

APPENDIX C

PRESSURE VESSEL ENGINEERING NOTE
 PER MANDATORY STANDARD SD37
 (CHAPTER 14.1, LAB SAFETY MANUAL)

Prepared by: W. Craddock
 Preparation date: January 21, 1985

5.1 Description and Identification

Fill in the label information below:

This vessel conforms to engineering standard SD37

Vessel Title Tohoku Bubble Chamber Magnet Vac Shell A&B

Vessel Number A)RD-1087 B)RD-1088

Vessel Drawing Number 2771-MD-156986

Maximum Allowable Working Pressure (MAWP) 19 PSID

Working Temperature Range 70 °F -320 °F

Contents Vacuum

Designer/Manufacturer W. Craddock/Fermilab
and Youngstown Welding

Test Pressure (if tested at Fermi) Acceptance
24 psig internal Date: 12/20/84

PSI, Hydraulic Pneumatic X

Accepted as conforming to standard by _____

 of Division/Section _____

NOTE: Any subsequent changes in contents, pressures, temperatures, valving, etc., which affect the safety of this vessel shall require another review and test.

← Obtain from
 Division/Section
 Safety Officer

← Actual signature
 required in this
 space

*Note: This vacuum vessel is not under the scope of Chapter 14.1. This document is included for consistency.

Reviewed by: *Peter Barbic* *See Note Date: 20 February 1985

Director's signature (or designee) if the vessel is for manned areas but doesn't conform to the requirements of the standard.

Date: _____

Lab Property Number(s): _____

Lab Location Code: NEU NCE (obtain from Safety Officer)

Purpose of Vessel(s): Vacuum shell for Tohoku Bubble Chamber Magnet

Vessel Capacity/Size: 22-9/32" IR x 45" OR x 15-7/8" high

Normal Operating Pressure (OP) 15 PSI external

MAWP-OP = 4 PSID

Is the above enough to provide relief cracking pressure tolerance plus system uncertainty tolerance per M-9. Yes

As an option, provide a photo of the entire vessel in the Appendix.

List the numbers of all pertinent drawings and the location of the originals.
(Append copies).

<u>Drawing #</u>	<u>Location of Original</u>
2771-MD-156986	35D Shabbona
2771-MD-56413	35D Shabbona
2771-ME-56410	35D Shabbona
2771-MC-156011	35D Shabbona
2771-ME-56411	35D Shabbona
2771-MC-156012	35D Shabbona

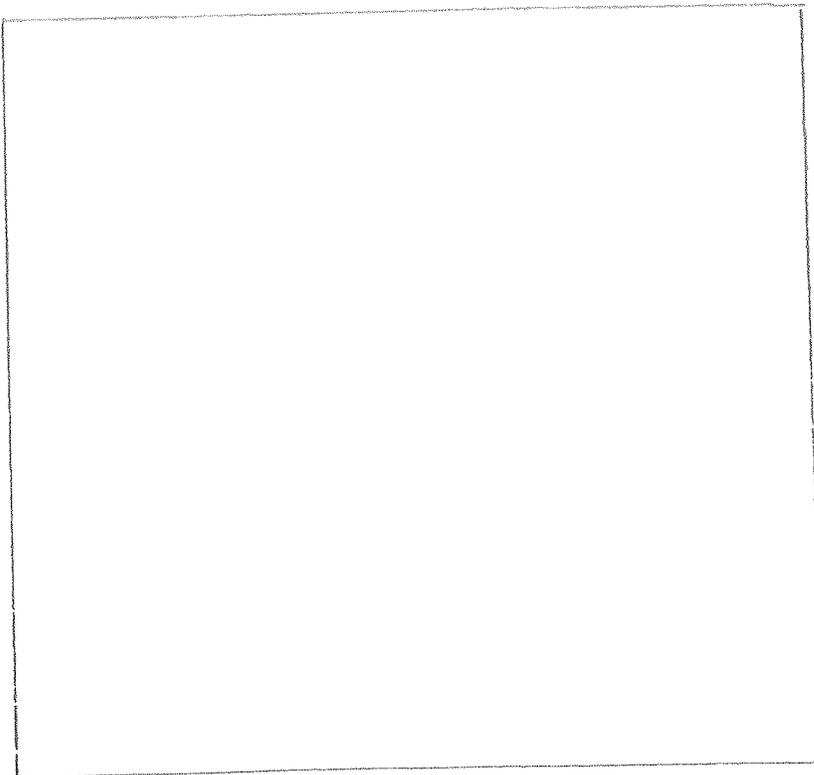
5.2 Design Verification

Does the vessel(s) have a U stamp? Yes _____ No X _____. If "Yes", fill out data below and skip page 3; if "No", fill out page 3 and skip this page.

Staple photo of U stamp plate below.

Copy "U" label details to the side if photo is not clear of if copies are unreadable.

Copy data here:



5.3 System Venting. Provide the system schematic in the Appendix, if the vessel safety is system sensitive.

Is it possible to isolate the relief valves by a valve from the vessel?

Yes _____ No X

If "Yes", the system must conform to M-5. Provide an explanation on the appended schematic. (An isolatable vessel, not conforming to M-5 violates the Standard.)

Is the relief cracking pressure set at or below the M.A.W.P.?

Yes X No _____ Actual setting 1 PSIG
(A no response violates the Standard.)

Is the pressure drop of the relief system at maximum anticipated flow such that vessel pressure never rises above the following? (UG 125)

Yes Vessel Inner Vac. 110% of MAWP (one relief)
No Shell 116% of MAWP (multiple reliefs)
& Vac/ Requires catastrophic 121% of MAWP (unexpected heat source)
Shell rupture of the fully pressure tested helium system.
Provide test or calculational proof in the Appendix.
(Non-conforming pressure rises violate the Standard.)

List of reliefs and settings:

<u>Manufacturer</u>	<u>Relief</u>	<u>Setting</u>	<u>Flow Rate</u>	<u>Size</u>
<u>All reliefs are installed on the connected LHe dewar.</u>				
<u>SEE: Tohoku B.S. Magnet Vacuum Shell Analysis</u>				
<u>Maximum Pressure Rise in Tohoku B.C. Magnet System</u>				
<u>Model of 30" Magnet Vacuum Relief System</u>				

Is the relief device an ASME stamped device? Yes _____ No X

5.4 Operating Procedure

Is an operating procedure necessary for the safe operation of this vessel?

Yes X No _____ If "Yes", please append.

5.5 Welding Information

Has the vessel been fabricated in a Fermilab shop? Yes X No _____

If "Yes", append a copy of the welding shop statement of welder qualification and a copy of the Welding Procedure Specification (WPS) used to weld this vessel.

5.6 Exceptional, Existing, Used, and Non-Manned Area Vessels

Is this vessel or any part thereof in the above categories? Yes X No _____

If "Yes", follow the Engineering Note requirements for documentation in free form below.