

Test Case Workstation_CAVE_1.0

for the

AWIPS

Contract

DG133W-05-CQ-1067

DCN: AWP.TE.SWCTR/TO8-0011

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Revision History

Revision	Date	Affected Pages	Explanation of Change
1.0	5 December 07	ALL	Initial Release
2.0	17 January 08	iii, 4-5, 7-13	PDT Redlines/NWS Comments
3.0	29 January 08	ALL	DT Redlines

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1.0 SCOPE

See Software Test Plan.

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2.0 APPLICABLE DOCUMENTS

2.1 Source Documents

- None

2.2 Reference Documents

- Software Test Plan for the Advanced Weather Information Processing System Project, Contract #DG133W-05-CQ-1067, 4 December 2007
- Section 2.1.6.4 of the AWIPS D-2D User's Manual Build 8.1
- Existing AWIPS 1 test procedures:
 - D2D_Prod_View_1.4.1.11
- The VPN connection to the Silver Spring NWS AWIPS 1 test bed
- Release OB8.1 of the Weather Event Simulator (WES)

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3.0 TEST CASE DESCRIPTION

This test case illustrates the capability of CAVE to display and manipulate static and animated images as well as associated map backgrounds. This test case also demonstrates a representative sample of functionality contained in each of the menus (Options, Tools, Volume, Obs, Upper Air, Satellite, koax and Maps).

3.1 Assumptions, Constraints and Preconditions

- TO8 software has been installed successfully
- CAVE, EDEX and pgAdmin III are running
- Test data has been ingested
- Additional manipulation of data are tested in additional test cases
 - ColorMap_Editor_1.0
 - Skew_T_1.0
 - Vectors_1.0

3.2 Recommended Hardware

See Software Test Plan.

3.3 Test Inputs

Section 4.0 below contains the test procedures for this test case. Sections 2.2 – 2.9 of the Software Test Plan contain general test inputs applicable to all TO8 test cases.

3.4 Test Outputs

The images and data will be displayed in CAVE.

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4.0 TEST SCENARIO

Step	Action	Result	Pass/Fail
1.	Start CAVE.	CAVE starts.	
2.	Verify the WarnGen button is in the tool bar.	The WarnGen button is in the tool bar.	
3.	Verify the following buttons in the tool bar: -Clear -First Frame -Previous Frame -Next Frame -Last Frame -Loop -Toggle Image Combination -Loop Controls -Image Properties -Print -Points -Baselines -Default Pane Layout -Three Pane Layout -Flash Flood (guidance) -Severe Weather (guidance)	The listed buttons are available from the tool bar.	
4.	Verify the following dropdown menus are present in the tool bar: -Scales (N. Hemisphere, North American, CONUS, Regional, State(s), WFO) -Frames (1-64) -Magnification (0.0, 0.8, 1.0, 1.25, 1.5, 2.0, 2.5) -Density (0.33, 0.5, 0.67, 1.0, 1.25, 1.5, 2.0, Max)	The listed dropdown menus contain the listed values.	
5.	Click mouse button 1 on the File menu.	A dropdown menu appears.	
6.	Verify the items in the dropdown menu are replicated in the 'FileMenu' screen shot. Note: The 'Exit...' option is under the CAVE menu. (A comprehensive test of the Procedures and History List is in the Workstation_Bundles_History_1.0 test case.) (A comprehensive test of the Print and Capture Window capabilities is found in the Screen_Capture_1.0 test case.)	The menu items are present.	
7.	Click mouse button 1 on the View menu.	A dropdown menu appears.	
8.	Verify the items in the dropdown menu are replicated in the 'ViewMenu' screen shot.	The menu items are present.	
9.	From the 'koax' dropdown menu, select an available composite reflectivity radar image. (A comprehensive test of the radar is in the Radar_Display_1.0 test case.)	The radar image displays in CAVE.	
10.	From the 'Satellite' dropdown menu, verify available products display the date and time (day.time) adjacent to the product. Then load an available satellite image from the 'Satellite' dropdown menu. Then hold down MB3 on the Satellite product ID in the product legend and select the 'Move Down' option.	The date and time are located adjacent to the available products. A satellite image displays in CAVE. The radar image appears above the Satellite image.	DR #690

