SECTION 01 4115

PRESSURE SAFETY SUBMITTALS

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

LANL MASTER SPECIFICATION

|  |
| --- |
| Rev. 2 Summary of Changes  Updated citations for LANL Engineering Standards Manual (ESM) STD-342-100 Chapter 17, *Pressure Safety,* 09/22/2023 requirements. |

Word file at <https://engstandards.lanl.gov/specs>

This is not a typical LANL master. It is pressure system submittal requirements that the Design Agency must convey to the constructor/fabricator. When applicable, conveying this can be accomplished in several ways:

Option 1: Include this Section in the Specification while ensuring that (a) 01 4115 is invoked by the technical sections (in Div. 22, 23, 40, etc.) and (b) those Sections are clear that the submittals discussed here are always sent in per the affected Div. 02-48 section.

Option 2: Including applicable material herein on the drawings and/or in the Spec (again, delete all references to this Section in Spec book) (NOTE: Option 2 is the least desirable option).

This document captures LANL’s pressure system submittal requirements once (rather than in multiple sections) for LANL’s convenience in maintaining the requirements. It is provided as an aid to the design agency for providing a complete, compliant design that LANL can review and accept during the design phase. Delegation and deferment of said design requires LANL project engineer and pressure safety SME prior approval.

This template must be edited for each project. In doing so, Specifier must add job-specific requirements. Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.  Once the choice is made or text supplied, remove the brackets.  Also, edit to delete requirements for processes, items, or designs that are not included in the project -- and specifier’s notes such as these.

To seek a variance from requirements herein that are applicable, contact the Engineering Standards Manual Pressure Safety [POC](https://engstandards.lanl.gov/POCs.shtml). Please contact POC with suggestions for improvement as well.  
  
Section developed for ML-4 projects.  For ML-1, 2, and 3 applications, additional requirements might be necessary if increased confidence in procurement or execution is desired, and independent review is necessary. See LANL Engineering Standards Manual (ESM) STD-342-100 Chapter 1 Section Z10 specifications and quality material.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1. GENERAL
   1. SECTION INCLUDES
      1. Submittals required for projects involving pressure systems within the scope of [LANL Engineering Standards Manual (ESM) STD-342-100 Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17).
      2. This Section defines the *What* and *When* to submit. The *Where* to submit applies to Division 02-48 sections. For the *How* *to* submit, refer to Section 01 3300 *Submittal Procedures*; its Attachment A log further addresses *When*.
   2. RELATED SECTIONS

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Delete specification sections not applicable to project.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

* + 1. Section 01 4444, *Offsite Welding and Joining Requirements*
    2. Section 01 4455, *Onsite Welding and Joining Requirements*
    3. Section 01 4525*, Nondestructive Examination (NDE) Requirements*
    4. Section 01 4631, *Welding, Brazing, and Soldering of ASME B31 Piping*
    5. Section 01 4731, *Flange Assembly for B31 Systems*
    6. Section 11 5311.18, *Glovebox Atmosphere Regenerable Purification Systems*
    7. Section 21 1300, *Fire Suppression Sprinkler Systems*
    8. Section 22 0529, *Hangers and Supports for Plumbing Piping and Equipment*
    9. Section 22 0813, *Testing Piping Systems*
    10. Section 22 1500, *Compressed-Air Systems*
    11. Section 23 1123, *Facility Natural-Gas Piping*
    12. Section 23 2113, *Hydronic Piping*
    13. Section 23 2215, *Steam and Condensate Heating Piping and Specialties*
    14. Section 23 2300, *Refrigerant Piping*
    15. Section 23 6200, *Packaged Compressor and Condenser Units*
    16. Section 23 7413, *Packaged, Outdoor, Central Station Air Handling Units*
    17. Section 23 8123, *Computer-Room Air-Conditioners*
    18. Section 25 5000, *Integrated Automated Facility Controls*
    19. Section 33 5100, *Natural-Gas Distribution*
    20. Section 33 6300, *Steam Energy Distribution*
    21. Section 40 0504, *Process Piping*
    22. Section 43 4113, *Gas and Liquid Pressure Vessels*
    23. Section 43 4116, *Atmospheric Tanks and Vessels*
  1. REFERENCES
     1. ASME B31.1, *Power Piping*
     2. ASME B31.3, *Process Piping*
     3. ASME B31.5, *Refrigerant Piping and Heat Transfer Components*
     4. ASME B31.9, *Building Services Piping*
     5. ASME BPVC Section I, *Rules for Construction of Power Boilers*
     6. ASME BPVC Section IV, *Rules for Construction of Heating Boilers*
     7. ASME BPVC Section VIII Division 1, *Rules for Construction of Pressure Vessels*
     8. NFPA 54, *National Fuel Gas Code*
  2. SUBMITTALS

NOTE: The following information shall be submitted for all relevant components to the Div 02-48 section to which they apply.

