DOMESTIC LNG FUEL SYSTEM COMMISSION JOB AID

Name of Vessel:	ne of Vessel: IMO or Official							
Type of		er: D	ate of					
Inspection:			I	nspec	tion:			
Y = Yes N = No N/A = Item does not apply C = Corrected on the spot PSTP = Periodic Safety Test Procedure ₁				1		Regulatory Cites/ USCG Guidance 1. IGF code (2019 amendments) a. MSC 391(95) & MSC 458(101) 2. ENG Policy Ltr 01-12 (CH-1) 3. CG-OES Policy Letter 01-15		
-	PSTP	Y	N	N/A	С			
1. Documentation								
A. Ops Manual - (Fuel Gas Handling)	N/A					IGF Code 3.2.17, 18.2 and 18.3 CG-OES		
1. Review approved Periodic Safety Test Procedures (PSTPs)						Policy Letter 01-15 Risk Assessment - ENG Policy Ltr 01-12		
2. Review Approved Tank Insp Plan	N/A					(CH-1) Ops Manual - IGF Code 18.2.3 Emergency		
B. Verify class docs endorsed for LFF	N/A					Manual - IGF Code 18.2.4 Maintenance		
C. Review approved Risk Assessment	N/A					Manual - IGF Code 18.2.2		
D. Review Emergency Manual	N/A					*Note any deviations or alternative		
E. Review Hazardous Area Plan &	N/A			arrangements in approved Risk Assessment				
list of approved electrical installations						(Must be approved by RO & USCG)		
F. Review Maintenance Manual	N/A							
G. Crew training, licensing, endorsements - conduct gas related emergency drill	N/A					IGF Code 19.2 STCW.7/Circ.23 CG-OES Policy Letter 01-15		
1. Crew	N/A							
2. Deck officers	N/A							
3. Engineer officers	N/A							
2. Instrumentation and Safety System (Checks					To include all safety system checks for all inspected systems		
A. PSTPs per approved plan Expectation - 100% PSTPs related to LNG FGSS - see section 16 (ER)						CG-OES Policy Letter 01-15 Check parameters and test per approved PSTP Plan		
3. Bunkering Manifold						IGF Code 8 and 15.5		
A. Piping & Valves Bunker cross overs - isolation valves Bunker lines gas free/drain point	N/A					IGF Code 8.5.3 / 8.5.4 / 8.5.5 / 8.5.6 46 CFR 56.20		
1. Shutdown valves (ESD)/ <5 sec Test again after Cool-Down	N/A					IGF Code 8.5.3 / 8.5.8 / 16.7.3.7 Ops Manual for closing time		
a. Manual operationb. Remote operation	N/A N/A					IGF Code 8.5.3		
B. Pressure gauges (local + remote)	N/A					IGF Code 15.3.1		

	PSTP	Υ	N	N/A	С		
C. Fixed Dry Powder FF sys + 1 portable						IGF Code 11.6	
Capacity - 3.5 kg/s for 45 sec / 5kg ext.	N/A					CG-ENG 01-12 (CH-1)/11.6	
Manual release from outside space							
D. Spill Protection	D1 / O					IGF Code 8.3.1.5	
	N/A					CG-OES Policy Letter 01-15	
1. Water Curtain	N/A					Approved Vessel Transfer Procedure	
2. Drip Trays - verify size,	NI/A					IGF Code 5.10	
location, material, & drain valve	N/A						
E. Electrical equipment -						IGF Code 14.3	
Zone 1 ("ia" intrinsically safe)	N/A					CG-ENG 01-12 (CH-1)/14.3.3	
Zone 2 ("d" = flameproof, "ex" = explosion)							
1. Ship-shore link - auto/manual	N/A					IGF Code 8.5.7	
ESD comms to bunkering source	IV/ A						
2. Gas Detection						IGF Code 15.5.3 and 15.8	
Audible & Visual alarm at	N/A					CG-521 Policy Letter	
bunker control station						01-12/5.5	
3. Fire Detection	N1 / A					IGF Code 11.7 - FSS code	
Heat and Smoke detectors	N/A					CG-ENG 01-12 (CH-1)/11.7	
4. Lighting						IGF Code 14.3.5	
Must be divided into at least	N/A					GC-OES Policy Letter	
2 branch circuits.	14//					01-15 CG-521 Policy	
5 73						Letter 01-12	
5. Electrical remote valve indicators	N/A					IGF Code 14	
4. Airlocks						Ref IGC Code 3.6	
Space enclosed w/ gastight bulkheads w	/ 2 gast	ight (doors	space	d	IGF Code 5.12	
1.5-2.5 meters apart	. .	8				CG-521 Policy Letter	
•						01-12/2.4	
A. Mechanical Ventilation						IGF Code 13.3.9, 13.3.10, 5.12.2	
Overpressure relative to adjacent	N/A					CG-521 Policy Letter	
hazardous space						01-12/2.10.1	
1. Loss of overpressure ventilation	NI/A					ICE C. 1. 12 2 0 2	
1	N/A					IGF Code 13.3.9.2	
B. Audible/Visual Alarms - 2 open doors	N/A					IGF Code 5.12.5	
C. Gas Detection	N1 / A					IGF Code 15.8.1.7	
Audible/Visual alarm @ 20% LEL	N/A					CG-521 Policy Letter	
ESD @ 40% LEL w/ 2 detectors						01-12/5.5	
D. Certified safe electrical equipment	N/A					IGF Code 5.12.7	
E. Inspect self closing door	N/A					IGF Code 15.12.1	
mechanism							
5. Tank Space/Semi-Enclosed Area (Zo						ICE C. 1. 5 11 1	
A. Gastight boundary doors	N/A					IGF Code 5.11.1	
B. Intrinsically safe electrical	N/A					IGF Code 14.3	

	PSTP	Y	<u>N</u>	N/A	<u> </u>	
C. Master Gas Valve Shutdown - Escape Route (Machinery space, ECR)	_					IGF Code 9.4.3
1. Gas detection	N/A					IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8
2. Fire Detection						CG E17G 01 12 (CH 1)/15.0
2. Fire Detection	N/A					IGF Code 11.7 and 15.9 Table 1 CG-ENG 01-12 (CH-1)/11.7
3. Lighting	N/A					IGF Code 14.3.5 GC-OES Policy Letter 01-15 CG-ENG 01-12 (CH-1)/14.3.5
D. Water spray system (Exposed tanks, boundaries of spaces w/in 10 meters; conduct water spray test)	N/A					IGF Code 11.5 CG-ENG 01-12 (CH-1)/11.5
E. Mechanical ventilation – >30 ACH Automatic fail-safe fire dampers	N/A					IGF Code 13.4 CG-ENG 01-12 (CH-1)/13
F. Bilge wells - Segregated & Independent collection	N/A					IGF Code 5.9.1 IGF Code 15.3.2
1. Temperature sensor/LT alarm	N/A					IGF Code 15.3.2
2. Bilge high level alarm	N/A					IGF Code 15.3.2
3. Bilge suction	N/A					
