





# Havforskningsinstituttet – Rederiavdelingen

## Fartøy:



**Vedlegg: Kravspesifikasjon for nye hangarporter til «Kronprins Haakon»**

### I Generelt

Havforskningsinstituttet skal skifte ut eksisterende hangarporter i hovedhanger. I den forbindelse skal det anskaffes og installeres to (2) nye hangarporter i hovedhangar om bord på det isgående forskningsfartøyet «Kronprins Haakon».

Det isgående forskningsfartøyet «Kronprins Haakon» har følgende klassenotasjon;

DNV + 1A1 Icebreaker Clean(Design) COMF(C-2, V-3) DAT(-35 °C) DK(+) DYNPOS(AUT) E0, HELDK(S, H, F) NAUT(OSV(A)) PC(3) RP Winterized(Basic).

De nye hangarportene må tilfredsstillende ovennevnte klassenotasjon, nærmere bestemt kravene til DAT (-35 °C). I den forbindelse vil bruk av AH-stålkvalitet og platetykkelser opp mot 10 mm anses tilstrekkelig..

I tillegg skal hangarportene være værtett (*weathertight*).

### II Hangarport mot styrbord skuteside

Det skal leveres og installeres en (1) horisontalt to-delt hangarport («*foldeport*») i hovedhangar med smørefrie lager i ledd. Foldeporten skal installeres mot styrbord skuteside i hovedhangar.

Hangarporten skal «foldes» vertikalt på topp av hovedhangar i åpen posisjon. Det skal installeres støttebein, samt låsing for sikring av hangarporten i åpen posisjon. Hangarporten skal kunne låses i hhv. lukket og åpen posisjon. En hydraulisk låsmekanisme skal monteres i karm. Eventuelt smøresystem skal være ved hjelp av smøresentral.

Hangarporten skal kobles til eksisterende hydraulisk system HPU2 (360liter / 260 bar maks) Hydraulikksystemet har olje type Mobil HVI26. Avstand til skipets hydraulikksystem er ca. 20 meter. Rørdimensjoner på hydraulikksystem er Ø38mm.

Operasjon av hangarporten skal gjøres fra tilhørende operasjonspanel som plasseres inne i hovedhangar.

Hangarporten skal benyttes i meget kaldt klima, ned mot minus 35 grader celsius, og må derfor kunne åpnes/lukkes så raskt som mulig. Åpne- og lukkehastighet skal spesifiseres.

Hangarporten skal være værtett og ha tilstrekkelig styrke til å kunne motstå oversjø fra rekke under full storm.

Hangarporten skal imøtekomme klassenotasjon DAT(-35 °C). Det skal benyttes stål av AH-grad for platetykkelser opp mot 10mm.

Hangarporten skal også utrustes med varmekabler får å unngå ising. Installerte varmekabler skal ha en effekt på 450w/m<sup>2</sup>. Varmekablene skal være operativ uavhengig av hangarportens posisjon. Operasjon av varmekabler gjøres lokalt fra operasjonspanelet i hovedhangar.



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Hangarporten skal være i flukt med dekk under for operasjon av utstyr gjennom åpningen. Grunnet operasjoner gjennom hangarporten skal ikke ny hangarport ha mindre lysåpning enn eksisterende rulleportsystem. Hangarporten skal i åpen posisjon ikke komme lengre ut fra skott enn eksisterende hangarporter.

### III Hangarport akter mot arbeidsdekk

Det skal leveres og installeres en (1) hangarport («spadeport») i hovedhangar akter mot arbeidsdekk.

Hangarporten skal glide i vertikale skinner, med stempler ovenfor hangarporten. Hangarporten skal kunne låses i hhv. lukket og åpen posisjon. I tillegg skal hangarporten kunne låses med 2400mm åpning.

Hangarporten skal kobles til eksisterende hydraulisk system HPU2 (360liter / 260 bar maks) Hydraulikksystemet har olje type Mobil HVI26. Avstand til skipets hydraulikksystem er ca. 20 meter. Rørdimensjoner på hydraulikksystem er Ø38mm.

Operasjon av hangarporten skal gjøres fra tilhørende operasjonspanel som plasseres inne i hovedhangar.

Hangarporten skal benyttes i meget kaldt klima, ned mot minus 35 grader celsius, og må derfor kunne åpnes/lukkes så raskt som mulig. Åpne- og lukkehastighet skal spesifiseres.

Hangarporten skal være i flukt med dekk under for operasjon av utstyr gjennom åpningen. Ny hangarport skal ikke ha mindre lysåpning enn eksisterende rulleportsystem.

Hangarporten skal være værtett og ha tilstrekkelig styrke til å kunne motstå oversjø fra rekke under full storm.

Hangarporten skal imøtekomme klassenotasjon DAT (-35 °C). Det skal benyttes stål av AH-grad for platetykkelser opp mot 10mm.

### IV Maling av hangarportene

#### Overflatebehandling:

- Rengjøring av løsemiddel i henhold til SMR.
- Rengjort i henhold til ISO 8501-1 Sa 3
- Ruhet i henhold til ISO 8503
- Gradering medium G, 50 - 85 µm, Ry

#### Malingsspesifikasjon:

- Termisk spray NS 1975 (metallisering) Zn80 80 µm



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## **Fartøy:**

- Intergrade 269 eller tilsvarende rød 15  $\mu\text{m}$
- Intershield 300 eller tilsvarende aluminium 150  $\mu\text{m}$
- Interfine 979 eller tilsvarende RAL 9018 100  $\mu\text{m}$

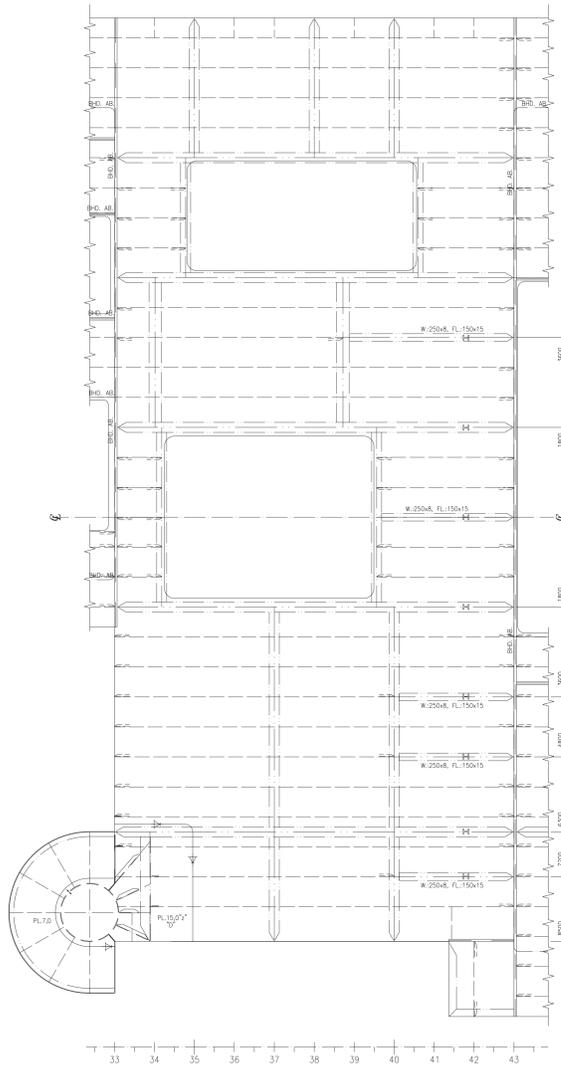
### **V Garanti, sertifisering, dokumentasjon mv.**

All dokumentasjon, inkludert, men ikke begrenset til, teknisk dokumentasjon, tegninger, brukermanualer, sertifikater mv. for installerte hangarporter skal leveres sammen med hangarportene.

Det skal leveres nødvendig DNV-sertifisering av hangarportene, samt oppdatering av vinteriseringsplan, se vedlagt Winterization Plan (*autocad vil leveres etter kontraktinngåelse*).

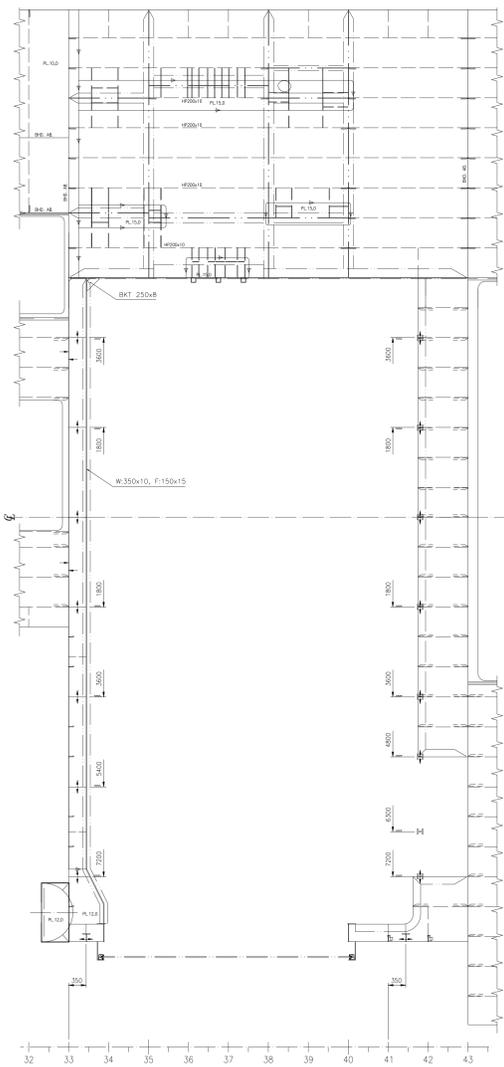
Det skal være minst 12 måneder garanti på hangarportene fra tidspunkt for levering av ferdiginstallerte hangarporter.