*NOTE: submittal documentation defined below shall be identified with the Pressure System Identification Number (PSID).*

* + 1. Action Submittals
       1. Qualifications of welding and/or brazing procedures and welder/brazer/bonder performance per Sections 01 4444 and/or 01 4455.
       2. Qualification of Examiner(s) in accordance with the code of record and per Section 01 4525.
       3. Qualification of Examination(s) procedures in accordance with the Code of Record and per Section 01 4525.
       4. Qualification and evaluation of unlisted components or materials in accordance with the Code of Record.
       5. Certified Materials Test Reports showing material traceability, including weld filler, material tensile test results (where required by the code of record) and conformance with Code of Record.
       6. Unevaluated unlisted components used for construction. Selection of an item outside of the original approved design may be considered unlisted due to its component type or its material of construction. Such items shall be reviewed and approved as shown below.
          1. Items that are unlisted due to component type or material shall be reviewed and accepted in accordance with the project ASME code of record for appropriate piping installation, and the [ESM Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17), Section *PS*-*REQUIREMENTS*, 8.2 *ASME Unlisted, Specialty, Or Unique Components.*
          2. Alternately, if non-ASME (NASME) design basis is applied to the design, proof that components are on the reputable manufacturer list; see the [ESM Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17), Section *PS*-*REQUIREMENTS*, 8.4 *NASME Pressure System Design.*
       7. If there is an unstamped (non-code) item that is being selected or substituted where a stamped item is required, justification and the code-equivalent documentation must be supplied. See [ESM Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17), Section *PS*-*REQUIREMENTS,* 7.7 *Application Of Codes, Standards, or Documents Not Invoked by 10 CFR 851*.
       8. If a component (e.g., valve, pressure regulator, etc.) or pressure source (e.g., pump, compressor, gas cylinder) is changed during construction as a substitute which has an impact to the overpressure protection evaluation, the evaluation shall be resubmitted to account for evaluation input changes.
       9. An overpressure protection evaluation for every pressure system for any temporary configurations (e.g., pressure/leak testing).
          1. This evaluation may be a comparison using the LANL approved calculation. This calculation may be a comparison using the LANL-approved calculations, CALC-10-00-786-PSS-GEN-00001 Rev.0 or CALC-11-00-786-PSS-GEN-246 Rev.0 (or successors) for gas flows, CALC-10-00-786-PSS-GEN-207 Rev. 0 (or successor) for steam. MS Excel workbooks based on the calculations referenced are available via the [*ESM Chapter 17, Pressure Safety website Reference Data*](https://coe.lanl.gov/swref1/default.aspx?RootFolder=/swref1/Documents/Chapter%2017,%20Pressure%20Safety%20Reference%20Data&FolderCTID=0x012000DEB8C2F32D991F4492A3DCC650FA5044&View=%7bF2DA8B4A-02F8-4B91-BCD5-F6A126CE840A%7d).
       10. Deferred design information within the scope of pressure safety as applicable. Examples include piping supports, code evaluations like flexibility analyses, and flange assembly directions.
    2. Informational Submittals at Closeout

Pressure system fabrication documentation including information of “as-built” condition of pressure system(s), but are not limited to:

* + - 1. The fabricator shall provide the information with updated drawings or sketches as appropriate.
      2. The Design Pressure or pressure rating and Design Temperature or temperature rating for the bill of materials (all components) for the pressure system(s).
      3. Documentation of welds/brazes as required by the design and the code of record. If weld maps are used, they shall indicate the physical location of the weld.
      4. Weld/braze examination forms in accordance with [ESM Chapter 13, *Welding, Joining & NDE*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm13).
      5. Examination reports.
      6. Other non-destructive evaluation (NDE) data reports
      7. Inspection reports. [LANL Form 2305, *Pressure System Inspection*](https://irm.lanl.gov/forms/Shared/2305.docx), may be used to document the results of the inspection.
      8. Certifications required by the Code of Record; for example, ASME B31.3 Section 341.4.1 requires the examiner to provide the Inspector with a certification that all the quality control requirements of the Code and of the engineering design have been carried out.
      9. Mandatory records required by the Code of Record.
      10. Piping component and materials evaluation as required by the code of record where unlisted components are used for fabrication see paragraph 1.4 A.7.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

The Pressure Safety Implementation Plan (PSIP) will help the Design Agency define in the design (specs or drawings) the required fabricator submittals. Reference [ESM Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17)*,* Section *PS-REQUIREMENTS,* 2.0 *Pressure Safety Implementation Plan.*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

* + - 1. Pressure safety submittals required by [ESM Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17), Section *PS*-*Requirements*, and Attachment REQ-2, *New or Modified System Design Document Requirements.*
         1. For all pressure vessels, boilers, and ASME BPVC Section IV ‘HLW’ water heaters:

A complete copy of the manufacturer’s data report for code-stamped items [pressure vessels (U), power boiler (S), heating boiler (H), etc..] with the national board numbering and registration. A complete copy includes partial data reports for the supplied items. For example, an ASME form U or U-1 manufacturer’s data report for an ASME BPVC Section VIII, Division 1 for a compressor air receiver with national board registration number assigned on the data report.

* + - * 1. Relief device record of conformance (e.g., ‘UV’ stamp, etc.).
        2. Pressure and leak test plans and reports including instrument calibration records. Comply with the [ESM Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17)*,* Section PS-*REQUIREMENTS*, 10.3 *Pressure and Leak Testing* section. [LANL Form 2304, *Pressure and Leak Test Plan*](https://irm.lanl.gov/forms/Shared/2304.docx), may be used to document pressure and/or leak test plans and reports.
        3. Records of cleaning. Comply with [ESM Chapter 17, *Pressure Safety*](https://engstandards.lanl.gov/ESM_Chapters.shtml#esm17), Section PS-*GUIDE*, 8.0 *Cleaning*. Records of any additional cleaning for each item required by the design for the fabrication, for example oxygen cleaning meeting ASTM G93, *Standard Guide for Cleanliness Levels and Cleaning Methods for Materials and Equipment Used in Oxygen-Enriched Environments*, level 175A or cleaner.

1. PRODUCTS

Not used.

1. EXECUTION

Not used.

END OF SECTION

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Do not delete the following reference information:

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

THE FOLLOWING STATEMENT is FOR LANL USE ONLY

This project specification section is based on LANL Master Specification Section 01 4115, Rev. 2, dated June 27, 2024.