APPENDIX C

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

Prepared by: J. Patrick Kelley

Preparation date: 24 September 86

5.1 Description and Identification

Fill in the label information below:

This vessel conforms to engineering standard SD37

Vessel Title CVM Pump Dewar Cryostat

Vessel Number RD 1148 ← Obtain from Division/Section Safety Officer

Vessel Drawing Number 303605

Maximum Allowable Working Pressure (MAWP) 46.7 PSIA (32 PSIG)

Working Temperature Range -452 °F 100 °F

Contents Liquid Helium

Designer/Manufacturer Cryodiffusion, Lery, France

Test Pressure (if tested at Fermi) Acceptance Date:

PSI, Hydraulic Pneumatic

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

of Division/Section Research Division

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

Reviewed by: Joe R Miller AD MECH SUPPORT Date: 10/3/86

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 NMS (obtain from Safety Officer)

Purpose of Vessel(s): Houses the LHe Pump's that supply LHe to the CERN Vertex Magnet in the Muon Laboratory

Vessel Capacity/Size: 450 liters

Normal Operating Pressure (OP) 18.9 PSI A

MAWP-OP = 27.8 PSID

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

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

Drawing #	Location of Original
CERN Dwg #303605	Originals are at CERN
CERN Dwg #324973	Copies are in the Res. Div.
" 303391	Cryogenic Dept. WH-11 Crossover
" 314001	"
" 313999	"

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.

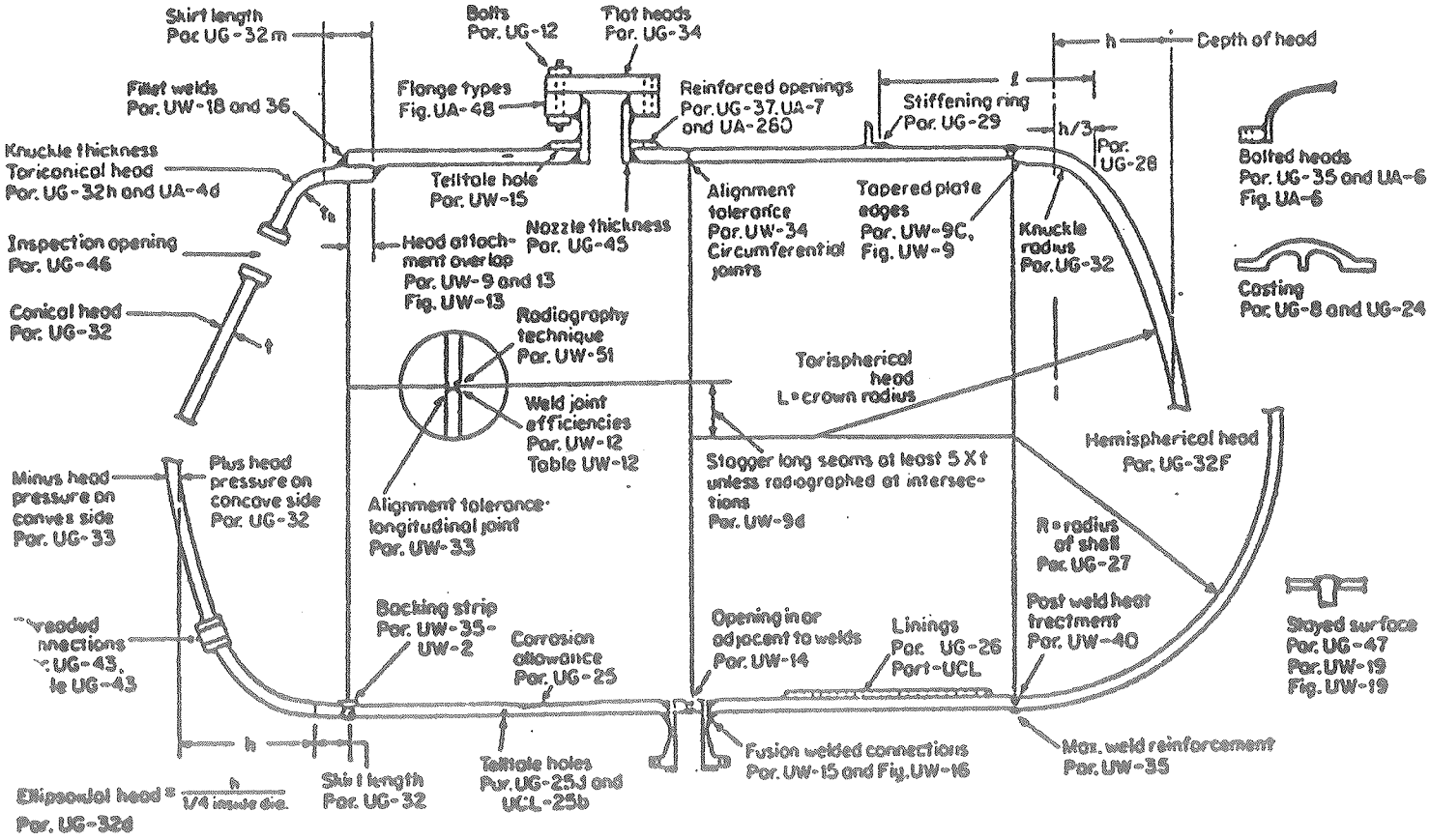
Staple photo of U stamp plate below.

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

Copy data here:

Vessel Is Not U Stamped

On the sketch below, circle all applicable sections of the ASME code per Section VIII, Division I. List the results of all calculations. (Insert copies of calculations in the appendix).



Summary of ASME Code

Item	Reference ASME Code Section	CALCULATION RESULT (Required thickness or stress level vs. actual thickness or calculated stress level)
	See the Attached	vs.
	Engineering Note	vs.
	(Muon Cryosystem	vs.
	Design Note #35)	vs.
		vs.

If this vessel is exceptional or had exceptional parts, list their details under 5.6. Yes_____ No X

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 32 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 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:

Manufacturer	Relief	Setting	Flow Rate	Size
Fike Metal Products, Corp.	CPV Rupture Disc	32 PSIG	See Eng Note 165 SCFM air ea.	4"
Circle Seal (6)	CC-5120-10MP-32	32 PSIG	990 SCFM air Total	.57" dia. Effective Square Edge Orifice Dia.

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_____ No X

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.