

APPENDIX C

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

Prepared by: Wes 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 Cryostat A&B

Vessel Number A)RD-1085, B) RD-1086

Vessel Drawing Number 2771-MD-156986 calculated cold MAWP

Maximum Allowable Design 1400 no electromagnetic loads

Working Pressure (MAWP) ~850 full electromagnetic loads PSI

Working Temperature Range 70 °F -454 °F

Contents LHe and LN2

Designer/Manufacturer W. Craddock/Fermilab
and Youngstown Welding

Test Pressure (if tested at Fermi) Acceptance A)1/4/85
Date: B)1/8/85

A) 95 psig (110 psid)

B) 93 psig (108 psid) Pneumatic X

Accepted as conforming to standard by
K. C. [Signature]

of Division/Section Research Div.

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

*** These vessels do not
meet the Chapter 14 require-
ments. See note to R. Lundy
24 February 1985

Reviewed by: [Signature] *** See Note Date: 28 February 1985

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

[Signature] Date: 3/5/85

Lab Property Number(s): _____

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

Purpose of Vessel(s): Contains LHe and provides structure for magnetic loads

Vessel Capacity/Size: 80 liter liquid helium

Normal Operating Pressure (OP) 3 PSI

MAWP-OP = ~850 PSI design or 86 psid limited by pressure testing and 1.25 derating factor

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-ME-56355 sheets 1 & 2	35D Shabbona
2771-ME-56354	35D Shabbona
2771-ME-156379 flow schematic	35D Shabbona

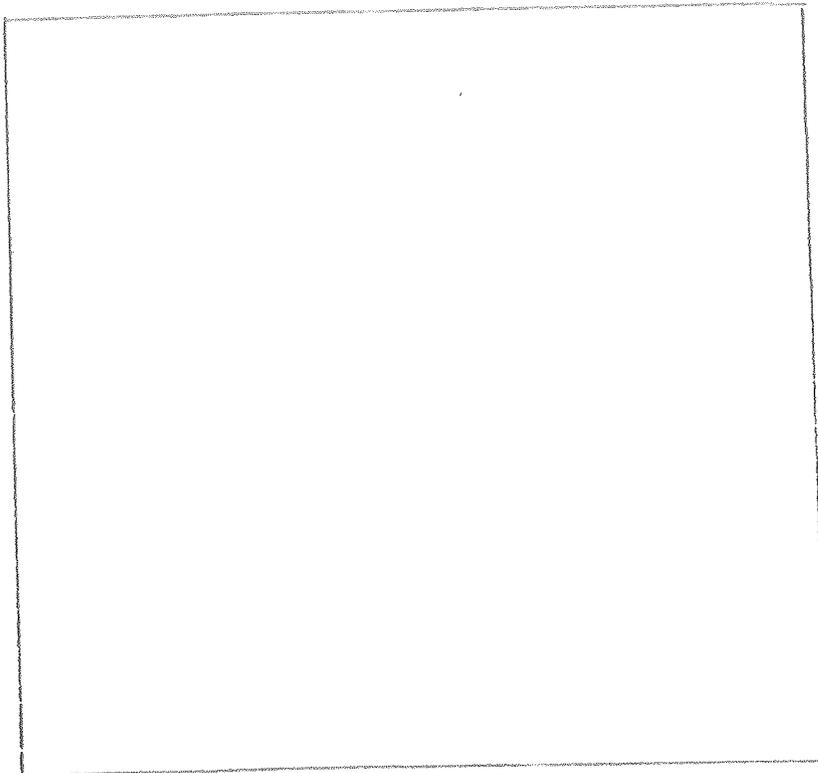
5.2 Design Verification

Does the vessel(s) have a U stamp? Yes _____ No . 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 or 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 5 PSI
(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 X No _____
110% of MAWP (one relief)
116% of MAWP (multiple reliefs)
121% of MAWP (unexpected heat source)

Provide test or calculational proof in the Appendix.
(Non-conforming pressure rises violate the Standard.)

List of reliefs and settings: All reliefs are installed on the connected LHe dewar.

<u>Manufacturer</u>	<u>Relief</u>	<u>Setting</u>	<u>Flow Rate</u>	<u>Size</u>
Fike	RD-01-H rupture disk	20 psig	See Appendix*	4"
Circle Seal	RV-03-H 280T-8PP-5	5 psig	See Appendix*	1"
Circle Seal	RV-02-H 249B-10PP-8	8 psig	See Appendix*	1-1/4"
Circle Seal (normal vent)	CV-01-H 119B-6PP	4" H ₂ O	See Appendix*	3/4"
Circle Seal	RV-01-H 533T-8M-2	2 psig	See Appendix*	1"
Fermilab (vac sys.)	PP-01-V	~1 psig	See Appendix+	6"
Cryolab (vacuum)	MV/RV-03-V 5V3-88-5W2	~1 psig	See Appendix+	1"

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.

*Maximum Pressure in the Tohoku Magnet System", Rev., Jan. 29, 1985, Sect. 1 to 8.
+Same as above Sect. 10.