Test Case Volume Browser 2.0

for

Contract DG133W-05-CQ-1067

Advanced Weather Interactive Processing System (AWIPS)
Operations & Maintenance

AWP.TE.SWCTR/TO10-0026

Prepared for:

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Change History

Revision	Date	Affected Pages	Explanation of Change
Draft	21 Nov. 2008	ALL	Initial Draft
1	16 Jan. 2009	ALL	Result of PDT
2	2 Feb. 2009	3	Result of DT
3	6 Feb. 2009	iii, 7-10	Result of DT

Table of Contents

Page

1.0 SCOPE

See TO10 Software Test Plan.

2.0 APPLICABLE DOCUMENTS

2.1 Source Documents

- TO8 Test Case Volume Browser 1.0

2.2 Reference Documents

- Legacy NWS Test Cases:
  - D2D_Prod_Load_1.4.1.22
  - Baseline_D2D_VB_Plan_1.4.1.2
  - Baseline_D2D_VB_Time_1.4.1.9_V2
  - Baseline_D2D_VB_T-Z_1.4.1.6
  - D2D_VB_XvsZ_1.4.1.7
  - D2D_VB_Xsect_1.4.1.4
  - Baseline_D2D_VB_Sound_1.4.1.8_V2
  - ECMWF Medium Range_DCS3377-OB8.1
- TO10 Software Test Plan for the Advanced Weather Interactive Processing System Project, Contract #DG133W-05-CQ-1067, January 2009.
- Section 3 of the AWIPS D-2D User's Manual Build 8.1
  - Release OB8.3 of the Weather Event Simulator (WES)
- The Silver Spring NWS AWIPS 1 test bed application.
- Rational RequisitePro.

3.0 TEST CASE DESCRIPTION

This test case demonstrates the capability of CAVE to display a representative sample of plan view, time series, time-height, variable versus height, cross section and sounding model products from available numerical models. The capability to recall radar products through the Volume Browser is introduced in TO10. A representative sample of products is demonstrated in the following test procedures.

3.1 Assumptions, Constraints and Preconditions

- TO10 software has been installed successfully
- CAVE and EDEX are running
- Data has been ingested
- The test for TO10 begins at step 42
  - Depending on the status of the ORPG prototyping in TO10 (TO11 delivery) some radar functionality from the volume browser may not be available.
- Actions, Results, and Requirements highlighted in gray indicate requirements and/or capabilities to be included in the scope of future task orders. They are included here for purposes of continuity and traceability with the original AWIPS I test case documents.

3.2 Recommended Hardware

See TO10 Software Test Plan, Section 2.2.

3.3 Test Inputs

Section 4.0 contains the test procedures for this test case. Sections 2.2 – 2.9 of the TO10 Software Test Plan contain general test inputs applicable to all TO10 test cases. Grayed out test step(s) indicate functionality not yet delivered.

3.4 Test Outputs

The images and data will be displayed in CAVE.

4.0 TEST SCENARIO

Step	Action	Result	Pass/Fail
Start of TO8 Test			
Plan View			
1.	In CAVE, click 'Volume' -> 'Browser…'.	The Volume Browser opens.	
2.	In the Volume Browser select 'Plan view' from the pull-down menu if not already selected.	The options within the Volume Browser change when 'Plan view' is selected.	
3.	Using 'Time' (in the menu bar of the Volume Browser), select an available grid product under the 'Sources' and 'Fields' sections. Under the 'Planes' section, select 'Surface'. Then click the 'Load' button.	The gridded data appears displaying the contours of the gridded product.	
4.	Verify the full model run is displayed by increasing the frame count to 64 and looping the gridded data.	The data loops chronologically through the model run.	
5.	Clear the CAVE display.	The display in CAVE clears.	
Cross Section			
6.	From the Volume Browser 'Tools' menu, select 'Baselines'.	The Interactive Baselines appear.	
7.	Choose a baseline that is to be used to make the cross section and edit the baseline accordingly (if desired). Record the line ID letter ____	Line and/or vertex moves to desired location.	
8.	From the Volume menu, select 'Browser' if the Volume Browser is not already open.	The Volume Browser window opens.	
9.	In the Volume Browser select 'Cross-section' from the pull-down menu labeled 'Plan View'.	The options within the Volume Browser change.	
10.	Using 'Time' and 'Log 1050-150' (in the menu bar of the Volume Browser), select an available grid product under the 'Sources' and 'Fields' sections. Under the 'Planes' section, select the chosen baseline. Then click the 'Load' button.	The cross section appears displaying the contours of the gridded product.	DR #811 DR #866 DR #1879
11.	Verify the full model run is displayed by increasing the frame count to 64 and looping the gridded data.	The data loops chronologically through the model run.	DR #1878
12.	Stop the loop.	The loop stops.	
13.	Zoom into the cross section.	The user is able to zoom into the cross section.	
14.	Close the Cross Section tab.	The Cross Section tab closes. CAVE returns to the map within the 'Maps' tab with the baselines displayed.	

