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**Weather Surveillance Radar - 1988 Doppler**

**(WSR-88D)**

**Integrated Logistics Support Plan**

WSR-88D Integrated Logistics Support Plan  
R400-IS301D.2  
15 August 2010

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## 1. INTRODUCTION

### 1.1 Overview

The Weather Surveillance Radar - 1988 Doppler (WSR-88D) program is a joint effort of the Department of Commerce (DOC), the Department of Defense (DoD), and the Department of Transportation (DOT). The operational user agencies involved are the DOC's National Weather Service (NWS), and the DoD's United States Air Force (USAF) and Naval Meteorological and Oceanography Command (NMOC), and the DOT's Federal Aviation Administration (FAA). The program has deployed 159 operational and 8 non-operational (training, test, and repair) WSR-88D weather radar systems throughout the United States and at selected overseas locations.

For the design and acquisition phase of the WSR-88D system, the Joint System Program Office (JSPO) was assigned program management responsibility under the DOC, with coordination of the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM). The WSR-88D Responsibility Transfer Plan defined the criteria for orderly transfer of support management and program management from the JSPO to the joint WSR-88D Radar Operations Center (ROC, W/OPS4) and the NWS Office of Operational Systems (W/OPS), respectively. Support Management Responsibility Transfer (SMRT) and the WSR-88D Program Management Responsibility Transfer (PMRT) occurred in 1997. The WSR-88D system is in the operational phase. The Next Generation Weather Radar (NEXRAD) Product Improvement (NPI) project and other sustaining engineering modification projects approved by the WSR-88D Program Management Committee (PMC) continue to provide state-of-the-art technology insertion to enhance radar capabilities and address component obsolescence.

#### 1.1.1 Purpose

This Integrated Logistics Support Plan (ILSP) identifies organizational relationships and responsibilities and describes the basis for agreements among various agencies for the management and technical support of the WSR-88D Program. The plan identifies support activities to be accomplished, and references how, when, and by whom they will be accomplished. This plan includes detailed information for site personnel such as recommended on-site spares, support equipment (SE), and consumables.

This document has been routinely updated and has evolved since WSR-88D network deployment to describe the logistics organizations and procedures in place for support of the WSR-88D system.

#### 1.1.2 Program Summary

The WSR-88D program provided a major upgrade of weather detection capabilities to detect, collect, and distribute vital weather data in order to identify weather events, to interpret vital weather data, and to issue warnings. It accomplishes this task by

integrating advanced Doppler radar capabilities; real-time signal processing techniques; advanced meteorological/hydrological algorithms; and automated product processing, distribution, and display technologies into the WSR-88D system. To support this national effort, radar system hardware and software capabilities vital to effective severe weather and flood warnin

g and to water resource management must be effectively maintained and enhanced as new requirements and technologies are identified.

## 1.2 Applicability

### 1.2.1 Background

In order to meet agency goals and mission responsibilities, the DOC, DoD, and DOT require similar information concerning the location, development, and movement of hazardous weather activity detectable by radar. In response to this need, these three agencies developed a common WSR-88D system with the WSR-88D JSPO assigned responsibility for system acquisition and deployment. The technical, operational, and integrated logistics support concepts developed during the WSR-88D Validation Phase indicated a need for continuation of a joint centralized, common support effort during the operational phase of the system life cycle. WSR-88D life cycle costs, system reliability, network integration, and future technological advancements were some considerations which formed the basis for agency agreements for operation and support of the system through a joint, tri-agency ROC. Consequently, actions were taken to define and establish the WSR-88D ROC as an organization of the NWS (W/OPS4) operating under the authority of the WSR-88D PMC. The PMC established the following priorities for the ROC: keep operational radar systems running, sustain baseline operational radar system capabilities, improve radar system reliability, integrate new capabilities into the radar system, and support the NPI program.

Major responsibilities of the ROC to sustain operational life cycle operations for all WSR-88D systems belonging to the three departments are in the areas of:

- Centralized software/algorithm development and maintenance
- Field support
- Engineering management
- Configuration management
- Modification development and deployment
- Technical documentation
- On-site depot maintenance

Supply support management and centralized depot repair are the responsibility of the NWS OPS Maintenance, Logistics, and Acquisition Division (W/OPS1). The NWS Office of Science and Technology (W/OST) Program Plans Division (PPD, W/OST1) and Systems Engineering Center (SEC) are responsible for managing and engineering NPI projects for changes that affect WSR-88D system architecture and are approved by



the PMC. Multi-agency and/or multi-organizational project teams may be formed to address both NPI and sustaining engineering projects.

### 1.2.2 Scope

This plan describes the integrated logistics support of the WSR-88D system during its operational life cycle. Included in the plan are the roles, responsibilities, and functional support task areas for the DOC, DoD, DOT, and the ROC to provide overall program management and oversight.

### 1.2.3 Program Management Responsibility

The PMC was formally established January 14, 1993, upon signature approval of the original Terms of Reference by the members of the NEXRAD Program Council (NPC). The NPC formally retired on November 17, 1997, after granting the PMC overall authority for the NEXRAD program.

Oversight of the NEXRAD program budget, policy, resource commitment, and management guidance is provided by the PMC throughout the life cycle of the WSR-88D program to ensure that both common and unique agency requirements are addressed and resolved.

The day-to-day operations and management of the WSR-88D Program are directed from the tri-agency ROC with the ROC Director (W/OPS4) organizationally reporting to the Director of W/OPS and serving the PMC as the Integration Program Manager (IPM). The Director of W/OPS serves as the Chairman of the PMC.

## 1.3 References

The following documents and changes thereto are applicable:

[Engineering Handbook 1 \(EHB-1\), Instrumental Equipment Catalog, 1 March 2010](#)

[Engineering Handbook 6-501 \(EHB 6-501\), Illustrated Parts Breakdown, 30 Sep 2009](#)

Federal Meteorological Handbook 11 (FMH-11), Doppler Meteorological Radar Observations, OFCM, [Part A](#) (May 2009), [Part B](#) (December 2005), [Part C](#) (April 2006), and [Part D](#) (February 2006)

Management Process for WSR-88D Modifications, ROCPLN-PGM-02, Rev 1, October 15, 2001

MEMORANDUM OF AGREEMENT among Department of Commerce (DOC), Department of Transportation (DOT) and Department of Defense (DoD) for Allocation of Program Costs of Next Generation Weather Radar (NEXRAD) Program, September 30, 2009

[MEMORANDUM OF AGREEMENT \(MOA\) among the Department of Commerce, Department of Defense, and Department of Transportation for Interagency Operation of the Weather Surveillance Radar-1998, Doppler \(WSR-88D\), 7 August 2007](#)

NEXRAD Maintenance Concept, RG400-MC202, February 1984

Technical Data Management Plan ROCPLN PGM-04, 01 March 2007

WSR-88D Configuration Management Plan, ROCPLN-PGM-03, 7 July 1996

[WSR-88D Configuration Control Board Charter, ROCPLN-PGM-06A April 12, 2000](#)

[WSR-88D Program Management Committee Charter, 29 March 2006](#)

[WSR-88D System Specification, Document Number 2810000H, Code Identification 0WY55, 25 April 2008](#)

WSR-88D Responsibility Transfer Plan, Version 3.4, 3 March 1993, and associated Transfer Agreements, 20 June 1994

#### 1.4 Acronyms and Office Symbols

##### 1.4.1 Acronyms

ACC	Air Combat Command
AETC	Air Education and Training Command
AF	Air Force
AFNIC	Air Force Network Integration Center
AFI	Air Force Instruction
AFMC	Air Force Material Command
AFPD	Air Force Policy Directive
AFWA	Air Force Weather Agency
AML	FAA Logistics Center
APWG	Adaptable Parameter Working Group
A <sub>i</sub>	Inherent Availability
A <sub>s</sub>	Service Availability
ASN	Agency Stock Number
ATE	Automated Test Equipment
ATO-T	Office of Communications, Navigation and Surveillance Systems, FAA
ATO-W	National Airway System Engineering, FAA
AWIPS	Advanced Weather Interactive Processor System
CCB	Configuration Control Board
CIWS	Corridor Integrated Weather System
CLS	Consolidated Logistics System
CM	Configuration Management
CSE	Common Support Equipment (Not WSR-88D unique. See PSE.)
DLA	Defense Logistics Agency

DOC	Department of Commerce
DoD	Department of Defense
DOT	Department of Transportation
ECP	Engineering Change Proposal
FAA	Federal Aviation Administration
FEDSTRIP	Federal Standard Requisitioning and Issue Procedures
FMH	Federal Meteorological Handbook
HQ	Headquarters
ICWG	Interface Control Working Group
ILSP	Integrated Logistics Support Plan
IPM	Integration Program Manager
ISEA	In-Service Engineering Activity
JSPO	Joint System Program Office
LRU	Line Replaceable Unit
MDC	Maintenance Data Collection
MILSTRIP	Military Standard Requisitioning and Issue Procedures
MLOS	Microwave Line of Sight
MOA	Memorandum of Agreement
MTBF	Mean Time Between Failure
MTTR	Mean Time to Repair
NAVICP	Navy Inventory Control Point
NEXRAD	Next Generation Weather Radar
NIST	National Institute of Standards and Technology
NLSC	National Logistics Support Center
NOAA	National Oceanic and Atmospheric Administration
NPC	NEXRAD Program Council
NPI	NEXRAD Product Improvement
NRC	National Reconditioning Center
NSN	National Stock Number
NWS	National Weather Service
NWSTC	NWS Training Center
OFCM	Office of the Federal Coordinator for Meteorological Services and Supporting Research
OO-ALC	Ogden Air Logistics Center
OPUP	Open Principal User Processor
OS&T	Office of Science and Technology
PCR	Publication Change Request
PHS&T	Packaging, Handling, Storage, and Transportation
PICA	Primary Inventory Control Activity
PM	Preventive Maintenance
PMC	Program Management Committee
PMEL	Precision Measurement Equipment Laboratory
PMRT	Program Management Responsibility Transfer
POC	Point of Contact
PPD	Program Plans Division, W/OST1

PSE	Peculiar Support Equipment (WSR-88D unique. See CSE.)
PUP	Principal User Processor
RDA	Radar Data Acquisition
ROC	Radar Operations Center
RPG	Radar Product Generator
RPIE	Real Property Installed Equipment
SE	Support Equipment
SEC	Systems Engineering Center, W/OST3
SERD	Support Equipment Recommendation Data
SICA	Secondary Inventory Control Activity
SMR	Source Maintenance and Recoverability
SMRT	Support Management Responsibility Transfer
SMT	Special Maintenance Team
SPAWAR	Space and Naval Warfare Systems Command
SPG	Supplemental Product Generator
SREC	Software Recommendation and Evaluation Committee
SSE	Shared Support Equipment
TAC	Technical Advisory Committee
TCM	Total Time Corrective Maintenance
TDWR	Terminal Doppler Weather Radar
TMDE	Test, Measurement, and Diagnostic Equipment
TPMS	Transition Power Maintenance System
USAF	United States Air Force
USMC	United States Marine Corp
WARP	Weather and Radar Processor
WDTB	Warning Decision Training Branch
WFO	Weather Forecast Office
WSR-88D	Weather Surveillance Radar - 1988 Doppler

#### 1.4.2 Office Symbols

W/OPS	NWS Office of Operational Systems
W/OPS1	NWS OPS Maintenance, Logistics, and Acquisition Division
W/OPS16	National Reconditioning Center
W/OPS18	National Logistics Support Center
W/OPS4	Radar Operations Center
W/OST	NWS Office of Science and Technology
W/OST1	NWS OST Program Plans Division
W/OS12	Requirements/Change Management Branch
W/OS61	NWS Training Center
W/OS62	Warning Decision Training Branch
W/OST3	NWS OST Systems Engineering Center

## 1.5 WSR-88D System Description

The WSR-88D system includes 159 operational Doppler radar sites consisting of a Radar Data Acquisition (RDA) function, a Radar Product Generator (RPG) function, multiple User Display Systems, and support which includes communications, facilities, and integrated logistics functions addressed by this plan.

The User Display Systems have replaced the Principal User Processor (PUP). These systems include the NWS Advanced Weather Interactive Processor System (AWIPS), the FAA Weather and Radar Processor (WARP), and the DoD Open Principal User Processor (OPUP). All of these systems, except the OPUP, are external to the WSR-88D system and are supported by the owning agencies. The ROC supports the OPUP.

Operational WSR-88D systems may be employed as network, supplemental, or non-network sites, as defined in the FMH-11 (Part A). The basic policies for the operation and support of the WSR-88D systems to meet the common needs of the WSR-88D agencies are stated in the Memorandum of Agreement (MOA) among DOC, DOT and DoD for Interagency Operation of the WSR-88D, 7 August 2007.

### 1.5.1 Radar Data Acquisition

The RDA includes the Doppler radar, tower, and radome which are located at the radar site. It includes hardware and software required for transmitting, receiving, signal processing, control, status monitoring, error detection, display, calibration, and archiving functions related to the radar's operation.

### 1.5.2 Radar Product Generator

The RPG includes data processing, data entry, and display capabilities located at either the radar or principal user site. It includes all hardware and software required for real-time generation, storage, and distribution of meteorological and hydrological products required for operational use. It also includes hardware and software required for control, status monitoring, error detection, and archiving. To the extent required, it includes some display and data entry hardware and software to provide for human interaction in the generation and distribution of products.

### 1.5.3 Supplemental Product Generator (SPG)

The SPG receives FAA Terminal Doppler Weather Radar (TDWR) data and generates WSR-88D-like products for display on the NWS AWIPS. It consists of a standard cabinet that can contain up to 4 SPGs. The SPG includes LRUs which are common to the NEXRAD RPG and runs modified RPG source code. Each of the FAA's 45 TDWRs sends data to a single SPG located at one of 34 Weather Forecast Offices (WFOs). In addition, there are 18 non-operational SPGs located at the Warning Decision Training Branch (WDTB, W/OS62), NWS Training Center (NWSTC, W/OS61), National Reconditioning Center (NRC), NWSHQ, and the ROC. NWSTC includes SPG modules as part of their WSR-88D maintenance training while WDTB provides SPG operator

training. The FAA provides/maintains the TDWR including the TDWR Hub. The NWS provides/maintains the cable which connects the TDWR Hub to the NWS surge suppressor, the surge suppressor, bridge, and CSU/DSU at the TDWR site; contracts for T1 communications from the TDWR site to the WFO; maintains all SPG equipment at the WFO; and performs all life cycle support. The SPG is tracked separately in EMRS and is funded/CM managed only by NWS.

#### 1.5.4 User Display Systems

The User Display Systems function includes data processing, data entry, and display capabilities located at the principal user site. It includes all hardware and software required for request, display, storage, annotation, local control, status monitoring, error detection, archiving, and limited product distribution. The PUP has been replaced by agency-unique principal user display systems such as the DoD OPUP; the NWS AWIPS; and the FAA WARP, ITWS, and Corridor Integrated Weather System (CIWS).

#### 1.5.5 Communications

The communications function includes wideband and narrowband communication circuits. Wideband communication circuits extend between the RDA and the RPG and between the RPG and the Level II base data users. Modem driven circuits handle data to and from analog principal users while frame relays and digital communications handle other principal users. Depending on the configuration and location of the RDA and RPG, the wideband communications between the RDA and the RPG can be hardware, commercial and private T1 fiber with copper wire backup, or microwave radio line of sight.

It includes the hardware and software required at WSR-88D sites and inter-site narrowband (e.g., communication circuits required to transmit and receive weather products and status and control information on a dedicated or dial-up basis). It also includes the hardware and software required at the WSR-88D radar and principal user site and intra-site transmission facilities required to transmit and receive radar base data.

#### 1.5.6 Facilities

The facilities function includes real estate, buildings, and provision and installation of Real Property Installed Equipment (RPIE) such as power generation, air conditioning equipment, uninterruptible power systems, and access roads, which are needed in support of the WSR-88D system. Each agency is responsible for its own facilities management in support of the WSR-88D Program.

## 2. AGENCY, DEPOT, and USER RESPONSIBILITIES

### 2.1 General

This section of the ILSP identifies the organizations of the participating agencies involved in WSR-88D operations and maintenance, delineates their organizational relationships, and specifies responsibilities for the management and support of the WSR-88D resources and functions throughout the system's operational life cycle. [Table 2.1](#) lists major responsibilities.

### 2.2 Program Management Committee (PMC)

**Background:** The PMC was formally established January 14, 1993, upon signature approval of the original Terms of Reference by the members of the NEXRAD Program Council (NPC). The NPC formally retired on November 17, 1997, after granting the PMC overall authority for the NEXRAD program.

**Authority:** The PMC is guided by the latest approved version of the WSR-88D PMC Charter. The PMC provides overall tri-agency policy, management guidance, budget, agreements, and decisions involving changes, modifications, new work, and resource commitments for the WSR-88D Program. The primary role of PMC members is to make higher authority decisions for each agency throughout the operational life of the WSR-88D equipment with focus on major product improvements and network performance.

Unresolved issues encountered at the PMC level can be elevated to the Agency Executive level (Director of NWS, Headquarters NWS; Director of Weather, Headquarters USAF; and FAA Vice President, Technical Operations Services). The PMC Chair will invite the appropriate agency executives to a meeting to address and resolve such issues.

**Chair:** The PMC is chaired by the Director of W/OPS who, as a non-voting member, presides over all meetings of the PMC, arranges the presentation of issues to the PMC, and obtains all resolutions. The Chair receives plans, issues, interagency MOAs, and charters from the agencies and the Radar Operations Center (ROC) and receives Engineering Change Proposals (ECPs) from the NEXRAD CCB.

