## 1.0 General

<table>
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<tr>
<th>1.1 Document Number:</th>
<th>VAR-10317</th>
<th>1.2 Revision:</th>
<th>0</th>
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1.3 Brief Descriptive Title: **Certification of Legacy Pressure Safety Systems**

<table>
<thead>
<tr>
<th>1.4 Affected Program:</th>
<th>Engineering Standards</th>
<th>1.5 Request Type:</th>
<th>Alternate Method</th>
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<table>
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<tr>
<th>1.6a Affected Tech Area</th>
<th>99</th>
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<table>
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<th>1.6b Affected Buildings</th>
<th>MULT</th>
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<tr>
<th>1.7 Requestor:</th>
<th>Cereijo Ruiznavarro, Jorge C</th>
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<tbody>
<tr>
<td>Organization:</td>
<td>ES-55</td>
</tr>
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### 1.8 Revision History

<table>
<thead>
<tr>
<th>Revision Number</th>
<th>Changes and Comments</th>
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<tbody>
<tr>
<td>0</td>
<td>Initial issue.</td>
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## 2.0 Affected Conduct of Engineering Program/Documents

### 2.1 Affected “P” Document: Engineering Standards

**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.]: Engineering Standards Manual STD-342-100 Chapter 17 Pressure Safety, Section ADMIN-1-3, Existing (Including Legacy) System Documentation Requirements.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Document Title/No.:</th>
</tr>
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<tbody>
<tr>
<td>0.1</td>
<td>Enter text.</td>
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### 2.3 Section/Paragraph: Text that precedes Table ADMIN-1-3-1ALT (pg 4)

**REduced REQUIREMENTS (LOW RISK)**

System documentation requirements of Table ADMIN-1-3-1 may be reduced for legacy systems meeting the following criteria:

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

<table>
<thead>
<tr>
<th>Applies only to standards variances</th>
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<tbody>
<tr>
<td>Type 2</td>
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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.

<table>
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<tr>
<th>General Corrosion</th>
<th>Corrosion rate (mills per year)</th>
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<tr>
<td>None/Inert</td>
<td>&lt; 1</td>
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<tr>
<td>Mildly Corrosive</td>
<td>1 to 5</td>
</tr>
<tr>
<td>Moderately Corrosive</td>
<td>5 to 10</td>
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<tr>
<td>Severely Corrosive</td>
<td>10 to 20</td>
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<tr>
<td>Unpredictable or Localized</td>
<td>&gt; 20</td>
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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;

Form Rev 1b : Template file: 2137_PROD_v1b.docx [06/20/17]
(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.
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  

3.10 QA Review for process change matters potentially affecting LANL’s NQA-1 implementation
   Is a QPA Determination required?: **No**  
   If Yes, then:  
   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**

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<th>POC (Management Program Owner’s Representative)</th>
<th>Organization</th>
<th>Signature</th>
<th>Date</th>
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<tbody>
<tr>
<td>Swartz, Ari (Ben)</td>
<td>ES-EPD</td>
<td>Ari B Swartz</td>
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<tr>
<td>Cereijo Ruiznavarro, Jorge C</td>
<td>ES-55</td>
<td>Jorge Ruiznavarro</td>
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<tr>
<th>LANL Owning Manager (FOD or R&amp;D/Program)</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Mason, Robert Clifford</td>
<td>TA55-DO</td>
<td>STUART MCKERNAN (Affiliate)</td>
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<th>Quality Reviewer’s Name:</th>
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<tr>
<td>[QPAName]</td>
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4.5 Safety or Security Management Program
Owner’s Approval for P341 and APs; P342, ESM and Contract Matters; and P343

Goen, Lawrence Kenneth
SMPO signature not required (Type 1 variance) ☐

<table>
<thead>
<tr>
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<td>ES-DO</td>
<td>Lawrence Goen</td>
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Digitally signed by Lawrence Goen
Date: 2019.03.21
15:34:38 -06'00'

4.6 Additional Signer 1

[AdditionalSigner1]
Role: Enter text.

4.7 Additional Signer 2

[AdditionalSigner2]
Role: Enter text.

4.8 CoE Administrator Signature

Salazar-Barnes, Christina L

NOTE: The CoE Admin is always the last signature placed on this document. The date of that signing is the date of this document.

<table>
<thead>
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<tbody>
<tr>
<td>CHRISTINA SALAZAR-BARNES (Affiliate)</td>
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Date: 2019.03.22
14:18:38 -06’00’