Step	Action	Result	Pass/Fail
15.	In the Volume Browser, using 'Space' and 'Log 1050-150' (in the menu bar of the Volume Browser), select an available grid product under the 'Sources' and 'Fields' sections. Under the 'Planes' section, select 'All Lat' under the 'Lat' menu. Then click the 'Load' button.	The cross section appears displaying the contours of the gridded product.	DR #1879
16.	Verify the full model run is displayed by looping the gridded data.	The data loops chronologically through space.	DR #1880
17.	Close the Cross Section tab. Then clear the CAVE display.	The Cross Section tab closes. CAVE displays a blank map within the 'Map' tab.	
Time Height			
18.	From the Volume Browser 'Tools' menu, select 'Points'.	The Interactive Points appear.	
19.	Choose a point that is to be used to make the Time height plot. Edit the point if necessary. Record the point's ID letter: ___	Point moves to desired location.	
20.	In the Volume Browser, select 'Time height' from the pull-down menu.	The options within the Volume Browser change.	
21.	In the Volume Browser, using 'left' and 'Log 1050-150' (in the menu bar of the Volume Browser), select an available grid product under the 'Sources' and 'Fields' sections. Under the 'Planes' section, select the chosen point. Then click the 'Load' button.	The Time height product appears displaying the variable with respect to time. CAVE displays the data with the initialized model time (0HR) on the right and the latest valid time on the left.	DR #811 DR #866 DR #867
22.	Close the Time Height tab.	The Time Height tab closes. CAVE returns to the map within the 'Map' tab with the Points displayed.	
23.	In the Volume Browser, using 'right' and 'Log 1050-150' (in the menu bar of the Volume Browser), select an available grid product under the 'Sources' and 'Fields' sections. Under the 'Planes' section, select the chosen point. Then click the 'Load' button.	The Time height product appears displaying the variable with respect to time. CAVE displays the data with the initialized model time (0HR) on the left and the latest valid time on the right.	DR #811 DR #866 DR #867
24.	Close the Time Height tab. Clear the display within CAVE.	The Time Height tab closes. CAVE displays a blank map within the 'Map' tab.	
Variable vs. Height			
25.	On the CAVE toolbar select the Points button.	The Interactive Points appear.	
26.	Choose a point that is to be used to make the variable versus height plot. Edit the point if necessary. Record the point's ID letter: ___	Point moves to desired location.	DR #810

Step	Action	Result	Pass/Fail
27.	In the Volume Browser, select 'Var vs Hgt' from the pull-down menu.	The options within the Volume Browser change.	
28.	In the Volume Browser, using 'Log 1050-150' (in the menu bar of the Volume Browser), select an available grid product under the 'Sources' and 'Fields' sections. Under the 'Planes' section, select the chosen point. Then click the 'Load' button.	The Variable vs. Height product appears displaying a graph of the variable with respect to height.	DR #811 DR #866
29.	View all the frames (model forecast times) by using the arrow keys on the keyboard or toolbar.	The variable will display as a line increasing or decreasing with height.	DR #1878
30.	Close the Var vs Hgt tab. Clear the display within CAVE.	The Var vs Hgt tab closes. CAVE displays a blank map within the 'Map' tab.	
Sounding			
31.	On the CAVE toolbar select the Points button.	The Interactive Points appear.	
32.	Choose a point that is to be used to make the sounding plot. Edit the point if necessary. Record the point's ID letter: ___	Point moves to desired location.	
33.	In the Volume Browser, select 'Sounding' from the pull-down menu.	The options within the Volume Browser change.	
34.	In the Volume Browser, select an available grid product under the 'Sources' section. Select 'Sounding' in the 'Fields' section under the 'Thermo' dropdown menu. Under the 'Planes' section, select the chosen point. Then click the 'Load' button.	The Sounding product appears displaying a Skew-T for the selected point.	DR #866
35.	View all the frames (model forecast times) by using the arrow keys on the keyboard or toolbar.	Each Sounding displays.	DR #826
36.	Close the Skew-T tab. Clear the display within CAVE.	The Skew-T tab closes. CAVE displays a blank map within the 'Map' tab.	
Time Series			
37.	On the CAVE toolbar select the Points button.	The Interactive Points appear.	
38.	Choose a point that is to be used to make the Time height plot. Edit the point if necessary. Record the point's ID letter: ___	Point moves to desired location.	
39.	In the Volume Browser, select 'Time series' from the pull-down menu.	The options within the Volume Browser change.	
40.	In the Volume Browser, using the selected point, select an available grid product under the 'Sources' and 'Fields' sections. Under the 'Planes' section, select 'Surface' from the 'Misc' dropdown menu. Then click the 'Load' button.	The Time series product appears displaying the variable with respect to time. CAVE displays the data with the initialized model time (0HR) on the left and the latest valid time on the right.	DR #866 DR #867

