

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-10554		1.2 Revision: 0					
1.3 Brief Descriptive Title: Ch. 21 Software – change to optional use							
1.4 Affected Program: Engineering Standards		1.5 Request Type: Variance					
1.6a Affected Tech Area 99		1.6b Affected Buildings Sitewide					
1.7 Requestor: Honey, Christine May Organization: ES-FE							
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 21 Software, SOFT-GEN: General Software Requirements Revision 1 Document Title/No.: P341, Facility Engineering Processes Manual Revision 7 Document Title/No.: ESM Chapter 1, General, Section Z10 Revision 15 Document Title/No.: ESM Ch. 1, Section Z10, Attachment C, Design Deliverables Schedule 30-60-90-100% Revision 8
2.3 Section/Paragraph: See field 2.4 below.	
2.4 Specific Requirement(s) as Written in the Document(s): Engineering Standards Manual STD-342-100, Chapter 21, Software 1.1 Chapter 21 Purpose and Applicability <ul style="list-style-type: none"> ○ A. Purpose: Chapter 21 is the software plan for the Facility Conduct of Engineering program (FAC-COE), safety basis, and nuclear criticality safety activities. 	

- B. Applicability: For new and “modified” software, this chapter is required when software is within the scope of:
- C. Exclusions:
 - 2. Software covered by existing, compliant software quality management plans/processes.⁶ The issuance of this chapter does not necessitate immediate replacement of those controls (grandfathering applies) unless/until a Major Change.

⁶ However, a software summary as described in SOFT-GEN Section 2.1 is required for new projects, including when compliant SQA programs other than this chapter are used.

P341, Facility Engineering Processes manual

LANL facility engineering personnel control software used for designs of SSCs in accordance with the ESM, Chapter 21, *Software*.

Engineering Standards Manual STD-342-100, Chapter 1, General

11.4 Software Calculations

- A.1.b. Subcontractor quality assurance programs must meet the requirements of [Chapter 21], comply with O 414.1D, and – where required by subcontract-ASME NQA-1, including Part 1 and part II, Subparts 2.7 and 2.14.

Engineering Standards Manual STD-342-100, Attachment C, Design Deliverable Schedule 30-60-90-100%

D. Schedule Usage/Format

SOFTWARE			
For Non-SSC software (e.g., design): Summaries for potentially safety affecting – preliminary (ref. Ch. 21, SOFT-GEN [e.g., r1 article 2.1])	X		
For Non-SSC software (e.g., design): Summaries for potentially safety affecting – Updated (ref. Ch. 21, SOFT-GEN [e.g., r1 article 2.1])		X	
For Non-SSC software (e.g., design): 2033 forms for potentially safety affecting – Final			X
For SSC software, all documents required by Ch. 21, leaving approvals for LANL to complete -- Preliminary	X		
For SSC software, all documents required by Ch. 21, leaving approvals for LANL to complete -- Updated		X	
For SSC software, all documents required by Ch. 21, leaving approvals for LANL to complete -- Final			X

All references to the required use of Chapter 21 as the software quality plan in all Conduct of Engineering (COE) documents including but not limited to Engineering Standards Manual, APs, P34X procedures, specifications, and training documents. Documents in other organizations could also be affected.

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

The requirements include contractual and preferential statements. ESM, Chapter 21, Software is an approved approach to software quality requirements in DOE Order 414.41D, Admin. Chg. 2, Quality Assurance, per SD330 Los Alamos National Laboratory Quality Assurance Program. The requirement to use ESM, Chapter 21, Software for the software plan for the Facility Conduct of Engineering program (FAC-COE), safety basis, and nuclear criticality safety activities is a LANL preference.

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

Type 2

2.7 Discipline

Safety Basis
Nuclear Criticality 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 [\[Select OpSysAcronymAndName\]](#)

System Number or Name [\[Select SystemNumberOrName\]](#)

3.3 Highest ML Level

ML-1

3.4 Proposal with Justification/Compensatory Measures:

Background

With the issuance of P1040 rev. 12 (pending), ESM Chapter 21, Software will become an acceptable alternative to P1040, Software Quality Management providing acceptable methodology to meet the requirements of DOE O 414.D, *Quality Assurance*. Chapter 21 is required for software associated with Facility Conduct of Engineering program (FAC-COE), safety basis, and nuclear criticality safety activities.

