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MANAGEMENT PROCESS FOR WSR-88D MODIFICATIONS

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FOR
WSR-88D MODIFICATIONS

ROCPLN-PGM-02 REV 1 **October 15, 2001**

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Section 1 - Introduction

1.1 Overview

Modification Programs offer ways to correct deficiencies in or improve the capabilities of existing equipment in lieu of new development programs. This plan states the procedures for planning, documenting, obtaining approval, managing, implementing, and tracking to completion modifications that require retrofit implementation.

1.2 Purpose

This plan provides the policies and procedures which will be applied when the tri-agencies' partnership modifies or retrofits the Weather Surveillance Radar, 1988 Doppler (WSR-88D). Activities detailed in this plan are directed to provide effective, economical modification and retrofit programs for WSR-88D Systems and associated equipment owned and used by the National Weather Service (NWS), United States Air Force, United States Navy, and the Federal Aviation Administration (FAA).

1.3 Scope

This plan specifies the steps for planning, documenting, obtaining approval, managing, and implementing WSR-88D System modifications and retrofits. This plan applies to the processing of modification and retrofit requirements for all WSR-88D Systems and associated equipment.

1.4 Applicability

Policies and procedures iterated in this document are mandatory for all items of hardware and software contained in the WSR-88D System or peculiar to the support and maintenance of the WSR-88D System.

1.5 Plan Description

1.5.1 Contents

This Management Process for WSR-88D Modifications contains five sections: Section 1 - Introduction, provides a general overview of the modification and retrofit management program; Section 2 - Organizational Roles and Responsibilities, provides a description of the organizational structure necessary to implement the requirements of this plan; Section 3 - Modification and Retrofit Descriptions, describes modification and retrofit categories; Section 4 - Retrofit Plan, discusses the contents of a Retrofit Plan; and Section 5 - Modification/Retrofit Implementation Process, describes the modification and retrofit processes from approval through completion of implementation.

1.5.2 Implementation

The Chief of the WSR-88D Radar Operations Center (ROC), and the Agency Representatives to the Next Generation Weather Radar (NEXRAD) Program Management Committee (PMC) approve the policies and implementation of this plan. Responsibility for management and implementation of sustaining engineering operation and maintenance (O&M) modification and retrofit programs resides at the ROC. The NWS Office of Science and Technology (W/OST) Program Plans Division (PPD) and Systems Engineering Center (SEC) are responsible for managing, implementing, and engineering NEXRAD Product Improvement (NPI) projects for changes that affect overall system architecture and are approved by the PMC. Multi-agency and/or multi-organizational project teams will be formed to address both NPI and sustaining engineering projects.

1.5.3 Maintenance

The ROC Program Branch (PGM) Chief and the ROC Chief review this plan in accordance with the established review procedures of the ROC. Reviews may also occur at the discretion of any one of the approving agencies, or when a change in the modification and retrofit management concepts and approaches occurs.

1.6 Reference Documents

The current issues of the documents listed below provide general guidance for the identification of the requirements and the development of the necessary modification and retrofit activities which the ROC will exercise.

a. WSR-88D Configuration Control Board Charter, OSFPLN-SSB-06, April 12, 2000

b. WSR-88D Configuration Management Plan, OSFPLN-SSB-03, July 1996

c. NEXRAD Integrated Logistics Support Plan (ILSP), R400-IS301B, June 1, 1998

d. Memorandum of Understanding between the Department of Commerce, Department of Defense, and Department of Transportation for the Joint Interagency Integrated Support of the Next Generation Weather Radar Program's WSR-88D, Rev 7.2 June 1, 1998

e. Agile™ Software, Agile Software Corporation, One Almaden Blvd., San Jose, CA, 95113-2253

f. Electronic Industries Alliance (EIA) EIA-649, National Consensus Standard for Configuration Management, August 1998

g. Military Handbook Configuration Management Guidance MIL-HDBK-61, September 1997

h. EIA-632, Processes for Engineering a System, September 1998

i. NEXRAD Product Improvement Project Plan

Section 2 - Organizational Roles and Responsibilities

Each agency involved in WSR-88D system management during its operations and maintenance life cycle will participate in the modification and retrofit process. As documented in the approved WSR-88D ROC Configuration Control Board Charter, all WSR-88D system modifications must be approved by the WSR-88D Configuration Control Board (CCB) for changes greater than $100,000.00 or the ROC Technical Review Committee (TRC) for changes less than $100,000.00.

