

# AE IV&V Test Case TO8\_2001

## Revision History

Rev. No.	Date	By	Description of Changes
1	4/20	Mike Churma (NWS/MDL)	Created

## 1. TEST CASE IDENTIFIER

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TO8\_2001

## 2. NARRATIVE

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**Time of Arrival/Lead Time (TOA/LT)** is an MDL application under the CAVE Tools menu that estimates the time at which a moving feature will appear at a user-specified location. It is similar to the storm-tracking feature in Warngen and the Distance Speed application (which is also in the Tools menu, and will be used as a reference in this test plan). These procedures will test each of the three display modes of the TOA/LT application, and check the veracity of the lead time and distance output against values from the Distance Speed tool.

## 3. REFERENCES (Optional)

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None

## 4. FEATURES TO BE TESTED

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Time of Arrival/Lead Time Tool.

## 5. SETUP INSTRUCTIONS

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Step	Setup Procedure	Result
1	Start EDEX	EDEX is running
2	Start CAVE	CAVE loads
3	Load radar or satellite data	Data field appears in CAVE.

## 6. ACCEPTANCE CRITERIA

Time of Arrival/Lead Time (TOA/LT) has three display modes – Point, Circular Front, and Polyline. Several test steps depend on the ability to display each mode, so each mode must be displayable for the test case to pass. In addition, the output values for lead time, distance, and arrival time, which are the main purpose of the tool, are validated against the Distance Speed tool’s output. The TOA/LT must be accurate and reasonable for this test case to pass.

Step(s)	Criteria	Result
1	Time of Arrival/Lead Time tool loads from the “Tools” menu. Two interactive circles appear on the map, along with a small popup window. <b>Test case fails if the points are not displayed or the popup does not appear.</b>	
2	“Point” option is selected from the TOA/LT popup; when the “Drag me to feature” circle is moved, a linear track appears. <b>Test case fails if the linear track does not appear</b>	
6	In the TOA/LT window, “Circular Front” is selected; an arc appears, bisected by the track line; the circular portion includes the arrow at the end of the track line, while the origin is at the beginning of the track line. <b>Test Case fails if the arc does not appear.</b>	
10	In the TOA/LT popup, “Polyline” is selected; two dashed lines will appear at each end of, and perpendicular to, the track line. A solid line segment, with circles on either end, will intersect the track line. <b>Test Case fails if the solid line segment does not appear</b>	
14	The TOA/LT application’s Arrival Time, Lead Time, and Distance are compared to data from the similar “Distance Speed” tool. <b>Test Case fails if the TOA/LT values are not consistent with complementary Distance Speed values.</b>	

## 7. TESTING PROCEDURE

Step	Procedure	Expected Result	Actual Result
1	In CAVE, with satellite or radar data loaded, use the left arrow button to move a few frames. Then, from the Tools menu, select <b>Time of Arrival/Lead Time</b>	In addition to the radar/satellite imagery, two circles will appear on the map, labeled “ <b>Drag me to Feature</b> ” and “ <b>Drag me to Point of Arrival</b> ”. A small popup window, labeled “TOA/LT”, will appear.	
2	In the TOA/LT popup, select the “Point” option, if not already selected; move the “ <b>Drag Me to Feature</b> ” circle in the map to a prominent radar/satellite feature.	Once the circle is de-selected, a linear track appears, bisecting the circle. In place of the “Drag me to Feature” text, the movable circle will be labeled with the frame time. An X marks the beginning of the track line,	

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Step	Procedure	Expected Result	Actual Result
		and an arrow point marks the end.	
3	Use CAVE's right arrow button to advance a few frames; then select the circle again and place it over the new location of the feature.	The track will align with the feature's path, and an estimated time of arrival (HHMM) will appear at the end of the track.	
4	Using CAVE's left and right arrows, move the frame times forward and backward.	The circle will move along the track, changing its labeled time as it moves. An X will mark the spot of the original frame time from step 2.	
5	Drag the "Drag me to Point of Arrival" (POA) circle to a position close to the end of the track.	<p>The "Drag me to Point of Arrival" text is replaced with:</p> <ul style="list-style-type: none"> <li>• an estimated arrival time (HHMM);</li> <li>• the lead time between the latest frame and the arrival time;</li> <li>• distance from the feature to the POA circle (in miles).</li> </ul>	
6	In the TOA/LT window, select "Circular Front"	An arc appears, bisected by the track line; the circular portion includes the arrow at the end of the track line, while the origin is at the beginning of the track line.	
7	Drag the POA circle (it will still have arrival time/lead time/distance information) to the curved edge of the arc.	The arrival time should be the same along all portions of the curved line (allowing for slight inaccuracies in placement)	
8	Drag the POA circle outside the circumference of the arc, but still with the angle (so that it is beyond the curved arrival line, but still in the path of the satellite/radar feature).	An updated arrival time, lead time, and distance will be displayed with the POA circle. The POA circle will be along a second curved line that has the same origin point as the first curved line.	
9	Drag the POA circle to a position outside the angle of the arc.	The POA circle text will be changed to "Unrealistic Point of Arrival." The arc that the POA circle was along will disappear.	
10	In the TOA/LT popup, select "Polyline."	Two dashed lines will appear at each end of, and perpendicular to, the track line. A solid line segment, with circles on either end, will intersect the track line at the "Drag Me to Feature" circle (now labeled with the frame	

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Step	Procedure	Expected Result	Actual Result
11	Select the circles on each end of the solid line segment that appeared in step 10, and drag them to a new location.	time). The line segment will change length and orientation to match the positions of the circles. The dashed lines on either end of the track line will change to mirror the length and orientation of the solid line.	
12	Move the POA circle to a position in front of the track line that would (eventually) be intersected by the solid line.	A dashed "arrival line" will appear, mirroring the appearance of the lines from step 11; the POA circle will be along that line segment, and its text will be updated with new arrival time/lead time/distance information.	
13	Move the POA circle to a position outside the path of the line segments.	The POA circle text will be changed to " <b>Unrealistic Point of Arrival.</b> " The additional dashed line segment from step 12 will disappear.	
14	Place the POA circle at the end of the track line. With the Time of Arrival tool still loaded, select the "Distance Speed" tool from the CAVE "Tools" menu. With the "Distance Speed" tool points, repeat steps 2 and 3 above, choosing the same points that were chosen for Time of Arrival (the track lines should be on top of one another). Observe the speed (in knots) readout at the end of the Distance Speed track line.	The POA circle's lead time and distance readout should approximately match the values that would be expected given the speed of the radar/satellite feature – e.g., if the distance is 100 miles and the speed is 43kts (50 mph) then the lead time should be about 2 hours.	
	End of test		