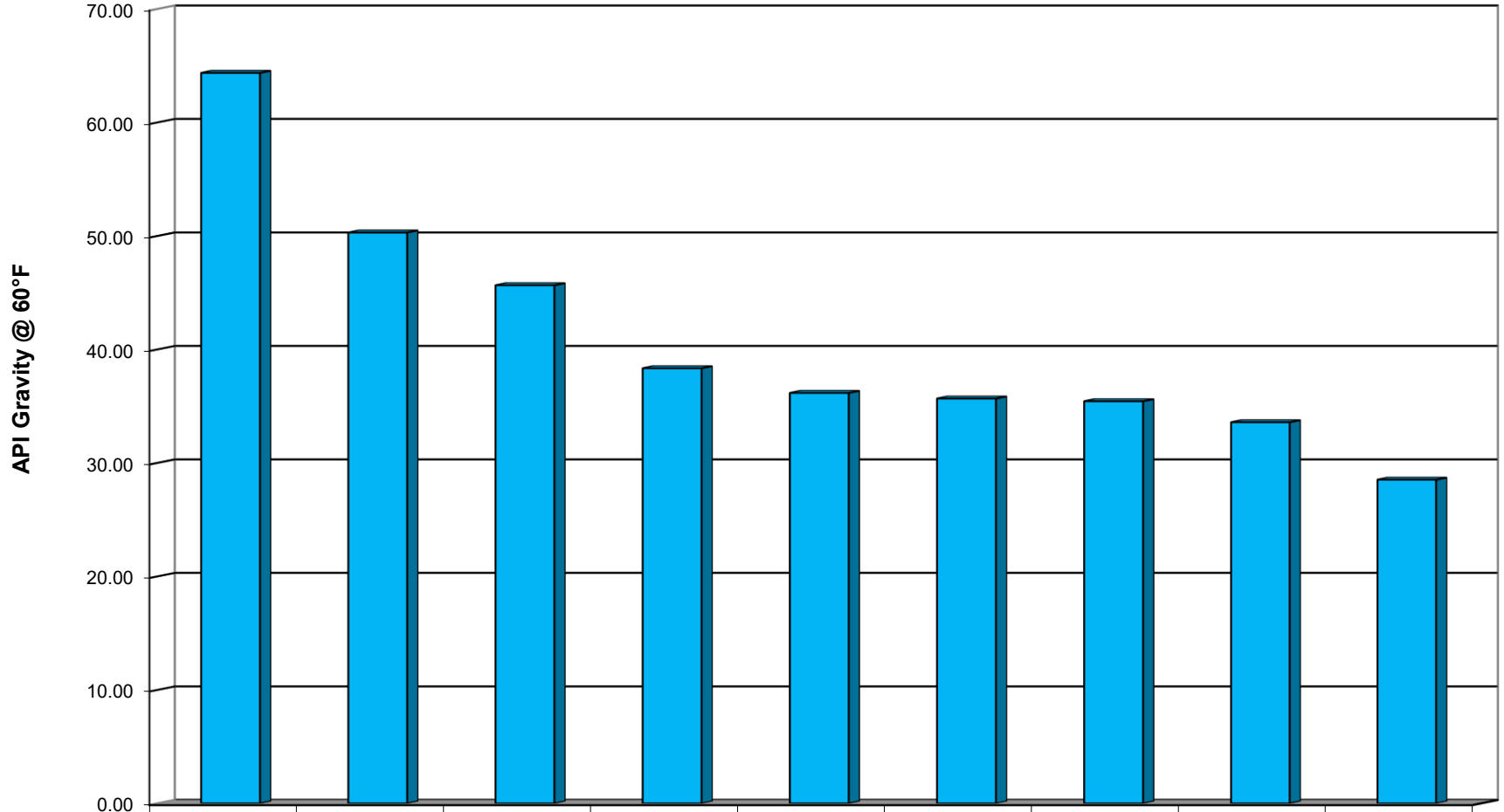


Fractions Mid B.P. Vs Density @ 15°C



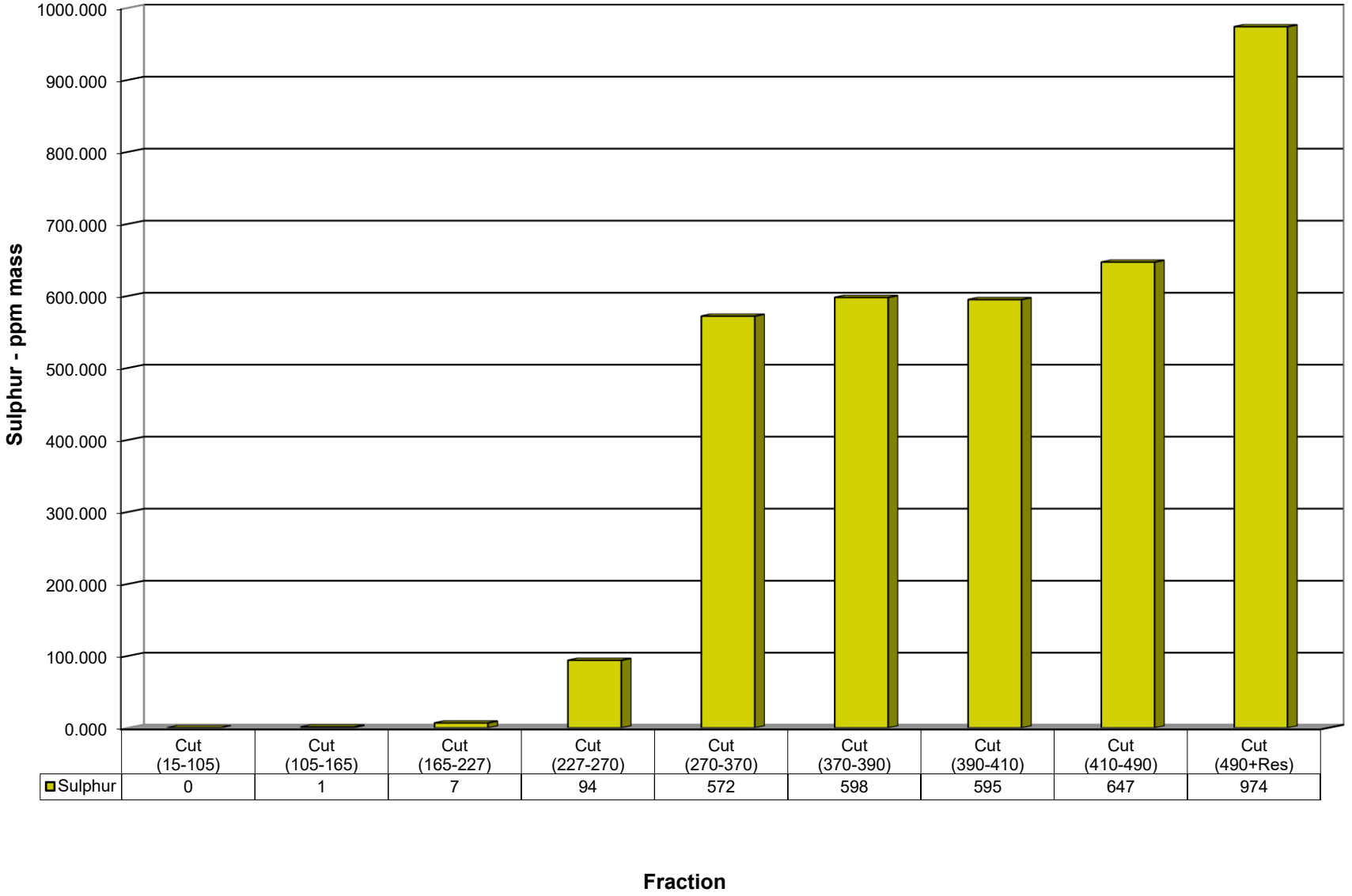
	Cut (15-105)	Cut (105-165)	Cut (165-227)	Cut (227-270)	Cut (270-370)	Cut (370-390)	Cut (390-410)	Cut (410-490)	Cut (490+Res)
Density@15°C	0.7222	0.7780	0.7983	0.8327	0.8435	0.8460	0.8472	0.8566	0.8837

Fractions Mid B.P. Vs API Gravity @ 60°F



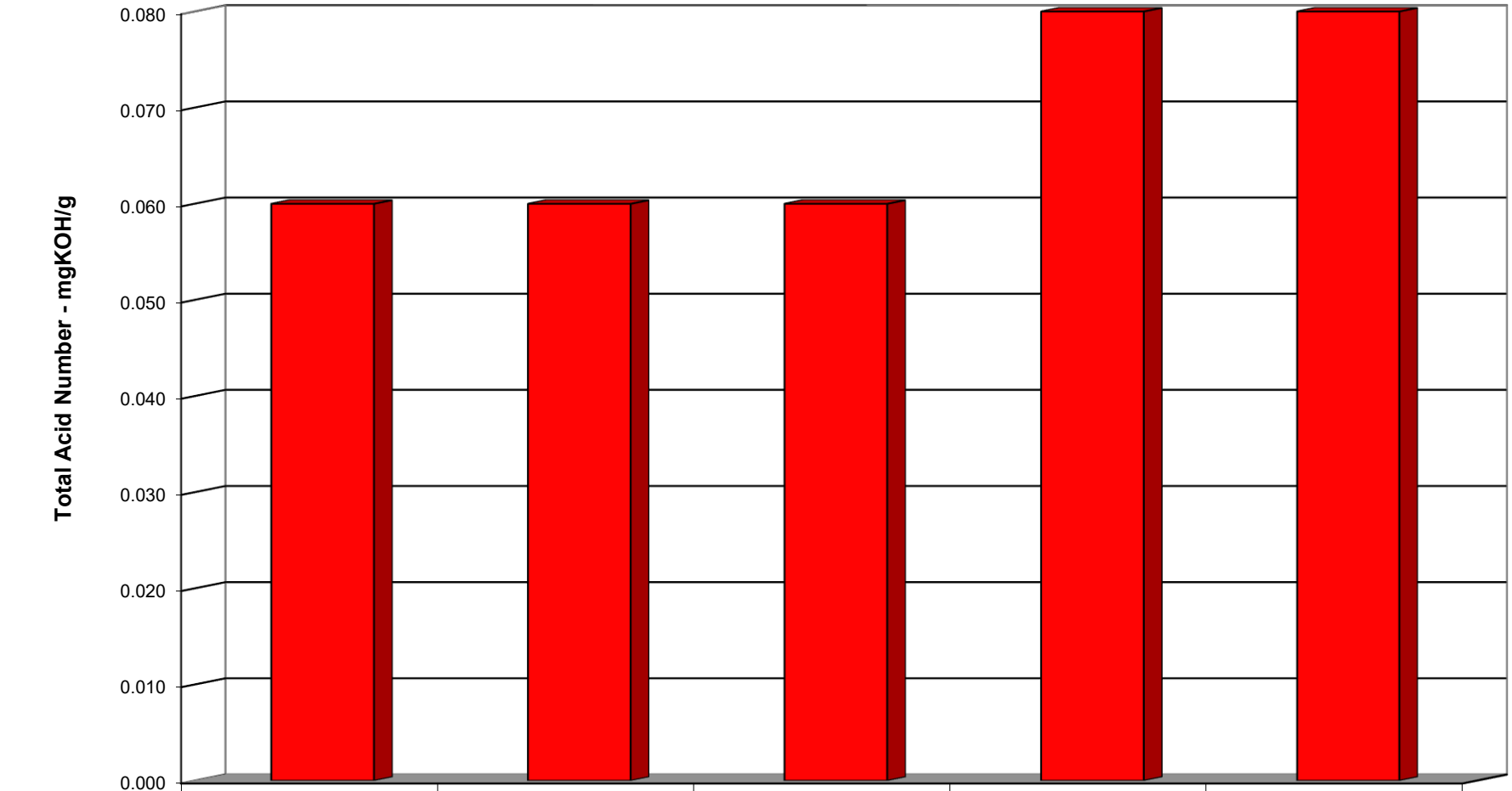
	Cut (15-105)	Cut (105-165)	Cut (165-227)	Cut (227-270)	Cut (270-370)	Cut (370-390)	Cut (390-410)	Cut (410-490)	Cut (490+Res)
API Gravity @60°F	64.37	50.31	45.66	38.35	36.17	35.68	35.44	33.59	28.53

Fractions Mid B.P. Vs Sulphur

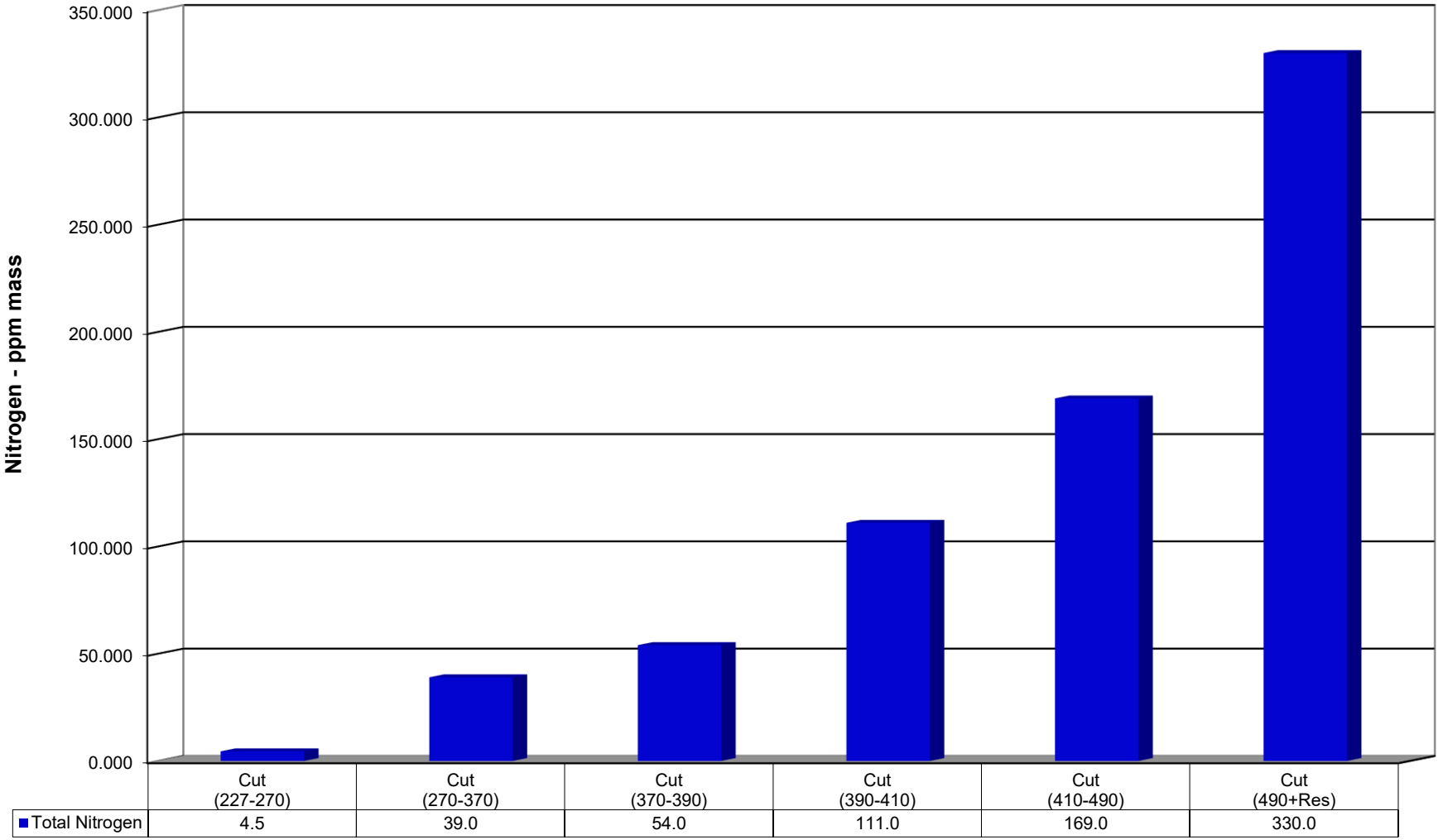


	Cut (15-105)	Cut (105-165)	Cut (165-227)	Cut (227-270)	Cut (270-370)	Cut (370-390)	Cut (390-410)	Cut (410-490)	Cut (490+Res)
Sulphur	0	1	7	94	572	598	595	647	974

Fractions Mid B.P. Vs Total Acid Number



Fractions Mid B.P. Vs Nitogen



Annexure II

to

RFP No. KGD6/CONDENSATE/2026/11

Condensate Sale Agreement

CONDENSATE SALE AGREEMENT

FORM OF AGREEMENT

This Condensate Sale Agreement ("**Agreement**") for the purchase and sale of Condensate produced from KG-DWN-98/3 ("**KG D6**") is executed on xxxxxxx, 2026 ("**Effective Date**").

BETWEEN:

Reliance Industries Limited, a company incorporated under the Companies Act, 1956 with its registered office at Maker Chambers IV, 3rd Floor, 222, Nariman Point, Mumbai (hereinafter referred to in this Agreement as "**RIL**"); and

BP Exploration (Alpha) Limited, a company incorporated and registered in England and Wales with its registered office at Chertsey Road, Sunbury on Thames, TW16 7BP, United Kingdom and having its project office at Office No 71 & 73, 7th Floor, 2nd North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai (hereinafter referred to in this Agreement as "**BPEAL**");

(RIL and BPEAL shall be hereinafter referred to in this Agreement individually as the "**Seller**" and collectively as the "**Sellers**").

AND

xxxxxxx, a company incorporated under the Companies Act, 1956 with its office at xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx (hereinafter referred to in this Agreement as "**Buyer**");

Each of the above is individually referred to as a "**Party**" and collectively the "**Parties**".

WHEREAS:

The Sellers have rights to sell the Condensate produced from Block KG-DWN- 98/3 under the Production Sharing Contract (the "**PSC**") dated 12 April 2000 entered into between them and the Government of India.

The Buyer agrees to purchase Condensate supplied by Sellers for consumption in Buyer's (or that of the Buyer's Affiliate's) owned and operated refiner(y)/(ies) in the quantities and subject to the terms stated herein.

NOW THIS CONTRACT WITNESSETH AND IT IS HEREBY AGREED AS FOLLOWS:

1. Definitions

1.1. **Affiliate**: means any company which (i) is directly or indirectly controlled by a Party, (ii) directly or indirectly, controls a Party or (iii) is, directly or indirectly, controlled by a company which also, directly or indirectly, controls a Party. For the purpose of this definition, "Control" means the right to cast more than 50% of the votes exercisable at an Annual General Meeting of such Party (or its equivalent) or ownership of more than 50% of the equity share capital of or other ownership interests in such entity, or the right to direct the policies or operations of such entity.

1.2. **Agreement:** means the Condensate Sale Agreement signed between Seller/s and Buyer for the purchase and sale of Condensate produced from KG-DWN-98/3 and executed at Mumbai. This Agreement shall comprise of this Form of Agreement along with Part I- Special Provisions, Part II - General Terms & Conditions, Part III – Terminal Handbook for KG D6 Ruby, and Annexures attached herewith, as amended, modified or supplemented from time to time in accordance with the terms hereof.

1.3. **Approved Industry Practice:** means the measurement, sampling and analysis activities and methods of a standard generally accepted in the international oil industry.

1.4. **Associated Persons**: means in relation to a Party or any Government official, any Person who is an agent, servant, representative, director, officer or employee of such Person.

1.5. **Barrel or bbl:** mean a quantity or unit equal to 158.9074 litres (forty-two (42) U.S. Gallons) liquid measure, at a temperature of sixty (60) degrees Fahrenheit (15.56 degrees Celsius) and under one atmosphere pressure (14.70 psia).

1.6. **BPEAL:** BP Exploration (Alpha) Limited; same meaning as defined in the Preamble above.

1.7. **BP GTC:** means BP Oil International Limited General Terms & Conditions for Sales and Purchases of Crude Oil and Petroleum Products (2015 Edition) as given in Part II – General Terms & Conditions.

1.8. **Buyer:** xxxxxxxxxxxx, same meaning as defined in the Preamble above.

1.9. **BS&W:** means basic sediments & water, excluding free water.

1.10. **Business Day** means a day other than a Saturday, Sunday and a public holiday, on which offices of the Parties are open for work in Mumbai.

1.11. **Condensate:** means those low vapour pressure hydrocarbons obtained from Natural Gas through condensation or extraction from KG-DWN-98/3 block and refers solely to those hydrocarbons that are liquid at normal surface temperature and pressure conditions. Condensate is delivered as a blend at the Delivery Point after excluding verified Natural Gas. For the purpose of this definition, Natural Gas means wet natural gas, dry natural gas, all other gaseous hydrocarbons, and all substances contained therein (including sulphur, carbon dioxide and nitrogen but excluding extraction of helium), which are produced from oil or natural gas wells, excluding those condensed or extracted liquid hydrocarbons that are liquid at normal temperature and pressure conditions, and including the residue gas remaining after the condensation or extraction of liquid hydrocarbons from the gas.

1.12. **CTM:** means Custody Transfer Meter (Ultrasonic meter) installed on the FPSO upstream of the Delivery Point.

1.13. **Debit/Credit Note:** has the meaning given to such term in Section 3.8 of Part I – Special Provisions.

1.14. **Dated Brent:** benchmark price in USD per barrel; is the monthly average of the daily mean values of the high and low assessments of Brent (Dated) (Platts Code: PCAAS00) Crude Oil quotations (as published under the Spot Crude Assessment Heading in Platts Crude Oil MARKETWIRE spot assessment, (including any published correction)) in the USD per barrel for the Scheduled Month of Supply, to be rounded off to three decimal places.

1.15. **Default Interest Rate:** has the meaning given to such term in Section 4.5 of Part I – Special Provisions.

1.16. **Delivery Point:** is the outlet flange of the hose of the delivery facility at the Loading Terminal connecting to the permanent inlet flange of the Buyer's vessel.

1.17. **Effective Date:** shall have the meaning as defined in the Preamble above.

1.18. **Expected Sale Period:** means the tentative dates when Sellers will have reasonable volumes, as envisaged under Clause 4 of the Form of Agreement ,to deliver to the Buyer.

1.19. **Exchange Rate** means the average (as rounded off to three decimal places) of the TT (Telegraphic Transfer) buying and selling rates of exchange for converting USD to INR, as quoted by SBI applicable to the day on which payment of any amounts due under this Agreement is made, provided that: (a) if SBI releases more than one quote on the applicable day, the first quote of the day shall be used; and (b) if such rate is not available as to any day, the Exchange Rate available for the last quoted day preceding such day shall be used.

1.20. **FPSO:** means Ruby Floating Production Storage and Offloading facility used for development and production of oil and gas from Block KG-DWN-98/3 off Kakinada, India; located as described in Clause 5.2 of the Form of Agreement.

1.21. **FOB:** means Free on Board as per Incoterms 2020.

1.22. **Force Majeure:** has the meaning given to it in Section 9 of Part I – Special Provisions

1.23. **Governmental Authority:** means any local, regional, state, federal or central government, governmental agency, department, ministry, commission, board, bureau or any other administrative or regulatory authority or instrumentality in India.

1.24. **Government Official:** means, whether appointed, elected or otherwise, any:

(i) officer or employee of a government or any department, agency or instrumentality of a government;

(ii) person acting in an official capacity or exercising a public function for or on behalf of a country or territory (or any subdivision of such a country or territory) or a government or any department, agency, enterprise or instrumentality of a country or territory (or any subdivision of such a country or territory) or a government;

(iii) officer or employee of a company or business which is majority owned or controlled by a government;

(iv) officer, employee or agent of a public international organization such as the World Bank or United Nations; and/or

(v) officer or employee of a political party or any person acting in an official capacity on behalf of a political party.

1.25. **Incoterms:** means International Commercial Terms, a series of pre-defined commercial terms published by the International Chamber of Commerce (ICC) relating to international commercial law.

1.26. **INR:** Indian Rupees, the lawful currency of India.

1.27. **KG D6:** same meaning as defined in the Preamble above.

1.28. **Laydays:** shall be the two-day date range in which the Buyer's nominated vessel must tender NOR at the Loading Terminal pursuant to Section 6.1 of BP GTC.

1.29. **Laytime:** shall be the time allowed for loading of the Condensate at the Loading Terminal.

1.30. **LC:** means Letter of Credit; Buyer shall provide to each Seller with an irrevocable, revolving stand-by Letter of Credit issued in favour of each Seller by a scheduled bank in India acceptable to each Seller as payment security.

1.31. **LIBOR:** London Inter-Bank Offer Rate for six-month deposits in United States Dollars as published by Reuters for the day or days in question.

1.32. **Loading Terminal:** means the FPSO at which the Condensate is to be delivered/supplied by the Sellers to the Buyer.

1.33. **NOR:** the valid Notice of Readiness to load cargo, as given by master of the Buyer's vessel to the Sellers' Representative at the Loading Terminal in accordance with Section 8 of Part I – Special Provisions and Section 9.7 of the Terminal Handbook (*as defined hereinafter*).

1.34. **Party or Parties:** same meaning as defined in the Preamble above.

1.35. **Person** means any natural person, firm, corporation, company, voluntary association, partnership, joint venture, trust, limited organization, competent authority or other entity including either Party, their Affiliates and Associated Persons.

1.36. **Price:** the price payable by the Buyer to the Sellers for the Condensate delivered to the Buyer fixed in accordance with Clause 8 of the Form of Agreement.

1.37. **PSC:** Production Sharing Contract; same meaning as defined in the Preamble above.

1.38. **RFP:** means the Request for Proposal No. KGD6/CONDENSATE/2026/11 dated 18th November 2026 along with all its Annexures.

1.39. **RFP Process** means the process of selecting buyers of Condensate produced from KG-DWN-98/3 provided in the RFP No. KGD6/CONDENSATE/2026/11 dated 18th November 2026 issued by the Sellers.

1.40. **RIL:** Reliance Industries Limited; same meaning as defined in the Preamble above.

1.41. **SBI Base Rate:** means base rate published by The State Bank of India.

1.42. **SBI MCLR:** the State Bank of India Marginal Cost of Funds-based Lending Rate as published from time to time, for the day or days in question.

1.43. **Scheduled Month of Supply:** Scheduled Month of Supply for 1st cargo is 1st to 31st May 2027; for 2nd cargo is 1st to 30th June 2027; for 3rd cargo is 1st to 31st August 2027; for 4th cargo is 1st to 30th September 2027; for 5th cargo is 1st to 31st December 2027; and for 6th cargo is 1st to 31st March 2028.

1.44. **Seller or Sellers:** means RIL and BPEAL; same meaning as defined in the Preamble above.

1.45. **Sellers' Representative:** means RIL as set out in Clause 2 of the Form of Agreement.

1.46. **Taxes:** means any and all present or future statutory taxes, levies, duties, cesses, charges, withholdings and imposts, or any similar charges or levies enacted, imposed by a court or judicial order or demanded by any Governmental Authority (or asserted by such Governmental Authority to be owing or to become owing in the future) from time to time including sales tax, value added tax, goods and services tax, excise duty, customs duty, local body tax, entry tax, advance tax, additional tax, octroi duty, works contract tax, construction cess, service tax and stamp duty, but shall not include any corporate or income taxes. Further, the liability for payment of Taxes shall include any Taxes that are paid, levied or accrued and payable or assessed or demanded or imposed pursuant to any interim order, provisional assessment, revisional assessment, judicial or executive review, final assessment or any other order made at any time by any Governmental Authority, court or judicial authority.

For the avoidance of doubt, if any of the foregoing are enacted, imposed or demanded (by a provisional or final demand) by such Governmental Authority, court or judicial authority but the enactment or imposition or demand of which is subject to a challenge as to their validity, efficacy, effect, or amount, such charges or levies shall nonetheless constitute Taxes unless and until a court of competent jurisdiction shall have determined by a final order or

judgment (against which no appeal may be brought, or, if any appeal shall have been brought, the appeal shall have been disposed of) that the charges or levies are invalid or ineffective for any reason including that the legislative provision or enactment pursuant to which such charge or levy has been brought or levied is invalid or ineffective or such charge or levy was not made or levied effectively by the Governmental Authority.

1.47. **Terminal Handbook:** means the Terminal Handbook for KG D6 Ruby attached herewith as "Part III – Terminal Handbook for KG D6 Ruby", as may be amended from time to time.

1.48. **Termination Date:** means the end date of this Agreement, i.e. xxxx (to be entered at the time of execution with respective Buyer of each cargo. Termination date will be 60 days after the last day of the Expected Sale Period for respective cargo as per the Agreement)

1.49. **USD or $ or US Dollars:** the lawful currency of the United States of America.

2. Sellers' Representation and Participation

a. RIL shall act as the Sellers' Representative for the purposes of administering this Agreement, including the giving and receiving of all notices, nominations, estimates, requests, elections and statements under this Agreement. Any notice required to be delivered by the Buyer under this Agreement shall be deemed to have been delivered to each Seller upon delivery to the Sellers' Representative.

b. No change in the identity of the Sellers' Representative shall be effective until the Buyer receives notice from the Sellers' Representative of the change and the effective date thereof, which must be prospective. The Sellers' Representative shall incur no liability under this Agreement other than in its capacity as a Seller.

c. The obligations and liabilities of each Seller under the Agreement shall be several and shall not be joint or joint and several. All obligations and liabilities of the Sellers under this Agreement shall be in accordance with and limited to their respective Participating Interests under the PSC which currently are as below:

SELLER ENTITY	PARTICIPATING INTEREST
RIL	66.67%
BPEAL	33.33%

d. In no event, whether arising in contract, tort (including negligence), breach of statutory duty, or otherwise, shall either Party be liable to the other for any indirect, incidental, special, consequential, punitive, or exemplary damages. This includes, without limitation, loss of anticipated profits, loss of production, plant shutdown, loss of power generation, blackouts, electrical shutdowns or reductions, loss of goodwill, market reputation, business opportunities, commercial contracts, business interruption, or any loss or damage to property, including the

Buyer's facilities resulting from supply of condensate delivered, whether or not such losses or damages were foreseeable and whether arising out of or in connection with the performance, suspension, failure to perform, or termination of this Agreement.

e. The provisions of Clause 2 (d) shall continue to apply notwithstanding the termination or expiry of the Agreement for any reason whatsoever.

3. Grade and Quality

KG D6 Condensate, as usually made available at the time and the Loading Terminal.

4. Quantity

4.1 At Sellers' option, approximately 500,000 bbls per cargo expected to be sold during the Expected Sale Period. Sellers shall endeavor to deliver Condensate with -/+ 10% tolerance of the agreed parcel size. Any increase or decrease in cargo size beyond -/+ 10% tolerance will be mutually agreed between Sellers and Buyer/s before loading.

Seller entity	Nominal Quantity
RIL	333,350 bbls
BPEAL	166,650 bbls

4.2 Expected Sale Period currently expected to be for 1st cargo: 1st to 31st May 2027; for 2nd cargo: 1st to 30th June 2027; for 3rd cargo: 1st to 31st August 2027; for 4th cargo: 1st to 30th September 2027; for 5th cargo: 1st to 31st December 2027; and for 6th cargo: 1st to 31st March 2028.

4.3 If for any reason, there is a change in the Expected Sale Period, Sellers shall notify to the Buyer atleast 45 days prior to first day of Expected Sale Period for each of the remaining cargo.

4.4 Quantity to be based on net bill of lading document quantity except for fraud or manifest error, for invoicing purposes only but without prejudice to the rights of any party to file a claim for quantity.

4.5 In case Seller identifies additional cargo available for sale ("Optional Cargo"), Seller may offer such Optional Cargo to the Buyer during the same Expected Sale Period and at the same price as relevant to the cargo being sold during such Expected Sale Period ("Sale Cargo"). The Seller may offer such Optional Cargo 60 days prior to the first day of the Loading Date Range for the Optional Cargo. Buyer will confirm in writing to the Seller's Representative within seven (7) Business Days from the Seller's whether it opts to offtake or reject the Optional Cargo. If the Buyer elects to offtake the Optional Cargo, the terms and conditions applicable to the Sale Cargo shall apply mutatis mutandis to the sale of such Optional Cargo. In the event Buyer elects not to offtake such Optional Cargo or does not respond to the offer within seven (7) Business

days, Seller shall be free to deal with the Optional Cargo as it may deem fit.

5. Delivery

5.1 Incoterms 2020 : FOB at the Delivery Point

5.2 Loading Terminal : FPSO off Kakinada, India. FPSO is moored 40 – 60 km south-east of Kakinada to the Turret Mooring bouy in the following position:

Latitude: 16 Degrees 33.1 Minutes North
Longitude: 82 Degrees 35.7 Minutes East

5.3 Laytime : For cargo size of 500,000 bbls, Sellers shall be allowed laytime of 46 hours + 6 hours from NOR acceptance by the Loading Terminal, Sundays and public holidays included to complete the loading operations at the Loading Terminal (i.e. hose disconnection). For every incremental 5,000 bbl cargo size above 500,000 bbl, laytime will increase by 30 minutes.

5.4 Loading Date Range : a five day loading window that will fall within the respective Expected Sale Period and will be informed by the Sellers' Representative to the respective Buyer of the cargo between 1st to 4th of the month prior to the Expected Sale Period. For example, for 1st cargo (Expected Sale Period: 1st to 31st May 2027), Loading Date Range notice will be informed between 1st to 4th April 2027.

5.5 Layday : a two-day window that will fall within the respective Loading Date Range. To be informed by the Buyer to the Sellers' Representative through email as provided in Section 15.1 B) I of Part I – Special Provisions of this Agreement, within 7 Business Days after issuance of the Loading Date Range notice by the Sellers Representative.

5.5 Transfer of Title & Risk : All title, risk and property in the Condensate delivered under this Agreement shall pass to the Buyer at the Delivery Point. The delivery of Condensate shall be deemed complete and title and all risk in and associated with such Condensate shall pass to the Buyer when the Condensate passes the Delivery Point.

5.6 Destination : The Condensate sold and delivered under this Agreement shall only be consumed in the Buyer's/Buyer's Affiliate's owned and operated refiner(y)/ (ies) located at [……..] India.

6. Term

This Agreement shall commence on the Effective Date of this Agreement and end on the Termination Date, both dates inclusive.

7. Termination

7.1 Sellers may at their sole discretion, and in addition to any other legal remedies they may have, terminate the Agreement if the Buyer fails to deliver the required LC in accordance with Section 5.1 of the Part I - Special Provisions. In such event, Sellers are not required to give 30 days' notice to Buyer.

7.2 Without limiting Sellers' other express termination rights under this Agreement, Sellers may at their sole discretion, and in addition to any other legal remedies they may have, forthwith suspend deliveries of the Condensate or terminate the Agreement:

A. upon giving 30 days' notice to Buyer, if:

i. The Buyer, for any reason whatsoever, fails to make any payment due to the Sellers under this Agreement by the due date, and such failure remains un-remedied at the expiry of the aforesaid notice period;

ii. The Buyer is in breach of its obligations under this Agreement and such breach or failure remains un-remedied at the expiry of the aforesaid notice period;

iii. The Buyer fails to take delivery of the Condensate that it is obligated to do so under this Agreement and such failures are not excused by any other provision in this Agreement;

iv. The Buyer faces an event of Force Majeure which continues for 60 days or more;

v. The Buyer assigns any or all of its rights or obligations under this Agreement without the prior written consent of the Seller; or

vi. Condensate production operations have ceased or suspended due to unforeseen maintenance at Sellers facilities; or

vii. In case there occurs termination of the PSC or cancellation of any or all of the applicable petroleum mining lease(s).

B. with immediate effect, if:

i. The Buyer becomes insolvent or bankrupt or makes a composition or arrangements with its creditors or does not pay or is, in the Seller's reasonable opinion, expected to be unable or unwilling to pay its debts as the same become due; or

ii. The Buyer is in breach of any of its representations, warranties, agreements or undertakings under Clause 10 of the Form of Agreement.

7.3. Buyer may at its sole discretion, and in addition to any other legal remedies they may have, forthwith suspend offtake of the Condensate or terminate the Agreement upon giving 30 days' notice to Seller, if:

A. The Seller is in breach of its obligations under this Agreement and such breach or failure remains un-remedied at the expiry of the aforesaid notice period;

B. The Seller fails to provide delivery of the Condensate that it is obligated to do so under this Agreement and such failures are not excused by any other provision in this Agreement; or

C. The Seller faces an event of Force Majeure which continues for 60 days or more.

7.4. Such termination shall not affect any rights of the Buyer or Sellers that may arise as a result of the termination or that may have accrued, or any obligations incurred and not discharged by the Buyer or the Sellers, prior to the date of termination.

7.5. The following provisions of this Agreement shall survive expiry or termination, howsoever effected: Clauses 1, 2, 7, 8, 9, 10, 11, 12, 13 and 14 of the Form of Agreement, Sections 3, 4, 5, 6, 9, 10, 11 and 15 of Part I - Special Provisions, and any provisions of Part II - General Terms & Conditions of the Agreement which continue in force and effect pursuant to Section 74.2 (Survivability) of the BP GTC. In addition, any and all accrued liabilities under this Agreement shall survive termination unless this Agreement expressly states the contrary.

8. Price:

8.1 The FOB Price, in USD, per net bill of lading Barrel shall be calculated in accordance with Annexure B.

8.2 Any corrections which are published to the relevant quotes until the issuance of invoice, Debit/Credit Note as per Section 3 of Part I – Special Provisions shall be taken into account for purpose of determining the final Price.

8.3 All monthly average of the daily mean values for arriving at the final Price, shall be rounded to three decimal places, using the following convention:

A. If the fourth decimal place is five (5) or greater than five (5), then the third decimal place shall be rounded up to the next digit.

B. If the fourth decimal place is four (4) or less than four (4), then the third decimal place shall remain unchanged.

9. Anti-Bribery

9.1 Each of the Parties represents and warrants to each of the other Parties that, to the best of its knowledge in the past three (3) years prior to the Effective Date and during the Term of this

Agreement, neither it nor any of its Affiliates or Associated Persons, in connection with or related to the RFP Process or this Agreement:

A. has engaged or will engage in any activity, practice or conduct, which will amount to corruption including but not limited to:

   i. paying, offering or offering to give, promising or agreeing to give, or authorising the payment (directly or indirectly through any third party) of any monies, consideration of any kind or anything of value, to (a) any Government Official in order to obtain or retain business or to influence official action, or (b) or any of the other Party's Affiliates or Associated Persons or any other Person, in each case where such activities have the purpose or effect of commercial bribery, or acceptance or acquiescence in kickbacks or other unlawful or improper means of obtaining or retaining business, or taking or refraining from taking any action as an improper inducement or a reward for any act or decision; or

   ii. receiving, extorting or soliciting, any monies, consideration of any kind or anything of value for any undue act or decision; or

B. has directly or indirectly engaged or will directly or indirectly engage in any other acts or transactions in each case, in violation of or inconsistent with any anti-bribery or corruption laws, rules, regulations or equivalent applicable to either Buyer or Seller.

