

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

**Programme Director:** [redacted]

**Review Period:** April 2022

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



Introductions & Apologies.  
Minutes from Last Meeting.

- HSE.
  - General Update, any issues.
- Programme.
  - 801 - Cardinal Date Programme Review.
    - CD - Programme Review.
    - Engineering & Steelwork.
    - Outfit.
    - Pipework.
    - Electrical.
    - Drydocking
    - Specialist Subcontractors.
    - Labour & Resource.
    - Issues, Challenges & Successes.
  - 802 - Cardinal Date Programme.
    - Fabrication & Erection.
    - Launch.
    - Outfit through to commissioning.
    - Pipework progress.
    - Electrical.
    - Specialist Subcontractors.
    - Labour & Resource.
    - Issues, Challenges & Successes.
- Engineering / Technical.
  - Stability.
  - Weight.
  - OOR's
  - FMEA way forward.
  - MCA / Lloyds issues.
  - Drawing Approval & Contract Specification update.
  - Drawing Status Update.
  - Crew Training.
- Commissioning.
  - Programme Review.
  - Specialised subcontractor support.
- Quality.
  - General update.
- Risk Register.
  - Review.
- Commercial.
  - Variations to Contract.
- AOB.

## Health & Safety

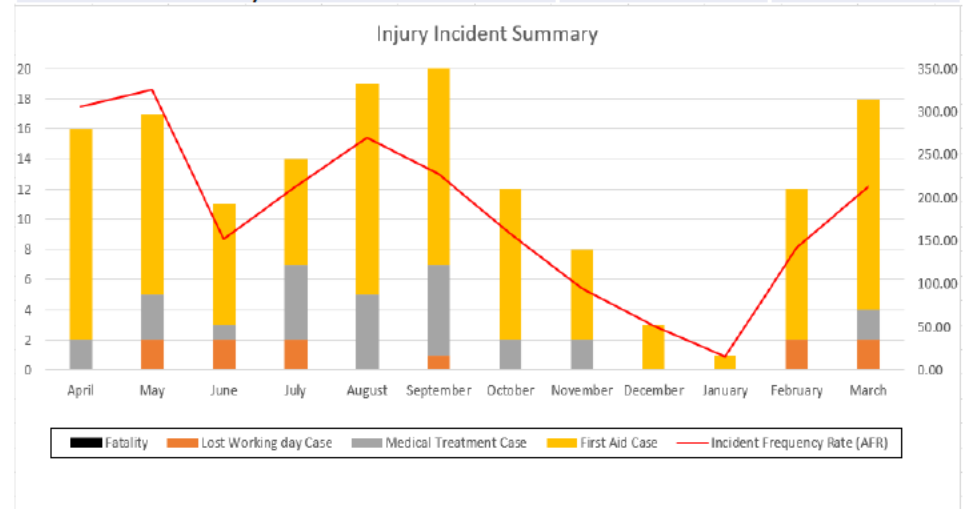
### Highlights

- Contract HSE Manager started on 21st March, other recruitment is ongoing
- Covid-19 cases stabilizing, we continue to monitor the impact whilst reducing our control measures in line with Scottish Government instructions.
- Road map to change complete and priority 1/2/3 identified with suitable timelines for completion of each phase (P1 30-60 days ) P2 (60 – 90) ( P3 – 120) days.
- 18 injury incidents reported
- 2 LTIs, ( Both 7 days – fractured finger / cut to hand RIDDORs due to time)
- 2 MTCs (slipped on stairs & hit thumb with hammer)
- 14 FACs
- 12 Near Misses – still low but report nonetheless.

### Moving forward :

- ERT review conducted and completed using third party – ERT now under the stewardship of HSE.
- Work continues to develop a more agile PTW system whilst maintaining the control required.

	Mar-22	Cumulative
Fatality	0	0
Lost Working Day Case	2	11
Medical Treatment Case	2	28
First Aid Case	14	115
Property Damage	1	3
Fire Incident	1	1
Environmental Incident	0	0
High Potential Near Miss	0	5
Near Miss	12	29
Total No. of Recordable Injuries	4	7
RIDDORS ( counted in category)	2	3
Total Number of Days Lost	14	76



**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												█		▨										

**Engineering & Steelwork**

[redacted] Scope

- Mezzanine hotwork 90% complete
- Trials done on both forward mezz ramps completed successfully
- Doors – smooth opening / closing demonstrated
- Hinge points re-established
- Fwd STBD Pilot door operation established manually, hydraulics still to be connected
- Mezzanine decks, temporary pilot ropes installed to allow easier montage of wires later.

**Steelwork**

- Critical areas progressed to allow [redacted] access to ECR and Em Dg to complete pre-commissioning activities
- STP and Hydraulics room progressing to revised plan
- 7 deck accommodation areas - hotwork being concluded for [redacted]
- MCA have provisionally signed off 7 deck
- Extension of [redacted] to end of July
- Shell side fairing underway

**Specialist Subcontractors**

- [redacted] - on site week 16 to commence gas phase installation
- Observation windows - specialist fitters due on site for review, plan to install June
- Lifts - [redacted] – programme received and draft plan submitted for agreement. Due on site end May to commence work.

