



Conduct of Engineering Formal Clarification or Interpretation Request

Assigned by Responder: Clarification Interpretation

Tracking number CIR-26-001

Clarify	To make the CoE document or its references understandable and free from confusion
Interpret	To formally provide an acceptable method of compliance with the document or references

1.0 Request

Brief Title: Exclusion of Machinery and Processing Equipment from B31 Codes			
Affected Document Title, Number, and Rev. No. ESM Chapter 17 Section PS-REQUIREMENTS, <i>Pressure Safety Requirements for New and Modified System Design</i> , Rev. 1, 06/11/2025 and Attachment REQ-4, <i>Piping Code and Regulation Application</i> . This sitewide CIR will be posted to REQ-4; CIR can be considered superseded by revision of REQ-4 and/or P101-34 scope.			
Section/Article/Para and Existing Wording PS-REQUIREMENTS 7.2 APPLICATION OF ASME B31 AND NFPA PIPING CODES (Page 11 of 57) <i>Attachment REQ-4, Piping Code and Regulation Application</i> , contains a summary of the scope of ASME B31 and NFPA piping codes and their applicability to LANL. It is the responsibility of the Designer to assign the most applicable piping code(s) of record to their pressure system design, though Attachment REQ-4 provides guidance regarding the most common applications of the piping codes. PS-REQUIREMENTS REQ-4, <i>Piping Code and Regulation Application</i> Lists various codes scopes and LANL commentary about same.			
Inquiry (describe ambiguity or issue) Is machinery or processing equipment within the scope of ASME B31 code?			
Requestor (LANL employee) Ari Ben Swartz	Z Number 235211	Organization PFE-DO	Date 5/14/2026

2.0 Response by Safety (or Security) Management Program Owner Representative (SMPOR/POC)

No. The basis for the answer (which includes DOE, ASME, and other citations) follows, with selected excerpts below that.

DOE
DOE Record ID D06-12-002, Subject: enforcement of voluntary standards compliance.
The DOE response line Record ID D06-12-002, 851 enforcement of voluntary standards compliance states the following:
REGULATORY REVIEW1910.6 (a)(1) states " Incorporation by Reference ... The standards of ... organizations which are not agencies of the U.S. Government which are incorporated by reference ... have the same force and effect as other standards in this part. Only the mandatory provisions (i.e., provisions containing the word "shall" or other mandatory language) of standards incorporated by reference are adopted as standards ..."

ASME
B31.3 excludes pumps and compressors. B31.3 does not apply to processing equipment. [Interpretation Number B31.3-18-09](#) states that ASME B31.3 Code does not require multiple stage process equipment be defined as packaged equipment.

For B31.9, processing equipment is outside the scope. B31.9 also excludes pumps, and limits materials to nonflammable liquids to 350 psig or less.

10CFR851

10CFR851 Appendix A. 4, Pressure Safety, paragraph (a) requires safety policies and procedures to ensure that pressure systems applicable and sound engineering principles.

OTHER

Other standards cover machine safety. These include OSHA, ISO, and Hydraulic Institute standards; citations below.

The OSHA general duty clause of the Occupational Safety and Health Act of 1970 requires employers to provide a workplace free from recognized hazards that are causing or are likely to cause death or serious physical harm employees. The OSHA website (<https://www.osha.gov/machine-guarding/standards>) references the ANSI B11 standards for machine safety. For example, B11.6, Safety Requirements for Manual Turning Machines with or without Auto Control, would apply to a machine lathe.

Other standards cover hydraulics:

The USACE, NAVFAC, and AFCEC are the primary US Department of Defense (DoD) engineering and construction agents responsible for delivering infrastructure, supporting military missions, and managing facility life cycles. They collaborate on policies, such as the Unified Facilities Guide Specifications (UFGS). The Unified Facilities Guide Specification UFGS-[35 05 40.14 10](#) - HYDRAULIC POWER SYSTEMS FOR CIVIL WORKS STRUCTURES cites numerous codes and standards but not B31.3 or B31.9:

ISO 4413 (2010) Hydraulic Fluid Power — General Rules and Safety Requirements for Systems and Their Components

ISO 9461 (1992) Hydraulic Fluid Power - Identification of Valve Ports, Subplates, Control Devices and Solenoids

ISO 10763 (2020) Hydraulic Fluid Power - Plain-end, Seamless and Welded Precision Steel Tubes - Dimensions and Nominal Working Pressures

ANSI/NFLPA T3.16.2 (1997; Rev 1; Reapproved 2005) Hydraulic Fluid Power - Design for Nonintegral Industrial Reservoirs

REFERENCES and EXCERPTS

B31.3 2024

300.1 Scope

Rules for the Process Piping Code Section B31.31 have been developed considering piping typically found in petroleum refineries; onshore and offshore petroleum and natural gas production facilities; chemical, pharmaceutical, textile, paper, ore processing, semiconductor, and cryogenic plants; food and beverage processing facilities; and related processing plants and terminals.

300.1.1 Content and Coverage

(a) This Code prescribes requirements for materials and components, design, fabrication, assembly, erection, examination, inspection, and testing of piping.

