

Programme: 100m LNG Dual-fuel Ro-Ro Passenger Ferry

Programme Director: [redacted]

Review Period: May 2022

<u>Name</u>	<u>Job Title</u>	
[redacted]	Programme Director	
[redacted]	CFO	



- HSE
- Comments on Pack
- Programme
- Production
- Engineering
- Commissioning
- OOR's
- Review of 3D-Model at ^[redacted], FMPG & ^[redacted] participants.
- Relocation of CMAL Staff into Modular Building
- AOB

Health & Safety

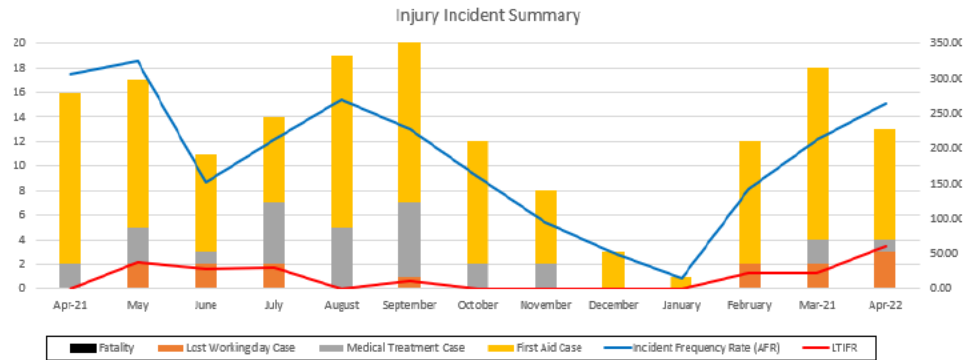
Highlights

- 14 injury incidents reported
- 3 LTIs, Right Forearm (5), R hand (5), Eyes (10)
- 1 MTC (dropped flange on fingers)
- 9 FACs
- 5 Near Misses

Moving forward :

- Work continues to develop a more agile PTW system whilst maintaining the control required and recruitment of replacement team members.
- Roll out of You See, You Do cards, Near Miss reporting system – Philosophy is Stop – Intervene – Rectify – Resume.
- HSE Roadmap is slightly behind plan however will be recovered.

	Apr-22	Cumulative
Fatality	0	0
Lost Working Day Case	3	3
Medical Treatment Case	1	1
First Aid Case	9	9
Property Damage	0	0
Fire Incident	0	0
Environmental Incident	0	0
High Potential Near Miss	0	0
Near Miss	5	5
Total No. of Recordable Injuries	4	4
RIDDORS (counted in category)	3	3
Total Number of Days Lost	20	20



Level 0 - Programme

Date: 23/03/2022

801

Year	2022											2023												
Month	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Hotwork Installation	█																							
Painting	█																							
Pipework Installation	█																							
HVAC	█																							
Electrical Installation	█																							
Miscellaneous Outfit								█																
Commissioning		█																						
Dry Dock					█						█													
Sea Trials											█													
Snagging & Delivery												█		▨										

Area Completion Summary 30 May 2022



Vessel 801	Activity	Complete
1	Engineering & Design	70%
2	Steelwork Main Structure	95%
3	Piping Systems	60%
4	Mechanical Equipment	90%
5	Electrical Equipment	90%
6	Electrical Cabling	5%
7	Accommodation Outfit	20%
8	Painting	40%
9	Commissioning	10%
10	Drydocking	66%
11	Sea Trials	0%
Overall Completion		70%

Vessel 802	Activity	Complete
1	Engineering & Design	50%
2	Steelwork Main Structure	60%
3	Piping Systems	2%
4	Mechanical Equipment	50%
5	Electrical Equipment	50%
6	Electrical Cabling	0%
7	Accommodation Outfit	0%
8	Painting	20%
9	Commissioning	0%
10	Drydocking	0%
11	Sea Trials	0%
Overall Completion		45%

Efficiency by Discipline

Discipline	April Performance	May Performance	Comments
Steelwork/Hotwork	33%	70%	Feedback from [redacted] on utilisation of Labour
Pipework	37%	45%	Weekly install rate which has improved with better material availability.
Cable Pulling	43%	77%	Based on S-Curve data supplied by [redacted]
Outfit	50%	50%	Increase performance expected as hot work completes and access become available. Focus is to finish deck / deckhead hotwork to complete screeding on deck 6&7 in dry dock.
Painting	30%	40%	Access issues continues. Steering Gear completed.

Engineering & Steelwork

[redacted] Scope

- Mezzanine hotwork 90% complete
- Hinge points to be re-established, [redacted] on site week 20/21 to support

Steelwork

- Critical areas progressed to allow [redacted] access to ECR and Emergency DG to complete pre-commissioning activities
- STP and Hydraulics room progressing to revised plan
- 7 deck accommodation areas - hotwork being concluded for [redacted]
- Shell side fairing underway
- Installation of MES door underway prior to ship being turned
- Ship turned to plan on 29 may

Specialist Subcontractors

- [redacted] Pipework – on site to continue installation
- Observation windows - specialist fitters have reviewed scope with positive feedback , planned to install Mid August.
- Lifts - [redacted] – programme received and draft plan submitted for agreement. Due on site start June May, awaiting update on whether they can delay start to after dry dock.