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11.	From the 'Maps' dropdown menu, select 'Cities'.	Cities are displayed in CAVE.	
12.	Click mouse button 1 on the 'Loop' button.	The images displayed in CAVE begin looping.	
13.	Click mouse button 1 on the Options menu.	A dropdown menu appears.	
14.	Verify the items in the dropdown menu are replicated in the 'OptionsMenu' screen shot.	The menu items are present.	
15.	From the 'Options' dropdown menu, select 'Loop Properties...'	A 'Loop Properties' window opens.	
16.	Increase the Forward speed to 10.	The loop increases its speed.	
17.	Set the First frame dwell and Last frame dwell to 0 seconds. Then close the 'Loop Properties' window.	The loop progresses continuously without pause. The 'Loop Properties' window closes.	
18.	Click mouse button 1 on the 'Clear' button.	The CAVE display clears.	
19.	Click mouse button 1 on the Tools menu.	A dropdown menu appears.	
20.	Verify the items in the dropdown menu are replicated in the 'ToolsMenu' screen shot.	The menu items are present.	
21.	From the 'Tools' dropdown menu, select 'Baselines'.	Baselines display in CAVE.	
22.	Click mouse button 2 on the Baselines product ID in the product legend if the baselines are not in edit mode.	The Baselines become editable.	
23.	Modify a line using the endpoints.	The Baseline is modified.	
24.	Click mouse button 1 on the 'Clear' button.	The CAVE display clears.	
25.	Click mouse button 1 on 'Upper Air' in the menu bar and select an available RAOB product.	A sounding displays in CAVE.	
26.	Close the Skew_T tab.	The Skew-T tab closes.	
27.	Click mouse button 1 on 'Obs' in the menu bar and select the 'Surface Plot' product.	The Station Plots display in CAVE.	
28.	Click mouse button 1 on the 'Clear' button.	The CAVE display clears.	
29.	Click mouse button 1 on 'Volume' in the menu bar and select 'Browser...'	The Volume Browser window opens.	
30.	Request an available product from within the Volume Browser.	The product displays in CAVE. The Volume Browser remains open.	
31.	Close the Volume Browser. (A comprehensive test of the Volume Browser is found in VolumeBrowser_1.0 test case.)	The Volume Browser closes.	
32.	Start the loop by clicking mouse button 1 on the 'Loop' button in the tool bar.	The data loops in CAVE.	
33.	Stop the Loop. Then click mouse button 3 on the contoured product ID in the product legend and select 'Line Width'. Set the line width to 3.	The loop stops. The line width of the contours increases in thickness.	
34.	Set the scale to WFO. Then, from the tool bar, change the density to 1.5.	The map adjusts to the WFO scale. The number of contours increases.	
35.	Click mouse button 3 on the 'State/County Boundaries' product ID in the product legend and select 'Change Color...'	A color palette window opens.	
36.	Select a color in the 'Color' window and click mouse button 1 on the 'OK' button.	The State and County lines change to the selected color.	
37.	Then click mouse button 1 on the 'Clear' button.	CAVE clears.	