(b) This Code applies to piping for all fluids, including

(1) raw, intermediate, and finished chemicals

(2) petroleum products

(3) gas, steam, air, and water

(4) fluidized solids

(5) refrigerants

(6) cryogenic fluids

(c) See Figure 300.1.1-1 for a diagram illustrating the application of B31.3 piping at equipment. The joint connecting piping to equipment is within the scope of B31.3.

300.1.2 Packaged Equipment Piping. Also included within the scope of this Code is piping that **interconnects pieces or stages within a packaged equipment assembly.**

300.1.3 Exclusions. This Code excludes the following:

- (a) piping systems designed for internal gage pressures at or above zero but less than 105 kPa (15 psi), provided the fluid handled is nonflammable, nontoxic, and not damaging to human tissues as defined in 300.2, and its design temperature is from -29°C (-20°F) through 186°C (366°F)
- (b) power boilers in accordance with ASME BPVC, Section I and boiler external piping that is required to conform to ASME B31.1
- (c) tubes, tube headers, crossovers, and manifolds of fired heaters that are internal to the heater enclosure
- (d) pressure vessels, heat exchangers, pumps, compressors, and other fluid handling or processing equipment, including internal piping and connections for external piping.

B31.9 2025

900.1 Scope

900.1.2 Services and Limits

(a) Services. This Code applies to the following building services, except as excluded in para. 900.1.3:

- (1) water and antifreeze solutions for heating and cooling
- (2) condensing water
- (3) steam or other condensate
- (4) other nontoxic liquids
- (5) steam
- (6) vacuum
- (7) compressed air
- (8) other nontoxic, nonflammable gases
- (9) combustible liquids including fuel oil

(d) Pressure Limits. Piping systems with working pressures not in excess of the following limits are within the scope of this Code:

- (1) steam and condensate: 150 psig (1 034 kPa gage)
- (2) liquids: 350 psig (2 413 kPa gage)
- (3) vacuum: 1 atm external pressure
- (4) compressed air and gas: 150 psig (1 034 kPa gage)

900.1.3 Exclusions. This Code does not apply to economizers, heaters, pumps, tanks, heat exchangers, and equipment covered by the ASME Boiler and Pressure Vessel Code (BPVC).

What is the [OSHA] General Duty Clause? From <https://www.osha.gov/machine-guarding/standards>

When Congress passed the Occupational Safety and Health Act of 1970, it bound private employers to comply with "occupational safety and health standards promulgated under this act."

Of course, OSHA's specific regulations (i.e., standards) didn't exist yet – they'd publish their first set the following year and continue posting hazard-specific rules throughout the years as they became aware of new workplace dangers.

In the meantime, there were significant loopholes for dangerous conditions that weren't explicitly banned yet. So Congress included a clause in the OSH Act that closed the gap.

Section 5a1 of the OSH Act (sometimes erroneously called Section 5a1 of the OSHA Act) says:

Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.

ANSI B11.6—2022, Safety Requirements for Manual Turning Machines with or without Auto Control

This standard specifies safety requirements for the design, construction, operation and maintenance (including installation, dismantling, and transport) of the general class of manually controlled horizontal and vertical spindle turning machines. Machines covered by this standard are intended to work metals and other man-made materials. This standard also applies to devices that are integral to the machine.

These machines may have automatic capability but may not be equipped with automatic part handling or bar-feed mechanisms nor automatic tool changing systems. This standard does not apply to NC Turning Machines where manual control is used only to set the machine for automatic production.

Manual turning machines utilize manually initiated steps to produce a part by rotating the workpiece against a stationary tool(s) such that the cutting force is from the workpiece and not the tool.

10CFR851

4. Pressure Safety

(a) Contractors must establish safety policies and procedures to ensure that pressure systems are designed, fabricated, tested, inspected, maintained, repaired, and operated by trained and qualified personnel in accordance with applicable and sound engineering principles.

...

(c) When national consensus codes are not applicable (because of pressure range, vessel geometry, use of special materials, etc.), contractors must implement measures to provide equivalent protection and ensure a level of safety greater than or equal to the level of protection afforded by the ASME or applicable state or local code. Measures must include the following:

(1) Design drawings, sketches, and calculations must be reviewed and approved by a qualified independent design professional (i.e., professional engineer). Documented organizational peer review is acceptable.

(2) Qualified personnel must be used to perform examinations and inspections of materials, in-process fabrications, non-destructive tests, and acceptance test.

(3) Documentation, traceability, and accountability must be maintained for each unique pressure vessel or system, including descriptions of design, pressure conditions, testing, inspection, operation, repair, and maintenance.

Name Ari Ben Swartz	Z Number 235211	Signature/Date Signature on file
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3.0 SMPO Approval (Standards Manual and code and regulation matters only, otherwise N/A)

Comments n/a		
Name Michael Richardson	Z Number 321622	Signature/Date Signature on file

Distribution (may be electronic): Requestor, SMPOR (POC), SMPO, CENG-OFF Program Manager