

Mooring cruise report *JR 140*

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Recovery and redeployment during JR 121:

In order to avoid the problem experienced during the 2003 winter when the deep mooring was snagged by a longline set for Toothfish, both moorings were in April 2005 deployed at the shallow site for the coming Antarctic winter period. The 'Deep Mooring' being placed 500m west of the 'Shallow'.

The recovery process started with the "Shallow Mooring" at 20:35 GMT of April 3rd with a CTD to 200m followed by EK 60 acoustics for 1/2 hour from 21:20 to 21:50 GMT. The weather was good, (force 2-3), calm sea, and good visibility. The releases were activated at 22:00 with a positive feedback. After approximate 5 min the mooring surfaced. At 22:35 the shallow mooring was successful recovered.

After clearing the deck the ship moved into position to recover the "Deep Mooring". The releases were activated at 23:01 and the buoy was sighted just 4 minutes later. At 23:25 the whole deep mooring was successful recovered.

During the next following 4 days, the data were downloaded, the batteries and O-rings replaced and all the hardware inclusive the ropes. Additional work was done with the WCP (see paragraph below). After the WCB and the calibration in Rosita harbor, the shallow water mooring was successfully redeployed **at 53.7953'S & 37.9368'W on 03.01.2006, 01.02 GMT in 318 m water depth. Please not that the Flashlight and VHF beacon was NOT switched on!!**

Immediately afterwards the ship steamed to the deep mooring position and the deep mooring was redeployed at **53.5105'S & 37.8453'W, on 03.01.2006, at 03:28 GMT in 1331 m water depth.**

Both deployment took place as described in the second deployment report in JR96 with the changes described in the JR100 mooring cruise report: To control the release of the weights, they were lowered over the stern with the starboard Effer crane on a strop and a sacrificial rope attached to the weights was threaded through two deck eyes. The weights were then lowered down until the sacrificial rope took up the weight. Then the strop was taken of. At the release point the rope was cut on top of a piece of wood between the eyebolts using an knife.

Data verification:

Both CTD's and both ADCP's have worked fine throughout the whole deployment. On the other hand, both WCB's have not worked at all, there was again NO data on the instruments, which is clearly very disappointing, because after the last deployment we thought we were making good progress in getting them to their right performance (for more details see paragraph below).

Work carried out:

WCP:

- Main O-Ring replaced
- Batteries replaced
- Clock Batteries replaced
- new circuit board installed
- new firm version installed
- serial Connector replaced

CTD:

- Data download
- Main O-Rings replaced
- Batteries replaced

ADCP:

- Data download
- O-rings replaced
- Batteries replaced

NOVATEC beacons

- Batteries replaced
- O-rings replaced

ARGOS beacons

- Batteries replaced
- O-rings replaced

Releases

- Batteries in all 4 releases replaced

Hardware on moorings

- all ropes, shackles and chains have been replaced with new once

WCP performance/replacement of connectors/installing of new firm ware and new insulation board:

ASL provided us with a new connectors, a new firm ware and a new developed insulation board to repair and upgrade both units, after the corrosion problems we encountered after the deployment after last.

On the 31.12.05 the work started on WCP 1004: The pin on the serial port was fully disintegrated now. The O-Ring on the purge plug was also disintegrated. Also there was corrosion found around the O-ring where the screw hits the face plate (pic. 1). When the serial connector was replaced corrosion was also found around the connector where again the connector hits the face plate. On the long term this is something we have to look into a bit more, it will come to a point where the corrosion will become so heavy corroded that the area around the purge plug and the two connectors will become not longer water tide. During the replacement of the connector we could not find any connector for the ribbon cable so all cable were soldered instead. After the replacement of the connector and the installation of the new insulation board the unit was power

up and connection was established. First was the time of the unit checked and the internal time was: 02/09/29 21:18 the actual GMT time was: 05/12/31 18:51. Thereafter we checked for data but there was no file on the unit, which was clearly very disappointing!!

The check after for battery power in the unit was: black – green: -12.12, black – red: 14.60, black – blue 14.65 compared with the new battery pack provide by ASL: green – black: -12.97, green red: 16.19 V. The check of the clock battery: old: 3.66, new: 3.30 V.

Thereafter the unit WCP 1005 was checked. Because there were no data on the unit 004 we decided to try to connect to the unit before taken it apart to avoid any possible influence due to the work carried out on the unit. The pin on the serial port was corroded but it was possible to establish connection to the unit. The internal clock showed: 02/09/30 17:17. The check afterwards for data revealed that the unit 005 did not had work either, as there was no file on the unit (pic 6). All this work on unit 005 was done without external power and before opening the unit! The removal of the purge plug and the serial connector showed the same corrosion like on unit 004. So something must be done to stop the corrosion otherwise it will come to a point when on of the six O-ring will not longer seal and water will get into the units (pictures 2,3,4,5).

