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CCP-QP-022

Revision 12

CCP
Software Quality
Assurance Plan

EFFECTIVE DATE: 11/18/2010

Rich Kantrowitz

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
3	09/26/2002	Made numerous changes to section and made changes to all attachments. Added step 4.9.1[K]. Added a Record of Revision. Updated Procedure Titles.
4	07/28/2005	Revision in response to Carlsbad Field Office (CBFO) Corrective Action Reports (CARs) # 05-031 and # 05-032 from the Idaho National Laboratory (INL) Certification Audit.
5	08/09/2005	Revised to change wording in Scope to align with the Site Project Manager (SPM) responsibilities.
6	01/25/2006	Revised to add new Section 4.7, language regarding proprietary software, steps to Section 4.5 and minor clarifications. This revision is in response to CBFO CAR 06-007.
7	05/30/2006	Removed the responsibility of the Software Configuration Management Coordinator (SCMC) to issue Software Change Order (SCO), SCO Addendum and SPER numbers and to maintain the associated logs.
8	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR).
9	10/15/2007	Revised in response to Central Characterization Project (CCP) Corrective Action Report (CAR) CAR-INL-0009-06 and in response to comments from the user community. The procedure was completely revised to provide separate sections addressing each type of software. The forms were adjusted to accommodate the newly-created sections, but the overall process was not significantly changed. A new section was added, addressing the control and use of Library Data Files.
10	10/16/2008	Revised to include Software Configuration Change Report (SCCR) for Central Characterization Project (CCP) software. Added the role of Records Custodian. CCP software end user testing is now required.

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
11	12/08/2009	Revised to include unique identifier information on all applications within commercial off the shelf software (COTS) spreadsheets (software change order [SCO] #, Addendum #, Software name and version, and tested operating environment). Annual review of the Software Inventory Listing (SIL) will be performed incrementally on a quartery basis. Minor software changes were also incorporated.
12	11/18/2010	Revised to add steps for the Software Configuration Management Coordinator (SCMC) to issue software change order (SCO) numbers through the data center. This is in reference to the CAR-CCP-0010-10.

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1.0 PURPOSE

This Central Characterization Project (CCP) Software Quality Assurance (QA) Plan (SQAP) addresses the procurement, development, maintenance, configuration management, and use of computer software, as applied to waste characterization, waste certification, and waste transportation activities.

1.1 Scope

This SQAP applies to all computer software including applications developed within Commercial-Off-The-Shelf (COTS) or System Software, used by the Washington TRU Solutions (WTS) Limited Liability Corporation (LLC), CCP, or any CCP subcontractor that produces data used to process, gather, or generate information used to make design, analytical, operational, or compliance-related decisions about transuranic (TRU) waste characterization, waste certification, waste transportation, or waste acceptance.

1.2 Applicable Software

1.2.1 System Software

System Software includes operating systems such as Windows, Linux, and system utilities such as compilers, assemblers, translators, interpreters, query languages, word processing programs, spreadsheet programs, database managers, and graphing programs. System Software is exempt from the requirements of this SQAP.

1.2.2 Library (Data) Files

Library files (e.g., nuclide library files used for Nondestructive Assay [NDA]) containing vendor-supplied data shall be controlled by the qualified supplier. A Software Change Order (SCO) is required for the initial library files when they are introduced into the CCP program for installation, and when they are updated with qualified supplier changes.

Data files that do not affect accuracy or precision, or the quality and correctness of the information, are exempt.

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1.2.3 Specific Applications developed under COTS or System Software

Specific Applications developed for use that fall under the applicability of this SQAP, based on COTS or System Software (e.g., Microsoft (MS) Excel spreadsheets, MS Access databases, detailed formulas, or macros) are not exempt from the requirements of this SQAP.

1.2.4 Supplier Software

Software that's initial design, programming, and testing is performed by a third party. Supplier Software can be categorized as COTS, System Software, or Firmware and could be supplied by either a Qualified or Non-qualified Supplier.

[A] COTS Software

COTS is an adjective that describes software products that are general purpose, ready-made and available for sale to the general public. COTS products are mass-produced, and are designed to be implemented easily into existing systems without the need for customization by the vendor. COTS software that meets the requirements of Section 1.1 are not exempt from this SQAP.

[B] Qualified Supplier Software

Qualified Supplier software is software that is developed for CCP to perform a specific end-user function. Only software that is provided from vendors that are on the WTS Qualified Supplier list (QSL) may be considered as Qualified Supplier software.

[C] Non-Qualified Supplier Software

Non-Qualified Supplier software is also developed for CCP to perform a specific end-user function. Non-Qualified Supplier software is provided by vendors that are not on the WTS QSL. Additional requirements are necessary for Non-Qualified Supplier software to ensure that it meets CCP criteria, before it can be used.

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1.2.5 Firmware

Vendor supplied software that is included as an integral part of an instrument (e.g., programmed in a read-only memory [ROM] chip) and cannot be modified by another party. Firmware that cannot be removed or updated is exempt from the requirements of this SQAP. Firmware that is removable or updated will be treated as software in accordance with this SQAP.

1.3 Software Evaluation

Software used by CCP will be evaluated to determine the applicable sections of this SQAP. Attachment 1, Software Evaluation Checklist, will be used for this evaluation.

1.4 Configuration Management

Configuration of software shall be maintained as follows:

Software shall be placed under configuration control as each configuration item is approved during the software development life cycle or as Qualified Supplier software is brought into the CCP program. A software baseline shall define the most recent approved software configuration. The configuration items and their associated documentation shall be traceable to one another.

1.4.1 Labeling System

A labeling system for configuration items shall be implemented that:

- Uniquely identifies each configuration item.
- Identifies changes to configuration items by revision or version identifier.
- Provides the ability to uniquely identify each approved configuration of the revised software that is available for use.

1.5 Software Change Orders (SCO)

All software applications used to process, gather, or generate information used to make design, analytical, operational, or compliance-related decisions about TRU waste characterization, waste certification, waste transportation, or waste acceptance must have an Attachment 2, Software Change Order, completed when initially brought under software configuration management.

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Each application will be assigned an SCO number (see Section 1.5.1) that will act as a unique identifier in order to track future modifications to the software, new installations, retirements, etc.

An addendum to an SCO is indicated by Block 2 on Attachment 2. An addendum to an SCO is used for additional installations, removals, and modifications to software. A modification may be considered a minor change. The degree of software validation shall be commensurate with the nature and scope of the change. A minor change is any change that cannot affect the data quality of the application. Examples of this would be changing screen colors, adding a corporate logo, correcting grammar, etc.

NOTE

The Software Configuration Management Engineer (SCME) works with the Software Developer (SD), Site Project Manager (SPM), and other appropriate individuals to determine if a change is considered a minor change.

Each revision must have an addendum to the corresponding SCO completed.

1.5.1 SCO Numbering System

All software, when brought under the software configuration management program, will be assigned a unique SCO number by the Software Configuration Management Coordinator (SCMC) (example: 851, 852, etc.). The SCMC will obtain the unique SCO number from the CCP Data Center.

1.6 Software Inventory Listing

The Software Inventory Listing (SIL) is a list that details all active, superseded, exempt, and retired software controlled by this SQAP. The SIL will be updated and maintained by the SCMC.

The SIL will contain the following information, at a minimum:

- SCO number
- SCO Addendum number, if applicable
- Software name and version
- Host site location

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- Classification (including the purpose of the software relative to its use in engineering, scientific, testing, data collection, design, analysis and operations activities)
- Exemption status
- The operating system on the computer in which the software is installed
- The COTS or System software in which the application was developed, if applicable
- The date the Application within COTS or System Software was developed, if applicable
- Computer model and serial number upon which the software is installed, if applicable
- Name of the SPM (that approved the software) of the site at which the software is installed

The SIL will be evaluated periodically, at least once annually, to ensure the data is accurate, current and complete. The process is administered by the SCME and utilizes management assessments, completed by the responsible area managers with the results complied by the SCME. To facilitate a more manageable process the SCME may divide the SIL into four sections with one section completed each quarter.

1.7 Software Problem Reporting and Change Request (SPRCR)

NOTE

The SCO number in Block 1 of Attachment 3, Software Problem Reporting and Change Request (SPRCR), is the SCO number for the software that the problem or change is being reported against. The report number in Block 2 is issued by the SCMC.

Attachment 3 is used either to report problems with software, the potential impact of the problem, and the corrective action(s) taken, or to request a modification to the software, unrelated to a problem with the software.

1.8 Software Configuration Change Report (SCCR)

Attachment 5, Software Configuration Change Report (SCCR), is used to track changes within the software configuration, the type of change, and a detailed description of the configuration change. Attachment 5 is only applicable for CCP software.

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1.9 Software Removal and Retirement

The removal of software applications is performed using Attachment 2, and retirement of software applications is performed using Attachment 3.

1.10 File Transfer Protocol Site

Controlled versions of software applications developed within COTS are posted to an file transfer protocol (ftp) site. The site address is: ftp://q.wipp.ws/QA/ControlledSoftware.

Applications will be tested in one or more operating environments prior to ftp site upload.

NOTE

Information for legacy applications posted to the ftp site will be added when the software is modified.

Applications developed within COTS that are posted to the ftp site shall contain the following information:

- Unique identifier information
- SCO number and addendum, if applicable
- Software name and version
- Operating environment(s) in which the application was tested (e.g., operating system and platform)
- The unique identifier information will be included on every printed page of the spreadsheet.
- The unique identifier information must be locked and/or password protected to prevent inadvertent modification.

Applications that are considered proprietary by the original software vendor are not required to be uploaded to the ftp site. This software will be identified on the SIL as Proprietary and will identify the software vendor.

1.11 SCO, SCO Addendums, SPRCRs, and Exempt Software Logs

Logs of all SCOs, SCO Addendums, SPRCRs, and Exempt Software are available in the CCP Data Center.

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1.12 Software from Qualified Suppliers Working as Subcontractors to CCP

Software and associated documentation obtained by CCP from active QSL suppliers, who are also subcontractors to CCP for other services, will be controlled under the supplier's approved Software QA Program.

1.13 Software Quality Assurance Plan (SQAP)

An SQAP shall be developed for software to assure that a quality product is supplied. This is the SQAP for all software except Non-Qualified Supplier software. A separate SQAP is required for Non-Qualified Supplier software. In either case (this SQAP or the separate SQAP for Non-Qualified Supplier software), the SQAP shall include:

- Software name
- Responsible person and organization
- Development standards and techniques to be used and methods of verifying compliance with them.
- Required activities, responsibilities, and documentation
- Required reviews and methods of verifying implementation of requirements
- Items that need to be base lined and methods for controlling the baseline configuration
- Provisions for error reporting, evaluation, and corrective action
- The procedure(s) used for establishing and maintaining the integrity of data, embodied mathematical models, and output files
- A plan to develop and document the Requirements, Verification and Validation (V&V) documents, Design, Tests, and User documents

1.14 Requirements Documentation

Software requirements documentation shall outline the requirements that the proposed software must satisfy. The software requirements shall, as applicable, address the following:

- Software name and version
- System the software supports
- Name of the person who developed the requirements

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- Functions that the software is to perform
- Time-related issues of software operations such as speed, recovery time, or response time
- Design constraints
- Non-time related issues of software operation such as portability, acceptance criteria, access criteria and maintainability identified
- Required interactions with people, hardware, and other software identified
- Requirements verification
- Requirements consistency
- Requirements technical feasibility that results in useable code
- Methods of V&V, including the responsibilities of the organization(s) involved, resources needed, and the methods employed to ensure traceability of the requirements to final validation of software
- Traceability to the requirements
- A description of the major components of the software design as they relate to the software requirements
- A technical description of the software with respect to the theoretical basis, mathematical model, control flow, data flow, control logic, and data structure
- Completeness and technical adequacy of the design
- A description of the allowable or prescribed ranges for inputs and outputs
- The design described in a manner that can be translated into code

1.15 User Documentation

User documentation should be sufficient to allow any qualified user (i.e., one having adequate technical background) to install and run the software and properly respond to errors. User documentation, at a minimum, shall include:

- Software name and version

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- User instructions that contain an introduction, a description of the user's interaction with the software, and a description of any required training necessary to use the software
- Input and output specifications and formats
- A description of functional requirements and system limitations, including hardware
- An explanation of the mathematical models and derivation of the numerical methods used in the software design (physical and mathematical assumptions on which the software is based shall be included, along with an explanation of the capabilities and limitations inherent in the software)
- A description of the anticipated errors and how a user can respond
- Information for obtaining user and maintenance support

1.16 Testing

Installation, Integration, Regression, and Functionality are different types of tests that may be performed on software to ensure that it is working correctly prior to operational use. Installation testing will always be required prior to use for certification in the CCP program to ensure that the software was installed correctly. Integration testing is required if the software product interacts with other software products. Functionality testing is required if new features are added to the software or existing features have been modified. Regression testing is required if there is a concern that modifications to certain functions of the software could adversely affect other functions of the software that were not modified.

