

**TECHNICAL APPENDIX FORM (TA5031.7) FOR MEMBRANE CRYOSTATS
 ENGINEERING NOTE PER CHAPTER 5031.7**

 Prepared by: _____
 Preparation date: _____

1. Description and Identification (Fill in the label information below):

THIS CRYOSTAT CONFORMS TO FERMILAB ES&H MANUAL CHAPTER 5031.7		
Cryostat Title	_____	
Cryostat Number	_____	
	(from Teamcenter)	
Cryostat Main Assy Drawing No.	_____	
Fluid Contents	_____	
	Internal to Membrane	External to Membrane
Design Pressure	mbar.d	mbar.d
Maximum Allowable Operating Pressure	mbar.d	mbar.d
Allowable Pressure Accumulation	mbar.d	mbar.d
Maximum Design Liquid Level	meters	NA
	<u>Minimum</u>	<u>Maximum</u>
Membrane Design Temperatures	K	K
Support Structure Design Temperatures	K	K
Allowable Number of Thermal/Filling Cycles: Membrane: _____ Structure: _____		
Designer / Manufacturer	_____	
Test Pressure (if tested at Fermilab) (per Chapter 5034 of the FESH&Q Manual)	Acceptance Date	_____
_____ mBarg Hydraulic _____	Pneumatic	_____
Accepted as conforming to FESHM 5031.7 by (Print D/S Head or Designee Name and lab ID#)		
_____	_____	
Of Division / Section / Project	_____	Date: _____

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

Support Structure Reviewed By: _____
(Print Name and lab ID #)Signature: _____ Date: _____
(If Teamcenter electronic Workflow approval is used instead of a physical signature note this in the signature blank)Cryostat Reviewed By: _____
(Print Name and lab ID #)Signature: _____ Date: _____
(If Teamcenter electronic Workflow approval is used instead of a physical signature note this in the signature blank)D/S Head or Designee: _____
(Print Name and lab ID #)Signature: _____ Date: _____
(If Teamcenter electronic Workflow approval is used instead of a physical signature note this in the signature blank)

Approvals Required for Exceptional Cryostats

Chief Safety Officer or Designee: _____
(Print Name and lab ID #)Signature: _____ Date: _____
(If Teamcenter electronic Workflow approval is used instead of a physical signature note this in the signature blank)Director or Designee: _____
(Print Name and lab ID #)Signature: _____ Date: _____
(If Teamcenter electronic Workflow approval is used instead of a physical signature note this in the signature blank)

Amendments should include a new TA5031.7 form with the signatures required to approve the amendment.

Lab Property Number(s): _____
 Lab Location Code: _____ (obtain from FESS FID Database)
 Purpose of Cryostat(s): _____

Cryostat Capacity: _____
 Cryostat Size (inner dimensions)
 Length: _____ Width: _____ Height: _____

List the numbers of all pertinent drawings and the location of the originals.

<u>Drawing #</u>	<u>Location of Original</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Summary of applicable codes, standards, specification, or recommended practices

System	Applicable code, standard, specification, or recommended practice
Metallic membrane vessel	
Foam insulation	
Secondary containment vessel	
Support Structure	
Top plate(s)	

2. Design Verification

Is this cryostat designed to meet FESHM 5031.7 and ALL of its Requirements?
 Yes ___ No ___

3. System Venting Verification

Attach or reference the vent system schematic showing the configuration of the pressure and vacuum relief devices as well as inlet and outlet piping sizes.

Schematic Location: _____

Attach or reference calculations for every credible failure scenario which may cause pressurization or vacuum resulting in a relief event.

Calculation Location: _____

Minimum Required Relief Capacity: _____

Referenced Codes & Standards: _____

Attach or reference calculations demonstrating the capacity of the pressure and vacuum relief system. Including references to allowable pressure accumulation for each credible failure scenario. Does the calculated capacity of the venting system also follow the requirements of 5031.7?

Yes ___ No ___

Calculation Location: _____

Calculated Relief System Capacity: _____

Referenced Codes & Standards: _____

Does the installation and configuration of the venting system and its pressure relieving devices follow the requirements of the Code(s)?

Yes ___ No ___

Referenced Codes & Standards: _____

A “no” response to either of the two preceding questions requires a justification and statement regarding what standards were applied to verify system venting is adequate.

List of pressure and vacuum relief device sizes and settings:

Manufacturer	Model #	Set Pressure	Flow Rate Capacity	Orifice Area	Discharge Coefficient	Type of stamp or mark (if any)

Has the pressure relief device information been entered into the lab wide database described in FESHM 5031.4?

Yes ___ No ___

4. Operating Procedure

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

Yes ___ No ___ (If "Yes", it must be appended)

5. Welding Information

Have the Welding Procedure Specification (WPS), Procedure Qualification Record (PQR), and Welder Performance Qualification (WPQ) records satisfying code requirements for all welds on the cryostat been attached to the Engineering Note?

Yes ___ No ___

Have all weld inspection, examination, and testing records required by FESHM 5031.7 and applied codes been attached to the Engineering Note?

Yes ___ No ___

6. Support Structure

Does the cryostat support structure meet requirements set in FESHM 5031.7 “Requirements”?

Yes ___ No ___

Are any actives measures (e.g. forced convection, heating tape) necessary to maintain external structure within allowable temperature limits?

Yes ___ No ___

7. Quality Control

Is the Quality Control and Acceptance Testing Plan document accepted and approved per requirements of FESHM 5031.7?

Yes _____ No _____

Is the Quality Control documentation required in FESHM 5031.7 Requirements Section 9 complete?

Yes _____ No _____

8. Exceptional Cryostats

Is this cryostat or any part thereof in the above category?

Yes _____ No _____