



## MERCANTILE MARITIME SOLUTIONS PTE LTD

Company Reg. No. 201419851N

Add: #14-12 International Plaza, Singapore 079903  
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**CLIENT – INDIA STEAMSHIP**  
**VESSEL: RATNA SHRUTI**  
**INSTALLATION OF ALPHA LUBRICATOR SYSTEM**  
**PLACE – SINGAPORE ANCHORAGE**  
**DATE FROM – 18/10/2015 TO - 24/10/2015**

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## A. GENERAL DESCRIPTION

Vessel: RATNA SHRUTI  
IMO no 9388364  
Engine type: 6 S60MC-C7  
Run. Hours: 34,338  
Engine builder: HHI-EMD  
Engine no.: AA2573  
New building yard: Hyundai Heavy Industries  
Hull no.: 1923  
Owner/manager: INDIA STEAMSHIP

## B. PREAMBLE

Vessel's ETA Singapore is 18th Oct, AM. Work needs to be done at Singapore EASTERN PETROLEUM ALPHA anchorage.

Engine details:  
Type: 6S60MC-C  
Builder: HYUNDAI  
Engine No. AA2573  
Power: 13560 KW  
RPM : 105

### **Job scope -**

- 1) To Remove Existing injector pipes and injector from liner.
- 2) Fabricate and installation for mounting bracket of ALCU Panel and pump station.
- 3) Run new inlet pipes from existing lubricator with T joint.
- 4) Run new return line from pump to cylinder oil service tank.
- 5) Fabricate and installation of lubricator mounting brackets with welding.
- 6) Run new inlet/outlet pipes from pump station to near No.6 cylinder
- 7) Install and "T" joint with existing lubricator injector pipe.
- 8) Install new injector in the liner.
- 9) Fabricate and install fuel rack transmitter bracket.
- 10) For No. 1 piston TDC sensor install in Non-driven shaft.



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- 11) Speed pick up signal sensor bracket and detection point brackets are install in fly wheel and Engine.
- 12) For 440V power supply cable are need to lay from LGSP1 and LGSP3 from tank top level.
- 13) From ECR console to ALCU panel need to lay as following signal cable
  - a) Alarm system
  - b) Safety system
  - c) HMI panel
  - d) LCD input signal
  - e) 24V DC power
- 14) Required scaffold to erect in Engine platform for welding of pump support bracket and ALCU panel Bracket.
- 15) Required sealing compound for cable penetration refilling.
- 16) Flushing of system required filter
- 17) Including testing and commissioning.

### Owner arrangements –

1. Interfacing with ER alarm system & Engine control system by ACONIS & KONGSBERG technician will be arranged from owner end.

**C. INVENTORY OF STOCK LIST**  
(Supplied by MAN)

Description	Length (Cm)	Width (Cm)	Height (Cm)	Gross weight (Kgs)	Net weight (Kgs)
1 P. Box (2 of 6 )	120	80	86	170,0	148,0
HU No.: 157076890057881066					
Product ID:		Product Type:			
Pos	Description	Qty	Uni	Plate/Item	Remarks
0005	HMI panel	1	PC	P90312-0004	
	Commodity code: 84099900			1 PC	
0007	Arr. of tacho pick-ups	1	PC	P90513-0048	
	Commodity code: 76169910			1 PC	
0008	Alpha Lube load transmitter w. pull rod	1	PC	P90619-0038	
	Commodity code: 84099900			1 PC	
0009	CLAMPING ARM	1	PC	P90619-0038/75	
	Commodity code: 84099900			1 PC	
0010	BRACKET, MOUNT.OF ENCODER	1	PC	P90503-0017	
	Commodity code: 84099900			1 PC	
0011	Measuring tool for axial movement	1	PC	P90564-0018	
	Commodity code: 84099900			1 PC	
0012	Test equip. f. Alpha lubr.	1	PC	P90364-0004	
	Commodity code: 73269098			1 PC	
0014	PIPE CLAMP	60	PC		
	Commodity code: 39259010			60 PC	
0015	Straight couplings,compl.	30	PC		
	Commodity code: 73071110			30 PC	
0016	Equal elbow couplings	12	PC		
	Commodity code: 73071110			12 PC	
0017	PLUGS FOR COUPLINGS	6	PC		
	Commodity code: 73071110			6 PC	
0018	TEE-SCREWED CONNECTION	12	PC		
	Commodity code: 73071110			12 PC	
0020	Pipe clamp	24	PC		
	Commodity code: 39259010			24 PC	
0021	Ball valve DN 13	12	PC		
	Commodity code: 84818081			12 PC	
0022	Adjust.elbow coupl.comp.	12	PC		
	Commodity code: 73071110			12 PC	
0023	Union	12	PC		
	Commodity code: 73071110			12 PC	
0024	Angle union	12	PC		
	Commodity code: 73071110			12 PC	
0025	Straight couplings,compl.	12	PC		
	Commodity code: 73071110			12 PC	
0027	PLUGS FOR COUPLINGS	40	PC		
	Commodity code: 84849000			40 PC	
0028	Tee connection	40	PC		
	Commodity code: 73071110			40 PC	
0032	Non-return valves	40	PC		
	Commodity code: 84099900			40 PC	
0033	Nut	50	PC		
	Commodity code: 73181691			50 PC	
0034	Screw	50	PC		
	Commodity code: 73181560			50 PC	
0035	Washers	50	PC		
	Commodity code: 73182200			22 PC	
0036	Terminal box for Alpha Lube	6	PC	P90308-0012	



