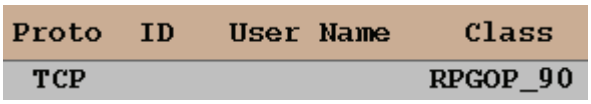
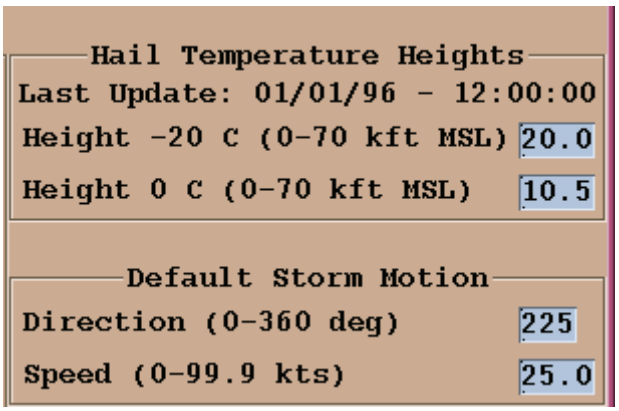
RPG Build 7.0

Training





Presented by the

Warning Decision Training Branch

Version: 0505

Overview

RPG Build 7.0 deployment will begin in early June, 2005. Unlike previous builds, RPG Build 7.0 has no new algorithms or products. The majority of the changes are to support the Open RDA (ORDA). These ORDA-related changes will not be apparent at the RPG until the ORDA is deployed and the RPG-ORDA connection is made. Training on the ORDA-related features of RPG Build 7.0 will be part of the ORDA training which will be delivered when the ORDA is deployed.

As with other RPG Builds, the changes with RPG Build 7.0 may impact Unit Radar Committee (URC) decision making. Coordination among URC members with respect to Build 7.0 URC impacts may be necessary.

This document will present a summary of the operational features of RPG Build 7.0 which are ***not*** ORDA-related. These features include communications improvements, corrections to existing algorithms, and changes to existing windows at the RPG HCI. The information in this document reflects the pre-deployment state of knowledge of the operational features of RPG Build 7.0.

The following features of RPG Build 7.0 will be presented in this document:

1. Increase in RPS List size*,
2. Improvements to the AWIPS Wide Area Network (WAN) One Time Request (OTR) process,
3. Changes to VCP 121,
4. Bypass Map no longer editable,
5. Auto PRF and VAD Update color coding,
6. Editing Default Storm Motion and Hail Temperature Heights, and

7. Corrections to MDA processing.

*Implementation of this feature also requires AWIPS Operational Build (OB) 4.2 or a later build

The Electronic Performance Support System (EPSS) has been updated to support the Build 7.0 changes that are apparent on the RPG Human Computer Interface (HCI).

Electronic Performance Support System (EPSS)

1. Increase in RPS List Size

The need to increase the size of RPS Lists has long been recognized. With RPG Build 7.0, the RPS List capacity will change from 90 to 160 products for all AWIPS-RPG dedicated connections which are class RPGOP_90 and use the TCP/IP protocol. This upgrade applies to the LAN connections from a WFO's AWIPS to its dedicated RPG. It also applies to any Frame Relay connection from a WFO's AWIPS to other RPGs (most often DoD or FAA RPGs).

The software required for the AWIPS side of this connection is OB 4.2 or a later build. The RPS List capacity on the AWIPS side is 150 products. This difference, 160 at the RPG and 150 at AWIPS, is due to the AWIPS RPS List editing structure, i.e. a single line entry is used for multiple layers of a product. For example, all elevations of the MRU would be a single entry on the AWIPS interface, but will result in up to 14 products at the RPG.

2. Improvements to WAN OTR Process

There are two improvements in Build 7.0 that will result in a faster response and a greater availability of products from WAN OTRs.

Each RPG has two ports for WAN OTRs. To improve the response time, the flow control for these ports has increased from 14.4 to 64 kbps for NWS RPGs and from 14.4 to 28.8 kbps for DoD and FAA RPGs.

To improve the availability of products with WAN OTRs, any product that is currently in the RPG database can be requested. With previous builds, the products available to WAN OTR users were limited to those specified for OTRs by the current Product Generation Table.

3. Changes to VCP 121

VCP 121 was implemented in RPG Build 5.0. It uses the Multiple PRF Dealiasing Algorithm (MPDA), which reduces range folding significantly. Build 7.0 has two changes which improve VCP 121 performance.

