

Conduct of Engineering Request for Variance or Alternate Method

To display the *VAR Request Metadata* pane for this document, click **File > Info > Properties > Show Document Panel.**

1.0 General

1.1 Document Number: VAR-10317		1.2 Revision: 0					
1.3 Brief Descriptive Title: Certification of Legacy Pressure Safety Systems							
1.4 Affected Program: Engineering Standards		1.5 Request Type: Alternate Method					
1.6a Affected Tech Area 99		1.6b Affected Buildings MULT					
1.7 Requestor: Cereijo Ruiznavarro, Jorge C Organization: ES-55							
1.8 Revision History <table border="1"> <thead> <tr> <th>Revision Number</th> <th>Changes and Comments</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Initial issue.</td> </tr> </tbody> </table>				Revision Number	Changes and Comments	0	Initial issue.
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0	Initial issue.						

2.0 Affected Conduct of Engineering Program/Documents

2.1 Affected "P" Document: P342 Engineering Standards If against the P document itself, revision (or N/A): N/A	2.2 Subordinate or related document(s) [AP, master spec, LANL ESM chapter & section; or code, Order, standard, etc.]: Document Title/No.: Engineering Standards Manual STD-342-100 Chapter 17 Pressure Safety, Section ADMIN-1-3, Existing (Including Legacy) System Documentation Requirements. Revision 0.1 Document Title/No.: Enter text.. Revision Enter text.. Document Title/No.: Enter text.. Revision Enter text.. Document Title/No.: Enter text.. Revision Enter text..
2.3 Section/Paragraph: Text that precedes Table ADMIN-1-3-1ALT (pg 4)	
2.4 Specific Requirement(s) as Written in the Document(s): "REDUCED REQUIREMENTS (LOW RISK) System documentation requirements of Table ADMIN-1-3-1 may be reduced for legacy systems meeting the following criteria: <ol style="list-style-type: none"> 1. The pressure system is not subject to low-cycle fatigue (where significant plastic straining occurs). 2. High-cycle fatigue (where stresses and strains are largely confined to the elastic region) is controlled to less than 100,000 cycles for the life of the pressure system. 	

3. Corrosion is not a significant factor.
4. There are no stress intensification factors for examples cracks or acute angles of pressure boundaries.
5. The system components have exhibited extensive, successful service experience under comparable conditions with similarly proportioned components of the same or like materials.
6. The pressure system is not high pressure as defined by ASME B31.3 2010 Chapter IX.
7. The pressure system is fluid is not Category M fluid as defined by ASME B31.3 2010.
8. The pressure system fluid is not steam.
9. The pressure system does not operate in the creep range.
10. The pressure system is not an ASME Section I, IV, VIII, or XII stamped item or an unstamped item performing the same task (e.g. a code equivalent vessel).
11. ASME B31.3 Fluid Category Normal or D.

When the above criteria are met, the system must pass an initial service leak test at the normal system operational pressures. Then, Table ADMIN-1-3-1 items 7.b-f, 9.a-b, and 10 are not required and Table ADMIN-1-3-1 becomes Table ADMIN-1-3-1ALT as follows in the attachment."

2.5 Contractual, preference, or other basis for requirement in 2.4:

Certification is a self-imposed LANL process (defined in Section GEN Att GEN-1 and described by Section ADMIN-1) in which a Pressure Safety Officer (PSO) reviews pressure system information provided by the System Owner including the design (materials and components), fabrication, assembly, and erection, inspection, examination, and testing; it also includes ensuring the maintenance items have been added to the maintenance tracking system. The Chief Pressure Safety Officer (CPSO) or Deputy Chief Pressure Safety Officer (DCPSO) then reviews the documentation and, if he/she concurs, certifies the pressure system. The documentation requirements of the LANL Certification are in many cases in excess of minimum Code requirements; however, to better ensure the systems are compliant with code, these additional record requirements and reviews have been added.

