



## NEXRAD PROGRAM MANAGEMENT COMMITTEE

### RECORD NPMC 07-2

October 10, 2007

#### 1. CONVENED – 8:35 A.M. Central Time

A meeting of the NEXRAD Program Management Committee (NPMC) was convened by Chair John McNulty on Wednesday, October 10, 2007, in the Nickles Conference Room (Room 3910) at the National Weather Center in Norman, Oklahoma, and was video-teleconferenced to room 16246 of the NWS Silver Spring Metro Center #2 building in Silver Spring, MD.

Members participating:

Chair	- Mr. John McNulty
DOC Rep.	- Ms. Deirdre Jones for Mr. Greg Mandt
DOD Rep.	- Col. Harold Elkins
DOT Rep.	- Mr. Carmine Primeggia
Integration Mgr.	- Mr. Rich Vogt
Exec. Secretary	- Mr. Felix Lee

Guests included:

Tim Crum, Christina Horvat, Russ Cook, J. Rex Reed, Steven Smith, Cheryl Stephenson, Douglas Rasmussen, Chuck Maples, Roger W. Hall, Ed Berkowitz, Michael Jain, Greg Cate, Eric Howieson, Bob Saffle, Major Mike Miller, Lt Col Scott Saul, Dr. Mark Weadon, and Daniel Melendez from the DOC; Dennis Roofe and Rick Mattox from the DOT; and William “Mike” Spaulding from the DOD.

This meeting was video-teleconferenced to room 16246 of the NWS Silver Spring Metro Center #2 building in Silver Spring, MD. Guests at the Silver Spring, MD, location included: Paul Jackson, Bill Bumgarner, and Cam Tidwell from the DOT; Mike Istok, Eric Parr, Aaron Kocian and Rob Ericson from the DOC.

## OPENING REMARKS

- Call to order.
- NPMC07-1 Meeting Record approved.
- Dr. Mark Weadon had requested to have his presentation (3f) start the general session, because he needed to start heading the MPAR Symposium registration at 9 am.

### **(3f) MULTIFUNCTION PHASED ARRAY RADAR UPDATES AND PLANS** [Informational]

Dr. Mark Weadon, OFCM, provided an update on recent MPAR working group activities since the last NPMC presentation. The following topic points were covered:

#### Interagency Working Group

- Interagency MPAR Working Group chartered by ICMSSR and convened Dec 2006 to implement 9-year R&D strategy laid out in OFCM report *Federal Research and Development Needs and Priorities of Phased Array Radar* (June 2006)
  - Quad co-chairs from NOAA (NSSL), FAA (System Engineering), Air Force (DEPFOR Federal Programs), and DHS (S&T Directorate)
  - Representation from FHWA, NASA, DOI, USDA, NSF, NORTHCOM, DHS, FAA, EPA, FEMA
- Task of MPAR WG
  - Refine radar requirements and lay groundwork for MPAR cost/benefit analysis
  - Publish annual statement of next-year research priorities and previous year accomplishments
  - Outreach efforts to build understanding of MPAR within the scientific community and the general public

#### Future Efforts

- O&M cost projection of legacy radars out to 2025
  - Radars included in study: NEXRAD, TDWR, ASR 9, -11, ARSR-1/2, -3, -4
- Develop MPAR CONOPs to guide future engineering trades and risk reduction
- Initiate partnerships with industry leaders in phased array technology
- Draft NOA/FAA Memorandum of Agreement to govern interagency coordination of MPAR risk-reduction program
- Align agency programming for MPAR risk reduction effort: NOAA and FAA planning significant investments by 2010; DHS and DOD investment still TBD
- MPAR Symposium, 10-12 October, Norman, OK, will engage federal stakeholders, academia, industry (<http://www.ofcm.gov/mpar-symposium/index.htm>)
- National Academies' Board of Atmospheric Science and Climate enlisted to evaluate MPAR planning process to date and to make recommendations
- MPAR WG will continue to refine user requirements
  - Engage with JPDO to solidify NextGen aviation requirements
  - Track agency programmed expenditures toward MPAR R&D
- Solidify technical requirements for MPAR system: engineering trade studies to balance

user needs with lowest cost

- Number of independent channels (TBD)
- Number of concurrent beams per channel (TBD)
- Number of T/R modules per face (TBD)
- Optimal scanning strategies (TBD)

Questions?

Dennis Roofe – How far along are you in the MPAR nine year plan and when do you see the end?

M. Weadon – We're in the first year of nine year plan, which may be stretched contingent on availability of funding. In the next few months, there should be a better handle on funding commitments. The end years are presently seen around 2015-2016.

Carmine Primeggia – FAA is presently projecting the acquisition contract award out towards the 2020 year time frame.

Col. Harold Elkins – Since we are dealing with a mature technology, what kind of risk factors do you foresee?

M. Weadon – A risk factor is the unknown of how it works on weather targets. Dual Pol is not transferable from NEXRAD to the phase array technology. There is also the program risk of bringing the cost down.

**2. OPERATIONS:**

**(2a) IPM UPDATES ON VARIOUS PROJECTS [Informational]**

Mr. Richard Vogt, IPM, provided updates on the status of various projects and events taking place at the ROC and in the NEXRAD Program that didn't require a separate formal briefing. The following topic points were covered:

Keep Operational Systems Running

- ROC completed 22 electronics technician maintenance trips (41 personnel) since last PMC meeting for:
  - 9 depot-level, 2 for KDIX (Philadelphia) bull gear repairs
  - 6 on-site assistances
  - 7 Limited Production Phase (LPP) pedestal modifications
- St Louis LPP modification, last remaining, to be completed this month
  - TDWR SPG and Comms installation
  - Kit proof installation
- 5 Trips to Support Build 9 Beta Tests
  - Trend: FY99 = 36; FY00 = 46; FY01 = 28; FY02 = 50; FY03 = 58; FY04 = 74; FY05 = 73; FY06 = 74; FY07 = 69
- Network Performance for Past Year and for Multi-Years
- 12-month running Average A<sub>s</sub>/ Goal
  - DOC: 99.2% / 96.0%
  - DOT: 97.1% / 98.9%
  - DOD: 95.9% / 96.0%

