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1            Scope:  
This specification describes the procedure used to produce Helical Magnet Beam Tube Assemblies.

2            Applicable Documents:

Helical Beam Tube	BNL Dwg. No. 12011169
RHIC Leak Check Procedure	CR-E-4703-0041

3            Requirements:

3.1          Material/Equipment

Alcohol	BNL E54075
Paper wipes	BNL I83312
Veeco Vacuum Pump /Leak Detector Model MS-17	

3.2          Safety Precautions:

3.2.1        Operators shall wear safety glasses with side shields, or goggles.

3.2.2        Operators shall be trained by their cognizant technical supervisor and qualified in the operation of the required welding equipment.

3.2.3        No welding shall take place unless all welding screens are in place around the welding station, and all personnel not directly involved with the welding process are outside the screens. Any personnel inside the screens shall wear protective gear to prevent eye injury, and shall be clothed to prevent burns caused by intense ultra-violet light.

3.3          Procedure

### CAUTION

**Beam tube components may be damaged by improper handling. It must be supported to prevent permanent distortion during all wrapping operations.**

3.3.1        Inspect the beam tubes and transition tube for bends, kinks and surface damage such as deep scratches.

3.3.2        Clean the inner and outer surfaces of the beam and transition tubes with alcohol and clean wipes until no contamination is evident on the wipe.

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- 3.3.3 Weld assembly using filler wire 12010441-03. Argon purge assembly while welding.
- 3.3.4 Leak check completed assembly per CR-E-4703-0041. Max leak rate  $1 \times 10^{-11}$  Std cc/Sec He.
- 3.3.5 Verify dash # of assembly being produced and machine both ends of weldment to dimensions A & B shown on drawing 12011169. Prepare machined ends to drawing.
- 3.3.6 Verify inside of tube is clean and free of debris. Cap both ends of assembly.
- 3.3.7 Electro-etch part number at location shown on drawing. Use .18 high characters /MIL-STD-130.

4 Quality Assurance Provisions:

- 4.1 The Quality Assurance provisions of this procedure require that the technician shall be responsible for performing all assembly operations in compliance with the procedural instructions contained herein and the recording of the results on the production traveler.
- 4.2 The technician is responsible for notifying the technical supervisor and/or the cognizant engineer of any discrepancies occurring during the performance of this procedure. All discrepancies shall be identified and reported in accordance with RHIC- MAG-Q-1004.
- 4.3 Measuring and test equipment used for this procedure shall contain a valid calibration label in accordance with RHIC-MAG-Q-1000.

5 Preparation for Delivery:

N/A