

# UNCONTROLLED



**WEST VALLEY  
NUCLEAR SERVICES COMPANY  
INCORPORATED**

## **ENGINEERING PROCEDURE**

<b>NO.</b> EP-3-017	<b>Rev.</b> 0	<b>Date</b> 07/03/89
<b>SUBJECT</b> Conversion Testing, Verification, and/or Validation of Software		
<b>APPROVED</b> D. K. Floetz <i>DK Floetz</i> Plant Engineering Manager		

### 1.0 PURPOSE

This procedure describes the process by which conversion testing, verification, and validation of software is performed and documented. It applies only when selected on the Software Requirements Form in accordance with EP-3-013, "Determination of Software Requirements." When selected, it applies to both engineering/scientific software and support software. It follows implementation of EP-3-016, "Software Configuration Control," if applicable. Application runs to test software with this procedure shall be performed and documented in accordance with EP-3-018, "Software Application Control".

### 2.0 RESPONSIBILITIES

- 2.1 Cognizant System Process/Design Manager (CSPM/CSDM) - Ensures conversion testing, verification, and/or validation required for engineering/scientific and support software as indicated on the Software Requirements Form is performed; appoints reviewers (from the WVNS Technical Specialist List, if possible) and ensures that an independent review is conducted of completed testing documentation.
- 2.2 Code Custodian - Provides testing personnel with the current version of the software, design documentation, and documentation of any previous testing; retains completed testing documentation as part of the Software Documentation Package and for inclusion in the Permanent Software Documentation Package.
- 2.3 Testing Personnel - Prepare Software Test Plan, Form WV-1867 (attachment A); complete and document application runs for testing in accordance with EP-3-018, "Software Application Control;" provide CSPM/CSDM with testing documentation as required by the Software Test Plan. (For instructions on the completion of WV-1867, see attachment B.)

### 3.0 DEFINITIONS

- 3.1 Testing - A general term for the purpose of this procedure, referring to conversion testing, verification, validation, or any combination thereof.

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3.2 All other terms used in this procedure are defined in EP-3-013, "Determination of Software Requirements," section 3.0.

4.0 GENERAL

Appropriate test personnel shall be individual(s) who are competent to perform the application runs necessary to exercise the software options and the range of variables likely to be encountered in the proposed application of the software. They may be the same as the Code Developer(s).

Independent Reviewers shall be individuals who are competent in the field under review and independent from the development process. They should be taken from the WVNS Technical Specialist List, if possible.

If an error is discovered during testing, the Testing Personnel shall report the error to the Code Custodian in accordance with EP-3-016, "Software Configuration Management," and to the CSPM/CSDM who shall determine whether testing shall continue. If the error is so severe as to require a new software version, the testing shall not continue. In this case the CSPM/CSDM shall document that the current Software Test Plan is no longer applicable, and a new plan will be prepared for use with a corrected version of the code.

5.0 PROCESSING

RESPONSIBILITY

ACTION

- |   |  |
|---|--|
| 5.1 Cognizant System Process/<br>Design Manager (CSPM/CSDM) | A. Appoints appropriate test personnel.  |
| 5.2 Code Custodian  | A. Supplies test personnel with current version of the software and documentation, and any previous testing results. |
| 5.3 Test Personnel  | A. Prepares a Software Test Plan and delivers it to CSPM/CSDM for approval.  |
| 5.4 CSPM/CSDM   | A. Approves Software Test Plan and returns it to testing personnel.  |
| 5.5 Test Personnel  | A. Performs and documents application runs in accordance with EP-3-018, "Software Application Control".              |

RESPONSIBILITY

ACTION

5.6 CSPM/CSDM

- A. Appoints independent reviewers and ensures that an adequate review of the completed test documentation is performed.
- B. Delivers completed test documentation to the Code Custodian.

5.7 Code Custodian

- A. Retains copies of test documentation for inclusion in the Software Documentation Package.
- B. Transmits test documentation to Records Management for inclusion in the Permanent Software Documentation Package via a Software Change Request Form in accordance with EP-3-016, Software Configuration Management.

6.0 REFERENCES

- 6.1 EP 3-013, "Determination of Software Requirements"
- 6.2 EP 3-016, "Software Configuration Management"
- 6.3 EP 3-018, "Software Application Control"

7.0 ATTACHMENTS

- 7.1 Attachment A - Software Test Plan, WV-1867 (latest revision)
- 7.2 Attachment B - Instructions for the Completion of Form WV-1867

ATTACHMENT A  
SOFTWARE TEST PLAN

- 1) Internal ID No. \_\_\_\_\_
- 2) Software name and version \_\_\_\_\_
- 3) Computer type and operating system \_\_\_\_\_
- 4) Purpose and scope of testing:
  - \_\_\_\_\_ Testing of new version
  - \_\_\_\_\_ Conversion testing
  - \_\_\_\_\_ Engineering/scientific software verification
  - \_\_\_\_\_ Engineering/scientific software validation
  - \_\_\_\_\_ Support software verification
- 5) Tests to be run \_\_\_\_\_
- 6) Evaluation methods \_\_\_\_\_
- 7) Acceptance criteria \_\_\_\_\_
- 8) Testing documentation required \_\_\_\_\_
- 9) Additional requirements \_\_\_\_\_

REVIEWED AND APPROVED BY:

- 10) \_\_\_\_\_  
Preparer Date
- 11) \_\_\_\_\_  
CSPM/CSDM Date

NO.	REV.	DATE
EP-3-017	0	07/03/89

ATTACHMENT B

INSTRUCTIONS FOR COMPLETING SOFTWARE TEST PLAN FORM - WV-1867

- 1) Enter the Internal ID No. of the software on this page and any attached pages.
- 2) Enter the software name and version number on this page and any attached pages.
- 3) Enter the computer type and operating system on which the testing is to be performed (e.g., DEC VAX 11/780 with VMS; or CDC 7600 with LTSS).
- 4) Check the appropriate space and describe the purpose and scope of testing. NOTE: Software verification can encompass both conversion testing and verification.
- 5) Describe the application runs to be made in enough detail so that an equally competent person can reproduce them. This description could consist of references to previous test documents, drawings, experimental test descriptions, run matrices, and other similar items. Input listings shall be attached, if necessary. The tests that are performed shall, at a minimum, exercise the software options and the range of variables likely to be encountered in the purposed applications of the software.
- 6-7) Describe the evaluation methods and acceptance criteria to be used by the independent reviewers. Evaluation methods can include comparison of specific results with experimental data or hand calculations, with previous standard test case results, or with other software. Since acceptance criteria are the basis for reviewers to approve the testing results, they shall be quantified.
- 8) Describe testing documentation required (e.g., computer output).
- 9) Include any additional requirements for testing, evaluation, or documentation. The Software Requirements Form or planning document(s) may be reference here as appropriate.
- 10) The preparer shall sign this space and enter the date the Software Test Plan was prepared.
- 11) The CSPM/CSDM shall indicate approval of the Software Test Plan by signature and date.

NOTE: This form can serve as a cover sheet for as many attached pages as needed to complete the test plan. The Internal ID No. and the software name and version no. shall appear on each attached page.