

Ocean Networks Canada

Ferry Maintenance Report – Queen of Alberni



Date: Nov 4 and 5th, 2014

Arrival: Depart 11am Ferry from Swartz Bay. Arrive at BC Ferries facilities 1:30pm. We signed in at front gate. Met Gary Flach, and discussed plans. Travis (Safety officer /Risk Management) provided Safety orientation and completed Risk Management form. Provided us AC panel lock-out locks to lock out panel. Travis assessed Sea chest compartment area and stated the sea chest is in a confined space, and we require certification to both Confined Space and Fall Protection limiting potential work while at DEAS docks in future.

Reporter/Attending: Denis Hedji (Servicing/Reporter), Ian Beliveau (Servicing)

Reason for Visit

Service(s) to SeaKeeper system. Ship at Richmond BC Ferries DEAS docks for re-fit.

Observations

- ~~1.~~ No signs moisture at bottom of housing. Ship was not in service for 3 weeks.
- ~~2.~~ The AADI optode (oxygen sensor) was slightly dirty with sediment/ bio film growth within the housing.
- ~~3.~~ The BBFL2 had a slight partial layer of sediment in the housing and had minimal fouling on the sensing surface.
- ~~4.~~ The Seabird 45 CT sensor slightly dirty. Blackish sediment at bottom visual through housing.
Seems like Coal dust ?
- ~~5.~~ Extreme smell – smelled like Sewage.
- ~~6.~~ The sea chest had half cup of water in housing. Seems its condensation build up.
- ~~7.~~ The inline filter (sea strainer) was black. Some Mussel growth was found inside the strainer basket. A colony of mussels grew inside sea strainer outer filter area again.
- ~~8.~~ Ship had many contractors on board.
- ~~9.~~ Upper crow's nest had scaffold built around it. Limited access. Fall protection gear required.
- ~~10.~~ Intake pod not visual to service. Beneath surface. Not serviceable in dirty river water (not for divers).

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Actions Taken

- ~~1.~~ Visually inspect side of ship if Intake pod is accessible for service and removal. Ship was not high enough to expose the pod above surface.
- ~~2.~~ Opened both boxes and observed functions. Computer housing powered ON. Instrument not functioning since ship is not in operation. Dried off the moisture build up at bottom of instrument housing.
- ~~3.~~ Powered down at Computer housing and at electrical panel EL-7 cct 7 using circuit lock out clamps required by Safety co-ordinator (Travis).
- ~~4.~~ Disassembled instruments; Seabird CT, AADI Optode, Wetlabs Eco Triplet BBFL2.
 - ~~5.~~ Remove and Disassemble pump control box. Replace leak sensor RCA jack, and cable plug. Clean connectors at RHS. Lower plug (one with Pump) corroded pins. Found pins are corroding from outside of the connector and affecting connector pins internally. Condensation leaks down wire and into and past the gland fitting into the pins of the connector. Gland fitting does not seal the connector nor the wires ! Had to scale off corrosion, and clean connector with alcohol thoroughly. This may have affected pump control. Applied silicon grease to end of gland fitting to protect water seepage into connector. Measured battery voltage =13.3Vdc (did not replace). Pump control b/h with pins had corrosion, mainly pins 6 and 7.
- ~~6.~~ Remove Pump, and related pipe(s)/ tubing. Remove fittings, plumber tape fittings, solder in two pin water proof connector. Assess old pump; no burning smell, nor mass growth noticeable in pump chambers.
- ~~7.~~ Cleaned and checked over instruments in engineering room. Cleaned CT sensor connector to remove sediment and biofouling growth. Take whole CTD apart. Wash clean.
- ~~8.~~ Remove input/ output PVC manifold. Remove top end of manifold. Two o-rings are apparent. There are three pipes bored into the manifold. Each pipe was loaded with mussels. Washed out manifold in engineering room. A spring loaded stopper installed on the side of manifold jammed piping with mussels possibly restricting flow. Spent much time cleaning this unit. I recommend that we purchase two more of these manifolds for in field easy swapping for future.
- ~~9.~~ Re-install seawater manifold, fittings, piping (placed new plumbers tape), pump, and same cleaned instruments. Hang leak sensor 2" above totes bottom.
- ~~10.~~ Place desiccant bags in housing, pump control box. Shut doors to instrument housing.
- ~~11.~~ Open floor panel to lower sea chest space. Placed gas meter in space. Recommended to do so by Safety officer a BC Ferry employee Monica as she also considers this space as confined space that may have exposure to multiple types of gases.