9.2 If, in the reasonable judgement of either of the Parties, the other Party is in breach of its representations and warranties under Clause 9.1 of Form of Agreement above, the non-breaching Party shall have, without prejudice to any other right or remedy legally available to it, the right to either:

A. require the other Party to undertake any and all requisite measures to remedy or rectify such breach;

B. immediately terminate this Agreement and recover any loss directly suffered by the non-breaching Party resulting from such termination; and/or

C. recover in full from the breaching Party, any other loss sustained by the non-breaching Party as a consequence of any such breach, whether this Agreement has been terminated or not.

9.3 Buyer will make reasonable endeavors to conduct due diligence in relation to Bribery Acts before appointment of any contractors or third parties required by the Buyer in relation to the transportation, processing or use of Condensate purchased under this Agreement.

9.4 If Buyer or any of its Affiliates or Associated Persons becomes aware of or reasonably suspects a violation or potential violation of Clause 9.1 of Form of Agreement by either of the Parties to this Agreement, such Persons may report the same to the Seller by sending email to 'ethics.taskforce@ril.com'.

9.5 If Buyer or any of its Affiliates or Associated Persons refuses to pay or offer a bribe or raises concerns, or report any wrongdoing to the Sellers, such Person will not face any form of

retaliation from the Sellers. The Sellers encourage openness and will support anyone who raises genuine concerns about any corrupt practices, in good faith.

10. Anti-Money Laundering

10.1 Each of the Parties represents and warrants to each of the other Parties that, to the best of its knowledge, in the past five (5) years prior to the Effective Date and during the Term of this Agreement, neither it nor any of its Affiliates or Associated Persons, in connection with or related to the RFP Process or this Agreement:

A. has directly or indirectly engaged or will directly and indirectly engage in or facilitated/ facilitate any activity which will amount to money laundering, including without limitation, smuggling, terrorism and terrorist financing, conversion, concealment or disguise to make appear as legitimate, or acquisition, possession or use, of any economic advantage or property obtained or suspected to have been obtained from or in connection with any category of offences designated under any applicable anti-money laundering or other applicable Law; or

B. has violated or will violate any provisions of the Prevention of Money Laundering Act, 2002, as may be amended, re-enacted, replaced or consolidated from time to time, or any other applicable anti-money laundering Law, which has as its objective the prevention of money laundering.

C. been convicted of any offence involving money laundering; or

D. been or are the subject of any investigation, inquiry or enforcement proceedings by any governmental, administrative or regulatory body regarding any offence or alleged offence involving money laundering.

10.2 Each of the Parties agrees that, in connection with this Agreement, each of the other Parties will comply with all anti-money laundering laws, rules, regulations or equivalent applicable to either Buyer or Sellers.

10.3 Subject to any relevant data privacy or protection law, each of the Parties shall immediately report to each of the other Parties any allegations, proceedings or investigations relating to bribery, corruption or money laundering against the defaulting Party, its directors, officers, employees or its buyers engaged in connection with this Agreement.

10.4 The Buyer hereby represents and provides an ongoing undertaking that the purchase proceeds are not and shall not be derived from criminal activity, and the receipt of them will not cause the Seller to be in breach of applicable Trade Restrictions (as defined in the BP GTCs).

10.5 Buyer will make reasonable endeavors to conduct due diligence in relation to Prevention of Money Laundering Act,2002 before appointment of any contractors or third parties required by the Buyer in relation to the transportation, processing or use of Condensate purchased under this Agreement.

10.6 If Buyer or any of its Affiliates or Associated Persons becomes aware of or reasonably suspects a violation or potential violation of Clause 10.1 of Form of Agreement by either of the Parties to this Agreement, such Persons may report the same to the Seller by sending email to 'ethics.taskforce@ril.com'.

11. Order of Precedence

This Agreement shall comprise of this Form of Agreement along with Part I- Special Provisions, Part II - General Terms & Conditions, and Part III – Terminal Handbook for KG D6 Ruby annexed herewith, which shall be deemed to form and be read and construed as integral parts of this Agreement and therefore interlinked to each other, but in the event of any ambiguity or inconsistency between such documents, the documents shall take precedence in the following order of priority:

Priority 1 - Form of Agreement

Priority 2 - Part I- Special Provisions

Priority 3 - Part II- General Terms & Conditions

Priority 4 - Part III- Terminal Handbook for KG D6 Ruby

12. General Terms & Conditions

12.1 Subject to Section 12.2, all terms and conditions in respect of FOB deliveries contained in the BP Oil International Limited General Terms & Conditions for Sales and Purchases of Crude Oil and Petroleum Products (2015 Edition) (the "**BP GTC**") are hereby deemed incorporated as Part II – General Terms & Conditions of this Agreement, save as specified below:

A. For the purposes of Section 6.8 of the BP GTC, loading from the FPSO shall not constitute loading from a floating storage facility or Vessel-to-Vessel transfer.

B. Section 71.1 and 71.2 (Sanctions and Boycotts) of the BP GTC should be deleted and replaced with the following:

"71.1.1 Nothing in the Agreement is intended, and nothing herein should be interpreted or construed, to induce or require either party hereto to act in any manner (including failing to take any actions in connection with a transaction) which is inconsistent with, penalized or prohibited under any laws, regulations, decrees, and/or other official rules applicable to such party which relate to international boycotts of any type; and

71.1.2 Neither party shall be obliged to perform any obligation otherwise required by this Agreement (including without limitation an obligation to (a) perform, deliver, accept, sell, purchase, pay or receive monies to, from, or through a person or entity, or (b) engage in any other acts) if this would be in violation of, inconsistent with, or expose such party to punitive measures under, any laws, regulations, decrees, and/or other official rules applicable to the parties relating to trade sanctions, foreign trade controls, export controls, non-proliferation, anti-terrorism and similar laws (the "Trade Restrictions").”

C. Section 72.1 (Facilitation Payments and Anti-Corruption) of the BP GTC should be deleted and replaced with the following:

"72.1 The Buyer and the Seller each agree and undertake to the other that in connection with this Agreement and to the extent applicable, they will each respectively comply with all applicable law(s), rules, regulations, decrees and/or official government orders or any other relevant jurisdiction relating to anti-bribery and anti-money laundering and that they shall each respectively take no action which would subject the other to fines or penalties under such laws, regulations, rules or requirements.”

D. Schedule F (BP Casualty Procedure) of the BP GTC, Section 4 (Incorporation of Schedule F) of Schedule E and Schedule A (Seller's Indemnity in lieu of shipping documents) of the BP GTC, shall be deleted.

12.2 Notwithstanding anything to the contrary contained herein:

A. References to any laws, doctrines or Acts, including English law in the BP GTC that are not applicable to the Parties shall be replaced with those laws, doctrines or Acts that are applicable in India.

B In the event of any inconsistency between the terms of Part II – General Terms & Conditions and Form of Agreement and/or Part I – Special Provisions and/or Part III – Terminal Handbook, the terms of the Form of Agreement and/or Part I – Special Provisions shall supersede in the order of precedence provided in Clause 11 of the Form of Agreement.

12.3 Parties agree that the Terminal Handbook (along with all Forms provided in various Appendix / Appendices) is an integral part of this Agreement and essential for the working and functioning of the Loading Terminal. The Buyer agrees and undertakes to comply with the provisions of the Terminal Handbook (along with all Forms provided in various Appendix / Appendices).

13. Repetition

For the avoidance of doubt, any repetition of any Clause, section or subsection of this Agreement shall be for emphasis only and shall not, by reason of such repetition, exclude any other provision of this Agreement.

14. Special Provisions

This Agreement constitutes the entire arrangement between Parties on the subject matter and supersedes any prior discussions between the Parties. Only those terms and conditions, and any amendments therefore, specifically agreed to by Parties in writing shall become part of the Agreement, and acceptance of delivery alone shall not constitute Agreement.

RELIANCE INDUSTRIES LIMITED	**BUYER**
AUTHORISED SIGNATORY:	AUTHORISED SIGNATORY:
WITNESS:	WITNESS:

BP EXPLORATION (ALPHA) LIMITED

AUTHORISED SIGNATORY:

WITNESS:

Part I – Special Provisions

1. Determination of Quantity and Quality

The quantity and quality shall be determined in accordance with standard practice at the Loading Terminal, which shall be as per Approved Industry Practice. The Loading Terminal shall employ methods of measurement and sampling in the following orders of preference:

1.1 Quantity Measurement:

a) CTM readings (using ultrasonic flow meter) installed at Delivery Point.

b) In the event that CTM is not available, manual ullage measurements of nominated tanks of the FPSO shall be used.

Quantities shall be net of free water and BS&W. BS&W shall be determined from analysis of the Condensate samples at the time of the loading.

1.2 Sampling Method:

a) Automatic, flow-proportional, in-line sampling device;

b) Weighted, volumetric composite of representative samples taken manually from nominated tanks of the FPSO;

2. Inspection

2.1. At the Loading Terminal, the Sellers shall appoint a mutually acceptable independent inspector/surveyor for determination of quantity and quality of the Condensate. Cost for such inspection, including cost of travel of independent inspector/surveyor to the Loading Terminal, shall be shared equally between Buyer and Sellers.

2.2. The quantity and quality of the cargo as determined by the independent inspector/surveyor at the Loading Terminal shall be final and binding on both the Buyer and the Sellers, save for fraud or manifest error.

3. Invoices

3.1 Sellers shall raise invoices for the supply of Condensate to the Buyer in USD. The Sellers shall raise separate invoices for their respective shares using:

a) The total net quantity as stated in the bill of lading for the cargo lot and

b) The Price to be determined as per Clause 8 of the Form of Agreement.

3.2 The Buyer shall make payment to each Seller in accordance with invoices into the bank accounts specified therein within 30 days from the relevant bill of lading date.

3.3 For avoidance of doubt it is understood that for purposes of this Section 3 of Part I – Special Provisions, the date shall be computed by reference to the convention that relevant bill of lading date=Day 0)

3.4 All payments under this Agreement has to be made in INR.

3.5 If there is bank holiday in Mumbai on the payment due date or the payment falls on any Saturday, the payment will be made on the immediate preceding banking day to the payment due date.

3.6 If there are two or more consecutive bank holidays in Mumbai on the payment due date, any payment due on the first such day shall be made on the immediate preceding banking day to the payment due date. Any payment due on the second day or following day(s) shall be made on the succeeding banking day of the due date.

3.7 In case of unscheduled closure of banks in Mumbai on the payment due date, the payment will be made on the immediate succeeding banking day in Mumbai.

3.8 Anytime from the relevant bill of lading date, the Sellers may issue invoices against which the Buyer shall make payment. If full month price is not available, invoice shall be raised by the Sellers on the basis of the relevant quote of the month preceding the Scheduled Month of Supply. Following the issuance of invoice, Sellers shall raise a Debit/Credit Note for the difference between the Condensate Price invoiced and Condensate Price computed for the Scheduled Month of Supply. Such Debit/Credit Note will be raised latest by 5th of the next month subject to the availability of relevant quotes.

3.9 All payments to be made by the Buyer towards the invoices shall be adjusted for such Price difference Debit/Credit Note raised before the payment due date. In the event, such Debit/Credit Notes are raised post due date of invoice payment, the Buyer shall pay to the relevant Seller any amounts which remain unpaid or the relevant Seller shall refund to the Buyer any excess amounts paid by the Buyer. All such payments (whether from Buyer to Seller, or vice versa) shall be made within 5 Business days of the issuance of such Debit/Credit Note.

3.10 Provided that payment of the balance due is made by the due date, no interest shall be payable by any party for the period between the provisional and final payment due dates.

4. Payment

4.1 All Payments due to the Sellers under the Agreement shall be made by the Buyer through electronic transfer to the Sellers' bank accounts advised in writing by the Sellers, free of all charges and without asserting any set-off, counter-claim or right to withhold Payment in accordance with Section 3 of Part I – Special Provisions in immediately available INR.

4.2 Buyer shall make Payment to Sellers in accordance with Section 4.1 of Part I – Special Provisions upon presentation of the following documents by the Sellers to the Buyer:

a) Sellers' fax or email copies of commercial invoices, prepared in accordance with the provisions of the Agreement; and

b) 3/3 original bills of lading issued or endorsed to the order of either the Buyer or any Party as requested by the Buyer in writing; and

c) Original certificates of quantity, quality and origin (or equivalent documents issued at the Loading Terminal); and

d) In the case of BPEAL, tax witholding certificate, if any, from the respective Indian Income Tax authorities.

4.3 If the Sellers are unable to present the documents referred to in Section 4.2 b) & c) of Part I – Special Provisions, the Buyer shall make payment to the Sellers upon presentation to the Buyer of the following documents to the Buyer:

a) Sellers' fax or email copies of commercial invoices; and

b) Sellers' fax or email letter of warranty in the format set out in Annexure A hereto.

4.4 All amounts payable by the Buyer hereunder shall be paid in INR by converting USD into INR at the Exchange Rate. All amounts shall be paid by electronic funds transfer or equivalent instantaneous transfer of funds for value on the day in question to the account designated by the Seller. Buyer shall be responsible for bearing any charges levied by the bank making the payments. Payment shall be deemed to be received on the date when such payment is actually credited to the receiving Party's account.

4.5 For the purposes of Section 63.9.1 of the BP GTC, references to "LIBOR" shall be replaced with references to "SBI MCLR". Without prejudice to any other rights and remedies available under this Agreement or under law, if the Buyer fails to make a payment to each of the Sellers of any amount due under this Agreement, interest thereon shall accrue at a rate per annum equal to one month SBI MCLR plus seven and a half (7.50) percentage points (the "**Default Interest Rate**"), for each day from and including the day on which such sum became due up to the day prior to the day on which payment thereof is received. If no SBI MCLR is available for such day then the SBI Base Rate shall be the comparable interest rate applicable on the last day before such day for which such interest rate is applicable.

4.6 If Buyer disputes any invoice or Debit/Credit Note, then Buyer shall provisionally make the payment in full (without any setoff or counterclaim) and may notify the disputed amount to Seller within thirty (30) days of receipt of the relevant invoice or Debit/Credit Note. If a dispute is decided in favour of Buyer, Seller shall refund the overpayment within seven (7) days following resolution of the dispute.

5. Letter of Credit

5.1 Buyer shall provide each Seller with an irrevocable standby LC, issued in their favor from a scheduled bank in India acceptable to each Seller as payment security for the cargo, seven (7) days prior to the issuance of Notice of Readiness (NOR) as per Clause 8.2 of the Form of Agreement.

5.2 The LC shall be provided by the Buyer from the list of banks as provided at Annexure D of the Agreement.

5.3 The Buyer shall bear all charges payable to the bank for issuing such LC, including advising charges payable to advising bank of Sellers.

5.4 Each LC shall at least be valid for a period of 45 days post cargo offtake and for an amount denominated in INR. The value of the cargo in USD shall be computed using:

a) Quantity as provided in Clause 4.1 of the Form of Agreement; and

b) Price using the relevant quote of the month preceding the month in which Sellers provide notice to the Buyers informing the Loading Date Range as per Clause 5.4 of the Form of Agreement.

5.5 INR value of the LC shall be calculated based on Exchange Rate applicable on the day on which the LC value is notified by the Sellers' Representative to the Buyer. The LC shall provide for the issuing bank to unconditionally and irrevocably undertake to RIL and BPEAL that the LC shall cover an additional amount of up to fifteen percent (15%) above the face value of the LC to cover any increase in the price and exchange rate (applicable on the day on which payment against demand is to be made). The LC shall be in the format as specified in the Annexure C. The LC shall be maintained after expiry or termination of this Agreement until all amounts owing by Buyer to Sellers have been satisfied.

5.6 If the LC furnished by the Buyer as described above fails to cover the value of cargo, Sellers shall seek revision of LC to the Buyer. Buyer shall provide the same to the Sellers within five (5) banking days of such demand from the Sellers. Post such revision, the LC shall provide for the issuing bank to unconditionally and irrevocably undertake to RIL and BPEAL that the LC shall cover an additional amount of up to fifteen percent (15%) above the revised face value of the LC to cover any increase in the price and exchange rate (applicable on the day on which payment against demand is to be made).

5.7 In the event that Buyer fails to pay any amount due under the terms of this Agreement to either RIL or BPEAL within the period specified in this Agreement, the affected Seller may, without prejudice to any other rights and remedies available under this Agreement or under law, draw upon its LC for payment of such amounts due and payable under any invoices and or debit notes and or interest charges raised under this Agreement.

5.8 In the event Buyer fulfils all its obligations under this Agreement and pays all amounts due under the terms of this Agreement to the Seller within the period specified in this Agreement, the Sellers shall discharge the LC in writing.

5.9 RIL's and BPEAL's obligation to deliver and sell Condensate under this Agreement to the Buyer shall be subject to Buyer's provision of a LC in accordance with this Agreement. In the event that the Buyer fails to provide such LC in accordance with this Agreement, Sellers have the right to terminate this Agreement.

6. Taxes

6.1 Buyers shall be liable for the payment of all Taxes imposed in connection with, or related to, the sale, purchase or delivery of Condensate under this Agreement and in respect of any payments made under this Agreement.

7. Vessel Nomination

7.1 The vessel nomination procedure shall be in accordance with the Part II -General Terms & Conditions.

7.2 The Buyer shall nominate a vessel that is suitable, in all respects, to receive Condensate from the Loading Terminal, within 15 Business days of issuance of Loading Date Range notice as per Clause 5.4 of the Form of Agreement.

7.3 The Buyer shall promptly answer or cause the vessel owner to answer any questionnaire for the nominated vessel as submitted by the Sellers' Representative. If any response as provided by, or on behalf of, the Buyer proves to be incorrect, the Sellers shall be entitled at any time to reject forthwith a previously accepted vessel and the Buyer shall indemnify the Sellers against any losses and costs incurred by the Sellers so arising from such rejection, including but not limited to, any demurrage payable in respect of other vessels waiting at the Loading Terminal.

8. Laytime and Demurrage

8.1 For cargo size of 500,000 bbls, Sellers shall be allowed laytime in accordance with Clause 5.3 of the Form of Agreement to complete the loading operations at the Loading Terminal.

8.2 Notice of Readiness (NOR) means the written notice tendered by the master of Buyer's vessel after meeting all criteria as mentioned in Section 9.7 of the Terminal Handbook.

a. NOR will be accepted from 0600 hours to 1500 hours only during the agreed Layday.
b. The NOR may be tendered any time day or night in order to establish the Buyer's vessel's arrival within the agreed Layday. Laytime shall commence upon expiration of 6 hours from the acceptance of NOR issued by the master of Buyer's vessel provided that no Force majeure event (as detailed in Section 9.2 hereinbelow) has occurred during such six (6) hour period, in which case the Laytime shall exclude the period for which such force majeure event subsists, or upon the Buyer's vessel mooring at the Delivery Point, whichever occurs first.
c. If the Buyer's vessel arrives at the location mentioned above after 1500 hours, NOR will be accepted at 0600 hours on the next day.
d. If NOR is tendered by the Buyer's vessel after the Layday and is accepted for loading by the Seller in its sole and absolute discretion, then laytime shall commence only on the commencement of loading.

e. In the event that the Buyer's vessel arrives prior to the Layday, subject to the Loading Terminal's discretion and availability of agreed cargo quantity in the Condensate storage facilities, the loading of the Buyer's vessel may be commenced before the actual laytime starts. In such case, laytime shall commence on completion of hose connection at the Buyer's vessel's manifolds.

8.3 Demurrage

a. In no event shall the Sellers be liable for demurrage unless the demurrage claim is attributable solely to Sellers and has been received by the Sellers in writing within forty-five (45) days of the date of disconnection of loading hoses, stating in reasonable detail the specific facts upon which the claim is based, provided that any supporting documentation which is not at that time available to the Buyer shall be received by the Sellers within sixty (60) days of the date of disconnection of loading hoses. If the Buyer fails to give such Notice or fails to provide such documentation within the aforesaid limits, then any liability of the Seller for demurrage shall be extinguished. For the purposes of Section 7.1.4 of the BP GTC, the time available with the Buyer to provide all necessary documentation to the Seller shall be replaced by sixty (60) days instead of ninety (90) days.

9. Force Majeure

9.1 Neither Party shall be deemed in breach of the Agreement as a result of, or be liable to the other(s) for, any failure, omission or delay in its performance in whole or in part of any of the terms or conditions of the Agreement (except in relation to obligations to make payments or provide security for payment under the Agreement) if such failure, omission or delay arises or results from any cause reasonably beyond, or to be treated as reasonably beyond, the control of that party (any such event being hereinafter referred to as "Force Majeure").

9.2 For the purposes of Section 9 of Part I – Special Provisions, and without limitation to the generality of Section 9.1 of Part I – Special Provisions, a clause shall be treated as being reasonably beyond the control of Seller if it arises or results from, or in connection with:

a) Compliance, voluntary or involuntary, with a direction or request (including any obligation arising out of the exercise of a requirement to deliver condensate of the grade deliverable hereunder) of any international, national, port, transportation, local Government or other authority or person purporting to act with such authority; or

b) Any natural calamity, earthquake, storm, flood, fire, adverse weather conditions beyond operational limits of the FPSO included in Section 11.1.1 of the Terminal Handbook, explosion or other act of God; or

c) Any war, hostilities declared or undeclared, embargo, blockade, riots, terrorism, civil unrest and any consequence thereof; or

d) Any strike, lockout, stoppage, restraint of work or other labour difficulty from whatever cause arising; or

e) Ionizing radiation or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of any nuclear fuel, radioactive toxic explosives or other hazardous properties of any explosive nuclear assembly or nuclear components thereof.

f) Any curtailment, reduction in, interference with, failure or cessation of supplies of Condensate from any of the Sellers' sources of supply including for reasons of reservoir failure or reduction in reservoir deliverability.

g) Any curtailment of, hindrance to, interference with, or delay to the availability, delivery or transportation of Condensate, whether or not of the grade to be delivered under the Agreement, as a result of Sellers' actions based on, or arising out of compliance with a request to, or requirement of, Government of India.

For the purposes of Section 9.2 of Part I – Special Provisions, the availability to the Sellers on the spot market of any quantity of Condensate, whether or not of the grade deliverable under the Agreement, shall not be taken into account in determining whether or not a Force Majeure event has occurred.

If the Buyer is a Government owned entity/company, any actions of any Governmental Authority shall not relieve the Buyer of its obligations under this Agreement unless such actions apply generally and are not undertaken primarily to relieve the Buyer's obligations under this Agreement.

9.3 If any Force Majeure event occurs, then at any time thereafter and for so long as the effect of that event continues, the Sellers shall be entitled to withhold, suspend, reduce or cancel delivery hereunder to such extent as the Sellers shall in their absolute discretion determine. For the avoidance of doubt, in a Force Majeure event, the Sellers have absolute discretion to determine which of the demands for Condensate on the Sellers, including from their Affiliates, they meet first, and the extent to which they meet each such demand. In such event, the Sellers shall not be bound to acquire by purchase or otherwise from any sources or anticipated sources of supply or other suppliers' additional quantities of Condensate to satisfy the Buyer's requirements hereunder. Further and without prejudice to the foregoing, in the event the Sellers elect to purchase or otherwise acquire additional Condensate, the Sellers shall have no obligation to allocate any portion of such additional Condensate to the Buyer.

9.4 Prompt written notice of any event of Force Majeure and, so far as possible, of its extent and anticipated duration shall be given by the Party so affected. That Party shall also give prompt written notice when the effects of the Force Majeure event come to an end.

9.5 If any failure, omission or delay in performance of the Agreement under Section 9 of Part I – Special Provisions continues for more than thirty (30) consecutive days after the day the

notice of Force Majeure has been sent, then any Party shall be entitled after said duration to cancel delivery of the shipment(s) affected by the event of Force Majeure by written notice to the other Parties, without any liability on any side save that such cancellation shall be without prejudice to any other accrued rights and (if applicable) to other deliveries under the Agreement. Performance under this Agreement shall resume to the extent made possible by the end of the effects of the Force Majeure event pursuant to Section 9 of Part I – Special Provisions.

9.6 Each Party shall bear its own costs incurred as a result of any event of Force Majeure.

9.7 Nothing in this Section 9 of Part I – Special Provisions shall be taken to limit or prevent the operation of the common law doctrine of frustration (including frustration of the adventure, of purpose, or of the Agreement).

9.8 This Section 9 of Part I – Special Provisions replaces Section 65 (Force Majeure) of the BP GTC (as hereinafter defined), and such replaced Section shall not apply to this Agreement and shall not form part of the Part II - General Terms & Conditions. The reference to "Section 65 (Force Majeure)" in Section 7.1.5 of the BP GTC shall be construed as a reference to this Section 9 of Part I – Special Provisions.

10. Governing Law

10.1 The construction, validity and performance of this Agreement shall be governed by Indian Law to the exclusion of any other law which may be imputed in accordance with choice of law rules applicable in any jurisdiction and subject to Dispute Resolution, the courts in New Delhi shall be exclusive jurisdiction.

11. Dispute Resolution

11.1 If Parties from time to time agree to use fast track arbitration, then, within sixty (60) days parties shall decide upon an independent third party mutually acceptable to the Parties (the "**Fast-Track Arbitrator**") and an alternate third party (the "**Alternate**") to decide disputes to be referred to the Fast-Track Arbitrator as provided in this Section. Failure to agree on the Fast-Track Arbitrator and the Alternate shall invalidate the provisions of this Section, in which case the provisions of Section 11.2 of Part I – Special Provisions herein below shall apply to all disputes. The Fast-Track Arbitrator and the Alternate each must have relevant experience related to the dispute. Only disputes mutually agreed shall be referred to the Fast-Track Arbitrator or the Alternate. In the event that the Fast-Track Arbitrator is unavailable to resolve the dispute within the time period stated in this Section, the dispute shall be referred to the Alternate. The Fast-Track Arbitrator or the Alternate, as the case may be (the "**Arbitrator**" for the purposes of this sub Section), shall have summary powers and shall be directed to resolve the dispute within thirty (30) days of referral (or such shorter time as the Parties shall agree). The Parties shall co-operate in good faith in providing to

the Arbitrator any information reasonably needed to resolve the dispute. The Fast-Track Arbitrator shall be held at a mutually agreeable location. The Fast-Track Arbitration shall be conducted in English language. The decision of the Arbitrator shall be final, binding and non-appealable. Judgment upon any award rendered may be entered in any court having jurisdiction or application may be made to such court for judicial acceptance of the award or an order of enforcement, as the case may be. The Arbitrator shall not be required to give reasons for his award in writing. Any damages which may be awarded by the arbitration tribunal shall bear interest from the date of any relevant breach or violation to the date of full satisfaction of such award at a rate equal to the lesser of (i) SBI MCLR plus seven and a half (7.50) percentage points and (ii) the maximum rate permitted by applicable law. The costs and expenses of the arbitration will be borne by the losing party, unless the Arbitrator finds that it would be manifestly unfair to honour this Agreement of the Parties and determines a different allocation of costs.

11.2 All disputes between the Parties not subject to Section 11.1 shall be referred to a panel of three (3) arbitrators. Appointment of arbitrators and arbitration proceedings shall be conducted in accordance with the Indian Arbitration and Conciliation Act, 1996, or any statutory modifications thereof. The latest United Nations Commission on International Trade Law (UNCITRAL) rules shall apply to the extent such corresponding rules are not provided in the Indian Arbitration and Conciliation Act, 1996. The place and seat of the arbitration shall be New Delhi, and the arbitration proceedings shall be conducted in the English language. The arbitration award shall be final, binding, and enforceable without the recourse of appeal to courts. Judgment on the award may be entered and execution had in any court having jurisdiction or application may be made to such court for a judicial acceptance of the award and an order of enforcement and execution, as applicable. Any damages which may be awarded by the arbitration tribunal shall bear interest from the date of any relevant breach or violation to the date of full satisfaction of such award at a rate equal to the lesser of (i) SBI MCLR plus seven and a half (7.50) percentage points and (ii) the maximum rate permitted by applicable law. The costs and expenses of the arbitration will be borne by the losing party, unless the arbitral tribunal finds that it would be manifestly unfair to honour this Agreement of the Parties and determines a different allocation of costs.

11.3 This Section 11 of Part I – Special Provisions replaces Section 73 (High Court and Small Claims) of the BP GTC, and such replaced Section shall not apply to this Agreement and shall not form part of the Part II - General Terms & Conditions.

12. Change of law

12.1 In the event of any change or amendment of any act or law, rules or regulations of the Government or public body or enactment of any new act(s) or rule(s) or regulation(s) or any change in the interpretation or enforcement of any said act or law, rules or regulation by

the Government or public body (hereinafter referred to as "Change in Law") which becomes effective after the date of this Agreement and there is a resultant change in the liabilities on account of any taxes, duties or levies payable by the Sellers or the Buyer in connection with the transaction under this Agreement (but excluding corporate or personnel related taxes, duties or levies) either retrospectively or prospectively, the same shall be discussed between the Parties and if no mutual agreement is arrived within 60 days or as may be agreed between the Parties of such Change in Law, the Sellers shall have a right to suspend the supplies of Condensate to the Buyer and the Buyer shall have the right to nominate 0 (zero) quantity of Condensate under this Agreement.

13. Assignment

13.1 Except as provided in this Section 13 of Part I – Special Provisions, neither Party shall assign any or all of its rights or obligations under this Agreement without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed, and any attempt to assign or delegate without obtaining a required consent shall be of no effect.

13.2 Each of the Parties shall have the right to assign any or all of its rights or obligations under this Agreement, without the consent of the other Party but upon written notice of such intent, to an Affiliate.

13.3 Notwithstanding anything to the contrary contained in this Agreement, if the Government of India has consented to the Assignment by a Seller or by the holder of a mortgage, charge or other encumbrance over all or part of that Seller's Participating Interest ("**Assigning Seller**") of the whole or part of its Participating Interest to another Seller or a third party ("**Assignee**") under the relevant provisions of the PSC, the Assigning Seller shall, with effect from the effective date of that assignment be deemed to have assigned its rights and obligations under this Agreement to the Assignee in the same proportion which the Participating Interest which the Assigning Seller assigned to the Assignee bears to Assigning Sellers total Participating Interest immediately prior to that assignment.

13.4 This Section 13 of Part I – Special Provisions replaces Section 69 (Limitation on Assignment) of the BP GTC, and such replaced Section shall not apply to this Agreement and shall not form part of the Part II - General Terms & Conditions.

14. Certain Definitions

14.1 In this Agreement, all references to banking days, including in Part II – General Terms & Conditions of this Agreement (including any references to banking days in London or banking days in New York therein), when the payments have to be made in INR, shall be construed as banking days in Mumbai. All references to time in this Agreement, including Part II – General Terms & Conditions of this Agreement, shall be construed as time in Mumbai.

15. Notices

15.1 Except as otherwise specifically provided in this Agreement, any Notice authorized or required between the Buyer, RIL and BPEAL by any of the provisions of this Agreement (including invoices and statements) shall be in writing in the English language and may be delivered in person or by courier service or by any electronic means of transmitting written communications which provides confirmation of complete transmission and shall be addressed as set forth below:

A) BUYER'S CONTACTS

I. Business

XXXXXXXX
XXXXXXXX
XXXXXXXX
Attention: XXXXXXX,
Designation: XXXXXXXX
Telephone No: XXXXXXXX
Email: XXXXXXXXX

II. Finance

Attention: XXXXXXXXXXXXXXXX,
Designation: XXXXXXXX
Telephone No: XXXXXXXX
Email: XXXXXXXX

III. Operations

Attention: XXXXXXXXXXXXXXXX,
Designation: XXXXXXXX
Telephone No: XXXXXXXX
Email: XXXXXXXX

B) RIL'S CONTACTS

I. Business
Reliance Industries Limited
Reliance Corporate Park,
Building 12 A, Second Floor,
Thane-Belapur Road,
Navi Mumbai 400 701, India
Attention: Mr Mahesh Sikaria
Telephone No. +91- 22 – 79685425
Facsimile No. +91- 22 – 44710050
Email: Mahesh.sikaria@ril.com

II. Finance
Reliance Industries Limited
Reliance Corporate Park,
Building 12 A, Second Floor,

Thane-Belapur Road,
Navi Mumbai 400 701, India
Attention: Mr Avinash Pathak
Telephone No.: +91- 22 - 79686002
Facsimile No.: +91- 22 – 44710050
Email: Avinash.pathak@ril.com

III. Operations
Reliance Industries Limited
KG-D6 Onshore Terminal (OT),
Gadimoga - 533463,
Tallarevu Mandal, East Godavari District, Andhra Pradesh
Attention: Mr. Muralidhar Lanka
Telephone No. +91-884-6677205
Email: Muralidhar.Lanka@ril.com

C) BPEAL'S CONTACTS

I. Business
BP Exploration (Alpha) Ltd
7th Floor, Maker Maxity,
2nd North Avenue,
Bandra Kurla Complex, Bandra (East)
Mumbai – 400 051
Attention: Mr. Manoj Kumar
Telephone No.: +91-22-71777100
Email: manoj.kumar@se1.bp.com

or such other address as any party hereafter shall designate from time to time to the other Parties by Notice in accordance with this Section 15 of Part I – Special Provisions.

15.2 Any such Notice shall be deemed received by the Party to whom so addressed when delivered at such address in person or by courier service. Notice given by facsimile shall be deemed received when received by the other Party's receiving terminal, provided, however, that if a facsimile is received or delivered after 1700 hours (time at receiver's location) or on a day that is not a receiver's Business day, such facsimile shall be deemed received or delivered on the next succeeding Business day.

ANNEXURE A
SELLER'S WARRANTY

THIS ANNEXURE A REPLACES SCHEDULE A OF THE BP GTC, AND SUCH SCHEDULE A SHALL NOT APPLY TO THIS AGREEMENT AND SHALL NOT FORM PART OF THE PART II - GENERAL TERMS & CONDITIONS.

****

FROM:
RELIANCE INDUSTRIES LIMITED
RELIANCE CORPORATE PARK
GHANSOLI
THANE BELAPUR ROAD
NAVI MUMBAI – 400 701

AND

BP EXPLORATION (ALPHA) LIMITED
OFFICE NO 71 & 73, 7TH FLOOR
2ND NORTH AVENUE, MAKER MAXITY,
BANDRA KURLA COMPLEX
BANDRA (EAST)
MUMBAI- 400051

TO: (APPLICANT)

IN CONSIDERATION OF YOUR PAYING FOR THE CARGO OF _____ BARREL OF CONDENSATE WHICH SAILED FROM _____ ON VESSEL _____ ON LOADED WITH SUCH CARGO AND THE ORIGINAL SHIPPING DOCUMENT FOR SUCH CARGO HAVE NOT BEEN DELIVERED TO YOU AT THE TIME OF PAYMENT.

WE HEREBY WARRANT TO YOU THAT AT THE TIME THE PROPERTY HAD PASSED TO YOU WE HAD THE RIGHT TO SELL OUR PARTICIPATING INTEREST SHARE OF THE SAID CARGO TO YOU AND WE HAD UNENCUMBERED TITLE OF OUR PARTICIPATING INTEREST SHARE OF THE SAID CARGO.

WE HEREBY IRREVOCABLY AND UNCONDITIONALLY UNDERTAKE TO PROVIDE YOU WITH THE ORIGINAL BILL OF LADING FOR SAID CARGO.

THIS LETTER OF WARRANTY SHALL BE GOVERNED AND CONSTRUED IN ACCORDANCE WITH INDIAN LAWS AND WE AGREE TO SUBMIT TO THE EXCLUSIVE JURISDICTION OF THE COURTS IN MUMBAI.

FOR RELIANCE INDUSTRIES LIMITED	**BP EXPLORATION (ALPHA) LIMITED**
AUTHORISED SIGNATORY	**AUTHORISED SIGNATORY**

ANNEXURE B
KG D6 CONDENSATE PRICING

THE FOB PRICE, IN USD, PER NET BILL OF LADING BARREL OF KG D6 CONDENSATE SHALL BE EQUAL TO "DATED BRENT + 'B' + API ADJUSTMENT FACTOR" WHEREIN,

DATED BRENT IS THE BENCHMARK PRICE IN USD PER BARREL. DATED BRENT IS THE MONTHLY AVERAGE OF THE DAILY MEAN VALUES OF THE HIGH AND LOW ASSESSMENTS OF BRENT (DATED) (PLATTS CODE: PCAAS00) CRUDE OIL QUOTATIONS (AS PUBLISHED UNDER THE SPOT CRUDE ASSESSMENT HEADING IN PLATT'S CRUDE OIL MARKETWIRE SPOT ASSESSMENT, (INCLUDING ANY PUBLISHED CORRECTION)) IN THE USD PER BARREL FOR THE SCHEDULED MONTH OF SUPPLY, TO BE ROUNDED OFF TO THREE DECIMAL PLACES. SCHEDULED MONTH OF SUPPLY FOR 1ST CARGO IS 1ST to 31ST MAY 2027; FOR 2ND CARGO IS 1ST TO 30TH JUNE 2027; FOR 3RD CARGO IS 1ST TO 31ST AUGUST 2027; FOR 4TH CARGO IS 1ST TO 30TH SEPTEMBER 2027; FOR 5TH CARGO IS 1ST TO 31ST DECEMBER 2027; AND FOR 6TH CARGO IS 1ST TO 31ST MARCH 2028.

