WSR-88D Tropical Cyclone Operations Plan
05/01/2025 Build 23.x Systems

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<u>NOTE</u>

For assistance with this Operations Plan, contact the WSR-88D Field Support Hotline.

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<u>OPERATIONS PLAN GUIDANCE</u>

- The WSR-88D Tropical Cyclone Operations Plan (TCOP) is designed to be used as an *operational reference*. Consult with your local Unit Radar Committee (URC) concerning any adaptable parameter setting changes that result in system-wide modifications. URC agreements completed prior to the onset of tropical cyclone events allow parameter settings to be modified operationally as needs arise.

  - In the event the WFO is evacuated, ensure the following items have been updated to the desired settings: RDA Control (to ensure the RPG has remote control of RDA); MSF parameters; VCP, including Add MPDA and SAILS; QPE and PPS parameters, including utilizing tropical relationships; and VMI. The "QUICK CHECK" List may be used to quickly locate the TCOP Reference page for each item.

- Modifications will likely be made to adaptable parameters prior to and during a tropical cyclone. It is recommended to create a backup of current adaptable parameter settings prior to the event. The **RPG Adaptation Data Backup** procedure is in Table 4-33 of EHB 6-520.

- Keep in mind that the recommended adaptable parameter settings in this plan are performed by the WFO using the URC-level of change authority. There are no commands requiring ROC-level passwords in this document.

- A few colors are used in this document: **Blue** indicates a hyperlink to a different location within or outside this document (i.e., an e-mail address or an internet address). **Red** is for a menu or a menu selection. **Green** is used in *NOTE* sections, which contain additional operational guidance.

- For definitions of acronyms used in this document refer to the Glossary of EHB 6-521. QPE refers to the Dual-Pol precipitation estimation algorithm while PPS refers to the Legacy (i.e., Hydromet) precipitation estimation algorithm.

WSR-88D System Documentation

Below is a list of documents referenced throughout the TCOP. If any document needs to be accessed, ensure to download the version corresponding to the RPG Build currently installed on your system. The referenced documents may be accessed with a secure login through the ROC website.

EHB 6-503-2: Preventive Maintenance Inspection Work Cards

EHB 6-504: WSR-88D System Security Manual

EHB 6-520: Maintenance Instructions RPG Refresh

EHB 6-521: Operations Instructions RPG Refresh

WSR-88D Guidance on Adaptable Parameters Handbook, Volume 1

If government users experience an issue accessing the documents listed above, please contact the **WSR-88D Field Support Hotline** for assistance.

RDA Processing Algorithms

- **CMD** should be enabled. CMD dynamically identifies ground clutter (i.e., automatically with each volume scan) and will almost always be superior to other clutter suppression options currently available.

- **AVSET** often produces faster volume scan updates, particularly when a tropical cyclone is still fairly distant from the radar.

RPG Processing Algorithms

- It is encouraged to **issue an FTM** from AWIPS to all users, notifying neighboring WFOs, national centers, RFCs, and NEXRAD tri-agencies when major operational changes are made (e.g., resetting precipitation accumulations, modifying adaptable parameters, etc.).

  o An FTM can be sent via the MSCF or AWIPS. If sent from AWIPS, the FTM first goes to the RPG and then out to all other dedicated users except the sending AWIPS.

- Build 23.0 Changes applicable to Tropical Cyclone Operations:

  o Add MPDA option available in VCPs 212 and 215 for the lowest one or two elevations

  o Raw ZDR (Product 198) available in AWIPS

  o Additional updates were made to the 2DVDA, including improvements to hurricane and turbulence detection

- In September 2023, dissemination of PPS products ceased. To obtain these products, they must be added to local RPS lists or obtained via OTRs/RMRs for nearby radars. Guidance for adding products to AWIPS RPS Lists can be found at: **https://www.roc.noaa.gov/branches/operations-branch/awips-rps-list-guidance.php**.

- Refer to the current WSR-88D Guidance on Adaptable Parameters Handbook, Volume 1 for discussion on adaptable parameters listed in this document, including default values and your notes on site-specific settings, where appropriate.

- Additionally, operators should be familiar with all other existing algorithms (i.e., the MLDA, HCA, and QPE algorithm). Training materials can be found on the CLC website at: **https://doc.csod.com/client/doc/** and on the WDTD website at: **https://training.weather.gov/wdtd/courses/rac/outline.php**.