This plan addresses sustaining engineering modification projects managed by the ROC and NPI modification projects affecting the WSR-88D system architecture managed by W/OST. All WSR-88D project managers will utilize the processes outlined in this plan to the maximum extent practicable to ensure efficient and consistent transfer and integration of modifications into the WSR-88D baseline.

Critical to the change control process is the planning and management of retrofit requirements resulting from an engineering change. Because of the magnitude of retrofit requirements that have occurred on the WSR-88D program, Project Teams represented by each functional area are established by the ROC TRC or W/OST. All active projects are contained on the WSR-88D active projects list which can be found on the ROC web page at http://www.roc.noaa.gov. The Project Team is assigned the task to develop, schedule, and implement the change requirements and inform the TRC of progress on sustaining engineering projects, and for NPI projects to inform the WSR-88D CCB and PMC members of their progress. Project Teams are required to utilize Agile™ for development and documentation of WSR-88D Configuration Change Requests (CCRs) and Engineering Change Proposals in accordance with the Work Practice Instructions (WPI) it contains.

2.1 Modification/Retrofit Management Responsibilities

2.1.1 NEXRAD Program Management Committee

The WSR-88D Program Management Committee (PMC) was formally established on January 14, 1993, by 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 WSR-88D program. The PMC is guided by the WSR-88D PMC Charter approved on February 14, 2001. 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 during its operational life cycle. The primary role of committee 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. The PMC acts as the final arbiter on major policy and financial issues involving the WSR-88D program.

The PMC is chaired by the Director of NWS Office of Operational Systems who as a non-voting member presides over all meetings of the PMC, arranges for the presentation of issues, and obtains all resolutions. The PMC Chair receives plans, issues, interagency Memoranda of Agreement (MOA), and charters for consideration by the PMC. The PMC Chair receives Engineering Change Proposals (ECP) from the WSR-88D Configuration Control Board (CCB) for consideration by the PMC. The PMC Chair refers unresolved issues to Agency Executive Levels for resolution.

Non-voting PMC operational support representation is provided by the Chief of ROC as the WSR-88D Integration Program Manager (IPM). The IPM provides technical support, operations issues advice, and status information on approved sustaining engineering changes and testing to the PMC. The IPM participates in the prioritization of new approved changes. The IPM monitors and reports to the PMC on WSR-88D network performance.

NEXRAD Product Improvement (NPI) representation is provided by the Chief of the Programs and Plans Division of the NWS Office of Science and Technology, who as a non-voting member of the PMC 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.

The NWS Office of Climate, Water and Weather Services, Operations and Requirements Division, Requirements/Change Management Branch (W/OS12) as a non-voting member of the PMC, provides the Executive Secretary to the PMC. The Secretary performs routine secretariat functions, assists the PMC Chair, and maintains the administrative management process of the PMC, i.e. member lists, meeting scheduling, agenda, minutes, etc.

Agency Representatives are the voting members of the PMC and are delegated full authority to act as Executive Agents for their respective agencies. The Agency Representatives present agency issues to the PMC. They review PMC meeting agenda and attend PMC meetings prepared to address and resolve each item on the agenda. The Agency Representative ensures appropriate coordination occurs to obtain agency approval to commit resources for WSR-88D support. Voting Agency Representatives of the PMC are: Director of the Office of Science and Technology, NWS; Director of Plans and Systems, Headquarters Air Force Weather Agency (AFWA); Program Director for Aviation Weather, Headquarters FAA.

2.1.2 Sustaining Engineering Projects

Sustaining Engineering projects are managed by Project Teams appointed by and under the direction of the ROC TRC.

