Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

BRIDGE PROCEDURES MANUAL

M/V NORTHERN RIVER

M/V NORTHERN RIVER

IMO NUMBER: 9179323

PORT OF REGISTRY: Fosnavåg

Copy Number 1 of 2

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 0 Document Description

0.1 DISTRIBUTION

Copy Number	Recipient
1	M/V NORTHERN RIVER
2	Trico Supply Fosnavåg Office

0.2 DOCUMENT INFORMATION

Document Title	Bridge Procedures Manual
Document Identification	
Replaces	New
Document File	

0.3 REVISION STATUS

Rev No.	Description	Prepared	Controlled	Approved	Date

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Table of Contents

SECTION 5 MANOEUVRING DATA 29

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 1 Introduction

1.1 Manual Purpose and Description

This Manual is intended to provide guidance for Deck Officers into the effective use of maneuvering controls and systems onboard.

The information contained in this manual, although in a common format, is specific to this vessel and should form part of the induction process of Deck Officers new or unfamiliar with the vessels characteristics.
It should also be kept available and easily accessible as a reference document for the bridge team.

It has been initiated as part of a suite of corrective actions following a collision incident between a Company vessel and two adjacent installations in the UK sector of the Southern North Sea.

The document is intended to be kept as up to date as possible and should be continuously developed to become a useful reference tool to the mariner.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 2 Vessel Specification

This Northern River has the following principal specifications;
The **UT 745L** – design, Platform Supply Vessel, is a modern all round supply vessel with very large capacities for general deck cargo, as well as different dry and liquid products. She is equipped with DP-system for ROV operations, and is approved for Oil Recovery Operations. This, together with ability to carry methanol (LFL+ class), excellent maneuverability and station keeping, does MV *Northern River* to a very efficient and advanced transport and field vessel, as well as a large pipe carrier.

2.1 General Spec's

Call Sign	LNPI
Classification	DnV, +1A1-SF - E0 - OILREC-DK(+) - HL (+)-LFL+ - DYNPOS AUTR
Design	UT 745 L
Builder	Myklebust Mekaniske Verksted A/S, Norway
Delivered	1998
Flag	Norwegian
Port of Registry	Fosnavåg
Owner	Trico Supply ASA

2.2 Tonnage

Gross Tonnage	3,605 tonnes
Net Tonnage	1,460 tonnes
Deadweight	4,417 tonnes
Displacement	7,391 tonnes
Light Ship	2,422 tonnes

2.3 Dimensions

Length OA	92,80 metres
Length BP	84,51metres
Breath, Moulded	18,80 metres
Depth, Moulded	7,60 metres
Draft, Summer	6,15 metres
Freeboard, Summer	1.45 metres
Draft, Minimum	3.80 metres

2.4 Propulsion / Positioning

Main Engines	2 x Ulstein Bergen Diesel engines BRM - 8, 2 x 3,530 kW / 750 RPM, 2 x 4,800 BHP
Fuel Type	Gas Oil
Propellers	2 x Ulstein Controllable pitch F 6183/4
Thrusters	1 x Ulstein 375 TV. 1200 BHP / 883 kW, forward (in tunnel)
	1 x Ulstein TCNS 73/50-180. 1200 BHP / 883 kW,
	Retractable Azimuth (forward)
	2 x Ulstein 150 TV, 2 x 895 BHP / 2 x 660 kW, aft (in tunnel)
Rudders	2 x Ulstein HLR 2,0 x 3,4. High Lift Flap
Joy Stick	Ulstein Poscon. Integrated electronic control
Econometer	Ulstein display fuel oil consumption record system

2.5 Generators

Shaft Generators	2 x 1,920 kW. 2 x Marelli Motori / M7R 500 MC4
Diesel Generators	2 x 360 kW. 2 x Newage / H.C.M. 534C
Emergency Generator	1 x 127 kW / 1800 RPM. SISI Diesel Inc. 620 DSG

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

2.6 Speed / Consumption

Draft	Idling / Stand by	10 knots	12 knots	13 knots	14 knots
4.45 metres	Abt. 3.0 m^3	Abt. 11.0 m^3	Abt. 12.0 m^3	Abt. 13.0 m^3	Abt. 14.5 m^3
6.31 metres	3.0 m^3	12.3 m^3	13.5 m^3	14.5 m^3	15.5 m^3

2.7 Cargo Capacities

Deck Area	As DSV 300 M3, As PSV 1000 m^2
Deck Cargo	As DSV 2,000 tonnes (max.), As PSV 2500 mt
Fuel Oil	1,117 m^3
Potable Water	1,104 m^3
Brine	116 m^3
Mud	692 m^3
Base Oil	230 m^3
Methanol	168 m^3
Dry Bulk	400 m^3 / 14,125 ft^3 (8 tanks of 50 m^3 / 1,765 ft^3)
Ballast/ Drill Water	1858 m^3

2.8 Cargo Discharge Capacities

Fuel Oil	250 m^3 / hour - 9 bar
Water	250 m^3 / hour - 9 bar
Dry Bulk	About 100 tonnes / hour
Base Oil	150 m^3 / hour - 9 bar
Brine	2 x 75 m^3 / hour - 24 bar each
Mud	2 x 75 m^3 / hour - 24 bar each
Methanol	2 x 50 m^3 / hour - 9 bar each
Sounding Control	Ulstein design, remote controlled from engine control-room and bridge

2.9 Cargo Transfer Connections

Couplings, lines All Weco 5” and 4 x Avery Hardoll 4”
Several reducers available on board

2.10 Deck Machinery

Deck	Timber sheathed, (5 tonnes / m^2 and 10 tonnes /m2 aft of fr 26)
Rails	3 metres cargo rails with 16 safety access openings port and starboard
Prov Crane	Type: Range 20 metres - 5 tonnes SWL
Capstan	2 x Ulstein Brattvaag CA 876/579. 2 x 10 tones pull
Windlass	Ulstein Brattvaag Type: BFMG 6300
Anchors	2 x Elnav SA./Spek 2,850 kgs each
MOB-boat	1 x MP-741 Springer 200 HK max 10 persons
FiFi	Prepared for FiFi 1 & 2

2.11 Moonpool

Moonpool 6.4 X 7 meter

2.12 Accommodation

Cabins/ berths total	34/ 62
Cabins	12 x 1 man cabins
	14x 2 men’s cabins
	2 x 3 men’s cabins
	4 x 4 men’s cabins
Hospital	1 x berth

2.13 Navigation Equipment

Control	Joy Stick Maneuvering System
Satellite Navigator	Furuno GP 80 (GPS)
Satellite Navigator	1x Seatex DPS 200, 1 x Seatex DPS 132
Radars	1 x Furuno, FAR 2835 S, ARPA 10 cm
	1 x Furuno, FR 2110 3 cm
Navtex Receiver	Furuno NX 500
Echo Sounder	Skipper GDS 101
Gyro Compass	2 x Anschutz Standard 20 1 x Anschutz Standard 22
Autopilot	Anschutz Pilotstar D BSH 46/45S/97
Log	Skipper EML 224
Electronic charts	Max Sea

2.14 Communications

Radio Station	GMDSS-Sea area A3.
	FS 5000 / RX, includes HF / MF, Inmarsat C and Inmarsat B
Telex	Inmarsat C x 2 and Radio HF/MF telex/DSC
Telephone	GSM Mobile Telephone, Inmarsat B and Shipequip V-sat telephone and internet
Telefax	GSM Mobile Telephone and Inmarsat B
VHF	2 x Furuno FM-8500
	1 x Furuno FM-7000
VHF Portable	2 x Motorola Radius GP 300
UHF Portable	2 x Motorola Radius GP 300
Emergency Helicopter	
Radio Beacon	TRP TU 8259 B
SART	2 x Tron Radar transponder 9 GHz
EPIRB	1 x Freefloat Tron 40 S, 1x Hand held Tron 45 S6
VDR	Rutter

2.15 Dynamic Positioning

DP-system	Kongsberg Simrad. SDP-21
Ref. system	1 x Seatex DPS 200 12 ch. 1 x Seatex DPS 132 12 ch. GPS Receivers
	HPR 410 hydro acoustic pos. With one standard transducer/ Narrow beam transducers
	2 x Taut Wire. Bandak MK 8. 500 metres water depth / Eiken TWR-OV7 600 M water depth.
	Radius 1000 with 2 transponders

2.16 Anti Rolling System

3 x Ulstein Anti rolling tanks

2.17 Safety Equipment

Acc. to SOLAS for World Wide Operation (Canadian rules included)

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 3 Maneuvering Control System

3.1 Maneuvering System – General

The Northern River's main maneuvering systems comprise;

Northern River has two Ulstein Bergen Diesel BRM-8 main engines, each driving an Ulstein pitch propeller. The vessel is also fitted with one forward tunnel thruster, one full retractable forward Azimuth thruster, two aft electrically driven tunnel thrusters and two high lift flap rudders.