All modifications shall be formally evaluated and approved by the organization responsible for the original design, unless an alternate organization has been given the authority to approve the changes by the SCME. The SCME will identify other affected groups or organizations, as needed, to allow for additional evaluation.

The degree of software validation shall be commensurate with the nature and scope of the change.

V&V activities SHALL be performed by any independent individual(s) or group(s) other than those who performed the software design and implementation. The individuals may be from the same organization and may include the designer's supervisor, provided the supervisor:

- Did not specify a singular design approach

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- Did not rule out certain design considerations
- Did not establish the design inputs used
- Is the only individual in the organization competent to perform the V&V

Acceptable test methods may include:

- Hand calculations
- Calculations using comparable proven programs
- Empirical data and information from technical literature
- Comparison with other validated software of similar purpose
- Manual inspections or qualitative checks not involving numerical manipulation
- Visual inspection of empirical data or data results based on the acceptable knowledge within the organization responsible for the original design

Test Plans shall identify or address the following:

- Software name and version
- System software supports
- Name of the person who developed the test plan
- Required tests and test sequences
- Required ranges of input parameters
- Identification of stages at which testing is required
- Criteria for establishing test cases
- Acceptance criteria
- Requirements for testing logic branches
- Requirements for hardware integration
- Anticipated output values

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- Type of test (Installation, Integration, Functionality, Regression, etc.)
- For CCP software, identification of tests to be performed by the End User.

Test Reports/Results shall identify or address the following, as applicable:

- Computer program tested
- Computer hardware used
- Operating system(s) and version(s) used during test performance
- Test equipment and calibrations
- Date of test
- Tester or data recorder
- Simulation models used
- Test problems
- Results and acceptability
- Action taken in connection with any deviations noted
- Person evaluating test results
- Alternate test methods(s) used
- Type of test (Installation, Integration, Functionality, Regression, etc.).

1.17 Required Documentation

The documentation required for each software type is listed in Section 5.0.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- DOE/CBFO-94-1012, U.S. Department of Energy Carlsbad Field Office, *Quality Assurance Program Document*
- WP 13-QA3012, *Supplier Evaluation/Qualification*
- DOE/WIPP-07-3361 *Cyber Security Risk: Assessment and Mitigation*
- Office of Environmental Management (EM) – Program Security Plan (PSP)

Referenced Documents

- CCP-QP-001, *CCP Graded Approach*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-015, *CCP Procurement*

2.2 Definitions

2.2.1 See Attachment 6, Definitions

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3.0 RESPONSIBILITIES

NOTE

The Initiator can be the same person as the SD or Tester but the SD and Tester cannot be the same person.

3.1 Initiator

3.1.1 Brings issues regarding software and requests to develop, modify, or procure software to the attention of the SCME and the appropriate SPM.

3.1.2 Evaluates software in accordance with Attachment 1.

3.1.3 Works in conjunction with SD to develop requirements documentation.

3.1.4 Determines if the Supplier is on the CCP QSL for procured software.

3.1.5 Obtains from the SCMC an SCO, SCO Addendum, or SPRCR number prior to initiation of a new software project or modification, revision, upgrade, removal, or installation of software.

3.1.6 Initiates the SCO, SCO Addendum, or SPRCR.

3.1.7 Ensures that software documentation for all software purchased from a supplier is identified, as applicable.

3.1.8 Ensures that supplier-provided user documentation is submitted to a SD for evaluation.

3.1.9 Ensures that the most recent user manual is available for use.

3.1.10 Participates in requirements reviews.

3.1.11 Develops SQAP in conjunction with the SD, SCME, and appropriate SPM for Non-Qualified Supplier Software per Section 1.13.

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3.2 Software Developer (SD)

NOTE

The SD can be anyone knowledgeable on the software's application and the process in which the software is used and must be a person other than the Tester.

3.2.1 Develops documentation required during various software life cycle phases in accordance with the requirements of this SQAP.

3.2.2 Develops and modifies software, as required.

3.2.3 Develops Test Plans and Test Cases, as required.

3.2.4 Informs SCME and appropriate SPM of software projects.

3.2.5 Initiates and completes Attachment 4, Software Review Action Items, as applicable.

3.2.6 Participates in document reviews of requirements, design, code, and test documentation.

3.2.7 Evaluates supplier-provided user documentation.

3.2.8 Develops/modifies user documentation.

3.2.9 Identifies configuration items.

3.2.10 Arranges for installation of software.

3.2.11 Ensures all software packages are submitted to a Tester for testing.

3.2.12 Ensures all required documentation is accurate, complete, and attached to the SCO.

3.2.13 Submits the SCO and associated documentation to the SCMC.

3.2.14 Submits the Attachment 2 and associated documentation to the SCMC.

3.2.15 Reviews and approves test plans and test results.

3.2.16 Identifies and documents problems with existing software on Attachment 3.

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3.2.17 Identifies and documents reasons for modifications to existing software on Attachment 3 in conjunction with the SCME.

3.2.18 Submits the Attachment 3 and associated documentation to the SCMC.

3.2.19 Submits the Attachment 5 to the SCME.

3.2.20 Identifies and documents software errors during development.

3.2.21 Troubleshoots problems with software.

3.2.22 Concurs with Tester that testing is completed satisfactorily.

3.2.23 Approves operational use of software in conjunction with the SCME.

3.2.24 Ensures obsolete versions of software are deleted or disabled so production use is prevented.

3.3 Tester

NOTE

The Tester can be anyone knowledgeable on the software's application and the process in which the software is used and must be a person other than the SD.

3.3.1 Develops Test Plans and Test Cases, as required.

3.3.2 Performs software testing.

3.3.3 Documents the software test results.

3.3.4 Participates in document reviews of requirements, test plan, and design.

3.3.5 Identifies and documents software errors during testing.

3.3.6 Works with the SD to resolve problems identified during testing.

3.4 CCP Quality Assurance (QA)

3.4.1 Ensures compliance with this SQAP.

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3.4.2 As requested, participates in document reviews of requirements, design, code, and test documentation.

3.5 Software Configuration Management Engineer (SCME)

3.5.1 Approves software evaluations.

3.5.2 Approves modifications to software.

3.5.3 Approves software retirement.

3.5.4 Approves operational use and document validation of software in conjunction with the SD and SPM.

3.5.5 Verifies the SCO is accurate and complete.

3.5.6 Reviews reasons for modifications to existing software on Attachment 3 in conjunction with the SD.

3.5.7 Reviews configuration items identified by the SD.

3.5.8 Verifies all required documentation is accurate, complete, and submitted with the SCO.

3.5.9 Reviews and approves the SQAP for Non-Qualified Supplier Software.

3.5.10 Determines if modification is considered minor change in conjunction with the SD, Tester, and appropriate SPM.

3.5.11 Identifies affected groups or organizations upon software changes to allow for additional evaluation.

3.6 CCP Software Configuration Management Coordinator (SCMC)

3.6.1 Maintains the CCP Software Configuration Management (SCM) Program and the SQA-TRU Software Quality Assurance Database, which is part of the CCP Data Center.

3.6.2 Places software and associated documentation from all locations into the CCP SCM Records files.

3.6.3 Electronically obtains an SCO, SCO Addendum, or SPRCR number from the CCP Data Center and provides to the initiator prior to the initiation of a new software project or modification, revision, upgrade, removal, or installation of software.

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3.6.4 Provides general information and assistance to CCP personnel regarding software QA documentation, status, and records.

3.6.5 Notifies the appropriate SPM when evaluations have been completed and determined exempt.

3.6.6 Updates the SIL for the specific site location when software is procured, developed, modified, or installed.

3.6.7 Posts software applications on the ftp site.

3.7 Site Project Manager (SPM)

3.7.1 Approves operational use and documents validation of software in conjunction with the SD and SCME.

3.7.2 Notifies the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved Expert Analysts (EAs)/Subject Matter Expert (SMEs) of operational use approval.

3.7.3 Reviews software posted on the ftp site.

3.7.4 Reviews the SIL for completeness.

3.7.5 Notifies the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs that the SIL has been updated.

3.8 CCP Records Custodian

3.8.1 Receives, processes, and maintains all records generated by this procedure in accordance with CCP-QP-008, *CCP Records Management*.

3.9 End User (Only for CCP Software)

3.9.1 Develops the test plan in conjunction with the SD and the requester.

3.9.2 Performs the testing.

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4.0 PROCEDURE

4.1 Software Evaluation

NOTE

A software evaluation must be done for initial software development or modification that may change the software baseline.

NOTE

Any personnel involved with developing, maintaining, using, or installing software used by CCP will follow the requirements of this SQAP, including verification that the software in use is listed on the SIL. The SPM will make notifications upon operational use approval and changes to the SIL.

Initiator

4.1.1 **IF** software has been previously categorized proceed to the applicable section of the SQAP. **IF NOT**,
THEN go to section 4.1.2.

4.1.2 Evaluate the software in accordance with Attachment 1, print name, sign, and date Attachment 1, **AND** obtain the SCME's printed name, signature, and date.

4.1.3 **IF** the software is **NOT** exempt,
THEN maintain the completed Attachment 1 with applicable software documentation, **AND** GO TO the applicable Section of this SQAP as indicated on Attachment 1.

4.1.4 **IF** the software is exempt (Category 6),
THEN document basis for exemption in Block 7 of Attachment 1.

4.1.5 **IF** the software is exempt (Category 6),
THEN transmit the completed Attachment 1 to the SCMC in accordance with CCP-QP-008, *CCP Records Management*.

NOTE

Some Firmware is exempt from the requirements of this SQAP (see Section 1.2.5).

SCMC

4.1.6 Update the SIL.

4.1.7 Notify the appropriate Initiator/SPM the evaluation has been completed and the software was determined to be exempt.

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4.1.8 Place the completed Attachment 1 into the CCP SCM Records file.

4.1.9 Update the SQA-TRU Software Quality Assurance Database.

SPM

4.1.10 Review the SIL for completeness.

4.2 COTS Software (Category 1)

4.2.1 Evaluate software in accordance with Section 4.1.

4.2.2 **IF** the request is for new COTS Software,
THEN GO TO Section 4.2.4.

4.2.3 **IF** the request is for a modification to an existing COTS Software,
THEN GO TO Section 4.2.5.

4.2.4 New COTS Software

Initiator

[A] Initiate Attachment 2 by obtaining an SCO number from the SCMC, **AND** complete Blocks 1 through 11.

SCMC

[A.1] Obtain SCO number from the SQA-TRU Software Quality Assurance Database.

[B] Record N/A for Blocks 12a through 12c on Attachment 2.

[C] Forward Attachment 1 and Attachment 2 to the SD.

SD

[D] Evaluate the user documentation to determine if it is suitable for the intended purpose of user documentation (see Section 1.14).