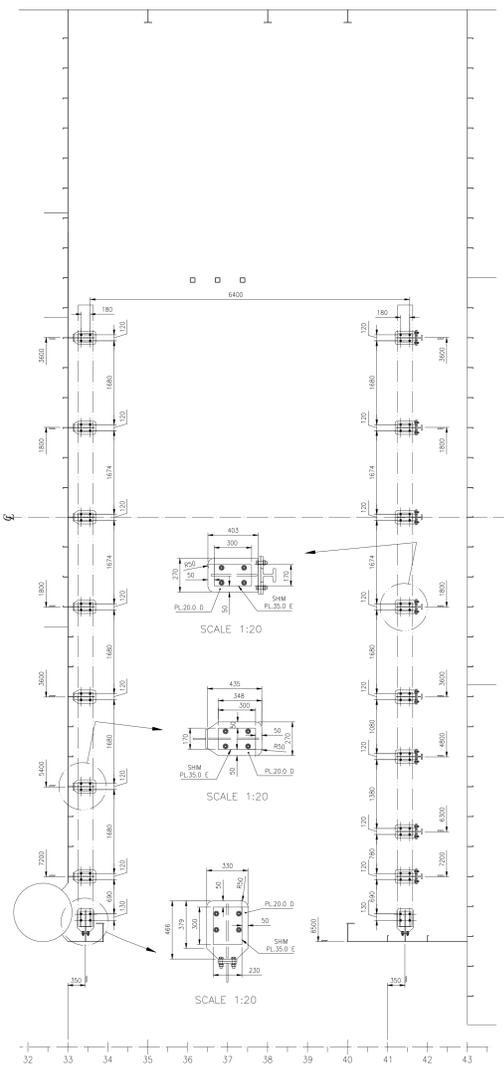
DECK 6 19000 AB.BL. PS

Deck Plate: PL 7.0 U.N.O.  
Deck beams: HP140x7 U.N.O.  
Girders: W450x10 FL200x20 U.N.O.

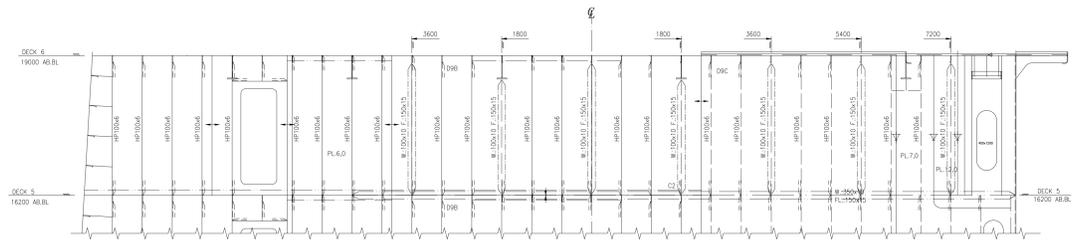


DECK 5 16200 AB.BL. PS

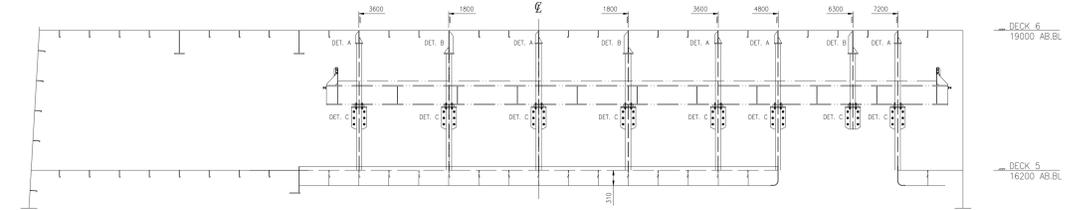
Deck Plate: PL 7.5 U.N.O.  
Deck beams: HP140x7 U.N.O.



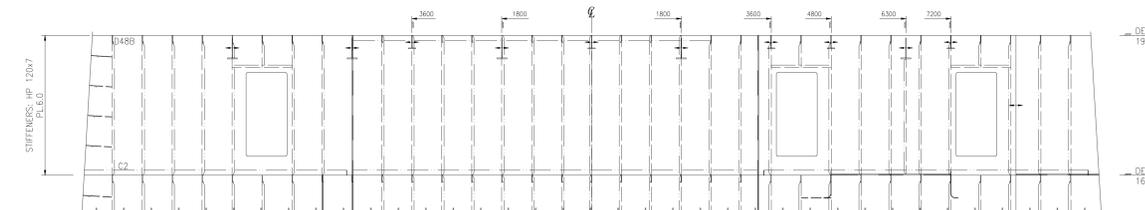
SECTION A-A



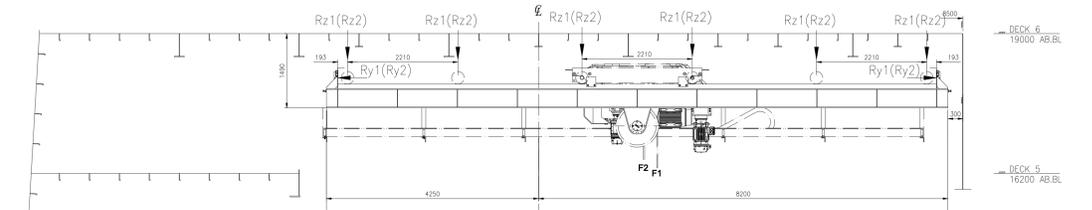
FRAME 33



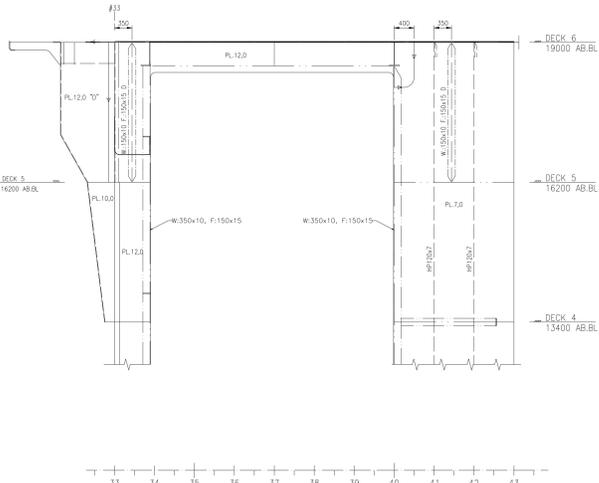
FRAME 41+600



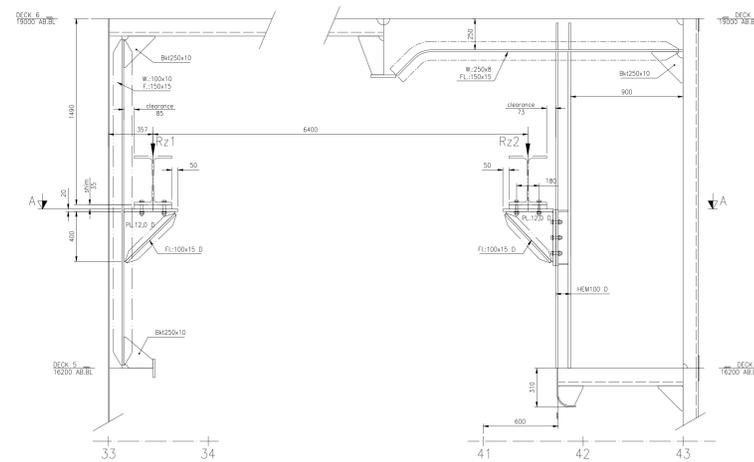
FRAME 43



GANTRY CRANE TRANSVERSE ARRANGEMENT



LONG. SECTION 8500 OFF CL SB

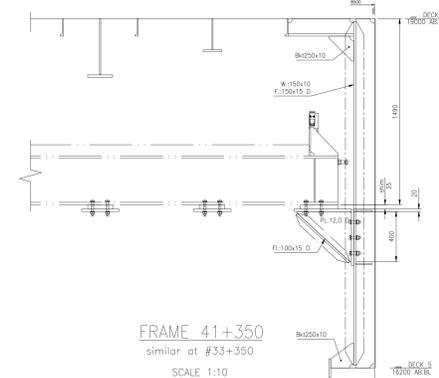


LONG. SECTION 3600 OFF CL PS

SECTION IN CL, 1800 OFF CL PS SIMILAR,  
1800, 3600, 5400, 7200 OFF CL SB SIMILAR,  
SCALE 1:10

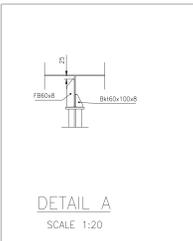
LONG. SECTION 3600 OFF CL PS

SECTION IN CL, 1800 OFF CL PS SIMILAR,  
1800, 3600, 4800, 6300, 7200 OFF CL SB SIMILAR,  
SCALE 1:10



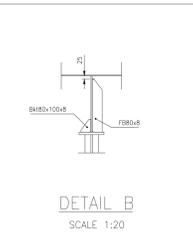
FRAME 41+350

similar at #33+350  
SCALE 1:10



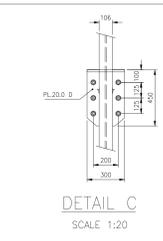
DETAIL A

SCALE 1:20



DETAIL B

SCALE 1:20



DETAIL C

SCALE 1:20

LOADS:  
- SELF WEIGHT: 15 050 KG  
- DYNAMIC FACTOR 1.3  
- LOAD: 15 T

FORCES:  
1. Gantry crane at foremost position:  
Rz1=140kN, Rz2=80kN, Ry1=Ry2=150kN  
2. Gantry crane at foremost position:  
Rz1=80kN, Rz2=140kN, Ry1=Ry2=150kN

(self weigh and dynamic factor 1.3 included)

NOTES:  
- ALL MATERIAL OF GRADE NVA36 U.N.O.  
- ALL WELDS TO BE ACCORDING TO WELDING TABLES U.N.O.