3.1.1 Main Engines

The vessels is fitted with 2 Ulstein Bergen Diesel BRM-8 main engines each producing 3530 kW (4800 BHP) a total of 7070 kW 9800 BHP **,** as well as providing motive power to drive the propellers each engine also provide power for a shaft generator.

3.1.2 Main Propellers

Each main engine drives a, 4 bladed, controllable pitch propeller 3.3 metres in diameter, outward turning.

Figure 1 Propellers & Rudders

3.1.3 Bow Thruster

The vessel is fitted with one electrically driven bow tunnel thruster (An Ulstein 375TV), this thruster has a controllable pitch propeller producing 1200 bhp (880 Kw).

Figure 2: Bow Thruster viewed from port

3.1.4 Stern Thrusteres

The vessel is fitted with two electrically driven, controllable pitch, tunnel thrusters each producing 880 Bhp (660 Kw), these units are an Ulstein 150 TV, the drive motors are air cooled.

Figure 3 Stern Thrusters

3.1.5 Azimuth thruster

This vessel is fitted with a pivoting, electrically driven, azimuth thruster producing 1200 BHP, This thruster can rotate through 360 degrees and is fitted with a controllable pitch 4 bladed propeller encased in a Kort Nozzle to improve efficiency. This thruster is fitted in the forward part of the vessel 13 metres from the stem, it projects 2.4 metres below the hull when fully deployed.

Figure 4 Swing up Az Thruster

Figure 5: Swing up Az Thruster

Figure 6: Azimuth Thruster

3.1.6 Rudders and Steering Gear

The vessel is fitted with twin Ulstein High Lift Becker Rudders these rudders can be synchronized or controlled independently, turning to 45 degrees either side.
The steering gear unit is manufactured by Tenfjord and consists of four pumps, two for each rudder.

Class and SOLAS rules require that the vessel's steering gear has redundant power and control supplies and no single failures would cause a failure of
the steering gear. Mechanical failure of the steering gear is also of a low probability as the gear is designed to be highly redundant.
Each steering gear is independent and there is no connection between the two systems either hydraulically or mechanically. The rudders can be controlled independently, synchronised or in non follow-up (NFU). NFU is emergency operation of the rudder. There are two control panels and two alarm panels on the Bridge (fwd/aft). There is one alarm panel in the ECR.

Figure 7: Becker Rudder

3.2 Efficiency

The kort nozzles surrounding the propeller on the azimuth thruster increases the efficiency of the propeller. The increase in power output from the propeller is achieved by making the diameter, within the shroud, smaller at the after end than the forward end. Because of this, the propeller is constantly drawing a mass of water into the shroud which has to be forced out through a smaller aperture. For this to happen the water has to be ejected out of the shroud at a much higher velocity than it entered and as a result a positive pressure exits at the aft end of the shroud. It is this that gives the azimuth thruster additional lift or drive; the shape of the nozzle (Wing Shaped) also gives additional lift. From this you can see that the units are not so efficient when operated in the astern mode, ie lever pushed in the opposite direction to the pointer on the control lever.

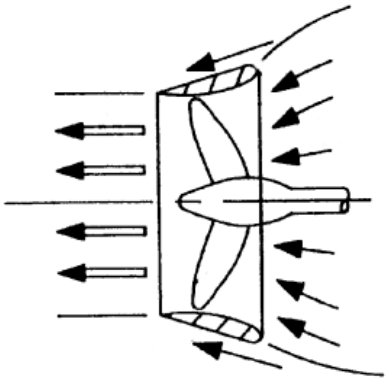


Figure 7: Kort Nozzle

Draft trim and heel will have an effect on the efficiency of all units and must be taken into consideration; excessive head trims should be avoided.

3.2.1 Main Propellers

When operated astern the propellers will loose about 30% of their efficiency when compared to going ahead.

3.2.2 Azimuth Thruster

When operated in the astern mode, ie the pitch control lever is moved in the opposite direction to the indicator on the control lever, the azimuth thruster is only 40% efficient when compared to being used in the ahead mode.

3.2.3 Bow Thruster

The bow thruster is more efficient pushing the bow to port the hub is on the starboard side, see figure 2

3.2.4 Stern Thrusters

Both Stern Thrusters have the hub on the starboard side and, consequently, will be more efficient pushing the stern to port,

3.3 Time Lag

Time taken for the movement of engine & thruster pitch also the rudder movement

3.3.1 Main Propellers

Apply pitch from 0 to full ahead	14 Seconds
Apply pitch from 0 to full astern	10 Seconds
Apply pitch from full ahead to full astern	22 Seconds

3.3.2 Azimuth Thruster

Rotate thruster 180 degrees	19 Seconds
Rotate thruster 90 degrees	9 Seconds
Zero pitch to full ahead	8 Seconds
Zero pitch to full astern	8 Seconds
Full ahead to full astern	15 Seconds

3.3.3 Bow Thruster

Zero pitch to full Port	6 Seconds
Zero pitch to full Starboard	6 Seconds
Full over to full over	12 Seconds

3.3.4 Stern Thrusters

No1 Fwd

Zero pitch to full Port	6 Seconds
Zero pitch to full Starboard	6 Seconds
Full over to full over	10 Seconds

No 2 Aft

Zero to full port	6 Seconds
Zero to full starboard	6 Seconds
Full over to full over	

3.3.5 Rudders

Midships to hard over	9 Seconds
Hard over to hard over	18 Seconds

3.4 Initial Start up Procedures

Always inform engine before you start any thrusters or other heavy power consumers.

3.4.1 Main Engines

1) Inform the duty engineer that the engines are required, giving adequate notice, on Request from the bridge both main engines will be started from the engine control room by the duty engineer.
2) Ensure Pitch controls are set to zero on both main engines.
3) The engines will be warmed through, taken up to the correct temperature and then clutched in, the bridge should be manned all the time that the engines are clutched in, prior to clutching in the engines the duty engineer should call the bridge to ensure that it is manned.
4) When both engines are clutched in and up to speed, 650 or 750 RPM depending on requirements. The duty engineer will then transfer control to the bridge and an audio alarm will sound until bridge officer accept command. Ensure both engines are clutched in before taking the engines by checking on the port aft consol that the 2 green clutched in lights are illuminated. Before taking control ensure that the pitch control levers are set to zero.
5) Take control by pushing the manoeuvre change button on the port aft consol. The indicator light will change from red to green, engine room control to bridge control. NB this can only be done at the aft console.
6) Ensure command is at the desired fore or aft consol by pressing the square yellow button on the appropriate consol, the in command lights will now be lit.
7) Test the pitch on both main engines.

Common In Command Button

Man Change bottons, to take control form the ER

Pitch in zero

Clutched in/out lights

Emergency pitch controls, press the red buttons & use the control levers

Figure 8: Main Engine Controls

3.4.2 Bow Thruster

When at sea ensure that there is no more than 80% pitch on the main propellers.

1) Do not start any more than one thruster at time, if you do the starting load may trip the shaft generator.
2) Start the servo pump (5 minutes before start of thruster if possible).
3) Start the thruster. Make sure the in command sign is lit at appropriate command station.
4) Test the pitch control by moving the handle in both directions.
5) Test the emergency pitch control, press the red button “Emerg on” and move the Emergency level in both directions.
6) Turn emergency control off after testing. Thruster is now ready for use!

Figure 9 : Bow Thruster Panel

3.4.3 Azimuth Thruster

The Azimuth Thruster is **not** normally used in port

1) Start the system pump (5 min before start of thruster if possible, the thruster **MUST NOT** be lowered until the vessel speed is below 5 knots as it could damage the thruster.
2) When speed is below 4 knots the thruster could be lowered from the forward consol. Once the thruster is fully lowered and the red “thruster out” light is lit, azimuth could be started.
3) Post the sign azimuth “Remember Azimuth thruster” to remind operators to stop and hoist the azimuth before speeding up!
4) Test the emergency steering for pitch both ways. Be aware that on the azimuth there are no levers, only buttons to push for each direction. You activate the emergency steering by pushing the button and steer the pith by pushing the desired direction button. ATTENTION: when pushing in the Emergency button. Pitch automatically goes astern. You can stop it by pressing and holding the Ahead button.
5) Test the emergency steering for direction with appropriate pushbutton.
6) Turn Emergency control off. Test both pitch and direction with main control. The azimuth is now ready for use!

