

Glen Sannox & Hull 802 Monthly Report – [November 2022]

1.0 General

Executive Summary

This assessment of the overall progress for each vessel is made against the programme dates and building sequence set out within the FMPG letter to the NZET committee on the 28th of September 2022 and the FMPG update given on the 28th of October 2022 regarding the LNG system, advising a 36-week lead time for the delivery of vacuum sensors for 801, which will delay the commissioning of the LNG system. The target for completion of 801, (without the LNG system) is end of May 2023 and a target handover date in Q1/2024 for 802. Further discussion is required to determine the approach for commissioning of LNG for 801. Hull 802 programme is still under ongoing review to align with launch dates and allocation of labour.

Following the same themes as previous months, for Glen Sannox (Hull 801) the main drive for work onboard remains the hotwork completion and main equipment commissioning. For hotwork, the yard continues to work to close out hotwork packs below 3-deck from aft to forward and in outfit areas from 7-deck down to 5-deck, which is customary practice in shipbuilding. This sequence seems logical and in line with system/areas completion in preparation of commissioning activities. The level of rework and legacy issues both with design and poor workmanship continues to add vast amounts of scope to the hot working teams.

Outstanding owners' observation issues, weekly defect report, technical design office queries as well as change notices remain under the scrutiny of senior management. There has been agreement to close a number of OORs however there are still a significant number to resolve at this stage in the build. Timescales and dates for carrying out the works have still to be established and how the execution of the works fit in with the rest of the build activities, particularly in the Engine Room and Generator Room where commissioning activities are priority. The legacy of pipework changes agreed by the previous management and their failure to implement, continue to raise challenges with regard to operational constraints.

Commissioning on Glen Sannox continues on all areas listed as critical path. Engineers from the supplier of the propulsion machinery equipment are on site carrying out pre-commissioning checks on Main Engines, Auxiliary Engines/Generators, Gearboxes and Thrusters, this work is progressing well. However, there is slippage in the overall commissioning programme, the target was to commission said equipment/systems before end 2022. The slippage in general as a result of additional modification works associated with failure in design of pipework only evident as commissioning is progressed. An updated commissioning plan is to be issued in the new year, setting out the revised dates and plans.

The capacity for main equipment suppliers to mobilise resources to meet the yard planning dates for commissioning activities is on the critical path. The yard's commissioning department is closely monitoring the situation. Most of the upcoming contractors are booked and should be in line with the yards plan to completion.

Key Challenges for the Shipyard

Hull 801 - Key known Challenges for the shipyard to meet the programme:

- Installation, testing and termination of the ship's cables. Particularly to align with the commissioning plan.
- Completion of pipework to meet commissioning dates, including addressing pipe clashes.
- Close out of OORs.
- Closure of design gaps.
- Unknown and emerging rework.
- Delivery and completion of production drawings and accuracy of production drawings.
- Availability of experienced supervisors and managers.
- Shortage of experience trades.
- Availability of ^[Redacted] for commissioning engineers.
- Coordination of multiple activities in busy compartments such as the engine room.
- Verify Hull 801 Deadweight.
- Commissioning of LNG System.
- Lack of familiarity with final stages of finishing the vessels, surveys, documentation, certification.
- Completion of bow door, ramps and mezz decks outstanding scope.
- Procuring and fitting of semi watertight passenger access doors on 03 and 04dk.

Owners Observation Reports 801 (at 30 November 2022)

The information below has been updated in conjunction with FMPG to reflect the joint review conducted during this reporting period. Significant efforts have been made to ensure that the scope of all issues, as well as the cost of implementation and the impact on the programme are fully understood.

	All Categories	Category 1	Category 2	Category 3
Total Raised	608	366	228	14
Total Closed	490	288	195	7
Total Committed	42	34	7	1
Total to close when work complete	45	35	8	2
Total still to resolve	31	9	18	4

Reference – Updated ORR Summary by Yard 4th October 2022

At end October 2022:

- 87 are categorised as will be done at ship and are still to be done at ship.
- 31 still have no identified solution
- There are also 130+ other defects/snags, which we have agreed not to add as OORs, which are captured in an email log. These are being considered as a normal snagging list in line with standard commercial shipbuilding practice.