'B' : IS THE BID PREMIUM UPTO ONE DECIMAL PLACE AND GREATER THAN THREE USD PER BARREL (IN USD PER BARREL)

API ADJUSTMENT FACTOR (IN USD PER BARREL) TO BE COMPUTED AS PER BELOW GUIDANCE:
API AS REPORTED IN ANNEXURE I OF THE RFP IS 48.53 DEGREE
API GRAVITY ("A"), AS DETERMINED BY THE INDEPENDENT INSPECTOR AT THE TIME OF LOADING AND REPORTED IN THE CERTIFICATE OF QUALITY ISSUED BY THE SELLERS' REPRESENTATIVE FOR THE SUBJECT CARGO, SHALL BE CONSIDERED TO DETERMINE THE ADJUSTMENT FACTOR USING BELOW PROVIDED TABLE.
FULL API DEGREE CALCULATION SHALL BE ROUNDED OFF TO ONE DECIMAL PLACE FOR DETERMINING THE API ADJUSTMENT FACTOR. ROUNDING TO ONE DECIMAL PLACE WILL BE DONE USING FOLLOWING CONVENTION:

I. IF THE SECOND DECIMAL PLACE IS FIVE (5) OR GREATER THAN FIVE (5), THEN THE FIRST DECIMAL PLACE SHALL BE ROUNDED UP TO THE NEXT DIGIT.
II. IF THE SECOND DECIMAL PLACE IS FOUR (4) OR LESS THAN FOUR (4), THEN THE FIRST DECIMAL PLACE SHALL REMAIN UNCHANGED.

API RANGE	**ADJUSTMENT FACTOR RULE**
IF A < 48.53	PRICE SHALL BE ESCALATED BY USD 0.040 PER NET BARREL FOR EACH 0.10 API DEGREE LOWER THAN 48.53 DEGREE.
IF A = 48.53	NO ADJUSTMENT IN PRICE
IF A > 48.53	PRICE SHALL BE DE-ESCALATED BY USD 0.040 PER NET BARREL FOR EACH 0.10 API DEGREE GREATER THAN 48.53 DEGREE.

PRICE CALCULATION FOR CONDENSATE PRICES SHALL BE ROUNDED OFF TO THREE DECIMAL PLACES AT ALL STAGES TILL THE DETERMINATION OF FINAL PRICE OF CONDENSATE.

ANNEXURE C
FORM OF LETTER OF CREDIT

[TO BE TRANSMITTED IN FIN 700]

Advising Bank: HSBC Bank Mumbai
(*Issuing bank should send the issued SBLC to advising Bank requesting them to advise the SBLC to beneficiary details as mentioned under field 78.*)

40 A	**Form of Documentary Credit**	IRREVOCABLE STANDBY
20	**Documentary Credit Number**	XXXXXXX
31C	**Date of Issue**	XXXXXXXX
40E	**Applicable Rules**	UCP LATEST VERSION
31D	**Date and Place of Expiry**	……MUMBAI, INDIA *** *(*** Expiry to be forty-five days from the date of bill of lading issuance)*
50	**Applicant**	XXXXXX
59	**Beneficiary - Name & Address**	RELIANCE INDUSTRIES LTD / BP Exploration (Alpha) Limited. *<address as per agreement>*
32B	**Currency Code, Amount**	INR XXXX.XX *<SBLC value quoted here should be as per Section 5 of Part I – Special Provisions in the Agreement>*
39	**Tolerance**	+ 15% *<for price and exchange rate fluctuations>*
41D	**Available With…By…**	ANY BANK IN INDIA BY PAYMENT AT SIGHT

45A: Description of Goods/ Services
SALE OF CONDENSATE BY THE BENEFICIARY TO THE APPLICANT FOR USE BY THE APPLICANT AS OUTLINED IN THE CONDENSATE SALE AGREEMENT ("AGREEMENT") DATED [•] EXECUTED BETWEEN THE BENEFICIARY AND THE APPLICANT.

46A: Documents Required

1. BENEFICIARY'S CERTIFICATE CERTIFYING THAT A PARTIAL/FULL *<strike off whichever is not applicable>* VALUE OF UNPAID INVOICE(S) AND/OR DEBIT NOTE(S) AMOUNTING TO INR [•] IS DUE ON (DD/MM/YYYY) PURSUANT TO THE AGREEMENT ON ACCOUNT OF APPLICANT'S FAILURE TO PERFORM OR FULFILL ANY OF ITS OBLIGATION SET FORTH IN THE AFORESAID AGREEMENT.
2. COPY OF UNPAID INVOICE(S) AND/OR DEBIT NOTE(S) UNDER THE AGREEMENT AGAINST WHICH THE AMOUNT CLAIMED IS DUE TO BENEFICIARY.

47A: Additional Conditions

1. THIS LETTER OF CREDIT IS ALLOWED TO BE OVERDRAWN FOR AN ADDITIONAL AMOUNT NOT TO EXCEED 15% OF FACE VALUE OF SBLC AS INDICATED UNDER FIELD 32B IN THE EVENT OF 1. DEPRECIATION IN THE VALUE OF INR AGAINST USD OVER AND ABOVE THE 'INITIAL EXCHANGE RATE' AND 2. INCREASE IN SELLER'S NOTIFIED PRICE WHICH IS [.] USD PER BARREL SUCH ADDITIONAL AMOUNT SHALL BE DETERMINED AS THE AMOUNT BY WHICH FACE VALUE WOULD INCREASE WHEN MULTIPLIED BY THE 'APPLICABLE EXCHANGE RATE' AND DIVIDED BY THE 'INITIAL EXCHANGE RATE'.

   FOR COMMON UNDERSTANDING OF ABOVE CLAUSE, THE TERMS 'APPLICABLE EXCHANGE RATE' AND 'INITIAL EXCHANGE RATE' ARE DEFINED AS BELOW:
   'APPLICABLE EXCHANGE RATE' MEANS THE AVERAGE (MID-RATE AS ROUNDED OFF TO THREE DECIMAL PLACES) OF THE TT (TELEGRAPHIC TRANSFER) BUYING AND SELLING RATES OF EXCHANGE FOR CONVERTING USD TO INR AS QUOTED BY THE STATE BANK OF INDIA ("SBI") APPLICABLE TO THE DAY ON WHICH PAYMENT AGAINST THE DEMAND IS MADE; PROVIDED, HOWEVER, THAT: (I) IF SUCH RATE IS NOT AVAILABLE AS TO ANY DAY, THE LAST AVAILABLE EXCHANGE RATE SHALL BE USED; AND (II) IF SBI RELEASES MORE THAN ONE QUOTE ON THE APPLICABLE DAY, THE FIRST QUOTE OF THE DAY SHALL BE USED.
   'INITIAL EXCHANGE RATE' MEANS INR [•] PER USD TO BE NOTIFIED BY THE SELLER.
   ALL PAYMENTS SUPPORTED BY COMMERCIAL DOCUMENTS DENOMINATED IN USD UNDER THIS LETTER OF CREDIT SHALL BE PAID IN EQUIVALENT INR BY CONVERTING THE AMOUNT DUE AT THE 'APPLICABLE EXCHANGE RATE'.

2. FOLLOWING ANY PAYMENT PURSUANT TO A CREDIT COMPLYING PRESENTATION, ISSUING BANK SHALL AUTOMATICALLY AND IMMEDIATELY THEREAFTER REINSTATE THE VALUE OF THIS LETTER OF CREDIT BY THE AMOUNT PAID IN ORDER TO RESTORE THIS LETTER OF CREDIT TO ITS FACE VALUE. THE ISSUING BANK SHALL NOTIFY THE BENEFICIARY IMMEDIATELY AFTER ANY REINSTATEMENT OF THIS LETTER OF CREDIT TO THE FACE VALUE. IRRESPECTIVE OF THE NOTIFICATION FROM THE ISSUING BANK, THE LETTER OF CREDIT SHALL STAND REINSTATED TO ITS FACE VALUE UPON PAYMENT OF ANY DRAWINGS UNDER THE LETTER OF CREDIT BY THE ISSUING BANK. THIS SBLC CAN BE REINSTATED UP TO MAXIMUM CUMULATIVE DRAWINGS NOT TO EXCEED INR *(<insert value in INR equivalent to 1.15 times the face value of SBLC >*) DURING THE VALIDITY OF THE SBLC.
3. BENEFICIARY IS ELIGIBLE TO DRAW FULL VALUE OF THE LETTER OF CREDIT ON PRESENTATION OF DOCUMENTS MENTIONED UNDER CLAUSE 46A, IF THE APPLICANT FAILS TO RENEW THIS LETTER OF CREDIT OR REPLACE THIS LETTER WITH ANOTHER LETTER OF CREDIT TO COVER VALUE OF CARGO OR FAILS TO MAKE PAYMENT UNDER ANY INVOICE AND/OR DEBIT NOTES.
4. BENEFICIARY IS ELIGIBLE TO DRAW UNDER THE LETTER OF CREDIT, DELAYED PAYMENT INTEREST ON THE AMOUNT DUE, CALCULATED FROM THE DATE PAYMENT IS DUE TO THE BENEFICIARY (AS INDICATED ON BENEFICIARY CERTIFICATE) UNTIL THE DAY ON WHCH PAYMENT IS MADE BY THE ISSUING BANK UNDER THIS LETTER OF CREDIT. THE INTEREST SHALL BE CALCULATED ON THE BASIS OF ONE MONTH STATE BANK OF INDIA MARGINAL COST LENDING RATE (SBIMCLR) PLUS SEVEN AND A HALF (7.50*)* PERCENTAGE POINTS.
5. ALL ORIGINAL DOCUMENTS MUST BE IN ENGLISH AND MANUALLY SIGNED.
6. PARTIAL AND MULTIPLE DRAWINGS ARE ALLOWED.
7. ALL DOCUMENTS SHALL MENTION 'DRAWN UNDER SBLC NUMBER.....DATED.....

71B	**Charges**	ALL CHARGES ARE FOR THE ACCOUNT OF THE APPLICANT.
48	**Period for Presentation**	WITHIN THE EXPIRY OF THE LC
49	**Confirmation Instructions**	WITHOUT
78	**Instr to Payg/Accptg/Negotg Bank**	(1) SBLC TO BE ADVISED TO THE BENEFICIARY AT RELIANCE INDUSTRIES LIMITED RELIANCE CORPORATE PARK THANE BELAPUR ROAD, GHANSOLI, NAVI MUMBAI – 400 701 ATTN: BP EXPLORATION (ALPHA) LTD. 71& 73, 2ND NORTH AVENUE, 7TH FLOOR, MAKER MAXITY, BANDRA-KURLA COMPLEX BANDRA (E) MUMBAI - 400 051 (2) WE HEREBY ENGAGE OURSELVES THAT ANY DRAWINGS IN ACCORDANCE WITH THE TERMS OF THIS STANDBY L/C WILL BE DULY HONOURED BY US. (3) ON RECEIPT OF CREDIT COMPLIANT DOCUMENTS, WE SHALL REMIT PROCEEDS AS PER NEGOTIATING BANK'S INSTRUCTION. (4) UNLESS EXPRESSLY MODIFIED OR EXCLUDED BY THE CREDIT, THIS CREDIT IS SUBJECT TO THE UCP (2007 REVISION) ICC PUB 600. (5) ALL DOCUMENTS AND ANY OTHER COMMUNICATIONS UNDER THIS LC SHOULD BE DIRECTLY SENT TO THE ISSUING BANK BY COURIER/SFMS AT THE FOLLOWING ADDRESS XXXXXX (IFSC CODE XXXXX).

ANNEXURE D

Name of Banks for issuing Letter of Credit by the Bidder

Bidders can issue the Letter of Credit ("LC") from any of the Banks listed below. LCs from any subsidiaries or affiliates of banks listed below will not be accepted.

Public Sector Banks	Private Banks	Foreign Banks
Union Bank of India	Axis Bank Limited	BNP Paribas
Bank of Baroda	Kotak Mahindra Bank Limited	Australia and New Zealand Banking Group Limited
Bank of India	HDFC Bank Limited	Credit Agricole Corporate & Investment Bank
Punjab National Bank	ICICI Bank Limited	Societe Generale
State Bank of India	IDBI Bank Limited	Deutsche Bank
		HSBC Limited
		Mizuho Bank Limited
		Sumitomo Mitsui Banking Corporation
		The Bank of Tokyo- Mitsubishi UFJ, Ltd.
		Barclays Bank Plc.
		Standard Chartered Bank
		Bank of America
		Citibank N.A.
		J.P. Morgan Chase Bank N.A.
		DBS Bank India Limited

ANNEXURE E (KG D6 Indicative Condensate Assay)

Attached separately

SCHEDULE
FORM OF DEMAND

[DATE]
To: [BANK]

Regarding: Irrevocable Standby Letter of Credit No. [ ] issued in favour of _____ ("Letter of Credit")

Dear Sirs:

We refer to the above-mentioned Letter of Credit. Terms defined in the Letter of Credit have the same meaning when used in this demand.

1. We certify that the sum of [**INR** *or* **USD]** [●] is due under the Agreement as of [date] against Invoice no…… dated ….. and Debit or Credit Note no…… dated…… We therefore demand payment of the sum of [INR / USD] [●] plus interest as provided in the Letter of Credit.

   alternative:

   We certify that the sum of [**INR** *or* **USD]** [•] may be drawn down under the Agreement. We therefore demand payment of the sum of [INR *or* USD] [•].

2. All documents prescribed under Field 46A in Annexure C (Form of Letter of Credit) are enclosed herewith.

3. The applicable exchange rate for this demand is the exchange rate as defined in the Letter of Credit.

4. Payment should be made to the following account:

   Name:
   Account Number:
   Bank:
   IFSC code:

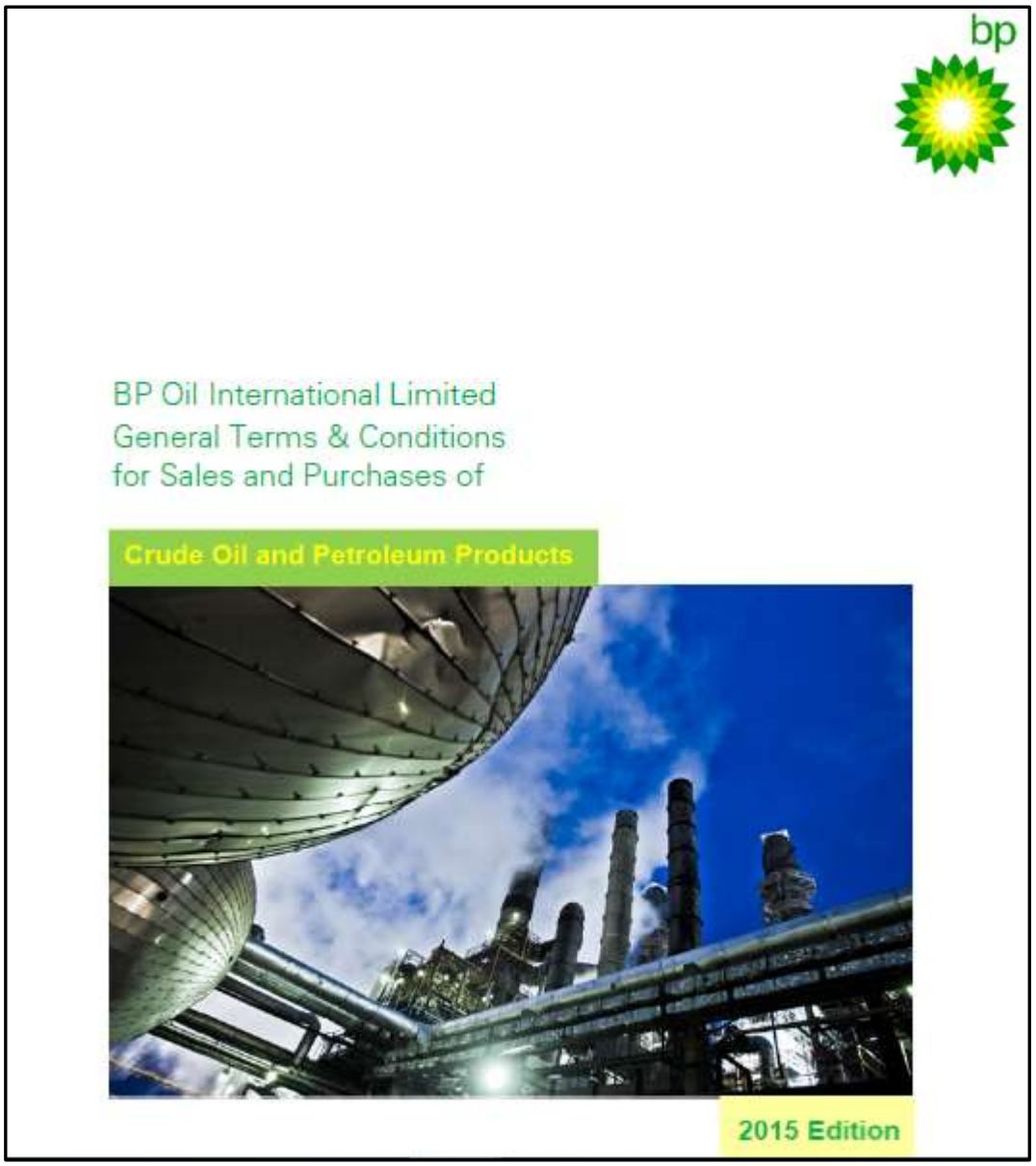
5. The date of this demand is not later than the expiry date.

Yours faithfully

(Authorised Signatory)
for
[Beneficiary].

PART II – GENERAL TERMS & CONDITIONS

BP Oil International Limited General Terms & Conditions for Sale and Purchases of Crude Oil and Petroleum Products (2015 edition)



PART III – TERMINAL HANDBOOK FOR KG D6 RUBY

To be provided separately

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Part III

to

Condensate Sale Agreement

Terminal Handbook for KG D6 Ruby

KGD6 RUBY FPSO O&M

Terminal Handbook

RIL DOC NO. RIL-E&P-KGD6-MJ-MOP-904
OCS DOC NO.: OCS-IND-POM-KRF-OPS-PRC-044

15	04-Sep-2026	Re-Issued for Use / IFU	**NR**	**PT**	**IF**
14	04-Jun-2025	Re-Issued for Use / IFU	**PT**	**RG**	**AH**
11	06-Feb-2024	Re-Issued for Use / IFU	**PT**	**RG**	**AH**
10	21-Dec-2023	Re-Issued for Use / IFU	**PT**	**RG**	**AH**
5	12-Jun-2023	Re-Issued for Use / IFU	**PT**	**MK**	**AH**
1	03-Apr-2023	Issued for Use / IFU	**PT**	**MK**	**AH**
0	26-Oct-2022	Issued for Use / IFU	**PT**	**MK**	**AH**
B	07-Oct-2022	Re-Issued for Client Review / IFA	**PT**	**MK**	**AH**
A	14-Sep-2022	Issued for Review / IFR	**PT**	**MK**	**AH**
REV	**DATE**	**DESCRIPTION**	**ORIG**	**CHK**	**APPR**

OCS Services (India) Pvt. Ltd.

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CHANGE RECORD

Rev. No.	Section No.	Brief Description of Change
A	-	Issued for Review / IFR
B	-	Re-Issued for Client Review / IFA
0	-	Issued for Use / IFU
1	-	Issued for Use / IFU
2	7.2 and 10.4	Issued for Use / IFU
3	Annexure S.	Re Issued for Use / IFU
4	2.4 and 10.7	Definitions and Notice of Readiness
5	Sec 8.2 & 16.2	Terminal Dues & Charges and Cargo Documentation
6	Appendix C, Appendix I and Appendix Q.	Re-Issued for Use / IFU
7	-	Re-Issued for Use / IFU
8	Appendix T	Added Appendix T – Note of Protest
9	-	Re Issued for Use / IFU
10	-	Re Issued for Use / IFU
11	-	Re Issued for Use / IFU
12	Appendix D2 Appendix R	Included Crew Matrix Requirements, Appendix R- changes in text
13	5.1.3, 5.1.4.4, 5.1.5, 7 d, 13.1.4, 14.3, 17.0, 20.2, Appendix D2 Appendix J	5.1.3 Details updated 5.1.4.4 Details updated 5.1.5 Racon details removed 7d Details of hose connection updated 13.1.4 details of hose connection updated 14.3 details updated 17.0 Water plug / Flushing of Cargo hose- new section added. 20.2 Emergencies- updated the table. Appendix D2- updated point 1.5 Appendix J- updated table for Declaration
14	5.1.3, 7 d, 14.2	5.1.3 Details updated 7d Details of hose connection updated 14.2 Details updated
15	7.0, 9.7, Appendix D-1 Appendix D-2 Appendix L, Appendix N Appendix O.	Revised Line No. "K" Notice of Readiness (NOR) Section updated Updated list of documents required for Terminal clearance Updated Tanker Vetting and Clearance Form Safety Letter Tanker Master Feedback Form Mooring Master Feedback Form

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1. General

1.1 Introduction

Reliance Industries Limited is developing offshore oil & gas fields in the block KG-DWN-98/3 (more commonly called KG-D6) in Krishna Godavari Basin on the East Coast of India in the Bay of Bengal. The location of the KG-D6 block is shown in Figure 1. The north-western boundary of the block is 60km south-east of Kakinada. Water depth in the block area ranges from 400m in the northwest to 2300m in the southeast.

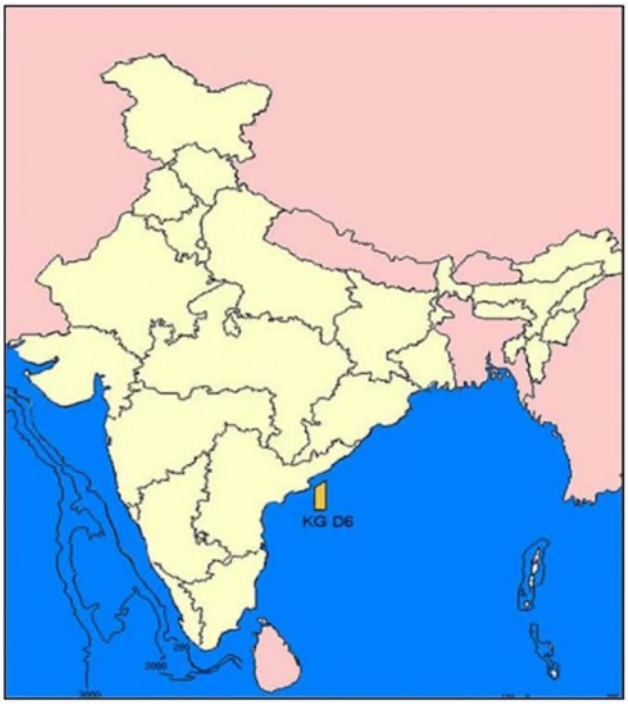


Figure 1: Location Map Block KG-D6

- Dhirubhai-26 (MA) oil & gas field
- Dhirubhai-1&3 (D1-D3) gas fields

Production from MA field has ceased in 2018 and D1-D3 ceased in 2020. In the current phase of development, R-Cluster, Satellite Cluster (Satellite & Other Satellite) and MJ discoveries are being developed by integrating with the existing facilities.

MJ Gas Condensate discovery is an eight wells development located within D1-D3 Mining Lease Area lying structurally about 2000 meters below D1-D3 reservoirs. The MJ field water depth varies from about 600m to 1200m.

The MJ field is to be developed with a Floating Production Storage and Offtake Unit (FPSO) utilizing two subsea production drill centers (North and Central) with a total of 7 subsea wells. Dry gas is to be exported from the FPSO via export risers and a pipeline which connects into the existing KG-D6 pipeline system to transport the gas to the existing onshore terminal.

1.2 Purpose

This document contains operational requirements and other useful information relating to the KG D6 RUBY Terminal which is operated by OCS Services for and on behalf of Reliance Industries Limited ("RIL"), in the Bay of Bengal in the east coast of India.

Reliance Industries Limited (RIL) – hereinafter referred to as the "Company", as well as "OCS" – hereinafter referred to as the "Terminal Operator" – are committed towards the safe and efficient turnaround of vessels at their marine terminal.

The purpose of the Terminal handbook is to acquaint Owners, Charterers and Masters of vessels/tankers calling at the KG D6 RUBY Marine Terminal – hereinafter referred to as the "Terminal" or "Marine Terminal" – with the operational requirements relating to condensate offtake, marine and other activities within the Restricted Zone.

Master of Offtake Tanker shall agree, owing to the sole fact that they load at the Terminal, to comply strictly with the provisions of the Marine Terminal Manual and the exceptional safety measures the Parties may be called upon to take under given circumstances.

1.3 Scope

This manual applies to all Offtake Tankers calling at the Terminal in order to ensure all necessary activities for safe mooring/ Off Loading / Unmooring operations at the Terminal are carried out with consistency, as well as in compliance with regulatory, contractual and other requirements.

1.4 Responsibilities

Position / Role / Competency Profile	Responsibility
Operations Manager (OCS)	• Implement and comply with this Manual across operations.
Offshore Installation Manager (OIM)	• Ensure all applicable regulations are enforced & complied with
Marine Superintendent	• Organize and supervise cargo operations. • Liaise with Client for the nominated cargo quantity and the readiness of cargo for export. • Monitor cargo operations and ensure they are conducted according to this Manual. • Coordinate with the Maintenance Superintendent for the readiness & availability of the cargo transfer equipment.
Mooring Master	• The "Mooring Master" shall mean the person appointed by the RIL who advises the Vessel Master on all aspects of the navigation and maneuvering of the vessel when within the pilotage area of the Terminal, including, but not limited to, mooring / unmooring and hose handling. When the vessel is moored he/she acts as the loading coordinator between the Master and his/her officers and the Terminal. He/she will supervise the connection and disconnection of the offloading hose and the cargo transfer operations

Assistant Mooring Master	• Appointed by RIL and responsible for assisting Mooring Master in all operations associated with loading of Offtake Tanker at the FPSO KG D6 RUBY.
Marine Supervisor	• Assist the Marine Superintendent. • Keep the Marine Superintendent informed of all developments before, during, and post, cargo operations. • Follow the requirements of this Manual when performing offloading.
Vessel Master	• Ensure enforcement of and compliance to all applicable regulations, as they apply to his vessel.

1.5 References

1.5.1 External References

SOLAS 1974 as amended	Safety of Life at Sea
MARPOL73/78 as amended	Convention for prevention of pollution from ships
STCW, as amended	Standards for Training and Certification for Watchkeepers
IMPA	International Maritime Pilots Association
OCIMF Publication	Oil Companies International Marine Forum Publications
ISGOTT	International Safety Guidelines for Oil Tankers and Terminals
ISM Code	Internal Safety Management Code

1.6 Definitions

Agreement	Condensate Sales Agreement executed between RIL and Buyer.
Arrival Point	The recognized arrival point is - 5.0 miles East of FPSO KG D6 RUBY
Bad/Adverse	A cyclone, tropical low, line squall or other adverse weather conditions
Barrel	As specified in the Agreement.
Boarding party	Person boarding the Offtake Tanker to assist in the mooring / loading / unmooring operations and will include the Berthing crew, Terminal representative and surveyors.
Buyer	As specified in the Agreement.
Cargo	Any quantity of condensate loaded or to be loaded onto a vessel.

Cargo handling	All procedures & practices necessary to enable the physical handling of goods.
Cargo manifest	Certificate of quantity, certificate of quality and certificate of origin, issued separately or issued as one certificate (containing these three certificates) at the Loading Terminal.
Central Control Room (CCR)	This area incorporates the Cargo Control Room and the Production Control Room and is always manned. The CCR becomes the Emergency Response Room in the event of an emergency and has all the necessary communications and CCTV facilities on board the FPSO.
Closed Loading	Hydrocarbon and inert gas is vented clear of the deck through Riser Vents, or high velocity vents. Offtake Tanker is equipped for and able to carry out closed loading operation in full compliance with ISGOTT guidelines.
Commencement of loading	In respect to Cargo, means the time & date at which the loading of Cargo commences, as recorded on the time sheet prepared by Terminal Operator.
Completion of loading	In respect of a Cargo, means the time & date at which the operation of loading is completed, as recorded on the time sheet prepared by Terminal Operator.
Condensate	As specified in the Agreement.
Day	A calendar day.
Delivery Point	The Offtake Tanker’s permanent hose connection.
DWT	Deadweight in metric tons
Emergency Shut Down (ESD)	Besides denoting the progressive emergency shutdown of the FPSO’s production plant the term ESD is also used to denote “stop pumping” between the FPSO and tanker.
ETA	Means the estimated date and time of arrival (local time at the Terminal GMT+5:30) of an Offtake Tanker at the Arrival Point.
Facility	Floating Production Storage and Offloading Facility at the KG-DWN-98/3 Block
Field Operator	Reliance Industries Ltd, operator of KG-DWN-98/3 Block.
FPSO	Floating Production Storage & Offloading Facility, where used in this manual will refer to FPSO KG D6 RUBY
FPSO Operator	OCS, its associated and affiliated companies (including parents), assignees and successors, agents, contractors, and subcontractors and the employees, directors, officers, and shareholders of the foregoing.
Free Pratique	Permission for a ship to enter a port, embark or disembark, discharge or load cargo or stores
Grade	Any grade of Condensate specified in the Agreement.
Hot Work	Work involving sources of ignition or temperatures sufficiently high to cause the ignition of a flammable gas mixture. This includes any work requiring the use of welding, burning or soldering equipment,

	blow torches, some power-driven tools, sand blasting equipment, portable electrical equipment which is not intrinsically safe or contained within an approved explosion proof housing, and internal combustion engines. Hot Work can only be carried out under a documented Permit to Work system.
Lifting	Means the act of loading of (or to load) a cargo at the Terminal
Loading plan	A plan providing the quantities and sequence of loading for the various grades carried / to be loaded in the ship's cargo tanks including the sequence for deballasting and stability condition at various stages of the operation
Loading Terminal	Any loading terminal as specified in the Agreement.
Marine Terminal Area	An area of 3 NM centered around the FPSO
Marine Terminal Representative	Offshore Installation Manager (OIM) or person designated by OIM
MARPOL	International Convention for the Prevention of Pollution from Ships, 1973, as modified.
Master (Vessel Master)	The person designated in the ship’s register onboard the offtake vessel as the Master, having overall command of the vessel.
Maximum Loading Rate	The Maximum Loading Rate from FPSO is about 37,700 barrels per hour through Off take Hose.
Metric Ton (MT)	Unit of weight equal to one thousand (1000) kilograms.
Month	A calendar month
Mooring Master	The “Mooring Master” shall mean the person appointed by the Company who advises the Master on all aspects of the navigation and maneuvering of the vessel when within the pilotage area of the Terminal, including, but not limited to, mooring and unmooring. When the vessel is moored, he/she acts as the loading coordinator between the Master and his/her officers and the Terminal. He/she will supervise the connection and disconnection of the offloading hose and the cargo transfer operations
Nautical Mile	A distance of 1852 meters
NOR	Notice of Readiness tendered by the Offtake Tanker
Off take Hose	The floating hose is used for transfer of condensate from the Terminal to the Offtake Tanker.
Offshore Installation Manager (OIM)	The person employed by OCS who has overall responsibility for the operation of the FPSO and in the 500 meters zone surrounding the FPSO
Offtake Tanker	A vessel visiting the Facility or nominated to visit the Facility to load condensate cargo during the agreed laycan.
Tanker Master	Master of Offtake Tanker
OIM	Offshore Installation Manager, the person on the FPSO who has overall responsibility of all operations at the Terminal.

Pilot Boarding Point	Kakinada anchorage or 5 Miles East of the FPSO KG D6 RUBY as notified by OIM/Marine Superintendent during the pre-arrival communication
Pull Back Tug	Tug used for off take support and towage operations.
Quarter	A period of the three (3) consecutive months commencing on first (1st) January or first (1st) April or first (1st) July or first (1st) October.
Responsible Officer	A person appointed by the employer or the master of a vessel and empowered to take all decisions relating to a specific task, having the necessary knowledge and experience to carry out the said task.
Restricted Zone	As defined in Section 6.0
Shut Down	Suspension of the transfer of condensate by the Terminal.
Significant Wave Height	(Hs) Significant Wave Height refers to the average wave height of the largest one third of waves.
Static Tow	Condition when the Offtake Tanker is moored astern of the FPSO, and a tug is made fast to the stern of the Offtake Tanker to prevent the Offtake Tanker ‘moving up on to the stern’, and/or ‘out of line’ of the FPSO.
Terminal	Means the FPSO called KG D6 RUBY moored at the KG-DWN-98/3 Block and all associated equipment and includes, the mooring system including connecting flow lines, hawser and off take loading hose.
Terminal Conditions	The terms and conditions that govern the provisions or performance of services at the Facility for the benefit of an Offtake Tanker, as set out in Appendix
Terminal Handbook	Refers to the KG D6 RUBY Terminal Handbook

1.7 Abbreviations

API	American Petroleum Institute
ASTM	American Society for Testing and Materials
Bbls	Barrels
CCR	Central Control Room
CCRO	Central Control Room Operator
COW	Crude Oil Washing
CLC	Civil Liability Convention
DWT	Dead Weight Tonnage
EDP	Early Departure Procedure
ERS	Emergency Release System

ESD	Emergency Shutdown
ETA	Estimate Time of Arrival
FPSO	Floating, Production, Storage and Offloading
FPSO OPS	FPSO Operations
GMT	Greenwich Mean Time
GRT	Gross Registered Tonnage
I.S.	Intrinsically Safe
ICS	International Chamber of Shipping
IGS	Inert Gas System
IMO	International Maritime Organization
IMPA	International Maritime Pilots Association
ISGOTT	International Safety Guide for Oil Tankers and Terminals
ISM	International Safety Management
ISPS	International Ship and Port Facility Security
ITOPF	International Tanker Owners Pollution Federation
LBP	Length Between Perpendiculars
LOA	Length Overall
LTTF	Last Tank To Fill
MARPOL	International Convention for the Prevention of Pollution from Ships (as amended). The principal body of rules, framed by IMO to control pollution of the marine environment.
MBL	Minimum Breaking Load
MT	Metric Ton
MODU	Mobile Offshore Drilling Unit
Nm	Nautical miles
NOR	Notice of Readiness
NRT	Net Registered Tonnage
NSV	Net Standard Volume
OCIMF	Oil Companies International Marine Forum
OIM	Offshore Installation Manager
OCS	OCS Services Pvt Ltd
SOPEP	Shipboard Oil Pollution Emergency Plan

P&I	Protection & Indemnity
PIC	Person in Charge
PLEM	Pipeline End Manifold
QRH	Quick Release Hook
RIL	Reliance Industries Ltd
SBT	Segregated Ballast Tank
SMS	Safety Management System
SOLAS	Safety of Life at Sea
SPS	Subsea Production System
STS	Ship to Shore
STV	Static Tow Vessel
SWL	Safe Working Load
UHF	Ultra-High Frequency
VEF	Vessel Experience Factor
VHF	Very High Frequency

2. Disclaimer

This Terminal Handbook has been prepared for the benefit of Buyers, Masters, Owners and Agents of Offtake Tankers by OCS as operator of the FPSO KG D6 RUBY. Every effort has been made to ensure that the information contained in this Terminal Handbook is correct, however, neither OCS nor Sellers make any warranties in respect of, and accept any responsibility for its accuracy or completeness (regardless of its purpose of use) and reserve the right to amend the information contained herein as and when required. It is the user’s responsibility to ensure that the latest edition of this Terminal Handbook and the Terminal Conditions are being referred to.

2.1 Continuous Improvement

In the interest of ‘continuous improvement’ and in an effort to maintain ‘industry best practice’, OCS considers it important to receive any feedback (positive or negative) from anyone who has cause to refer to this document.

Any comments should be directed to: -

Operations Manager FPSO KG D6 RUBY,
OCS Services India Pvt. Ltd.
C/O: Cosy World Resorts Ltd.
Door No # 67-15-32, Halcyon Times,
Nagamallithota Junction,
Kakinada: 533 003

Or Email
opsmgr.ruby@ocs.services

3. Control of the Terminal Handbook

The Terminal Handbook is part of the OCS Management System documents. Updates would be done to this terminal handbook as and when deemed necessary and any future revisions will also be provided electronically.

An Electronic copy or applicable parts thereof, of the Terminal Handbook will be provided to each export tanker so that it may be aware of all the terms and conditions it has to comply with.

It is the responsibility of all persons using uncontrolled copies of the Terminal Handbook to ensure that they have the current revision.

4. Introduction

4.1 Project Description

RIL is the Field Operator of KG-DWN-98/3 Block. The field is approximately about 40 nautical miles southeast of Kakinada on the east coast of India approximately in 1100 – 1400 m of water depth.

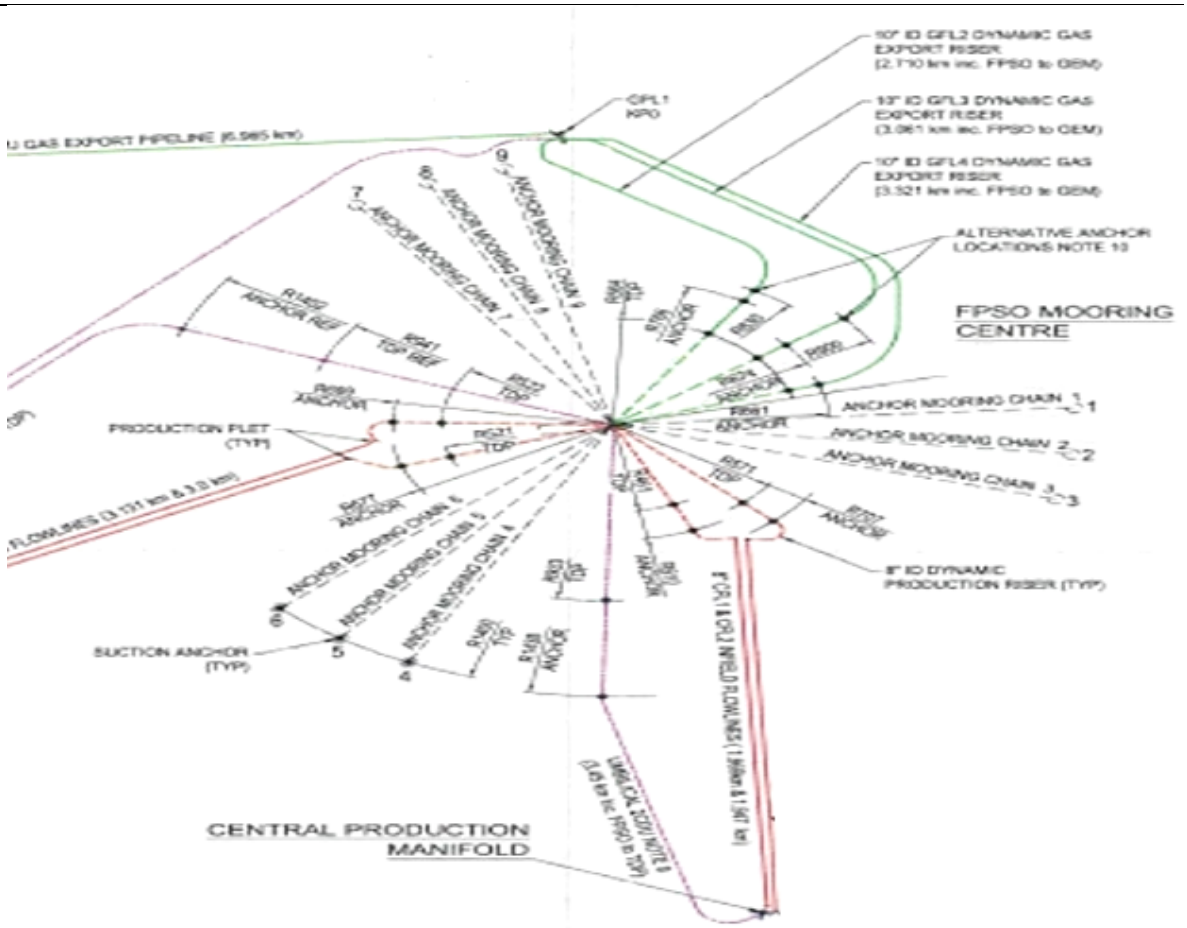
FPSO KG D6 RUBY Terminal consists of a purpose-built tanker of 157259 metric tons DWT under the Indian registry. The FPSO KG D6 RUBY is permanently moored using a Submerged Turret Production (STP) Buoy.