- This Tropical Cyclone Operations Plan has been designed for systems that are using Build **23.x** software. If there is a question about the current RPG software build, check with site maintenance technicians or radar focal point. Contact the **WSR-88D Field Support Hotline** for immediate issues or concerns.

Table of Contents

NOTE: *Table of Contents Procedures 1-10 are performed at the RPG HCI while Procedures 11-13 are performed at an AWIPS Workstation. Some Procedures may require the URC-Level Password.*

WSR-88D RPG HCI Preparation:

1.   Generator Transfer Test & Fuel Level

It is recommended that EHB 6-503-2 Preventive Maintenance Inspection Work Card Set 2-013, Section E (Auto Transfer Switch and Generator Systems Test), disregarding Steps 7 & 8, be completed by site maintenance staff at least one week prior to the onset of a tropical cyclone.

In addition, ensure the RDA emergency power generator fuel level is adequate at least three days prior to a tropical cyclone. The **Generator Fuel Level** can be checked via **RDA Performance Data** → **Tower/Utilities** → **Power** as well as on the SCL product. See Procedure 11 for accessing the SCL.

2.   RDA Control

Ensure the RPG has remote control of the RDA. The RPG has remote control of the RDA when the label above the line connecting the **Tower** icon and the **RPG** icon specifies **RPG**. If the label specifies RDA, then it needs to release control so the RPG may take control of the RDA. The control status can also be verified via the SCL product. See Procedure 11 for accessing the SCL. If needed, request assistance from your maintenance technicians.

3.   RPG Software Restart

It is recommended to perform an RPG **Shutdown** and **Startup** in order to reinitialize memory prior to the onset of a tropical cyclone. This can be accomplished via the **RPG Control** window. An RPG **Clean Startup** can be done as an alternative; however, an **RPG Adaptation Data Backup** should be performed prior to the Clean Startup in order to ensure site-specific adaptation data are saved.

4.   Level II and Level III Radar Receive Status

WFOs can check the status of Level II and Level III data dissemination by following the links below. As a reminder, WFOs are responsible for monitoring the dissemination of data from their assigned DoD and FAA WSR-88D(s).
Level II: **https://radar2pub.ncep.noaa.gov/** and **https://www.weather.gov/nl2**
Level III: **https://radar3pub.ncep.noaa.gov/**

5. Clutter Suppression

CMD should remain enabled. CMD helps improve overall algorithm performance, including rainfall estimates, and is generally better than applying a static Bypass Map or All Bins because ground clutter locations change with beam propagation. Additionally, switching to an SZ-2 VCP automatically enables CMD. The status of CMD is displayed at the lower right of the RPG HCI as well as in the SCL product. See Procedure 11 for accessing the SCL.

For additional information on Clutter Suppression, refer to Section 3.8.9 in EHB 6-521.

6. Mode and VCP Selection

a. Mode Selection Function

In order to ensure the MSF does not override the operator-selected VCP, set the Clear Air and Precipitation Switching options to **Manual**.

b. VCP Selection

The *four* main considerations in VCP selection are (i) the **range** from the radar to the center of the tropical cyclone, (ii) the **location** (with respect to the radar) of structural regions of the tropical cyclone, (iii) the **frequency** of volume updates, and (iv) velocity **dealiasing errors** (i.e., apparent inbound velocities are where outbound velocities should be or vice versa or discontinuities that do not make sense meteorologically).

VCPs 112, 212, and 215 are designed to mitigate range folded data (i.e., purple haze), which can be a problem during tropical cyclones. Reduction in range folding results in better velocity coverage. Likewise, the aforementioned VCPs allow for better visual pattern recognition and performance of the algorithms that utilize velocity data. Refer to Procedure 6c for more information on mitigating range folding.

VCPs with shorter completion times are important for monitoring severe weather potential (i.e., tornadic circulations) as a tropical cyclone nears land and makes landfall. In radar meteorology, there is always a tradeoff. To complete VCPs in a shorter time, fewer pulses may be transmitted; thus, the quality of the data and algorithm output may be lower as compared to data from VCPs with longer completion times. For example, velocity dealiasing errors may become more probable in shorter VCPs (i.e., 212 and 215) as compared to VCP 112.