Cat 1 - Items, which relate to Safety, Quality, Maintainability and Specification requirements.

Cat 2 – Item, which relate to poor design, quality or production.

Cat 3 – General snagging and workmanship

CMAL have instigated a number of meetings with Fergusons to discuss the closing of OORs. In the last month 17 have been closed with most being CMAL conceding on closing or grouping

them together with other open OORs, leaving 118 still to be completed. Some of which are major works to correct. We have also started a process of highlighting onboard defects through joint CMAL/FM weekly inspection. The details of those are listed below:

	<u>Total</u>	<u>Open</u>	<u>Closed</u>
Outfit	18	9	9
Pipework / Mechanical	73	66	7
Steelwork / Paint	27	17	10
Electrical	20	12	8
Totals	138	104	34

Reference – Updated Weekly inspection defect summary by Yard 4th October 2022

2.0 Changes to Site Supervision Team

The core head count remains the same.

CalMac Senior officers are on site.

3.0 Design Changes Approved

Ongoing design changes and legacy issues are still affecting the constructability of the vessels. CMAL are now daily assisting the design process due to poor legacy design. Assistance is also being given to Fergusons in meeting criteria to gain approval from class and ^[Redacted]. Closure of final design gaps is needed, which at this late stage of the project remains a significant risk to the project.

4.0 Agreed Changes to Delivery Date

Updated programme delivery dates are set out in section eight below.

5.0 Agreed Changes to Price

(Note of changes; changes to be authorised & recorded in Contract Variation Register)

6.0 Changes Awaiting the Owner's Approval

(Note of changes outstanding for approval by the Owner in excess of Buyer's Representative authority as stated in Consultancy Agreement Cl. 3.4)

7.0 Surveys / Inspections

Verification surveys of the as-built standard are listed below.

	Week 44	
41	801 General surveys of Z1 St/gear area continues and progress is being made.	
42	801 Eng-rm walkway onboard discussions with [Redacted]	
43	801 Part areas surveys continue for both Fire and Thermal insulation on 05/06k areas.	
44	801 Part structural survey at ^[Redacted] to assist ^[Redacted] with their progress.	
45	801 Part surveys of P&S L11 areas 03/04dk. and will continue in Wk45.	
46	801 F.O. Part system installation checks with ^[Redacted] in attendance	
47	802 Unit A7-6 Port section surveyed by ^[Redacted] and ourselves.	
48	802 Side shell OBD shell pipe penetrations set up before welding continues (internal of the vessel only) and witnessed by ^[Redacted] .	
	Week 45	
50	801 General surveys of Z1 St/gear area continues and progress continues being made.	
51	801 Part areas surveys continue for both Fire and Thermal insulation on 05/06k areas and ^[Redacted] attended Tuesday and will return next week for an extended visit.	
52	801 Part structural survey at ^[Redacted] to assist ^[Redacted] with their progress.	
53	801 Part surveys of P&S L11 areas 03/04dk. and will continue in Wk45.	
54	801 [Redacted] locker structure with ^[Redacted] and ourselves.	
55	801 Onboard survey with Yard [Redacted] regards quantities and positions of lifting aids in engineers workshop, engine room and generator room	
56	801 Port Silencer uptake survey (at our request) regards outstanding works	
57	801 03dk 7off Car deck outstanding recesses completion surveys have got u/way leaving 10off to complete	
58	802 Port Stabiliser LO storage tk pressure test ^[Redacted] and ourselves.	
	Week 46	
59	801 General surveys of Z1 St/gear area continues and progress continues being made.	
60	801 ^[Redacted] visit and surveyed available areas and also general survey of vessel progress.	
61	801 F.O. Part system installation checks with ^[Redacted] in attendance which will lead to pressure testing and sign off	
62	801 Onboard survey with Yard [Redacted] regards quantities and positions of lifting aids and also with the view to reduce where possible which has continued to the AMS and bow thrust space.	
63	801 Port Silencer uptake survey further checks before Silencer was installed.	
64	801 Galley part behind linings survey.	
65	801 08dk External Aft lighting positions agreed above Em-gen and AC rm.	
66	802 Unit A4-7 Steel section surveyed by ^[Redacted] and ourselves.	
	Week 47	
68	801 ^[Redacted] engine survey and walkround before commencing bulletins and pre-sommissioning works.	
70	801 Accomodation behind linings part inspections	
71	801 08dk External Aft lighting positions agreed above Emf-gen and AC rm.	
72	801 Further alarm and mimic checks in ECR	
73	801 Stbd side above ceiling cabins inspection	
74	802 Paint checks on foundations and hangers fitted in AMS.	
75	802 Staircase infill pieces survey	
	Week 48	
76	801 Accomodation behind linings part inspections with ^[Redacted]	
77	801 Pressure testing of fuel overflow tank in ER.	
78	801 Port side above ceiling cabins inspection	
79	801 ^[Redacted] draught stop design and onsite pre-approvals	
80	801 Paint surveys on 03dk and 04dk	
81	801 Fuel system port side survey	