2.6 Type of VAR from ESM Chap 1, Z10 [*Applies only to standards variances*)

Type 2

2.7 Discipline

Pressure Safety

3.0 Request Information & Comments

3.1 NCR required (work has occurred)? **No**

If Yes, NCR Number: [Enter text.](#)

3.2 System/Component Affected

OpSystem Acronym & Name **N/A**

System Number or Name **N/A**

3.3 Highest ML Level

ML-1

3.4 Proposal with Justification/Compensatory Measures:

Proposal

1. Provide for Low Risk Systems as described in ADMIN-1-3-1ALT that have exhibited good operating **history** the option of not requiring detailed information for the certification of legacy systems. Information previously captured during pressure safety walkdowns can be left in the Pressure Safety Database.

Good operating history is defined as service history of an existing pressure system where a record of successful service may be created by the System Owner confirming that no failures have occurred in

the system pressure boundary, that no pressure or temperature transients have occurred which exceeded the system design basis, and that personnel have not been harmed while operating or in close proximity to the system (from Att-GEN-1-R1).

2. Corrosive: For the text preceding Table ADMIN-1-3-1ALT (and elsewhere in Ch 17 where it is defined such as GEN-1), define "corrosive" as follows:

API 581 general corrosion loss levels are defined in terms of mills/year (mpy, see table below). At LANL, a fluid is considered corrosive when loss > 10 mill per year—or single exposure to the internal fluid can produce serious irreversible harm to persons on breathing or bodily contact, even when prompt restorative measures are taken.

<u>General Corrosion</u>	<u>Corrosion rate (mills per year)</u>
None/Inert	< 1
Mildly Corrosive	1 to 5
Moderately Corrosive	5 to 10
Severely Corrosive	10 to 20
Unpredictable or Localized	> 20

Change the Attachment ADMIN-1-3

REDUCED REQUIREMENTS (LOW RISK) (*shown above in box 2.4*)

from:

11. ASME B31.3 Fluid Category Normal or D.

to:

11. ASME B31.9, B31.5, and B31.3 Fluid Category Normal or D.

3. Modify Tables 1-3-1 SUM (Summary, and ADMIN-1-3-N to U as shown in the attachment.

The following two GEN-2, Exclusions from Program, pressure systems may also be processed with these instructions as well after being assigned a pressure system identification number.

"Chilled water systems (except radiation contaminated)"

"Control, instrument, and shop air or inert gas piping systems with MAWP not to exceed 150 psig and line sizes not to exceed NPS 3/8"

Justification

Certification is a self-imposed LANL administrative requirement in excess of code minimums whereby a Pressure Safety Officer (PSO) reviews pressure system design, fabrication, testing and maintenance and determines whether it is satisfactory; this ensures that worker health and safety requirements as outlined by 10 CFR 851 have been observed.

Modifying the language for certification of legacy systems will enable PSOs for same to complete their review and approval with a reasonable and appropriate level of effort and assurance.

This change still meets the requirements of 10CFR851. Employee safety will be addressed during the review process in accordance with the requirements of 10 CFR 851.21 and 851.22 (highlighted below). The processes identified in ESM Chapter 17 Section EXIST will be employed as required to mitigate pressure system hazards.

§851.21 Hazard identification and assessment.

(a) Contractors must establish procedures to identify **existing** and potential workplace hazards and assess the risk of associated workers injury and illness. Procedures must include methods to:

- (1) Assess worker exposure to chemical, **physical**, biological, or safety workplace hazards through appropriate workplace monitoring;

- (2) Document assessment for chemical, **physical**, biological, and safety workplace hazards using recognized exposure assessment and testing methodologies and using of accredited and certified laboratories;
- (3) Record observations, testing and monitoring results;
- (4) Analyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards;
- (5) Evaluate operations, procedures, and facilities to identify workplace hazards;
- (6) Perform routine job activity-level hazard analyses;
- (7) Review site safety and health experience information; and
- (8) Consider interaction between workplace hazards and other hazards such as radiological hazards.

(b) Contractors must submit to the Head of DOE Field Element a list of closure facility hazards and the established controls within 90 days after identifying such hazards. The Head of DOE Field Element, with concurrence by the Cognizant Secretarial Officer, has 90 days to accept the closure facility hazard controls or direct additional actions to either:

- (1) Achieve technical compliance; or
- (2) Provide additional controls to protect the workers.