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0037	Spare parts	1 PC	6 PC	S903-0038
	Commodity code: 84099900			
0040	BRACKET-LUBRICATOR	6 PC	1 PC	
	Commodity code: 84099900			
0042	Cable ties	150 PC	6 PC	
	Commodity code: 84811005			
0043	Cable ties	2 PC	150 PC	
	Commodity code: 27149000			
0044	Cable ties	1 PC	2 PC	
	Commodity code: 27149000			
0045	Ferrules	2 PC	1 PC	
	Commodity code: 27149000			
0049	Spacer tubular, straight	7 PC	2 PC	
	Commodity code: 85369010			
0051	Instruction manual- Alpha Lub MC	3 PC	7 PC	
	Commodity code: 73045992			
0052	INSTRUCTION PLATE	1 PC	3 PC	
	Commodity code: 84099900			
	Commodity code: 39269092		1 PC	

Description	Length (Cm)	Width (Cm)	Height (Cm)	Gross weight (Kgs)	Net weight (Kgs)
1 Box (3 of 6 )	182	84	59	333,0	283,0

HU No.: 157076890057884388

Product ID:

Product Type:

Pos	Description	Qty	Uni	Plate/Item	Remarks
0006	CYL. LUB.OIL BOOSTER UNIT	1	PC	FLOW 0,8 M3/H 3X440V 60HZ	
	Commodity code: 84212900			1 PC	

Description	Length (Cm)	Width (Cm)	Height (Cm)	Gross weight (Kgs)	Net weight (Kgs)
1 Carton (4 of 6 )	19	19	10	1,5	1,4

HU No.: 57076890057883865

Product ID:

Product Type:

Pos	Description	Qty	Uni	Plate/Item	Remarks
0023	Union	12	PC		
	Commodity code: 73071110			12 PC	

Description	Length (Cm)	Width (Cm)	Height (Cm)	Gross weight (Kgs)	Net weight (Kgs)
1 Wood.box (5 of 6 )	317	37	41	255,0	211,0

HU No.: 157076890057886313

Product ID:

Product Type:

Pos	Description	Qty	Uni	Plate/Item	Remarks
0013	Seamless prec.steel pipes	30	PC		
	Commodity code: 72069000			30 PC	
0019	SEAMLESS PREC.STEEL PIPES	12	PC		
	Commodity code: 72069000			12 PC	
0026	Seamless prec.steel pipes	36	PC		
	Commodity code: 72069000			36 PC	



