

NEXRAD/WSR-88D HISTORY

NEXRAD

(As of March 12, 2012)

- 1971 - First Doppler radar installed (at National Severe Storms Laboratory (NSSL), OK) to study morphology of storms (June).
- 1973 - Second Doppler radar installed (at Cimarron Airport, OK) to study morphology of storms (May).
- 1976 - DOC, DOD, DOT (tri-agency) formed Joint Doppler Operational Project (JDOP) to explore benefits of Doppler radar observations.
- 1978 - JDOP report presented three basic findings:
 - .. 20 minute average lead time for detecting storm before occurrence;
 - .. Doppler able to detect gust fronts;
 - .. Doppler information can be processed for display in real time.
- 1979 - The US Air Force Geophysical Laboratory (AFGL) transferred 5 cm Doppler radar to Norman, OK to compare with NSSL radar (Spring).
 - April 10th storm (at Wichita Falls, TX) provided evidence that 5 cm radar had;
 - .. More attenuation;
 - .. More range folding;
 - .. More velocity aliasing.
 - The Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) approved concept document of NEXRAD (July).
 - OFCM established NEXRAD Program Council (NPC) (July).
 - NPC approved formation of Radar Test and Development Branch (RTDB) (Fall).
 - The Congressional Office of Management and Budget (OMB) directed OFCM to conduct a tri-agency crosscut study for NEXRAD (October).
 - The National Oceanic and Atmospheric Administration (NOAA) approved establishing of the Joint System Program Office (JSPO) (November).
- 1980 - NPC approved establishment of Interim Operational Test Facility (IOTF) (forerunner of Operational Support Facility) (OSF).
 - NPC formed NEXRAD Technical Advisory Committee (TAC) (Spring).
 - Congress appropriated first funding (1981) for NEXRAD (October).
- 1981 - RTDB name changed to Interim Operational Test Facility (IOTF).
 - NPC approved Joint Operational Requirements (JOR) (January).
 - NPC approved the NEXRAD Technical Requirements (NTR) (March).
 - NPC and Source Evaluation Board (SEB) approved release of System Definition Phase Request for Proposal (RFP) (July).

NEXRAD/WSR-88D HISTORY

- NEXRAD Research and Development Plan issued (December).

- 1982
 - Fixed price contract awarded to Raytheon Company, Sperry Corporation, and the team of Ford Aerospace and Westinghouse Corporation for concept development (February).
 - Interim Oral Reports conducted on design alternative (NTR, JOR, and optimum) and high cost drivers. Reports indicated JOR and optimum alternative not affordable (May).
 - NPC approved revisions to acquisition strategy to remove Full Scale Development Phase (May).
 - Agency Requirements Team met to review high cost drivers and to trim NTR (July).
 - NPC approved modifications to the NTR to address high cost drivers (July):
 - .. system reliability and maintainability;
 - .. range folding;
 - .. scan sequence;
 - .. clutter suppression.
 - Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)/Doppler Workshop held (September).
 - NPC and SEB approved Validation Phase (September).
 - Validation Phase Request for Proposal (RFP) released (October)
 - System Definition Phase Final Reports submitted by Contractors (November).

- 1983
 - Source Selection Official selected Raytheon and Sperry for Validation Phase contracts (March).
 - Raytheon and Sperry awarded competitive, cost-plus-fixed-fee contracts for Validation Phase (April).
 - Demonstration of Prototype NEXRAD products in operational environment occurred (April-July).
 - Cost-plus-fixed-fee contract for site surveys awarded to SRI International (August).
 - Preliminary site surveys began (August).
 - Preliminary design review completed (October).
 - Boston area NEXRAD demonstration (BAND) began (November).

