TECHNICAL APPENDIX FORM (TA5031.5) FOR LOW PRESSURE VESSELS
PRESSURE VESSEL ENGINEERING NOTE PER CHAPTER 5031.5

Prepared by: _____

Preparation date: _____

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

THIS VESSEL CONFORMS TO FERMILAB ESH&Q MANUAL CHAPTER 5031.5

Vessel Title _____

Vessel Number _____ ←**Obtain from Teamcenter**

Vessel Drawing No. _____

Maximum Allowable Working Pressure (MAWP)

   Internal Pressure _____

   External Pressure _____

Working Temperature Range _____ ˚F _____ ˚F

Contents _____

Designer / Manufacturer _____

Test Pressure (if tested at Fermilab)   Acceptance Date _____   ← **Document per Chapter 5034 of the Fermilab ESH&Q Manual**

_____ PSIG,   Hydraulic ____   Pneumatic ____

Accepted as conforming to standard by

_____ ←**Print D/S Head or Designee Name and lab ID#**

Of Division / Section / Center _____ Date: _____

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

Reviewed by: _____

<div align="center">(Print Name and lab ID #)</div>

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: _____

<div align="center">(Print Name and lab ID #)</div>

Signature: _____Date: _____

(If Teamcenter electronic Workflow approval is used instead of a physical signature note this in the signature blank)

Approvals Required for Exceptional Vessels

Chief Safety Officer or Designee:_____

<div align="center">(Print Name and lab ID #)</div>

Signature: _____Date: _____

(If Teamcenter electronic Workflow approval is used instead of a physical signature note this in the signature blank)

