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RECORD OF REVISIONS

Rev.	Date	Description	POC	RM
0	06/23/2016	Initial issue	Tobin Oruch, <i>ES-DO</i>	Mel Burnett, <i>CENG-OFF</i>
1	05/25/2017	Clarifications for existing (in-use) software, other minor clarifications	Tobin Oruch, <i>ES-DO</i>	Lawrence Goen, <i>ES-DO</i>
2	02/11/2026	Minor streamlining and updating.	Tobin Oruch, <i>ES-FE</i>	Michael Richardson, <i>ES-DO</i>

SOFT-MAINT: Use, Maintain, & Retire

1.0 INTRODUCTION

1.1 Purpose and Applicability

This section describes the requirements for using, maintaining, and retiring software.

2.0 DEFINITIONS AND ACRONYMS

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

3.0 SSC SOFTWARE

3.1 Use and Maintain SSC Software

Control management level (ML)-1 through ML-4 software to ensure that the use remains consistent with the software design and approved acceptance test results. For ML-1 through ML-3 software, in addition to the applicable controls from other chapter sections, ensure the following controls are established and documented on the software datasheet (SDWS) and otherwise as allowed by this chapter before software approval for use (SWAU). For existing software (also referred to as in-use or legacy software) that is noncompliant, initiate an IM action to resolve deficiencies (see SOFT-GEN for details). (Requirement 21-0601)

Use and maintain the software using these controls until the software is retired.

- Application documentation
- Access control specifications
- Computer system vulnerability protections
- Problem reporting and corrective actions
- In-use tests
- Configuration management
- Inventory
- Supporting quality assurance program controls

Process and retain documentation in accordance with the governing document control and records management process indicated by the software responsible line manager (SRLM), described in the SWDS, or both. Ensure the correct software identification number (often obtained before completing Form 2033) is part of the documentation. See AP-341-402, *Engineering Document Management in Operating Facilities*, for details.

SOFT-MAINT: Use, Maintain & Retire

Rev. 2, 02/11/2026

The following summary table provides an overview of the requirements and deliverables of this Section. **It also contains details on who performs related tasks, and when**

Table 21.6 SOFT-MAINT Summary (This table is a summary only and does not include all requirement details. See text for details.)								
Activity No.	SQM Activity	ML ¹			Implementation Detail			ESM Ch. 21 Ref. ⁵
		1, 2	3	4	How	When	Who ²	
1	Use and maintain the software	R	Gr	Gr ³	<ul style="list-style-type: none"> ▪ Use and control the software to ensure that the use remains consistent with the software design and approved acceptance test results ▪ Maintain software application documentation ▪ Maintain licenses and registrations ▪ Use and maintain access controls ▪ Use and maintain vulnerability protections ▪ Report problems and take corrective actions ▪ Perform in-use tests ▪ Maintain configuration management (e.g., maintain software baseline, SWDS, and software change documentation) ▪ Maintain inventory/inventories⁴ ▪ Implement supporting quality assurance program controls (e.g., training/qualification and assessments) 	<ul style="list-style-type: none"> ▪ Upon SWAU and until the software is retired ▪ In-use testing and assessments as specified on the SWDS (at a minimum, when installed on a different computer or after significant changes) 	SU (for use) SO/SRLM (for maintenance)	SOFT-GEN, SOFT-V&V, SOFT-MAINT
2	Retire the software	R	R	R	<ul style="list-style-type: none"> ▪ Prevent unintended or routine use ▪ Terminate software agreements and licenses ▪ Remove from the inventory/inventories as applicable⁴ ▪ Where practical or where a future need may exist, retain as a record 	When no longer required for routine use or acceptable for use	SO/SRLM	SOFT-GEN, SOFT-MAINT

¹ ML = management level; R = required; Gr = required but graded
² SU = software user; SRLM = software responsible line manager (The SU and SRLM may be the same person)
³ In-use testing is not required for ML-4.
⁴ See SOFT-INV for details.
⁵ Ref. = ESM Chapter 21 section name

3.1.1 Software Application Documentation

Application documentation for structure, system, and component (SSC) software is a general term that comprises the following main categories.

- **Operations and Maintenance (O&M) Documentation.** Software shall be controlled in accordance with approved procedures and instructions (i.e., O&M instructions). O&M instructions are required for all ML levels. The O&M documentation must be sufficiently detailed and usable to allow a competent individual trained in the use of the software to use the program without undue difficulty or likely misuse. O&M manual(s) should be listed on the software baseline.
- **Licenses and Registrations.** As applicable, maintain license documentation and other registrations, including maintenance contracts, as appropriate to promote proper software use. As applicable, document licenses on the software baseline and document license and registration maintenance protocols on the SWDS.

Operational Event Documentation. Operational event documentation should be retained for ML-1 and ML-2 software to support software maintenance, cybersecurity protection, and assessments. Operational event documentation is generated as part of the software operation; it is dependent on the software design. Event documentation may include system startup, shutdown, changes, logons, logon failures, logoffs, self-diagnostic test results, tamper attempts, or other information. As applicable, *indicate event documentation review and retention protocols on the SWDS*

3.1.2 Access Control Requirements

For all ML levels, establish and implement access controls in accordance with [P218](#), *Cyber Security Controls*. Address the security of the computer system and the critical data that may reside in the system. For ML-1 through ML-3 software, document access controls on the SWDS and, as required, in the governing software procedures. See SOFT-GEN for SWDS details. (This requirement may not be applicable in cases such as read-only firmware that lacks user-changeable setpoints.)