- NEXRAD Actual Parts Usage Cost Separated by Agency
- NEXRAD Actual Parts Usage Quantity Separated by Agency
- Overall NEXRAD parts usage has been decreasing with the advent of the deployment of Open RDA and the modification to the trigger amps increasing reliability
- Contracted depot-level radome and tower maintenance
  - Radome (8 repaired; 25 inspected since last PMC)
    - Repaired sites: Vandenberg, CA; Albany, NY; Shreveport, LA; Vance AFB, OK; Fort Hood, TX; Salt Lake City, UT; Indianapolis, IN; and Tampa, FL
    - Panel/site trend: FY02 = 136/11; FY03 = 119/11; FY04 = 27/14; FY05 = 48/10; FY06 = 47/7; FY06 = 44/11; FY07 = 32/13
  - Tower (4 repaired; 30 inspected since last PMC)
    - Repaired sites: Andersen AB, Guam; Kunsan AB, Korea; Eureka, CA; and San Francisco, CA
    - Repaired/inspected trend: FY05 = 16/32; FY06 = 13/20; FY07 = 6/37
- Shelter Refurbishment Contract awarded in September 2007
  - NWS regions can issue ROC-prepared SOW for task order contracts
  - DOD and DOT can use SOW if desired
- ROC, NRC, and OPS1 will form a working group to examine NEXRAD spares and consumables, and recommend adjustments to variables in the logistics models
  - Will also review maintenance documentation and training, and Tri-Agency logistics processes to determine if adjustments are needed
  - Anticipate report at next NPMC meeting

#### Techniques for Decreasing Radar Downtime

- Use ROC Hotline Early and Often
  - Call 24/7 for troubleshooting or other assistance
  - Can result in decreased parts orders and logistics delays
  - Contacting Hotline “not a sign of weakness”
  - ALWAYS call Hotline if initial parts ordered do not fix the problem
  - DO NOT wait to call until already an extended outage
- Order using Emergency Priority if Radar is Down & Spare Part is Not Available On-Site (USAF: MICAP, Priority 02; NWS: Type EMR; FAA: P1)
  - Recommend not using Lateral Requisitions when radar is down
- Return Defective Parts Promptly so They Can Be Repaired and Placed in Stock for Reissue to Another Site

#### Techniques for Decreasing Radar Downtime (for DOD sites)

- If SMSS Will Not Accept Requisition, Contact Hill AFB Customer Service Center 24/7
  - DSN 586-3295; Commercial 801-586-3295
- Special Requirement for Army Forts Ordering Thru USAF Bases
  - Enter DODAAC in Supplementary Address (e.g., FY4824)
  - Enter Correct Signal Code so Part is Shipped to Supplementary Address (Use J, K, L or M)
    - DO NOT use A, B, C or D; will result in 24-hr additional down time
  - Use This Procedure for Both In-Line and Off-Line Requisitions

Col. Harold Elkins comment – Looking on the logistics side to get the Air Force and Army to use the same rules and same guidelines with looking at getting the option to deal directly with the depot will make the process much easier for everyone involved.

#### Sustain Baseline Operational Radar System Capabilities

- Evansville radar produced by EEC
  - Recent major pedestal failure, radar restored after one week
- Azimuth main bearing replaced
- Improved Drive Module to be installed in late CY07
  - Planned October 07 Enhancements
- Replace legacy RPG hardware with RPG Refresh
  - Currently considering options for adding SZ-2, Super Resolution, and Dual Pol functionality
- Modification documents issued since last NPMC
  - Mod Note 81/TCTO 31P1-4-108-660: Expansion of Radar Product Generator Power Administration. Applicable to NWS and DoD sites.
  - Mod Note 88: Installation of Fiber Optics at Selected National Weather Service Sites. Applicable to NWS sites.
  - Mod Note 96/TCTO 31P1-4-108-659: FAA Digital Wide Area Network (WAN) Radar Product Generator Preparation. Applicable to NWS and DoD sites.
  - Mod Note 98/TCTO 31P1-4-108-664/EEM 6345.1 CHG 76, Chap 68: Replacement of Cables 4/104W154 and 4/104W100. Applicable to all agencies.
  - Mod Note 99/TCTO 31P1-4-108-666/EEM 6345.1 CHG 78, Chap 70: Removal of UD2A5/UD2A9 RF Power Monitor and Associated Cabling from the Antenna Pedestal. Applicable to all agencies.
- Modification documents issued since last NPMC
  - Mod Note 100/TCTO 31P1-4-108-678/EEM 6345.1 CHG 86, Chap 78: DAU Surge Protection. Applicable to all agencies.
  - TCTO 31P1-4-108-667: OPUP Deployment and Checkout. Applicable to DOD sites.
  - Mod Note 106: FAA Dedicated Circuit and Modem Relocation on the Radar Product Generator. Applicable to NWS sites.
  - Mod Note 107/TCTO 31P1-4-108-683: Upgrade RPG Digital Communications Backup Circuits Replacement of Cables 4/104W154 and 4/104W100. Applicable to all agencies.
  - Maintenance Note 50/TCTO 31P1-4-108-682/EEM 6345.1 CHG 90, Chap 82: Inspection of System Waveguide Switches. Applicable to all agencies.
- Modification documents issued since last NPMC
  - Soft Note 40/EEM 6345.1 CHG 89, Chap 81: Combined SZ-2 and Multiple PRF Dealiasing Algorithm for Range Folding Mitigation. Applicable to NWS and FAA sites.
  - TCTO 31P1-4-108-681: Camp Humphreys Spot Blanking Update (ZONE 2). Applicable to DoD sites.
  - EEM 6345.1 CHG 74, Chap 67: Expansion of Radar Product Generator Power Administration and Installation of an External DIO Module. Applicable to FAA sites.

#### Support NPI Program

- Supported ORDA Project
  - 67,782 hours overall, 1282 hours last PMC
- Supported Dual Pol Project
  - 6,384 hours overall, 3,992 hours last PMC
  - Includes Update of ROC Pedestal Test Facility

#### Special Projects

- Participated in NWS Southern Region ET conference
- FMH-11 Updates
  - OFCM published FMH-11 Part A update in August; supports Build 9 deployment
- ROC MOA with FAA in OKC on reciprocal agreement for Continuity of Operations – backup each others agency’s facilities if one should go down
- ROC Consolidation
  - Applications Branch, Radar Engineering, Electronics Maintenance, RSIS Management, and Documentation Teams are in place as of mid Sept 06...49 total staff
  - Adair Bldg renovation is complete and IT&S staff on LAN equipment moved Apr 07
  - Adair Bldg New 7.5 yr Operating Lease, Apr 07
  - Bldg 600/”NSSL” renovation underway Mar - Oct 07; move remaining staff in Nov 07
  - Bldg 600 Lease...anticipate new 20-yr Operating Lease by Nov 07

#### **(2b) UPDATES ON VARIOUS ENGINEERING PROJECTS [Informational]**

Mr. Rex Reed, ROC Engineering Branch Chief, provided updates on the status of and results of various WSR-88D engineering projects that didn’t require a separate formal briefing. The following topic points were covered:

#### Update on Engineering Projects

- Interference
  - Working 8 interference cases
    - Attempting to locate interference sources
      - Some interference intermittent & hard to identify
      - Working with FCC
    - Possible frequency changes of other systems
  - ASR-11 Interference,
    - Fort Smith, AR, Springfield, MO, Columbia, SC, Saginaw, MI & Grand Rapids MI (DoD ASR-11)
      - Fix requires WSR-88D and ASR-11 changes
      - WSR-88D fleet wide modification deployment has begun
      - Interim ASR-11 mod at Ft. Smith & Springfield
      - Awaiting installation of final ASR-11 hardware
      - Saginaw, MI freq change (N Indiana WSR-88D interference)
      - Awaiting DoD response on Grand Rapids interference
  - ASR-7 Interference Identified-Green Bay & Mobile & Midland/Odessa-no change
    - ASR-11 replaces ASR-7; Mobile Aug 2007, Midland/Odessa Dec 2007, Green Bay Oct 2008

- Minor operational impact
- SR & CR agreed to wait for ASR-11 installation
- DAU Optic Isolator
  - Reliability improvement
  - Isolates DAU from external cables & reduces lightning vulnerability
  - Deployment underway
  - Expect 5 units shipped per week
- LPP Pedestal Lubrication
  - 11 sites impacted (8 field & 3 support)
  - ROC depot team fully modified 10 sites
  - St Louis remains to be modified
- LPP Hand wheel Modification
  - Change to match FSP connection
  - 8 of 11 sites modified (i.e. properly lubricated)
- Louisville/Ft. Knox WSR-88D blockage study
  - ROC Report provided to CR & site July 07
    - Increased blockage to SW
    - Little blockage change NE
  - Recommend vegetation removal in one area to show benefit
  - Large scale vegetation removal may require more impact studies/funding
- RF Generator Test Capability
  - Tests phase shift adjustment in RF Generator
    - Previously, phase stability/accuracy not important
    - SZ2 implementation makes phase accuracy critical
  - ROC developed capability for NRC to test & adjust phase of RF Generators
  - Initial capability delivered
  - Final test capability being readied for delivery
- OPUP Security Recertification
  - OPUP reaccredited with full ATO approved 5/11/07
  - Build 10 security test & evaluation procedures in progress
- WSR-88D C&A Status
  - 10/6/06 Preliminary C&A package submitted to CIO
  - 6/26/07 full C&A package submitted
  - 7/12/07 CIO requested updated package to clarify security controls
  - 7/23/07 CIO contractor arrived to perform independent tests
  - 9/17/07 received contractor developed C&A package
    - ROC provided significant comments
    - ROC, CIO & contractor have had significant discussions/interchange
  - Expect new C&A will be complete by 11/17/07 due date
- RPG Refresh
  - Deployment with Build 9
  - Outstanding support from NRC & NLSC to meet schedules

- 120 sites completed as of 10/10/07
  - RPG processor average load
    - Decreased from > 60% to < 10%
    - Plenty of capacity for Super Res & Dual Pol
  - ROC Remote Access-Frame Relay
    - Access, monitoring & disaster recovery
      - Allows ROC remote troubleshooting, recovery, status, resets
      - Reduces time/travel to reconfigure or troubleshoot routers
      - Includes DOD/FAA connections
    - Build 9 extends frame relay monitoring/troubleshooting capability to 94 sites
    - Expanded to all CONUS hurricane-prone sites
    - Working with CIO
      - NOAA Net can be used for communications
      - Separate radar virtual routes possible for future remote access
    - Emergency reconfiguration & rerouting now possible
  - Implement IPV6 Capability
    - OMB mandated implementation by June 2008
    - WSR-88D has no Internet access; only required for OMB compliance
    - Implement Build 11 or later
    - Hardware procurement moved to FY09 in ROC 8 yr Mod Plan
      - DOC \$2,069K
      - DoD \$467K (RPG only-OPUP router funds already available)
      - DOT \$440K
      - Assumes module reuse - \$343K added if no module reuse
    - 1,200 hours ROC & 120 hours NRC/NLSC staff time required
    - Since June 08 deadline can not be met, waiver needed until implemented
- Bill Bumgarner comment: We should consider looking at the LINUX world as an alternative to Cisco type routers in the long term to save money and maybe improve performance. The ROC replied they are investigating COTS router solutions beyond Cisco.
- Trigger Amplifier Modification-Revision C
    - Over 50 % modified
    - Requisitions reduced significantly
      - FY06 requisitioned 351
      - FY07 requisitioned 203
      - Cost avoidance-\$630K in repair costs FY07 vs FY06
      - Only 8 trigger amplifiers requisitioned in Sept 2007
    - Mod significantly improving reliability
    - 46 modified Rev C units returned for repair
      - 15 failures related to components in new design
      - Remaining returns were no defect found, shipping damage, or failures not related to Mod C components/design
  - NEXRAD to WARP Interface

- 141 of 142 CONUS connections complete
- Last, Holloman AFB, complicated by interagency agreements & connections
- Alaska connections planned for summer 2008
- Pedestal Mounting Bolts
  - Pedestal mounting bolt torque problem
  - Approved first article anti-spin washers & SmartBolts
  - Awaiting full deployment quantity delivery
  - ROC depot team will install when on site for other work
- Post Hurricane Satellite Communications
  - Emergency communication when terrestrial service lost
  - 8 NWS CIO-purchased satellite terminals at ROC
  - Commercial satellite service selection ongoing
  - With satellite service available, can be used in emergency to restore comms
- USAF-OPUP Projects
  - Deployment of OPUPs
    - Ft. Riley only OPUP awaiting analog circuit (in place now per Mike Spaulding)
    - New: K16 OPUP added in Korea; special case-no port available
  - Alaska reconfiguration
    - Need to reconfigure Alaska circuits in Dec 2007
    - Requires test ECP & ROC site visits to accomplish
  - New task: consolidation of Shaw AFB OPUP connections to Barksdale AFB OPUP
  - Future OPUP
    - JET planned as basis for OPUP radar display replacement
    - JET requirements & timeframe remain unclear
    - ROC planning OPUP refresh to PC/LINUX
  - OPUP digital communications
    - Convert OPUP communications to digital service
    - Planned for Build 11
    - Deployment in early CY09

**(2c) STATUS OF UPCOMING MOVES OF WSR-88D SYSTEMS [Informational]**

Mr. Ed Berkowitz, ROC Program Branch Chief, presented an update on the planning and status of the moves of the Camp Humphreys, Korea and Sterling, VA WSR-88Ds. The following topic points were covered:

Background Review

- Sterling, Virginia:
  - Relocation required as part of much larger MWAA expansion of Dulles Airport
- USAG Humphreys, ROK:
  - Relocation made necessary by construction of new barracks near old location on base
  - Related but separate simultaneous project: additional OPUP installation at K-16 airbase

