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From:     Richard J. Vogt  
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Subject:   WSR-88D Software Build 14 Changes That May Impact  
          WSR-88D Product and Data Users starting January 2014

The NEXRAD Program will implement software changes in Weather Surveillance Radar-1988, Doppler (WSR-88D) Radar Data Acquisition/Radar Product Generator (RDA/RPG) Build 14, that may impact data/product users and user systems. Beta testing of Build 14 will begin at 5 sites in October 2013. The software is scheduled for release starting in January 2014. Three of the changes will slightly change the format of Level 3 products and Level 2 data. These changes are described below:

1. A new, dynamic scanning method called Supplemental Adaptive Intra-Volume Low-Level Scan (SAILS) will be introduced. When "SAILS" is selected by the radar operator, one supplemental "Split Cut scan (lowest elevation of the VCP, normally 0.5°) is inserted into the "middle" of existing severe weather VCPs 12 and 212. To evenly space the time intervals between low-level updates, the "middle" of the VCP is determined each volume scan based on the termination angle assigned by the Automated Volume Scan Evaluation and Termination (AVSET) function. SAILS will extend volume scan completion times by approximately 35 seconds and double the number of low-level scans.
2. Radial-by-Radial Noise Estimation will be introduced. Noise can vary within elevation scans and over time. The new algorithm's noise power estimate comes from radial data rather than the current separate test, resulting in a unique noise value for each radial. This change prevents over- or under-estimation of noise and improves signal recovery, resulting in more accurate Reflectivity, Differential Reflectivity, Spectrum Width, and Correlation Coefficient values.
3. Base Products, Base Data, and General Status Message (GSM) changes in Build 14:

- Base Products: The RPG will support generating base products DR (94), DV (99), SDR (153), SDV (154), and SDW (155) from the SAILS added Split Cut. For these products, the volume scan time/date fields will be set to the start time/date of the added Split Cut. The volume scan time/date fields for all other products will continue to be the start time/date of first radial of the volume scan. While SAILS is active, the supplemental products N0Q(94/DR) and N0U(99/DV) will be provided via the NWS Radar Product Central Data Collection Dissemination Service (RPCCDS) and NOAAPort.

- Level 2 Base Data: The legacy base moments and Dual Pol variables from SAILS supplemental scans will be in the Level II base data stream. Radial-by-Radial Noise Estimation requires the Horizontal and Vertical channel dBZ0 values to be added to the Radial Data Block within Message Type 31, resulting in a Major Version change from 1 to 2.

- General Status Message (GSM): The GSM length is increasing to 200 bytes. GSM Halfword 58, Bit 15 is set when AVSET is enabled, Bit 14 will be used to identify when SAILS is active, and Bit 13 will be set if a site-specific VCP is in use. Bit 14 is set when SAILS is enabled and a SAILS VCP is active and is not set all other times. Bit 13 will only be set for the KLGX (Langley Hill, WA) GSM.

The following tools are available to assist user's transition to the Build 14 changes:

1. Draft Build 14 Interface Control Documents (ICDs) describing the new data format and data stream (RPG to Class 1, RDA to RPG, and Product Specification) are available at:

<http://www.roc.noaa.gov/WSR88D/NewRadarTechnology/NewTechDefault.aspx>

2. Dates/times of archived test Level 2 data sets, available from NCDC, using the new format and SAILS and/or AVSET are available at:

[http://www.roc.noaa.gov/WSR88D/PublicDocs/NewTechnology/SAILS\\_AVSET\\_ON-OFF\\_Times.pdf](http://www.roc.noaa.gov/WSR88D/PublicDocs/NewTechnology/SAILS_AVSET_ON-OFF_Times.pdf)

3. Real-time Level 2 data from the ROC test bed WSR-88D (KCRI) will be available during Build 14 Operations Test at select periods beginning in July. The ROC will issue another TIN in June with information on how to obtain the data from the NWS Level 2 Data Collection and Distribution network and when the data will be available with SAILS and/or AVSET operating.

4. An early version of Build 14 Software, executable and source code, will be available from the NWS Common Operations and Development Environment (CODE) beginning in June 2013 at:

<http://www.nws.noaa.gov/code88d>

More detailed descriptions of AVSET and SAILS are available at:

<http://www.roc.noaa.gov/WSR88D/NewRadarTechnology/NewTechDefault.aspx>

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National Technical Implementation Notices are online at:

<http://www.weather.gov/os/notif.htm>

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