Figure 10 : Azimuth Controls

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

3.4.4 Stern Thrusters

When at sea ensure that there is no more than 80% pitch on the main propellers.

1) Start the servo pumps,5 min before start of thruster if possible to allow hydraulics to warm through.
2) Start one thruster at a time, Make sure the in command sign is lit at appropriate command station.
3) Test the pitch control by moving the handle in both directions.
4) Test the emergency pitch control, press the red button “Emerg on” and move the emergency level in both directions.
5) Turn emergency control off after testing. Thruster is now ready for use!

Figure 11 : Stern Thruster Controls

3.4.5 Steering Gear

There are two steering motors for each rudder; it is normal to have all motors running when entering or leaving port, shifting ships or working within the 500 metre zone of a rig.

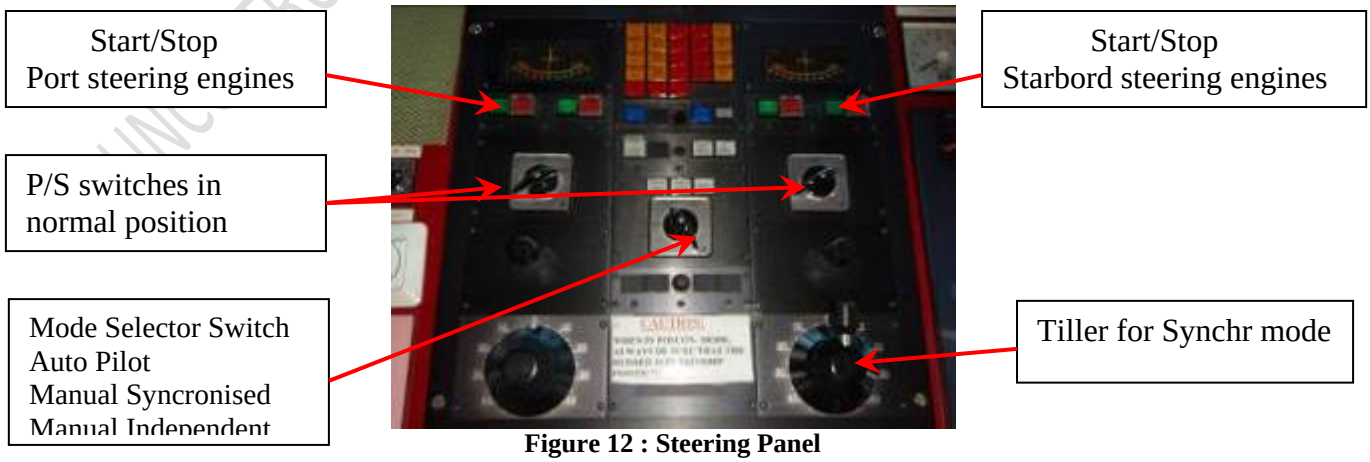


Figure 12 : Steering Panel

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

3.5 Manual Controls

3.5.1 Main Propellers

The pitch on the each main propeller is controlled with a pitch control lever, one for each propeller marked 0% to 100% ahead and astern, these controls are duplicated at the forward and aft end of the bridge.

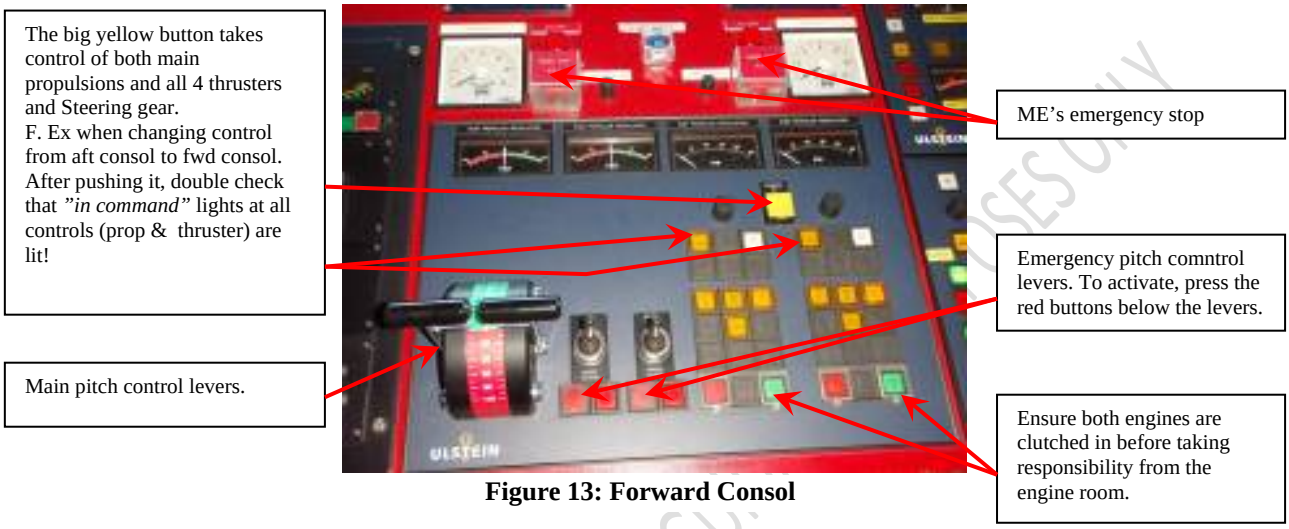


Figure 13: Forward Consol

3.5.2 Main steering panel

Figure 14 : Steering Panel

3.5.3 Fwd Thrusters control panel

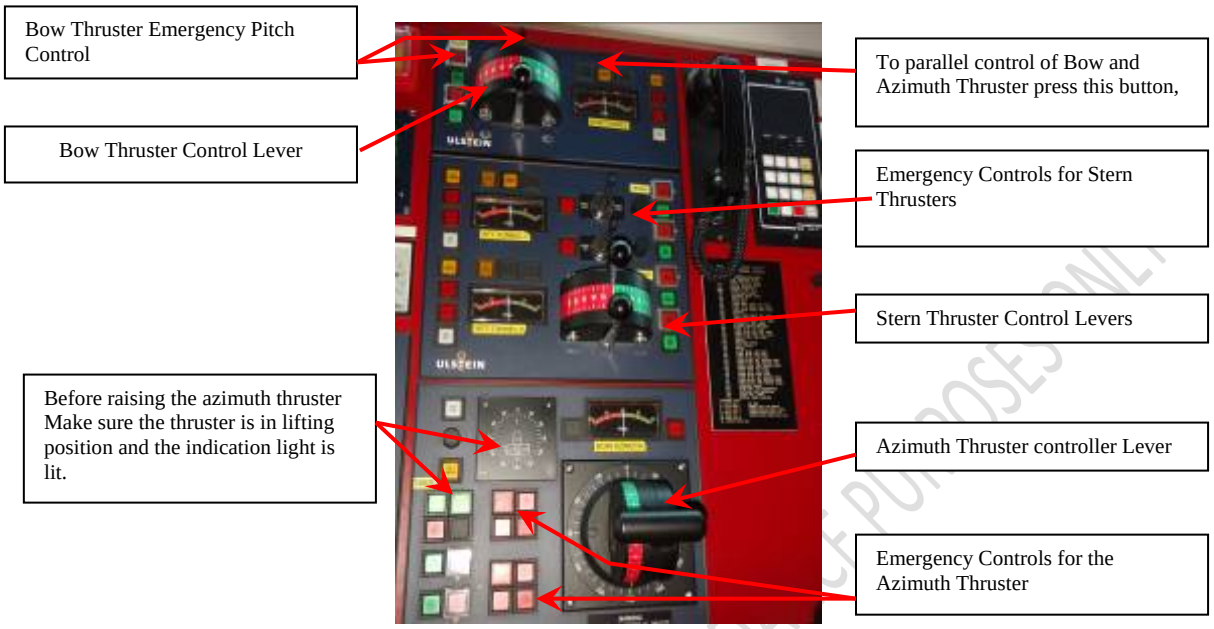


Figure 15 : Forward Thruster Panel

The pitch on bow and stern thrusters is controlled with a variable pitch control lever marked 0% to 100% port and starboard, the control is duplicated at the aft consol.
The azimuth thruster is controlled by the use of a rotating control lever marked 0% to 100% and 0 to 360 degrees, this lever adjusts the amount of applied pitch and the direction of the applied pitch, the azimuth thruster mimics the control lever. The control lever is duplicated at the forward and aft consol. If you wish to parallel this control with the bow thruster press the yellow parallel control button, adjust thruster to the correct orientation now use the bow thrust control lever.