For VCP 112, the Multiple PRF Dealiasing Algorithm (MPDA) is used and is the recommended VCP choice for most tropical cyclone situations. The 2DVDA is enabled by default for all other VCPs. Alternatively, the MPDA may be utilized in VCPs 212 and 215 in lieu of the 2DVDA when **Add MPDA** is enabled by the user. VCP 112 utilizes one SAILS cut. If additional SAILS cuts are required, then **Add MPDA** is recommended when SAILSx2 or SAILSx3 is needed and maximum mitigation of range-folded data is still a priority.

The following table summarizes the VCPs most commonly used during tropical cyclone events:

VCP	Tilts	Time*	Usage	Limitations
**112	14	5.5 min	VCP of choice for large-scale systems with widespread high velocity (e.g., long squall lines, hurricanes). Significantly reduces range-obscured V/SW data within 124 nm compared to other VCPs.	PRFs are not editable for Split Cuts. RF is only mitigated for Split Cuts. Limited to a single SAILS scan.
**212	14	4.6 min	Rapidly evolving, severe convective events (e.g., supercells, squall line, MCS). Uses SZ-2 to significantly reduce range-obscured V/SW data compared to VCP 12.	All Bins clutter suppression is not recommended. High antenna rotation rate decreases the effectiveness of clutter filtering and decreases the accuracy of the base data estimates. PRF sectors not allowed.
**215	15	6 min	VCP for general surveillance of precipitation. Best vertical coverage. Lower SNR than VCPs 12/212. Uses SZ-2 to reduce range-obscured V/SW data. Low-level antenna rotation rates increase the accuracy of base data estimates. Shares common lower elevations with VCPs 12 and 212.	All Bins clutter suppression is not recommended. Slower low-level updates than VCP 12/212. Limited to a single SAILS scan. PRF sectors not allowed.
**12	14	4.3 min	Fastest VCP. Rapidly evolving, severe convective events (e.g., squall line, MCS). PRF Sectors are allowed.	High antenna rotation rate decreases the effectiveness of clutter filtering and decreases the accuracy of the base data estimates. Susceptible to widespread range folding.

* VCP update times are approximate.
** The VCP time changes if AVSET, Add MPDA, and/or SAILS are enabled.

For a more comprehensive overview of *all* VCPs, refer to the VCP Comparison Table, Figure 3-1, in EHB 6-521.

Below is a simplified list of VCP choice, prioritized by the primary concerns:

Choice	Velocity Dealiasing	Tornado Detection
#1	112	212
#2	215 or 212 w/ MPDA	112
#3	212	215

c. Mitigation of Range Folding

At the **PRF Control** window, operators have the ability to move the maximum unambiguous range (R_{max}) by selecting **Manual PRF**. Range folding may be mitigated by adjusting the PRF, when allowed by the VCPs described in the table under Procedure 6b. Manually-selected PRFs can be defined for up to three sectors. Remember, for SZ-2 VCPs (e.g., 212 and 215) the PRF chosen must be the same for each sector. Keep in mind that lower PRFs may increase the likelihood of introducing dealiasing errors.

Auto PRF-Storm is useful when embedded severe convection is present with a tropical cyclone and is the default setting.

For further information about the improved Auto PRF function, go to: **https://www.roc.noaa.gov/radar-techniques/prf-selection.php**.

NOTE: *The NHC prefers an R_{max} with sufficient range to provide velocity data near the eye or center of a tropical cyclone; however, local needs may dictate otherwise and will take precedence. Therefore, a VCP with an operator-specified PRF may be needed to mitigate range folding in the region of concern. VCP 112 PRFs are not editable on Split Cuts and can be changed on Batch Cuts, as needed. Likewise, PRFs on the MPDA cuts in VCPs 212 and 215 are fixed when utilizing Add MPDA.*

d. AVSET

Using AVSET potentially produces faster volume scan updates. When AVSET is enabled, the volume scan may terminate at elevations at or above 6.4 degrees when no echoes of at least 18 dBZ covering at least 80 km² are detected (which is smaller than a convective cell with a diameter of 5.5 nm).

For additional information about AVSET, refer to Section 2.3.16.5.2 in EHB 6-521.

e. SAILS

When enabled, SAILS inserts up to three supplemental scans of the lowest elevation cut into each volume. This processing option can be applied to VCPs 112, 212, 215, and 12; though, only one SAILS cut can be added to VCPs 112 and 215. The additional supplemental lowest elevation cut(s) is/are evenly spaced, in time, throughout the volume scan.

For additional information about SAILS, refer to Section 2.3.16.5.3 in EHB 6-521.