**Electrical**

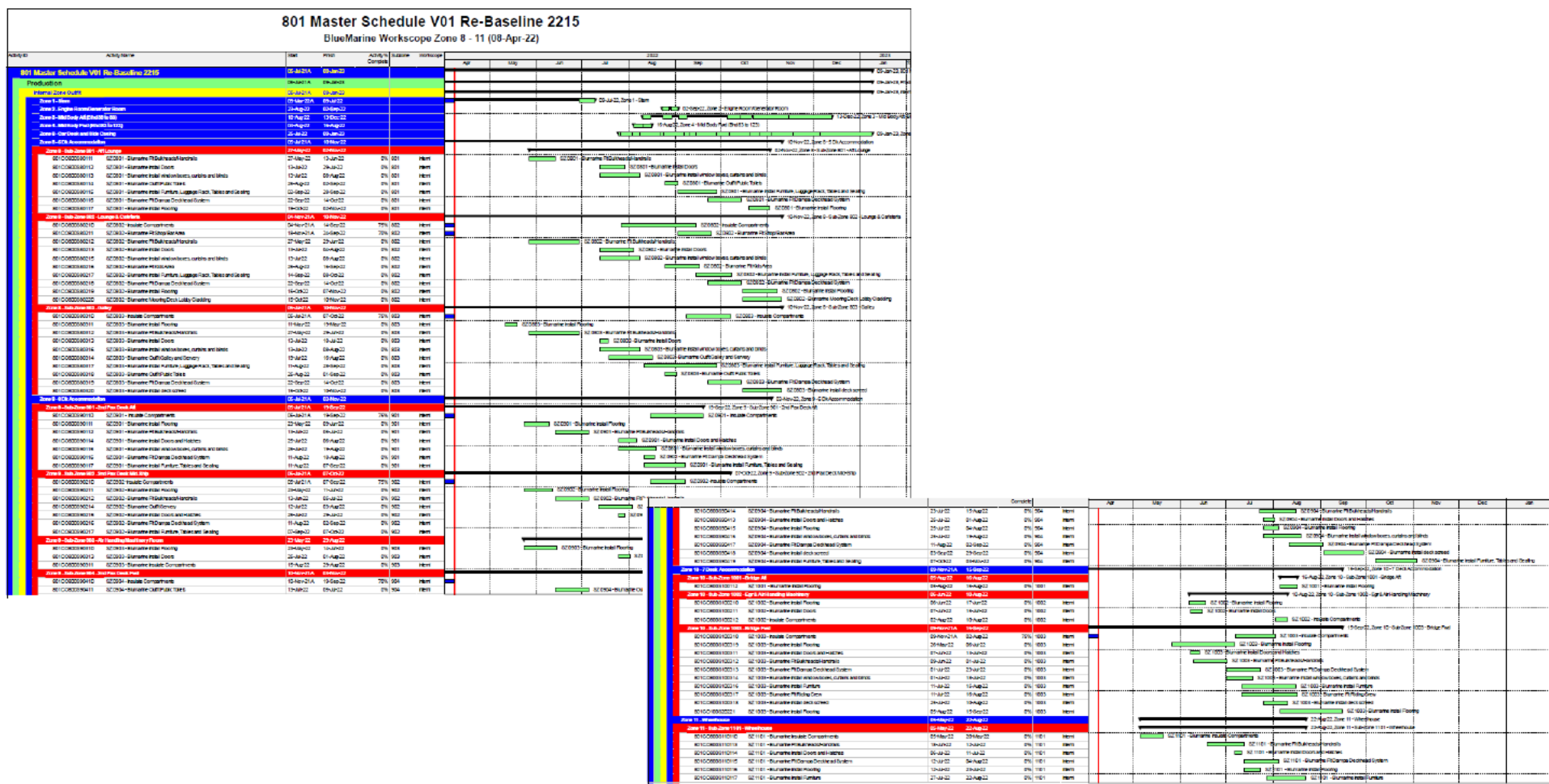
- Upper Decks 7,6,5 main ladder rack installed and signed off by QC ( CMAL involved during inspections)
- Cable install commences week 16 on 7,6,5 deck.
- [redacted] & the hot work team have made excellent progress in the lower decks to complete electrical brackets welded and painted in the critical path for the main cable routes.
- Decks ,2,3,4 main ladder rack inspection continues this week, all scope clearly broken down to 3 phases with QC ,
- Phase 1 complete STP, hydraulic, Steering gear, workshop area, compartments are all complete, all other key areas in lower decks for main ladder rack will signed off by 5th May.
- 2 deck cable install commences wk17, PoaP for weekly qty will be issued.
- Commissioning plan will be given priority at all times, (although we will go for volume cable install circa 220,000 [redacted] to go includes legacy ) a specific team will be allocated to the commissioning plan to work though to completion.
- There are 2 weekly meetings in addition to POTD one commercial and the other on the ship, to ensure all are on the one page with our planning commitments/milestones for 801.

**Pipework**

- Fuel Oil changes underway
- SW changes underway in ER/GR tanks
- Critical systems established with commissioning plan
- Weekly reviews underway