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Specific Tools			
Unit Calculator			
38.	From the 'Tool' dropdown menu, select 'Units Calculator...'	A unit calculator appears.	
39.	In the left text box, enter '1' and click mouse button 1 on 'Celsius' on the left side.	The Celsius unit on the right side becomes selected and 1.00000 is entered in the right text box.	
40.	On the right side, click mouse button 1 on 'Fahrenheit'.	The value changes to 33.80000.	
41.	Verify the Celsius and Fahrenheit units are labeled next to the appropriate text box.	The units are labeled next to the appropriate text box.	
42.	On the left side, select knots. Then select mph on the right side.	The unit calculator returns 1kt on the left side and 1.15078mph on the right side.	
43.	On the left side, select m. Then select km on the right side.	The unit calculator returns 1m on the left side and 0.00100km on the right side.	
44.	On the left side, select day. Then select hr on the right side.	The unit calculator returns 1d on the left side and 24.00000hr on the right side.	
45.	On the left side, select mb. Then select hPa on the right side.	The unit calculator returns 1mb on the left side and 1.00000hPa on the right side.	
46.	Close the Unit Calculator.	The unit calculator closes.	
Baselines			
47.	Click mouse button 1 on the Baselines button in the tool bar.	10 baselines labeled A through J display in edit mode in CAVE.	
48.	Click mouse button 2 on the Baselines product ID in the product legend.	The Baselines are put to Normal mode and are not editable.	
49.	Click mouse button 2 on the Baselines product ID in the product legend.	The Baselines return to Edit mode and are editable.	
50.	Verify the product legend displays 'Interactive Baselines (Editable)'	The product legend displays 'Interactive Baselines (Editable)'	
51.	Click and hold mouse button 1 on the center of a baseline and move it to a different location.	The baseline moves to a different position.	
52.	Click and hold mouse button 1 on an endpoint of a baseline and move it to a different location.	The baseline endpoint moves to a different position.	
53.	At the midpoint of a baseline, click and hold mouse button 3 and select 'Add Vertex' from the pop up menu.	A vertex is added to the baseline.	
54.	Click and hold mouse button 3 on the new vertex and select 'Delete Vertex' from the pop up menu.	The vertex is deleted from the baseline.	
55.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
56.	Reload the Baselines and verify the edits made to the baselines remain.	The baselines load, maintaining the edits made to the baselines.	
57.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
Az/Ran Overlay			
58.	From the 'Tool' dropdown menu, select 'Az/Ran Overlay'.	The Az/Ran Overlay tool displays in CAVE.	
59.	Click mouse button 2 on the Az/Ran Overlay product ID in the product legend.	The Az/Ran Overlay tool becomes editable.	
60.	Click mouse button 1 elsewhere in the main pane of the CAVE display.	The Az/Ran Overlay tool appears at the location where the mouse click took place.	
61.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
Distance Bearing			
62.	From the 'Tool' dropdown menu, select 'Distance Bearing'.	6 Distance Bearing lines labeled A through F display in CAVE.	
63.	Click mouse button 2 on the Distance Bearing product ID in	The Distance Bearing lines become	

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	the product legend.	editable.	
64.	Click and hold mouse button 1 on the center of a Distance Bearing line and move it to a different location.	The Distance Bearing line moves to a different position.	
65.	Click and hold mouse button 1 on an endpoint of a Distance Bearing line and move it to a different location.	The Distance Bearing endpoint moves to a different position.	
66.	Verify the distance and bearing readout was modified, displaying the readout at the 'arrow's head'.	The distance and bearing readout modifies with the values representing the 'arrow's head'.	
67.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
Distance Speed			
68.	From the 'Tool' dropdown menu, select 'Distance Speed'.	A point displays in CAVE labeled with 'Drag me to feature'. The Distance Speed tool is in edit mode. A 'Distance Speed' window appears.	
69.	Click and hold mouse button 1 on the point and drag it to another position. Select 'Speed' in the 'Distance Speed' window.	A vector appears with the point at the center of the line, tick marks, and speed (in knots) and bearing (in degrees) values at the arrowhead and point.	DR # 691
70.	Press the right arrow key on the keyboard several times.	The point moves forward from tick mark to tick mark with each key stroke.	
71.	Move the point to another position.	The vector is modified, the spacing between the tick marks is modified, and the speed and direction values change.	
72.	Press the left arrow key on the keyboard several times.	The point moves backward from tick mark to tick mark with each key stroke.	
73.	Verify the speed and direction values are labeled adjacent to the point.	The speed and direction are labeled adjacent to the point.	
74.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
Home			
75.	From the 'Tool' dropdown menu, select 'Home'.	An 'x' labeled 'Home' appears in CAVE at a location specified by localization.	
76.	Click mouse button 2 on the Home product ID in the product legend.	The Home tool becomes editable.	
77.	Click mouse button 1 on the Home marker and drag it to another location.	The Home point is relocated.	
78.	Note the new lat/lon position. Then close and restart CAVE.	CAVE is restarted.	
79.	From the 'Tool' dropdown menu, select 'Home'.	An 'x' labeled 'Home' appears in CAVE at the new location.	
80.	Verify the new lat/lon point was recorded in localization under Preferences.	The Home location lat/lon points are modified to the new location	
81.	Click and hold mouse button 3 on the display and select 'Sample' and 'Lat/Lon Readout'.	The Lat/Lon readout and distance and bearing values also display.	
82.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
Points			
83.	Click mouse button 1 on the Points button in the tool bar.	10 points labeled A through J display in edit mode in CAVE.	
84.	Click mouse button 2 on the Points product ID in the product legend.	The Points are put to Normal mode and are not editable.	
85.	Click mouse button 2 on the Points product ID in the product legend.	The Points return to Edit mode and are editable.	
86.	Verify the product legend displays 'Interactive Points (Editable)'.	The product legend displays 'Interactive Points (Editable)'.	