3.5.4 Controls aft

Figure 16 : Aft Control Consol

All of the controls on the aft control panel are the same as on the fwd panel, but a slightly different configuration. In addition we also have the POSCON joystick control as described as followed.

3.5.5 Joystick Control System

An automated control system is provided to enable simple control of all the above manual controls simultaneously. This is referred to as the POSCON. It comprises a joystick system which enables the user to maneuver the vessel using one simple hand control.

For joystick set-up and changeover procedures refer to Section 4 of this manual.

The joystick operates as follows;

Aft Maneuvering Station;

Heading is controlled and maintained by the POSCON control.

Clockwise rotation of heading is achieved by pushing the STBD button on the POSCON consol. Anti-clockwise rotation of heading is achieved by pushing the PORT button on the POSCON consol, one push of the button will change heading by one degree

The heading can also be changed by pushing the button on top of the joystick (axis mode) this turns the vessel on its axis using the thrusters and rudders if engaged. Looking down twist the joystick anti-clockwise to alter heading to port or clockwise to alter heading to starboard. In this mode heading is not maintained. Pushing the button again on top of the joystick will maintain the present heading. See following diagram. (Excessive thrust may be experienced when used this mode of operation)

Movement ahead is achieved by moving the joystick towards the bow.

Movement astern is achieved by moving the joystick towards the stern.

Bodily vessel movement to starboard is achieved by moving the joystick to starboard.

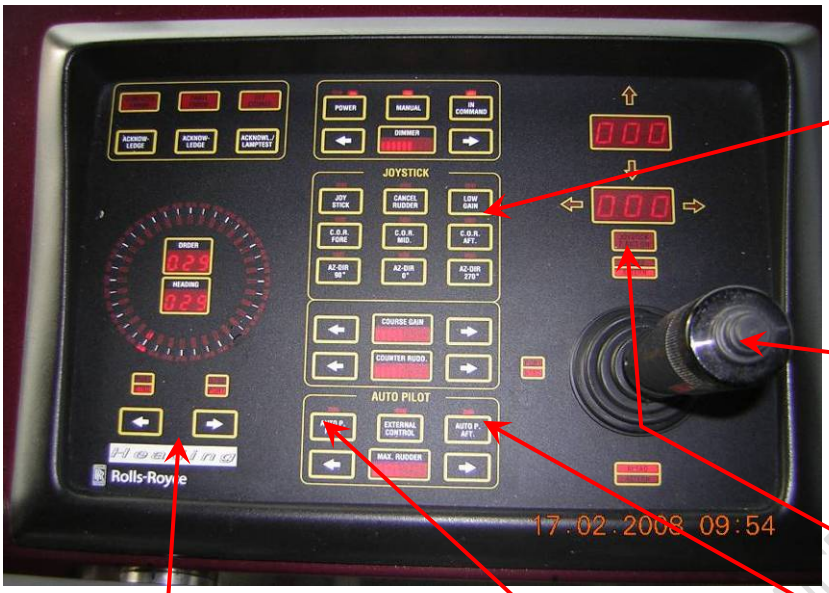
Bodily vessel movement to port is achieved by moving the joystick to port.

Combinations of the above maneuvers are achievable by appropriate movements of the joystick i.e. the vessel should move in the same direction as the joystick itself.

You can cancel the rudders on the Poscon control unit so you receive full thrust ahead and astern on both the main propulsions. You can also adjust the orientation of the azimuth thruster.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

POSCON Joystick Control



Main joystick controls
The buttons contained in this area are all 2 x push buttons. In this box you have the following options.

1) Full joystick mode.
2) Cancelling of rudders.
3) Low gain.
4) Choice of centre of rotation
5) Choice of direction of the azimuth thruster. 90deg or 270 deg or fore and aft.

Axis mode
This button when pressed will put the Poscon in axis mode. Looking down at the joystick (by twisting anti clock wise the heading will go to port & clockwise the heading will go to starboard) heading will not be maintained when you press this button.
This light will illuminate when in axis mode

Figure 17 : POSCON

Controlled and maintained heading
Clockwise rotation of heading is achieved by pushing heading control button to starboard.

Anti-clockwise rotation of heading is achieved by pushing heading control button to port.

Auto pilot fore mode
You also have the option of auto pilot fore mode instead of joystick mode. In this mode the heading is maintained using both bow thrusters, but side thrust is controlled by the stern tunnel thruster. This is also a 2 x push button.

Auto pilot aft mode
Also another option is auto pilot aft mode. This mode is useful when drifting up or down tides, it will maintain the heading using the stern thruster, and ahead and astern movement is controlled by the joystick. Also a 2 x push button. Bow thrusters not required.

3.5.6 Centre of Rotation

It is possible to alter the center of rotation of the vessel in joystick mode. You can alter the center of rotation by pushing the following buttons on the Poscon control unit.

C.O.R. Fore = center of rotation forward.

C.O.R. Mid = center of rotation midships.

C.O.R. Aft = center of rotation aft.

3.5.7 Heading Priority

It should be remembered that the available maximum thrust to some propulsion and thrust units may be lessened through the use of the joystick, the system will give priority to vessel heading so may not apply full thrust to a particular unit.
The POSCON joystick control system fitted to this vessel will give priority to heading, that is to say, the maximum available thrust will be limited or reduced until the unit has brought the heading of the vessel to within defined limits. You may find that the POSCON is not doing what you want it to do, it may ignore or limit commands from the joystick when heading is outside of set limits, the unit will prioritize heading until the heading is brought back to within defined limits.

Normally any manoeuvring operations at offshore installations are controlled using the manoeuvring station located at the aft end of the bridge. This position also has a full suite of communications systems and cargo system controls.

3.6 Variable Thrust Power Configurations

The thrusters and main engines on this vessel cannot be run on reduced power, there are no options for varying the power output, it is all or nothing.

Pushing the low gain button on the poscon control unit, will reduce the available thrust to 50%

Reference should always be made to the “Guidelines for the Safe Management of Offshore Supply and Anchor-Handling Operations (NW European Area)” current edition in particular the section on Collision Risk Avoidance and Adverse Weather Working when choosing the power configuration (see appendis). The vessel must at all times be able to manoeuvre to a safe position so should always have sufficient reserve power available to achieve this particularly in strong tidal or marginal weather conditions.
Reference should be made to Trico’s Marine Safety letter No 8 of 2007, see appendix

For manual operation set-up and changeover procedures refer to Section 4 of this manual

3.7 Dynamic Positioning System (DP)

The vessel is also equipped with a Kongsberg Simrad SDP-21 dual DP control system. This is a very sophisticated automated maneuvering control system which accepts information from various sources such as;

Gyro Compass
Motion sensors
Anemometer
DGPS position reference system
RADIUS position reference system
Taut-Wire position reference system
HPR position reference system

The system compares and analyses information from the various reference systems and applies power to the various thrust systems automatically to maintain the required position. Conflicting information is generally taken care of by the use of several inputs such that where 3 inputs are supplied and 2 agree the system will believe that information and discount the erroneous data. The system also learns from its previous maneuvers in that it becomes more accurate and efficient the longer it is required to maintain that position.

It is important that all operators of the DP system read and fully understand the DP operators manual and the FMEA they should fully conversant with the benefits and limitations of the system, whenever the system is in use there must always be a trained and qualified DP operator on the bridge. All company DP procedures must be followed when using the system.

3.7.1 DP operator desk

Figure 18 : DP Desk

3.7.2 DP reference station

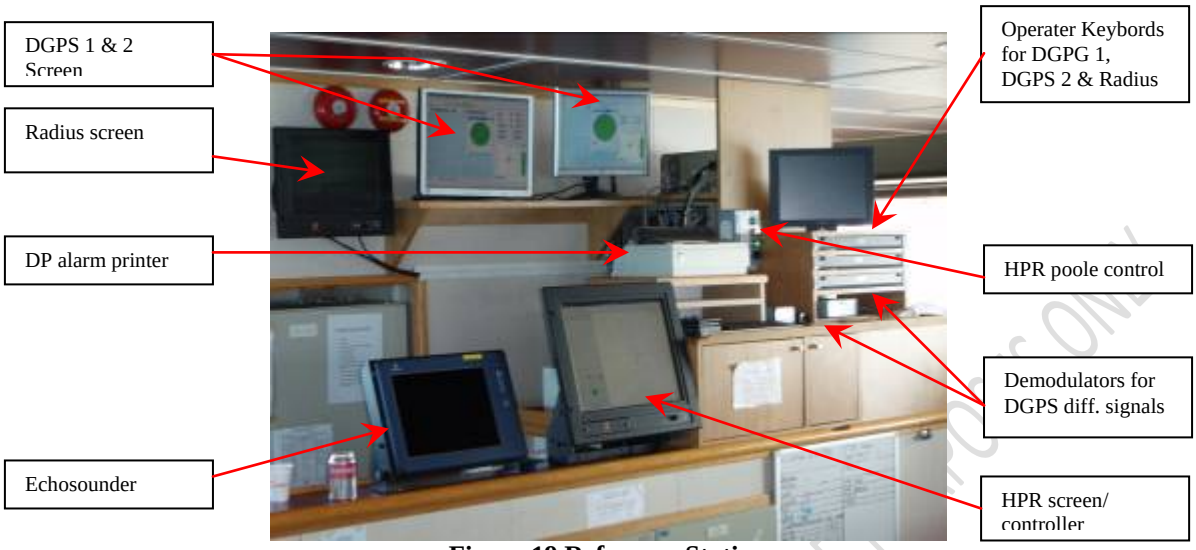


Figure 19 Reference Station

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 4 Changeover Procedures

The following procedures shall be followed when changing over control;

4.1.1 Manual Steering to Autopilot

Ensure the vessel is on the correct heading steady, the wheel is amidships and you have taken command of the forward panel. Change over control from manual to autopilot is achieved by turning the mode selector switch to auto. The steering is now changed over to autopilot and controlled on Pilot Star D unit.

