

# **Test Plan: Field Test of the Automated Volume Scan Evaluation and Termination (AVSET) Function**

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# AVSET Field Test - Test Plan

## 1.0 Field Test Philosophy

The goal of the AVSET Field Test is to ensure AVSET functionality integrates into WSR-88D field operations. Additionally, the field test period will allow agency personnel and other users to identify any possible adverse affects AVSET may have on user display and processing systems before AVSET is considered for full scale deployment.

### 1.1 Field Test Approach

The overall objective of the AVSET Field Test is to ensure the execution and control of the AVSET function enhances WSR-88D forecast and warning support and does not adversely impact user agency product manipulation and display systems. The specific objectives of this test are:

1. *Verify AVSET supports forecast and warning operations;*
2. *Verify AVSET does not adversely affect the operation of the WSR-88D during active weather periods;*
3. *Verify AVSET-produced volume scans with varying completion durations do not adversely impact forecast and warning operations;*
4. *Verify AVSET-produced volume scans with varying completion durations do not adversely impact user data processing and display systems.*

## 2.0 AVSET Functionality

The AVSET function is designed to terminate the current volume scan after the radar has scanned all elevations with significant return. In other words, once the elevation angle overshoots available significant radar return, the volume scan is terminated because there is no operational benefit realized by continuing the current volume scan, and a new volume scan is begun. The net effect of AVSET is to shorten the elapsed time between data collection on low elevation angles of consecutive volume scans when no significant data are available on higher elevation tilts (i.e., lower elevations are scanned more frequently).

When enabled by the operator, the AVSET function evaluates the return on each elevation above 5° and calculates the areal coverage of return 18dBZ and greater and 30dBZ and greater. If the areal coverage of >18dBZ is less than 80 km<sup>2</sup> (total over the entire radar coverage area) AND the areal coverage of >30dBZ is less than 30 km<sup>2</sup> (total over the entire radar coverage area) AND the areal coverage of 18dBZ and greater has

not increased by 12 km<sup>2</sup> or more since the last volume scan THEN AVSET terminates the volume scan AFTER completion of the next higher elevation. This volume scan termination scheme causes the system to enter its normal transition (RDA antenna retrace, RPG concludes algorithm processing and product generation, etc.,) to prepare for the start of a new volume scan.

### **3.0 Participating Test Sites**

NWS Southern Region:

Norman, OK (KTLX)

Melbourne, FL (KMLB)

NWS Central Region:

Goodland, KS (KGLD)

Indianapolis, IN (KIND)

Pueblo, CO (KPUB)

St Louis, MO (KLSX)

NWS Eastern Region:

Sterling, VA (KLWX)

State College, PA (KCCX)

NWS Western Region:

Glasgow, MT (KGGW)

Tucson, AZ (KEMX)

Salt Lake City, UT (KMTX)

Cedar City, UT (KICX)

Eureka, CA (KBHX)

Sacramento, CA (KDAX)

USAF AFWA

25<sup>th</sup> OWS, Davis-Monthan AFB, AZ (Associated to KEMX, KGGW, KPUB, KMTX and KDAX)

15<sup>th</sup> OWS, Scott AFB, IL (Associated to KLWX, KCCX, KLSX and KIND)

26<sup>th</sup> OWS, Barksdale AFB, LA (Associated to KTLX, KMLB and KLSX)

FAA

Indianapolis ARTCC, Indianapolis, IN (Associated to KIND)

### **3.1 Test Schedule**

This test will be conducted in conjunction with the release and installation of WSR-88D RPG Build 12 (Summer 2010). The test period extends through the end of January 2011.

AVSET training will be available no later than May 31, 2010. The training will be presented via a self-paced web-based module.

## 4.0 Test Execution

The AVSET software is included, as non-operational, in the Build 12 baseline WSR-88D software. Even though AVSET is included in RPG Build 12, the user interaction capability is not available to the operational WSR-88D users. For the Field Test sites, the ROC will provide an AVSET CD along with written installation instructions. This CD adds an AVSET Enable/Disable toggle button to the RPG HCI.

The default state of the AVSET function is “Disabled”. To activate the AVSET function, the operator must enable it by selecting the AVSET Enable/Disable toggle button located on the RPG Control/Status window. The AVSET function is automatically disabled when a Clear-Air Mode volume coverage pattern (VCP 31 or 32) is invoked (either manually or automatically by the Mode Selection Function). To reactivate AVSET, the operator must manually select the AVSET Enable toggle after a Precipitation Mode VCP is invoked (either manually or automatically by the Mode Selection Function). Note: The AVSET Enable/Disable button activates/deactivates AVSET at the start of the next volume scan. The AVSET status will change to PENDING until the start of the next volume scan.

During the AVSET Field Test period, the operators will be asked to use AVSET as often as possible. If for any reason an operator becomes uncomfortable with the execution of AVSET they may disable it. The AVSET Field Test Manager requests that, if it is decided not to use AVSET, the operator record, on a test log, the reason(s) for not using AVSET for the particular event.

The MSCF operator shall send a Free Text Message (FTM) to all Class 1 users when AVSET is manually enabled or disabled. The operator will use the Console Message window accessed from the RPG Control/Status window of the RPG HCI. The operator will record in the test log the times when AVSET is manually enabled or disabled.

If agency personnel feel their mission or radar display systems are operationally impacted, they may request through, the WSR-88D Hotline, the termination of AVSET at a particular radar site(s).

During the AVSET field test period, ROC Engineering will periodically review products and analyze radar status information and data from participating sites. This analysis will aid in the evaluation of the AVSET performance.

Additionally, during the Field Test period, operators at all test locations will be asked to provide comments on the operational effectiveness of the AVSET function during both routine forecast and warning operations.

## **5.0 AVSET Field Test Performance Assessment**

In order to minimize the impact of the field test on operations, AVSET performance assessment will be noted by exception. The Field Test Manager will routinely solicit comments from the radar focal points, conduct random interviews with operational forecast staff, and assemble test log comments to compile the exception-based assessment.

The Field Test Manager will also replay selected Level II data cases to quantify AVSET operational performance during the event. Additionally, a post test questionnaire will be administered to collect operator opinions on the effectiveness of AVSET during forecast and warning operations.

The Field Test Manager will collate operator comments, review test log entries, review radar status information and data cases, and tabulate questionnaire results to produce an end-of-test summary report. This summary report will be provided to the NEXRAD Software Recommendation and Evaluation Committee (SREC). The SREC will use the information contained in this report as input for a fleet-wide AVSET deployment decision.