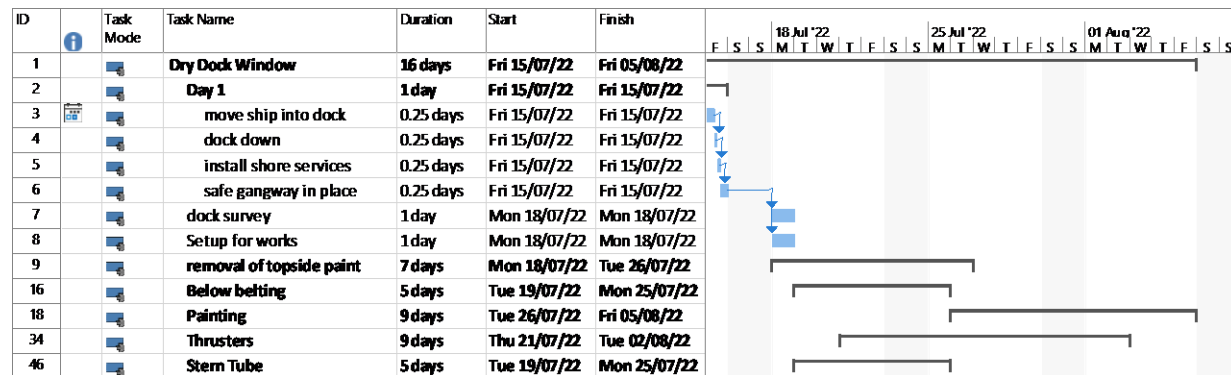
	309	414	554	571	577	581	582	666	701	704	705	708	709	711	712	713	731	732	735	731	740	743	801	802	803	804	813	815	816	818	819	821	NA	Grand Total						
Zone 1	17%					68%	33%							11%		46%				55%																				
Zone 2	66%					81%	82%	100%	0%	99%	52%	99%	55%	0%	91%	89%	22%	100%	87%	80%	73%		87%	70%	98%	98%	87%	100%		95%	0%	60%	88%		82%					
Zone 3	45%					62%	69%			100%	50%	20%	33%			42%	18%	84%	75%		100%	100%	100%	80%	88%	84%	100%													
Zone 4	37%					38%	70%	78%	73%							0%		100%	53%	63%						53%	73%	34%	0%	24%										
Zone 5	0%					0%	0%									31%										40%	38%	20%	0%											
Zone 6	3%					83%	0%	2%	43%							0%										24%	73%	49%	51%	29%	32%	13%	24%							
Zone 7						33%	3%									81%	0%	0%								24%	0%	41%	43%			55%	27%							
Zone 8	0%					85%	82%	80%	0%																		50%	31%	0%	0%										
Zone 9						42%	34%	64%	0%																		18%	67%												
Zone 10						0%	0%	79%	0%																		10%	0%	0%											
Zone 11						0%	0%																																	
NA						31%	0%	0%	11%	14%	6%	50%	0%	0%	9%	32%	9%	40%	15%	72%	89%	28%	100%	71%	70%	82%	41%	18%	83%	8%	74%	47%	54%	28%	33%	32%	4%	6%		

• [redacted] plan in place



# Drydocking

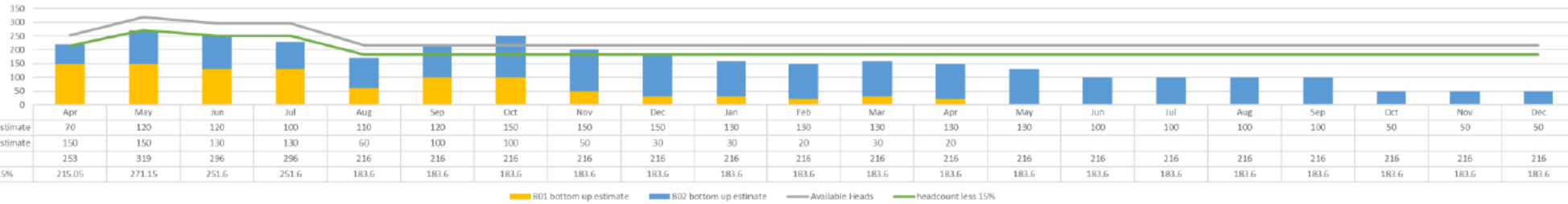
- Slots booked
  - Summer Docking                      15 July to 07 August 2022
  - Winter Docking                        23 January to 31 January 2023
- Thrusters
  - 802 Thrusters being removed for shipment to Wartsila, plan to complete week 16.
  - PO placed for overhaul of both 801 / 802 thrusters and service engineer support for 801 docking
- Scope
  - Scope of Work reviewed at meeting with [redacted] 13 April , major activities:
    - Paint topsides
    - Removal of marine growth
    - Painting below belting
    - Replacement of thruster pods
    - Stern tube
    - Draught marks



# Forecast Labour & Resource.



Overall Resource Demand



- [redacted]
  - Reduced team over Easter break
  - Contract extended from week 18 to maintain a headcount of 80 to support 801 and 802
- Overall loading can be contained within current headcount
- Trade level reviews required, particular attention to demand on shipwrights and engineer/fitters



- Issues

- Axilock change out on HT-LT – access issues – impact being assessed

- 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

- Bow door operation
- MCA provisional sign off - 7 deck
- [redacted] access achieved to commence pre-commissioning checks

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

### **Manufacturing Sheds**

- Plan for remaining units now in place.
- Outfit to be maximised in sheds prior to erection.
- Wheelhouse and both wheelhouse voids will be completed and erected as one unit.

### **Erection & Consolidation**

- Erection & Consolidation plan now in place.
- Units 49, 50 & 51 to be erected as block week commencing 25/04/2022.

### **Outfitting**

- Outfitting to be maximised in Sheds before unit erection.
- Plan now in place for outfitting to completion.

### **Pipework Installation**

- Commencing June.

### **Launch**

- Launch preparation commencing August.
- 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**

- Issue

## **Challenges**

- Manpower.
- Change management.
- Materials.

## **Successes**

- Complete BOM now available.
- Unit 49/50/51 completed as block ready to be erected week commencing 25/04/2022.

