Loading Plan – Part Two (2) (Line Up)

Instructions	
1.	*To be reviewed and approved by the Master and where applicable the Chief Engineer*
2.	*Circulated and cross checks by ALL officers engaged in the Cargo Operation.*
3.	*Follow the plan and Port specific Loading Operation Manual without deviation at all time.*
4.	*If an approved Port specific plan is available, this should be followed as per #3 and replicated in to this plan.*
5.	*Whenever review of an approved port specific finds circumstances have changed or it is deemed unsafe, it must be reported to the Office and/or parties concerned on site and never proceed without the approval from the office and/or terminal/cargo buyer or seller's representatives.*

General			
Vessel	LNG Carrier	Voyage No.	2019
Date	1.1.2019	Port	LNG Terminal

Arm Cool Down; Line Cool Down Line Up:

Set up the port manifold as follows:

.**Position**	**Description**	**Valve**
Open 20%	No.1 tank filling valve	**CL100**
Open 20%	No. 2 tank filling valve	**CL200**
Open 20%	No. 3 tank filling valve	**CL300**
Open 20%	No. 4 tank filling valve	**CL400**
Shut	No. 4 Tank Spray Bypass Valve	**CS404**
Open	No. 1 Liquid Manifold Manual Valve	**CL013**
Open	No. 2 Liquid Manifold Manual Valve	**CL023**
Open	No. 3 Liquid Manifold Manual Valve	**CL033**
Open	No. 4 Liquid Manifold Manual Valve	**CL043**

Arm Cool Down is according to shore order

After arm Cool down is complete, request rate 50m3/hour (as agreed rate) for line cool down

Tank pressure control with H/D Compressor cooling down via slowly opening of Vapour Return CG900.

If tank pressure is not able to be maintained at proper pressure, release the pressure from Vapour Cross Over Block Valve **CG075**

If pressure is still not able to be controlled, start H/D Compressor

- On the HD compressors open the following valves:

Position	**Description**	**Valve**
Open	Vapour header to compressor supply line	**CG601**
Open	No.1 HD compressor inlet valve	**CG531**
Open	No. 2 HD compressor inlet valve	**CG532**
Open	No.1 HD compressor outlet valve	**CG564**
Open	No. 2 HD compressor outlet valve	**CG565**
Confirm with Shore to Open Vapour Manifold ESD valve		
Open *	Compressor supply to vapour manifold	**CG547**) (*Opening Ratio Depending on HD Comp C/D Rate. 10deg/min. Before starting Compressor, ensure fully open)

Instructions	
1.	*To be reviewed and approved by the Master and where applicable the Chief Engineer*
2.	*Circulated and cross checks by ALL officers engaged in the Cargo Operation.*
3.	*Follow the plan and Port specific Loading Operation Manual without deviation at all time.*
4.	*If an approved Port specific plan is available, this should be followed as per #3 and replicated in to this plan.*
5.	*Whenever review of an approved port specific finds circumstances have changed or it is deemed unsafe, it must be reported to the Office and/or parties concerned on site and never proceed without the approval from the office and/or terminal/cargo buyer or seller's representatives.*

General			
Vessel	LNG Carrier	Voyage No.	2019
Date	1.1.2019	Port	LNG Terminal

Ensure that valve **CG075** is closed otherwise vapour will recirculate around the system.

Note: HD compressor capacity during loading appears to be based on an average tank temperature of -130°C, The results show that 50% capacity of a single HD is required to handle the boil-off. Based on this, normally only one HD would be used, the other would remain on standby. From experience it has been found that two HD compressors maybe required for the first few hours.

