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Operations Division

Systems Maintenance, NWSPD 30-21

SYSTEMS MAINTENANCE MANAGEMENT

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SUMMARY OF REVISIONS: This directive supersedes NWSI 30-2101, "*Systems Maintenance Management*," dated July 25, 2005. The title of the division was updated to "Operations" Division. Added "Reference" paragraphs, and changed the names in "OPR," "Certified by," and "Director" entries.

Signed November 30, 2009

Dominic Bosco for Mark S. Paese Date

Director, Office of Operational Systems

Systems Maintenance Management

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1 Introduction

This instruction outlines operating procedures for systems and equipment maintenance to achieve maximum responsiveness to the missions of the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS). Field maintenance organizational boundaries normally coincide with Weather Forecast Office (WFO) and County Warning Area (CWA) operations. Maintenance effectiveness may require variations in work loads, equipment distribution, or geographic constraints. The Regional Director (RD) may authorize deviations on a case-by-case basis.

2 Scope

Maintenance requirements apply to NWS operational, administrative, and telecommunications systems and equipment. Operational systems and equipment include nationally supported

computer-based [e.g., Advanced Weather Interactive Processing System (AWIPS)], electronic/electrical, electro-mechanical, and instrumental systems and equipment, and encompass systems administration and operational administrative software support. Administrative and telecommunications systems and equipment, including local and wide area networks, and regional-specific equipment are regionally supported.

3 General Instructions

The wide dispersion of NWS operations and maintenance activities requires the following established policy and procedural directives. However, when an emergency exists, it may be necessary to take temporary actions deviating from normal operating procedures. In those instances, the Chief, Systems Operations Division (SOD), or designee, will be notified as soon as possible of any deviations. The system/equipment will be restored to official configuration as soon as possible after normal operations are restored. General instructions are found in the following paragraphs. These general instructions are supplemented by program specific instructions.

3.1 Work Assignment Plans

The Electronics Systems Analyst (ESA) will prepare plans covering maintenance responsibilities for each member of the electronics maintenance staff. The ESA will provide a copy of the current integrated work assignment plan to the Meteorologist-In-Charge (MIC). Each plan will indicate specific primary and backup Electronics Technician (ET) maintenance assignments at local and remote locations including monitoring sites maintained by contract.

3.2 Maintenance Priorities

1. The MIC, in consultation with the ESA, will assign priorities for corrective and emergency maintenance within the CWA. Coordination with the Hydrologist-In-Charge (HIC) is required at collocated WFO/River Forecast Center (RFC) offices.
2. If corrective or emergency maintenance within the CWA cannot be completed within a reasonable time, the ESA will notify the Regional Headquarters (RH) Regional Maintenance Specialist (RMS) and/or Electronics Program Manager (EPM) of the status. Decisions regarding further activity and/or assistance will be made as required.
3. If a critical system or equipment becomes inoperative or partially inoperative, and remedial action will be delayed, the ESA will promptly report the outage and its extent to the EPM and/or other SOD staff. This action is also important where extended outage time will result from a lack of spare parts or other resources.

3.3 Call-Back Procedure

When critical operational equipment becomes inoperative as determined by the MIC/HIC/Official-In-Charge (OIC), emergency repairs and additional resources (e.g., additional staff, compensatory time, compensated overtime) may be requested and authorized, as necessary, to restore the equipment to service. If an ESA/ET is unavailable for call-back, or the ESA/ET cannot restore the equipment to service, the MIC, ESA, or designee, will request assistance through the RMS and/or EPM. The MIC, ESA, or designee, may also directly request assistance from a neighboring office.

3.4 Remote Assistance

Occasionally, a field ET may require assistance to resolve equipment problems such as persistent

or intermittent malfunctions. In such instances, the ET will request help through the ESA or designee. Refer to regional directives for specific procedures.

3.5 Frequency of Preventive Maintenance

The frequency of preventive maintenance will be as specified in maintenance schedules or other policy issuances. All ETs will report systems or equipment requiring excessive maintenance to RH through the ESA.

