



COPIOUS LK985

Macduff's new 24.9m Demersal Trawler for Shetland



Wheelhouse team aboard *Copious*.
From left: Ryan Arthur, Mate and Skipper, Andrew White.

Macduff Ship Design are pleased to announce the completion and handover of MFV

'*Copious*' LK 985, a new 24.9 m fishing vessel for 60 North Fishing company of Shetland.

The vessel is the first of a pair of sister vessels for the company and was built in Croatia by **Tehnomont Shipyard** to a full design package supplied by **Macduff Ship Design**.

The vessel completed her delivery trip to Shetland, through the Mediterranean, up the west coast of Portugal, Spain and Ireland, arriving in Shetland on the morning of the 14th January

just in time for the islands fire festival Up Helly Aa. The second vessel to be named '*Prolific*' is set to be delivered later in the year.

Macduff Ship design were first contacted by **Mark Anderson**, who heads **60 North Fishing** with partners, Andrew White, Ryan Arthur and fish selling agent **LHD**, 5 years ago to develop a bespoke new design. Mark had a clear idea of what he wanted the vessel to achieve and some of the key design factors that needed to be considered. In close co-operation with Mark, a General Arrangement plan and Specification were produced. These were sent to a number of yards for a tendering



Some of the proud crew travelled over 3,000 miles from the yard in Croatia.

Macduff Ship Design set about developing hull form, detailed construction and outfitting plans. One of the first key decisions was sizing the propeller. Larger CP propellers can have notable efficiency savings hence the largest propeller that could fit was to be selected. The aft end of the hull was developed to ensure this was possible with a 3.0m **Finnøy propeller** chosen. This was fitted inside a **Kort nozzle** with triple rudder arrangement for improved manoeuvrability.

In recent years Macduff Ship Design have been involved in tank and CFD testing of several vessels, and have developed an advanced understanding on how the hull form can influence both vessel resistance and seakeeping. This knowledge was applied to the hull of the *Copious* to ensure the crew would have a vessel that could handle the unpredictable and often times rough seas in their fishing area but would also have optimum efficiency to minimise fuel consumption.

The amount of, and layout

of, deck machinery, fishing gear and fish processing equipment was of high importance to Mark. The vessel needed to readily be able to swap between single net trawling, twin rigging and pair trawling with all equipment needed for these three operations to be carried onboard. The arrangement of the deck machinery was developed collaboratively with Mark, with a number of innovative ideas integrated into the design. This was both to improve the safety, and efficiency of the vessels fishing operations.

Catch quality and value was a high priority on the vessel and although designed with the ability for 10 day trips it is expected that the vessel is likely to focus on shorter trips.

In order to maximise the quality of the landed fish there has been a high importance placed on the way the fish is handled once caught, with care taken in the design of all of the systems, with particular attention being paid to the processing

equipment supplied by **JJ Measuring Systems**.

Once the fish is landed through the aft cod end hatch into the hopper it is immediately cooled with a water spraying and slush ice system. After passing through the gutting area the fish are sorted into one of two 6 compartment cylindrical, selector/coolers supplied by Danish firm **Carsoe** to a design from Jim Johnson of JJ Measuring Systems. Each segment can be emptied individually in any order to suit the optimal fish cooling. Once cooled the fish are transported by conveyor to the fish access hatch and into the hold to a portable table with 4 workstations. The fish are graded, weighed and boxed with freshwater and flake ice before being stored in the 1100 box capacity hold.

The hold also contains 2 x 2.5 T capacity **Buus** slush ice tanks which work in conjunction with the 2 x 4.5 T per day ice machines on main deck. The water for the system is supplied from the onboard fresh water tanks and a →

process. Macduff Ship Design assisted Mark and his 60 North Fishing partners during this process through to final yard selection.

Once Tehnomont Shipyard were selected as builder in 2020,

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CONGRATULATIONS!
To the 60 North Fishing Company, Mark Anderson, Andrew White, Ryan Arthur and crew on your new vessel *Copius LK985*

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Impressive wheelhouse display supplied by H Williamson and Sons.



Mitsubishi V12 S12R main engine.

2 T per day **Alfa Laval** freshwater desalinator fitted in the engine room.

ENGINE

The vessel is fitted with a **Mitsubishi V12 S12R main engine** rated 588Kw at 1400rpm and this is coupled to a **Finnøy FK50 11.3:1 gearbox**. This drives a Finnoy 3000mm diameter controllable pitch propeller fitted in a nozzle supplied by **Kort Propulsion**. The vessel is fitted with a triple rudder and bow thruster also supplied by Kort propulsion, which give the vessel excellent manoeuvrability for fishing day to day operations.