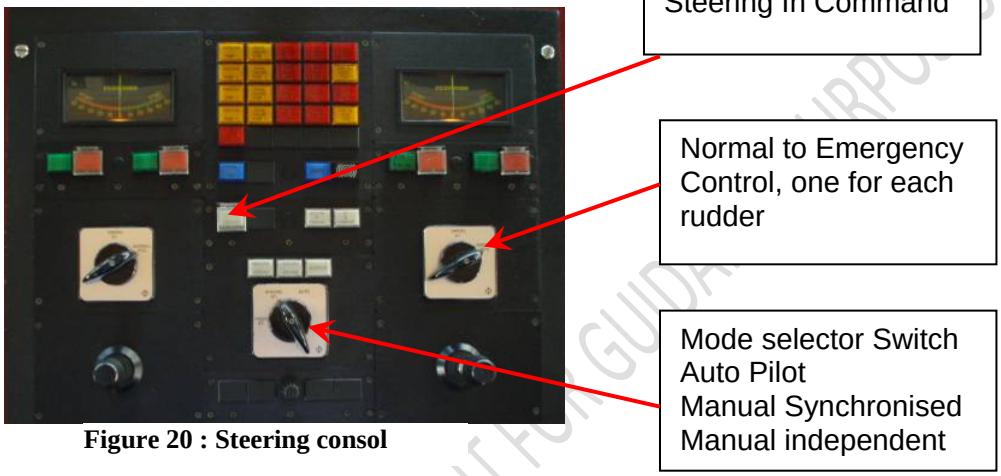


Figure 20 : Steering consol

4.1.2 Autopilot to Manual Steering

Be aware of the heading steered by the autopilot. Check that the steering wheel is in amidships position.
Turn the center switch to SYNCR.ST. Both rudders are now controlled by the right hand steering wheel.

4.1.3 Manual Steering to Emergency Steering

Turn both top switches to EMERGENCY then use both NFU steering levels to control each rudder independent of each other, You can use the NFU steering levels even if the switches are in normal position. Just by pulling it to port or stb, but when you release the NFU steering level the rudder goes automatic back to amidships.

4.1.4 Emergency Steering to Manual Steering

Check the position of the center switch. SYNCR.ST means that both rudders are controlled by the right hand steering dial. This steering dial also has a knob located in center position. INDEP.ST means that each rudder is controlled by its nominated steering wheel.
Turn the center switch to the preferred position and the top switches to NORMAL.

4.1.5 Normal pitch control to Emergency pitch control

Press down the two red bottoms to the right of the pitch controller, and use the emergency levels to control the pitch. When back to normal just press the red bottoms again.

4.1.6 Forward Maneuvering Station to Aft Maneuvering Station

Ensure all thruster, rudder and engine levers are set to zero. Press the big yellow button on the port aft consol. All steering, thruster and engine controls are now changed over to the aft maneuvering station, check to ensure you have control of rudders.

4.1.7 Aft Maneuvering Station to Forward Maneuvering Station

Ensure all thruster, rudder and engine levers are set to zero. Press the big yellow button on the forward maneuvering station. All steering, thruster and engine controls are now changed over to the forward maneuvering station, check to ensure you have control of rudders

4.1.8 Manual Controls to Joystick Controls

Ensure all control is on the aft maneuvering station. Keep the vessel in a steady heading. The changeover to joystick control is done by pushing the JOYSTICK button on the POSCON consol twice. Make sure that all levers are at zero on the aft maneuvering station after the changeover is done and the joystick is set upright, zero position. The system will not allow you the POSCON to take control if the joystick is not upright, you will get an alarm and the unit will return to standby.

4.1.9 Emergency Pitch Control of the tunnel Thrusters

To use the emergency pitch control levers for the tunnel thrusters press the red emergency control button adjacent to the control and operate the control lever in the appropriate direction.

4.1.10 Emergency Control of the Azimuth Thruster

At the appropriate control consol, forward or aft, press the Emergency On button, there is one for the rotation and one for the pitch control, now press the appropriate emergency control button for rotation and pitch control.

4.1.11 Joystick Control to Manual Controls

Make sure that all levers are at zero on the aft maneuvering station. Push the MANUAL button on the POSCON consol twice or push the big yellow button on the port aft consol once. The control is now set to the aft maneuvering station.

4.1.12 To Pass Control to the DP Desk

The vessel should be clear of all obstructions outside of the 500 metre zone of an offshore installation on a steady heading with minimum speed over the ground. Pass and take control of all thrusters and main engines to the after consol ensuring you have taken control of the rudders. Turn the Dp selector switch from Main to DP, at the appropriate operator station enable the appropriate thrusters and main engines, enable a reference system. You can now control the vessel using the DP joystick. To go into Auto DP mode use the joystick to reduce the speed of rotation to a minimum, now select heading control by double pressing heading. Use the joystick to reduce the sway and surge speed to a minimum now you can select sway and surge control by double pressing each button twice alternatively double press the Auto DP button.
Before you use the DP desk you must have had appropriate training and have read and fully understood the DP Manual and the FMEA, it is not intended to give DP instruction in this manual.

4.2 Power Failures (Blackouts)

The vessel is DP class ll, this means that the vessel will be able to maintain position despite the failure of a one piece of critical equipment, the function of this classification is tested annually during DP trial where the FMEA is put to the test.

The vessel has two shaft generators one on each engine and two auxiliary generators, at sea both shaft generators are in use all the time, with the auxiliary's on standby, there is also one emergency generator.

The distribution board is split so that one shaft generator will power half the ship for example the starboard engine's shaft generator will power stern thruster No 4 and the azimuth thruster, the port engine will power stern thruster No 3 and the bow thruster. Should you lose one engine you should always have one thruster at each end (however you take care in using the azimuth thruster in port, you may not have enough water under the keel)
Heavy consumers can be run from either side of the board.

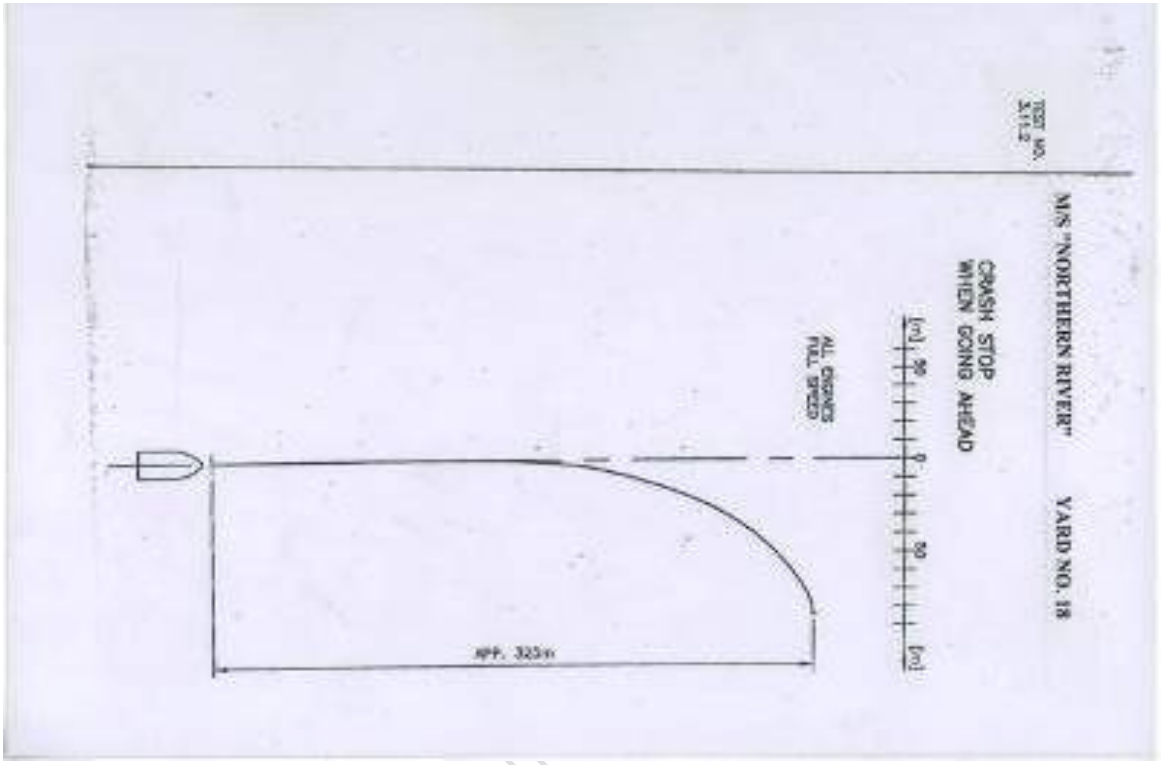
Should an engine fail then one or both of the auxiliary generators will start automatically and put itself on the board, should there be a total blackout the emergency generator will start and provide power for emergency lighting and equipment.