3.6 Suspension of Field Electronics Maintenance Activities

Field electronics maintenance activities will be suspended during specified time periods and for designated geographic locations as described below. All operational systems including Automated Surface Observing System (ASOS), Weather Surveillance Radar-1988 Doppler (WSR-88D), and Advanced Weather Interactive Processing System (AWIPS) will be affected by the curtailment.

3.6.1 Critical Weather Day

No system or equipment modifications will be performed during a time designated as a Critical Weather Day (CWD). Restrictions are limited to the County Warning Areas covered by the geographic designation of the subject CWD. Notification of a CWD will be issued through the MIC or designee within each WFO.

3.6.2 Maintenance Moratorium Periods

No system or equipment modifications will be performed on any system or equipment during Thanksgiving and Christmas Maintenance Moratorium Periods. The Thanksgiving Maintenance Moratorium Period starts at 12:01 A.M. local time Tuesday prior to Thanksgiving Day and ends at 11:59 P.M. local time Sunday after Thanksgiving Day. The Christmas holiday Maintenance Moratorium Period starts at 12:01 A.M. local time December 22nd and ends at 11:59 P.M. local time January 2nd. Maintenance moratoriums maybe extended as requested by other government agencies. Notification of extensions will be issued by NWS Headquarters (WSH).

3.7 Supply Support

The National Logistics Support Center (NLSC) provides supply support for NWS nationally supported systems and equipment. The NLSC also maintains supplies of technical items, technical forms, and publications. Items not unique to NWS are available from General Services Administration supply service and other sources. The NWS is the designated primary inventory control authority for some programs (e.g., WSR-88D). Field offices maintain other stocks of certain items. NWS Manual 30-3101, *Supply Manual* lists items stocked at NLSC. Items in NWSM 30-3101 are requisitioned through the Consolidated Logistics System. Many stock items are designated as repairable. Timely return of defective repairable items to the National Reconditioning Center (NRC) helps ensure continued availability of these items. Detailed instructions on the use of the logistics system are found in NWSM 30-3101, and may be supplemented by regional instructions. The following principles will be observed:

1. Use Government supply sources in preference to commercial sources.
2. Realistically set priority of orders. Unwarranted setting of high priorities degrades the response of the supply support system for all users and unnecessarily increases costs.

3. Control ordering to ensure compliance with agency instructions. Supply organizations cannot exercise this control; user personnel within NWS organizations must exercise this control.
4. In emergencies, when restoration of equipment is paramount, responsible individuals will obtain essential supplies through the EPM/RMS when authorized purchase/order limits are exceeded.
5. Promptly return defective repairable parts to the NRC or elsewhere as directed by WSH or RH managers.
6. ESAs will exercise control over the supply functions of the ETs. This control includes review of on-site spares, prompt return of repairable and unauthorized items, and compliance with prescribed ordering procedures.

3.8 Maintenance Reporting

Maintenance reporting is accomplished through the Engineering Management Reporting System (EMRS). EMRS is the primary source for reliability and maintainability data for NWS systems and equipment. All field offices will use EMRS to document maintenance activities following NWS Instruction 30-2104, *Maintenance Data Documentation* guidance.

3.9 Outage Reporting

All field offices will report outages following NWSI 30-2112, *Reporting Systems, Equipment, and Communication Outages*.

3.10 Hydrological Equipment

Maintenance of hydrological equipment may present unusual conditions (e.g., remote or relatively inaccessible installations, shared maintenance responsibility with other agencies, contractual maintenance agreements). ETs are responsible for maintaining all authorized NWS electronic and electro-mechanical hydrological equipment having NWS telemetry adjuncts. Operations personnel with cooperative program management functions are responsible for the maintenance of precipitation recorders without telemetry adjuncts.

3.11 Split Responsibility

When maintenance is split between the NWS and other agencies or contractors, the NWS ETs are responsible for all NWS-owned equipment or adjuncts. NWS Policy Directives and Instructions or contractual agreements define the point of demarcation for interface activities. Maintenance and/or contract maintenance coordination activities performed by the maintenance staff will be reported through EMRS, following NWS Instruction 30-2104 guidance.

3.12 Contract Maintenance Monitoring

In addition to performance of maintenance and systems administration duties, ESAs and ETs will monitor and report, as required, maintenance performed by contractors. Examples of contract maintenance include AWIPS and NOAA Weather Radio (NWR) maintenance.