Electrical

- Cable installs 99% complete on 7 deck, continue with 5 & 6 decks with cable install dates well in advance of [redacted] commencing their scope.
- The majority of the electrical equipment will arrive on site within the next 2/3 weeks including the circa 1,000 [redacted] lights. (Major boost to allow programme dates to completion)
- Hot work activities and fitting ladder rack brackets in the lower decks still remains a challenge and we await a completion date from operations. We also require paint completion dates on the brackets, this will allow [redacted] to proceed in all areas as per the programme requirements.
- Nigh shift commenced 23rd May for cable install in the lower decks, which is the main cable routes to remove clash with hot work/change activities on day shift.
- Commissioning plan will always be given priority, although we will continue drive for volume cable install 208,000 [redacted] to go includes legacy cables.
- Decks ,2,3,4 main ladder rack inspection continues only minor areas remaining to be signed off.

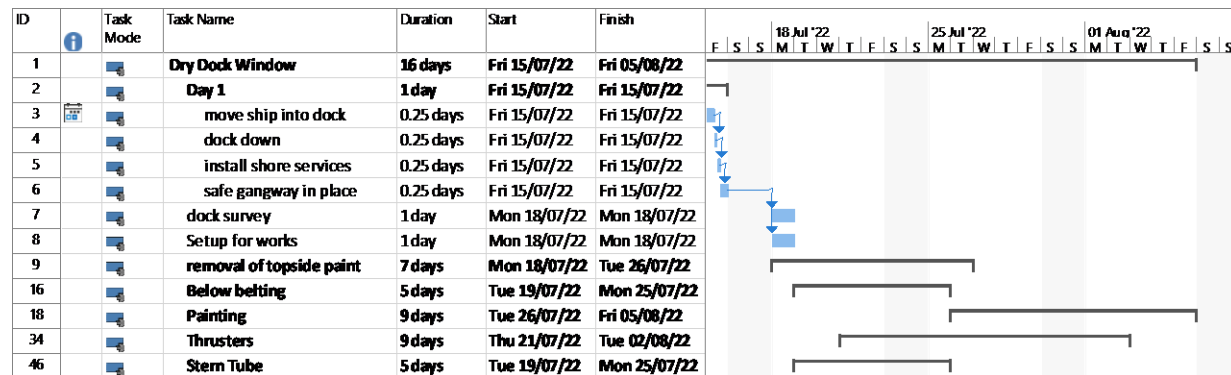
Pipework

- Fuel Oil changes underway
- SW changes complete in ER/GR tanks, one mod outstanding for crossover valve install.
- Critical systems established with commissioning plan
- Axilock review underway with CMAL to minimise impact of legacy OORs that have been actioned too late in build
- Weekly reviews underway

801 Outfit activities									
	Install Hotwork	Pipe Installation	Electrical Installation	Pipe testing	Pipe insulation	Screed Deck	MCA Sign off	Install Accomodation	
Zone	Finish	Finish	Finish	Finish	Finish	Finish	Finish	Start	Finish
Zone 8 (5 Deck)									
Zone 8 - Sub-Zone 801 - Aft Lounge	10-Jun-22	04-Jul-22	23-Jun-22		25-Aug-22	08-Nov-22		24-May-22	31-Oct-22
Zone 8 - Sub-Zone 802 - Lounge & Cafeteria	03-May-22	19-Jul-22	18-Jun-22					04-Nov-21 A	08-Nov-22
Zone 8 - Sub-Zone 803 - Galley	05-May-22	25-Jul-22	06-Jul-22					05-Jul-21 A	08-Nov-22
Zone 9 (6 Deck)									
Zone 9 - Sub-Zone 901 - 2nd Pax Deck Aft	23-May-22	28-Jun-22	06-Jul-22		21-Sep-22	29-Sep-22		05-Jul-21 A	19-Sep-22
Zone 9 - Sub-Zone 902 - 2nd Pax Deck Mid-Ship	06-May-22	19-Jul-22	09-Jul-22					05-Jul-21 A	07-Oct-22
Zone 9 - Sub-Zone 903 - Air Handling Machinery Room	27-Apr-22	21-Jul-22	23-Jul-22					23-May-22	31-Aug-22
Zone 9 - Sub-Zone 904 - 2nd Pax Deck Fwd	16-May-22	15-Aug-22	05-Aug-22					10-Nov-21 A	03-Nov-22
Zone 10 (7 Deck)									
Zone 10 - Sub-Zone 1001 - Bridge Aft	05-May-22	28-Jun-22	23-Jul-22		12-Oct-22	10-Aug-22		02-Nov-21 A	16-Aug-22
Zone 10 - Sub-Zone 1002 - Egr & Air Handling Machinery	27-Apr-22	30-Jun-22	24-May-22					06-Jun-22	05-Aug-22
Zone 10 - Sub-Zone 1003 - Bridge Fwd	26-May-22	01-Jul-22	08-Jul-22					09-Nov-21 A	15-Sep-22
Zone 11 (7 Deck)									
Zone 11 - Sub-Zone 1101 - Wheelhouse	22-Apr-22	02-Aug-22	08-Jul-22		01-Nov-22			25-Apr-22	17-Aug-22

Drydocking

- Slots booked
 - Summer Docking 15 July to 07 August 2022
 - Winter Docking 23 January to 31 January 2023
- Thrusters
 - 802 Thrusters removed and returned to [redacted] for overhaul
 - PO placed for overhaul of both 801 / 802 thrusters and service engineer support for 801 docking
- Scope
 - Scope of Work being agreed reviewed at meeting with [redacted], major activities:
 - Paint topsides
 - Removal of marine growth
 - Painting below belting
 - Replacement of thruster pods
 - Stern tube
 - Draught marks



Forecast Labour & Resource.



