

**NATIONAL SYMPOSIUM  
ON  
MULTIFUNCTION PHASED ARRAY RADAR**

**LEVERAGING TECHNOLOGY FOR A NEXT-GENERATION  
NATIONAL RADAR SYSTEM**

**October 10-12, 2007  
National Weather Center**

120 David L. Boren Blvd, Norman, Oklahoma

# ***Theme: LEVERAGING TECHNOLOGY FOR THE NEXT GENERATION NATIONAL RADAR SYSTEM***

## **Scope/Impact:**

The nation's weather and aircraft surveillance system is aging and critical replacement decisions loom on the horizon. The National Weather Radar Testbed, a Navy SPY-1 phased array radar (PAR) adapted for weather research in Norman, OK, under a multiagency agreement, has opened exciting new avenues of research to bring this mature military technology to bear on a wide array of civilian applications. Much remains to be done, however, before final acquisition decision on a national PAR system can be made. This symposium will convene a broad cross-section of stakeholders and potential users—the weather, aviation surveillance, and homeland defense communities—to discuss the implications of PAR for weather and aviation surveillance missions. In addition, radar technology developers from industry, academia, and government will lay out future pathways of higher PAR performance at lower cost. Ultimately, the purpose of the symposium is to focus a national initiative to replace mechanically steered legacy radars with high-performance electronically scanning radars through a disciplined risk-reduction program.

## **Objectives:**

- Highlight future user PAR requirements and summarize benefits derived from PAR's adaptive scanning capability
- Explore implementation of R&D priorities laid out in the June 2006 Interagency *JAG/PAR* report, accounting for: (1) work already accomplished; (2) items that still need additional focus; and (3) potential alternative configurations
- Gather perspective from the radar industry on the state of the technology, the technological uncertainties, and the challenges of delivering affordable phased array radar systems in the future
- Develop the way ahead to address MPAR risk-reduction challenges through an implementation strategy and interagency management approach

## **AGENDA**

### ***Wednesday, October 10th***

9:00 a.m.–1:30 p.m.     **Registration**

9:00 a.m.–12:00 p.m.   **Tours of the National Weather Radar Testbed and the National Weather Center**

12:15–1:00 p.m.        **Press Roundtable**

1:30–1:45 p.m.        **Mr. Samuel P. Williamson**, Federal Coordinator for Meteorological Services and Supporting Research, *Opening Remarks*

1:45–2:00 p.m.        **Mr. Joseph Harroz**, Vice President and General Counsel of the University of Oklahoma, *The Importance of Partnerships in Advancing our National Surveillance Capability*

- 2:00–2:15 p.m. **Dr. Denise Stephenson Hawk**, Director, Societal-Environmental Research and Education Laboratory, National Center for Atmospheric Research, *Potential Socio-Economic Benefits of a National Multifunction Phased Array Radar System*
- 2:15–2:45 p.m. **Break**
- 2:45–3:00 p.m. **Special Session - DOD Perspective on MPAR and Interagency Collaboration**  
Mr. Albert Miller, 5 M Inc, Office of the Assistant Secretary of Defense for Homeland Security, *Interagency Collaboration for Seamless Surveillance*
- 3:00–4:45 p.m. **Senior Leader Perspective on MPAR and Interagency Collaboration**  
Ms. Mary Glackin, Acting Deputy Under Secretary for Oceans and Atmosphere, *The Power of Partnerships in Building a National Weather Surveillance Weather Capability*  
Ms. Victoria Cox, Vice President of Operations Planning, Air Traffic Organization, Federal Aviation Administration, *Future of Surveillance in the NAS*  
Mr. Randy Zeller, Director, Interagency Programs, Science and Technology Directorate, Department of Homeland Security, *Homeland Security Needs for a National Surveillance System*
- 5:00 p.m. **Adjourn Day #1**
- 5:00–7:00 p.m. **Ice Breaker in NWC Atrium Exhibit Hall (heavy hors d’ouvres/cash bar)**

**Thursday, October 11th**

- 7:00–7:45 a.m. **Continental Breakfast**
- 7:45–8:00 a.m. Administrative and Logistical Remarks, Dr. Mark Weadon (STC/OFCM)
- 8:00–9:45 a.m. **Session 1: MPAR User Communities of Interest**  
Moderator: Dr. Robert Serafin, National Center for Atmospheric Research, Director Emeritus  
Rapporteurs: Dr. Mark Weadon (STC/OFCM), Dr. Pamela Heinselman (CIMMS)  
Panelists:  
Dr. John L. Hayes, Director, National Weather Service, *Multifunction Phased Array Radar: View from Operations*  
Dr. Richard W. Spinrad, NOAA Assistant Administrator, Office of Oceanic and Atmospheric Research, *MPAR and the Advancement of Atmospheric Science*  
Mr. James Williams, Director of Systems Engineering, Federal Aviation Administration, *FAA’s Roadmap for Air Traffic and Weather Surveillance*  
Mr. Spanky Kirsch, Office of Science and Technology, Department of Homeland Security, *MPAR’s Contribution to Secure Skies and Borders*  
Dr. Fred Lewis, Air Force Director of Weather, *Air Force’s Need for Radar Data*

RDML(s) David Titley, Chief of Staff of Naval Meteorology and Oceanography Command, *Navy's Need for Radar Data*

9:45–10:15 a.m.