**Integration Program Manager (IPM):** Non-voting PMC operational support representation is provided by the Director of the ROC as the IPM. The IPM provides the PMC technical support; advice regarding operations, issues of interagency MOAs, plans, and charters; and status information on approved changes regarding development and test activities at the ROC. The IPM shall participate in the prioritization of new approved changes for development and testing. The IPM monitors and reports to the PMC on WSR-88D network performance.

**NEXRAD Product Improvement (NPI) Manager:** Non-voting NPI representation is provided by the NWS Office of Science and Technology, Chief of the Programs and

Plans Division (W/OST1) who is the WSR-88D NPI Manager. The NPI Manager proposes project baselines in terms of cost, schedule, and scope defining the product and cost benefit as the advocate for NPI. Once PMC approval for a NPI project is received, the NPI Program Manager manages the approved project within the PMC approved baseline cost, schedule, and scope and briefs the status of NPI projects to the PMC.

**Executive Secretary:** The NWS Office of Climate, Water, and Weather Services, Operations and Requirements Division (W/OS1) provides the non-voting Executive Secretary to the PMC. The Secretary is responsible for scheduling meetings, preparing the agenda and supporting data, assisting the Chair in the conduct of meetings, distributing proposed revisions to the ILSP, and preparing and distributing meeting minutes.

**Agency Representatives:** The only voting members are the three Agency Representatives (the Director, Office of Science and Technology, NWS; Headquarters, Air Force Weather Agency Director (AFWA), Strategic Plans and Programs; and Manager of System Engineering, Terminal Services, FAA). The Agency Representatives are delegated full authority to act as Executive Agents for their respective agencies and shall present agency issues to the PMC. The Agency Representatives shall review the PMC agenda and be prepared to address and resolve each item on the agenda. The Agency Representatives shall ensure appropriate coordination occurs to obtain agency approval to commit resources for support responsibility.

## 2.3 Department of Commerce, National Weather Service (NWS)

### 2.3.1 Office of Science and Technology (OS&T)

The NWS Office of Science and Technology provides the Agency Representative who is the NWS voting member of the PMC and who is delegated full authority to act as Executive Agent for DOC. W/OST initiates and manages NPI projects approved for implementation by the tri-agency WSR-88D PMC. These projects typically use new technology that improves the WSR-88D system architecture and performance capabilities.

#### 2.3.1.1 Program and Plans Division

The Program and Plans Division (W/OST1), provides non-voting PMC representation as the NPI Manager. W/OST1 defines and plans science and technology road maps for service improvements and leads NWS technology improvements to the WSR-88D system. W/OST1 provides program planning, execution, and tracking of NPI projects; proposes NPI projects in terms of cost, schedule, and scope; and briefs the status of NPI projects to the PMC and other organizations.

For NPI projects approved by the PMC, W/OST1 manages approved costs, schedule, and scope defining the product and cost benefits.



### 2.3.1.2 Systems Engineering Center

The NWS OST Systems Engineering Center (SEC, W/OST3) plans WSR-88D system evolution consistent with the NWS information technology structure. They analyze requirements and solutions for cost benefit and operational feasibility. W/OST3 directs development and integration of enhancements to and new technology for communications, hardware, and software infrastructure. Specifically they:

- a. Provide systems engineering for NPI projects
- b. Develop software for NPI and sustaining engineering projects
- c. Provide integration and testing of NPI projects
- d. Provide supply support planning and implementation for NPI projects.
- e. Provide supply equipment planning and implementation for NPI projects.
- f. Provide retrofit planning, modification kit procurement, and implementation for NPI projects.
- g. Provide safety planning and implementation for NPI projects.
- h. Provide field and depot maintenance support planning and implementation for NPI projects.
- i. Provide depot repair planning and implementation for NPI projects.
- j. Provide facilities planning and implementation for NPI projects.
- k. Provide configuration management planning and implementation for NPI projects.
- l. Provide operations and maintenance technical manual planning and implementation for NPI projects.
- m. Provide engineering data including specifications and drawing planning and implementation for NPI projects
- n. Perform Independent Verification and Validation of NPI projects

### 2.3.2 Office of Operational Systems (OOS)

The W/OPS Chairs the PMC and provides the non-voting PMC WSR-88D Integration Program Manager. The W/OPS operates and maintains all NWS-owned WSR-88D equipment. In addition, the W/OPS:

- a. Provides program management responsibility for WSR-88D operational support as detailed in the WSR-88D Responsibility Transfer Plan and the WSR-88D PMC Charter.
- b. Prepares program plans and documentation.
- c. Provides support for NWS WSR-88D site surveys, site modifications, and site acceptance of WSR-88D equipment.
- d. Provides a NWS representative to tri-agency working groups and teams.
- e. Plans, budgets, and provides staff to the ROC. Manages and operates the ROC by implementing coordinated tri-agency plans, policies, budget, and staffing. Plans, programs, and budgets costs for tri-agency and agency-unique integrated logistics support elements including the maintenance, spares, Peculiar Support Equipment (PSE), and repairs of the NWS portion of the WSR-88D systems at field sites (by special teams, contractors, or on-site personnel) and at the repair depot.
- f. The ROC Program Branch reviews the ILSP every 3 years and determines if a major update with formal coordination is required. Administrative changes such as table entries, office symbols, etc. will be posted as required to the ROC web page with informal coordination with the agency focal points and not require formal coordination/signature.
- g. At the ROC, provides tri-agency WSR-88D hardware and software configuration management, hardware sustaining engineering design, software and algorithm maintenance, software release, sustaining engineering modification development/procurement/deployment, engineering/technical data development, and maintenance. The ROC additionally coordinates support requirements for fielded systems including field support and on-site depot level maintenance. The ROC manages near-term technical data transfer activities and long-term system improvement work. The ROC established and maintains a site configuration database. The ROC investigates radar coverage issues, resolves electromagnetic interference issues, analyzes proposed construction to ascertain potential degradation to radar performance, relocates radars, and procures additional radars as needed.
- h. Plans and budgets for operation, maintenance, and sustaining engineering modification improvements to the WSR-88D system.
- i. Procures and provide to NWS sites all WSR-88D Common Support Equipment (CSE) requirements. Provides calibration for all NWS CSE and PSE.
- j. Provides direction to the NWS regions and maintains liaison with other agencies in the effective maintenance of required meteorological and hydrological data collection, dissemination, and exchange.

- k. Serves as the Primary Inventory Control Activity (PICA) to control and replenish spare parts inventory and provide supply support for all three agencies. Ensures that Line Replaceable Units (LRUs) are returned to the NRC (W/OPS16) in a timely manner, and coordinates and obtains approval from W/OPS14 for requisitions for LRUs for which no unserviceable LRU return to the NRC is planned.
- l. Plans for and provides centralized depot-level repair support for all NWS, Air Force, Navy, and FAA equipment at the NRC in accordance with the procedures contained in [Appendix B](#) of this plan.
- m. Responds to requests for data and audits to help the ROC maintain network configuration control of WSR-88D and the individual site configuration database.

**Table 2.1  
Major Responsibilities Synopsis**

**Program Management**

Program Management Responsibility .....	W/OPS
Interagency Management Coordination .....	W/OPS
Interagency Technical Coordination .....	ROC
Tri-agency Budget Coordination .....	W/OPS

**Configuration Management**

Agency PMC/CCB Coordination .....	ROC
Hardware/Software Configuration Management .....	ROC
Communications Configuration Management .....	Agencies/ROC
Engine/Generator/TPS Shelter(s) Configuration Management .....	Agencies/ROC

**Engineering/Technical Support**

Maintenance Data Collection .....	W/OPS1
Maintenance Data Analysis .....	ROC/W/OPS1
Software Maintenance/Enhancement .....	ROC
Adaptable Parameters/Background Maps .....	ROC
Technical/Engineering Documentation .....	ROC
Modification/Retrofit Planning, Procurement, Deployment .....	ROC
Engineering, NEXRAD Product Improvement .....	W/OST SEC
Engineering, Sustaining .....	ROC
Integration Testing .....	W/OST SEC/ROC
Frequency Management .....	W/OPS11/ROC

**Field Support**

On-Site Depot Team Corrective/Preventive Maintenance .....	ROC
Hotline Field Support .....	ROC
Replenishment Supply/PICA .....	W/OPS1
Depot Repair and/or Reconditioning .....	NRC
Quality Control of Depot Repairs .....	NRC
Quality Assurance of New Supply Spares .....	NRC
Organizational Level Corrective/Preventive Maintenance .....	Agencies/Site
System Calibration .....	Agencies/Site
Test Equipment Repair and Calibration .....	Agencies/Site/NRC
Formal Maintenance Training .....	WDTB/AETC
Formal Operations Training .....	NWSTC/AETC
Network Management .....	ROC
Tri-agency Operational Support .....	ROC
Communications Access Management .....	ROC
Operations .....	Agencies

Note 1: See Section 1.4 for acronyms.

Note 2: Agencies = NWS, FAA, AFWA, and Marine Corps

### 2.3.3 National Weather Service Training Center (NWSTC)

W/OS61, NWSTC, is responsible for development, implementation, conduct, and monitoring of formal technical training required to qualify NWS, FAA, and DoD maintenance personnel on WSR-88D equipment.

### 2.3.4 Warning Decision Training Branch (WDTB)

W/OS62, WDBT, is responsible for development, implementation, conduct, and monitoring of formal operations training required to qualify NWS operations personnel on WSR-88D and AWIPS equipment. In addition they review WSR-88D Program documents, provide advice on radar and warning-related operational issues, and assist in testing new WSR-88D builds.

### 2.4 Cooperative Program for Operational Meteorology, Education and Training (COMET)

COMET is a multi-agency organization that supports, enhances, and stimulates learning about atmospheric and related sciences. COMET provides operations training for NWS.

### 2.5 Department of Defense (DoD)

DoD owns and maintains 26 WSR-88Ds. DoD operates 5 of the 26 WSR-88Ds (viz., Vandenberg AFB, Lajes AB, Kadena AB, Camp Humphreys, and Kunsan AB); and NWS operates the remaining 21.

#### 2.5.1 Air Force Weather Agency (AFWA)

AFWA provides the Agency Representative who is the DoD voting member of the PMC and who is delegated full authority to act as Executive Agent for DoD. AFWA provides DoD program management support based on lead command responsibilities as identified in Air Force Policy Directive (AFPD) 10-9, while ensuring the operation and maintenance of all DoD-owned WSR-88D equipment. In addition, AFWA:

- a. Assists in the preparation of program plans and documentation.
- b. Provides local support for Combat Weather Team (CWT) and Operational Weather Squadron (OWS) site surveys and modifications and for acceptance of WSR-88D equipment.
- c. Provides a DoD representative to tri-agency working groups and teams.
- d. Plans, budgets, and provides staff to the ROC. Staffs the position of ROC Deputy Director. Plans, programs, and budgets costs for tri-agency and agency-unique operation, modification improvements, and integrated logistics support elements including the maintenance, spares, and repairs of the DoD portion of

the WSR-88D systems at the site (by special teams, contractors, or on-site personnel) and at the repair depot.

- e. Ensures provision of all NEXRAD CSE requirements to DoD sites.
- f. Provides direction to the DoD Commands. Maintains liaison with other agencies in the effective maintenance of required meteorological and hydrological data collection, dissemination, and exchange.
- g. Responds to requests for data and audits to help the ROC maintain nationwide configuration control of WSR-88D and to keep the site configuration database current.
- h. Provides operations training requirements to the Air Education and Training Command (AETC).

#### 2.5.2 Air Force Network Integration Center (AFNIC)

The Headquarters AFNIC is responsible for coordinating with AFWA and participating commands on inputs when tasked or required. In addition, AFNIC:

- a. Assists in the policy and procedures for WSR-88D support.
- b. Provides a representative to tri-agency working groups and teams where DoD logistics and maintenance issues are discussed.

#### 2.5.3 Air Force Material Command (AFMC)

AFMC:

- a. Establishes a Secondary Inventory Control Activity (SICA) to interface with the PICA's logistics systems.
- b. Supports any USAF conducted Operational Test and Evaluation program as necessary in accordance with Air Force Instruction (AFI) 99-102.
- c. Provides calibration and Precision Measurement Equipment Laboratory (PMEL) support for Air Force WSR-88D systems and ensures that systems and equipment meet the metrology and calibration requirements in accordance with AFI 21-113 which establishes and directs the metrology and calibration program and Technical Order (T.O.) 00-20-14 which provides methodology and procedures to carry out the direction of AFI 21-113.
- d. Coordinates with the supporting agency to ensure the WSR-88D system is supported according to approved MOA and established WSR-88D support procedures of DoD, DOC, and DOT.

- e. Participates in test acceptance in accordance with WSR-88D Site Acceptance Plan and commissioning in accordance with AFI 33-104.
- f. Plans and performs site surveys for the Air Force portion of the WSR-88D system.
- g. Plans and provides communications between WSR-88D RPG sites and the Air Force owned WSR-88D OPUP sites.

#### 2.5.3.1 Ogden Air Logistics Center (OO-ALC)

OO-ALC performs SICA responsibilities for the Air Force. In addition, OO-ALC:

- a. Plans, programs, budgets, and funds for spares and depot support of Air Force owned components as required by MOA with the supporting agency, NWS.
- b. Provides a representative to tri-agency working groups and teams where DoD logistics, maintenance, and configuration issues are discussed.
- c. Provides customer liaison and feedback to the AFWA for DoD maintainers and supply points to ensure effective support of WSR-88D equipment. Ensures all customers are informed that with an ID and password they can view a read-only copy of stock availability and requisition status by going to <https://cls.nlsc.noaa.gov/>.
- d. Assists the ROC in Technical Manual development by providing part numbers, documentation references, etc.

#### 2.5.3.2 Other Air Logistics Centers

The other affected Air Logistics Centers budget for and procure any required CSE.

#### 2.5.4 Participating Commands

The participating commands operate Air Force-owned WSR-88D equipment. In support of operations and maintenance the participating commands:

- a. When tasked or required, support AFWA in coordinating policy and procedures.
- b. Upon request, provide inputs to various logistics documents (Maintenance Concept, ILSP, and others).
- c. Provide qualified personnel to support logistics and program activities (technical order verification, provisioning, audits, and others) upon request.
- d. Assist in support of site surveys, installation requirements, and the commissioning of systems at command sites.

- e. Provide maintenance training requirements to HQ AETC.
- f. Respond to requests for data and audits to help the ROC maintain nationwide configuration control of WSR-88D and to keep the site configuration database current.
- g. Provide timely and adequate maintenance information to assist the ROC with the correction of malfunctions and engineering design deficiencies.
- h. Provide all WSR-88D CSE requirements to DoD sites.
- i. Budget and fund command spares replenishment and CSE. Ensure that LRUs are returned to the NRC in a timely manner, and coordinate and obtain approval from W/OPS14 for requisitions for LRUs for which no unserviceable LRU return to the NRC is planned.

#### 2.5.5 Space and Naval Warfare Systems Command (SPAWAR)

SPAWAR is the WSR-88D Program Manager for Navy-owned Marine Corps equipment. In coordination with the DoD AFWA, SPAWAR:

- a. Assists in the preparation of program plans and documentation.
- b. Provides local support for site surveys, modifications, and/or other assistance for acceptance of WSR-88D equipment.
- c. Provides a representative to tri-agency working groups and teams.
- d. Ensures all Marine Corps users are advised of the need to budget for operation, maintenance, and modification improvements to the WSR-88D system.
- e. Provides all WSR-88D CSE requirements to Marine Corps sites.
- f. Plans, programs, and budgets costs for tri-agency and agency-unique integrated logistics support elements including the maintenance, spares, and repairs of the NWS portion of the WSR-88D systems at the site (by special teams, contractors, or on-site personnel) and at the repair depot.
- g. Provides direction to the Marine Corps commands and maintains liaison with other agencies in the operation and effective maintenance of required meteorological and hydrological data collection, dissemination, and exchange.
- h. Responds to requests for data and audits to help the ROC maintain nationwide configuration control of WSR-88D and to keep the site configuration database current.



### 2.5.6 Navy Inventory Control Point (NAVICP)

NAVICP performs SICA responsibilities for the Marine Corps. In addition, NAVICP:

- a. Budgets throughout the WSR-88D life-cycle for depot repairs of Navy-owned Marine Corps WSR-88D equipment.
- b. Provides a Navy/Marine Corps representative to tri-agency working groups and teams where Navy/Marine Corps logistics issues are discussed.
- c. Provides customer liaison and feedback to the SPAWAR WSR-88D Program Office for Navy maintainers and supply points to ensure effective support of WSR-88D equipment.

### 2.5.7 Marine Corps Users

Marine Corps users plan, program, and budget for the operation and maintenance of Navy-owned WSR-88D equipment.

## 2.6 Department of Transportation (DOT)

DOT/FAA owns and maintains 12 WSR-88Ds. Also FAA maintains the NWS WSR-88D at Cedar City, UT under a local Memorandum of Understanding. NWS operates all 12 of FAA's WSR-88Ds.

### 2.6.1 Federal Aviation Administration (FAA)

FAA Headquarters, Aviation Weather Program provides the Agency Representative who is the FAA voting member of the PMC and who is delegated full authority to act as Executive Agent for DOT. The FAA maintains all FAA-owned and operated WSR-88D equipment. In addition, the FAA:

- a. Assists in the preparation of program plans and documentation.
- b. Provides local support for FAA site surveys and modifications and for acceptance of WSR-88D equipment.
- c. Provides a FAA representative to tri-agency working groups and teams.
- d. Plans, budgets, and provides staff to the ROC.
- e. Plans and budgets for operation, maintenance, and modification improvements to the WSR-88D system.
- f. Procures and provides to FAA sites all required WSR-88D CSE. Provides calibration and repair of all FAA site test equipment.

