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LINAC HIGH VOLTAGE CABLE ASSEMBLY

R. Damm

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Collider Accelerator Department
Brookhaven National Laboratory

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BROOKHAVEN NATIONAL LABORATORY
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Most H.V. cables and terminations fail due to corona. The source of this corona may be poor design of cable or termination, voids in the dielectric and/or poor assembly procedures.

The rf system of the 200 MeV linac uses 60 kV dc for its primary source of power. The entire system uses approximately 60 cable assemblies for this 60 kV power. After some failures and long delivery delays of cable spares, a cable repair technique was developed at BNL.

The assembly technique developed utilized most of the design of the original (Rowe) connector. The resultant cable assembly conforms to BNL specification #AGSCD 482. This procedure refers to BNL DWG D24-M-2152-4. The cable is detailed on BNL DWG D24-M-2179-3.

When dressing the cable end as shown on 2179 care should be taken to trim all loose braid wires, remove cut pieces of wire and ensure that all semi-conductive material (black RTV) is removed from the cable dielectric (white RTV). Acetone or freon may be used as a degreasing agent. Semi-conductive material may be removed with a sharp knife or sanding. No cuts in the surface of the dielectric should be allowed.

Part-2158 is soft soldered to the inner conductor. All flux and excess soft solder should be removed.

The cable strain relief, item 5, along with parts-2173 and 2168, are placed on the cable.

-2169 is next located on the cable, seated against the outer cable covering.

-2151 is slid over the braid and seated against -2169. The braid is now flared out.

-2153 is now placed on cable. The braid is trimmed flush with the OD of -2153.

-2170 is now placed on the cable and is fastened to -2169.

Part -2166, -2167, and 2156 are preassembled. -2166 and -2156 should be insulated from each other. The dielectric tape on the cable insulates the two parts from being shorted together by the semi-conductive layer. The three piece assembly is placed on the cable and fastened to part -2169. A resistance measurement should be taken at this time to ensure electrical insulation.

-2154 is placed on the cable and the inner braid is shaped over its leading. (radius) edge. The excess braid is trimmed as required.

-2155 is now placed on the cable and fastened to -2156. (2155 and 2158 should be silver plated and primed with DC 1201 before assembly on cable. The silver and primer improve the adhesion of the RTV potting material.) No feather edges of the semi-conductive layer should extend beyond part -2155. The cable end is now ready for potting, using potting fixture shown on BNL DWG D-24-M-2175- 3.

Distr.: Department Administration
F. Kito
A. McNerney
A. Walker