



VALIDATION, VERIFICATION, AND TESTING PLAN

Project or System Name

U.S. Department of Housing and Urban Development

Month, Year

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	5/30/00	Validation, Verification, and Testing Plan Template and Checklist
Rev. 1	4/12/02	Conversion to WORD 2000 format



Validation, Verification and Testing Plan Authorization Memorandum

I have carefully assessed the Validation, Verification, and Testing Plan for the (System Name). This document has been completed in accordance with the requirements of the HUD System Development Methodology.

MANAGEMENT CERTIFICATION - Please check the appropriate statement.

_____ The document is accepted.

_____ The document is accepted pending the changes noted.

_____ The document is not accepted.

We fully accept the changes as needed improvements and authorize initiation of work to proceed. Based on our authority and judgment, the continued operation of this system is authorized.

NAME
Project Leader

DATE

NAME
Operations Division Director

DATE

NAME
Program Area/Sponsor Representative

DATE

NAME
Program Area/Sponsor Director

DATE

VALIDATION, VERIFICATION AND TESTING PLAN

TABLE OF CONTENTS

	<u>Page #</u>
1.0 GENERAL INFORMATION	1-1
1.1 Purpose	1-1
1.2 Scope	1-1
1.3 System Overview	1-2
1.4 Project References.....	1-2
1.5 Acronyms and Abbreviations.....	1-2
1.6 Points of Contact	1-3
1.6.1 Information	1-3
1.6.2 Coordination	1-3
2.0 TEST EVALUATION	2-1
2.1 Requirements Traceability Matrix	2-1
2.2 Test Evaluation Criteria	2-1
2.3 User System Acceptance Criteria.....	2-1
3.0 TESTING SCHEDULE	3-1
3.1 Overall Test Schedule	3-1
3.2 Security.....	3-1
3.x [Testing Location Identifier]	3-2
3.x.1 Milestone Chart.....	3-2
3.x.2 Equipment Requirements	3-2
3.x.3 Software Requirements	3-2
3.x.4 Personnel Requirements.....	3-3
3.x.5 Deliverable Materials.....	3-3
3.x.6 Testing Tools	3-3
3.x.7 Site Supplied Materials	3-3
4.0 TESTING CHARACTERISTICS	4-1
4.1 Testing Conditions	4-1
4.2 Extent of Testing	4-1
4.3 Data Recording.....	4-1
4.4 Testing Constraints.....	4-1
4.5 Test Progression	4-1
4.6 Test Evaluation.....	4-1
4.6.1 Test Data Criteria	4-1
4.6.1.1 Tolerance	4-1
4.6.1.2 System Breaks	4-2
4.6.2 Test Data Reduction.....	4-2

5.0	TEST DESCRIPTION	5-1
5.x	[Test Identifier]	5-1
5.x.1	System Functions	5-1
5.x.2	Test/Function Relationships.....	5-1
5.x.3	Means of Control	5-1
5.x.4	Test Data.....	5-1
5.x.4.1	Input Data	5-1
5.x.4.2	Input Commands.....	5-1
5.x.4.3	Output Data.....	5-2
5.x.4.4	Output Notification.....	5-2
5.x.5	Test Procedures.....	5-2
5.x.5.1	Procedures	5-2
5.x.5.2	Setup.....	5-2
5.x.5.3	Initialization.....	5-3
5.x.5.4	Preparation.....	5-3
5.x.5.5	Termination	5-3

1.0 GENERAL INFORMATION

NOTE TO AUTHOR: *Highlighted, italicized text throughout this template is provided solely as background information to assist you in creating this document. Please delete all such text, as well as the instructions in each section, prior to submitting this document. ONLY YOUR PROJECT-SPECIFIC INFORMATION SHOULD APPEAR IN THE FINAL VERSION OF THIS DOCUMENT.*

The Validation, Verification, and Testing Plan provides guidance for management and technical efforts throughout the test period. It establishes a comprehensive plan to communicate the nature and extent of testing necessary for a thorough evaluation of the system. This plan is used to coordinate the orderly scheduling of events by providing equipment specifications and organizational requirements, the test methodology to be employed, a list of the test materials to be delivered, and a schedule for user (tester) orientation and participation. Finally, it provides a written record of the required inputs, execution instructions, and expected results of the system test.

1.0 GENERAL INFORMATION

1.1 Purpose

Describe the purpose of the Validation, Verification, and Testing Plan.

1.2 Scope

Describe the scope of the Validation, Verification, and Testing Plan as it relates to the project.