### Sterling, Virginia

- MWAA awarded main construction contract (including WFO, not including NEXRAD) to Milestone Construction
  - Notice to Proceed issued 30 Jul 07, with a 400-calendar-day completion schedule
  - Construction of new WFO facility (final RPG location) trails relocation of radar by 6 months, not part of radar relocation project
- MWAA contracted directly with RSIS for new NEXRAD site construction
  - Notice to Proceed issued May 07 (finalized Jul 07), with a contingency-based schedule
  - 30% B&V Construction Plans received 19 Jul 07; comments finalized 1 Oct 07

### Sterling, Virginia Details

- ‘Zero downtime’ approach to radar move, with overlapping period of operation for both radars available to WFO
  - Requires second temporary frequency assignment (2950 MHz) for new radar
    - Temporary frequency may become new permanent frequency
  - WFO will be able to see one radar at a time, must switch between
    - To use only the existing RPG; note- downtime may be required to move RPG to new WFO facility later (not part of radar relocation project)
- RSIS acquisitions:
  - Standard 30 meter tower
  - ESSCO NEXRAD Radome w/ Aircraft Warning Lights
  - Black & Veatch Civil Engineering Support
  - Pedestal Cradle, modified to accommodate LPP pedestal
- Project on Schedule
  - RSIS construction completion 1 Mar 08
  - Overlapping radar operation available to WFO for 30 days March – April timeframe

### USAG Humphreys, ROK

- USAG Humphreys Relocation Schedule
  - Site preparation, shelter foundations, access road, and power installation complete
  - ROC/RSIS pre-move base-lining of ‘old’ radar, Sep 24 to Oct 1
  - Downtime starts and NOTAMs issued Sep 24
  - Prerequisite USFK telecomm infrastructure completion promised Oct 1
  - Tower and radome erection subcontractors on site Oct 1
  - Assembly of new tower and radome, Oct 3 – 16
  - Shelters relocated – complete by Oct 28
  - Disassembly of old tower and radome; move pedestal, Oct 16 - 28
  - Install pedestal, new radome, & waveguide; make system operational, complete by Nov 2
  - Shelters refurbishment – done on non-interfering basis
  - “Acceptance” by Nov 15

### USAG Humphreys Details

- Radar to feed five OPUPs for five organizations at five remote sites (none co-located with radar)
  - Four USFK (including new K16)

- One Korean (Korean Meteorological Agency)
- USFK telecomm challenges were resolved
- New radome, tower, pedestal cradle through customs in ROK; waveguide, A/C units, and all other replace/rebuild materiel have cleared customs in ROK

USAG Humphreys Risks

- Possibility of weather delay from late-season typhoons
- Dependency on close coordination between USFK and external Korean businesses to complete tightly scheduled Telecomm circuit readiness
- Potential connectivity complications from complex USFK inter-organizational arrangements for multiple OPUPS on newly devised “military Comm Backbone” – have been overtaken by events

Bill Bumgarner: FAA needs specifications for the sites - i.e. latitude, longitude, height, ID numbers, cut over dates, etc.

Ed Berkowitz & Cheryl Stephenson: When the specification details are known, it will be made available.

Further detailed discussion is to be done offline from the meeting.

**(2d) UPDATE ON ROC ACTIONS IN REGARD TO WIND FARM IMPACTS ON WSR-88D OPERATIONS, TRIAGENCY OPERATIONS, AND POLICY**

[Informational]

Dr. Tim Crum, ROC, provided an update on the ROC actions taken in regard to wind farms impacting WSR-88Ds and triagency operations since the last NPMC meeting and planned actions. The following topic points were covered:

ROC Wind Farm Actions and Initiatives Since Last NPMC Meeting

- ROC received 56 notices of proposed wind farm projects from National Telecommunications and Information Administration
  - A subset of planned wind farms; participation voluntary
  - Most ROC evaluations found “minimal interference” - out of radar line of sight; recommended no required further contact with developer
  - 7 evaluations showed turbines will be in line of sight of a WSR-88D; recommended wind farm developer work with ROC to reduce impact
    - One developer has responded to ROC
- Two developers have contacted ROC for preliminary analysis
- Participated in Rep. Neugebauer (TX) public forum at Dyess AFB regarding wind farm development and military readiness
  - Local officials obtained more favorable wind farm siting to address Dyess AFB and POC concerns
  - No plans for legislation, suggested checklist development; DOE action
- Initiated wind farm impact section on ROC web page
  - Resource for wind farm developers

- [http://www.osf.noaa.gov/windfarm/windfarm\\_index.asp](http://www.osf.noaa.gov/windfarm/windfarm_index.asp)
- ROC presented poster at June American Wind Energy Association (AWEA) annual meeting
  - Inform wind energy industry of:
    - Mission critical WSR-88D data; locations
    - Potential impacts of wind farms on WSR-88Ds, forecasts/warnings, and other radar data users
  - Discuss how we can work together to better site new wind farms to reduce impact on WSR-88D data
  - Considerable audience interest
  - Poster and paper a useful reference for inquiries; part of ROC outreach program
- Met with three wind farm developers, who proposed wind turbines in a WSR-88D radar line of sight; developers have
  - Relocated some wind turbines
  - Expressed desire to learn about WSR-88D locations and sensitivities earlier in siting process
- Working with FAA to add WSR-88D tool kit to OE/AAA web site
  - Greater WSR-88D visibility for wind farm developers earlier in planning process
  - Developers can perform their own preliminary analysis
  - ROC will analyze sites on case-by-case basis upon request
  - Participated in September user conference
- Continued support of Univ. of Oklahoma, Dr. Bob Palmer, research to mitigate impact of wind farms with WSR-88D software
  - Collected additional WSR-88D Level I data to support research

#### Highlights of Planned Actions

- ROC engineer participating in DOI-sponsored toolkit planning workshop this week
- OE/AAA contractor to meet with ROC staff in November
  - Coordinated WSR-88D toolkit on web site
  - Train ROC on use of OE/AAA database
- Contacted American Wind Energy Association (AWEA) Siting Committee for participation in October conference call
- Presentation and paper at January 2008 American Meteorological Society annual meeting
- Will make invited presentation at AWEA February wind siting workshop
- Requested to present a poster at June AWEA annual meeting, WINDPOWER 2008

#### **(2e) NETWORK DATA QUALITY: FAA CONCERNS [Informational]**

Paul Jackson, FAA, presented how the FAA is using NEXRAD data and what their concerns are with the data quality. The following topic points were covered:

##### Background

- 2004 Hot & Cold Radar issue came up during testing of the WARP Optimal Mosaic
  - Unisys offered to modify the algorithm to identify and compensate for hot or cold radars

- FAA declined the offer based on data from the ROC indicating the problem is usually 2 dBZ or less
  - Also wanted to avoid a protracted validation of the Unisys algorithm
- April 2007 Fort Worth ARTCC identified several cases where hot & cold radars caused anomalous behavior in WARP mosaics
- May 2007 FAA turned on the Optimal Mosaic for controller displays (without hot & cold radar compensation)

Sample Case

- April 30, 2007
- WARP mosaic for 240-330 layer composite reflectivity
- Square area of lower reflectivity appears over central Texas
- Caused by two radars (MAF and FDR) running hotter than their neighbors (GRK, SJT, DYX, and FWS)

FAA Concerns

- Does ROC still monitor hot vs cold radars?
- How significant is the problem?
- Is anyone notified when a problem is identified?
  - Yes, contact the NEXRAD hotline (per John McNulty)
- What corrective actions are taken?