6. Fuel Containment System (Tanks)	•					IGF Code 6 CG-ENG 01-12 (CH-1)/6
A. Liquid level gauging, sampling points, Max Loading Temp (15-day calculation (COI cargo carriage)						IGF Code 15.4.1, 15.4.2, and 15.5 Max Loading Temp - IGF 6.9.1.1
1. High level alarm (95%)						IGF Code 15.4.2.1 CG-ENG 01-12 (CH-1)/6.8.2
2. Overfill alarm (98%)						IGF Code 15.4.2.2
B. Shutoff valves inlet/outlet	N/A					IGF Code 9.4
1. Automatic closing when safety system is activated - <30 seconds	N/A					IGF Code 9.4.1, 15.4.2.2, 15.5.1, 16.7.3.6
C. Tank pressure sensors – high pressure and vacuum						IGF Code 15.4.3, 15.4.4, 15.4.5 15.5.1
1. Local indicating device	N/A					
2. Remote indicating device	N/A					
D. Pressure relief valves/MARVS	N/A					IGF Code 6.7.2
1. Visually inspect pilot valve	N/A					Verify bench test as per ops manual

	PSTP	Υ	<u>N</u>	N/A	<u>C</u>	
	N/A					MARVS - max allowable relief valve setting
E. Tank temperature sensors						IGF Code 6.9.1
F. Visual inspection of	NI /A					
supports/mounts/tank externals	N/A					IGF Code 6.4.15
G. Verify annular space vacuum						
7. Submerged cargo pumps						CG-ENG 01-12 (CH-1)//14.3.8
A. Low liquid level, low current,	Π					IGF Code 14.3.7 and 14.3.8
low discharge pressure shutdown						Test shut downs/alarms
B. Audible/visual alarm						1 est shat do whs/alarms
C. Lockable circuit breaker or switch						1
	n Doom	7 II.	D/I D	POC		IGF Code 5.8
8. Vaporizer Space/Cold Box (Fuel Pre	p Koom	I) - П.	P/LP/	DUG	l	
A. Intrinsically safe electrical equipment	N/A					IGF Code 14.3 CG-ENG 01-12 (CH-1)/14.3.3
1. Gas detection						IGF Code 15.8
1. Gus detection	N/A					CG-ENG 01-12 (CH-1)/15.8
2. Fire detection						IGF Code 11.7 and 15.9 Table 1
2. Fire detection	N/A					CG-ENG 01-12 (CH-1)/11.7
3. Lighting						IGF Code 14.3.5
	N/A					GC-OES Policy Letter 01-15
	IN/A					CG-ENG 01-12 (CH-1)/14.3.5
4. Instrumentation	N/A					IGF Code 9.9.4
B. Fire protection						XCT C 1 11 0 1
Cat A machinery space - fixed FF req.	N/A					IGF Code 11.3.1
C. Mechanical ventilation – Negative						IGF Code 13.6
(under) pressure	N/A					151 50 00 1010
D. Master Gas Valve	N/A					ICE C 1 0 4 10 4 2 C ICE
1. Automatic closing when safety						IGF Code 9.4 and 9.4.2, See IGF
system is activated (<30 seconds)	N/A					Code Table 1: Monitoring of gas
system is derivated (50 seconds)	14,71					supply system to engines
E. Vaporizer glycol system	N/A					Vessel Operations Manual
9. Compressor Room	14,71					IGF Code 9.9
7. Compressor Room						IGI Code 7.7
A T 4						IGF Code 14.3
A. Intrinsically safe electrical equipment	N/A					CG-ENG 01-12 (CH-1)/14.3.3
						, ,
1. Gas detection						IGF Code 15.8
	N/A					CG-ENG 01-12 (CH-1)/15.8
						, ,
2. Fire detection						IGF Code 11.7 and 15.9 Table 1
	N/A					CG-ENG 01-12 (CH-1)/11.7
						CG-ENG 01-12 (CH-1)/11./
		l]		

S. Lighting		PSTP	Υ	N	N/A	С	
Description N/A CG-ENG 01-12 (CH-1)/ 14.3.5	3. Lighting						IGF Code 14.3.5
B. Fire protection N/A C. Mechanical ventilation – Negative (under) pressure D. Compressor monitoring system—to include high and low temp and pressure alarms, etc. E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures N/A I. Ventilated duct N/A B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A I. Gas Detection, Installed A. Calibration N/A D. Alarm locations N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns P. Gas Detection, Vent ducts/hoods N/A I. GF Code 15.8.7 C. Genng 01-12 (CH-1)/15.8 CG-ENG 01-12 (CH-1)/15.8		NI/A					GC-OES Policy Letter 01-15
B. Fire protection N/A C. Mechanical ventilation – Negative (under) pressure D. Compressor monitoring system – to include high and low temp and pressure alarms, etc. E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures N/A A. Secondary enclosures N/A I. Ventilated duct N/A I. Ventilated duct N/A I. OF Code 9.5.1 I. Ventilated duct N/A I. OF Code 9.6.1.2 and 13.8 B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A I. Gas Detection, Installed A. Calibration N/A I. Gas Expiration N/A D. Alarm locations N/A D. Alarm locations N/A I. Gas Detection, Spaces Alarms/ Shutdowns I. Cyen Let audible/visual alarms 1. Cyen Let audible/visual alarms N/A I. Gas Code 15.8.7 C. Geen Gol-12 (CH-1)/15.8 C. Spaces provided N/A I. Gas Code 15.8.6 C. Spaces Let alarm N/A I. Gas Code 15.8.6 C. Geen Gol-12 (CH-1)/15.8 I. Geen Gol-12 (CH-1)/15.8		N/A					CG-ENG 01-12 (CH-1)/ 14.3.5
C. Mechanical ventilation — Negative (under) pressure D. Compressor monitoring system—to include high and low temp and pressure alarms, ctc. E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures N/A I. Ventilated duct A. Negative ventilation N/A B. Gas detection D. Pressure gauges N/A I. Gas Detection, Installed A. Calibration N/A D. Pagass N/A I. Gas type/mix N/A D. Alarm locations N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. GWe LEL audible/visual alarms N/A I. GGF Code 13.6 I. GF Code 9.9. 1 and 15.6.1 C. G-ENG 01-12 (CH-1)/15.8 I. GF Code 9.4, 9.5, 9.6, 9.7 I. GF Code 9.4, 9.5, 9.6, 9.7 I. GF Code 9.5. 1 I. GF Code 9.5. 1 I. GF Code 9.6.1. 2 and 13.8 I. GF Code 9.6.1. 1 and 13.8 I. GF Code 15.8 C. C-ENG 01-12 (CH-1)/15.8 I. GF Code 15.8. C. G-ENG 01-12 (CH-1)/15.8 I. GF Code 15.8.6 C. G-ENG 01-12 (CH-1)/15.8 I. GF Code 15.8.7 I. GF Code 15.8.7							