1.3 System Overview

Provide a brief system overview description as a point of reference for the remainder of the document. In addition, include the following:

- Responsible organization
- System name or title
- System code
- System category
 - *Major application*: performs clearly defined functions for which there is a readily identifiable security consideration and need
 - *General support system*: provides general ADP or network support for a variety of users and applications
- Operational status
 - Operational
 - Under development
 - Undergoing a major modification
- System environment and special conditions

1.4 Project References

Provide a list of the references that were used in preparation of this document. *Examples of references are:*

- *Previously developed documents relating to the project*
- *Documentation concerning related projects*
- *HUD standard procedures documents*

1.5 Acronyms and Abbreviations

Provide a list of the acronyms and abbreviations used in this document and the meaning of each.

1.6 Points of Contact

1.6.1 Information

Provide a list of the points of organizational contact (POCs) that may be needed by the document user for informational and troubleshooting purposes. Include type of contact, contact name, department, telephone number, and e-mail address (if applicable). Points of contact may include but are not limited to helpdesk POC, development/maintenance POC, and operations POC.

1.6.2 Coordination

Provide a list of organizations that require coordination between the project and its specific support function (e.g., installation coordination, security, etc.). Include a schedule for coordination activities.

2.0 TEST EVALUATION

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2.1 Requirements Traceability Matrix

Prepare a functions/test matrix that lists all application functions on one axis and cross-reference them to all tests included in the test plan.

2.2 Test Evaluation Criteria

Decide the specific criteria that each segment of the system/subsystem must meet. Such criteria are described by the user of the system/subsystem and typically are a mix of functional and performance requirements, such as processing data within a certain time frame, producing a report, or responding to an online query within a certain amount of time.

2.3 User System Acceptance Criteria

Describe the minimum function and performance criteria that must be met for the system to be accepted as “fit for use” by the user or sponsoring organization.

3.0 TESTING SCHEDULE

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3.1 Overall Test Schedule

Prepare a testing schedule to reflect the unit, integration, system acceptance, and release tests, as well as the time duration of each. This schedule should reflect the personnel involved in the test effort and the site location. In the test schedule, include the following information:

- Documentation review
- Test scripts
- Data preparation
- Test execution
- Output review
- System certification
- System release
- Return of test site to pretest condition

3.2 Security

Prepare a list of requirements necessary to ensure the integrity of the testing procedures, data, and site. Any special security considerations (e.g., passwords, classifications, security or monitoring software, or computer room badges) should be described in detail.

3.x [Testing Location Identifier]

This section provides a description of testing locations. Each location should be under a separate section header, 3.3 - 3.x. Identify the location at which the testing will be conducted, and the organizations participating in the test. List the tests to be performed at this location.

3.x.1 Milestone Chart

Provide a chart to depict the activities and events listed below. When preparing the chart, give consideration to all tests scheduled for this location. The activities and events will be presented in chronological order with supporting narrative, as necessary, and will depict, for example:

- The overall on-site test period by calendar date, and portions of the period assigned to major portions of the test.
- The pretest on-site period required for system test team orientation, familiarization, and for system debugging.
- The period assigned for the collection of database values, input values, and other operational data required for system test.
- The period assigned for user training, operator training, maintenance and control group training, and management orientation briefing.
- The period assigned for preparation, review, and approval of the test analysis report.

3.x.2 Equipment Requirements

Provide a chart or listing of the period of usage and quantity required of each item of equipment employed throughout the test period in which the system is to be tested. Any communications and test data reduction equipment will be included.

3.x.3 Software Requirements

Identify any software required in support of the testing when it is not a part of the system being tested. Include systems support, communications, and applications software, their recording and storage media, version number, and media type.

3.x.4 Personnel Requirements

Provide a listing of the personnel necessary to perform the test. For each of the personnel, this listing should provide the following information:

- Name, title, current organization, grade (if known), and level of security background investigation
- Description of the required tasks to be performed
- Geographical location of the work to be performed
- Time required (dates needed)
- Whether the requirement is full time, part time, or as needed
- Any special skills required (i.e., programming language, machine familiarity)

3.x.5 Deliverable Materials

Itemize all materials that will be delivered as part of the system test, to include the quantity and full identification.

3.x.6 Testing Tools

Identify the testing tools to be used during the preparation for and execution of the test.

3.x.7 Site Supplied Materials

Describe any materials required to perform the test that need to be supplied at the test site. These materials could include desks, chairs, special equipment, office supplies, database and its media, as well as other input and their media.

4.0 TESTING CHARACTERISTICS

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4.1 Testing Conditions

Indicate whether the testing will use the normal input and database or whether some special test input is to be used.

