NEXRAD NOW

Volume 1 Issue 3 March 1997

RPG Build 9.1 Information

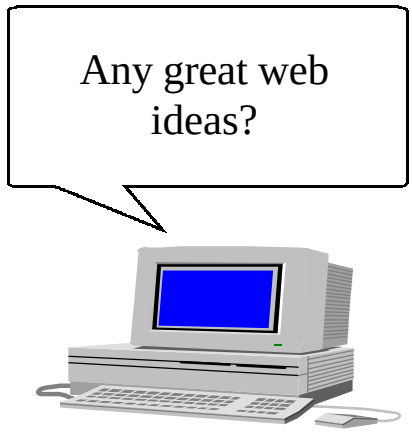
A narrowband communications problem was introduced in Build 9.0 that occasionally caused RPG dial-in ports to become inaccessible to users. This problem would typically show a "No Answer No Request Sent" in response to PUP dial requests. On December 21, 1996, the WSR-88D Hotline broadcast a FAXBack topic alerting all field sites to this problem. The field alert recommended that all sites with UCP control of a WSR-88D (all full-thread sites) perform a Disconnect/Connect of all NAPUP dial lines at least once every eight hours (shift change), as it was found that disconnecting/connecting affected dial lines would recover them.

OSF software and hardware engineers quickly found the source of this communication error, and as a result, RPG Build 9.1 was developed to eliminate the cited narrowband communications problem, and others that were discovered during testing. Upon receipt and installation of RPG Build 9.1, UCP operators will no longer be required to routinely issue Disconnects/Connects on the NAPUP dial lines. However, other dial communication problems, such as the "NO COMMUNICATION FROM RPG" symptom that causes a complete outage of all dial ports sharing the same VME communications card, will not be rectified until Build 10 because of time constraints.

RPG Build 9.1 is expected to be released as an RPG Applications Tape in late April 1997. Loading instructions and documentation will arrive with the tape. Electronics Technicians should allow 21/2 - 3 hours of radar down-time per RPG.

More information on RPG Build 9.1 is available on the OTB Web Page at http:\\www.osf.noaa.gov\otb.

Mike Istok, OSF Test Program Manager,
Operations Branch



OSF Web Page
http://www.osf.noaa.gov

Do you want more information about the OSF? Our Web Page may just be the place to find it. Each of the five OSF branches provides information from their branch with respect to their mission and the needs of their customers. All of the information provided on the OSF Web Page is updated on a regular basis. As you may notice throughout this issue of *NEXRAD Now*, there are references made to information that is being added to our web site virtually everyday!

Check out our Web Page, then let us know your thoughts--what you like, what you don't like, what should be added--in order for us to provide you, our customer, the information you need. Please send your comments to Christina Smith at csmith@osf.noaa.gov.

Director's Dialogue

James D. Belville, Director,
WSR-88D Operational Support Facility

In April, the final OSF WSR-88D Operations Course will be taught by the Operations Training Branch. This will complete the WSR-88D training for all operational forecasters and hydrologists in the agency. Since its inception in 1991, OTB has taught 2525 in the Operations Course, 219 in the UCP course and 301 in advanced workshops. Over the past six years, 44 individuals from within the NWS and 4 DOD personnel have served as instructors. The steady turnover rate of instructors is a good indication of the high quality of individual who has served the agency in this capacity. In addition, the high level of success of the WSR-88D program is in part due to the work of these instructors. For all involved, thanks for a job well done.

Even though residence training will be concluding, this does not mean the end of training activities in the OSF. Quite the contrary. The OSF will be heavily involved in the transition of training into a distance learning environment. In addition, the OTB will evolve into a new group called the Focus on Remote Sensing Technology Training (FIRSTT). As the name implies, this new group will become involved with other remote sensing technology, such as satellite (both geostationary and polar orbiting), etc. However, the FIRSTT will also continue to be involved with the preparation of training materials for subsequent upgrades of the WSR-88D.

Inside This Issue...