Wk 21	May	801			802			Total		
		Demand	Actual	Shortfall	Demand	Actual	Shortfall	Demand	Actual	Shortfall
Operations Demand										
Welder	Welder	21	6		18	13		40	19	
Plater	Plater	33	1		39	17		71	18	
Caulker Burner	Caulker Burner	7	3	-4	7	7	0	14	10	-4
Shipwright	Shipwright	8	2	-6	4	5	1	11	7	-4
Pipe Welder	Pipe Welder	0	0	0	8	9	1	8	9	1
Pipe fabricator	Pipe fabricator	0	0	0	5	9	4	5	9	4
Pipe Fitter	Pipe Fitter	43	19	-24	12	0	-12	56	19	-37
Engineers/Mechanic	Engineers/Mechanical Fitter	8	10	2	0		0	8	10	2
Painting	Painting	9	10	1	0	16	16	9	26	17
Joiner	Joiner	0	7	7	0	0	0	1	7	6
Scaffolder	Scaffolder	5	6	1	3	10	7	8	16	8
Ancilliary Worker	Ancilliary Worker	10	26	16	4	16	12	14	42	28
Apprentice 2nd Year	Apprentice 2nd Year	0	0	0	0	1	1	0	1	1
[redacted] Welder	[redacted] Welder	0	12	12	0	10	10	0	22	22
[redacted] Plater	[redacted] Plater	0	33	33	0	22	22	0	55	55
	Total Heads	150	135		120	135		270		
	Welders (includes burners)	29	21	-8	25	30	5	54	51	-3
	Platers (includes shipwrights)	40	39	-1	42	44	2	83	80	-3

- Overall loading can be contained within current headcount
- Trade level reviews ongoing weekly with particular attention to demand for shipwrights and engineer/fitters and painters

- Issues

- Axilock change out on HT-LT – Axilocks arrived 26 May, installation has commenced – risk of delay to system completion .
- [redacted] Gas Phase install being reviewed for any rip outs required for work in way.

- Challenges

- Completion of hotwork to meet subcontractor access dates
- Level of change being managed
- Pipework completion for commissioning (FO)
- Material availability
- Driving OORs to closure
- Cable installation
- Work sequencing

- Successes

- Sea Water modification in double bottoms complete and tested
- Commenced pressure testing in accommodation areas
- Ship turned 29 May

802 Cardinal Date Programme



Level 0 - Programme

Date: 23/03/2022

Year	2022											2023													
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
802	Structure	[Bar from Mar 2022 to Nov 2022]																							
	Hotwork Installation		[Bar from Apr 2022 to Jan 2023]																						
	Painting			[Bar from May 2022 to Apr 2023]																					
	Pipework Installation			[Bar from Jun 2022 to May 2023]																					
	HVAC						[Bar from Sep 2022 to Jun 2023]																		
	Electrical Installation						[Bar from Sep 2022 to Jul 2023]																		
	Insulation & Architecture						[Bar from Sep 2022 to Sep 2023]																		
	Launch																								
	Commissioning																								
	Dry Dock																								
	Sea Trial																								
	Snagging & Delivery																								

Manufacturing Sheds

- Unit A7/5 manufactured and at berth.
- Funnel units 97,98, 99 & 100 being fully outfitted before erection.

Erection & Consolidation

- Erection & Consolidation plan now in place.
- Units 49, 50 & 51 erected to ship & being consolidated.



Outfitting

- Plan now in place for outfitting to completion.

Pipework Installation

- Commencing June.

Launch

- Launch commencing August.
- 'A' brackets now shipped in position.
- Launch Date February 23rd, 2023.

Electrical

- Commencing September.

HVAC

- Commencing September.

Specialist Contractors

- Currently reviewing opportunities and finalising plan with specialist contractors.

802 Fabrication- Remaining Units

	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238		
Bottom Shed	802 Unit A7/5	Outfit	802 UA6/6				Outfit	802 UA8/6						Outfit													
Bottom Shed	802 Unit A9/5			Outfit	802 UA7/6				Outfit	802 Unit A9/6				Outfit													
Bottom Shed	802 Unit A10/5			Outfit		802 UA9/7			Outfit	802 UA8/7			Outfit														
Module Hall area 1	mega block 49, 50 & 51	Paint	U87/88 Bullwork			Aft Mask				Outfit																	
Module Hall area 2	802 Unit 85/86			Outfit	A4/7 (lock items)		Outfit	A10/6		Units 10/6, 11/6, 10/7																	
Module Hall area 3	802 Unit 97		Outfit	802 Unit 99		Outfit	A10/7																				
Module Hall area 4	802 Unit 98		Outfit	802 Unit 100		Outfit	A11/6			Fwd Mask		Outfit															
Top Shed	802 Unit A8/5			Outfit	802 UA11/5				Outfit	802 UA7/7			Outfit														
Manpower	40	40	40	40	40	40	40	40	40	40	40	40	40														

Issues

- Drawing packs.

Challenges

- Change management.
- Materials.

Successes

- Draft Build Strategy in place.
- Funnel units 97, 98, 99 & 100 being outfitted in manufacturing sheds.
- Sufficient manpower now in manufacturing sheds and on ship.
- Unit 49/50/51 erected as block & being consolidated.

