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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 LN2 Buffer Dewars A&B

Vessel Number /(A)RD-1083; (B) RD-1084 ← Obtain from Division/Section Safety Officer

Vessel Drawing Number 2771-ME-156145

Maximum Allowable Working Pressure (MAWP) 60 psid (45 psig) inner vessel; 60 psid vacuum shell RSI

Working Temperature Range 70 °F -320 °F

Contents LN2

Designer/Manufacturer M. Mruzek/Fermilab

Test Pressure (if tested at Fermi) Acceptance Date: Vac. 12/20/84; Inner 1/4/85

Inner Ves. psig	Inner Ves. psid	Vac Shell psig
A) 60	75	24
B) 66	81	24

internal/Pneumatic X

Accepted as conforming to standard by: ← Actual signature required in this space

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.

***These vessels do not meet the Ch. 14 requirements. See note to R. Lundy, 24 January 85

Reviewed by: *** See Note [signature] Date: 31 January 85

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): Provides LN2 for the Tohoku Bubble Chamber Magnet

Vessel Capacity/Size: 70 liters

Normal Operating Pressure (OP) 7 PSIG

MAWP-OP = 38 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.

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

Drawing #	Location of Original
2771-ME-156145	35D Shabbona
2771-ME-156379 flow schematic	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 20 PSI G
(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)

Yes Inner Vessel & Vac. Shell No Vacuum Shell requires cata-stropic rupture of fully pressure tested LHe system.

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.) See Document "Maximum Pressure in the Tohoku Bubble Chamber Magnet System"

List of reliefs and settings:

Manufacturer	Relief	Setting	Flow Rate	Size
Fike	RD-04-N rupture disk	50 psig	See Appendix *	3/4"
Circle Seal	RV-06-N 533-T-8M-20	20 psig	See Appendix *	1"
Circle Seal (normal vent)	CV-02-N 280T-6PP	7 psig	See Appendix *	3/4"
Circle Seal (protects against high pressure fill and trapped volumes)	RV-07-N 559B-6M-30	30 psig	See Appendix *	3/4"
Fermilab (vacuum system)	PP-02-V parallel plate	∿ 1 psig	See Appendix +	2"
Cryolab (vacuum) (common other vac reliefs on the liquid He dewar and interconnecting lines)	MV/RV-06-V	∿ 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 _____ No X . 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.

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* "Maximum Pressure in the Tohoku Bubble Chamber Magnet System" Rev. Dec. 7th, 1983, S. [illegible]
+ Same as above Section 11.