

Enclosure D

Specification & Qualifiers

RFQ BG428294 – ARI LHe Cryo-cooling system.

The Contractor shall supply two LHe Cryo-cooling systems with the following components:

- 2x CKW21A compressor (or equivalent).
- 2x FC70 compressor (or equivalent).
- 2x sets of valves and fittings for plumbing of compressor pairs (or equivalent).
- 2x remote control manifold (or equivalent).
- 2x Cryocooler rack and acoustic paneling (or equivalent).
- 2x 10-ft flexible transfer line sets (or equivalent).
- 2x sets of all hoses, cables, etc. that are required to operate system (or equivalent).
- 1x cryostat to match the details and interfaces in the drawing on page 3 of this document (ARPES variant)
- 1x cryostat to match the details and interfaces in the drawing on page 3 of this document (RIXS variant)
- 2x “soft coil” cold fingers
- 2 sets of cold finger braids with mounting tabs
- 2 sets of rad. shield braids with mounting tabs
- 2x Lakeshore Model 336 4-channel controller.
- 2x UHV instrumentation bundles including:
 - Two Silicon Diode Sensors LS-DT-670B installed (one sensor for temperature control and the other for sample monitoring on 4 inch free length)
 - 50 ohm / watt rugged cartridge heater specified for in vacuum use. Easily field replaceable.
 - UHV 10 pin
 - All wires have kapton coated shielding
 - No tapes, adhesives or epoxy is used for installation
- Onsite installation and training of at least 2 days.

The Contractor shall supply the above mentioned items as a system capable of meeting the following specifications:

- ≤ 4.2 K temperature at the cold tip.
- 0.6W to 0.7W capacity @ 4.2K.
- $<1\text{E}-10$ mBar UHV compatible.
- Ultra low vibration ($<5\text{nm}$ of displacement).

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Qualifiers:

1. Offerers must provide a commercially available product meeting the performance specifications of the items identified above.
2. Will the Offerer provide the equipment as listed above with the specified manufacturer and item numbers?

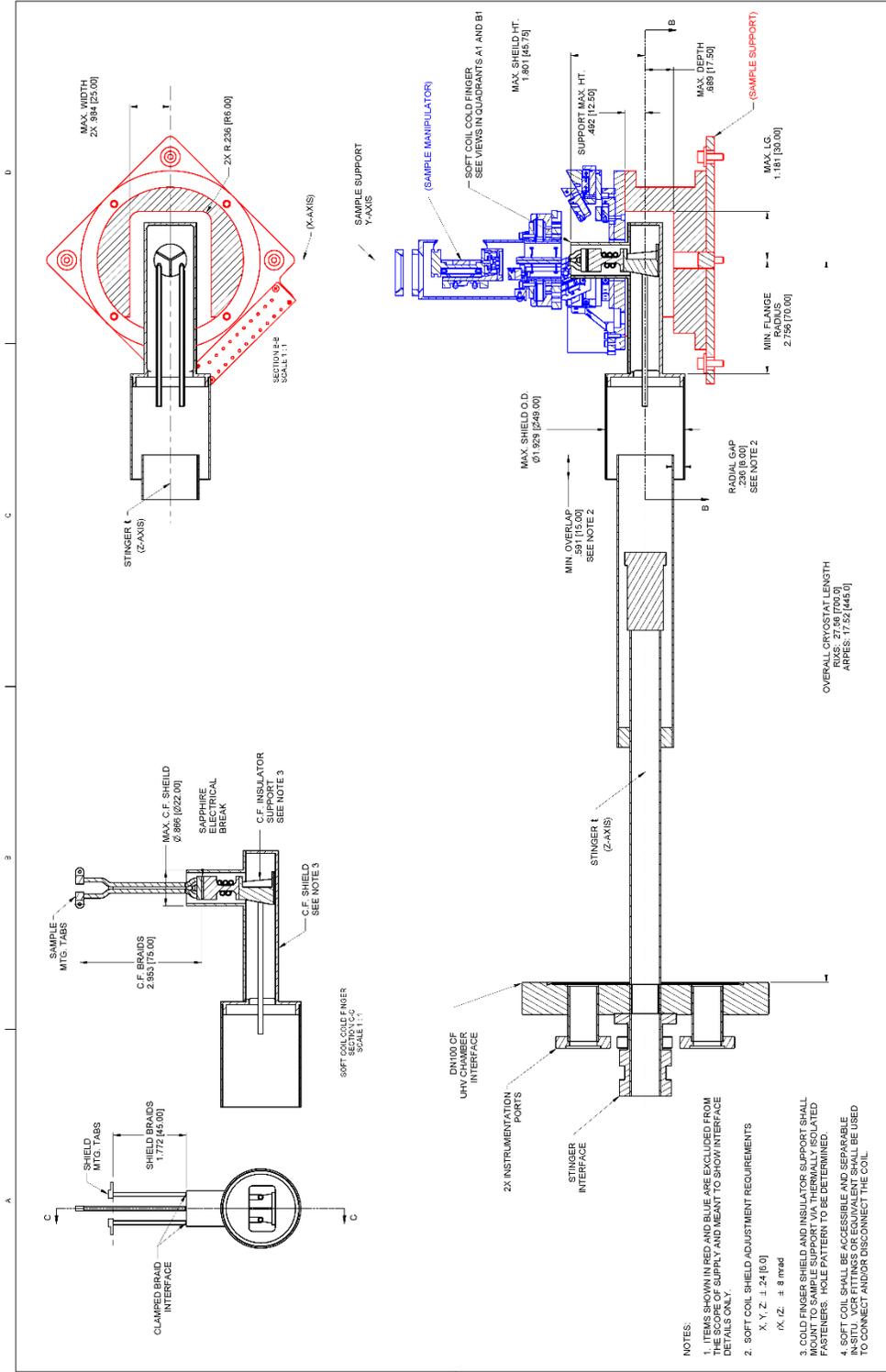
If no, Offerer shall submit a detailed specification, 3D model (in stp or step file format), and test report that illustrates equivalent requirements and performance.

1. Does the Offerer have previous experience manufacturing, assembling, and testing closed-cycle Helium cryostats of similar complexity for the items identified above?

If yes, the Offerer shall provide references for at least 3 successfully manufactured, assembled, tested and delivered closed-cycle He. Cryostat systems of similar complexity. The references shall include the name of the organization, contacts, phone numbers, and e-mail addresses.

Failure to provide the above information will render your offer non-responsive.

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- NOTES:
1. ITEMS SHOWN IN RED AND BLUE ARE EXCLUDED FROM THE SCOPE OF SUPPLY AND MEANT TO SHOW INTERFACE DETAILS ONLY.
 2. SOFT COIL SHIELD ADJUSTMENT REQUIREMENTS
X, Y, Z: ± .24 [6.0]
R, Z: ± .8 [20.0]
 3. COIL FINGER SHIELD AND INSULATOR SUPPORT SHALL MOUNT TO SAMPLE SUPPORT THERMALLY ISOLATED FASTENERS. HOLE PATTERN TO BE DETERMINED.
 4. SOFT COIL SHALL BE ACCESSIBLE AND SEPARABLE IN-SITU. VCR FITTINGS OR EQUIVALENT SHALL BE USED TO CONNECT AND/OR DISCONNECT THE COIL.

OVERALL CRYOSTAT LENGTH
RWAS: 27.66 [700.0]
APPES: 17.52 [445.0]