- g. Plans, programs, and budgets costs for tri-agency and agency-unique integrated logistics support elements including the maintenance, spares, and repairs of the NWS portion of the WSR-88D systems at the site (by special teams, contractors, or on-site personnel) and at the repair depot. Ensures that LRUs are returned to the NRC in a timely manner, and coordinates and obtains approval from W/OPS14 for requisitions for LRUs for which no unserviceable LRU return to the NRC is planned.
- h. Provides guidance and authorizing documentation to the FAA regions and sites and maintains liaison with other agencies in the operation and effective maintenance of required meteorological and hydrological data collection, dissemination, and exchange.
- i. Responds to requests for data and audits to help the ROC maintain nationwide configuration control of WSR-88D and to keep the site configuration database current.
- j. Provides operations and maintenance training requirements to the NWS Training Division.
- k. Performs SICA responsibilities for the FAA.
- l. Provides customer liaison and feedback to the FAA maintainers and supply points to ensure effective support of WSR-88D equipment
- m. FAA is responsible for configuration management of the Engine/Generator/TPS shelter for FAA sites.

### 3. TASKS AND PLANS

This section of the ILSP identifies the tasks and plans whereby the three agencies support the field (to include spare parts and support equipment), maintain technical and engineering data, train the field, test and evaluate system changes, provide hardware and software maintenance, enforce configuration management, publish technical manuals, and field modification retrofits. [Table 3.1](#) provides a list of functional area responsibilities and organizational Points of Contact.

#### 3.1 Maintenance Planning

##### 3.1.1 Maintenance Concept

The three agencies approved the NEXRAD Maintenance Concept, RG400-MC202, in February 1984. It provides policy for the life cycle maintenance planning and maintenance of the WSR-88D system hardware. In summary, organizational and field maintenance are the responsibility of each agency. The policy provides for removal and replacement of LRUs at the organizational level and repair of LRUs at a centralized depot maintenance facility. The maintenance policy further provides for specialized, on-site depot level maintenance support provided by a centralized team for a select number of large, low failure or highly complex items.

##### 3.1.2 Availability Requirements

The WSR-88D program defines several availabilities, two of which are discussed here.

- a. The three agencies use Service Availability ( $A_s$ ) to monitor WSR-88D availability.  $A_s$  is calculated by accounting for total time corrective maintenance (TCM) which is the total downtime associated with corrective maintenance (including delays for travel, parts etc.). Consequently

$$A_s = \frac{8760 - \text{TCM}}{8760}$$

where 8760 is the number of hours in a year. The numerator does not have a preventive maintenance (PM) term. It follows that PM time does not count against  $A_s$ .

As a stated requirement of the three agencies, the AFWA and NWS WSR-88Ds shall have an  $A_s$  of at least 0.960 and DOT WSR-88Ds shall have an  $A_s$  of 0.989 or higher.

- b. Contracts for major system upgrades should specify Inherent Availability ( $A_i$ ) rather than  $A_s$  because  $A_s$  includes logistics and administrative delays associated with corrective maintenance which are beyond the contractor's control.  $A_i$  is defined as

$$A_i = \frac{8760}{8760 - \frac{8760 * MTTR}{MTBF}}$$

where MTTR is mean time to repair and MTBF is mean time between failure. For NWS and DoD systems  $A_i$  should be .993. For FAA systems it should be .998. Contractors should contact the Program Branch for further details.

### 3.1.3 Field Support at the ROC

The ROC supports all three agencies, primarily by telephone through the WSR-88D Hotline 1-800-643-3363, in the resolution of field level hardware and software problems. Each agency may contact the ROC for maintenance, operational, and procedural assistance through slightly different procedures, as outlined below. The ROC keeps appropriate [Table 3.1](#) POCs informed of difficult or ongoing problems.

- a. NWS. If hardware, software, or operational problems cannot be corrected by on-site personnel, they will normally first contact their regional headquarters. If ROC assistance is deemed necessary, the field site will call the WSR-88D Hotline.
- b. Air Force. When an Air Force field site has a problem it cannot resolve, the technician will attempt to call the Command Special Maintenance Team (SMT) for assistance. If the SMT is unavailable or the problem still persists, the site may then call the WSR-88D Hotline depending on the complexity of the problem and the direction from the major command headquarters.
- c. Marine Corps. When a Marine Corps field site has a problem that cannot be resolved locally, they will contact the WSR-88D OPUP In-Service Engineering Activity (ISEA) at SPAWARSCEN, Charleston, SC, code 5.3.7.2. If the ISEA is unavailable or the problem still persists, the site may then call the WSR-88D Hotline.
- d. FAA. When an FAA field site has a problem it cannot resolve, the technician will contact their sector/regional engineering office. Efforts to resolve problems shall be done at the lowest level before contacting ATO-W (formerly AOS-250) and the WSR-88D Hotline. The technician will also notify ATO-W, either directly or via their appropriate sector or regional office, concerning any problem that was encountered that required assistance outside the local technician workforce. If further assistance is still required, the technician will contact ATO-W for additional guidance.

The ROC will provide site depot level support to each site by arranging for appropriate contract or Government services. [Table 3.2](#) lists the depot team corrective maintenance items which the ROC provides. Depot team support may be requested by calling the WSR-88D Hotline at 1-800-643-3363.

### 3.1.4 Maintenance Data Collection

The agencies use maintenance data collection (MDC) to identify reliability, maintainability, and availability trends, problems, and deficiencies. The agencies forward site A<sub>s</sub> to W/OPS42 as it becomes available. W/OPS42 compiles monthly statistics and provides reports to W/OPS13 and others as required.

As required, NRC uses maintenance data to calculate MTBF and repair cost for individual LRUs.

### 3.2 Workforce and Personnel

The WSR-88D system is maintained by personnel of the three agencies, and the skill levels of agency personnel vary. WSR-88D systems are maintained only by task-qualified technicians. Experience varies from several years experience to new graduates of basic electronic and systems technical schools.

### 3.3 Supply Support

The Logistics Branch (W/OPS14) provides PICA supply support for WSR-88D systems and resolution of tri-agency supply problems. The process in place for supply support is provided as [Appendix A](#) of this plan.

As the PICA, W/OPS14 has established and maintains an electronic requisition and status link Federal Standard Requisitioning and Issue Procedures (FEDSTRIP); Military Standard Requisitioning and Issue Procedures (MILSTRIP) to accommodate current DoD and FAA requisitioning procedures and routing processes. Field personnel experiencing supply support problems contact their normal Inventory Management Specialist; the SICA in turn contacts W/OPS14. NWS warehouse operations, under the supervision of W/OPS14, are located at National Oceanic and Atmospheric Administration (NOAA) National Logistics Support Center (NLSC, W/OPS18), Kansas City, Missouri. Requirements for stock item replenishment are determined by W/OPS14 and executed through the procurement office of the NOAA Region Acquisition Division. The tri-agency funding required to operate the warehouse is acquired through the stock item unit price surcharge included on the funded FEDSTRIP/MILSTRIP requisitions or Consolidated Logistics System (CLS) requisitions submitted by the field users. W/OPS14 provides the FAA and DoD with "read only" access to CLS for status monitoring of requisitions.

The agencies will ensure that all WSR-88D LRUs or other items which are coded as repairable are returned to NRC in accordance with the WSR-88D Supply Support Plan ([Appendix A](#)) and the WSR-88D Depot Repair Support Plan ([Appendix B](#)). The agency/site will be charged full replacement cost for any LRU requisitioned. Credit will be issued when repairable items are returned to the NRC. If credit items are not returned within one hundred and eighty (180) days of the requisition ship date, restocking action will be initiated by W/OPS14; and the full issue price is charged.

Special arrangements can be made by the agencies with W/OPS14 to extend the return time.

### 3.3.1 Site Recommended Spares and Consumables

Site recommended spare parts were provided to each site based on each agency's assessment of its need to meet availability requirements after the time of system acceptance by the Government. As modifications are made to the WSR-88D system, it is the responsibility of each assigned project team to assess impact to the recommended on-site spares list and coordinate additions, changes, and deletions with W/OPS14 and the agencies. It is each site's responsibility to replace items used from their on-site spares during corrective maintenance. The recommended site spares for the WSR-88D system are provided in [Table 3.3A](#) for repairable on-site spares and [Table 3.3B](#) for consumable on-site spares.

Recommended consumables are listed in [Table 3.4](#) for the WSR-88D system and [Table 3.5](#) for the OPUP.

EHB 6-537 Table 7-6 "Small OPUP Maintenance Parts List (MPL)" list of the OPUP's consumables may be more current than the ILSP and is available at <https://www.roc.noaa.gov/security/logon.aspx> under the OPUP Manuals section.

EHB 6-500 Table 1-25 "Consumables/Expendables Matrix" lists all other consumables. It may be more current than the ILSP and is available at <https://www.roc.noaa.gov/security/logon.aspx> under the Maintenance Manuals section.

### 3.3.2 NWS Supply

NWS field personnel follow the policies and procedures contained in NWS Engineering Handbook 1, Instrumental Equipment Catalog (Part 0), for obtaining needed WSR-88D replacement supply items (e.g., LRUs, piece parts, and consumables).

### 3.3.3 Air Force Supply

The Air Force field personnel use the procedures contained in [Appendix A](#) of this plan for parts requisitioning. Any item (LRU, piece part, etc.) required to make repairs to the equipment is requisitioned through the host supply activity using established procedures set by Air Force directives and base supply (e.g., telephone, appropriate forms, and computer terminals). Base supply processes a MILSTRIP requisition and makes available the required part based on the requisition priority. The requisitions for repairable items are automatically routed to the PICA through OO-ALC, the Air Force's SICA for WSR-88D. Requisitions for consumables are routed directly to NWS or the Defense Logistics Agency (DLA).

### 3.3.4 Navy Supply

Navy field personnel use current procedures for requisitioning spares. Any item required to make repairs to the equipment is requisitioned through the host supply activity. This requisitioning process uses established procedures set by base supply (e.g., telephone, appropriate forms, and computer terminals). Base supply processes the requisition and makes the required part available based on the requisition priority. Base Supply enters the requisition on the MILSTRIP computer network. The requisition is automatically routed to the PICA through NAVICP Mechanicsburg, the Navy's SICA.

### 3.3.5 FAA Supply

The FAA Logistics Center (AML), as the SICA, is the centralized supply point for the FAA. AML processes MILSTRIP requisitions to the PICA who will make available the required part based on the requisition priority. FAA field personnel utilize existing FAA ordering procedures for ordering replacement items.

### 3.3.6 Obtaining Stock Availability and Requisition Status

NWS, Air Force, Navy, and FAA AML customers with an ID and password can view a read-only copy of stock availability and requisition status by going to <https://cls.nlsc.noaa.gov/>.

## 3.4 Support Equipment

### 3.4.1 Purchase and Distribution

- a. WSR-88D PSE is documented and approved by the three agencies through a Support Equipment Recommendation Data (SERD) prepared by ROC PGM (W/OPS42). Approved PSE is procured by ROC and distributed to WSR-88D sites through NLSC. PSE which fails is returned to the NRC for repair, and its replacement is requisitioned from the WSR-88D PICA using normal supply procedures. PSE approved for use on the WSR-88D is provided in [Table 3.6](#). More current PSE data may be available in EHB 6-500 Tables 1-22, 1-23, and 1-24. EHB 6-500 is available at <https://www.roc.noaa.gov/security/logon.aspx>.
- b. WSR-88D CSE is documented and approved by the three agencies through a SERD prepared by the Maintenance, Logistics, and Acquisition Division's Maintenance Branch (W/OPS12). The SERD recommends CSE. The decision as to which items are required by each agency (due to current agency inventories), the funding, procurement, and distribution of CSE will be the responsibility of each agency. Replacement and repair of failed CSE is the responsibility of each agency. CSE documented by approved SERD for use on the WSR-88D is provided in [Table 3.7](#). More current CSE data may be available in EHB 6-500 Tables 1-22, 1-23, and 1-24. EHB 6-500 is available at <https://www.roc.noaa.gov/security/logon.aspx>.

- c. Certain items of Support Equipment (SE) due to frequency of use and/or high cost are shared by the agencies from limited quantities available at the NLSC. WSR-88D Shared Support Equipment (SSE) is documented and approved by the three agencies through a SERD prepared by ROC PGM (W/OPS42). Approved SSE is procured by the ROC and stored at the NLSC. When a user site requires this support equipment, it is requisitioned as any other stock item, used by the site, and then returned to the NRC for checkout prior to being returned to the NLSC stock shelf. SSE approved for use on the WSR-88D is provided in [Table 3.8](#). More current SSE data may be available in EHB 6-500 Tables 1-22, 1-23, and 1-24. EHB 6-500 is available at <https://www.roc.noaa.gov/security/logon.aspx>.
- d. [Table 3.9](#) lists the parts most commonly needed following a lightning strike. Note that all but one of these parts (R400-2A3) is listed as on-site spares in [Table 3.3A](#).
- e. [Table 3.10](#) lists the parts in the Recommended WSR-88D Transition Power Maintenance System (TPMS) On-Site Spares Kit and their quantity. This kit is considered an on-site spare for all DoD sites and a regional spare for the NWS. The FAA is not part of the TPMS Program. The following list gives the quantity of spares kits owned by each NWS Region:

Southern Region:	3
Eastern Region:	3
Central Region:	3
Western Region:	14
ROC:	1

#### 3.4.2 SE Maintenance and Calibration

Maintenance and calibration of on-site PSE and CSE is handled differently within each agency. A brief summary of each agency's procedures is given below.

- a. **NWS.** Calibration and repair of NWS WSR-88D on-site SE is handled by W/OPS12. Test equipment calibration is traceable to the National Institute of Standards and Technology (NIST) standards and is being accomplished using the manufacturer's recommended interval.
- b. **Air Force.** The accuracies associated with the WSR-88D radar system and supporting Test, Measurement, and Diagnostic Equipment (TMDE) must be traceable to NIST or a DoD-approved source.

The AF Metrology Calibration Detachment 1, Heath, OH, is assigned the responsibility of calibration support planning for systems entering the Air Force inventory. This planning action is accomplished through reviews of contractor prepared documents, such as SERD submittal, support equipment plans, etc.



The calibration and maintenance support of the WSR-88D TMDE designated in Technical Order 33K-1-100 as PMEL responsibility is performed by the closest geographically located PMEL. The owning activity normally is responsible for PSE. If resources are not available to the owning activity, the PMEL identifies an alternative source at a lower organizational level or provide the required support. When necessary, PMELs equipped with a Transportable Field Calibration Unit will provide support to remote or off-base locations requiring on-site calibration or repair of TMDE.

- c. **Marine Corps.** Calibration of on-site common General Purpose Test Equipment at Marine Corps locations is accomplished using the established Navy Metrology and Calibration Program. The Metrology Requirements List is publication NAVAIR 17-35MTL-1/SPAWAR SP4734-310-001/ USMC TI-4733-15/13.
- d. **FAA.** The policy for each article of test equipment is established by FAA Headquarters. It is the responsibility of the Airway Facilities Sector or Division to see that each site's test equipment is maintained and calibrated in accordance with this policy. Although the FAA's depot in Oklahoma City is available for engineering and repair maintenance and calibration, the Region may contract with a private contractor or with a local Air Force PMEL, depending on the test equipment to be repaired or calibrated.

### 3.5 Responsibilities and Parts Tables

The following tables will be updated as needed and will be posted to the ILSP on the ROC website (<http://www.roc.noaa.gov/WSR88D/PublicDocs/ILSP.pdf>) without re-coordination of this document.

Table 3.1  
Functional Area Responsibility/Points of Contact

	TRI-AGENCY COORDINATION	DOC POC	DoD POC	DOT POC	TRI-AGENCY COMMITTEES & GROUPS
PLANS	ROC DIR	W/OST DIR	HQ AFWA	ATO-W	PMC/TAC
BUDGET		W/OPS DIR/ROC	HQ AFWA	ATO-W	PMC
SYSTEM CM SITE CM	ROC CM	W/OS12	HQ AFWA HQ AFWA	ATO-W ATO-W	PMC/WSR-88D CCB/TRC
SW MAINT/SUSTAINING ENG SW DEVELOP/NPI ENG	ROC ENG W/OST	ROC ENG W/OST	HQ AFWA HQ AFWA	ATO-W ATO-W	SREC/APWG SREC/APWG
HDWR SUSTAINING ENG HDWR DEVELOP/NPI ENG	ROC ENG W/OST	ROC ENG W/OST	HQ AFWA HQ AFWA	ATO-W ATO-W	ICWG
DOCUMENTATION	ROC PGM	W/OPS12	HQ AFWA	ATO-W	
FIELD MAINT DEPOT MAINT	ROC OPS NRC	W/OPS12 NRC	HQ ACC/SC OO-ALC	AML-2000 AML-2000	
FACILITIES	W/OPS15	W/OPS15	HQ AFWA	ATO-T	
OPERATIONS TRNG MAINT TRNG	ROC OPS ROC OPS	WDTBNWSTC	KEESLER AFB NWSTC	WDTB* NWSTC	
MODIFICATIONS	ROC PGM	W/OPS1	HQ AFWA	ATO-W	
PECULIAR SE COMMON SE SHARED SE DEPOT SE	ROC PGM ROC PGM ROC PGM NRC	W/OPS12 W/OPS12 W/OPS12	HQ AFWA HQ AFWA HQ AFWA	REGION/SITE REGION/SITE REGION/SITE	
SAFETY	ROC PGM	ROC PGM	HQ AFWA	ATO-W	

\*WDTB teaches NWS Center Weather Support Unit employees working for the FAA.