4.2 Purpose of the Terminal

The purpose of the Terminal is to receive process, stabilize and store condensate production from various sub-sea wells from KG-DWN-98/3 Block via sub-sea flow lines and to offload condensate to Offtake Tankers calling at the Terminal.

It is the express objective of the Terminal that all operations in the Restricted Zone be conducted in conditions of complete preparedness and safety and in line with all applicable requirements

The offload operations will be supervised by a loading master and will work in consultation with and under the overall command of the OIM.


GFL1
KP0
FPSO MOORING
CENTRE
ALTERNATIVE ANCHOR
LOCATIONS NOTE 10
ANCHOR MOORING CHAIN 1
ANCHOR MOORING CHAIN 2
ANCHOR MOORING CHAIN 3
PRODUCTION FLET
(TYP)
SUCTION ANCHOR
(TYP)
8" ID DYNAMIC
PRODUCTION RISER (TYP)
CENTRAL PRODUCTION
MANIFOLD

5. Information relating to the Terminal

FPSO KG D6 RUBY Terminal consists of a purpose-built tanker of 157259 metric tons DWT under the Indian registry. The FPSO KG D6 RUBY is permanently moored using a Submerged Turret Production (STP) Buoy. The buoy is housed within an internally mounted turret in way of 1 Centre Condensate Tank and the FPSO ‘Weathervanes’ around the turret. The vessel was constructed in Geoje / Korea with process facilities, metering system and gas compressors to enable stabilization of condensate and the delivery to Offtake Tankers.

The FPSO KG D6 RUBY is moored by means of 9 chains divided into three cluster of 3 chains at 120 degrees apart at the water depths of around 600 to 1000 meters. The FPSO has a storage capacity of approximately 1,000,000 barrels of condensate. The condensate will be transferred to the Offtake Tanker through a single Offtake Hose system at up to 37,700 Barrels /hr.

The FPSO KG D6 RUBY receives condensate from the subsea well via the subsea flowlines and risers. This is then processed, stabilised, mixed and stored and the processed gas exported. The stored condensate is offloaded to export tankers via a floating hose assembly.

The export tanker moors in tandem to the FPSO KG D6 RUBY stern using a 140-meter-long mooring hawser (Hawser of 140m x 175mm + Chain of 8m x 76mm + Connection shackles etc) supplied by FPSO KG D6 RUBY.

The FPSO is designed to accept tankers up to 110,000 DWT under certain conditions of weather.

The **main particulars** of the FPSO are: -

Length Overall	:	260 meters
Breadth	:	54 meters
Vessel Depth	:	29 meters
Summer Draft	:	19.3 meters
DWT	:	157259.4 metric tons
Water Depth	:	600 to 1200 meters. (At FPSO location in 917 meters)
Condensate Storage	:	About 1,000,000 barrels
Condensate Offloading rate	:	37,700 barrels/ hr (about 6000 m3/hr)

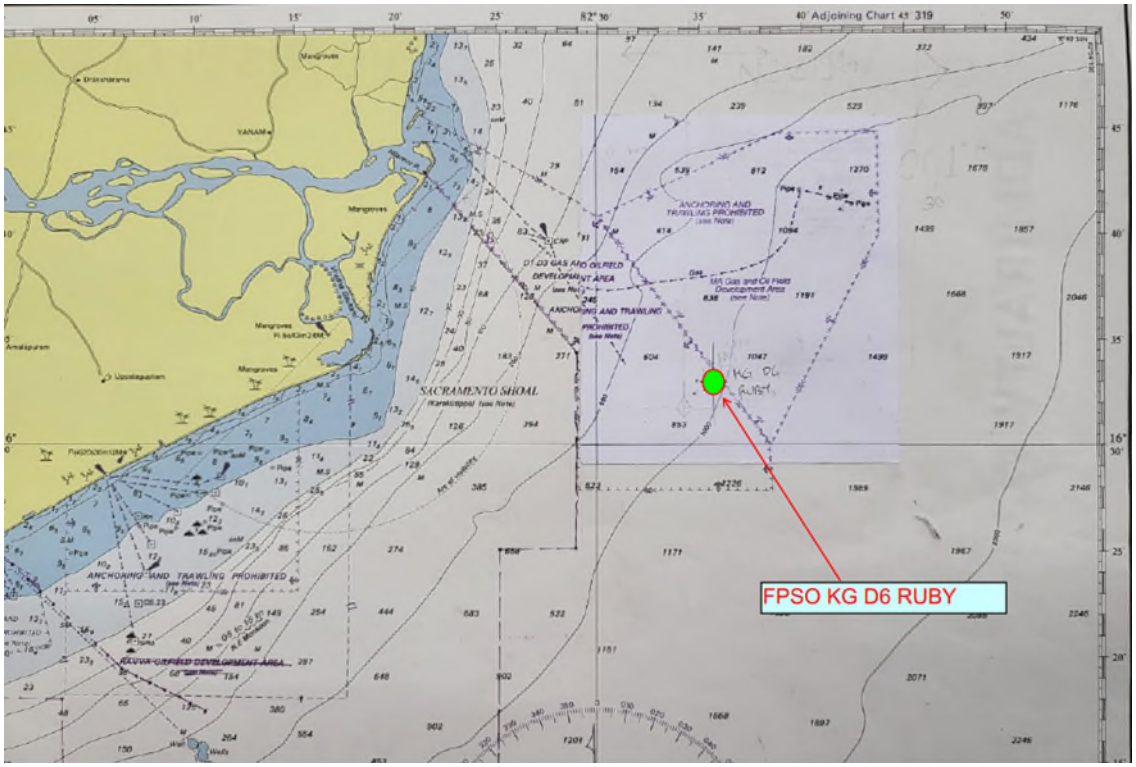
5.1.1 Location of the FPSO

The FPSO KG D6 RUBY is moored 40 - 60km south-east of Kakinada to the Turret Mooring buoy in the following position:

Latitude 16° 33.1 North

Longitude 082° 35.7' East

FPSO



KG D6 RUBY will have 0.2 miles turning circle around this position.

The water depth at moored position is about 917 meters.

5.1.2 Time Zone

The FPSO KG D6 RUBY operates in the following time zone.

UTC +5.30 hrs. through the year (There is no Daylight Saving Time)

5.1.3 Radio Communication with the FPSO KG D6 RUBY Terminal

Terminal Name:	FPSO KG D6 RUBY Terminal
Call Sign	VTFZ
FPSO VHF channel	16, 67
VSAT SIP Phones	+44 2032690032 (CCR) , +44 2037692341(OIM)
Email address Marine Supt	marinesup.ruby@ocs.services
E-mail address Mooring Master	osl.kakinada@adani.com
E-mail address OIM	oim.ruby@ocs.services
E-mail address RIL Onboard Rep	kgd6fpsoruby.car@ZMAIL.RIL.COM

5.1.4 Climate

5.1.4.1 Tropical Storms

Tropical cyclones and depressions are a relatively frequent occurrence in Bay of Bengal, numbering around 12 a year, although this varies from year to year. On an average, six will develop into tropical storms with gale force winds and two are likely to develop into full tropical cyclones. It is worth noting that tropical disturbances often intensify or decline, passing quickly from one category to the next. Tropical cyclones may occur at any time of the year; they are least frequent in the cool season from January to March and most frequent just prior to and after the SW monsoon, namely May, October and November.

Winds of force BF7 or over are mainly associated with local rain squalls and severe tropical storms or cyclones.

5.1.4.2 Weather Patterns

North-east monsoon. From December to March, NE monsoon conditions prevail over the whole area and the surface winds are mainly from a N or E direction. In the N, cloud amounts are small, gradually increasing to the S.

5.1.4.3 Rain

Averaged over most of the region, winter is the dry season whereas the SW monsoon months of June to September account for 75% of the annual precipitation along the coast of Burma and N of 150N on the Indian coast.

Intense falls of rain are quite common with up to 250 mm in a day and 100 mm in one hour. The principal causes of rainfall over the area are tropical storms, cyclones, and the SW monsoon. There are few years with large variations in rainfall along the Burma coast, but deviations from normal are more frequent on the W side of Bay of Bengal.

5.1.4.4 Weather updates

Typically, weather, storm and cyclone bulletins are routinely received at the Terminal Operator offices and will be automatically forwarded to the FPSO KG D6 RUBY

Bulletin intervals will vary from ordinary, routine reports to more frequent forecasts in the event of a cyclone alert.

OCS subscribes to the weather updates from 2 different weather agencies.

5.1.5 Navigational Information

Hazards to Navigation

The Bay of Bengal area where the FPSO KG D6 RUBY is located, includes gas condensate field with numerous platforms, rigs, obstructions and submarine pipelines together with another FPSO in the area. Submarine pipelines run in a largely South Easterly direction from the Amalapuram island to the field.

Extreme caution must be exercised when navigating in this area and instructions must be obtained from Kakinada Port Control on VHF Ch. 16 and strictly followed. When within Kakinada port limits as marked on nautical charts the Export tanker will report to Kakinada port control on VHF Channel 16 as direct in the appropriate ALRS volume.

The fields are designated restricted areas.

The FPSO KG D6 RUBY offtake floating hose is 363 meters long and is reeled on the hose drum located at the stern of the FPSO. The hose reel so does not pose a direct danger to approaching Export tanker.

To comply with international regulations, during the hours of darkness the FPSO KG D6 RUBY will show lights with the distinctive characteristics of the Morse code letter “U”. Tankers using the Terminal will be moored in tandem, Offtake Tanker’s bow to FPSO KG D6 RUBY stern and loading will be by means of a floating hose arrangement between the FPSO and the tankers.

6. KG D6 Ruby Marine Terminal’s Restricted Areas

A "Restricted Zone" of radius 3.0 miles (centred on the FPSO KG D6 RUBY Turret) exists into which passing vessels or tankers awaiting berthing at the Terminal must not enter without a Mooring Master onboard

A "Safety Zone" of radius 500 m (centered on the FPSO KG D6 RUBY Turret) exists into which all vessels are prohibited without prior permission from the FPSO OIM or his Designated Representative

A "Vessel Waiting Area” is an area where an Export Tanker must await berthing for any reason including break of daylight hour. The Offtake Tanker is not to drift inside a circle of 5 nautical miles off the Terminal,

7 KG D6 RUBY Marine Terminal Requirements

a) It is essential that tankers advise the Terminal of their estimated time of arrival (ETA) at 72 hours, 48 hours, 24 hours, and 4 hours prior to arrival (refer Section 9.4).

b) Tankers must be fitted with at least one bow chain stopper and fairleads suitable for a 76 mm chain. The FPSO mooring messenger shall be brought on board the tanker using one of the tanker’s rope reels and not the warping drum. The mooring winch drum shall be cleared of any wires or ropes prior to arrival.

c) The anchors of visiting tankers shall be positively secured at all times against accidental movement from the time the Mooring Master boards.

d) Tankers are required to have ready for use: two (2) messenger lines forward, the hose handling derrick/crane (SWL 15 T) on the starboard side with 1 x 16” manifold connections on the manifolds.

The FPSO KG D6 RUBY is fitted with Quick Release Hook at Hawser station – SWL 250 T which can be operated locally or remotely from FPSO Control Room should there an emergency arises.

e) All tankers must comply with all international & local laws regarding the prevention of pollution of the sea by oil.

f) Tankers must arrive with not less than 30% of the tanker’s summer deadweight in ballast / cargo on board and be able to maintain this condition during the loading period.

g) Tankers must arrive trimmed not more than 3 m by the stern, with the propeller fully submerged. The forefoot must always remain in the water to prevent the floating hose from lying under the bow.

h) Normally the terminal-towing vessel will provide a tow wire, but tankers must provide and make ready for use two (2) mooring lines in good condition suitable for towing from the stern.

i) Berthing and un-berthing shall be at the discretion of the Mooring Master in consultation with the Tanker Master and the OIM of the Terminal. The presence of the Mooring Master onboard the tanker is compulsory.

j) The Terminal / FPSO KG D6 RUBY has no facilities for the disposal of the tanker’s dirty ballast.

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k) A team of maximum 10 persons comprising of Mooring Master, Assistant Mooring Master, Mooring crew, surveyor and Terminal representative will board the Offtake Tanker at Pilot boarding point.

l) Offtake Tanker will be required to provide appropriate accommodation and meals for the Boarding party.

m) Tanker Masters visiting the Terminal are responsible for the safety of their own ship at all times.

n) The crews of tankers visiting the Terminal are required to perform all operations of mooring, connecting and disconnecting hoses and unmooring.

o) Tanker crews must not close tanker valves against loading condensate flow.

p) In the event of normal communications failure, the emergency loading stop signal shall be the continuous sounding of either the Tanker or the FPSO KG D6 RUBY's General Alarm.

q) Shore leave and crew changes are not permitted on tankers visiting the Terminal. No supplies of any kind nor medical services (except in the event of an emergency and subject to the availability of a Medic) are available at the Terminal.

r) Arriving tankers are required to display the following signals:

During loading Tankers shall display:		
By day	**Fly International Code Flag "Q"**	Fly International Code Flag **"B"**
By night		Display RED light

s) Tankers shall exhibit the Indian National flag from arrival until departure from the FPSO vicinity.

t) The cargo tanks of tankers must be inerted (with an oxygen content of less than 8% by volume on arrival. This may be checked by the Mooring Master or his assistant.

u) The cargo tanks of the tankers should not have H2S content of over 5.0 PPM.

v) Tanker should have arrangements ready to vent from aftmost tank PV valves in circumstances of still air conditions or when winds from astern.

w) Tankers shall comply with OCIMF recommendations for tankers securing to single point moorings.

x) All Tankers calling at the KG D6 RUBY Terminal shall be subject to a screening process prior the arrival at the terminal (when nominated) which includes the verification of an OCIMF SIRE (Ship Inspection report) not older than six months and must be comply with the relevant standards of the OCIMF publication Vessel Inspection Questionnaire for Bulk Oil/Chemical Carriers and Gas Carriers.

y) The Charterer / Tanker Owner warrant that, at the time of loading:

(1) The tanker, which will lift the condensate is entered in a Protection & Indemnity ("P&I") Club which is a member of the International Group of P&I Clubs.

(2) The tanker has in place insurance cover for oil pollution in an amount of no less than the highest standard oil pollution cover available under the rules of the International Group of P&I Clubs,

(3) The owners of the tanker are a member of the International Tanker Owners Pollution Federation Limited (ITOPF) and the tanker shall have on board a valid certificate issued pursuant to the Civil Liability Convention (CLC) 1969, or to the 1992 Protocol, as and when in force.

(4) The Charterer / Tanker Owner undertakes to use its reasonable efforts to ensure that any vessel nominated to the Terminal Operator to lift the cargo shall fully comply with International Safety Management (ISM) code which has come into force in July 1998, and shall, upon request, provide a copy of the relevant valid management certificate and document of compliance as required under the SOLAS Convention 1974 as amended.

7.1 Non-Compliance with Terminal Requirements

The Terminal Operator shall have the full right to refuse to moor at the Terminal any tanker which:

1. Does not comply in any material respect with the requirements set out above or the Terminal Regulations.
2. Has been approved as a Qualified Vessel but on arrival at the Terminal does not conform to the requirements set out above or the Terminal Regulations.
3. In the judgment of the Terminal Operator is either not suitable to lift due to a likely compromise of the safety or environmental integrity of the Terminal or is likely to adversely affect the operational efficiency or capability of the Terminal.
4. If an Offtake Tanker is found to be non-compliant with any requirement set forth, the Terminal Operator shall have the right to immediately terminate all operations and request that the Offtake Tanker leave the berth at which time laytime will cease to accrue.
5. ISPS code:
    a) Charterer / Tanker Owner shall ensure that any tanker nominated by it shall be fully compliant with the requirements of the International Code for the Security of Ships and of Port Facilities and the relevant amendments to Chapter XI of SOLAS (the “ISPS Code”) and that each such tanker shall when required submit a Declaration of Security (DoS) to the appropriate authorities prior to arrival at the Terminal.
    b) Notwithstanding any prior acceptance of an Offtake Tanker by the Terminal Operator, if at any time prior to loading at the Terminal, such tanker ceases to comply with the requirements of the ISPS Code:
        i. The Terminal Operator shall have the right not to berth such nominated tanker.
        ii. Charterer / Tanker Owner shall be obliged to substitute such nominated tanker with a vessel complying with the requirements of the ISPS Code; and
        iii. All costs and damages, including, but without limitation, demurrage, resulting shall be for the account of the Charterer / Tanker Owner.

7.2 Terminal Dues and Charges

1. KG D6 RUBY Terminal charges for the use of their facilities including pilotage, tug, mooring boat, berth usage and other vessel related charges are to be paid by Buyer / Buyer nominated Offtake Tanker prior to berthing of the vessel. All costs, expenses, losses, etc. related to berthing, unberthing and reberthing due to any reason attributable to the Offtake Tanker/Buyer shall be paid by the Offtake Tanker/ Buyer to the Field Operator as per the demand note/invoice received from the Field Operator. All provisional Terminal charges and dues must be remitted in advance, no later than 120 hours prior to ETA of the Offtake Tanker based on the 96-hour ETA message. The Terminal reserves the right to reject the vessel if any dues, partly or in full, remain outstanding.
2. Charges on account of hiring of independent cargo surveyors is equally shared between the Buyer and the Seller. Invoicing and payment of such invoice will be governed as per the executed Agreement.

8 Responsibility

These Terminal Regulations outline steps taken to enhance the safety of the Terminal. However, the Tanker Master, subject to the Terminal Regulations will continue to be solely responsible on behalf of the owners for the security of the tanker and the owners shall protect, defend and indemnify the Terminal, FPSO Operator and other general partners of their employees, agents and servants against all losses, damages, costs and expenses (including but not limited to losses, damages, etc. to the FPSO KG D6 RUBY and/or other assets in the 98/03 Field) sustained by any of them or their

officers, directors, employees, servants or agents by reason of the use by any vessel of any facility belonging to or provided by Terminal / FPSO Operator or their agents or servants without regard to the cause or causes thereof, including but not limited to any negligent act or omission (whether sole or contributory) of any of the indemnified parties.

The Terminal Regulations cannot alter the unquestionable fact that the Master of the Offtake Tanker is directly responsible for the safety of his vessel at all times and therefore must take necessary precautions, with or without the advice of the Terminal personnel regarding prevailing weather conditions, mooring, unmooring, cargo handling and whatever circumstances that require special care, including removal of the tanker from the mooring.

Nothing in these Terminal Regulations shall impose any liability upon the Terminal / FPSO Operator and its clients or any of their employees, agents or servants for any loss, damage, injury or delay from whatsoever cause, arising in consequence of any vessel calling at the Terminal or operating in or transiting the waters of the Terminal or of rendering any assistance, information, advice or instruction whatsoever, given or tendered in respect of any vessel, whether by way of Pilotage, berthing services, provision of support vessels or navigational facilities including buoys, lights, horns, or otherwise regardless of whether caused or brought about by the Parties, operator of the FPSO KG D6 RUBY, the Mooring Master and all other contractors and their employees and consultants negligence (including active, passive, sole, joint or concurrent negligence) or any other theory of legal liability, including strict liability, breach of contract, breach of warranty, the unseaworthiness of any vessel and the un-airworthiness of any aircraft and including pre-existing conditions.

8.1 Fishing Vessels

Tankers operating in the vicinity of the Terminal both entering and departing are cautioned to be aware of the possible presence of light (small) fishing craft.

8.2 Period of Operation

The Terminal will normally be open at all times, but the mooring of tankers will be done during daylight hours only (0600 to 1500 hours only). However, where in its sole opinion, the Terminal Operator deems it prudent to do so, the Terminal Operator may, for considerations of (among other things) adverse weather, sea or meteorological conditions, fire, emergency, vessel traffic or other peril of the sea, close the Terminal. Closing of the Terminal may be carried out with or without notice and shall impose no liability upon the Field / Terminal Operator.

The Terminal Operator shall have the sole discretion to use night mooring procedures to berth the tanker.

8.3 Removal of Wrecks

Should any vessel or craft sink or become an obstruction in any part of the Terminal or the approaches thereto, or the area of the submarine pipe lines, and/or cause pollution of the sea, and the vessel or craft fails to remove the obstruction or danger, or respond to the pollution within a practical period of time, then the Terminal Operator shall be empowered and shall have the right to take any steps it may deem necessary to remove the obstruction, danger and/or respond to the pollution without notice to the owners. All expenses incurred shall be borne by the vessel or craft or by those owning it at the time of the accident causing the obstruction, danger and/or pollution and Terminal Operator / FPSO Operator shall be entitled to reimbursement by them for any such expenses incurred by it.

9 Tanker Calling at the KG D6 Ruby Marine Terminal

9.1 Eligibility to Enter

No ship, support vessel, barge, launch or other vessel shall enter the Marine Terminal Area without first obtaining the permission of the Terminal. Only tankers that have been vetted and cleared by the terminal will be scheduled for berthing.

All the required document and certificates listed in Appendix D-1 shall be submitted to the terminal OIM well in advance for prompt clearance.

The Offtake Tanker must comply and always remain in satisfactory compliance with all the Terminal requirements, including those listed in the “Appendix D2 – Terminal Questionnaire”.

Any wrong declaration made by Offtake Tanker will result in Offtake Tanker being rejected even after berthing if found unsuitable. Once the vessel is moored, Terminal Operator shall recover all the related charges of berthing and unberthing in case of such rejections.

9.2 Vessels Nominated to Assist the Offloading are Allowed to Stay Inside the Terminal if they have Knowledge of Regulations

The Master or Person in Charge (PIC) of any vessel within the Marine Terminal Area is charged with knowledge of the applicability and content of the Terminal Regulations and is responsible to ensure that his crew members are fully advised with regard to the same. The Terminal Operator shall have the right to board any vessel within the Marine Terminal Area at any time for the purpose of ensuring that the Terminal Regulations are being observed. Additional copies of the Terminal Regulations can be obtained from the Terminal or Ship’s Agent.

9.3 Pre-Arrival Message

The Terminal will send an email or fax to vessels intending to call at the Terminal requesting pertinent information. Information is required prior to the vessel being cleared to enter the Marine Terminal Area.

9.4 Notification of ETA

Tankers calling at the Terminal shall advise the Terminal of their estimated time of arrival (ETA) upon departure from the last port or, if at sea, as soon as orders are received to proceed to the Terminal. ETA shall be repeated to the Terminal and to the Ship’s Agents with 72, 48 and 24 hours in advance of arrival.

Pre-arrival questionnaire messages (as detailed in Appendices E and F) shall be sent from the Terminal to the Offtake Tanker after receipt of the 72 hours prior arrival advice.

An Offtake Tanker wishing to call at the Terminal with any defects to navigational or machinery equipment in any way whatsoever must include details of the same in the ETA advice so that a Terminal Representative can inspect the Offtake Tanker before entering the Marine Terminal Area.

9.5 Draft and Trim Requirements

Unless otherwise authorized by the Terminal, Offtake Tankers in ballast or in partly laden condition shall, upon arrival, meet the draft and trim requirements specified in Appendix D. Offtake Tankers sailing from the Terminal with a part cargo must also conform to the above draft and trim conditions.

9.6 Ballast Discharge

The Terminal does not have the facilities to accept dirty ballast. The responsibility for avoiding oil pollution rests with the tanker. Ballast in tanks must be clean for overboard discharge and all de-ballasting operations must be carried out under absolute compliance with the MARPOL and IMO Guidelines and in accordance with the tanker’s Ballast Management Plan under the responsibility of the Tanker Master. It will be the duty of the Master to ensure that the ballast water is clean and free of oil and in compliance with all local and international regulations. If for any reason the tanker is unable to discharge full or part of its ballast water, it will be at the entire responsibility of the Tanker Master. The Terminal will not entertain any claims for dead-freight so caused.

9.7 Notice of Readiness (NOR)

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NOR means the written notice tendered by the Master or vessel’s agent of an Offtake Tanker by Telex/Fax/email after meeting following criteria:

1. Vessel has arrived at the Arrival Point after completing the port formalities and obtaining port clearance at Kakinada,
2. Vessel is ready in all respects to load and
3. Vessel is in compliance with the Terminal Handbook and has provided the pre-arrival notices required elsewhere in this Terminal Handbook.

An Offtake Tanker shall be deemed to have arrived when she has reached the Arrival Point (5.0 miles East of KG D6 Ruby FPSO) after completing the port formalities and obtaining the Port Clearance from Kakinada Port.

The Terminal Operator shall make every effort to moor vessels upon arrival in daylight, weather permitting.

A Notice of Readiness will not be accepted unless the tanker is ready to load.

Offtake Tankers awaiting berthing are to remain in a safe location with at least 5 nm clearance from the Terminal and always in VHF contact.

NOR will be accepted from 0600 hours and 1500 hours only.

1. The NOR may be tendered any time day or night in order to establish the Offtake Tanker’s arrival within the agreed Lay day. Laytime shall commence upon expiration of 6 hours from the acceptance of NOR issued by the master of the Offtake Tanker, or upon the Offtake Tanker mooring at the Delivery Point, whichever occurs first.
2. If the Offtake Tanker arrives at the location mentioned above after 1500 hours, NOR will be accepted at 0600 hours on the next day.
3. If NOR is tendered by the Offtake Tanker after the Lay day and is accepted for loading by the Seller in its sole and absolute discretion, then laytime shall commence only on the commencement of loading.
4. In the event that the Offtake Tanker arrives prior to the Lay day, subject to Terminal Operator’s discretion and availability of agreed cargo quantity in the Condensate storage facilities, the loading of the Offtake Tanker may be commenced before the actual laytime starts. In such case, laytime shall commence on completion of hose connection at the Offtake Tanker’s manifolds.

The NOR shall be signed "For Receipt Only" by a Terminal Representative. If it is subsequently found that the tanker is not in all respects ready to load due to, for instance, high oxygen readings (more than 8% by volume) in the cargo tanks or excessive de-ballasting time or other proceedings for the nominated cargo, a Letter of Protest shall be delivered to the tanker, which will automatically cancel the Terminal's initial acceptance of the NOR. In such cases, the tanker must prepare a revised NOR, cancelling the first one and stating a time tendered in accordance with its subsequent readiness.

9.8 Vessel to Vacate on Request

Any vessel entering the Marine Terminal Area may be required to vacate the berth or Marine Terminal Area promptly on being requested by the Terminal. Should any vessel become an obstruction in any part of the Marine Terminal Area, or approaches thereto, or in any area of submarine pipeline, the Terminal may take any steps necessary to remove the obstruction, with or without notice, and with all expenses being for the account of the vessel concerned.

10 Marine Terminal Service

10.1 Mooring Master

The tanker shall be boarded by the Mooring Master with his assistant and other offtake personnel (e.g., Cargo Surveyors, etc.).

The Mooring Master shall assist the Offtake Tanker Master in all operations activities within the berthing area such as mooring, unmooring, connecting and disconnecting the export hose, as well as control of crafts which render assistance to the tanker. All operations, such as making fast tugs, berthing and un-berthing of Offtake Tankers shall be carried out by the ship’s crew in presence of a ship’s officer.

Hose connection shall be carried out with ship crew under the Mooring Master / Mooring Master’s Assistant and one ship officer’s (deputed by the Master) guidance.

All manoeuvring and berthing / unberthing of tankers shall only be done in accordance with the advice of a Mooring Master, subject to the understanding that in all cases and circumstances the Tanker Master shall be solely responsible for the actual manoeuvring procedures and the Mooring Master shall be considered at the service of the Offtake Tanker’s owners. In no case shall the Mooring Master be either responsible or co-responsible for anything that could possibly occur or not occur in consequence of such operations. Communication with the support vessels and the tugs shall be done by the Mooring Master.

The acceptance of the Mooring Master’s service by the Offtake Tanker Master shall be considered as total acceptance of the above-mentioned conditions. Any delay that may possibly occur in consequence of not following this requirement, as well as anything happening, or not, in consequence, will be at the Offtake Tanker’s expenses.

In a similar way, the Terminal / FPSO Operator and its clients will be considered harmless of any kind of responsibility of liability for damages, accidents, disasters, losses and or anything that may possibly occur or not occur in consequence of the acceptance by the Tanker Master of guidance, orientation, opinion, actions or intentions of the Mooring Master, with whom the Tanker Master will agree or not, according to his own judgment which shall always prevail.

It is the responsibility of the Tanker Master to notify the Mooring Master of any special conditions, difficulties or peculiarities of the vessel such as defective navigational equipment, helm, engine or boiler deficiencies or lack of necessary equipment that might impose hazards in connection with handling, mooring, unmooring and actually operating the tanker.

The Mooring Master must be immediately warned about any acts or facts that may jeopardize the safety of the tanker or the system, as well as operational events that may possibly alter the existing conditions.

10.2 Support Vessels

The Terminal shall have the following support vessels assisting the tanker operations:

- Static Tow Vessel of at least 50 tons bollard pull, with complete set of towing pendant and stretcher.
- Mooring Line & Hose Handling Boat to assist in mooring / unmooring and hose handling.

These vessels shall be directed by the Mooring Master, to whom requests by the tanker for action or assistance must be directed.

Services and facilities provided by the Parties including the services of the Mooring Master, vessels, or berthing equipment, are at the tanker’s risk.

10.3 Helicopter for MEDEVAC Cases

The Terminal can arrange emergency medical evacuation of seriously ill or injured crew members by helicopter. The use of the helicopter requires a suitable landing and or winching area, safety and firefighting readiness and personnel on the Offtake Tanker as recommended in the International Chamber of Shipping (ICS) Guidelines for helicopter operations. All charges to be borne by the tanker.

10.4 Cargo surveyor

Cargo Surveyors attend cargo transfers and the associated gauging and sampling. These surveyors are independent contractors appointed by the Seller through bidding process in advance, to ensure their availability during cargo offloading operation. Their primary functions are to inspect the tanks to ensure they are clean, dry, and ready to receive cargo, and to measure and record the quantity & quality of the cargo transferred.

The presence of a cargo surveyor aboard does not relieve the Offtake Tanker personnel of their responsibilities for measuring and sampling the cargo transferred.

11 Mooring and Unmooring

c) The Terminal is normally open 24 hours a day, 7 days a week, weather permitting. Generally berthing operations take place in daylight only, but the Terminal Operator may exercise night-time berthing at times. Un-berthing operations can be carried out anytime.

d) The Terminal may be closed at any time if the Mooring Master considers that weather or other conditions may make the continued export/mooring operations unsafe. The Mooring Master in consultation with the KG D6 RUBY OIM (and when applicable the Tanker Master) shall be the final authority as to when the Terminal is open or closed. Tanker Masters shall be notified in writing of periods of Terminal closure and the reason for closure.

e) **Pilot Boarding/Disembarking Point**- Tankers to be moored or maneuvered at the Terminal shall be boarded by the Mooring Master and the boarding party at Kakinada Anchorage. The alternate Pilot Boarding Point is 5.0 miles East of the terminal. OIM/Marine Superintendent of the Terminal will notify the arriving Offtake Tanker of the Pilot Boarding Point during the pre-arrival communication.

   Upon completion of unmooring, the Off Take Tanker shall proceed to Kakinada Anchorage for disembarking the Pilot/Boarding party.

f) No tanker may enter the KG D6 RUBY's Safety zone unless the Mooring Master is onboard. The Mooring Master shall advise the Tanker Master on approaches to the berth, mooring, unmooring, tug handling, connecting, and disconnecting of the hose and hawser and other operations within the Marine Terminal Area. All such manoeuvring of tankers shall only be carried out in accordance with the advice of the Mooring Master, except where the Tanker Master believes such advice to be contrary to the proper navigation and safety of the vessel and crew, and subject to the understanding that in all cases and circumstances the Tanker Master being maneuvered shall remain solely responsible on behalf of the Tanker Owners / Charterers for the safety and proper manoeuvring of the tanker. The Tanker Master, or one of his designated qualified deck officers specifically appointed by him at the time, must be on the navigation bridge at all times while the tanker is being maneuvered.

g) The safe embarkation and disembarkation of the Mooring Master and Government Officials is entirely the responsibility of the Tanker Master. The pilot ladder/accommodation ladder combination should be set up or ready for immediate deployment, even if the primary means of boarding is planned to be done using the personnel basket and the ship's crane.

Pilot / combination ladder access to the tanker must conform to SOLAS Chapter V Regulation 17

h) Inward clearance and Free Pratique as applicable are pre-requisites to enter Terminal waters as required by local authorities.

As per Andhra Port Government Port Order, all incoming vessels need to duly inform the Kakinada Port Officer about the detailed activities planned related to the offtake and pay the applicable port dues and obtain the Port Clearance. Each vessel needs to use its own prudence to duly comply with Kakinada Port Guidelines.

Incoming vessel needs to submit the Port Clearance obtained from Kakinada Port Officer to the Terminal. Upon Completion of cargo operations, the Offtake Tanker needs to obtain the required clearance from Kakinada Port Officer.

i) The Mooring Master will be in direct control of all vessel communications while in the Marine Terminal Area.

The connection and disconnection of loading hoses will be carried out by the tanker's crew under the direction of the Mooring Master. A responsible Ships Officer should be in attendance throughout the operations.

j) The Mooring Master may refuse to accept a tanker for loading if he considers the vessel's condition to be unsatisfactory. In the event that the Tanker Master and the Mooring Master cannot agree to a procedure by which the Offtake Tanker can meet satisfactory loading conditions, the FPSO operator's OIM, the Operations Manager (in-Country), Terminal Onboard Representative, and the owner/charterer of the tanker shall be immediately contacted so that corrections can be made.

k) The Mooring Master after consultation with the FPSO OIM, Company's Representative and Tanker Master may require the tanker to unmoor at any time he deems it necessary for the safety of the tanker, Terminal or both, or for infringement of these Terminal Regulations.

l) In the event of an electrical storm in the immediate vicinity of the operations, loading shall be suspended, and all gas vents closed until such time as the storm has passed.

In the event of a fire on board a vessel moored at the Terminal, loading shall be stopped, and preparations made for disconnection and departure from the Terminal. All available means of firefighting shall be used to contain/extinguish the fire – the vessel's Master shall remain sole in-charge of all firefighting onboard the vessel. The vessel's Master shall give the alert by means of short and rapid blasts of the whistle.

11.1 Berthing Limiting Parameters

Prior to authorizing final approach to mooring, the Mooring Master shall satisfy himself that all requirements relative to safety conditions and measures aboard the visiting Offtake Tanker are in place and/or in a state of readiness according to the parameters of the OCIMF/ICS STS Transfer Guide.

11.1.1 Wind / Weather Limiting Parameters

Tandem mooring / cargo offloading shall be called off under any of the following conditions:

Limit	Approaching / Berthing	Offloading / Offtake Tanker Moored
Wave	Significant wave height exceeds 3.0 m (if 2 m waves then OIM, Mooring Master and Tanker Master to evaluate actual and forecast weather condition including the ability of the hose handling vessel to maneuver)	Significant wave height exceeds 4.0 meters
Wind	Speed exceeds 30 Knots	If load cell reading falls outside the operating range 100 T.

		Stop cargo > 40.0 Knots Disconnect hose > 45.0 Kts Unberth if speed > 45.0 Kts
Current	Beam current exceeds 2.5 Knots	N/A
Visibility	Visibility is below 1.0 mile	Visibility is below 100 meters
Squalls	Presence of squalls within 10 nautical miles of the Terminal. Monitored by weather reports and onboard radars.	If load cell reading falls outside the operating range 100 T.
Position Keeping	Depends on the Mooring Master's discretion considering Set & Drift and windage effect, however as a general recommendation the approach to be aborted if FPSO KG D6 RUBY more than 30 degrees in-line with the Export Tankers approach.	If unable to maintain position as per Appendix H of this manual.

Wave height listed are "Significant Wave Heights" & Wind Speed listed is "Mean Wind Speed" & not Gusts.

The above weather parameters can be reviewed with time and actual experience at location.

11.1.2 Mooring Load Limiting Criteria

Offtake Tanker shall be instructed to suspend the cargo operations and prepare for disconnection if one of the following conditions occur:

m) Three peaks of 100 T within 60 minutes or

n) A steady load of 100 T for 3 minutes or

o) Single peak occurrence of 150 T or

p) If the Offtake Tanker is unable to maintain position due to adverse conditions of wind, weather or current.

The hawser system also includes an emergency release mechanism located in the FPSO.

NOTE: This does not in any way absolves the Offtake Tanker Master from any responsibility for the safety of his vessel and other responsibilities.

11.1.3 Squalls

Squalls pose a moderate hazard to the position keeping capability of an Offtake Tanker in tandem moor with weathervaning FPSO. The effect of squalls on an Offtake Tanker will vary according to freeboard, trim, and direction of squall along with the capabilities of assisting tugs.

All VHFs to be set at low power of 1W

The Mooring Master and Offtake Tanker's officers shall monitor weather conditions using weather reports, radar, and any other means at their disposal. During darkness, the observation of squalls is even more difficult with radar being the only means of monitoring a squall.