C. Mechanical ventilation — Negative (under) pressure D. Compressor monitoring system—to include high and low temp and pressure alarms, ctc. E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures N/A I. Ventilated duct A. Negative ventilation N/A B. Gas detection D. Pressure gauges N/A I. Gas Detection, Installed A. Calibration N/A D. Pagass N/A I. Gas type/mix N/A D. Alarm locations N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. GWe LEL audible/visual alarms N/A I. GGF Code 13.6 I. GF Code 9.9. 1 and 15.6.1 C. G-ENG 01-12 (CH-1)/15.8 I. GF Code 9.4, 9.5, 9.6, 9.7 I. GF Code 9.4, 9.5, 9.6, 9.7 I. GF Code 9.5. 1 I. GF Code 9.5. 1 I. GF Code 9.6.1. 2 and 13.8 I. GF Code 9.6.1. 1 and 13.8 I. GF Code 15.8 C. C-ENG 01-12 (CH-1)/15.8 I. GF Code 15.8. C. G-ENG 01-12 (CH-1)/15.8 I. GF Code 15.8.6 C. G-ENG 01-12 (CH-1)/15.8 I. GF Code 15.8.7 I. GF Code 15.8.7	B. Fire protection	21/2					IGF Code 11.3.1
(under) pressure D. Compressor monitoring system—to include high and low temp and pressure alarms, etc. E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures 1. Ventilated duct 2. Double wall piping 3. Continuous nitrogen purge 3. N/A 3. Continuous nitrogen purge 4. C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A 1. Gas Detection, Installed A. Calibration N/A 1. Gas type/mix 2. Expiration N/A 1. Gas type/mix 2. Expiration N/A 1. Gas Detection, Spaces Alarms/Shutdowns N/A 1. 2. Gas Detection, Spaces Alarms/Shutdowns N/A 1. 2. Gas Detection, Spaces Alarms/Shutdowns N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. 30% LEL alarm N/A 1. 30% LEL alarm IGF Code 9.9. 1 and 15.6.2 IGF Code 9.4, 9.5, 9.6, 9.7 IGF Code 9.6.1.2 and 13.8 IGF Code 15.8.4 IGF Code 15.8.5 IGF Code 15.8.5 IGF Code 15.8.6 IGF Code 15.8.6	201 no presenten	N/A					
(under) pressure D. Compressor monitoring system—to include high and low temp and pressure alarms, etc. E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures 1. Ventilated duct 2. Double wall piping 3. Continuous nitrogen purge 3. N/A 3. Continuous nitrogen purge 4. C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A 1. Gas Detection, Installed A. Calibration N/A 1. Gas type/mix 2. Expiration N/A 1. Gas type/mix 2. Expiration N/A 1. Gas Detection, Spaces Alarms/Shutdowns N/A 1. 2. Gas Detection, Spaces Alarms/Shutdowns N/A 1. 2. Gas Detection, Spaces Alarms/Shutdowns N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A 1. 30% LEL alarm N/A 1. 30% LEL alarm IGF Code 9.9. 1 and 15.6.2 IGF Code 9.4, 9.5, 9.6, 9.7 IGF Code 9.6.1.2 and 13.8 IGF Code 15.8.4 IGF Code 15.8.5 IGF Code 15.8.5 IGF Code 15.8.6 IGF Code 15.8.6	C. Mechanical ventilation – Negative						IGF Code 13.6
D. Compressor monitoring system—to include high and low temp and pressure alarms, etc. E. Gas Tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures I. Ventilated duct N/A 2. Double wall piping A. Continuous nitrogen purge N/A B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A I. Gas Detection, Installed A. Calibration N/A D. Alarm locations N/A D. Alarm locations N/A D. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system IGF Code 15.8.7 IGF Code 9.9.1 and 15.6.2 IGF Code 9.4, 9.5, 9.6, 9.7 IGF Code 9.4, 9.5, 9.6, 9.7 IGF Code 9.5.1 IGF Code 9.6.1.2 and 13.8 IGF Code 9.6.1.1 and 13.8 IGF Code 15.8 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8. IGF		N/A					
to include high and low temp and pressure alarms, etc. E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System A. Secondary enclosures N/A 1. Ventilated duct 2. Double wall piping 3. Continuous nitrogen purge B. Gas detection N/A C. Ventilation/purge failure/loss of pressure gauges N/A 1. Gas Piping System IGF Code 9.9.1 and 15.6.2 IGF Code 9.9.1 and 15.6.2 IGF Code 9.9.1 IGF Code 9.6.1.2 and 13.8 IGF Code 9.6.1.2 and 13.8 IGF Code 9.6.1.1 and 13.8 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 C. Ventilation/purge failure/loss of pressure gauges N/A IGF Code 15.3.1 IGF Code 15.8. CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL andible/visual alarms N/A 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods N/A IGF Code 15.8.7 IGF Code 15.8.7	\ / 1						IGF Code 9.9 and 15.6.1
December 2012 December 2013 December 2014 December 201							
E. Gas tight bulkhead/deck shaft glands 10. Gas Piping System IGF Code 9.4, 9.5, 9.6, 9.7 A. Secondary enclosures 1. Ventilated duct N/A 2. Double wall piping N/A 3. Continuous nitrogen purge B. Gas detection N/A C. Ventilation/purge failure/loss of pressure gauges N/A 1. Gas Detection, Installed A. Calibration N/A B. Span gas 1. Gas type/mix 1. Gas type/mix N/A C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. Gos Detection, Spaces Alarms/ System activation N/A E. Gas Detection, Vent ducts/hoods N/A 1. Gos Piping System IGF Code 9.4, 9.5, 9.6, 9.7 IGF Code 9.6.1.1 and 13.8 IGF Code 9.6.1.1 and 13.8 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions IGF Code 15.8.1 IGF Code 15.8.1 IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8							
Secondary enclosures							IGF Code 9.9.1 and 15.6.2
IGF Code 9.4, 9.5, 9.6, 9.7							161 6646 31311 4114 151612