Table 3.2  
Depot Team Corrective Maintenance Items List

ASN	NSN	PART NUMBER	ITEM NAME	CAGE CODE	SMR
*		171748X	FEED SUPPORT STRUT	84147	PAFZZ
11*		MICROFLECT	STEEL TOWER	29189	PDFDD
R400-12	5985-01-448-5950	8531-1	RADOME	15175	PDFDD
12MP10*		8531-4	ZENITH HATCH ASSEMBLY	15175	PAFDD
12MP11*		B1529-12-AZ	PANEL, AZIMUTH	15175	PAFZZ
12MP2*		B1529-11-B1	PANEL, B1	15175	PAFZZ
12MP3*		B1529-11-B2	PANEL, B2	15175	PAFZZ
12MP4*		B1529-13-B1X	PANEL, B1X	15175	PAFZZ
12MP5*		B1529-13-B2X	PANEL, B2X	15175	PAFZZ
12MP9*		B1529-11-A	PANEL, A	15175	PAFZZ
R400-12MS4	5920-01-381-3107	705-174-5	LIGHTNING ROD FOR 5 ROD ARRAY	15175	PAFZZ
R400-12MS6	5920-01-448-9208	8552-74-1	LIGHTNING ROD SHAFT ASSEMBLY, 88"	15175	PAFZZ
2*		1214777	ANTENNA/PEDESTAL	56232	PDFDD
2*		1219667	ANTENNA/PEDESTAL	56232	AD
2A1*		40505-1001-102	PEDESTAL ASSEMBLY, REDUNDANT	26795	PBFDD
R400-2A1	NWS9-90-200-0001	40505-1001-101	PEDESTAL ASSEMBLY, FSP	26795	PBFDD
2A1*		54636-1001-101	PEDESTAL ASSEMBLY, LPP	26795	PBFDD
2A1A1*		54636-1202-101	ELEVATION ASSEMBLY, LPP	26795	PBFDD
2A1A1*		40505-1202-101	ELEVATION ASSEMBLY, FSP/REDUNDANT	26795	PBFDD
R400-2A1A1A3A1 OR R400-2A1A3A3A1	3010-01-436-0701	14636-5003-3	GEARBOX, ELEVATION	1M813	PAFLD
R400-2A1A1A5	3120-01-388-2111	14636-5001-101 or 1222R2	BEARING, TURNABLE, ELEVATION	1M813	PAFLD
R400-2A1A1A6	3110-01-414-1805	14636-5001-103 or 1222A11	BEARING, 4PT ANGULAR CONTACT, ELEV	1M813	PAFZZ
R400-2A1A1MS1	5330-01-380-9549	NS67400-0022	SEAL FLANGE	15566	PAFZZ
R400-2A1A1SR	5331-01-381-2557	5-069N674-70	O-RING	02697	PCFZZ
2A1A3*		40505-1201-101	AZIMUTH ASSEMBLY, FSP/REDUNDANT	26795	PBFDD
R400-2A1A3A5	3120-01-388-6395	14636-5001-102 or 1222A10	BEARING, 4PT ANGULAR, CONTACT, AZ	0HRJ8	PAFLD
R400-2A2	5985-01-414-9266	172560X	FEED ANTENNA ASSEMBLY	84147	PBFDD
R400-2A2A1	5985-01-417-4618	172816X	FEED/POLARIZER ASSEMBLY	84147	PBFDD
R400-2A2A1MP1 - R400- 2A2A1MP18	5985-01-417-6540	171740X	REFLECTOR SKIN PANEL	84147	PAFZZ

\*No R400- designator in ASN column and no value in NSN column because not stocked at NLS

Table 3.2  
Depot Team Corrective Maintenance Items List

ASN	NSN	PART NUMBER	ITEM NAME	CAGE CODE	SMR
R400-2A2A1MS3	5985-01-413-9062	171789X	SKINPANEL PACK	35844	PBFDD
R400-3A1	5895-01-387-5785	1D20992G01	CONTROL PANEL	97942	PAFDD
R400-W10-301	5995-01-362-0504	1213464-301	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-302	5995-01-362-0500	1213464-302	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-303	5995-01-362-0499	1213464-303	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-304	5995-01-362-0501	1213464-304	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-305	5995-01-362-0502	1213464-305	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-306	5995-01-362-0503	1213464-306	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-307	5995-01-387-3787	1213464-307	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-308	5995-01-387-3808	1213464-308	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-309	5995-01-387-3809	1213464-309	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-310	5995-01-387-3177	1213464-310	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-311	5995-01-387-3810	1213464-311	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-312	5995-01-432-6306	1213464-312	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-314	5995-01-469-5861	1213464-314	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-317	5995-01-469-5885	1213464-317	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-318	5995-01-469-5888	1213464-318	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-319	5995-01-469-5892	1213464-319	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-301	5995-01-469-6169	1218221-301	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-303	5995-01-469-6171	1218221-303	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-304	5995-01-469-6172	1218221-304	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-305	5995-01-432-6315	1218221-305	CABLE ASSEMBLY	56232	PAFZZ
R400-W10-308	5995-01-470-6732	1218221-308	CABLE ASSEMBLY	56232	PAFZZ
R400-W131-310	5995-01-467-8525	1213477-310	CABLE ASSEMBLY	56232	PAFZZ
R400-W131-313	5995-01-469-5895	1213477-313	CABLE ASSEMBLY	56232	PAFZZ
R400-W31-301	5995-01-360-9755	1213477-301	CABLE ASSEMBLY	56232	PAFZZ
R400-W31-303	5995-01-360-9756	1213477-303	CABLE ASSEMBLY	56232	PAFZZ
R400-W31-314	5995-01-469-5898	1213477-314	CABLE ASSEMBLY	56232	PAFZZ
R400-W31-317	5995-01-469-5904	1213477-317	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-301	6150-01-360-9803	1213460-301	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-302	6150-01-360-9804	1213460-302	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-303	6150-01-360-9805	1213460-303	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-304	6150-01-360-9806	1213460-304	CABLE ASSEMBLY	56232	PAFZZ

Table 3.2  
Depot Team Corrective Maintenance Items List

ASN	NSN	PART NUMBER	ITEM NAME	CAGE CODE	SMR
R400-W3-305	6150-01-360-9807	1213460-305	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-306	6150-01-360-9808	1213460-306	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-307	6150-01-388-7609	1213460-307	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-308	6150-01-388-7613	1213460-308	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-309	6150-01-388-7614	1213460-309	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-310	6150-01-388-7612	1213460-310	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-311	6150-01-388-7611	1213460-311	CABLE ASSEMBLY	56232	PAFZZ
R400-W3-312	6150-01-387-6854	1213460-312	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-301	5995-01-362-0498	1213461-301	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-302	5995-01-362-0494	1213461-302	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-303	5995-01-368-4586	1213461-303	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-304	5995-01-362-0495	1213461-304	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-305	5995-01-362-0496	1213461-305	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-306	5995-01-362-0497	1213461-306	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-307	5995-01-387-6396	1213461-307	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-308	5995-01-387-3631	1213461-308	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-309	5995-01-387-3632	1213461-309	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-310	5995-01-387-3639	1213461-310	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-311	5995-01-388-3804	1213461-311	CABLE ASSEMBLY	56232	PAFZZ
R400-W4-312	5995-01-469-5840	1213461-312	CABLE ASSEMBLY	56232	PAFZZ
R400-W53-302	5995-01-360-9767	1213591-302	CABLE ASSEMBLY	56232	PAFZZ
R400-W53-303	5995-01-360-9757	1213591-303	CABLE ASSEMBLY	56232	PAFZZ
R400-W53-304	5995-01-360-9758	1213591-304	CABLE ASSEMBLY	56232	PAFZZ
R400-W53-305	5995-01-360-9779	1213591-305	CABLE ASSEMBLY	56232	PAFZZ
R400-W53-306	5995-01-360-9759	1213591-306	CABLE ASSEMBLY	56232	PAFZZ
R400-W53-510	5995-01-360-9765	1213591-510	CABLE ASSEMBLY	56232	PAFZZ
R400-W54-308	5995-01-360-9761	1213591-308	CABLE ASSEMBLY	56232	PAFZZ
R400-W54-309	5995-01-360-9760	1213591-309	CABLE ASSEMBLY	56232	PAFZZ
R400-W54-310	5995-01-360-9762	1213591-310	CABLE ASSEMBLY	56232	PAFZZ
R400-W54-311	5995-01-360-9763	1213591-311	CABLE ASSEMBLY	56232	PAFZZ
R400-W54-312	5995-01-360-9764	1213591-312	CABLE ASSEMBLY	56232	PAFZZ
R400-W54-511	5995-01-362-0505	1213591-511	CABLE ASSEMBLY	56232	PAFZZ

Table 3.3A  
WSR-88D System Recommended On-Site Repairable Spares List

ASN	NSN	PART NUMBER	ITEM NAME	FAA QTY	DoD QTY	NWS QTY
R400-2A1A1A2A1	7050-01-388-0992	14636-5017-1	ENCODER	1	1	1
R400-2A1A1B1	6105-01-394-5305	14636-5018-1	DC SERVO MOTOR	1	0	1
R400-2A4	5895-01-362-0550	1213674-201 or RF1784B	AMPLIFIER, RF, LOW NOISE	0	1	0
R400-3A10	6110-01-315-9249	1D20990G01	CHARGING SWITCH	1	1	1
R400-3A11	5996-01-455-9921	2500046-301	TRIGGER AMP (MODIFIED)	1	1	1
R400-3A12A1	5961-01-362-0585	3D55852G01	RBDT SWITCH	0	1	0
R400-3A12A3	5961-01-462-2266	2500007-301	BACKSWING DIODE STACK	1	1	1
R400-3A3A3	5998-01-295-0536	706J221G01	RMS INTERFACE	1	1	1
R400-3A3A4	5998-01-362-0583	706J233G01	CONTROL ADAPTER	0	1	0
R400-3A4	5963-01-316-0781	645A794A02	RF DRIVER MODULE	0	1	0
R400-3A5	6625-01-316-0780	1A20768A01	PULSE SHAPER MODULE	1	1	1
R400-3A8	6110-01-471-6084	2500004-301	POST CHARGE REG, MODIFIED	0	1	0
R400-3P52	6130-01-466-4506	2500010-301	POWER SUPPLY, FOCUS COIL	0	1	0
R400-4A26	5895-01-368-4590	1213625-201 or 70069	RF POWER MONITOR	1	1	1
R400-10A6A1A2	5895-01-417-2700	408-2200	ELECTRONIC UNIT	0	1	0
R400-70/170A14A1	5895-01-377-7114	1219739-209 or 21100	MODEM, DATA, DUAL	0	1	1
R400-70/170A14A6	5895-01-377-7105	1219739-207 or 40363	MODEM CARD	0	1	1
R400-70/170A14PS1	6130-01-371-5048	80406	POWER SUPPLY	0	1	0
R400-85A2A1	7025-01-492-7673	2210017-209 or 370-3693-01	HARD DISK DRIVE, 9 GB	0	1	0
R400-90/190A13A1	5998-01-380-1642	40505-1301-102	PWA, ANALOG W/NOTCH	1	0	1
R400-90/190A13A2	5998-01-386-8526	40505-1302-102	PWA, DIGITAL BOARD	1	1	1
R400-90/190A3A1	5998-01-387-0386	1389802-302	DIGITAL DAU BOARD	1	1	1
R400-90/190A3A2	5998-01-385-1668	1526471-301	ANALOG DAU BOARD	1	1	1

Table 3.3B  
WSR-88D System Recommended On-Site Consumable Spares List

ASN	NSN	PART NUMBER	ITEM NAME	FAA QTY	DoD QTY	NWS QTY
R400-2A3A1	5895-01-400-3043	AMC1164	LIMITER, PASSIVE	0	1	0
R400-3A7HP1	4320-01-543-1181	646A034H01	PUMP, OIL	0	1	0
R400-3S8	5930-01-322-0288	2390017-301	SENSOR, PRESSURE	1	0	1
R400-3S10	6685-01-322-2236	PSF101-6639	SENSOR, PRESSURE	1	1	1
R400-70/170B1	4140-01-105-2015	1213829-201	FAN	1	0	1
R400-85A2A2	7025-01-492-7668	2210017-208 or 370-3694-01	DISK DRIVE, CD ROM 32X	0	1	0
R400-85A4	7025-01-467-9370	2210017-204 or 370-3631-01	MOUSE	0	1	0

Table 3.4  
WSR-88D System Consumable List

ASN	NSN	PART NUMBER	ITEM NAME	QUANTITY
			FUSE, 2 AMP 250 V	5
014-G-14	9150-00-935-4018	AEROSHELL GREASE 17 or MIL-G-21164	GREASE, CARTRIDGE	1
017-F-40-17	5920-01-093-8458	F02A250V2-1-2A	FUSE, 3AG 2.5 AMP 250 V	5
017-F-40-21	5920-00-010-6652	AGC-3	FUSE, 3 AMP 250 V	5
R400-90/190PS3F1	5920-01-028-5727	BUSS MDL3	FUSE, 3 AMP 250 V	5
017-F-40-25	5920-01-017-0683	GMA-3	FUSE, 3 AMP 250 V	5
017-F-40-29	5920-01-240-8022	FNQ-5	FUSE, 5 AMP 500 V	5
017-F-40-39	5920-00-011-7142	F02A125V10A	FUSE, 10 AMP 125 V	5
017-F-40-49	5920-01-311-6724	FLQ 20	FUSE, 20 AMP 500 V	5
017-F-40-52	5920-00-927-5567	KTK10	FUSE, 10 AMP 600 V	5
017-F-4-10	5920-00-280-8342	AGC1	FUSE, 1 AMP, 250 V	5
017-F-4-15	5920-00-050-4953	F02A250V1-1/2A	FUSE, 3AG 1.5 AMP 250 V	5
017-F-4-30	5920-00-557-2647	AGC4	FUSE, 3AG 4 AMP 250 V	5
017-F-4-35	5920-00-284-6787	F02A250V5A	FUSE, 3AG 5 AMP 250 V	5
017-F-4-5	5920-00-280-8344	F02A250V1/2A	FUSE, 3AG 0.5 AMP 250 V	5
017-F-4-8	5920-00-284-9494	F02A250V3-4AS	FUSE, 3AG 0.75 AMP, 250 V	5
017-F-5-18	5920-00-280-3178	MDL25/10	FUSE, 2.5 AMP 125 V	5
017-F-5-19	5920-00-284-7134	MDL-15	FUSE, 15 AMP 32 V	5
017-F-5-22	5920-01-032-6471	BUSS MDL-6-1/4	FUSE, 6.25 AMP 32 V	5
017-F-5-25A	5920-00-156-7375	F02B250V1-1/4A	FUSE, 1.25 AMP 250 V	5
017-F-5-31S	5920-00-238-3087	MDL-2	FUSE, 2 AMP 250V SLO-BLO	5
017-F-5-45	5920-00-284-6795	F02B32V10A	FUSE, 3AG 10 AMP 32 V	5
017-F-7-40S	5920-00-880-0603	AGX-2	FUSE, 2 AMP	5
017-F-7-50	5920-01-013-2389	F02A125V8A	FUSE, 3AG 8 AMP 32 V	5
052-S-1	1365-01-359-7102	2S5, ES400	SMOKE_DETECTOR	1
R400-014-O-20	9150-01-418-8738	SCH75W	OIL, LUBRICATING, 5 GAL., PEDESTAL GEARBOX	1
R400-014-O-21	9150-93-000-0002	SCH75W	OIL, LUBRICATING, 1 QT., PEDESTAL GEARBOX	1
R400-014-O-22	9150-01-389-2196	TRIBOLUBE-L3-5	OIL, LUBRICATING, LOW TEMP, 5 GAL., PEDESTAL GEARBOX	*
R400-10M1MP18	2940-01-407-3802	PMAF4539	FILTER, AIR (KOHLER)	2
<b>LEGEND:</b>	* Alternates for Sites with low temperature environments			



Table 3.4  
WSR-88D System Consumable List

ASN	NSN	PART NUMBER	ITEM NAME	QUANTITY
R400-10M1MP9	2910-00-100-3354	AR50041	FILTER, FUEL (KOHLEK)	2
R400-10M1MP19	2940-00-007-4791	T19044	FILTER, OIL (KOHLEK)	2
R400-10M1MP17	2910-01-331-1771	PMFS1247	FILTER, WATER SEPARATOR (KOHLEK)	2
R400-3A7C01	9160-01-142-5748	55822AV	OIL, DIELECTRIC, 5 GAL.	1
R400-3E3MP1-1	3030-01-439-0886	588R721H04 or 3VX265	BELT, 26.5"	1
R400-3E3MP1-2	3030-01-473-7476	2200052-201 or 3VX257 or JA-257-C	BELT, 25.7"	1
R400-90/190A22F1	5920-01-123-5836	SC15 or 24-071	FUSE, 15 AMP 300 V	5
R400-3A1DS1	6240-01-103-3081	MS25237-385AS15	LAMP, INCANDESCENT	1
<b>LEGEND:</b>				
* Alternates for Sites with low temperature environments				