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~~12~~—Checked over Sea chest and valves, no leaks apparent. Sea chest contained at bottom about half cup of water.

~~13~~—Disassemble sea chest, turn OFF intake valve, and remove sea chest assembly.

Tube contained mussel growth. Disconnect and remove braided piping to sea strainer because it had growth too.

~~14~~—Take apart Sea chest piping, and wash with hose on main deck. Picked off mussels with clothes hangar.

~~15~~—Re-assemble sea chest components. Replaced braided pipe from Sea chest to Seastrainer.

~~16~~—Remove, and clean sea strainer. Re-installed and re-plumb.

~~17~~—Placed new desiccant bags in Sea chest housing.

~~18~~—Check for leaks internal to sea chest housing. None visually apparent. Place floor panel back in place. Check computer housing connectors.

~~19~~—Upper electronics housing at ships crow's nest was difficult to access. Multiple contractors with the area, scaffold built in area, risk of falling – fall protection gear did not have/ nor we are certified, weather was damp and partially raining, and needed a Radar lock out.

~~20~~—Signed out with safety officer Monica (stating to her to unlock the EL-7 cct 7 panel) she had keys, and signed out at security front gates.

Future Actions

1. Board ship when back in operations to check for leaks, and operations of instruments on Nov 15th 2014.
2. Replace Amphenol CT bulkhead connector and its plug (shipboard connector will need to be re-soldered).
3. Replace Amphenol plug going into pump control box. (need to order all Amphenol connectors for future replacement and have spares on hand).
4. Possibly replace all metallic connectors on upper boxes with plastic glands.
5. Provide training and certify particular staff for confined space, and fall protection. Paul, Denis and Ian.B
6. Complete documentation prior to arrival - Risk management assessment sheet
7. BBFL2 end cap one screw is stripped. Need to re-tap all holes in housing to next size up.
8. Purchase our own electrical panel lockouts

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ADDENDUM/NOTE: There was no sign of crab inhabitation this trip.

PICTURES

Figure 1: System upon arrival

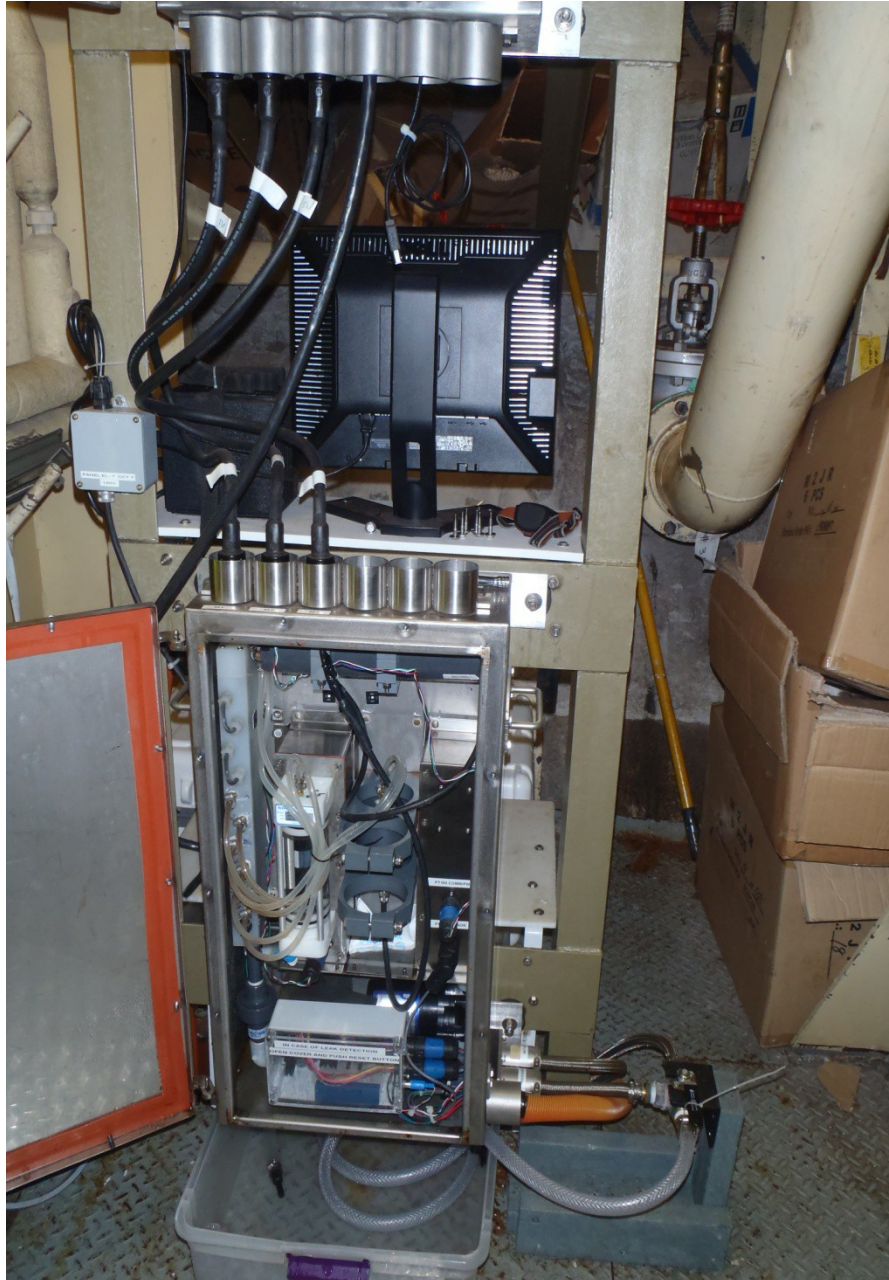


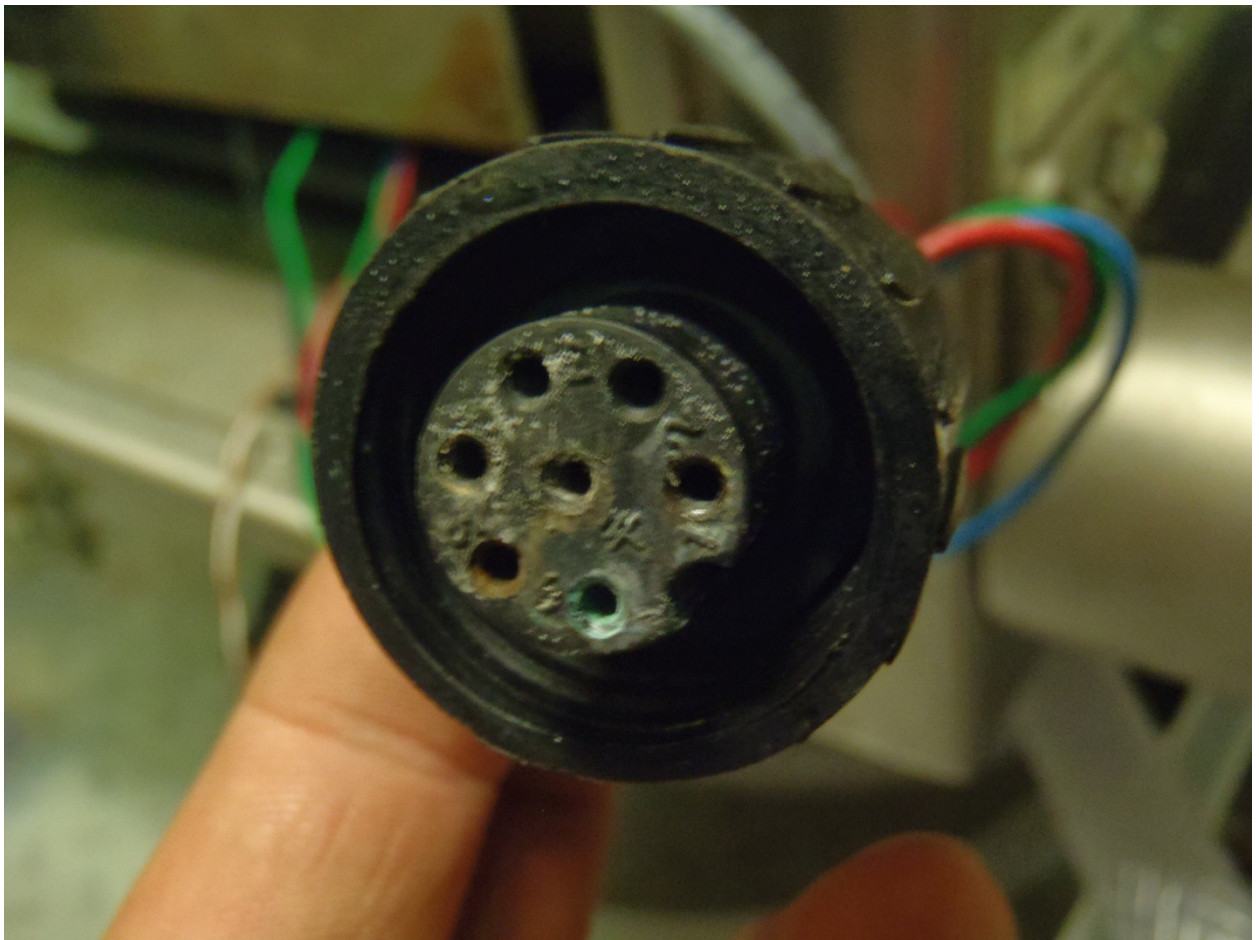


Figure 2: CT Sensor fouling



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Figure 3: Pump control box connector



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Figure 4: BBFL2 fouling



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Figure 5: AADI Dissolved oxygen sensor



Figure 6: Top part of inlet outlet manifold

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Figure 7: Manifold inlet, and outlet. Internal mussel growth.

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Figure 8: Manifold install

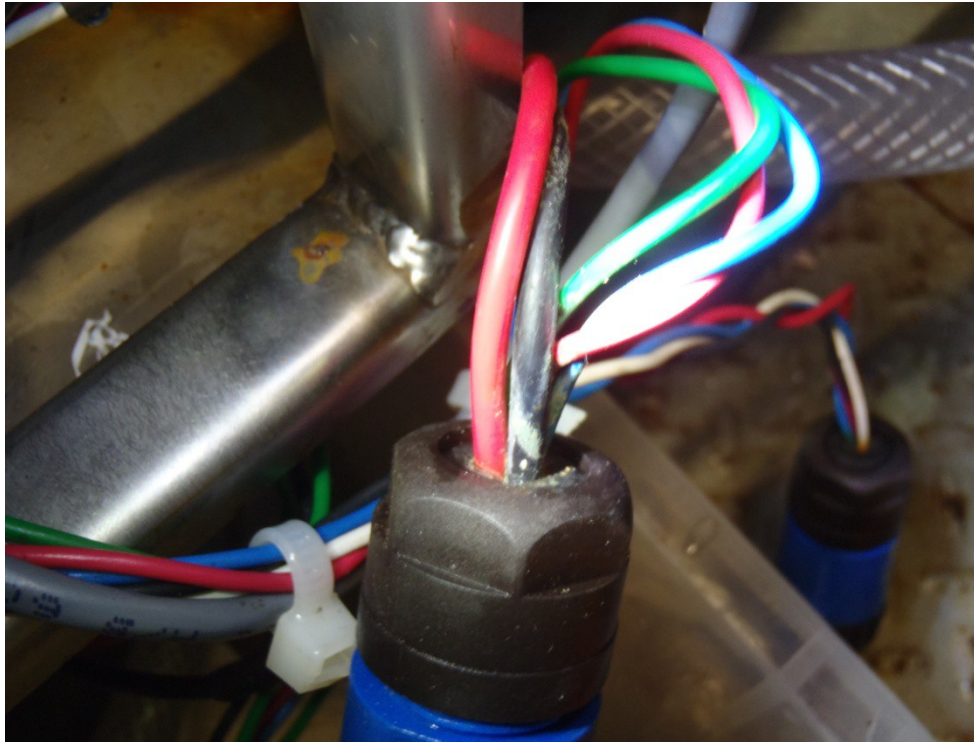
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Figure 9: Pump control box plug to pump. Water seeps pass these wires. Gland fitting does not seal water out. This may have caused issue with pump. Red and Black wires are pump power wires.



No photos of Sea chest available