

Section PS-REQUIREMENTS

Rev. 1, 9/22/2023

Attachment REQ-2, New or Modified System Design Document Requirements

RECORD OF REVISIONS

Rev	Date	Description	POC	RM
0	9/17/2014	Initial issue	Ari Ben Swartz, <i>ES-EPD</i>	Larry Goen, <i>ES-DO</i>
1	9/22/2023	Redesignation of attachment numbers and titles (replaces ADMIN-1-4, New System Document Requirements). Revised to reflect changes to P101-34 and ESM Ch 17.	Ari Ben Swartz, <i>ES-FE</i>	Dan Tepley, <i>ES-DO</i>

Contact the Standards POC for upkeep, interpretation, and variance issues.

Chapter 17	<u>Pressure Safety POC</u>
-------------------	--

This document is online at <https://engstandards.lanl.gov>

This attachment summarizes the base set of design documentation required to review and approve pressure system designs. The “Required When” column specifies when any given row applies to a system. The two verification columns can be utilized by the designer and design reviewer as a checklist to acknowledge that all required documentation has been included in the documentation package. Items not applicable to the pressure system design may be marked as “N/A” in the verification columns.

Documentation Package Item	Required When	Designer Verification	Design Reviewer Verification
1. System drawings and schematics	Every Package		
2. Overpressure protection evaluations	Every Package		
3. Applicable Alternate Methods/Variations/Clarifications/Interpretations	The system or any item of the system has an applicable AM/V/C/I to the requirements of ESM Ch 17.		
4. Code Stamped Vessel Fabrication Documentation (i.e., American Society of Mechanical Engineers (ASME) Manufacturer Data Report)	The system contains a code stamped vessel.		
5. Non-ASME code Fabricated Vessel Information (code-equivalent Documentation)	The pressure system contains Non-ASME code stamped boilers and pressure vessels (which includes boilers, pressure vessels, heat exchangers, and accumulators).		

Section PS-REQUIREMENTS

Rev. 1, 9/22/2023

Attachment REQ-2, New or Modified System Design Document Requirements

Documentation Package Item	Required When	Designer Verification	Design Reviewer Verification
a. ASME code equivalent documentation for systems with pressure vessels which includes but is not limited to minimum wall thickness determination, corrosion allowance, weld efficiency rating, support structure loading, nozzle calculations. Calculations will use the material values specified in the ASME code.	A non-code boiler, pressure vessel, heat exchanger, and accumulator are in the pressure system package.		
b. Pressure/leak test procedures and test reports	Non-code boilers, pressure vessels, heat exchangers, and accumulators are in the pressure system package.		
c. Modification procedures/instructions	Modifications were made to non-code boilers, pressure vessels, heat exchangers, and accumulators in the pressure system package.		
d. Nondestructive evaluation (NDE) data reports	NDE was done to non-code boilers, pressure vessels, heat exchangers, and accumulators in the pressure system package		
e. Weld examination forms as described in ESM Chapter 13	Welding was done to non-code boilers, pressure vessels, heat exchangers, and accumulators in the pressure system package.		
f. Special calculations such as welding	Special calculations are performed for non-code boilers, pressure vessels, heat exchangers, and accumulators in the pressure system package.		
g. Vendor drawings	Piece parts are used to fabricate non-code boilers, pressure vessels, heat exchangers, and accumulators in the pressure system package.		
h. Vessel modification reports	Vessel is modified by other than LANL personnel.		
6. Pressure relief devices (PRD)	The pressure system contains a pressure relief device.		
a. Certified test data of relief valves, e.g., steam pressure safety valves are certified by NBIC coded shop	A PRD is modified or tested by an outside facility.		
b. Documentation of relief valve modification	A relief valve has been modified.		
7. Piping system documentation	The system contains pipe, tube, or other components not classed as boilers or vessels.		
a. Fabrication documentation	Fabrication is performed.		
b. Pressure/leak test procedures and test results	A pressure system package contains piping system components.		
c. Examiner qualification	Examinations are performed.		
d. Owner's Inspector checklist	Owner's Inspectors are required by ASME code.		
e. Modification procedures/instructions	Components of a system were modified from original construction.		
f. Nondestructive evaluation (NDE) data reports	NDE is performed on piping system components.		

Section PS-REQUIREMENTS

Rev. 1, 9/22/2023

Attachment REQ-2, New or Modified System Design Document Requirements

Documentation Package Item	Required When	Designer Verification	Design Reviewer Verification
g. Special calculations such as welds and orifices	A pressure system package contains piping system components that have been welded, modified with "home-made" orifices, or unlisted components.		
h. Corrosion allowance calculations per ASME B31G	Piping is used in corrosive fluid service.		
i. Code required design calculations e.g., flexibility analysis, pipe supports, wind loading, snow loading, and seismic loading. See specific code for additional detail. (e.g., B31.3 paragraph 319 and 321)	System dependent. For example <ul style="list-style-type: none"> • Flexibility analysis for design temperatures defined in ESM Ch 17 • Pipe support calculations for engineered piping supports • Wind/snow loading for piping outside • Seismic loading when required by safety basis 		
j. Weld examination forms in accordance with ESM Chapter 13, and special required examinations defined in the applicable code	Welding of pipe or tube in a pressure system package was performed.		
k. Weld in-process forms in accordance with ESM Chapter 13, and the most applicable code	When in-process examination of welding is used.		
l. Vendor drawings or sketches	A pressure system package contains vendor supplied systems, piping, or components.		
m. Unlisted component evaluation [per piping code of record (COR)] or use of Reputable Manufacturer List (when Non-ASME (NASME) applies)	Using an unlisted component in pressure system.		
8. Oxygen Hazards Analysis and Failure Modes and Effects Analysis (FMEA)	Pressure system is an oxygen system above 350 psig or as required by the chief pressure safety officer.		