- 1984
 - Doppler/Lightning (DOPLIGHT) Project began in OKC (April).
 - Contractors conducted risk reduction demonstration of data processing, and display systems and Validation Phase, Part 1 completed (April).
 - Validation Phase Part 2 option exercised (May).
 - NPC approved revision to NTR to include;

NEXRAD/WSR-88D HISTORY

- .. Layer composition products;
- .. Automated alerts;
- .. Radar coded message;
- .. Scan strategy for clear air.
- Contract Modification issued (November).
- Programmatic Environmental Impact Statement published (November).

- 1985 - DOC secretary established independent “Blue Ribbon” panel (Kammer Committee) to review, assess and validate NEXRAD requirements (April).
- Critical Design Reviews completed (May).
- Contract Modification issued for parallel system design and software development for Hydro-Precipitation Pre-processing Subsystem (May).
- BAND report issued (May).
- Development Test and Evaluation began (June).
- In-depth site surveys began (August).
- “Blue Ribbon” panel published findings that NTR was on target (September).

- 1986 - NPC and SEB approved Limited/Full Scale Production RFP (February).
- Preliminary site surveys completed (May).
- Limited/Full Scale Production Proposals received (June).
- Initial Operation Test and Evaluation (IOT&E) Part 1A conducted by US Air Force Test and Evaluation Center (AFOTEC) (August-October).
- Validation Phase contract option to perform First Article upgrade task exercised (December).

- 1987 - DOPLIGHT radar supported operations at OKC (at OUN) (March).
- IOT&E Part 1B conducted April-May).
- Validation Phase completed (June).
- Unisys corporation awarded Limited Production Phase contract (December).

- 1988 - Operational Support Facility established (OSF) (May).
- Unisys Prototype erected at OSF (Winter).

- 1989 - OSF Engineering and Configuration Management staffed to support IOT&E Part 2 (January)
- Unisys conducts first software training class (February - March).
- NEXRAD Training Unit established as part of WFSO Norman (July).
- IOT&E Part 2 conducted (March-August).
- WSR-88D Hotline planning and staffing began (August).
- First System Requirements Evaluation Committee (SREC) meeting held to review and prioritize WSR-88D service reports (September).
- Independent Evaluation Team Meeting held (September-October).

NEXRAD/WSR-88D HISTORY

- NEXRAD System Production Readiness Demonstration occurred (December).
- 1990
 - Exercised option to start Full Scale Production (FSP) (January).
 - OSF Engineering started working with external users to develop communications interfaces.
 - First Limited Production Unit delivered (to OKC) (May).
 - Software Build 5.0 deployment began (Summer).
 - First OPS course taught by UNISYS and NTU (September).
- 1991
 - Tri-agencies entered into comprehensive settlement with Unisys to resolve outstanding contract claims and deficiencies (Spring).
 - Real-time Operational Assessment performed at OKC/OSF (March-April).
 - OSF began its first formal operational assessment of WSR-88D software (Build 5.1B) (July).
 - NEXRAD Training Unit renamed to OTB and became part of OSF (Fall).
 - OSF Operations Course began (September).
 - National Weather Service Training Center (NWSTC) WSR-88D Maintenance Course began (September).
 - WSR-88D Hotline began operations coincident with first system utilization by field sites at Norman, Sterling, and Melbourne (November).
- 1992
 - First Full Scale Production (FSP) unit delivered (to NRC) (July).
 - WSR-88D Hotline began continuous 24x7 operations coincident with first formal government acceptance of field WSR-88D systems (July).
 - Started the conversion from circular polarization to linear polarization for the first six fielded radars (September).
- 1993
 - Tulsa Radar Accepted on Friday and killer tornados hit on Saturday (April).
 - First Micro5/VME system and Software Build 6.0 delivered (to Pittsburgh) (May).
 - Micro5/VME retrofit began (August).
 - OSF released first software with Government changes (Build 5.3) (August).
 - Lightning/grounding retrofit began (October).
 - DOD loaned three radars to FAA for Anchorage, Fairbanks, and Molokai (October - December 94).
- 1994
 - First NWS system commissioned (at OKC) (February).
 - OSF began coding first version of WSR-88D software (Build 8.0) (May).
 - Support Management Responsibility Transfer (SMRT) completed (June).
 - First Federal Aviation Administration (FAA) redundant system delivered to South Kauai (June).
 - First NWS redundant system delivered (to Reno) (July).