7. Velocity Measurement Increment (VMI) for Extreme Wind Speeds

Velocity measurements are limited to approximately +/- 122 kts when the VMI is set to 0.97 kts, which is the default value. When hurricane speeds are expected to exceed 122 kts, the NHC recommends operators change the VMI to 1.94 kts, preferably prior to the hurricane becoming a Category 3 storm.

Recall that the VMI is only applied at the RPG to Level 3 products, not to Level 2 base data. Increment differences may be observed when comparing Level 2 velocity data to Level 3 velocity products.

The **Velocity Increment** setting is located via the **VCP and Mode Control** window and can be verified by viewing the current SCL product or reopening the **VCP and Mode Control** window. See Procedure 11 for accessing the SCL.

8. Precipitation Accumulation Initialization

a. Reinitializing Precipitation Accumulation

Reset the PPS, QPE, and the Difference products from the **RPG Control** window prior to the tropical cyclone event. This should be done in conjunction with your Service Hydrologist and RFC.

NOTE: *The accumulations can be reset without shutting down the RPG Software. If a Clean Startup was performed in Step 3 then this step can be skipped.*

b. Precipitation Accumulation Initialization Parameters

The QPE and PPS parameters used for initializing precipitation accumulations can be modified via the **Algorithms** window in the **Dual-Pol Precip** and **Hydromet Preprocessing** adaptation items, respectively.

The **PAIF Rate Threshold** and **PAIF Area Threshold** represent the minimum rate (mm/hr) and area (km^2) thresholds required to begin QPE accumulations. Similarly, **RAINZ** and **RAINA** represent the minimum reflectivity (dBZ) and area (km^2) thresholds required to begin PPS accumulations.

It is recommended the rate and reflectivity thresholds remain set to the default values of 0.5 mm/hr and 20 dBZ, respectively. Similarly, both areal thresholds should remain set to the default value of 80 km^2, unless these thresholds were previously optimized during fair weather.

9. Precipitation Product Data Levels

Adjustment of the precipitation data levels will be needed if heavy rainfall is expected as the tropical cyclone approaches the WSR-88D. The maximum displayable value for OHP, THP, and OHA is 12.7 inches**.** Likewise, the maximum displayable value for STP is 25.4 inches. USP uses the **OHP/THP, OHA Data Levels** unless the maximum value exceeds the value set for Code 16. Otherwise, USP uses the **STP Data Levels** values. All other precipitation accumulation products auto-scale based on maximum accumulations.

In the **Selectable Parameters** window, select **OHP/THP, OHA Data Levels** and **STP Data Levels** to set the desired Precipitation Product Data Levels.

10. Algorithm Adaptable Parameters

a. Precipitation Estimation Optimization

NOTE: *Subsections i through v refer to QPE parameters, while subsections v and vi refer to PPS parameters. Recall that modifications to these parameters should be coordinated with your RFC(s). The precipitation algorithm parameter modifications outlined below will result in more realistic rainfall estimates during tropical weather situations. For additional guidance on optimizing QPE adaptable parameters, review the QPE Considerations document.*

i. Enable Use of Supplemental Scans

Due to rapidly-moving cells within the outer bands, precipitation accumulations may be better estimated in those locations if **Enable use of Supplemental Scans** is set to YES. This parameter is available under **Algorithms** → **Adaptation Item** → **Dual-Pol Precip**.

ii. QPE R(Z,Zdr) Equation

While in the **Dual-Pol Precip** adaptation item menu, change the **Precipitation type used for R(Z,Zdr)** for the QPE algorithm to STRAT/TROP, if desired, during tropical cyclone events.

If alpha values exceed 0.02, then the R(Z,Zdr) equation should be set to STRAT/TROP. Alpha estimates are available in the text data included with the DSA product, which can be viewed in AWIPS using the Text Window by typing *DSAxxx* in the **AWIPS ID** box, where *xxx* is the 3-letter radar identifier. The alpha values can also be viewed in the SCL product. See Procedure 11 for viewing the SCL.

Alpha values are estimated by the Specific Attenuation, R(A), rate method.

Read the next section for more information related to R(A).

iii. Specific Attenuation, R(A)

The Specific Attenuation (R(A)) method estimates rainfall rate from total differential phase. Unlike reflectivity, differential phase is unaffected by partial beam blockage; thus, R(A) can mitigate the impacts of partial beam blockage in QPE. R(A) is a function of drop shape and does not work for non-liquid hydrometeors; thus, it is limited in range, below the melting layer. It also has a low sensitivity to drop size distribution variability.