2.1.2.1 TRC Chairperson

The ROC PGM, Configuration Management Team (CMT) Leader will assume the responsibilities of TRC Chairperson and will:

a. Develop and distribute an agenda to all ROC Branch and Team Leaders at least two working days in advance of ROC TRC meetings.

b. Chair and schedule the ROC TRC meetings.

c. Develop and distribute to all ROC Branch and Team Leaders the ROC TRC meeting minutes within 5 working days following the meeting.

d. Assure TRC Action Items are reported and tracked to completion.

e. Report and coordinate TRC activities with the WSR-88D CCB, the PMC, and the WSR-88D Partnership Agencies as required.

f. Ensure that all WSR-88D Configuration Management (CM) new requirements, baseline data and proposed changes to it are developed and maintained within Agile™.

g. Provide electronic access to the WSR-88D CM data within Agile™ to tri-agency users of this data.

2.1.2.2 ROC TRC

The ROC TRC comprised of ROC Branch and Team Leaders will:

a. Prepare for and attend TRC meetings.

b. Conduct technical assessments of all hardware and system level change requirements which are documented in Configuration Change Requests (CCR).

c. Review and disposition all changes that are less than $100,000.00, and report these activities to the WSR-88D CCB.

d. Review and recommend disposition of all changes that exceed $100,000.00 to the WSR-88D CCB.

e. Activate sustaining engineering projects to the WSR-88D project priority list from the pool of approved change requirements documented in CCRs.

f. Assign Engineering Change Proposal (ECP) numbers to sustaining engineering and NPI projects.

g. Assign the Project Team leader and functional area Project Team members when sustaining engineering projects are activated to the WSR-88D project priority list.

h. Monitor the progress of Sustaining Engineering Project Teams.

2.1.2.3 Sustaining Engineering Project Teams

Project Team members and the team leader are assigned by the TRC when the TRC activates a project to the WSR-88D project priority list from the pool of approved change requirements documented in CCRs. The Project Team will consist of members from the following functional areas and may vary somewhat to accommodate specific project requirements:

Systems Engineering
Software Engineering
Radar Engineering
Retrofit Management
Primary Inventory Control Activity Support
Documentation
Radar Operations
Electronic Maintenance
Field Support
Depot Repair and Quality Control Support
Training
Configuration Management

Project Teams will:

a. Prepare for, attend, and keep meeting minutes of Project Team meetings called by the Project Team lead or requested by a team member.

b. Respond to and complete action items assigned by team meetings, the TRC, WSR-88D CCB, and the PMC.

c. Develop and provide coordinated and approved documentation, planning, implementation and deployment of projects assigned by the TRC within Agile™ using approved WPIs.

d. Provide change updates to the project as required.

e. Report project schedules/progress, changes exceeding $2,500.00, and project problems not resolved by Project Team consensus agreement to the TRC for resolution.

f. Approve and implement minor changes to projects of up to $2,500.00 impact.

g. Ensure proper functional area impact review and documentation of proposed changes by team members.

h. Ensure that the team members have reviewed the design of hardware modification kits for impact on WSR-88D operational support equipment, supply support, engineering technical data, Technical Manual data, depot repair support and test equipment, training, etc.

i. Develop coordinated Retrofit Plans.

j. Provide monthly status reporting on modification/retrofit projects that are deployed to the Agencies and the TRC.

k. Review and kit proof proposed field implementation procedures for modification kits including safety issues.

l. Carry out the day to day modification/retrofit implementation and installation management and tracking functions.

2.1.3 NEXRAD Product Improvement Projects

The NWS Office of Science and Technology will initiate and manage NPI projects approved for implementation by the tri-agency WSR-88D PMC. These projects encompass changes which affect the WSR-88D system architecture. The ROC CM Team will assign CCR and ECP Numbers for NPI projects approved for development by the PMC.

