

LBID-611
c.1



Lawrence Berkeley Laboratory

UNIVERSITY OF CALIFORNIA

Engineering & Technical Services Division

RECEIVED
LAWRENCE
BERKELEY LABORATORY

APR 21 1983

LIBRARY AND
DOCUMENTS SECTION

For Reference

Not to be taken from this room



LBID-611
c.1

DISCLAIMER

This document was prepared as an account of work sponsored by the United States Government. While this document is believed to contain correct information, neither the United States Government nor any agency thereof, nor the Regents of the University of California, nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or the Regents of the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof or the Regents of the University of California.

LAWRENCE BERKELEY LABORATORY - UNIVERSITY OF CALIFORNIA		CODE	SERIAL	PAGE
ENGINEERING NOTE		P40406	M5425C	1 of 3
AUTHOR	DEPARTMENT	LOCATION	DATE	
FRED PERRY	MECHANICAL ENGINEERING	BERKELEY	JANUARY 28, 1980	
PROGRAM - PROJECT - JOB				
PEP-4				

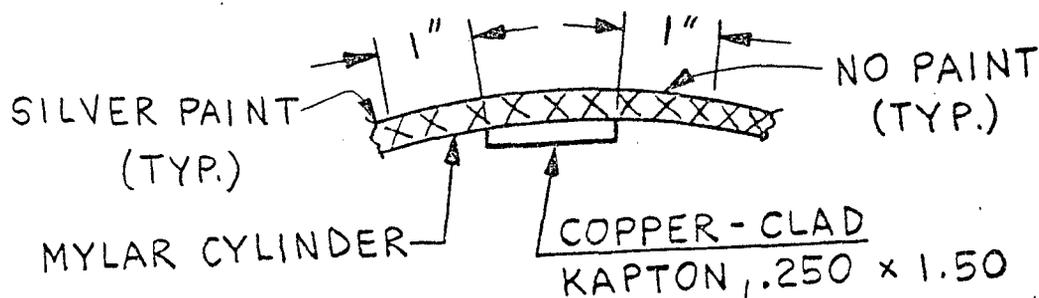
SMALL COARSE FIELD CAGE

TITLE

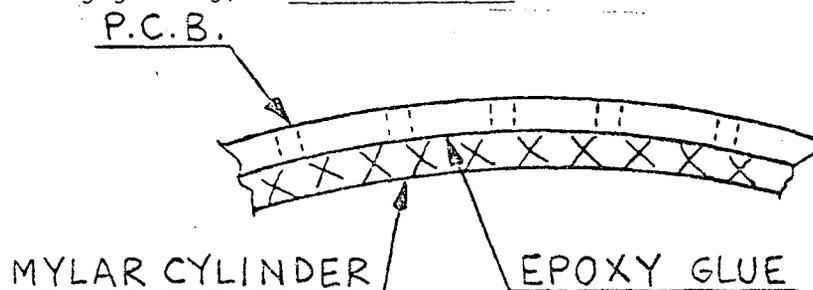
CONSTRUCTION PROCEDURE

C Rev. 2/10/81

0. (Assembly Shop) Fill with solder connection between lines on P.C.B. on top and bottom.
1. (Physics) Hi-pot ring to ring on insulator. Measure and record resistance of central and minor stripes on graded insulation.
2. (Physics) Clean both sides of P.C.B. with ethyl alcohol. After cleaning, always handle with clean gloves.
3. (Physics) Hi-pot board (each ring) before using.
4. (Machine Shop) Trim Mylar insulation to length (Drawing 20C3106). When trimming Mylar insulation to length, machine down to last layer, which is copper clad Kapton. Remove last few layers of Mylar by hand if necessary. (Leave copper clad Kapton and NEMA G-10 cylinder intact).
5. (Assembly Shop) Trim copper clad Kapton even with Mylar insulation, except leaving a small tab.



6. (Assembly Shop) Paint trimmed edge of Mylar insulator with conductive silver paint (supplied) except for 1" space either side of copper tap. Check for continuity.
7. (Assembly Shop) Rough up Mylar cylinder, use 320 or 400 garnet paper. Take care not to go too deep or hit silver painted center stripe. Clean cylinder with ethyl alcohol. Take care not to touch silver center line. After cleaning, always handle with gloves.
8. (Assembly) Locate predrilled printed circuit boards on Mylar cylinder, using P.C.B. aligning Bar Drawing 20C6214 taking care of alignment and orientation (Assy. Drawing 20C0046). Epoxy-glove on P.C.B. to Mylar cylinder (take care that no air is trapped between P.C.B. and Mylar cylinder during glueing). No air bubbles.