[D.1] **IF** the evaluation is successful,
THEN GO TO step 4.2.4[E].

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[D.2] **IF** the evaluation is **NOT** successful, **THEN** initiate communication with supplier.

(a) Document and resolve issues with supplier.

(b) GO TO step 4.2.4[E].

[E] Print name, sign, and date Block 13 of Attachment 2 after completing the user documentation evaluation.

[F] Develop Test Plan, as applicable, using the user documentation provided with the COTS Software (see Section1.16).

[G] Forward all documentation to SCME for adequacy and completeness review.

SCME

[H] Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 of Attachment 2.

[I] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[J] **IF** there are NO Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check NO in Block 14 of Attachment 2.

[K] Forward all documentation to SD.

SD

[L] Arrange for installation of the software for testing.

[M] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[N] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

Controlled
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Tester

[O] Perform Test as outlined in the Test Plan.

[P] **IF** there are Software Review Action Items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[Q] **IF** there are NO Software Review Action Items that need to be resolved as a result of the testing review,
THEN check NO in Block 15 of Attachment 2.

[R] Print name, sign, and date Block 15 of Attachment 2.

[S] Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

SD

[T] Document the software name and version, operating system and version, hardware manufacturer, and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, as applicable.

[T.1] **IF NOT** applicable,
THEN mark N/A in Block 16 of Attachment 2.

[U] Print name, sign, and date Block 16 of Attachment 2.

[V] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[W] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to SCME.

SCME

[X] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[Y] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to the appropriate SPM.

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SPM

[Z] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[AA] Submit data package to SCMC in accordance with CCP-QP-008.

SCMC

[BB] Upon receipt of the software documentation place data package into the CCP SCM Records file.

[CC] Update the SIL.

[DD] Notify the appropriate SPM when the SIL has been updated.

[EE] Update the SQA-TRU Software Quality Assurance Database, which is part of the CCP Data Center.

[FF] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[GG] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

[HH] Review the SIL for completeness.

[II] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs that the SIL has been updated.

4.2.5 Modification to Existing COTS Software

Initiator

[A] Initiate Attachment 3 by obtaining an SPRCR number from the SCMC, **AND** complete Blocks 1 through 9 in conjunction with the SD to document reason for modification.

SCMC

[A.1] Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

[B] Determine if the modification is considered a minor change in conjunction with the SD, Tester, SCME, and appropriate SPM.

[C] Document basis for decision regarding change in Block 10 of Attachment 3.

[D] Document corrective action taken by completing Block 11 of Attachment 3, **AND** record N/A for Block 12 on Attachment 3.

[E] Document approval by completing Block 13 and obtaining the SCME printed name, signature, and date.

[F] Initiate Attachment 2 by obtaining an SCO Addendum number from the SCMC, **AND** complete Blocks 1 through 11.

SCMC

[F.1] Obtain SCO Addendum number from the SQA-TRU Software Quality Assurance Database.

[G] Record N/A for Blocks 12a through 12c on Attachment 2.

[H] Forward Attachment 2 **AND** Attachment 3 to the SD.

SD

[I] Evaluate the user documentation to determine if it is suitable for the intended purpose of user documentation (see Section 1.14).

[I.1] **IF** the evaluation is successful, **THEN** GO TO step 4.2.5[J].

[I.2] **IF** the evaluation is **NOT** successful, **THEN** initiate communication with supplier.

(a) Document and resolve issues with supplier.

(b) GO TO step 4.2.5[J].

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[J] Print name, sign, and date Block 13 of Attachment 2 after completing the user documentation evaluation.

[K] Develop Test Plan, as applicable, using the user documentation provided with the COTS Software (see Section 1.16).

[L] Forward all documentation to SCME for adequacy and completeness review.

SCME

[M] Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 of Attachment 2.

[N] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[O] **IF** there are NO Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check NO in Block 14 of Attachment 2.

[P] Forward all documentation to SD.

SD

[Q] Arrange for installation of the software for testing.

[R] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[S] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

Tester

[T] Perform Test as outlined in the Test Plan.

[U] **IF** there are Software Review Action Items that need to be resolved as a result of the testing, **THEN** check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

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[V] **IF** there are NO Software Review Action Items that need to be resolved as a result of the testing review, **THEN** check NO in Block 15 of Attachment 2.

[W] Print name, sign, and date Block 15 of Attachment 2.

[X] Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

SD

[Y] Document the software name and version, operating system and version, hardware manufacturer, and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, as applicable.

[Y.1] **IF NOT** applicable, **THEN** mark N/A in Block 16 of Attachment 2.

[Z] Print name, sign, and date Block 16 of Attachment 2.

[AA] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[BB] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to SCME.

SCME

[CC] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[DD] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to the appropriate SPM.

SPM

[EE] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[FF] Submit data packages to SCMC in accordance with CCP-QP-008.

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SCMC

[GG] Update the SIL.

[HH] Notify the appropriate SPM when the SIL has been updated.

[II] Update the SQA-TRU Software Quality Assurance Database.

[JJ] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[KK] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

[LL] Review the SIL for completeness.

[MM] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs that the SIL has been updated.

4.3 Application within COTS or System Software (Category 2)

NOTE

Only one SCO needs to be completed for each application developed within COTS or System Software to upload it to the ftp site. An SCO is **NOT** required to be completed each time an application developed within COTS or System Software is downloaded from the Controlled Software folder on the ftp site to a workstation, provided that the Operating Environment in which the application was tested is the same as that on the workstation the application is being downloaded to. An application developed within COTS cannot be downloaded and used on an operating system that it has not been tested on.

4.3.1 Evaluate software in accordance with Section 4.1.

4.3.2 **IF** the request is for new application development, **THEN** GO TO Section 4.3.4.

4.3.3 **IF** the request is for a modification to an existing application, **THEN** GO TO Section 4.3.5.

4.3.4 New Application within COTS or System Software

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Initiator

[A] Initiate Attachment 2 by obtaining an SCO number from the SCMC, **AND** completing Blocks 1 through 11.

SCMC

[A.1] Obtain SCO number from the SQA-TRU Software Quality Assurance Database.

[B] Record N/A for Blocks 12a through 13 on Attachment 2.

[C] Submit Attachment 1 **AND** Attachment 2 to the SD.

SD

[D] Develop a functional description of the software, including source code listing, such as formulas within cells, macros, etc.

[E] Develop application as outlined in the functional description.

[F] Develop the Test Plans and Test Cases as outlined in the functional description (see Section 1.16).

[G] Forward all documentation to SCME for adequacy and completeness review.

SCME

[H] Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 of Attachment 2.

[I] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to
Attachment 2 (see Section 4.10).

[J] **IF** there are NO Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check NO in Block 14 of Attachment 2.

[K] Forward all documentation to SD.

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SD

[L] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[M] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

Tester

[N] Perform testing as outlined in the functional description.

[O] **IF** there are Software Review Action Items that need to be resolved as a result of the Testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4; **AND** attach to Attachment 2 (see Section 4.10).

[P] **IF** there are NO Software Review Action Items that need to be resolved as a result of the testing review,
THEN check NO in Block 15 of Attachment 2.

[Q] Complete Block 15 of Attachment 2.

[R] Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

SD

[S] Document the software name and version, software development date, application and application version, and operating system and version on which the software application is installed in Block 16 of Attachment 2, as applicable.

[S.1] **IF NOT** applicable,
THEN mark N/A in Block 16 of Attachment 2.

[T] Print name, sign, and date Block 16 of Attachment 2.

[U] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[V] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to SCME.

Controlled
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SCME

[W] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[X] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to the appropriate SPM.

SPM

[Y] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[Z] Submit data package to SCMC in accordance with CCP-QP-008.

SCMC

NOTE

Controlled versions of software applications are posted to the following ftp site address: ftp://q.wipp.ws/QA/ControlledSoftware.

[AA] Post the software on the ftp site unless it has been determined to be proprietary (see Section 1.10).

[BB] Update the SIL.

[CC] Notify the appropriate SPM when the SIL has been updated.

[DD] Update the SQA-TRU Software Quality Assurance Database.

[EE] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[FF] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

Controlled
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SPM

[GG] Review the software posted on the ftp site, if applicable.

[HH] Review the SIL for completeness.

[II] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs that the SIL has been updated.

4.3.5 Modification to Existing Application within COTS or System Software

Initiator

[A] Initiate Attachment 3 by obtaining an SPRCR number from the SCMC, **AND** complete Blocks 1 through 9 in conjunction with the SD to document reason for modification.

SCMC

[A.1] Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

[B] Determine if the modification is considered a minor change in conjunction with the SCME, SD, Tester, and appropriate SPM.

[C] Document basis for decision change in Block 10 of Attachment 3.

[D] Document corrective action taken by completing Block 11 of Attachment 3, **AND** record N/A for Block 12 on Attachment 3.

[E] For a modification that is not considered a minor change go to Section 4.3.5[G].

[F] For a modification that is considered a minor change perform the following:

[F.1] Document approval by signing Block 13 and forward data package to the SCME for final approval.

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SCME

[F.2] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[F.3] Sign Block 13 of Attachment 3, approving the modification.

[F.4] Notify the appropriate personnel that the change has been approved.

Initiator

[F.5] Perform the change as outlined on Attachment 3, **AND** notify the SCME that the change has been made.

SCME

[F.6] Update the comments box on the SIL to reflect the SPRCR by indicating the problem report number.

[F.7] Update the controlled software folder with the new software, **AND** notify the appropriate personnel, if applicable.

[F.8] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[F.9] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

[G] Document approval by completing Block 13 and obtaining the SCME's printed name, signature, and date.

[H] Initiate Attachment 2 by obtaining an SCO Addendum number from the SCMC, **AND** complete Blocks 1 through 11.

SCMC

[H.1] Obtain SCO Addendum number from the SQA-TRU Software Quality Assurance Database.

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[I] Submit Attachment 2 **AND** Attachment 3 to the SD.

SD

[J] Record N/A for Blocks 12a through 13 on Attachment 2.

[K] Modify existing functional description of the software, including source code changes, such as formulas within cells, macros, etc.

[L] Develop the Test Plans and Test Cases as outlined in the functional description.

[M] Forward all documentation to SCME for adequacy and completeness review.

SCME

[N] Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 of Attachment 2.

[O] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[P] **IF** there are NO Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check NO in Block 14 of Attachment 2.

[Q] Forward all documentation to SD.

SD

[R] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[S] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

Tester

[T] Perform testing as outlined in the functional test plan requirements.

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[U] **IF** there are Software Review Action Items that need to be resolved as a result of the Testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[V] **IF** there are NO Software Review Action Items that need to be resolved as a result of the testing review,
THEN check NO in Block 15 of Attachment 2.

[W] Complete Block 15 of Attachment 2.

[X] Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

SD

[Y] Document the software name and version, software development date, application and application version, and operating system and version on which the software application is installed in Block 16 of Attachment 2, as applicable.

[Y.1] **IF NOT** applicable,
THEN mark N/A in Block 16 of Attachment 2.

[Z] Print name, sign, and date Block 16 of Attachment 2.

[AA] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[BB] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to SCME.

SCME

[CC] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[DD] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to the appropriate SPM.

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SPM

[EE] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[FF] Submit data package to SCMC in accordance with CCP-QP-008.

SCMC

NOTE

Controlled versions of software applications are posted to the following ftp site address: ftp://q.wipp.energy.gov/QA/ControlledSoftware.

[GG] Post the software on the ftp site unless it has been determined to be proprietary (see Section 1.9).

[HH] Update the SIL.

[II] Notify the appropriate SPM when the SIL has been updated.

[JJ] Update the SQA-TRU Software Quality Assurance Database.

[KK] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[LL] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

[MM] Review the software posted on the ftp site, if applicable.

[NN] Review the SIL for completeness.

[OO] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs that the SIL has been updated.