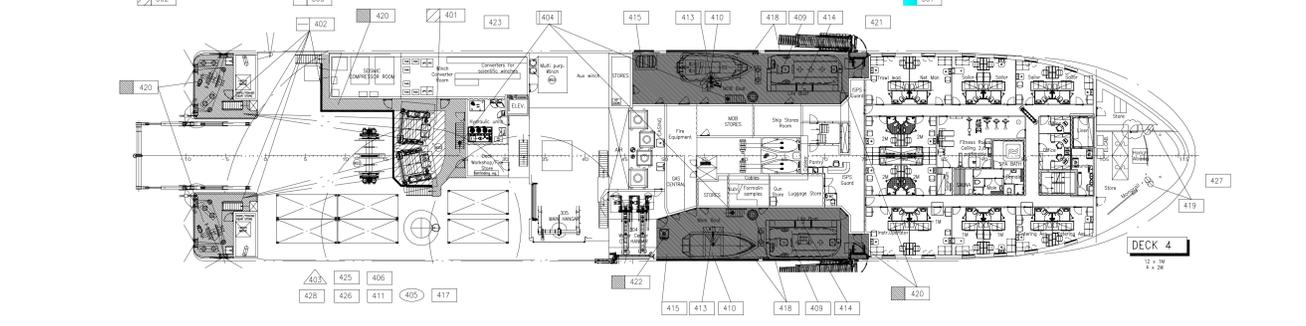
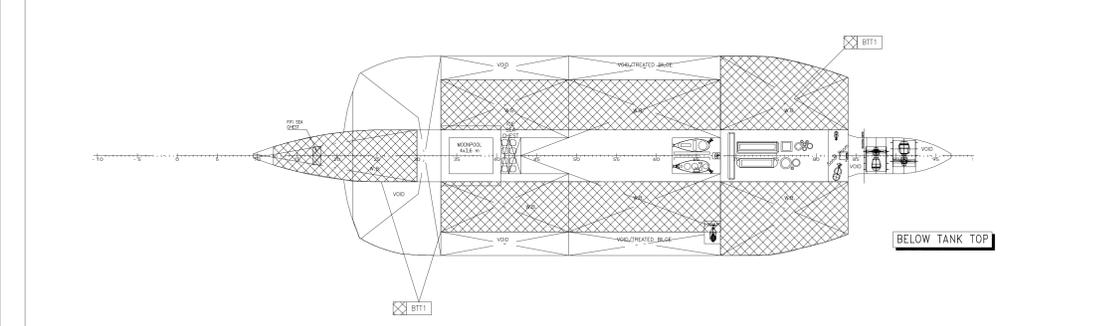
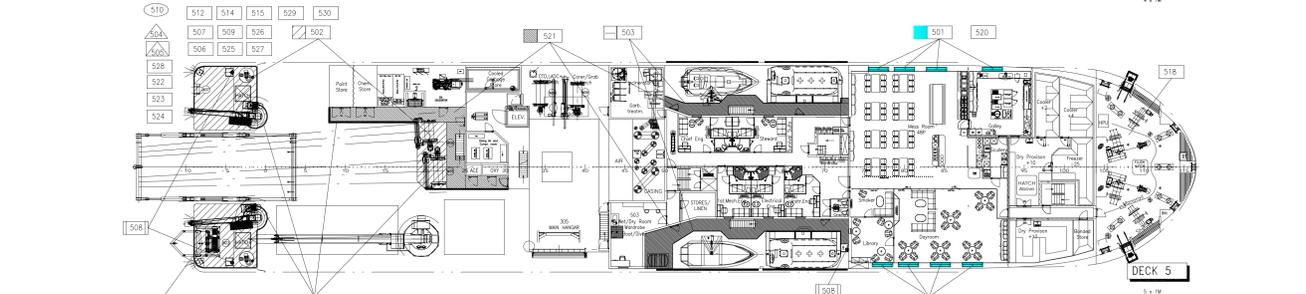
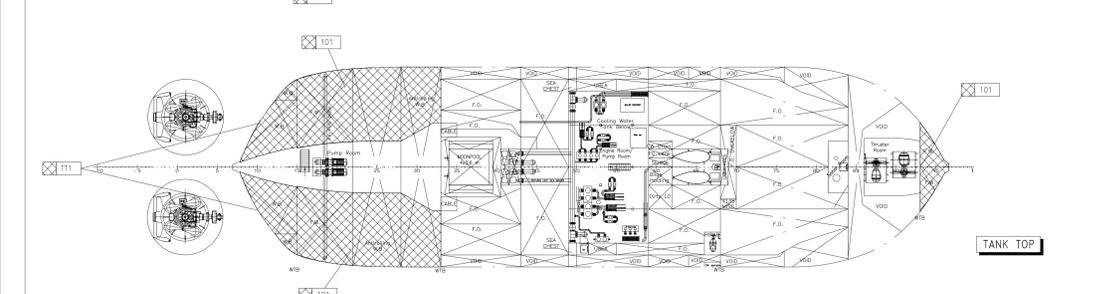
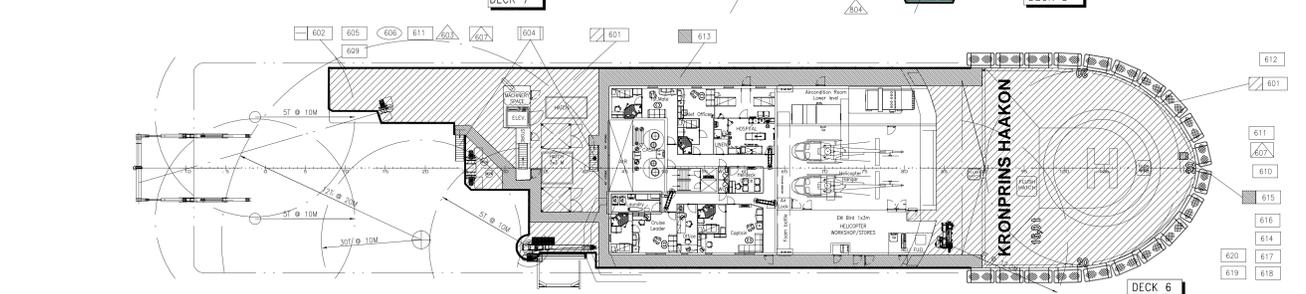
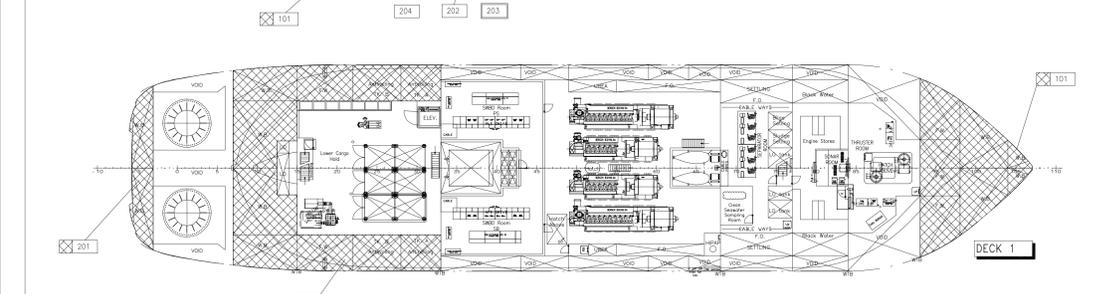
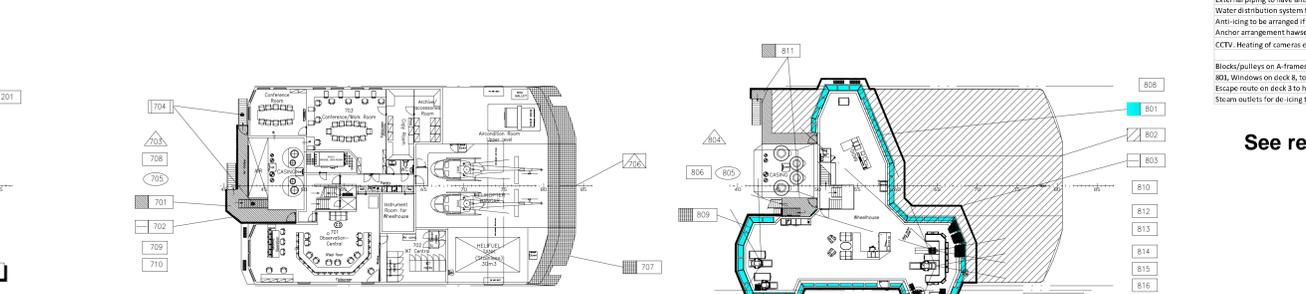
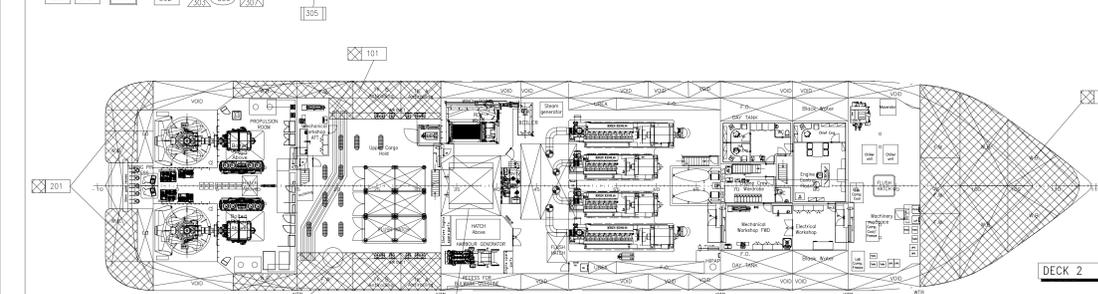
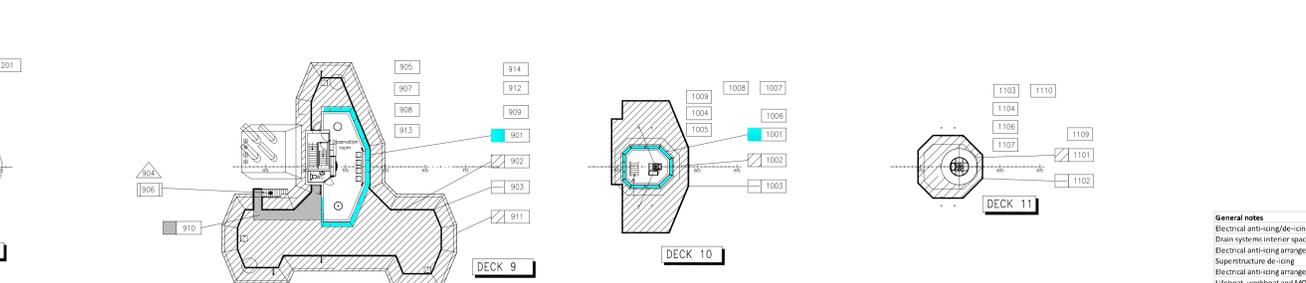