Editor's Notes

Christina M. Smith,
Managing Editor

Due to the end of residence training in the Operations Training Branch, April 24 will be the last time that I give an information flow briefing to the WSR-88D Operations Course students. I started doing these briefings about 15 months ago with the idea that it would not only give field personnel an idea of the various ways the OSF is working to improve information flow, but would also give me a chance to interact directly with field personnel to openly solicit ideas and answer any questions. The best part of doing these briefings has been meeting so many interesting people and hearing your ideas and questions. Even though I won't be giving these briefings anymore, I would like to keep that open line of communication to the field. If you have any questions about the OSF, or have any ideas on ways the OSF can continue to improve information flow, please let me know.

MESOCYCLONE AND TVS ADAPTABLE PARAMETERS:
Inject More Octane into Your Algorithms

Have you ever observed a mini-supercell on the WSR-88D and wondered why it wasn't identified by the Mesocyclone Algorithm? Or why tornadoes *never* trip the TVS Algorithm at your site? Well, these problems may be due to your adaptable parameter settings. The OSF recognizes the limitation of using one adaptable parameter setting for all weather events, and Unit Radar Committees (URCs) have been delegated the authority to "fine tune" two adaptable parameters, with the goal of maximizing performance of the Mesocyclone and TVS algorithms. This article will discuss these two adaptable parameters: the Mesocyclone Minimum Number of Pattern Vectors, and the Minimum TVS Shear.

Threshold Pattern Vector (TPV)

In March of 1995, the OSF authorized URCs to change the Mesocyclone adaptable parameter Threshold Pattern Vector (TPV). This parameter controls the minimum number of Pattern Vectors needed for identification of a 2-D feature. A Pattern Vector is a continuous run of azimuthally adjacent radial velocities with increasing values (from maximum inbound to maximum outbound). If the TPV parameter is set high, only larger atmospheric circulations will be identified, and smaller ones may go undetected by the algorithm. If the TPV parameter is set low, smaller circulations will often be identified, as well as larger ones. The number of Pattern Vectors may now be set at any value between 6 and 10, inclusive, with the default value being 10.

A TPV of 10 is the preferred setting for "traditional" mesocyclones associated with supercell thunderstorms, while six is the preferred setting for "non-traditional" mesocyclones such as mini-supercell thunderstorms (echo tops less then 30 kft), comma-heads of bow echoes, and leading edges of squall lines. When lower values of TPV are used, the Mesocyclone Algorithm should produce better detection of smaller mesocyclones, but may also cause more false alarms. Offices are encouraged to adjust the TPV parameter based on the type of storms expected during the event.

To change the TPV setting at the UCP, go to the Adaptation Data, Meteorological Algorithms, Mesocyclone menu. Specific menu instructions are found in your RPG Adaptable Parameters Handbook, Section 6.7.

Threshold TVS Shear (TTS)

In May of 1996, the OSF authorized URCs to change the TVS adaptable parameter Threshold TVS Shear (TTS) from the default value of 72 hr^{-1}, to any value between 18 hr^{-1} and 72 hr^{-1}. The performance of the TVS Algorithm is dependent upon the TTS setting, but is also indirectly affected by the TPV setting in the Mesocyclone Algorithm, since the TVS Algorithm will not be executed unless a mesocyclone has first been identified. The amount of shear present in the atmosphere will determine whether or not the TTS criteria will be met. Shear is a measure of the change of radial velocity, divided by the distance over which the change takes place. For example, velocities of 36 knots inbound and 36 knots outbound, separated by a 1 nm distance, equates to a shear of 72 hr^{-1}.

Studies have shown that the default TTS value of 72 hr^{-1} has resulted in very few algorithm identified TVSs during the past few years, indicating the default value may be too high. If a URC wishes to lower the TTS value, the OSF recommends a beginning value of 54 hr^{-1} or 36 hr^{-1}. By lowering the TTS, less shear is needed to satisfy TVS criteria, which should increase the probability of TVS detections on "non-traditional" supercell thunderstorms (echo tops less than 30kft), comma-heads of bow echoes, and leading edges of squall lines. Although lowering the TTS will increase the overall skill of the TVS algorithm, it may also increase the number of false alarms. URCs are encouraged to adjust the setting based on performance at their site.

To change the TTS setting at the UCP, go to the Adaptation Data, Meteorological Algorithms, TVS menu. Specific menu instructions are found in your RPG Adaptable Parameters Handbook, Section 6.14.