A. Secondary enclosures N/A 1. Ventilated duct N/A 2. Double wall piping A. Continuous nitrogen purge N/A B. Gas detection N/A C. Ventilation/purge failure/loss of pressure gauges N/A 1. Gas Detection, Installed A. Calibration N/A C. Spaces serviced N/A D. Alarm locations N/A L. Gas Detection, Spaces Alarms/Shutdowns 1. 20% LEL audible/visual alarms P. Gas Detection, Vent ducts/hoods N/A L. Ventilated duct N/A N/A IGF Code 9.6.1.2 and 13.8 IGF Code 9.6.1.1 and 13.8 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions IGF Code 15.8.1 IGF Code 15.8.1 IGF Code 15.8.1 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8							IGF Code 9.4, 9.5, 9.6, 9.7
1. Ventilated duct A. Negative ventilation A. Negative ventilation A. Negative ventilation A. Double wall piping A. Continuous nitrogen purge B. Gas detection A. Calibration A. Calibration A. Calibration A. Calibration A. Cas perecion, Installed A. Calibration B. Span gas A. Cas type/mix A. Cas perecion A. Cas pereci	Tot Gus Tiping System						
1. Ventilated duct a. Negative ventilation A/A 2. Double wall piping a. Continuous nitrogen purge B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A 1. Gas Detection, Installed A. Calibration N/A 1. Gas type/mix N/A C. Spaces serviced N/A D. Alarm locations N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/Shutdowns 1. 2. 40% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A 1. Gar Code 9.6.1.2 and 13.8 IGF Code 9.6.1.2 and 13.8 IGF Code 9.6.1.1 and 13.8 IGF Code 9.6.1.2 and 13.8 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 LIGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.1 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 IGF Code 15.8.7 IGF Code 15.8.7	A. Secondary enclosures	N/A					IGF Code 9.5.1
a. Negative ventilation 2. Double wall piping a. Continuous nitrogen purge B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions C. Spaces serviced N/A D. Alarm locations N/A C. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 IGF Code 15.8.6 IGF Code 15.8.6 IGF Code 15.8.6 IGF Code 15.8.7 IGF Code 15.8.7							IGF Code 9.6.1.2 and 13.8
2. Double wall piping a. Continuous nitrogen purge B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.10 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 B. Span gas N/A B. Span gas N/A Per Vessel Operations Manual and/or manufacturer's instructions C. Spaces serviced N/A D. Alarm locations N/A IGF Code 15.8.1 IGF Code 15.8.1 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8	a. Negative ventilation	N/A					
a. Continuous nitrogen purge B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.10 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 B. Span gas N/A I. Gas type/mix N/A I. Gas type/mix N/A C. Spaces serviced N/A D. Alarm locations N/A IGF Code 15.8.1 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions IGF Code 15.8.1 IGF Code 15.8.1 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8		N/A					IGF Code 9.6.1.1 and 13.8
B. Gas detection N/A C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.10 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions 2. Expiration C. Spaces serviced N/A D. Alarm locations N/A IGF Code 15.8.1 IGF Code 15.8.1 IGF Code 15.8.1 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7		N/A					
C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A IGF Code 15.10 IGF Code 15.3.1 IIGF Code 15.3.1 IIGF Code 15.3.1 IIGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions 2. Expiration C. Spaces serviced N/A D. Alarm locations N/A IIGF Code 15.8.1 IIGF Code 15.8.1 IIGF Code 15.8.1 IIGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IIGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IIGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IIGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IIGF Code 15.8.6 IIGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IIGF Code 15.8.6 IIGF Code 15.8.7							IGF Code 15.8
C. Ventilation/purge failure/loss of pressure alarms D. Pressure gauges N/A IGF Code 15.10 IGF Code 15.3.1 IGF Code 15.3.1 IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions 2. Expiration N/A IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions IGF Code 15.8.1 D. Alarm locations N/A IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 IGF Code 15.8.7		N/A					CG-ENG 01-12 (CH-1)/15.8
D. Pressure gauges N/A IGF Code 15.3.1 II. Gas Detection, Installed A. Calibration N/A B. Span gas N/A I. Gas type/mix N/A C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 2. 40% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods N/A IGF Code 15.8.1 IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7							
D. Pressure gauges N/A IGF Code 15.3.1 II. Gas Detection, Installed A. Calibration N/A B. Span gas N/A I. Gas type/mix N/A C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 2. 40% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods N/A IGF Code 15.8.1 IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7	C. Ventilation/purge failure/loss of						IGF Code 15.10
11. Gas Detection, Installed A. Calibration B. Span gas N/A C. Expiration C. Spaces serviced N/A D. Alarm locations E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions IGF Code 15.8. CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8							
11. Gas Detection, Installed A. Calibration B. Span gas N/A C. Expiration C. Spaces serviced N/A D. Alarm locations E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions IGF Code 15.8. CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8	D. Pressure gauges	NI/A					IGF Code 15.3.1