Weight & Stability

- **Stability**
 - Cross flooding pipe due to arrive in yard early June, with installation to follow thereafter
 - Awaiting updated calculations for damage stability (Water on Deck) following updates to ECR partial bulkheads and the lift shaft doors on the car deck. [redacted] and lift company [redacted] are being chased. Preparing a plan if the lift shaft door area requires to be Watertight.
- **Weight**
 - Legacy weight list (handed over from former FMEL team) is frozen and kept as is for a reference.
 - predicted weight was 3556T with 44T contingency
 - Total validated amount was 3,449T, 97% of total
 - Remaining 3% validation was for foundations and supports.
 - To validate the legacy weights list, as of mid-March a new weight study started. Overall [redacted] and [redacted] weights extracted from the 3D model.
 - This study has never been performed at any stage of initial or detail design. Model based study provided a better estimation covering the previous margin assumptions.
 - **All** 3D model items extracted for weight details and these items have provided a better reference for Centre of Gravity (CoG) values.
 - 3,406.29 t is the core ship weight and 147.06t is the as-built allowance (margin, error allowance). $3,406.29+147.06=3,553.35t$ (contract)
 - Weight updates and distribution is ongoing.
 - Interim inclining experiment will be undertaken to set the towing condition 2 weeks prior to the dockyard transit. Currently, 3344t is available onboard including scaffoldings etc. This corresponds to 92-93% ship completion level. Better estimation of CoGs of ship will be undertaken afterwards along with determination of transit condition for docking with calculation of docking ballast requirements.

Other docs to deliver

- [redacted]
- CalMac to confirm if this is still required, CMAL & FMPG have agreed (13/05/22) that this is not required as a final deliverable document however a test pack will be created to show how the system recovers after failures. FMPG to propose a test pack format to CMAL.
- Machinery list (including serial numbers) is WIP. The commissioning team are producing and will also record last maintenance date where appropriate. This shall also cover the requirements for producing tallies.
- Operations Manual – Still awaiting feedback from CMAL
- As built drawings for P&IDs and technical compartment arrangements have been agreed with CMAL. Other as built drawings to be agreed with CMAL (full list shown on slide on this pack).

[redacted] plan approval update

[redacted]

Under Review with [redacted]	Date Sent to [redacted]	Note
Anti Fouling Plan	15/09/2021	Part of the Econotation, shall be approved for ship completion hand over date as part of larger pack.
Cargo Securing Manual	01/02/2022	
Damage control plan	20/04/2022	

[redacted]

Under Review with [redacted]	Date sent to [redacted]	Note
Emergency Towing Booklet	11/04/2022	Only for information but copy to be kept on board
Accommodation Layouts	15/02/2022	
Accommodation Handrailing	31/01/2022	Will be finalised after Escape route approval
Crew Accommodation Plan	15/02/2022	
Fire Control Plan	20/04/2022	Updated inline with Structural Fire protection Plan
Structural Fire Protection Plan	20/04/2022	[redacted] comments addressed
Fixed Fire Extinguishing Syst. ECR & Pipes, Cables Transformer Room	04/11/2021	Provisionally agreed require new Type Approval Certificate from [redacted] for system as current cert is out of date.

To Be submitted to [redacted] (in Work)	Date sent to [redacted]	Note
Stability book	Draft End Q2 2022	Finalise after incline
Fire & Deck Wash System	Under 2nd internal review	Reworked from initial review will be sent by 22/04/22
CALMAC Muster Lists (Mode 1-4)	CMAL	
CALMAC SAR Plan	CMAL	
801&802-LNGPac Operating & Maintenance Manual LNGPac-H149-D9	[redacted] to confirm requirement	[redacted] Updating
Emergency Low level lighting	submit after escape routes update	
Escape Route Plan	Internal review prior to submission	[redacted] submitted new document 27/05/2022 around timescales for escape, under internal review before submission to [redacted]

CMAL Drawing Approval update

- CMAL Drawing Approval update
 - 68 Total to approve
 - 14 now approved by CMAL
 - 24 under review & nearing approval. Meeting arranged for 01 June to review all PAX areas with CMAL and sub contractors
 - 30 others still to be submitted for approval
 - 9 Systems Approved
 - 23 Systems to be approved by CMAL, 2 being reviewed 01 June working through with CMAL final schedule for completion
 - Time will be set aside over the coming weeks when the CMAL representative shall be on site to review further P&IDs.
- Contract Specification update
 - There have been various updates within the document which require to be internally reviewed and then presented to CMAL for agreement.

Drawing status update

Below is a table detailing the current list of required drawings and The ones marked with a P (57 in No.) in the column AB are the proposed "as built" drawings to be provided. This list will need to be agreed with CMAL.

