

***NATIONAL WEATHER SERVICE INSTRUCTION 30-2104
OCTOBER 4, 2005***

***Maintenance, Logistics, and Facilities
Systems/Equipment Maintenance, NWSPD 30-21
MAINTENANCE DATA DOCUMENTATION***

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SUMMARY OF REVISIONS: This directive supersedes National Weather Service (NWS) Instruction 30-2104, dated December 23, 2004 and has been revised to clarify and incorporate new and updated Maintenance Reporting Guidance.

Signed by
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September 20, 2005
Date

Maintenance Data Documentation

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1 Introduction. This instruction describes the Engineering Management Reporting System (EMRS) and the procedures necessary for collecting data used to assess the reliability and maintainability (R&M) of weather surveillance systems, facilities and infrastructure. These systems and facilities are operated, owned and/or maintained by the NWS. The data collected by EMRS is vital to achieving maximum responsiveness to NWS missions.

EMRS is the primary field level maintenance data collection, analysis and maintenance workflow management tool used by the NWS. EMRS data allows the NWS to:

1. Determine systems R&M.
2. Anticipate systems and facilities maintenance requirements.
3. Measure the effectiveness of systems and facilities upgrades and modifications.
4. Provide configuration data for specific systems and facilities.
5. Provide evidence of a systems' operational status for use in legal matters.
6. Monitor engineering resources expended on designated systems and facilities.
7. Provide program performance data.
8. Manage maintenance workflow at the weather forecast and field office.
9. Assess systems and facilities maintenance requirements, and assist in planning for future staffing levels.

1.1 EMRS Data. The systems and facilities tracked by EMRS vary in nature. Systems such as weather surveillance radar are large, stationary, and composed of many subsystems and communication links. Other systems tracked in EMRS are small and portable. Some systems are located at remote locations, such as on mountain tops or on offshore oil platforms. Other systems are located at the WFO/Office. Facilities tracked by EMRS also vary in size, complexity and location. Complex facilities such as the Weather Forecast Office include the physical building, heating/ventilation/air conditioning (HVAC), electrical, emergency power and plumbing systems. Other less complex facilities are co-located with remote weather surveillance systems. These facilities may only include the physical building and electrical power.

There are three general classes of data in EMRS.

1. Equipment and facilities inventory.
2. Equipment, facilities and infrastructure maintenance data.
3. Equipment maintenance activity information.

Data collected, via EMRS, is used to perform periodic and ad hoc maintenance data analyses. These analyses are conducted by NWS Program Managers, Regional Officials, field offices, other agencies and the private sector. Typical analytical studies include equipment reliability, maintainability and operational availability. Equipment maintainability analyses are the primary method for assessing maintenance requirements, and planning for future electronics staffing levels.

The information entered into EMRS is accessible four different ways.

- (1) EMRS Data Entry System.
- (2) EMRS Web page at http://ops13web.nws.noaa.gov/pls/emrsuser/emrs_main.home
- (3) End-User ad hoc query and analysis tools.
- (4) Standardized or ad hoc reports.

2 Scope. The maintenance reporting requirements of this document apply to equipment designated by the Director, Office of Operational Systems. Equipment codes for maintenance reporting are listed in document EHB-4, Appendix C. Maintenance reporting begins with the activation of a system or site, and continues through deactivation. All maintenance events, including site preparation work, are reported using EMRS. In addition, all Field Staff activities associated with contract maintenance, including contract maintenance oversight, is documented in the EMRS.

2.1 Filing Requirements. Once the Weather Service Form A-26, EMRS Maintenance Record (A-26) is completed and has been entered into the system, it can only be modified by contacting National Weather Service Headquarters (WSH). There are no requirements to retain paper copies of the A-26 after data has been committed into the EMRS Data Entry System.

2.2 Point of Contact. Contact the WSH Maintenance, Logistics, and Acquisition Division, Configuration Branch, (W/OPS13) at (301) 713-1892, for information or assistance regarding EMRS.