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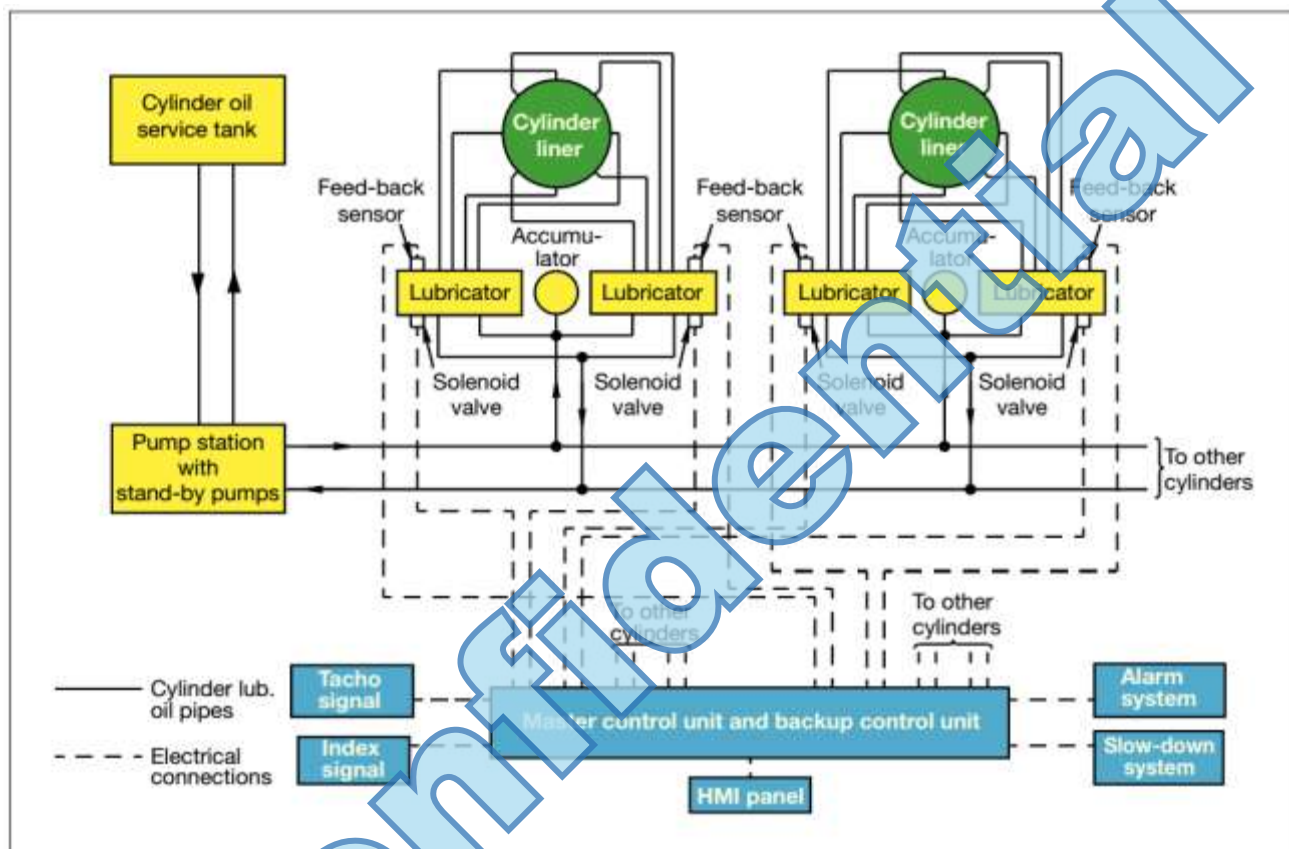
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Description	Length (Cm)	Width (Cm)	Height (Cm)	Gross weight (Kgs)	Net weight (Kgs)
1 P. Box (6 of 6 )	107	107	60	260,0	232,0
HU No.: 157076890057893823					
Product ID:			Product Type:		
Pos	Description	Qty	Uni	Plate/item	Remarks
0048	Cable, multi-core, twisted pair Commodity code: 85444991	76	PC	76 PC	
0002	HYDR. BLOCK + LUBRICATOR Commodity code: 84099900	6	PC	4 PC	P90307-0035
0038	LUBRICATOR Commodity code: 84099900	1	PC	1 PC	P90307-0035/175
0046	Cable, multi-core, twisted pair Commodity code: 84099900	114	PC	114 PC	
0047	Cable, multicore 4x2x0.75 mm <sup>2</sup> Commodity code: 85444991	227	PC	227 PC	



## D. INSTALLATION REPORT



### Description of works :

As per client request provided skilled pipe fitter and electrician with tools boarded on vessel carried out to installation of alpha lubricating system. Fabricated and welded the ALCU control panel and pump unit. 6 nos lubricator brackets welded in exhaust side. 6 nos junction boxes brackets and flat bars for cable fabricated and welded to near the lubricator. 28 mm pipes fabricated and bended as per the required for pressure line and return line. Fabricated and installed the 28 mm pipes brackets from the pressure line and return line to lubricators 6 sets of 15 mm pipes fabricated and installed.