Reference – Updated CMAL Surveys by week number.

8.0 Progress Against Programme

Glen Sannox



Reference – Updated November 2022 FMPG Project Report. (LNG impact still to be reviewed)

Completion dates for planned works for commissioning activities are late to complete, particularly electrical aspects to meet target commissioning dates. The latest baseline incorporates a 52-hour a week resource schedule to aid acceleration of the electrical installation.

Hull 801 Pipe Spool Installation

Installation of pipework spools is showing to be below the s-curve versus the 801s Level 0 programme. FMPG and its subcontractor’s pipefitting rate is down in general due to rework on systems previously fitted. Attributed to the necessary alterations to previous systems to allow commissioning to take place.

Week Number	Spools Fitted	Spools Fitted Running Total
2244	71	10983
2245	79	11062
2246	60	11122
2247	96	11218

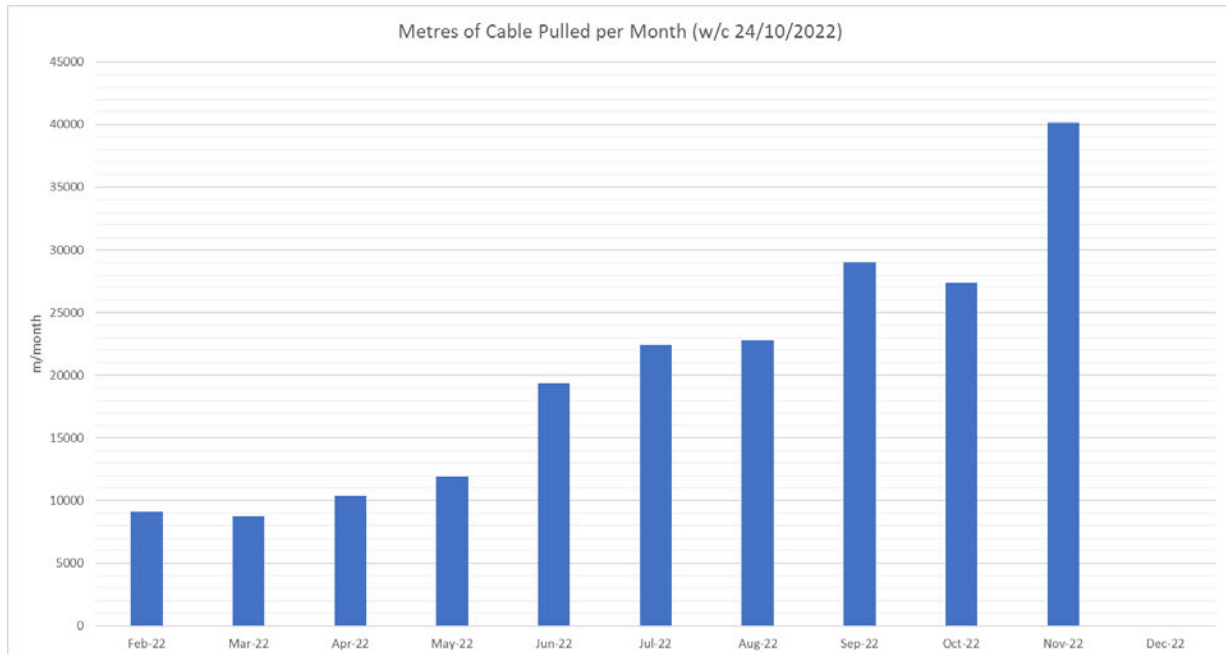
Reference – November update on CMALs records.

