



Ocean Networks Canada

Ferry Maintenance Report – Queen of Alberni

Date: March 20, 2015

Arrival: 12:45AM sailing to Tsawwassen. We signed in at terminal supervisor at Duke Point.

Reporter: Chris Sundstrom (Servicing), Akash Sastri (Science Analysis)

Attending Personnel: Chris Sundstrom (ONC-Operations), Akash Sastri (ONC Science), Ferdous Nawar (UBC Visiting Student)

Reason for Visit

Servicing of instruments. Install new backwater preventer. Complete radiometer mounting.

Observations

1. There was evidence of condensation within the Instrument Box. Visual inspection of the water patterns and locations as well as secondary sampling (smell testing indicated fresh water throughout with no evidence of leakage).

Actions Taken

1. The system was operating upon arrival.
2. The upper and lower boxes were opened and system operation was observed. Water was evident within the instrument box but there was none in the catchment basin. This water was apparently from condensation as there was no evidence of leaking.
3. Switched off the system and proceeded with normal instrument cleaning and calibration procedures.
4. Minor sedimentation was observed within all instrument housings. Some indications of s[ring bloom were present (biological growth).
5. Added a backflow preventer check valve to the output pipe of the system.
6. Reassembled system.
7. Turned system on and operation was noted as normal. No leaks immediately evident.
8. Checked and cleaned the Sea Strainer unit.
9. Proceeded to upper deck (monkey's island, 2nd bridge).
10. Replaced radiometer/pyranometer mounting hardware with complete set.



Ocean Networks Canada

Ferry Maintenance Report – Queen of Alberni

11. Supervised UBC Student _____ during collection of water samples.
12. Signed out at Engineering room.

Future Actions

1. Inspect new plumbing for leaks.

Discussion of Test Procedures and Results

The test procedures used are documented in the supplemental report, which also provides preliminary analysis of the data and its consequences.

Pictures:



Figure 1: Instrument Box upon arrival. Note condensation throughout. Note dry catchment basin.

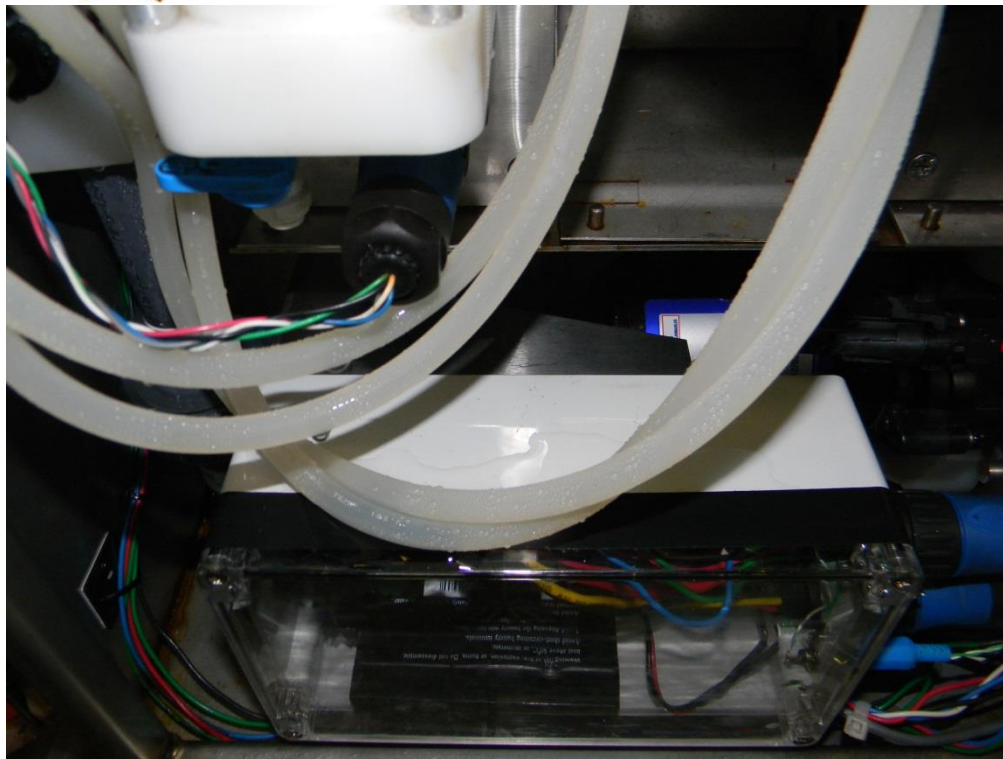


Figure 2: Condensation on tubing and on top of Pump Control Box.

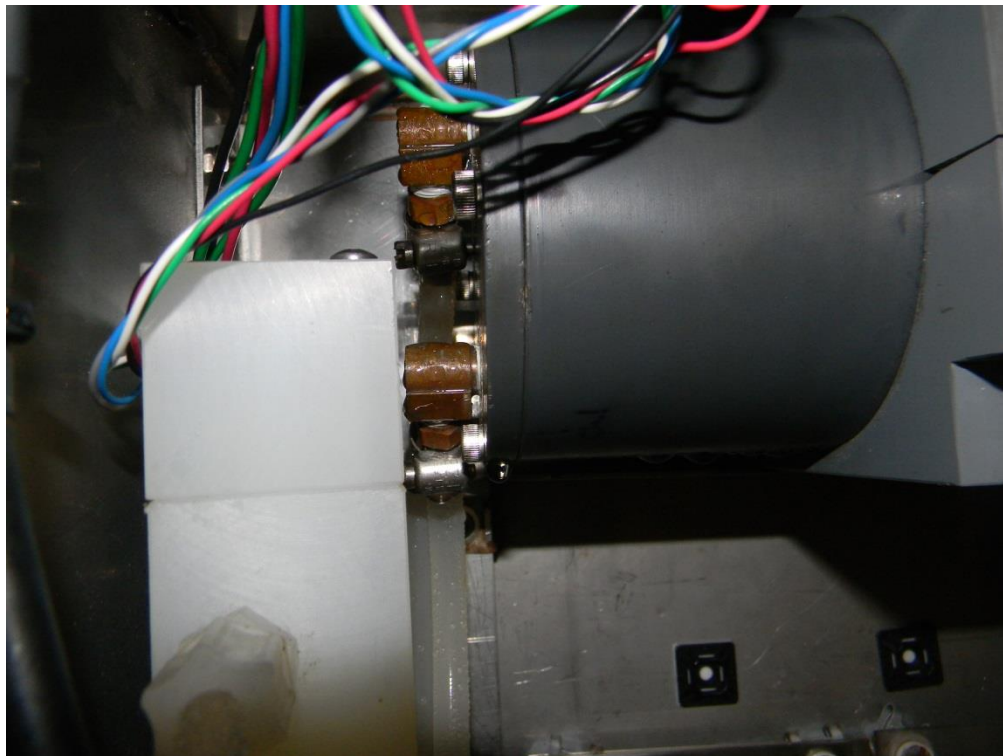


Figure 3: Condensation on/around BBFL2.



Figure 4: Condensation on CT unit.



Figure 5: Condensation on OPTODE unit.



Figure 6: Sedimentation/biofouling within CT unit.



Figure 7: Biofouling on OPTODE unit.



Figure 8: Biofouling on OPTODE unit.



Figure 9: Biofouling within BBFL2 unit.



Figure 10: Biofouling within BBFL2 unit.



Figure 11: Biofouling of Sea Strainer.

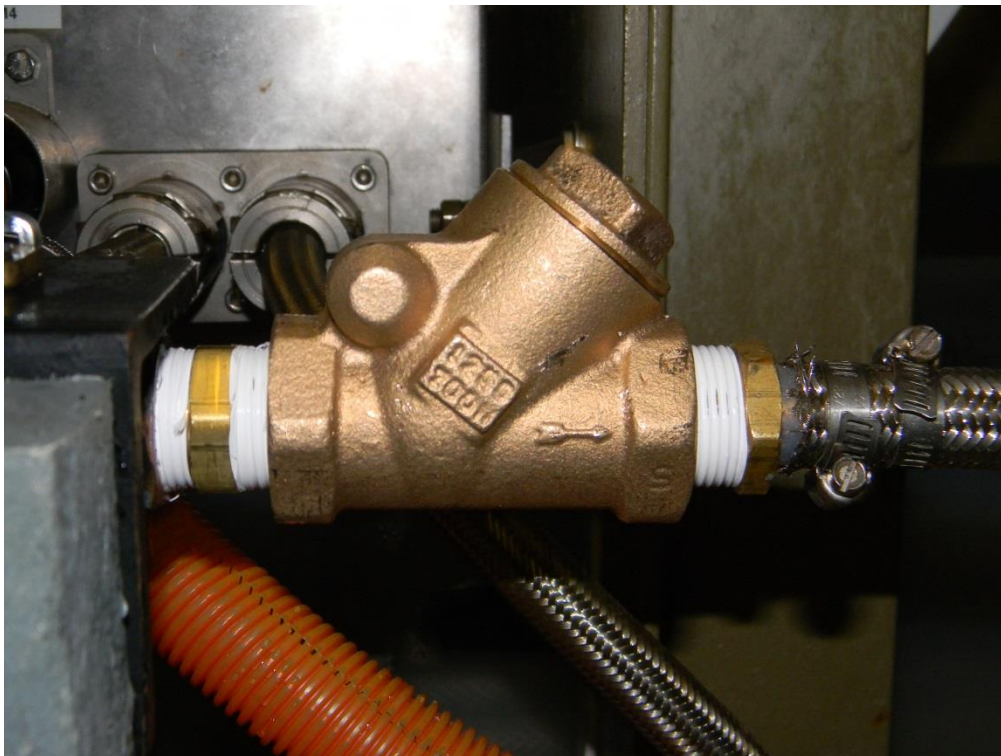


Figure 12: New backflow preventer check valve on output line.



Figure 13: Radiometer and Pyranometer as remounted.

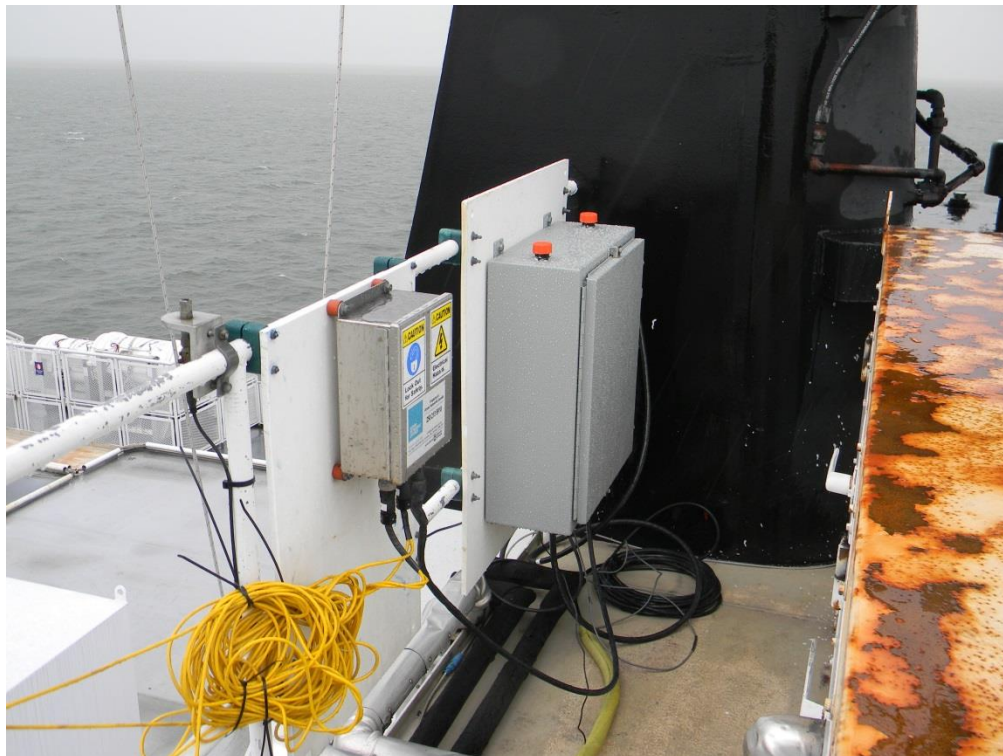


Figure 14: Remounted Campbell Scientific interface box.



Ocean Networks Canada

Ferry Maintenance Report – Queen of Alberni

Table 1. March 20, 2015. Mean (\pm standard error) values of pre- and post-cleaning fluorescence for solutions/fluorescent sticks specific to CDOM and Chlorophyll fluorescence. ‘ Δ fluor’ values for Diet Coke (Chl) and diluted tonic water or Sprite Zero (CDOM) are used at every cleaning to assess the degree of signal decay between cleanings. The pre-cleaning fluorescence values for fluorescent sticks and standard solutions were all greater than post- values. Note however, that the % difference between pre- and post- cleaning fluorescence for the blue fluorescent stick (specific to CDOM) was unrealistically high. The otherwise low % difference values suggest minimal bio-fouling of the BBFL2 lenses.

CDOM/Chl Fluorescence	Method	Pre- (mean \pm SEM)	Post- (mean \pm SEM)	Δ fluor (%)
CDOM	Diluted tonic water	20.98 \pm 0.015	21.54 \pm 0.013	0.026
CDOM	Sprite Zero	42.68 \pm 0.019	43.47 \pm 0.019	0.018
CDOM	Blue fluorescent stick	54.27 \pm 0.044	94.74 \pm 0.61	0.42
Chl	Diet Coke	6.08 \pm 0.006	6.15 \pm 0.0017	0.012
Chl	Pink fluorescent stick	6.67 \pm 0.002	7.42 \pm 0.002	0.10



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Table 2. Oxygen saturation/zero oxygen values for the optode currently deployed aboard the Queen of Alberni (#418; 2-point lab calibration on December 19, 2014). Mean and standard errors of the means were calculated on values recorded when instrument output stabilized following immersion of the optode into either oxygen saturated (bubbled) or zero oxygen (sodium thiosulfate addition to the saturated solution) water.

March 20, 2015 (mean± SEM)	
100% solution	101.45±0.022
0% solution	0.69±0.0046