John McNulty - The following presentation by Major Mike Miller may answer many of FAA's concerns.

**(2f) NETWORK DATA QUALITY** [Informational]

Major Mike Miller, ROC Operations Branch Chief, presented an overview of the tools available to the ROC to monitor WSR-88D data quality and summarized how they are used. The following topic points were covered:

Tools

- General Status Messages
- System Logs
- Archive Status Products
- AWIPS (NWS), OPUP (DoD) Display Systems
- RFC Precipitation Biases
- Radar Reflectivity Comparison Tool (RRCT)
- Unisys SkyVision Unfiltered Composite Reflectivity
- Local Data Manager (LDM) Level II Data
- Radar Reflectivity Comparison Tool (RRCT)
  - Objective comparison between adjacent sites
  - Development by NSSL
  - An indicator of comparative / relative calibration
- Unisys SkyVision
  - Unfiltered Composite Reflectivity Mosaic

### Approach

- Assess Whether Radars are comparatively “Warm or Cool” (What causes radars to view the “same” targets differently?)
  - Antenna pointing angle (up is cool, down is warm - usually)
  - Calibration: Adaptation data; Defective hardware
  - Clutter suppression (too much is cool, too little is warm)
  - Beam propagation (beam height is an estimate)
  - Different sampling techniques/VCPs in use at adjacent radars
  - Precipitation Estimates
    - (High estimates = warm radar; not necessarily)
  - Interference can Impact System Calibration Calculations
  - Attenuation
- Courtesy Calls to Sites
- Technical Assistance Group Help
- On-site Assistance

### Case Study

- Meteorological Situation at Time of FAA Mosaic Discontinuities
- NSSL Quality Controlled Composite Reflectivity Product
- Regional Radar Comparison (TX/OK)
  - Frederick, OK and Houston, TX Warmer
  - Fort Hood, TX Cooler
  - All others comparable
- WARP Mosaic
- Assess Potential Causes for “Erroneous” Returns
- Focus on Input from Frederick, OK Radar

### Case Study - Potential Causes

- Atmospheric Conditions Can Cause Multiple Radars to View Meteorological Targets Differently
  - Atmospheric conditions stable (N-W of event)
    - Likely cause is Super Refraction of beams
- Mosaicing Scheme May Exacerbate the Problem (versus Averaging which may blend it out a bit)

### Responses to FAA Questions

- Does the ROC Hotline monitor hot vs cold radars?
  - Primarily as call load permits; Sites calling in get addressed first
  - Technician Staff monitors daily; makes courtesy calls routinely
- How significant is the problem?
  - There are differences; however RRCT indicates most radars match neighbors within 1.5 dBZ (Even outliers are less than 3dBZ)
- Is anyone notified when a problem is identified?
  - The site
- What corrective actions are taken?
  - Problem dependent: The Hotline will help troubleshoot

### Conclusions

- Evidence Indicates Most Calibration Differences are Less Than 1.5 dBZ (Less Than Before ORDA)
- ROC Continues to Work Network Calibration Differences
- ROC Hotline Ability to Assess Concerns Would be Enhanced with WARP Display/Drop
- Apparent Anomalies Caused by One or More Sources
  - Human Induced
  - Hardware Induced
  - Atmospherically Induced

### Recommendations

- Report Data Quality Concerns to the Hotline in Real Time
- Encourage Active Participation in URC meetings
- FAA Provide ROC Hotline a Live WARP Display
- ROC and FAA Need to Work Together
  - Reassess Strengths/Weaknesses of Layered Products
  - Evaluate Alternate Strategies for Creating WARP Mosaics

### **(2g) TRIAGENCY MOA FOR THE OPERATION OF THE WSR-88D.**

[Decision]

Dr. Tim Crum, ROC, presented the NPMC a briefing on the updated triagency Memorandum of Agreement for the Interagency Operation of the WSR-88D. Dr. Crum had coordinated the draft MOA with the NWS regional HQs and triagency focal points in advance and had sent the draft MOA to NOAA General Counsel for approval. Dr. Crum will send the DOC General Counsel-approved MOA to the NPMC members, via the NPMC Executive Secretary, for approval/signature when it is received. Therefore, NPMC decision on the MOA was not reached at this time.

### **3. SYSTEM DEVELOPMENT:**

#### **(3a) SOFTWARE RECOMMENDATION ENHANCEMENT COMMITTEE (SREC) CHARTER [Decision]**

Dr. Tim Crum, SREC Executive Secretary, presented the NPMC the updated SREC Charter for approval and signature. Dr. Crum had coordinated the draft updated charter with the triagency focal points in advance. The NPMC Executive Secretary had sent the final version of the updated charter to the NPMC members on 14 September. Dr. Crum also provided a brief summary of the September SREC meeting results and recommendations. The following topic points were covered:

#### Dual Pol and Build Planning

- Contractor Will Develop Dual Pol Capable RDA Builds 11 and 12
  - Build 11 Will Support Dual Pol Single Thread Configuration

- Build 12 Will Support Dual Pol Redundant Configuration
- Install with Hardware Retrofit
- Government Will Support Dual Pol Contractor
  - Provide the Latest Version of Build 10 Software as Soon as the Contractor Is Ready to Accept
  - Provide a Build 11 Software “Engineering Drop” by 12/3/07 that Includes:
    - Red Hat 5 LINUX Operating System
    - Sigmet Updates
    - Government Will
      - Develop and Deploy a RDA, RPG, and OPUP Build 11 (Gov’t)
    - “Split” RDA Software Baselines
    - Enables New Capabilities and Security Updates Before Dual Pol Retrofit
    - Not Dual Pol Capable, Though Has Software that Will Enable Dual Pol Processing
      - Merge RDA Baselines After Contractor Build 11 Work Complete
    - Build 11 (Merged) Will Use and Process Dual Pol Data
    - Install Build 11 (Merged) at Sites After Dual Pol Modification Installed
    - SREC/ROC Expects Up to 4 Security-Driven “Point” Releases Between Major Application Software Releases in Future
      - May Include Low-Risk Applications that are Ready