Hull 801 Electrical Works

Cable pulling has continued throughout the vessel in both the machinery and passenger accommodation areas. Additional labour has been brought onsite as part of the effort to meet the schedule. Exact numbers of cables required; and cables installed onboard to date has gone through a further rigorous reconcile period, FMPG are now in agreeance with the cabling contractor in regard to the reported numbers. As of the end of November, the shipyard reports that **83.7%** of all ships cabled have now been pulled in with a total metreage of 204,358m. The average installed per month since May has been just over 22,000m, with November being a 5-week month. Following this trend all remaining cables will be installed by week 05 2023.

CMAL have also observed a change in previously reported figures with monthly totals changing month to month. This has been highlighted to the yard who in turn have been reassured by the contractor that there were issues with reporting, thus previously installed cables were not being reported consistently This trend has continued into November and

previously reported months are now reporting higher metres pulled. Essentially in the contractor supplied November report, between the months of May and September, it was reported that 136,000m of cables were pulled, whereas in the September report, 126,000m was reported. It has been reported that this misalignment has been due to anomalies in the contractors SharePoint dashboard and feed in of information from their cabling subcontractor.



Reference – November update on CMALs records. (November was a 5-week reporting period)

Hull 801 Clam Shell Doors

Renewed focus has been put on the clam shell doors and all TTS equipment onboard. Work on the doors still awaits specialist scaffolding contractors to complete their work and install a working platform. Slippage in completion date is expected but this is being monitored closely. Fergusons have advised that this should not affect the commissioning of the system as a whole in early 2023.

Hull 801 Lifts install

Lift contractor, [Redacted] arrived in early November and commenced with lift install. Commencing with the fwd access passenger lift then moving onto the passenger lifts throughout the ship. The programme is currently showing 5 months to complete with a 2nd install team arriving in January.

Hull 801 LNG System

In line with other small projects onboard, for the LNG system install, integration and commissioning a composite project team has been appointed. The team includes the main stakeholders: FM, CMAL and [Redacted] and [Redacted]. The main installation sub-contractor, [Redacted] are now onsite to begin their aspect of the installation. Ferguson pipe sections to be installed after pre commissioning activities of engines and generators.

Hull 801/802 LNG Bunkering

There are 2 locations on the vessels for bunkering LNG: one port and one stbd. There may be an option than one bunkering location will meet with operational requirements, this is being investigated.

Hull 801 LNG Vacuum Skid

Below latest update regarding the LNG Vacuum Skid and where [Redacted] currently sees the programme with regards to delivery.

