



GO PCO2 Installation & Maintenance



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P&O Maritime Services

GO PCO₂ Installation & Maintenance



RV Tom Crean



RV Celtic Explorer

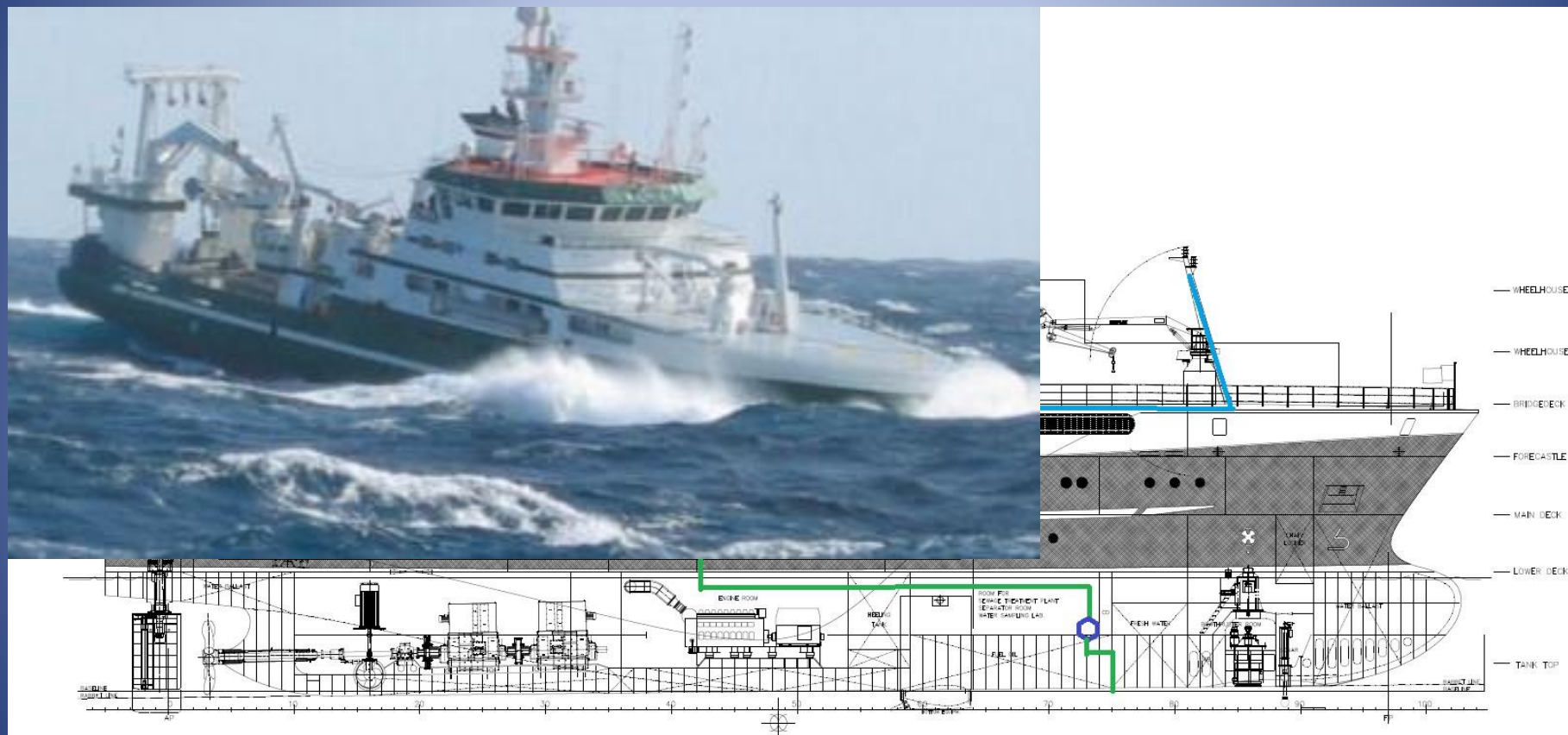