3.13 Unauthorized Maintenance and Modification

Before an ESA assigns maintenance responsibilities for equipment to an ET, the ET must be qualified through on-the-job training or other evaluation procedures giving the ESA an expectation of safe and effective work. WFO operations personnel will not attempt repairs or adjustments unless they have received instruction from an authorized NWS maintenance

representative. NWS ETs will not maintain equipment or systems not officially assigned unless approved by the RH, including equipment provided by other agencies for special purposes and equipment from Government surplus. Unauthorized modifications (electronic or structural) or "field engineering" will not be attempted on WSH-supported systems/equipment.

A change request must be approved before any change can be made to systems under NWS configuration management. However, ESAs and RH may authorize temporary modifications to restore critical system operation in an emergency. After the emergency, the system will be restored to its original configuration. Each ESA will ensure all systems remain standardized under NWS policy and prescribed configuration.

Regions are responsible for equipment they purchase (with the approval of WSH) for special programs, and will cover it by specific regional supplemental directives. Each ESA will ensure all equipment approved for maintenance is added to the site's equipment inventory listing. The RD, who implements regional initiatives, is responsible for providing maintenance resources including funding for augmented staffing needs.

3.14 Non-Government Equipment

NWS employees will not assume electronic maintenance of leased equipment unless approved by the region. Where such maintenance is authorized, it will be as described in the equipment lease. If there are parts or assemblies in leased systems identical to those owned by the NWS, ETs will not use NWS-owned parts in leased equipment unless explicitly authorized by the Operations Division (OPS1). Non-government entities may install equipment on NWS premises and/or connect to NWS systems/equipment only under the following conditions:

1. The region has an approved written agreement between the non-government entity and the region or the affected site including an approved detailed installation plan or Installation Control Document (ICD).
2. The non-government entity installs/connects such equipment under the overview of the responsible NWS ESA/ET on a non-interference basis.
3. NWS ETs will not maintain or adjust such equipment except upon written authorization by the RD.

3.15 Non-Government Maintenance

Local site personnel will enter NWS equipment maintained by contractor(s) in the site's EMRS equipment inventory listing. The MIC will ensure appropriate use of WS Form A-26, Maintenance Record.

3.16 Facilities Maintenance

Some facilities related work is performed by electronics staff as a normal part of their duties. The electronics staff will timely and accurately report through EMRS facilities maintenance work performed.

4 References

The following references contain greater detail:

NWS Policy Directive 30-13, *Quality Assurance/Control*, defines Quality Assurance Program.

NWSPD 30-21, *Maintenance, Logistics, and Facilities Systems Maintenance,* defines the Maintenance Program.

NWS Instruction 30-2104, *Maintenance Data Documentation*, defines and assigns responsibility for the origination, completion, distribution, and retention of Maintenance Record, WS Form A-26.

NWS Instruction 30-2112, *Reporting Systems, Equipment, and Communication Outages*, defines and assigns responsibility for reporting outages.

NWS Policy Directive 30-22, *Technical Orders (TO)*, defines technical policy and procedures documentation.

NWS Manual, 30-3101, *Supply Manual*, [formerly Engineering Handbook 1 (EHB-1), *Instrumental Equipment Catalog*] lists items stocked at NLSC.

NWSI 3102, *Integrated Logistics Support Planning*, defines system life cycle planning.

NWS Policy Directive 50-11, *Occupational Safety and Health*, contains safety and health policy and guidance.

APPENDIX A - Maintenance Definitions

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1 Computer-Based Systems and Equipment

Any system or equipment incorporating one or more microprocessors in the design and utilizing software/firmware algorithms to perform required tasks. Examples include operational, administrative management, and communications systems and equipment.

2 Electronic System

Any system or device using the principles of physical electronics to acquire/process information (e.g., sensing, sampling and applying estimates to atmospheric parameters, digital processing, and communication/transmission of information).

3 Electro-mechanical and Mechanical Equipment

Any device using electrical energy to produce mechanical movement or any device using mechanical movement to produce an electrical signal. They include non-electronic instruments and recorders.