Projected timeline (lead time of overall skid is not confirmed, estimated 8 weeks after delivery of parts to skid maker)

Preliminary Plan, Pending Skid Approval from [Redacted]									
	2022		2023						
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July
Plan Approval									
Equipment Order + Manufacture + Inbound Equipment									
Skid Manufacture									
Despach to Shipyard									
Installation at Shipyard									
Commissioning and Testing									

Hull 801 Commissioning

- [Redacted] now close to completion all service bulletin and pre-commissioning works on both aux generators.
- Aux generator turbo chargers have been removed, overhauled, bearing changed out and now back installed on ship.
- HT/LT system has been signed off, cleaned and flushed.
- [Redacted] have commissioned the serial connections for the alarm system
- Gearboxes have been filled with oil and flushed.
- Aux engines priming pumps have been run and internals checked before and after.
- Starting air system automatics demonstrated to CMAL and [Redacted].
- Fuel quick closing signed off by FM ready for first run.

Hull 801 - Accommodation Outfitting

- Joiner's linings framework is nearing completion in the bridge
- 07dk – Priority ceilings install now commenced.
- 05dk – Fwd passenger lounge perimeters install has commenced.
- 05dk – Aft passenger toilets and kids' area linings install underway.
- 05dk – Galley outfitting well progressed. Stainless linings, extractor hoods, electrical panels installed.
- 02dk – Install of doors for stores now underway.
- Upper accommodation draft stops trial has been installed and presented to CMAL and [Redacted] for approval which has now been approved for full accommodation install.

Hull 801 HVAC Installation

Contractor performing in line with current outfit demands, the standard of installation remains satisfactory. Issues with sequencing and finishing details occurring due to lack of information. Below 3 deck works now await further outfitting and commissioning of major machinery before [Redacted] can be installed and completed. Outstanding [Redacted] control panels and [Redacted] plants have been delivered with all now installed in their final position onboard.

802 Level 0 Programme	Ship Construction																								Ship Delivery into Service				
	2022												2023												2024				
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
Engineering/Design (ICE)																													
ICE Workpack Release																													
Structure (Unit Construction)																													
Structure (Unit Erection)																													
Structure (Unit Consolidation)																													
Hotwork installation																													
Clam shell doors/ramps [Redacted]																													
Mezzanine Decks																													
Pipe Manufacture																													
Pipework Installation																													
HVAC																													
Electrical Installation																													
Outfit																													
Launch Prep & Launch																													
Commissioning																													
Dry Dock																													
Sea Trial																													
Snagging/ Delivery/ in Service																													

Reference - October 2022 FMPG Project Report. *(Confirmed launch date still under review)*

Project 802 is making limited progress against the dates given in the level 0 plan. Main sub-contractors are yet to commence work on hull 802. There remains no visibility of main contracts for Electrical systems being awarded with limited pipework allocation in machinery spaces. The yards focus remains committed on project 801. There is a lack of available labour for 802, dates shown above will need to be revised.

The programme is currently under ongoing review to align with proposed new launch date and allocation of labour. We expect to be presented with said programme in the new year.

Hull 802 Block Fabrication and Erection

- A11-5 now erected. All 5 deck units now onboard with unit linkups nearing completion.
- Bridge unit A10-7 slightly delayed and will now commence in December.
- Emergency Generator room unit A4-7 steel and aluminium section being joined prior to erecting onboard.
- Units A7-6, A8-6, A9-6 and A10-6 fabrication progressing well.

Hull 802 Works

- Walkways and handrails continue to be fitted in LNG, HPU and STP.
- Limited foundations are being installed in AMS, ECR and engineer’s workshop.
- Outstanding windows are being fitted in units to make 05/06dk watertight.

9.0 Next Stage Payment Due

N/A

10.0 Forthcoming Period Events

N/A

11.0 Tests & Trials Due

Hull 801

- Continue with alarm channel testing. 240V & 690V Switchboard & ^[Redacted] controls and indication.
- Fuel supply to Aux/Main engines to pressure test and flush.
- First run of auxiliary and main engines.

12.0 Risk Register Update

CMAL attended the shipyard monthly project risk review meeting on Monday 07 November.

13.0 Safety & Environmental

No issue to report this period

Print Name: **[Redacted]**

[Redacted]

Signature:

Date: [13 December 2022]