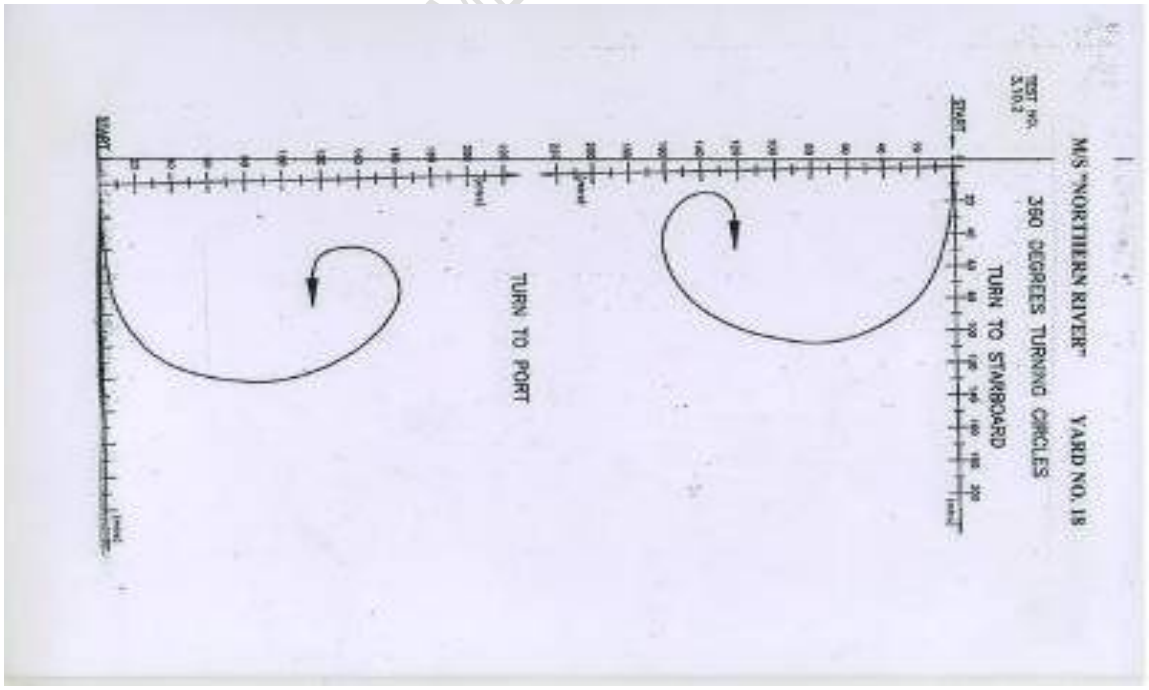
At sea a complete blackout may occur as a result of failure of both main engines and both auxiliary generators, the emergency generator will then start and provide power for emergency lighting and controls. The high level of duplication, redundancy, maintenance and the annual proving of the FMEA means that a total blackout is an unlikely event.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 5 Manoeuvring Data

The following data can be found posted on the bridge.





Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 6 FMEA – Effect of failure of critical components

Explanation

Trico Supply is responsible for equipment essential to station keeping in close proximity to offshore installations and general vessel manoeuvring. Consequently it is necessary to obtain a reassurance that 'causes', 'effects' and 'risks' of system failure have been reviewed systematically.

Objectives

1 Identify the 'equipment' or 'subsystem' and 'mode of operation' of the equipment;
2 Identify possible failure modes and their consequences.
3 Evaluate the effects on the system of each failure mode;
4 Identify measures for eliminating or reducing the risks associated with each failure mode;
5 Identify trials and testing necessary to prove the conclusions; and
6 Provide information to operators and maintainers of the system in order that they understand the capabilities and limitations of the system to achieve best performance.

The Process

1. Will a failure of the system result in serious or undesirable consequences. If NO, document and end the analysis. If YES see (1a)
a) Divide the system into subsystems. Ask the question in 1. for each subsystem. If NO document and end analysis. If YES see (1b)
b) Divide each subsystem into its assemblies. Ask the question for each assembly. If NO document and end analysis. If YES continue to sub assemblies etc.
2. For each analysed element, what are the failure modes?
3. For each failure mode, what are the failure effects?

The Northern Clipper is a DP Class II vessel, on completion of the installation of the DP II equipment a theoretical FMEA is produced, this FMEA is then put to the test by conducting a DP proving trial to ensure that the failure of one piece of critical equipment will not result in the loss of position when sitting on DP. Dp trials are then conducted every year to ensure that there has been no degrading, there will be independent witnesses to these trials and will be monitored by DnV

The theoretical FMEA is filed in the DP file Operation file kept on the bridge, it is important that all Dp operators read and understand the contents of this file, this includes the engine room officers of the watch.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 7 Record of Incidents.

7.1 Purpose

On every occasion that an incident or failure of equipment occurs, even if this incident does not result in injury to personnel or damage to equipment or to the vessel, an incident investigation must take place. The purpose of the investigation is to ascertain the reason for the failure so that, hopefully, future occurrence can be avoided. It will also give an indication to the likely sequence of events following the failure of such equipment and the best course of action to take.
No matter how small the incident it must be investigated and the findings recorded in BPM section 7.
The corrective measures taken to prevent re-occurrence must also be included in the incident log.
I am sure that you can see the benefits of having the past history of incidents recorded in this manual; it will alert new crew and your opposite number of the likely outcome of failures of equipment and how to deal with such failures and what to expect if failure does occur. It will also give an indication of what actions should be avoided.
This is also to include incidents involving human error, for example pressing the wrong button or pulling the wrong lever, anything that we can learn from.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

7.2 Incident Log

Date :25th august 2005	Time :0245	Location : Forties Delta
Wind :~25 knot	Sea : 2-3 meters	
What happened : On August 25th 2005 at 0245 Hrs: Contact with FD-Platform As the ship was sitting on the platform Forties Delta NW-Corner, the distance to the platform became reduced to 7-8 meters. During manoeuvring to increase the distance, the ship hit the fender work on the NW corner. The rig informed at 0247 hrs The Captain informed at 0248 hrs, the captain on the bridge at 0250 hrs. Reason for the accident: The rudder had been left with a stb rudder of about 15 - 20 degrees when switching over to POSCON.		
Result of Incident : Northern River: Following damage: port Quarter: Damage to tank 35 (port AP-tank) containing PW. , between frame 2 - 1 dented (induced) 15-20 cm, between frame 1 to -1 dented(induced) 15 - 20 cm, between frame -1 to -2 dented (induced) 2 - 5 cm. No leakage observed. Steel changed during dry-dock. Forties D: Damage to the fender work on the actual leg (NW) (observed from the ship).		
Corrective measures / how to avoid re-occurrence: Poster posted at all steering positions that rudder MUST be set to zero before changing command station! Ship handling record books for bridge officers supplied to all Trico vessels and necessary revision to SMS manual conducted.		

