1.0 Executive Summary

1.1 Scope  This ICD covers the interface between the Racks WBS 4.8.1 and the Low Level RF WBS 4.6.1. The interface is physical and electrical, with Racks providing the space and power required for the LLRF.

1.2 Responsibilities

<table>
<thead>
<tr>
<th>WBS</th>
<th>Represented by</th>
<th>Responsible for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8.1</td>
<td>M. Ortega</td>
<td>preparing, maintaining, and approving ICD</td>
</tr>
<tr>
<td>4.6.1</td>
<td>S. Smith</td>
<td>supporting and approving this ICD</td>
</tr>
</tbody>
</table>

1.3 Interface Diagram

1.4 Interface Description

<table>
<thead>
<tr>
<th>Type</th>
<th>Location and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>LLRF Electronics are mounted in Racks</td>
</tr>
<tr>
<td>RF</td>
<td></td>
</tr>
<tr>
<td>Structural</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>120VAC and 24VDC power for electronics</td>
</tr>
<tr>
<td>Thermal</td>
<td>Heat rejected into racks from electronics</td>
</tr>
<tr>
<td>Special Fluid</td>
<td></td>
</tr>
<tr>
<td>Signal</td>
<td>Special EMI racks required</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
2.0 Applicable Documents

Location B062-111 CAPTAR Database Rack Layout
Location B062-112 CAPTAR Database Rack Layout
Location B062-113 CAPTAR Database Rack Layout
Location B062-131 CAPTAR Database Rack Layout
Location B062-132 CAPTAR Database Rack Layout
IL 293-130-08 8-Pack Cable Tray and Equipment Layout
GD-LLPene 8-Pack LLRF Rack Modifications

3.0 Interface Definition

3.1 Physical Requirements
Racks shall provide the 8-Pack racks B062-111, B062-112, B062-113, B062-131 and B062-132, with required internal power distribution and cooling, for installation of electronic equipment and intra-rack cabling. LLRF shall provide power supplies, front-end boxes, and all other electronic equipment and install in racks. Racks shall deliver racks to LLRF at a location TBD. After installation of equipment, Racks shall deliver the loaded racks to the NLCTA facility. The racks shall be located in the facility per drawing IL 293-130-08.

3.2 RF Requirements
None

3.3 Structural Requirements
None

3.4 Mechanical Requirements
None

3.5 Electrical Requirements
Racks shall procure racks. Racks shall install plugmolds and any other specified rack infrastructure in the racks per CAPTAR Rack Layouts Locations B062-111, B062-112, B062-113, B062-131, and B062-132. Racks shall provide means for EMI electrical safety grounding. Racks shall provide standard but separate CAMAC & VME crate power outlets as needed for each CAMAC module in addition to a plugmold for light utility. Racks shall paint and prepare the racks for installation, including any required modifications. The CAPTAR database shall be assumed to be correct on Milestone dated 4/10/02. Racks shall then provide the racks to LLRF for installation of electronic equipment at a location TBD.

LLRF shall monitor and confirm that the CAPTAR Database for these racks is correct by Milestone 4/10/02. LLRF shall provide a drawing, GD-LLPene, that defines modifications that are to be made to the racks. LLRF shall design inter-rack wiring.
employing EMI minimizing techniques and install equipment in the racks per CAPTAR Database.

Racks shall deliver the loaded racks to Building 062 ready for installation. Racks shall provide requirements for hoisting the racks into place. (Note: installation of the racks is expected to be performed by an electrical contractor under the purview of Cables.) After installation, Racks shall verify correct operation of rack infrastructure, such as grounding and electrical power.

3.6 Thermal Requirements
LLRF shall provide the thermal requirements of the electronic equipment to be installed in the racks. The CAMAC modules in the CAMAC crate require cooling that will be handled by the standard CAMAC crate cooling fan system. VME crates have integral fans for cooling. EMI shielded passive vent panels shall be provided.

3.7 Special Fluid Requirements
None

3.8 Signal Requirements
Racks shall provide EMI-type racks, and execute appropriate grounding for these types of racks maintaining EMI shielding per LLRF design requirements. Vent panels shall be EMI shielded.

3.9 Other Requirements
None

4.0 Verification
Placement of the LLRF equipment in the racks and correct wiring will be verified by inspection against latest revision of the CAPTAR Database and CAMAC Database. Operational readiness of the racks shall be verified by Racks by electrical or other testing after installation.

Final verification of operational readiness of LLRF electronic equipment shall be performed by LLRF.

5.0 Notes
TBD