Step	Action	Result	Pass/Fail
41.	Close the Time Series tab. Clear the display within CAVE. Close the Volume Browser.	The Time Series tab closes. CAVE displays a blank map within the 'Map' tab. The Volume Browser closes.	
End of TO8 Test			
Start of TO10 Test			
42.	In CAVE, MB1 click 'Volume' -> 'Browser…'.	The Volume Browser opens.	
Reflectivity			
43.	In the Volume Browser, select the following: Sources: Radar Fields: Reflectivity Planes: 0.5 km AGL	The 0.5 km AGL Reflectivity data displays in the main pane.	
44.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
45.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Radial Velocity			
46.	In the Volume Browser, select the following: Sources: Radar Fields: Radial Vel Planes: 0.5 km AGL	The 0.5 km AGL Radial Velocity data displays in the main pane.	
47.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
48.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Tilt Angle			
49.	In the Volume Browser, select the following: Sources: NAM 40 Fields: Tilt Angle Planes: 0.5 deg	The 0.5 deg NAM Tilt Angle data displays in the main pane.	DR #1834
50.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
51.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Col. Max Reflectivity			
52.	In the Volume Browser, select the following: Sources: Radar Fields: Col Max Refl Planes: Layer	The Layer Col Max Reflectivity data displays in the main pane.	
53.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
54.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	

Step	Action	Result	Pass/Fail
Spectrum Width			
55.	In the Volume Browser, select the following: Sources: Radar Fields: Spectrum Width Planes:0.5 km AGL	The 0.5 km AGL Spectrum Width data displays in the main pane.	DR #1834
56.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
57.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Diff. Reflectivity			
58.	In the Volume Browser, select the following: Sources: Radar Fields: Diff Refl Planes:0.5 km AGL	The 0.5 km AGL Diff. Reflectivity data displays in the main pane.	DR #1834
59.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
60.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Corr. Coefficient			
61.	In the Volume Browser, select the following: Sources: Radar Fields: Corr Coeff Planes: 0.5 km AGL	The 0.5 km AGL Corr. Coefficient data displays in the main pane.	DR #1834
62.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
63.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Spec. Diff. Phase			
64.	In the Volume Browser, select the following: Sources: Radar Fields: Spec Diff Phase Planes: 0.5 km AGL	The 0.5 km AGL Spec. Diff. Phase data displays in the main pane.	DR #1834
65.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
66.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Hydrometeor Class			
67.	In the Volume Browser, select the following: Sources: Radar Fields: Hydrometeor Class Planes: 0.5 km AGL	The 0.5 km AGL Hydrometeor Class data displays in the main pane.	DR #1834
68.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
69.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	

Step	Action	Result	Pass/Fail
Feature Strength			
70.	In the Volume Browser, select the following: Sources: DMD Fields: Feature Strength Planes: Layer	The Layer DMD Feature Strength data displays in the main pane.	
71.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
72.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Feature Diameter			
73.	In the Volume Browser, select the following: Sources: DMD Fields: Feature Diameter Planes: Layer	The Layer DMD Feature Diameter data displays in the main pane.	
74.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
75.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Shear Magnitude			
76.	In the Volume Browser, select the following: Sources: NAM40 Fields: Shear Mag Planes: 850mb	The NAM40 850mb Shear Magnitude data displays in the main pane.	
77.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
78.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Gate to Gate Shear			
79.	In the Volume Browser, select the following: Sources: DMD Fields: Gate2Gate Shr Planes: Lo Layer	The Lo Layer DMD Gate to Gate Shear data displays in the main pane.	
80.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
81.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
Feature Motion			
82.	In the Volume Browser, select the following: Sources: NAM Bufr Fields: Feat Mot Planes: Surface	The NAM Bufr Surface Feature Motion data displays in the main pane.	
83.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
84.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	

Step	Action	Result	Pass/Fail
Divergence			
85.	In the Volume Browser, select the following: Sources: NAM40 Fields: Divergence Planes: 850mb	The NAM40 850mb Divergence data displays in the main pane.	
86.	MB1 click the 'Clear' button on the CAVE toolbar.	The main display clears.	
87.	In the Volume Browser select 'Edit', 'Clear all'.	The prior Volume Browser selections are cleared.	
End of TO10 Test			