Assisting tug shall advise in case of squalls as they should have their radar operational.

The Offtake Tanker's Bridge must be permanently manned by a competent person during offloading operations. Any signs of an impending squall or weather deterioration shall activate the following:

- The Tanker Master shall be on the Bridge.

- The Mooring Master shall be on the Bridge.
- The OIM & Marine Department in charge on the KG D6 RUBY shall be notified.
- The Offtake Tanker’s engines shall be tested and kept ready for immediate use.
- Assisting tugs shall be informed of the situation and positioned accordingly.
- Standby tugs (if available) shall be made fast if required.
- The Terminal shall be informed and if required cargo operations shall cease till further notice.
- The Mooring Master’s Assistant and tanker’s crew (with responsible officer) shall proceed to the manifold and standby to disconnect the hose.
- The Terminal shall monitor the load on the Quick Release Hook (QRH) and relay this information to the Mooring Master as and when requested.

The Mooring Master shall use all means available to maintain the Offtake Tanker in a safe position with relation to the FPSO. In the event he deems it not possible to do so, the hose shall be disconnected, and the tanker cast off from the Terminal.

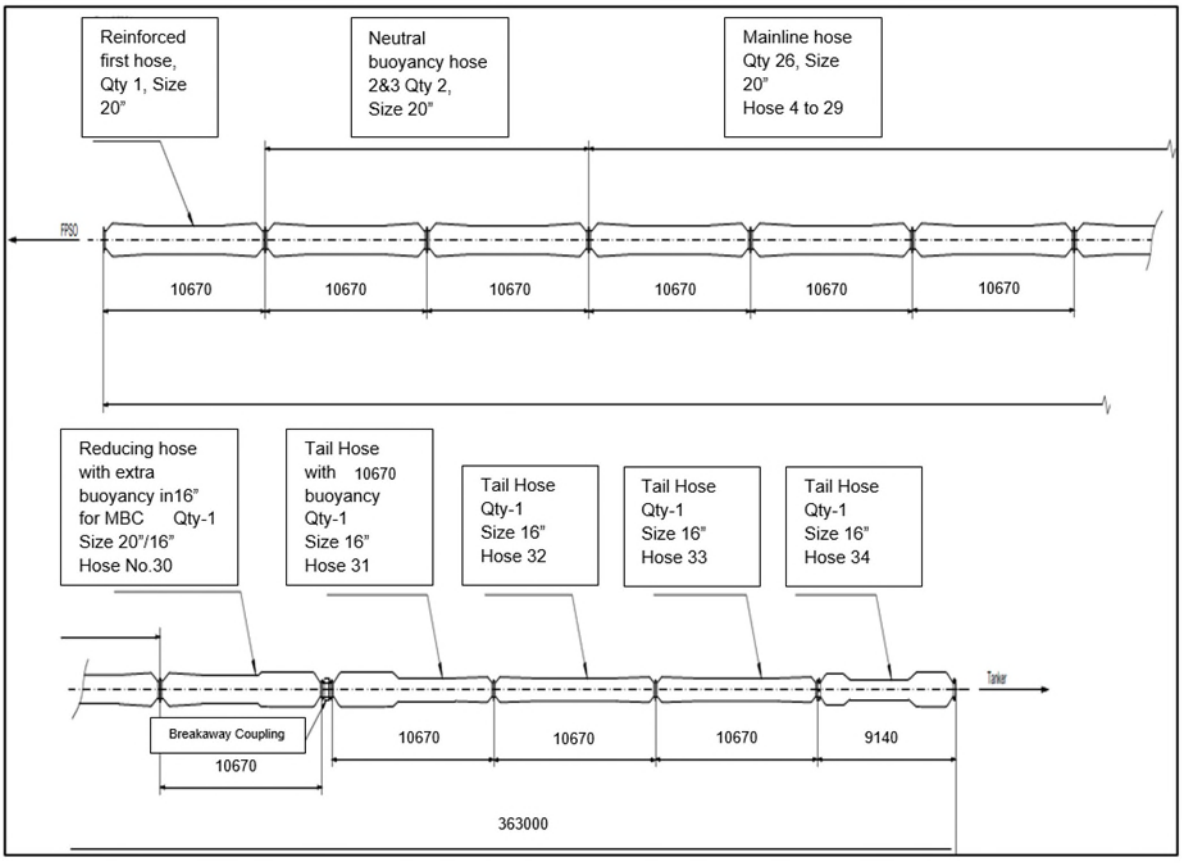
Note[11]: Squalls vary in their direction and intensity; therefore, no definite plan can be made to mitigate all the associated dangers. The above actions provide a general outline to be followed by the Tanker Master, Mooring Master and OIM.

12 Equipment

12.1 Cargo Offloading Hose

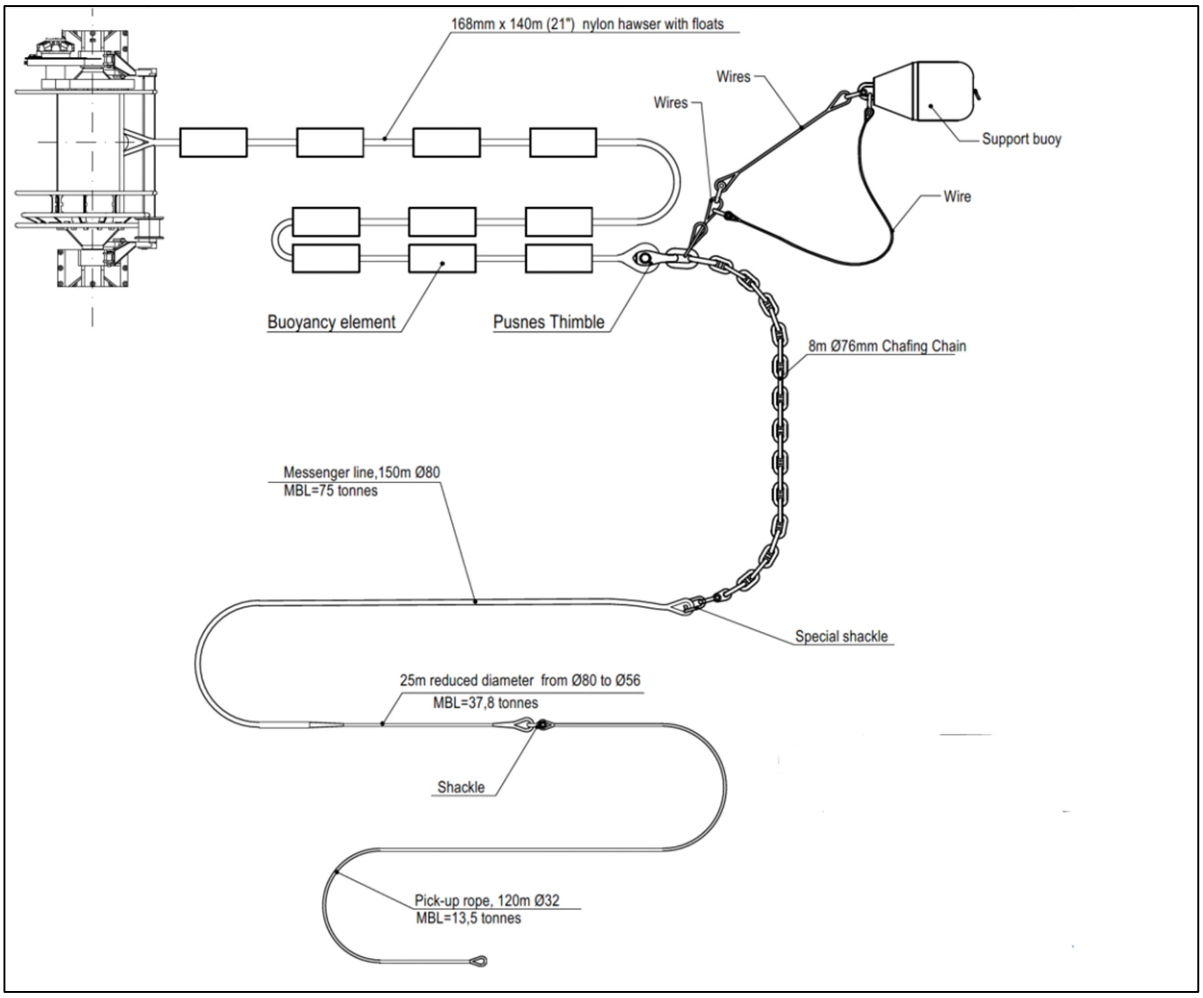
An illustration of the Cargo Offloading Hose (as part of the KG D6 RUBY Tandem).



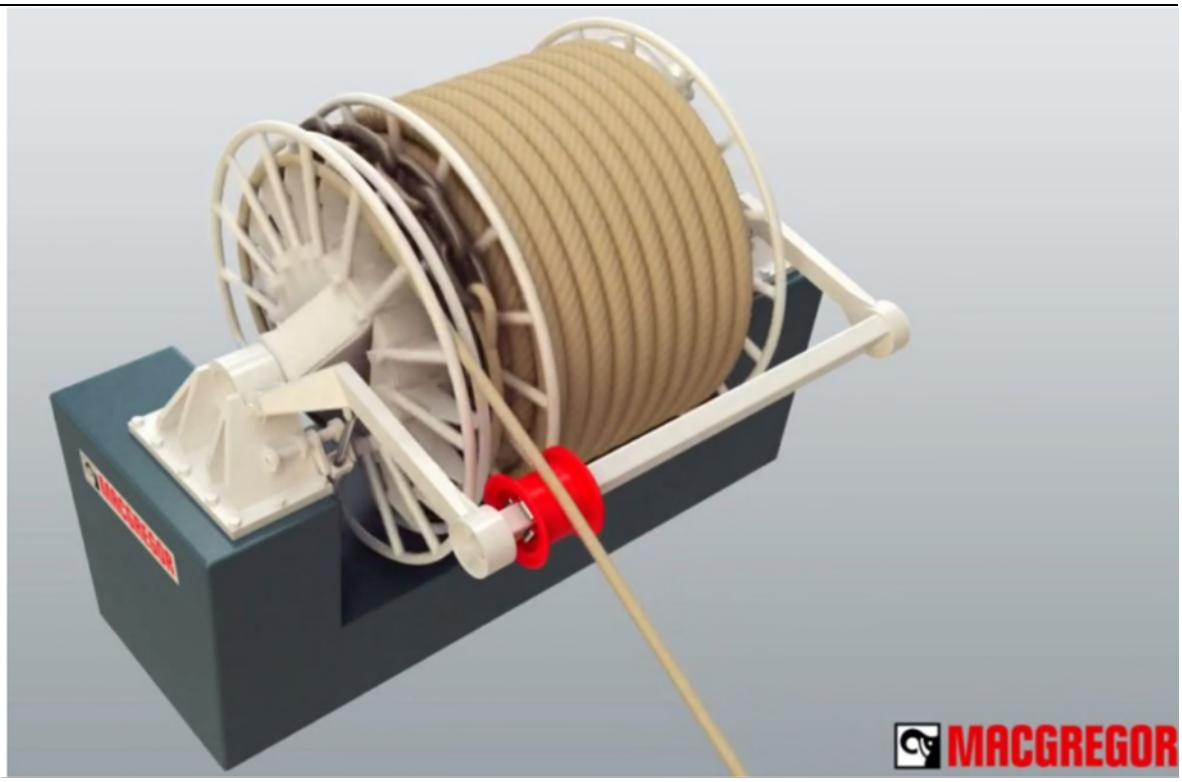


12.2 Tandem Mooring Hawser

The hawser make-up is presented below.



1. One (1) 8 m OCIMF Type “A” Chafe chain (Export Tanker end) – 76mm Stud Links, R4 Grade
2. One (1) 140 m 168mm Nylon mooring hawser - MBL (dry): 662.0 MT
3. Hawser Quick Release Hook of SWL 250.0 MT



12.3 Quick Release Hook (“QRH”) Hook

12.3.1 QRH Load Settings

The hawser system includes a Load Indicator, which will display the load on the Quick Release Hook in digital form, in the range, 0 - 250 T.

The QRH is equipped with the following alarms (these alarm values can be adjusted by the operator):

- Low Load 00~10 T
- Normal Operation 10~50 T
- High Load 50~100 T
- High-High Load >100 T

13 Berthing

a) Offtake tankers will normally be accepted and berthed in chronological order of arrival provided that such tankers have current nomination for cargo, valid at the time of tender of notice of readiness, carry clean ballast, if any, and have cargo tanks in a fit condition to receive cargo.

b) Tankers required to leave the Marine Terminal Area on account of bad weather should keep in contact with the Terminal by whatever means is available, in order that they may be available when the weather is fit for resumption of operations.

c) The Terminal Operator reserves the right to load tankers "out of turn" following the return of good weather. Further, the Terminal Operator reserve the right to decline to moor a specific tanker if its condition or facilities are unsafe for mooring or loading even though the Terminal may be open to other tankers.

d) The decision of the Mooring Master on berthing shall be final.

e) The tanker shall have ready on the forecastle head an operational bow chain stopper capable of accepting 76 mm chain and rated in accordance with OCIMF recommendations.

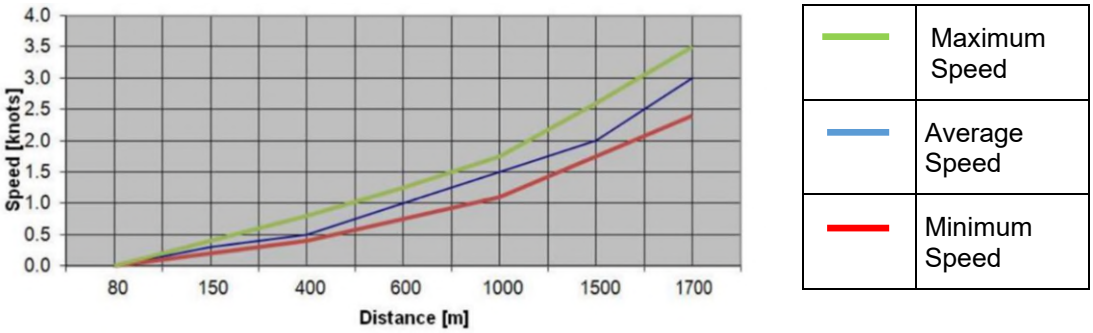
The Mooring Master may inspect the Test Certificate for such stoppers on boarding the tanker.

f) When approaching the berth, at approximately 2 mile astern of the FPSO KG D6 RUBY, the static towing vessel (bollard pull not less than 50 metric tons) shall be made fast aft of the tanker to assist with the safe mooring operation.

g) While approaching the FPSO KG D6 RUBY for berthing following will be the limiting speeds of the export tanker.

Distance(m) to FPSO	Distance (NM)	Speed (Knots)	Time (Min)	Total Time(min)
1850-950	1.0-0.5	<2	14	14
950-600	0.5-0.3	<1.5	8	22
600-300	0.3-0.16	<0.8	11	33
300-100	0.16-0.1	<0.3	12	45

Recommended Approach Speed



h) When the tanker has been maneuvered into a position close astern of the FPSO, the messenger line shall be lowered to the line handling boat. This boat shall take the end of the messenger line and attach it to the end of a floating pick-up rope. The tanker's crew under the control of a responsible officer, shall then heave in the messenger & pickup rope successively until the mooring hawser chafe chain is drawn through a fairlead and is in a

position to be secured to a chain stopper. Alternatively, use of Pneumatic Line Thrower may be used for transferring the mooring hawser.

i) In exceptional circumstances, once the Offtake Tanker is connected to the mooring, its engines, on request of the Mooring Master, may have to be run “very slowly” astern in order to avoid contact between the FPSO and Offtake Tanker.

13.1 Mooring Operations

The maximum size of Offtake Tankers allowed is **110,000 DWT.**

A Static Tow Vessel (STV) shall remain secured to the stern of the tanker during the entire loading operation. The Offtake Tanker should not approach within 3 nm of the FPSO without permission from the FPSO Marine Department in charge.

Since the FPSO is weathervaning, the approach can be made from any direction. The mooring boat shall assist in the operation as such:

- Assist in stretching out and then passing the mooring hawser to the Offtake Tanker.
- Transfer the tanker toolbox to the Offtake Tanker; and
- Assist in passing the floating offtake hose to the Offtake Tanker’s port manifold.

As the Offtake Tanker starts her approach to the FPSO, the messenger line shall be made ready on the forecastle running through one of the bow fairleads and passing it through the chain stopper before going to a winch. If possible, the messenger should be secured around a winch drum so that the whole operation can be carried out on a remote (hands-off) basis.

During the approach, on instructions from the Mooring Master the messenger shall be lowered to the line-handling boat for connection to the pick-up rope. When the line handling vessel is clear, the system shall start winching in. The pick-up rope is then fully retrieved until the chafe chain passes through the fairlead, reaching the required position.

Care should be taken when winching-in the pick-up rope & chafe chain to ensure that there is always some slack in the mooring assembly. It can be very dangerous for the mooring crew if the assembly becomes tight before the connection is completed. The tanker should be carefully maneuvered to ensure that this does not occur. The QRH load cell shall be monitored on board the FPSO during mooring/unmooring operations, with readings made available to the Offtake Tanker on request.

Once the chafe chain is in position it shall be secured to the stopper as quickly as possible. Once the chain is connected and secured, the pick-up rope shall be slowly walked back until all weight is transferred to the chain stopper.

It is the Offtake Tanker's responsibility to maintain a watch-stander on the bow to monitor the mooring throughout the period that the Offtake Tanker is tandem moored to the FPSO. The watch-stander should be appropriately equipped with a means to communicate with the officer of the watch and report any failure, or imminent failure, of moorings or leakage of condensate. He should also report if the Offtake Tanker starts to ‘ride up’ to the FPSO and/or if the Offtake Tanker starts to yaw excessively. The Terminal shall also maintain a watch-stander at the stern mooring bracket of the FPSO to notify the Central Control Room Operators (CCROs) should anything unusual be observed.

13.1.1 Hazards of Dynamic Intervention

Dynamic interaction is the most serious problem affecting Offtake Tanker operations at FPSO facilities. There are considerable hydrodynamic interactions between the FPSO and the Offtake Tanker, normally to a much greater degree than is experienced at other export facilities, such as surface buoys or loading columns. Part of the reason for this is the difference in underwater shape and mass between a fully loaded deep draught FPSO and a lighter shallow draught Offtake Tanker. As the loading progresses, the balance of forces acting on the underwater shapes can equalize and then become biased so that greater forces act on the Offtake Tanker than on the FPSO.

Major dynamic interaction problems are linked to fishtailing and surging. Watch-keeping personnel must be adequately trained in understanding the problems associated with dynamic interaction.

13.1.2 Fish Tailing

Fishtailing generally occurs when environmental forces are reasonably low in magnitude. Fishtailing is also a phenomenon that principally occurs when there is considerable dissimilarity in hydrodynamic characteristics between the Offtake Tanker and the FPSO. During the course of the offtake operation, the FPSO becomes lighter and is subject to influence by a different combination of hydrodynamic forces, becoming more under influence of wind than wave or current. Similarly, as the Offtake Tanker’s condition changes, it becomes heavier and tends to be more under the influence of wave & current than wind.

Use of support vessels and the tanker’s engine are to be made in order to maintain some tension on the hawser. This has the effect of turning the offtake tanker and FPSO into one unit, so that there is more likelihood of the combined environmental forces exerting the same influence on both the offtake tanker and FPSO.

13.1.3 Surging

This is a well know problem during offtake operations, particularly at FPSO facilities. The Offtake Tanker may experience long period waves more than 15-seconds frequency with the result that the Offtake Tanker begins to surf on the crests. While the Offtake Tanker is subject to such surface influence, the FPSO is subject to different hydrodynamic forces and at a different level resulting in asynchronous movement between the two units.

Use of a support vessel and the ship’s engine are to be made in order to maintain some tension on the hawser to lessen the likelihood of the tension appearing in the hawser when the Offtake Tanker moves astern on the swell.

13.1.4 Station Keeping

Whilst the offtake tanker is connected to the FPSO, the static towing vessel (tug) shall normally maintain a steady pull to prevent the tanker from riding up on the FPSO or from becoming “fishtailed” with the FPSO. Should the tanker’s crew believe that the vessels are approaching each other or are moving in such a way as to endanger the vessels, they must inform the Mooring Master immediately. All communications between the tug and tanker shall be via the Mooring Master.

The tanker’s crew are not to directly contact the tug with regard to engine movements or the positioning of the tug.

FPSO and tanker positioning and hawser tension will be as indicated in Appendix H.

Any requests for the use of the offtake tanker’s main engines shall be at the direct request of the Mooring Master.

Note: There shall be no movement of the main engines without the permission of the Mooring Master, including for test purposes.

Communication between the tanker, FPSO and tug shall be tested on an hourly basis. HOSE HANDLING

After the offtake tanker has been securely moored, the export hose must be lifted to the loading manifold by the ship's gear on the starboard side (preferable). The lift shall be carried out by the offtake tanker’s crane, which shall have a safe working load of at least 15 T. The crane must have been certified by appropriate authorities and must be operated by trained & competent personnel. The offtake tanker’s crew shall assist under a certified Tanker Officer for the lift operation.

Refer to Appendix I for additional information on hose handling, lifting and for connecting / disconnecting the hose to the ship's manifold.

13.2 Unmooring Operations

When un-mooring, the chain must be walked back into the water and the pick-up rope slowly paid out through the fairleads (as per good seamanship). The mid-hawser retrieval line shall be used to recover the mooring hawser onboard the FPSO after casting off. The Mooring Master’s Assistant must supervise the operation. All tools & equipment, which belong to the Terminal, should be stored in a toolbox, and passed to the support vessel prior the offtake tanker’s departure.

13.3 Departure

On completion of loading and disconnecting of the hoses the tanker shall let go from the FPSO and proceed to a safe area in the immediate vicinity of the FPSO to await papers. Anchors shall remain secured until the tanker departs the Terminal.

The tanker’s bond shall be kept sealed and shall not be opened until the tanker has been cleared outbound and has departed port limits.

Notes of protest to the tanker shall be issued by the Clients Representative. Should the Mooring Master believe a task, operation or failure by the tanker or her crew warrants a note of protest, the Mooring Master is to advise the Client Representative.

13.4 State of Readiness

Tanker Masters loading at the Terminal are advised that this port is considered an "open roadstead," and under no circumstances shall the main engine be shut down for repairs whilst their vessels are moored. It is essential that the tanker maintain its propulsion, steering and other equipment, required for unmooring and manoeuvring, fully operational throughout her stay. No repairs are permitted that would interfere with this requirement.

In cases where, through force majeure, a tanker becomes immobilized while in berth, the Tanker Master must immediately advise the Mooring Master of the facts so that a decision can be made on the advisability of continuing with cargo operations and so that special precautions can be taken.

13.5 Communication with the Marine Terminal

All communications relative to the loading of the offtake tanker shall be routed to the FPSO Cargo Control Room. In case of a temporary breakdown in communication, contact may be re-established on a portable UHF radio provided to the Mooring Master.

13.6 Communication between Offtake Tankers and Support Vessels

Communication between tankers and support vessel during manoeuvring are normally carried out on pre-agreed designated field channels with a back-up designated channel as a secondary communication channel.

All communication shall be in English, no other language is allowed between the FPSO / offtake tanker / support vessels during berthing / loading and unmooring operations.

In case of a loss of VHF contact, the following signals can be made on the offtake tanker’s whistle or siren:

- 1 prolonged blast “pull stern”
- 1 prolonged blast followed by 1 short blast “pull stern to port”
- 1 prolonged blast followed by 2 short blasts “pull stern to starboard”
- 1 prolonged blast followed by 3 or more short blasts “stop support vessel engines”

The whistle signals form of communication between tanker and support vessel is for emergency use only and, if possible, manoeuvres should be aborted or suspended until VHF contact is again possible.

14 Cargo and Ballast Operations

14.1 General

It is the responsibility of the offtake tanker’s crew to plan and execute all cargo loading operations in a safe and timely manner and in accordance with the recommendations contained in ISGOTT. Should the Officer of the Watch on the tanker believe that the situation on board is becoming unsafe due to weather, vessel movements, or any other reason, he shall inform the Mooring Master and request the FPSO to cease pumping.

Responsibility for safety on board the offtake tanker remains with the Tanker Master at all times and the presence of the Mooring Master, or his assistant does not reduce this in any way. The proposed load and de-ballasting plan shall be discussed with the Mooring Master. Opening and closing of the manifolds shall only be carried out on the instructions of the Mooring Master. Once the tanker is ready to load and the manifolds have been opened there must be a flow path maintained for the incoming condensate until such time as the Mooring Master gives permission to close the manifold valves.

Prior to the commencement of the loading operations, the Safety Checklists (refer Appendix J) shall be completed by the responsible parties. At intervals during the loading operation items on the checklist shall be verified as being complied with by either the Mooring Master or his assistant.

14.2 Manifold Connection

Flanges for cargo connections, reducers and spools on the offtake tanker’s manifold must conform to the OCIMF publication Recommendations for Oil Tanker Manifolds and Associated Equipment i.e.:

- 1 x 16" ANSI 150 on the Starboard manifold.
- Flange faces, gaskets and seals shall be clean and in good condition.
- All “bolted flange” connections must be fully bolted (all bolt holes must be used).

  (Skip bolting is not permitted)
- All unused manifolds (cargo/bunker) connections shall be kept blanked with all nuts & bolts tight.
- The Terminal shall use camlock connections for hose connection to the offtake tanker.

14.3 Hose Handling and Lifting Readiness

The mid ship crane of the offtake tanker must have a SWL of at least 15 metric tons, as per OCIMF, and should be rigged and centered over the manifold prior to mooring.

Refer to Appendix I for additional information and for the method of connecting / disconnecting the hose to the tanker’s manifold.

14.4 Inert Gas System

Offtake tankers loading condensate at the Terminal must have a properly working Inert Gas System (IGS) in compliance with SOLAS 1974 Convention, Chapter II-2, Part D, and the latest edition of the International Safety Guide for Oil Tankers and Terminals (ISGOTT).

Before mooring, the Tanker Master shall confirm that the IGS is working correctly i.e., maintaining positive pressure on all tanks with the oxygen content of the inert gas less than 8% by volume in the cargo tanks.

Cargo gauging and sampling procedures at the Terminal shall be carried out under a closed cargo gauging & sampling system within pressurized and inerted tank atmospheres. On arrival the offtake tanker may be requested to gauge various tanks for the purpose of sampling, water finding, temperature taking, tank inspection, etc. This will only be done through dedicated vapor locks as per ISGOTT Section 7.2.3.

The IGS must be capable of producing sufficient inert gas to maintain 5% or less oxygen content to prevent air from entering the tanks. In case of inert gas failure, the deck-isolating valve shall be closed until the system has been restored or an alternative source of inert gas can be provided.

When loading into an inerted tank, the inert gas displaced must be vented through the offtake tanker's vent system and not the ullage ports.

Venting via an "open system" is not allowed while in the terminal area.

14.5 Pre-Transfer Conference

Upon arrival at the Terminal, and prior to any cargo transfer, a Pre-Transfer Conference shall be held between a Mooring Master and the Offtake Tanker Master, Chief Mate, Chief Engineer, Bosun and Pumpman, and entered in their respective Logbooks.

The purpose of the Pre-Transfer Conference is to review the Terminal Regulations and to ensure that there is a complete understanding of all safety & pollution prevention requirements, as well as de-ballasting / cargo operations procedures, tank inspection requirements, cargo nominations, and preparation of documentation.

The offtake tanker must furnish a comprehensive loading plan to the Mooring Master prior to commencing cargo work.

Cargo operations will not be permitted until authorized by the Terminal.

14.6 Ballast Water Inspection

Ballast in segregated ballast tanks must be clean for overboard discharge. All de-ballasting operations must be carried out under absolute compliance with MARPOL & IMO Guidelines, and in accordance with the tanker’s Ballast Management Plan.

It shall be the duty of the Tanker Master to ensure that ballast water is clean and free of Condensate. If for any reason the offtake tanker is unable to discharge full or part of its ballast water, it shall be at the entire responsibility of the tanker’s Master.

14.7 Precautions in Cargo and Ballast Handling

The offtake tanker must have the ability to maintain a minimum 33% of her summer DWT throughout the whole cargo operation, and trim as per MARPOL requirements.

The loading plan of double-hull tankers should always account for free-surface effects of liquids, in cargo & ballast tanks, particularly large “U” ballast tanks and centre cargo tanks with no centreline bulkhead.

To ensure that the total free surface effect of cargo / ballast tanks is kept within safe limits, particular care should be exercised when loading cargo or discharging ballast. Stability data on loading along with de-ballasting instructions must be available on board and must be discussed between the Tanker Master and Mooring Master.

Additionally, a pre-arrival plan for trim & transverse stability during cargo and ballast operations should be prepared by the Tanker Master and, upon request, cabled to the Terminal. The plan of

operations should include data on loading rate limitations, manifold size & characteristics, de-ballasting rates, and IGS operability.

Simultaneous cargo & ballast handling can save significant time and enhance safety, because it means that the offtake tanker is never in a completely light condition. Tanker Masters should take advantage of simultaneous cargo & ballasting operations, however on double-hull vessels, the free-surface effects caused by slack cargo & ballast tanks during simultaneous transfer of ballast and cargo during loading or unloading operations can adversely affect vessel stability.

It is the responsibility of the offtake tanker to ensure that cargo & ballast operations are conducted strictly in accordance with the ship’s Loading Manual. Conventional safety measures for double hull tankers shall apply and the Tanker Master should refer to the ICS / OCIMF International Safety Guide for Oil Tankers and Terminals (ISGOTT), Chapter 8.

14.8 Code Flag

During cargo loading, the International Code Flag "B" shall be displayed by the offtake tanker during daylight hours. During darkness a red light shall be displayed. This light should be of a character such as to be visible at a distance of at least one mile and show unbroken RED light all around the horizon.

Also “H” Flag to be displayed at all times till pilot has boarded the Offtake Tanker.

In addition to the lights usually displayed, an offtake tanker discharging ballast or loading cargo during darkness shall illuminate the area around the ship, to the satisfaction of the Mooring Master, in order that any oil on the surface of the sea may be readily detected and appropriate action taken.

Offtake tankers unable to illuminate the sea satisfactorily may not discharge ballast during darkness. Offtake tankers should provide suitable floodlights for working on deck during night operations.

15 Loading Operations

Wind condition will be monitored at all the time and in case of wind speed less than 5 knots mooring master and marine superintendent shall be informed and the offloading will be suspended at OIM’s discretion in consultation with Company Rep and mooring master.

The Mooring Master shall advise the Tanker Master in respect to loading pressures & hazards but will not direct the loading except as may be necessary to protect the Terminal facilities. At all times during loading operations, a responsible officer shall be in charge of operations on board the offtake tanker, either on deck or in the Cargo Control Room, and the deck must be continuously patrolled by a watchman in contact with the officer or with the Cargo Control Room. Sufficient crew should remain on deck to deal with the operation and security of the offtake tanker.

During cargo transfer, the hose shall be inspected regularly. Frequent checks shall be made by the responsible officers to confirm that cargo is only entering designated cargo tanks and that there is not escape of cargo into a Pump Room, or through sea & overboard valves. Cargo line pressures should also regularly be checked.

Hourly comparison of cargo quantities shall be made between the offtake tanker and Terminal. Any drop in pressures or any marked discrepancy between tanker & Terminal estimates of quantities could indicate pipeline or hose leaks and requires that cargo operations be stopped until investigations have been made.

Good communication must be maintained at all times between the tanker, Terminal & support vessels, and shall be checked frequently. In addition to the deck watch, an experienced crew member, equipped with a portable radio, must be stationed on the forecastle of the tanker at all times.

When the tanker is ready in all respects to receive cargo, the Terminal shall be notified. Cargo transfer shall not start unless the tanker & Terminal manifold stations are manned. Cargo transfer shall start at a low rate until the product is verified as moving properly and the hose connections are confirmed tight. At such time, the flow shall be increased until the agreed rate is reached.

The Maximum Loading Rate is 37,700 barrels/hr via a 16-inch hose.

The actual loading rate will depend on the agreed maximum rate, the quantity of cargo to be loaded, and other operational factors such as the offtake tanker's cargo tank venting capacity. The loading rate can be reduced at any time i.e., during topping off tanks or any other circumstances.

In the event of "Tanker Stop" the tanker shall provide 60 mins / 30 mins / 15 mins / 5 mins and "standby" notices when loading is near completion. In the event of "Terminal Stop", the same above notices are to be given by the Terminal to the offtake tanker.

Tanker Masters are warned of the serious consequences of closing or partially closing valves against the incoming condensate flow. Such a practice creates excessive pressure surge, which may result in damage to the loading hose and Terminal facilities. The offtake tanker shall be held liable for damages resulting from failure to observe this precaution.

15.1 Cargo Measurement

The Terminal uses the measurement standards published by the American Petroleum Institute in their Manual of Petroleum Measurement Standards. The Terminal uses Table 6A/54A, API Standard 2540 (ASTM D1250-80) for calculations of measured volumes of condensate pumped into the offtake Tanker. Tankers should have these publications available on board.

Immediately after completion of loading, the offtake tanker's cargo figures should be calculated by her Officer-in-Charge. Tankers are encouraged to use measurement standards published by API in Chapter 17 of the Manual of Petroleum Measurement Standards in the interest of uniformity.

The Vessel Experience Factor (VEF) is a statistical means of comparing tanker cargo volume figures with the shore volume figures by ratio. The VEF should be used for mitigating inaccuracies in the offtake tanker's tank calibration tables and should be calculated over a number of voyages to obtain an average.

The Terminal is equipped with a metering / automatic sampler. In the event the metering / automatic sampler is not functioning, cargo measurement shall be done by taking ullages with the resulting volumes corrected for the Terminal's experience factor.

15.1.1 Difference between Tanker / Terminal Cargo Figures

When the NSV differs from the NSV of the Bill of Lading by more than Five tenths of one percent (0.5%) in plus or in minus, then all tanks must be regauged:

a) All gauging's and all temperatures of the tanker must be retaken. All temperatures of the cargo determined for each tank must be based on an average between the temperature at the top, at the middle and at the bottom of the tank. If necessary, the tanker shall leave its loading bay and move to a waiting zone, with the understanding that there is no anchoring zone (great depth) within the proximity of the Terminal, as indicated in the port and safety regulations.

b) A complete inspection of the tanker shall be undertaken, including measurement of all bunker tanks and all void spaces. Samples shall be taken from bunker tanks.

c) The Terminal Operator shall check the calculations of the Terminal at the time of loading in order to detect any potential errors and will re-measure where possible.

15.1.2 Unresolved Differences between Tanker and Terminal

If the difference is not resolved pursuant to the paragraphs above, then the tanker shall sail with an unresolved Tanker / Terminal difference and a formal claim may be filed by the Party concerned or by the Terminal Operator, as applicable.

The Charterer / Owner shall instruct the Tanker Master to avoid any transfer of cargo or slops during the voyage. Should it be necessary to transfer cargo or slops, the Tanker Master shall measure all cargo tanks before and after the transfer of such cargo.

The Terminal Operator and the Party concerned shall jointly request one or several inspection companies to supply an official report of the unloading. The Terminal Operator and the Party may assist or be represented during the unloading and supervise the inspection.

If possible, unloading should take place into segregated tanks via an isolated pipe system, in accordance with a procedure that will enable the most accurate measurements possible.

15.1.3 Cargo Samples

Cargo samples will be distributed as per the Buyer's Instructions. The FPSO will typically provide composite cargo samples in sealed cans to the Export Tanker in accordance with instructions received and retain one onboard the Terminal. One composite sample will be retained on the FPSO for a period of ninety (90) days from the date of completion of offloading.

The independent surveyor will obtain composite cargo samples, in sealed cans, from the Offtake Tanker, which will be retained as instructed. Taking, bottling, and sealing of the samples on board the Offtake Tanker as well as the FPSO is supervised by an Independent Surveyor. Additional samples may be provided at Buyer's request.

15.2 Cargo Documentation

The Offtake Tanker shall remain in a safe position after disconnecting until the completion of cargo calculations and documentation as required by the Terminal.

The following documents are typically requested and produced by the Terminal:

- Bill(s) of Lading
- Certificate of Origin
- Cargo Manifest
- Certificate of Quality
- Certificate of Quantity
- Ullage reports
- Statement of Facts

16 Early Departure Procedure

An Early Departure Procedure (EDP) is NOT allowed at this Terminal.

17 Water Plug/ Flushing of Cargo Hose ("Flushing Activity")

The FPSO Terminal will conduct maintenance on its Cargo Offloading Hose as required from time to time, during which the Cargo Offloading Hose will be flushed with water.

Following the Flushing Activity, water remains in the Cargo Offloading Hose. The FPSO Terminal (through Sellers Representative) will notify the export tanker at the time of tendering Notice of Loading Date Range pursuant to executed Agreement, allowing for planned reception of displaced water in a nominated empty tank of the export tanker.

Post such displacement of water from the Cargo Offloading Hose, it is expected that the export tanker may receive a certain quantity of water-condensate mixture in the nominated tank/s. Anticipated approximate water quantity proposed to be pumped by the FPSO Terminal will be informed at the time of tendering Notice of Loading Date Range.

Once the line displacement is completed, the tanker must prepare and continue loading as per plan or disconnection in case of water plug after Offtake is completed. Buyer/export tanker needs to plan for the effective disposal of water / water – condensate mixture.

The quantity of condensate received during Flushing Activity will be measured and included in BL. Quantities will be net of free water as determined by the independent inspector/surveyor.

18 Safety Standards

18.1 Scope and Enforcement

Offtake tankers calling at the Terminal must operate at all times within the bounds of good seamanship and the provisions of the Terminal Regulations. The safety standards in effect at the Terminal are in conformity with the recommendations of the ISGOTT (latest edition), and the OCIMF Ship to Ship Transfer Guide, which are applicable to marine terminal operations.

An offtake tanker or other vessel(s) violating such standards shall be required to cease cargo & ballast operations or to leave the berth if violations are considered to endanger the Terminal or its operations. Vessels, which violate these safety regulations, or fail to correct unsafe conditions, shall be refused entry to the Terminal.

18.2 Pre-Transfer Safety Checklist

The Safety Checklists used at the Terminal are contained in Appendix J.