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87.	Click and hold mouse button 1 on a point and move it to a different location.	The point moves to a different position.	
88.	Click and hold mouse button 3 on a point and select 'Delete Entire Element' from the pop up menu.	The point is deleted from the CAVE display.	
89.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
90.	Reload the Points and verify the edits made to the points remain.	The points load, maintaining the edits made to the points.	
91.	Click mouse button 1 on the 'Clear' button.	CAVE clears.	
Sunrise/Sunset			
92.	From the 'Tool' dropdown menu, select 'Sunrise/Sunset...'	The Sunrise/Sunset tool appears.	
93.	Verify the current data was populated in the Year, Month and Day text boxes. Verify the Zone is set to that set in localization.	The current date is populated. The Zone is set to that set in localization.	
94.	Modify the following values: -Latitude and Longitude -Year -Month -Day Then click mouse button 1 on the 'Calculate' button.	The following values modify: -Sunrise Azimuth angle and Time -Sunset Azimuth angle and Time -Azimuth graphic -Time of sunlight	
95.	Close the Sunrise/Sunset window.	The Sunrise/Sunset window closes.	
Range Rings			
96.	From the Tools menu, select 'Range Rings'.	A 'RangeRing' window appears. The Range Rings tool loads in edit mode.	
97.	In the top half of the 'RangeRing' window, activate the 'Sample' section by clicking MB1 on the box.	The box becomes checked. Three range rings appear in the main pane of the CAVE display.	
98.	Enter 5, 50, and 100 in the three text boxes from right to left respectively. Then click MB1 on the Apply button.	The 'RangeRing' window remains open. The range rings modify to the changes made in the 'RangeRing' window.	
99.	Under the Labels section, select 'C123', then click MB1 on the Apply button.	The three rings become labeled with the entered distances within the text boxes of the 'RangeRing' window. The center point is also labeled 'Sample'.	
100.	Deactivate the 'Sample' section.	The 'Sample' section is disabled. The sample range rings are removed from the display.	
101.	Click MB1 on the 'New at:' dropdown menu currently labeled 'Lat/Lon'.	The dropdown menu consists of Lat/Lon, points labeled A through J, and Sample.	DR #732
102.	Select Point A.	The 'Movable Rings' section within the 'RangeRing' window expands to include the ID, Lat, Lon, Radius, and Labels. The Lat and Lon text boxes becomes populated with the Lat/Lon position of Point A.	
103.	Increase the Radius by entering 300 into the Radius text box. Then click MB1 on the Apply button.	The range ring with a radius of 200nm appears over Point A.	
104.	From the 'Labels' dropdown menu under the 'Movable Rings' section, select C1. Then click MB1 on the OK button.	The 'RangeRing' window closes. The range ring is labeled with the designated point and the distance entered in the Radius text box.	
105.	Clear the main pane in CAVE.	The main pane in CAVE clears.	