Director or Designee: _____

<div align="center">(Print Name and lab ID #)</div>

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 TA5031.5 form with the signatures required to
approve the amendment.
```

Lab Property Number(s):_____

Lab Location Code:_____ (obtain from safety officer)

Purpose of Vessel(s):_____

_____

Vessel Capacity/Size:_____ Diameter:_____ Length:_____

Normal Operating Pressure (OP)_____

MAWP-OP =_____PSI

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

Drawing #   Location of Original

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____
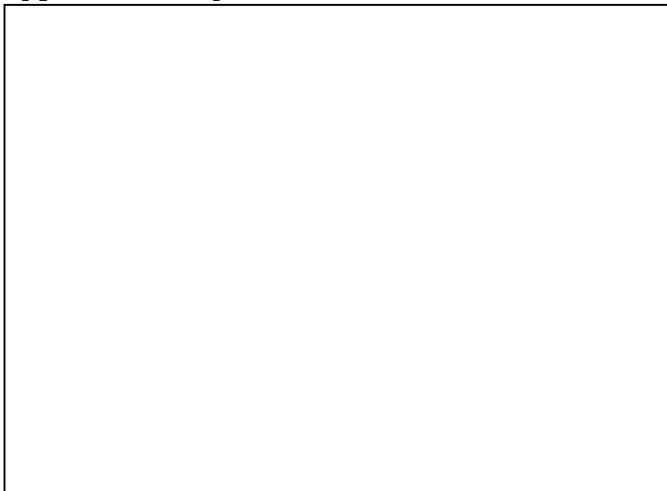
_____   _____

2.   Design Verification

       Is this vessel designed and built to meet the Code or "Experiment Vessel"
       requirements (see definition of the "Code" in FESHM 5031.5)?
       Yes___ __ No_____ Which Code(s)? _____

       If "No", state the standard that was used _____.
       Demonstrate that design calculations of that standard have been made and
       that other requirements of that standard have been satisfied.

       Does the vessel(s) have a Code stamp or mark? Yes_____ No__ ___.
       If "Yes", complete section 2A; if "No", complete section 2B.

       A.   Staple photo of Code stamp or mark plate below.
       Copy Code stamp or mark details to the side

                                                    Copy data here:

                                                    _____

                                                    _____

                                                    _____

                                                    _____

                                                    _____

                                                    _____

                                                    _____

                                                    _____

                                                    _____

                                                    _____

Provide ASME design calculations in an appendix. On the sketch below, circle all applicable sections of the ASME code per Section VIII, Division I. (Only for non-coded vessels)
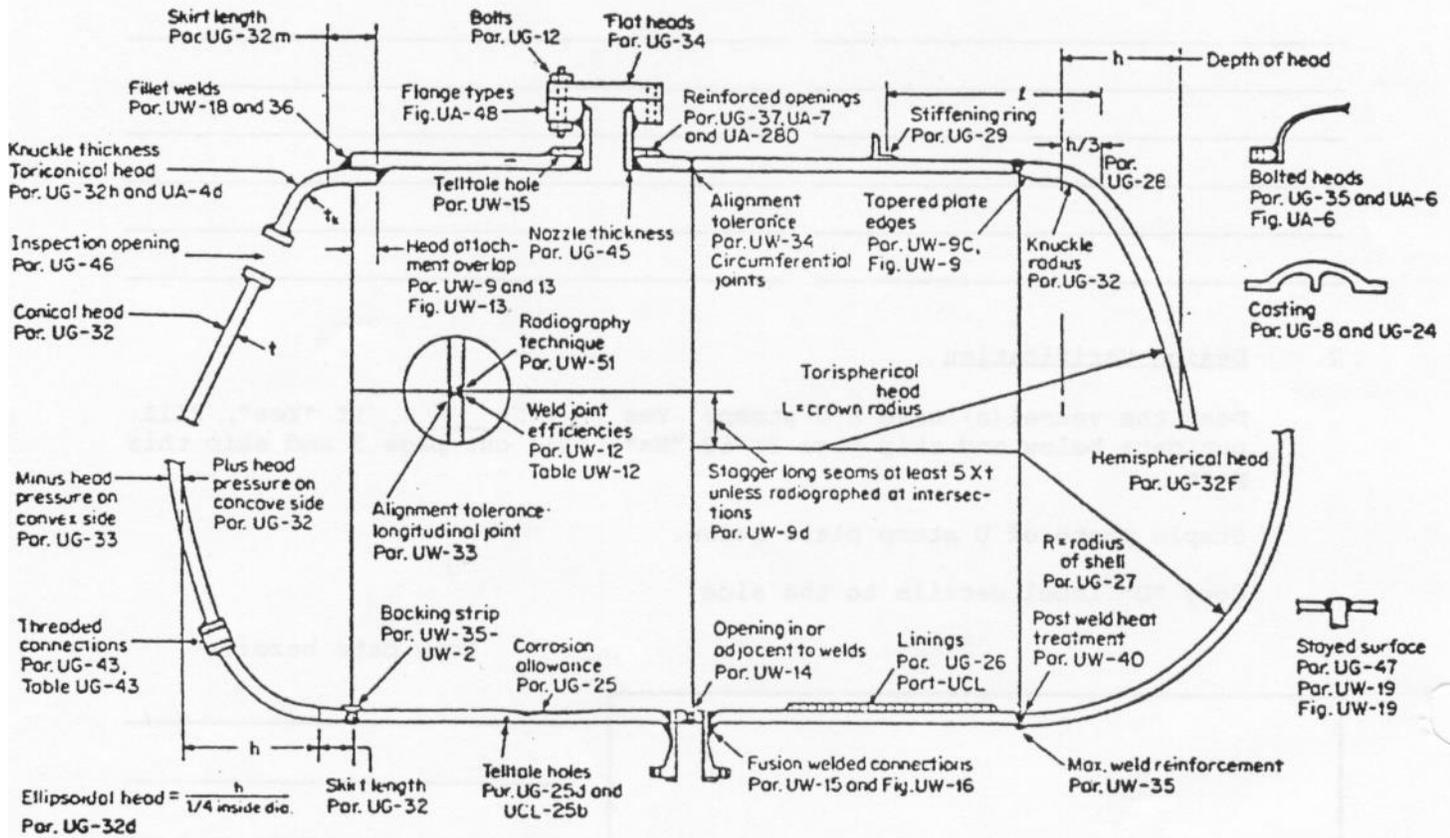

Figure 1. ASME Code: Applicable Sections

2B.

Summary of ASME Code

Item	Reference ASME Code Section	CALCULATION RESULT (Required thickness or stress level vs. actual thickness calculated stress level)
_____	_____	_____ vs _____
_____	_____	_____ vs _____
_____	_____	_____ vs _____
_____	_____	_____ vs _____
_____	_____	_____ vs _____

Alternatively, equilivalent information may be attached.

3. <u>System Venting Verification</u>

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: _____

Is the pressure relief device upstream pressure greater than the critical flow nozzle pressure for sonic flow as defined by API 520 Part 1 5.6.2.4?
Yes _____ No_____

Attach or reference calculations demonstrating the capacity of the pressure and vacuum relief system. Including references to the Code-allowable pressure accumulation for each credible failure scenario. Does the calculated capacity of the venting system also follow the requirements of the Code?
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 any of the three proceeding questions requires a justification and statement regarding what standards were applied to verify system venting is adequate.

<u>List of pressure and vacuum relief device sizes and settings:</u>

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 labwide database described in FESHM 5031.4?

Yes___ No___

4.   Operating Procedure

       Is an operating procedure necessary for the safe operation of this vessel?
            Yes_____ No_____   (If "Yes", it must be appended)

5.   Welding Information

       Has the vessel been fabricated in a non-code shop? Yes_____ No_____
            If "Yes", append a copy of the welding shop statement of welder
            qualification (Procedure Qualification Record, PQR) which references
            the Welding Procedure Specification (WPS) used to weld this vessel.

6.   Existing and Unmanned Area Vessels

       Is this vessel or any part thereof in the above categories?
       Yes_____ No_____

       If "Yes", follow the requirements for an Extended Engineering Note for
       Existing and Unmanned Area Vessels.

7.   Exceptional Vessels

       Is this vessel or any part thereof in the above category?
       Yes_____ No_____

       If "Yes", follow the requirements for an Extended Engineering Note for
       Exceptional Vessels.