(Continued on page 4)

(Continued from page 3)

WSR-88D Field Office Parameter Studies

Using data from May 29, 1996, Salt Lake City personnel examined a case study in which at least one tornado briefly occurred along with severe storm outflow. Shear calculations and algorithm output were obtained using the WSR-88D Algorithm Testing and Display System (WATADS). The results of three different runs of the algorithm shear thresholds of 70 hr^{-1}, 30 hr^{-1}, and 18 hr^{-1} can be viewed at http://www.wrh.noaa.gov/wrhq/LITETAs/TALITE9611/talite9611.html.

Gregory A. Tipton, Eric D. Howieson, and John M. Margraf from NWSFO Minneapolis / Chanhassen, Minnesota have conducted another study of the TVS algorithm performance using WATADS. They optimized adaptable parameters for both Mesocyclone and TVS algorithms using a tornado outbreak case from 1995. A report of their results "Optimizing the WSR-88D MESO/TVS Algorithm Using WATADS - A Case Study" can be found on the OTB Web Page at http://www.osf.noaa.gov/otb/otb.html.

If your URC decides to modify TTS from its default value, please inform your appropriate focal point and Bob Lee, Applications Branch, (405) 366-6530 ext. 2300 or rlee@osf.noaa.gov.

Robert A. Prentice, Meteorologist Instructor,
Operations Training Branch

David L. Floyd, Meteorologist Instructor,
Operations Training Branch

Robert Lee, Meteorologist,
Applications Branch

VCPs: CHange vs DOwnload

Have you ever been confronted with this situation? You are working an operational shift and you are focusing your attention on a storm with an interesting velocity signature. Then just as the storm begins to really get going the valuable velocity data moves into an area that is being obscured by Range Folded data. Well, if this has ever reared its ugly head at your site, then the changes provided for VCP definitions in Build 9.0 will help.

The WSR-88D system supports two sets of Volume Coverage Patterns. The Local set is stored on the RDA hard drive and cannot be modified. Local VCPs 11 and 21 are defined with a PRF selection of #5 (Rmax = 80 nm). The Remote set is stored on the RPG hard drive in adaptation data. With Build 9.0, the Remote VCPs 11 and 21 are defined with a PRF selection of #4 (Rmax = 94 nm).

These two commands allow the UCP operator to quickly implement a different PRF. The first is the **DO**wnload command: RD,DO,VCP#, which is used to download one of the Remote VCPs, results in an Rmax of 94 nm. The second is the **CH**ange command: RD,CH,VCP#, used to implement one of the local VCPs, results in an Rmax of 80 nm.

By defining different PRFs for the Local and Remote VCPs, the task of changing the Rmax during time-critical situations has been made much easier. Therefore, the UCP operator will be more likely to make a change in Rmax, resulting in improved availability of velocity data.

Jim Keeney, Meteorologist Instructor,
Operations Training Branch

PCR Report On The Web

System Documentation Section (SDS) developed an online report which identifies Publication Change Requests (PCRs) that have been received. This report is generated from the new database that was created to better track PCRs through their review/implementation process. The PCR report uses OSF assigned control numbers that are linked to the original documents submitted from the three agencies. The reports include the following data; OSF assigned PCR number, page number of error, status of PCR, agency submitting PCR, priority of PCR, and a short description of the error. Hopefully, this information will help identify publication errors that have been submitted to SDS for inclusion in each publication. As we gain more experience, we will modify and update this database to better serve our customers. The report is on the OSF Web Page at: http://www.osf.noaa.gov/ssb/pcr.htm.

Danny Green, Technical Writer,
System Support Branch

TRAINING MODE

DESCRIPTION

Training Mode is a WSR-88D PUP function used by some offices to stay proficient on PUP operations and prepare for seasonal severe weather events. The function reads products into a PUP data base from an archived optical disk. The only products available are those previously recorded on the optical disk. One-time requests are not possible, but most other PUP functions are available.

While using Training Mode, operators are given data in a way that nearly simulates real time. Upon starting Training Mode, products from the first volume scan on the disk are downloaded all at once. After a period of time (six to eight minutes), products from the next volume scan are downloaded.