Proposal

Revise wording to remove the requirement to use Chapter 21 and replace with the recommendation to use Chapter 21 for Facility Conduct of Engineering program (FAC-COE), safety basis, and nuclear criticality safety activities.

Revised Chapter 21, Software

1.1 Chapter 21 Purpose and Applicability

- A. Purpose: Chapter 21 is an approved software quality plan satisfying the requirements of P1040, Software Quality Management. It is the recommended process for software associated with Facility Conduct of Engineering program (FAC-COE), safety basis, and nuclear criticality safety activities.
- B. Applicability: For new and "modified" software, this chapter is the recommended approved alternate method to P1040 when software is within the scope of:
- C. Exclusions:
 - 2. Software covered by existing, compliant P1040 software quality management plans/processes.

Revised: P341, Facility Engineering Process Manual

3.10.9 Computer Software Control for Designs of SSCs shall meet the software quality requirements of DOE O 414.1D, Admin. Chg. 2, *Quality Assurance*. P1040, *Software Quality Management* and ESM, Chapter 21, *Software* are parallel software quality procedures that satisfy the requirements of DOE O 414.1D, Admin. Chg. 2, *Quality Assurance*.

Revised: ESM, Chapter 1, General

Engineering Standards Manual STD-342-100, Chapter 1, *General*

11.4 Software Calculations

- A.1.b. Subcontractor quality assurance programs must meet the requirements of DOE O 414.1D, Admin. Chg. 2, *Quality Assurance* and – where required by subcontract-ASME NQA-1, including Part I and part II, Subparts 2.7 and 2.14.

Revised: ESM, Attachment C, Design Deliverable Schedule 30-60-90-100%***D. Schedule Usage/Format***

SOFTWARE	30	60	90
All documents as required by either P1040 or Ch. 21, leaving approvals for LANL to complete -- Preliminary	X		
All documents as required by either P1040 or Ch. 21, leaving approvals for LANL to complete -- Updated		X	
All documents as required by either P1040 or Ch. 21, leaving approvals for LANL to complete -- Final			X

Justification

ESM Chapter 21, Software and LANL P1040, Software Quality Management are parallel software quality procedures that flow down the same software quality requirements as required by DOE O 414.1D, Admin. Chg. 2, Quality Assurance. The required use of Chapter 21 for software associated with Facility Conduct of Engineering program (FAC-COE), safety basis, and nuclear criticality safety activities was a LANL preference and LANL Conduct of Engineering decided to change the required use of Chapter 21 to a recommended use. This allows the software owner to use either LANL P1040 or ESM Chapter 21 as the procedure for software quality as both satisfy the requirements.

3.5 AttachmentsDocument Title or Description [Enter text...](#)

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:

[Click to enter a date.](#)

3.8b End Date:

[Click to enter a date](#)3.8c Provide the PFITS number for tracking removal/correction: [\[PFITSNum\]](#)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): Tepley, Daniel James	Organization ES-FE	Signature
4.2 Facility Design Authority Representative [FDARName] FDAR signature not required <input checked="" type="checkbox"/>	Organization Enter text..	Signature
4.3 LANL Owing Manager (FOD or R&D/Program) [FODorPrgmMgrName] FOD or Program Manager signature not required <input checked="" type="checkbox"/>	Organization Enter text..	Signature
4.4 Quality Reviewer's Name: Tunney, Daniel Joseph QPA review/signature not required <input type="checkbox"/>	Organization IQPA-IQ	Signature
4.5 Safety or Security Management Program Owner's Approval for P341 and APs; P342, ESM and Contract Matters; and P343 Apperson, Jason Wesley SMPO signature not required (Type 1 variance) <input type="checkbox"/>	Organization ES-DO	Signature
4.6 Additional Signer 1 Hein, Nathaniel Stephen Role: Enter text.	Organization IQPA-IQ	Signature
4.7 Additional Signer 2 [AdditionalSigner2] Role: Enter text.	Organization Enter text.	Signature
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.	Signature	