The Terminal Operator shall check every vessel for compliance as soon as possible after arrival. The checklist shall also be used to self-examine the vessel's safety without waiting for the Terminal to perform a check.

18.3 Fire Fighting Equipment

The offtake tanker's fire main must, where practical, remain fully pressurized and ready for use with fire monitors trained on the cargo manifold area and other vulnerable locations during all cargo operations. If the offtake tanker or other vessel(s) are not fitted with fire monitors in the manifold area, hoses with nozzles shall be connected to the fire main and be run out forward and aft of the cargo manifold and at other strategic locations such as the Pump Room top.

Where it is not practical to keep the fire main pressurized, the fire pump shall be ready for immediate use. The position of the vessel's international shore connection shall be conspicuously marked. Portable fire extinguishers of the dry chemical type shall also be placed in the vicinity of the cargo manifold.

18.4 Smoking

Smoking outdoors is strictly prohibited throughout the Marine Terminal Area and smoking is NOT permitted on board the FPSO unless in designated smoking areas.

Smoking is not permitted on board vessels calling at the Terminal unless in designated smoking areas.

Generally, such in-door "smoking permitted" rooms should be confined to locations abaft the cargo tanks which do not have doors or ports opening directly onto or over the cargo deck.

Where smoking is permitted in an enclosed space, a "No Smoking Outside" notice must be posted on the inside of all doors that open directly onto the weather decks.

No matches, mechanical lighters or any other appliance that produces ignition may be carried by persons engaged in the handling of cargo, hoses, or ballast of a vessel, or in other duty on the weather decks of offtake tankers or on the Terminal.

18.5 Doors, Ports, Ventilators and Tank Openings

A potential danger for fire & explosion exists if hydrocarbon gases displaced during cargo operations reaches any location where there may be sources of ignition. Before commencing any loading, de-ballasting or other related operations, all doors and ports opening onto the decks forward of the funnel (stack) shall therefore be closed and shall remain closed at all times during the performance of such operations. If doors have to be opened for access they should be closed immediately after use.

Additional doors and ports may have to be closed due to structural peculiarities of the tanker.

Conventional goose neck/mushroom type ventilators shall be kept suitably trimmed or closed according to prevailing conditions to prevent the entry of petroleum gas.

All cargo & ballast tank lids shall be securely closed. The cargo tank venting system shall be set for the operation concerned and, if required, a device that prevents the passage of flame shall protect the outlets. High velocity vents should be set in the operational position to ensure high exit velocity of vented gas.

18.6 Air Conditioning

Central air-conditioning or mechanical ventilating systems intakes shall be monitored at the air intakes to prevent entry of flammable gas.

The use of window type air-conditioning units, unless certified to be explosion-proof or flame-proof, is prohibited on any vessel within the Marine Terminal Area (500 meters). Such units must be electrically disconnected, and any external vents or intakes covered or closed.

18.7 Simops with Support Vessels, alongside or at Plem, Heli-Ops

Except in an emergency or for personnel transfer, no support vessels / crafts shall come alongside the offtake tanker or FPSO or be allowed to work at the Pipeline End Manifold (PLEM), whilst tandem mooring operations are underway. If the Terminal Operator authorizes any craft to go alongside a vessel moored at the Terminal, then all loading or de-ballasting operations must be stopped. Further, helicopters shall NOT be allowed to approach or land while mooring / unmooring operations are in progress.

18.8 Adverse Weather

When an electrical storm / squall is anticipated in the vicinity of the tanker / Terminal, all operations must be stopped and ventilation valves closed, including any bypass valve fitted on the tank venting system.

Should a heavy rainstorm / squall occur during topping off operations, loading will be suspended until the storm has passed.

The Terminal has the responsibility of determining when wind conditions are reaching the limit of the design criteria for continued operations.

Notwithstanding to the above, any delay in operations arising out from adverse weather conditions, which is solely determined by Terminal, shall be excluded while ascertaining the laytime used for offtake operations.

18.9 Hot Work

No hot work, including but not limited to, welding, hammering, chipping, scraping and use of power tools is permitted on the offtake tanker nor on the FPSO during the tanker berthing.

18.10 Electrical & Electronic Equipment

Use of electrical or electronic equipment, equipment, cellular phones, pagers, radios etc. is not permitted on a moored offtake tanker or on the Terminal unless in designated areas.

Portable electric lamps and equipment for use in hazardous area must be of an approved type.

18.11 Fishing / Swimming

Personnel are not allowed to swim or dive or engage in fishing of any description whatsoever from the Offtake Tanker anywhere within the Safety Zone.

18.12 Photography/ Videography

Photography/ Videography is strictly prohibited when the Offtake Tanker is within the Safety Zone.

18.13 Static Electricity

Static electricity is a major hazard, and care must therefore be taken to ensure that equipment used is suitable for controlling static hazards.

18.14 Tank Entry

Tank entry is strictly prohibited within the Terminal’s Safety Zone.

18.15 Garbage

The FPSO has no facility to receive ship garbage, and no garbage shall be thrown overboard. Garbage disposal should be dealt with as per MARPOL 73/78, Annex V.

18.16 Blowing Down Boiler Tubes

Boiler tube blow through is not allowed while the offtake tanker is at tandem berth. Where this is unavoidable, then it may only be done with permission from the Mooring Master.

18.17 Ship’s Whistle & Sirens

Except in an emergency, ship's whistles, sirens etc., must not be used whilst an offtake tanker is moored at the Terminal.

18.18 Intoxicated Person

Any person, who appears to be in an intoxicated condition, or under the influence of drugs, shall not be allowed on the Terminal. Offtake Tankers and other vessel(s) must adhere to the OCIMF guidelines for the control of drugs and alcohol.

Drug or alcohol shall not be allowed on the Terminal

18.19 Visitors

Visitors must be authorized by Terminal Operator.

19 Pollution Prevention

19.1 Reporting

All oil/condensate spills, whether pollution of the surrounding waters occurs or not, must be promptly reported to the Mooring Master / Offshore Installation Manager (OIM).

19.2 Pollution Prevention Notice

The Tanker Master must sign the Pollution Prevention Notice shown in Appendix L before starting de-ballasting/cargo loading operations.

19.3 Loading Precautions

Tanker Masters are responsible for ensuring that no oil (condensate, bunker, diesel or bilge) is pumped and/or spilled overboard from their vessel. All surplus rainwater and other water drained from exhaust steam lines or firewater lines must be drained off periodically and scupper plugs replaced immediately after water has been run off. It is the tanker's responsibility to keep drip trays under the manifold connections emptied or drained.

Cargo hoses should be inspected to ensure proper connection; drip trays should be in place especially when disconnecting hoses; scuppers should be plugged tight to contain possible spills; loading valves should be checked and tested to ensure proper operation and tight shut off; unused cargo & bunker connections should be blanked off, all sea valves should be closed and lashed shut upon completion of de-ballasting; and the tanker should provide sufficient staff to ensure proper supervision of loading and topping off operations

If during first inspection or during progress of loading, it is revealed that the ship's hull is not oil-tight, the tanker shall be rejected and refused further ‘Loading’. No offtake tanker shall be accepted for loading unless satisfactory evidence of effective repair is submitted, duly certified by Classification society of the Offtake Tanker.

19.4 Oil Spill Recovery Gear

Means should be available for the prompt removal of any spillage on deck.

The offtake tanker must be equipped with a spill clean-up kit consisting as minimum of shovels, absorbent material (i.e., sawdust, sorbent pads/booms or other oil absorbing material) and spare containers (i.e. drums). The kit should be located at or near the manifolds area.

19.5 Deck Watch Communication

The offtake tanker shall have adequate deck watch during all cargo & de-ballasting operations. A minimum of two watch-standers is required; one watch-stander shall remain on the bow to monitor the mooring and the other will be on roving deck patrol to check the hose and manifold areas throughout the period the offtake tanker remains moored in tandem.

The communication system between the tanker Cargo Control Room (or its functional equivalent) and the Terminal's Central Control Room shall be tested frequently. Additionally, as a backup to the VHF radio in the Cargo Control Room set to pre-agreed channel, the Terminal’s UHF radio, should also be tested periodically. If during cargo operations communication equipment fails, cargo operations are to be suspended.

The vessel/facility on which communication has failed shall indicate its situation to the other vessel/facility by sounding the emergency shutdown signal. Operations shall remain suspended until full communication has been restored.

19.6 Loading Rates

The offtake tanker shall maintain the loading rates agreed upon at the Pre-Transfer Conference, however the rate must never exceed the maximum manifold allowable pressure and/or pipeline flow for the cargo system.

19.7 Topping Off Operations

When topping off cargo tanks, the tanker's Officer-in-Charge shall be in control of the operation, have adequate assistance from his senior crew, and ensure that the Terminal is advised in advance to reduce the loading rate or stop loading as required.

Tanker personnel must check the cargo tanks that have been topped off frequently during the remainder of the loading operation to avoid an overflow due to improper shut-off or faulty valve. The tanker should always allow sufficient ullage in the final tank(s) to accept the draining of the loading hose.

19.8 Clean Ballast Discharge

Discharging of clean ballast is NOT permitted. Only segregated ballast in a dedicated (Segregated Ballast Tanks) SBT, with a dedicated & segregated pump system shall be allowed to discharge after confirming that the same is not contaminated and that proper ballast water management procedures as applicable have been followed, shall be allowed to pump out within the Marine Terminal Area.

All vessels found to have contaminated ballast while at the Terminal shall be required to retain such contaminated ballast on board. The Terminal will not entertain any claims for dead-freight so caused.

20 Emergency Situations

20.1 Alarm Signal

The Terminal’s fire alarm system is in the FPSO’s CCR.

In the event of a fire, explosion, or other emergency involving the Terminal, the tanker or other vessels, the Terminal shall sound the general alarm followed by a PA announcement stating the type of emergency.

The offtake tanker shall be informed of the nature of the emergency on board the FPSO as soon as it is practical to do so. Except in extreme emergency, the offtake tanker's crew should not attempt to disconnect the hoses without the presence of marine terminal personnel. The tanker's crew should remain in readiness to sail or act as required.

20.2 Emergencies

For incidents involving the Terminal the following actions are in addition to be taken:

Jackknife	• Stop cargo transfer • Attempt to correct the vessel position • Reposition assisting tugs to make optimum use • Maintain offtake tanker’s position using main engines • Consider disconnection if situation worsens • If all fails, stop cargo transfer and disconnect the hose. • unmoor offtake tanker • Attempt berthing when conditions improve
Loss of static tow vessel power	• Stop cargo transfer • Verify position of static tow line & current prior to using main engines to maintain position of offtake tanker.

	• Commence hose disconnection • Use Standby Tug as Static Tow Vessel if available • Emergency unmooring if necessary • Unmoor offtake tanker and proceed to safe location
Failure of static tow line	• Stop cargo transfer • If propeller is clear, use offtake tanker’s main engines to assist in position keeping • Use standby vessel and maintain offtake tanker’s position • Commence hose disconnection • Emergency unmooring if necessary • Unmoor offtake tanker and proceed to safe location.
Mooring hawser failure	• Inform FPSO Central Control Room (CCR) of location of failure • Stop cargo transfer, Shut cargo hose/manifold valve • Commence hose disconnection • Use standby vessel and maintain offtake tanker’s position • Proceed to safe location after disconnection of manifold
Floating cargo hose failure	• Stop cargo transfer • Activate Oil Pollution Emergency Plan (OPEP) • Inform Static Tow/Standby Tug and other assisting vessels • Consider Hose Disconnection • Consider unmooring offtake tanker for safety reasons
Loss of offtake tanker main engine power	• Stop cargo transfer • Disconnect cargo hose • Consider weather conditions & severity of problem and allow a reasonable amount of time for repairs • Unmoor offtake tanker using tugs & proceed to a safe location
Fire/explosion on FPSO	• Stop cargo transfer • Disconnect cargo hose • Unmoor offtake tanker • Consider emergency release of hawser using QRH
Fire/explosion on offtake tanker	• Stop cargo transfer • Disconnect cargo hose • Unmoor offtake tanker and proceed to a location clear of Terminal • Use Static Tow / Standby Tug / Vessel power to maneuver • Consider maneuvering with hose connected and activate Marine Breakaway Couplings • Consider using firefighting capabilities of Standby Tug
Alarm signals on FPSO	• Communicate nature of alarm to Offtake tanker • Stop cargo transfer • Standby Assistant Mooring Master / offtake tanker crew for hose disconnection • Static Tow / Standby Tug advised of situation & positioned appropriately. • Communication/updates from FPSO CCR • Disconnect the hose and unmoor the tanker based on the instructions from the FPSO.
Alarm signals on offtake tanker	• Communicate nature of alarm to FPSO CCR • Stop cargo transfer. • Keep FPSO informed/updated on the situation

	• Standby Assistant Mooring Master / tanker’s crew to disconnect hose Static Tow/Standby Vessel informed and positioned appropriately • Consider emergency cast off • Communication between FPSO CCR and offtake tanker
ESD on FPSO	• Primary communication on predesignated channel change over to secondary channel • Mooring Master to monitor predesignated channel and update Tanker Master on situation • Offtake tanker to prepare for disconnection and cast off if required.
Loss of communication	• Mooring Master to raise FPSO CCR on predesignated channel • If all fails, sound offtake tankers forward whistle.

21 Security Guidelines

21.1 Security at the Marine Terminal

The Terminal shall take prudent and reasonable security measures consistent with security threats and risks inherent in each situation with regard to vessels in the marine terminal restricted areas.

In addition to the use of the ship-to-shore radiotelephone system, the Terminal utilizes VHF/UHF communications with onshore personnel and local law enforcement authorities.

Access to the Terminal, offtake tanker(s) or any other vessel shall be controlled by:

- Employee and visitor pass system.
- Property pass system (covering spare parts, stores, provisions and other material);
- Random search of personnel and vessels, as necessary.

The Terminal is responsible for all security activities in the Marine Terminal Area. The Terminal shall advise the Tanker Master of his responsibilities and of any special circumstances that might necessitate special security precautions.

The Tanker Master should also inform the Terminal of the security procedures on board his vessel in accordance with these Terminal Regulations.

21.2 Security on the Offtake Tanker

The Tanker Master is responsible for gangway access control to the vessel, surveillance on board the vessel, and surveillance of the waters surrounding the vessel. The Tanker Master should also institute a system of package control to include the issuance of appropriate property passes for items authorized to leave his vessel.

Security of the offtake tanker shall always remain with the Tanker Master and the Terminal shall not be responsible for any damage or loss occurred to the offtake tanker whilst moored or in the Marine Terminal Area.

21.3 Declaration of Security

Declaration of Security shall be exchanged between the Offtake Tanker & Terminal if requested by any of the parties.

APPENDIX A: FPSO KG D6 RUBY

Sr. No.	Item Description	Description of FPSO
1.	**Hull Particulars**	
A	IMO Number (for intercept new ship hull)	9884930
B	Year of Built / Date of keel lay (for intercept new ship hull)	N/A
C	Built by (for intercept new ship hull)	N/A
D	Hull Type	Double Hull and Double Bottom
E	Propulsion System including main engine	1 set of Fixed Pitch Propeller (Main engine: 7G50ME-C9.6)
F	Flag state	India
G	Classification Society	Dual Class with ABS and IRS
G.1	Class Notation	✠A1, Floating Production, Storage and Offloading System (Ship-Type) (S) Indian Water, (Disconnect able- R (from gas condensate feld in KG-DWN-98/3 Block to the designated ports)), OHCM, ✠AMS, ✠ACCU, DLA (S100), SFA(20), 2042, HELIDK, CRC(OC), UWILD, IHM Designated Ports: Kakinada, Visakhapatnam, Gangavaram and Chennai
H	Construction Yard • Hull & Topsides • Topside Integration	Samsung Heavy Industries Geoje Shipyard, South Korea
I	Design Life	Hull to be suitable for deployment in the gas condensate field in KG-DWN-98/3 Block for a minimum period of 15 years without the need to return to dry dock and also meet the requirement of Class Rules. The design life of the topside production facilities shall be 20 years.
2.	**Principal Dimensions**	
A	Length overall	Apprx.260 m
B	Length between perpendicular	238.0 m
C	Breadth moulded	54.0 m
D	Depth moulded	29.0 m
E	Freeboard	Min 9.7 m Max 16.5 m
F	Summer draft / displacement	19.3 m / 220,567 tonne

G	Light ship displacement	Approx. 69,200 metric tons
H	Dead Weight Tonne (DWT)	Approx. 151,000 metric tons
3.	**Tank Capacities**	
A	Total Cargo Storage Capacity	1,031,768barrels
B	Cargo Tanks (Nos with capacity of each tank)	6EAx78,282 barrels 4EAx93,939 barrels 2EAx14,803 barrels
C	Ballast Tanks (Nos with capacity of each tank)	EAx32,347 barrels EAx23,397 barrels 6EAx28,888 barrels 4EAx35,227 barrels 2EAx50,209 barrels 1EAx28,616 barrels
D	Slop Tanks (Nos with capacity of each tank)	2EAx27,219 barrels
4.	**Marine Systems**	
A	Cargo Pumps	Nos. :24 (incl. Cond. off-spec. pump) Capacity: 750 m3/hr Type: Hydraulic submerged
B	Ballast Pumps	Nos.: 2 Capacity:2,300 m3/hr Type: Hydraulic submerged
C	Inert gas system for cargo tanks (type & capacity)	Nos.:2 Capacity:7,500 m3/hr Type: Dedicated IGG (DO Combustion)
5.	**Cargo (Condensate) Offloading System**	
A	Type	Hydraulic, Reel
B	Hose system	Doublecarcass,20”x363m
C	Hawser system	Nylon, 168mmdia.x140m(650MT) in Winch
D	Weather Limitations	Upper limiting criteria for berthing operations: Significant Wave Height: <3.0m Wind Speed: <30knots. Offtake Tanker unmooring conditions: Significant Wave Height: >4.0m Wind Speed: >45knots.
E	OCIMF compliance	Yes

APPENDIX B: Receipt & Acknowledgement Form

TERMINAL HANDBOOK– RECEIPT & ACKNOWLEDGMENT		
RECEIVING SHIP'S NAME:	*(visiting offtake tanker)*	
DATE:		

RECEIPT

Receipt and Acknowledgement
FSPO KG D6 RUBY Marine Terminal Manual
– Rules and Regulations

Receipt and agreement to the provisions of the Marine Terminal Manual – ***FPSO KG D6 RUBY Marine Terminal Rules & Regulations***, including all appendices and attachments is hereby acknowledged:

ACKNOWLEDGEMENT

	NAME	SIGNATURE	DATE & TIME
TANKER MASTER			
MARINE TERMINAL	***FPSO KG D6 RUBY MARINE TERMINAL***		
TERMINAL REPRESENTATIVE			

APPENDIX C: Terminal Conditions of Use Form

MARINE TERMINAL – CONDITIONS OF USE	
CONTRACT REF - CONDENSATE SALE AGREEMENT EXECUTED ON 31 MAY 2023 AMONG RELIANCE INDUSTRIES LIMITED, BP EXPLORATION (ALPHA) LIMITED AND INDIAN OIL CORPORATION LIMITED	
RECEIVING SHIP'S NAME:	*(visiting offtake tanker)*
DATE:	

FPSO KG D6 RUBY MARINE TERMINAL

FPSO KG D6 RUBY MARINE TERMINAL (hereinafter referred to as the "Marine Terminal Facilities", which for the purposes hereof shall include all barges, workboats, pipelines, hoses, buoys, tackle, equipment, gear, premises and other property provided by the Marine Terminal, whether owned by the Terminal or not, to facilitate the berthing, un-berthing, loading and unloading at the Terminal) is private property and may only be used by vessels subject to the conditions set out in the Marine Terminal Manual.

The Buyer (as defined in the Agreement) has chartered the vessel to offtake Condensate from Marine Terminal Facilities. For the purposes of this Conditions of Use, the Buyer will be referred as Charterer and shall abide by this Conditions of Use as appearing hereinafter:

1. The Terminal, Sellers, its Affiliates, and its and their employees, officers, directors, agents and contractors or any third parties:
   (a) shall not be responsible for any loss, damage, or delay from cause whatsoever and howsoever arising in respect of any vessel in consequence of any assistance, advise or instructions whatsoever, given or tendered, whether by way of pilotage, towage of berthing services, the provision of navigational facilities; including buoys or other navigation aids, or otherwise howsoever; and in all circumstances the master of such vessel shall remain solely responsible on behalf of its owners, operators, and/or charterers, their employees, servants and agents, for the safety and proper navigation of its vessels;
   (b) give no guarantee of safety or suitability is given with regard to the Marine Terminal Facilities or any part thereof for vessels permitted or invited to use them; and
   (c) shall not be responsible for any loss, damage or delay of any sort that may be sustained by or occur to any vessel or her Owner or her cargo or any part thereof (whether or not it is due in whole or in part to any act, neglect, omission or default on the part of any employees, servants, agents and contractors or any third parties of the Sellers and any servant or agent of the Marine Terminal or by any fault or defect in the Marine Terminal Facilities or any part thereof.
2. The Charterer (or any vessel owned/chartered by the Charterer) shall indemnify and hold harmless Sellers, its Affiliates, its and their employees, officers, directors and agents and OCS from and against any and all claims, damages, liabilities, losses, costs or expenses arising out of or in connection with any injury or loss of life or loss/damage of property of a third party caused directly or indirectly by the use or intended use of the Marine Terminal Facilities or any part thereof by the Charterer (or any vessel owned//chartered by the Charterer).
3. The Charterer (or any vessel owned/chartered by the Charter) shall indemnify and hold harmless Sellers, its Affiliates, its and their employees, officers, directors and agents and OCS from and against any and all claims, damages, liabilities, losses, costs or expenses arising out of or in connection with any injury or loss of life or loss/damage of property of the Charterer, its vessel or any vessel chartered by the owners, operators, and/or charterers, their employees, servants and agents of such vessel, regardless of the cause.

MARINE TERMINAL – CONDITIONS OF USE		
CONTRACT REF - CONDENSATE SALE AGREEMENT EXECUTED ON 31 MAY 2023 AMONG RELIANCE INDUSTRIES LIMITED, BP EXPLORATION (ALPHA) LIMITED AND INDIAN OIL CORPORATION LIMITED		
RECEIVING SHIP'S NAME:	*(visiting offtake tanker)*	
DATE:		

4. The Sellers shall indemnify and hold harmless Charterer, its Affiliates, its and their employees, officers, directors and agents, from and against any and all claims, damages, liabilities, losses, costs or expenses arising out of or in connection with any injury or loss of life or loss/damage of property of a third party caused directly or indirectly by Sellers' use or intended use of any vessel owned/chartered by the Charterer.
5. The Sellers shall indemnify and hold harmless Charterer, its Affiliates, its and their employees, officers, directors and agents, from and against any and all claims, damages, liabilities, losses, costs or expenses arising out of or in connection with any injury or loss of life or loss/damage of property of the Sellers or OCS, regardless of the cause.
6. The Charterer acknowledges, agrees and confirms that if in connection with, or by reason of, the use or intended use of the Marine Terminal Facilities by the Charterer (or any vessel owned/chartered by the Charterer), any vessel sinks, or otherwise becomes, in the opinion of the Marine Terminal an obstruction or danger to any part of the Marine Terminal Facilities or the approaches thereto, and/or causes pollution of the sea, then Charterer shall ensure that the master, or person legally in charge of the vessel (owned/chartered by the Charterer as the case may be), will remove such vessel from the Marine Terminal Facilities when advised by the Mooring Master, or as required by the Marine Terminal Representative in charge of the Marine Terminal Facilities.
7. In the event the Charterer (or the vessel owned/chartered by the Charterer), fails to remove such obstruction or danger, or respond to the pollution within a period stipulated by the Marine Terminal, the Marine Terminal Representative shall have the authority to take any steps deemed necessary to remove the obstruction or danger, or respond to the pollution. Any costs incurred by the Marine Terminal including legal costs, involved in remedying such failure will be recoverable from the by the Charterer.
8. These Conditions of Use shall apply on each and every occasion the Marine Terminal Facilities are used by any vessel.
9. These Conditions of Use are to be interpreted and construed in accordance with the Laws of India. The provisions of Clauses 11 and 12 of Part-I (Special Provisions) of the Agreement shall apply *mutatis mutandis* to the provisions of these conditions of use contained in this Appendix C.
10. The offtake tanker shall comply with the approved Ballast Water Management Plan.

ACKNOWLEDGEMENT

I hereby acknowledge receipt of the ***FPSO KG D6 RUBY's Marine Terminal's Conditions of Use*** and agree to comply with the said conditions in all respects.

	NAME	SIGNATURE	DATE & TIME
TANKER MASTER			
MARINE TERMINAL	**FPSO KG D6 RUBY MARINE TERMINAL**		
TERMINAL REPRESENTATIVE			

APPENDIX D: Offtake Tanker Berthing Parameters

Dimensional limitations and other requirements for offtake tankers calling at the Terminal are as follows:

Length overall max:	245.5 Meters
Draft & Trim:	as per SOLAS / MARPOL
- Minimum mean draft	2.0 + LBP * 0.002 (in meters)
- Trim by stern	not greater than LBP * 0.015 (in meters)
- Full propeller immersion	
Offtake tanker minimum deadweight:	**as per MARPOL**
Offtake tanker maximum deadweight:	110,000 MT
Cargo manifold flanges:	16-inch ANSI (with or without reducer)
Cargo hose handling derrick / crane (OCIMF):	Minimum SWL 15 Tons.

Additionally, the following requirements apply to offtake tankers calling at the Terminal:

- All cargo tanks must be inerted to IMO / SOLAS regulations.
- H2S not more than 5 ppm is allowed in cargo tanks. All arriving tankers to check the tanks and purge if necessary to comply the requirement
- Tankers must have segregated ballast tanks and be capable of simultaneous loading and de-ballasting.
- The loading vessel must have the ability to maintain a minimum 33% of her summer DWT.
- Tankers must be fitted with OCIMF recommended bow chain stopper of tongue type or hinged bar type (AKD) to accommodate size 76 mm chafing chain as follows:
  Note: SMIT type brackets are NOT acceptable.
- Tankers must have closed chocks.
- Emergency towing as per IMO Resolution A535 (13);
- OCIMF manifolds.
- Main engine requirements:
  - Capable of running engine continuously on at Dead Slow Head/Astern if required.
  - Ship able to manoeuvre with Dead Slow Head; and
  - Hard Port/Starboard rudder allowed on all engine movements.
- Tankers must adhere to OCIMF guidelines for the control of drugs and alcohol.

In addition to the dimensional limitations and other technical requirements listed above, the following parameters and conditions will govern lifting of condensate from the Terminal:

- Split parcel loadings will be allowed consistent with available inventory, available entitlement of the Buyer, and confirmation of the lifting schedule as established by the Terminal Operator.
- Where, in the sole opinion of the Terminal Operator, it is deemed prudent to do so, the Terminal Operator may, for considerations of (among other things) adverse weather, sea or meteorological conditions, fire, emergency, vessel traffic or other peril of the sea, close the Terminal. Any such closing may be carried out with or without notice and shall impose no liability upon the Terminal Operator.

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APPENDIX D-1: List of documents required for Terminal clearance

The following documents and certificates are required to be provided for the Terminal clearance.

1. Terminal Questionnaire (Appendix D2)
2. Last PSC Report
3. Last port clearance “Kakinada Port Clearance (Applicable at the time of tendering NOR)”
4. IMO Crew list
5. Last 10 ports of call and security level
6. Updated Q88
7. Updated HVPQ
8. Updated Officer Matrix
9. Class Survey Status Report issued within the last 10 days
10. Load line certificate
11. Safety Construction certificate
12. Safety Equipment certificate
13. Record of Safety Equipment- Form E
14. IOPP certificate
15. Ballast water management certificate or statement of compliance.
16. Safety Management Certificate
17. ISPS certificate
18. Declaration from Master confirming the nonexistence of any statutory defects.
19. Mooring arrangement plan.
20. Copy of 2 mooring ropes (MBL 80T) certificates, (should not be more than 2 years old)
21. Oil CLC, Bunker CLC and P&I Certificate of Entry
22. IMO Maritime Declaration of Health
23. Any other documents which may be reasonably demanded by the Terminal

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APPENDIX D-2: Terminal Questionnaire

Name of the Vessel:		Date
1	Particulars of the Vessel	Remarks
1.1	Length Overall (LOA) of the vessel not more than 245.5 Mtrs and confirmation from the Master that the maximum deadweight at any given time shall not exceed 110,000 MT	(Attach the signed copy of APPENDIX L: Safety Letter
1.2	Date of last SIRE inspection (Must be within the last 6 months). Confirm that all observations have been closed and the corrective actions implemented	
1.3	Please confirm that all PSC and FSI deficiencies are closed or within the due dates. Provide details of any PSC or Flag State detentions in the last two years.	
1.2	Has the vessel been involved in any major accident in the last 1 year. If yes, provide details.	
1.3	Has the vessel been involved in any Pollution incident within the last 1 year, if yes, provide details.	
1.4	Confirm the main engines are fully operational on Bridge Control without any restrictions.	
1.5	Does the vessel have any Conditions of Class? If yes, please share the Class status Survey Report.	
	Last drill done: Emergency Steering drill ECR Manoeuvring of Engine Local Manoeuvring of Engine Oil spill response drill Fire drill	 Date: Date: Date: Date: Date
1.6	Confirm vessel will arrive with maximum ballast on board and trim not to exceed more than 0.015xL where L = the overall length of the Offtake Tanker, for all the movements within the safety zone	
1.7	Confirm the tanker will maintain a minimum mean draft of 2.0 + LBP * 0.002 (in meters) upon arrival and berthing at KG D6 terminal.	
1.8	Does the vessel have Man transfer Basket, if yes how many person can be carried.	
1.9	Confirm the vessel crane is certified for Man riding operation / JSA in place for Man riding operation for transfer of boarding party	

1.10	Is inert gas system operational?	
1.11	Tanker confirms to arrive the Terminal with cargo tanks inerted and O2 less than 8%	
1.12	Confirm the cargo tank H2S is less than 5ppm in each cargo tank.	
1.13	Does the vessel have sufficient carrying capacity/LSA to carry boarding party comprising of 10 persons	
1.14	Can the vessel provide accommodation for: Mooring Masters, Mooring crew, Surveyors & Terminal Representative	
1.1	All observations from previous calls at Terminal are closed. (Mark Yes if there are no observations or closed) Does the vessel have any Conditions of Class? If yes share the Class status	
2	Mooring arrangements	
2.1	Does the Vessel have Bollard strength as per OCIMF recommendations	
2.2	Vessel to provide 2 x 220 metres rope of at least 80 MT MBL for pull back tug. Both lines should be within 2 years from date of manufacture. Certificate to be attached	
2.3	Can the Vessel present spooling drum capable of storing hawser of 80m x 56 mm diameter + messenger line 120m x 32 mm diameter on winches at bow for FPSO pick up hawser and chain. Does the hawser lead directly to winch? (If No, describe)	
2.4	Is vessel fitted with bow stoppers (Chain stoppers) to accommodate 76mm chafe chain and in compliance with OCIMF mooring arrangements? (SMIT Type bracket is not acceptable)	
2.6	Does the vessel have crane/derrick on port / Stbd side of SWL 15T to lift Cargo hose? Maximum outreach:	
3	Cargo arrangements	
3.1	Does vessel have any cargo filling restrictions?	
3.2	Does Vessel have high level alarm fitted and operational?	
3.3	Does Vessel have high –high level alarm fitted independent of the tank gauging system and operational?	
3.4	Are the Manifold values Manually operated or Hydraulic operated	
3.5	Are PV valves full Flow?	
3.6	Is the Mast riser valve (Manual/Hydraulic) Date last “Flame Arrester” inspected.	Date:

4	Manifold arrangements		
4.1	a) Does the vessel have 16-inch 150 ANSI flange meeting OCIMF standards?		
5	General		
5.1	Does Vessel have Aft leading Combination ladder for pilot boarding.		
6	Crew Experience		
6.1	Are the officers meeting the terminal crew experience matrix requirements as specified in below table. (Complete the table below)		

Senior Officers*	**Criteria**	**Master & Chief Officer**	**Chief Engineer and 2nd Engineer**
Time with Company	Aggregate not less than 1 years		
Sea Time in Rank	Aggregate not less than 3 years		
Sea Time Oil Tanker	Aggregate not less than 4 years		
Junior Officers*	**Criteria**	**2nd Officer & 3rd Officer**	
Sea Time in Rank	Aggregate not less than 1 year		
Sea Time on all type of Tankers	Aggregate not less than 1 year		

Signature :

Master : Stamp :

APPENDIX E: Sample Pre-Arrival by E-Mail

WELCOME TO FPSO KG D6 RUBY MARINE TERMINAL	
TO:	Master of nominated offtake tanker
FROM:	**FPSO KG D6 RUBY MARINE TERMINAL**
We hold your nomination of xxxxxxx barrels at 15° C of…condensate oil - approx. API…& approx. Temp…c. Kindly furnish the following information along with vessel Q-88& separate clear copies of the bow and stern mooring arrangement (including SWL of the bollard / Panama chock that will be used).	
AAA	Confirmation that you can load the nominated volume
BBB	Quantity and grade of any transit cargo you have on-board
CCC	Quantity of clean ballast (estimated time required to de-ballast), quantity of segregated ballast
DDD	Quantity and type of slop on board to lot or to be kept segregated
EEE	Maximum Loading Rate in barrels/hr
FFF	Arrival data: draft (trim should not exceed 3 m by stern) and SDWT
GGG	Departure data: estimated draft and DWT
HHH	Distance from bow to manifold in meters
III	Confirm you are able to simultaneously load and de-ballast, maintaining double valve segregation throughout or retain your ballast on board.
JJJ	Confirm latest edition of following publications are on-board: • ISGOTT Safety Guide • OCIMF Ship-To-Ship Transfer Guide • International Chamber of Shipping Guide to Helicopter/Ship Operation.
KKK	Advise if the vessel is equipped with hull cathodic protection. If yes, what type and working conditions?
LLL	Master full name
MMM	Confirm if vessel has onboard a certified personnel transfer crane and and have adequate procedures / risk assessment for transferring by basket
NNN	Advise name of your Underwriters
OOO	Date vessel built
PPP	Previous vessel name
QQQ	Vessel's flag / port
RRR	Advise expiry date of vessel Safety Management Certificate (SMC)
SSS	Best ETA and bearing when vessel at 10 miles from Terminal

TTT	Confirm that your vessel is fitted with OCIMF recommended *bow chain stopper* of tongue type or hinged bar type to accommodate 76 mm size chafing chain
UUU	Specify max. summer DWT if your vessel is using different loading marks
VVV	Confirm that you can provide accommodation for Pilot, Assistant Mooring Master, Agent or Marine Terminal Representative and Cargo Surveyor, who should stay onboard your vessel throughout the loading operation
WWW	For SBT vessels only: total capacity of tanks that are part of SBT system.
XXX	Confirm your IGS is in good working condition maintaining O_2 content less than eight (8) % by volume in all cargo tanks. Inert as required in case cargo tank O2 content more than 8 %
YYY	Confirm that main engine can run continuously at Dead Slow Ahead / Astern if required
ZZZ	Confirm vessel has 2 synthetic mooring ropes of breaking strength at least 80T each. The date of manufacture of the mooring ropes should be within 2 years. (Attach copy of certificate)

The following instructions are hereby tendered:

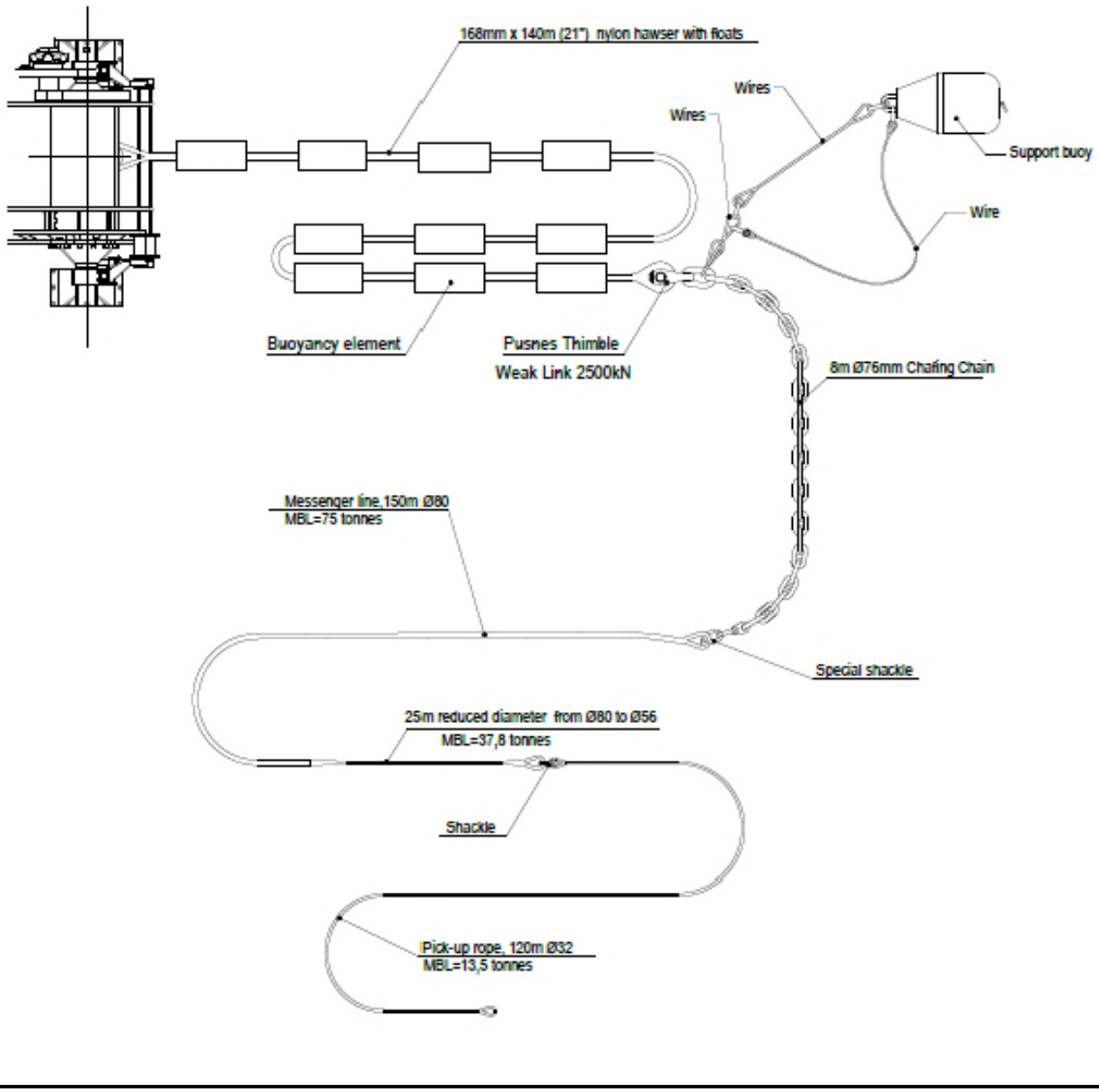
- Your vessel is scheduled to moor on arrival.
- Upon notification by your Owners that you are going to load at KG D6 RUBY Marine Terminal, send us your best ETA at 72, 48 and 24 hours in advance.
- When in range, contact Terminal via VHF channel 67 / 16 for berthing instructions.
- On arrival have your pilot ladder/personnel transfer basket ready on lee side as per pilot instructions and your port boom (min SWL 15 MT) rigged for 16-inch hose handling.
- A Marine Terminal Representative will board your ship to check tank's inerted atmosphere.
- Pollution prevention: upon arrival & before de-ballasting, your ballast water may be inspected by a Terminal representative.
- Pumping of any bilge water overboard and disposal of garbage at sea is strictly prohibited.
- Operation safety checklist as per OCIMF Ship-To-Ship Guide must be adhered to.
- One 16-inch floating hose will be connected to your port manifold.
- One (1) static tow vessel and one (1) support vessel will be available for mooring and hose connection assistance.
- 2 x 38mm diameter x 200m length messengers rigged forward in good condition.
- As per terminal handbook section 11(h),

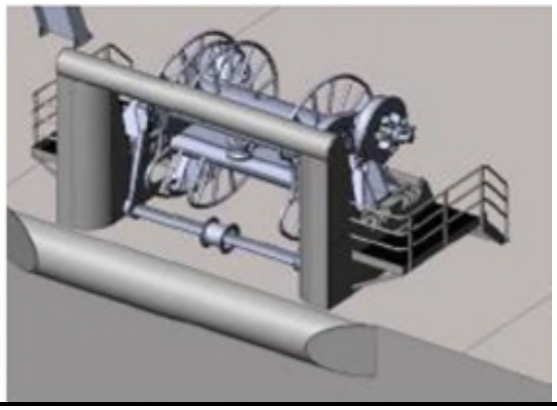
APPENDIX F : Vessel Information Exchange by E-Mail

WELCOME TO FPSO KG D6 RUBY MARINE TERMINAL	
TO:	Master of nominated offtake tanker
FROM:	**FPSO KG D6 RUBY MARINE TERMINAL**
Kindly furnish the following information along with vessel Q-88& separate clear copies of the bow and stern mooring arrangement (including SWL of the bollard / Panama chock that will be used).	
1.	Confirm the name of the vessel, flag and radio call sign.
2.	Advise vessel's: a. Inmarsat Phone Number b. Inmarsat fax Number c. E-mail Address
3.	Advise name of Master.
4.	Advise name and contact details of vessel's Indian agents.
5.	Advise the cargo nomination quantity and loading window.
6.	Advise ETA at the Terminal waiting area.
7.	Confirm vessel in possession of valid SOLAS, Safety Management & Document of Compliance (ISM Code) Certificates.
8.	Confirm vessel is able to maintain trim less than 0.015 x LOA during mooring operation and loading.
9.	Advise the estimated draft forward and aft on arrival.
10.	Advise: a. LOA; b. Beam; c. SDWT; and d. Distance between Bow and front of Bridge.
11.	Advise class of hull (single hull, double hull or double bottom)
12.	Advise the last port of call and next destination
13.	Advise previous Vessel name(s) and date of building
14.	Advise quantity and type of ballast (clean or segregated) on arrival
15.	Confirm that the vessel has an Approved Ballast Water Management Plan in place.
16.	Confirm the vessel maintains a record book in which the following are recorded: a. The coordinates of the loading/discharge points, the quantity of water loaded/discharged, the capacity of the tanks as well as the date of operations and the duration of the discharge. b. The location of the sampling points. c. The date when sediments were last cleaned. d. The names of the persons responsible for implementing the *Ballast Management Plan* and of the person responsible for the records.