Removed the existing injector pipes from the valve block and cut the pipes. Then joined the non-return valve from the mechanical lubricator side Joined with "T" connection into alpha lubricator pipes fabricated and installed oil inlet line and return line to tank with 28 mm pipe.





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As following cables are laid, strapped and terminated.

1. ECR console to ALCU power	2*2.5sq.mm	- 2*30 mtr
2. ECR console to ALCU for alarm	7*2*0.75	- 35 mtr
3. HMI panel to ALCU	7*2*0.5	- 35 mtr
4. ECR console to ALCU for safety	4*2*0.5	- 35 mtr
5. ECR console to ALCU for governor	2*2*0.5	- 35 mtr
6. ECR console to ALCU for pre lub	1*2*0.5	- 35 mtr
7. ALCU to fuel index transmitter	2*2*0.5	- 45 mtr
8. ALCU to Speed pickup	4*2*0.5	- 65 mtr
9. ALCU to Encoder	4*2*0.5	- 55 mtr
10. ALCU to starter panel -1	7*2*0.5	- 45 mtr
11. ALCU to starter panel -2	7*2*0.5	- 45 mtr
12. ALCU to lubricators	4*2*0.5	-6*45 mtr
13. LGSP1 to starter panel -1 440V	3C*2.5	- 48 mtr
14. LGSP1 to starter panel -2 440V	3C*2.5	- 30 mtr

Fabricated encoder mounting flange and installed in main engine non driven end. Completion of installation adjusted the encoder to no.1 cylinder TDC. On driven end fabricated and welded speed pickup bracket and target bracket.

Installed the fuel track transmitter the common linkage and terminated the cable. Carried out flushing with 10 micron filter no.1, 2 and 3 lubricators about 190 min. Then changed over to 4, 5 and 6 lubricators about 190min.

Carried out testing of lubricators with pre lub. Found no.1, 2,3 and 4 are working in order. No.5 and No.6 are not working.

Carried out to check the lubricators found no.5 unit is only feedback problem and no.6 no output from SBU.

Rectified the feedback fault on no.5 unit. For no.6 unit unable to rectify the problem due to software .Informed vessel superintend about the problem to arrange the maker.

We supply and installed the selector switch into the console for mechanical lubricator and Alpha lubricator's failure signal to Kongsberg remote control system.

As following adjustment and testing has to be done

1. Fuel track transmitter input signal
2. No.6 unit lubricator input signal



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### E. ADDITIONAL SUPPLY OF CABLE

#### AA. Additional Supply of Marine Cables

- 1) 3cx2.5sqmm -100mtr =OFFER: ARMOURED CABLE STEEL WIRE BRAIDED
- 2) 2cx2.5sqmm -86mtr, =OFFER: ARMOURED CABLE STEEL WIRE BRAIDED
- 3) 2X2X0.75MM SQMM COMMUNICATION PAIR CABLE 250V
- 4) 4X2X0.75MM SQMM COMMUNICATION PAIR CABLE 250V

#### BB. Additional Supply of Marine Cables (First Delivery and Second Delivery)

- 1) Marine Armoured Cable  
XLPE/CWB/SHF1, 250V  
Flame Retardant to IEC 60332-3A  
Halogen Free & Low Smoke to IEC 60754 & 61034  
Cable Type: FM2XCH Grey  
Core Color: White & Blue with numbering  
Brand: UNTEL Turkey  
7x2x0.75mm<sup>2</sup> 90m

F. PHOTOGRAPHS







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## G.CERTIFICATES

Certificate Number: 14-PR1203985-PDA  
04/NOV/2014



### Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 22/SEP/2019. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 04/AUG/2019 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Cable, Electric

Model Name(s): MGG, MGCG, MGH, MGCH, MGH-FFR, MGCH-FFR, MGCH-EMC, M2XY-FR, M2XCY-FR, M2X, M2XH, M2XCH

Presented to:  
UNTEL KABLOLARI SANAYI VE TICARET ANONIM SIRKETI  
MAKINE OSB, 6.CAD. NO: 4 41455  
DİLOVASI-GEZİRE  
KOCAELİ  
Turkey

Intended Service:

Power Cables, Marine and Offshore.