2.1.3.1 Program and Plans Division

W/OST1, Program and Plans Division (PPD), will:

a. Define and plan science and technology road maps for service improvements.

b. Lead NWS technology improvements.

c. Provide program planning, execution, and tracking of NPI projects.

d. Propose NPI projects in terms of cost, schedule, and scope.

e. Brief the status of NPI projects to the PMC and other organizations.

f. For NPI projects approved by the PMC, manage approved costs, schedule, and scope.

g. As the advocate for NPI projects, define the product and cost benefits.

h. Provide a Project Control team member for NPI projects.

i. Provide Quality Assurance for NPI projects.

2.1.3.2 Systems Engineering Center

W/OST3, Systems Engineering Center (SEC) will:

a. Plan system evolution consistent with the NWS information technology structure

b. Analyze requirements and solutions for cost benefit and operational feasibility

c. Direct development and integration of enhancements to and new technology for communications, hardware, and software infrastructure

d. Provide Systems Engineering for NPI projects.

e. Develop Software for NPI and Sustaining Engineering projects.

f. Provide Integration and testing of NPI projects.

g. Provide supply support planning and implementation for NPI projects.

h. Provide supply equipment planning and implementation for NPI projects.

i. Provide retrofit planning, modification kit procurement, and implementation for NPI projects.

j. Provide safety planning and implementation for NPI projects.

k. Provide field and depot maintenance support planning and implementation for NPI projects.

l. Provide depot repair planning and implementation for NPI projects.

m. Provide facilities planning and implementation for NPI projects.

n. Provide Configuration Management planning and implementation for NPI projects.

o. Provide Operations and Maintenance Technical Manual planning and implementation for NPI projects.

p. Provide Engineering Data including specifications and drawing planning and implementation for NPI projects

q. Perform Independent Verification and Validation of NPI projects

2.1.3.3 NPI Project Teams

A NPI Project Team Leader and Project Control team member are assigned by the PPD when the PMC approves a project recommendation from the PPD NPI Program Manager. A Project Engineering Team Leader who leads the system engineering development and implementation of the NPI project is assigned by the SEC. A multi-organizational Project Team which consists of members from the following functional areas is formed by SEC:

Systems Engineering
Software Engineering
Radar Engineering
Retrofit Management
Primary Inventory Control Activity Support
Documentation
Radar Operations
Electronic Maintenance
Field Support
Depot Repair and Quality Control Support
Training
Configuration Management

NPI Project Teams will:

a. Prepare for, attend, and keep meeting minutes of Project Team meetings called by the Project Team lead or requested by a team member.

b. Respond to and complete action items assigned by team meetings, the TRC, WSR-88D CCB, and the PMC.

c. Develop and provide coordinated and approved documentation, planning, implementation and deployment of projects assigned by the PMC within Agile™ using approved WPIs.

d. Provide change updates to the project as required.

e. Report project schedules/progress, changes exceeding $2,500.00 to the Project Control Team member and the PPD Program Leader.

f. Approve and implement minor changes to projects of up to $2,500.00 impact.

g. Ensure proper functional area impact review and documentation of proposed changes by team members.

h. Ensure that the team members have reviewed the design of hardware modification kits for impact on WSR-88D operational support equipment, supply support, engineering technical data, Technical Manual data, depot repair support and test equipment, training, etc.

i. Develop coordinated Retrofit Plans.

j. Provide monthly status reporting on modification/retrofit projects that are deployed to the Agencies and the PPD Program Leader.

k. Review and kit proof proposed field implementation procedures for modification kits including safety issues.

l. Carry out the day to day modification/retrofit implementation and installation management and tracking functions.

2.2 Agency Modification/Retrofit Responsibilities

2.2.1 National Weather Service

The NWS Director of the Office of Operational Systems (W/OPS) is responsible for ensuring that modification and retrofit programs comply with the policy and procedures set forth in this plan for National Weather Service WSR-88D systems. The Director will appoint a NWS focal point for executing these responsibilities.