2.3 Responsibilities. Responsibilities are detailed in document NDS 30-2104, which is located on the NWS Directive System's web page at: <http://www.nws.noaa.gov/directives/>.

2.3.1 Assistant Administrator for Weather Services (AA). The Assistant Administrator has overall responsibility for ensuring NWS-wide implementation of maintenance policy.

2.3.2 Directors, Office/Region/National Centers for Environmental Prediction. WSH Office Directors, Regional Directors, and the Director for the National Centers for Environmental Prediction are responsible for administering EMRS procedures within their organization. These responsibilities include:

1. Recommendation of equipment designated for tracking within EMRS.
2. Compliance with maintenance policy and EMRS procedures.
3. Assurance that personnel understand and carry out EMRS responsibilities.

2.3.3 Director, Office of Operational Systems (OPS). The Director has overall responsibility for implementing EMRS procedures and designating equipment for tracking via EMRS.

2.3.4 Director, Maintenance, Logistics, and Acquisition Division (OPS1). The Director provides fundamental engineering and acquisition services to support operational NWS systems. These responsibilities include:

1. Developing and maintaining EMRS.

2. Providing information essential to acquisition, operation and support management. This includes defining requirements for reliability and maintainability estimates, standards and goals.
3. Developing and maintaining maintenance policies and EMRS procedures that are planned, integrated, and developed in conjunction with logistics, acquisition, engineering, configuration management and safety/environmental directives.
4. Ensuring NWS employees have access to EMRS.

2.3.5 Meteorologist-In-Charge (MIC), Hydrologist-In-Charge (HIC), Official-In-Charge (OIC)/Station Manager. The MIC, HIC, OIC and Station Manager are responsible for the day-to-day administration of EMRS procedures within their offices. They will ensure that:

1. Office staff comply with EMRS procedures.
2. Site-specific EMRS procedures and guidance are developed and implemented.
3. Employees responsible for EMRS reporting carry out their responsibilities.
4. Site personnel are aware of EMRS reporting requirements.

2.3.6 NWS Staff Reporting Equipment Malfunctions. Staff will comply with maintenance policy and EMRS procedures, initiating maintenance requests using the EMRS Data Entry System. If there is no access to the data entry system, staff will follow locally established procedures to ensure proper notification and routing of the maintenance request.

2.3.7 NWS Staff Performing Maintenance Activities. Staff performing maintenance and maintenance related system administration on NWS equipment are responsible for documenting their maintenance activities using the EMRS Data Entry System. They are also responsible for completing all A-26s originated by other employees to request maintenance.

2.3.8 All Levels of Authority. All levels of authority will measure how effectively they have satisfied EMRS reporting requirements. All operating units will review EMRS maintenance activity, Operational Availability (A_o) and R&M reports.

3 General Instructions. The EMRS Data Entry System is a web-based data collection and maintenance workflow management tool. The system requires internet connectivity and a web browser to transmit and receive data from a centralized database located at WSH, in Silver Spring, MD. The EMRS combines multiple phases of maintenance data collection, report generation and maintenance workflow management into a single web-based application.

3.1 Accessing the EMRS. The EMRS is for official NWS use only. A valid username and password is required to access the system. Contact WSH Maintenance, Logistics, and Acquisition Division, Configuration Branch (W/OPS13), at (301) 713-1892, for information or assistance regarding access to EMRS.

3.2 Maintenance Record, A-26. Use the Maintenance Record, or A-26, to report maintenance activity on all equipment, facilities and infrastructure designated by the Director of the Office of Operational Systems. Reportable maintenance activities include equipment outages, routine maintenance, maintenance related system administration, activations, deactivations, and engineering modification implementation. For a complete listing of designated equipment, see document EHB-4, Appendix C.