ENGINEERING NOTE

P40406

M5425C

2 OF 3

AUTHOR

DEPARTMENT

LOCATION

DATE

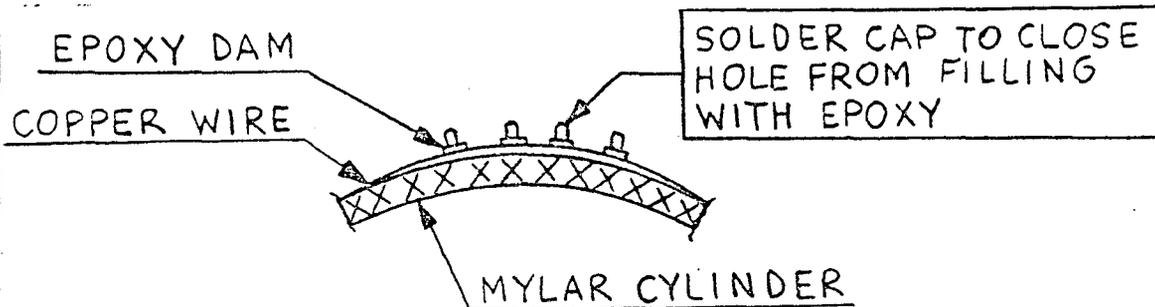
FRED PERRY

MECHANICAL ENGINEERING

BERKELEY

January 28, 1980

9. (Assembly Shop) Solder copper wires (supplied) to P.C.B., make sure 5mm spacing is uniform around cylinder, check for continuity. Press in brass tubes in holes. Check for straightness and angularity and solder to pads. Then place drop of solder on top of each tube to close off hole of tube (to prevent epoxy from filling hole during casting). Place a drop of epoxy around each brass tube and pad to form a dam for support.



10. Wrap insulator with .012 x 6" wide fiber glass tape 3/16 thick then place vacuum casting (Drawing 20C0516) cylinder over insulator and dummy rings and seal. Check for vacuum.
- 10a. Pull vacuum for one day in order to dry out insulator.
11. 100 micron vacuum induce epoxy, cure epoxy at room pressure and a temperature of 80°C (176°F).
12. After curing remove dummy ring and casting cylinder. Check for continuity.
13. Machine cylinder to proper diameter and trim ends to proper length and deburr holes in brass tubes. (DO NOT use a drill to deburr brass tubes, use small counter sink by hand with little pressure.)
- 13a. Break key in mandrel to partially collapse it.
14. Check for continuity, hi-pot between rings.
15. Outer Kapton preparation:
- Measure continuity of each line.
 - Inspect sections - copper pieces, line width, delamination wrinkles etc.
 - Cut out bad sections (lengthwise).
 - Clean with ethyl alcohol.
 - After cleaning handle with gloves.
 - Hi-pot each ring.
16. Glue on 20mm spaced copper trace Kapton with epoxy Epon 820, Versamid 140 (no bubbles).
17. Solder in pins and solder to Kapton (with hi-temp solder).
18. Check continuity.
19. Solder wires between pins in same ring; solder copper lines (of same ring) together where Kapton meets itself.

ENGINEERING NOTE

P40406

M5425.C

3 of 3

AUTHOR

DEPARTMENT

LOCATION

DATE

Fred Perry

Mechanical Engineering

Berkeley

November 1979

20. Check continuity and hi-pot.
21. Glue on Nema end ring, membrane supports, fine field cage supports etc.
22. Remove mandrel.
23. Glue on stainless steel end rings.

This report was done with support from the Department of Energy. Any conclusions or opinions expressed in this report represent solely those of the author(s) and not necessarily those of The Regents of the University of California, the Lawrence Berkeley Laboratory or the Department of Energy.

Reference to a company or product name does not imply approval or recommendation of the product by the University of California or the U.S. Department of Energy to the exclusion of others that may be suitable.

TECHNICAL INFORMATION DEPARTMENT
LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA 94720