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Contribution ID: **370** Type: **Poster Presentation**

FRIB Cryogenic Distribution System

Monday, 29 June 2015 09:00 (2 hours)

The MSU-FRIB cryogenic distribution system supports the 2 K, 4 K, and 35 K operation of more than 70 loads in the accelerator and the experimental areas. It is based on JLab and SNS experience with bayonet-type disconnects between the loads and the distribution system for phased commissioning and cryomodule maintenance. The linac transfer line, which features three separate transfer line segments for additional independence during phased commissioning at 4 K and 2 K, connects the folded arrangement of 49 cryomodules and 4 superconducting dipole magnets. The pressure reliefs for the transfer line process lines, located in the refrigeration room outside the tunnel/accelerator area, are piped to be vented outdoors. The transfer line designs integrate supply and return flow paths into a combined vacuum space. The main linac distribution segments are produced in a small number of standard configurations; a prototype of one such configuration has been fabricated at Jefferson Lab and has been installed at MSU to support testing of a prototype FRIB cryomodule.

Primary author: Dr GANNI, Rao (JLAB)

Co-authors: Dr CASAGRANDE, Fabio (MSU-FRIB); DIXON, Kelly (Jefferson Lab); Mr LAVERDURE, Nathaniel (Jefferson Lab); Mrs JONES, Shelly (MSU-FRIB); Mrs YANG, Shirley (Jefferson Lab); Mr NELLIS, Tim (MSU-FRIB)

Presenter: Mr LAVERDURE, Nathaniel (Jefferson Lab)

Session Classification: C1PoD - Cryogenic Distribution Systems

Track Classification: CEC-02 - Large-Scale Systems, Facilities, and Testing