A. Calibration N/A CG-ENG 01-12 (CH-1)/15.8 B. Span gas N/A Per Vessel Operations Manual and/or manufacturer's instructions 2. Expiration N/A IGF Code 15.8.1 D. Alarm locations N/A IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) E. Gas Detection, Spaces Alarms/ Shutdowns N/A IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8		IN/A					
B. Span gas 1. Gas type/mix 2. Expiration N/A C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods N/A Per Vessel Operations Manual and/or manufacturer's instructions IGF Code 15.8.1 IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8	11. Gas Detection, Installed						IGF Code 15.8
1. Gas type/mix 2. Expiration N/A C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A N/A And/or manufacturer's instructions and/or manufacturer's instructions IGF Code 15.8.1 IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8	A. Calibration	N/A					CG-ENG 01-12 (CH-1)/15.8
2. Expiration C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A IGF Code 15.8.1 IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8	B. Span gas	N/A					Per Vessel Operations Manual
C. Spaces serviced N/A D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7	1. Gas type/mix	N/A					and/or manufacturer's instructions
D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7	2. Expiration	N/A					
D. Alarm locations N/A E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm N/A IGF Code 15.8.8 CG-ENG 01-12 (CH-1)/15.8 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7	C. Spaces serviced	NI/A					IGF Code 15.8.1
E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A CG-ENG 01-12 (CH-1)/15.8(b) IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7		IV/A					
E. Gas Detection, Spaces Alarms/ Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods N/A 1. 30% LEL alarm IGF Code 15.8.6 CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7	D. Alarm locations						IGF Code 15.8.8
Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7		N/A					CG-ENG 01-12 (CH-1)/15.8(b)
Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7							
Shutdowns 1. 20% LEL audible/visual alarms 2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A CG-ENG 01-12 (CH-1)/15.8 IGF Code 15.8.7	E. Gas Detection, Spaces Alarms/	N/A					IGF Code 15.8.6
2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A IGF Code 15.8.7	Shutdowns	IN/A					CG-ENG 01-12 (CH-1)/15.8
2. 40% LEL safety system activation F. Gas Detection, Vent ducts/hoods 1. 30% LEL alarm N/A IGF Code 15.8.7	1. 20% LEL audible/visual alarms	N/A					
F. Gas Detection, Vent ducts/hoods N/A IGF Code 15.8.7 1. 30% LEL alarm N/A	2. 40% LEL safety	NI/A					
1. 30% LEL alarm N/A	system activation	IN/A					
	F. Gas Detection, Vent ducts/hoods	N/A					IGF Code 15.8.7
2. 60% LEL safety system N/A	1. 30% LEL alarm	N/A					
	2. 60% LEL safety system	N/A					

A. O2 Alarm B. Constant flow/purge N/A B. Constant flow/purge N/A A. Low/high pressure gas shut down/fuel switching B. Low maneuvering speeds gas shut down/fuel switching B. Low maneuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A B. Piping systems C. Pumps N/A D. Ventilation systems N/A D. Ventilation systems N/A D. Wentilation fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves IGF Code 10.3 IGF Code 10.4 IGF Code 10.3 IGF Code 10.4 IGF Code 10.4 IGF Code 10.5 IGF Code 10.4 IGF Code 10.5 IGF Code		PSTP	Υ	N	N/A	С		
A. Calibration								
B. Span gas N/A CG-ENG 01-12 (CH-1)/15.8(f) 1. Gas type/mix N/A Per Vessel Operations Manual and/or manufacturer's instructions C. Proof of proper operation N/A Per Vessel Operations Manual and/or manufacturer's instructions 13. Nitrogen Generator/Storage Per Vessel Operations Manual and/or manufacturer's instructions 13. Nitrogen Generator/Storage Per Vessel Operations Manual and/or manufacturer's instructions 14. Cas switching N/A Individual and/or manufacturer's instructions 15. Constant flow/purge Individual and/or manufacturer's instructions 16. Constant flow/purge Individual and/or manufacturer's instruction	·		of 2)				4	
1. Gas type/mix N/A 2. Expiration N/A C. Proof of proper operation N/A 13. Nitrogen Generator/Storage A. O2 Alarm N/A B. Constant flow/purge N/A A. Low/high pressure gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves B. Piping systems N/A D. Ventilation systems N/A D. Wentilation	A. Calibration	N/A						
2. Expiration C. Proof of proper operation N/A C. Proof of proper operation N/A 13. Nitrogen Generator/Storage A. O.2 Alarm B. Constant flow/purge N/A 14. Gas switching interlocks A. Low/high pressure gas shut down/fuel switching B. Low maneuvering speeds gas shut down/fuel switching B. Low maneuvering speeds gas shut down/shangeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A D. Ventilation systems N/A D. Wentilation free Pre Ra djacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves 17. Personnel Protective Equipment A. Cryogenie Protective Equipment A. Protective Foot wear	•	N/A						