The best application of VCP 121 is for large-scale weather systems. VCP 121 was used with success during the 2004 hurricane season. However, it was discovered that the Velocity Measurement Increment (VMI) could not be changed from .97 kts to 1.94 kts, as may be desirable for a hurricane landfall. The VMI of .97 kts allows for the assignment of velocity estimates up to ±124 kts, while the VMI of 1.94 kts allows for the assignment of velocity estimates up to ±248 kts. RPG Build 7.0 allows for the VMI to be changed to 1.94 kts while VCP 121 is in use:

VCP 121 has the fastest antenna rotation rates among all the VCPs, which impacts the effective-

ness of clutter suppression. In order to improve the performance of clutter suppression with VCP 121, the number of pulses per radial has been increased slightly for some Contiguous Surveillance rotations. This change increases the volume scan update rate for VCP 121 by about 10 seconds. With this adjustment, the VCP 121 update rate is now about 5 minutes and 30 seconds.

4. Bypass Map No Longer Editable

With RPG Build 7.0, the Bypass Map will no longer be editable. The Bypass Map defines the location of ground clutter targets in discrete bins and is used for filtering of normal ground clutter. The application button label reads “Bypass Map Display”:

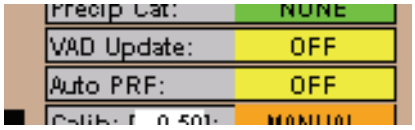
This change is in anticipation of the ORDA, where generating a new Bypass Map will be a much faster process than with the legacy RDA. It will be faster (and easier) to generate a new Bypass Map than it will be to edit an existing one.

Generation of a new Bypass Map will still need to be performed during appropriate atmospheric conditions, i.e. clear air with no anomalous propagation.

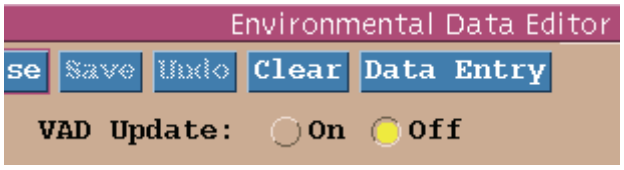
5. Auto PRF and VAD Update Color Coding

The color coding for the on or off states of Auto PRF and VAD Update has been made consistent across the various RPG HCI windows. As an

example, when Auto PRF and VAD Update are off, the color is yellow on the main page:



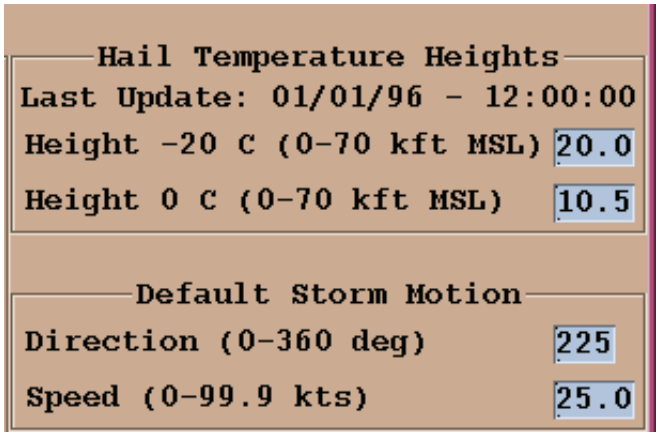
On the VCP Control and Environmental Data Editor windows, the color yellow is also used when Auto PRF and VAD Update are off:



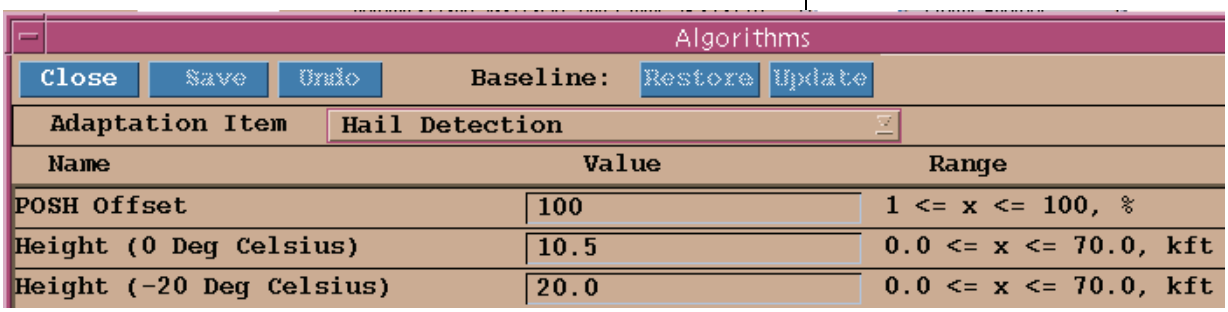
6. Editing Default Storm Motion and Hail Temperature Heights