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4.4 Qualified Supplier Software (Category 3)

NOTE

Some software procurement contracts stipulate a supplier upgrade and provide revisions to software over the course of the contract. This type of modification to supplier software DOES **NOT** require procurement activity but does require SCO initiation, user documentation evaluation, integration testing, and inclusion on the SIL.

Procurement documentation specifies applicable QA requirements and required supplier software documentation. Software and associated documentation procured by CCP from active QSL suppliers, who are also subcontractors to CCP for other services, will be controlled under the supplier's approved Software QA Program. Upon receipt of the developed or modified software from the QSL supplier, CCP performs user documentation review and installation/integration testing in accordance with this SQAP.

Grading of software is performed in accordance with CCP-QP-001, *CCP Graded Approach*. Procurement of software is performed in accordance with CCP-QP-015, *CCP Procurement*.

4.4.1 **IF** the request is for a new software development,
THEN GO TO Section 4.4.3.

4.4.2 **IF** the request is for a modification to an existing application,
THEN GO TO Section 4.4.4.

4.4.3 New Qualified Supplier Software

Initiator

[A] Initiate Attachment 2 by obtaining an SCO number from the SCMC, **AND** completing Blocks 1 through 11.

SCMC

[A.1] Obtain SCO number from the SQA-TRU Software Quality Assurance Database.

[B] Record N/A for Blocks 12a through 12c of Attachment 2.

[C] Upon receipt of the user documentation, forward Attachment 1, Attachment 2, and the user documentation to the SD for evaluation.

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SD

[D] Evaluate the user documentation to determine if it is suitable for the intended purpose of user documentation (see Section 1.15).

[D.1] **IF** the evaluation is successful, **THEN** GO TO step 4.4.3[E].

[D.2] **IF** the evaluation is **NOT** successful, **THEN** initiate communication with supplier.

(a) Document and resolve issues with supplier.

(b) GO TO step 4.4.3[E].

[E] Print name, sign, and date Block 13 of Attachment 2 after completing the user documentation evaluation.

[F] Develop a Test Plan (see Section 1.16).

[G] Forward all documentation to the SCME for adequacy and completeness review.

SCME

[H] Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 of Attachment 2.

[I] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[J] **IF** there are NO Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check NO in Block 14 of Attachment 2.

[K] Forward all documentation to SD.

SD

[L] Arrange for installation of the software for testing.

[M] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

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[N] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2, **AND** forward the data package to the Tester.

NOTE

Installation/integration tests are performed per each installation/integration of the software with hardware, data, or other components. Multiple operating systems and work stations may be listed in Block 16 of Attachment 2 for the same software and version at specific sites. An additional sheet may be attached if there is not enough room in Block 16.

Tester

[O] Perform Test as outlined in the Test Plan.

[P] Determine if the results of the test(s) are satisfactory.

[P.1] **IF** the test results are satisfactory, **THEN** document the test results, complete Block 15 of Attachment 2, **AND** GO TO step 4.4.3[R].

[P.2] **IF** the test results are **NOT** satisfactory, **THEN** document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware data and other components need to be replaced.

(a) Initiate Attachment 3 by obtaining an SPRCR number from the SCMC, **AND** complete Blocks 1 through 9 in conjunction with the SD to document the issue.

SCMC

(a.1) Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

(a.2) **IF** it is a hardware, data, **OR** other component issue, **THEN** replace **AND/OR** reintegrate the software with the hardware, data, and other components, **AND** GO TO step 4.4.3[F].

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(a.3) **IF** it is **NOT** a hardware, data, **OR** other component issue,
THEN initiate communication with the Qualified Supplier so the supplier can resolve the issue.

(a.4) Upon completion of modification by supplier, notify SD, **AND** submit the deliverables to the SD.

SD

(a.5) Review the deliverables, communicate with the supplier as necessary, **AND** GO TO step 4.4.3[F].

Tester

(b) **IF** a modification is **NOT** required,
THEN identify and document errors and resolutions in the test results, **AND** notify the supplier of errors and resolutions.

[Q] **IF** there are action items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[R] **IF** there are NO Software Review Action Items that need to be resolved as a result of the testing review,
THEN check NO in Block 15 of Attachment 2.

[S] Notify the SD that the test has been satisfactorily completed.

[T] Print name, sign, and date Block 15 of Attachment 2.

[U] Verify that all associated Test documentation is attached, **AND** forward the package to SD.

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NOTE

Block 10 of Attachment 2 may be used to list as many work stations as necessary of the same software and version.

Initial installation of NDA software, including library data files, is documented in accordance with the requirements of this procedure.

Software on computer workstations that have crashed shall be reinstalled using Attachment 2, provided the software name and version; and hardware model number, serial number, and operating system are the same as identified on the original SCO.

SD

[V] Document the software name and version, operating system and version, hardware manufacturer; and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, as applicable.

[V.1] **IF NOT** applicable,
THEN mark N/A in Block 16 of Attachment 2.

[W] Print name, sign, and date Block 16 of Attachment 2.

[X] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[Y] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to SCME.

SCME

[Z] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[AA] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the appropriate SPM.

SPM

[BB] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** submit the data package to the SCMC in accordance with CCP-QP-008.

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[CC] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

SCMC

[DD] Update the SIL.

[EE] Update the SQA-TRU Software Quality Assurance Database.

[FF] Notify the appropriate SPM that the SIL has been updated.

[GG] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[HH] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

[II] Review the SIL for completeness.

[JJ] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs that the SIL has been updated.

4.4.4 Modification to Existing Qualified Supplier Software

Initiator

[A] Initiate Attachment 3, by obtaining an SPRCR number from the SCMC, **AND** complete Blocks 1 through 9 in conjunction with the SD to document reason for modification.

SCMC

[A.1] Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

[B] Determine if the modification is considered a minor change in conjunction with the SCME, SD, Tester, and appropriate SPM.

[C] Document basis for decision regarding change in Block 10 of Attachment 3.

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[D] Document corrective action taken by completing Block 11 of Attachment 3, **AND** record N/A for Block 12 on Attachment 3.

[E] For a modification that is not considered a minor change go to Section 4.4.4[G].

[F] For a modification that is considered a minor change perform the following:

[F.1] Document approval by signing Block 13 and forward data package to SCME for final approval.

SCME

[F.2] Review the data package, **AND** verify all of the required documentation is accurate and complete.

[F.3] Sign Block 13 of Attachment 3, approving the modification.

[F.4] Notify the appropriate personnel that the change has been approved.

Initiator

[F.5] Perform the change as outlined on Attachment 3, **AND** notify the SCME that the change has been made.

SCME

[F.6] Update the comments box on the SIL to reflect the SPRCR by indicating the problem report number.

[F.7] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Record Custodian

[F.8] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

[G] Document approval by completing Block 13 and obtaining the SCME's printed name, signature, and date.

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[H] Initiate Attachment 2 by obtaining an SCO Addendum number from the SCMC, **AND** complete Blocks 1 through 11.

SCMC

[H.1] Obtain SCO Addendum number from the SQA-TRU Software Quality Assurance Database.

[I] Upon receipt of the user documentation, forward Attachment 2, **AND** Attachment 3 and the user documentation to the SD for evaluation.

SD

[J] Record N/A for Blocks 12a through 12c on Attachment 2.

[K] **IF** no user documentation is obtained for the modification of existing software,
THEN verify with the vendor that no new release of the user documentation was required.

[L] Print name, sign, and date Block 13 of Attachment 2 after completing the user documentation evaluation.

SD

[M] Develop/modify a Test Plan (see Section 1.16).

[N] Forward all documentation to the SCME for adequacy and completeness review.

SCME

[O] Review and approve the Test Plan in conjunction with the SD, Tester, and appropriate SPM, **AND** complete Block 14 on Attachment 2.

[P] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check YES in Block 14 of Attachment 2 initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[Q] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check NO in Block 14 of Attachment 2.

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[R] Forward all documentation to SD.

SD

[S] Arrange for installation of the software for testing.

[T] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[U] Verify that all associated documentation is attached to Attachment 2; print name, sign, and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

Tester

[V] Perform the test(s).

[W] Determine if the results of the test(s) are satisfactory.

[W.1] **IF** the test results are satisfactory,
THEN document the test results by completing Block 15 of Attachment 2, **AND** GO TO step 4.4.4[X].

[W.2] **IF** the test results are **NOT** satisfactory,
THEN document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware data and other components need to be replaced.

(a) **IF** it is a hardware, data, **OR** other component issue,
THEN replace **AND/OR** reintegrate the software with the hardware, data, and other components, **AND** GO TO step 4.4.4[M] .

(b) **IF** it is **NOT** a hardware, data, **OR** other component issue,
THEN instruct initiator to initiate a Purchase Requisition (PR) or Purchase Requisition Change Notice (PRCN).

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Initiator

(c) Initiate PR or PRCN in accordance with CCP-QP-015 for supplier modification of software.

(d) Ensure that the PR/PRCN includes the required deliverables the supplier must provide for review after modification.

(e) Ensure the software errors identified by the SD are submitted to the supplier.

(f) Upon completion of modification by supplier, notify SD, **AND** submit the deliverables to the SD.

SD

(g) Review the deliverables, communicate with the supplier as necessary, **AND** GO TO step 4.4.4[M].

Tester

[W.3] **IF** a modification is **NOT** required,
THEN identify and document errors and resolutions in the test results, **AND** notify the supplier of errors and resolutions.

[W.4] **IF** there are action items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[W.5] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the testing review,
THEN check NO in Block 15 of Attachment 2.

[X] Notify the SD that the test has been satisfactorily completed.

[Y] Print name, sign, and date Block 15 of Attachment 2.

[Z] Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

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SD

[AA] Document the software name and version, operating system and version, hardware manufacturer, and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, if applicable.

[AA.1] **IF NOT** applicable,
THEN mark N/A in Block 16 of Attachment 2.

[BB] Print name, sign, and date Block 16 of Attachment 2.

[CC] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[DD] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the SCME.

SCME

[EE] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[FF] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the appropriate SPM.

SPM

[GG] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[HH] Submit data package to SCMC in accordance with CCP-QP-008.

SCMC

4.4.5 Update the SIL.

4.4.6 Notify the appropriate SPM when the SIL has been updated.

4.4.7 Update the SQA-TRU Software Quality Assurance Database.

4.4.8 Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

Controlled
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CCP Records Custodian

4.4.9 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

4.4.10 Review the SIL for completeness.

4.4.11 Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs, when the SIL has been updated.

4.5 Non-Qualified Supplier Software (Category 4)

4.5.1 Evaluate software in accordance with Section 4.1.

4.5.2 **IF** the request is for a new Non-Qualified Supplier Software, **THEN** GO TO Section 4.5.4.

4.5.3 **IF** the request is for a modification to an existing Non-Qualified Supplier Software,
THEN GO TO Section 4.5.5.

4.5.4 New Non-Qualified Supplier Software

Initiator

[A] Develop a project-specific SQAP that addresses the elements in Section 1.13, and that establishes how the documentation requirements in Section 5.1.1[E] will be completed, **AND** forward to SCME for review.

SCME

[B] Review and approve the project-specific SQAP to verify that it meets the requirements of CCP-QP-022, *CCP Software Quality Assurance Plan*.

[C] **IF** there are Software Review Action Items that need to be resolved as a result of the project-specific SQAP review,
THEN initiate and complete
Attachment 4 (see Section 4.10).

[D] **IF** there are NO Software Review Action Items that need to be resolved as a result of the SQAP review,
THEN forward to initiator.

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Initiator

[E] Initiate Attachment 2 by obtaining an SCO number from the SCMC, **AND** completing Blocks 1 through 11.

SCMC

[E.1] Obtain SCO number from the SQA-TRU Software Quality Assurance Database.

[F] Complete Blocks 12a through 12c of Attachment 2 per the SQAP developed in step 4.5.4[A].

[G] Upon receipt of the user documentation, forward Attachment 1, Attachment 2, the SQAP, **AND** the user documentation to the SD for evaluation.