4.2 Extent of Testing

Indicate the extent of the testing to be employed. Where limited testing is to be employed, the test requirements will be presented either as a percentage of some well-defined total quantity or as a number of samples of discrete operating conditions or values. Also, indicate the rationale for adopting limited testing.

4.3 Data Recording

Indicate data recording requirements for the testing process, including data not normally recorded during system operation.

4.4 Testing Constraints

Indicate the anticipated limitations imposed on the testing because of system or test conditions (timing, interfaces, equipment, personnel).

4.5 Test Progression

In progressive or cumulative tests, include an explanation concerning the manner in which progression is made from one test to another so that the cycle or activity for each test is completely performed.

4.6 Test Evaluation

4.6.1 Test Data Criteria

Describe the rules by which test results will be evaluated.

4.6.1.1 Tolerance

Discuss the range over which a data output value or a system performance parameter can vary and still be considered acceptable.

4.6.1.2 System Breaks

The maximum number of interrupts, halts, or other system breaks which may occur because of non-test conditions.

4.6.2 Test Data Reduction

Describe the technique to be used for manipulation of the raw test data into a form suitable for evaluation, if applicable. *The available techniques may include:*

- *Manual collection and collation of system test output into test sequence order, followed by verification of the results.*
- *Automatic inspection of test results as obtained by data recording means using a test data reduction program followed by manual inspection of selected test results which do not lend themselves to complete reduction by automatic means.*
- *Automatic inspection of test results specifically recorded for manipulation by the test data reduction program. Test results as recorded, include all items of test significance. The test data reduction program contains an image of correct data output for an item by item comparison of data, and provides a summary of an evaluated test as output.*

5.0 TEST DESCRIPTION

5.0 TEST DESCRIPTION

This section provides a description of the tests. Each test should be under a separate section header, 5.1 - 5.x.

5.x [Test Identifier]

Provide a test name and identifier here for reference in the remainder of the section. Describe the test to be performed.

5.x.1 System Functions

Provide a detailed list of the system and communications functions to be tested.

5.x.2 Test/Function Relationships

Provide a list of the tests that constitute the overall test activity. Include a test/function matrix summarizing the overall allocation of the system tests to the functions.

5.x.3 Means of Control

Indicate whether the test is to be controlled by manual, semiautomatic, or automatic means.

5.x.4 Test Data

Identify any security considerations in each of the following subsections.

5.x.4.1 Input Data

Describe the manner in which input data are controlled in order to test the system with a minimum number of data types and values, exercise the system with a range of bona fide data types and values that test for overload, saturation, and other “worst case” effects, and exercise the system with bogus data and values that test for rejection of irregular input.

5.x.4.2 Input Commands

Describe steps used to control initialization of the test; to halt or interrupt the test; to repeat unsuccessful or incomplete tests; to alternate modes of operation as required by the test; and to terminate the test. Include graphic representation if appropriate.

5.x.4.3 Output Data

Identify the media and location of the data produced by the tests. Describe the manner in which the output data are analyzed in order to: detect whether an output is produced; evaluate output as a basis for continuation of the test sequence; and evaluate the test output against the anticipated output to assess system performance.

5.x.4.4 Output Notification

Describe the manner in which output notifications (messages output by the system concerning status or limitations on internal performance) are controlled in order to:

- Indicate readiness for the test
- Provide indications of irregularities in input test data or test database because of normal or erroneous test procedures
- Provide indications of irregularities in internal operations on test data because of normal or erroneous test procedures
- Provide indications on the control, status, and results of the test as available from any auxiliary test software

5.x.5 Test Procedures

5.x.5.1 Procedures

Describe the step-by-step procedures to perform each test.

5.x.5.2 Setup

Describe or refer to standard operating procedures that describe the activities associated with setup of the computer facilities to conduct the test, including all routine machine activities.

5.x.5.3 Initialization

Itemize, in test sequence order, the activities associated with establishing the testing conditions, starting with the equipment in the setup condition. Initialization may include functions such as:

- Readout of control function locations and critical data from indicators and storage locations for reference purposes
- Queuing of data input values for the test
- Queuing of test support software
- Coordination of personnel actions associated with the test

5.x.5.4 Preparation

Describe, in sequence, any special operations such as:

- Inspection of test conditions
- Data dumps
- Instructions for data recording
- Modifications of the data base
- Interim evaluation of test results

5.x.5.5 Termination

Itemize, in test sequence order, the activities associated with termination of the test, such as:

- Recording readouts and critical data from indicators for reference purposes
- Termination of operation of time-sensitive test support software and test apparatus
- Collection of system and operator records of test results