Drawing / Document	I	II	III	IV	AB
General Arrangement Plan	P	P	P	P	P
Decking Plan	P	P	P	P	P
Capacity Plan	P	P	P	P	P
Hydrostatic Data (Tables)	P	P	P	P	P
Sounding Tables	P	P	P	P	P
Model Test Report	P	P	P	P	P
Sea Trials Report	P	P	P	P	P
Summary of Damage Stability Calculation	P	P	P	P	P
Stability Booklet and Loading Manual	P	P	P	P	P
Damage Control Plan and Booklet	P	P	P	P	P
Approval Plan	P	P	P	P	P
Ship's Name	P	P	P	P	P
Draught Marks and Paint Lines	P	P	P	P	P
Markings on Hull Art	P	P	P	P	P
Block Plan, Fore and Aft	P	P	P	P	P
Inventories, Spare Parts and Tools, Machinery Part List	P	P	P	P	P
Inventories, Spare Parts and Tools, Deck Part List	P	P	P	P	P
Register of Lifting Appliances	P	P	P	P	P
Towing Plan Booklet	P	P	P	P	P
Machinery Outfitting	P	P	P	P	P
Engine room arrangement	P	P	P	P	P
Arrangement of Engine Room	P	P	P	P	P
Arrangement of Emergency Genzel room	P	P	P	P	P
Arrangement of Engine Control Room	P	P	P	P	P
Arrangement of Steering Gear	P	P	P	P	P
Arrangement of Shafting	P	P	P	P	P
Arrangement of Bow Thruster Compartment	P	P	P	P	P
Arrangement of all Workshops, Machinery and Auxiliary Machinery	P	P	P	P	P
Store Floors	P	P	P	P	P
Arrangement of Hydraulic Rooms	P	P	P	P	P
Machinery Removal Routes Arrangement	P	P	P	P	P
Arrangement of Small Tanks	P	P	P	P	P
Pipemarking	P	P	P	P	P
Diagram of bilge system	P	P	P	P	P
Diagram of ballast system	P	P	P	P	P
Diagram of remote controlled valves	P	P	P	P	P
Diagram of quick-closing valves	P	P	P	P	P
Diagram of air pipes	P	P	P	P	P
Diagram of sounding pipes	P	P	P	P	P
Diagram of tank monitoring	P	P	P	P	P
Diagram of potable water system	P	P	P	P	P
Diagram of sanitary water system	P	P	P	P	P
Diagram of black and grey water system	P	P	P	P	P
Diagram of fire extinguishing system	P	P	P	P	P
Diagram of scupper and deck drainage	P	P	P	P	P
[redacted]	P	P	P	P	P
[redacted]	P	P	P	P	P
[redacted]	P	P	P	P	P
Diagram of the nitrogen system	P	P	P	P	P
Diagram of the fuel oil system	P	P	P	P	P
Diagram of fuel oil vent and overflow	P	P	P	P	P
Diagram of fuel oil transfer system	P	P	P	P	P
Diagram of separation system	P	P	P	P	P
Diagram of fuel and lub. oil leakage system	P	P	P	P	P
Diagram of lubricating oil system	P	P	P	P	P
Diagram of sea water cooling systems	P	P	P	P	P
Diagram of fresh water cooling systems	P	P	P	P	P
Diagram of chilled water system	P	P	P	P	P
Diagram of hot water system	P	P	P	P	P
Heat Balance	P	P	P	P	P
Diagram of compressed air system	P	P	P	P	P
Diagram of exhaust pipes	P	P	P	P	P
Diagram of engine room ventilation	P	P	P	P	P
Diagram of flap control	P	P	P	P	P
Calculation of engine room ventilation	P	P	P	P	P
Mounting of main engines and gensets	P	P	P	P	P
Insulation plan engine room	P	P	P	P	P
Lubrication chart	P	P	P	P	P
Makers' drawings for main engine and gensets	P	P	P	P	P
All other Makers' drawings	P	P	P	P	P
Steel Structure	P	P	P	P	P
Midship Section	P	P	P	P	P
Longitudinal sections	P	P	P	P	P
Deck's	P	P	P	P	P
Bulkheads	P	P	P	P	P
Shell Expansion	P	P	P	P	P
Deckhouses	P	P	P	P	P
Main Engine Foundation	P	P	P	P	P
Base Construction	P	P	P	P	P
Stern Construction	P	P	P	P	P
Non Destructive Testing Plan	P	P	P	P	P
Outfitting	P	P	P	P	P
Funnel mast	P	P	P	P	P
Scoring equipment (rudder/gear)	P	P	P	P	P
Mooring arrangement	P	P	P	P	P
Deck machinery arrangement fore & aft	P	P	P	P	P
Hydraulic piping diagram for deck and cargo equipment	P	P	P	P	P
Arrangement of anchors	P	P	P	P	P
Anchor chain design	P	P	P	P	P
Arrangement of elevators	P	P	P	P	P
Door and hatch plan	P	P	P	P	P
Plan of manholes and drain plugs	P	P	P	P	P
Arrangement of bow door and bow ramps	P	P	P	P	P
Arrangement of stern ramps	P	P	P	P	P
Arrangement of deck stairs	P	P	P	P	P
Arrangement - garbage treatment	P	P	P	P	P
Arrangement of drawings - open decks	P	P	P	P	P
Arrangement drawings - cargo hold/decks	P	P	P	P	P
Arrangement drawing of all lifting devices	P	P	P	P	P
Painting application	P	P	P	P	P
Cathodic protection	P	P	P	P	P
Fire Fighting / Safety Outfitting	P	P	P	P	P
Structural fire protection plans	P	P	P	P	P
Fire Control plan	P	P	P	P	P
Safety plan	P	P	P	P	P
Evacuation Analysis	P	P	P	P	P
Escape Route Drawing	P	P	P	P	P
Arrangement of life saving equipment	P	P	P	P	P
Insulation plans	P	P	P	P	P
Diagram of local application fire fighting	P	P	P	P	P
Diagram of CO2 fire fighting	P	P	P	P	P
Diagram of water mist systems for fire fighting	P	P	P	P	P
Accommodation, Ventilation	P	P	P	P	P
Accommodation plans	P	P	P	P	P
Public sanitary spaces	P	P	P	P	P
Arrangement of Store rooms	P	P	P	P	P
Key system/key plan	P	P	P	P	P
Interior specification (from architect)	P	P	P	P	P
Signage plan	P	P	P	P	P
Deck Covering plan	P	P	P	P	P
Window plan	P	P	P	P	P
Arrangement - catering equipment, galley and pantries	P	P	P	P	P
Provision rooms	P	P	P	P	P
Heat balance diagram for accommodation HVAC (Heating and cooling all affected compartments)	P	P	P	P	P
Diagram - HVAC - systems including schematic of all accommodation supply and exhaust vent ducts	P	P	P	P	P
Ventilation plan - cargo hold, ventilated rooms	P	P	P	P	P
Electrical Outfit / Navigation	P	P	P	P	P
Arrangement of wheelhouse	P	P	P	P	P
Arrangement of manoeuvring console	P	P	P	P	P
Arrangement of radar and signal mast	P	P	P	P	P
Arrangement of navigation and signal lights	P	P	P	P	P
Arrangement of all electrical rooms	P	P	P	P	P
Electrical Common System	P	P	P	P	P
Single Line Diagram	P	P	P	P	P
Electrical balance	P	P	P	P	P
Main switchboards	P	P	P	P	P
Emergency switchboard	P	P	P	P	P
Electrical Distribution Systems	P	P	P	P	P
Sub-switchboards & power installation in engine room	P	P	P	P	P
Connection diagrams	P	P	P	P	P
Cable diagrams	P	P	P	P	P
Electrical Outfit	P	P	P	P	P
Light in engine room	P	P	P	P	P
Sub-switchboards and power in Accommodation	P	P	P	P	P
Battery-less telephone	P	P	P	P	P
Position cooling, cable diagram	P	P	P	P	P
Air compressors, cable diagram	P	P	P	P	P
Fire detection and alarm, cable diagram	P	P	P	P	P
Light in accommodation	P	P	P	P	P
Sub-switchboards & power installation, Deck	P	P	P	P	P
Light on Deck	P	P	P	P	P
Integrated monitoring alarm and control system	P	P	P	P	P
ESD system for Engineering	P	P	P	P	P
IT & Comm. System Diagrams	P	P	P	P	P
Light for public area	P	P	P	P	P
Operating Manual	P	P	P	P	P

