

# Bradley ACCESS Test Cases Training

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## Course Description:

- **The purpose of this training is to present a knowledge base regarding all Bradley ACCESS Test Case phases.**

Audience:	Test Engineers
Instruction Method:	Instructor
Length of Course:	1 ½ hour or less
Prerequisites:	Prior testing experience
Follow-on Courses:	Database Manual
Resources for Questions	Charles Gundlach, Tom Stephenson

## Learning Objectives

- **To Understand the Basics of Writing Acceptable Test Cases - both Requirements Based and Functional.**
- **To understand the Evolution of a Test Case and the Guidelines Necessary to Preserve Its Integrity Throughout the Testing Phases.**



## **A Test Step Is Needed:**

- **If it satisfies a Requirement**
- **If it is a step or one of a series of steps that contributes to a future Test Step which satisfies a Requirement**
- **If it is a single step that calls a Framework Procedure**
- **If it is needed as a comment to describe a following set of test steps**

## **A Framework Procedure Is Needed:**

- **To replace a Test Step or group of Test Steps that do not require or are inappropriate for PASS/FAIL. These are akin to a subroutine and are useful in setting up for Test Steps that do require a verification.**

## Test Configuration

### ➤ Test Description

- Describe what the test is designed to accomplish – be specific and thorough

Test Description	Initial Conditions	Post Conditions	Rev History	Test Case Info	SQT ScoreCard
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Validates responses to a situation wherein a vehicle (VTBA )enters a Hazard Area. It verifies that VTBA receives appropriate audio and visual warnings as it crosses the hazard threshold, and that a second vehicle (VTBB) receives the NBC1 Report warning, and sees the same display responses.

### ➤ Initial Conditions

- Entrance criterion which must be met before running the Test Case

Test Description	Initial Conditions	Post Conditions	Rev History	Test Case Info	SQT ScoreCard
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(For both VTBA and VTBB)  
FBCB2 is switched on, FBCB2 SELECTION SWITCH set to FBCB2 APPLIQUE, TURRET POWER and DRIVE POWER are Off, B-Kit Block Indicator = BLOCK 0,  
SIMULATED HPU = NONE, SIMULATED INU = Universal TALIN, INU LOCATION = TURRET, INU RT 16 = INTERNAL, DVDB Power Switch is on, CLAW NOT present

- These must be carefully written, and checked thoroughly before running the test case as correct execution and results depend on them.

## Test Configuration (continued)

### ➤ Post Conditions

- State what is to be done after the test case is finished

Test Description	Initial Conditions	Post Conditions	Rev History	Test Case Info	SQT ScoreCard	
Close Notepad windows - recycle model						

### ➤ Rev History

- Whenever a test case is edited information must be added to the current Rev History - the date changes were made, the initials of the person making them, and a brief summation of the edits. In future releases of the database, a “Change Log” button will bring up a Word File wherein lengthy summations may be added. The log entry may be referenced briefly in the Rev History thus saving space in the database.

Test Description	Initial Conditions	Post Conditions	Rev History	Test Case Info	SQT ScoreCard	Problem Report	
merged from (8.00.05) t18c01a-AHH0, modified 12/20/06 cg; (changes noted since 12/20/06   no rev history entered) modified to correct test case flow 10/25/07 cg							

## Test Configuration (continued)

### ➤ Test Case Info

- Pertinent information about the original author and the current state of the test case is entered here.

Test Description	Initial Conditions	Post Conditions	Rev History	Test Case Info	SQT ScoreCard
<b>Author:</b>	<input type="text" value="C. Gundlach"/>	<b>Status:</b>	<input type="text" value="Ready for SQT"/>		
<b>Last Run VVID:</b>	<input type="text" value="8.10.04-06"/>	<b>CSIL/Vehicle:</b>	<input type="text" value="VTB6"/>		
<b>Current VVID:</b>	<input type="text" value="8.10.16"/>	<b>CSIL Model #:</b>	<input type="text" value="Time"/>	<b>11 Minutes</b>	