Table 3.5  
WSR-88D MSCF & OPUP Printer Consumables List

<b>Phaser 8200 Ink Sticks (<a href="http://www.office.xerox.com/color-printers/phaser-8200/supl-enus.html">http://www.office.xerox.com/color-printers/phaser-8200/supl-enus.html</a>)</b>	
<b>PART NUMBER</b>	<b>ITEM NAME</b>
016-2040-00	Xerox 5 Black ColorStix, 8200 Ink Sticks
016-2045-00	Xerox 5 Cyan ColorStix, 8200 Ink Sticks
016-2046-00	Xerox 5 Magenta ColorStix, 8200 Ink Sticks
016-2047-00	Xerox 5 Yellow ColorStix, 8200 Ink Sticks
<b>Phaser 8400 Ink Sticks (<a href="http://www.office.xerox.com/color-printers/phaser-8400/supl-enus.html">http://www.office.xerox.com/color-printers/phaser-8400/supl-enus.html</a>)</b>	
<b>PART NUMBER</b>	<b>ITEM NAME</b>
108R00608	Xerox 6 Black ColorStix, 8400 Ink Sticks
108R00605	Xerox 2 Cyan ColorStix, 8400 Ink Sticks
108R00606	Xerox 2 Magenta ColorStix, 8400 Ink Sticks
108R00607	Xerox 2 Yellow ColorStix, 8400 Ink Sticks
<b>Phaser 8550 Solid Ink (<a href="http://www.office.xerox.com/color-printers/phaser-8500-8550/supl-enus.html">http://www.office.xerox.com/color-printers/phaser-8500-8550/supl-enus.html</a>)</b>	
<b>PART NUMBER</b>	<b>ITEM NAME</b>
108R00668	Xerox Solid Ink 8500/8550 Black (3 Sticks)
108R00669	Xerox Solid Ink 8500/8550 Cyan (Three Sticks)
108R00670	Xerox Solid Ink 8500/8550 Magenta (Three Sticks)
108R00671	Xerox Solid Ink 8500/8550 Yellow (Three Sticks)
108R00672	Xerox Solid Ink 8500/8550 Black (6 Sticks)
Sites will replace OPUP consumables via local purchase procedures	

Table 3.6  
WSR-88D Peculiar Support Equipment

ASN	NSN	PART NUMBER	ITEM NAME	SERD	RDA	RPG	OPUP	MLOS
R400-SE1	4320-01-388-2118	1219694-301	OIL TRANSFER PUMP KIT	2	X			
R400-SE12	4720-01-389-1475	3F6132 or 1219680-201	DRAIN HOSE PEDESTAL OIL W/ 15 FT HOSE	28	X			
R400-SE22	4920-01-417-2706	M709	TOOL, KLYSTRON ADJUSTMENT	61	*			
R400-SE23	5998-01-297-1709	1D22733G01	EXTENDER, CARD, TRANSMITTER	56	X			
R400-SE25	3950-01-354-2517	4214-2262	CRANE, CURVED OUTRIGGER	66	X			
R400-SE29	5998-01-390-2987	SD-97059 OPT A	EXTENDER CARD (MLOS)	62				X
R400-SE30	5998-01-387-9046	SD-97273 OPT A	EXTENDER CARD (MLOS)	63				X
R400-SE34	5120-01-407-8166	R400-SE34	SWITCH SLEEVE SPANNER WRENCH	74	X			
R400-SE35	5975-01-412-0666	161C755G01	TOOL, BYPASS	N/A	X			
R400-SE41	5315-01-433-8106	2100001-101	PIN, ENGAGEMENT	89	X			
R400-SE47	6150-01-492-7226	2200101-201	LOOPBACK CABLE ASSEMBLY (ORPG)	101		X		
R400-SE48	5995-01-492-1903	2210042-206	RS232/530 NULL MODEM CABLE	102		X		
R400-SE5	3950-01-393-3802	SH-10	CHAIN HOIST	5	X			
R400-SE50	5935-01-503-2892	2200128-202	NULL MODEM ADAPTER	106		X		
R400-SE51	5925-01-392-7701	PSL-CB	CIRCUIT BREAKER LOCKOUT DEVICE	107	X			
R400-SE52	3950-01-567-4434	2A7395	ELECTRIC DAVIT CRANE	110	X			
R400-SE6	3940-01-391-2615	WSP4415	SLING, KLYSTRON TUBE AND FOCUS COIL	1	X			
R400-SE7	3920-01-390-2989	86D064	SERVICE DOLLY, KLYSTRON	3	X			
R400-SE8	4910-01-197-4887	1213760-201	MANUAL DAVIT CRANE, RDA TOWER	6	*			
R400-SE63	TBD	2310033-301	Hose Assembly	116	X			
R400-SE62	TBD	2100068-101	Gear Tool (Data Package)	117	X			
Not in CLS	Not in CLS	HP3312A or equivalent	GENERATOR, SIGNAL, AUDIO FREQUENCY	67	X			
Not in CLS	Not in CLS	DBI/SALA L3300DP6	LANYARD, EZ STOP	94	X			
<b>LEGEND:</b> * Item delivered as part of site installation								

Table 3.7  
WSR-88D Common Support Equipment

ASN	NSN	PART NUMBER	ITEM NAME	SERD	RDA	RPG	OPUP	MLOS
041-B-5	NWS0-43-500-0001	335-1000	CANVAS HOIST BAG	111	X			
041-L-4	5210-00-223-9607	98-12	LEVEL, PRECISION	90	X			
060-P-10	NWS9-92-030-0010	210WDL56 or EQUIVALENT	LANYARD, 6 FT POSITIONING	**103	X			
060-P-14	4020-01-493-7701	1220007 or EQUIVALENT	LANYARD, 3 FT SHOCK ABSORBING	104	X			
060-P-4	NWS9-92-030-0003	1105754	HARNESS, SAFETY, SMALL SIZE	**105	X			
060-P-5	NWS9-92-030-0005	1105750	HARNESS, SAFETY, MEDIUM SIZE	**105	X			
060-P-6	NWS9-92-030-0006	1105751	HARNESS, SAFETY, LARGE SIZE	**105	X			
060-P-7	NWS9-92-030-0007	1105752	HARNESS, SAFETY, X-LARGE SIZE	**105	X			
060-P-8	NWS9-92-030-0008	1105753	HARNESS, SAFETY, XX-LARGE SIZE	**105	X			
R400-SE42	5120-01-449-7588	NWS-6000-SP1	TOOL KIT, EXTRACTION/INSERTION	95	X	X		
R400-SE43	5935-01-458-6310	234	PANEL PUNCH, ELECTRONIC CONNECTOR	96		X		
R400-SE45	7910-01-467-2748	2200064-201	VACUUM CLEANER, CANNISTER, HEPA	98	X			
R400-SE46	6625-01-492-3940	224490/20 or EQUIVALENT	RADIATION HAZARD METER, EMR-20	99	X			
R400-SE49	5210-00-293-3511	GGG-R-791 TY3CLIST3	RULE, MULTIPLE FOLD	91	X			
R400-SE55	5995-01-538-9630	940-0144	RJ2-DB9F RS232 CABLE	112	X			
R400-SE56	5995-01-538-9626	EVNSL91-0006	CABLE ASSEMBLY, CATEGORY 5E,	113	X			
R400-SE57	5995-01-538-8742	UTP-1200-10R	CAT5E XOVER TEST CABLE	114		X		
R400-SE58	5995-01-538-8752	UTP-1400-10B	CAT5E STRAIGHT TEST CABLE	115		X		
T158	6625-01-275-6268	HP 5350B OPT 001	RF FREQUENCY COUNTER	47	X			
T229A	6625-01-391-5354	HP 8648C OPT 1E5-1E6	RF SIGNAL GENERATOR	49	*			
T313-1	6625-00-354-9762	HP 8481A	POWER SENSOR, -30 TO +20 dBm	43	X			
T313-2	6625-01-028-2882	HP8484A	POWER SENSOR -70 TO -20 dBm	10	X			
T330	6625-00-411-9643	HP 4328A	MILLIOMETER/HIGH RESIST METER	58	*			
T330A	6625-01-373-2278	HP4338A	MILLIOMETER, DIGITAL	58	*			
T331	6625-01-033-5050	HP 436A	POWER METER, DIGITAL	9	X			
T331-10	5985-01-305-3003	3324-4	POWER SPLITTER (4-WAY)	36	X			
T331-2	6625-01-297-2594	HP 8481H	POWER SENSOR -10 TO +34.7 dBm	27	X			
T332	6625-01-336-6150	DT-5U-3-1434R04	TEST SET TRANSMISSION	19		X		
<b>LEGEND:</b>	* Alternate Items for same SERD							
	** NWS Only							

Table 3.7  
WSR-88D Common Support Equipment

ASN	NSN	PART NUMBER	ITEM NAME	SERD	RDA	RPG	OPUP	MLOS
T333	6625-01-312-2930	87	MULTIMETER, HAND HELD	12, 65	X			
T335	6625-01-304-4945	AM-48	TRANSMISSION LINE TEST SET	15		X		
T372-1	6625-01-040-4423	P6015A	HIGH VOLTAGE PROBE	48	X			
T374	6625-93-000-0040	TDS 420	OSCILLOSCOPE, DIGITAL	**11	*			
T411	6625-01-487-0700	78-110	NETWORK CABLE TESTER	100				
T434A	6625-01-455-2312	OC60D&TC/DE	OIL TEST SET, PORTABLE	51	*			
T541	6625-01-047-7309	HP 545A	PROBE, LOGIC	55	X			
T542	5985-00-813-9111	HP 908A	TERMINATOR 50 OHM	37	X			
T543	6625-01-327-5153	HP 423B OPT 003	DIODE DETECTOR BNC/TYP N	18	X			
T600	6625-00-484-6354	HP 11581A	ATTENUATOR KITS	38	X			
T600-5	5985-01-272-0914	8491A-030-890	ATTENUATOR, COAX, TYPE N 30 dB	38A	X			
T600-6	5985-94-000-0001	23-6-34	ATTENUATOR, HIGH POWER	**82	*			
T605	5985-01-138-3578	HP 8494A OPT 001-UK6	ATTENUATOR, STEP 0 - 11 dB	44	X			
T606	5985-01-249-6037	HP 8496A OPT 001-UK6	ATTENUATOR, STEP 0 - 110 dB	45	X			
T606-1	5985-01-107-7801	HP 11716A	INTERCONNECTION KIT	46	X			
T616	5985-01-029-4624	HP S281A	ADAPTER, WAVEGUIDE TO COAX	57	X			
T900	6635-01-239-6812	GD-30	DYNAMOMETER, GRAM FORCE	80	X			
T901	6635-00-921-6255	12998-F	TESTER, BELT TENSION	81	X			
Not in CLS	Not in CLS	HP 8563A	SPECTRUM ANALYZER	16	X			
Not in CLS	Not in CLS	923718	DIP CLIP, 28 PIN	50	X	X		
<b>LEGEND:</b>								
* Alternate Items for same SERD								
** NWS Only								

Table 3.8  
WSR-88D Shared Support Equipment

ASN	NSN	PART NUMBER	ITEM NAME	SERD	RDA	RPG	OPUP	MLOS
R400-SE13	5995-01-388-4552	1219683-301	CABLE, ADAPTER, FOCUS COIL	30*	X			
R400-SE14	5905-01-390-0244	1219695-301	RESIST/ADAPT, FILAMENT POWER	31*	X			
R400-SE26	8145-01-388-1190	2D08935G01	CONTAINER, KLYSTRON STORAGE	4	X			
R400-SE37	5985-01-445-4605	54418A-284	ADAPTER, WAVEGUIDE, RECTANGULAR	92	X			
R400-SE9	6625-01-389-1375	RF/TABEL	AMMETER	17*	X			
R400-SE44-1	6625-01-496-1495	R400-SE44-1	KIT, NOISE SOURCE CALIBRATION	97	X			
T802	6625-01-379-7591	HP11758B	DIGITAL RADIO TEST SYSTEM	68				X
<b>LEGEND:</b>								
* Issued to all DoD sites and Shared by DOC and DOT sites								

Table 3.9  
WSR-88D Recommended Lightning Strike Replacement Parts

ASN	NSN	PART NUMBER	ITEM NAME
R400-2A1A1A2A1	7050-01-388-0992	14636-5017-1	ENCODER
R400-2A1A1B1	6105-01-394-5305	14636-5018-1	DC SERVO MOTOR
R400-2A3	5985-01-369-7461	1213627-201	RECEIVER PROTECTOR W/PASSIVE LIMITER
R400-2A4	5895-01-362-0550	1213674-201 or RF1784B	AMPLIFIER, RF, LOW NOISE
R400-3A3A4	5998-01-362-0583	706J233G01	CONTROL ADAPTER
R400-90/190A3A1	5998-01-387-0386	1389802-302	DIGITAL DAU BOARD
R400-90/190A3A2	5998-01-385-1668	1526471-301	ANALOG DAU BOARD
R400-90/190A13A1	5998-01-380-1642	40505-1301-102	PWA, ANALOG W/NOTCH
R400-90/190A13A2	5998-01-386-8526	40505-1302-102	PWA, DIGITAL BOARD

Table 3.10  
Recommended WSR-88D TPMS On-Site Spares Kit

ASN	NSN	PART NUMBER	ITEM NAME	CAGE CODE	QTY
R400-62W3F1	5920-01-028-5727	128102005	FUSE - 3 AMP, DUAL	31795	2
R400-62A12F1	5920-00-174-5793	128103155-002	FUSE - 0.2 AMP	31795	1
R400-62A1F16	5920-01-332-1033	128304123	FUSE - 70 AMP	31795	1
R400-62A2F1	5920-01-491-5105	128304038-053	FUSE - 10 AMP, TYPE KTK	31795	2
R400-62A2F13	5920-01-257-3545	128304038-045	FUSE - 1 AMP, TYPE KTK,	31795	2
R400-62A3A1	5998-01-491-4744	101073070-001	CONTROL BOARD - STATIC SWITCH BYPASS	31795	1
R400-62A3A1MP1	5999-01-491-5457	132208006	SPACER - CONTROL BOARD	31795	2
R400-62A3E1	5920-01-044-4158	141923173	SURGE ARRESTOR, 650 V	31795	1
R400-62A3R61	5905-01-309-8531	141713001	RESISTOR - 20 OHM, 20 WATT	31795	1
R400-62A4A1	5998-01-491-4766	101073074-001	CONTROL BOARD - RECTIFIER	31795	1
R400-62A4A2	5998-01-491-4756	101073072-001	CONTROL BOARD - INVERTER	31795	1
R400-62A4A2MP1	5970-01-491-5458	132208047-001	SPACER - CONTROL BOARD	31795	2
R400-62A5A1	5998-01-491-4752	101073071-001	CONTROL BOARD - MONITOR PANEL	31795	1
R400-62A5A2DS1	6240-01-491-5473	139305015-001	LAMP - LCD DISP	31795	1
R400-62A5A3	5998-01-491-5559	163901048-001	CONTROL BOARD - LCD INVERTER	31795	1
R400-62A6S5	5925-01-491-5057	122130089-001	SWITCH - 2 POLE, 20 AMP	31795	1
R400-62A7B1	4140-01-491-5544	151101056-001	FAN - 24 VDC, 283 CFM	31795	2
R400-62A8A1C41	5910-01-436-5774	120519018-001	CAPACITOR - 3.3 µF	31795	1
R400-62A8A1F41	5920-01-491-5164	128307025-001	FUSE - 200 AMP, SEMICONDUCTOR	31795	4
R400-62A8A1MP1	5999-01-439-7896	129101001-002	THERMAL INTERFACE PAD	31795	4
R400-62A8A1Q41/Q42	5961-01-491-5523	143224023-001	IGBT - 300A, 1200V, N-CHANNEL	31795	4
R400-62A9C21	5910-01-491-5048	120515017-001	CAPACITOR - 0.20 µF	31795	1
R400-62A9PB21	5961-01-440-8946	143318022	SCR POWER BLOCK - 1600V, 150A	31795	3
R400-62A9PB21MP1	5999-01-491-5442	129101002-002	THERMAL INTERFACE PAD	31795	4
R400-62E6MP1	5970-00-142-1840	132204002	SPACER - CONTROL BOARD	31795	2
R400-62F61	5920-00-033-4339	128304128-003	FUSE - 80 AMP	31795	1
R400-62PS1	5998-01-491-4760	101073073-001	CONTROL BOARD - DC POWER SUPPLY	31795	1
R400-64A1F1	5920-01-256-5830	128208001-012	FUSE - 1.5 AMP	31795	1
R400-64A1F2	5920-00-370-2479	128208001-029	FUSE - 10 AMP	31795	1



### 3.6 Technical Data

Technical Data includes all levels of engineering data, technical manuals, and any other data necessary to operate and support a system over its life cycle. All technical data is managed and maintained by the ROC. This includes the drawing repository (vault), the drafting work, updating of original text, etc. Engineering data includes specifications, drawings, schematics, manufacturing standards, test criteria, calibration information, and full design disclosure. Engineering data are used to support WSR-88D repair, quality assurance, modification, provisioning, and replenishment procurement of spares and contractor logistics support. The goal of the ROC is to provide electronic access and retrieval of WSR-88D engineering data through the AGILE™ configuration and data management software tool.

The complete suite of technical manuals including operator manuals, maintenance manuals, commercial manuals, parts listings, etc. is developed, updated, managed, and distributed by the ROC. A more complete discussion of Technical Manuals is found in paragraph 3.14.

