



Institut de recherche
pour le développement

**CENTRE IRD DE
BRETAGNE**

Technopole Pointe du Diable
BP 70
29280 Plouzané
Tél. (33) 2 98 22 46 55
Fax (33) 2 98 22 45 14
Email: Denis.Diverres@ird.fr

SEA SURFACE SALINITY MEASUREMENT

INSTALLATION OF A THERMOSALINOGRAPH ON CMA CGM ONYX



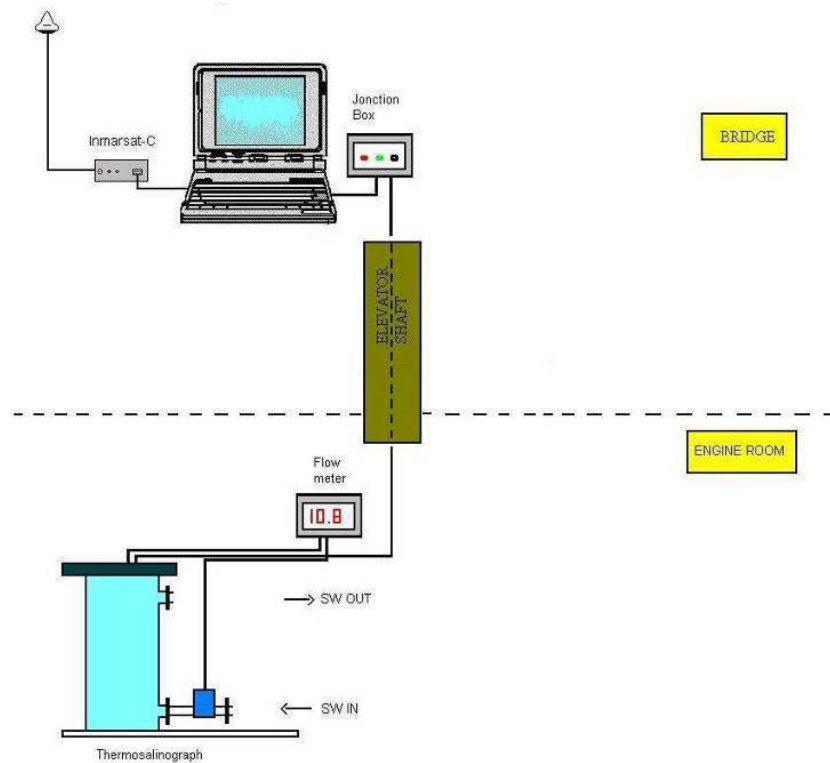
Denis Diverres
June 4, 2014

Content

1	Overview	3
2	Engine room	4
	Thermosalinograph	
	Inlet and outlet	
	Power supply	
3	Connexion to the bridge	5
4	Bridge	7
	Computer	
	Inmarsat-C transmitter	

1. Overview

The thermosalinograph measures the temperature and the salinity of the seawater. These data are used to study the climate change, particularly to calculate the amount of water exchanged at ocean/atmosphere interface.



The thermosalinograph must be as close as possible to the hull. On CMA CGM Onyx, the best place is close to the fresh water generator. It is connected to the computer on the bridge with a cable through the elevator. 12 VDC is provided by the interface box on the bridge.

Data are sent every 5 min to the computer and recorded on the hard disk. They are transmitted every 6 hours by an Inmarsat-C transmitter.

2. Engine room

Thermosalinograph



Sea Water OUT

Sea Water IN

Flow meter (l/min) Thermosalinograph

Sea water inlet and outlet



inlet



outlet

The sea water flow rate must be around 20 l/min, the outlet valve is not fully open.

Power supply for the flow meter



The flow meter is powered with 12 VDC. The 220 VAC / 12 VDC transformer is connected to the 220 VAC plug on the wall. It can be disconnected / reconnected without any problem.

3. Connexion to the bridge

The thermosalinograph is directly connected to the computer on the bridge with a cable to provide power (12 VDC) and allow data transmission.

On CMA CGM Onyx, this was achieved through the elevator shaft in three steps:

1. From the FWG to the lower level of the elevator at deck 2.
2. Within the elevator shaft, along the cable trunk.
3. From the elevator escape to the bridge.

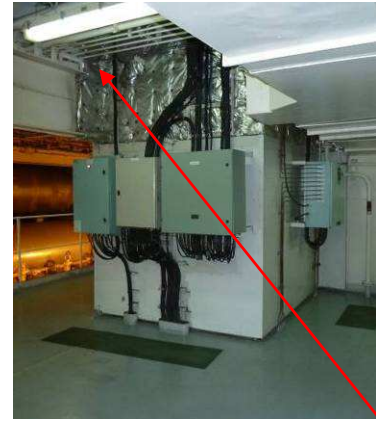


Elevator

Fresh Water Generator



Lower Level of the elevator – deck 2



The cable enters the elevator here



Bridge deck – top of the elevator

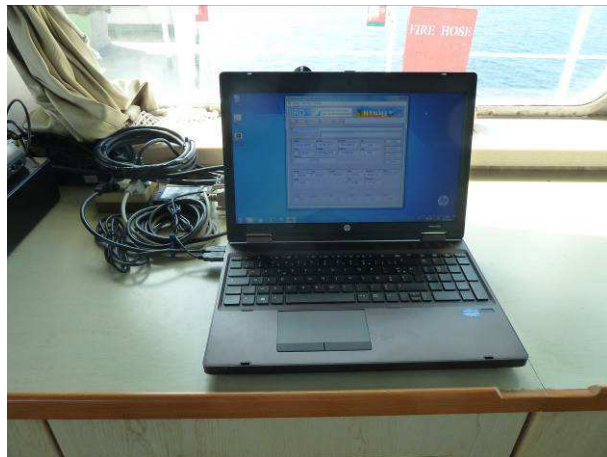
The cable exits the elevator shaft close to the escape hatch. A gland makes the connexion waterproof. To enter the bridge, the cable is routed along the existing piping (climatisation).

4. Bridge

The laptop computer is installed on the desk, starboard, close to the existing CSIRO XBT computer. 220 VAC power supply is available there.



Bridge – Starboard side



Laptop / electronics interfaces



The cable from the engine room enters the bridge portside, in the same place as the power supply of the air conditioner. The cable is routed through the bridge and placed into a cable duct.

The Inmarsat-C transmitter

The Inmarsat-C transmitter is made of an electronic interface and an antenna. The electronic interface is behind the laptop.



Top of bridge – starboard side

The antenna of the transmitter is outside, on the railway. CSIRO has already installed an ARGOS antenna for their XBT laptop. We have used the same cable duct.