2.2.1.1 NWS Focal Point

The NWS Focal point will coordinate modification/retrofit activities affecting the NWS WSR-88D Systems with the affected organizations. The NWS focal point will:

a. Ensure that the NWS Requirements/Change Management Branch in the NWS Office of Climate, Water and Weather Services (W/OS12) distributes and collects comments on ECPs and CCRs forwarded by the ROC CMT affecting the WSR-88D System and enter them into Agile™.

b. Review CCRs and ECPs for impact to NWS processes and procedures and provide comments in Agile™.

c. Ensure that the W/OS12 provides NWS approved CCRs to the ROC CMT for entry into Agile™ and distribution for tri-agency consideration.

d. Ensure operational sites install approved modifications.

e. Staff and respond to Legislative Affairs regarding Congressional inquiries on the NWS WSR-88D system and program.

f. Coordinate and implement NWS WSR-88D commissioning and decommissioning policies and procedures.

g. Ensure staffing of agency WSR-88D program management positions.

2.2.1.2 NWS Office of Operational Systems

The Director of the NWS Office of Operational Systems (OPS) serves as the Chairperson of the NEXRAD PMC which is the CCB approval authority for proposed engineering changes and requirements exceeding $1,000,000.00 whether sustaining engineering or NPI projects. The ROC is organizationally a Division of the OPS and the ROC Chief reports directly to the OPS Director. The NWS Director of OPS is responsible for ensuring that modification and retrofit programs comply with the policy and procedures set forth in this plan for National Weather Service WSR-88D systems. The W/OPS as part of its operations and maintenance mission will:

a. Manage operational weather systems

b. Provide system engineering, software management, facilities engineering services, communications, and logistical services.

c. Develop policy for implementation, operations, support, and evaluation.

d. Provide depot reconditioning and logistics support and develop maintenance policy and guidance.

e. Conduct integrated planning for weather system operation and support

f. Represent the NWS on related issues at international and interagency organizations/forums.

g. Provide comprehensive configuration management and testing of tri-agency and NWS systems and upgrades.

2.2.2 Air Force Weather Agency

The Director of Plans and Programs for the Department of Defense (DOD) Air Force Weather Agency (AFWA) is responsible for ensuring that WSR-88D System modification and retrofit programs comply with the policy and procedures set forth in this plan. The Director will appoint a DOD focal point.

2.2.2.1 DOD Focal Point

The DOD Focal point will coordinate modification/retrofit activities affecting the DOD WSR-88D Systems with the affected DOD organizations. The DOD focal point will:

a. Distribute and collect DOD comments on ECPs and CCRs forwarded by the ROC CMT affecting the WSR-88D System and enter them into Agile™.

b. Review CCRs and ECPs for impact to DOD processes and procedures and provide comments in Agile™.

c. Provide AFWA approved CCRs to the ROC CMT for entry into Agile™ and distribution for tri-agency consideration.

d. Maintain data bases which they manage that are of particular interest to the DOD NEXRAD Program such as the Reliability Engineering Management Information System (REMIS) and Core Automated Maintenance System (CAMS).

e. Ensure operational sites install approved modifications.

2.2.3 Federal Aviation Administration

The Department of Transportation (DOT) FAA Program Director for Aviation Weather is responsible for ensuring that WSR-88D System modification and retrofit programs comply with the policy and procedures set forth in this plan. The Program Director will appoint a DOT FAA focal point.

2.2.3.1 FAA Focal Point

The DOT FAA Focal point will coordinate all modification/retrofit activities affecting the DOT FAA WSR-88D Systems with the affected FAA organizations. The FAA focal point will:

a. Distribute and collect FAA comments on ECPs and CCRs forwarded by the ROC CMT affecting the WSR-88D System and enter them into

Agile™.

b. Review CCRs and ECPs for impact to FAA processes and procedures and provide comments in Agile™.

c. Provide FAA approved Case Files to the ROC CMT for entry into Agile™ and distribution for tri-agency consideration.

d. Maintain data bases which they manage that are of particular interest to the DOT NEXRAD Program such as the FAA maintenance data collection system.

e. Ensure operational sites install approved modifications.