4 Data Collection Equipment

Any system or device directly sensing, measuring, telemetering, or recording environmental data.

5 Maintenance

The installation, activation, calibration, prevention, correction, modification, deactivation, or disposal work, including reporting, necessary to keep systems or equipment in proper working condition. There are two types of maintenance: routine (preventive) and non-routine. The reporting of maintenance activities will follow the guidance provided in NWS Instruction 30-2104, Maintenance Data Documentation.

5.1 Routine (Preventive) Maintenance

Maintenance actions performed on equipment to ensure continued operation within the prescribed capabilities or to minimize failure probability. Routine maintenance is scheduled, planned, or periodic preventive maintenance actions. Examples include the inspection of

equipment, systems administration, lubrication, interchanging spare subassemblies, calibration, testing to assure specific performance, and condition monitoring.

5.2 Non-routine Maintenance

Non-routine maintenance includes system or equipment corrective and emergency maintenance, system/equipment modification, pre-planned improvements (P^2I), and system/equipment activation, deactivation, and disposal tasks.

5.3 Corrective and Emergency Maintenance

Corrective maintenance is remedial action to correct failure(s) and restore system/equipment operation to prescribed capabilities and tolerances. This maintenance includes unplanned or non-periodic repairs or systems administration performed as a result of evidence indicating a failure occurred or is imminent (e.g., abnormal bearing noises, equipment overheating, and unusual odors). Emergency maintenance is necessary or crisis actions are required to restore systems or equipment operation when failure to do so can have a negative effect upon NWS operations, endanger life, the environment, or property.

5.4 Modification and Pre-Planned Improvements (P2I)

Modifications and P^2I actions are approved hardware and/or software changes required to improve/extend systems or equipment operations/life or to satisfy new requirements.

5.5 Activation, Deactivation, and Disposal

These are approved actions taken to place the system or equipment into a state of activation or deactivation, respectively.

System/equipment disposal is an action taken to facilitate the removal of a decommissioned system/equipment component from the NWS property inventory. This action may require restoration of the site to a condition agreed to by all appropriate parties. Activation and deactivation tasks will be performed using national and regional policies and plans. Disposal tasks will be completed in accordance with General Services Administration, Department of Commerce, National Oceanic and Atmospheric Administration, Office of Finance/ Administrative Service Center, national, and regional guidance.

6 Systems Administration

Activities related to managing software operating systems and overseeing systems performance including managing user access and privileges, configuring devices, making backups, training users, managing system security, installing approved operating system software changes, and resolving fault isolation issues (e.g., software vs. hardware failures).

APPENDIX B - Systems Maintenance Organization

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1 Systems Maintenance Organization and Responsibilities

National and regional headquarters (RH), WFO Meteorologists-In-Charge (MIC) and Electronic Systems Analysts (ESA) manage the maintenance program. Coordination, guidance, and uniformity are important to ensure data compatibility in observational networks; reduce cost and equipment downtime; and ensure an effective, safe, and secure maintenance program. Regional headquarters through the Systems Operations Division (SOD) assure maintenance programs are carried out and reported through EMRS, and maintenance activities are accomplished by performing periodic engineering quality program reviews of assigned sites following the guidance in NWS Policy Directive 30-13, *Quality Assurance/Control*.

1.1 National Weather Service Headquarters (WSH), Operations Division

1. Determines national engineering policies and standards.
2. Prepares and monitors staffing plans and budgets.
3. Provides systems life cycle Integrated Logistic Support (ILS) planning including the following elements: field- and depot-level maintenance, maintenance training, supply support, facilities engineering, technical data including documentation, transition planning, support and test equipment (including calibration); performs system analyses and recommends replacements for all nationally supported systems and equipment. For more

complete information, see NWS Instruction 30-3102, Integrated *Logistics Support Planning*.