PROBLEM

In real time, the operator knows what volume scan time products arriving in the PUP data base are from by looking at the product received line (**PROD RCVD**) in the bottom portion of the status and annotations' area on the graphics monitor. This is imperative in real time, to prevent decision making on old products. It also queues the operator to further actions, for example, when to run a user function.

Prior to Build 9.0, training mode also displayed products received in the PUP data base on the product received line. Build 9.0 software inadvertently disabled the product received line in training mode. Since the goal of training mode is to simulate real time radar operations, a loss of the product received line has degraded its use.

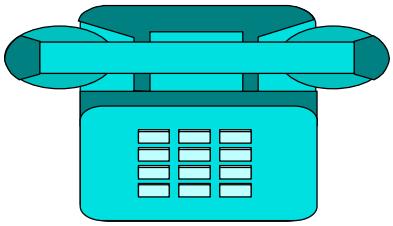
PROPOSED WORKAROUND

While in training mode, the **Product Queue** line (also in the status and annotations area) displays the recent volume scan time as new data is dumped to the PUP data base. When a new volume scan is being stored in the data base, the product queue line will display the volume scan time being loaded (similar to how the "product received" line operated prior to Build 9.0). When an archived data set has fewer than 15 products per volume scan, the queue should be cleared after each scan for proper updating. If users of training mode look for the volume scan time on the "Product Queue" line (instead of the "Product Received" line), the mode can be used effectively.

PERMANENT SOLUTION

Software engineers state that the correction to the problem will be a simple one, but cannot be included in Build 9.1 currently in Beta testing. The fix is expected to be included in Build 10, scheduled for release in the summer of 1998.

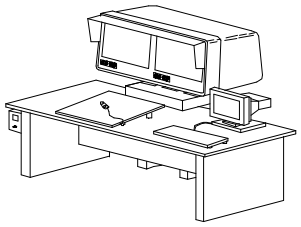
Jim Keeney, Meteorologist Instructor,
Operations Training Branch



WSR-88D Operations Tips

prepared by the Hotline Staff

1-800-643-3363



Latest News on Tales from the Hotline, FAXBack, & WWW

WSR-88D "Tales from the Hotline" has recently been updated with several new 'Tales topics, as well as updates to existing topics, and are currently available on the WSR-88D Hotline's FAXBack system and web site. The catalog (document 1000) has also been updated to include a column at the far right side of the page, which easily informs you of the topics most recently added or updated. The symbols in this column are defined in a legend on the last page of the catalog.

The FAXBack system is very easy to use, and almost every site can access it! All you need is a phone and a fax machine. You are guided through the steps you need to complete by voice prompts. Once you complete all the steps and hang up, the 'Tales topics you desire will print to your fax machine. You can access FAXBack by calling 1-800-874-6745. Some DOD sites may have to call the Tinker AFB operator (DSN 312-884-1110) and offnet to 366-6559.

The information on FAXBack is also available on the OSF Web Page. You can access this by going directly to the catalog at: http://www.osf.noaa.gov/ops/1000.htm.

Hotline and Field Sites Together Win in 1996

The Hotline processed 14,779 problems reported from throughout the worldwide triagency WSR-88D network during 1996 -- an average of 1,232 per month. Of these, 88.8% were resolved within one hour of the initial site call and less than 0.2% required escalation outside the Hotline for assistance in resolving them! This impressive success rate is due in great part to the team effort of our field callers and the Hotline staff to get the job done. Thanks to all of you for making 1996 such a productive and successful year throughout the WSR-88D network!

Keeping us busy...

The busiest hours for the Hotline continue to be mid-morning and mid-afternoon Central Time during mid-week (Tuesday through Thursday). Don’t hesitate to call us at ANY time, but be aware that processing of the more routine types of system problems may take longer during these periods due to our call load. Thanks for your understanding...