NEXRAD/WSR-88D HISTORY

- 1995
 - 100th NEXRAD system accepted by the Government (January).
 - OSF deployed WSR-88D Software Build 8.0 (March).
 - FAA returned the three borrowed DOD radars (Kunsan, Kadena, and Camp Humphreys) (May - August).

- 1996
 - OSF formed a team for the development of ORPG (January).
 - JSPO Began efforts for the installation of three additional systems (Fort Smith, aka Western Arkansas; North Webster, aka Northern Indiana; and Hytop, aka Northeast Alabama (Spring). A result of a DOC Secretary report to Congress (October 1995).
 - OSF deployed WSR-88D Software Build 9.0 (September).

- 1997
 - Last OSF Operations Course taught (April).
 - OSF deployed WSR-88D Software Build 9.1 (RPG) (April).
 - OSF deployed WSR-88D Software Build 9.2 (PUP) (May).
 - Fort Smith Radar installed (August).
 - Contract signed for the installation of a Rotary UPS for each NWS and DOD NEXRAD System (TPMS) (September).
 - First Distance Learning Operations Course taught (September).
 - Hytop radar installed (December).

- 1998
 - North Webster radar installed (March).
 - Tornado strikes NEXRAD tower at Charleston, WV (June).
 - OSF deployed RDA/RPG Remote Access Terminal (June).
 - OSF formed a team for the development of OPUP (August).
 - FAA deployed the Remote Monitoring Subsystem for the FAA WSR-88Ds (September)
 - OSF deployed WSR-88D Software Build 10.0 (October).

- 1999
 - The NWS requested an additional three pedestals (January).
 - OSF distributed Tornado warning guidance related to Build 10.0 and the Tornado Vortex Signature.
 - Modernization/Transition Committee confirmed a requirement for radar at Evansville, IN (June).
 - OSF plan for Evansville, IN installation formalized (August).
 - OSF deployed WSR-88D Software Build 10.1 for FAA sites only (November) (Build 10.2 internal OSF Software Build)

- 2000
 - NEXRAD Contract - Defense Contract Audit Agency completed two final audits. Both parties (Government and Contractor) agreed with results.
 - NEXRAD Contract - The contractor Estimate-at-Completion (EAC) settled.

NEXRAD/WSR-88D HISTORY

- Evansville, IN Interim Radar contract signed (February)
 - Stop Work Order issued for the installation of the Rotary UPS (TPMS) (April).
 - Interim Evansville, IN Radar became operational (April).
 - The contractor made the last delivery - three additional pedestals (June).
 - Received the last of the production line residual materials (June).
 - NWS reorganization resulted in name change -- from NEXRAD Operational Support Facility to the Radar Operations Center (October 8).
 - NWS reorganization resulted in administrative removal of OSF Operations Training Branch Re-designated Warning Decision Training Branch (October).
 - Contract Modification signed for the installation and retrofit of the Rotary UPS with a Static UPS (TPMS) (November).
 - Retrofit of the Rotary UPS with the Static UPS begins (TPMS) (December).
 - NEXRAD Contract closed out (December).
- 2001
- Central Product Collection switches from NIDS to Radar Product Central Collection and Dissemination Service (January).
 - Permanent Evansville, IN Radar RFP issued (May).
 - Restoration of Little Rock, AR – replace Azimuth Bull Gear (May).
 - Catastrophic loss of Radome at Laughlin AFB, TX (May).
 - Severe hail damage to Radome at Denver CO (June).
 - First Open RPG installed at ROC (June).
 - Contract for ORDA project signed (June).
 - Permanent Evansville, IN, Radar contract signed (September).
 - Last TPMS Retrofit site installed (94 total) (September).
 - First new TPMS Site accepted (September).
 - Change of TPMS COTR (November).
 - 50th Open RPG installed at Boston, MA (November).
 - ROC hosts SREC to define ORPG Build 2.0 and preliminary definition for Builds 3.0 and 4.0 (December).
- 2002
- 100th Open RPG installed (Wichita, KS) (March).
 - Build 1.2 S/W for ORPG released (March).
 - ROC hosts SREC to define ORPG Build 3.0 and preliminary definition for Builds 4.0 and 5.0 (April).
 - Change of TPMS COTR (May).
 - Transfer of Keesler AFB, MS, operational radar to NWS from DOD for use at Jackson MS radar move (May).
 - 150th Open RPG installed (Minot, ND) (June).
 - Last Open RPG installed (King Salmon, AK) (188) (July).
 - Third Generation (3G) Cellular Phone Interference Testing (July).
 - Integration of New Science into RPG Build 3.0 (August).
 - AWIPS Build 5.2.2 Interface Certification Testing (August).

