Contents

Record of Revisions

Rev	Date	Description	POC	RM
0	06/23/2016	Initial issue as provisional document.	Tobin Oruch, *ES-DO*	Mel Burnett, *CENG-OFF*
1	05/25/2017	Made chapter mandatory. GEN forms renumbered. Added template 3046, *Software Risk Register*; DOE-STD-1073, *Configuration Management.* Clarified applicability and added Nuclear Criticality Safety, review of supplier software error reports, modified file numbering scheme, Less-Than-Minor Change definition, other minor changes throughout.	Tobin Oruch, *ES-DO*	Lawrence Goen, *ES-DO*
2	02/11/2026	Merged/streamlined SSC and Non-SSC requirements while maintaining essential content.	Tobin Oruch, *ES-FE*	Michael Richardson, *ES-DO*

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SOFT-ACQUIRE: Acquiring Software

1.0 INTRODUCTION

1.1 Purpose

This section applies to workers who acquire software. (See SOFT-INTRO for definition of acquired). Software acquisition includes both software and software services, whether procured (purchased) or acquired in other ways.

Before using this section, perform the applicable activities described within SOFT-GEN (e.g., software identification, completion of a draft or final Software Grade Determination (Form 2033), and other steps).

1.2 Definitions and Abbreviations

Appendix A of SOFT-INTRO addresses defined Chapter 21 terms.

1.3 Summary Table

The following table provides an overview of the requirements and deliverables of this Section. **It also addresses who performs tasks, and when.**

Table 21.3 SOFT-ACQUIRE Section Summary for Structure, System, and Component (SSC) and Non-SSC Software (This is a summary only and does not include all requirement details. See text for details.)								
Activity No.	**SQM Activity**	**ML[1]**			**Implementation Detail**			**Reference**
		1, 2	3	4	**How**	**When**	**Who[2, 3]**	**ESM Ch. 21 Ref.[8]**
I. For SSC Software								
1	Acquire new software	R	Gr	Gr	▪ Evaluate and document whether to acquire from a Nuclear Quality Assurance (NQA)-1 or Non-NQA-1 qualified supplier and commercially dedicate (CGD)[4] ▪ Develop a software data sheet (SWDS), (SOFT-GEN-FM01)[5] ▪ Develop Statement of Work (SOW)[6] ▪ Acquire per P841-1, PD210 and CIO-P100 ▪ Develop interface agreement, integrated contract orders, interagency agreements or equivalent[7] ▪ Complete Exhibit H[5]	▪ When needed to perform work	▪ SO (D) ▪ SRLM (R, A)	SOFT-GEN 2.0 (all) SOFT-GEN 3.0 (all) SOFT-ACQUIRE, 2.0 (all)
II. For Non-SSC Software								
1	Acquire existing LANL software	R	R	Gr	▪ Look for and evaluate existing LANL software for usage ▪ If suitable, acquire existing software from the SRLM and obtain SRLM authorization for use ▪ Update documentation (e.g. licenses), as applicable, to reflect additional authorized user(s)	▪ Look for and evaluate existing LANL software before acquiring new software ▪ When needed to perform work	▪ SU (D) ▪ SRLM (R, A)	SOFT-ACQUIRE (all)

Table 21.3 SOFT-ACQUIRE Section Summary for SSC and Non-SSC Software
(This is a summary only and does not include all requirement details. See text for details.)

Activity No.	SQM Activity	ML[1]			Implementation Detail			Reference
		1, 2	3	4	How	When	Who[2, 3]	ESM Ch. 21 Ref.[8]
2	Acquire new software	R	Gr	Gr	▪ Determine and document if software is used in SSC design and is *simple and easily understood*; document and verify with each use ▪ Determine if software is a toolbox code ▪ Evaluate and document whether to acquire from NQA-1 or Non-NQA-1 qualified supplier and commercially dedicate the software (CGD)[4] ▪ Develop SWDS, (SOFT-GEN-FM01)[5] ▪ Develop SOW[6] ▪ Acquire per P841-1, PD210 and CIO-P100 ▪ Develop CGD documentation per AP-341-703[4] ▪ Use P-card or purchase order (PO) ▪ Develop inter- or intra-LANL agreements[7] ▪ Complete Exhibit H[5]	▪ When needed to perform work	▪ SO (D) ▪ SRLM (R, A)	SOFT-ACQUIRE (all) SOFT-GEN 3.0 (all)

Table Notes:
[1] ML = Associated Management Level per Form 2033. Complete Form 2033 prior to acquisition. R = Required. Gr = Required but graded.
[2] D = Develop or implement; R = Review; A = Approve.
[3] SO = Software Owner. SRLM = Software Responsible Line Manager. SU = Software User
[4] CGD applies to ML-1 and ML-2 software only.
[5] Required for ML-1 through ML-3 software or for any ML if the supplier is required to come onsite to install/maintain the software.
[6] Applies to ML-1 through ML-3 software only.
[7] See P841-1 for details. Required for acquisitions from LANL organizations, DOE sites, and/or government agencies.
[8] Ref. = ESM Chapter 21 section name and subsection number (e.g., Section SOFT-GEN, Subsection 3, Software Identification and Determination).

2.0 SSC AND NON-SSC SOFTWARE ACQUISITION

2.1 General Requirements

The requirements in this subsection apply to the acquisition of all software managed under Chapter 21. (Requirement 21-0301)

NOTE: Before acquiring new Non-SSC software, look for and evaluate whether existing LANL software may be available to use. If existing software is suitable, then acquire using methods described in this chapter. For Facility Engineering divisions, inventory is per SOFT-MAINT (§4.1).

A. The software acquisition process must ensure that malicious software, including suspect/counterfeit, is not permitted to enter the LANL supply chain or computing environment.