### 3.7 Training and Training Support

#### 3.7.1 Operations Training

Each agency is responsible for its own training. WDTB and COMET provide operations training for NWS. DoD provides operations training at Keesler AFB Technical Training Center.

#### 3.7.2 Maintenance Training

Maintenance training is the responsibility of each agency and is carried out for DOC, DOT, and DoD at the NWSTC.

#### 3.7.3 Training Equipment

DOC training equipment is located at the NWSTC in Kansas City, Missouri, and in Norman, Oklahoma. This equipment is configuration controlled, managed, and modified in accordance with procedures applicable to operational systems.

### 3.8 Facilities

The Facilities functional area includes construction, maintenance, and modification of shelters and other RPIE. Facilities are operated and maintained by each agency according to agency instructions.

### 3.9 Packaging, Handling, Storage, and Transportation (PHS&T)

PHS&T of WSR-88D components is in accordance with best commercial practices to ensure protection of the items during shipment and handling. NLSC is responsible for

PHS&T of outbound shipments. The NRC monitors PHS&T of supplies received, and initiates requests, as required, for assistance from the W/OPS14, NLSC, and the ROC to correct problems in this area should problems arise during the operational life cycle phase of the program.

### 3.10 Test and Evaluation

Test and Evaluation associated with the deployment of hardware or software modifications to the WSR-88D system is the responsibility of the ROC for sustaining engineering projects and the responsibility of W/OST for NPI projects. ROC maintains the WSR-88D test equipment located in Norman, OK.

#### 3.10.1 Test Program Objectives

Thorough testing of a complex system like the WSR-88D requires the expenditure of a considerable amount of time and resources. Such expenditure should not be done without a clear understanding of the objectives of the test program. These objectives are:

- a. Provide confidence to the WSR-88D agencies that the modified system will meet their operational requirements;
- b. Ensure that overall system reliability, usability, stability, and performance does not deteriorate as a result of modifying the system;
- c. Find as many errors in the modified system as possible, as early as possible in the test cycle and prior to releasing the modification to the field; and,
- d. Prevent software defects by promoting the adoption of proven defect prevention methods, such as inspections and walk-throughs, throughout the development process.

#### 3.10.2 Levels of Testing

The WSR-88D Program has adopted a five-level test cycle in order to ensure modifications are thoroughly tested. These levels are Component Testing, Integration Testing, System Testing, and Acceptance Testing (which includes Operations Testing and Beta Testing). Component and Integration Testing are informal and will be done by the software and hardware developers. All formal testing is managed by an independent test group trained in industry-standard test processes. Software and hardware under formal test is controlled by the Configuration Management Team.

#### 3.10.3 Focus of Testing

Testing focuses on three major system attributes: functionality, stability, and performance.

#### 3.10.4 Management of Testing

The ROC and W/OST have centralized WSR-88D formal testing in a group independent of the Engineering function. The ROC testing group is led by the ROC OPS Branch Test Program Manager, who appoints Test Directors for each formal level of testing and reviews test plans and test reports. The test group thoroughly documents all formal testing.

#### 3.11 Commissioning and Decommissioning Plans

Commissioning Plans and Decommissioning Plans for each site are the responsibility of each agency.

#### 3.12 Software Maintenance

WSR-88D system software maintenance is accomplished by the ROC based on tri-agency CCB approved change requirements to the operating system, the applications software, support software, background maps, adaptable parameters, and diagnostics. These responsibilities include development or modification of source code, correction and testing of software, documentation of changes, technical documentation development, configuration management, duplication/copy, and distribution to WSR-88D field sites. Software maintenance at the field level is restricted to changing some adaptable parameters. Field sites load software upgrades provided by the ROC to the WSR-88D system.

#### 3.13 Depot Repair

Centralized depot repair is performed by the NWS NRC (W/OPS16). The NRC, located in Kansas City, Missouri, accomplishes LRU repairs utilizing the most cost effective method available (either organic or contract) so that the repair process is transparent to the user. The user is responsible for returning repairable items to the NRC. The NRC repairs the LRU, performs quality control functions, and returns the LRU to the NLSC as serviceable, or condemns it as non-repairable.

The NRC also collects component failure data from information returned with a LRU from a field site as well as information collected during the NRC repair process. The NRC enters the data into a computer network for further analysis by the ROC and user agencies. Contractor repair information is collected when available.

The Depot Repair Support Plan is included as [Appendix B](#) of this plan.

##### 3.13.1 Depot Test Equipment

The NRC maintains all the hardware and software associated with WSR-88D Automated Test Equipment (ATE) and bench test equipment. When required, the NRC replenishes its test equipment.

### 3.14 Configuration Management

Overall management of the hardware and software configuration baselines of the WSR-88D systems is the responsibility of the ROC. The processes and agency responsibilities are prescribed by the tri-agency approved WSR-88D Configuration Management Plan and the WSR-88D Configuration Control Board Charter, OSFPLN-SSB-06. For the 12 FAA NEXRAD sites, the Generator/TPS Shelter facilities are under FAA CM control, provided FAA adheres to ICD 2620062 "ICD for the WSR-88D Generator Shelter." The ROC retains CM responsibility for the DoD and DOC Generator/TPS Shelter facilities.

### 3.15 Technical Manuals

The development, revision, printing, and distribution of Technical Manuals are the responsibility of the ROC, and are carried out in accordance with the requirements of the Technical Data Management Plan. Source, Maintenance, and Recoverability (SMR) codes will appear in the Illustrated Parts Breakdown Manual to inform the technician of the source of repair, the maintenance action required, and the disposition of the failed item. Documentation associated with the Generator/TPS Shelter facilities for the 12 FAA NEXRAD sites shall be maintained by FAA, provided FAA adheres to ICD 2620062 "ICD for the WSR-88D Generator Shelter."

A listing of current Technical Manuals and Modification Documents can be found at <http://www.roc.noaa.gov/ssb/sysdoc/techman/subs/sect1c.asp>.

#### 3.15.1 Technical Manual Changes

The agencies identify suggested changes and submit them using their developed procedures. The Air Force submits changes on AFTO Form 22. The FAA submits changes as Case Files. The NWS submits Publication Change Requests (PCRs). (Note: For the following discussion, the term PCR is used generically to refer to each agency's publication change request.) These changes are then submitted to the ROC. When received, the ROC Documentation Team enters the PCR into a database which assigns a local control number. The PCR is then reviewed by the ROC to determine validity and clarify any procedures/changes. If approved, the PCR is filed until the next technical manual change; and the PCR database is updated. If disapproved, the PCR is filed, and the database is updated. All PCR status is obtainable on the ROC website which is updated nightly.

Technical manual changes are incorporated according to the PCR priority as follows:

- a. EMERGENCY: Change developed and published within 10 calendar days
- b. URGENT: Change developed and published within 45 calendar days.
- c. ROUTINE: Published in the next change/revision of the document.

A listing of current Publications Change Requests (PCRs) can be found at <http://www.roc.noaa.gov/ssb/sysdoc/pcrs/>.

### 3.15.2 Technical Manual Ordering

**USAF:** The Air Force uses the standard JCALS System, AFTO System of Record.

**NWS:** The ROC sends the manuals to the sites using the CLS System.

**FAA:** The ROC sends the manuals to the sites using the CLS System based on input provided by FAA.

**NAVY:** The ROC sends the manuals to the sites using the CLS System.

### 3.16 Modification/Retrofit

The ROC is assigned the lead design and engineering responsibility for sustaining engineering modifications and retrofit of the WSR-88D system. W/OST3 is assigned the lead design and engineering responsibility for NPI Projects and retrofit of the WSR-88D system. For CCB approved engineering changes, the ROC and W/OST3 provide systems engineering and integration for modification and retrofit including the following: development, prototype, planning, documentation, procurement, testing, kit deployment, and status reporting. These responsibilities are carried out in accordance with the requirements of the Management Process for WSR-88D Modifications, ROCPLN-PGM-02 REV 1. For Sustaining Engineering projects, retrofit kits for all agencies affected by a change are requisitioned by the ROC for shipment directly (“pushed”) to the affected site maintenance personnel. The ROC maintains records for site completion of retrofits which can be accessed through the following web address:

<http://www.roc.noaa.gov/ssb/logistics/retrofit/reports/>.



APPENDIX A: SUPPLY SUPPORT PLAN  
APPENDIX A  
TO  
WSR-88D INTEGRATED LOGISTICS SUPPORT PLAN

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## 1. Purpose

The purpose of this supplementing plan is to identify the organizational relationships and responsibilities among the supply support organizations that support the fielded Weather Surveillance Radar-88D (WSR-88D) systems and equipment. This plan identifies activities to be accomplished and references how, when, and by whom they will be accomplished. This plan addresses the action to be taken by the National Weather Service (NWS), Office of Operational Systems, Department of Defense (DoD), and Department of Transportation, Federal Aviation Administration (FAA) and includes their subordinate organizations in the establishment and maintenance of the WSR-88D supply support system. The supply support provided to agencies external to the NWS is through interagency supply support agreements.

The participating agencies agree to this by the terms, procedures, and conditions set forth herein. All changes to this plan must be approved by the participating agencies.

## 2. Scope

This plan is used during the operational phase and includes the improvements and upgrades to fielded systems and equipment that comprises the WSR-88D.

NWS provides supply related logistics support for WSR-88D to all participating agencies in the capacity of a Primary Inventory Control Activity (PICA). Stock item initial provisioning, follow-on provisioning, replenishment, and supply coordination on behalf of WSR-88D users is accomplished at NWS Headquarters in Silver Spring, Maryland.

## 3. Background

In November 1992, the supply support function for the WSR-88D transitioned from the interim support contract with Lockheed Martin to full Government support by the NWS through LRU and repair parts stocked at the National Oceanic and Atmospheric Administration's National Logistics Support Center (NLSC) warehouse in Kansas City, Missouri. The transition commenced with the delivery of provisioned stock items to NLSC in early FY 1992 and was completed with the termination of the contractor interim support contract line items.

Initial Operational Capability (IOC) for the United States Air Force (USAF) supply support was achieved October 1, 1993 by implementation of Military Standard Requisitioning and Issue Procedures (MILSTRIP) requisitioning for all USAF sites. The Federal Aviation Administration and US Navy achieved IOC October 1, 1995 with their implementing full Federal Standard Requisitioning and Issue Procedures (FEDSTRIP) and MILSTRIP requisitioning for their WSR-88D sites. Billing for NWS supplied material to external customers has been operational since 1993 for the USAF and since 1995 for the FAA and US Navy.

Warehousing of stock items including storage, requisition processing, packing, shipping, receiving, and physical inventory control are accomplished at the NLSC as directed and

funded by NWS Office of Operational Systems, Maintenance Logistics and Acquisition Division, Logistics Branch (W/OPS14).

#### 4. References

The following documents and changes thereto are applicable:

[DD Form 1949-1, Part II, Logistics Support Analysis Record \(LSAR\) Data Selection Sheet, AUG 96](#)

[Defense Integrated Material Management Manual for Consumable Items, DoD 4140.26M, May 16, 1997](#)

[DoD-STD-1686C, Department of Defense Standard Practice, Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment \(Excluding Electrically Initiated Explosive Devices\), 25 October 1995](#)

[Engineering Handbook 1 \(EHB-1\), Instrumental Equipment Catalog, 1 March 2010](#)

[Engineering Handbook 6-501 \(EHB 6-501\), Illustrated Parts Breakdown, 30 Sep 2009](#)

[Federal Logistics Information System \(FLIS\) Manual DoD 4100.39M, April, 2010](#)

[Joint Regulation Governing the Use and Application of Uniform Source, Maintenance, and Recoverability Codes, AFJI 21-106, OPNAVINST 4410.2, MCO 4400.120, U.S. GPO: 1985 0-460-975/20059](#)

[MIL-HDBK-502, Acquisition Logistics, 30May97](#)

[Military Standard Billing System \(MILSBILLS\) Manual, DoD 4000.25-7-M, dated May 2007](#)

[Military Standard Requisitioning and Issue Procedures \(MILSTRIP\) Manual, DoD 4000.25-1-M, dated October 5, 2007](#)

[MIL-STD-2073-1D, Department of Defense Standard Practice for Military Packaging, 15 December 1999 with 10May02 Change](#)

[National Weather Service Manual 30-3102 Integrated Logistics Support Planning, November 20, 2002](#)

[Wholesale Inventory Management and Logistics Support of Multiservice Used Nonconsumables, AMC-R 700-99, NAVSUPINST 4790.7, AFLCR 400-21, MCO P4410.22C, dated 27 April 1990](#)

## 5. Acronyms

BM	Rather than being an acronym, "BM" is the passing action status code assigned when being passed from FGZ to G13.
CAMS	Commerce Administrative Management System
CBS	Commerce Business Systems (formerly known as CAMS)
CLS	Consolidated Logistics System
CMD	Catalog Management Data
CONUS	Continental, Conterminous, Contiguous United States
CRAD	National Oceanic and Atmospheric Administration's Central Region Acquisition Division Procurement Office, Kansas City, Missouri
DAAS	Defense Automated Addressing System
DCN	Design Change Notice
DESEX	Defense Emergency Supply Expert System
DLA	Defense Logistics Agency
DLIS	Defense Logistics Information Services
DoD	Department of Defense
DODAAC	Department of Defense Activity Address Code
DSN	Defense Switched Network (Military phone system)
ECP	Engineering Change Proposal
EHB	Engineering Handbook
EOQ	Economic Order Quantity
ERRC	Expendability-Recoverability-Repairability Codes
ESDS	Electrostatic Discharge Sensitive
FAA	Federal Aviation Administration
FEDSTRIP	Federal Standard Requisitioning and Issue Procedures
GSA	General Services Administration
ILS	Integrated Logistics Support
ILSP	Integrated Logistics Support Plan
IMM	Integrated Material Management
IPB	Illustrated Parts Breakdown
JSPO	Joint System Program Office
LOA	Level of Authority
LRU	Line Replaceable Unit
LSA	Logistics Support Analysis
LSAR	Logistics Support Analysis Record
MAJCOM	Major Command
MICAP	Mission Capability
MILSBILLS	Military Standard Billing System
MILSTRIP	Military Standard Requisitioning and Issue Procedures
MOE Rule	Major Organizational Entity Rule
MOU	Memorandum of Understanding
NAVICP	Naval Inventory Control Point OR NAVSEA Inventory Control Point
NIMSC	Nonconsumable Item Material Support Code
NLSC	National Logistics Support Center
NOAA	National Oceanic and Atmospheric Administration

NRC	National Reconditioning Center
NSN	National Stock Number
NWS	National Weather Service
OO-ALC	Ogden Air Logistics Center
OPAC	Online Payment and Accounting
PCA	Physical Configuration Audit
PICA	Primary Inventory Control Activity
POC	Point of Contact
PTD	Provisioning Technical Documentation
RDA	Radar Data Acquisition
ROC	Radar Operations Center
RPG	Radar Product Generator
SBSS	Standard Base Supply System
SCR	System Change Request
SE	Support Equipment
SERD	Support Equipment Recommendation Data
SICA	Secondary Inventory Control Activity
SMR	Source, Maintenance, and Recoverability Code
SPTD	Supplementary Provisioning Technical Documentation
SSR	Supply Support Request
Sybac	Simplified Billing and Collections
TIR	Total Item Record
UJC	Unit Justification Code
USAF	United States Air Force
W/OPS14	NWS/OOS/MLAD Logistics Branch
W/OPS16	National Reconditioning Center
W/OPS18	National Logistics Support Center
WSR-88D	Weather Surveillance Radar-88D

## 6. Organizational Responsibilities for WSR-88D Operational Supply Support

During the initial Integrated Logistics Support (ILS) planning for the WSR-88D, an integrated tri-agency team approach was developed to develop the WSR-88D supply support. To accomplish this, one provisioning specialist and one equipment specialist or inventory manager from each agency was designated to coordinate the unique supply requirements for their agency to the overall supply support system. This team management approach has been extended to the management of each agency's operational phase supply support. Outlined below are the various responsibilities of the tri-agency team participants.

### 6.1 NWS Responsibilities - Primary Inventory Control Activity (PICA)

The NWS Logistics Branch is the PICA for the WSR-88D. As an Integrated Material Manager, the NWS/OOS/MLAD Logistics Branch (W/OPS14) is responsible for and provides the following functions for WSR-88D supply support:

- a. Budgets and funds for PICA repair reprocurement contracts.
- b. Performs cataloging activities for NWS managed items.
- c. Contracts for reprocurement of repair parts and repairable end items.
- d. Provides customer service activities for customers external to the NWS.
- e. Makes disposal decisions for items no longer required by the WSR-88D supply system.
- f. Provides provisioning for new items being introduced into the WSR-88D system.
- g. Provides requisitioning processing for tri-agency requisitions.

## 6.2 Department of Defense

### 6.2.1 US Air Force

- a. Provides coordination and management of DoD supply support requirements, funding, and lead service planning.
- b. Ensures that the proper supply representatives attend all meetings and program activities where supply support issues are discussed.
- c. Provides SICA FEDSTRIP support for USAF owned WSR-88D equipment.
- d. Management activities include Engineering Change Proposal (ECP) evaluation coordination and coordination of the activities of subordinate USAF commands who are involved in or provide supply support.

### 6.2.2 Department of Navy

- a. Provides coordination and management of Department of Navy supply support requirements, funding, and service planning.
- b. Ensures that the proper supply representatives attend all meetings and program activities where supply support issues are discussed.
- c. Provides SICA FEDSTRIP support for US Navy owned WSR-88D equipment.
- d. Management activities include ECP evaluation coordination and coordination of the activities of subordinate US Navy commands who are involved in or provide supply support.