The Six Year Modification Plan

Have you ever wondered what changes might be needed for WSR-88D hardware in the next century? Most of you probably are aware of the major NEXRAD product improvement efforts currently underway such as migration of RPG and RDA systems to open system architecture, but did you know that someone is also planning the routine modifications that will be needed to keep the radar supportable for the long term? The OSF Engineering Branch has been thinking about the future for some time now. Last year, we provided a document titled "Future Year Modifications" to the agencies. That document contained eighteen proposed areas for hardware improvement along with rough order of magnitude (ROM) costs.

Engineering recently updated this plan to incorporate what we've learned about the performance of the system over the past couple of years. The budget planning years have also been extended to a six year cycle since many efforts begin in the out years; thus, the plan is now called "The Six Year Modification Plan". More detailed descriptions and justifications have been completed along with increased financial plan information. The plan covers fiscal years 1998 through 2003. The new plan contains twenty exhibits detailing projects that the OSF feels are important to the life cycle support of the WSR-88D.

Many of the projects are included because certain subsystems are being replaced at significant rates. For example, the post charge regulator in the transmitter was ordered by field units a total of 110 times in 1996; therefore, we are planning an engineering development leading to deployment of an improved unit starting in 2001. The plan also addresses the highest failure rate, most critical items as early in the program as OSF resources will permit.

Some projects are driven by critical failures in the field. The data acquisition unit (DAU) circuit cards frequently fail during lightning events. The circuit cards are easily replaced; we have sufficient spares on hand; and the cost to repair is relatively low. However, many of these failures result in radar down-time, and extra trips to remote RDAs, often during times of severe weather. We have included plans aimed at increasing the reliability of the DAU.

Each proposed project exhibit contains estimated cost breakouts for engineering, retrofit kits, support systems, spares, and logistics. It's intended to be used as a budgetary input for the NEXRAD agencies to use in out year funding plans. The plan is currently being coordinated to derive a combined prioritization of the initiatives that will be supported by the NEXRAD agencies.

Rich Ice, Acting Chief,
Engineering Branch

Algorithm Survey Results

In April 1995, the OSF Algorithms Section sent the WSR-88D Meteorological Algorithms Survey to all WSR-88D field sites. This included National Weather Service (NWS) Forecast Offices, Center Weather Service Units (CWSUs), River Forecast Centers (RFCs) and DOD weather stations. The goal of this project was to ask WSR-88D operators to subjectively assess the performance of 19 WSR-88D meteorological algorithms and products and to indicate how often each product was used. A similar survey was sent to field sites in April 1994.

Surveys were mailed to 246 different sites. One hundred and fifteen (115) sites returned two hundred eighty nine (289) survey forms. Some sites returned more than one survey form. Surveys were broken down by agency as follows: 159 NWS, 108 DOD, 19 CWSU, and 3 RFC. Survey results can be viewed at: http://www.osf.noaa.gov/app/app_BL4.htm

Bob Lee, Meteorologist
Applications Branch

WSR-88D Operations Library

Quickly locating information pertaining to the WSR-88D can be a trying experience. A conveniently located radar reference library may be the answer. The following documents will provide the core material for an effective radar library.

GOVERNING DOCUMENTS

Federal Meteorological Handbook 11, Parts A through D and any subsequent national or regional addenda. Office of Primary Responsibility: Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM).

Memorandum of Agreement for Interagency Operation of the WSR-88D, Weather Surveillance Radar - 1988, Doppler, dated 1994. Office of Primary Responsibility: NEXRAD Program Council (NPC).

OPERATIONS DOCUMENTS

Unit Control Position (UCP) Documents

NWS EHB 6-521, Operations Instructions Unit Control Position (UCP), 15 August 1992 (to include through Change 6, 22 Feb 1995). Office of Primary Responsibility: OSF System Support Branch.

NWS EHB 6-521-1, User's Guide, Unit Control Position (UCP), 3 Feb 1995 (to include Change 1, 1 Oct 1996). Office of Primary Responsibility: OSF System Support Branch.

WSR-88D Operator Handbook Unit Control Position (UCP - 1), Job Sheets, 1 Oct 96. Office of Primary Responsibility: OSF System Support Branch.

WSR-88D Info - Frame UCP (Job Aid). Office of Primary Responsibility: OSF System Support Branch.

