Minimum Acceptable Documentation Necessary

to Meet the Requirements of ESM Chapter 17

RECORD OF REVISIONS

Rev	Date	Description	POC	RM
0	9/17/2014	Initial issue.	Ari Ben Swartz, *ES-EPD*	Larry Goen, *ES-DO*

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

Chapter 17	**Pressure Safety POC and Committee**

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Use the tables in this document as a checklist. Some items listed may not be required if there is not an item that fits the description in the pressure system. Some examples are:

> If the pressure system does not contain a vessel (as defined in ASME Boiler and Pressure Vessel Code Section VIII, Div 1, paragraph U-1(c)(2)), then Table ADMIN-1-1 items #4 "Code Stamped Vessel Fabrication Documentation" and item #5 "Non-ASME code Fabricated Vessel Information (code-equivalent Documentation)" are not required.
>
> If a system is located inside a temperature controlled environment and will not experience relatively large thermal cycles then a calculation evaluating thermal growth is not required.

As stated in elsewhere in this chapter, "Information required on system drawings and schematics may be documented in alternative documents or captured in controlled databases, such as the MEL or the CMMS, but must be referenced and readily available for review. The evaluation shall be considered a record and must be managed per LANL P1020, P1020-1, and P1020-2"

How to determine which forms are required is as follows:

Form Number	Description of Form	Notes
FM01	This form (or equivalent) is required for all packages. This form has been modified to state "Signature of the PSO indicates that all deficiencies have been resolved, including deficiencies tracked in PFITS", and "Signature of the PSO indicates that the Maximum Allowable Working Pressures (MAWPs) of the system components have been reviewed and that the set point of the pressure relief valve is equal to lower than, the lowest component MAWP".	
FM02	This form (or equivalent) is required for all packages. This form is required to be loaded into the Pressure Safety Certification System database with the minimum information required for CMMS entry (see the Attachment 2: Minimum Required Data Entry into CMMS).	As an alternative to directly loading this information into the database, a direct entry into the CMMS maybe performed and documentation of the update submitted with the pressure system package for certification.
FM03	In accordance with the note on FM01, all FM03 entries will have been closed prior to submission for certification.	The PSO or CPSO may elect to use FM03 or DRR forms to comment on the pressure safety package submission.
FM04	In accordance with the note on FM01, all FM04 entries will have been closed prior to submission for certification.	The PSO or CPSO may elect to use FM04 or DRR forms to comment on the pressure safety package submission.
FM05	If flexible elements (not non-metallic pipe/tube) are system components, an inspection of the hoses will be performed to ensure they are still adequate for the application.	Evaluation of hoses may be performed to manufacturer guidelines or Designer specified requirements.
FM06	Specifies actual pipe or tube material, thickness, and size used in the construction.	This form is not required if the information is included as part of the system schematic sketch, an Excel spreadsheet, or Master Equipment List
FM07	A listing of system components is required.	This form is not required if the information is included as part of the system schematic sketch, an Excel spreadsheet, or Master Equipment List
FM08	If the system is designed for the system pressure or protected by a relief device this form is not required.	

Form Number	Description of Form	Notes
FM09	A reference to a bounding calculation (see Notes) is sufficient to show that thrust considerations have been considered.	Bounding calculations could be, for example: System 4980 PSV set at 225 psig reaction loads showed 52 lbf; System 4375 PSV set at 200 psig showed 80 lbf on a ¼ inch elbow. All forces were absorbed by the tubing systems and normal tubing supports.
FM10	System schematic sketch	
FM11	Not required	This was used by the walkdown team to document the configuration of the relief protection.

Additional Information Required for Pressure System Packages

Relief Protection
A formal pressure relief device calculation is required for all systems. This calculation may be a comparison using the LANL approved calculations, CALC-10-00-786-PSS-GEN-00001 Rev.0 and CALC-10-00-786-PSS-GEN-00001 Rev.0, (or successors) assuming the conditions of the calculations are met.

Component MAWP or Rating
Supporting documentation must be presented that contains manufacturer's rating of items that are not ASME B31.3 piping components.

> ASME B31.3-2010 paragraph 300.2 **Definitions**:
> *piping components:* mechanical elements suitable for joining or assembly into pressure-tight fluid-containing piping systems. Components include pipe, tubing, fittings, flanges, gaskets, bolting, valves, and devices such as expansion joints, flexible joints, pressure hoses, traps, strainers, inline portions of instruments, and separators.

Examiners and Examinations
An Examiner with the necessary training and experience must be appointed by the Responsible Line Manager in accordance with LANL Policy P330-8, paragraph 3.6.

> **3.6 Inspection and Test (I/T) Personnel Qualification/Certification**
> The RLM will appoint appropriate personnel and identify the qualification requirements for qualifications/certifications not identified in this section.
> Qualification records of I/T workers must be maintained as a record in accordance with P1020-1, *Laboratory Records Management*.
>
> ***3.6.7 Test Personnel***
> Test personnel must have the knowledge, skills, and abilities to adequately and safely perform the required test process. In some cases, specific qualification and certification requirements will apply.

These requirements must be specific in the test plan or procedures. Organization-specific qualification and certification procedures may be necessary (e.g., boiler and pressure vessel test, leak testing).
Note: For guidance on content and approval of test personnel qualification and certification contact the QA Division at 665-5437 or Engineering Services Division at 606-0600.

The following is required by ASME Code B31.3-2010:

342.1 Personnel Qualification and Certification
Examiners shall have training and experience commensurate with the needs of the specified examinations. The employer shall certify records of the examiners employed, showing dates and results of personnel qualifications, and shall maintain them and make them available to the Inspector.

346.3 Retention of Records
Unless otherwise specified by the engineering design, the following records shall be retained for at least 5 years after the record is generated for the project:

(a) Examination procedures

(b) Examination personnel qualifications

Examiner certificates must be supplied indicating that the necessary examinations were performed and acceptable. This is required by the ASME Code B31.3-2010:

341.4.1 Examination — Normal Fluid Service.

(c) Certifications and Records. The examiner shall be assured, by examination of certifications, records, and other evidence, that the materials and components are of the specified grades and that they have received required heat treatment, examination, and testing. The examiner shall provide the Inspector with a certification that all the quality control requirements of the Code and of the engineering design have been carried out.

Owner's Inspector Report

A LANL Owner's Inspector, qualified and accepted by the LANL Construction Management, shall perform an evaluation of the system in accordance with their standard procedures. A LANL qualified Duty Area B PSO may serve as an Owner's Inspector for piping systems which fall under the scope of ASME B31.3.
A copy of the Owner's Inspector checklist and report is required to be included in the pressure safety package.

Leak Testing

Leak Test is a code term for a pressure test conducted on the pressure system before it is ready for operation. A Leak Test report is required to be included in the pressure safety package.

Calculations

For existing FS-2 and FS-3 systems it is appropriate to apply engineering judgment for existing pressure systems with successful service history, and not perform strict engineering evaluations when evaluating small pipe size, indoor locations, with adequate supports, and low relief energies. The evaluation must not conflict with safety basis.