JetBrief No. 261 March 1995
Service: Oil Rig Crew Boat
Location: Gulf of Mexico

Hamilton Jet Model HM571
Application Review

Multiple Hamilton Waterjets Fill Crew Boat Propulsion Gulf

Breaking with tradition is never a decision taken lightly and is usually only done when there are compelling reasons. This was the case when Diamond Services Corp. opted to use waterjet propulsion in their new crew boat for servicing oil rigs in the Gulf of Mexico.

Brief Specifications

NAME:
Mr Mel
SERVICE:
Oil Rig Crew Boat
LENGTH:
43.20 metres [LOA]
BEAM:
7.90 metres
DRAUGHT:
1.8 metres [static]
CONSTRUCTION:
Aluminium
DISPLACEMENT:
110 tons [normal]
180 tons [maximum]
PAYLOAD:
79 passengers & 5 crew
30 long tons deck cargo
SPEED:
28 knots [normal load]
20 knots [max load]
WATERJETS:
Quad Hamilton Jet
Model HM571
WATERJET CONTROLS:
Hamilton Jet DECS Electronic
CERTIFICATION:
USCG T Type [vessel]
ABS [waterjets]
ENGINES:
Quad Detroit diesels
Model 12V-92TA DDEC, each
589skW (790shp) @ 2100rpm
GEARBOXES:
Quad Twin Disc MG5202
DRIVELINES:
GWB 587.55
SHIPS SERVICE POWER:
Twin Detroit 50kW Generators
DESIGNER/BUILDER:
Swiftships Inc.
Morgan City LA, USA
OPERATOR:
Diamond Services Corp.
Morgan City LA, USA
Hamilton Jet DISTRIBUTOR:
Sewart Supply Inc.
Morgan City LA, USA

Quadruple Hamilton Jet model HM571 jets have been installed in the 141 foot monohull which was built in the yard of Swiftships Inc, and the results have proved to be right up to expectations. Diamond Services identified flexibility as a key advantage in maintaining their market share in the competitive industry. The jets in this vessel have provided them with exactly this capability, delivering speed, manoeuvrability and flexibility.

Quadruple HM571 Jets Behind the Crew Boat

SPEED – is an important factor. Each jet is driven by a Detroit 12V-92TA DDEC diesel engine, generating thrust to push the craft up to 20 knots at maximum load and over 28 knots normally laden.

C W F Hamilton & Co Limited
Lunns Road Middleton Christchurch 4
New Zealand. P O Box 709
Telephone: +64 3 348 4179. Facsimile: +64 3 348 6969

JetBrief

Authorised Distributors Worldwide

Normal load speed is substantially faster than conventionally powered crew boats of the same size which achieve 22-23 knots in the same conditions. At 28 knots with jets, higher propulsive coefficients are achieved. Conventionally powered craft are usually "propped" for their laden speed and the engine rpm governor reduces power when trying to run at higher speeds at light displacements. Power absorption of the waterjets however, is completely independent of boat speed so that at the same throttle setting, this vessel will run up to higher speeds when lightly laden, without risk of over-revving the engines. This attribute enables the vessel to reach the oil rigs quicker when only carrying exchange crews and light stores or alternatively, the skipper can throttle back to the design "laden" cruise speed, saving fuel. With the quadruple jet arrangement, acceptable service speeds and manoeuvring capability can be maintained on three systems in the event of one system being taken out of service, again with no risk of overloading the remaining operational units. Unlike propeller installations where the additional underwater appendages of multiple installations cumulatively add to the vessels' resistance, the flush installations of the waterjets maximise propulsive efficiency since they do not increase drag.

MANOEUVRING capability is another key requirement for crew boats, especially for holding station under personnel baskets when loading and discharging transfer crews. All four jets have steering and reverse functions, commands for which are regulated by an integrated modular electronic control system. This Hamilton Jet developed control system (DECS) is based on microprocessor logic and provides total vessel control throughout the entire speed range with simple operator inputs. Two similar control stations are installed in the wheelhouse, one facing forward and the other aft. At each station, an electronic wheel helm is used to direct the steering deflectors on each jet to port or starboard. With the deflectors driven in synchronism by the central processor unit, mechanical links between the jets are not required and manoeuvring is achieved without the complexity of differential steering. The vessel's ahead and astern movement is initiated simply by twin control levers at each command station.

Through the central processor, the jets are paired together and each lever provides proportional control of the astern deflectors where the deflector movement follows that of the lever. Throttle control is combined in the movement of these levers, with the whole system interfaced with the electronic circuits of the Detroit DDEC system. Complex manoeuvres can be achieved simply by using the helm, astern/throttle levers in unison to induce appropriate thrust vectoring for forward or astern movement, on-the-spot rotation or sideways movement. In addition to these primary functions, the electronic control system also incorporates a full range of indicators and back-up functions.

Main Forward Racing Helm Station (Primary Controls are Repeated Facing Aft)

FLEXIBILITY of operation was one of the key considerations in the selection of a quadruple propulsion system, but cost was also a factor. The chosen arrangement was in fact less expensive than a twin engine/jet option. Primarily, this was due to the fact that V12 engines cost significantly less than larger models from the next engine series up, which would have been required for a twin option.

HM571 Jet Installation in Mr Mel

OTHER BENEFITS have also been highlighted since the launching of the vessel. To suit the higher design speed, the hull was built with a finer entry forward and redesigned lifting strake arrangement, all of which have contributed to better riding characteristics and correspondingly, reduced stress on the crews.

The Hamilton Jet installation has no exposed underwater appendages so damage to the propulsion system through unavoidable encounters with debris or floating ropes is minimised, reducing downtime and maintenance.

This Hamilton Jet powered Swiftships crew boat represents a vessel that can deliver reduced operating costs through improved efficiencies.