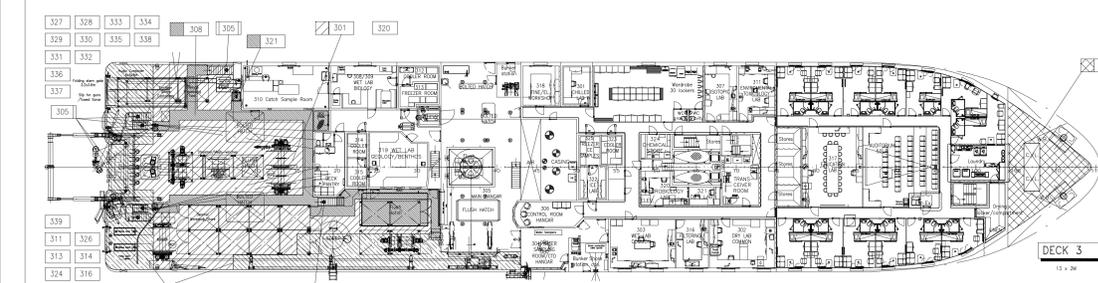
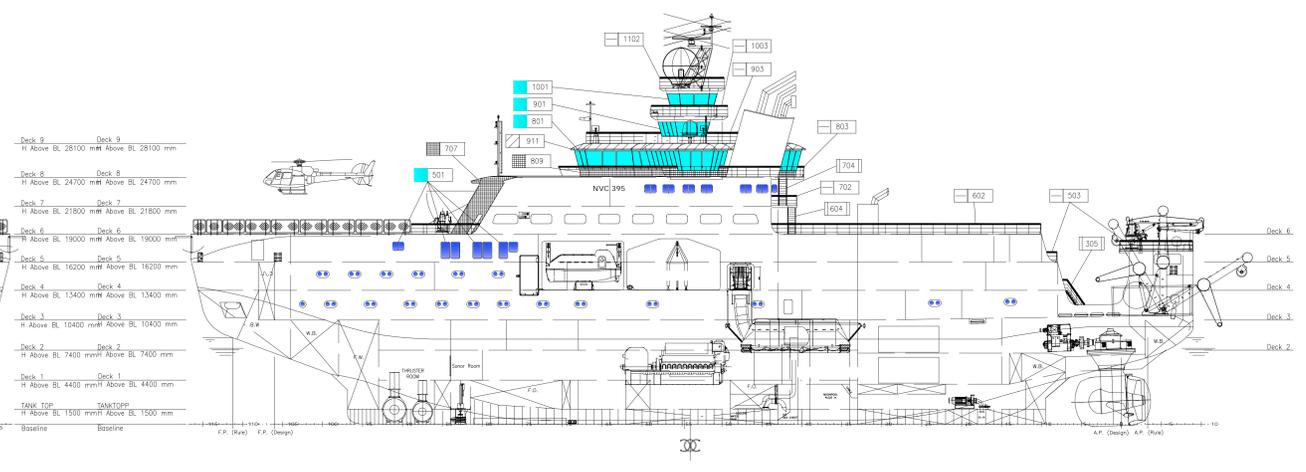
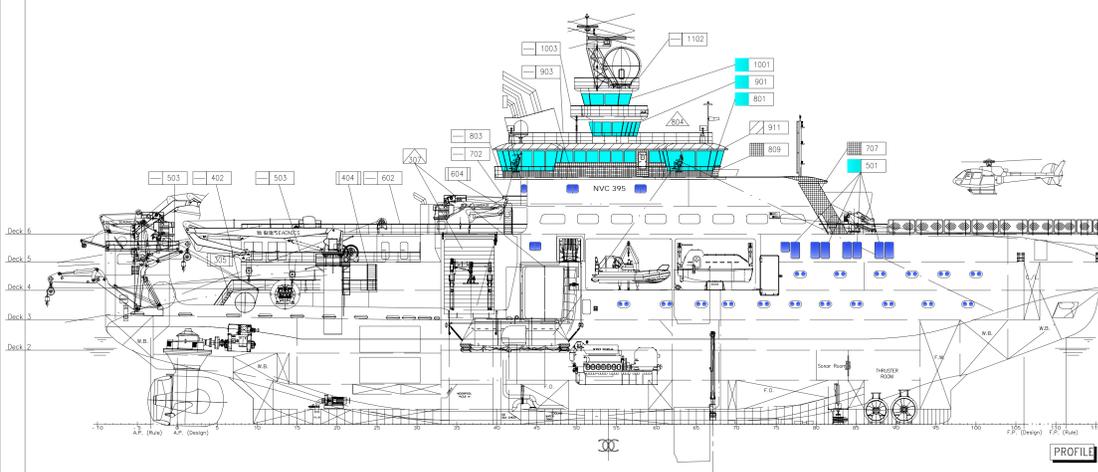
REF. ROLLS-ROYCE MARINE DRAWING NO:  
-08-6543-00-200-001-01/04 PROFILE AND PLAN  
-08-6543-00-200-021-01 MIDSHIP SECTIONS  
-08-6543-00-200-101-001 GENERAL ARRANGEMENT  
-08-6543-00-485-010 MAIN HANGAR ARRANGEMENT