4. Provides guidance to the maintenance management team consisting of senior WSH and regional managers.
5. Prepares specifications and procurement documentation; evaluates technical proposals; and monitors national contracts for equipment, systems, and support services.
6. Establishes standards and procedures for installation, systems administration, maintenance, repair, calibration, modification, quality control, and reporting on equipment and systems; and ensures agreement of documentation with interagency/organizational memorandum of agreement/understanding.
7. Manages engineering modification development and implementation processes to maintain or improve systems operations, or to satisfy new requirements.
8. Establishes technical training goals, policies, and requirements.
9. Coordinates remote centralized systems and equipment depot repair planning.
10. Provides assistance for complex technical problems.
11. Develops and promulgates maintenance reporting policy through NWS Policy Directive 30-21, *Maintenance, Logistics, and Facilities Systems Maintenance*.
12. Manages and operates the National Reconditioning Center (NRC) located in Kansas City, Missouri.
13. Develops and maintains electronics maintenance work load models and forecasts end-state electronics maintenance program resource needs.
14. Develops, maintains, and administers the EMRS as the primary data source for systems/equipment reliability analyses and maintenance work load forecasting.

1.2 Regional Headquarters (RH)

1.2.1 Regional Director (RD)

Within each NWS region, the RD is responsible for the systems maintenance program. The RD may delegate management authority of this program to the Chief, Systems Operations Division (SOD).

1.2.2 Systems Operations Division (SOD)

The SOD provides management, strategic planning, and direction for the integration, implementation, operation, support, quality control, and safe operation of national operational and regional administrative and telecommunications systems and equipment. These responsibilities include system/equipment installation, system administration, and equipment maintenance. The SOD chief ensures that regional operational procedures and programs are developed, as necessary.

1.2.3 Systems Integration Branch (SIB)

The SIB is under the supervision of the Chief, SOD. The SIB chief or SOD chief designee provides management support and recommends policies for integration, use, operation, administration, and maintenance of computer-based systems, electronic, electro-mechanical, meteorological, and hydrological weather systems and equipment to staff at field, regional, and national levels. The SIB chief or SOD chief designee ensures that regional operational and safety procedures and programs are implemented.

1.2.4 Electronics Program Manager (EPM)

The EPM, under the supervision of the SIB chief or other SOD chief designee, provides management support and recommends policies for integration, use, operation, administration, and maintenance of computer-based, electronic, electro-mechanical, meteorological, and hydrological weather systems and equipment to staff at field, regional, and national levels. The EPM also performs the following functions:

1. Manages the installation, activation, modification, deactivation, maintenance, and systems administration of operational systems and equipment.
2. Coordinates resource allocation and implementation plans and procedures for maintaining systems on a routine and emergency basis.
3. Implements and ensures adherence to national and regional maintenance policies and directives.
4. Oversees the regional engineering quality program for electronic systems, and periodically provides reports to regional and WSH managers.
5. Determines regional electronics training needs, coordinates with WFO and regional management, and schedules personnel for training; ensures that regional personnel are trained to meet program requirements.
6. Provides technical and functional direction and support to regional electronics personnel.
7. Provides technical and programmatic consultation, guidance, and leadership to field staff, regional, and national officials regarding the maintenance program.
8. Performs as liaison and coordinates programs, plans, and policies with WSH, other Federal agencies, state and local officials, contractors, and suppliers.
9. Authorizes temporary modifications or deviation from established procedures in emergencies. Recommends to WSH changes to equipment or procedures for increased reliability, improved systems performance, or more efficient use of resources.
10. Acts as the Contracting Officer's Representative (COR) for regional maintenance contracts. The EPM may act as assistant COR on national contracts.

1.2.5 Regional Maintenance Specialist (RMS)

The RMS supports field efforts and is responsible for reviewing quality assurance programs of systems or activities as described in NWS Policy Directive 30-13. The RMS is often stationed at a separate location (e.g., WFO). The RMS performs electronics maintenance, quality assurance, systems administration, systems implementation, and contract administration, as assigned. The RMS:

1. Conducts systems quality assurance program oversight for assigned offices including the National Test Equipment Calibration Program.
2. Serves as a technical expert, advisor, and consultant to the RH and sites on maintenance problems, issues, change recommendations, and equipment modifications for designated NWS system(s) or equipment.
3. Performs and reports on quality program reviews as recommended in NWS Policy Directive 30-13; verifies that electronic systems and equipment are regularly calibrated and operate in accordance with established standards; checks to ensure that preventive maintenance is being accomplished and reported.
4. Coordinates engineering program quality review findings with regional managers and advises MICs and ESAs of these findings.