### ➤ SQT ScoreCard


- This information is entered when a Test Case has finished being run in SQT. It is used to track progress during SQT and to issue the final report of the SQT results in the STR

Test Description	Initial Conditions	Post Conditions	Rev History	Test Case Info	SQT ScoreCard
<b>Tester</b>	<input type="text" value="Charly Gundlach"/>	<b>VTB</b>	<input type="text" value="VTB 4"/>		
<b>GOV</b>	<input type="text" value="Bob Cox"/>	<input type="text" value="2/5/08"/>	<input type="text" value="PASS"/>		
<b>QA</b>	<input type="text" value=""/>	<input type="text" value="PASS"/>	<input type="text" value="FAIL"/>		
<b>Comments</b>		<input type="text" value="A perfect run!"/>			



## Test Configuration (continued)

### ➤ General Note:

- The following fields should be filled (when possible) by typing characters in the field until the full desired text is displayed.
- Another method is clicking  the to their right, then choosing the appropriate text from the drop down list.

#### Action Point /

#### Test Steps

this test case form 

Initial Conditions 

#### Observation Point /

#### Expected Results

Initial Conditions 

all initial conditions are verified 





## Test Step Configuration and Data Entry

### ➤ Action Point

Where the action specified in the “Test Steps” field (below) is to be viewed or implemented.

### ➤ Test Step (Test Action)

The action statement. It must be both concise and precise. It must begin with an action verb (lower case). Punctuation and special characters are to be avoided. Quotes (“ ’) are never allowed.

If statements are not allowed in a Test Step.



## Test Step Configuration and Data Entry (continued)

### ➤ **Observation Point**

Where the Expected Result is to be observed.

### ➤ **Expected Result**


A statement describing the result expected from performing the Test Step action. It must be both concise and precise. Punctuation and special characters are to be avoided. Quotes (“ ‘) are not allowed.

# Test Step Configuration and Data Entry (continued)

## ➤ Linking a Requirement to a Test Step

- Displayed below is the area of the RunTest Form where Requirements are linked:

ID	SRS #	SRS Text	SSDD #	SSDD Text	Status (F, PF, P)
<input type="text"/>					TBD

- Clicking the  on the ID drop down (above left) will display a drop down list similar to that shown below:

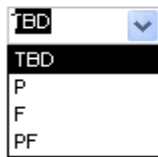
ID	SRS_ID_NUMBER	SRS text	PUI
-2123010729	FS.ER.8140	FS shall set the default Engaged Target Horizontal value to 125 m.	POSNAV.3191
-2066771457	SML.VVID.001	SML shall display the VVID, TPU software, and LRU versions as identified by SMS in the version screen	VVC.0840
-2039495574	SMS.DVDBMGR.7370	SMS shall report a fuel level from 0 to 150 gallons.	LOG.0010
-1999090533	SMS.POSNAV.8040	SMS shall set the VIM status in accordance with the Vehicle In Motion logic equation in the POSNAV Modes Technote (80212-4270409) at a minimum rate of 1.0 Hz.	POSNAV.3155
-1952500293	SMS.VVID.8122	SMS shall determine the best configuration/version (of an LRU or group) by selecting the right-most entry each time that a group of most software matches exists.	VVC.0350
-1898174280	SMS.VVID.8180	SMS shall set the reported VVID to the expected VVID each time that all reported versions match their respective expected version.	VVC.0440
-1870344376	SML.VVID.001	SML shall display the VVID, TPU software, and LRU versions as identified by SMS in the version screen	FF.0005
-1859773817	SMS.CMPT.6025	The A3 software shall power down the Applique and block subsequent operator actions to reset power for the duration of the power cycle as directed by Compatibility Checking.	VVC.0500
-1842008950	C2.LOGISTICS.0110	C2 shall send each LRU status with the associated Bradley BRIL number after sending the system status in the Logistics Status Response Message ID 23 to FBCB2 each time that the Logistics St	C2.LOG.0250
-1832060630	SMS.POSNAV.6060	SMS shall provide encrypted GPS status for display while crypto data is detected on the GPS in accordance with the "GPS Fail/Red and Status" figure in the POSNAV Modes Technote (80212-42)	POSNAV.2340

- Choosing an ID from the list will fill in all of the fields shown near the top of this slide. The final action is to choose either P, PF, or F from the drop down list shown above right.