- Open the vapour manifold ESD valve **CG071** (port side). This will enable a free flow of gas to the terminal and is a check that the pipeline layout on board has been arranged correctly.
- Set up the port manifold, numbered from forward to aft as follows:

Position	Description	Valve
Confirm Open	No. 1 port liquid manifold ESD valve	**CL011**
Confirm Open	No. 2 port liquid manifold ESD valve	**CL021**
Confirm Open	No. 3 port liquid manifold ESD valve	**CL031**
Confirm Open	No. 4 port liquid manifold ESD valve	**CL041**
Confirm Open	No. 1 port manifold manual valve	**CL013**
Confirm Open	No. 2 port manifold manual valve	**CL023**
Confirm Open	No. 3 port manifold manual valve	**CL033**
Confirm Open	No. 4 port manifold manual valve	**CL043**

Ramp Up

- Make sure de-ballasting completed before commence ramp down
- Request shore to supply LNG at a slow rate through all loading arms. During the time of slow loading it is important to patrol the whole deck area to monitor for all potential cargo leaks. All leaks, even the smallest one, must be corrected immediately even if this requires slowing down or even stopping the loading.

- **Inittially keep open filling valves on all cargo tanlks as 20%**
- **and keep opening filling valves as increasing laoding rate**

- Start HD compressor as necessary.

Instructions	
1.	*To be reviewed and approved by the Master and where applicable the Chief Engineer*
2.	*Circulated and cross checks by ALL officers engaged in the Cargo Operation.*
3.	*Follow the plan and Port specific Loading Operation Manual without deviation at all time.*
4.	*If an approved Port specific plan is available, this should be followed as per #3 and replicated in to this plan.*
5.	*Whenever review of an approved port specific finds circumstances have changed or it is deemed unsafe, it must be reported to the Office and/or parties concerned on site and never proceed without the approval from the office and/or terminal/cargo buyer or seller's representatives.*

General			
Vessel	LNG Carrier	Voyage No.	2019
Date	1.1.2019	Port	LNG Terminal

- Monitor the tank pressures in order to achieve a pressure of about 7~10kPa.
- Increase the loading rate in stages as agreed with the terminal at the pre-load meeting. The terminal will begin to bring their pumps on line according to their schedule, if the tank pressure rises too high inform the terminal to delay the ramp up.

Full Rate

- Ensure the terminal have confirmed that the ballast water sample analysis has proven satisfactory before starting the de-ballasting programme. Keep draught, trim, hull stresses within permissible limits and that the vessel is maintained in an upright condition by controlling the deballasting.
- Adjust the opening of the tank filling valves to maintain even distribution

(1CT = 50%, 2CT=100%, 3CT=100%, 4CT=80%)

Place both (if required) H/D compressors on AUTO Mode.

Minimum opening of Liquid Filling Valves 300% at 12,000m^3/hr

Ratedown

- Ease in the filling valve of each tank as the tank approaches full capacity. Arrange to terminate tanks at suitable intervals. On the LNG Terminal project one (1) hours notice is required for stopping the first pump. **The final pump must run for a minimum of 10 minutes before the terminal will shut it down.**
- Before topping off the first tank, request shore to reduce the loading rate and continue reducing when topping off each following tank. When a tank is at its required level, close the corresponding loading valve, i.e. tank No.1 **CL100**, tank No.4 **CL400** and tank No.2 **CL200**. It is convenient to finish loading by tank No.3 for ease of line draining.
- Slow down and stop the HD compressor as falling tank pressures require. When the compressor is stopped, free flow vapour to shore via vapour crossover valve **CG075**. Close valve **CG547**.
- Stop loading when the final tank reaches 98.5% capacity minus an allowance for line draining and leave the tank loading valve **CL300** open. Make sure you stop loading last tank in time before reaching pre-deteriminated level, to avoid Very high level in tank and automatic shut of filling valve.
- **Stop order → Shut ESD Valve only after confirmation from shore**

Warning: The very high level alarms and shutdowns are emergency devices only and should on no account be used as part of the normal topping-off operation.