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Change Background Color			
106.	From the 'Options' menu, select 'Set Background Color...'. Then click the OK button.	A 'Set Background Color for all Panes' window appears. The color displayed is black.	
107.	Using mouse button 1, increase the Red value to 255. Then click the OK button.	The color displayed in the 'Set Background Color for all Panes' window is red. The background color for all panes becomes red. The 'Set Background Color for all Panes' window closes.	
108.	Repeat step #107, changing the color to black. Then click the OK button.	The color displayed in the 'Set Background Color for all Panes' window is black. The background color for all panes becomes black. The 'Set Background Color for all Panes' window closes.	
	End of test.		

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5.0 REQUIREMENTS VERIFICATION TRACEABILITY MATRIX (RVTM)

Number	Description	Test Step(s)
CAVE_TO8_003	CAVE shall display a menu bar with the look and feel of the legacy D2D application	5-8,13-14,19-20
CAVE_TO8_003.1	The menus and submenus shall contain baselined products as in the legacy D2D application	5-8,13-14,19-20
CAVE_TO8_003.1.1	The File menu in CAVE shall display items identical to those displayed in the legacy AWIPS 8.1 screen shot 'FileMenu'	5-6
CAVE_TO8_003.1.2	The View menu in CAVE shall display items identical to those displayed in the legacy AWIPS 8.1 screen shot 'ViewMenu'	7-8
CAVE_TO8_003.1.3	The Options menu in CAVE shall display items identical to those displayed in the legacy AWIPS 8.1 screen shot 'OptionsMenu'	13-14
CAVE_TO8_003.1.4	The Tools menu in CAVE shall display items identical to those displayed in the legacy AWIPS 8.1 screen shot 'ToolsMenu'	19-20
CAVE_TO8_003.2	CAVE shall provide a WarnGen button in the tool bar	2
CAVE_TO8_003.4	CAVE shall display a tool bar with the look and feel of the legacy D2D application	2,3,4
CAVE_TO8_003.4.3	CAVE shall provide a Clear button within the tool bar	3
CAVE_TO8_003.4.4	CAVE shall provide a First Frame button within the tool bar	3
CAVE_TO8_003.4.5	CAVE shall provide a Previous Frame button within the tool bar	3
CAVE_TO8_003.4.6	CAVE shall provide a Next Frame button within the tool bar	3
CAVE_TO8_003.4.7	CAVE shall provide a Last Frame button within the tool bar	3
CAVE_TO8_003.4.8	CAVE shall provide a Loop button within the tool bar	3
CAVE_TO8_003.4.9	CAVE shall provide a Toggle Image Combination button within the tool bar	3
CAVE_TO8_003.4.10	CAVE shall provide a Loop Controls button within the tool bar	3
CAVE_TO8_003.4.11	CAVE shall provide a Image Properties button within the tool bar	3
CAVE_TO8_003.4.12	CAVE shall provide a Print button within the tool bar	3
CAVE_TO8_003.4.13	CAVE shall provide a Points button within the tool bar	3
CAVE_TO8_003.4.14	CAVE shall provide a Baselines button within the tool bar	3
CAVE_TO8_003.4.15	CAVE shall provide a Default Pane Layout button within the tool bar	3
CAVE_TO8_003.4.16	CAVE shall provide a Three Pane Layout button within the tool bar	3
CAVE_TO8_003.4.17	CAVE shall provide a Frames dropdown menu within the tool bar	4
CAVE_TO8_003.4.17.1	The Frames dropdown menu shall allow the user to select the frame count from 1-64 in increments of 1	4
CAVE_TO8_003.4.18	CAVE shall provide a Magnification dropdown menu within the tool bar	4
CAVE_TO8_003.4.18.1	The Magnification dropdown menu shall allow the user to select the magnification scale from 0.0-2.5 at specified values (0.0, 0.8, 1.0, 1.25, 1.5, 2.0, 2.5)	4
CAVE_TO8_003.4.19	CAVE shall provide a Density dropdown menu within the tool bar	4