## Test Step Configuration and Data Entry

### ➤ Linking a Requirement to a Test Step (continued)

Status (F, PF, P)



A screenshot of a dropdown menu. The menu is open, showing a list of options: TED, P, F, and PF. The option 'TED' is currently selected and highlighted in black. The dropdown arrow is visible on the right side of the menu.

- Selecting “P” signifies that the step partially satisfies the selected requirement. It may be followed by one or more test steps that partially satisfy the requirement verification, but must be terminated with a test step that completes the partials by selecting a “PF”.
- Selecting “PF” signifies that one or more “P” steps, partially fulfilling a requirement, are now complete (the set of “P” steps now fully satisfy the selected requirement verification with this final step in the series).
- Selecting “F” signifies that the current test step completely fulfills the verification of the selected requirement.

## Test Step Configuration and Data Entry (continued)

### ➤ PASS/FAIL Buttons:



One or the other must be selected in each and every test step.

### ➤ Recorded / Observed data and Comments Fields

Recorded / Observed data
Comments
Recorded / Observed data here
Comments here

REDLINE

- Recorded / Observed data

Whenever a request is made to record data, either in a Test Step or a Comment, it must be entered into the Recorded / Observed data field. *Whenever a Test Case is Reset this field is cleared.*

- Comments Field

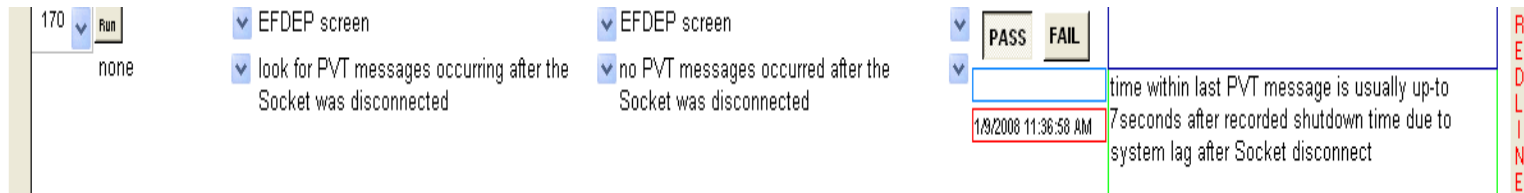
The Comments field is for any comments that are important to the current test step, such as to record data. They may also be used to inform the tester what to expect next, timing consideration, etc., for the purpose of allowing the test case to be run smoothly and accurately.

## Test Step Configuration and Data Entry (continued)

### ➤ Recorded / Observed data and Comments Fields & the **REDLINE** Button:

- Comments Field (continued)

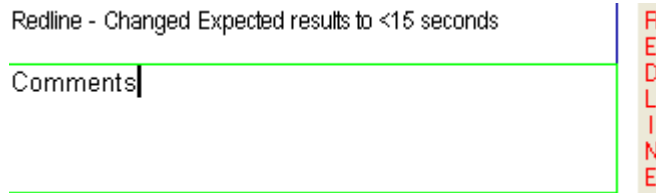
They must be concise and to the point. They may augment and clarify a test step but must be kept out of the Test Step itself. This is not a place for narrative or personal notes. *When a Test Case is Reset this field is not cleared.*



The screenshot shows a test configuration interface with several dropdown menus and a results table. On the left, there is a dropdown for '170' with a 'Run' button and a 'none' value. Below it are two dropdowns for 'EFDEP screen' with selected options: 'look for PVT messages occurring after the Socket was disconnected' and 'no PVT messages occurred after the Socket was disconnected'. On the right, there is a 'PASS FAIL' button, a date/time field showing '1/8/2008 11:36:58 AM', and a text field containing 'time within last PVT message is usually up-to 7seconds after recorded shutdown time due to system lag after Socket disconnect'. A vertical 'REDLINE' button is visible on the far right.