The **Switch for R(A)** parameter is available under the **Dual-Pol Precip** adaptation item menu. If overestimation is occurring primarily below the melting layer, disabling this parameter may result in lower estimates.

iv. QPE Maximum Reflectivity

The **Maximum Reflectivity** default value is 53 dBZ. The operator may want to increase this value in order to accommodate higher reflectivity values due to heavy rainfall in tropical cyclone events. It can be changed in the **Dual-Pol Precip** adaptation item menu.

v. Maximum Precipitation Rate

The **Max Precip Rate** parameter also can be edited under the **Dual-Pol Precip** adaptation item menu. This single entry applies to both the QPE and PPS algorithms. For tropical cyclone events, the ROC recommends setting this value between 150 to 200 mm/hr.

For additional information, review Section 4.5.10 of the WSR-88D Guidance on Adaptable Parameters Handbook, Volume 1.

vi. PPS R(Z) Relationship

Under **Algorithms** → **Adaptation Item** → **Hydromet Rate**, change the **Relationship used for R(Z)** to TROPICAL, if desired, during tropical cyclone events.

As stated above, observing alpha estimates can be useful in determining when tropical processes become dominant.

b. Melting Layer Detection Algorithm Heights

The MLDA attempts to determine the height of the ML using elevations from 4.0 through 10.0 degrees. The ML is generally higher in tropical cyclones as compared to that of extratropical cyclones. The determined ML is used in the HCA. The output of the HCA is ingested into the QPE algorithm.

i. Settings for Sites With Model Data

The WFOs across the contiguous U.S. and Puerto Rico have access to the RAP model data via AWIPS. If the operator wishes for the MLDA to use model data, ensure **Model Update** is on via the RPG HCI and verify the **Melting Layer Source** is set to Model_Enhanced, which can be located via **Algorithms → Adaptation Item → MLDA**.

In order to verify new model data are actually received from the host AWIPS, look for the **MODEL DATA** entry shortly after the top of each hour in the **RPG Status** window.

The Model Data Viewer in the RPG HCI can be utilized to ensure the model data are correct and representative of the environmental conditions. Refer to Section 2.3.17.8.5 of EHB 6-521 for more information about the Model Data Viewer.

ii. Settings for Sites Without Model Data

The WFOs outside of the contiguous U.S. do not receive RAP model data. These offices should verify the **Melting Layer Source** is set to Radar_Based, which can be located via **Algorithms → Adaptation Item → MLDA**.

If a WFO is unable to use RAP model data, then the operator will need to update temperature heights (as well as Environmental Winds and Default Storm Motion) by manually entering data from the sounding closest to the WSR-88D. Manual entry of these data can be done via the **Environmental Data** Editor. Refer to Section 3.10.4 of EHB 6-521 for more information on **Data Entry**.

NOTE: *Procedures 10c and 10d will independently increase the radar's detection efficiency for small, shallow circulations typically found in tropical cyclones.*

c.   Mesocyclone Detection Algorithm Optimization

The Minimum Display Filter Rank should be lowered in order to enable detection of weaker circulations within the tropical cyclone; however, doing this particular procedure may result in a greater number of false alarms. To help reduce the false alarm rates, detections must be within 20 km of a SCIT-identified cell.

Under **Algorithms** → **Adaptation Item** → **MDA**, change the **Minimum Display Filter Rank** to 4 (or even 3).

d.   Tornado Detection Algorithm Optimization

Similar to the MDA, the TDA parameters should be changed in order to better detect weak or distant tornadoes. Under **Algorithms** → **Adaptation Item** → **Tornado Detection**, change (i) **Min 3D Feature Depth** to 1.6; (ii) **Min 3D Feat Low-Lvl Delta Vel** to 27; and (iii) **Min TVS Delta Velocity** to 27.

AWIPS Workstation Preparation:

11. Shift Change Checklist

The SCL product is generated every volume scan and can be viewed via AWIPS using the Text Window by typing **SCLxxx** in the **AWIPS ID** box, where **xxx** is the 3-letter radar identifier. AWIPS requests it once per hour, and the SCL for the current volume scan can be retrieved by placing the SCL on the RPS List or by doing an OTR or RMR. The SCL provides a number of important NEXRAD status summaries including **Narrowband Communications:** (which should reflect NEXRAD-specific NWS AWIPS and FAA connectivity), **RDA/RPG WB Port Status T1/Eth(D)/Eth(C):** (which reflect wideband primary comms status), and **RPG Alarm Summary:** (which reflects when Backup Comms is engaged). Current status of several algorithm adaptable parameters are also available via the SCL.