**Break**

10:15–11:45 a.m.

**Session 2: Current State of Military Investment in PAR**

Moderator: Dr. Jeffrey Herd (MIT/LL)

Rapporteurs: Lt Col Mark Fitzgerald, USAF (OFCM), Dr. Chris Curtis (CIMMS)

Panelists:

Dr. Richard Wittstruck, U.S. Army PEO IEW&S, *Army's Digital Array Radars*

Dr. Michael Pollock, Office of Naval Research, *R&D in Navy's Phased Array Radar Program*

Dr. Mark Longbrake, Air Force Research Laboratory, *RF Sensor Technology*

12:00–1:00 p.m.

**Lunch** Speaker: Dr. Elbert W. (Joe) Friday, Jr., former Director of National Weather Service, *NEXRAD as a Successful Interagency Collaboration: What Did it Take?*

1:15–3:00 p.m.

**Session 3: Latest Innovations in PAR: An Industry Perspective**

Moderator: Mr. Barry Fell, Technology Services Corporation

Rapporteurs: Dr. Mark Weadon (STC/OFCM), Dr. Sebastian Torres (CIMMS)

Panelists:

Mr. Michael Sarcione, Chief Engineer, Sensor H/W, Raytheon Integrated Defense Systems

Mr. Kevin Leahy, Enterprise Technical Executive for RF, Northrop Grumman Projects

Dr. Douglas H. Reep, Vice President, Technical Operations, Lockheed Martin MS2

Dr. Gregory Turner, Director, Advanced Programs, Space Systems, Harris Corporation

Each panelist will present his company's perspective on state of PAR technology in the commercial sector (introduction to commercial display session in Atrium)

3:00–3:30 p.m.

**Break**

3:30–5:30 p.m.

**Session 4: Component Technology: What the Future Holds in Cost and Performance**

Moderator: Dr. Michael Pollock (Office of Naval Research)

Rapporteurs: Lt Col Mark Fitzgerald, USAF (OFCM), Dr. Igor Ivic (CIMMS)

Panelists:

Dr. Douglas Carlson, Director of Advanced Technology, Tyco Electronics, MA-COM

Mr. James Milligan, Director, RF and Microwave Products, Cree Inc.

Dr. Gailon Brehm, Director, Military Business Unit, Triquint Semiconductor Texas

Mr. Daniel Steele, Senior Radar Systems Engineer, Sierra Monolithics, Inc.

Mr. Steve Nelson, VP MMIC Operations, REMEC Defense and Space, Inc.

Invited panelists from leading manufacturers of T/R modules and wideband gap semiconductors will address future technology challenges and prospects for lower costs.

5:30–7:00 p.m. **Review Industry Displays in NWC Atrium (heavy hors d'ouvres/cash bar)**

### ***Friday, October 12th***

7:00–7:45 a.m. **Continental Breakfast**

7:45–8:00 a.m. Administrative and Logistical Remarks, Lt Col Mark Fitzgerald, USAF (OFCM)

8:00–9:45 a.m. **Session 5: MPAR Alternative Configurations**

Moderator: Dr. Kelvin Droegemeier, Oklahoma University

Rapporteurs: Dr. Mark Weadon (STC/OFCM), Dr. Svetlana Bachman (CIMSS)

Panelists:

Mr. Douglas Forsyth, National Severe Storms Laboratory, *National Weather Radar Testbed: Lessons Learned with SPY-1*

Dr. Mark Weber, MIT Lincoln Laboratory, *MPAR Trade Studies*

Dr. Jothiram Vivekanandan, National Center for Atmospheric Research, *Phased Array Radar Configuration for Ground-Based and Airborne Deployments*

Dr. Chandra Chandrasekar, Colorado State University, *CASA Vision of Dense Low-level Network*

9:45–10:15 a.m. **Break**

10:15–11:45 a.m. **Session 6: Way Ahead to Address MPAR Risk Reduction—Implementation Strategy and Interagency Management Approach**

Moderator: Dr. Paul Try, Science and Technology Corporation

Rapporteurs: Dr. Mark Weadon (STC/OFCM), Lt Col Mark Fitzgerald, USAF  
(OFCM)

Panelists:

Dr. Jeffrey Kimpel, Director, National Severe Storms Laboratory, NOAA

Mr. Bill Benner, Weather Group Manager, Will J. Hughes Technical Center, FAA

Mr. Spanky Kirsch, Office of Science and Technology, DHS

11:45 a.m.–12:00 p.m. **Review of Action Items and Closing Remarks**

Mr. Samuel P. Williamson, Federal Coordinator for Meteorological Services and  
Supporting Research