118 TECHNICAL TRAINING FOR CREW

The Builder will provide on board training in machinery and equipment for key staff. The Builder will also provide training as detailed in the Requirement Specification and Technical Schedule, and will include:

[redacted]	Up to 10 people (3 courses)
Navigation and Communication Systems	6 people
Communications Systems	6 people
Generators & Prime Movers	Up to 10 people (3 courses)
Propeller Units	Up to 10 people (CPP)
Power Management System	6 people
Alarm, Monitoring & Control Systems,	6 people
Lifesaving Equipment	6 people

This will be done separately from the commissioning process.

The training is to be in English and held by specialist commissioning engineers from the Builder, or representatives from sub-contractors, prior to delivery and signed off by Buyers.

Specialist [redacted] training (approx. 1 week per ship) will be provided to ship's crew.

Training will also include Ship Specific ECDIS training for Deck Officers.

- **Current Status**
- Further Queries around content/location/duration from CMAL have been submitted to [redacted]
- Agreement on FMPG numbers to be sent for training

The following has been achieved since the previous meeting.

- [redacted] are onboard conducting pre-commissioning checks on the switchboards. The following tests have been completed:
 - 240V switchboard main circuit breaker protection settings.
 - 690V, 240V and Emergency switchboard busbar flash tests.
- Shore power has been connected to the 415V switchboard via the port shore supply box for functional checks.
- Relief valves have been re-tested / certified and witnessed by [redacted] .
- Starting air and control air compressors have been visually inspected, turned by hand and filled with oil.
- Steering gear pipe work has been flushed.

Planned activities for the next 3 weeks.

- [redacted] have commenced point to point wire checking and circuit breaker testing on the 690V switchboard.
- 415/240V transformers will be inspected and insulation resistance checked week ending 27 May.
- Stbd shore supply box will be used to power the 415V switchboard week ending 03 June.
- One 415/240V transformer will be energised week ending 03 June. Power will be connected to the 240V switchboard.
- Port and Starboard motor control centres will be energised week ending 10 June.
- [redacted] due on site 07 June to download alarm system software on switchboards and below deck outstations.
- Group Starter cubicles are due for delivery 03 June.
- Testing of alarm system controls for the Group Starter Boards can commence on completion of alarm system software installation.

