

Dr. Fridtjof Nansen – Building progress

Update by 31st August 2016



Main milestones:

- First steel cut: 13.01.2015**
- Keel laying: 23.04.15**
- Launch of vessel: 23.12.15**
- Scheduled trial start up – ref MP5: Dockside trials 16.08.16-Sea trials: 01.10.16 (under revision)**
- Scheduled Delivery – ref MP5 : 07.11.16 - Plan B: 21.11.16 (under revision??)**

Progress:

- Progress in August has been somewhat affected by the Spanish vacation time, number of shipyard workers has been reduced and those on site has worked reduced time (07-14). Subcontractors (LIDO, Proelsur and painters) have had almost full staffing and work time.
- Partly based on above, but also with a general lag from July. The planned progress and start up/trial schedule for August has not been achieved. Still lot of work remaining in all areas.
- Yard stated in week 34 that departure for sea trails by October 1st is not achievable. A revised start up and trial schedule is in progress by the yard, and we understand this plan will aim for a target date for sea trials departure mid-October.
Based on what we can see from remaining work, and the trend that daily and weekly targets are not met, this is an optimistic target. Due to tide restrictions, the next “window” for departure will be around Nov. 1st.
- Yard continues to put priority to make the “maritime” ships systems ready for commissioning and start up. Apart from start of cable pulling to scientific winches last week and some work on sanitary and clean seawater piping in labs, limited progress has been seen in the scientific areas. Thus, our previous reported concern for underestimated scope of remaining work and limited time for testing in these areas are still valid.
- Except for a negative trend related to cleaning and tidiness on board, the overall quality of installation work remains good.

- **Hull Construction:** External outfitting:
 - Unit 47 (casing) installed week 31.
 - Bow mast installed week 34
- **Piping:**

Seawater piping to freshwater plants and minor transfer/control system piping remaining.

 - Pressure testing and flushing of maritime systems ongoing.
 - Pressure test on Clean Seawater system ongoing, piping around intakes and pumps not started.
 - Started final inspections and “closing” of tanks
- **Propulsion and maneuvering:** Major components and systems are assembled and connected. Service engineer from MaK, Ingeteam and Alfa Laval has been on board for pre-inspections and commissioning work. Main switchboard was checked with power from shore Aug. 19th. Fuel and lub oil separators “powered up” and runned locally 24th Aug. (No systems filled yet) Kongsberg Maritime engineers continuing on site with termination on bridge equipment.
- **Scientific equipment and Labs:** Low activity also this period, no interior work/furnishing started yet. Sanitary piping completed, clean seawater piping ongoing. Hydraulic piping to winches almost completed, El. cabling to winches started.
- **Electrical: Cable trays and cabling**
 - Pulling of cables to scientific areas and winches now ongoing.
 - Cables pulled by date: 215.000m of a yard estimated total of 225.000m (total is revised from original 165.000m and from 205.000m in last report)
 - Cable trays: Due to above underestimation of cable lengths, some new cable trays has to be installed in aft ship Tween and Main deck areas (mainly routing to winches)
- **Accommodation:** Furniture installation on decks up to 2nd deck ongoing. Late arrival of table tops and tables has delayed completion of cabins. Most of the internal doors are installed. All tiling work completed. Provision rooms interior almost completed. Limited galley, scullery and messroom outfitting done by date. Wall paneling and wooden floor in wheelhouse completed.
- **Sandblasting & Painting:**
 - Tanks: Ballast, freshwater and void tanks completed, generally sandblasting and painting of tanks are on schedule.
 - Machinery spaces and technical areas: Propulsion room and aux. engine room completed, started painting in engine room area.
 - Outside areas: Still lot of sandblasting/metalizing and paint work remaining. This work is affecting other work activities and equipment - sand and dust flying all over the vessel and proper covering and cleaning is chased daily by site team.

Still "wrapped in" for sandblasting and painting of outside areas.