5. Coordinates field implementation of complex new systems and modifications to existing equipment within the assigned WFO areas.
6. Serves, as required, as the COR and/or technical monitor for assigned contracts [e.g., National Oceanic and Atmospheric Administration (NOAA) Weather Radio Program].
7. Monitors the condition of NWS equipment/systems and makes recommendations for replacement or major rehabilitation of systems or equipment.
8. Provides technical and/or management support on complex facilities maintenance tasks when required.

1.2.6 Area Electronics Supervisor (AES)

The Alaska and Pacific Regions continue to have AES positions. Under the supervision of the SIB chief or other SOD chief designee, the AES:

1. Manages assigned maintenance program day-to-day activities; provides routine supervision, technical direction, and safety assurance to assigned ETs.
2. Coordinates and participates in maintenance activities on assigned systems and equipment.
3. Ensures WSH and regional electronics maintenance program policies, procedures, and programs are followed.
4. Conducts quality reviews and evaluates ETs effectiveness in meeting established performance standards; ensures quality assurance reviews are conducted following NWS Policy Directive 30-13 guidance and findings are reported to regional managers.
5. Prepares and updates work assignment plans for each assigned ET following national and regional directives; ensures that each ET has a current performance plan.
6. Develops and maintains individual training plans for assigned ETs; recommends ETs for training; encourages professional development; and ensures that each ET completes mandatory training courses.
7. Ensures logistics and proper sparing of parts for assigned systems and equipment.
8. Ensures timely and accurate WS Forms A-26, Maintenance Record, data are entered into EMRS for maintenance work performed as prescribed by NWS Instruction 30-2104, *Maintenance Data Documentation*; evaluates and analyzes maintenance reports submitted into EMRS and reports to SIB chief or other SOD chief designee on area deficiencies.
9. Verifies that all assigned operational systems and equipment are regularly calibrated and are operating within established standards.
10. Activates, deactivates, and modifies systems and equipment under approved directives.
11. Supports strategic maintenance planning and direction for the assigned program.

1.3 Weather Forecast Office (WFO).

1.3.1 Meteorologist-In-Charge (MIC)

The MIC is the WFO station manager. In cases of a collocated WFO/River Forecast Centers (RFC), WFO electronics maintenance program management responsibilities and electronics staff oversight lie with the WFO MIC. The setting of maintenance priorities and requirements for the RFC lies with the Hydrologist-In-Charge (HIC). The maintenance responsibilities of the office are coordinated between the MIC and HIC. Maintenance conflicts between the MIC and the HIC are resolved using established regional procedures. The MIC:

1. Manages the WFO systems maintenance program, including supervision of the ESA and ETs in an effective, safe, and secure manner.

2. Establishes equipment restoration priorities (in coordination with the HIC at collocated offices), and ensures that subordinate staff are aware of these priorities.
3. Ensures that a Maintenance Record, WS Form A-26, is originated by the operations staff for each equipment malfunction occurring within the WFO County Warning Area (CWA) responsibility. In cases of collocated WFO/RFC, the responsibility lies with the MIC at the WFO and the HIC at the RFC.
4. Ensures timely and accurate completion and submission of WS Form A-26, Maintenance Record, for maintenance work performed following NWS Instruction 30-2104.
5. Institutes a local site process that keeps the maintenance staff informed of equipment and system malfunctions. In cases of collocated WFO/RFC, the responsibility lies with the MIC at the WFO and the HIC at the RFC.
6. Serves as the first level supervisor for the ESA and second level supervisor for the office's ETs.