DECK MACHINERY

The deck machinery package supplied by **Rapp MacGregor** is driven by 3 hydraulic pumps driven from power take offs on the **Finnøy gearbox** and electric towing pumps. The fishing equipment consists of 3 x 14 T trawl winches arranged under the focsle forward. They can carry 1100 fathoms of 22mm wire but are set up with 700 fathoms of **Brunton Shaw warps** supplied by **LHD**. The winches are linked to

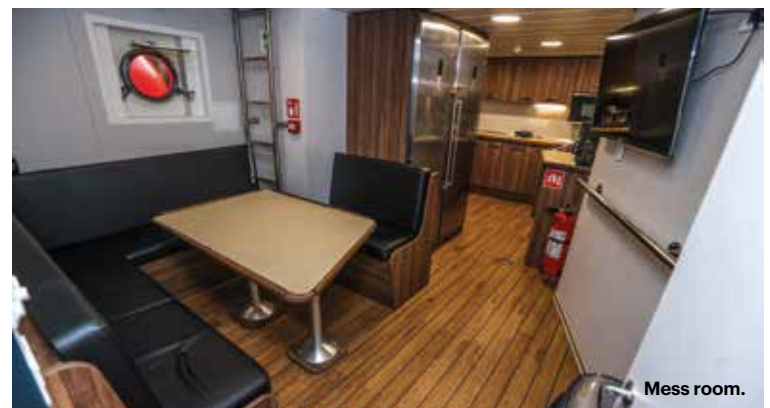
a scantrol autotrawl system with a 3-speed arrangement of 100%, 80% and 60%.

Aft of the wheelhouse are three 20 T split net drums which are also linked to the scantrol system. Rapp Macgregor also supplied a pair of hinged pins which are arranged just forward of the stern openings and can be raised or lowered remotely, depending on the fishing method and nets being used.

TRAWL DOORS

The winches tow a pair of **Thyborøn** type 32 semi pelagic trawl doors and 2 T roller clump. The gear is monitored by a **Marpport system** with sensors on the trawl doors and clump measuring depth, height, distance, pitch and roll with a further sounder measuring the distance each door is off the seabed. There are a further 2 symmetry sensors mounted on the headline of the net.

Nordsøtrawl supplied the twin rig nets along with a single net and high lift pair trawl net with Scot trawl supplying the codends and extensions and **Jackson**



Mess room.

Trawl the combi line sweepelines.

ACCOMMODATION

The crew accommodation is arranged entirely on the main deck and comprises a changing area with deck WC and shower forward to port accessible from the processing area. Once into the main living quarters 2 x 4 berth cabins, 2 x 2 berth cabins

and WC facilities are positioned from midships forward. Aft of the cabins there is a dedicated lounge area and then a combined galley mess. The wheelhouse is arranged with a forward control area and an aft raised.

■ The Skipper team wishes the owners, skipper and crew good and safe fishing. ●



Copious was fitted with the largest propeller possible, as it can have notable efficiency savings.



Trawl winches and deck equipment supplied by Rapp MacGregor.



Fishing deck.



Fish handling room by JJ Measuring Systems.



After a long haul journey from the yard in Croatia and 3,000 miles and a 17 day steam, Copious finally arrived home in Lerwick harbour.



Spacious fishhold.

ELECTRONICS

H Williamson and Sons supplied the wheelhouse electronics.

NAVIGATION

- Sodena Turbowin x 2
- Olex with ground discrimination module
- TimeZero plotter with DRS12A-NXT radar module and Wassp F3i 160 sounder
- Furuno FR2228 radar
- Furuno GP-39 GPS
- Furuno SCX-21 satellite compass
- Rayethon STD 22 gyro compass
- Furuno FA-170 AIS
- Navitron NT921G autopilot
- Furuno RD33 heading repeater
- Furuno BR-500 bridge watch alarm system

COMMUNICATIONS

- Sailor 6222 DSC VHF
- Sailor 6248 VHF
- ENTEL HT649 handheld VHF
- Turbosailor VSAT
- Furuno Felcom 18 Sat-C
- Furuno NX700B Navtex

FISHFINDING

- Simrad ES80
- Furuno FCV1900G BB
- Marport gear sensor system

MISCELLANEOUS

- Jotron Phontec 3101
- Superlive Plus CCTV
- Jotron TRON 60 GPS



Aft wheelhouse overlooking the aft deck.