DOMESTIC LNG FUEL SYSTEM COMMISSION JOB AID

Name of Vessel: _____ IMO or Official Number: _____

Type of Inspection: _____ Date of Inspection: _____

Y = Yes N = No N/A = Item does not apply C = Corrected on the spot PSTP = Periodic Safety Test Procedure[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	C	
1. Documentation						
A. Ops Manual - (Fuel Gas Handling)	N/A					IGF Code 3.2.17, 18.2 and 18.3 CG-OES Policy Letter 01-15 Risk Assessment - ENG Policy Ltr 01-12 (CH-1) Ops Manual - IGF Code 18.2.3 Emergency Manual - IGF Code 18.2.4 Maintenance Manual - IGF Code 18.2.2 *Note any deviations or alternative arrangements in approved Risk Assessment (Must be approved by RO & USCG)
1. Review approved Periodic Safety Test Procedures (PSTPs)						
2. Review Approved Tank Insp Plan	N/A					
B. Verify class docs endorsed for LFF	N/A					
C. Review approved Risk Assessment	N/A					
D. Review Emergency Manual	N/A					
E. Review Hazardous Area Plan & list of approved electrical installations	N/A					
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 operation	N/A					IGF Code 8.5.3
b. Remote operation	N/A					
B. Pressure gauges (local + remote)	N/A					IGF Code 15.3.1

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

	PSTP	Y	N	N/A	C	
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	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 Verify bench test as per ops manual
1. Visually inspect pilot valve	N/A					

	PSTP	Y	N	N/A	C	
	N/A					MARVS - max allowable relief valve setting
E. Tank temperature sensors						IGF Code 6.9.1
F. Visual inspection of 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 IGF Code 14.3.7 and 14.3.8 Test shut downs/alarms
A. Low liquid level, low current, low discharge pressure shutdown						
B. Audible/visual alarm						
C. Lockable circuit breaker or switch						
8. Vaporizer Space/Cold Box (Fuel Prep Room) - HP/LP/BOG						IGF Code 5.8
A. Intrinsically safe electrical equipment	N/A					IGF Code 14.3 CG-ENG 01-12 (CH-1)/14.3.3
1. Gas detection	N/A					IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8
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
4. Instrumentation	N/A					IGF Code 9.9.4
B. Fire protection Cat A machinery space - fixed FF req.	N/A					IGF Code 11.3.1
C. Mechanical ventilation – Negative (under) pressure	N/A					IGF Code 13.6
D. Master Gas Valve	N/A					IGF Code 9.4 and 9.4.2, See IGF Code Table 1: Monitoring of gas supply system to engines
1. Automatic closing when safety system is activated (<30 seconds)	N/A					
E. Vaporizer glycol system	N/A					Vessel Operations Manual
9. Compressor Room						IGF Code 9.9
A. Intrinsically safe electrical equipment	N/A					IGF Code 14.3 CG-ENG 01-12 (CH-1)/14.3.3
1. Gas detection	N/A					IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8
2. Fire detection	N/A					IGF Code 11.7 and 15.9 Table 1 CG-ENG 01-12 (CH-1)/11.7

	PSTP	Y	N	N/A	C	
3. Lighting	N/A					IGF Code 14.3.5 GC-OES Policy Letter 01-15 CG-ENG 01-12 (CH-1)/ 14.3.5
B. Fire protection	N/A					IGF Code 11.3.1
C. Mechanical ventilation – Negative (under) pressure	N/A					IGF Code 13.6
D. Compressor monitoring system – to include high and low temp and pressure alarms, etc.						IGF Code 9.9 and 15.6.1 CG-ENG 01-12 (CH-1)/15.3
E. Gas tight bulkhead/deck shaft glands						IGF Code 9.9.1 and 15.6.2
10. Gas Piping System						IGF Code 9.4, 9.5, 9.6, 9.7
A. Secondary enclosures	N/A					IGF Code 9.5.1
1. Ventilated duct	N/A					IGF Code 9.6.1.2 and 13.8
a. Negative ventilation	N/A					
2. Double wall piping	N/A					IGF Code 9.6.1.1 and 13.8
a. Continuous nitrogen purge	N/A					
B. Gas detection	N/A					IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8
C. Ventilation/purge failure/loss of pressure alarms						IGF Code 15.10
D. Pressure gauges	N/A					IGF Code 15.3.1
11. Gas Detection, Installed						IGF Code 15.8 CG-ENG 01-12 (CH-1)/15.8 Per Vessel Operations Manual and/or manufacturer's instructions
A. Calibration	N/A					
B. Span gas	N/A					
1. Gas type/mix	N/A					
2. Expiration	N/A					
C. Spaces serviced	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
1. 20% LEL audible/visual alarms	N/A					
2. 40% LEL safety system activation	N/A					
F. Gas Detection, Vent ducts/hoods	N/A					IGF Code 15.8.7
1. 30% LEL alarm	N/A					
2. 60% LEL safety system	N/A					

	PSTP	Y	N	N/A	C	
12. Gas Detection, Portable (minimum of 2)						IGF Code 18.5.1 CG-OES Policy Letter 01-15 CG-ENG 01-12 (CH-1)/15.8(f) Per Vessel Operations Manual and/ or manufacturer's instructions
A. Calibration	N/A					
B. Span gas	N/A					
1. Gas type/mix	N/A					
2. Expiration	N/A					
C. Proof of proper operation	N/A					
13. Nitrogen Generator/Storage						Per Vessel Operations Manual and/or manufacturer's instructions
A. O2 Alarm	N/A					
B. Constant flow/purge	N/A					
14. Gas switching interlocks						
A. Low/high pressure gas shut down/fuel switching						IGF Code 5.6.3.3, 10.3.2, 10.3.3, 10.3.4, 10.4.4 Note: Engine/deck/alarm logs/loss of propulsion, etc.
B. Low maneuvering speeds gas shut down/changeover						
C. Gas fuel system ESD/safety system shutdown/changeover						
15. Electrical bonding						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
A. Valves	N/A					
B. Piping systems	N/A					
C. Pumps	N/A					
D. Ventilation systems	N/A					
16. Engine Room & LNG Machinery						IGF 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						IGF Code 10.3.2.2
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						CG-OES Policy Letter 01-15 IAW Ops Manual IGF Code 18.4.6.2
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					
5. Hard hats	N/A					

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	X			
Fire detection in ventilation trunk for fuel containment system below deck	X			
Bilge well high level in tank connection space	X			
Bilge well low temperature in tank connection space	X	X		
Gas detection in duct between tank and machinery space containing gas-fuelled engines at 20% LEL	X			
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	X			
Gas detection on two detectors[1)] in fuel preparation room at 40% LEL	X	X[2)]		
Gas detection in duct inside machinery space containing gas-fuelled engines at 30% LEL	X			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	X		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)]	X		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	X		X	
Fire detection in machinery space containing gas-fuelled engines	X			
Abnormal gas pressure in gas supply pipe	X			
Failure of valve control actuating medium	X		X[4)]	Time delayed as found necessary
Automatic shutdown of engine (engine failure)	X		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	X		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.