#### Build 11 (Government)

- Major Milestones
  - Fall 2008: Beta Test
  - Feb-Mar 2009: Start Software Deployment to Field
- Major RDA Contents:
  - Clutter Mitigation Decision (CMD) Algorithm (Operational/Non-Operational Data Quality Decision Point at Start of System Test)
  - Staggered Pulse Repetition Time (PRT), Phase 2 (Non-Operational, Supports Off-Line Testing)
  - Two Non-Operational Scanning Patterns (Supports Off-Line Testing)
- Major RPG Contents
  - Dual Pol Algorithms and Products (Non-Operational)
  - Support RPG Router Replacement
  - Data Quality Algorithm Improvements
  - OPUP Digital Communications Migration Support
- Major OPUP Contents
  - Implement OPUP-RPG Digital Communications
  - Changes Needed Due to Product Changes (e.g., Dual Pol)
- A Build 11 “Point Release” Will be Deployed to the Field in Advance of the Dual Pol Modification that Activates the RPG Dual Algorithms and Products

#### Build 11 (Merged)

- Target Date: Start Software Deployment to Field at Least 4 Months After Start of Dual Pol Deployment
- Concept of Operations, Government:
  - Merges Contractor Build 11 RDA Baseline (Single-Thread) with Build 11(Gov’t)

- Installs Build 11 (Merged) on Single-Thread Systems after Government Accepts Dual Pol Hardware and Software Modification Installation
- May Cause Interim Period of Loss of Build 11 (Gov't) Functionality
  - Provides Sites Enhancement and Security Updates Sooner
  - Reduces Contract Risk of Having Government Changing Contractor-Controlled Software Baseline

#### Build 12 (Government)

- Major Milestone for Start Software Deployment to Field – Dependent on Dual Pol Contract
- Major RDA Content: Add Hybrid Scan Spectrum Width Estimator
- Major RPG Contents
  - Integration of Super Resolution Data into Select Algorithms (TDA, MDA, DQA, MIGFA)
  - Reduce TDA/MDA False Alarms, Keep Detection High
  - New Graphical Exclusion Zone Editor
- Major OPUP Content: Rehost to LINUX Operating System

#### Build 12 (Merged)

- Targeted Date to Start Software Deployment to Field At Least 4 Months after Build 12 Dual Pol Deployment Begins
- Concept of Operations, Government:
  - Merges Final Contractor Dual Pol RDA Baseline (Build 12) with Build 12 (Gov't)
  - Installs Build 12 (Merged) on Systems after Government Accepts Dual Pol Hardware and Software Modification Installation
- Restores RDA to Single Baseline

#### Review Of Triagency Technology Transfer MOUs

- MOUs Reviewed:
  - ROC-Managed: NSSL, NSSL & NCAR, and OHD
  - NPI-Managed: NSSL
- New SREC Process: SREC Members and MOU Managers Conduct Technical Interchange Meetings (TIMs) in Advance of SREC
- SREC Member MOU Conclusions:
  - Well Coordinated, Little Overlap/Duplication
  - Leading to Operational Applications
  - Funded at Appropriate Levels
- Recommendations:
  - Continue Funding in FY08
  - Continue New Process of Annual SREC MOU TIMs Prior to SREC Meeting

#### SREC Recommendations for NPMC Approval

- Build 11 (Government) Contents; Release to Field: Feb-Mar 2009
  - Content Details in Coming Decision Paper
- “Split and Merge” RDA Software Baseline Approach
- Continue Technology Transfer MOUs in FY08
- Approve/Sign SREC Charter Update of August 2007
  - Charter Requires Biannual Update and NPMC Approval

- Updated Charter Sent to NPMC Members on 9/14
- Updates Are Relatively Minor
  - Update Coordinated with Triagency SREC Members in Advance; They Recommend Approval

DECISION: The SREC members approved and signed the SREC Charter update of August 2007.

**(3b) NEXRAD TECHNICAL ADVISORY COMMITTEE (TAC) MEETING SUMMARY** [Informational]

Lt Col Scott Saul, ROC Applications Branch Chief, provided an overview of the major outcomes of the August 2007 “mini” TAC meeting held in regard to the Super Resolution and Recombination Algorithm data quality assessment. He also outlined the objectives for the next TAC meeting. The following topic points were covered:

Aug '07 TAC Summary

- Mini-TAC Convened for Super-res Decision
  - TAC endorsed implementation of super-resolution and recombination algorithm in Build 10
  - TAC noted utility of super-res base data to researchers and experimental product developers
    - Urged a sampling of super-res base data be available as quickly as possible

December '07 TAC Objectives

- Decision Briefings on the Following Issues:
  - Implement Staggered PRT, phase 2
  - Implement Modified VCP 121 to include SZ-2 processing
  - Implement Improvements to DQA
  - Implement partial beam blockage enhancement to QPE version 2

December '07 TAC Objectives

- Receive Technical Updates / Informational Briefs on:
  - Increased data transmission requirements for super-res and dual pol
- NOAA NET capability
  - Potential Future Enhancements to MLDA and HCA
  - AVSET / Rapid Surface Scanning VCP

**(3c) STATUS OF SOFTWARE BUILDS 9 AND 10** [Informational]

Steve Smith, ROC Software Engineering Team Leader, provided a status of the Build 9 deployment, including the RPG hardware refresh; Build 10 testing and preparation for field deployment; and Build 11 planning. The following topic points were covered:

Build 9.0 Status

- Currently being deployed

- Number of Sites on Each Build (as of 10/01/07)
  - RDA Build 9.0: 120
  - RDA Build 8.0: 53
  - RPG Build 9.0: 117
  - RPG Build 8.2: 54, Build 8.0: 2
  - OPUP 9.1: 3, 9.0: 49
  - OPUP 8.0: 70
- Deployment Scheduled Completion 12/02/07

#### Build 9.1 Status

- RPG Build 9.1 Release Motivated By Quarterly Security Scans
  - OS patches address Medium/High Security Vulnerabilities
  - Presented Opportunity to Address:
    - Several RPG Software Defects – Low Risk
    - Evansville/EEC Radar Wideband Comms Compatibility with RPG Refresh
    - Site-Specific Adaptation Data Updates
      - Camp Humphrey Move and Addition of K16 OPUP
      - Support Barksdale Large OPUP
      - Router Configuration Corrections for Several Sites
    - NVIDIA Graphics Driver Upgrade
- System Test/Operations Test Began 10/1/07, 2 Week Effort
- Deployment Starts 11/1/07 for Eglin and San Diego. Anticipate 6 Week Deployment Period (During ROC Move)

#### Build 10.0 Content Highlights

##### RDA Build 10.0:

- Super Resolution Base Data – Radial Message Format Change (Message 31)
- Level I Data Recording to DVD (4 GB/~ 3 VCPs)
- Wideband Data Compression By Default
- Staggered PRT (Phase I) – Non Operational