# 802 Progress & Trackers

**Progress to be measured using below method with percentage completion against each activity.**

ITEM TYPE	ZONE	SUB-ZONE	PROJECT DOCUMENT TITLE	PROJECT DOCUMENT NUMBER	TAG NUMBER	TAG DESCRIPTION (IF ANY)	REVISION (IF NECESSARY)	STATUS	Manufactured (YES/NO)	MA Workpack number	IN Workpack number	Filled (YES/NO)
Foundation	01	0102	Key plan of Foundations - 0102	8625-0102-HO-DW-263-100	0102-FND-570EF001	FOUNDATION FOR EF-1 STEERING GEAR ROOM - EXHAUST FAN	N/A	VALID	YES	802MaS0102Hw04	802InS0102Hw04	NO
Foundation	01	0102	Key plan of Foundations - 0102	8625-0102-HO-DW-263-100	0102-FND-570FE028	FOUNDATION FOR H-28 ELECTRIC AIR HEATER - FAN ASSISTED	N/A	VALID	YES	802MaS0102Hw04	802InS0102Hw04	NO
Foundation	01	0102	Key plan of Foundations - 0102	8625-0102-HO-DW-263-100	0102-FND-570FE029	FOUNDATION FOR H-29 ELECTRIC AIR HEATER - FAN ASSISTED	N/A	VALID	YES	802MaS0102Hw04	802InS0102Hw04	NO
Foundation	01	0102	Key plan of Foundations - 0102	8625-0102-HO-DW-263-100	0102-FND-570SF001	FOUNDATION FOR SF-1 STEERING GEAR ROOM - F.A. SUPPLY FAN	N/A	VALID	YES	802MaS0102Hw04	802InS0102Hw04	NO
Foundation - Vera Navis	01	0102	WZ01-HO-Vera Navis Drawing	WZ01-HO-Vera Navis Drawing	E-0102-FND-403EC020	for Steering Gear Motor Controller No.2 & Steering Gear.M	N/A	VALID	NO	802MaS0102Hw04	802InS0102Hw04	NO
Foundation	01	0102	Key plan of Foundations - 0102	8625-0102-HO-DW-263-100	0102-FND-E-DOOR201-ACCU M	REINFORCEMENTS OF FOUNDATION FOR WT DOOR ACUMULATOR 20L	N/A	VALID	YES	802MaS0102Hw04	802InS0102Hw04	NO
Foundation	01	0102	Key plan of Foundations - 0102	8625-0102-HO-DW-263-100	0102-FND-LO-096	FOUNDATION FOR SEMI ROTARY HANDPUMP (LO-096)	N/A	VALID	YES	802MaS0102Hw04	802InS0102Hw04	NO
Foundation	01	0102	Key plan of Foundations - 0102	8625-0102-HO-DW-263-100	0102-FND-SVD-075	equipment inoh Hand Pump Rotaryinoh	N/A	VALID	YES	802MaS0102Hw04	802InS0102Hw04	NO
Lifting Eye	01	0102	Detail dwgs for Structures for Lifting Eyes-0102	8625-0102-HO-DW-462-100	0102-HST-201	LIFTING EYE TYPE A SWL0.5	N/A	VALID	YES	802MaS0102Hw06	802InS0102Hw06	NO
Lifting Eye	01	0102	Detail dwgs for Structures for Lifting Eyes-0102	8625-0102-HO-DW-462-100	0102-HST-202	LIFTING EYE TYPE A SWL0.5	N/A	VALID	YES	802MaS0102Hw06	802InS0102Hw06	NO

Activity ID	Activity Name	Start	Finish	Activity % Complete	Discipline
Manufacturing		24-Jan-22 A	15-Sep-22		
Zone 1 - Stern		19-Apr-22	09-Sep-22		
Sub-Zone 0101 - Tank Top - Voids and Tanks (Aft)		19-Apr-22	22-Aug-22		
Hull Outfit Manufacturing		19-Apr-22	22-Aug-22		
802MaS0101Bm01	Sub-Zone 0101 - Hull Outfit Manufacturing Start	30-May-22		0%	HM
802MaS0101Hw01	Sub-Zone 0101 - Manufacture Pipe Pens	30-May-22	22-Aug-22	0%	PM
802MaS0101Hw02	Sub-Zone 0101 - Manufacture Pipe Supports	30-May-22	22-Aug-22	0%	HM
802MaS0101Hw03	Sub-Zone 0101 - Manufacture Ldrs	30-May-22	22-Aug-22	0%	HM
802MaS0101Hw04	Sub-Zone 0101 - Manufacture Manholes	30-May-22	22-Aug-22	0%	HM
802MaS0101Hw15	Sub-Zone 0101 - Manufacture Manholes no 88 & 91- CR 446	30-May-22	03-Jun-22	0%	HM
Pipework Manufacturing		28-Apr-22	28-Apr-22		
Sub-Zone 0102 - Steering Gear and Escapes		08-Jun-22	31-Aug-22		
Hull Outfit Manufacturing		08-Jun-22	31-Aug-22		
802MaS0102Bm01	Sub-Zone 0102 - Hull Outfit Manufacturing Start	08-Jun-22		0%	HM
802MaS0102Hw01	Sub-Zone 0102 - Manufacture Pipe Pens	08-Jun-22	31-Aug-22	0%	PM
802MaS0102Hw02	Sub-Zone 0102 - Manufacture Elect Pens	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw03	Sub-Zone 0102 - Manufacture HVAC Pens	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw04	Sub-Zone 0102 - Manufacture Major Seats	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw05	Sub-Zone 0102 - Manufacture Elect Seats	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw06	Sub-Zone 0102 - Manufacture Lift Eyes	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw07	Sub-Zone 0102 - Manufacture Pipe Supports	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw08	Sub-Zone 0102 - Manufacture Cable Tray Supports	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw09	Sub-Zone 0102 - Manufacture HVAC Supports	08-Jun-22	31-Aug-22	0%	HM
802MaS0102Hw10	Sub-Zone 0102 - Manufacture WW/Stairs/Pltfs, Ldrs/Rails	08-Jun-22	31-Aug-22	0%	HM
802MaZ0100Hw01	Sub-Zone 0102 - Manufacture Unit 82/83/84 Additional Stiffeners	08-Jun-22	14-Jun-22	0%	
Sub-Zone 0103 - Workshop and Stores		17-Jun-22	09-Sep-22		
Hull Outfit Manufacturing		17-Jun-22	09-Sep-22		

Extract from tracker above.