12. Data Requests from Adjacent Radars

As a tropical cyclone approaches your WSR-88D, an RMR can be initiated to surrounding WSR-88Ds for products not available via the Satellite Broadcast Network (SBN). To view a list of the products available via the SBN, go to:
https://www.weather.gov/media/tg/noaaport_radar_products.pdf.

Additionally, most WFO AWIPS systems have WAN Dedicated access to at least one immediately adjacent WSR-88D (see Section 13). WAN Dedicated connections can also be started to request products not already received via the SBN from the WSR-88D(s) shown in the WFO AWIPS Radar File Help Sheet. It should be noted that all non-associated AWIPS connectivity to NEXRAD requires the AWIPS WAN (OneNWSNet service) be operational.

13. Communications Backup

Ensure you have printed out a copy of your latest AWIPS Radar File Help Sheet and the WSR-88D Communications Documentation for the NEXRADs operated by your WFO's Distant MSCF(s).

The AWIPS Radar File Help Sheet provides site-specific radar access information that could prove pivotal in the event default telecommunication (telecom) systems become inoperative during a tropical cyclone event. Similarly, WSR-88D Communications Documentation provides system-specific telecoms information. Contact the WSR-88D Field Support Hotline for copies of either document if your site ESA or radar technicians do not already have current copies.

AWIPS to WSR-88D WAN Dedicated operations could prove pivotal in the event one WFO needs to perform WSR-88D backup transmission for another WFO. The overview for WAN Dedicated operations has been updated recently on the ROC website at: **https://www.roc.noaa.gov/public-documents/operations-branch/AWIPS_RadarServer_Configuration_Instructions_PostAWIPS21.4.1.pdf**.

It is strongly recommended this functionality be tested during benign weather and well in advance of any landfalling tropical cyclone.

All WSR-88Ds in the CONUS, Puerto Rico, the Hawaiian Islands, and Alaska that rely on commercial telecoms for either the wideband circuit or the primary DoD or FAA to NWS private-IP connection now have either 4G wireless or permanent (built-in) VSAT auto-fail-over backup installed. The WSR-88D Communications Documentation for those locations includes the 4G or VSAT backup communications data.

If your office relies on backup communications for either the wideband or private-IP to a DoD or FAA WSR-88D, check with the applicable WSR-88D maintenance staff and determine when EHB 6-503-2 Preventive Maintenance Inspection Work Card Sets 2-009A (28-Day System Status Check) and 2-019A (84-Day Backup Comms Fail-Over Test) were last accomplished in advance of any landfalling tropical cyclone. Ideally, backup communications fail-over will be confirmed in advance of any landfalling tropical cyclones.

In advance of significant landfalling tropical cyclones, NEXRAD enterprise telecoms providers are asked to place a heightened watch on the telecoms they provide to the NWS and WSR-88D systems in the forecast path of any major landfalling tropical cyclone.

The ROC, Regional Focal Points, Office of Dissemination, and AWIPS NCF will partner to evaluate and initiate restorative telecoms solutions, backup scenarios, and tertiary or emergency restorations, as required.

For additional information on contingency and operations plans, refer to the latest version of EHB 6-504.

Likewise, radar service backup is addressed in National Weather Service Instruction 10-2201, Appendix I: Communications Backup. It can be accessed at: **https://www.weather.gov/media/directives/010_pdfs/pd01022001curr.pdf**.

Closing Comments

A copy of the National Hurricane Operations Plan can be found on the Tropical Cyclone Operations and Research Forum website at: **https://www.weather.gov/tropical/tcorf**.

This TCOP document and the Quick Checklist can be accessed via the WSR-88D Hotline website at: **https://www.roc.noaa.gov/branches/operations-branch/wsr88d-hotline-links-info.php**.

After the tropical cyclone threat has passed, all adaptable parameters should be returned to their original values. The **RPG Adaptation Data Restoral** procedure is in Table 4-34 of EHB 6-520. If the adaptation data need to be manually entered, then refer to the current WSR-88D Guidance on Adaptable Parameters Handbook, Volume 1 for system-wide defaults.

For all other inquiries or concerns about the information contained in this document, contact the WSR-88D Field Support Hotline.