The check afterwards for battery power in the unit 005 was: black – green: -12.04, black – red: 14.68, black – blue 14.64 compared with the new battery pack provide by ASL: green – black: -12.97, green red: 16.22 V. The check of the clock battery: old: 3.23, new: 3.30 V.

The replacement of the connector and the new board was done afterwards and an other check for a file on the unit conducted, but without any success.

Therefore decision was made to replace the firm ware, the clock battery and the main battery and to deploy unit 004 for a short test deployment in Rosita harbour prior to the ships hull echo sounder calibration. The unit work fine, but we had problems picking up the pings with a radio on 600 – 900 kHz, no real signal was detect. Also the Excel file provided a total wrong time stamp, but that is probably an Excel problem the file cam out as: 06/01/2001 instead of 01/01/2006. Both units were than programmed and deployed on the two moorings.

New Instrument settings (general):

CTD

shallow:

start time: 02.01.06

sample interval: 240 sec.

deep:

start time: 02.01.06

sample interval: 240 sec.

ADCP

Shallow:

Start time: 02.01.06

Duration: 210 days

Sample interval: 5 min

Pings in interval: 7

Deep:

Start time: 02.01.06
Duration: 210 days
Sample interval: 5 min
Pings in interval: 7

WCP

Shallow:

year = 6
month = 1
day = 2
hour = 20
burst_resolution = 1
ping_length = 600
lockout_range = 0
gain = 1
max_range = 200
burst_multiplier = 120
burst_count = 1
bin_size = 8
EndYear = 6
EndMonth = 6
EndDay = 1
EndHour = 12

Deep:

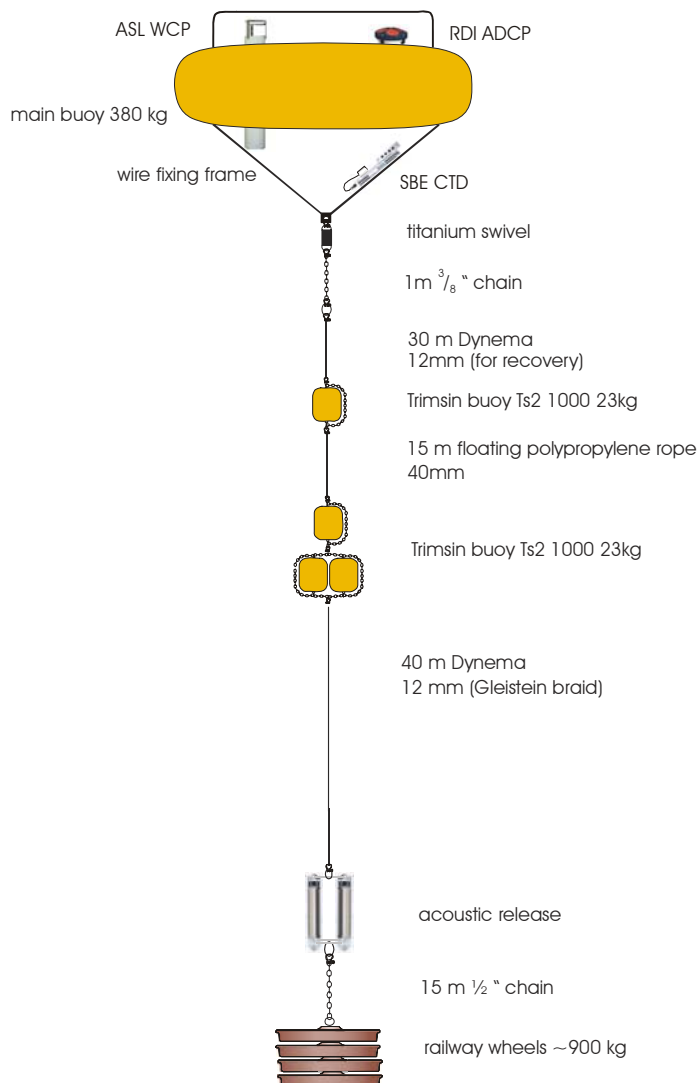
year = 6
month = 1
day = 2
hour = 20
burst_resolution = 1
ping_length = 600
lockout_range = 0
gain = 1
max_range = 200
burst_multiplier = 120
burst_count = 1
bin_size = 8
EndYear = 6
EndMonth = 6
EndDay = 1
EndHour = 12

Eventlog during mooring activities:

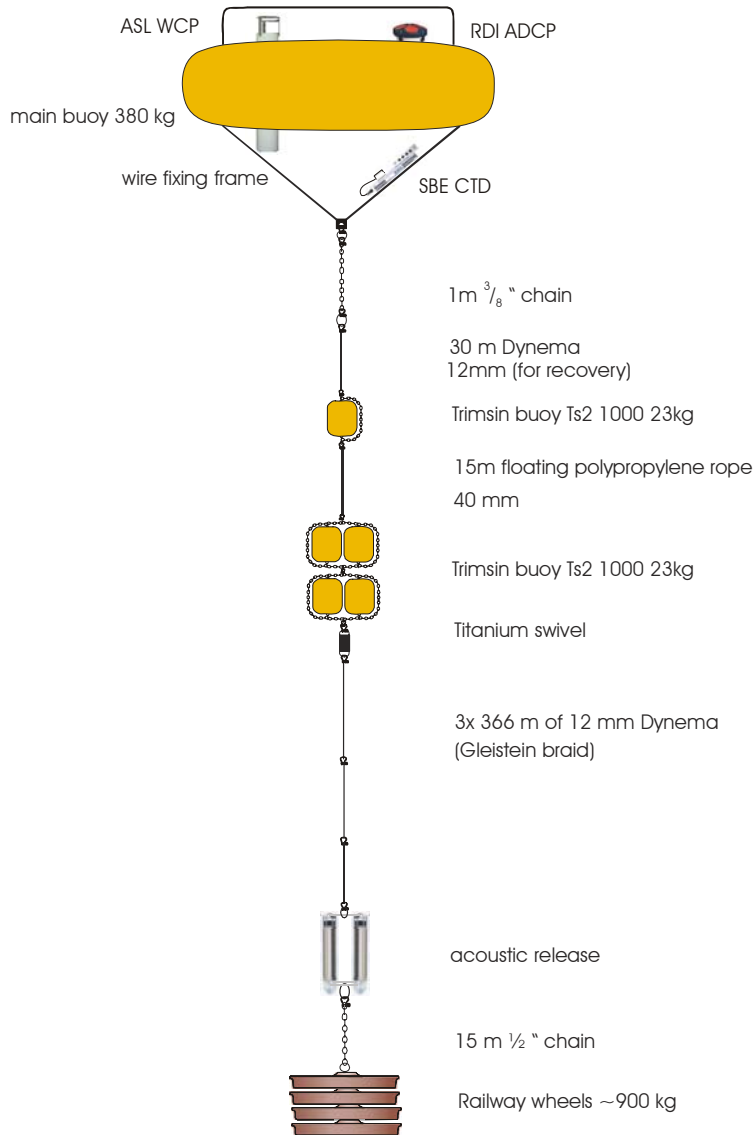
Time	Lat	Lon	Comment
03/01/2006 03:28	-53.5105	-37.8453	Deep water mooring slipped from stern. Depth 1331m.
03/01/2006 02:50	-53.4964	-37.8397	Commence deployment of mooring.
03/01/2006 02:48	-53.4961	-37.8395	Ship in position for deployment of deep mooring.
03/01/2006 01:02	-53.7953	-37.9368	Mooring released. Depth on EA 600 318mts
03/01/2006 00:51	-53.7921	-37.9386	Commenced deployment
03/01/2006 00:45	-53.7918	-37.9387	Ship in position for deployment of shallow mooring.

28/12/2005 23:25 -53.7949 -37.9389 Mooring recovered.
 28/12/2005 23:10 -53.7981 -37.9422 Recovery line attached. Commence recovery.
 28/12/2005 23:08 -53.799 -37.9422 v/l makes approach on mooring bouy
 28/12/2005 23:03 -53.8012 -37.9413 Buoy surfaced one point to port.
 28/12/2005 23:01 -53.8012 -37.9413 Both releases fired
 28/12/2005 22:58 -53.8012 -37.9415 Ship in position for recovery of second mooring.
 28/12/2005 22:35 -53.7946 -37.9346 Mooring recovered.
 28/12/2005 22:21 -53.7975 -37.9343 Recovery line attached. Commence recovery.
 28/12/2005 22:04 -53.8001 -37.9334 Buoy surfaced two points to starboard.
 28/12/2005 21:59 -53.8 -37.9334 Ship moved back downwind for recovery.
 28/12/2005 21:20 -53.7986 -37.9358 On position over shallow mooring. Commence acoustics.
 28/12/2005 21:08 -53.8003 -37.9318 CTD recovered after being deployed to 200 metres.
 28/12/2005 20:53 -53.8004 -37.9316 CTD deployed near core box shallow mooring site.

shallow water mooring (300m water depth)



deep water mooring (1300m water depth)





Pic. 1: corroded connector on WCP 1004



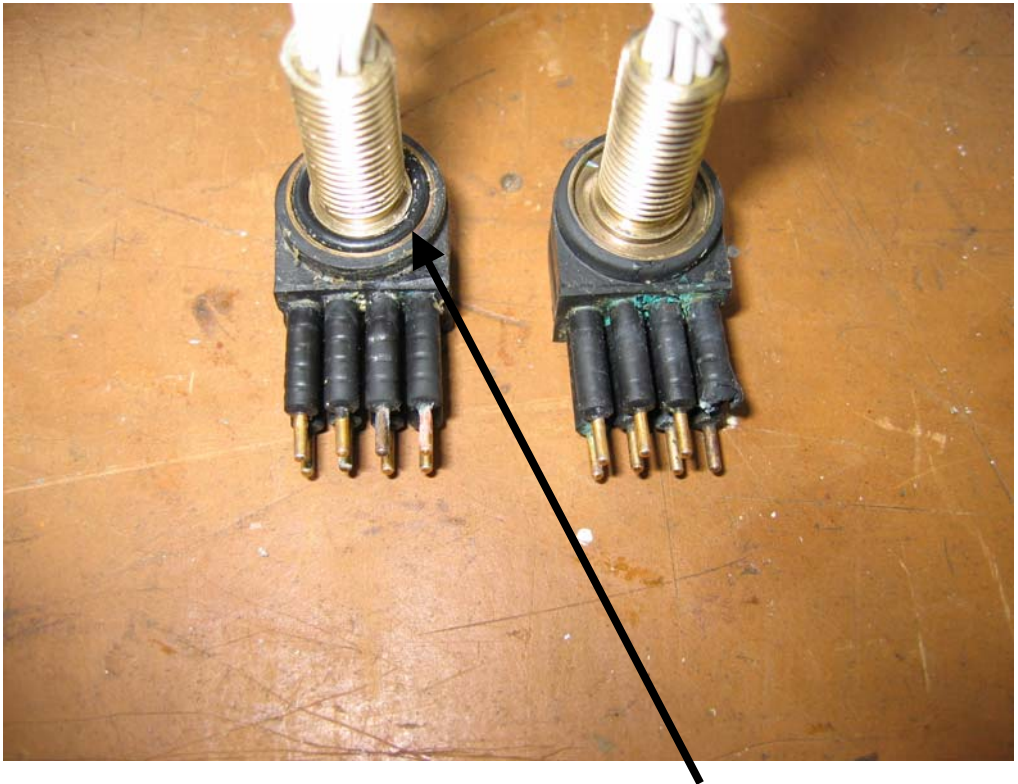
Pic 2: less corroded connector on WCP 1005 with purge plug removed showing disintegrated O-ring and corrosion around



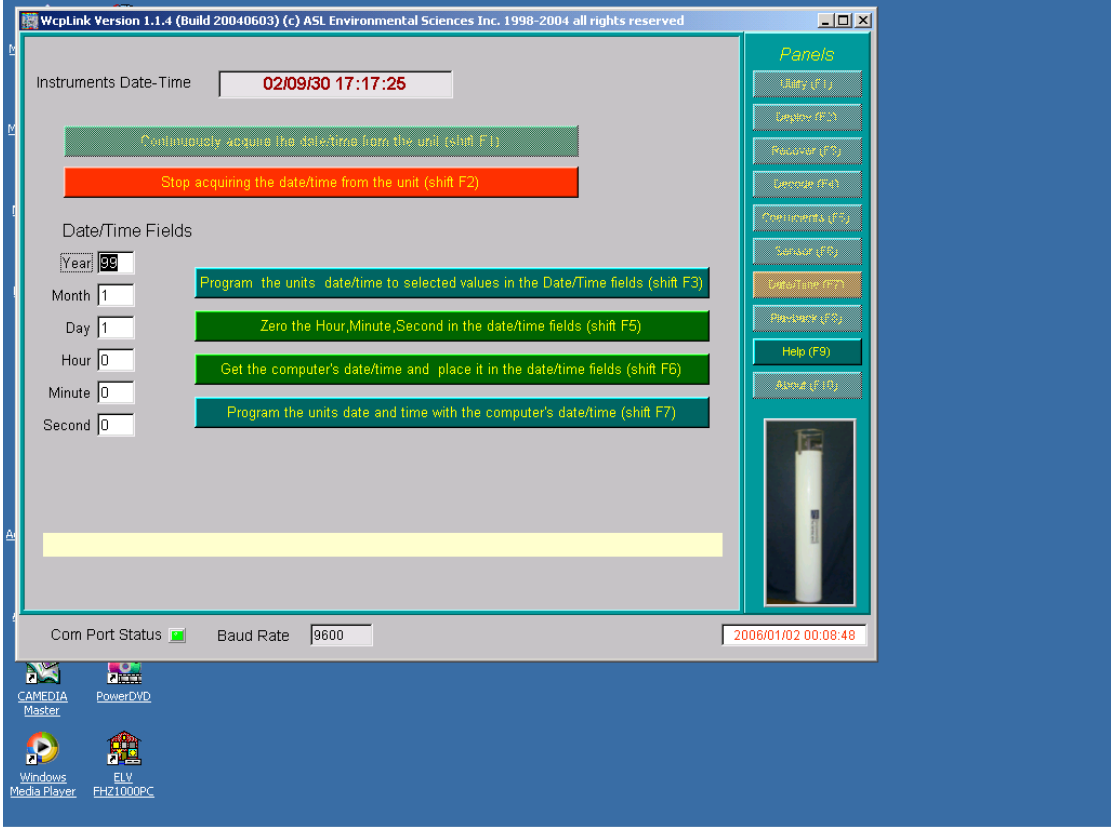
Pic 3: corrosion found around serial port and purge plug on WCP 1005

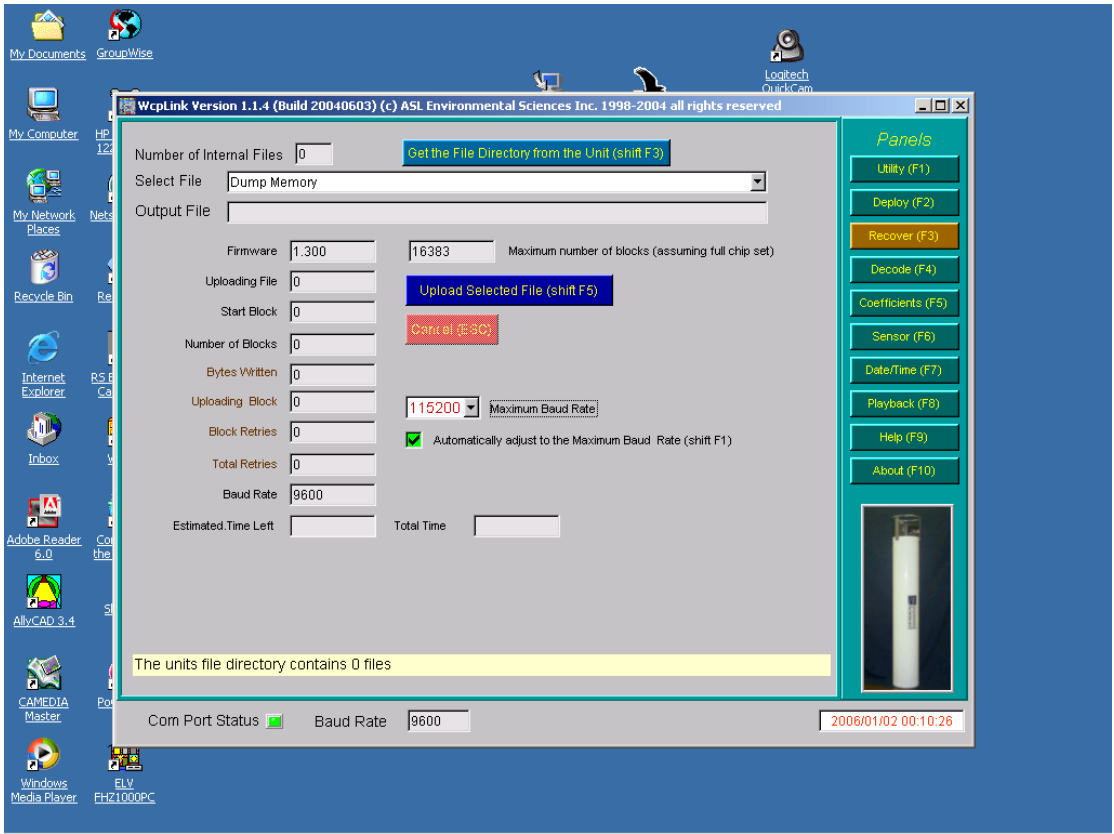


Pic 4: corrosion compared to location of O-ring of serial connector



Pic 5: both removed serial connectors showing the brass? which caused the corrosion





Pic 6: screen dumps of the time and the file directory of WCP 1005