1.3.2 Electronic Systems Analyst (ESA)

The ESA, under the supervision of the MIC, is the office systems administrator for assigned national, regional, and local operational systems and is also the supervisor of the office's ETs. The ESA is responsible for effective, safe, and secure maintenance program management of complex Government electronic systems and equipment within the assigned CWA. At collocated offices, the MIC evaluates the ESA's performance with input from the HIC. The ESA:

1. Performs and oversees systems administration and management functions on assigned computer-based systems [e.g., Advanced Weather Interactive Processing System (AWIPS)]; participates with the appropriate WFO and RFC staff in systems problem solving.
2. Provides routine supervision and technical direction to ETs at the assigned WFO and RFC; provides electronics maintenance program strategic planning and direction for the assigned office.
3. Manages and performs maintenance on electronics systems and equipment; coordinates and participates in the accomplishments of maintenance on assigned systems and equipment; ensures that WSH and regional electronics maintenance program policies, procedures, programs, and safety aspects are followed, including the reporting of maintenance activities prescribed in NWS Policy Directive 30-21; coordinates with agency and contractor personnel in investigating and isolating systems malfunctions.
4. Verifies that all operational systems and equipment are regularly calibrated and operating within established standards; conducts quality reviews and reviews ET effectiveness in meeting established performance standards and monitoring systems maintained by contractors.
5. Provides liaison among regional SOD technical staff and adjacent WFO MICs, ESAs, ETs, government agencies, contractors, and cooperators within the assigned CWA; supports working relationships with neighboring WFO MICs and ESAs to assist in interoffice maintenance backup plans.
6. Activates, deactivates, and modifies systems and equipment under approved directives.
7. Manages and ensures logistics and proper sparing of parts for assigned systems and equipment; ensures that timely and accurate WS Forms A-26, Maintenance Record, data are entered into EMRS as prescribed by NWSI 30-2104; evaluates and analyzes maintenance reports submitted into EMRS; and reports to the MIC/HIC/EPM/RMS on area deficiencies.

8. Prepares and updates work assignment plans for each assigned ET following national and regional directives; ensures that each assigned ET has current performance and development plans.
9. Develops and maintains training plans for ETs; recommends ETs for training to the EPM to improve the performance of official duties; encourages professional development of the ETs; and ensures each ET completes mandatory training courses.
10. Coordinates, manages, validates, and records all configuration changes (e.g., Modifications, Requests for Change, Maintenance Notes) to assigned systems performed by government and/or contractor personnel; ensures accountability for the coordination, management, validation, completion, and EMRS submission of each configuration change.

1.3.3 Electronics Technician (ET)

The ETs are under the direct supervision of the ESA. The ET:

1. Performs assigned integrated maintenance activities including modification, preventive, corrective, emergency, systems administration, and reporting on an array of systems and equipment [e.g., WSR-88D, Upper Air, ASOS, computer-based systems] at the designated station and other specified locations in a safe manner. ESAs assign work of increasing complexity to ETs as they gain experience and demonstrate proficiency.
2. Enters and submits timely and accurate WS Forms A-26, Maintenance Record, into EMRS for maintenance work performed as prescribed by NWSI 30-2104.
3. The assigned GS-12 ET at a combined WFO/RFC performs more complex duties and assignments.

1.4 River Forecast Center (RFC). The HIC at an RFC

1. Coordinates with the WFO MIC to set priorities of local and remote (e.g., rain gages in multiple CWAs) corrective and emergency maintenance needs. In emergencies, requests call-back of the ESA/ET through the WFO senior forecaster.
2. Informs the MIC on local and remote equipment operations and on the performance of the ET.
3. Includes the ESA in team meetings potentially impacting systems administration and maintenance activities.

2 Maintenance Program Functional Relationships

The Operations Division performs staff functions within WSH. Acting with authority delegated by the Assistant Administrator for Weather Services, it provides direction, assistance, resources, and other support to the NWS regions. The regional SODs perform a similar staff function for the WFOs, acting with authority delegated by the RDs. At collocated WFO/RFC locations, the MIC ensures RFC systems administration and equipment maintenance requirements are met. The ESA is part of the WFO management team acting with authority delegated from the MIC. The ESA is the first level supervisor of the assigned ETs. ETs carry out the assigned maintenance program responding to the maintenance needs of the operations they support.

RDs document any additional definitions of working relationships through issuance of regional supplements to procedural directives. One copy of each supplement will be forwarded to the Chief, Operations Division and to the Chief, Maintenance Branch.

2.1 RMS to MIC

Following NWS Policy Directive 30-13 guidance and in coordination with the EPM, the RMS provides guidance and technical assistance to WFO MICs, ESAs, and ETs in connection with systems and equipment maintenance activities to ensure that they conform to technical standards established by WSH and RH.