Discussion Points

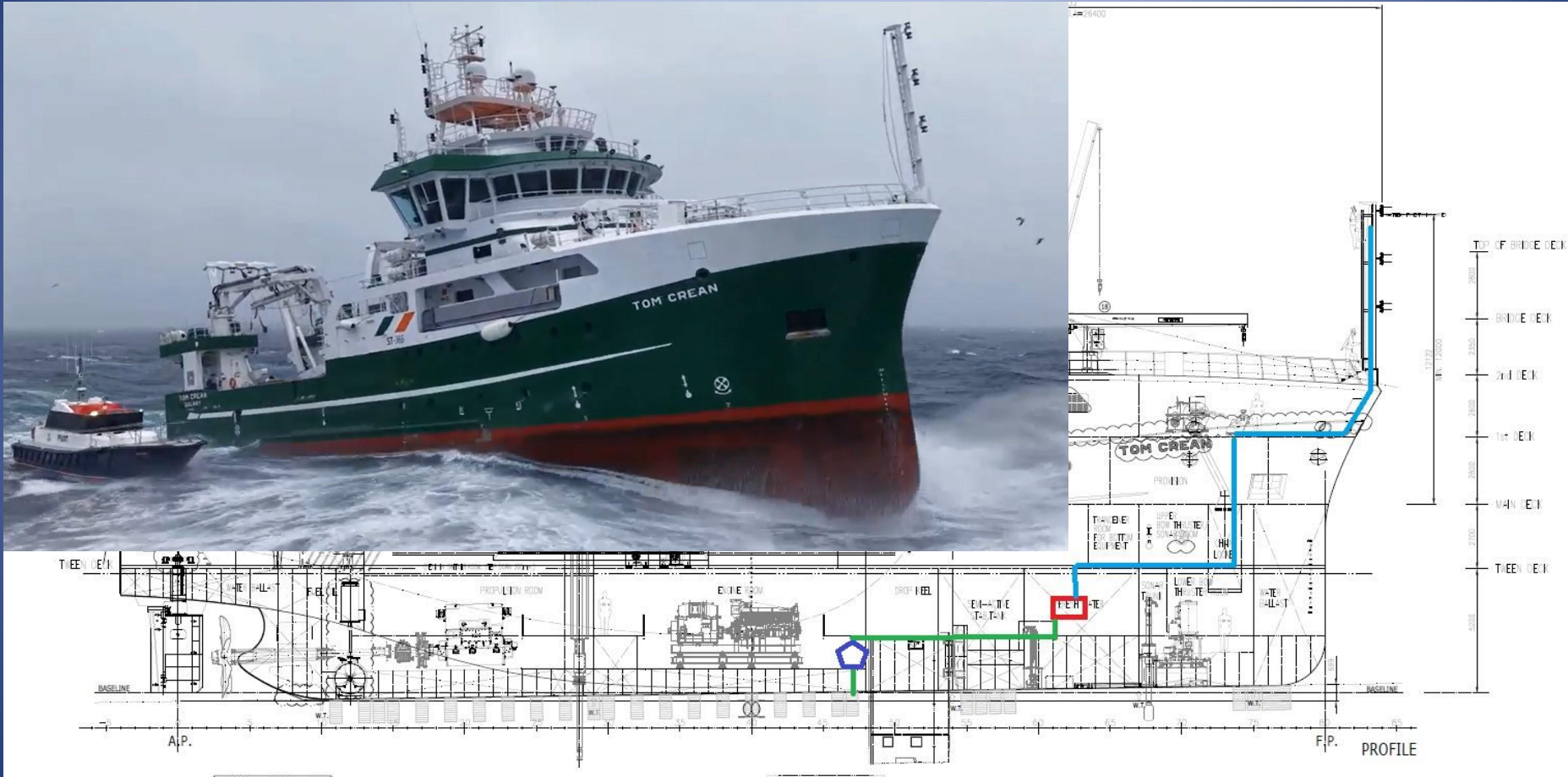
- Installation considerations
- Technical Support & Servicing
- Routine Maintenance
- Parts & Consumables
- Science Vs Operator Defined Roles
- Operational issues

Installation Considerations For GO 8050\8060

- Dry & Wet Box locations
- Air Intake
- Sea Water intake
- Gas Bottle location

Celtic Explorer GA





PCO₂ Dry & Wet Box

Celtic Explorer



PCO₂ Dry & Wet Box

Tom Crean



Gas Bottle Location

Explorer Deck



Bottle Corrosion



Tom Crean - Build

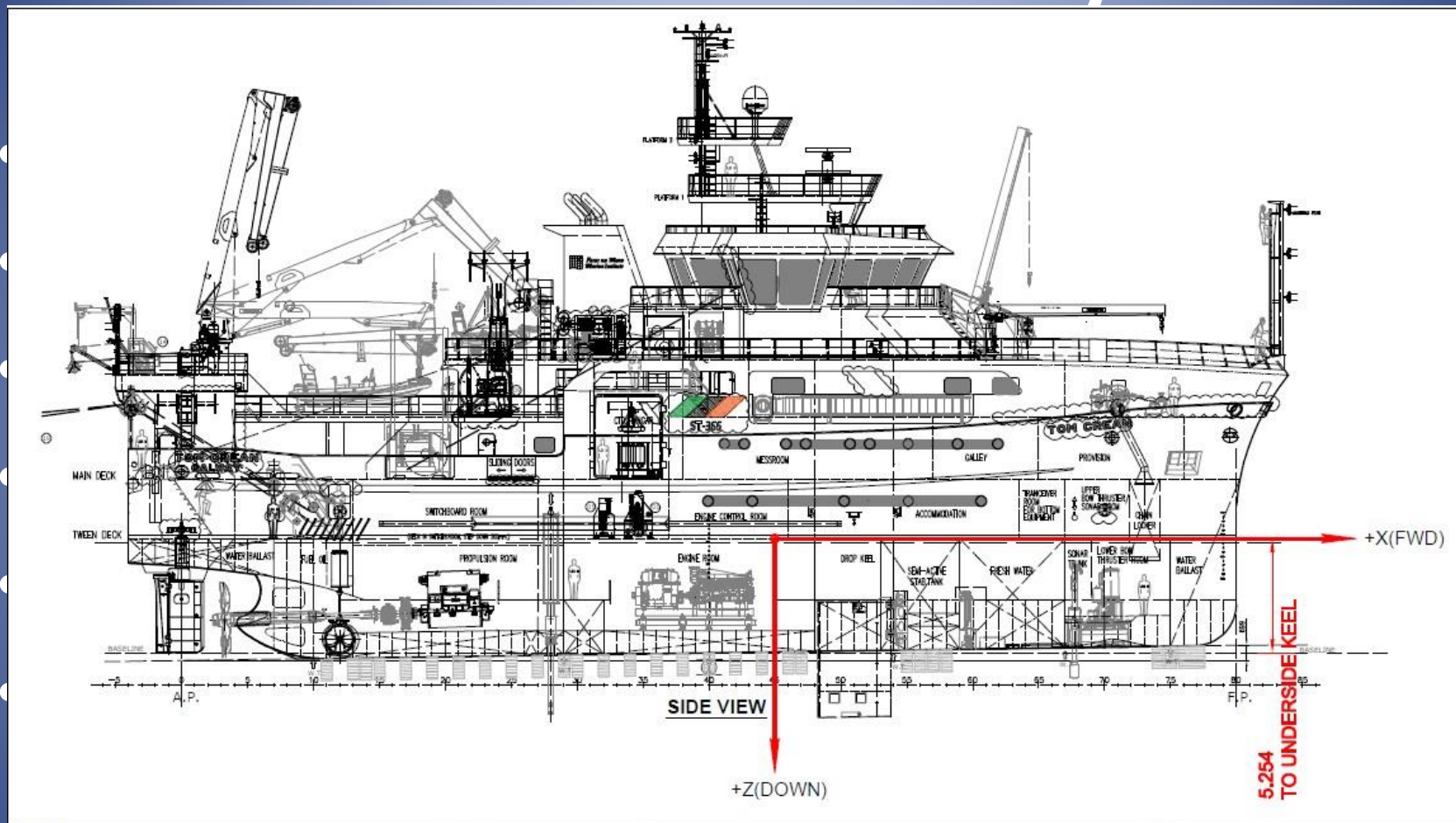


Celtic Explorer 2024 Mod



BOC Gas
Detector

Dimensional Survey



NOTES:

- SKETCH NOT TO SCALE
- ALL COORDINATES AND DIMENSIONS IN METRES

THE COMMON COORDINATE REFERENCE SYSTEM IS DEFINED AS FOLLOWS:

- REFERENCE PLANE IS A BEST FIT PLANE OF 8M DRAFT AROUND THE VESSEL
- COORDINATE REFERENCE POINT (CRP, WHERE $X=0.000$, $Y=0.000$, $Z=0.000$) IS AT SENSOR POINT MGC R3

- POSITIVE X-AXIS IS FORWARD AND PARALLEL TO VESSEL CENTERLINE
- POSITIVE Y-AXIS IS TOWARDS STARBOARD
- POSITIVE Z-AXIS IS DOWNWARDS
- FRAME 0 IS 27.032 M BEHIND CRP
- CENTERLINE IS 0.733 M STARBOARD OF CRP
- UNDERSIDE KEEL IS 5.254M BELOW CRP



ANKO MARITIME AS
DIMENSIONAL CONTROL

TITLE:

COORDINATE REFERENCE SYSTEM

CLIENT:

KONGSBERG DISCOVERY AS

PROJECT:

TOM CREAM

LOCATION:

SWANSEY DRYDOCKS, UK

DOC. REF.: 2106033-003

ENCL.: 2

REF. DRAWING NO.:

V129-101-001-F

PAGE:

2

4	SHIFT OF CRP	06.02.25	VJ	VJ	RH	RH
REV.NO.	REASON FOR ISSUE	DATE	DRAWN	PREPARED	CHECKED	APPROVED

GO 8050

Technical Support

- General Oceanics have a single Engineer
- Scientist support
- ICOS Support – membership required
- Third Party – Marine Carbon Instruments & Data (MaCID)

Routine Maintenance

SFI Code	Make	Model number	Serial Number	Name					
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SYSTEM EQUIPM	Model number	Serial Number	Standard Job	Maintenance Interval	Department
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[20] Equipment Explorer

File Open Find View Help

Q- Search...

Q- Search...

[482.006] SOL 21 THERMOGRAPHY

[482.003] UNDERWAY FLUOROMETER

[482.004] CTD SYSTEM

[482.005] SOOGARD SYSTEM

[482.006] PCO2

[482.006.001] PCO2 DRY BOX

A - PC LAPTOP

B - LICOR CO2 ANALYZER

C - VALCO MULTIPOSITION VALVE

CO2 200PPM

CO2 400PPM

CO2 450PPM

CO2 600PPM

D - THREE WAY LATCHING SOLENOID

E - ETHERNET SWITCH

F - ETHERNET TO SERIAL CONVERTOR

G - POWER SUPPLY

H - FUSE BOX

I - GO BOARD

J - MASS AIR FLOW SENSOR

NITROGEN GAS

REGULATOR 200PPM

REGULATOR 400PPM

REGULATOR 450PPM

REGULATOR 600PPM

REGULATOR NITROGEN

[482.006.002] PCO2 WET BOX

A - MAIN EQUILIBRATOR

B - SECONDARY EQUILIBRATOR

C - THREE-WAY ROTARY VALVE

D - FRESH WATER SOLENOID

E - WATER FILTER

F - WATER PRESSURE REGULATOR

G - WATER FLOW METER

H - CONDENSOR

I - EQU AND ATM MOISTURE DETECTORS

J - AIR AND VACUUM PUMPS

K - PERMAPURE NAFION DRYERS

L - ACRODISC FILTERS

M - PERISTALTIC PUMPS

N - DIFFERENTIAL PRESSURE TRANSDUCERS

O - ADAM MODULES

P - HART THERMOMETER

Q - HEAD SPACE PUMPIEQ PUMP

[482.006.003] DECK BOX

[484] LABORATORY EQUIPMENT

PT A - PC LAPTOP

MFGYR-2021 ST: 579N8D3 EX: 1132...

482.006.001.001_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT B - LICOR CO2 ANALYZER

IRG4-1263

482.006.001.002_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT C - VALCO MULTIPOSITION VALVE

482.006.001.003_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT CO2 200PPM

PR32946

482.006.001.012_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT CO2 400PPM

PR11065

482.006.001.013_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT CO2 450PPM

M-99-T1-46747

482.006.001.014_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT CO2 600PPM

PR11064

482.006.001.015_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT D - THREE WAY LATCHING SOLENOID

482.006.001.004_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT E - ETHERNET SWITCH

482.006.001.005_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT F - ETHERNET TO SERIAL CONVERTOR

482.006.001.006_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT G - POWER SUPPLY

482.006.001.007_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT H - FUSE BOX

482.006.001.008_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT I - GO BOARD

482.006.001.009_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT J - MASS AIR FLOW SENSOR

482.006.001.010_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT NITROGEN GAS

482.006.001.011_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT REGULATOR 200PPM

HP1700B.GG-BS3 CODE: 851800

482.006.001.017_0...

6.0 PCS MAIN DEC...

N

N

0.0000

PT REGULATOR 400PPM

HP1700B.GG-BS3 CODE: 851800

482.006.001.018_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT REGULATOR 450PPM

HP1700B.GG-BS3 CODE: 851800

482.006.001.019_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT REGULATOR 600PPM

HP1700B.GG-BS3 CODE: 851800

482.006.001.020_0...

0.0 PCS MAIN DEC...

N

N

0.0000

PT REGULATOR NITROGEN

HP1700B.GG-BS3 CODE: 851800

482.006.001.016_0...

0.0 PCS MAIN DEC...

N

N

0.0000

- GO in USA – USA so delays with imports
- GO - Changed to ProForma in 2024
- Gases take 3-6 months (BOC\Air Products)
- Gases provided with ICOS membership
- Regulators 2-3 months
- European suppliers – sensors and consumables

Science Vs Operator Defined Roles

- P&O Technician maintenance is programmed into vessel PM software.
- Science team responsible for certain PM tasks.
- P&O Technician Start\Stop acquisition at port calls.
- Science team responsible for data.
- In 2024 Data QC outsourced to MaCID

Operational Issues

- Wet Box flooding.
- Gas line leaks and monitoring.
- Replacement Gases & calibration
- Heating effect of engine spaces.
- Fouling of water supply intake.
 - Plastic lined steel pipes on Tom Crean
 - Cathodic sea chests on Celtic Explorer
 - Cunifer pipe
 - Ultrasonic system
 - Air jetting port limitations
 - Grating and filters