- Trackers created direct from BOM.
- 4 trackers 1 per discipline, Hull Outfit, Piping, HVAC and Electrical.



## Major OORs listed only.

- OOR 267 Equipment in Bunker station to be zone 1 - *Valve block relocated to airlock but still being worked for final solution (potential large cost to purchase Atex rated valves).*
- OOR 341 Accessibility to Equipment in ER & GR – *Ongoing with CRs raised to address some issues but physical walk round to be agreed with CMAL for closure.*
- OOR 531 Access to area behind fuel oil purifier – *CR 499 created to fix*
- OOR 532 Access issues beneath lub oil purifier platform - *CR 501 created to fix*
- OOR 552 Panels and small E/L items shown in the 3D model not recessed as per our Specification – *Under investigation*
- OOR561 Orientation and access to stbd generator quick closing valve - *Orientation of Valve will be changed.*
- OOR 568 Diesel fuel system overflow - venting arrangement – *CR being raised to correct error within ICE model.*

- **Stability**

- MCA have provisionally given their approval for the weathertight partial bulkhead on the ECR stairs, subject to approval of the escape routes. From stability perspective it is fine, and the solution meets all regulatory requirements, so we are confident it will be approved
- Cross flooding pipe due to arrive in yard 23<sup>rd</sup> May, with installation to follow thereafter
- Awaiting updated calculations for damage stability (Water on Deck) following updates to ECR partial bulkheads and the doors on the car deck

- **Weight**

- Current predicted weight is 3556T (was 3562T in last updated). Target is 3553T.
- 106T remains to be validated (18T validated last month)
- Total validated amount is 3,449T, 97% of total
- We still have 44T of contingency (margin) in our total predicted weight.
- Validation on foundations & supports and small items are ongoing since the last revision. (The number of items to be validated are higher compared to system weights, and new weight list release will be after more maturity)
- As of mid-March, weight distribution study started to provide feedback for launching calculations and docking.

## Other docs to deliver

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- FMEA - CMAL / CalMac to confirm if this is still required
- Machinery list (including serial numbers) is WIP. The commissioning team are producing and will also record last maintenance date where appropriate.
- Operations Manual – Still awaiting feedback from CMAL
- As built drawings for P&IDs and Compartment Arrangements.

## Lloyds and MCA plan approval update

### Lloyds

Under Review with Lloyds	Date Sent to LR	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	

### MCA

Under Review with MCA	Date sent to MCA	Note
Emergency Towing Booklet	11/04/2022	
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	MCA 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 MCA (in Work)	Date sent to MCA	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	Adam to confirm requirement	[redacted] Updating
Emergency Low level lighting	submit after escape routes update	
Escape Route Plan	LR Re producing escape documentation	To clarify escape times with as built GA.

- CMAL Drawing Approval update
  - 68 Arrangement Drawings to be approved by CMAL
    - 14 approved by CMAL
    - 24 submitted for review (Pulled back from CMAL and under review again due to errors in coordination), schedule for re-submission to be agreed in week 16
    - 30 still to be reviewed, schedule for submission to be agreed in week 16
    - \*Outfitting team currently working with CMAL to review all drawings for changes to model to ensure approval and coordination with Outfit Contractor\*
  - 9 Systems Approved 23 Systems to be approved by CMAL, schedule for completion to be agreed with CMAL
- 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
<b>General Arrangement Plan</b>	P	P	P	P	P
<b>Docking Plan</b>	P	P	P	P	P
<b>Capacity Plan</b>	P	P	P	P	P
<b>Hydrostatic Data (tables)</b>	P	P	P	P	P
<b>Sounding Tables</b>	P	P	P	P	P
<b>Model Test Report</b>	P	P	P	P	P
<b>Sea Trials Report</b>	P	P	P	P	P
<b>Summary of Damage Stability Calculation</b>	P	P	P	P	P
<b>Stability Booklet and Loading Manual</b>	P	P	P	P	P
<b>Damage Control Plan and Booklet</b>	P	P	P	P	P
<b>Freeboard Plan</b>	P	P	P	P	P
<b>Ship's Name</b>	P	P	P	P	P
<b>Draught Marks and Paint Lines</b>	P	P	P	P	P
<b>Markings on Shell, Aft</b>	P	P	P	P	P
<b>Body Plan, Fore and Aft</b>	P	P	P	P	P
<b>Inventories, Spare Parts and Tools, Machinery Part (list)</b>	P	P	P	P	P
<b>Inventories, Spare Parts and Tools, Deck Part (list)</b>	P	P	P	P	P
<b>Register of Lifting Appliances</b>	P	P	P	P	P
<b>Towing Plan Booklet</b>	P	P	P	P	P
<b>Machinery Outfitting</b>	I	II	III	IV	AB
Engine room arrangement	P	P	P	P	P
Arrangement of Engine Room	P	P	P	P	P
Arrangement of Emergency genset 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 Work shops, Machinery and Auxiliary Machinery Store Rooms	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
Pipe marking	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
Diagram of the LNG / fuel gas system	P	P	P	P	P
Diagram of the LNG loading system	P	P	P	P	P
Diagram of LNG Gas Leak Detection	P	P	P	P	P
Diagram of LNG System Cold Spot Detection	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
Maker's drawings for main engines and gensets	P	P	P	P	P
All other Maker's drawings	P	P	P	P	P
<b>Steel Structure</b>	I	II	III	IV	AB
Midship Section	P	P	P	P	P
Longitudinal sections	P	P	P	P	P
Decks	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
Bow Construction	P	P	P	P	P
Stern Construction	P	P	P	P	P
Non Destructive Testing Plan	P	P	P	P	P
<b>Outfitting</b>	I	II	III	IV	AB
Funnel mark	P	P	P	P	P
Steering 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 stores	P	P	P	P	P
Arrangement - garbage treatment	P	P	P	P	P
Arrangement drawings - open deck	P	P	P	P	P
Arrangement drawings - cargo hold deck	P	P	P	P	P
Arrangement drawing of all lifting devices	P	P	P	P	P
Painting specification	P	P	P	P	P
Cathodic protection	P	P	P	P	P
<b>Fire Fighting / Safety Outfitting</b>	I	II	III	IV	AB
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 Routes 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
<b>Accommodation, Ventilation</b>	I	II	III	IV	AB
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 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 - system, 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
<b>Electrical Outfit / Navigation</b>	I	II	III	IV	AB
Arrangement of theelhouse	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
<b>Electrical Outfit</b>	I	II	III	IV	AB
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
Provision 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 Bunkering	P	P	P	P	P
IT & Comms. System Diagrams	P	P	P	P	P
Light for public area	P	P	P	P	P
Operating Manual	P	P	P	P	P