OORs

OOR status

	All categories	Category 1	Category 2	Category 3
Total Raised	604	366	225	13
Total Closed	419	251	168	0
Total committed	53	41	11	1
Total to close when work complete	71	47	17	7
Total still to resolve	61	27	29	5

Category 1 - Must be done before handover

Category 2 - General / Specification Issues to be done - may carry over to warranty period

Category 3 - Snagging

- Internal review and priority to Cat 1 – once agreed Change requests in place shall move to manage production work scopes
- Actions being identified to move Category 1 “close when work complete” to closure
- Meeting scheduled for 30 May to review all access / walkway OORs with CMAL

Top Risks

Risk No	Risk Category	Risk Identified by:	Risk Owner	Risk Description	process	Action Planned	Action Owner	Target Date	Controls Confidence Levels	Current Impact	Current Likelihood	Current Risk Score	SCORE AT LAST REVIEW
42	PROJECT RISK	[redacted]	[redacted]	Performance of on site subcontractors impacts programme Add risk of under-performance of subcontractor	Subcontract Manager in place to provide oversight	<ol style="list-style-type: none"> 1. Ensure access dates are achieved to minimise out of sequence working 2. Ensure all emergent change is managed through VO 3. Ensure material supply issues are addressed 4. Stores to provide complete kits 	[redacted]		Reasonable	50	5	250	50
79	PROJECT RISK	[redacted]	[redacted]	There is a risk of late change due to design errors. These errors may be mistake, missed cope or non-conformances to requirements / spec. The non-conforming escape routes, stability and fuel system are examples.	Continue to work with the relevant parties [redacted] CMAL) to derisk the design and agree acceptable concessions.	<ol style="list-style-type: none"> 1. Complete review of single line diagrams with CMAL. 2. complete all plan approvals. 3. Review critical installations with [redacted] where appropriate. 4. Complete update to contract technical spec to capture any agreed deviations and to identify any additional variations which need to be formalised or resolved. 5. Continue to work with the relevant parties [redacted] CMAL) to derisk the design and agree acceptable concessions. 	[redacted]		50	5	250	200	
77	PROJECT RISK	CMAL	[redacted]	There is a risk that if all OORs are not agreed as closed with CMAL that acceptance of the vessel will be difficult to achieve.	Regular reviews of OORs in place to agree way forward with CMAL. OORs to be done will be scoped within the re-baselined programme	<ol style="list-style-type: none"> 1. Work with Operations to close OORs with agreed solutions 2. Work with Engineering to conclude solutions to OORs without solutions 3. Put monitors in place to burn down OORs 4. SMT focus to be led by Head of Compliance 5. Maintain regular reviews 6. Ensure agreed OORs are scoped within the programme and workpackaged 	[redacted]		Limited	50	5	250	250
4	Production	[redacted]	[redacted]	There is a risk that the programme is impacted due to a lack of buy-in from workforce to deliver the plan. This includes the fitness of our workforce to deliver the challenge ahead (mature workforce)	<p>Rollout of Visual Management on 801;</p> <p>Allocation of Supervisor to zones with a team;</p> <p>Rollout of performance management</p> <p>Continue and excel the D&A testing across all shift including weekend</p>	<ol style="list-style-type: none"> 1. Employee engagement sessions planned for January 2022, planned for week 3 2. Provide visibility of the plan - rollout week 2 (for next 6 weeks) 3. Finalise allocation of supervisors to areas for start back in January - rollout week 02 4. Performance management in place in January 2022 5. Supervision / workforce buy in to working overtime needs to be increased 	[redacted]		Reasonable	50	5	250	200
53	Engineering	[redacted]	[redacted]	Overhaul and Maintenance. Client concerned about removal space for ME pistons and other generators (thinks harbour gen set should be OK). This should be considered as high as it would prevent hand over	Removal diagrams have been produced showing that removal is feasible but space is tight.	<ol style="list-style-type: none"> 1. Demonstrate removal onboard at the earliest opportunity 2. New action April 20: model removal reviews and demonstrations being undertaken and may fully prove the removal requirements 3. Demonstrate that design drawings clearly instill confidence to CMAL that removal routes can be achieved. 4. The removal of key mechanical components to be physically demonstrated as part of the trials program. 	[redacted]		50	4	200	20	

Top Risks

Risk No	Risk Category	Risk Identified by:	Risk Owner	Risk Description	process	Action Planned	Action Owner	Target Date	Controls Confidence Levels	Current Impact	Current Likelihood	Current Risk Score
41	PROJECT RISK	CMAL		[red bunkering requires modifications as risk assessment has not yet been undertaken	HAZOP, HAZID and bunkering risk assessment undertaken	<ol style="list-style-type: none"> Attend LNG training to identify work to be done Confirm that all actions from RBD are closed Identify LNG suppliers (CMAL to advise) Conduct initial risk assessment and action issues as required. Consider whether a Subject Matter Expert should be used. Identify potential bunkering location (Troon to be confirmed) Engage with all appropriate parties (including SME to complete risk assessment) Conduct full risk assessment. 	[redacted]		Limited	50	4	200
70	Engineering	[redacted]		there is a risk that there remains a non compliant axilock that has not been picked up as part of the review and modifications that have been issued.		<ol style="list-style-type: none"> Review status of all remaining axilocks on the ship ensure that the Change / Mod Sheets to remove axilocks have been implemented and signed off. QC to conduct survey checks and use "cheat sheet" to confirm that axilock types / locations are correct 	[redacted]			50	4	200
78	PROJECT RISK	[redacted]		There is a risk that late approval of drawings results in additional reworking of progressed areas. This is a risk associated with change process / configuration management		<ol style="list-style-type: none"> Close all outstanding approvals with MCA / LR Ensure all new AFC drawings are issued to Operations Ensure all new drawing revisions are included in plan install 3D model station on ship to provide access to supervisors close out NC on review of revision levels of drawings with Supervision process to be agreed to capture as built changes and update line diagrams 	[redacted]		Reasonable	50	3	150
6	Engineering	[redacted]		There is a risk that there are items in the model which are required but do not have a production output drawing [redacted] or FMPPG. This would lead to late emerging change, late hotwork.	Ship Manager currently reviewing the model zone by zone and feeding back gaps to engineering. This process is however reactive and not effective use of	<ol style="list-style-type: none"> Drawings to be moved to sharepoint Model to be available on the ship Put change manager in place [redacted] move to Manufacturing Engineering (Buildability). [redac to review the Model and the ships for Critical areas. Where drawing are not available, develop a fast track process (quick sketch) to allow the work to be completed. Work with Operation Manager [redacted] and Technical Liaison to manage and fast track missing drawings which are key to complete hotwork. How are supplier detailed workpackages packaged (e.g. TTS, alfa laval boiler) Defined list available for platforms / walkways / ladders to be detailed by FMPPG Area reviews by composite team will highlight issues 	[redacted]		Reasonable	50	3	150
26	PROJECT RISK	[redacted]		Level of rework not sufficiently scoped. Known rework not fully scoped. Unknown rework will occur particularly during the test and commissioning phase	CNs and 200 series included in programme Change control process implemented. OORs incorporated into model	<ol style="list-style-type: none"> Completion of re-baseline evaluation Allow additional time in the commissioning programme confirm all lockout items are in space prior to hotwork completion Check legacy change has all been completed or planned 	[redacted]		Reasonable	25	4	100