(c) Contractors must perform the activities identified in paragraph (a) of this section, initially to obtain baseline information and as often thereafter as necessary to ensure compliance with the requirements in this Subpart.

§851.22 Hazard prevention and abatement.

(a) Contractors must establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner.

(1) For hazards identified either in the facility design or during the development of procedures, controls must be incorporated in the appropriate facility design or procedure.

(2) For existing hazards identified in the workplace, contractors must:

- (i) Prioritize and implement abatement actions according to the risk to workers;
- (ii) Implement interim protective measures pending final abatement; and
- (iii) Protect workers from dangerous safety and health conditions;

(b) Contractors must select hazard controls based on the following hierarchy:

- (1) Elimination or substitution of the hazards where feasible and appropriate;
- (2) Engineering controls where feasible and appropriate;
- (3) Work practices and administrative controls that limit worker exposures; and
- (4) Personal protective equipment.

(c) Contractors must address hazards when selecting or purchasing equipment, products, and services.

10CFR851 Appendix A Part 4:

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.

(b) Contractors must ensure that all pressure vessels, boilers, air receivers, and supporting piping systems conform to:

(listing of ASME BPVC Section and ASME B31 Codes)

3.5 Attachments

Modified Attachment ADMIN-1-3 (Tables 1-3-N through U)

3.6a Project ID N/A	3.6b: Project Name N/A	3.6c: Code of Record Date N/A
3.7 Duration: Lifetime	3.8a If Finite Period, Start Date: N/A	3.8b End Date: Click to enter a date

3.8c Provide the PFITS number for tracking removal/correction: N/A
3.9 USQD/USID required (Nuclear, High/Mod Hazard)? No If Yes, USQD/USID Number Click here to enter text.
3.10 QA Review for process change matters potentially affecting LANL's NQA-1 implementation Is a QPA Determination required?: No If Yes , then: Choose an item. QPA Comments: Enter text..
3.11 POC Determination: Accept POC Comments: Enter text..
3.12 Management Program Owner's (SMPO) Approval for P341 and APs; P342, ESM, ML-1 and -2, and Contract Matters; and P343 SMPO Determination: Accept Comments: Enter text..

4.0 Participant Signatures **NOTE:** DO NOT ADD NAMES FROM WITHIN WORD! Save and close the form first, then do 1-4 below:

1. From the SharePoint library, select the document, then click the **ellipsis (...)** in the second column; a small dialog appears
2. In the small dialog click the **ellipsis** again
3. Click **Edit Properties** and check out the document if prompted to Enter names using the controls provided, then **Save**

4.1 POC (Management Program Owner's Representative): Swartz, Ari (Ben)	Organization ES-EPD	Signature
4.2 Facility Design Authority Representative Cereijo Ruiznavarro, Jorge C FDAR signature not required <input type="checkbox"/>	Organization ES-55	Signature
4.3 LANL Owning Manager (FOD or R&D/Program) Mason, Robert Clifford FOD or Program Manager signature not required <input type="checkbox"/>	Organization TA55-DO	Signature
4.4 Quality Reviewer's Name: [QPAName] QPA review/signature not required <input checked="" type="checkbox"/>	Organization Enter text.	Signature

<p>4.5 Safety or Security Management Program Owner's Approval for P341 and APs; P342, ESM and Contract Matters; and P343</p> <p>Goen, Lawrence Kenneth</p> <p>SMPO signature not required (Type 1 variance) <input type="checkbox"/></p>	<p>Organization</p> <p>ES-DO</p>	<p>Signature</p>
<p>4.6 Additional Signer 1</p> <p>[AdditionalSigner1]</p> <p>Role: Enter text.</p>	<p>Organization</p> <p>Enter text.</p>	<p>Signature</p>
<p>4.7 Additional Signer 2</p> <p>[AdditionalSigner2]</p> <p>Role: Enter text.</p>	<p>Organization</p> <p>Enter text.</p>	<p>Signature</p>
<p>4.8 CoE Administrator Signature</p> <p>Salazar-Barnes, Christina L</p> <p>NOTE: The CoE Admin is always the last signature placed on this document. The date of that signing is the date of this document.</p>	<p>Signature</p>	