# Crew Training

## 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:

LNG Systems	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 LNG training (approx. 1 week per ship) will be provided to ship's crew.

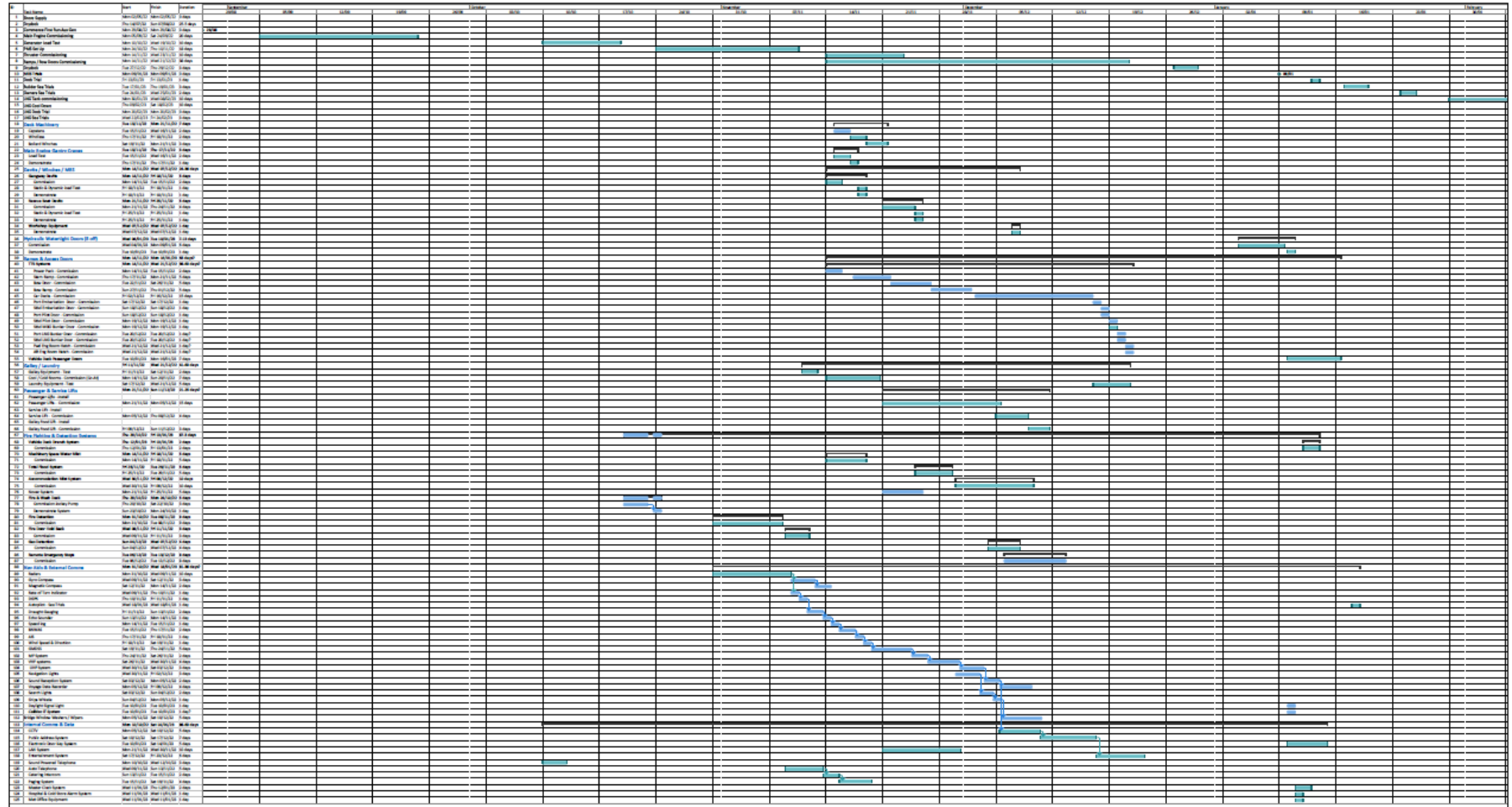
Training will also include Ship Specific ECDIS training for Deck Officers.

- **Current Status**
- Proposed [redacted] dates have recently been received, and now with CMAL for agreement

- [redacted] are onboard conducting pre-commissioning checks on the switchboards.
- The following tests have been witnessed by Lloyds:
  - 415V switchboard main circuit breakers protection settings.
  - 415V switchboard busbar ductor testing.
- Circuit breaker protection settings and ductor testing will be carried out on all switchboards over the coming weeks.
- Shore power will be connected to the 415V switchboard for functional checks.
- 415/240V transformers will be inspected and insulation resistance checked. Transformers will be energised when shore power is available
- 240V & 24V UPS's in ECR will be inspected and energised.
- First commissioning meeting scheduled for 21 April.