2.2 RMS to Chief, SIB

The RMS is typically under the administrative and technical supervision of the Chief, SIB, or other SOD chief designee (e.g., EPM). Following regional guidance, the RMS is responsible for coordinating work plans and activities with the immediate supervisor. Difficult problems concerning maintenance projects will be reported to the Chief, SOD for assistance and resolution.

2.3 ESA to MIC

The ESA will meet with the MIC to discuss the scope of work to be accomplished, and those activities that affect, or have the potential of affecting, ongoing programs. The MIC, or designee, will inform the ESA concerning deficiencies in assigned systems or equipment.

Any action by the ESA that could result in degraded systems or equipment operation will be coordinated with the MIC who is responsible for fulfilling the WFO's mission. The MIC/ESA will coordinate with the HIC at collocated offices if there is an RFC impact. It is the responsibility of the ESA and ETs to advise the MIC on the following:

1. **Operational Limitations**. Operational limitations, if any, of systems or equipment in need of maintenance.
2. **Additional Damage**. Possible additional damage or failures that could result from continued use of the systems or equipment.
3. **Time Factor**. Forecasted downtime to accomplish maintenance and systems administration work.

3 Centralized Assistance

3.1 ASOS Operations and Monitoring Center (AOMC)

The AOMC provides around-the-clock operations, monitoring, and maintenance support for ASOS. These monitoring and maintenance tasks include acting as the single point-of-contact (POC) for ASOS maintenance status; providing near real-time monitoring of ASOS system products; managing ASOS clock synchronization and site-specific data; initiating corrective maintenance action; providing remote maintenance diagnostic capability; and tracking and documenting ASOS malfunctions. When an ASOS site malfunctions, the AOMC investigates the malfunction by remote dial access to the site. Under certain conditions, the AOMC will remotely clear low priority faults. Otherwise, the AOMC notifies the regionally-designated maintenance POC of the malfunction. The AOMC provides a projected restoration time based on established criteria (site class and type of failure). When the project technician notifies the AOMC that the repair is complete, the AOMC closes the trouble report.

3.2 AWIPS Network Control Facility (NCF)

The majority of AWIPS equipment is under contract maintenance. The AWIPS NCF manages and maintains the AWIPS and its communications network. The NCF design incorporates a

suite of unique software that enables the NCF operator to remotely monitor and control an AWIPS. The NCF is responsible for ensuring the integrity and reliability of the AWIPS Satellite Broadcast Network data streams. It provides around-the-clock operational support to AWIPS sites using a multi-tiered support approach. This support consists of NCF operators that use software tools to remotely detect, diagnose, and repair system malfunctions. The first tier of NCF support provides a help desk to answer technical questions from AWIPS users, diagnose, and resolve software or hardware malfunctions. More in-depth questions or more sophisticated problems are escalated to a second tier specialist. Problems that cannot be resolved by either the first or the second tiers are escalated to subject-matter experts. The NCF manages AWIPS hardware failures using a third party maintenance dispatch. It also performs a host of systems administration tasks in conjunction with the sites' systems administrators.

3.3 WSR-88D Hotline

The WSR-88D Hotline at the Radar Operations Center (ROC) provides around-the-clock (24-hours/day - 7 days/week) support when problems with the WSR-88D cannot be corrected by on-site personnel. The Hotline provides WSR-88D support for hardware, software, system analysis, data quality analysis, standby-power systems, system calibration, depot maintenance alert, troubleshooting, technical explanations and technical research. If a network WSR-88D is inoperative and the malfunction is not identified within 24-hours with help from the on-duty hotline technician, the ROC Technical Assistance Group (TAG) may be called upon, at the request of the site, to provide around-the-clock troubleshooting assistance until the problem is resolved or the next level of assistance is required (On-Site Assistance). The TAG is a team consisting of ROC radar maintenance technicians, engineers, and contractors. Their mission is to analyze inoperative systems with complex malfunctions. They remain in continuous contact with the site technician until the problem is resolved or On-Site Assistance is required. The ROC will send personnel on site to augment local technicians to resolve difficult problems in a timely manner that can not be resolved via telephone support.