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CAVE_TO8_003.4.19.1	The Density dropdown menu shall allow the user to select the density scale from 0-Max at specified values (0.33, 0.5, 0.67, 1.0, 1.25, 1.5, 2.0, Max)	4
CAVE_TO8_003.4.20	CAVE shall provide a Flash Flood guidance button within the tool bar	3
CAVE_TO8_003.4.21	CAVE shall provide a Severe Warning guidance button within the tool bar	3
CAVE_TO8_003.6	The menu and submenu products shall display the date and time (day.time) of the most recently ingested data if data is available	10
CAVE_TO8_017	CAVE shall contain a Unit Calculator tool	38
CAVE_TO8_017.1	The Unit Calculator tool shall be accessible through the Tool menu	38
CAVE_TO8_017.2	The Unit Calculator shall display the selected units adjacent to the text box	41
CAVE_TO8_017.3	The Unit Calculator shall allow the user to enter a numerical value into the text box	39
CAVE_TO8_017.4	The Unit Calculator shall return a conversion value when a unit has been selected in the other column	40
CAVE_TO8_017.5	The Unit Calculator shall convert between Temperature units	40
CAVE_TO8_017.5.2	The Unit Calculator shall convert temperature from Celsius to Fahrenheit	40
CAVE_TO8_017.6	The Unit Calculator shall convert between Speed units	42
CAVE_TO8_017.6.3	The Unit Calculator shall convert Speed from knots to mph	42
CAVE_TO8_017.7	The Unit Calculator shall convert between Distance units	43
CAVE_TO8_017.7.2	The Unit Calculator shall convert Distance from m to km	43
CAVE_TO8_017.8	The Unit Calculator shall convert between Time units	44
CAVE_TO8_017.8.2	The Unit Calculator shall convert Time from day to hr	44
CAVE_TO8_017.9	The Unit Calculator shall convert between Pressure units	45
CAVE_TO8_017.9.6	The Unit Calculator shall convert Pressure from mb to hPa	45
CAVE_TO8_021	CAVE shall contain a baselines tool	47
CAVE_TO8_021.1	CAVE shall allow launch of Baselines tool from "Tools" menu	21
CAVE_TO8_021.2	CAVE shall allow launch of Baselines tool from Baselines button on tool bar	47
CAVE_TO8_021.2.1	The Baselines tool shall load in Edit Mode	47
CAVE_TO8_021.3	CAVE shall create a default baseline line array if user's configuration does not contain a baseline array	47
CAVE_TO8_021.3.1	Default configuration shall consist of 10 lines labeled A-J centered about user's home location	47
CAVE_TO8_021.4	CAVE shall allow the user to display the baselines in Normal Mode	48
CAVE_TO8_021.4.2	The Baselines in CAVE shall be uneditable while in Normal Mode	48
CAVE_TO8_021.5	CAVE shall allow manipulation of Baselines through an Edit Mode	51
CAVE_TO8_021.5.1	CAVE shall display the baselines in Edit Mode	47,49
CAVE_TO8_021.5.2	CAVE shall allow manipulation of baseline lines in Edit Mode	51,52
CAVE_TO8_021.5.2.1	CAVE shall display the label 'Interactive Baselines (Editable)'	50

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	when the Baselines are in Edit Mode	
CAVE_TO8_021.5.2.2	The user shall be able to move a baseline using mouse button 1 (click and hold) on the baseline	51
CAVE_TO8_021.5.2.4	The user shall be able to click and hold mouse button 1 on the endpoint to allow movement of the endpoint for the baseline	52
CAVE_TO8_021.5.2.6	The user shall be able to add a vertex from the operations menu using mouse button 3	53
CAVE_TO8_021.5.2.8	The user shall be able to delete a vertex from the operations menu using mouse button 3	54
CAVE_TO8_021.6	CAVE shall allow toggling of modes using mouse button 2 on label describing layer (Interactive Baselines)	48,49
CAVE_TO8_021.7	In Edit mode, System shall persist the user's changes to the baseline. Baseline will be persisted as a localization object with the CAVE localization	51-56
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