C. Proof of proper operation IS. Nitrogen Generator/Storage A. O2 Alarm B. Constant flow/purge Id. Gas switching interlocks A. Low/high pressure gas shut down/changeover B. Low maneuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover IS. Electrical bonding B. Piping systems N/A D. Ventilation systems IGF Code 7.3.1.2, 14.3.6, 18.4.5 C. Pumps N/A D. Ventilation systems IGF Code 7.3.1.2, 14.3.6, 18.4.5 C. Pumps N/A D. Ventilation systems IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 10.3 IGF Code 10.3 IGF Code 10.3 IGF Code 10.3 IGF Code 9.4.4 IGF Code 9.4.4 IGF Code 9.4.4 IGF Code 10.3 IGF Code 10.4 IGF Code 10.3		N/A					=	
13. Nitrogen Generator/Storage Per Vessel Operations Manual and/or manufacturer's instructions	2. Expiration	N/A					or manufacturer's instructions	
A. O2 Alarm B. Constant flow/purge N/A B. Constant flow/purge N/A H. Gas switching interlocks A. Low/high pressure gas shut down/fuel switching B. Low maneuvering speeds gas shut down/fuel switching B. Low maneuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A B. Piping systems C. Pumps N/A D. Ventilation systems N/A D. Ventilation systems N/A D. Wentilation systems N/A D. Wentilation systems N/A D. Wentilation systems N/A D. Wentilation systems IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3	C. Proof of proper operation	N/A						
B. Constant flow/purge 14. Gas switching interlocks A. Low/high pressure gas shut down/fuel switching B. Low maneuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves B. Piping systems N/A C. Pumps N/A D. Ventilation systems 16. Engine Room & LNG Machinery A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Run adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves 17. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Protective foot wear	13. Nitrogen Generator/Storage							
14. Gas switching interlocks A. Low/high pressure gas shut down/fucl switching B. Low mancuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves B. Piping systems N/A D. Ventilation systems IGF Code 7.3.1.2, 14.3.6, 18.4.5 C. Pumps N/A D. Ventilation systems IGF Code 9.4.3 / 9.6 16. Engine Room & LNG Machinery A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves ITGF Code 10.3 IGF Code 10.3	A. O2 Alarm	N/A					and/or manufacturer's instructions	
A. Low/high pressure gas shut down/fuel switching B. Low maneuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A B. Piping systems N/A C. Pumps D. Ventilation systems Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves 1. GIF Code 10.3 1. GIF Code 10.3 1. GIF Code 9.4.4 1. Gloves 2. Full face shields N/A 1. Forective foot wear IGF Code 18.4.6.2 IGF Code 18.4.6.2 IGF Code 18.4.6.2	B. Constant flow/purge	N/A						
down/fuel switching B. Low maneuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A B. Piping systems N/A D. Ventilation systems N/A D. Ventilation systems N/A IG. Engine Room & LNG Machinery A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG IGF Code 10.3 IGF Code 9.4.4 17. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Protective foot wear N/A A. Protective foot wear	14. Gas switching interlocks							
B. Low maneuvering speeds gas shut down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A B. Piping systems N/A C. Pumps N/A D. Ventilation systems N/A B. Engine Room & LNG Machinery A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves T. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment A. Gloves J. Full face shields N/A 3. Fit-for-purpose clothing N/A 4. Protective foot wear N/A D. Note: Engine/deck/alarm logs/loss of propulsion, etc. IGF Code 7.3.1.2, 14.3.6, 18.4.5 CG-ENG 01-12 (CH-I)/14.3.1 CG-ENG 01-12 (CH-I)/14.3.1 CG-OES Policy Letter 01-15 LGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3 IGF Code 18.4.6.2	A. Low/high pressure gas shut						IGF Code 5.6.3.3, 10.3.2, 10.3.3,	
down/changeover C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A C. Pumps D. Ventilation systems N/A C. Engine Room & LNG Machinery A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves IGF Code 9.4.4 17. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment I. Gloves J. Full face shields N/A J. Fit-for-purpose clothing N/A A. Protective foot wear N/A J. Protective foot wear JIGF Code 7.3.1.2, 14.3.6, 18.4.5 CG-ENG 01-12 (CH-1)/14.3.1 CG-ENG 01-12 (CH-1)/15 CG-OES Policy Letter 01-15 LAW Ops Manual IGF Code 18.4.6.2	down/fuel switching						10.3.4, 10.4.4	
C. Gas fuel system ESD/safety system shutdown/changeover 15. Electrical bonding A. Valves N/A B. Piping systems N/A C. Pumps N/A D. Ventilation systems N/A IGF Code 7.3.1.2, 14.3.6, 18.4.5 C. Pumps D. Ventilation systems N/A IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3 D. SSDGs PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves IGF Code 9.4.4 T. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment A. Gloves JIGF Code 18.4.6.2 E. Full face shields N/A J. Fit-for-purpose clothing N/A A. Protective foot wear IGF Code 7.3.1.2, 14.3.6, 18.4.5 CG-ENG 01-12 (CH-1)/14.3.1 CG-OES Policy Letter 01-15 IGF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3 IGF Code 10.3 IGF Code 10.3 IGF Code 10.3 IGF Code 18.4.6.2	B. Low maneuvering speeds gas shut							
system shutdown/changeover 15. Electrical bonding A. Valves B. Piping systems C. Pumps D. Ventilation systems IGF Code 7.3.1.2, 14.3.6, 18.4.5 C. Pumps D. Ventilation systems IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3	down/changeover						of propulsion, etc.	