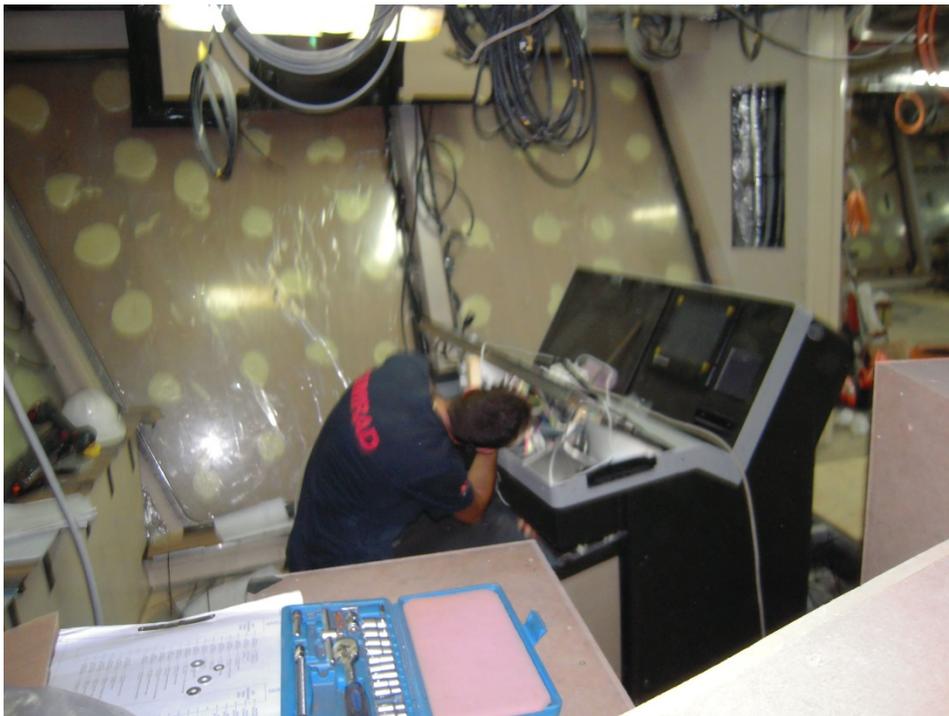
Funnel installed



Wheelhouse and 3rd deck



Cable termination DP consol.



Installation of fixed furniture ongoing



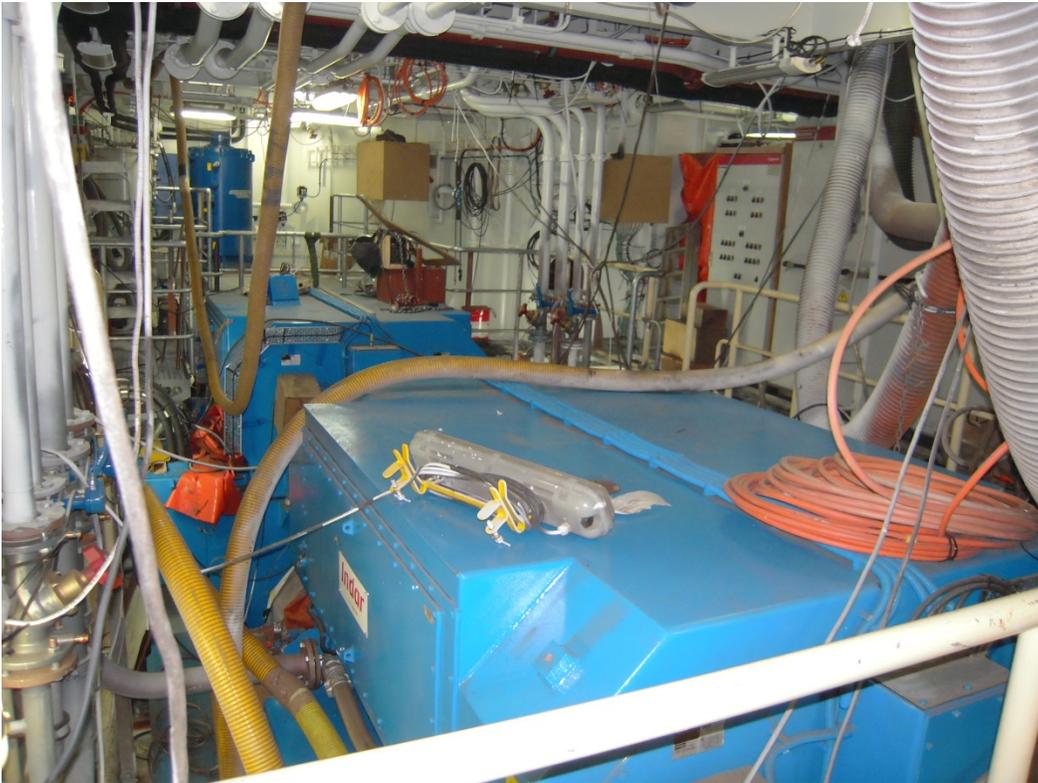
Freezer rooms



Engine control room console



Propulsion room/DC motors



Power on some engine room distribution panels



Lub oil separator comissioning/start up



UPS batteries installed



Cabling to Fishery and scientific winches started