SD

[H] Evaluate the user documentation to determine if it is suitable for the intended purpose of user documentation (see Section 1.15).

[H.1] **IF** the evaluation is successful, **THEN** GO TO step 4.5.4[I].

[H.2] **IF** the evaluation is **NOT** successful, **THEN** initiate communication with supplier.

(a) Document and resolve issues with supplier.

(b) GO TO step 4.5.4[I].

[I] Print name, sign, and date Block 13 of Attachment 2 after completing the user documentation evaluation.

[J] Develop a Test Plan (see Section 1.16).

[K] Forward all documentation to the SCME for adequacy and completeness review.

SCME

[L] Review and approve the Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 on Attachment 2.

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[M] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[N] **IF** there are NO Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check NO in Block 14 of Attachment 2.

[O] Forward all documentation to SD.

SD

[P] Arrange for installation of the software for testing.

[Q] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[R] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

NOTE

Installation/integration tests are performed per each installation/integration of the software with hardware, data, or other components. Multiple operating systems and work stations may be listed in Block 16 of Attachment 2 for the same software and version at specific sites. An additional sheet may be attached if there is not enough room in Block 16.

Tester

[S] Perform the test(s).

[T] Determine if the results of the test(s) are satisfactory.

[T.1] **IF** the test results are satisfactory, **THEN** document the test results, complete Block 15 of Attachment 2, **AND** GO TO step 4.5.4[V].

[T.2] **IF** the test results are **NOT** satisfactory, **THEN** document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware data and other components need to be replaced.

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(a) **IF** it is a hardware, data, **OR** other component issue,
THEN replace **AND/OR** reintegrate the software with the hardware, data, and other components, **AND** GO TO step 4.5.4[J].

(b) **IF** it is **NOT** a hardware, data, **OR** other component issue,
THEN instruct initiator to initiate a PR or PRCN.

Initiator

(b.1) Initiate PR or PRCN in accordance with CCP-QP-015 for supplier modification of software.

(b.2) Ensure that the PR/PRCN includes the required deliverables the supplier must provide for review after modification.

(b.3) Ensure the software errors identified by the SD are submitted to the supplier.

(b.4) Upon completion of modification by supplier, notify SD, **AND** submit the deliverables to the SD.

SD

(b.5) Review the deliverables, communicate with the supplier as necessary, **AND** GO TO step 4.5.4[J].

Tester

(c) **IF** a modification is **NOT** required,
THEN identify and document errors and resolutions in the test results, and notify the supplier of errors and resolutions.

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[U] **IF** there are Software Review Action Items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[V] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the testing review,
THEN check NO in Block 15 of Attachment 2.

[W] Notify the SD that the test has been satisfactorily completed.

[X] Print name, sign, **AND** date Block 15 of Attachment 2.

[Y] Verify that all associated Test documentation is attached, **AND** forward the package to SD.

SD

[Z] Document the software name and version, operating system and version, hardware manufacturer, and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, as applicable.

[Z.1] **IF NOT** applicable,
THEN mark N/A in Block 16 of Attachment 2.

[AA] Print name, sign, and date Block 16 of Attachment 2.

[BB] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[CC] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the SCME.

SCME

[DD] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[EE] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the appropriate SPM.

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SPM

[FF] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[GG] Submit the data package to the SCMC in accordance with CCP-QP-008.

SCMC

[HH] Update the SIL.

[II] Notify the appropriate SPM that the SIL has been updated.

[JJ] Update the SQA-TRU Software Quality Assurance Database.

[KK] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[LL] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

[MM] Review the SIL for completeness.

[NN] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as involved EAs when the SIL has been updated.

4.5.5 Modification to Existing Non-Qualified Supplier Software

Initiator

[A] Initiate Attachment 3 by obtaining an SPRCR number from the SCMC **AND** completing Blocks 1 through 9 in conjunction with the SD to document reason for modification.

SCMC

[A.1] Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

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[B] Determine if the modification is considered a minor change in conjunction with the SD, SCME, Tester, and appropriate SPM.

[C] Document the basis for decision regarding change in Block 10 of Attachment 3.

[D] Document corrective action taken by completing Block 11 of Attachment 3, **AND** record N/A for Block 12 on Attachment 3.

[E] For a modification that is not considered a minor change go to Section 4.5.5[G].

[F] For a modification that is considered a minor change perform the following:

[F.1] Document approval by signing Block 13 and forward data package to SCME for final approval.

SCME

[F.2] Review the data package, **AND** verify all of the required documentation is accurate and complete.

[F.3] Sign Block 13 of Attachment 3, approving the modification.

[F.4] Notify the appropriate personnel that the change has been approved.

Initiator

[F.5] Perform the change as outlined on Attachment 3, **AND** notify the SCME that the change has been made.

SCME

[F.6] Update the comments box on the SIL to reflect the SPRCR by indicating the problem report number.

[F.7] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

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CCP Record Custodian

[F.8] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

[G] Document approval by completing Block 13 and obtaining the SCME's printed name, signature, and date.

[H] Develop/modify a project-specific SQAP describing how the requirements in Section 5.0 will be satisfied (see Section 1.13), **AND** submit to SCME for review.

SCME

[I] Review and approve the project-specific SQAP to verify that it meets the requirements of CCP-QP-022.

[J] **IF** there are Software Review Action Items that need to be resolved as a result of the project-specific SQAP review, **THEN** initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[K] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the SQAP review, **THEN** forward all documentation to Initiator.

Initiator

[L] Initiate Attachment 2 by obtaining an SCO Addendum number from the SCMC, **AND** completing Blocks 1 through 11.

SCMC

[L.1] Obtain SCO Addendum number from the SQA-TRU Software Quality Assurance Database.

[M] Complete Blocks 12a through 12c of Attachment 2 per the SQAP developed or modified in step 4.5.4[E].

[N] Upon receipt of the user documentation, forward Attachment 1, Attachment 2, Attachment 3, the SQAP, and the user documentation to the SD for evaluation.

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SD

[O] **IF** no user documentation is obtained for the modification of existing software,
THEN verify with the vendor that no new release of the user documentation was required.

[P] Print name, sign, and date Block 13 of Attachment 2 after completing the user documentation evaluation.

SD

[Q] Develop Test Plan (see Section 1.16).

[R] Forward all documentation to the SCME for adequacy and completeness review.

SCME

[S] Review and approve the Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 on Attachment 2.

[T] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[U] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check NO in Block 14 of Attachment 2.

[V] Forward all documentation to SD.

SD

[W] Arrange for installation of the software for testing.

[X] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[Y] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

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Tester

[Z] Perform Test as outlined in the Test Plan.

[AA] Determine if the results of the test(s) are satisfactory.

[BB] **IF** the test results are satisfactory,
THEN document the test results by completing Block 15 of Attachment 2, **AND** GO TO step 4.5.5[DD].

[CC] **IF** the test results are **NOT** satisfactory,
THEN document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware data and other components need to be replaced.

[CC.1] **IF** it is a hardware, data, **OR** other component issue,
THEN replace **AND/OR** reintegrate the software with the hardware, data, and other components, **AND** GO TO step 4.5.5[DD].

[CC.2] **IF** it is **NOT** a hardware, data, **OR** other component issue,
THEN notify initiator to initiate a PR or PRCN.

Initiator

(a) Initiate PR or PRCN in accordance with CCP-QP-015 for supplier modification of software.

(b) Ensure that the PR/PRCN includes the required deliverables the supplier must provide for review after modification.

(c) Ensure the software errors identified by the SD are submitted to the supplier.

(d) Upon completion of modification by supplier, notify SD, **AND** submit the deliverables to the SD.

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SD

(e) Review the deliverables, communicate with the supplier as necessary, **AND** GO TO step 4.5.5[Q].

Tester

[CC.3] **IF** a modification is **NOT** required, **THEN** identify and document errors and resolutions in the test results, **AND** notify the supplier of errors and resolutions.

[DD] Notify the SD that the test has been satisfactorily completed.

[EE] Print name, sign, **AND** date Block 15 of Attachment 2.

[FF] Verify that all associated Test documentation is attached, **AND** forward the data package to SD.

SD

[GG] Document the software name and version, operating system and version, hardware manufacturer, and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, as applicable.

[GG.1] **IF NOT** applicable, **THEN** mark N/A in Block 16 of Attachment 2.

[HH] Print name, sign, and date Block 16 of Attachment 2.

[II] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[JJ] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the SCME.

SCME

[KK] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[LL] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the appropriate SPM.

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SPM

[MM] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[NN] Submit the data package to the SCMC in accordance with CCP-QP-008.

SCMC

4.5.6 Update the SIL.

4.5.7 Notify the appropriate SPM when the SIL has been updated via email.

4.5.8 Update the SQA-TRU Software Quality Assurance Database.

4.5.9 Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

4.5.10 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

4.5.11 Review the SIL for completeness.

4.5.12 Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs, when the SIL has been updated.

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4.6 CCP Software (Category 5)

NOTE

This Section requires all software life cycles to be analyzed. If problems are identified during software development that require modification to the requirements, design, code or testing, the SD will modify the appropriate life cycle phases in accordance with the corresponding steps in this Section. Attachment 2 is used to document modifications to an open SCO.

An iterative or sequential approach to the life cycle phases prior to operational use may be used.

4.6.1 Evaluate software in accordance with Section 4.1.

4.6.2 **IF** the request is for new software being developed, **THEN** GO TO Section 4.6.4.

4.6.3 **IF** the request is for a modification to existing software, **THEN** GO TO Section 4.6.5.

4.6.4 New CCP Software Development

Initiator

[A] Initiate Attachment 2 by obtaining an SCO number from the SCMC **AND** completing Blocks 1 through 11.

SCMC

[A.1] Obtain SCO number from the SQA-TRU Software Quality Assurance Database.

[B] Forward Attachment 1 and Attachment 2 to the SD.

SD

[C] Develop the software requirements document per Section 1.14 in conjunction with the Initiator.

[D] Arrange for **AND** perform a Requirements Review using independent personnel.

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[E] **IF** there are Software Review Action Items that require resolution as a result of the requirements review, **THEN** check YES in Block 12a of Attachment 2, **AND** initiate and complete Attachment 4 (see Section 4.10).

[F] **IF** there are NO Software Review Action Items that need to be resolved as a result of the requirements review, **THEN** check NO in Block 12a of Attachment 2.

[G] Document the Requirements Review, **AND** obtain participant's printed name, signature, and date in Block 12a of Attachment 2.

[H] Develop and document the design, per Section 1.14, in conjunction with the Initiator.

[I] Arrange for **AND** perform a Design Review using independent personnel.

[J] **IF** there are Software Review Action Items that require resolution as a result of the Design Review, **THEN** check YES in Block 12b of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[K] **IF** there are NO Software Review Action Items that need to be resolved as a result of the design review, **THEN** check NO in Block 12b of Attachment 2.

[L] Document the Design Review, obtain participant's printed name, signature, and date in Block 12b, **AND** sign Block 12b of Attachment 2.

[M] Translate the design into code.

[N] Arrange for **AND** perform a code review using independent personnel.

[O] **IF** there are Software Review Action Items that need to be resolved as a result of the code review, **THEN** check YES in Block 12c of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[P] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the code review, **THEN** check NO in Block 12c of Attachment 2.

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[Q] Document the Code Review, **AND** obtain participant's printed name, signature, and date in Block 12c of Attachment 2.

[R] Develop user documentation (see Section 1.15).

[S] Complete Block 13 of Attachment 2.

[T] Develop the Test Plan in conjunction with the requestor and end user (see Section 1.16).

[U] Forward all documentation to SCME for adequacy and completeness review.

SCME

[V] Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 of Attachment 2.

[W] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[X] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check NO in Block 14 of Attachment 2.

[Y] Forward all documentation to SD.

SD

[Z] Arrange for installation of the software for testing.

