

Lawrence Berkeley National Laboratory University of California	Code	SPECIFICATION	Serial M939	Page 1 Of 2
Written by Craig Fong	Department Mech. Eng.	Location	Date May 17, 2000	
Title KamLAND Electronics Hut Procurement				

REVISION_0

CHECKED BY__CGF

DATE__06-29-00

1.0 Purpose:

This specification describes the design, fabrication, delivery and general requirements for an enclosure to house diagnostic electronics in an underground environment. The structure will be of bolted/welded construction and be shipped in a knock-down condition to LBNL, assembled, prepared, then disassembled and shipped to Kamioka, Japan for final installation. Background information on this project can be found at:

www.awa.tohoku.ac.jp/kamland
www-eng.lbl.gov/~luft/kam/

Look under 'Cable routing layout'

2.0 Reference Documents:

The following documents form a part of this specification herein:

- 2.1 LBNL Drawing Number 21F9023 Latest Revision
- 2.2 US National Electrical Code (NEC)
- 2.3 National Electrical Manufacturers Association Code (NEMA)

3.0 Requirements:

- 3.1 Application – the enclosure shall house high speed data acquisition electronics in an underground physics experiment located in a nickel mine in Kamioka, Japan. The enclosure will isolate the electronics from the potential spark ignition hazard of an accidental high concentration of vaporized mineral oil outside the enclosure. Per US NEC, the environment would be classified as Class I, Division 2. A combination of common mineral oil with pseudo-cumine is used as part of the facility.
- 3.2 Configuration – the enclosure shall comply to the configuration specified . by LBNL Drawing 21F9023.
- 3.3 Materials of Construction – shall be of mild steel. Seller to specify, LBNL to approve.
- 3.4 Method of Construction – to be bolted, riveted and welded, finished with compatible caulking to meet leak tightness specified herein. The shipped components must clear a cave corridor entering the installation site. Therefore, individual piece parts cannot be any larger than 7 feet by 9 feet by 3 feet for shipping and handling purposes. Any individual shipped package shall not weigh more than 500 pounds.
- 3.5 Weight Capacity – enclosure shall be rated for 6500 pounds of LBNL standard electronics racks. Racks will be bolted to enclosure floor by LBNL.
- 3.6 Spark Proof – though governing specifications for Japan mining operations for this hybrid application do not exist, the enclosure will comply with NEMA Class 1, Division 2 for electrical spark proof application as assembled at LBNL.
- 3.7 Personnel Access Air and Light Lock – a controlled access air/light lock for person entry and egress shall be provided by the seller. Air lock will allow

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the passage of one person with allowances for equipment, to routinely access the enclosure without allowing a free air or light passage between the inside and outside of the enclosure. An interlocked double door configuration is preferred. Seller to provide interlock mechanism and electrical, LBNL to provide final interlock electrical to the facility.

- 3.8 Emergency Exit/Access Door – an interlocked and alarmed door, used only in extreme emergencies such as fire, equipment or power failure, shall be provided. It will also be used for the installation phase. Seller to provide mounting and switch, LBNL to provide final wiring to the facility.
- 3.8 Cable, Accessory and Utility Interfaces – all cable and utility interfaces will be the responsibility of LBNL. Enclosure roof and sides shall be capable of accommodating dead loads to 50 pounds/square foot (or industrial standard) for occasional service personnel and permanently installed cable and tray. LBNL will install fire protection system, lighting, emergency lighting, convenience and primary power, water cooling lines, and conditioned air lines. LBNL shall assume responsibility for requirements of Section 3.6 for these interfaces.
- 3.9 Finish and knockdown – enclosure piece parts to be finished in seller's standard high gloss enamel or powder coat both inside and outside. Color and finish to be selected by LBNL at approval drawing phase. Enclosure to be assembled at seller's plant for pre-shipment inspection, then disassembled or knockdown (ed) for shipment to LBNL. Touch up paint to be provided by seller.

4 Documentation, Approval, Inspection and Delivery

- 4.1 Documentation – seller shall provide proposal drawings with the bid response package. Seller shall provide approval drawings after receipt of order.
- 4.2 Approval – LBNL shall approve seller provided drawings within three work days after receipt.
- 4.3 Inspection – LBNL shall perform a final technical inspection at Seller's facility prior to disassembly for shipment.
- 4.4 Weather Proof Packaging – shipped packages in knockdown condition shall be capable of withstanding one month of outdoor storage without damage from moisture.
- 4.5 Delivery – seller shall ship disassembled enclosure to Berkeley, California.

5 LBNL Procurement and Technical Contact

- 5.1 The LBNL Procurement Contact shall be that agent specified on the request for proposal bid package. The LBNL agent will administer any and all contract changes.
- 5.2 Technical Contacts – routine technical correspondence shall be directed to one or both of the following:

Craig Fong - Phone: 50-486-5298; Fax: 510-486-7678; e-mail: cgfong@lbl.gov

Leo Greiner – Phone: 510-486-7570; Fax: 510-486-7379; e-mail: lcgreiner@lbl.gov