- ***(HI)** High Tank Level alarm sounds at **97%***

Instructions	
1.	*To be reviewed and approved by the Master and where applicable the Chief Engineer*
2.	*Circulated and cross checks by ALL officers engaged in the Cargo Operation.*
3.	*Follow the plan and Port specific Loading Operation Manual without deviation at all time.*
4.	*If an approved Port specific plan is available, this should be followed as per #3 and replicated in to this plan.*
5.	*Whenever review of an approved port specific finds circumstances have changed or it is deemed unsafe, it must be reported to the Office and/or parties concerned on site and never proceed without the approval from the office and/or terminal/cargo buyer or seller's representatives.*

General			
Vessel	LNG Carrier	Voyage No.	2019
Date	1.1.2019	Port	LNG Terminal

- *Shut valve before level exceeds **98.5 %***
- *(**HIHI**) High High Tank level alarm will sound at **99.0%** capacity and the filling valve (on tank in alarm) will automatically close.*
- ***(VHI)** Very high level alarm will operate at **99.5%** capacity and will initiate (ESD)*

Operating Procedure for Draining Lines

- Liquid lines, including the horizontal part of the manifolds, will automatically drain to tank No. 3. The inclined parts of the manifold are purged inboard with nitrogen.

Note: This manifold draining/purging procedure varies from terminal to terminal.

- On completion of draining the loading arms close the liquid manifold ESDS valves. The ESD system will have to be put into override mode with the terminalôs permission, switch the ship/shore link selection in the CCR from USE to NOT IN USE.

Ensure the vapour return valve remains open.

Position	Description	Valve
Close	No. 2 Port liquid manifold ESD valve	**CL021**
Close	No. 3 Port liquid manifold ESD valve	**CL031**
Close	No. 4 Port liquid manifold ESD valve	**CL041**

- The shore lines are now pressurised at 300kPa with nitrogen.
- Purging through the manifold ESD bypass cooldown valves **CS021, CS031 and CS041**. Repeat this operation two or three times until no liquid remains in the manifold lines and loading arms.
- Close the manifold double shut valves and open the manifold drain valves and carry out a vapour purge until the HC content is below 1% by volume.
- When gas readings obtained from a portable meter are less than 1% CH_4 per volume at the vent cocks, all valves are closed and the loading arms are ready to be disconnected.
- Return the IBS and IS nitrogen system supply control valve **CN511** set point back to 2 kPa for normal operating.
- Inhibit the high level alarms prior to proceeding to sea.
- Complete the de-ballasting operation to obtain an even keel situation for final measurement. When the measurement is completed adjust the ballast tank levels for sailing condition.

Instructions	
1.	*To be reviewed and approved by the Master and where applicable the Chief Engineer*
2.	*Circulated and cross checks by ALL officers engaged in the Cargo Operation.*
3.	*Follow the plan and Port specific Loading Operation Manual without deviation at all time.*
4.	*If an approved Port specific plan is available, this should be followed as per #3 and replicated in to this plan.*
5.	*Whenever review of an approved port specific finds circumstances have changed or it is deemed unsafe, it must be reported to the Office and/or parties concerned on site and never proceed without the approval from the office and/or terminal/cargo buyer or seller's representatives.*

General			
Vessel	LNG Carrier	Voyage No.	2019
Date	1.1.2019	Port	LNG Terminal

Note: This is not strictly necessary, but some terminals/surveyors prefer it.

- Stop the HD compressor just before closing the vapour manifold valve **CG071** for nitrogen purging and disconnection of the loading arms.
- Close the vapour manifold ESD valve **CG071** for nitrogen purging of the vapour arm.
- Close the vapour crossover valve **CG075** and open the vapour manifold drain valve. Purge the connection with nitrogen and when gas readings obtained from a portable meter are less than 1% CH_4 per volume at the vent cocks, all valves are closed and the vapour arm is ready to be disconnected.
- Set up the LD compressor and boil-off heater system for gas burning at sea.
- Open all tank valves to allow for warming up. These are normally the branch valves and filling valves on all tanks and the spray master valve and spray return valve on one tank.
- Disconnect the liquid and vapour arms.

Note: Disconnection of the liquid arms may be carried out before purging of the vapour arm depending on the terminalôs preference.

Note: For Cargo Loading Operation refer to illustration No. 3.

Cargo plans are only a guide, but give a good indication of the various stages of the operation.

Consult me if in any doubt.