[AA] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[BB] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

Tester

[CC] Perform test as outlined in the Test Plan.

[DD] Determine if the results of the test are satisfactory.

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[DD.1] **IF** the test results are satisfactory,
THEN document the test results, attach the Test Report, sign and date Block 15 of Attachment 2,
AND GO TO step 4.6.4[FF].

[DD.2] **IF** the test results are **NOT** satisfactory,
THEN document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware data and other components need to be replaced.

(a) **IF** it is a hardware, data, **OR** other component issue,
THEN replace **AND/OR** reintegrate the software with the hardware, data and other components, **AND** GO TO step 4.6.4[T].

[EE] **IF** there are Software Review Action Items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[FF] Notify the SD that the test has been satisfactorily completed.

[GG] Forward the data package to the end user.

<u>End User</u>

NOTE

Tests performed by the End User may be a subset of all tests identified in the test plan. The test plan SHALL identify which tests are to be performed by the End User.

[HH] Perform test as outlined in the test plan.

[II] Determine if the results of the test are satisfactory.

[II.1] **IF** the test results are satisfactory,
THEN document the test results, attach the Test Report, complete Block 15 of Attachment 2, and GO TO step 4.6.4[KK].

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[II.2] **IF** the test results are **NOT** satisfactory,
THEN document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone, **OR** if hardware data and other components need to be replaced.

(a) **IF** it is a hardware, data, **OR** other component issue,
THEN replace **AND/OR** reintegrate the software with the hardware, data and other components, **AND** GO TO step 4.6.4[T]

[JJ] **IF** there are Software Review Action Items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[KK] **IF** there are NO Software Review Action Items that need to be resolved as a result of the testing review,
THEN check NO in Block 15 of Attachment 2.

[LL] Notify the SD that the test has been satisfactorily completed.

[MM] Print name, sign, and date Block 15 of Attachment 2.

[NN] Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

SD

[OO] Document the software name and version, software development date, application and application version, operating system and version, hardware manufacturer, database, database version, and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, as applicable.

[OO.1] **IF NOT** applicable,
THEN record N/A in Block 16 of Attachment 2.

[PP] Print name, sign, and date Block 16 of Attachment 2.

[QQ] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

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[RR] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the SCME.

SCME

[SS] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[TT] Complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward the data package to the appropriate SPM.

SPM

[UU] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

[VV] Submit the data package to the SCMC in accordance with CCP-QP-008.

SCMC

[WW] Update the SQA-TRU Software Quality Assurance Database.

[XX] Update the SIL.

[YY] Notify the appropriate SPM when the SIL has been updated.

[ZZ] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[AAA] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

[BBB] Review the SIL for completeness.

[CCC] Notify the appropriate SD and SCME in Block 16 of Attachment 2, as well as the involved EAs/SMEs when the SIL has been updated.

4.6.5 Modification to Existing CCP Software

Initiator

[A] Initiate Attachment 3 and submit the request for modification to the Change Control Board (CCB). Upon approval, request an SPRCR number from the SCMC, and complete blocks 1 through 7 of the attachment.

SCMC

[A.1] Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

[B] Complete blocks 8 and 9 in conjunction with the SD to determine the reason for modification.

[C] Determine if the modification is considered a minor change in conjunction with the SCME, SD, Tester, and appropriate SPM.

[D] Document the basis for decision regarding change in Block 10 of Attachment 3.

[E] Document corrective action taken by completing Block 11 of Attachment 3, **AND** record N/A for Block 12 on Attachment 3.

[F] For a modification that is not considered a minor change go to Section 4.6.5[H].

[G] For a modification that is considered a minor change perform the following:

[G.1] Document approval by signing Block 13 and forward data package to SCME for final approval.

SCME

[G.2] Review the data package, **AND** verify all of the required documentation is accurate and complete.

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[G.3] Sign Block 13 of Attachment 3, approving the modification.

[G.4] Notify the appropriate personnel that the change has been approved.

Initiator

[G.5] Perform the change as outlined on Attachment 3, **AND** notify the SCME that the change has been made.

SCME

[G.6] Update the comments box on the SIL to reflect the SPRCR by indicating the problem report number.

[G.7] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[G.8] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

[H] Document approval by completing Block 13 and obtaining the SCME's printed name, signature, and date.

[I] Initiate Attachment 2 by obtaining an SCO Addendum number from the SCMC **AND** completing Blocks 1 through 11.

SCMC

[I.1] Obtain SCO Addendum number from the SQA-TRU Software Quality Assurance Database.

[J] Forward Attachment 2 **AND** Attachment 3 to the SD.

SD

[K] **IF** the Requirements require modification, **THEN** GO TO step 4.6.5[P].

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[L] **IF** the Design requires modification,
THEN GO TO step 4.6.5[X].

[M] **IF** the Code requires modification,
THEN GO TO step 4.6.5[CC].

[N] **IF** the User Documentation requires modification,
THEN GO TO step 4.6.5[EE].

[O] **IF** the Test Plan requires modification,
THEN GO TO step 4.6.5[GG].

[P] Develop/modify the software requirements, document in conjunction with the Initiator, **AND** ensure that the requirements per Section 1.14 are met.

[Q] Arrange for **AND** perform a Requirements Review using independent personnel.

[R] **IF** there are Software Review Action Items that require resolution as a result of the requirements review,
THEN check YES in Block 12a of Attachment 2, initiate **AND** complete Attachment 4 (see Section 4.10).

[S] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the requirements review,
THEN check NO in Block 12a of Attachment 2.

[T] Document the Requirements Review, **AND** obtain participant signatures and date in Block 12a of Attachment 2.

[U] Develop/modify and document the design or modification(s) to the design, **AND** ensure that the requirements per step 4.6.4[H] are met.

[V] Arrange for **AND** perform a Design Review using independent personnel.

[W] **IF** there are Software Review Action Items that require resolution as a result of the Design Review,
THEN check YES in Block 12b of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

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[X] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the design review, **THEN** check NO in Block 12b of Attachment 2.

[Y] Document the Design Review, obtain participant signatures and date in Block 12b, **AND** sign Block 12b of Attachment 2.

[Z] Translate the design into code, **OR** modify the code.

[AA] Arrange for **AND** perform a code review using independent personnel.

[BB] **IF** there are Software Review Action Items that need to be resolved as a result of the code review, **THEN** check YES in Block 12c of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[CC] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the code review, **THEN** check NO in Block 12c of Attachment 2.

[DD] Document the Code Review, **AND** obtain participant signatures and date in Block 12c of Attachment 2.

[EE] Develop/modify user documentation, per Section 1.15.

[FF] Complete Block 13 of Attachment 2.

[GG] Develop/modify the Test Plan, **AND** ensure that it follows the items identified as per Section 1.16.

[HH] Forward all documentation to the SCME for adequacy and completeness review.

SCME

[II] Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 on Attachment 2.

[JJ] **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review, **THEN** check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

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[KK] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check NO in Block 14 of Attachment 2.

[LL] Forward all documentation to the SD.

SD

[MM] Arrange for installation of the software for testing.

[NN] Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

[OO] Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

Tester

[PP] Perform Test as outlined in the Test Plan.

[QQ] Determine if the results of the test are satisfactory.

[QQ.1] **IF** the test results are satisfactory,
THEN document the test results, attach the Test Report **AND** GO TO step 4.6.5[SS].

[QQ.2] **IF** the test results are **NOT** satisfactory,
THEN document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware data and other components need to be replaced.

[QQ.3] **IF** it is a hardware, data, **OR** other component issue,
THEN replace **AND/OR** reintegrate the software with the hardware, data and other components,
AND GO TO step 4.6.5[BB].

[RR] **IF** there are Software Review Action Items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[SS] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the Testing review,
THEN print name, sign, and date Block 15 of Attachment 2.

[TT] Notify the SD that the test has been satisfactorily completed.

[UU] Forward the data package to the end user.

End User

NOTE

Tests performed by the End User may be a subset of all tests identified in the test plan. The test plan SHALL identify which tests are to be performed by the End User.

[VV] Perform test as outlined in the test plan.

[WW] Determine if the results of the test are satisfactory.

[WW.1] **IF** the test results are satisfactory,
THEN document the test results, attach the Test Report, complete Block 15 of Attachment 2, **AND** GO TO step 4.6.5[XX].

[WW.2] **IF** the test results are **NOT** satisfactory,
THEN document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware data and other components need to be replaced.

[WW.3] **IF** it is a hardware, data, **OR** other component issue,
THEN replace **AND/OR** reintegrate the software with the hardware, data and other components,
AND GO TO step 4.6.5[BB].

[XX] **IF** there are Software Review Action Items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

[YY] **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the Testing,
THEN check NO in Block 15 of Attachment 2.

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[ZZ] Print name, sign, and date Block 15 of Attachment 2.

[AAA] Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

SD

[BBB] Document the software name and version, software development date, application and application version, operating system and version, hardware manufacturer, database, database version, and model and serial number of the workstation(s) on which the software is installed, in Block 16 of Attachment 2, as applicable.

[CCC] **IF NOT** applicable,
THEN record N/A in Block 16 of Attachment 2.

[DDD] Print name, sign, and date Block 16 of Attachment 2.

[EEE] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[FFF] Complete Block 17 of Attachment 2 documenting operational use approval and document validation.

[GGG] Initiate an Attachment 5 (see Section 4.7), **AND** forward data package to SCME.

SCME

[HHH] Review the data package, **AND** verify that all of the required documentation is accurate and complete.

[III] Complete Block 17 of Attachment 2 documenting operational use approval and document validation.

[JJJ] Forward documentation to SPM.

SPM

[KKK] Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

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[LLL] Submit the data package to the SCMC in accordance with CCP-QP-008.

SCMC

[MMM] Update the SQA – Software Quality Assurance Database.

[NNN] Update the SIL.

[OOO] Notify the appropriate SPM when the SIL has been updated.

[PPP] Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

[QQQ] Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

[RRR] Review the SIL for completeness.

[SSS] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs when the SIL has been updated.

4.7 Software Configuration Change Report (SCCR)

SD

4.7.1 Complete Blocks 1 through 7 of Attachment 5.

4.7.2 Print name, sign, and date Block 8.

4.7.3 Forward Attachment 5 and all other documentation to the SCME.

4.8 Additional Software Installations

Initiator

4.8.1 Initiate Attachment 2 by obtaining an SCO addendum number from the SCMC, **AND** complete Blocks 1 through 11.

4.8.2 Forward Attachment 2 to the SD.

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SD

4.8.3 Record N/A for Blocks 12a through 12c of Attachment 2.

4.8.4 Verify with the vendor that **NO** new release of the user documentation was required, if applicable.

4.8.5 Print name, sign, and date Block 13 of Attachment 2 after completing user documentation verification.

4.8.6 Develop test plan in conjunction with the requestor and the end user (see Section 1.16).

4.8.7 Forward all documentation to the SCME for adequacy and completeness review.

SCME

4.8.8 Review and approve the Test Plan in conjunction with the SD, Tester, and appropriate SPM, **AND** complete Block 14 on Attachment 2.

4.8.9 **IF** there are Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

4.8.10 **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the Test Plan review,
THEN check NO in Block 14 of Attachment 2.

4.8.11 Forward all documentation to SD.

SD

4.8.12 Arrange for installation of the software for testing.

4.8.13 Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

4.8.14 Verify that all associated documentation is attached to Attachment 2; print name, sign, and date Block 15 of Attachment 2, **AND** forward the data package to the Tester.

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Tester

4.8.15 Perform Test as outlined in the Test Plan.

4.8.16 **IF** there are Software Review Action Items that need to be resolved as a result of the testing,
THEN check YES in Block 15 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2 (see Section 4.10).

4.8.17 **IF** there are **NO** Software Review Action Items that need to be resolved as a result of the testing review,
THEN Print name, sign, and date Block 15 of Attachment 2.