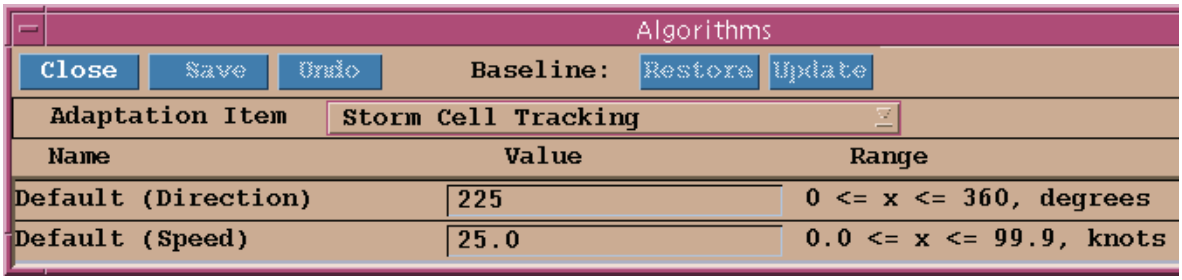
The Default Storm Motion supports the Storm Cell Identification and Tracking (SCIT) Algorithm, while the Hail Temperature Heights support the Hail Algorithm.

The Hail Temperature Heights and the Default Storm Motion are typically edited at the Environmental Data Editor window:



Though rarely used, these parameters have also been editable at the Algorithms window:





With RPG Build 7.0, these menu entries at the Algorithms window will no longer be available. The Hail Temperature Heights and the Default Storm Motion will continue to be editable at the Environmental Data Editor window

7. Corrections to MDA Processing

The Mesocyclone Detection Algorithm (MDA) generates two products, Mesocyclone (MD) and Digital Mesocyclone Detection (DMD). Some corrections have been made in Build 7.0 which will improve the performance of the MDA.

When a TVS is detected within 2 km of a MDA identified circulation, this association is supposed to be noted with a Y in the TVS column on the Mesocyclone (MD) alphanumeric product, as well as on the DMD table display. These associations have been failing due to a timing parameter, which has been adjusted. Thus when a TVS association

occurs, it will be noted on the MD alphanumeric product and on the DMD table:

```
                          MESOCYCLONE DETECTION ALGORITHM
    RADAR ID: 303         DATE: 04/04/2005   TIME: 15:47:04   Avg di

CIRC   AZRAN    SR STM |-LOW LEVEL-|  |--DEPTH--|  |-MAX RV-| TVS
 ID    deg/nm      ID  RV   DV  BASE  kft STMREL%  kft    kts

  1   242/ 47   6L B0  33   71  < 4   >15   39       9     37  Y
 60   289/ 35   5L E0  13   18  < 3   >17   29      13     32  N
  4   302/ 36   4  D0  31   36   10    31   72      17     40  N
```

KLWX DMD Table

File: working | Configurations | Rank: default | Attributes | Link to F

ident	azm	rng	stRank	status	class	msi	tvs	base
1	243	44	7	UPD	MESO	5100	Y	3.6
111	248	84	4 L	TOP	circ	2185	N	9.2
118	304	38	4	UPD	circ	2373	N	10.5

An adjustment was made to allow for the detection of shallow circulations (tops < 3 km) by the MDA, which will be reported on the MD and DMD products with the letter S appended to the strength rank value. The detection of a shallow circulation is expected to be rare, and examples were not readily available at press time. A shallow circulation detection would appear similar to the previous examples, where there would be an S (instead of an L) appended to the Strength Rank (L depicts Low Core).

Summary

RPG Build 7.0 was largely designed to support the ORDA, and the associated changes will become relevant once the ORDA is deployed. Without the ORDA, the most significant operational impact with Build 7.0 is the increased RPS List capacity. The remaining operational impacts are algorithm corrections and changes to some windows at the RPG HCI.