IGF Code 7.3.1.2, 14.3.6, 18.4.5	C. Gas fuel system ESD/safety							
A. Valves B. Piping systems C. Pumps D. Ventilation systems N/A B. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves IGF Code 9.4.4 17. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment I. Gloves J. Full face shields J. Fit-for-purpose clothing A. Protective foot wear N/A CCG-OES Policy Letter 01-15 CG-OES Policy Letter 01-15 IGF Code 18.4.6.2	system shutdown/changeover							
B. Piping systems C. Pumps N/A D. Ventilation systems N/A D. Ventilation systems N/A IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3 D. SSDGs PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves IGF Code 9.4.4 ICG-OES Policy Letter 01-15 CG-OES Policy Letter 01-15 CG-OES Policy Letter 01-15 IGF Code 9.4.3 / 9.6 IGF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3.2.2 IGF Code 10.3 IGF Code 9.4.4 IGF Code 18.4.6.2	15. Electrical bonding						IGF Code 7.3.1.2, 14.3.6, 18.4.5	
C. Pumps D. Ventilation systems N/A D. Ventilation systems IGF Code 9.4.3/9.6 IGF Code 10.3.2.2 IGF Code 10.3.2.2 IGF Code 10.3 IGF Code 10.4 IGF Code 10.4 IGF Code 10.5 IGF Code 10.4 IGF Code 10.5 IGF Code 10.4 IGF Code 10.4 IGF Code 10.4 IGF Code 10.5 IGF Code 10.4 IGF Code 10.4 IGF Code 10.5 IGF Code 10.4 IGF Code 10.4 IGF Code 10.5 IGF Code 10.5 IGF Code 10.4 IGF Code 10.5 IGF	A. Valves						→	
D. Ventilation systems 16. Engine Room & LNG Machinery A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves 17. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment A. Gloves 2. Full face shields A. Fit-for-purpose clothing A. Protective foot wear N/A 1. Gloves 1. GF Code 9.4.3 / 9.6 IGF Code 10.3.2.2 IGF Code 10.3.2.2 IGF Code 10.3 IGF Code 9.4.4 IGF Code 9.4.4 IGF Code 9.4.4 IGF Code 18.4.6.2	B. Piping systems	N/A						
1GF Code 9.4.3/9.6 A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves 1GF Code 10.3 IGF Code 10.3	C. Pumps	N/A						
A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG IGF Code 10.3 D. SSDGs PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves IGF Code 9.4.4 17. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment I. Gloves N/A I. Gloves IGF Code 10.3	D. Ventilation systems	N/A						
A. Manual Emergency Shutdowns Pumps, Compressors, Fuel Supply Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG IGF Code 10.3 D. SSDGs PSTPs on LNG IGF Code 10.3 E. Double Block and Bleed valves IGF Code 9.4.4 17. Personnel Protective Equipment A. Cryogenic Protective Equipment A. Cryogenic Protective Equipment I. Gloves V/A IGF Code 18.4.6.2 IGF Code 18.4.6.2	16. Engine Room & LNG Machinery						ICE Code 0 4 2 / 0 6	
Test from: Bridge, CCR, Safety Center, ECR, Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves TGF Code 10.3 IGF Code 9.4.4 CG-OES Policy Letter 01-15 IAW Ops Manual I. Gloves A. Cryogenic Protective Equipment N/A I. Gloves N/A 3. Fit-for-purpose clothing A. Protective foot wear N/A N/A	A. Manual Emergency Shutdowns						1GF Code 9.4.3 / 9.6	
Fire Control Station, Fuel Prep Rm adjacent exits B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves 1GF Code 10.3 IGF Code 10.3 IGF Code 10.3 IGF Code 10.3 IGF Code 10.3 CG-OES Policy Letter 01-15 IAW Ops Manual I. Gloves 2. Full face shields 3. Fit-for-purpose clothing 4. Protective foot wear N/A IGF Code 10.3	Pumps, Compressors, Fuel Supply							
B. U/W - ME gas to diesel changeover upon gas detection C. ME PSTPs on LNG D. SSDGs PSTPs on LNG E. Double Block and Bleed valves 1GF Code 10.3 IGF Code 10.3 CG-OES Policy Letter 01-15 IAW Ops Manual IGF Code 18.4.6.2 2. Full face shields 3. Fit-for-purpose clothing 4. Protective foot wear N/A IGF Code 10.3								
upon gas detection C. ME PSTPs on LNG IGF Code 10.3 D. SSDGs PSTPs on LNG IGF Code 10.3 IGF	Fire Control Station, Fuel Prep Rm adjacent exits							
upon gas detection C. ME PSTPs on LNG IGF Code 10.3 D. SSDGs PSTPs on LNG IGF Code 10.3 IGF Code 10.3 E. Double Block and Bleed valves IGF Code 9.4.4 CG-OES Policy Letter 01-15 IAW Ops Manual I. Gloves IGF Code 18.4.6.2 Protective Equipment N/A IGF Code 10.3	B. U/W - ME gas to diesel changeover						IGF Code 10.3.2.2	
D. SSDGs PSTPs on LNG E. Double Block and Bleed valves IGF Code 10.3 IGF Code 10.3 IGF Code 10.3 IGF Code 9.4.4 CG-OES Policy Letter 01-15 IAW Ops Manual IGF Code 18.4.6.2 2. Full face shields 3. Fit-for-purpose clothing 4. Protective foot wear N/A IGF Code 10.3	upon gas detection			<u> </u>	<u> </u>		101 0000 10101212	
E. Double Block and Bleed valves IGF Code 9.4.4 17. Personnel Protective Equipment A. Cryogenic Protective Equipment 1. Gloves 2. Full face shields 3. Fit-for-purpose clothing 4. Protective foot wear IGF Code 9.4.4 CG-OES Policy Letter 01-15 IAW Ops Manual IGF Code 18.4.6.2	C. ME PSTPs on LNG						IGF Code 10.3	