# Commissioning Programme - extract



## OOR's

Closed	379
Open*	90
Will be done	121
Total	590

\*Open breakdown - (Note: ^clear demarcation under review as often OORs have multiple inputs between Dept)

Ops	37^	10 under review, 24 have responses but not started, 3 are part of Accessibility
Eng	43^	9 Under review, 23 have responses but not started/agreed, 11 are part of Accessibility
QC	7	
DD	1	
Comm	2	
TOTAL	90	

To tackle the "Will be done" items. Composite team to be assembled to systematically drive closure of open "Will Be Done" items, Driven by QC

**DC Surveys** – Units 49,50 and 51 surveys complete. Dimensions being checked to provide dimensions to mark the Greens in readiness for erection.

**7 Deck** - Insulation surveys completed in readiness for MCA inspection due in April.

**Painting** - 801, Hull fairing ongoing in readiness for painting  
802, Tanks being surveyed, and reports being published to provide guidance to bring the coatings up to spec.

**Surveys**- 67 surveys conducted. (35 Steel work, 12 Pipework, 10 Outfitting, 6 Paint and 4 Electrical)

### NDT

801	MPI	9	All Passed
	DPI	2	1 Pass, 1 Failed (reworked)
	UT	1	Pass
802	MPI	2	All passed
	DPI	3	All passed

**Lloyds** - 801, Hydraulic Room. Insert on Deckhead Passed  
801, Wheelhouse top, straightness check Passed

**ISO Auditing**- 5 internal audits conducted. 1 Supplier Audit conducted  
LRQA Audit Surveillance Audit confirmed for **9<sup>th</sup> – 12<sup>th</sup> May**

**Processes** - Process approved for the TQ process, this will allow Fast Tracking of non-critical changes on board and key focus of the new approach to OOR closure

# Top Risks

Risk No	Risk Category	Risk Owner	Risk Description	Action Planned	Controls Confidence Levels	Current Impact	Current Likelihood	Current Risk Score	SCORE AT LAST REVIEW	Date Last Reviewed	Change explanation
42	PROJECT RISK	[redacted]	Performance of on site subcontractors impacts programme	<ol style="list-style-type: none"> <li>1. Ensure access dates are achieved to minimise out of sequence working</li> <li>2. Ensure all emergent change is managed through VO</li> <li>3. Ensure material supply issues are addressed</li> <li>4. Stores to provide complete kits</li> </ol>	Reasonable	50	5	250	50	07/04/2022	organisations in place; controls remain WIP; risk of out of sequence work remains
2	PROJECT RISK	[redacted]	There is a risk that we are unable to complete Critical compartments in line with the plan due to emergence of 'unscoped changes'.	<ol style="list-style-type: none"> <li>1. Extend the change process to [redacted] Any changes recommended by ICE to be signed off by Engineering Director and included a clear justification for change with impact analysis.</li> <li>2. Create a rule that no change will be accepted for 801 unless it Safety critical, results in an early life failure of its customer paid change.</li> <li>3. High impact change for 801 must be signed off by CEO</li> <li>4. Start meetings to review change by zone / system (include Engineering / QC / OOR in first instance)</li> </ol>	Reasonable	50	5	250	250	07/04/2022	Mod Sheets: 400 sheets available - 60 % of this change understood and analysed - remaining 40% impact not understood. Lack of visibility of extent of this change.  'Pipes: Receive Pipe changes via CSV file which including significant change from [redacted] and potential rip out of systems in place.
77	PROJECT RISK	[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.	<ol style="list-style-type: none"> <li>1. Work with Operations to close OORs with agreed solutions</li> <li>2. Work with Engineering to conclude solutions to OORs without solutions</li> <li>3. Put monitors in place to burn down OORs</li> <li>4. SMT focus to be led by Head of Compliance</li> <li>5. Maintain regular reviews</li> <li>6. Ensure agreed OORs are scoped within the programme and workpackaged</li> <li>7. Ensure future OORs are captured and actioned</li> <li>8. Compliance involved in closing out / ensuring work is in plan</li> <li>9. Customer engagement (ongoing)</li> </ol>	Insufficient	50	5	250	250	07/04/2022	change of focus / ownership to drive closure
79	PROJECT RISK	[redacted]	There is a risk of late change due to design errors. These errors may be mistake, missed scope or non-conformances to requirements spec. The non-conforming escape routes, stability and fuel system are examples.	<ol style="list-style-type: none"> <li>1. Complete review of single line diagrams with CMAL.</li> <li>2. complete all plan approvals.</li> <li>3. Review critical installations with LR &amp; MCA where appropriate.</li> <li>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.</li> <li>5. Continue to work with the relevant parties (MCA, LR and CMAL) to derisk the design and agree acceptable concessions.</li> </ol>		50	5	250	200	07/04/2022	
4	Production	[redacted]	There is a risk that the programme is impacted due to a lack of buy -in from work force to deliver the plan. This includes the fitness of our workforce to deliver the challenge ahead (mature workforce)	<ol style="list-style-type: none"> <li>1. Employee engagement sessions planned for January 2022, planned for week 3</li> <li>2. Provide visibility of the plan - rollout week 2 (for next 6 weeks)</li> <li>3. Finalise allocation of supervisors to areas for start back in January - rollout week 02</li> <li>4. Performance management in place in January 2022</li> </ol>	Reasonable	50	4	200	250	07/04/2022	Effectiveness of re-organisation to be measured