NEXRAD/WSR-88D HISTORY

- Restoration of Beale AFB, CA - replace Azimuth Bull Gear (August).
 - ROC Deployed Redundant RDA/RPG Remote Access Terminal (August).
 - Build 10.3 Correction of RDA Attenuator (4A23) Calibration released (September).
 - Build 2.0 (RPG) released (September).
 - Removal of Keesler AFB, MS, radar (September).
 - Cooperative Agreement - between Federal Government and City of Brandon for the Jackson radar relocation site (September).
 - Ground breaking ceremony for the Evansville radar (September).
 - Ground breaking for Weather Center Building in Norman (November).
 - ROC hosts SREC to define ORPG Build 4.0 and preliminary definition for Builds 5.0 and 6.0 (November).
- 2003
- Permanent Evansville, IN Radar operational (January).
 - NWS Plans for Real-Time Level II Data Collection and Distribution Network (January).
 - Reinstall Keesler AFB radar in Jackson/Brandon, MS (February).
 - Software Build 3.0 (RPG) released (March).
 - Remove Jackson, MS radar (April).
 - Reinstall Jackson, MS radar at ROC as a test bed (May).
 - Software Build 4.0 (RPG) released (September).
 - Beta test installation (OPUP), Yokota AB JP, MCAS Futenma JP, and Buckley AFB, CO (November).
 - Restoration of Camp Humphreys, Korea – replace Azimuth Bull Gear (December).
- 2004
- OPUP Deployment begins including 4 AF Large, 3 AF Medium, 35 AF Small, and 35 Navy Small (January).
 - Software Build 5.0 (RPG) released (March).
 - First Frame Relay Communications Link installed Ft. Hood/Ft Worth (March).
 - Software Build 5.0 (OPUP) released (April).
 - ROC hosts SREC to define Build 7.0 (April).
 - Real-Time Level II Data Collection and Distribution Network reaches full operational capability (April).
 - Spiral 2 OPUP Deployment completed (July).
 - Software Build 6.0 (RPG) released (September).
 - Software Build 6.0 (OPUP) released (November).
- 2005
- Software Patch Release 6.1P (RPG) released (January).
 - ROC hosts SREC to define Build 8.0 (January).
 - ROC hosts SREC to define Build 9.0 and preliminary definition for Builds 10.0 through 12.0 (June).