801		Issues found	
		known	unknown
Solutions found	known	Reinststate legacy cables Wheelhouse Console modifications (timing / duration / place) Bow ramp repairs [redacted] cope to complete Approved Change Requests (including OORs (will be done) [redacted] bow thruster seal replacement - part of dry dock scope Bunkering plan FMPG drawing deliverables to complete (platforms / ladders) Scuppers to remove (CMAL request) Crossflood pipe change (material due into UK 18 May) Fuel Oil System modifications (PORTSIDE) Crankcase Breather modifications Dry Dock availability / Vendor support [redacted] - lift installation to be detailed in plan Chemical clean of FO/LO system External Paint budget aligned to agreement with CMAL Funnel / uptakes outfitting completion 2 deck damage to repair (WIP) HT/LT axilock EPDM replacement MCA - insulation of pens on accommodation decks Additional weathertight doors to meet stability requirements MCA Approval of Aft Navigation Light - risk that MCA don't approve (Zone 1)	Missing structure not yet identified Equipment still to be ordered Sabotage (e.g. pipe contamination) Equipment failure - OEMs / prime contractors Unkown damage / defects Failure of plant / machinery impacts programme Vibration levels exceed acceptance criteria Noise levels exceed acceptance criteria Risk of reporting %age complete into SG timescale to present serviceable machinery space (systematic review to ensure compliance) Lockout items are locked out requiring rework Failure of equipment during warranty period Commissioning scope for OEMs not fully in place
	unknown	Open OORs (no agreed solution) Pending / Emergent Change Requests Instrumentation installation detail to complete (gauge boards / piping etc) Deconstruction [redacted] Additional hotwork to complete areas Walkway modifications Soft Engineering Deliverables (O&O guides / As fit Drawings / FMEA / Certification / Contract Specification) lightship / speed requirements are met [redacted] of staircase width normal flushing of remaining systems Repair method for Wheelhouse Windows (risk is we need to replace) Availability/Lead Time of LR approved Quick Release hatch for shaft inspection (late hotwork in Steering Gear compartment - due to length of process to get a hatch through approval process)	Full Approvals have not yet been achieved - no of exemptions required Unknown errors in basic / detailed design Output from Peel Ports - supply chain impact Weather events & Acts of God COVID re-emergence Key personnel availability NATO escalation impacts availability of [redacted] Fuel costs increase risk of absenteeism / WFH

Variations to Contract

<u>VTC's</u>	<u>Contract Section</u>	<u>Description</u>	<u>Date Requested</u>	<u>Impact</u>	<u>Comments</u>	<u>Status</u>
LNG-100-114	section 813: Fire and Wash Deck System	A fresh water fire main, supplied from the vessel's domestic fresh water system, will be provided in the main accommodation area and small bore fire hoses, of nominal 25 mm diameter and not exceeding 15 m length, will be provided at sufficient locations on each deck level to reach all parts of the accommodation This requirement to be deleted	13/04/2020	Requirement to be removed from technical specification		[redacted]
100-119	N/A	Provision of workshop tools		FM to supply various tools/pieces of equipment for workshop		postponed
LNG-100-121	section 561 i) passenger lifts	addition of weathertight door for passenger lift on 07 deck				costs to be determined
LNG-100-123	section 868: shore supply	Addition of a shore supply connection box for 802				[redacted]
100-127		Sanitary/Grey Water System		Re-routing of laundry discharges to grey water tank		under investigation
LNG-100-128		Quick Release Hatches for shaft inspection in Workshop / Nitrogen spaces				under investigation
LNG-100-129		Domestic Hot Water		The installation for the potable freshwater which within the contract is stipulated as copper piping. Agreement with CMAL to change to Mapress rather than copper. This is a suitable replacement that is easier to install and maintain and is suitable for use on domestic systems. We have engaged with [redacted] and they do not have any issue with this	Amend Technical specification	[redacted]

CMAL Comments to the Monthly Report

CMAL Comments: