



# Integration Checklist

|                                      |   |                         |                                   |
|--------------------------------------|---|-------------------------|-----------------------------------|
| Document Number<br><b>3166-50211</b> | Title/Description<br><b>Surface Mooring Initial Power Checklist</b> |                         |                                   |
| Author<br><b>G Cook</b>              | Approved by<br><b>S. N. White</b>                                   | Revision<br><b>1-00</b> | Effective Date<br><b>11/10/14</b> |
| Part Number<br><b>Various</b>        | Name/Description<br><b>Surface Mooring</b>                          |                         | PN Rev.<br><b>N/A</b>             |

## 1 Reference Documents

The following documents are located on VAULT at Vault\Project\_Files\Documentation  
3166-50000 Surface Mooring VIP

## 2 Definitions & Acronyms

|       |   |
|-------|---|
| SBD   | Short Burst Data                                  |
| ISU   | Iridium Subscriber Unit                           |
| GPS   | Global Positioning System                         |
| RFM   | Radio Frequency Modem                             |
| Wi-Fi | Wi-Fi is a wireless local area network technology |
| SSH   | Secure Shell                                      |
| STC   | Sensor Telemetry Controller                       |
| RTE   | Radar Target Enhancer                             |
| PuTTY | PuTTY is an SSH and telnet client                 |

## 3 Training Requirements

None

## 4 Required PPE and Safety Notes

Ensure testing is performed in compliance with applicable WHOI/SIO/OSU safety protocols, OOI EH&S Plan (1006-00000) and CGSN EH&S Plan (3101-00009).  
Read and follow all safety warnings in the MSDS.

## 5 Required Tools & Equipment

- Adjustable DC Power Supply capable of 24 VDC at 8 Amps
- Test computer – Windows PC with 1 USB and 1 Ethernet port
- 1 USB to serial adapter with USB cable
- 1 Ethernet patch cable and 1 multiport Ethernet switch

Additional test cables as identified in Appendix A

## 6 Notes

Acceptable tolerance on all voltage measurements is +/- 0.5 VDC.  
Acceptable tolerance on all continuity measurements is < 1 ohm.

## 7 Handling Instructions

**WARNING – Follow Electrostatic Discharge handling precautions**

## 8 Preparation & Information Tracking

Save a copy of the Procedure tab as 3166-50211-XXXXX where XXXXX is the next sequential number in Vault. The new document is hereafter referred to as the results document.

Record the XXXXX number in the Results Document Number field at the top of the results document.

Modify the following document information in the "Microsoft Word, Title Properties" field where <#> represents the mooring (i.e. CP03ISSM-00001) and <date> represents the test date (i.e. 2014-11-17) : <#>\_Surface\_Mooring\_Initial\_Power\_Checklist\_<date>.  
To modify this field in Microsoft Word click File >Properties >Title. This field is visible in Autodesk Vault.

Record the **Mooring Serial Number** at the top of the results document.



Fill in the **Test Conductor's Name** and the **Test Date** at the top of the results document.

## 9 Test

Conduct the test steps identified in the "Procedure" tab

## 10 Test Artifacts

- Copy any data files (with naming convention similar to Document\_Number-XXXXX-A.txt) created during testing.
- Upload the data file and the completed checklist document to the appropriate deployment folder on Vault:  
Vault \ Project\_Files \ I&V \ PLATFORM \ 3166-5\_Surface\_Mooring \ Completed\_Checklists
- Notify cgsncm@whoi.edu to lock documents in Vault and release to Alfresco.

|   |                         |   |
|---|-------------------------|---|
|   |                         | <h2>Integration Checklist</h2>                                      |
| Document Number<br><b>3166-50211</b>  | Revision<br><b>1-00</b> | Title/Description<br><b>Surface_Mooring_Initial_Power_Checklist</b> |
| Results Document Number   |                         | Mooring Serial Number   |
| Test Date   |                         | Test Conductor  |

| Objective | Pass/Fail | Operation |
|-----------|-----------|-----------|
|-----------|-----------|-----------|

This procedure assumes that all subassemblies used have already been tested for proper operation. It also assumes that the battery tray and batteries have been wired properly and installed within the well and are fully charged. The Leak Detectors are installed. Additionally, the first shelf containing the METBK(s), FBB Enclosure, Backup Batteries, and the WAVSS have been properly installed.

Temporarily, the Platcon, ESE, (2) DGH's, (2) RKI Hydrogen Sensors, and PSC should be located on a table next to the well, ready for interconnections to avoid having to remove the top shelf in the event a problem down below is discovered while bringing the systems up. Drape the Battery and Leak Detector cables over the side of the buoy well for now as they will be connected later in this procedure.

The Telemetry/Sensor tower should be nearby to allow connections as this test progresses, as should the NSIF and MFN DCL bottles.

**These tests can be done on a bench as opposed to within the well if desired.**

Inspect all connectors before trying to mate them.  
 Ensure they are clean and free of debris.  
 Ensure the pins are straight.  
 Do not force the connectors to mate; if they do not mate easily, something is wrong with keying or, possibly, bent pins

|                                      |                  |  |
|--------------------------------------|------------------|--|
|                                      |                  | Connect 'Riser' connectors (including Status panel) to Platcon. Make sure the magnet is installed to the face of the Riser J Box panel |
|                                      |                  | Connect 'sensor' cables to Platcon (internal and J Box)  |
|                                      |                  | Connect Telemetry J Box connectors to Platcon  |
|                                      |                  | Connect test computer to available ethernet port on the Platcon  |
|                                      |                  | Connect cable 3701-00216 P5 to J5 on the PSC   |
|                                      |                  | Connect one battery cable to the PSC   |
|                                      | nominally +25vdc | Confirm buss voltage on 3701-00216 pins E (pos) and F (neg).   |
|                                      |                  | Remove battery cable from PSC  |
|                                      |                  | Connect cable 3701-00216 P81to J81 on the Platcon  |
|                                      |                  | Connect all battery cables to the PSC  |
|                                      |                  | 3701-00213 to J2<br>3701-00212 to J1<br>3701-00214 to J3<br>3701-00215 to J4   |
|                                      |                  | Confirm 2 green LEDs are illuminated on the Status panel indicating the presence of buss voltage on both CPMs                          |
|                                      |                  | Remove the magnet from the Riser panel   |
|                                      |                  | Observe LEDs on the Riser panel and master CPM to confirm power is enabled   |
|                                      |                  | After a few minutes, the system will have loaded normally and the operator can log on to CPM1 with the test computer                   |
| <b>Place system in a 'test' mode</b> |                  |  |
|                                      |                  | To keep the normal mission file from 'stepping on' the checks that follow, turn off heartbeats via ucmd by issuing <code>_hboff</code> |
|                                      |                  | Stop all processes from "current" directory prompt issue <code>./stop</code>   |

|                                      |                         |   |
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| Results Document Number              |                         | Mooring Serial Number   |
| Test Date                            |                         | Test Conductor  |

| Objective                                    | Pass/Fail           | Operation   |
|--|---------------------|---|
|  |                     | Start the supervisor process from "current" directory prompt, issue ./start supervisor  |
| <b>Check power to telemetry</b>              |                     |   |
|  |                     | Connect the telemetry cable to the appropriate connectors on the Telemetry J Box. Do not connect the cable to the telemetry bottles, voltages are checked at that end   |
|  |                     | Power up each telemetry channel and confirm the correct voltage and polarity  |
|  |                     | This must be repeated for both the Master and the Backup CPM1 telemetry sets  |
|  | <b>PRIMARY CPM1</b> |   |
|  | nominally +4vdc     | 3712-00154 GPS pins 5 (+) and 1 (-)   |
|  | nominally +5vdc     | 3712-00155 SBD pins 4 (+) and 1 (-)   |
|  | nominally +12vdc    | 3712-00156 RFM pins 5 (+) and 1 (-)   |
|  | nominally +12vdc    | 3712-00157 ISU pins 8 (+) and 7 (-)   |
|  | nominally +12vdc    | 3712-00160 WiFi pins 3 (+) and 1 (-)  |
|  | <b>BACKUP CPM1</b>  |   |
|  | nominally +4vdc     | 3712-00154 GPS pins 5 (+) and 1 (-)   |
|  | nominally +5vdc     | 3712-00155 SBD pins 4 (+) and 1 (-)   |
|  | nominally +12vdc    | 3712-00156 RFM pins 5 (+) and 1 (-)   |
|  | nominally +12vdc    | 3712-00157 ISU pins 8 (+) and 7 (-)   |
|  | nominally +12vdc    | 3712-00160 WiFi pins 3 (+) and 1 (-)  |
|  |                     |   |
|  |                     | Prior to checking connections to the NSIF and MFN, it is assumed that all of the Riser components are in place (EM Chain, EM Cable, Stretch hoses, etc. as applicable to the deployment site. Do not connect the cable to the NSIF of MFN bottles, voltages are checked at that end |
| <b>Check power and comms to NSIF and MFN</b> |                     |   |
| <b>Check power to the NSIF</b>               |                     |   |
|  | nominally +25vdc    | At the end of the EM Chain on the connector that connects to JC 100 of the NSIF bottle, pins 11, 12, and 13 (+); pins 14, 15, and 16 (-)  |
|  |                     | At CPM1, use ucmd to turn off the NSIF _pwroff dcl6   |
|  |                     | Connect the EM Chain connectors to the JC100 and the ethernet connections on the NSIF   |
|  |                     | At CPM1, use ucmd to turn on the NSIF _pwron dcl6   |
|  | log on successful   | after no more than 5 minutes, the operator should be able to log on to the NSIF via ssh   |
|  |                     |   |
| <b>Check power to the MFN</b>                |                     |   |
|  |                     | On the Riser panel, install the HV INTLK jumper   |

|                                      |                         |   |
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| <b>Results Document Number</b>       |                         | <b>Mooring Serial Number</b>  |
| <b>Test Date</b>                     |                         | <b>Test Conductor</b>   |

| Objective                         | Pass/Fail         | Operation   |
|-----------------------------------|-------------------|---|
|                                   | nominally +375vdc | On cable 3707-00670 pins 1, 2, and 3 (+); pins 4, 5, and 6 (-), confirm the presence of High Voltage  |
|                                   |                   | On the Riser panel, remove the HV INTLK jumper  |
|                                   |                   | Connect cable 3707-00670 to J 9 of the MPEA bottle. Connect the MFN CPM/DCL power cables to the MPEA at J1 (3706-00130 or 3706-00138) and J2 (3706-00131). Do not connect the cable to the MFN CPM/DCL bottles, voltages are checked at that end                                |
|                                   |                   | On the Riser panel, install the HV INTLK jumper   |
|                                   | nominally +28vdc  | On 3706-00138 or 3706-00130 confirm the presence of power at pins 3 and 4 (+); pins 1 and 2 (-)   |
|                                   | nominally +28vdc  | On 3706-00138 or 3706-00130 confirm the presence of power at pins 1, 2, and 3 (+); pins 5, 6, and 7 (-)   |
|                                   |                   | At CPM1, use ucmd to turn off the NSIF _pwroff dcl7   |
|                                   |                   | Connect the power connectors to the JC111 and the control connections on the MFN  |
|                                   |                   | At CPM1, use ucmd to turn on the NSIF _pwron dcl7   |
|                                   | log on successful | after no more than 5 minutes, the operator should be able to log on to the MFN via ssh  |
| <b>Check power to instruments</b> |                   |   |
|                                   |                   | Connect the instrument cable to the appropriate connectors on the J Box or DCL bottle. Do not connect the cable to the instrument, voltages are checked at that end   |
|                                   |                   | Using ucmd at each DCL, power on and off the instrument ports per the <u>DCL Channels and Cabling</u> and <u>Instrument Pinouts</u> tabs. DCLs, channels, pins, and expected voltages are given in the tabs. See 3102-00011 for the location of instruments on a given mooring. |

Appendix A - Additional Test Cables