4.8.18 Notify the SD that the test has been satisfactorily completed.

4.8.19 Print name, sign, and date Block 15 of Attachment 2 and forward the data package to the SD.

SD

4.8.20 Document the software name and version, software development date, application and application version, operating system and version, hardware manufacturer, database, database version, model, and serial number of the workstation(s) on which the software is installed in Block 16 of Attachment 2, as applicable.

[A] **IF NOT** applicable,
THEN record N/A in Block 16 of Attachment 2.

4.8.21 Print name, sign, and date Block 16 of Attachment 2.

4.8.22 Review the data package, **AND** verify that all of the required documentation is accurate and complete.

4.8.23 Complete Block 17 of Attachment 2, documenting operational use approval and document validation, **AND** forward data package to the SCME.

SCME

4.8.24 Review the data package, **AND** verify that all of the required documentation is accurate and complete.

4.8.25 Complete Block 17 of Attachment 2, documenting operational use approval and document validation, **AND** forward the data package to the appropriate SPM.

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SPM

4.8.26 Review the data package, complete Block 17 of Attachment 2, documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as involved EAs/SMEs of operational use approval.

4.8.27 Submit data package to SCMC in accordance with CCP-QP-008.

SCMC

4.8.28 Update the SIL.

4.8.29 Notify the appropriate SPM when the SIL has been updated.

4.8.30 Update the SQA-TRU Software Quality Assurance Database.

4.8.31 Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

4.8.32 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

4.8.33 Review the SIL for completeness.

4.8.34 Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as notify the involved EAs/SMEs when the SIL has been updated.

4.9 Software Problem Report Change Request (SPRCR)

NOTE

This section is used to address bugs, fixes, and enhancements to already-existing software.

The SCO number identified in Block 1 is the SCO against which the SPRCR is written.

Initiator

4.9.1 Document the problem or issue by initiating Attachment 3, by obtaining a SPRCR number from the SCMC, **AND** completing Blocks 1 through 9.

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SCMC

[A] Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

4.9.2 Determine if the modification is considered a minor change by obtaining the SCMEs printed name, signature, and date in Block 10 of Attachment 3.

4.9.3 Submit Attachment 3 to the SD.

SD

4.9.4 Review Attachment 3, determine if the problem(s) requires a modification to applications or software requirements, design, code or testing, **OR** if the problem needs to be corrected by a supplier.

4.9.5 Document what research was done to address the problem/suggestion in Block 8 of Attachment 3.

4.9.6 Document the impact of the problem/suggestion on the system in Block 9 of Attachment 3.

4.9.7 Document the recommended corrective action to be taken, **AND** if a modification is required, from the SCMC, obtain the new SCO Addendum number that will address the problem/suggestion in Block 11 of Attachment 3.

4.9.8 Record N/A for Block 12 of Attachment 3.

4.9.9 Obtain Initiator's printed name, signature and date in Block 13, **AND** complete Attachment 3.

[A] **IF** a modification is **NOT** required,
THEN GO TO step 4.9.10.

[B] **IF** a modification is required,
THEN GO TO Section 4.1.

4.9.10 Notify the Initiator that the problem(s) has been resolved.

4.9.11 Submit Attachment 3 to the SCMC in accordance with CCP-QP-008.

SCMC

4.9.12 Update the SQA TRU Software Quality Assurance Database.

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4.9.13 Submit Attachment 3 and associated software documentation to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

4.9.14 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

4.10 Software Review Action Items

NOTE

This section explains Attachment 4. Attachment 4 is used to report Software Review Action Items.

SCME, Tester, OR SD

4.10.1 Initiate a Software Review Action Item by completing Blocks 1 through 6 on Attachment 4.

4.10.2 Determine and document the recommended action in Block 7 of Attachment 4.

4.10.3 Document final resolution by completing Block 8 of Attachment 4.

4.10.4 To indicate approval, obtain the appropriate signatures by printing name, signing, and dating Block 9 of Attachment 4 upon resolution of the Software Review Action Items as follows:

- Minimum approval signatures required for Software Review Action Items regarding the SQAP review: Initiator, SD, and SPM.
- Minimum approval signatures required for Software Review Action Items regarding the requirements review: Initiator, SD, and SPM.
- Minimum approval signatures required for Software Review Action Items regarding the Design review: SD and at least one other technical reviewer.
- Minimum approval signatures required for Software Review Action Items regarding the Code review: SD and at least one other technical reviewer.
- Minimum approval signatures required for Software Review Action Items regarding the Test Plan review: SD, Tester, and at least one other technical reviewer.

- Minimum approval signatures required for Software Review Action Items regarding the Testing review: SD, Tester, and at least one other technical reviewer.

4.11 Retirement

Initiator

4.11.1 Determine if the software:

- No longer provides a function used or required by CCP
- Will be replaced by different software
- Is obsolete and will **NOT** be replaced

[A] **IF** none of the criteria in step 4.11.1 are met, **THEN** the software CAN **NOT** be retired.

[B] **IF** any of the criteria in step 4.11.1 are met, **THEN** initiate Attachment 3 by obtaining an SPRCR number from the SCMC, **AND** complete Blocks 1 through 6, record N/A in Blocks 7 through 11.

SCMC

[B.1] Obtain SPRCR number from the SQA-TRU Software Quality Assurance Database.

4.11.2 Document the justification for the retirement of the software in Block 12 of Attachment 3, **AND** print name, sign, and date Block 12 and Block 13 of Attachment 3.

4.11.3 Obtain the printed names, signatures and dates of an SPM in Block 12 of Attachment 3 and the SCME in Block 13 of Attachment 3, to indicate approval.

SCME

4.11.4 Working with the SCMC, ensure all copies of the software are removed from the field, including the ftp site, **AND** are deleted from all computers and workstations.

4.11.5 Transmit all retired software documentation to the SCMC in accordance with CCP-QP-008.

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SCMC

4.11.6 Remove software from the ftp site, if applicable.

4.11.7 Update the SIL.

4.11.8 Update the SQA-TRU Software Quality Assurance Database.

4.11.9 Notify the appropriate SPM that the SIL has been updated.

4.11.10 Submit Attachment 3 to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

4.11.11 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

4.11.12 Confirm the software on the ftp site has been removed, if applicable.

4.11.13 Review the SIL for completeness.

4.11.14 Notify the appropriate SD in Block 12 of Attachment 3, as well as the involved EAs/SMEs, that the SIL has been updated.

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4.12 Software Removal

NOTE

Software removal is not retirement. Removal consists of taking software off of a specific workstation(s), but software will still be used and supported at a specific site. Software removal may be documented on the same SCO used for new software development, provided the software name and version are the same.

Attachment 2, using the original SCO number, is completed for software removal of the same software and version and hardware model number, serial number and operating system as the original SCO. Workstations from which software has been removed will be superseded on the SIL, based on the information in Attachment 2, but removal history is not required to be documented on the SIL.

Initiator

4.12.1 Determine if the software needs to be removed from a workstation.

4.12.2 Initiate Attachment 2 by obtaining an SCO Addendum number from the SCMC, completing Blocks 1 through 11, **AND** record N/A for Blocks 12a through14.

SCME

[A.1] Obtain SCO Addendum number from the SQA-TRU Software Quality Assurance Database.

4.12.3 Check NO in Block 15.

4.12.4 Document workstations in which software will be removed in Block 16.

Initiator, SD, SPM

4.12.5 Complete Block 17, and print name, sign, and date; obtain other signatures, as required; **AND** record N/A for any remaining signature blocks of Attachment 2.

4.12.6 Ensure the software is removed from the appropriate workstation(s).

4.12.7 Transmit Attachment 2 to the SCMC in accordance with CCP-QP-008.

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SCMC

4.12.8 Update the SIL.

4.12.9 Notify the appropriate SPM that the SIL has been updated.

4.12.10 Place Attachment 2 in the CCP SCM Records file.

4.12.11 Update the SQA-TRU Software Quality Assurance Database.

4.12.12 Submit data package to CCP Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

4.12.13 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

4.12.14 Review the SIL for completeness.

4.12.15 Notify the appropriate SD and SCME as well as the involved EAs/SMEs that the SIL has been updated.

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5.0 RECORDS

5.1 Records generated during the performance of this SQAP are maintained as QA records in accordance with CCP-QP-008. The records are the following:

NOTE

Software and associated documentation procured by CCP from active QSL suppliers, who are also subcontractors to CCP for other services, will be controlled and maintained under the supplier's approved Software QA Program.

5.1.1 <u>QA/Non-Permanent</u>

[A] Exempt Software (Category 6)

[A.1] Attachment 1, Software Evaluation Checklist

[B] COTS Software (Category 1)

[B.1] Attachment 1, Software Evaluation Checklist

[B.2] Attachment 2, Software Change Order

[B.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[B.4] User Documentation

[B.5] Test Documentation

[B.6] Associated Supporting Documentation, if applicable

[C] Application within COTS (Category 2)

[C.1] Attachment 1, Software Evaluation Checklist

[C.2] Attachment 2, Software Change Order

[C.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[C.4] Attachment 4, Software Review Action Item, if applicable

[C.5] Test Documentation

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[C.6] A listing of the software code (i.e., details of formulas, file/table/cell references, and/or macros)

[C.7] Documentation to demonstrate by hand or other independent calculations that the specific application provides the correct results for the specified range of input parameters

[C.8] Associated Supporting Documentation, if applicable

[D] Qualified Supplier Software (Category 3)

[D.1] Attachment 1, Software Evaluation Checklist

[D.2] Attachment 2, Software Change Order

[D.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[D.4] Attachment 4, Software Review Action Item, if applicable

[D.5] User Documentation

[D.6] Test Documentation

[D.7] Associated Supporting Documentation, if applicable

[E] Non-Qualified Supplier Software (Category 4)

[E.1] Attachment 1, Software Evaluation Checklist

[E.2] Attachment 2, Software Change Order

[E.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[E.4] Attachment 4, Software Review Action Item, if applicable

[E.5] Software Quality Assurance Plan

[E.6] Requirements Documents, per SQAP, if applicable

[E.7] Validation and Verification Documents, per SQAP, if applicable

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[E.8] Design Documents, per SQAP, if applicable

[E.9] User Documentation

[E.10] Test Documentation

[E.11] Associated Supporting Documentation, if applicable

[F] CCP Software (Category 5)

[F.1] Attachment 1, Software Evaluation Checklist

[F.2] Attachment 2, Software Change Order

[F.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[F.4] Attachment 4, Software Review Action Item, if applicable

[F.5] Attachment 5, Software Configuration Change Report (SCCR), if applicable

[F.6] Requirements Documents

[F.7] Validation and Verification Documents

[F.8] Design Documents

[F.9] User Documentation

[F.10] Test Documentation

[F.11] Associated Supporting Documentation, if applicable

[G] SQA-TRU Software Quality Assurance Database

[G.1] Software Change Order Log

[G.2] Software Problem Reporting and Change Request Log

[G.3] Addendum Log

[G.4] Exempt Software Log

[H] Software Inventory List

Attachment 1 – Software Evaluation Checklist

1. Initiator: (Print Name)	**2. Date:**	**3. Site:**
4. Software Name:	**5. Software Version:**	**6. Process Affected:**

7. Purpose/function of software (including whether software is used for data collection, design, analysis or scientific reasons):

8. If any of the answers to **c** through **g** are "YES", then the Section of the Plan listed in the corresponding block is applicable.