##### RPG Build 10.0:

- Super Resolution Support
- Recombination Algorithm, 3 New Base Products (SDR, SDV and SDW)
- Dual Polarization Preprocessor (fully functional/disabled in Build 10.0)
- FAA's NEXRAD Turbulence Detection Algorithm and Products (EDR and EDC)

##### OPUP Build 10.0:

- Solaris 10.0
- Support for New Products (EDR, EDC, SDR, SDV, SDW)

#### Build 10.0 Status

- Build 10.0 in System Test; Began 8/13/07.
- Upcoming Milestones (Includes 2-week Slip for 9.1)
  - Operations Test Starts 12/14/07
  - Beta Test Starts 2/21/08
  - Deployment Starts 4/28/08
  - Deployment Scheduled Completion 5-6 weeks after Start

#### Build 10.1

- Anticipate OS Updates Will Be Required Based On Quarterly (March/2008 and June/2008) Security Scan Results
- Tentatively Scheduled for Late Summer or Early Fall 2008 Release

#### Build 11.0

- ROC Planning for RDA, RPG and OPUP Build 11.0, Separate Baseline From Contractor Dual Polarization Development
- System Test 04/01/08 – 07/30/08 (Tentative)
- Beta Test Fall, 2008
- Deployment Spring, 2009

### **(3d) DUAL POLARIZATION, TERMINAL DOPPLER WEATHER RADAR ACCESS TO NWS WFOs, and NEW SCIENCE STATUS [Informational]**

Mr. Greg Cate, OS&T, presented the status of the dual polarization project, adding NWS WFO connections to TDWRs, super resolution data readiness, and other OS&T led NPI efforts. The following topic points were covered:

#### Acquisition Strategy

- Use GSA Government-Wide Acquisition Contract (GWAC) Millennium Lite
  - Provides contract award, administration and close-out support
  - Contracting Officer and staff located in Oklahoma City Federal Building
  - Streamlines acquisition process
  - Compete among pre-qualified vendors
- Use performance based statement of objectives
  - Use Firm Fixed Price (FFP) contract
  - Award on best value considering technical, past performance and price
- Acquisition Schedule

#### Evaluation Factors

- Evaluation factors listed in descending order of importance:
  - Technical/Management
- Technical approach (includes calibration technique)
- Management Solution
- Support Management Responsibility Transfer Plan
- Security Solution
- Quality Control Plan
  - Past Performance
  - Price/Cost
- Non-price factors are significantly more important than price

#### Best Value Recommendation

- L3 Titan
  - Innovative technical approach
    - Reduces development risk by building on existing commercial design
    - Minimizes signal loss
    - Addresses calibration requirement

- One kit design for both single and dual thread systems
- Excellent past performance
  - Experience with commercial dual-pol systems
  - Subcontractor ESSCO performed original WSR-88D antenna work
- Kick-Off Meeting scheduled for October 23-24
- Dual Polarization High Level Data Flow based on NSSL Version 2.0
- Dual Pol Product Requirements
- Technical Requirements for WSR-88D Dual Polarization Products rev13 17sep2007-mji vs Degree of Agreement

#### Impacted External Systems

- Agency-centric Principal User Display Systems and Comms to them
  - AWIPS(WFO, RFC, NCEP), OPUP, WARP, ITWS, etc.
- Level 2 Data Central Collection, Distribution, Archive
  - NOAAnet (WFO to NWS RHQ)
  - Frame Relay (DoD RPG to NWS WFO) – Migrate to NOAAnet
  - RHQ LDM Servers
  - NCDC Servers and Archive
- Level 3 Products Central Collection, Distribution, Archive
  - AWIPS WAN (WFO to NCF) – Migrating to NOAAnet
  - RPCCDS
  - Multicast Broadcast (to agency and external users)
  - SBN/NOAAport (NCF to Sites)
  - Radar FTP Site (receives Multicast Broadcast)
  - NCDC Servers and Archive
- Level 3 Product Systems
  - RIDGE, WFO Web Sites

#### Site Impact

- New Calibration Techniques
  - Accurate calibration is key to sound dual polarization data
  - Automated process is a requirement
  - Antenna-Mounted Equipment
- Current Plan for two-week install
  - As in ORDA, coordinate with site/region on schedule and training
  - Significant modification to pedestal/antenna

#### Dual Polarization Schedule (Draft)

##### TDWR Data Ingest

- NOAA mandate to install remaining 35 TDWR Data Ingest systems
  - OS&T will acquire, deploy and prepare for support management responsibility transfer
    - in FY07-08
- NOAA Funded
- Utilize ROC COMMITS vehicle
- Finalize FAA/NWS MOU
- FAA National Change Proposal required for deployment

- In coordination
  - Support management responsibility
- Transfer to ROC in FY09
- Dependent on \$1M increase to O&M budget
- TDWR Data Program Schedule

#### Super-Resolution

- TAC and SREC recommendation for Build 10 (April 2008)
- Improve Angular and Range Resolution
- Better Detail on Structure of Tornadoes

### **(3e) PLANNING FOR COLLECTING SUPER RESOLUTION AND DUAL POL DATA [Informational]**

Ms. Christina Horvat, ROC System Engineering, summarized costs and plans for potentially adding Super Resolution data and Dual Pol data to the data distribution network and National Climatic Data Center archives. The following topic points were covered:

#### Current Status

- NWS collects Level II data from all 121 NWS, 1 FAA, and 13 DOD radars
  - Collaborative use of Internet 2
  - Data sent to 4 top-tier sites for redistribution; and to NCDC for archival
- Users want Level II data from all CONUS, AK, and HI radars
- Super Resolution data (Build 10, April 2008) and Dual Pol (Build 11, Fall 2009) will significantly increase bandwidth requirement
  - Current communications inadequate; O&M funds not available
  - NOAA Net, MPLS architecture, anticipated for implementation in early FY09, will enable Super Res from existing NWS Level II sites
  - No additional cost for Super Res, if NEXRAD frame relay for existing DoD and FAA Level II sites can be transitioned to NOAA Net
  - Until NOAA Net is ready, Super Res data will not be collected
  - Without communications upgrade, Dual Pol data will not be sent beyond the WFO AWIPS
- No current capability to collect and archive TDWR Level II data

#### NWS NEXRAD O&M Funding Initiative

- Obtain NOAA/NWS funding beginning in FY10 for the collection, distribution and archiving of NEXRAD Level II data (Super Resolution and Dual Polarization) from all US radars
  - Adds 11 FAA and 8 DOD radars
- Obtain NWS FY10 funding for communications (TDWR-to-SPG T1 lines, and Level II collection/archive), and for ROC support
  - All 45 TDWR sites