3.3 Maintenance Data Reporting. Initiate an A-26 when a maintenance event occurs. A maintenance event is defined as any routine or non-routine maintenance activity associated with preventive maintenance, equipment failure, activation, deactivation, modification or when special sampling is conducted. If more than one maintenance event is associated with a system or facility, an A-26 for each maintenance event is required. For example, if an electronics technician (ET) investigates a failure of a Radar Data Acquisition (RDA) equipment group, and a second ET investigates another non-related failure within the same RDA, each of these non-related maintenance events require a separate A-26.

Enter all information regarding the maintenance event. Incomplete data may lead to confusion about the maintenance performed or the outage that occurred. Use the EMRS Data Entry System to request maintenance, manage maintenance workflow and to document completed maintenance activities. If there is no access to the data entry system, employees will follow locally established procedures to ensure proper notification of maintenance requests and documentation of maintenance activities.

NOTE: NWS Field Staff performing, documenting or assisting with maintenance on contract maintained equipment must report the maintenance activity they accomplish. This includes contract maintenance, coordination and oversight.

3.3.1 Reportable Maintenance Events. There are five types of reportable maintenance events:

1. Corrective Maintenance - The remedial action to correct failures and restore system/equipment or facility operation to prescribed capabilities and tolerances. This includes unplanned and non-periodic repairs, as well as systems administration performed as a result of evidence indicating a failure has occurred or is imminent.
2. Equipment Management - The accomplishment of system/equipment or facilities activation, deactivation, relocation and other similar activity.
3. Modification - The authorized hardware and/or software configuration changes required to improve/extend system/equipment or facility operations/life or to satisfy new requirements.
4. Special Activity - The authorized short-term or limited collection of data (special sampling), system/equipment installation, equipment relocation, equipment modification system test and other similar activity for a specific purpose.
5. Preventive/Routine Maintenance - Maintenance actions performed on system/equipment or facilities to ensure continued operation within the prescribed capabilities or to minimize failure probability. Routine maintenance includes scheduled, planned or periodic preventive maintenance actions.

3.3.2 When to Originate an A-26. NWS Field Staff must submit an A-26 when:

1. A system/equipment, facility or infrastructure failure occurs.
2. System/equipment or facility undergoes routine maintenance.
3. System/equipment or facility is relocated.
4. System/equipment or facility is activated, deactivated or modified.

5. Special activity or sampling occurs.
6. Maintenance related system administration is accomplished.

3.3.3 When to Commit an A-26. The A-26 is committed when all activities associated with the maintenance event are concluded. The EMRS Data Entry System will not permit a maintenance record to be committed unless all mandatory data fields are entered and the data meets validation requirements for consistency and logic. If data types and logic do not match, (e.g., the Close Date is later than the Current Date) a warning will be displayed on the computer screen. When data validation is complete, the A-26 may be saved to the EMRS database.

NWS Field Staff should complete an A-26 when:

1. An outage is cleared and the system/equipment or facility is returned to service.
2. An activation, deactivation, modification or relocation is completed.
3. Regularly scheduled maintenance is completed.
4. Other maintenance activities are completed.

3.4 Disposition of A-26s. Once an A-26 has been saved to the EMRS database, there is no requirement to retain or forward hard-copies to WSH.

3.5 Maintenance Data Quality Control. Automated and manual processes provide quality control of EMRS data. Equipment performance measurements and maintenance data trends are computed and analyzed. Staff-hour information accumulates, and is monitored to assess maintenance staff requirements. Failure rates and trends are monitored. Configuration management data is loaded and reviewed. Maintenance goals, processes and directives are then modified to achieve maximum responsiveness to the missions of the NWS. All operating units review and monitor EMRS data to provide additional measures of quality control.

4 Engineering Handbook 4 (EHB-4). This document, updated regularly, outlines in greater detail the EMRS procedures necessary for collecting data used to assess the reliability and maintainability (R&M) of NWS weather surveillance systems. The handbook can be found at: http://ops13web.nws.noaa.gov/pls/emrsuser/emrs_main.home.