REF. NON ROLLS-ROYCE MARINE DRAWING NO:  
SEANONICS dwg. 2048326 G: 1ST GANTRY CRANE DIMENSIONAL SKETCH

FINCANTIERI REGISTRATION NUMBER (ONLY FOR DOCUMENTATION MANAGEMENT)				REVISION DESCRIPTION			
FINCANTIERI DRAWING NUMBER	REV.	DATE		REV.	DATE		
082656G1800027	0	30.12.15					
1	03.12.15	ISSUED FOR APPROVAL		RG			
Rev.	Date	Reason for issue		Made by	Checked by	Disc. by	Client appv.
CUSTOMER				TITLE			
FINCANTIERI				FOUNDATION FOR OVERHEAD CEILING			
Yard no.: 6255				CRANE MAIN HANGAR			
<small>Ship Technology Offshore Systems Rolls-Royce Marine AS P.O. Box 100, NO-2007 Tromsø, Norway Tel: +47 79 00 00 00 E-mail: info@rolls-royce.com</small>				<small>DOCUMENT NO: 08-6543-00-263-333-10 Scale: 1:150 Format: A0 Version: 1.1</small>			

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-  - Window
-  - Door
-  - Stairs and ladders
-  - Hatch
-  - HVAC
-  - Railing
-  - Steam outlets
-  - Deck heat.(cat.I)
-  - Deck heat.(cat.II)
-  - Tank heating
-  - Manual Removal
-  - Bulkhead heating (cat.II)
-  - Other



**General notes**

	Spec.	Reference
Electrical anti-icing/de-icing arrangement of external drains and scuppers	Gr 8.806	
Drain systems interior spaces. Pipes going overboard to be provided with heating cables for anti-icing	Gr 8.809	
Electrical anti-icing arrangement for air pipe ventilation heads to tanks	Gr 8.821	
Superstructure de-icing	Gr 4.487	
Electrical anti-icing arrangement of external fire / heliport washing system	Gr 8.813	
Liferaft, workboat and MOB board areas. To be provided by 2 x 2 hot water heated fan coils, in addition to anti-icing facilities.	Gr 4.487	
External piping to have anti/de-icing by means of heating cables	Gr 4.487	
Water distribution system for fire extinction	Gr 4.487	
Anti-icing to be arranged if catwalk heat from lanterns is too low to avoid ice accretion.	Gr 4.427	
Anchor arrangement to have pipes. (Note that heating cables are not to be mounted at the anchor pocket)	Gr 4.487	
CCTV. Heating of cameras exposed to low temperatures, and extreme temperature, -35°C	Gr 4.416	

Blocks/pulleys on A-frames to have de-ice by electrical heating

803. Windows on deck 8, to include windows in deck on starboard side

Escape route on deck 3 to have anti-ice by heating. To be avoided

Steam outlets for de-icing to be included

See reference table in own excel document for more info.

**DNVGL Notes/Comments:**

- Heating power capacity for anti-icing
- With reference to anti-icing DNV GL will apply the January 2013 rules for this contract. P15 Ch1 Sec3 specifies the minimum heating power capacity and it is noted that the specifications for the project are equivalent or exceed these values.
- Details of anti-icing for doors / hatches acting considered part of escape route to open deck to be checked for proper heat tracing of equipment. Anti-icing for survival crafts with details and wires to be documented by master of the delivered equipment. The above to be verified by the attending surveyor.
- De-icing  
The winterization basic rules are ensuring that the vessel is capable of and suitable prepared for operations in low temperatures. The areas / components requiring de-icing and how this shall be done should be mentioned in the operational manual and the essential equipment should be provided to the attending surveyor from DNV GL.  
To be checked out and closed by surveyor.  
(DNV Rules P15 Ch1 Sec.6)
- Helicopter deck foam piping system and fire main for Winterized Basic. With respect to the Winterized Basic notation, all helicopter deck foam and fire main pipes arranged on weather-deck shall for these try system be arranged with self-drainage at the lowest points to ensure that no water / condensate is trapped, which can block the system.  
Isolation valves if arranged on open deck shall have anti-icing protection. To be verified by the attending surveyor from DNV GL.  
(P15 Ch1 Sec.6)
- NAU-006. To comply with the requirements of 1800W/m<sup>2</sup> in P15 Ch1 Sec.6 = 8115/P15 Ch1 Sec.2 = 0200 we see that the intention is to use a combination of heated glass panes (1200W/m<sup>2</sup>) and defogger system. Please forward ventilation calculations for the defogger system.  
80W answer: Heated glass power is increased to meet requirements.
- NAU-006. The window covers to be type approved and to comply with ISO 17889 (P16 Ch1 Sec.1 = Table 57 / Sec.2 = 0202) hence provision for de-icing according to ISO 17889/171 to be provided. Please forward a type approval certificate showing compliance.

FINCANTIERI REGISTRATION NUMBER (ONLY FOR DOCUMENTATION MANAGEMENT)			
FINCANTIERI DRWS NUMBER	REV.	DATE	REVISION DESCRIPTION
006255GZ83500003	00	10.02.15	
	01	19.05.15	ECR/ECO 006255-00665 date 19/05/2015
	02	25.08.15	ECR/ECO 006255-00792 date 12/08/2015
	03	04.11.15	ECR/ECO 006255-01039 date 03/11/2015

6	20.04.21	Heating cables from helideck safety net removed	khf	(Lengthen)	
5	16.06.16	Heating cables from anchor pockets removed	kph		
4	08.04.16	Reissued for Approval	kph		
3	11.03.15		BSV		
2	04.12.14		ET	ET	
1	14.03.14	For approval	FR		
Rev.	Date	Reason for issue	Made by	Checked by	Disc. apprv.

CUSTOMER: FINCANTIERI

TITLE: WINTERIZATION PLAN

Sheet 1 of 3

Yard No.: 6255

**Rolls-Royce** Ship Technology Offshore Systems

**Rolls-Royce Marine AS**

ROVLS-Design

DOCUMENT NO: 08-6543-00-487-010 -01

Scale: 1:250

Format: A4

Version: 6.1

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Pos.	Type	Location	Anti-/ De-ice	Method	More info	Ref. Dwg. Number	Ref. Dwg.	Ref. in dwg	Ref. Building Spec	DNV Class. Ref.	Building Spec. Req.	DNV Class. Req.	Power installed [W/m <sup>2</sup> or W/m]	Quantity	Size [m <sup>2</sup> or m]	Absorbed power [kW]	Remarks
501	Window	Deck 5	Anti-ice	El-heating	Electrical heating element, Gr.5 S15	08-6543-00-515-001	Windows and side cutters.dwg	506-509, 512-515	Gr.4.487	-	Anti-ice	-	1800	16	1,22	35,136	1800 W/m <sup>2</sup> similar to other heated windows
502	Deck	Deck 5	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	98,7	44,4	
503	Railing	Deck 5	De-ice	El-heating	Electric heating cable, Gr. 4.487	-	-	-	Gr.4.487	PL.5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50	-	117,6	5,9	
504	Door	Deck 5	Anti-ice	El-heating	Heated gasket, leaf and handle (to be checked with vendor)	08-6543-00-512-001 08-6543-00-105-001	Door plan.dwg & Escape plan.dwg	503, 509, 519, 540, 541, 548, 554	Gr.4.487	PL.5 Ch.1 Sec.6 B110	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	7	1,33 (leaf) + 5 (gasket)	5,9	450 W/m <sup>2</sup> for leaf, required by Owner
505	Hatch	Deck 5	De-ice	El-heating	Cables in gasket rims for all weather or frost exposed hatch coamings, Gr.3.30	08-6543-00-304-001	Hatches plan - location and type.dwg	20, 21	Gr.3.30	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450 (lid) + 50 (gasket)	2	5 (lid) + 12,8 (gasket)	2,9	Hatches 20, 21: both heated lid and gasket
506	W37 - Winch	Deck 5	De-ice	Covered by canvas	OWNER SUPPLY	08-6543-00-101-001	Deck_Arrangement_Deck_5_v0_1	8	Gr.4.487	PL.5 Ch.1 Sec.6 B111	De-ice	De-ice	N.A.	1	N.A.	N.A.	
507	Search lights	Deck 5	Anti-ice	El-heating / cover	lights capable of operating at temperature specified (-35°C); protected by cover when turned off	08-6543-00-899-010	Outside Lights General Arrangement	pos 62-L17-25, 62-L17-28, 62-L17-29	GR8.893	PL.5 Ch.1 Sec.6 B110	anti-icing if considered as special equipment essential for safety and safe operation	CAT I classified if considered needed for navigation and safety	tbd	3	-	tbd	
508	Ladder	Deck 5	Anti-ice	El-heating	Ladder to 5B life boat area. Electric heating cable, Gr. 4.487	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL.5 Ch.1 Sec.6 A303	50 W/m	50 W/m	50	3	12,6	1,9	
509	FFI	Deck 5	Anti-ice	Cover	-	08-6543-00-814-100	Fire fighting system for external fire	TBD	Gr.8.814	PL.5 Ch.1 Sec.6 Par.110	Cover	-	2	-	-		
510	HVAC	Deck 5	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-101-001	GA HVAC Outside accommodation.dwg	55	Gr.5.570	PL.5 Ch.1 Sec.6	El-heating cable for anti-icing/snow melting purposes	Anti-ice	3,5 kW/m <sup>2</sup>	-	0,49	1,7	Power installed has to be confirmed
512	Aft deck Crane ps and stbd	Deck 5	De-ice	El-heating	electric Blankets on winch motor - Space heaters on el. Motors and JB	08-6543-00-101-001	Deck_Arrangement_Deck_5_v0_1	4, 5	Gr.3.331	PL.5 Ch.1 Sec.6 B111	De-ice	De-ice	TBD	1	TBD	TBD	waiting for data from supplier
514	Main deck Crane stbd	Deck 3	De-ice	El-heating	electric Blankets on winch motor - Space heaters on el. Motors and JB	08-6543-00-103-010-01	Deck_Arrangement_Deck_3_v0_5	-	Gr.3.331	PL.5 Ch.1 Sec.6 B111	De-ice	De-ice	TBD	1	TBD	TBD	waiting for data from supplier
515	W08-W09 - W23 Scientific / Fishing winch	Deck 5	De-ice	Covered by canvas	Taraulin	08-6543-00-101-001	Deck_Arrangement_Deck_5_v0_1	1,2,9	Gr.4.487	PL.5 Ch.1 Sec.6 B111	De-ice	De-ice	N.A.	3	N.A.	N.A.	
520	Gutters	Deck 5	Anti-ice	El-heating	El-heating in gutters, accommodation areas	08-6543-00-805-100	Internal Drains System	N.A.	Gr.8.809	-	Anti-ice	-	50 W/m	N.A.	125	6,3	Installation to be defined. Only one cable line considered along the gutter. Power installed to be confirmed
521	Escape route	Deck 5	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL.5 Ch.1 Sec.6 A303	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	84,3	37,9	
522	Nav / Signal lights	Deck 5	Anti-ice	El-heating	If radiated heat from light is too low to avoid ice accretion	08-6543-00-418-001	Arrangement navigation and signal lights.dwg	-	Gr.4.427	PL.5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	83	3	-	0,2	Anti-ice requirement according to BS and to DNV. Winterized light considered. manual steam de-icing will be carried out with steam gun placed on deck 6
523	Deck (Manual de-ice)	Deck 5	De-ice	Steam gun	Steam system, Gr.7.751	08-6543-00-751-100	Steam and condensate system	TBD	Gr.4.487	-	de-icing	-	T.B.D. after steam gun definition	0	-	T.B.D. after steam gun definition	
524	Air Vents	Deck 5	Anti-ice	El-heating	Air vent with electric cable tracing	08-6543-00-210-100	Vent Pipe System	TBD	Gr.8.821	PL.5 Ch.1 Sec.6 Par.110	anti-icing	electrical anti-icing	0,54	10	T.B.D.	5,4	
525	Fire Station	Deck 5	Anti-ice	El-heating	El-heating cables,	08-6543-00-813-100	Fire line system	TBD	Gr.8.813	PL.5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing/de-icing	0,5	1	T.B.D.	0,5	
526	External scupper	Deck 5	Anti-ice	El-heating	El-heating cables,	08-6543-00-804-100	external drain system	TBD	Gr.8.804	PL.5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	24	T.B.D.	6	
527	Internal scupper	Deck 5	Anti-ice	El-heating	El-heating cables,	08-6543-00-805-100	external drain system	TBD	Gr.8.805	PL.5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	2	T.B.D.	0,5	
528	Mooring door/platform	Deck 5	Anti-ice	El-heating	Cables in leafs	08-6543-00-304-001	Hatches plan - location and type.dwg	23,24	Gr.3.301	PL.5 Ch.1 Sec.6 B102	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf)	2	4,8 m <sup>2</sup> (leaf)	4,3	450 W/m <sup>2</sup> for leaf, required by Owner PRELIMINARY - TO BE CONFIRMED BY SUPPLIER
529	Search light hatch	Deck 5	Anti-ice	El-heating	Cables in leafs and gasket rims for all weather or frost exposed hatch coamings, Gr.3.30	08-6543-00-304-001	Hatches plan - location and type.dwg	42	Gr.3.301	PL.5 Ch.1 Sec.6 B102	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	1	4,2 m <sup>2</sup> (leaf) + 8,4 m (gasket)	2,3	450 W/m <sup>2</sup> for leaf, required by Owner PRELIMINARY - TO BE CONFIRMED BY SUPPLIER
530	Panama and fairleads hatch	Deck 5	Anti-ice	El-heating	Cables in gasket rims for all weather or frost exposed hatch coamings, Gr.3.30	08-6543-00-433-001	MOORING ARRANGEMENT	435-125.01	Gr.3.301	PL.5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50 (gasket)	5	14 m (gasket)	3,5	PRELIMINARY - TO BE CONFIRMED BY SUPPLIER
401	Deck	Deck 4	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	37,2	16,7	
402	Railing	Deck 4	De-ice	El-heating	Electric heating cable, Gr. 4.487	-	-	-	Gr.4.487	PL.5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50	-	58,8	2,9	
403	Door	Deck 4	Anti-ice	El-heating	Heated gasket, leaf and handle (to be checked with vendor)	08-6543-00-512-001 08-6543-00-105-001	Door plan.dwg & Escape plan.dwg	401, 402, 406, 410, 416, 436, 439, 440, 441, 446, 447, 450, 453	Gr.4.487	PL.5 Ch.1 Sec.6 B110	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	12	1,33 (leaf) + 5 (gasket)	10,2	450 W/m <sup>2</sup> for leaf, required by Owner
404	Stair	Deck 4	Anti-ice	El-heating	Steps and railings	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup> - 50 W/m	300 W/m <sup>2</sup> - 50 W/m	450 (steps) - 50 (railing)	3	36,4 (steps) - 4,1 (railing)	50,4	
405	HVAC	Deck 4	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-101-001	GA HVAC Outside accommodation.dwg	51, 18, 20	Gr.5.570	PL.5 Ch.1 Sec.6	El-heating cable for anti-icing/snow melting purposes	Anti-ice	3,5 kW/m <sup>2</sup>	-	1,09	3,8	Power installed has to be confirmed
406	W20 Fishing Winch	Deck 4	De-ice	Covered by canvas	Taraulin	08-6543-00-103-030	Deck_Arrangement_Deck_4_v0_1	1,2	Gr.4.487	PL.5 Ch.1 Sec.6 B111	De-ice	De-ice	N.A.	2	N.A.	N.A.	
411	Mooring(Windless Winches)	Deck 4-5	De-ice	Covered by canvas	Taraulin	08-6543-00-433-001	Mooring arrangement	434-102.01, 434-102.02	Gr.4.487	PL.5 Ch.1 Sec.6 B110	De-ice	De-ice	N.A.	2	N.A.	N.A.	
413	M28 Boat PS	Deck 4	Anti-ice	El-heating	Anti ice heater	08-6543-00-501-001	Arrangement lifesaving equipment	501-119.01	Gr.4.486	PL.5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	1,5	1	N.A.	1,5	
414	Life Boats	Deck 4	Anti-ice	El-heating	Anti ice heater	08-6543-00-501-001	Arrangement lifesaving equipment	501-102.03	Gr.4.486	PL.5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	3,0	2	N.A.	3,0	
415	Liferrafts	Deck 4	Anti-ice	El-heating	Anti ice heater	08-6543-00-501-001	Arrangement lifesaving equipment	501-105.01	Gr.4.486	PL.5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	TBD	4	N.A.	TBD	waiting for data from supplier
417	Steam outlets	Deck 4	Anti-ice	El-heating	Steam system, Gr.7.751	08-6543-00-751-100	Steam and condensate system	TBD	Gr.4.487	-	-	-	0,5	3	-	1,5	
418	Canvas - Curtain	Deck 4	Anti-ice / De-ice	TBD	-	08-6543-00-101-001	General_Arrangement	-	Gr.3.307	PL.5 Ch.1 Sec.6 B110	Anti-ice for LifeBoats and MOB Boat area side doors/ De-ice for WorkBoat area side door	Anti-ice for LifeBoats and MOB Boat area side doors/ De-ice for WorkBoat area side door	TBD	-	174 m <sup>2</sup> approx.	TBD	waiting for data from supplier
419	Anchor hawse pipe	Deck 4	Anti-ice	El-heating	According to rules	08-6543-00-431-001	Arrangement anchor and chain	-	Gr.4.431	PL.5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	450	2	6,9	6,2	consumption and dimensions to be verified
420	Escape route	Deck 4	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL.5 Ch.1 Sec.6 A303	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	309,8	139,4	
421	Gutters	Deck 4	Anti-ice	El-heating	El-heating in gutters, accommodation areas	08-6543-00-805-100	Internal Drains System	N.A.	Gr.8.809	-	Anti-ice	-	50 W/m	N.A.	90	4,5	Installation to be defined. Only one cable line considered along the gutter. Power installed to be confirmed
422	Emergency Hatch with coaming	Deck 4	Anti-ice	El-heating	El-heating cables installation to be investigated; Cables in gasket rims for all weather or frost exposed hatch coamings, Gr.3.30	08-6543-00-304-001	Hatches plan - location and type.dwg	-	Gr.3.30	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450 (lid and coaming) + 50 (gasket)	1	0,7 (lid) + 3,2 (gasket) + 2,4 (coaming)	1,6	Hatch 807/808 - considered only de-ice insulation above the heating cables on the coaming -
423	Deck (Manual de-ice)	Deck 4	De-ice	Steam gun	Manual remove with steam	08-6543-00-751-100	Steam and condensate system	TBD	Gr.4.487	-	de-icing	-	T.B.D. after steam gun definition	3	-	T.B.D. after steam gun definition	
424	Hatch	Deck 4	Anti-ice	El-heating	Bolted hatch for Hipap dismantling	08-6543-00-304-001	Hatches plan - location and type.dwg	-	-	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450 (lid) + 50 (gasket)	1	1,2 (lid)	0,5	Only heated lid
425	Air Vents	Deck 4	Anti-ice	El-heating	Air vent with electric cable tracing	08-6543-00-210-100	Vent Pipe System	TBD	Gr.8.821	PL.5 Ch.1 Sec.6 Par.110	anti-icing	electrical anti-icing	0,54	12	T.B.D.	6,48	
426	Fire Station	Deck 4	Anti-ice	El-heating	El-heating cables,	08-6543-00-813-100	Fire line system	TBD	Gr.8.813	PL.5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing/de-icing	0,5	2	T.B.D.	1	
427	Anchor pocket	Deck 4	Anti-ice	Steam? TBD	According to rules	08-6543-00-431-001	Arrangement_anchor_and_chain	-	Gr.4.431	PL.5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	TBD	-	9,9	-	Dimensions to be verified Heating power required: about 8,9 kW
428	Work Boat TBD	Deck 4	Anti-ice	El-heating	Anti ice heater	08-6543-00-101-001	General_Arrangement	-	Gr.4.486	PL.5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	1,5	1	N.A.	1,5	
301	Deck	Deck 3	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	271	122,0	
302	Deck (Manual de-ice)	Deck 3	De-ice	Steam gun	Manual remove with steam (areas without el-heating cables)	08-6543-00-751-100	Steam and condensate system	TBD	Gr.4.487	-	de-icing	-	T.B.D. after steam gun definition	4	-	T.B.D. after steam gun definition	
303	Door	Deck 3	Anti-ice	El-heating	Heated gasket, leaf and handle (to be checked with vendor)	08-6543-00-512-001 08-6543-00-105-001	Door plan.dwg & Escape plan.dwg	301, 303, 304, 305, 306, 339, 341	Gr.4.487	PL.5 Ch.1 Sec.6 B110	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	7	1,33 (leaf) + 5 (gasket)	5,9	450 W/m <sup>2</sup> for leaf, required by Owner
305	Stair	Deck 3	Anti-ice	El-heating	Steps and railings	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup> - 50 W/m	300 W/m <sup>2</sup> - 50 W/m	450 (steps) - 50 (railing)	6	36,4 (steps) - 4,1 (railing)	101,6	
306	HVAC	Deck 3	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-101-001	GA HVAC Outside accommodation.dwg	28, 30, 32	Gr.5.570	PL.5 Ch.1 Sec.6	El-heating cable for anti-icing/snow melting purposes	Anti-ice	3,5 kW/m <sup>2</sup>	-	1,19	4,1	Power installed has to be confirmed
307	Hatch	Deck 3	De-ice	El-heating	Cables in gasket rims for all weather or frost exposed hatch coamings, Gr.3.30 No ice on the door 35 and 36 during operation, Gr.3.307	08-6543-00-304-001	Hatches plan - location and type.dwg	11, 12, 13, 35, 36	Gr.3.30	PL.5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450 (lid) + 50 (gasket)	5	83,6 (lid) + 50 (gasket)	40,1	Hatches 11, 12: only heated lid Hatches 13, 35, 36: both heated lid and gasket
308	Escape route	Deck 3	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL.5 Ch.1 Sec.6 A303	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	70,7	31,8	
311	W05 Winch	Deck 3	De-ice	Covered by canvas	Taraulin	08-6543-00-103-010-01	Deck_Arrangement_Deck_3_v0_5	W05	Gr.4.487	PL.5 Ch.1 Sec.6 B111	De-ice	De-ice	N.A.	1	N.A.	N.A.	
313	W21 -W22 Fishing Winch	Deck 3	De-ice	Covered by canvas	Taraulin	08-6543-00-103-010-01	Deck_Arrangement_Deck_3_v0_5	7,8	Gr.4.487	PL.5 Ch.1 Sec.6 B111	De-ice	De-ice	N.A.	2	N.A.	N.A.	
314	W36 - Winch	Deck 3															

Pos.	Type	Location	Anti-/ De-ice	Method	More info	Ref. Dwg. Number	Ref. Dwg.	Ref. in dwg	Building Spec	DNV Class. Ref.	Building Spec. Req.	DNV Class. Req.	Power installed [W/m <sup>2</sup> or W/m]	Quantity	Size [m <sup>2</sup> or m]	Absorbed power [kW]	Remarks
1101	Deck	Deck 11	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	34	15.3	
1102	Railing	Deck 11	De-ice	El-heating	Electric heating cable, Gr. 4.487	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50	-	21	1.1	
1103	Radar	Deck 11	Anti-ice	El-heating	Heating, Gr.4.411	421-001	Antenna arrangements.dwg	TBD	Gr.4.411	PL5 Ch.1 Sec.6 B102	Anti-ice	Anti-ice	TBD	TBD	TBD	TBD	Power installation data available within May 2015. Antenna arrangement available within July 2015
1104	Antennas	Deck 11	Anti-ice	El-heating	Anti-ice precautions, Gr.4.412,417, 419, 421, 423, 424	421-001	Antenna arrangements.dwg	TBD	Gr.4.412,417, 419, 421, 423, 424	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	TBD	TBD	TBD	TBD	Power installation data available within May 2015. Antenna arrangement available within July 2015
1106	Signal Mast	Deck 11	Anti-ice	Covered by GRP	Covered by GRP to avoid ice accretions	08-6543-00-418-053	Radar and signal mast.dwg	-	Gr.4.418	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	-	-	-	-	
1107	Nav/ Signal Lights	Deck 11	Anti-ice	El-heating	If radiated heat from light is too low to avoid ice accretion	08-6543-00-418-001	Arrangement navigation and signal lights.dwg	-	Gr.4.427	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	84,83	12	-	1.0	Anti-ice requirement according to BS and to DNV. Winterized light considered.
1109	Search Light	Deck 11	Anti-ice	El-heating / cover	Lights capable of operating at temperature specified (-35°C); protected by cover when turned off	08-6543-00-809-010	Outside Lights General Arrangement	pos 61-142-30	GR 8.893	PL5 Ch.1 Sec.6 B110	anti-icing if considered as special equipment essential for safety and safe operation	CAT I classified if considered needed for navigation and safety	tbd	1	-	tbd	
1110	External scupper	Deck 11	Anti-ice	El-heating	El-heating cables,	08-6543-00-804-100	external drain system	TBD	Gr.8.04	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	4	T.B.D.	1	
1001	Window	Deck 10	Anti-ice	El-heating	Electrical heating element, Gr.5.515	08-6543-00-515-001	Windows and side scutters.dwg	1001-1012	Gr.4.487	PL5 Ch.1 Sec.6 B110	Anti-ice	1800 W/m <sup>2</sup>	1800	12	1,21	26,2	1800 W/m <sup>2</sup> as per DNV comments (2015-01-14)
1002	Deck	Deck 10	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	71	32,0	
1003	Railing	Deck 10	De-ice	El-heating	Electric heating cable, Gr. 4.487	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50	-	38,7	1,9	
1004	Antennas	Deck 10	Anti-ice	El-heating	Anti-ice precautions, Gr.4.412,417, 419, 421, 423, 424	421-001	Antenna arrangements.dwg	TBD	Gr.4.412,417, 419, 421, 423, 424	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	TBD	TBD	TBD	TBD	Power installation data available within May 2015. Antenna arrangement available within July 2015
1005	Signal Horn	Deck 10	Anti-ice	El-heating	El-heating cables,	TBD	TBD	TBD	Gr.4.427	PL5 Ch.1 Sec.6 B110	-	Anti-ice	TBD	TBD	TBD	TBD	
1006	Gutters	Deck 10	Anti-ice	El-heating	El-heating in gutters, accommodation areas	08-6543-00-805-100	Internal Drains System	N.A.	Gr.8.809	-	Anti-ice	-	50 W/m	N.A.	13	0,7	Installation to be defined. Only one cable line considered along the gutter. Power installed to be confirmed
1007	Wipers	Deck 10	Anti-ice	El-heating	Electrical heating element, Gr.5.515	08-6543-00-515-001	Windows and side scutters.dwg	1005-1009	Gr.4.487	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	150	5	1	0,8	150 W/m, data from possible vendor
1008	External scupper	Deck 10	Anti-ice	El-heating	El-heating cables,	08-6543-00-804-100	external drain system	TBD	Gr.8.04	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	6	T.B.D.	1,5	
1009	In ternal scupper	Deck 10	Anti-ice	El-heating	El-heating cables,	08-6543-00-805-100	external drain system	TBD	Gr.8.05	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	4	T.B.D.	1	
901	Window	Deck 9	Anti-ice	El-heating	Electrical heating element, Gr.5.515	08-6543-00-515-001	Windows and side scutters.dwg	901-923	Gr.4.487	PL5 Ch.1 Sec.6 B110	Anti-ice	1800 W/m <sup>2</sup>	1800	23	1,14	47,1	1800 W/m <sup>2</sup> as per DNV comments (2015-01-14)
902	Deck	Deck 9	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	117	52,7	
903	Railing	Deck 9	De-ice	El-heating	Electric heating cable, Gr. 4.487	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50	-	71,4	3,6	
904	Door	Deck 9	Anti-ice	El-heating	Heated gasket, leaf and handle (to be checked with vendor)	08-6543-00-512-001 08-6543-00-105-001	Door plan.dwg & Escape plan.dwg	901, 906	Gr.4.487	PL5 Ch.1 Sec.6 B110	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	2	1,52 (leaf) + 5 (gasket)	1,9	450 W/m <sup>2</sup> for leaf, required by Owner
905	Antennas	Deck 9	Anti-ice	El-heating	Anti-ice precautions, Gr.4.412,417, 419, 421, 423, 424	421-001	Antenna arrangements.dwg	TBD	Gr.4.412,417, 419, 421, 423, 424	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	TBD	TBD	TBD	TBD	Power installation data available within May 2015. Antenna arrangement available within July 2015
906	Stair	Deck 9	Anti-ice	El-heating	Steps and railings	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup> - 50 W/m	300 W/m <sup>2</sup> - 50 W/m	450 (steps) - 50 (railing)	1	36,4 (steps) - 4,1 (railing)	16,8	
907	Nav/ Signal Lights	Deck 9	Anti-ice	El-heating	If radiated heat from light is too low to avoid ice accretion	08-6543-00-418-001	Arrangement navigation and signal lights.dwg	-	Gr.4.427	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	85	8	-	0,7	Anti-ice requirement according to BS and to DNV. Winterized light considered.
908	Search lights	Deck 9	Anti-ice	El-heating /Cover	Lights capable of operating at temperature specified (-35°C); protected by cover when turned off	08-6543-00-809-010	Outside Lights General Arrangement	pos 61-117-15, 61-117-14, 62-12-21, 62-12-16	GR 8.893	PL5 Ch.1 Sec.6 B110	anti-icing if considered as special equipment essential for safety and safe operation	CAT I classified if considered needed for navigation and safety	tbd	4	-	tbd	
909	Gutters	Deck 9	Anti-ice	El-heating	El-heating in gutters, accommodation areas	08-6543-00-805-100	Internal Drains System	N.A.	Gr.8.809	-	Anti-ice	-	50 W/m	N.A.	31	1,6	Installation to be defined. Only one cable line considered along the gutter. Power installed to be confirmed
910	Escape route	Deck 9	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL5 Ch.1 Sec.6 A303	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	12,6	5,7	
911	Screen above bridge window	Deck 9	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	115	51,8	
912	Wipers	Deck 9	Anti-ice	El-heating	Electrical heating element, Gr.5.515	08-6543-00-515-001	Windows and side scutters.dwg	901, 904, 906-908, 910-916, 918, 921, 923	Gr.4.487	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	150	15	0,8	1,8	150 W/m, data from possible vendor
913	External scupper	Deck 9	Anti-ice	El-heating	El-heating cables,	08-6543-00-804-100	external drain system	TBD	Gr.8.04	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	11	T.B.D.	2,75	
914	In ternal scupper	Deck 9	Anti-ice	El-heating	El-heating cables,	08-6543-00-805-100	external drain system	TBD	Gr.8.05	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	4	T.B.D.	1	
801	Window	Deck 8	Anti-ice	El-heating	Electrical heating element, Gr.5.515	08-6543-00-515-001	Windows and side scutters.dwg	801-860	Gr.4.487	PL5 Ch.1 Sec.6 B110	1200 W/m <sup>2</sup>	1800 W/m <sup>2</sup>	1800	60	1,45	156,3	1800 W/m <sup>2</sup> as per DNV comments (2015-01-14)
802	Deck	Deck 8	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	327,2	147,2	
803	Railing	Deck 8	De-ice	El-heating	Electric heating cable, Gr. 4.487	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50	-	85	4,3	
804	Door	Deck 8	Anti-ice	El-heating	Heated gasket, leaf and handle (to be checked with vendor)	08-6543-00-512-001 08-6543-00-105-001	Door plan.dwg & Escape plan.dwg	801, 802, 803	Gr.4.487	PL5 Ch.1 Sec.6 B110	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	3	1,33 (leaf) + 5 (gasket)	2,5	450 W/m <sup>2</sup> for leaf, required by Owner
806	Steam outlets	Deck 8	Anti-ice	El-heating	Steam system, Gr.7.751	08-6543-00-751-100	Steam and condensate system	TBD	Gr.4.487	-	-	-	0,5	1	-	0,5	Installation to be defined. Only one cable line considered along the gutter. Power installed to be confirmed
808	Gutters	Deck 8	Anti-ice	El-heating	El-heating in gutters, accommodation areas	08-6543-00-805-100	Internal Drains System	N.A.	Gr.8.809	-	Anti-ice	-	50 W/m	N.A.	72	3,6	Installation to be defined. Only one cable line considered along the gutter. Power installed to be confirmed
809	Bulkhead	Deck 8	De-ice	El-heating	Electric heating cables installed behind bulkhead	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450	-	63,014	28,4	450 W/m <sup>2</sup> required by Owner
810	Deck (Manual de-ice)	Deck 8	De-ice	Steam gun	Steam system, Gr.7.751	08-6543-00-751-100	Steam and condensate system	TBD	Gr.4.487	-	de-icing	-	T.B.D. after steam gun definition	1	-	T.B.D. after steam gun definition	
811	Escape route	Deck 8	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL5 Ch.1 Sec.6 A303	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	18	8,1	
812	Wipers	Deck 8	Anti-ice	El-heating	Electrical heating element, Gr.5.515	08-6543-00-515-001	Windows and side scutters.dwg	802-814, 822-836, 839-853	Gr.4.487	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	150	66	1,05	10,4	150 W/m, data from possible vendor
813	Nav/ Signal Lights	Deck 8	Anti-ice	El-heating	If radiated heat from light is too low to avoid ice accretion	08-6543-00-418-001	Arrangement navigation and signal lights.dwg	-	Gr.4.427	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	90,6	5	-	0,5	Anti-ice requirement according to BS and to DNV. Winterized light considered.
814	Antennas	Deck 8	Anti-ice	El-heating	Anti-ice precautions, Gr.4.412,417, 419, 421, 423, 424	421-001	Antenna arrangements.dwg	TBD	Gr.4.412,417, 419, 421, 423, 424	PL5 Ch.1 Sec.6 B110	Anti-ice	Anti-ice	TBD	TBD	TBD	TBD	Power installation data available within May 2015. Antenna arrangement available within July 2015
815	Fire Station	Deck 8	Anti-ice	El-heating	El-heating cables,	08-6543-00-813-100	Fire line system	TBD	Gr.8.813	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing/de-icing	0,5	1	T.B.D.	0,5	
816	External scupper	Deck 8	Anti-ice	El-heating	El-heating cables,	08-6543-00-804-100	external drain system	TBD	Gr.8.04	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	10	T.B.D.	2,5	
701	Escape route	Deck 7	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL5 Ch.1 Sec.6 A303	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	22,2	10,0	
702	Railing	Deck 7	De-ice	El-heating	Electric heating cable, Gr. 4.487	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	50 W/m	50 W/m	50	-	16,1	0,8	
703	Door	Deck 7	Anti-ice	El-heating	Heated gasket, leaf and handle (to be checked with vendor)	08-6543-00-512-001 08-6543-00-105-001	Door plan.dwg & Escape plan.dwg	701, 709	Gr.4.487	PL5 Ch.1 Sec.6 B110	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	2	1,33 (leaf) + 5 (gasket)	1,7	450 W/m <sup>2</sup> for leaf, required by Owner
704	Stair	Deck 7	Anti-ice	El-heating	Steps and railings	08-6543-00-105-001	Escape plan.dwg	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup> - 50 W/m	300 W/m <sup>2</sup> - 50 W/m	450 (steps) - 50 (railing)	2	36,4 (steps) - 4,1 (railing)	33,6	
705	HVAC	Deck 7	Anti-ice	El-heating	El-heating cables, Gr.5.570	08-6543-00-101-001	GA HVAC Outside accommodation.dwg	04, 02A, 02B,13	Gr.5.570	PL5 Ch.1 Sec.6	El-heating cable for anti-icing/snow melting purposes	Anti-ice	3,5 kW/m2	-	13,32	46,6	Power installed has to be confirmed
706	Helicopter hangar door	Deck 7	Anti-ice	El-heating	Cables in leafs and gasket rims for all weather or frost exposed hatch coamings, Gr.3.30	08-6543-00-304-001	Hatches plan- location and type.dwg	37	Gr.3.301	PL5 Ch.1 Sec.6 B102	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450 (leaf) + 50 (gasket)	1	30m <sup>2</sup> (leaf) + 23 m (gasket)	14,7	450 W/m <sup>2</sup> for leaf, required by Owner PRELIMINARY- TO BE CONFIRMED BY SUPPLIER
707	Bulkhead	Deck 7	De-ice	El-heating	Helihangar, Electric heating cables installed behind bulkhead	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	200 W/m <sup>2</sup>	200 W/m <sup>2</sup>	450	-	155,4	69,9	450 W/m <sup>2</sup> required by Owner
708	Gutters	Deck 7	Anti-ice	El-heating	El-heating in gutters, accommodation areas	08-6543-00-805-100	Internal Drains System	N.A.	Gr.8.809	-	Anti-ice	-	50 W/m	N.A.	55	2,8	Installation to be defined. Only one cable line considered along the gutter. Power installed to be confirmed
709	External scupper	Deck 7	Anti-ice	El-heating	El-heating cables,	08-6543-00-804-100	external drain system	TBD	Gr.8.04	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	4	T.B.D.	1	
710	In ternal scupper	Deck 7	Anti-ice	El-heating	El-heating cables,	08-6543-00-805-100	external drain system	TBD	Gr.8.05	PL5 Ch.1 Sec.6 Par.110	anti-icing	anti-icing	0,25	7	T.B.D.	1,75	
601	Deck	Deck 6	De-ice	El-heating	Electric heating cables installed under deck, Gr.8.881	-	-	-	Gr.4.487	PL5 Ch.1 Sec.6 B102	450 W/m <sup>2</sup>	300 W/m <sup>2</sup>	450	-	689,8	310,4	
602	Railing	Deck 6	De-ice	El-heating	Electric heating cable, Gr. 4.487	-											