NEXRAD/WSR-88D HISTORY

- Software Build 7.0 (RPG) released (June).
 - Software Build 7.0 (OPUP) released (July).
 - ORDA Maintenance Demonstration (July/August).
 - First ORDA site installed at Norman WFO (August)
 - Last Frame Relay installed Vance/Wichita (August).
 - Emergency OPUP deployment to Keesler AFB, MS for Hurricane Katrina support (September).
- 2006
- Additional OPUP Deployment (56) begins (January).
 - 50th ORDA site installed (Nashville, TN) (March).
 - Software Build 8.0 (OPUP) released (March).
 - Restoration of Eglin AFB, FL – replace Elevation Bull Gear (April).
 - Software Build 8.0 (ORDA/RPG) released (May).
 - 100th ORDA site installed (Cincinnati, OH) (May).
 - Radar Engineering Team moves to old Armory – starts ROC consolidation (September).
 - Weather Center Building in Norman commissioned (September).
 - System Documentation Team moves to old WFO space (October).
 - Last ORDA installed (Middleton Island, AK) (October).
- 2007
- Software Build 9.0 (ORDA & RPG) released (June).
 - Software Build 9.0 (OPUP) released (June).
 - First RPG Re-host deployed (June).
 - Restoration of Philadelphia (Mt Holly), PA – replace Azimuth Bull Gear (June).
 - Dual Polarization contract signed (September).
 - National Symposium on Multifunction Phased Array Radar (October).
 - The rest of Program and Engineering Branches move to old NSSL building (November).
 - Build 9.1 deployed (November).
 - Camp Humphrey radar relocation completed (November).
 - Last RPG Re-host deployed (December).
- 2008
- Restoration of Dover AFB, DE – replace Azimuth Bull Gear (January).
 - Relocated DoD training assets to a new location on Keesler AFB (March).
 - Software Build 10.0 (ORDA & RPG) released (May).
 - Restoration of New Braunfels (Austin/San Antonio), TX – replace Azimuth Bull Gear (May).
 - Software Build 10.0 (OPUP) released (June).
 - Sterling, VA radar relocation, due to runway expansion, completed (June).
 - Restoration of Missoula, MT – replace Azimuth Bull Gear (May).
 - Old Sterling pedestal refurbishment – replace Azimuth Bull Gear in preparation for the Evansville installation (June).

NEXRAD/WSR-88D HISTORY

- Restoration of Fort Rucker, AL – replace Azimuth Bull Gear (July).
 - Dual Polarization Critical Design Review held (October).
 - Old Sterling LPP system was relocated to Evansville, IN to replace the commercial EEC radar (November).
 - ROC collaborated with OST to initiate public distribution of TDWR/SPG products (November).
 - NEXRAD received 3 year Security Authorization to Operate (ATO) at the moderate risk level (December).
 - Catastrophic loss of Radome at Reno, NV; recovery effort started (December).
- 2009
- Reno, NV recovery effort completed and site restored to operation (February).
 - Initiated TDWR/SPG product data distribution and archive (February).
 - Based on FY09 appropriation for initial funding to add a weather radar along the Washington State coast, the ROC began project and acquisition planning to install a new radar (March).
 - Software Build 11.0 (RDA & RPG) released (May).
 - Dual Pol contractor modified NSSL Radar (KOUN) for Dual Pol testing (June).
 - Software Build 11.1 (RDA) released (June).
 - ESS/EA for Washington State Coast radar completed (July).
 - Software Build 11.1 (RPG) released (September).
 - Software Build 11.2 (RDA/RPG) released (November).
 - 2010 Consolidated Appropriations Act signed, contained funding for Washington Coast radar installation (December).
- 2010
- Software Build 11.0 (OPUP) released (January).
 - Software Build 11.2 (OPUP) released (January).
 - National Level II Initial Release (January).
 - Software Build 11.3 (RDA/RPG) released (February).
 - Software Build 3.2 (TDWR/SPG) released (February).
 - Initiated project for new Washington Radar (March).
 - Software Build 11.4 (RDA) released (April).
 - Software Build 3.3 (TDWR/SPG) released (April).
 - Dual Polarization System Test Readiness Review held (May).
 - Software Build 3.4 (TDWR/SPG) released (July).
 - Software Build 12.0 (RPG) released (August).
 - Software Build 11.5 (RDA) released (August).
 - Software Build 3.5 (TDWR/SPG) released (August).
 - Conducted Operational Assessment of Dual Pol data (August).
 - Dual Polarization Operational Test Readiness Review held (September).
 - DoD transferred two Keesler Maintenance Training assets to NWS. One was utilized for the new Western WA radar (KLGX) and the other was added to the ROC Test Bed (October).