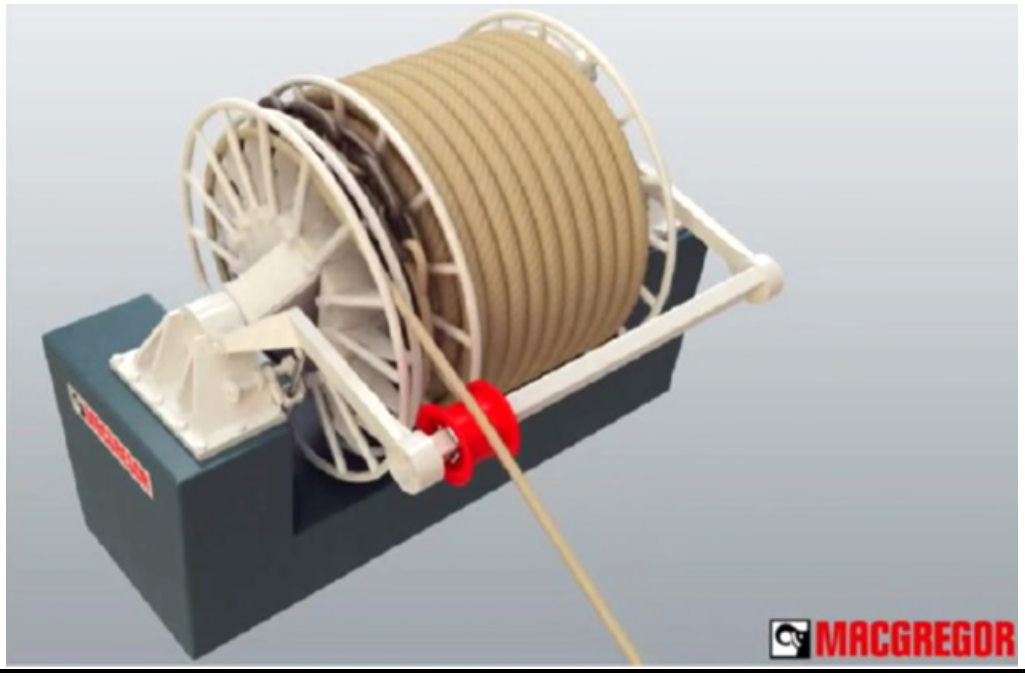
17.	Confirm that either: a. The ballast water was treated, immediately after loading, with the minimum amount of biocide needed to eliminate micro-organisms. b. The ballast water was exchanged at a distance of over 100 nautical miles from the Indian coast.
18.	Can loading of cargo and discharging of ballast be carried out concurrently? If not, state reasons. How long is needed for de-ballasting?
19.	Note that the vessel must maintain: a. Minimum Deadweight 33% SDWT b. Maximum trim 3 m c. Sufficient forward draught to prevent the possibility of floating hose going under the bow.
20.	Confirm that vessel valves, heating coils and tanks are sound and not leaking.
21.	Advise the loading rate with ONE (1) 16" hoses. a. Confirm manifold is fitted with the 16" – 150 ANSI (ex ASA) flange.
22.	Advise: a. Number, type and SWL of bow chain stoppers. b. Bow chain stoppers are suitable to accept 76 mm mooring chain. c. Distance between fairlead and chain stopper; and d. Bow fairlead size
23.	Advise the hose derrick / crane SWL and confirm availability of cleats and bits in the manifold area for lashing floating hose
24.	Confirm that the cargo and slops will be under inert gas on arrival (O_2 < 8% by vol.).
25.	Confirm that the tank atmosphere contains less than 5 ppm H_2S.
26.	Advise any Owners / Charterers instructions regarding particular inclusions or special remarks to be added to the cargo loaded Bill of Loading.
27.	Advise the quantity and quality of slops on board, if any. Advise if the load on top procedures is to be followed on this loading.
28.	Advise the VEF calculated as follows: Total of vessel figures divided by total B/L figures for the previous ten (10) voyages.
29.	Advise: a. Distance between ship side and Manifold. b. Height of centre of manifold pipe above main deck; and c. Distance between Bow and centre of manifold.
30.	Confirm vessel is able to maintain 30% or more of SDWT on arrival and during loading cargo.
31.	Advise if Vessel has any reportable sickness on board or if Master advises clean bill of health
32.	Advise 72 hrs, 48 hrs, 24 hrs and 4 hrs ETA in local time.
33.	Advise the Present Security Level.
34.	The FPSO maintains a listening watch on VHF channels 16,/ 67

APPENDIX G: Mooring Hawser Arrangement

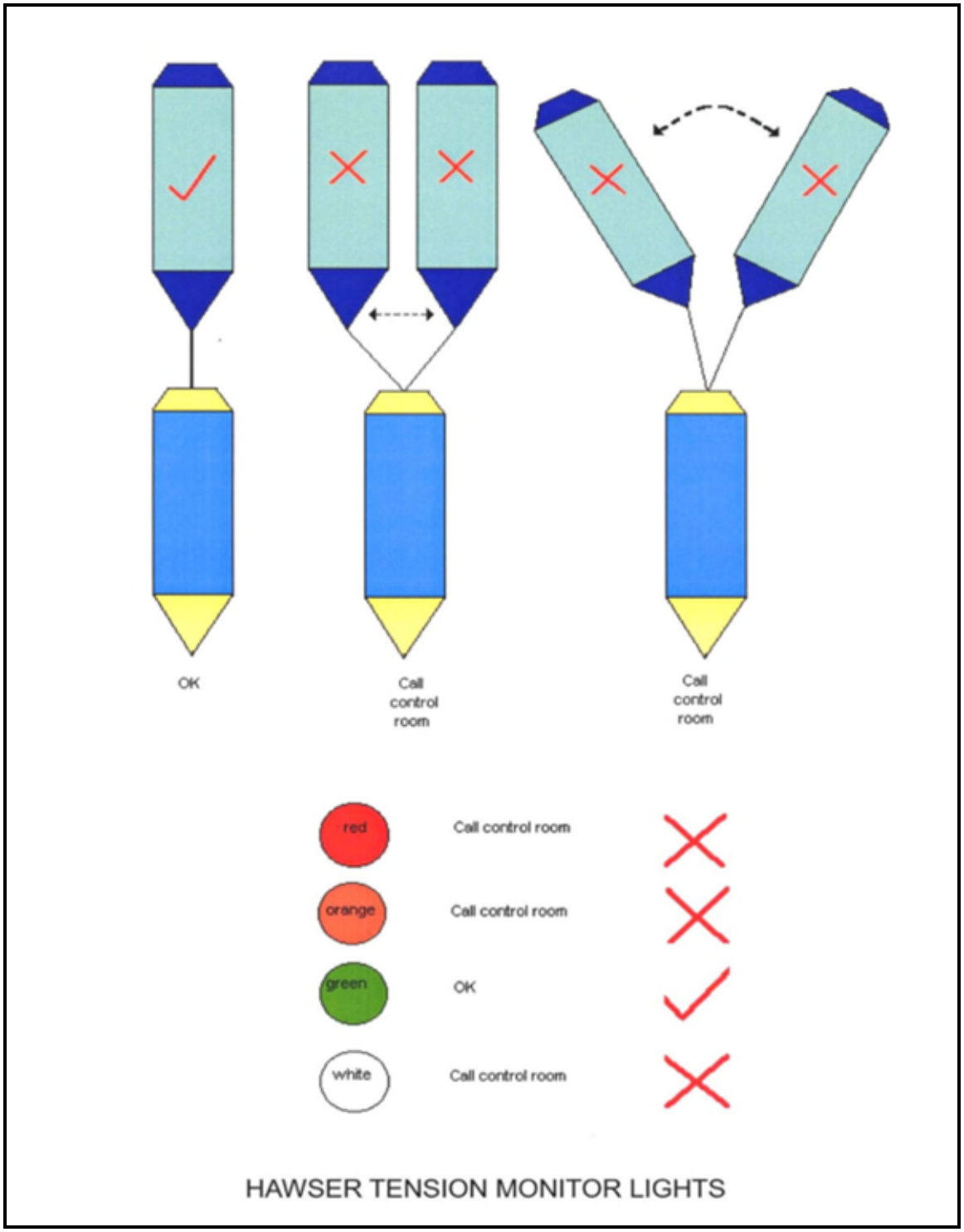


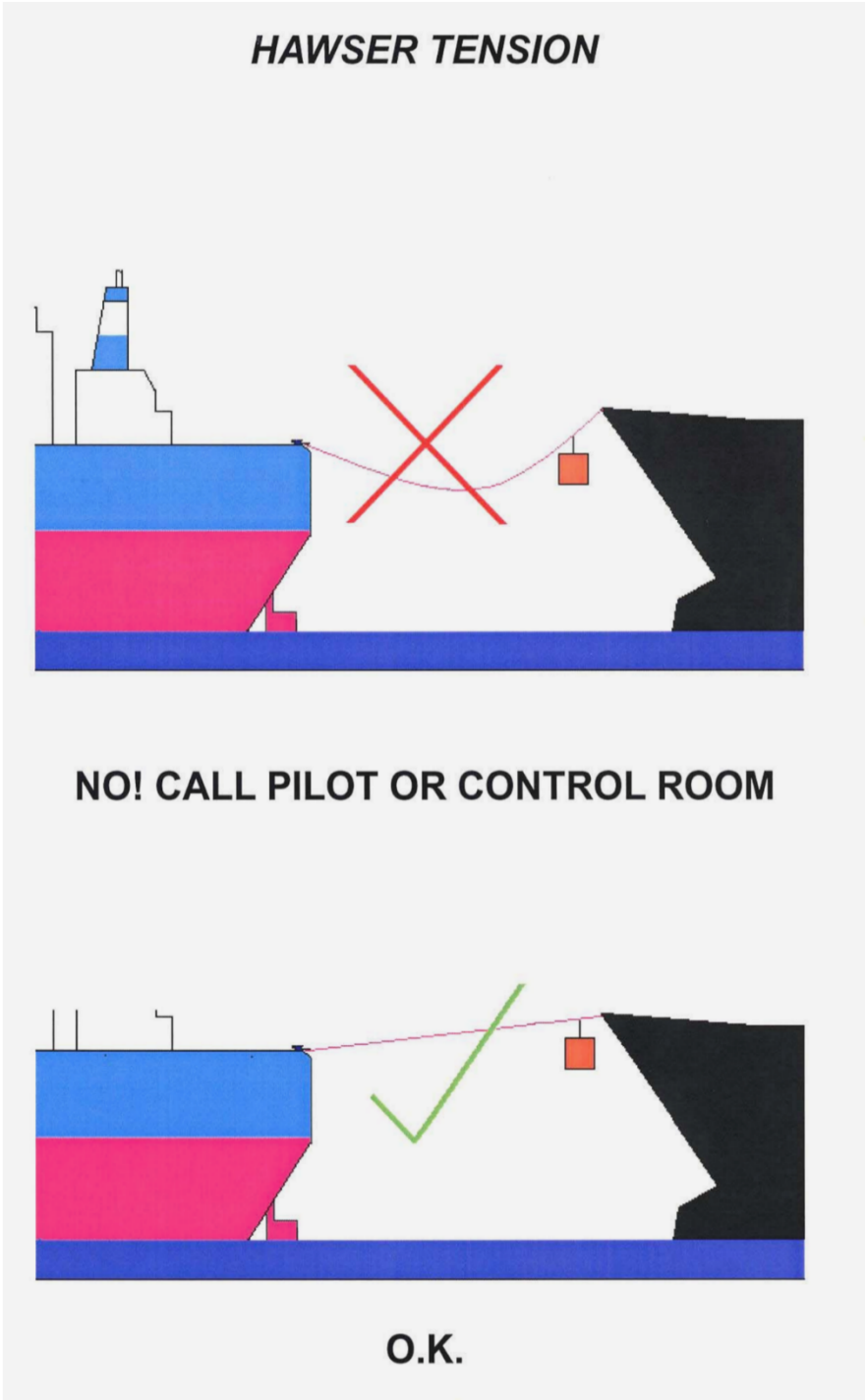





MACGREGOR

APPENDIX H: Export Tanker Position Reportings




HAWSER TENSION
NO! CALL PILOT OR CONTROL ROOM
O.K.

APPENDIX I: Mooring Procedure

DEPLOYMENT

Deploy the hawser to moor the vessel, as per the following steps:

(1) Offtake tanker approaches FPSO.

(2) Offtake tanker launches messenger line to the work boat that is waiting with the mooring hawser and picks up line fully stretched; this is connected to the pickup line.

(3) Work boat pays out the pickup line, and the offtake tanker pays in their messenger line.

(4) Work boat lets go of the pickup line, and the offtake tanker pays in the pickup line.

(5) Once the complete assembly is deployed the offtake tanker pulls the chafe chain to the deck and through the chain stopper on the bow; and

Note: Horizontal Hawser Reel is not designed to tension mooring line. The Horizontal Hawser Reel is not to be used at any point for mooring the offtake tanker.

(6) The tandem mooring process is complete.

DISCONNECT AND RETRIEVAL

To disconnect the offtake tanker from the FPSO the following steps are required:

(7) The offtake tanker releases the chafe chain (2), which is lowered into the sea with the chafe chain buoy (1), and the pickup line (5);

(8) Once the hawser assembly is clear of the offtake tanker, the FPSO begins retrieving the hawser (3).

(9) Once the hawser is completely retrieved on the horizontal hawser drum, the chafe chain (2) is retrieved on board of the FPSO.

(10) The buoy (1) is secured overboard, and the chafe chain (2) is secured to a strong point, provided on the FPSO deck.

(11) The pickup line (5) is retrieved and stored on board next to the drum at a convenient location.

(12) The offtake tanker gently moves astern and releases the static tow vessel when clear of the FPSO by at least 500 m.

HOSE HANDLING

Due to the weight and size of the hose string and fittings, special precautions must be taken. When hose strings are lifted out of the water, the load will increase continuously toward its maximum. All equipment is to be kept within the original specification (including hooks, wires, blocks, etc.). The offtake tanker's lifting equipment should be rigged to its maximum heaving capacity. Only approved equipment of the required capacity are to be used. The working area should be clear from obstruction prior to the beginning of the lifting operation. The derrick/crane must always be plumbed outboard of the offtake tanker’s side until the pick-up chain has been secured.

During the lifting operation, no person shall stand under the lift and/or near the hose and associated equipment. An offtake tanker officer must stop the hose at deck level for visual inspection of lifting gear. Condition and security of the various hose lifting gear components must be checked for excessive wear, damage, or poor connections. If there is any question of inadequacy of the lifting gear, the lift operations must be stopped until the inadequacies are corrected to the satisfaction of the offtake tanker officer.

Note: Disconnection of the hose can be dangerous, and care must be taken to ensure that the hose is secured to the offtake tanker or derrick/crane at all times, until lowered to the sea.

Note: Reference should be made to the OCIMF publication SPM Hose Ancillary Equipment Guide, latest edition.

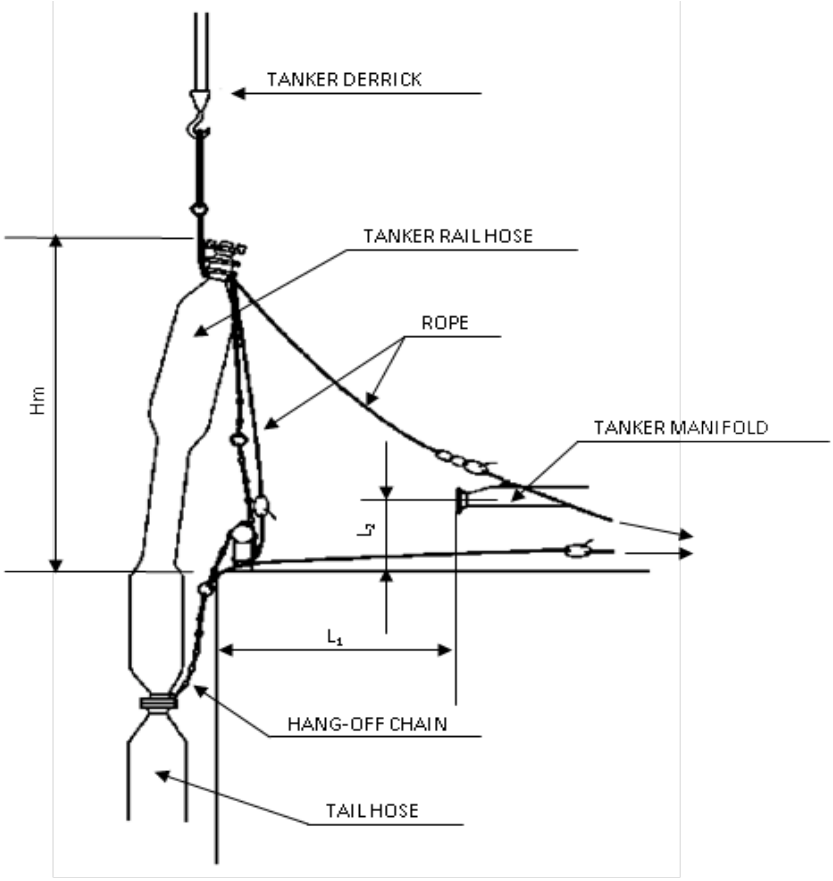
CONNECTING

Prior to berthing, the hose handling workboat or standby vessel shall keep the hose clear from the offtake tanker’s approach. While towing, the whole length of strings must be visually checked with the direction and towing speed of the workboat adjusted to avoid bend the hose strings. Once the tanker is moored, she will lift the hose end on her deck and will coil the pickup rope with the marker buoy. The coil will be lashed with small rope to avoid uncoiling during the hose lift by crane.

- Lift the hose string’s end to a height of approximately “Hm” from the Main Deck, where:

$$H = (L1+L2) \times 1.05 \sim 1.10$$

- Secure two ropes to the hose connecting end.
- Tanker rail hose, hang-off chain and rope shall be arranged in the way shown.
- Tighten the hang-off chain to hold the weight of the hose line.
- After confirming the tension of the hang-off chain, move the derrick/crane towards the manifold and lower the hose end slowly.



- Bend the tanker rail hose slowly towards the deck side by pulling or loosening the rope and lower it until the height above the manifold is approximately 30 cm, then remove the hose’s blind flange.
- Lower the hose’s end to the same height as the manifold and connect them.
- Place a holding strap on the hose to secure it against movement.
- On completion of connection, place a wide strap around the hose body to keep it in a stable position; and
- To complete the connection, raise the derrick/crane slowly until the axis of the rail hose is in line with the manifold.

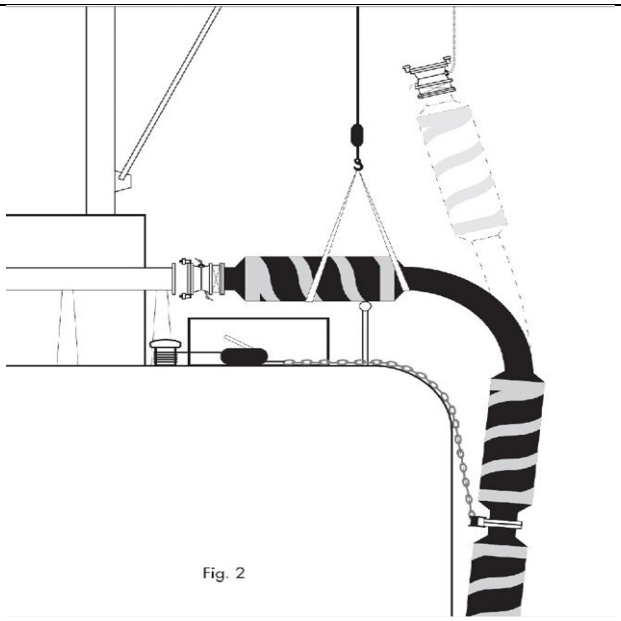


Fig. 2

DISCONNECTING

- After completing loading, close the hose end’s butterfly valve and the manifold valves.
- Flush and/or empty the spool piece.
- Lift up the pick-up chain at end of outside hose line and disconnect the hose end from the manifold.
- Care should be taken to stop the hose moving during this operation by securing a line around the hose near the flange and fastening it to convenient bits.
- Blank off the hose camlock using its blind flange and “O” ring.
- Lift up the hose string and disconnect the hang-off chain from main deck bollard.
- Suspend and lower the hose level and pickup rope hand tight with a figure of 8 on the pairs of bits. Now slowly lower the crane hooks string onto the deck and confirm the pickup rope is connected to the hose end.
- Lower the hose to the ship’s rails to transfer the weight to the pickup rope and release the crane hook.
- Hang the hose string should off the pickup rope with the camlock flange at deck level and derrick hook disconnected.

  Note[c]: The hose string should remain in this position until directed by the Mooring Master to be lowered to sea level by slacking the pickup rope.
- Once the full hose in water and there is weight left on the pickup rope, the pickup rope can then be dropped into the water using good seamanship.

  Note[d]: If possible, the hose string may be transferred directly to the support vessel along with the box of hose equipment.

On completion of the loading of agreed parcel size, the stopping of the transfer of cargo will be initiated. On being notified that the cargo pump/s has stopped the line contents will be drained to the last tank. The FPSO will purge the hose with Nitrogen for 50 minutes at 7-8 bar to push the condensate in the hose into the offtake tanker.

Hose volume of 66 M3 needs to be accommodated in the last loading tank of the offtake tanker which would be the line content from SDV of the FPSO Hose Reel to the butterfly valve of the OHTP end.

Upon completion of purging of the hose, the manifold valve and the Offtake Hose butterfly valve will be closed and locked witnessed by the Mooring Officer. When the manifold has been drained the Offtake Tanker crew under the supervision of a responsible officer will disconnect the hose. The Mooring Officer will be in attendance and observe the disconnection of the hose.

During hose disconnection it is normal practice to carry out gauging on the Offtake Tanker. This will be carried out by the Independent Surveyor and a responsible ships officer.
Hose disconnection time is the time when hose is disconnected from manifold.



APPENDIX J: Pre-Mooring Safety Checklists

SAFETY CHECKLIST – PRE-MOORING CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	

INSTRUCTIONS FOR COMPLETION

The safety of operations requires that all questions be answered affirmatively with a tick i.e., ✓. If an answer is not possible, the reason should be given, and agreement reached upon appropriate precautions between the ship and the Terminal. Where any question is not considered to be applicable a note to that effect should be inserted in the remark's column.

☐ - The presence of this symbol in the columns "Vessel" and "Terminal" indicates that the check shall be carried out by the Party concerned.

The presence of the letters **A**, **P** and **R** in the column "Code" indicates the following:

A - The mentioned procedures and agreements shall be in writing and signed by both parties.

P - In the case of a negative answer, the operation shall not be carried out without the permission of the Marine Terminal.

R - Indicates items to be re-checked at intervals not exceeding that agreed in the declaration.

Part A: General

Arrangements	Vessel	Terminal	Code	Remarks
1. Are radio communications well established?	☐	☐	**P**	
2. Is the vessel's mooring arrangement in accordance with *OCIMF Recommendations for Equipment Employed in the Mooring of Ships at Single Point Moorings*?	☐	☐	**P**	
3. Is the vessel's manifold arrangement in accordance with *OCIMF Recommendations for Oil Tanker Manifolds and Associated Equipment*?	☐	☐	**P**	
4. Is the vessel's lifting equipment in accordance with *OCIMF Recommendations for Oil Tanker Manifolds and Associated Equipment*?	☐	☐	**P**	

SAFETY CHECKLIST – PRE-MOORING CHECKLIST					
VESSEL NAME:					
BERTH:	**FPSO KG D6 RUBY**				
PORT:	**FPSO KG D6 RUBY**				
DATE OF ARRIVAL:		TIME OF ARRIVAL:			
5. Are rope messengers, stoppers and heaving lines ready for use?	☐	☐	**P**		
6. Is a spool prepared on the forward winch for lifting the hawser pickup rope on board?	☐	☐	**P**		
7. Are all cargo tank atmospheres 8% or less oxygen content by volume and with positive pressure?	☐	☒	**P**		
8. Has the "Vessel/Pilot" information card been exchanged?	☐	☒	**R**		
9. Have berthing and mooring procedures been agreed upon?	☐	☒	**P**		
10. Have the crew been briefed on the mooring procedure?	☐	☐	**P**		
11. Has the tug been briefed on the berthing and mooring procedure?	☐	☐	**P**		
12. Have the engines, steering gear and navigational equipment been tested and found to be in good order?	☐	☐	**P**		
13. Are both anchors secured?	☐	☐	**P**		
14. Is a proficient helmsman at the wheel?	☐	☐	**P**		

DECLARATION

We have checked, where appropriate jointly, the items on this checklist, and have satisfied ourselves that the entries we have made are correct to the best of our knowledge.

	NAME	RANK/POSITION	SIGNATURE
PERSON IN CHARGE (VESSEL)			
MOORING MASTER			

SAFETY CHECKLIST – PRE-MOORING CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	
TERMINAL NOTIFIED ON COMPLETION OF CHECKLIST AND IF ANY ISSUES NOTED. (Record Date and time of reporting to terminal on VHF)			

APPENDIX K: Pre-Transfer Safety Checklists

SAFETY CHECKLIST – PRE-TRANSFER CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	

INSTRUCTIONS FOR COMPLETION

The safety of operations requires that all questions be answered affirmatively with a tick i.e. ✓. If an answer is not possible, the reason should be given, and agreement reached upon appropriate precautions between the ship and the Terminal. Where any question is not considered to be applicable a note to that effect should be inserted in the remark's column.

The presence of the letters **A**, **P** and **R** in the column "Code" indicates the following:

A - Any procedures and agreements should be in writing in the remark's column of this checklist or other mutually acceptable form. In either case, the signature of both parties should be required.

P - In the case of a negative answer, the operation shall not be carried out without the permission of the appropriate Authority.

R - Indicates items to be re-checked at intervals not exceeding that agreed in the declaration.

Part A: BULK LIQUID GENERAL – PHYSICAL CHECKS

Requirements	Vessel	Terminal	Code	Remarks
1. There is safe access between the vessel and shore.			**R**	
2. The vessel is securely moored.			**R**	
3. The agreed vessel/shore communication system is operative.			**A R**	System: By VHF Ch 67 Backup system: VHF Ch 16
4. Emergency towing-off pennants are correctly rigged and positioned.			**R**	Tugboat connected on the stern during Operation
5. The vessel's fire hoses, and firefighting equipment are positioned and ready for immediate use.			**R**	
6. The Terminal's fire-fighting equipment is positioned and ready for immediate use.			**R**	
7. The vessel's cargo and bunker hoses, pipelines and manifolds are in good condition, properly rigged and appropriate for the service intended.				

SAFETY CHECKLIST – PRE-TRANSFER CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	

8. The Terminal's cargo and bunker hoses/arms are in good condition, properly rigged and appropriate for the service intended.				
9. The cargo transfer system has been sufficiently isolated and drained to allow safe removal of blank flanges prior to connection.				
10. Scuppers and 'save all's on board are effectively plugged and drip trays are in position and empty.			**R**	
11. Temporarily removed scupper plugs will be constantly monitored.				
12. Shore spill containment and sumps are correctly managed.			**R**	
13. The vessel's unused cargo and bunker connections are properly secured with blank flanges fully bolted.				
14. The Terminal's unused cargo and bunker connections are properly secured with blank flanges fully bolted.				
15. All cargo, ballast and bunker tank lids are closed.				
16. Sea and overboard discharge valves, when not in use, are closed and visibly secured.				
17. All external doors, ports and windows in the Accommodation, Stores and Machinery Spaces are closed. Engine Room vents may be open.			**R**	
18. The vessel's emergency fire control plans are located externally.				Location

Part B: INERT GAS SYSTEM – PHYSICAL CHECKS

If the vessel is fitted, or required to be fitted, with an Inert Gas System (IGS) the following points should be physically checked:

Requirements	**Vessel**	**Terminal**	**Code**	**Remarks**
19. Fixed IGS pressure and oxygen content recorders are working.			**R**	

SAFETY CHECKLIST – PRE-TRANSFER CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	

Part B: INERT GAS SYSTEM – PHYSICAL CHECKS (cont.)

Requirements	Vessel	Terminal	Code	Remarks
20. All cargo tank atmospheres are at positive pressure with oxygen content of 8% or less by volume.			**P R**	

Part C: BULK LIQUID GENERAL – VERBAL VERIFICATION

21. The vessel is ready to move under its own power.			**P R**	
22. There is an effective deck watch in attendance on board and adequate supervision of operations on the vessel and in the Terminal.			**R**	
23. There are sufficient personnel on board and ashore to deal with an emergency.			**R**	
24. The procedures for cargo, bunker and ballast handling have been agreed			**A R**	Cargo & Ballast as per loading plan – no bunkering
25. The emergency signal and shutdown procedure to be used by the vessel and shore have been explained and understood			**A**	LONG BLAST WHISTLE by VHF Ch 67__ and/or as per Loading Master Communication
26. Material safety data sheets (MSDS) for the cargo transfer have been exchanged where requested.				
27. The hazards associated with toxic substances in the cargo being handled have been identified and understood.				H2S Content Benzene Content
28. An International Shore Fire Connection has been provided.				
29. The agreed tank venting system will be used.			**A R**	Method: *Open Mast Riser Vent*
30. The requirements for closed operations have been agreed.			**R**	

SAFETY CHECKLIST – PRE-TRANSFER CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	

31. The operation of the P/V system has been verified.				
32. Where a vapour return line is connected, operating parameters have been agreed.			**A R**	
33. Independent high-level alarms, if fitted, are operational and have been tested.				
34. Adequate electrical insulating means are in place in the ship/shore connection.				Electrically Discontinuous Tanker Hand Rail Hose
35. Shore lines are fitted with a non-return valve or procedures to avoid 'back filling' have been discussed.				
36. Smoking Rooms have been identified and smoking requirements are being observed.			**A R**	Nominated Smoking Rooms:
37. Naked light regulations are being observed.			**A R**	
38. Ship/shore telephones, mobile phones and pager requirements are being observed.			**A R**	
39. Hand torches (flashlights) are of an approved type.				
40. Fixed VHF/UHF transceivers and AIS equipment are on the correct power mode or switched off.				
41. Portable VHF/UHF transceivers are of an approved type.				
42. The vessel's main radio transmitter aerials are earthed and radars are switched off.				
43. Electric cables to portable electrical equipment within the hazardous area have been disconnected from power.				
44. Window type air conditioning units are disconnected.				
Part C: BULK LIQUID GENERAL – VERBAL VERIFICATION (cont.)				
45. Positive pressure is being maintained inside the Accommodation.				

SAFETY CHECKLIST – PRE-TRANSFER CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	

46. Measures have been taken to ensure sufficient mechanical ventilation in the Pump Room.			**R**	
47. There is provision for an emergency escape.				
48. The maximum wind and swell criteria for operations has been agreed upon.			**A**	Stop cargo at: 40.0 Kts wind speed Disconnect at:45.0 Kts wind speed Un-berth at: 45.0 Kts wind speed
49. Security protocols have been agreed between the Ship Security Officer and the Terminal Security Officer, if appropriate.			**A**	ISPS Checklist

Part D: INERT GAS SYSTEM – REQUIREMENTS

If the vessel is fitted, or required to be fitted, with an Inert Gas System (IGS) the following statements should be addressed:

Requirements	Vessel	Terminal	Code	Remarks
50. The IGS is fully operational and in good working order.			**P**	
51. Deck seals, or equivalent, are in good working order.			**R**	
52. Liquid levels in pressure/vacuum breakers are correct.			**R**	
53. The fixed and portable oxygen analysers have been calibrated and are working properly.			**R**	
54. All the individual tank IGS valves (if fitted) are correctly set and locked.			**R**	
55. All personnel in charge of cargo operations are aware that in the case of failure of the Inert Gas plant, discharge operations should cease, and the Terminal shall be advised.				

Part E: CRUDE OIL WASHING SYSTEM

SAFETY CHECKLIST – PRE-TRANSFER CHECKLIST			
VESSEL NAME:			
BERTH:	**FPSO KG D6 RUBY**		
PORT:	**FPSO KG D6 RUBY**		
DATE OF ARRIVAL:		TIME OF ARRIVAL:	

If the vessel is fitted with a Crude Oil Washing (COW) system, and intends to COW, the following statements should be addressed:

Requirements	Vessel	Terminal	Code	Remarks
56. The Pre-Arrival COW checklist, as contained in the approved COW manual, has been satisfactorily completed.				
57. The COW check lists for use before, during and after COW, as contained in the approved COW manual, are available and being used.			**R**	

Part F: TANK CLEANING

If the vessel is planning to tank clean alongside, the following statements should be addressed. addressed:

Requirements	Vessel	Terminal	Code	Remarks
58. Tank cleaning operations are planned during the vessel's stay alongside the Terminal.	YES/NO	YES/NO		
59. If 'yes' the procedures and approvals for tank cleaning have been agreed.	YES/NO	YES/NO		
60. Permission has been granted for gas freeing operations.	YES/NO	YES/NO		

DECLARATION

We have checked the items on this checklist and have satisfied ourselves that the entries we have made are correct to the best of our knowledge.

	NAME	RANK/POSITION	SIGNATURE
PERSON IN CHARGE (VESSEL)			
PERSON IN CHARGE (TERMINAL)			

APPENDIX L: Safety Letter

15

Company: **Reliance Industries Limited**
KG D6 RUBY Marine Terminal
Port: RUBY FPSO
Date: XX / YYY / ZZZZ

To,
The Master,
Vessel:

Dear Sir,

Responsibility for the safe conduct of operations while your ship is at this Terminal rests jointly with you, as Master of the ship, and with the responsible Terminal Representative. We wish, therefore, before operations start, to seek your full cooperation and understanding on the safety requirements set out in the *Ship/Shore Safety Checklist*, which are based on safe practices that are widely accepted by the oil tanker industries.

We expect you, and all under your command, to adhere strictly to these requirements throughout your ship's stay alongside this Terminal and we, for our part, will ensure that our personnel do likewise, and cooperate fully with you in the mutual interest of safe and efficient operations.

