



Fermilab

Particle Physics Division

Mechanical Department Engineering Note

Number: g-2-doc-1981

Date: June 10, 2014

Project: g-2 superconducting rings

Title: g-2 mandrel LHe piping engineering note

Author(s): Erik Voirin

Reviewer(s): Mark Adamowski *Mark Adamowski 08/01/14*

Key Words: Piping note, 31.3, ASME, 5031

Abstract Summary:

This document describes the LHe tubes in the g-2 cryostat rings, which were designed and installed in the g-2 cryostat at Brookhaven National Laboratory in the early 90's. The LHe tubes cool the aluminum superconductor containing mandrel which is Aluminum T6061-T6. The tube itself is Aluminum T6063-T52 and has a relief valve set to 100 psi. The design pressure is 291 psid, with the relief valves set lower since a large pressure rise is seen during the relief scenarios analyzed. This piping note analyzes the tubing and shows the system complies with FESHM 5031.1 and ASME 31.3 code for process piping for operational pressure/temperature design, as well as all relief scenarios, which include simultaneous complete loss of vacuum and magnet quench without consideration of the dump resistor.



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