17. Personnel Protective Equipment CG-OES Policy Letter 01-15 A. Cryogenic Protective Equipment N/A 1. Gloves N/A 2. Full face shields N/A 3. Fit-for-purpose clothing N/A 4. Protective foot wear N/A	D. SSDGs PSTPs on LNG						IGF Code 10.3	
A. Cryogenic Protective Equipment N/A IAW Ops Manual 1. Gloves N/A IGF Code 18.4.6.2 2. Full face shields N/A 3. Fit-for-purpose clothing N/A 4. Protective foot wear N/A	E. Double Block and Bleed valves						IGF Code 9.4.4	
A. Cryogenic Protective Equipment N/A IAW Ops Manual 1. Gloves N/A IGF Code 18.4.6.2 2. Full face shields N/A 3. Fit-for-purpose clothing N/A 4. Protective foot wear N/A	17. Personnel Protective Equipment						CG-OES Policy Letter 01-15	
1. Gloves N/A IGF Code 18.4.6.2 2. Full face shields N/A 3. Fit-for-purpose clothing N/A 4. Protective foot wear N/A		N/A					-	
2. Full face shields N/A 3. Fit-for-purpose clothing N/A 4. Protective foot wear N/A	, ,							
3. Fit-for-purpose clothing N/A 4. Protective foot wear N/A			1				1	
4. Protective foot wear N/A							1	
							1	
J. Halu halb	5. Hard hats	N/A					1	

Table 1: Monitoring of gas supply system to engines

Parameter	Alarm	Automatic shutdown of tank valve ⁶⁾	Automatic shutdown of gas supply to machinery space containing gas-fuelled engines	Comments
Gas detection in tank connection space at 20% LEL	X			
Gas detection on two detectors ¹⁾ in tank connection space at 40% LEL	X	X		
Fire detection in fuel storage hold space Fire detection in	Х			
ventilation trunk for fuel containment system below deck	Х			
Bilge well high level in tank connection space	Х			
Bilge well low temperature in tank connection space	Х	Х		
Gas detection in duct between tank and machinery space containing gas-fuelled engines at 20% LEL	Х			
Gas detection on two detectors ¹⁾ in duct between tank and machinery space containing gas-fuelled engines at 40% LEL	X	X ²⁾		
Gas detection in fuel preparation room at 20% LEL	Х			
Gas detection on two detectors ¹⁾ in fuel preparation room at 40% LEL	Х	X ²⁾		
Gas detection in duct inside machinery space containing gas-fuelled engines at 30% LEL	Х			If double pipe fitted in machinery space containing gas-fuelled engines

Parameter	Alarm	Automatic shutdown of tank valve ⁶⁾	Automatic shutdown of gas supply to machinery space containing gas-fuelled engines	Comments
Gas detection on two detectors ¹⁾ in duct inside machinery space containing gas-fuelled engines at 60% LEL	X		X ₃)	If double pipe fitted in machinery space containing gas-fuelled engines
Gas detection in ESD protected machinery space containing gas-fuelled engines at 20% LEL	X			
Gas detection on two detectors ¹⁾ in ESD protected machinery space containing gas-fuelled engines at 40% LEL	Х		X	It shall also disconnect non certified safe electrical equipment in machinery space containing gas-fuelled engines
Loss of ventilation in duct between tank and machinery space containing gas-fuelled engines	X		X ²⁾	
Loss of ventilation in duct inside machinery space containing gas-fuelled engines ⁵⁾	Х		X ³⁾	If double pipe fitted in machinery space containing gas-fuelled engines
Loss of ventilation in ESD protected machinery space containing gas-fuelled engines Fire detection in	Х		Х	
machinery space containing gas-fuelled engines Abnormal gas pressure in	Х			
gas supply pipe	X			
Failure of valve control actuating medium	X		X ⁴⁾	Time delayed as found necessary
Automatic shutdown of engine (engine failure)	Х		X ⁴⁾	

Parameter	Alarm	Automatic shutdown of tank valve ⁶⁾	Automatic shutdown of gas supply to machinery space containing gas-fuelled engines	Comments
Manually activated emergency shutdown of engine	Х		X	

- 1) Two independent gas detectors located close to each other are required for redundancy reasons. If the gas detector is of self-monitoring type the installation of a single gas detector can be permitted.
- 2) If the tank is supplying gas to more than one engine and the different supply pipes are completely separated and fitted in separate ducts and with the master valves fitted outside of the duct, only the master valve on the supply pipe leading into the duct where gas or loss of ventilation is detected shall close.
- 3) If the gas is supplied to more than one engine and the different supply pipes are completely separated and fitted in separate ducts and with the master valves fitted outside of the duct and outside of the machinery space containing gas-fuelled engines, only the master valve on the supply pipe leading into the duct where gas or loss of ventilation is detected shall close.
- 4) Only double block and bleed valves to close.
- 5) If the duct is protected by inert gas (see 9.6.1.1) then loss of inert gas overpressure shall lead to the same actions as given in this table.
- 6) Valves referred to in 9.4.1.