Before the start of operations, and from time to time thereafter, for our mutual safety, a member of the Terminal staff, where appropriate together with a Responsible Officer, will make a routine inspection of your ship to ensure that elements addressed within the scope of the *Ship/Shore Safety Checklist* are being managed in an acceptable manner. Where corrective action is needed, we will not agree to operations commencing or, should they have been started, we will require them to be stopped.

Kindly ensure the DWT of your vessel should not exceed **1,10,000 MT** while moored at the terminal in any condition of loading. If the deadweight exceeds **1,10,000MT** you will be immediately cast off and all delays, costs will be on your account.

Similarly, if you consider that safety is being endangered by any action on the part of our staff or by any equipment under our control, you should demand immediate cessation of operations.

There can be no compromise with safety.

Please acknowledge receipt of this letter by countersigning and returning the attached copy.

Signed: _____
Marine Terminal Representative

Marine Terminal Representative on duty is: _____
Position or Title: _____
Contact Details: _____

Signed: _____
Master

APPENDIX M : Pollution Prevention Notice

MARINE TERMINAL AREA - POLLUTION PREVENTION NOTICE		
RECEIVING SHIP'S NAME:	*(Visiting offtake tanker)*	
DATE:		

1. I understand that while I am at the ***FPSO KG D6 RUBY Marine Terminal*** (hereinafter referred to as the "Terminal") I will adhere to the rules and regulations of the Terminal and will respond to directions from Terminal personnel in charge.
2. I understand that I have a responsibility to immediately correct all safety and pollution hazards and to report them to the Terminal Person in Charge (PIC).
3. I understand that I should not give the OK to increase the loading rate to the maximum acceptable rate until the product is pumped slowly into the proper compartments.
4. I understand that no transfer is to begin unless someone is standing by the offtake tanker manifold and Terminal manifold.
5. I understand that I am to remain in continuous contact with Terminal personnel while moored; keeping them informed of what is going on at all times.
6. I understand that a pollution incident or disregard for the *Terminal Regulations*, particularly the ones listed above, may result in the suspension of vessel operations and the removal of the vessel from the Terminal.
7. I understand that in the event of a pollution incident caused by my vessel all expenses and/or damage costs incurring in connection with the incident will be charged to the Vessel Owners.
8. I understand that this in no way relieves me of my responsibility to operate and transfer in compliance with the local and international regulations, as applied.

ACKNOWLEDGEMENT

	NAME	SIGNATURE	DATE & TIME
TANKER MASTER			
MARINE TERMINAL	**FPSO KG D6 RUBY**		

MARINE TERMINAL AREA - POLLUTION PREVENTION NOTICE			
RECEIVING SHIP’S NAME:	*(Visiting offtake tanker)*		
DATE:			
TERMINAL REPRESENTATIVE			

APPENDIX N : OFFTAKE TANKER FEEDBACK FORM

OFFTAKE TANKER FEEDBACK FORM

15

Offtake No		**Date**	
Tanker Name		**Master Name**	

Sr. No.	Description	Adequate	Improvement required
1.	Pre-Arrival Information exchange with the Terminal	☐	☐
2.	Pre / Post offtake documentation	☐	☐
3.	Discussion held regarding mooring, unmooring, pull-back operations	☐	☐
4.	Arrival / Berthing / Unberthing activities	☐	☐
5.	Clarity on pre-transfer meeting (Ship-shore safety checklist)	☐	☐
6.	Floating Hose (Connection / Disconnection)	☐	☐
7.	Communication with Terminal during mooring and offtake	☐	☐
8.	Performance of the Tugs	☐	☐

Remarks

Master Name	Sign / Date
Terminal Representative	Sign / Date

APPENDIX O : Mooring Master Feedback Form

15

MOORING MASTER FEEDBACK FORM

Offtake No		**Date**	
Tanker Name		**Mooring Master 1**	
Pull back tug Name		**Mooring Master 2**	

Sr. No	Description			
TANDEM MOORING ARRANGEMENTS		**Acceptable**	**Improvement required**	**Not Acceptable**
1.	Pick-up gear and messenger arrangements adequate	☐	☐	☐
2.	Winches on Tanker operational and effective	☐	☐	☐
3.	Safe deployment and recovery of hawser	☐	☐	☐
4.	Emergency arrangements on tanker in place (Fire axe, crowbar etc)	☐	☐	☐
5.	Spare ropes for pull back available and in good condition	☐	☐	☐
HOSE & TRANSFER ARRANGEMENTS		**Acceptable**	**Improvement required**	**Not Acceptable**
6.	Hose handling and connection conducted safely	☐	☐	☐
7.	Hose lifting arrangements provided adequate	☐	☐	☐
8.	Hose Connection/ Disconnection tools adequate	☐	☐	☐
9.	Crane operations for hose handling	☐	☐	☐
BOARDING & ACCESS ARRANGEMENTS		**Acceptable**	**Minor Deficiency**	**Not Acceptable**
10.	Pilot/ combination ladder rigged in accordance with SOLAS	☐	☐	☐
11.	Combination and pilot ladder condition and securing arrangements	☐	☐	☐
OFFTAKE TANKER & CREW PERFORMANCE		**Good**	**Satisfactory**	**Unsatisfactory**
12.	Main propulsion and steering reliability	☐	☐	☐
13.	Tanker crew competence and supervision	☐	☐	☐

Sr. No	Description			
14.	Compliance with Mooring Master instructions	☐	☐	☐
COMMUNICATION		**Effective**	**Adequate**	**Ineffective**
15.	FPSO ↔ Tanker communication	☐	☐	☐
16.	Tug ↔ Tanker communication	☐	☐	☐
PULL-BACK TUG PERFORMANCE		**Good**	**Satisfactory**	Unsatisfactory
17.	Ability to maintain position and heading	☐	☐	☐
18.	Tug power adequate for environmental conditions	☐	☐	☐
19.	Connection and disconnection	☐	☐	☐
20.	Response to Mooring Master instructions	☐	☐	☐
SAFETY AND OPERATIONS		**Good**	**Satisfactory**	Unsatisfactory
21.	Safety/ Operational procedures compliance	☐	☐	☐
22.	Any Equipment issues affecting operations	☐	☐	☐

OBSERVATIONS (should include comments for any of the sections)

Mooring Master Name / Signature	Date/ Sign

APPENDIX Q: Material Safety Data Sheets

Section 1: Identification of the substance or mixture and of the supplier

Product Name: Condensate Oil

Synonyms/Other Means of Identification: Condensate Oil, Desalted, Field Crude oil, Petroleum Crude, Petroleum Oil.

MARPOL Annex I Category: Condensate Oil

Intended Use: Refinery Feed

Supplier: Reliance Industries limited,
KG D6 Terminal, Gadimoga,
Tallarevu Mandal, E.G.Dist, Andhra Pradesh

Emergency Health and Safety Number: Security Control Room: 0884 - 6677100 / 2977100
Shift Manager: 09392912202, Safety Manager: 08008093388

Section 2: Hazard(s) Identification

Classification

Code	Hazard Statements	Hazard Class	Category	Pictogram	Signal Word	Precautionary Statements			
						PREVENTION	RESPONSE	STORAGE	DISPOSAL
H224	Extremely flammable liquid and vapor	Flammable liquids	Category 1		Danger	P210, P233, P240, P241, P242, P243, P280	P303+P361+P353, P370+P378	P403+P235	P501
H304	May be fatal if swallowed and enters airways	Aspiration hazard	Category 1		Danger	-	P301+P310, P331	P405	P501
H319	Causes serious eye irritation	Serious eye damage/eye irritation	Category 2A		Warning	P264, P280	P305+P351+P338, P337+P313	-	-

H336	May cause drowsiness or dizziness	Specific target organ toxicity, single exposure; Narcotic effects	Category 3		Warning	P261, P271	P304+P340, P312	P403+P233, P405	P501
H350	May cause cancer	Carcinogenicity	Category 1A, 1B		Danger	P201, P202, P281	P308+P313	P405	P501
H373	Causes damage to organs through prolonged or repeated exposure	Specific target organ toxicity, repeated exposure	Category 2		Warning	P260	P314	-	P501
H411	Toxic to aquatic life with long lasting effects	Hazardous to the aquatic environment, long- term hazard	Category 2			P273	P391		P501

Hazards not Otherwise Classified

May contain or release poisonous hydrogen sulfide gas

Precautionary Statement(s):

Obtain special instructions before use. (P201)*

Do not handle until all safety precautions have been read and understood. (P202)* Keep away from heat/sparks/open flames/hot surfaces. - No smoking. (P210)* Keep container tightly closed. (P233)*

Ground/bond container and receiving equipment. (P240)* Use with explosion-proof equipment. (P241)*

Use only non-sparking tools. (P242)*

Take precautionary measures against static discharge. (P243)* Do not breathe dust/fume/gas/mist/vapours/spray. (P260)* Avoid breathing dust/fume/gas/mist/vapours/spray. (P261)* Wash thoroughly after handling. (P264)*

Use only outdoors or in a well-ventilated area. (P271)*

Wear protective gloves / protective clothing / eye protection / face protection. (P280)* Use personal protective equipment as required. (P281)*

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. (P361)* Rinse skin with water/shower. (P353)*

IF ON SKIN (or hair): Take off Immediately all contaminated clothing. Rinse SKIN with water [or shower]. (P303+P361+P353) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338*)

If eye irritation persists: Get medical advice/attention. (P313)*

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. (P301+P310)* Do NOT induce vomiting. (P331)*

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. (P304+P340)* Call a POISON CENTER or doctor/physician if you feel unwell. (P312)*

In case of fire: Use dry chemical, carbon dioxide, or foam for extinction.(P370+P378)* If exposed or concerned: Get medical advice/attention. (P308+P313)

Collect spillage. (P391) Store locked up. (P405)*

Store in a well-ventilated place. Keep cool.(P403+P235)*

Store in a well-ventilated place. Keep container tightly closed. (P403+P233) Dispose of contents/container to approved disposal facility. (P501)*

* (Applicable GHS hazard code.)

Section 3: Composition / Information on Ingredients

Component	CASRN	Concentration[1]
Condensate Oil (Petroleum)	8002-05-9	100
Naphthalene	91-20-3	0-1.2
Benzene	71-43-2	8-15
Hydrogen Sulfide	7783-06-4	<0.2
Total Sulfur	7704-34-9	< 0.7

All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Crude oil, natural gas and natural gas condensate can contain minor amounts of sulphur, nitrogen and oxygen containing organic compounds as well as trace amounts of heavy metals like mercury, arsenic, nickel, and vanadium. Composition can vary depending on the source of crude.

Section 4: First Aid Measures

Eye Contact: For direct contact, remove contact lenses if present and easy to do. Immediately hold eyelids apart and flush the affected eye(s) with clean water for at least 20 minutes. Seek immediate medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

Most important symptoms and effects

Acute: Headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue

Delayed: Dry skin and possible irritation with repeated or prolonged exposure.

Notes to Physician: At high concentrations hydrogen sulfide may produce pulmonary edema, respiratory depression, and/or respiratory paralysis. The first priority in treatment should be the establishment of adequate ventilation and the administration of 100% oxygen. Animal studies suggest that nitrites are a useful antidote, however, documentation of the efficacy of nitrites in humans is lacking. If the diagnosis of hydrogen sulfide poisoning is confirmed and if the patient does not respond rapidly to supportive care, the use of nitrites may be an effective antidote if delivered within the first few minutes of exposure. For adults the dose is 10 mL of a 3% NaNO2 solution (0.5 gm NaNO2 in 15 mL water) I.V. over 2-4 minutes. The dosage should be adjusted in children or in the presence of anemia, and methemoglobin levels, arterial blood gases, and electrolytes should be monitored closely.

Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Federal regulations (29 CFR 1910.1028) specify medical surveillance programs for certain exposures to benzene above the action level or PEL (specified in Section (i)(1)(i) of the Standard). In addition, employees exposed in an emergency situation shall, as described in Section (i)(4)(i), provide a urine sample at the end of the shift for measurement of urine phenol.

Other Comments: Before attempting rescue, first responders should be alert to the possible presence of hydrogen sulfide, a poisonous gas with the smell of rotten eggs, and should consider the need for respiratory protection (see Section 8). Remove casualty to fresh air as quickly as possible. Immediately begin artificial

Section 5: Fire-Fighting Measures

respiration if breathing has ceased. Consider whether oxygen administration is needed. Obtain medical advice for further treatment.

NFPA 704 Hazard Class



Health: 2 Flammability: 3 Instability: 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: Extremely flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. This product will float and can be reignited on surface water. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire. Hazardous combustion/decomposition products, including hydrogen sulfide, may be released by this material when exposed to heat or fire. Use caution and wear protective clothing, including respiratory protection.

Extinguishing Media: Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined

spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Water may be ineffective for extinguishment, unless used under favourable conditions by experienced fire fighters.

Fire Fighting Instructions: Long-duration fires involving crude or residual fuel oil stored in tanks may result in a boilover. The contents of the tank may be expelled beyond the containment dikes or ditches. All personnel should be kept back a safe distance when a boilover is anticipated (reference NFPA 11 or API 2021).

For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Hydrogen sulfide and oxides of nitrogen and sulfur may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

Section 6: Accidental Release Measures

Personal Precautions: Extremely flammable. Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. May contain or release poisonous

hydrogen sulfide gas. If the presence of dangerous amounts of H2S around the spilled product is suspected, additional or special actions may be warranted, including access restrictions and use of protective equipment. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use foam on spills to minimize vapors. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills

into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

Section 7: Handling and Storage

Precautions for safe handling: Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary

measures against static discharge. Nonsparking tools should be used. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. May contain or release dangerous levels of hydrogen sulfide. Do not breathe vapors or mists. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

Extremely Flammable. May vaporize easily at ambient temperatures. The vapor is heavier than air and may create an explosive mixture of vapor and air. Beware of accumulation in confined spaces and low lying areas. Open container slowly to relieve any pressure. Electrostatic charge may accumulate and create a hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-70 and/or API RP 2003 for specific bonding/grounding requirements. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames.

Mercury and other heavy metals may be present in trace quantities in crude oil, raw natural gas, and condensates. Production and processing of these materials can lead to "drop-out" of elemental mercury in enclosed vessels and pipe work, typically at the low point of any process equipment because of its density. Mercury may also occur in other process system deposits such as sludges, sands, scales, waxes, and filter media. Personnel engaged in work with equipment where mercury deposits might occur (confined space entry, sampling, opening drain valves, draining process lines, etc), may be exposed to a mercury hazard (see sections 3 and 8).

Conditions for safe storage: This material may contain or release poisonous hydrogen sulfide gas. In a tank, barge, or other closed container, the vapor space above this material may accumulate hazardous

concentrations of hydrogen sulfide. Check atmosphere for oxygen content, H2S, and flammability prior to entry. Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only

in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Section 8: Exposure Controls / Personal Protection

Component	ACGIH	OSHA	Other
Oil (Petroleum)	---	---	TWA:100 mg/m3 - 8 hr (ConocoPhillips Guidelines)
Naphthalene	STEL: 15 ppm TWA: 10 ppm 2 ppm TWA; skin; A3 – confirmed animal carcinogen with unknown relevance to humans; TLV basis: upper respiratory tract irritation Skin	TWA: 10 ppm : 50 mg/m3	TWA: 0.2 mg/m3 (as total of 17 PNA"s measured by NIOSH Method 5506) (ConocoPhillips Guidelines)
Benzene	STEL: 2.5 ppm TWA: 0.5 ppm Skin	Ceiling: 25 ppm STEL: 5 ppm TWA: 10 ppm TWA: 1 ppm	---
Hydrogen Sulfide	STEL: 5 ppm TWA: 1 ppm	Ceiling: 20 ppm	TWA: 5 ppm 8hr TWA: 2.5 ppm 12hr STEL: 15 ppm (ConocoPhillips Guidelines)

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required. Eye/Face Protection: The use of eye protection (such as splash goggles) that meets or exceeds ANSI Z.87.1 is recommended when there is potential liquid contact to the eye. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile Respiratory Protection: Where there is potential for airborne exposure to hydrogen sulfide (H2S) above exposure limits, a NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used. Under conditions where hydrogen sulfide (H2S) is NOT detected, a NIOSH certified air purifying respirator equipped with organic vapor cartridges/canisters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

If benzene concentrations equal or exceed applicable exposure limits, OSHA requirements for personal protective equipment, exposure monitoring, and training may apply (29CFR1910.1028 - Benzene).

Workplace monitoring plans should consider the possibility that heavy metals such as mercury may concentrate in processing vessels and equipment presenting the possibility of exposure during various sampling and maintenance operations. Implement appropriate respiratory protection and the use of other protective equipment as dictated by monitoring results (See Sections 2 and 7).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

Section 9: Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Yellowish to Brownish
Physical Form:	Liquid
Odor:	Petroleum. Rotten egg / sulfurous
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	0.6-10 psia (Reid VP) @ 100°F / 37.8°C
Vapor Density (air=1):	>1
Final Boiling Point:	<575 °C
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity (water=1):	0.75-0.90 @ 60ºF (15.6ºC)
Density:	750-890 Kg/m3
Evaporation Rate (nBuAc=1):	No data
Flash Point:	< -10 °C
Lower Explosive Limits (vol % in air):	1.1
Upper Explosive Limits (vol % in air):	6.0

Section 10: Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Avoid high temperatures and all sources of ignition. Prevent vapor accumulation.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

Section 11: Toxilogical information

Information on Toxicological Effects of Substance/Mixture

Acute Toxicity	Hazard Additional Information	LC50/LD50 Data
Inhalation	Expected to have a low degree May contain or release of toxicity by inhalation poisonous hydrogen sulfide gas - see Other Comments.	> 5 mg/L (vapor)
Skin Absorption	Unlikely to be harmful	> 2 g/kg
Ingestion (Swallowing)	Unlikely to be harmful	> 5 g/kg

Aspiration Hazard: May be fatal if swallowed and enters airways.

Skin Corrosion/Irritation: Causes mild skin irritation. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Irritation: Causes serious eye irritation.

Signs and Symptoms: Effects of overexposure may include irritation of the digestive tract, irritation of the respiratory tract, nausea, vomiting, diarrhea and signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

Skin Sensitization: Not expected to be a skin sensitizer.

Respiratory Sensitization: No information available.

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness and dizziness.

Specific Target Organ Toxicity (Repeated Exposure): May cause damage to organs through prolonged or repeated exposure. Laboratory animal studies of crude oil by the dermal and inhalation exposure routes have demonstrated toxicity to the liver, blood, spleen and thymus

Carcinogenicity: May cause cancer Chronic application of crude oil to mouse skin resulted in an increased incidence of skin tumors. IARC concluded in its Crude Oil Monograph that there is limited

evidence of carcinogenicity in animals, and that crude oil is not classifiable as to its carcinogenicity in humans (Group 3). It has not been listed as a carcinogen by NTP or OSHA.

Germ Cell Mutagenicity: Inadequate information available.

Reproductive Toxicity: Inadequate information available. Dermal exposure to crude oil during pregnancy resulted in limited evidence of developmental toxicity in laboratory animals. Decreased fetal weight and increased resorptions were noted at maternally toxic doses. No significant effects on pup growth or other developmental landmarks were observed postnatally.

Other Comments: This material may contain or liberate hydrogen sulfide, a poisonous gas with the smell of rotten eggs. The smell disappears rapidly because of olfactory fatigue so odor may not be a reliable indicator of exposure. Effects of overexposure include irritation of the eyes, nose, throat and respiratory tract, blurred vision, photophobia (sensitivity to light), and pulmonary edema (fluid accumulation in the

lungs). Severe exposures can result in nausea, vomiting, muscle weakness or cramps, headache, disorientation and other signs of nervous system depression, irregular heartbeats, convulsions, respiratory failure, and death.

This material may contain varying concentrations of polycyclic aromatic hydrocarbons (PAHs) which have been known to produce a phototoxic reaction when contaminated skin is exposed to sunlight. The effect is similar in appearance to an exaggerated sunburn and is temporary in duration if exposure is discontinued. Continued exposure to sunlight can result in more serious skin problems including pigmentation (discoloration), skin eruptions (pimples), and possible skin cancers.

Information on Toxicological Effects of Components n-Hexane

Target Organs: Excessive exposure to n-hexane can result in peripheral neuropathies. The initial symptoms are symmetrical sensory numbness and paresthesias of distal portions of the extremities. Motor weakness is typically observed in muscles of the toes and fingers but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. The neurotoxic properties of n-hexane are potentiated by exposure to methyl ethyl ketone and methyl isobutyl ketone.

Reproductive Toxicity: Prolonged exposure to high concentrations of n-hexane (>1,000 ppm) resulted in decreased sperm count and degenerative changes in the testes of rats but not those of mice.

Xylenes

Target Organs: Rats exposed to xylenes at 800, 1000 or 1200 ppm 14 hours daily for 6 weeks demonstrated high frequency hearing loss. Another study in rats exposed to 1800 ppm 8 hours daily for 5 days demonstrated middle frequency hearing loss. Reproductive Toxicity: Both mixed xylenes and the individual isomers produced limited evidence of developmental toxicity in laboratory animals. Inhalation and oral administration of xylene resulted in decreased fetal weight, increased incidences of delayed ossification, skeletal variations and resorptions, but no evidence of teratogenicity.

Ethyl Benzene

Carcinogenicity: Rats and mice exposed to 0, 75, 250, or 750 ppm ethyl benzene in a two year inhalation study demonstrated limited evidence of kidney, liver, and lung cancer. Ethyl benzene has been listed as a possible human carcinogen by IARC.

Target Organs: In rats and mice exposed to 0, 75, 250, or 750 ppm ethyl benzene in a two year inhalation study there was mild damage to the kidney (tubular hyperplasia), liver (eosinophilio foci, hypertrophy, necrosis), lung (alveolar epithelium metaplasia), thyroid (hyperplasia), thyroid (hyperplasia) and pituitary (hyperplasia). In animal models (particularly rats), ethyl benzene affects the auditory function mainly in the cochlear mid-frequency range and ototoxicity was observed after combined exposure to noise and ethyl benzene. There is no evidence of either ethyl benzene-induced hearing losses or ototoxicity with combined exposure to ethyl benzene and noise in workers.

Naphthalene

Carcinogenicity: Naphthalene has been evaluated in two-year inhalation studies in both rats and mice. The US National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial

neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has been identified as a carcinogen by IARC and NTP.

Benzene

Carcinogenicity: Benzene is an animal carcinogen and is known to produce acute myelogenous leukemia (a form of cancer) in humans. Benzene has been identified as a human carcinogen by IARC, the US National Toxicology Program and the US- Occupational Safety and Health Administration.

Target Organs: Prolonged or repeated exposures to benzene vapors can cause damage to the blood and blood forming organs, including disorders like leukopenia, thrombocytopenia, and aplastic anemia.

Reproductive Toxicity: Some studies in occupationally exposed women have suggested benzene exposure increased risk of miscarriage and stillbirth and decreased birth weight and gestational age. The size of the effects detected in these studies was small, and ascertainment of exposure and outcome in some cases relied on self-reports, which may limit the reliability of these results.

Germ Cell Mutagenicity: Benzene exposure has resulted in chromosomal aberrations in human lymphocytes and animal bone marrow cells. Exposure has also been associated with chromosomal aberrations in sperm cells in human and animal studies.

Section 12: Ecological Information

Toxicity: Experimental studies of acute aquatic toxicity show values for crude oil in the range of 2 to over 100 mg/L. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions. Crude oil should be regarded as harmful to aquatic organisms, with the potential to cause long term adverse effects in the aquatic environment. Classification: H411; Chronic Cat 2.

Persistence and Degradability: Most crude oils are not regarded as readily biodegradable. Most of the non-volatile constituents are inherently biodegradable; some of the highest molecular weight components are persistent in water.

Persistence per IOPC Fund definition: Persistent

Bio accumulative Potential: Log Kow values measured for the hydrocarbon components of this material range from less than 2 to greater than 6 and therefore would be regarded as having the potential to bioaccumulate.

Mobility in Soil: Crude oil spreads as a film on the surface of water, facilitating loss of its lighter components by volatilization. In air, the volatile hydrocarbons undergo photodegradation by reaction with hydroxyl radicals with half-lives varying from 0.5 days for n- dodecane to 6.5 days for benzene. The lower molecular weight aromatic hydrocarbons and some polar compounds have low but significant water solubility. Some higher molecular weight compounds are removed by emulsification, and these also slowly biodegrade; others adsorb to sediment and sink. A further removal process from water involving the heavier fraction is agglomeration to form tars, some of which sink.
Other Adverse Effects: None anticipated.

Section 13: Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste. However, it would likely be identified as a federally regulated RCRA hazardous waste for the following characteristic(s) shown below. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

Container contents should be completely used and containers should be emptied prior to discard. Container residues and rinseates could be considered to be hazardous wastes.

EPA Waste Number(s)

D001 - Ignitability characteristic

D018 - Toxicity characteristic (Benzene)

Section 14: Transport Information

U.S. Department of Transportation (DOT)

Shipping Description:	UN1267, Petroleum crude oil, 3, I or II
Non-Bulk Package Marking:	Petroleum crude oil, UN1267
Non-Bulk Package Labelling:	Flammable liquid
Bulk Package/Placard Marking:	Flammable / 1267
Packaging - References:	49 CFR 173.150; 173.201; 173.243 [PG I] -or- 49 CFR 173.150; 173.202; 173.242 [PG II] (Exceptions; Non-bulk; Bulk)
Hazardous Substance:	See Section 15 for RQ`s
Emergency Response Guide:	128
Note:	Packing group is dependent on boiling point (BP) of the material: I if BP <=35° C (95° F); II if BP > 35° C (95° F)

The following alternate shipping description order may be used until January 1, 2013: Proper Shipping name, Hazard Class or Division, (Subsidiary Hazard if any), UN or NA number, Packing Group

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Other shipping description elements may be required for DOT compliance.

International Maritime Dangerous Goods (IMDG)

Shipping Description:	UN1267, Petroleum crude oil, 3, I or II, (FP° C cc), [where FP is the material's flash point in degrees Celsius closed cup]
Non-Bulk Package Marking:	Petroleum crude oil, UN1267
Labels:	Flammable liquid
Placards/Marking (Bulk):	Flammable / 1267
Packaging - non-bulk:	P001
EMS:	F-E, S-E
Note:	U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25. If

transported in bulk by marine vessel in international waters, product is being carried under the scope of MARPOL Annex I.

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #:	UN1267
Proper Shipping Name:	Petroleum crude oil

Hazard Class/Division:	3
Subsidiary risk:	None
Packing Group:	I or II
Non-Bulk Package Marking:	Petroleum crude oil, UN1267
Labels:	Flammable liquid
ERG Code:	3H
Note:	U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 24.

LTD. QTY	Passenger Aircraft	Cargo Aircraft Only	
Packaging Instruction #:	Forbidden - [PG I] Y341 - [PG II]	351 - [PG I] 353 - [PG II]	361 - [PG I] 364 - [PG II]
Max. Net Qty. Per Package:	Forbidden - [PG I] 1L - [PG II]	1L - [PG I] 5 L - [PG II]	30 L - [PG I] 60 L - [PG II]

Section 15: Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material contains the following chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372:

Component	TPQ	EPCRA RQ
Hydrogen Sulfide	500 lb	100 lb

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	Yes
Fire Hazard:	Yes
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:

Component	Type of Toxicity
Ethyl Benzene	Cancer
Naphthalene	Cancer
Various Polycyclic Aromatic Hydrocarbons	Skin Cancer
Toluene	Developmental Toxicant Female Reproductive Toxicant

Benzene	Cancer Developmental Toxicant Male Reproductive Toxicant

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Component	Concentration[1]	de minimis
n-Hexane	0-5	1.0%
Xylenes	0-3	1.0%
Ethyl Benzene	<2	0.1%
Naphthalene	0-0.9	0.1%
Benzene	<1	0.1%

EPA (CERCLA) Reportable Quantity (in pounds):

EPA's Petroleum Exclusion applies to this material - (CERCLA 101(14)).

California Proposition 65:

Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the warning requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

International Hazard Classification

Canada:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class:

B2 Flammable Liquids D2A

D2B

National Chemical Inventories

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA All components are either on the DSL, or are exempt from DSL listing requirements

U.S. Export Control Classification Number: 1C981

Section 16: Other Information

Issued by : RIL KGD6 Onshore Terminal, Gadimoga Issue Date: June 12, 2023, Rev 00

Technical Preparation by: Reliance Industries Limited.

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for

Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association;

NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure

Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and Implied Warranties

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No

responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license

APPENDIX R: Actions to be taken in different wind Scenarios

GAS ACCUMULATIONS, CARGO TRANSFER & RELATIVE WIND CONDITIONS

Overview

During calm weather conditions (As defined in the end of the document), it is proven that cargo tank hydrocarbon gas vented from export tankers can accumulate in the vicinity of the FPSO. In certain calm weather conditions, such gas accumulations can "drift" onto the FPSO creating strong potential for activation of gas detectors around the accommodation block and throughout the topsides production area. In extreme cases, activation of gas detectors has caused FPSO shut down events affecting power generation and by default top-sides process and subsea operations, thus creating upset conditions and heightening overall operational risk.

As the gas detection arrangement onboard the FPSO is a mandatory safety requirement, mitigation of such shut-down events has to be sought through operational procedure and operator awareness of the prevailing weather conditions. Therefore, the following requirements and table of operational restrictions must be observed jointly by the Terminal Mooring Masters onboard the export tanker and by the Cargo Team onboard the FPSO.

Weather Observations & Watch-keeping

Onboard the export tanker and FPSO respectively, all means shall be used to best determine relative wind conditions, such as; anemometers, weather vanes, wind socks, flags, funnel and flare smoke. Apart from it the hydrocarbon vapours are also visible by naked eye in the daytime and mostly at night also depending on lighting.

In complying with these requirements, it must be considered that calm condition winds and associated eddies around the FPSO and export tanker may differ owing to the relative locations, settings and accuracy of weather monitoring equipment at each vessel. Therefore, the worst-case scenario must always take precedence and the FPSO Cargo Team / or the Terminal Mooring Masters may initiate these restrictions irrespective of reported conditions at the other vessel.

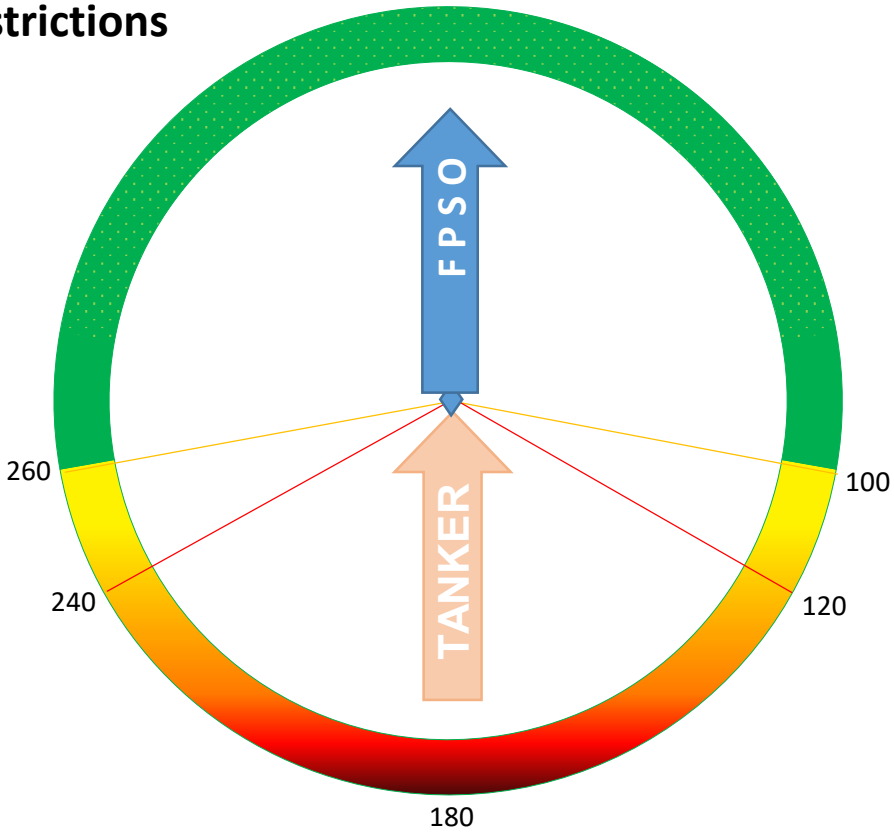
While at the FPSO the prevailing weather conditions are recorded automatically and retained, onboard the export tanker the Terminal Mooring Masters must maintain a manual log of all pertinent weather data at least every 60 minutes during the time from cargo hoses connected to completion of cargo transfer operations. Such data will be taken from the export tanker's weather observation equipment. However, if such equipment is not available for any reason then readings from the FPSO CCR must be requested and recorded.

Additional Precautions

At the FPSO, the poop deck watch-keeper must be equipped with hydrocarbon gas detection equipment and understand how to use, read and report on that equipment to the FPSO CCR. He should take regular rounds on the poop deck and helideck to check any ingress of hydrocarbon vapours.

During normal loading conditions where operationally favourable winds are predominant, the export tanker must utilise its mast vent riser to maintain a common cargo tank atmosphere pressure of between 250 – 350mmWg, unless this requirement conflicts with the vessel's safety management system when the minimum pressure stated within that system should be observed.

Relative Wind Table & Restrictions



Note: 1. Definitions are read in a clockwise rotation.

Note: 2. Wind speeds are sustained wind speeds – not gusting.

Wind Direction / Speed	Guidance Action
Wind speed below 3 knots from any direction	**Stop Loading**
Wind speed between 3 knots and 5 knots	**Reduce loading rate to 50% rate and prepare to stop loading. Mastriser on offtake tanker to be throttled ASAP accordingly**
Wind above 5 knots from relative 100° to 120°	**Reduce loading rate to 50% rate and prepare to stop loading. Mastriser on offtake tanker to be throttled ASAP accordingly**
Wind above 5 knots from relative 240° to 260°	**Reduce loading rate to 50% rate and prepare to stop loading. Mastriser on offtake tanker to be throttled ASAP accordingly**
Wind above 10 knots from Relative 100° to 260°	**Reduce loading rate to 50% rate and prepare to stop loading. Mastriser on offtake tanker to be throttled ASAP accordingly**
Wind below 10 knots from relative 120° to 240°	**No Loading**

The actions listed in the above table for each of the relative wind conditions are for guidance.

Marine superintendent, CAR and OIM shall review the onsite conditions and consider any additional measures that can be taken jointly and decide if loading may be continued without reduction of rate if deemed appropriate.

Note: the risk of gas alarm activation and associated shutdown will remain despite any additional measures when relative wind is from the aft of the FPSO and the agreement to load is allowed after understanding the risks by the review team.

Actions When Not Loading

During times when loading is stopped, if the export tanker has to vent off to reduce cargo tank pressure then it should be carried out in short periods as possible using individual cargo tank hi velocity vents. Such operations must only be conducted with permission from the export tanker Master and in close consultation with the FPSO Cargo Department. It should be carried out only

after informing the FPSO CCR. All such venting must be supervised by the Terminal Mooring Master aboard the export tanker.

During periods of venting, all due gas detection precautions must be in place onboard the export tanker via the bow watch-keeper and onboard the FPSO via the poop deck watch-keeper.

Caution

This is offered as a guide only and it should be appreciated that owing to the vagaries of wind variability and eddies around vessels, that gas dispersion and accumulation may register on export tanker and FPSO gas detection systems at any time and in any wind condition throughout the loading operation. In such cases, appropriate action must be taken.

Definitions

Calm weather conditions:

They will be defined for the purpose of this document and subsequent action to be taken as mentioned above, if any of the criteria below is met. All the directions mentioned are clockwise relative to the tanker:

(13)When the wind speed is less than 3 knots from any direction.

(14)When wind speed is less than 10 knots from sector 120 to 240 degrees (Red zone in diagram).

(15)When the wind speed is between 3 and 5 knots from 260 to 100 degrees (Green zone in diagram).

(16)Wind speed is between 5 and 10 knots from sectors 100-120 degrees and 240-260 degrees (Yellow sector in diagram).

(17)Wind speed is above 10 knots from sector 100-260 degrees (Yellow and red sector).

APPENDIX S: Format of statement of facts

KG D6 RUBY FPSO PRODUCTION INSTALLATION (LOCATED AT LAT. 16 DEGREES 33.1 MINUTES NORTH A LONG. 82 DEGREES 35.7 MINUTES EAST) SHIPMENT NO. RIL / KG D6 CONDENSATE / RUBY / XXXX					
STATEMENT OF FACTS					
Vessel Name		Draft	Fwd (m)	Aft (m)	Mean (m)
Voyage No.		Arrival			
Master's Name		Departure			
Last Port of Call			BL Quantity (bbls)		
Next Port of Call			Max loading rate (m3/hr)		
ETAs received timely (Y/N)			Ruby:		Vessel:

ACTIVITIES / EVENTS	FROM / AT		TO		REMARKS
	DATE	TIME	DATE	TIME	
End of sea passage					
At Arrival Point (%NM East of KG D6 RUBY)					
NOR Tendered					
Awaiting Daylight					
Free Pratique granted					
Custom Clearance granted					
Pilot On Board (POB)					
NOR received					
Mooring					
Gangway lowered					
Boarding Officer/Inspectors on board					
Discussion with Chief Officer					
Ship shore Safety Checklist					
Tank Inspection					
Loading Hose connection					
Ship Line-up					
Shore Line-up					
Commenced loading cargo					
Completed loading cargo					SHIP STOP / SHORE STOP
Ullaging, sampling & calculations					
Loading Hose disconnection					
Cargo documents on board					
Unmooring					
Tug usage					*Tug:*

Made fast to Offtake Tanker					*Line Boat:*
Cast off					
Pilot away					
Vessel sailed					
Other events/delays					

For Reliance Industries Limited

Vessel Master

Authorized Signatory

APPENDIX T: Format for Letter of Protest

LETTER OF PROTEST

Date ……..... Offtake Tanker ……..

Offtake Tanker ……. Master ……..

On behalf of OCS, KGD6 Ruby FPSO, Reliance Industries Limited and BP Exploration (Alpha) Limited, bring to your attention the following incident and or deficiency that occurred while your vessel was moored at or in the vicinity of the KGD6 Ruby FPSO Terminal as noted below, and is being brought to your attention.