5.0 TO9 REQUIREMENTS VERIFICATION TRACEABILITY MATRIX (RVTM)

Number	Description	Test Step(s)
CAVE_TO8_002	CAVE shall contain a Volume Browser with the look and feel, and functionality of the current AWIPS 1 Volume Browser	ALL
CAVE_TO8_002.10	The Volume Browser shall allow the user to select items displayed within the Volume Browser	4
CAVE_TO8_002.12	The Volume Browser shall allow the user to display Baselines in CAVE using MB1	7
CAVE_TO8_002.13	The Volume Browser shall allow the user to display Points in CAVE using MB1	19
CAVE_TO8_002.15	The Volume Browser shall allow the user to select settings	3,10,21,28,34,40
CAVE_TO8_002.15.1	The Volume Browser shall allow the user to select the Plan view option using MB1	3
CAVE_TO8_002.15.2	The Volume Browser shall allow the user to select the Cross Section option using MB1	10
CAVE_TO8_002.15.3	The Volume Browser shall allow the user to select the Time height option using MB1	21
CAVE_TO8_002.15.4	The Volume Browser shall allow the user to select the Var vs Hgt option using MB1	28
CAVE_TO8_002.15.5	The Volume Browser shall allow the user to select the Sounding option using MB1	34
CAVE_TO8_002.15.6	The Volume Browser shall allow the user to select the Time series option using MB1	40
CAVE_TO8_002.16	The Volume Browser shall allow the user to display data within the Volume Browser	4,11,22,24,29,35,41
CAVE_TO8_002.16.1	The Volume Browser shall display data in the Plan View setting with reference to Time	4
CAVE_TO8_002.16.3	The Volume Browser shall display data in the Cross Section setting with reference to Time	11
CAVE_TO8_002.16.4	The Volume Browser shall display data in the Cross Section setting with reference to Space	16
CAVE_TO8_002.16.6	The Volume Browser shall display data in the Time Height setting	22,24
CAVE_TO8_002.16.8	The Volume Browser shall display Time Series data	41
CAVE_TO8_002.16.10	The Volume Browser shall display Sounding data	35
CAVE_TO8_002.16.11	The Volume Browser shall display Variable vs Height data	29
CAVE_TO8_002.17	The Volume Browser shall allow the user to display data in CAVE	4,11,22,24,29,35,41

Number	Description	Test Step(s)
CAVE_TO8_002.17.1	CAVE shall display Plan View data with reference to Time as requested through the Volume Browser	4
CAVE_TO8_002.17.3	CAVE shall display data in Cross Sections with reference to Time as requested through the Volume Browser	11
CAVE_TO8_002.17.4	CAVE shall display data in Cross Sections with reference to Space as requested through the Volume Browser	16
CAVE_TO8_002.17.5	CAVE shall display Time Height data chronologically from right to left as requested through the Volume Browser	22
CAVE_TO8_002.17.6	CAVE shall display Time Height data chronologically from left to right as requested through the Volume Browser	24
CAVE_TO8_002.17.7	CAVE shall display Time Series data as requested through the Volume Browser	41
CAVE_TO8_002.17.8	CAVE shall display Sounding data as requested through the Volume Browser	35
CAVE_TO8_002.17.9	CAVE shall display Variable vs. Height data as requested through the Volume Browser	29
CAVE_TO8_002.23	The Volume Browser window shall have the capability to remain open after the selected products in the Product Selection List are loaded	4,11,22,24,29,35,41
CAVE_TO8_006	CAVE shall provide the capability to display cross-sections	11
CAVE_TO8_006.1	Cross-sections shall be accessible through the volume browser, Plan View default tab	10
CAVE_TO8_006.2	Cross-section shall allow the user to view gridded data as vertical slices along specific baselines	11
CAVE_TO8_006.6	Cross-sections shall display gridded model data	11
CAVE_TO8_006.7	The user shall be able to view a time-height cross section of a full run of gridded model data for a specific location	22
CAVE_TO8_006.7.1	Generation of Time-height cross-section displays shall be available through the Points submenu	22
CAVE_TO8_006.8	The user shall be able to zoom into the cross section	14

6.0 TO10 REQUIREMENTS VERIFICATION TRACEABILITY MATRIX (RVTM)

Number	Description	Test Step(s)
SYSR3119	The AWIPS system shall begin design / modifications to the radar comms manager to feed ORPG (Open Radar Product Generator) data to AWIPS II (completion planned for TO11).	42-87