Section 3 - Modification and Retrofit Descriptions

3.1 Modifications

Modifications are made to Configuration Items (CI) when necessary to:

a. Accomplish or improve the performance of the assigned mission of the WSR-88D System

b. Improve safety, survivability, physical or communications security, compatibility with the electromagnetic environment, reliability, maintainability, energy conservation, manpower and training support

c. Reduce life cycle costs

d. Test and evaluate

3.1.1 Categories of Modifications

Modifications may take several forms. Those which result in a permanent approved change to the CM baseline and require retrofit to operational WSR-88D System(s) are the primary focus of this plan. DOD describes modifications as falling into one of the five following Categories:

a. Category 1 - temporary for special requirements

b. Category 2 - temporary for test or design and development

c. Category 3 - permanent for correction of deficiencies during production

d. Category 4 - permanent for safety, material deficiencies, or to improve reliability and maintainability

e. Category 5 - improved operational capability

In considering modifications which result in system retrofit, only Category 3, Category 4 and Category 5 type modifications are applicable and reflected in formal engineering change proposals. Category 1 and Category 2 modifications are not addressed by this policy document.

3.1.2 Implementation Responsibility

Responsibility for management and implementation of modifications resides at the ROC for Sustaining Engineering Projects and W/OST for NPI Projects.

3.2 Retrofit

The EIA Standard 649, National Consensus Standard for Configuration Management, definition of a retrofit is: “The incorporation of new design parts or software code, resulting from an approved engineering change to a product's current approved product configuration documentation, into products already delivered to and accepted by customers.”

Each system retrofit effort authorized by the WSR-88D CCB or TRC through approved Engineering Change Proposals will have a retrofit plan and will be assigned a retrofit number to be used for tracking purposes throughout the implementation process. The retrofit plan will provide the implementation details for an approved change. The Retrofit Plan once agreed upon by the Project Team will become Attachment M to the Engineering Change Proposal in Agile™. At a minimum, the Retrofit will identify parts impacted by the change, Technical Manuals impacted by the change, Support Equipment impacted by the change, retrofit dependencies, recommended implementation method, a summary of the retrofit approach, staff hour requirements per retrofit, modification test and evaluation status and reports, supply and cataloging requirements, disposition of existing materials, modification kit identification, and retrofit effectivity. Appendix A provides a block by block description and example of the Retrofit Plan.

3.2.1 Types of Retrofits

Three types of system retrofits will be managed under this plan. These types are defined as follows:

3.2.1.1 Contractor or Depot Team Installation

Contractor or Depot Team Installation type of retrofit is installed on all deployed systems, both operational and non-operational, by a contractor, such as Lockheed Martin, or a Government depot installation team. These retrofits generally require an in depth knowledge of the system components and interfaces. Retrofits in this group have the greatest magnitude of complexity and are usually considered major in scope, affecting multiple subsystems and interfaces. Most NPI Projects would fall under this type of retrofit.

3.2.1.2 Site Technician Installation

Site Technician Installation type of retrofit is installed on all deployed systems, both operational and non-operational by the Agency site maintenance personnel. These retrofits are generally of moderate scope and complexity, affecting single subsystems and few interfaces. Retrofits fitting this description will usually be performed by the Government; however, the Government may contract to perform the retrofit. Most Sustaining Engineering Projects would fall under this type of retrofit.

3.2.1.3 Attrition or Scheduled Installation

Attrition or Scheduled Installation type of retrofit is installed on an attrition or scheduled basis by a joint effort of the ROC, the NRC and the responsible on-site maintenance technicians. These retrofits are installed as the fielded components fail and must be replaced. Retrofits of this type are for components replaced in the logistics system either because they are no longer available (obsolete) or because they have been replaced by less expensive, more reliable, or more capable components. Some Sustaining Engineering Projects would fall under this type of retrofit.

Section 4 - Retrofit Plan

4.1 Retrofit Plan Assignment

Each retrofit affecting the WSR-88D System will be planned and documented by the Project Team assigned to develop the CCB approved requirements into an engineering change proposal. The Retrofit Plan will be entered into the CM change records in Agile™ as Attachment M.