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Incident Log

Date :	Time :	Location :
Wind :	Sea :	Current :
What happened :		
Result of Incident :		
Corrective measures / how to avoid re-occurrence		
Date:	Name:	Signature:

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Incident Log

Date :	Time :	Location :
Wind :	Sea :	Current :
What happened :		
Result of Incident :		
Corrective measures / how to avoid re-occurrence		
Date:	Name:	Signature:

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Incident Log

Date :	Time :	Location :
Wind :	Sea :	Current :
What happened :		
Result of Incident :		
Corrective measures / how to avoid re-occurrence		
Date:	Name:	Signature:

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Section 8 Appendix

8.1 Marine Safety Letter No 8 of 2007
8.2 Abstract from “Guidelines for the Safe Management of Offshore Supply Vessels and Anchor Handlers
8.3 A002-03 Pre-sailing & Pre-arrival check list
8.4 A002-04 Entering 500 meter zone check list
8.5 A002-06 Master Pilot Exchange of Information
8.6 A002-07 Embarking / Disembarking Pilots check list
8.7 A002-08 Anchor Watch check list.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Marine Safety Letter No.: 08/07

To: **All Trico Operated Vessel Masters and Officers**

Subject: **Vessel Manoeuvring Controls – Available Power**

Recently a Company vessel collided with a gas production platform and attendant rig whilst working cargo in the UK sector of the Southern North Sea.

The subsequent investigation has found that the main reasons that the collision occurred were an underestimation of the sudden and dramatic changes in tidal conditions and the choice of low power on thrusters prior to commencing the operation. This choice left insufficient reserve power to deal with the sudden increased tidal effect resulting in the vessel drifting astern and bodily to port striking both installations it was near to.

The vessel concerned was of diesel-electric configuration with the ability to chose either high or low power on all azimuth and tunnel thrusters. Also with low power the choice of whether two or three main generators sets being operational becomes possible. When in high power three generator sets would be required to start the thrusters but only two may be required for operation if, for example, weather conditions were fine provided the third set was available in an auto-start function. This scenario may however restrict available power for rapid exits and due to time delays in start-up and synchronisation is not recommended.

As a consequence all company vessels where such a choice exists must now ensure that high power/high speed is chosen at all times in strong tidal conditions or in marginal weather conditions. The golden rule from the NW European

Steve Ferguson
Marine Superintendent
Trico Supply

8 Collision Risk Avoidance

8.1 Collision Risk Avoidance

8.1.1 Overview

1. 98% of collisions with installations involve visiting vessels. This section addresses safe conduct of vessel operation in the vicinity of installations. [45, 46]

2.   To reduce the risk whenever vessel is alongside or near installation:
   - minimise number and duration of visits
   - avoid working weather side where possible.
   - do not undertake any operation without risk assessment

3. Vessel Master or officers must never be pressured to carry out operations where safety of vessel, installation or personnel is prejudiced.

4.  Vessels **should have** adequate contingency plans for potential problems near offshore installations, particularly various mechanical or control systems failure modes. These should be regularly exercised.

5. **Key points for consideration in voyage planning** are:
   - obtain confirmation of installation readiness for operations prior to vessel approach and set-up to minimise time alongside
   - perform risk assessment against 8.1.2 Adverse Weather Working Guidelines
   - communicate with installation and confirm agreement to commence operations. Vessel Master or OIM or Crane Operator have right of veto during operations.
   -   Vessel Master, Crane Operator and OIM **continually review** conditions and actual operation as an ongoing risk assessment.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

8.1.2 Adverse Weather Working Guidelines

Leeside Working

Trigger	Precaution
Wind Unfavourable Wind Direction	No installation overboard venting or discharges whilst working supply vessels, unless previously agreed with vessel Master.
20 kts mean wind speed at 10m level	Secure loose items and advise greater caution to prevent injury to personnel and damage to equipment.
20 - 25 knots Mean Wind Speed at 10m level	OIM, Crane Operator and Master should evaluate the weather conditions and forecast. If necessary, a risk assessment should be carried out before commencing / continuing the operation. Consider vessel motion and potential cargo damage when reviewing prevailing weather conditions and immediate forecast.
25-40 knots mean wind speed at 10m level	Any operations in this range must only be carried out with full agreement of OIM, Crane Operator and Master. Weather conditions should be continuously monitored. NO9
Sea State 3m - 4m Significant Wave Height	OIM, Crane Operator and Master should assess the situation on positioning and cargo handling before arrival within safety zone. Account for vessel motion, any awkward lifts, potential cargo damage due to heave and potential effects of sea on hose work.
Tidal Streams Strong Currents or Tides	Consider delaying discharging until slack tides if vessel cannot hold station satisfactorily (propeller and/or thruster utilisation below 50%) against tide
Visibility Poor visibility	Cease cargo operations if crane operator is unable to see vessel deck crew clearly.
Visibility <250m	Remain outside safety zone of installation to avoid collision with installation or other vessels. Maintain radar watch.
Vessel and Equipment Vessel rolling heavily	Master may cease operations at lower wave heights than those above if rolling starts to affect station keeping or crew safety.
Vessel moving violently	If vessel motion adversely affects vessel's station-keeping equipment Master will cease operations and clear installation.
Forecast for vessel's specific criteria to be exceeded	Consider making for sheltered waters or port to avoid risk to personnel or equipment or cargo.
Hose Operations	**Continue hose operations at Master's discretion. If station keeping requires 50% of propeller and/or thruster utilisation consider ceasing hose operations.**

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

Weather Side Working

20 - 25 knots Mean Wind Speed at 10m level	Secure loose items and advise greater caution to prevent injury to personnel and damage to equipment.
Above 25 knots at 10m level	Operations cease. When on Norwegian Continental Shelf see NO9.
Sea State 3m - 4m Significant Wave Height	OIM, Crane Operator and Master should assess the situation on positioning and cargo handling before arrival within safety zone. Account for vessel motion, any awkward lifts, potential cargo damage due to heave and potential effects of sea on hose work.
Above 4m	Operations cease. When on Norwegian Continental Shelf see NO9.
Tidal Streams Strong Currents or Tides	Consider delaying discharging until slack tides if vessel cannot hold station satisfactorily (propeller and/or thruster utilisation below 50%) against tide
Visibility Poor visibility	Cease cargo operations if crane operator is unable to see vessel deck crew clearly.
Visibility <250m	Remain outside safety zone of installation to avoid collision with installation or other vessels. Maintain radar watch.
Vessel and Equipment Vessel rolling heavily	Master may cease operations at lower wave heights than those above if rolling starts to affect station keeping or crew safety.
Vessel moving violently	If vessel motion adversely affects vessel's station-keeping equipment Master will cease operations and clear installation.
Forecast for vessel's specific criteria to be exceeded	Consider making for sheltered waters or port to avoid risk to personnel or equipment or cargo.
Thruster and propeller Utilisation	**If vessel thruster or propeller use exceeds 50% of propeller and/or thruster utilisation Master will cease operations.**

8.1.3 Adverse Weather Working

8.1.3.1 Working Parameters

1. When alongside, prevailing and forecast weather conditions should be continually compared to Adverse Weather Working Guidelines 8.1.2. UK2
2. If weather requires change of position or heading, promptly inform installation. If it becomes difficult to maintain position or see installation, inform installation and move vessel away.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

3. Consider vessel motion in deteriorating weather. Safety of crew on deck is paramount; prevention of damage to cargo and vessel is important. Consider also the risk of lifts becoming snagged under the cargo rail.
4. If necessary, advise Crane Operator of safe cargo landing position. Should conditions become unsafe for operations, inform installation and move away and wait until sea state and vessel motion improves.
5. Weather criteria must be discussed and agreed before starting heavy lift operations, and may cause other operations to be suspended. Use of tag lines for heavy or large lifts is subject to the Master's agreement and risk assessment.
6. OIM and Masters must allow time for vessels to seek shelter in event of adverse forecast.

8.1.3.2 Weather Side Working – Risk Assessment

1. Weather side should be considered as that side at which the net environmental forces (wind, waves and current) will cause the vessel to move toward the installation.
2. It is preferable for an OSV to work on the lee side (opposite side to the weather side) of any installation when working cargo.
3. When planning weather-side operations the vessel must analyse impact of failure in propulsion, manoeuvring or positioning systems within the safety zone. Situations that may lead to vessel starting to drift shall be identified and operational limitations defined in the operations manual. The Ship Owner shall inform operating/logistics company of such limitations.
4. When working weather side, Masters must use their judgement, experience and knowledge of the vessel, plus any specific weather policy of the operating/logistics company or installation, to set their own weather limits; i.e. they must perform risk assessment before agreeing to come alongside.
5. Risk assessment should include:
   - Master's and relevant officers' experience;
   - weather and sea state;
   - adverse weather-induced fatigue;
   - anticipated tidal effect;
   - forecast weather and impact on wind speed, direction or sea state;
   - vessel's power management configuration, and station keeping ability in event of loss of one main propulsion unit;
   - peak loads on position-keeping power generation capacity;
   - impact on vessel of deck cargo layout and cargo to be discharged and associated hazards to deck crew;
   - free surface effect of slack tanks;
   - position or reach of installation crane(s), hose lengths, platform lighting
   - time vessel is expected to remain alongside;

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

- continuous hours worked previously by Master and crew.