5 References. The following references also contain greater detail.

NWSPD 30-11, Engineering Modifications

NWSPD 30-12, Configuration and Data Management

NWSI 30-1201, Data Management

NWSI 30-1202, Engineering Drawings

NWSI 30-1203, Configuration Management for Operational Systems

NWSI 30-1204, Site Identifiers

NWSPD 30-21, System Maintenance

NWSI 30-2101, System Maintenance Management

NWSI 30-2106, Radar Maintenance

NWSI 30-2107, NOAA Weather Radio Maintenance

NWSI 30-2108, Surface Equipment Maintenance

NWSI 30-2110, Hydrologic Maintenance

NWSI 30-2111, ASOS Maintenance

NWSPD 30-22, Technical Orders

NWSI 30-2201, Engineering Documentation

NWSPD 30-31, Logistics Planning and Operations

NWSI 30-3101, Supply Manual and Catalog

APPENDIX A. - ACRONYMS

Table of Contents: Page

1 Acronym Descriptions A-1

1 Acronym Descriptions

<u>Acronym</u>	<u>Description</u>
A _o	Operational Availability
AA	Assistant Administrator for Weather Services
A-26	WS Form A-26, EMRS Maintenance Record
ACN	AWIPS Communication Network
ACT	Activation(s)
AES	Area Electronics Supervisor
AOMC	ASOS Operations and Monitoring Center
ASN	Agency Stock Number
ASOS	Automated Surface Observing System
AT	Action Taken Code
AWIPS	Advanced Weather Interactive Processing System
BIT	Built-in-Test
CLS	Consolidated Logistics System
CM	Configuration Management
CMIS	Configuration Management Information System
COTS	Commercial Off-The-Shelf
CRS	Console Replacement System
DAPM	Data Acquisition Program Manager
DEACT	Deactivation(s)
ECP	Engineering Change Proposal

<u>Acronym</u>	<u>Description</u>
EHB	Engineering Handbook
EMRS	Engineering Management Reporting System
EPM	Electronics Program Manager
EQUIP	Equipment
ESA	Electronic Systems Analyst
ET	Electronics Technician
FMK	Field Modification Kit
GSA	General Services Administration
H-14	WS Form H-14, Equipment Return Tag
HIC	Hydrologist-In-Charge
HMT	Hydro-Meteorological Technician
HOW MAL.	How the System Malfunctioned
ID	Identification
LRU	Lowest Replaceable Unit
MDC	Maintenance Data Collection
MIC	Meteorologist-In-Charge
MOD	Modification(s)
NCF	(AWIPS) Network Control Facility
NEXRAD	Next Generation Radar
NLSC	National Logistics Supply Center
NOAA	National Oceanic and Atmospheric Administration
NOAA Form 37-4	Stores Requisition
NRC	National Reconditioning Center
NSN	National Stock Number
NWR	NOAA Weather Radio

<u>Acronym</u>	<u>Description</u>
NWS	National Weather Service
NWSI	National Weather Service Instruction Manual
NWSLI	NWS Location Identifier
OIC	Official-In-Charge
PC	Personal Computer
QCI	Quality Control Inspection
OPS	Office of Operational Systems
OPS1	Maintenance, Logistics and Acquisition Division
OPS13	Maintenance, Logistics and Acquisition Division, Configuration Branch
R&M	Reliability and Maintainability
RC	Request for Change
RMS	Regional Maintenance Specialist
ROC	Radar Operations Center
SIB	Systems Integration Branch
SID	Station Identifier
SN	Serial Number
TELCO	Telephone Company
TIP	Technical Information Package
TM	Type Maintenance Code
URL	Uniform Resource Locator
VPN	Vendor Part Number
WFO	Weather Forecast Office
WKL	Work Load
WS Form A-26	Weather Service Form A-26
WSH	National Weather Service Headquarters, Silver Spring, Maryland

Acronym

Description

WSR-88D

Weather Surveillance Radar - 1988 Doppler