#### Resources Required

- Increased Recurring Frame Relay/NOAA Net bandwidth per radar for Dual Pol
- Initial and recurring upgrades for NCDC hardware and storage equipment

- Initial and recurring LDM server upgrades

#### Benefits

- Operational impact of implementing
  - Provide data for assessing Dual Pol data quality across wide spectrum of climatological and geographical settings.
  - Provide Dual Pol Level II data for developing and recommending changes required for improved data quality.
- Will support
  - NOAA operations and research
  - NOAA regional collaboration initiatives by improving integrated water resource services and supporting hazard resilient coastal communities
  - Weather Enterprise

#### Operational Impact of NOT Implementing

- Multi-agency collaborative efforts on national/mosaic of QPE will not have Dual Pol data that is key to transition to operations
- Restricts WSR-88D data quality team to assessing Dual Pol data quality to data from ROC test bed, only
- Hinders development and testing of improved Dual Pol data processing software

#### TDWR SPG/Level II Data Expansion Initiative

- Funding Breakdown

John McNulty commented: Only the NWS funds this requirement increase – not an FAA or a DOD requirement

Rich Vogt commented:

- Build 10 Super-Res will initially stop at the forecast office and will not be collected on Level II until NOAAnet is employed.
- Dual Pol data will stop at the forecast office due to funding limits.
- Additional funding is required to collect, distribute, and archive Dual Pol Level II data.

## 4. OLD BUSINESS

**NPMC03-2.2: Greg Cate will investigate the possibility of incorporating the multiple data stream software enhancement for software Build 8 and the potential impacts of incorporating this software enhancement.**

**Status:** New 05/07/03. The SREC has this change targeted for Build 8. Greg Cate will be meeting with the FAA on clarifying the requirements. (OPEN 08/21/03). The FAA is utilizing data from multiple radars to support Air Traffic Control Operations. Sites are inconsistent in their application of clutter filtering, leading to contamination by AP. Blanket application of the current clutter filters impacts OH with loss of some reflectivity data. Alternatives: A. Implement a base data stream with clutter filter parameters set to FAA specifications and that are under control of the FAA. Issue becomes time and resources dependent to implement; B. Leverage off of new developments on adaptive clutter filters and AP removal to provide adequate data quality for FAA and OH. Action:

Bob Saffle and Greg Cate examine improvements in the pipeline and determine if these improvements are adequate to address FAA and OH requirements. Upcoming improvements will also be examined to assure there is no duplication of effort and which combination of improvements affords the most benefit. Work with agency personnel during this effort. Make recommendation of NEXRAD modifications to address issue. Note: Bob Saffle and Capt. Dustin Evancho have determined that the current RDA-RPG T1 is adequate to handle bandwidth requirements through dual-pol (with compression). (OPEN 11/19/03). As stated in previous response, FAA is receptive to alternatives which provide consistent application of clutter processing. Use of the new adaptive clutter processor (GMAP) in ORDA holds promise in this area. There may still be procedural issues to address. (OPEN 6/2/04). We are incorporating the new clutter processing technique into ORDA. Its effectiveness in supporting improvements in data quality need to be evaluated as ORDA is deployed and the operators become familiar in its use. So it was recommended that this remain open as evaluations progress. (OPEN 9/8/04). As stated in earlier update, we intend to use the new adaptive clutter processor (GMAP) in ORDA, and evaluate its contribution to improving data quality consistently across the network. Recommend action item remain open, as data quality continues to be monitored through ORDA testing. (OPEN 3/2/05) Recommend this remains open; data quality should continue to be evaluated as ORDA continues to be deployed. (OPEN 9/28/05) In discussions with the FAA technical staff, they are generally satisfied with the performance of the GMAP clutter filter and are less inclined to support a requirement for dual data streams. However, would recommend this item remain open until ORDA deployment is complete (Sept. 2006) to ensure ORDA data quality meets their requirements. (OPEN 3/29/06) The FAA feels that current and future improvements aimed at improving data quality should be adequate with the *proper application* of those tools. The FAA is concerned that the extended hiatus of changes during Dual Polarization RDA development will significantly delay the introduction of promising technology which improves data quality (i.e. the Clutter Mitigation Decision Tool), and has asked NPI and the ROC to investigate introducing the CMD tool at least by Build 12. (OPEN 10/4/06). NPI and the ROC are mindful of the FAA data quality concerns. These concerns will be a factor in the deliberations of the upcoming June SREC meeting to determine timing and content of future builds. The latest Dual Polarization schedule, schedules for improvements related to data quality, and the potential of data quality improvements with dual polarization will all be considerations of the tri-agency SREC. (OPEN 4/11/07) Although there is work to be done in the area of data quality and uniform application of data quality tools in the field, focus by the NEXRAD SREC, TAC, and the NEXRAD data quality team ensures that data quality is a focus of NEXRAD stakeholders. A software release is planned for non-Dual-Pol sites which will allow the evaluation of data quality improvements (i.e., CMD). (CLOSED 10/10/07)

**NPMC07-1.1: The ROC/NSSL contact Naval Research Laboratory (NRL) to discuss technological advances in phased array radar technology that may be applicable to the National Weather Radar Testbed (Phased-Array).**

**Status:** New 04/11/07. Jeff and Doug Forsyth again reviewed the information from NRL and found it deals with ship-to-aircraft communications using the Navy's current ship-borne PAR systems. NSSL did not contact NRL since they are already aware of their work, and do not believe it could be applied at this time to the NWRT which uses an older version of passive array PAR. The technology can be considered during the MPAR prototype design at a latter time. (CLOSED 10/10/07)

**NPMC07-1.2: The ROC determines the potential utility/feasibility of putting selected surface sensors (e.g. wind direction, wind speed, pressure, humidity and temperature) at wind farms.**

**Status:** New 04/11/07. Initial contacts with two wind farm operators indicates that most wind turbines may have meteorological sensors (wind speed/direction and temperature) on their nacelle; however, there seems to be reluctance to share this data as they view it as proprietary. If it were made available, secure communications interfaces would be needed and techniques would need to be developed for incorporating the data into the radar in a meaningful way to recover lost/corrupted data. It appears the sensors would only be useful for filling in environmental winds at the given location/height, but not for detecting severe storm circulations. If rain gauge sensors were available at each turbine (they are not), it would be useful ground truth information to correct radar precipitation estimates, but not to recover corrupted reflectivity fields. The ROC will make additional contacts, via DOE, to explore the possibilities for obtaining wind farm meteorological data, but at this time the 3-D spectral interpolation technique developed by the University of Oklahoma seems to offer more promise with less engineering and programmatic complexity. (CLOSED 10/10/07)

**5. NEXT MEETING**

**The proposed date for the next NPMC Meeting is Wednesday, April 23, 2008, in Silver Spring, MD.**

**6. ADJOURN 11:30 A.M. Central Time**