- A Redline statement

is entered into the Recorded / Observed data field. An example is shown below:



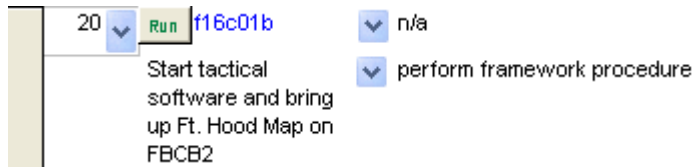
The screenshot shows a 'Redline - Changed Expected results to <15 seconds' statement entered into a 'Comments' field. A vertical 'REDLINE' button is positioned to the right of the field.


Clicking the REDLINE Button adds the “Redline - Changed Expected results to <15 seconds” statement to the Redline Table which will ultimately be used for SQT metrics.

## Test Step Configuration and Data Entry (continued)

### ➤ Selecting a Framework Procedure:

A Framework Procedure may be entered by typing its PUI (ref [f16c01b](#) below).



It may also be entered by clicking the  (to the left of the “n/a” above) and selecting it from the resulting drop down list (see example below)



## Test Case Phases and Guidelines

(Understanding Test Case Evolution and the Guidelines/Rules Necessary to Preserve Its Integrity Throughout the Testing Phases)

### ➤ **Developing a new Test Case or Framework Procedure**

- **Until the Test Case or Framework Procedure is ready for a Peer review, there are no controls in force.**

If it is a Requirements based Test Case the author should attempt to find a group of Requirements that will have a logical “fit” to a single test case.

If it is a functional Test case or a Framework Procedure, it should be designed to have a logical and smooth flow.

If it uses captured data, it should be designed to peruse through it in an orderly manner from top to bottom.

Make certain that the Test Description, Initial Conditions, and Post Conditions tabs are filled in. Attempt to make the Test Description as informative as possible.





## Test Case Phases and Guidelines (continued)

### ➤ Dry Run

- After the Peer Review changes (if any) are implemented and accepted all new Test Cases and Framework Procedures will be Dry Run as many times as necessary to insure that it works. *This is the only time to appropriately focus on trivialities and minutiae.* Typos and spelling corrections can be made without a need for review. A new Framework Procedure will not be locked until PSQT
- Whenever a new VVID is introduced, all Test Cases will be Dry Run again. All changes must be noted in the Problem Report Tab and are subject to review. All Frameworks are locked.
- The Test Case Info tab should be filled in at this point.



## Test Case Phases and Guidelines (continued)

### ➤ PSQT

- After the Dry Run changes (if any) are implemented and accepted, and prior to SQT, all Test Cases will go through the PSQT phase. This phase is primarily to validate that the assigned Test Cases still produce the same expected results as the last time they were run in an SQT. *This is not the time to focus on trivialities and minutiae, but to instead focus on the “big picture”. PSQT may be witnessed by SQA.*
- *This is the time to practice all assigned test cases*, and it is recommended to run them on as many VTBs as possible.
- If a new SW drop is introduced prior to SQT, PSQT should be repeated.
- All changes must be noted in the Problem Report Tab and are subject to review. All Test Steps and Frameworks are locked.



# Test Case Phases and Guidelines (continued)

## ➤ SQT

- All Testers should be confident of their assigned Test Cases and focused.
- All Test Steps and Frameworks are locked.
- Any problems or needed changes including PCRs must be noted in the Recorded/Observed data field as Redlines. Click the REDLINE Button.
- Make sure that all of the PASS/FAIL buttons have been selected.
- Fill in all information within the SQT ScoreCard tab.

## References

- **OJ Liggins – “Writing Good Requirement based Test Cases”**  
- OJ Liggins & Charles Gundlach, December 5, 2005
- **IEEE 829**
- **“Managing the Testing Process” by Rex Black, 2002**