6. Masters have final decision on whether to work weather side.

8.1.3.3 Weather Side Working – Practice

1. All requirements of 3.3.4.1 apply. If vessel power requirement to maintain station exceeds 50 % of main propulsion or any thrusters, including shaft alternator power, the Master must cease operations. This critical limit also applies to diesel electric propelled vessels.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

8.3 PREPARATION FOR SEA / ARRIVAL PORT

No.	Preparation for Sea	OK	Not OK
1	Electronic navigational aids on and available	☐	☐
2	Radar ready for operation	☐	☐
3	Navigation light on	☐	☐
4	Propeller and rudder clear of obstruction	☐	☐
5	Steering tested in primary and emergency mode	☐	☐
6	Main engines and thrusters tested and engine room manned	☐	☐
7	Bridge communication equipment (internal, external) operational	☐	☐
8	Internal UHF / VHF communication tested	☐	☐
9	Arrangements for pilot embarkation / disembarkation including overside lightening, heavingline, lifebouy and condition of ladder	☐	☐
10	Charts and navigational publications available	☐	☐
11	Voyage plan prepared for new overseas voyages	☐	☐
12	Draught forward and aft read and logged in deck log book	☐	☐
13	Weather and tide assessed prior to departure	☐	☐
14	Harbour office informed and sailing time agreed	☐	☐

No.	Arrival Port	OK	Not OK
1	Available port information, sailing directions, navigational information, weather forecast, tidal information, depths in port and approaches, speed restrictions, etc. studied	☐	☐
2	Approximate draught forward and aft known	☐	☐
3	Large-scale chart for port prepared	☐	☐
4	VHF channels for various services noted	☐	☐
5	Internal UHF / VHF communication tested	☐	☐
6	Appropriate flag / light signals displayed	☐	☐
7	Prepared for Pilot (see own forms)	☐	☐
8	Thrusters running and tested	☐	☐
9	Emergency steering gear tested	☐	☐

The purpose of this checklist is to ensure that all departures and arrivals are planned and that vital equipment / machinery are functioning. The form has to be filled in but it is not necessary to file it. The deck officers in charge have the responsibility to ensure that the checks are performed and recorded in the deck logbook.

Master / Deck Officer in charge: .....

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

8.4 PRE-ENTRY / DEPARTURE CHECKLIST INSTALLATION 500 M SAFETY ZONE

Vessel					
Operator					
Field Installation		**Date**		Time	

SEA / WEATHER CONDITIONS			
☐ **CALM**	☐ **BREEZE**	☐ **ROUGH**	☐ **HIGH**
☐ **MODERATE**	☐ **GALE**	☐ **STORM**	☐ **FOG**

CHECKS TO BE CARRIED OUT BEFORE ENTERING 500 M SAFETY ZONE		**Acceptable Yes / no**		**COMMENTS**
VESSEL	Main engines tested. Ahead and Astern	☐	☐	
	Steering mode set to manual	☐	☐	
	Steering gear tested to port and starboard	☐	☐	
	Emergency steering gear tested to port and starboard	☐	☐	
	All thrusters/azimuths running and operational	☐	☐	
	All thrusters function tested	☐	☐	
	Vessel speed reduced to less than 7 knots	☐	☐	
	Communication established to Installation	☐	☐	
	Communication established to deck crew	☐	☐	
	Familiar with Installation Procedures	☐	☐	
	P/A Announcement – No Hot work – No Smoking	☐	☐	
	Permission obtained from installation prior to entering	☐	☐	

BEFORE STARTING OPERATION		**Acceptable Yes / No**		**COMMENTS**
VESSEL / RIG	Working side of installation agreed	☐	☐	
	Poscon operational and function tested	☐	☐	
	Poscon set up at least 50 m from installation. Keep position for some minutes before final approach	☐	☐	
	DP set up at least 150 m from installation. Keep position for at least 15 minutes	☐	☐	
	Weather conditions suitable for operation	☐	☐	
	Cargo bulk and fluid operations agreed	☐	☐	

CHECKS TO BE CARRIED OUT BEFORE DEPARTING INSTALLATION		**Acceptable Yes / No**		**COMMENTS**
VESSEL	Vessel to be manoeuvred well clear of Installation before changing command	☐	☐	
	Main engines, thrusters and rudders set to zero before shifting command from Poscon / DP or other bridge slave	☐	☐	
	Stand by vessel /other vessels well clear of vessel	☐	☐	

The purpose of this checklist is to ensure that all navigation and operation inside 500 meters of an Oil Installation is safe. The form has to be filled in but it is not necessary to file it. Both deck officers on duty shall participate; one to perform the checks and one to fill in the checklist. The completion of the checks is to be recorded in the deck logbook and signed for by both officers.

Master / Deck Officer in charge:……

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

8.5 MASTER / PILOT INFORMATION EXCHANGE

Vessel name		Call sign.	Flag	
Official (IMO) number	No. of crew		No. passengers	
Date	Time		Place	
Last port	Next port		Cargo	
Draught Fwd.	Draught Aft	LOA	Breadth	Displacement
Propulsion type	RPM	SHP	Speed	Dead-weight
Thrusters Forw.	SHP	Thrusters Aft	SHP	Br.T.
Owner / address				
Agent / Address				
Additional Information / Pilot notes:				
Master		Master sign		

The purpose of this form is to ensure that Master / Pilot Information Exchange are planned and organised.

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

8.6 EMBARKATION / DISEMBARKATION OF PILOT

Date: **Embarkation time:** **Disembarkation time:**

No.	Action	OK	Not OK
1	Check if pilot is compulsory or advised for any part of the voyage	☐	☐
2	Master informed of probable time of embarkation / disembarkation	☐	☐
3	ETA / ETD sent to pilotstation	☐	☐
4	Pilot / Master Information Exchange form prepared	☐	☐
5	Side from which pilot embarks / disembarks agreed	☐	☐
6	Pilot embarkation / disembarkation arrangements and ancillary equipment ready and checked	☐	☐
7	Deck officer available to meet pilot and conduct to bridge / from bridge to disembarkation point	☐	☐
8	Engine room informed of expected embarkation / disembarkation time to allow adequate notice of "stand by"	☐	☐
9		☐	☐
10		☐	☐
11		☐	☐

The purpose of this checklist is to ensure that all embarkation / disembarkation of pilots are planned and organised. It is not necessary to actually fill in this form, but it shall always be available on the bridge (on notice board, etc.). The master has the responsibility to decide whether to fill in this form or not.

References: Pilot book's, Guide to Port Entry

Master: .....

Trico Supply (UK) Limited
14 Albyn Terrace, Aberdeen, AB11 5PB, Scotland, United Kingdom
Telephone: +44 (0) 1224 633366, Facsimile: +44 (0) 1224 630818
E-Mail: charteringnorthsea@tricomarine.com, Web: www.tricomarine.com

8.7 ANCHORING AND ANCHOR WATCH CHECKLIST

Place: **Date:** **Time:**

No.	Action	OK	Not OK
1	Engine room informed of probable time of "stand by" for anchoring	☐	☐
2	Officer on watch informed of probable time for anchoring	☐	☐
3	Anchoring plan prepared (possible other anchor places, depths, length of anchor chain, bottom, etc.)	☐	☐
4	Portable VHF/UHF tested	☐	☐
5	Anchor ready for letting go	☐	☐
6	Anchoring lights / day signals available	☐	☐
7	Account taken of direction and strength of wind and current	☐	☐
8	Need for adequate sea room particularly to leeward	☐	☐
9	Appropriate sound signals available if visibility deteriorates	☐	☐
10	Anchor watch set	☐	☐
11	Crew and engine room warned that vessel may proceed at short notice	☐	☐
12	Permission to carry out engine repair / maintenance that may delay proceeding	☐	☐
13	Anchored position determined and checked regularly	☐	☐
14	Main engines stand by if weather deteriorates	☐	☐
15		☐	☐
16		☐	☐
17		☐	☐
18		☐	☐
19		☐	☐

The purpose of this checklist is to ensure that all anchoring and anchor watches are planned and organised. It is not necessary to actually fill in this form, but it shall always be available on the bridge (on notice board, etc.). The master has the responsibility to decide whether to fill in this form or not.

Master: .....