B. Acquire software in accordance with P841-1, Quality Procurements, PD210, Cyber Security Program, CIO-P100, Cybersecurity Program Plan, CIO-P215, Industrial Control Systems (ICS) Risk Management, and the following:

1. Ensure software functional requirements are fully identified, documented, reviewed and approved.

Note: It may not be necessary to develop specific requirements for firmware if the documented requirements for the SSC define the functional requirements for the associated firmware.

2. Ensure the software data sheet (SWDS) is complete, if required.

a. As required, clarify LANL-supplier division of responsibility on the SWDS.

Example: LANL plans to acquire software for a management level (ML)-2 application. The supplier only provides notifications of defects, new releases, or other issues that may impact the software operation on the supplier's website. The SWDS specifies that, prior to each use, the software responsible line manager (SRLM) must review the supplier website and/or contact the supplier to ensure this problem reporting (PR&CA) notification/action requirement is fully satisfied.

Note: The initial revision of the SWDS may have TBD entered for some parameters (e.g., fields in the Use and Maintenance section) that are not known during initial planning.

3. Ensure the software identification number (SWID) is included in the acquisition documentation.

4. Ensure all applicable requirements (including those from subsequent subsections) are documented in the Exhibit H (or Statement of Work) associated with the procurement.

5. Engage the LANL chief information officer (CIO) as necessary to satisfy the requirements of CIO-P100, CIO-P215, and other applicable procedures.

6. When subcontractors are involved in the development and/or supply of software to LANL, ensure that all applicable software quality requirements are included in the associated statement of work. Generally, the following requirements should be flowed down:

- For SSCs with software being specified or designed, and for any software being delivered for LANL ownership and use, require the same documentation deliverables that LANL personnel must provide (to the extent

the information is known in the design and construction phases; when not known, insert TBDs and deliver as “Draft”).

- Unless otherwise indicated in subcontract documents, the construction subcontractor serves as the software owner (SO) up to the point of turnover. Upon turnover, the SO responsibility transfers to the LANL system engineer or other designated SO. The facility design authority representative (FDAR) is the SRLM and retains that responsibility until turnover, however, they may delegate activities through subcontract to the subcontractor.
- Subcontractor quality assurance programs must meet the requirements of this chapter, comply with DOE O 414.1E, and (where required by subcontract) ASME nuclear quality assurance (NQA)-1, including Part I and Part II, Subparts 2.7 and 2.14.

2.2 SSC and Non-SSC Software (ML-1 through ML-3)

The following requirements shall be addressed in procurement documents for all ML-1 through ML-3 software except as noted.

A. From NQA-1 qualified suppliers (per IESL) for ML-1 and -2, and when available and desired from non-NQA-1 qualified suppliers, require the supplier to report software errors to the purchaser, and (as appropriate) the ability for the purchaser to report software errors to the supplier. (Requirement 21-0302)

B. ML-1 and ML-2 only: For software that will undergo CGD, specify any supplier support required to dedicate the software (e.g., access for supplier assessments, surveys, third-party dedicators). (Requirement 21-0303)

The dedication process shall be documented and include the following:

- Identification of the capabilities and limitations for intended use as critical characteristics; and,
- Use of test plans and test cases as the method of acceptance to demonstrate the capabilities within the limitations; and,
- Instructions for use (e.g., user manual) within the limits of the dedicated capabilities.

The performance of the actions necessary to accept the software shall be reviewed and approved. The resulting documentation and associated computer program(s) shall establish the current baseline.

For guidance in dedicating computer programs, see AP-341-703 and ASME NQA-1-2015 Part III, Subpart 3.2-214, Quality Assurance Requirements for Commercial Grade Items and Services, Commercial Grade Computer Programs, and Software Services and the references therein.

Subsequent revisions of ML-1 and ML-2 software from non-NQA-1 qualified suppliers that do not follow NQA-1 Subpart 2.7 to V&V the software for acceptance (as described in SOFT-V&V) may need to be dedicated. See Section 5.2.C of SOFT-GEN for details.

Incorporate the following guidance as applicable, when dedicating computer programs (Ref. NQA-1-2015, Part III, Subpart 3.2-2.14):

Guidance: Acceptable data for historical performance should evaluate the industry-monitored performance of the commercial grade computer program, industry product tests, certification to national codes and standards (nonnuclear-specific), and other industry records or databases. When a computer program has been demonstrated to be reliable based on its historical performance, it should be credited during dedication.

Historical performance should be supported by the use of one of the other verification methods listed above.

This acceptance method [Method 4: Acceptable Supplier Item or Service Performance Record] should have a greater application for the dedication of computer programs used in design or analysis. Computer programs that are commercially available and that have industrywide application may be used successfully hundreds or even hundreds of thousands of times daily. The results of these uses and engineering judgment associated with the acceptance of the computer program should be considered when dedicating the computer program.

Errors reported by the users to the supplier and failures associated with structures, systems, and components may be evaluated as part of the failure analysis investigation. This method is most effective when the supplier provides error reports to the purchaser for applicability and significance evaluation and when the users contact the supplier when computer program errors are suspected. A technical support agreement in the procurement documents provides assurance that there is adequate communication between the supplier and users.

C. Specify any required documentation (and/or computer programs) of methods used in the development and validation of the software (e.g., test cases).

D. Specify any requirements for supplier notification of new releases or other issues (in addition to errors) that could potentially impact the software operation.

E. Specify any training and/or technical support required for successful installation and/or use of the software.

F. The following requirements shall be addressed in procurement documents for ML-1 through ML-3 non-SSC software.

- Specify any required design codes for the software (e.g., SAP2000 must satisfy ASCE 10-15 for steel frame design and ACI 318-19(22) for concrete frame design).