a. Is this System Software as defined below? (System Software includes operating systems such as Windows, Linux, and system utilities such as compilers, assemblers, translators, interpreters, query languages, word processing programs, spreadsheet programs, database managers, and graphing programs). If YES, this software is exempt from the requirements of this SQAP. N/A Blocks **b** through **g,** and complete Block 9. If NO, continue to Block 8**b**.	☐ Yes ☐ No
b. Can the software output adversely impact certification? If YES, continue to Block 8c. If NO, this software is exempt from the requirements of this SQAP. N/A Blocks **c** through g and complete Block 9.	☐ Yes ☐ No ☐ N/A
c. Is this COTS Software as defined below? (Commercial off the shelf software downloaded onto a system or Personal Computer (PC), Instrument, or tool that interacts with system software defined in 8a). **If YES, Section 4.2 of this SQAP is applicable.** N/A Blocks **d** through **g**, and complete Block 9. If NO, continue to Block 8**d**.	☐ Yes ☐ No ☐ N/A
d. Is this an application developed within COTS or System Software as defined below? (Applications developed within COTS or System Software that may include formulas or calculations that are easily reproduced by hand or with a calculator. This would include databases that transfer data or interface with other software). **If YES, Section 4.3 of this SQAP is applicable.** N/A Blocks **e** through **g,** and complete Block 9. If NO, continue to Block 8**e**.	☐ Yes ☐ No ☐ N/A
e. Is this Qualified Supplier Software as defined below? (Qualified Supplier Software includes software that is owned and/or maintained by a Supplier on the QSL). **If YES, Section 4.4 of this SQAP is applicable**. N/A Block **f** and **g** and complete Block 9. If NO, continue to Block 8**f**.	☐ Yes ☐ No ☐ N/A
f. Is this Non-Qualified Supplier Software as defined below? (Non-qualified Supplier Software includes software that is owned and/or maintained by a Supplier NOT on the QSL)? **If YES, Section 4.5 of this SQAP is applicable.** N/A Block **g** and complete Block 9. If NO, continue to Block 8**g.**	☐ Yes ☐ No ☐ N/A
g. Is this CCP Software as defined below? (CCP Software is software developed and/or maintained by CCP. Prior to obtaining SCME signature submit request to the Change Control Board [CCB] for approval). **If YES, Section 4.6 of this SQAP is applicable.** Complete Block 9.	☐ Yes ☐ No ☐ N/A

9. Evaluation performed by:		**Approved by:**	
Initiator Print Name/Sign	Date	SCME Print Name/Sign	Date

Attachment 2 – Software Change Order

1. SCO #:	**2. Addendum #:** ☐ N/A	**3. Page ___ of ____**
4. Initiator _____ Print Name	**5. Request Date** _____	
6. Software Name	**7. Version**	
8. Description of software or modification to be performed:		
9. Process Affected _____	**10. Site** _____	
11. New Development ☐ Yes ☐ No **Modification** ☐ Yes ☐ No	**Additional Installation** ☐ Yes ☐ No **Removal** ☐ Yes ☐ No	

12a. Requirements Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SD Print Name/Sign	Date	Requirements Reviewer Print Name/Sign	Date
Requirements Reviewer Print Name/Sign	Date	Requirements Reviewer Print Name/Sign	Date
12b. Design Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SD Print Name/Sign	Date	Design Reviewer Print Name/Sign	Date
Design Reviewer Print Name/Sign	Date	Design Reviewer Print Name/Sign	Date
12c. Code Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SD Print Name/Sign	Date	Code Reviewer Print Name/Sign	Date
13. User Documentation Evaluation ☐ N/A			
SD Print Name/Sign	Date		
14. Test Plan Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SCME Print Name/Sign	Date		

Attachment 2 – Software Change Order (Continued)

SCO #: **Addendum #:** Page ___ of ____

15. Testing ☐ Yes ☐ No **Software Review Action Items** ☐ Yes ☐ No

Installation Test	☐ Yes	☐ No	Regression Test	☐ Yes	☐ No
Alternate Test Method	☐ Yes	☐ No	Integration Test	☐ Yes	☐ No
Functionality Test	☐ Yes	☐ No	Hand Calculations	☐ Yes	☐ No

Any modification to development documentation as a result of testing activities must be identified by an SCO addendum.

SD Print Name/Sign	Date	Tester Print Name/Sign	Date
Tester Print Name/Sign	Date	Tester Print Name/Sign	Date

If used for additional installation of the same software and version as on an original SCO, list the software name, version; operating system, version; and hardware manufacture, model number and serial number.

16. Installation/Removal

Software	Software Version	Software Development Date (Applications within COTS only) ☐ N/A
Application	Application Version	
Database	Database Version	
Operating System (OS)	OS Version	
Hardware Mfr	Hardware Model #	Hardware Serial #

SD Print Name/Sign	Date

17. Operational Use Approvals and Document Validation

SD Print Name/Sign	Date	SPM Print Name/Sign	Date
SCME Print Name/Sign	Date		

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Attachment 3 – Software Problem Reporting and Change Request (SPRCR)

1. SCO #:	**2. SCO Addendum #**	**3. Report #:**	**4. Report Date:**
5. Software Name:	**6. Software Version:**		

7. Problem/Suggestion:

8. Research Analysis:

9. Description of System Impact:

10. Minor Change: ☐ Yes ☐ No

Reason:

11. Corrective Action (Obtain SCO # or SCO Addendum, identify the SCO # in this block, and complete the SCO #):

12. Software Retirement ☐ N/A

Justification for Retirement:

Initiator Print Name/Sign	Date	SPM Print Name/Sign	Date

13. Approvals (Date Indicates that resolutions were completed):

Initiator Print Name/Sign	Date	SCME Print Name/Sign	Date

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Attachment 4 – Software Review Action Item

1. SCO #:	2. Addendum #:	3. Initiation Date:	4. Page ____ of ____

5. ☐ **SQAP** ☐ **Requirements** ☐ **Design** ☐ **Code** ☐ **Test Plan** ☐ **Testing**

6. Statement of Issue:

7. Recommended Action:

8. Final Resolution to Action Item:

9. Approvals (Date Indicates that resolutions were completed):

Initiator Print Name/Sign	Date	SPM Print Name/Sign	Date
SD Print Name/Sign	Date	Reviewer Print Name/Sign	Date

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Attachment 5 – Software Configuration Change Report (SCCR)

1 SCO:	2. Addendum:	3. Version:	4. Date:	5. Page__ of__

6. Change to: ☐ Requirements ☐ Design ☐ Software

7. Detailed Description of Changes to Software Configuration:

Module	**Type**

8. Development and Document Validation:

_____ _____
SD Print Name/Sign Date

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Attachment 6 – Definitions

Acceptance Criteria	The criteria that a system or component must satisfy in order to be accepted by a user, customer, or other authorized entity.
Acceptance Testing	Formal testing conducted to determine whether or not a system satisfies its acceptance criteria and to enable the customer to determine whether or not to accept the system, or formal testing conducted to enable a user, customer, or other authorized entity to determine whether to accept a system or component.
Baseline	Software that has been formally reviewed and agreed upon, and that can only be changed through formal change control procedures.
Change Control Board	The Change Control Board is a collection of technical, management, and administrative experts assigned the authority and responsibility to review and authorize developments and change request to CCP Software.
Code	One or more computer programs, or part of a computer program, expressing in programming language.
Code Review	A review during which software code is reviewed by another software developer for comment or approval.
Commercial Off the Shelf (COTS)	Software products that are general purpose, ready-made and available for sale to the general public.
Computer Program	A sequence of instructions and data definitions that enable computer hardware to perform computational or control functions.
Configuration Item	A collection of hardware or software elements treated as a unit for the purpose of configuration control.
Configuration Control	The process of identifying and defining the configuration items in a system, controlling the release and change of these items throughout the system life cycle, and the recording and reporting of the status of configuration items and change requests.
Configuration Identification	An element of configuration management, consisting of selecting the configuration items for a system and recording their functional physical characteristics in technical documentation.
Configuration Management	A discipline applying technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a configuration item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements.
Design	The process of defining the architecture, components, interfaces and other characteristics of a system.
Design Review	A documented evaluation of design output during the design process to determine the design adequacy and the conformance to specified acceptance criteria.
Error	A discrepancy between a computed, observed or measured value or condition and the true, specified or theoretically correct value or condition.
Firmware	Vendor supplied software that is included as an integral part of an instrument (e.g., programmed in a ROM chip) and cannot be modified by another party.
Implementation	When a software product is created with program language from design documentation and debugged.
Installation and Checkout	When a software product is integrated into its operational environment and tested in this environment to ensure that it performs as required.

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Attachment 6 – Definitions (Continued)

Library Files	Electronic data files used by computer software as sources of information required for the software to perform its intended function. They are primarily associated with software for the NDA characterization method (e.g., nuclide library files). Library files are created and maintained by the supplier of the software, under the qualified supplier's program. They are controlled under this SQAP when they are distributed for field installation on production equipment.
Portability	The ease with which software can be transferred from one computer system or environment to another.
Requirement	A condition or capability needed by a user to solve a problem or achieve an objective that must be met or processed by a system or system component.
Requirements review	A review during which the requirements for a system, hardware item or software item are presented to project personnel, managers, users, customers or other interested parties for comment or approval.
Software	Computer programs, procedures, rules, and associated documentation and data pertaining to the operation of a computer system.
Software Life Cycle	The period of time that starts when a software product is conceived and ends when the software product is no longer available for routine use. The software life cycle typically includes a requirements phase, a design phase, an implementation phase, a test phase, an installation and checkout phase, an operation and maintenance phase and sometimes a retirements phase.
Software Quality Assurance Plan	A plan for the development of software products necessary to provide adequate confidence that software conforms to established requirements.
Software Validation	The process of test and evaluation of the completed software to ensure compliance with software requirements.
Software Verification	The process of determining whether or not the product of a given phase of the software development cycle fulfills the requirements imposed by the previous phase.
System Software	Software which is used exclusively in the preparation, installation, or operation of executable software applications.
Test, Alternate Method	A test method, which differs from the original test, which is performed to verify the correctness of the original test.
Testing	The process of exercising or evaluating a system or system component by manual or automated means to verify that it satisfies specified requirements or to identify differences between expected and actual results.
Testing, Functional	Testing that ignores the internal mechanism of a system or component and focuses solely on the outputs generated in response to selected inputs and execution conditions. Testing that is employed to determine if software meets the intended specifications and functional requirements laid out in your requirements and design documentation. Testing that is not concerned with the internal workings of the system, but concentrates on the outputs generated from the system. This type of testing cannot be performed unless you have the requirements and design documentation for the software.
Testing, Initial	The first group or individual to test the system performs the initial test. For vendor-supplied software, the vendor will always be the entity to perform the initial test.
Testing, Integration	Testing in which software components, hardware components or both are combined and tested to evaluate the interaction between them.

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Attachment 6 - Definitions (Continued)

Testing, Regression	Selective retesting of a system or component to verify that modifications have not caused unintended effects and that the system or component still complies with its specified requirements. This type of testing ensures that no other previously working functions have failed as a result of the reparations and that newly added features have not created any problems. Regression testing is initiated after a programmer has attempted to fix a recognized problem or has added source code to a program that may have inadvertently introduced errors. It is a quality control measure to ensure that the newly modified code still complies with its specified requirements and that unmodified code has not been affected by the maintenance activity.
Testing, Unit	Testing of individual hardware or software units or groups of related units.
Test Case	A specific set of test data and associated procedures developed for a particular objective such as to exercise a particular program path or to verify compliance with a specific requirement.
Test Plan	A document describing the approach to be taken for intended testing activities. The plan typically identifies the items to be tested, the testing to be performed, test sequences, personnel requirements, and evaluation criteria.
Traceability	The ability to trace the history, application and location of an item, data or sample using recorded documentation. The degree to which a relationship can be established between two or more products of the development process, especially products having a predecessor-successor or master-subordinate relationship to one another; for example, the degree to which the requirements and design of a given software match.
User Documentation	Documentation describing the way in which a system or component is to be used to obtain desired results. User documentation should be sufficient to allow any qualified user to install and run the software and properly respond to errors.
User Manual	A document that presents the information necessary to employ a system or component to obtain desired results.
Verification and Validation	The process of determining whether the requirements for as system or component are complete and correct, the products of each development phase fulfill the requirements or conditions imposed by the previous phase and the final system or component complies with specified requirements.