Principal User Processor (PUP) Documents

NWS EHB 6-531, Operations Instructions Principal User Processor (PUP), 22 Feb 1995 (to include Change 1, 1 Oct 1996). Office of Primary Responsibility: OSF System Support Branch.

NWS EHB 6-531-1, User's Guide, Principal User Processor (PUP), 3 Feb 1995 (to include Change 1, 1 Oct 1996). Office of Primary Responsibility: OSF System Support Branch.

WSR-88D Next Generation Weather Radar Operator Handbook Principal User Processor Volumes I-III, dated July 1, 1994 (to include through Change 2, 1 Oct 1996). Office of Primary Responsibility: OSF System Support Branch.

General Documents

WSR-88D Guidance on Adaptable Parameters Handbook Volume 1, RPG, 1 Oct 1996: Office of Primary Responsibility: OSF System Support Branch.

WSR-88D Tales from the Hotline. Office of Primary Responsibility: OSF Operations Branch, Field Support Section.

TRAINING

Unit Control Position (UCP)

WSR-88D Unit Control Position (UCP) On-Site Training Program, Feb 1995. Office of Primary Responsibility: OSF Operations Training Branch.

Radar Product Generation Unit Control Position (UCP) On-the-Job Proficiency Check List, 11/14/96. Office of Primary Responsibility: OSF Operations Training Branch.

WSR-88D Control Course: Unit Control Position and Operating System Student Guide. Office of Primary Responsibility: OSF Operations Training Branch.

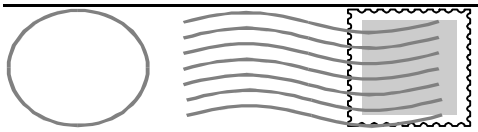
Principal User Processor (PUP)

WSR-88D Operations Training Student Guide. Office of Primary Responsibility: OSF Operations Training Branch.

Principal User Processor (PUP) On-the-Job Proficiency Check List, 11/14/96. Office of Primary Responsibility: OSF Operations Training Branch.

If you cannot locate these documents, contact your appropriate WSR-88D Focal Point.

Joe N. Chrisman, Instructor,
Operations Training Branch



Letters to the Editor

Hi Christina,

I am the ESA at LIX Slidell,LA. We were performing PMIs on the RDA and found that the oil tank hoses were dry rotted. This may be an item to post and have other sites check. I am glad that we found this before the lines ruptured.

Thanks
Wayne Hall, ESA

Southern Region Headquarters instructed their field sites to inspect the oil tank hoses when performing their PMIs, which the field sites did. Upon inspection, several other sites were faced with the same problem. The other NWS regions, along with FAA and DOD need to check for this as well, and replace the hoses if they are found to be worn or deteriorated.

If you have questions regarding this matter, please contact the WSR-88D Hotline.

Thanks for the e-mail, Wayne!

If you have a question that you want submitted to Letters to the Editor, send it to csmith@osf.noaa.gov.

BASELINING YOUR SYSTEM

The WSR-88D RDA Transmitter and Receiver/Signal Processor subsystems are comprised of numerous components working together to form an operational radar system. All components must be working correctly to maintain a stable and calibrated radar. Since many components work together, degradation of one component can cause alarms or calibration uncertainty and it is sometimes difficult to isolate the "problem child". Even a completely failed component is sometimes difficult to find because of the way several components work together to achieve a certain functionality. This is particularly true within the Receiver/Signal Processor subsystem.

To help isolate problems within the Receiver/Signal Processor subsystem and to evaluate calibration certainty on a periodic basis, we highly recommend that technicians baseline the operation of the system when it is working correctly. This "baseline" information can serve as vital starting point for assessing future problems. With the WSR-88D operating correctly, alarm free, and calibrated within the guidelines of Section 6-6.28 of the RDA Maintenance Manual, we highly recommend that you collect the following information:

1. Run RDASOT Receiver Diagnostics, record the session to disk, transfer the file to the RPG disk using Disk/Tape Backup procedures, and print the file at the UCP printer. Note that the diagnostics will pass as long as the expected and measured values are within 3 dB of each other. Also, note that the "DIFF" column is a relative value with no positive or negative signs; thus, a tested component could pass with a +2 dB error one week, have a 4 dB degradation and still pass with a -2 dB error the next week. However, if you have a copy of the receiver diagnostics when the system was working correctly, it would be easy to compare those indicated measured values for each subtest to measured values when a degradation has occurred.