3.1.3 Computer System Vulnerability Protections

For all ML levels, establish and implement computer system vulnerability protections as required by [PD210](#), *Cyber Security Program*, and CIO-P100, *Cybersecurity Program Plan*. Base controls on consequence of loss, confidentiality, integrity, and availability. As required, contact an information system security officer to assist with identifying and implementing computer system vulnerability controls. As appropriate, implement the following protections, which may be designed into the program, established as part of the O&M procedures, specified on the SWDS, or a combination of these.

- Access timeouts after a specified time of inactivity.
- Use recovery/contingency protocols, including retention of backups of system data.
- Use software tools to verify pedigree authenticity or detect tampering associated with suspect/counterfeit items (not applicable in all cases, such as firmware).

3.1.4 Problem Reporting and Corrective Action

For all ML levels, follow the problem reporting and corrective action processes in SOFT-GEN.

3.1.5 In-Use Tests

- A. When determined necessary by the software owner and SRLM, perform in-use testing of ML-1 through ML-3 software as specified in this section and the SWDS. Perform in-use testing in accordance with test procedures to confirm acceptable performance in the operating environment. Integrate governing SSC work controls.

- B. Perform in-use tests in accordance with the applicable test planning and testing requirements of the SOFT-V&V section.
- C. Demonstrate required performance over the range of operation of the controlled function or process.
- D. Document test procedures and frequency on the SWDS. Specify test frequency using the following methods:
 - 1. Perform testing after the computer program is installed on a different computer.
 - 2. Perform testing when there are changes in the operating system environment when specified by the SRLM.
 - 3. Perform periodic testing where computer program errors, data errors, computer hardware failures, or instrument drift can affect required performance (consider manual and automatic self-check tests).
 - 4. Perform specified testing when required by procedure (e.g., [AP-341-801](#), *Post Modification/Post Maintenance Testing*).
 - 5. Perform testing based on the computer program's risk of failure. For ML-1 and ML-2 software, at a minimum, an annual test is recommended.

3.1.6 Configuration Management

Perform the following tasks:

- A. Follow configuration management and interface control processes in SOFT-GEN. Ensure completeness and accuracy in maintaining the software baseline and SWDS.
- B. Where practical, use and maintain software versions that are compatible with prior versions of the software and associated hardware (sometimes referred to as backward compatibility) to minimize interface issues.
- C. As required by the SRLM, ensure data produced by the software is adequately retained (backed up) so that it may be readily retrieved if needed.

3.1.7 Inventory

For all ML levels, maintain complete and accurate software inventories in the Form 2033 Graded Software Inventory (GSI) in accordance with P1040, *Software Quality Management*.

3.2 Retire SSC Software

When it is no longer required for routine use or no longer approved for use, the SRLM shall retire software and prevent it from unintended or routine use. Perform the following, as applicable, to retire all ML levels of software (Requirement 21-0602):

- A. Terminate software support, including registrations, agreements, and licenses.
- B. Remove the software.
- C. Update the software record in the GSI in accordance with P1040, *Software Quality Management*.
- D. Cancel or revise affected documents per the governing document control process. *Guidance: Also, close all open error and software change requests, regardless of their state.*
- E. Where practical or where a future need for the software may exist, retain the retired software baseline (which includes the computer program files) as a record. Retain this record in accordance with the governing quality assurance records management

procedure. Retired software should be retained such that it is retrievable and can be readily installed if it becomes necessary to “roll back” to the software. Retain support software as required to roll back.

- F. Cancel or revise affected training courses/plans.

4.0 NON-SSC SOFTWARE

4.1 Use and Maintain

Follow Subsection 3.1 with the following clarifications.

Do not use LANL ML-1, 2, or 3 Non-SSC software unless it is approved for use [i.e., (1) listed as “Completed” including the correct version and (2) current relative to review date on the Form 2033 Graded Software Inventory/GSI, and (3) will be used in accordance with the SWDS], or SWAU is otherwise provided by the SRLM in writing.

For ML-4, acquired software (other than Excel), the Facility Engineering divisions [e.g., Engineering Services (ES), Plutonium Facilities (PFE), and Plutonium Infrastructure Engineering (PIE)] shall also use the GSI (the “Fac Eng Design Record” choice in the left column filters for same).¹ If the software is not listed, contact the SRLM or ES software coordinator.

- Before using the software, the SU must verify that they are authorized to use it by reviewing the SWDS. If the SU is not shown as an authorized user for the software, contact the software owner, SRLM, or ES software coordinator. Do not use the software unless authorization is shown on SWDS or SWAU is otherwise provided by the software owner or SRLM in writing.
- Note, some SSC-related administrative procedures/processes may not apply fully or partially; choose and/or tailor with SRLM concurrence.
- Use the non-SSC change process in SOFT-GEN.
- Maintain application logs for ML-1 and ML-2 non-SSC software that is used for design purposes or in other applications where it may be necessary to trace the impacts of a software error to affected documents (e.g., determining which fire hazards analyses may be impacted by an airflow modeling error). Application logs should record who used the software, the software baseline revision used, and any information necessary to provide traceability (e.g., design change form numbers). Application logs shall be maintained by the software owner. As applicable, provide application log protocols on the SWDS.
- In each calculation where *simple and easily understood* software is used, document the determination of *simple and easily understood* software and review and approve the software (individually verify) with each use as part of the calculation.

4.2 Retire Non-SSC Software

Follow Subsection 3.2 with the following additions:

- As applicable, remove software from the Form 2033/GSI (for Facility Engineering, ref. ESDO-AP-002, *Engineering Service (ES) Software Inventory Instructions*). This removal includes incomplete software designs.
- Update the GSI software record for safety or non-safety software indicating its retirement.

¹ PFE and PIE may opt out at Division Leader direction.