### 6.3 Federal Aviation Administration, Monroney Aeronautical Center

- a. Provides coordination and management of supply support requirements, funding, and agency planning.
- b. Ensures that the proper supply representatives attend all meetings and program activities where supply support issues are discussed.
- c. Provides SICA FEDSTRIP support for FAA owned WSR-88D equipment.
- d. Management activities include ECP evaluation coordination and coordination of the activities of field units who are involved in or provide supply support.

## 7. Operational Supply Support

The WSR-88D operational sites are provided supply support and replenishment from the NLSC. This support process involves a number of definite steps and involves a number of different organizational activities. A summary of the major activities that comprise the supply support systems are discussed in this section.

### 7.1 Requisitioning Process

Requisitions from all the WSR-88D using agencies are submitted and accepted in accordance with the policies of Military Standard Requisitioning and Issue Procedures (MILSTRIP) Manual, DoD 4000.25-1-M and/or AFMAN 23-110, USAF Supply Manual, Part 2 USAF Standard Base Supply System, Chapter 11, Customer Requirements. Both electronic and manual requisitions prescribed by the MILSTRIP Manual may be used, however the use of manual requisitions is restricted to emergency situations where the normal electronic transmission system has failed.

NWS activities order directly from the NLSC using standard NWS operating procedure.

FAA sites order through the FAA Monroney Aeronautical Center using standard FAA operating procedure.

DoD sites order through their respective SICAs. The process begins with the user calling his local supply POC. By the end of the process one or more of the following activities will be involved:

- a. G13, National Weather Service (NWS)  
The local supply POC submits all G13 requisitions through the Standard Base Supply System (SBSS). This includes Mission Capability (MICAP) requisitions. G13's system is completely automated, and they will not accept requisitions over the phone. All customers can view a read-only copy of stock availability and requisition status by going to <https://cls.nlsc.noaa.gov/>. If no status is available after 24 hours, contact your Major Command (MAJCOM).

- b. FGZ, Ogden Air Logistics Center (OO-ALC)  
Due to funding FGZ must act as the Air Force Inventory Control Point even though they do not stock any assets. Requisitions must flow through OO-ALC in order to be funded. Once FGZ receives your requisition and allocates funds, they pass the requisition to G13, using "BM" for the status code.
- c. N35, NAVICP  
Marine Corps organizations follow standard MILSTRIP procedures to requisition assets. All customers can view a read-only copy of stock availability and requisition status by going to <https://cls.nlsc.noaa.gov/>.
- d. DLA, Defense Logistics Agency (S9C, S9E, S9G, or S9I)  
MICAP requisitions can be submitted through the Defense Emergency Supply Expert System (DESEX). All other DLA requisitions can be done through the SBSS. Contact DESEX (877-352-2255, 877-DLA-CALL) to retrieve status.

Requisitions are transmitted by customers external to the NWS via the Defense Automated Addressing System (DAAS). Data received by DAAS from a WSR-88D user is immediately transmitted to the NWS Department of Defense Activity Address Code (DODAAC), 136418, Source of Supply G13. Electronic requisitions are received by the NWS from DAAS at Headquarters NWS, Silver Spring, Maryland. After initial requisition validation and stock availability verification, the requisition is transmitted to the NWS Consolidated Logistics System (CLS) computer in Kansas City, Mo. Transmission of the validated requisition is over a dedicated T-1 line. After the stock validation process is completed, requisition status is transmitted from the NWS back to the requisitioner via DAAS. The requisition status either states that the item is available and gives the estimated shipping date or it states that the item is not available and that it has been placed on back order. Incoming requisitions are forwarded to the NLSC for processing once an hour, 24 hours a day, 7 days a week.

When the requisition is received by the NLSC in the CLS computer, it is placed in the processing queue that operates on a first-in first-out basis. Emergency requisitions receive priority over the processing of routine requisitions. During normal duty hours emergency requisitions are processed on a priority basis. Emergency requisitions that are received after normal duty hours and weekends are given priority processing through the NLSC after hours call back process. Personnel designated for after hours support are notified via the CLS computers synthesized voice function to come in and fill an emergency requisition. Only requisitions that are coded priority 02 or 03 with a unit justification code (UJC) receive after hours processing.

#### 7.1.1 Modification Kits

Modification kits are stocked at the NLSC. A limited number of these are procured for a particular modification. Modification kits are requisitioned by Radar Operations Center (ROC) Program Branch for free issue and direct shipment to all affected field units.

After rescission of the authorizing document and deletion of kits from the supply system, funding for the kit material is the responsibility of the specific organization.

### 7.1.2 Depot-Only Items

There are some repair parts that are designated only for use by depot level repair activities. These items will only be issued to authorized depot level repair activities.

## 7.2 Replenishment Process

All of the WSR-88D stock listed items resulting from the provisioning process that are managed by the NWS are stocked, stored, issued, and replenished by the NWS. Replenishment is based on demands and is computed using Economic Order Quantity (EOQ) methodology. Requests for procurement are initiated by NWS Logistics Branch inventory managers when stock falls below the minimum EOQ. Contracting for replenishment procurements is performed through the Central Region Acquisition Division (CRAD) Procurement Office as requested by Logistics Branch on a weekly EOQ computational output cycle. Reprocurements are competitive, except for those stock items which are identified as proprietary. Non-competitive procurements are supported by sole source justifications.

### 7.3 Repair/Supply Support Interface

Unserviceable, repairable stock items (condition codes E and F) are returned to the National Reconditioning Center (NRC) in Kansas City, Mo. Condemned (condition code H) stock depot disposable items are also returned to NRC. All failed, warranted stock items should be returned to NRC, regardless of condition. Warranty tracking is accomplished/coordinated through the NRC.

CLS provides return credit (less repair cost) for unserviceable stock items (condition codes E and F only) which are received with MILSTRIP Automatic Return, Document Identifier FTA and project code 3AL indicating a requisition for a replacement item. All other returned stock items will receive no return credit.

### 7.4 NLSC Warehouse Operation

The NLSC warehouse is located at 1510 East Bannister Road, Bldg. #1, Kansas City, Missouri. The warehouse's normal hours of business are 6:30 AM to 4:30 PM Central Time, Monday through Friday. Emergency service for priority requisitions is provided 24 hours per day, 7 days per week.

#### 7.4.1 Summary of the Warehouse Functions

- a. Receiving and receipting stock items;
- b. Warehousing stock items;



- c. Requisition processing and issuing stock items;
- d. Packaging and preservation of stock items;
- e. Shipping of stock items;
- f. Physical inventory of stock items;
- g. Control of accountable, inactive, excess, hazardous material content, shelf-life, and serialized stock items;
- h. Operation of CLS.

#### 7.4.2 Requisitions Processing and Turnaround Time Goals

- a. **Non-duty-hour priority** - delivered to carrier within 4 hours of requisition receipt, or in time to meet the first flight out of Kansas City International Airport. The most expedient mode of transportation is selected to the specific requisitioning site. Historically average time for delivery to a CONUS site from the time of requisition receipt at NLSC is 18 to 24 hours.
- b. **Duty-hour priority** - delivered to carrier same day as requisition receipt. The most expedient mode of transportation is selected to the specific requisitioning site. Historically average time for delivery to a CONUS site from the time of requisition receipt at NLSC is 18 to 24 hours.
- c. **Duty-hour routine** - shipped 2 working days after requisition receipt. Historically average time for delivery to the site from the time of requisition receipt at NLSC is 3 days.

#### 7.5 Prices, Billing, and Credits

Each WSR-88D stock item stocked at the NLSC has a standard unit price. This is derived from the current market or production cost of the item at the time the price is established. Standard prices will be subject to, but not limited to, annual review. Revisions to standard prices will be issued in accordance with DoD 4100.39M. The WSR-88D users requisition stock items from the NWS using funded requisitions for both consumable and nonconsumable items in accordance with MILSTRIP/FEDSTRIP procedures. Requisitions must contain appropriate fund and signal codes for subsequent billing/crediting action on both initial stocking requirements and replenishment requisitions.

Billing is based on monthly electronic transfer from W/OPS14 to the Commerce Business Systems (CBS, formerly known as CAMS). Billing and credits for DoD activities is via GSA/Interfund Transfers to DoD treasury appropriation accounts. On September 15, 1989 the NOAA NWS was approved to participate in the MILSBILLS Interfund System through the General Services Administration's Sybac system. This

billing/paying process was implemented in November 1993. The approval limits the NWS's seller functions to DoD activities and to those items for which the NWS is designated as the integrated DoD material manager. Civilian agency customers are billed through the Online Payment and Accounting (OPAC) process. Accounting information from CBS is billed or credited through the NOAA Office of Finance and Administration to the appropriate agency paying office on a quarterly basis.

#### 7.6 Reprocurement Data Management

To the extent that reprocurement data was made available as Supplementary Provisioning Technical Documentation (SPTD) or as engineering drawings from acquisition phase, files of these data are maintained by the NWS ROC Configuration Management Team. This reprocurement data is updated as WSR-88D design changes occur and is used for competitive replenishment of stock items. When reprocurement data is proprietary the data is used to support sole-source contracts.

#### 7.7 Design Change/Modification Implementation

Development and deployment costs for ECPs are allocated in accordance with the Cost Share MOU. The supply support product baselines were established as a result of the WSR-88D Physical Configuration Audits (PCA).

Design changes incorporated into the WSR-88D system by ECP approval by the three agencies include costs associated with the modification of spares, and are funded by the WSR-88D Program.

For each Class I or Class II Engineering Change Proposal approved by the Configuration Control Board that affects any repairable or consumable stock item of the WSR-88D, a Design Change Notice (DCN) is submitted to NWS Logistics Branch by the ROC. This requirement assures that the supply system will provide the correct parts for operation and maintenance of the WSR-88D.

#### 7.8 Cataloging

Cataloging is the assignment of National Stock Numbers (NSN) to items that are stocked in the supply system. All requisitions use the NSN to identify what is being requisitioned. To establish the NWS as a PICA for cataloging purposes, System Change Request (SCR) number OF-2712 [ZF-885701] was submitted to Defense Logistics Information Services (DLIS) on February 5, 1988. Corrections were made, and the SCR was formally referred to the DoD Integrated Material Management Committee for approval in March 1988. After review by all agencies, the SCR was approved on August 16, 1988 and implemented by DLIS on November 6, 1989. Full implementation of the software changes required by this SCR was completed by DLIS in 1994. This action provided the NWS Major Organizational Entity (MOE) rules to identify the NWS as both PICA and SICA and provided Level of Authority (LOA) for both PICA and SICA activities.

A MOE rule is a short hand used by the supply system to identify an operational relationship of buyer/seller, or wholesale/retail activity within the federal supply system. Each stock item sent to DLIS for cataloging receives a MOE rule as part of the NSN assignment process. Activities other than the cataloging requestor that want to be able to requisition that item, also add their MOE rule after the NSN is assigned. The MOE rules then identify the activities that have registered for support from the PICA for that item. MOE rules and LOA assignments for WSR-88D items managed by the NWS are in accordance with SCR OF-2712 (ZF-885701).

All WSR-88D items are assigned NSNs. This is accomplished by the NWS Logistics Branch in two steps. During the provisioning process all part numbers are screened against the DLIS data base to identify parts which already have an assigned NSN. If a match is found the NSN is added to the NWS data base, if no NSN is found a cataloging action is initiated to obtain a NSN. This was done for all WSR-88D repairable and consumable items. This is a continuous process that is used any time a new item is introduced into the WSR-88D supply system.

Action by an agency to add its MOE rules to an item with an existing NSN is called collaboration. Collaboration is used for Federal Supply Classes which are assigned to specific agencies for Defense Integrated Material Management (IMM). This has been accomplished by NWS Logistics Branch for WSR-88D items. In cases where the IMM is other than the NWS, action was taken to add all the WSR-88D using agencies' SICA MOE rules by applying the appropriate designations.

Cataloging actions to stock-list are submitted to DLIS by the NWS Logistics Branch in accordance with the requirements of DoD Manual 4100.39M and also include Catalog Management Data (CMD). The submission of SICA(s) peculiar CMD is the responsibility of each respective agency. SICA proposed changes to item data, other than SICA CMD, are submitted to the PICA for processing to DLIS. All nonconsumables for the WSR-88D for which NSN assignment is requested are Nonconsumable Item Material Support Coded (NIMSC) into the Total Item Record (TIR) at DLIS in accordance with AFMCR 400-21, Wholesale Inventory Management and Logistics Support of Multiservice Used Nonconsumables. All items are assigned NIMSC 5: Depot Repairable Component (Phase II). This code identifies SICA managed depot repairable components assigned to a PICA in another service. This action permits an organization to submit their supply requirements to the PICA on requisitions, which are funded by a designated point within the SICA. The SICA will also provide item/program data to the PICA to meet to register as a user of the item. This is accomplished by submitting Supply Support Requests (SSR). The IMM, as the item PICA, is required to add this information to the DLIS TIR for the stock-listed items and to assume supply support responsibility for the requestor. DLIS processes add/change/delete actions applicable to the DLIS TIR only when received from a PICA, except for Segment H, CMD, SICA.

## 7.9 Provisioning

Provisioning is the process of determining the range and quantity of items (i.e., spares, repair parts, special tools, test equipment, and support items) required to support and maintain an end item of material for an initial period of service and during subsequent life cycle phases. The selection of items for supply support was a collaborative effort of the WSR-88D provisioning team. The quantities of each end item required for initial stock were calculated by the NWS Logistics Branch and procured through the Provisioned Item Order option on the WSR-88D contract. In the case of Integrated Material Managed Items already in the Federal Supply System, SSRs were initiated by NWS to the IMM in accordance with Chapter 4, DoD Manual 4140.26M. Each WSR-88D nonconsumable stock item which is PICA managed by agencies other than NWS will be individually assessed during the provisioning process to determine if transfer of management to NWS management is desirable or appropriate from the currently assigned IMM.

### 7.9.1 Provisioning Organization

Provisioning contact points have been established in each WSR-88D using agency as follows:

PICA NWS, W/OPS14  
SICA FAA, Logistics Center/AML-2000  
SICA AF, OO-ALC/LH  
SICA Navy, NAVICP/C5322

### 7.9.2 Source, Maintenance, and Recoverability (SMR) Coding

SMR codes are used to communicate supply instructions to the various logistics support levels and to users. These codes are part of the Illustrated Parts Breakdown (IPB) of maintenance technical manuals, The Engineering Handbook 1, Federal Cataloging Data and various provisioning and supply support documents. A single SMR code is assigned to each item and is based on the logistics support plans and maintenance concept of the end item, in this case the WSR-88D. The SMR codes provide a "mini" maintenance plan for each item which, when all elements of the SMR code are considered together, implements the WSR-88D maintenance concept. The SMR code assigned to each stock item is also a record of technical support decisions that reflect consideration of design, manufacture, application, repair cost, maintenance, and supply practices and capabilities for each stock item and the operational mission of the WSR-88D.

SMR coding for WSR-88D components began with contractor recommendations and were included as part of the Provisioning Technical Documentation (PTD). Assignments of SMR code are in accordance with the Joint Regulation Governing the Use and Application of Uniform Source, Maintenance, and Recoverability Codes, AFJI 21-106. Uniform SMR codes used on the WSR-88D consist of three parts: a two-

position source code; a two-position maintenance code; and a one-position recoverability code. A further explanation of the codes is as follows:

- a. Source codes (positions 1 and 2) denote the means by which the stock item is acquired for replenishment purposes, i.e., procured and stocked at NLSC or elsewhere in the Government, locally manufactured, assembled, etc. For the WSR-88D, it was and is mandatory that the source code be constant for all users and applications of a single stock item.
- b. Maintenance codes (positions 3 and 4) denote the level(s) and extent of maintenance performed on an item. Position 3 of the SMR code is referred to as the maintenance code. It indicates the lowest level of maintenance authorized to remove, replace, and use an item. The codes that apply to the WSR-88D stock items in position 3 are:

- "O" for organizational or field level removal and replacement or
- "D" for depot level removal and replacement.

Assignment of maintenance codes implies that the related logistics support areas such as maintenance training, tools, test equipment, technical documentation, etc., are inclusive of all stock items for a given level of maintenance.

The fourth position of the SMR code is often referred to as the repair code. This position identifies whether an item is repairable or consumable. If it is repairable, this position of the SMR identifies the lowest maintenance level with the capability to perform repair, i.e., all authorized maintenance actions required to restore the item to serviceable condition. As with position 3, the selection of a repair code implies that all related logistics support areas have been planned and provided to carry out the intent of the SMR code. The codes which used in the fourth position of the SMR code for the WSR-88D stock items are:

- "Z" for no repair authorized or not repairable (consumable),
- "O" for organizational or field level repair,
- "D" for limited field repair, depot overhaul, and
- "L" for specialized repair teams.

Teams from the ROC will provide depot repair support for maintenance actions that are beyond the capability of field units.

Positions 3 and 4 of the SMR coding for the WSR-88D stock items will remain constant for all users to simplify management of each stock item.

- c. The fifth position of the SMR denotes which maintenance level is authorized to dispose of an item and is referred to as the recoverability code. Recoverability codes for the WSR-88D items are:
  - "Z" for nonrepairable or throw away items. (Disposal is done by level of maintenance indicated in position 3 of the SMR code.),
  - "O" for organizational or field level,
  - "D" for depot level, and
  - "A" which denotes that the item requires special handling, contains

hazardous materials, or precious metals and that specific procedures must be followed in its disposal.

Some assumptions were used for the WSR-88D coding: Major WSR-88D end items such as Radar Product Generator (RPG), Radar Data Acquisition (RDA), OPUP, etc., that will not be stocked, stored, issued or returned to depot for repair, will be source coded "PD" in positions 1 and 2, i.e., procured for initial issue or outfitting and restocked only for subsequent or additional initial issues or outfittings. These items are not subject to automatic replenishment. These items are assigned NSNs for the purpose of property tracking and possible movement of systems during the operational life cycle. There is limited use of source code "XB," i.e., item is not procured or stocked, if not available through salvage requisition. Letter "D" in the third, fourth, or fifth position of the SMR code always denotes the NRC in Kansas City, Missouri, regardless of the final repair destination or final disposition destination. Letter "O" in the third, fourth or fifth position of the SMR code applies to any organizational activity and/or its geographically associated sites.

### 7.9.3 Support Equipment

The determination of the WSR-88D Support Equipment (SE) requirements was done through the Support Equipment Recommendation Data (SERD) process. The contractor submitted a SERD on items considered necessary for the support of the WSR-88D. The SERD items were classified as being either peculiar (WSR-88D unique) or common. The Joint System Program Office (JSPO) along with input from the user agencies reviewed, modified, and approved or disapproved each item as appropriate. The equipment selected through the SERD process was then procured. Peculiar SE spare parts support was provisioned by NWS for support of tri-agency used support equipment. Support of Common SE is the responsibility of each agency. New items of support equipment are introduced into the supply support system through the SERD process.

### 7.9.4 Consumable Material

An initial supply of consumable items, such as lamps, fuses, filters, oil, and belts, was made into a kit form and shipped from the NLSC in time to coincide with system delivery at the site. The kits contained an estimated one year supply of consumable items. Replenishment of consumable items at the site is accomplished by requisitioning these supplies from the NLSC.

### 7.9.5 Design Change Requirements

As the WSR-88D system evolves and modifications are made to the system, each change will be provisioned to provide the necessary supply support for the new hardware; and new items will be procured as stock items. The method of parts selection will be via a Logistics Support Analysis (LSA) 036 Report, a provisioning parts

list. The media and format for Provisioning Technical Documentation (PTD) and selected data elements shall be those available in MIL-HDBK-502 and as designated in Part II, Logistics Support Analysis Record (LSAR) Data Selection Sheet, of the contract DD Form 1949-1. SMR coding will be in accordance with the SMR coding used in the initial provisioning process.

#### 7.9.6 Provisioned Item Orders

As required, the NWS provides Provisioned Item Order(s) to the designated acquisition agent designated for each change.

#### 7.9.7 Preservation, Packaging, and Packing Requirements

Requirements for preservation, packaging, and packing of spare and repair parts for WSR-88D and WSR-88D support equipment are considered during the provisioning process. Special Packaging Instructions (SPIs) are prepared for all items requiring special packaging. SPIs shall be prepared for all items having Expendability-Recoverability-Repairability Codes (ERRC), C, S, and T. Commercial packaging container criteria as contained in Appendix E of MIL-STD-2073-1D may be used to satisfy SPI requirements.

Those items determined to be Electrostatic Discharge Sensitive (ESDS) as defined by DoD-STD-1686C are identified as such on packaging data submittal.

Usually packaging data is submitted for approval actions as soon as possible after requirements have been identified. This will ensure completion of data approval and allow sufficient packaging lead time prior to the required delivery dates of the items themselves. In no case are items shipped without approved packaging data, unless prior approval has been granted by the PICA.

### 8. Depot Support

The Integrated Logistic Support Plan (ILSP) designates the NWS as PICA for the WSR-88D radar system. As a part of this responsibility, the NRC has been designated as the primary Government repair depot for WSR-88D LRUs designated depot repairable. The WSR-88D ROC has been designated to provide on-site support for maintenance actions that are beyond the capability of field units. This encompasses maintenance actions that require special skills, knowledge, or more manpower than are available to field sites. Examples include recovery from lightning strikes, system outages caused by catastrophic failures, and radome repair and maintenance.

#### 8.1 Tower and Radome Repair and Maintenance

Tower and radome repair and maintenance are typically handled under separate contracts by prime contractors who accomplish in-depth inspections and write detailed reports which are then provided to a Project Manager at the ROC. The project manager reviews the inspection reports and then authorizes a level of maintenance to correct any

discrepancies listed in the reports. The inspection reports will detail all supplies and materials required to correct the discrepancies. (The materials involved in the maintenance of these entities are not stock listed.) Once authorized, the contractors will purchase those supplies and materials, deliver them to the individual radar site, and install them.

## 8.2 Supply Support for Depot-Only Items

Items that are SMR coded for depot, with a "D" in position 3, are only issued to activities authorized to use or release those items. At present only the NWS Logistics Branch (W/OPS14), the National Reconditioning Center (W/OPS16), and the ROC (W/OPS4) have this authorization. There are two kinds of depot-level maintenance: 1) Depot and 2) On-site. NRC performs depot maintenance on LRUs which sites return to them. Typically the depot-only item will be an integrated circuit. When sites need on-site, depot-level maintenance, they call the ROC Hotline. When the Hotline orders the part, it uses a project code to designate whether NWS, DoD, or FAA is to be billed. After the part arrives, either a ROC Depot Maintenance Assistance Team or a contractor travels to the site and performs the on-site, depot-level maintenance.



APPENDIX B: DEPOT REPAIR SUPPORT PLAN  
APPENDIX B  
TO  
WSR-88D INTEGRATED LOGISTICS SUPPORT PLAN

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## 1. Purpose

This document establishes a tri-agency support agreement for depot level support of the Weather Surveillance Radar - 1988 Doppler (WSR-88D) and ancillary test equipment. This agreement is established among the Department of Commerce (DOC) National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS), the Department of Transportation (DOT) Federal Aviation Administration (FAA), and the Department of Defense (DoD). This document establishes the NWS's National Reconditioning Center (NRC) as the primary activity for depot level maintenance, reconditioning, and quality control of the WSR-88D. The participating agencies agree to this by the terms, procedures, and conditions set forth herein. All changes to this plan must be approved by the participating agencies.

## 2. Acronyms

ATE	Automated Test Equipment
BER	Beyond Economical Repair
CLS	Consolidated Logistics System
CM	Configuration Management
COTR	Contracting Officer's Technical Representative
DOC	Department of Commerce
DoD	Department of Defense
DOT	Department of Transportation
FAA	Federal Aviation Administration
H-14	NWS Form H-14 "Equipment Return Tag"
ILSP	Integrated Logistics Support Plan
JCN	Job Control Number
LRU	Line Replaceable Unit
NIST	National Institute of Standards and Technology
NLSC	National Logistics Support Center
NOAA	National Oceanic and Atmospheric Administration
NRC	NWS's National Reconditioning Center
NWS	National Weather Service
ORG	Organization Code
PICA	Primary Inventory Control Activity
ROC	Radar Operations Center
SE	Support Equipment
SMR	Source, Maintenance, and Recoverability
WSR-88D	Weather Surveillance Radar - 1988 Doppler

## 3. Background

The Integrated Logistics Support Plan (ILSP) designates the NWS as Primary Inventory Control Activity (PICA) for the WSR-88D radar system. As a part of this responsibility, the NRC has been designated as the primary Government-wide repair depot for WSR-88D Line Replaceable Units (LRUs) determined to be depot repairable.

#### 4. NRC Responsibilities

The NRC provides depot level maintenance, reconditioning, and quality control services for all WSR-88D LRUs designated as depot repairable according to the Source, Maintenance, and Recoverability (SMR) code. In addition, the NRC maintains depot test equipment and provides program data to the Radar Operations Center (ROC).

##### 4.1 Repair

The NRC performs depot level repair and maintenance of all appropriate WSR-88D LRUs either in-house or by contract or a combination of both. Repairs will be performed in accordance with industry standards or better. All repairs will conform to the WSR-88D Technical Requirements. Defective LRUs will be returned to their original operating condition unless an official ROC change notice authorizes a modification. The NRC notifies the ROC if any unauthorized changes are made in the field to an LRU.

##### 4.1.1 Depot Repairable LRUs

The CLS identifies the WSR-88D LRUs specified as depot repairable. All LRUs to be repaired or quality controlled by the NRC must be sent to the NRC for the work to be performed. The NRC will not provide on-site repair or troubleshooting except in special cases approved by the site, the ROC, and user agencies. These services are provided by the ROC's on-site depot corrective maintenance team and the WSR-88D Hotline.

##### 4.1.2 Performance Specifications

Each NRC repaired LRU shall be determined to conform to one of two repair classifications. The vast majority of NRC repairs will be Class 1. Class 1 repairs will be repaired in accordance with NWS Maintenance, Logistics, and Acquisition Division (W/OPS1) performance specifications. Quality and workmanship will conform to industry standards and will equal or exceed the original manufacturer's specifications. Occasionally, due to high demand and/or low supply, LRUs that cannot be returned to Class 1 condition will be repaired and classified as Class 2 LRUs. Class 2 repairs will match all function, form, and fit requirements, but because of physical damage cannot be made to appear new. All Class 2 repairs will be so marked. The NRC will consult the ROC before any Class 2 repairs are accomplished.

##### 4.1.3 Repair Source Determination

The NRC determines the feasibility of in-house versus contract repair for all depot-repairable LRUs based on repair costs, manpower availability, turn around times, and program requirements. The NRC shall be responsible for repairing and reconditioning all depot-repairable WSR-88D LRUs using the most economical means available while meeting the quality, quantity, and timeliness criteria.

#### 4.1.3.1 Contract Repaired Items.

For LRUs to be repaired by contract, the NRC is responsible for preparing requests for quote and serving as the Contracting Officer's Technical Representative (COTR). Preparation of requests for quotation for contract repairs will be performed using NWS performance specifications and turn around time requirements. The NRC personnel serve as COTR for all repair contracts associated with depot repair of WSR-88D LRUs.

#### 4.1.3.2 In-House Repaired LRUs

The NRC is responsible for developing test procedures and techniques for in-house repairs. This includes developing bench test procedures, designing and building specialized test fixtures, and modifying automated test equipment (ATE) hardware and software as appropriate.

#### 4.1.4 Beyond Economical Repair (BER) LRUs

Based on inspection and troubleshooting of an LRU, the NRC may designate an LRU as BER. The designation will be based on the cost of a new item against the cost of repairing the defective LRU as well as the availability of new replacement items.

#### 4.1.5 Parts Substitution

The NRC coordinates any part substitutions with the ROC. Substitute parts may be needed to replace hard-to-find parts or to replace an expensive part with a less expensive but functionally identical part. All part substitutions will be coordinated with the ROC prior to implementation.

#### 4.1.6 Equipment Modifications

Although most modifications entail kits installed by agency field personnel, authorized equipment modifications may be performed at the NRC during the repair process (attrition retrofit) or as a special project. NRC is responsible for incorporation of all modifications into their WSR-88D systems and any affected spare parts in stock at the National Logistics Support Center (NLSC). NRC costs associated with modifications will be recouped through modification program funding. The ROC Program Branch (W/OPS42) will be responsible for providing the necessary modification kits to the NRC for implementation. If, in the course of repair, NRC personnel identify a modification to the equipment that would benefit the WSR-88D Program either through decreased maintenance costs or improved system performance, a suggestion for implementation will be submitted directly to the ROC, as a Configuration Change Request, for consideration by the WSR-88D Configuration Control Board.

#### 4.2 Quality Control

NRC Quality Control Test Procedures vary according to the item classification. Repaired LRUs are 100% inspected. New LRUs are normally sampled but may be

100% inspected based on item type, history, or quantity. Non-repairable items will be sampled. Sample quantities are determined by type of test required and type of item. For example, destructively tested items will have an extremely small sample. Repaired LRUs found to be out of specification will be referred to the repair source (in-house or vendor) for rework or final disposition. New items found defective will be referred to the supplier for correction, replacement, or other disposition. Individually tested and accepted items will receive a quality control tag. Items that are sample tested will be given Quality Control acceptance by lot. The NRC will notify the ROC of non-routine problems with quality of new or repaired stock items. NRC Quality Control will ensure that all new and repaired WSR-88D LRUs meet original manufacturer's specifications and also meets the following criteria:

- a. New, repaired, and/or reconditioned items will perform their designed function when installed in field equipment.
- b. Reconditioned LRUs will be in like new condition or marked as Class 2 repair.
- c. New, repaired, and/or reconditioned items will contain all authorized modifications and all unauthorized modifications will be removed.
- d. New, repaired, and/or reconditioned items will be clean and have no damaged parts.

#### 4.2.1 New Stock

All new stock to be warehoused at NLSC is quality control inspected by the NRC in accordance with acceptable standards and practices. This includes repairable as well as disposable items.

#### 4.2.2 Repaired or Reconditioned Stock

All stock items repaired or reconditioned by the NRC either by contract or in-house are quality control inspected by the NRC prior to transferring the item to the NLSC inventory. In addition, all contractor-repaired items that qualify as Class 2 will be so marked by the NRC.

#### 4.2.3 Received Defective

Items returned to the depot as received-defective are examined to determine the cause of the failure. If the problem lies outside the depot, the ROC is notified for corrective action. The NRC documents each occurrence of received-defective that is found not to be defective and coordinates with the ROC for possible investigation (e.g., a diagnostic may be marginal or not operating as intended). Returned-defective LRUs will be credited at the issue cost.

### 4.3 NRC Logistics

The NRC receives and process all defective WSR-88D LRUs and NWS owned ancillary test equipment.

#### 4.3.1 Return Form (H-14)

NWS users use the pre-printed H-14 paper form to return an LRU for depot repair. Items received at the NRC will be checked against the H-14.

#### 4.3.2 Defective WSR-88D LRU Accompanying Documentation

For the DoD and DOT participants, the pre-printed H-14 form is the preferable form to return with each repairable item. For those cases where this is not available, each defective WSR-88D LRU sent to the NRC for repair by any participating agency shall be accompanied by appropriate documentation containing, as a minimum, the following information:

- a. Organization (ORG) Code of the site where the failure occurred.
- b. Task Code (USAF Job Control Number (JCN))
- c. NWS Part Number (NWS Sites Only)
- d. National Stock Number
- e. Serial Number
- f. Document Number
- g. Technician's assessment of the LRUs failure

#### 4.3.3 Data Entry

The NRC records all necessary information on items received for repair into the CLS database. The NRC makes inquiries to sites to clarify apparent information discrepancies.

#### 4.3.4 NRC Repair Cost

Before historical repair cost data are available on WSR-88D LRUs, all depot repairs will be charged at 35 percent of acquisition cost. After in-house and contract repair cost have been established, depot repairs will be charged at a periodically agreed-to rate, currently 110% of NRC repair cost. This costing method provides for the repair and maintenance of the NRC WSR-88D capital equipment. NRC computes actual repair costs and repair lead-times which are then automatically fed to the CLS product record in an overnight transfer.

#### 4.4 Program Data

The NRC provides the ROC with information on repair costs, repair turnaround times, number of repairs performed, received-defective rate, actual failure and repair data, and cost avoidance. The ROC may disseminate this information to user agencies. Restrictions may apply to the dissemination of repair cost information when it is deemed procurement sensitive.

#### 4.5 Test Equipment Calibration

The NRC is responsible for and will maintain the calibration of all test equipment used in the course of depot repair of any WSR-88D LRU. Calibration will be performed at regular intervals and will be in accordance with the National Institute of Standards and Technology (NIST). As a routine part of the NRC repair process for field test equipment, that equipment will also be calibrated to NIST standards. However, user agencies and their field offices are responsible for the calibration of all such equipment in their inventory in accordance with those policies put in place by the individual agencies.

#### 4.6 ATE Maintenance

The NRC is responsible for maintaining the ATE equipment used in the depot repair of any WSR-88D LRU. This includes hardware and software maintenance and updates as necessary. The ROC is responsible for providing assistance in the implementation of new or modified hardware and software in the event of a new or modified LRU being introduced into the WSR-88D system.

##### 4.6.1 Hardware

ATE hardware is maintained by the NRC either in-house or by contract.

##### 4.6.2 Software

NRC personnel are responsible for implementing all software changes to the ATE, either through in-house efforts or through contract.

##### 4.6.3 ATE Configuration Management (CM)

The NRC is responsible for maintaining CM on WSR-88D depot ATE.

#### 4.7 Repair Turnaround Times

The NRC is responsible for repairing items in a timely manner in accordance with Engineering Division guidance. The goal of the NRC is to quickly repair and quality control LRUs in order to minimize back orders.



#### 4.8 Shipping Costs

Shipping costs are the responsibility of the site and will not be paid by the NRC.

#### 5. Site Responsibilities

The WSR-88D site personnel are responsible for returning defective LRUs to the NRC and for calibration of support equipment (SE) at their sites.

##### 5.1 Return of Defective Items

The site will ensure that the NRC receives a defective LRU within 30 days of the receipt of a replacement item. All defective items will be accompanied by documentation as described in paragraph 4.3.2. The NRC will issue overdue notices to each site for sites that have not returned their LRUs within the 30 day window. If credit items are not returned within one hundred and eighty (180) days of the requisition ship date, restocking action will be initiated by W/OPS14, and the full issue price is charged. Special arrangements can be made by the agencies with W/OPS14 to extend the return time.

##### 5.2 Test Equipment Calibration

The NRC ensures only calibrated test equipment is returned to NLSC for stocking. However, the individual agencies are responsible for assuring on-site calibration of all field test equipment drawn from stock.