2. At the UCP, print out the critical RDA system status screens on a weekly basis. Print the screens for the calibration status (ST,RD,CA), the receiver status (ST,RD,R), the transmitter status (ST,RD,TR), and the 8-Hour Calibration Check status (ST,RD,CH). Note that some status screens may have more than one page. These values (collected when system is operating correctly) can be invaluable for assessing how the RDA calibration processes are "attempting" to correct for a failed or degraded component within the radar system.

Call the Hotline should you need assistance with printing the diagnostics or status screens. Also, Hotline technicians have been receiving some specialized receiver training designed to help analyze receiver/signal processor problems based on information displayed by status screens and diagnostics. However, the analysis must be done by comparing "bad" values against "good" values. If you have printouts of both, feel free to fax these to the Hotline at (405)366-2958 for further analysis.

Paul Krenek, Senior Electronics Technician,
Operations Branch

Status of WSR-88D Major Product Improvement

The OSF has formed an Open System Team to work with the NWS Office of Systems Development, Integrated Systems Laboratory (ISL), National Severe Storms Laboratory (NSSL), the NWS Office of Systems Operations (OSO), and the NOAA System Acquisition Office (SAO) to develop an "Open Systems" RPG (ORPG). The NSSL is providing the basic ORPG software and the ISL is providing prototype communications hardware. The OSF will integrate the hardware and software, and lead the test and evaluation activities to produce a final design. The OSO3 and SAO will acquire the hardware. The existing proprietary Concurrent RPG processor will be replaced with a processor using a UNIX operating system. While as much of the current RPG hardware will be re-used as possible, some components other than the processor will be replaced and some new hardware will be included in the design. The ORPG software primarily will be based on the functionality in the Concurrent-based Build 10 that is now being developed by the OSF for release on existing RPGs in the summer of 1998. The first ORPG build may include some enhancements beyond the initial Build 10 field release. The ORPG is scheduled for deployment for beta testing at selected field sites beginning in 1999 with wide scale deployment beginning in 2000. The ORPG will provide more computational capacity and a new X-Windows-based graphical user interface replacement for the UCP, among other features.

WSR-88D Major Product Improvement work also includes an "Open Systems" RDA (ORDA) which is expected to undergo extensive field beta testing in late 2001 and 2002. The ORDA will feature a new signal processor as well as a replacement of the existing proprietary RDA system control processor and related peripheral hardware. NSSL is developing the software and prototype hardware for this upgrade. The OSF will work with the NSSL to finalize the design, produce design-level and fabrication-level specifications and drawings, and test the overall design in a final prototype mode through a series of NSSL software deliveries.

The Air Force recently announced that the PUPs supporting Air Force and Army sites will transition to a workstation based "Open Systems" PUP (OPUP) at about the same time the ORPG is being fielded. As with the ORPG, the NSSL is providing the software while the OSF will integrate the hardware and lead the test and evaluation activities. The OPUP will be X-Windows based and replace the current PUP hardware with UNIX based workstation hardware. Build 10 functionality will be the targeted baseline for the OPUP. FAA and NWS are not planning for OPUP systems since other workstation programs (WARP, ITWS, and AWIPS, respectively) will provide PUP functionality and eventually replace PUP hardware.

Tim Crum, Chief, Instructional Resources Section,
Operations Training Branch

NEXRAD Now Distribution

To avoid overwhelming printing costs, only two copies of *NEXRAD Now* are being mailed to each office. One copy is for the Operations Point of Contact (POC), while the other is for the Maintenance POC. Please keep in mind that the intention of *NEXRAD Now* was that each individual in an office read and gain information and knowledge regarding the WSR-88D; therefore, I would like to stress that if you aren't already doing so, please distribute this among the entire staff in your office.

In addition, if there is an error in the address please contact me so that I can make any necessary corrections to the address database. Your cooperation is appreciated.

Christina M. Smith,
Managing Editor

NEXRAD Now is a periodic information publication of the WSR-88D Operational Support Facility.

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