NEXRAD/WSR-88D HISTORY

- Retrofit of RVP8 (Dual Pol Requirement) (October).
 - Installation of Pedestal Maintenance Hatch Toe Boards (Safety enhancement) (October).
 - Retrofit of Filament Power Supply (Dual Pol Requirement) (November).
 - Software Build 11.6 (RDA) released (November).
 - Software Build 12.1 (RPG) released (November).
 - Fielding of Ladder Stability Device (Safety enhancement) (November).
 - National Level II Initial Software Update 1.1 Released (November).
 - Dual Polarization Maintenance Demonstration #1 Conducted (December).
- 2011
- Software Build 3.6 (SPG) released (January).
 - Lease for Washington State Coast radar (KLGX) site completed (February).
 - First Dual Polarization site (Vance AFB) installed (February).
 - Software Build 1.2 (National Level II) released (March).
 - Dual Polarization Maintenance Demonstration #2 Conducted (April).
 - Restoration of Chicago, IL – replace Azimuth Bull Gear (April).
 - Software Build 12.0, Digital OPUP released (April).
 - Dual Polarization Beta Test Readiness Review held (May).
 - First Dual Polarization Beta Site accepted, Phoenix, AZ (May).
 - Okinawa radar hit by Hurricane, destroyed antenna and radome (May).
 - Software Build 12.2 (RPG) released (May).
 - Software Build 11.7 (RDA, all legacy sites) (May).
 - Software Build 12.1 OPUP) released (July).
 - Software Build 2.0 (National Level II) released (July).
 - Software Build 3.7 (SPG) released (July).
 - San Juan, PR replaced RMG with Static UPS (July).
 - Software Build 12.0 (RDA, Dual Polarization) (August).
 - Dual Polarization Deployment Readiness Review (September).
 - Langley Hill, WA (KLGX) installed with Dual Polarization (September).
 - Portland, OR (KRTX) dual Polarization system installed (September).
 - KLGX Dedication Ceremony: Sen Cantwell, Rep Dicks, Dr Hays and other dignitaries attended (September).
 - Restoration of King Salmon, AK – replace Azimuth Bull Gear (October).
 - Software Build 12.3 (RPG) released (October).
 - Software Build 11.8 (RDA) released (October).
 - Lower Elevation Test Started (November).
 - Software Build 2.1 (National Level II) released (November).
 - Kenai, AK replaced RMG with Static UPS (December).
- 2012
- Frame-Relay circuit upgrades for FAA Alaska radars to NWS WFOs, released (January).

NEXRAD/WSR-88D HISTORY

- Coordinated 1st signed wind farm Operational Curtailment agreement (Letter of Intent) between a WFO and a wind farm (Feb)
- SPG Software Build 4.0 released (February).
- Software Build 13.0 (OPUP) released (March).
- Software Build 11.9 (RDA) released (April).
- Software Build 13.0 (RPG) released (April).
- RDA software preparations for DP (April).
- Software Build 12.3 (RDA) released (April).
- RPG procedures to support DP for RDA Build 12.3 released (April).
- Software Build 13.1 and convert medium OPUP to Large OPUP, released (April).
- Software Build 2.4 (National Level II) released (May).
- RPG files to support RDA Build 13.0, released (June).
- Software Build 13.0 (RDA) released (June).
- SPG Software Update 4.1 released (July)
- 1000th wind farm analysis completed since starting them in 2008 (August)
- Software update 11.10 (RDA) released (September).
- RDA Laptop software 1.3 released (September).
- Software update 1.6 (level I) released (September).
- Software update 2.5 (Level II) released (September).
- Coordinated 1st signed wind farm data sharing agreement between an individual wind farm and a WFO (Oct)
- Restoration of Brookhaven, NY – replace Azimuth/Elevation Bull Gears (November).
- Software update 2.6 (Level II) released (December).