

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 Liquid Helium

Vessel Number Storage Dewars A&B
A)RD-1081 B)RD-1082

Vessel Drawing Number 2771-ME-156354

Maximum Allowable 85 psid (70 psig) inner vessel

Working Pressure (MAWP) 26 psig Vacuum shell PSIX

Working Temperature Range 70 °F -454 °F

Contents LHe, (LN2 cooldown)

Designer/Manufacturer M. Mruzek/Fermilab

Test Pressure (if tested at Fermi) Acceptance Vac. 12/20/84
 Inner Ves. Inner Ves. Vac shell Date: InnerA 1/4/85
InnerB 1/8/85

psig	psid	psig intl.	Pneumatic
A)95	110	24	<u>x</u>
B)93	108	24	

K.C. Janfield
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 Ch. 14 requirements. See note to R. Lundy, 20 February 1985.

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

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

Alan M. Redner Date: 2-20-85

Lab Property Number(s): _____

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

Purpose of Vessel(s): Provides LHe for the Tohoku Bubble Chamber Magnet

Vessel Capacity/Size: 1300 liters

Normal Operating Pressure (OP) 3 PSIG

MAWP-OP = 67 PSIG

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.

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 PSIG
(A no response violates the Standard.) 1 psig vacuum shell

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

Inner Vessel No requires cata- 110% of MAWP (one relief)
& Vac Shell/ strophic rupture 116% of MAWP (multiple reliefs)
121% of MAWP (unexpected heat source)
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>
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"
Fermitlab (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 Fermitlab 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