# Top Risks

Risk No	Risk Category	Risk Owner	Risk Description	Action Planned	Controls Confidence Levels	Current Impact	Current Likelihood	Current Risk Score	SCORE AT LAST REVIEW	Date Last Reviewed	Change explanation
41	PROJECT RISK	[redacted]	[redacted] bunkering requires modifications as risk assessment has not yet been undertaken	<ol style="list-style-type: none"> <li>Attend [redacted] to identify work to be done</li> <li>Confirm that all actions from [redacted] are closed</li> <li>Identify [redacted] suppliers</li> <li>Conduct initial risk assessment and action issues as required - Consider whether a Subject Matter Expert should be used.</li> <li>Identify potential bunkering location</li> <li>Engage with all appropriate parties (including SME to complete risk assessment)</li> <li>Conduct full risk assessment.</li> </ol>	Limited	50	4	200	30	07/04/2022	PROMOTED following Risk Reviews
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"> <li>Review status of all remaining axilocks on the ship</li> <li>ensure that the Change / Mod Sheets to remove axilocks have been implemented and signed off.</li> </ol>		50	4	200	150	07/04/2022	6/3/22 There have been extensive studies carried out by [redacted] We are waiting on the results of an additional review into the [redacted]
8	Engineering	[redacted]	There is a risk that the commissioning programme is delayed / extended due to impact of further changes	<ol style="list-style-type: none"> <li>Change to be tightly controlled to identify schedule impact</li> <li>Impact assessments to be completed and held in a register</li> <li>additional review of programme to look at additional activities / niche sequencing</li> <li>Impact of programme change on Dry Dock availability / OEM availability to be understood</li> </ol>	Reasonable	50	3	150	150	07/04/2022	[redacted]6/3/22 - Can we close this risk and absorb it into another 'risk of change causes delay'?
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"> <li>Close all outstanding approvals with MCA / LR</li> <li>Ensure all new AFC drawings are issued to Operations</li> <li>Ensure all new drawing revisions are included in plan</li> <li>install 3D model station on ship to provide access to supervisors</li> <li>close out NC on review of revision levels of drawings with Supervision</li> </ol>	Reasonable	50	3	150	200	06/03/2022	NEW risk Note from [redacted]6/3/22 - I think that there is a low risk due to unapproved drawings from LR and MCA, very few remain outstanding. ICE drawings are already approved and available, there should not be any more arriving at AFC (except through managed change). There is a greater risk of late recognition of design errors causing change. I have raised a new risk, 79, for this.
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 from VN, ICE or FMPG. This would lead to late emerging change, late hotwork.	<ol style="list-style-type: none"> <li>Drawings to be moved to sharepoint</li> <li>Model to be available on the ship</li> <li>Put change manager in place</li> <li>[redacted] move to Manufacturing Engineering (Buildability). [redacted] to review the Model and the ships for Critical areas.</li> <li>Where drawing are not available, develop a fast track process (quick sketch) to allow the work to be completed.</li> <li>Work with Operation Manager [redacted] and Technical Liaison to manage and fast track missing drawings which are key to complete hotwork.</li> <li>How are supplier detailed workpackages packaged (e [redacted] boiler)</li> <li>Defined list available for platforms / walkways / ladders to be detailed by FMPG</li> </ol>	Reasonable	50	3	150	200	07/04/2022	Example zone 1002 / 0303 Walkways identified within the model with not information available for Operation to fit. This was identified by operations review the Model and identified missing walkways.  Note [redacted]it was always intended for there to be no production output for these walkways - this was agreed with [redacted] in 2020. I don't think that this risk is as high as stated here. The ship survey reviewed the ship against the model and should have identified missing items on the ship. Risk likelihood reduced to 3

801		Issues found	
		known	unknown
<b>Solutions found</b>	<b>known</b>	Reinststate legacy cables [redacted] pre-commissioning Replace 0201 SW lines (single sleeve) Wheelhouse Console modifications (timing / duration / place) Bow ramp repairs [redacted] scope 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 MCA approval of Novec bottle storage in ECR Fuel Oil System modifications (PORTSIDE) Crankcase Breather modifications Dry Dock availability / Vendor support Techwind - lift installation to be detailed in plan Observation (Bonded) window installation Chemical clean of FO/LO system External Paint budget aligned to agreement with CMAL Funnel / uptakes outfitting completion 2 deck damage to repair	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
	<b>unknown</b>	Open OORs (no agreed solution) Pending / Emergent Change Requests Additional weathertight doors to meet stability requirements MCA - insulation of pens on accommodation decks Instrumentation installation detail to complete (gauge boards / piping etc) Deconstruction budget 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 HT/LT axilock EPDM replacement BGEN Cable damage during pulling (9 off to replace) MCA approval of staircase width normal flushing of remaining systems	Full Approvals have not yet been achieved - no of exemptions required Unknown errors in basic / detailed design Output from Peel Ports Trading with Russia / Belarus - supply chain impact Weather events & Acts of God COVID re-emergence Key personnel availability NATO escalation impacts availability of personnel 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>
<a href="#">LNG-100-114</a>	<b>section 813:</b> 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		FM to send VTC
<a href="#">LNG-100-119</a>	N/A	Provision of workshop tools		FM to supply various tools/pieces of equipment for workshop		postponed
<a href="#">LNG-100-121</a>	<b>section 561 i)</b> passenger lifts	addition of weathertight door for passenger lift on 07 deck				costs to be determined
<a href="#">LNG-100-123</a>	<b>section 868:</b> shore supply	Addition of a shore supply connection box for 802 only				FM to send VTC
<a href="#">LNG-100-127</a>		Sanitary/Grey Water System		Re-routing of laundry discharges to grey water tank		under investigation
<a href="#">LNG-100-128</a>		Quick Release Hatches for shaft inspection in Workshop / Nitrogen spaces				under investigation
<a href="#">LNG-100-129</a>		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 Lloyds and they do not have any issue with this	Amend Technical specification	FM to send VTC

## CMAL Comments to the Monthly Report

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### CMAL Comments: