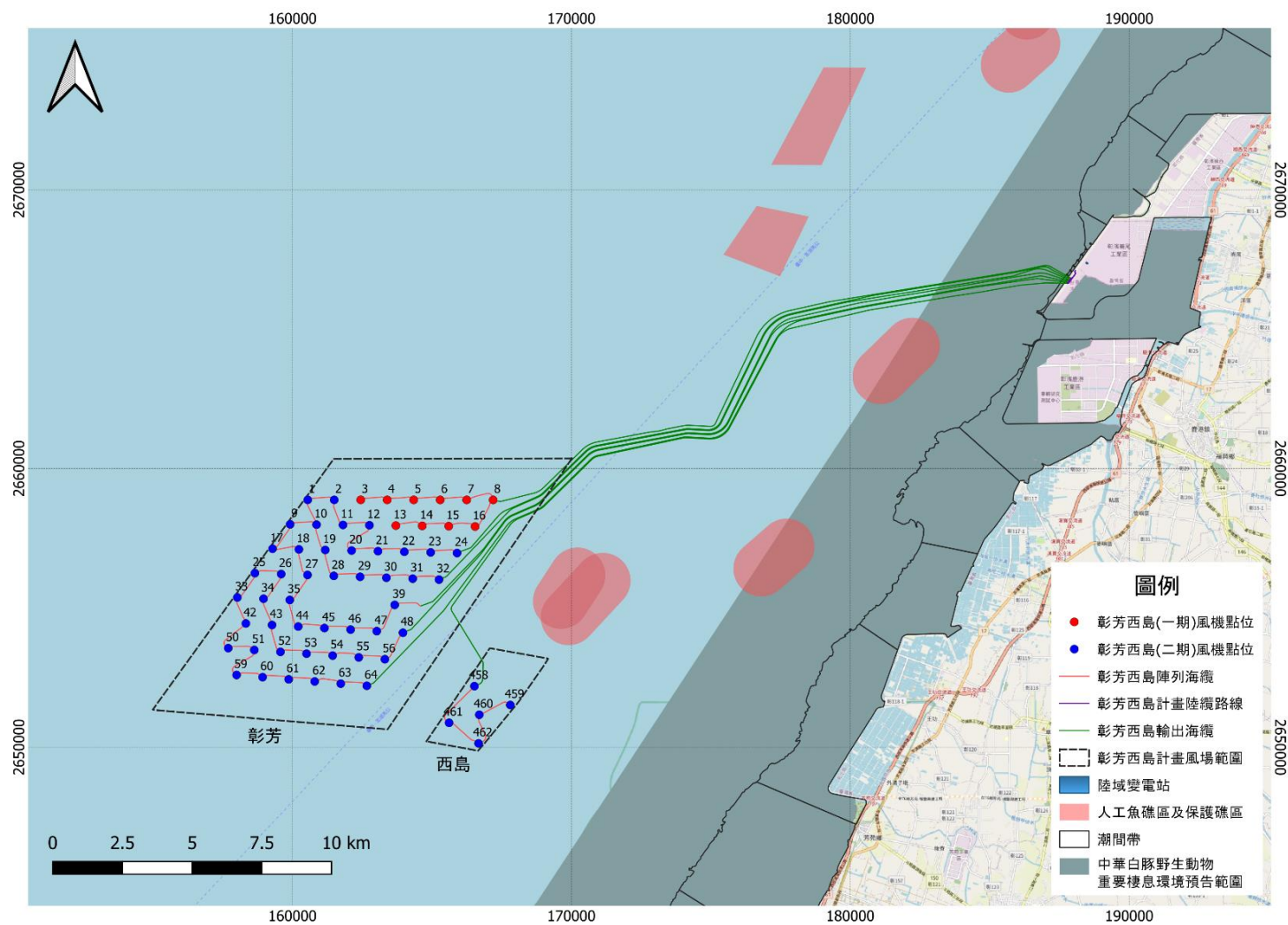


附件一、船舶作業範圍及時間



一、 本計畫作業範圍：

本計畫佈纜船將於風場陣列及輸出海纜路徑範圍進行佈纜作業，佈纜作業範圍詳如下圖所示：



風場邊界點位:

點位 (名稱)	座標(TWD97)	
	Long (X 座標)	Lat (Y 座標)
CF1	160550.16	2658875.5
CF8	167196.57	2658874.6
CF50	157698.45	2653555.9
CF64	162667.85	2652205.3
CF458	166525.70	2652192.1
CF459	167811.80	2651516.4
CF461	165615.98	2650878.8
CF462	166673.03	2650139.5
點位 (名稱)	座標(WGS84)	
	Long (E 座標)	Lat (N 座標)
CF1	120.120617381149	24.03226085845
CF8	120.185953028347	24.032613907053
CF50	120.09292173714	23.984069707015
CF64	120.14183409022	23.9721566761461
CF458	120.179740755186	23.9722447928066
CF459	120.192415634442	23.9662111168387
CF461	120.170877984526	23.9603394044667
CF462	120.181305428655	23.9537202231673

二、 本計畫作業期程:

上述佈纜船於民國111 年3 月29日開始作業，預定至民國 111 年12月 31 日佈纜作業完成為止。

三、 本計畫施工廠商與相關聯繫人員：

施工廠商	施工期間	聯絡人員	聯絡電話	施工範圍
德商汐威離岸 電纜鋪設工程 股份有限公司	每日 00:00 ~ 24:00	Andrew Foster	+886928968383	施工範圍如 上方說明
Topaz Installer		Paul Jochems	+886933839630	

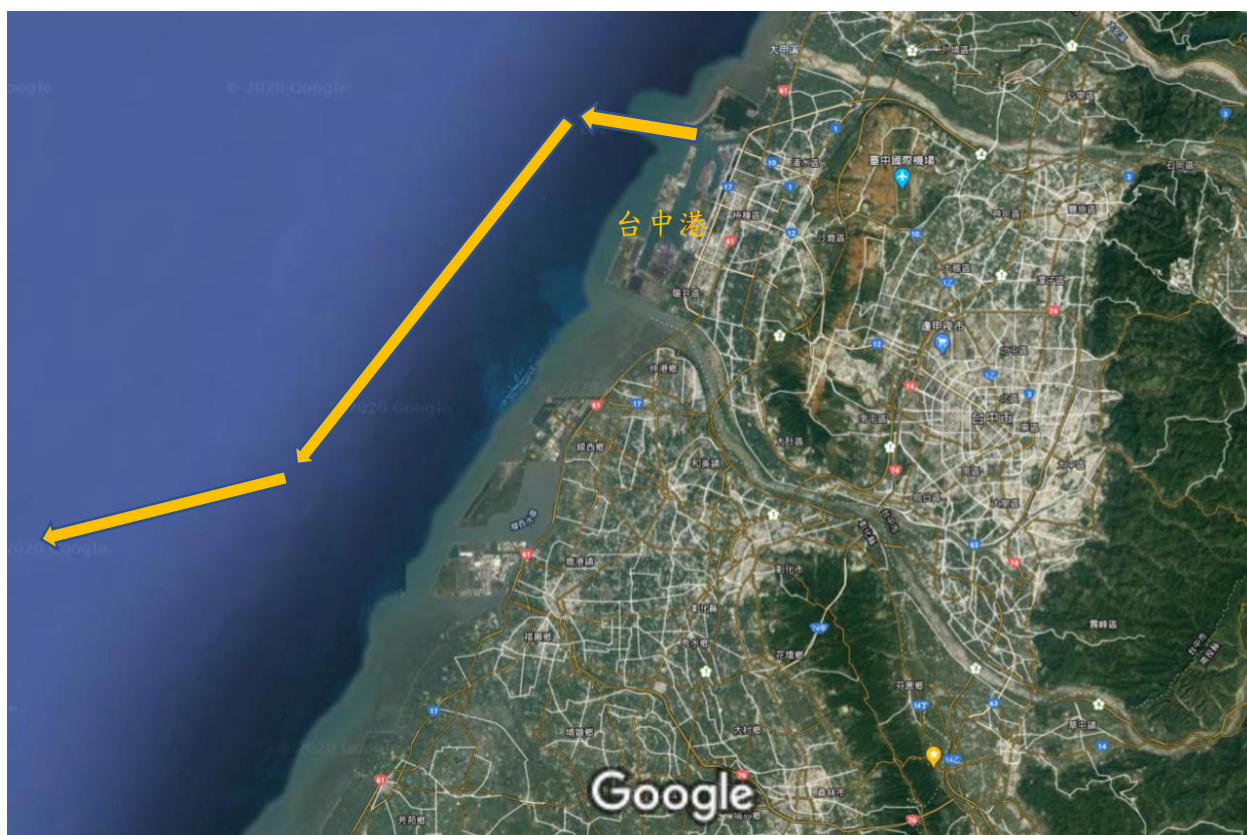
四、 本計畫施工船舶

船舶名稱	Topaz Installer
船舶工項	陣列海纜及輸出海纜佈纜作業
MMSI 號碼	538007103



五、 工作港及航行路線

佈纜船隻自台中港動員前往施工區域。若有遇到受氣候條件影響而必須暫停工作的情況，上述船隻僅需暫時停止作業並停留在同一位置，等待工作許可範圍內的氣候復工。



本計畫預計航行路線

附件二、Topaz Installer 船舶規格文件



Topaz Installer

88 M - 7800 BHP - DP2 - Cable Lay Vessel

Vessel Specifications

TOPAZ
MARINE



Vessel Specifications

Registration

Year built / builder	1999 / De Hoop B.V. Lobith, The Netherlands
Year upgraded / builder	2012 / Astander Shipyard, Spain
Flag	Marshall Islands
Class	DNV-GL +1A1 Cable Laying Vessel, DYNPOS-AUTR
Call sign / IMO No.	V7EN3 / 9199854
Owners	TEAM IV Limited
Managers	Topaz Marine

Dimensions

Length overall	88.2 m (including the stern chute)
Breadth moulded	24 m
Depth moulded	5.5 m
Maximum draft	4.5 m
Deadweight	Around 4677 mt
Registered tonnage	GRT: 4904 t / NRT: 1472 t

Machinery

Main propulsion	2 x Schottel SRP 1212 FP, electric driven azimuth thrusters with fixed pitched propeller, 1200 kW each
Generators	4 x Caterpillar 3512 B engines each of 1424 kW, 480V 3ph 60Hz
Bow thrusters	1 x Schottel - STT 1010 electric driven tunnel thruster, 1100 kW -FPP 1 x Schottel- STT 4CP, electric driven tunnel thruster, 1044 kW -CPP 1 x Schottel- SPR 1212 ZSV retractable azimuth thruster with fixed pitched propeller, 1200 kW
Emergency generator	1 x Scania DS-9 95 175 kW, 480V 3ph 60Hz
Sewage treatment plant	1 x 60 person capacity, make: Aquamar Bio-Unit Mod. MSP III 1 x 20 person capacity, make: RWO-WWT 2 LC Biopur
Fresh water maker	1 x 25 tonnes per day, make: Aquamar, AQE 25D
Oily water separator	1 m³ per hr with 15 ppm alarm, make: DVZ-250 VC

DP equipment

	DP Class-II, Converteam DPS21
	Duplex DP with remote Converteam DPS21 Joystick forward and aft control
Reference System	DGPS 1 x Fugro Seastar 8200 HP 1 x Fugro Seastar 8300 HP 1 x Fugro Seastar 9200 HIPAP - 1 x HPR Sonardyne System VRU - 2 x TSS, model RP-25 x 2 1 x Radarscan

Capacities

Fuel oil	649 m³
Fresh / drill water	793 m³
Ballast tanks	2476 m³
Chiller	1 x 20 m³, 1 x 15 m³
Freezer	2 x 20 m³
Clear deck area (Aft of carousel)	400 m² @ 10 t / m²

Offshore subsea crane

Make	TTS, model GPOKAC 2000-35-30
Type	Knuckle boom active heave compensation (AHC) crane
Maximum water depth	300 m
Personnel lift	1.5 tonnes
Lifting capacity - Main	Crane: SWL 35 tonnes @ 5-30 m Auxiliary: 5 tonnes @ 30 m
Minimum working radius	5.7 m
Hoisting speed	Main: 0-24 m per min Aux: 0-50 m per min
Slewing	360 degrees continuous

Vessel Specifications

Cable handling equipment

Turntable / carousel	Maximum capacity 3600 tonnes
Inside diameter	8 m
Outside diameter	24 m
Height of carousel	4 m
Surface ring	379 m ²
Volume of ring	1516 m ³
Turntable speed	2 rpm max

Tensioners

Make: Parkburn
Type: Electric 2 Trade Multi Product
Maximum tension: 20 tonnes
Grip force: 50 kn / m - 300 kn / m
Cable size: 50 mm - 350 mm

Winches & 4 pt. mooring system

Mooring winch	4 x Kraaijeveld electric self-tensioning winches, Forward type: 2 x 60 t, Aft type: 2 x 48 t
Anchors	Delta flipper HHP anchors, 2 x 3.5 tonnes, 2 x 2.5 tonnes
Capstans	2 x 5 tonnes electro hydraulic

Performance

Max speed	10 knots
Service speed	8 knots

Navigation equipment

Inmarsat C	Furuno -Felcom 15
GMDSS	Sailor 6110 system, A1 + A2 + A3
V Sat system	Caprock Seatel Sea Access
Radars (ARPA)	1 x Furuno RDP 115 A, 1 x Furuno RDP 124
GPS	1 x Leica MK10, 2 x Furuno GP-150
ECDIS	2 x C-Map
AIS	1 x Furuno FA-150
Autopilot	1 x Anschutz Pilotstar D
Navtex receiver	1 x Furuno NX500
Gyro compass	3 x Sperry SR 180 MK-1
Gyro repeaters	2 x Classens Plath
Magnetic compass	1 x Classens Plath
Communications: data / fax/ phone	Nera Mini M, Nera Satcom B
MF / HF Radio	1 x Furuno DSC-6A
SSB	1 x Furuno FS-1562-25
VHF	2 x Furuno (DSC) FM-8500, 1 x Sailor RT2048 + 5 x GMDSS sets (handheld)
Echo sounder	1 x Furuno FE-700, 1 x Navisound -210
Depth indicator	1 x Furuno ED-222
Doppler speed log	1 x Doppler Sonar DS-60
SART	2 x Jotron
EPIRB	1 x McMurdo E3 Pains Wessex

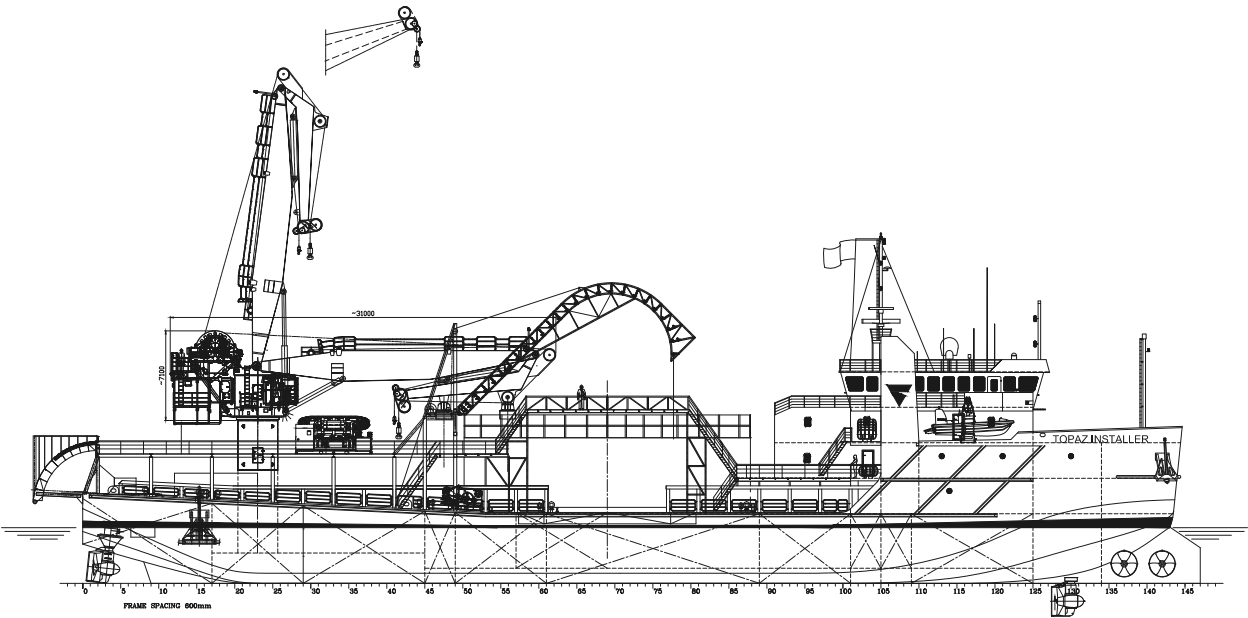
Fire-fighting and safety equipment

Life rafts	As per class requirements
Fast rescue boat / davit	1 x 15 men Noreq-FRB 650
Fire extinguishers	As per class requirements
Emergency fire pump	1 x 50 m ³ per hr
Fixed CO ₂	Fixed flooding system in the generator room and paint locker

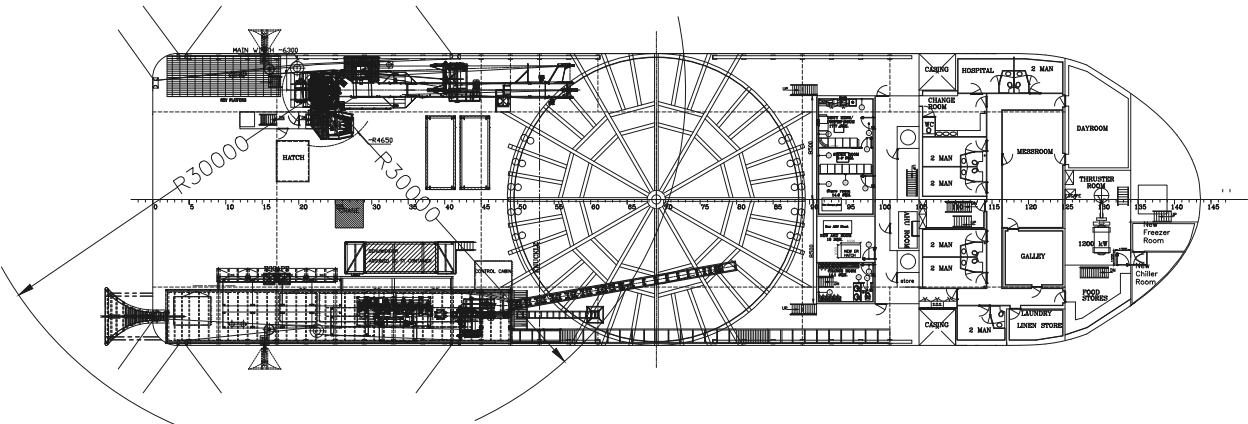
Accommodation (70 bunks)

10 x 1 berth cabins = 10 berths
30 x 2 berth cabins = 60 berths
1 x hospital

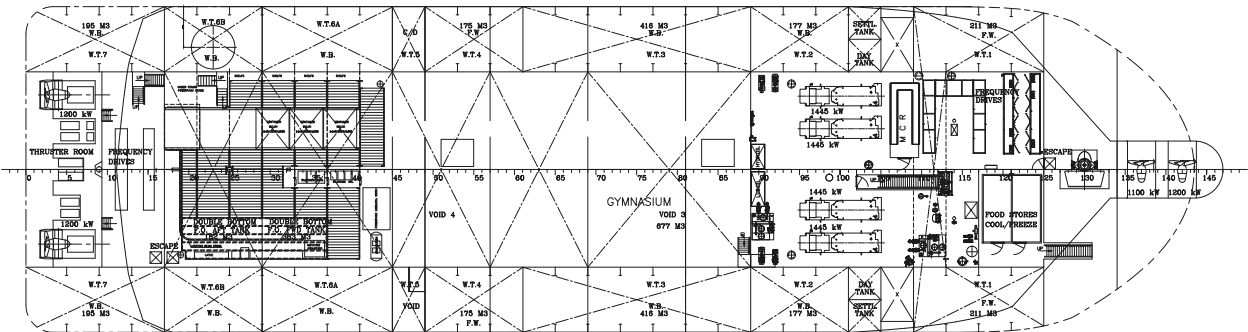
GA Specifications



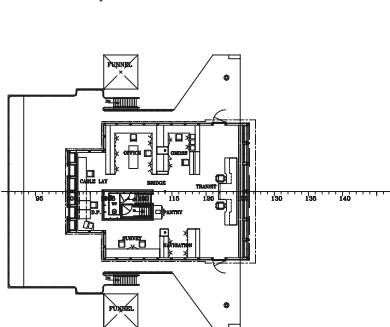
Profile



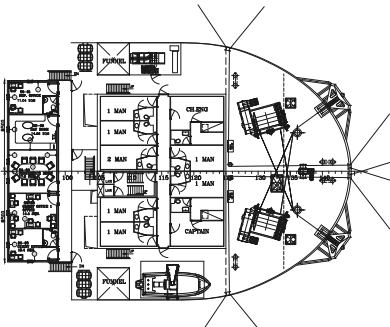
Main deck



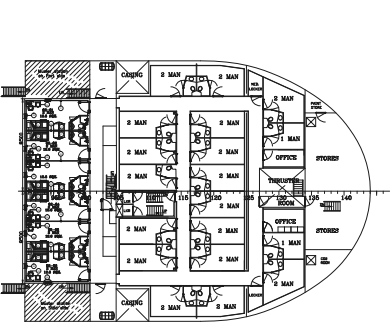
Tank top



Bridge deck



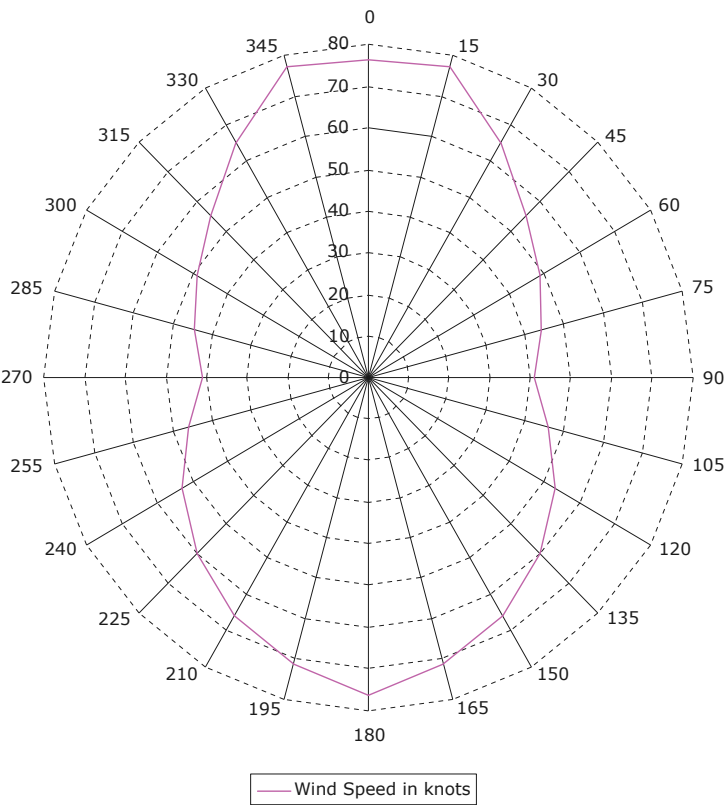
Boat deck



Forecastle deck

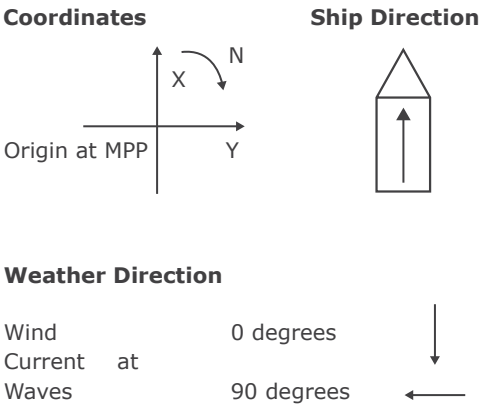
Capability Plots

Capability plot varying wind. 2 tunnel thrusters, 2 azimuth thrusters, 2 tunnels on the bow, 1.5 knot current stepped

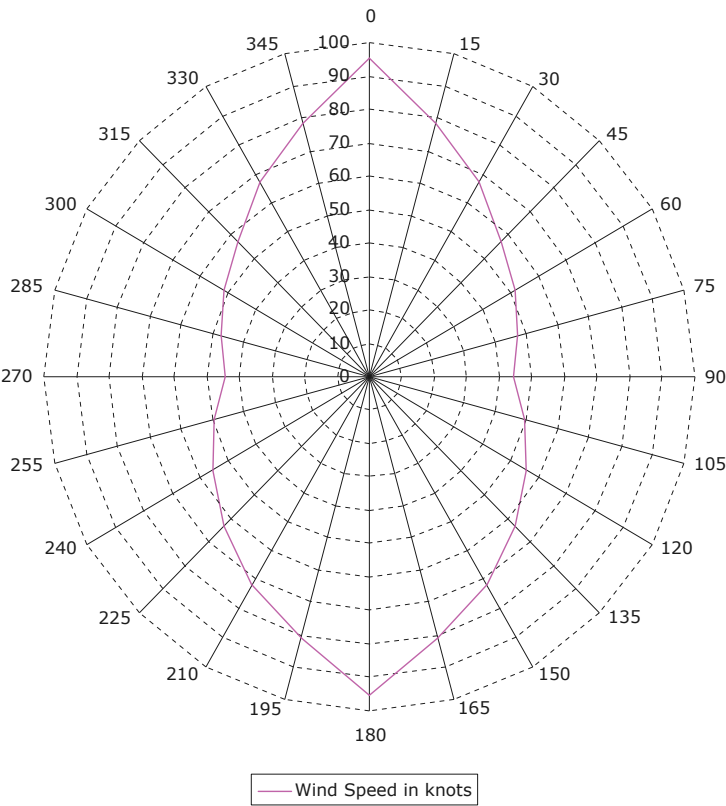


Wind angle is stepped from 0 to 360 deg.
Wave angle is stepped from 0 to 360 deg.
Current angle is stepped from 0 to 360 deg.

Wind speed is set automatically.
Wave height is derived from Wind Speed.
Current Speed is 1.5 knots.

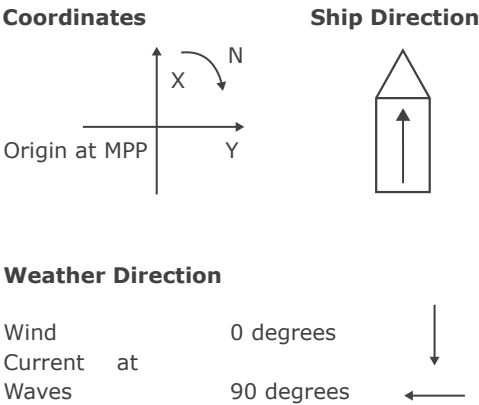


Capability plot varying wind. 1 tunnel thruster, 3 azimuth thrusters, 1 tunnel and 1 azimuth thruster on the bow, 1.5 knot current stepped

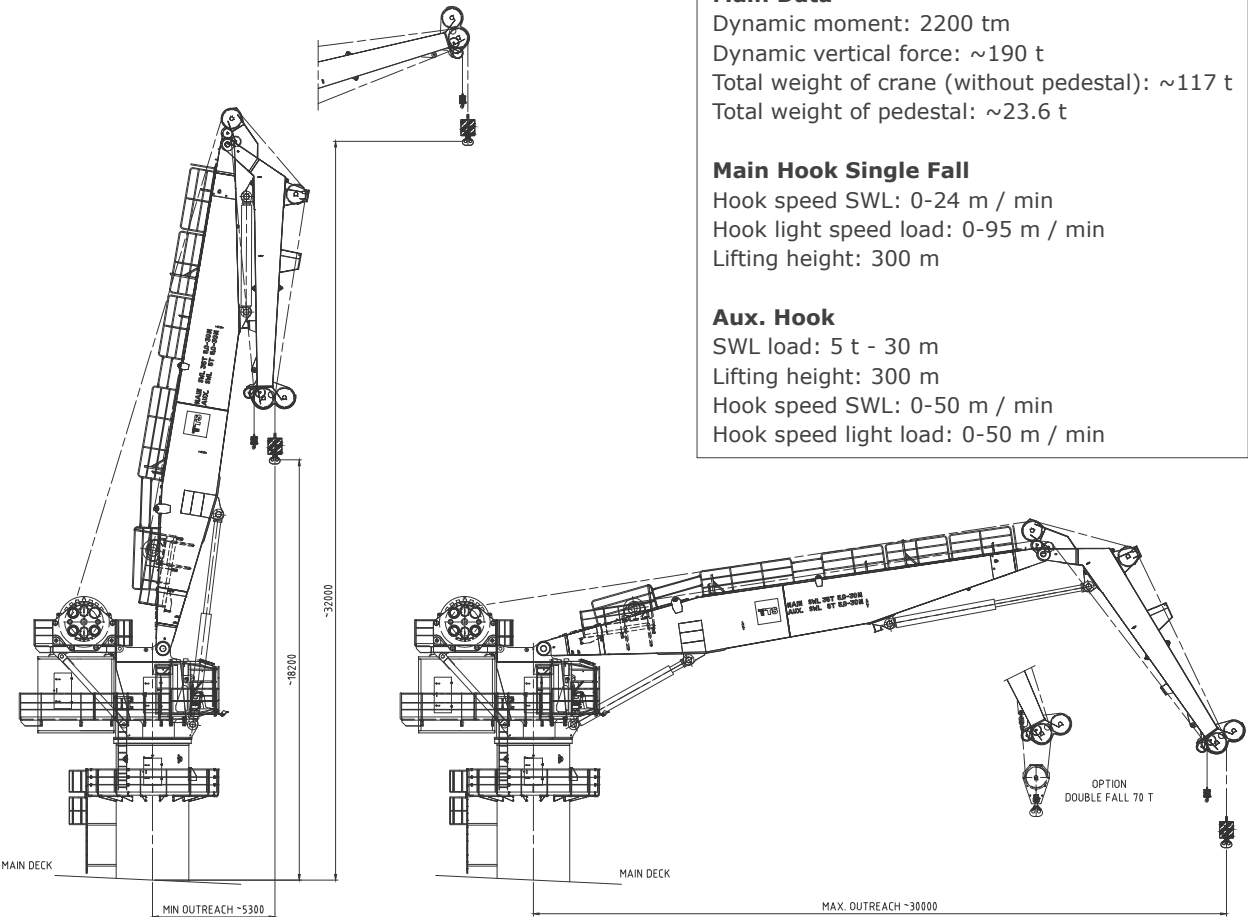


Wind angle is stepped from 0 to 360 deg.
Wave angle is stepped from 0 to 360 deg.
Current angle is stepped from 0 to 360 deg.

Wind speed is set automatically.
Wave height is derived from Wind Speed.
Current Speed is 1.5 knots.



Crane Load Chart



Main Data

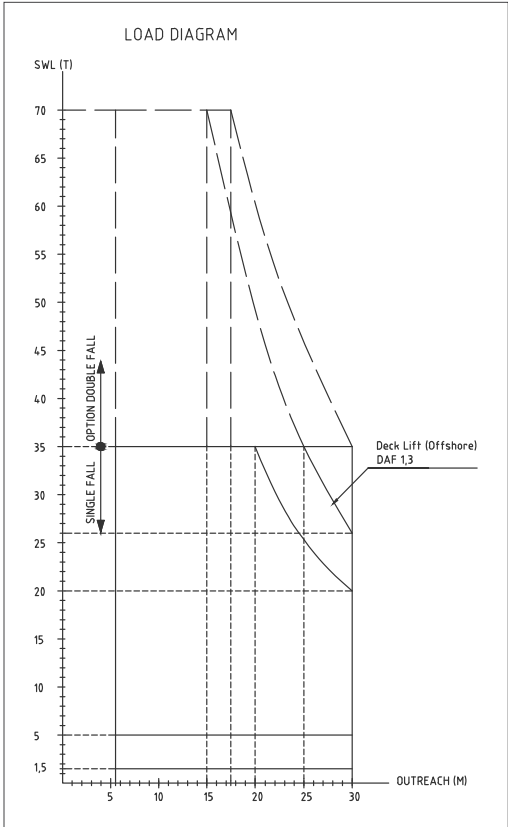
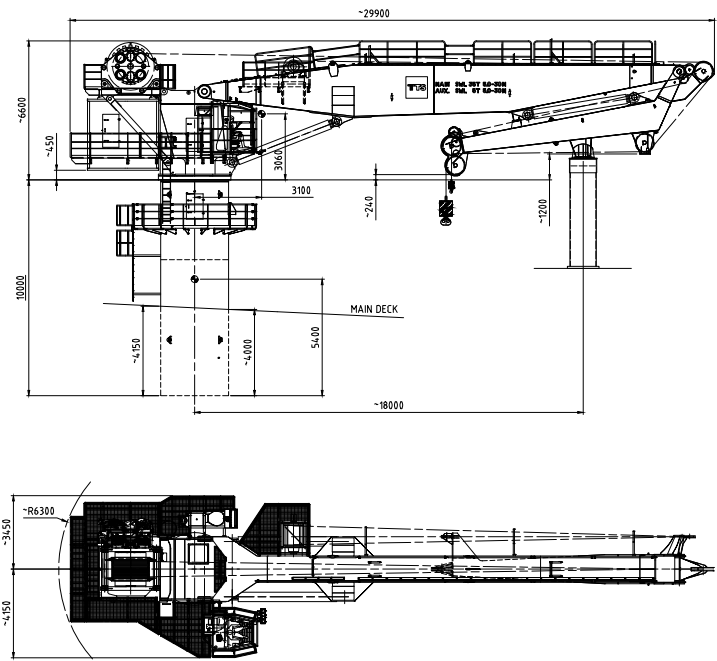
Dynamic moment: 2200 tm
Dynamic vertical force: ~190 t
Total weight of crane (without pedestal): ~117 t
Total weight of pedestal: ~23.6 t

Main Hook Single Fall

Hook speed SWL: 0-24 m / min
Hook light speed load: 0-95 m / min
Lifting height: 300 m

Aux. Hook

SWL load: 5 t - 30 m
Lifting height: 300 m
Hook speed SWL: 0-50 m / min
Hook speed light load: 0-50 m / min



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Fax +994 124 97 25 96
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Victoria Island, Lagos, Nigeria
Email commercial.africa@topaz-marine.com

附件三、Topaz Installer 儀器清單



項目	設備
甲板張緊器 Deck tensioner	Electric 2 Track Multi Product
海纜儲放槽 Turntable	3560T - diameter 8m ~ 24m
遙控潛水器 ROV	SAAB Seaeye Cougar XT Compact
遙控潛水器 ROV	Control Unit and Workshop
起重機 Crane	TTS GPOKAC 2000-70-30
繫泊絞盤 Mooring winch	4x Kraaijeveld electric self-tensioning
錨 Anchors	Delta flipper HHP anchors
拖曳絞車 SB Tugger Winch	A&R Winch SWL 5t

附件四、船員及工作人員名冊



船舶名稱：Topaz Installer

IMO 船舶識別碼：9199854

船舶檢疫狀態：☒ 低風險船舶 ☐ 具風險船舶

※最後更新日期：111 年 7 月 26 日※

序號	姓名	國籍	護照號碼 (或臺灣身分證證號)	出生年月日
1	Sunil Babu	印度	Z2722402	1976/01/31
2	Beary Asrafali Moosa	印度	N3126352	1972/11/12
3	Magno Arturo Malpaya	菲律賓	P1278335B	1991/02/02
4	Longobardi Antonio	義大利	YB6606393	1975/05/09
5	Zapata Ramos Joan Wilehaldo	墨西哥	G13493508	1980/02/19
6	Umesh Sachin	印度	N4245030	1985/04/15
7	Maro Antony Raphaeli	坦尚尼亞	TAE216999	1977/07/05
8	Sharma Rajesh	印度	R8382412	1967/09/17
9	Selia Maaz Abdul Kayyum	印度	V7994025	1992/04/04
10	Jimenez De Anda Arturo	墨西哥	G38822770	1990/11/10
11	Belen Jerald Aldovino	菲律賓	P3620069B	1986/06/18
12	Molina Brandy Paris	菲律賓	P5773155B	1973/02/23
13	Yadav Deepak	印度	Z3429777	1981/03/08
14	Kuniyil Abdul Razak	印度	V8564225	1958/10/01
15	Ovens Paul Robert	澳洲	PB4064761	1967/09/28
16	Markevich Denis	俄羅斯	762091733	1982/05/08
17	Jeries Eid Yacoub Kufoof	約旦	P545953	1988/10/10
18	Ng Jinq Tyng	馬來西亞	A50433634 (A800305014)	1987/11/07
19	Stanca Gabriel	羅馬尼亞	58559323	1978/01/12
20	Caccioppoli Giuseppe	義大利	YA4389414	1961/04/15
21	Kalai Anak Presa	馬來西亞	K53188758	1983/01/01
22	Bullas Paul Antony James	英國	538616651	1967/05/01
23	Whitfield Leslie	英國	511456113	1965/07/07
24	Garford Glen Paul	英國	124442971	1965/08/19
25	Edwards Terence	英國	535295134	1979/05/16
26	Matthews Aaron Anthony	英國	522502986	1994/09/09

27	Morgan Colin David	英國	516943079	1966/06/25
28	Mc Fadden Martin Edward	愛爾蘭	LB6747020	1966/03/28
29	Vesajev Sergej	立陶宛	25207431	1976/02/29
30	Mcpartland Andrew John	英國	527190408	1973/12/05
31	Lovett Mark Barry	英國	548350302	1967/11/15
32	Rimons Edvards	拉脫維亞	LV5621479	1992/03/20
33	Pogorelovs Maksims	拉脫維亞	LV4570786	1982/12/10
34	Gerasimov Aleksej	立陶宛	24899442	1984/04/01
35	Nefedovs Pavels	拉脫維亞	LZ3385512	1974/07/30
36	Lovett Adrian Graham	英國	556988568	1967/11/15
37	Mesnyankin Andrey	俄羅斯	754284232	1984/08/21
38	Amr Mohamed Abdelmoneim Ibrahim	埃及	A24301255	1987/11/13
39	Jordaan Louis Ferdinand	南非	M00220520	1984/06/04
40	Sinitsyna Alexandra	俄羅斯	726581214	1994/02/24
41	Marr John Peter	英國	549241063 (A800306217)	1986/01/27
42	Gibbs David Douglas William	英國	519715964	1973/10/02
43	Stewart Malcolm Donald	英國	538687989	1994/03/14
44	Mason William Stephen Buchan Griffin	英國	576405947	1959/07/13
45	Dinan Andrew Martyn	英國	514094281	1996/05/27
46	Mcdonagh Patrick James	英國	511096152	1987/06/02
47	Ashby Jonathan	英國	523826699	1975/08/25
48	Gorrie James Alexander	英國	537772596	1990/11/28
49	Dovgii Vitalii	俄羅斯	751103796	1979/06/17
50	Grishko Andrei	俄羅斯	750544338	1967/02/12
51	Wu Hsieh-Yi 吳協益	中華民國	351846739 (P124198215)	1995/12/26
52	Chang Chen-Yu 張震宇	中華民國	351067062 (H124373964)	1992/12/08
53	Lee Chyun-Chieh 李群傑	中華民國	310293821 (E170028933)	1994/07/01
54	Mohd Noor Azhar Bin Abdul Khalid	馬來西亞	A54207670	1982/11/23
55	Castaneda Ordonez Walter Edgar	祕魯	120409501	1980/04/10
56	Hodson Garry Charles	英國	553511346 (A800240214)	1971/11/17

57	Huang Chih-Hsin 黃志新	中華民國	353451282 (H120526530)	1974/01/17
58	Guleria Ashwani	印度	U7119614	1987/12/31