Description:

"MGG" 0.6/1kV unarmored power cables, "MGCG" 0.6/1kV armored power cables, "MGH" 0.6/1kV halogen free unarmored power cables, "MGCH" 0.6/1kV halogen free armored power cables, "MGH-FFR" 0.6/1kV halogen free unarmored fire resistant power cables, "MGCH-FFR" 0.6/1kV halogen free armored fire resistant power cables, "MGCH-EMC" 0.6/1kV halogen free armored EMC protected power cables, "M2XY-FR" 0.6/1kV unarmored power cables, "M2XCY-FR" 0.6/1kV armored power cables, "M2X" 0.6/1kV halogen free unarmored, unsheathed power internal cables, "M2XH" 0.6/1kV halogen free unarmored power cables, "M2XCH" 0.6/1kV halogen free armored power cables.

Tier:

2

Ratings:

0.6/1 kV Power Cables

Service Restrictions:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

MGG 0.6/1kV unarmored power cables (copper conductors class 2 or class 5,





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Certificate Number: 14-PR1203985-PDA

HEPR insulation, rubber bedding, outer sheath SE1); MCGG 0.6/1kV armored power cables (copper conductors class 2 or class 5, HEPR insulation, rubber bedding, electrolytic plain copper braided screen, outer sheath SE1); MGH 0.6/1kV halogen free unarmored power cables (copper conductors class 2 or class 5, HF-HEPR insulation, halogen free bedding compound, outer sheath SHF1); MGCH 0.6/1kV halogen free armored power cables (copper conductors class 2 or class 5, HF-HEPR insulation, halogen free bedding compound, electrolytic plain copper braided screen, outer sheath SHF1); MGH-FFR 0.6/1kV halogen free unarmored fire resistant power cables (copper conductors class 2 or class 5, mica tape, HF-HEPR insulation, halogen free bedding compound, outer sheath SHF1); MGCH-FFR 0.6/1kV halogen free armored fire resistant power cables (copper conductors class 2 or class 5, mica tape, HF-HEPR insulation, halogen free bedding compound, electrolytic plain copper braided screen, outer sheath SHF1); MGCH-EMC 0.6/1kV halogen free armored EMC protected power cables (copper conductors class 2 or class 5, HF-HEPR insulation, halogen free bedding compound, electrolytic plain copper braided screen, 100% wrapped electrolytic copper tape, outer sheath SHF1); M2XY-FR 0.6/1kV unarmored power cables (copper conductors class 2 or class 5, XLPE insulation, bedding compound (if any), outer sheath ST2); M2XCY-FR 0.6/1kV armored power cables (copper conductors class 2 or class 5, XLPE insulation, bedding compound (if any), electrolytic plain copper braided screen, outer sheath ST2); M2X 0.6/1kV halogen free unarmored, unsheathed power internal cables (copper conductors class 2 or class 5, HF-XLPE insulation); M2XH 0.6/1kV halogen free unarmored power cables (copper conductors class 2 or class 5, HF-XLPE insulation, halogen free bedding compound (if any), outer sheath SHF1); M2XCH 0.6/1kV halogen free armored power cables (copper conductors class 2 or class 5, HF-XLPE insulation, halogen free bedding compound (if any), electrolytic plain copper braided screen, outer sheath SHF1). The Manufacturer has provided a declaration about the absence of Asbestos in his products.

## Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

## Term of Validity:

This Product Design Assessment (PDA) Certificate 14-PR1203985-PDA, dated 05/Aug/2014 remains valid until 04/Aug/2019 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

## ABS Rules:

The Rules for Conditions of Classification, Part 1 2014 Steel Vessels Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following: 2014 Steel Vessels Rules 4-8-3/9.1, 9.3, 9.5, 9.7, 9.9, Steel Vessels Under 90 meters (295 feet) in Length 4-6-4/13.1, 2014 Offshore Support Vessels (OSV Rules) 4-8-3/9.1, 9.3, 9.5, 9.7, 9.9 The Rules for Conditions of Classification, Part 1 - 2014 Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following: 2014 MODU Rules 4-3-4/7.1.

## National Standards:

## International Standards:

IEC 60092-353 (2011) and the applicable IEC standards referred to in the above standards (IEC 60228(2004-11), IEC 60092-359(1999-08), IEC 60092-350(2001-06), IEC 60092-351(2004-04), IEC 60332-3-22(2000), IEC 60331-21(1999) & 31, IEC 60811)

## Government Authority:

## EUMED:

## Others:

## Model Certificate

## Model Certificate No

## Issue Date

## Expiry Date

PDA

14-PR1203985-PDA

05/AUG/2014

04/AUG/2019






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ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.

Confidential