4.2 Retrofit Plan Objective

The key to successful retrofit planning is a clear, comprehensive, and concise format so that reviews for approval can easily be performed and implementation can be precisely tracked. In order to consistently prepare retrofit plans, Appendix A provides a format and description of a retrofit plan. The primary source of information for the plan is extracted from the ECP and Project Team meetings. If the ECP is developed and documented in accordance with EIA Std 649 and the guidance of MIL HDBK 61, the majority of the information required for the retrofit planning process can be readily derived. Primary areas of impact which must be addressed in a retrofit plan are schedule, operations impact, logistics support, and technical documentation.

4.3 Retrofit Plan Preparation

The Project Team member from the Retrofit Management functional area is responsible for generating the retrofit plan and providing it to the members of the Project Team for their review and concurrence. As the engineering change is developed by the Project Team, a retrofit plan will be prepared and attached to the ECP as Attachment M in Agile™ if retrofit is required by the change. A sample format for a Retrofit Plan has been provided in Appendix A. Data elements contained in Retrofit Plans will follow the form and format for data provided by MIL-STD 2549, Configuration Management Data Interface. ECPs forwarded to the TRC or WSR-88D CCB for approval will have Attachment M completed.

4.4 Modification/Retrofit Evaluation

As part of the standard ECP review process, Project Team members will review the ECP for impacts to their area of functional responsibility and evaluate the completeness as well as the correctness of the impacted items identified. As the ECP is being reviewed, each project team member will simultaneously check the retrofit plan to ensure the retrofit application is appropriately recorded. An area of particular interest is the retrofit effectivity which should be explicitly identified by quantity of kits and kit types per site, site name, site identification, and site organization code.

If different implementations are to be performed for different user agencies, the agency unique applications must be coordinated with the agency and evaluated by the team

members to ensure that all implementation approaches are possible and the retrofit plan must specifically identify the differences. If a particular installation sequence is important to the user agencies, a list of site installation priorities or the preferred installation sequence will be provided by the user agencies. Additionally, the user agencies will determine times, i.e., convective season, hurricane season, etc.,when a retrofit installation would be inappropriate. Given this information, a preliminary retrofit implementation schedule can be documented in the retrofit plan. Final retrofit implementation will be dependent upon the actual schedules for the modification development effort including efforts such as: design, prototype acquisition, prototype test and evaluation, engineering documentation, Technical Manual and Combined Modification Document development, kit and spares acquisition, first article evaluation, kit proof, etc.

Project Team members must also conduct an analysis to determine if there are associated or dependent retrofits that must be coordinated with the new retrofit requirements so that all retrofit activities can be performed in the most efficient and least disruptive manner.

4.5 Modification/Retrofit Plan Approval

All retrofit plans must be reviewed and accepted as complete by the consensus agreement of the Project Team members prior to submission of an ECP for TRC or WSR-88D CCB approval. It is the responsibility of the Project Team to ensure retrofit plans are incorporated into the Agile™ CM data base as Attachment M prior to release of the ECP for Tri-agency review and WSR-88D CCB adjudication.

Section 5 - Modification/Retrofit Implementation Process

The ROC CMT is responsible for incorporating into the WSR-88D CM baseline any CCB approved modification to all items of hardware and software contained in the WSR-88D System or peculiar to the support and maintenance of the WSR-88D System. This responsibility ensures that all aspects of the modification are ready for operational use.

5.1 Administrative Record Keeping/Performance Reporting

Following CCB approval of an ECP that requires retrofit, the Project Team will make any adjustments necessary in the Retrofit Plan based on decisions made at the CCB. The ROC CMT will maintain the Agile™ database and retain hard copy files of the, CCRs, ECPs, the CCB decision memoranda and minutes documenting the ECP approval decision, and all correspondence generated and/or received by the Project Team regarding the subject ECP. This will maintain an audit trail of all decisions made and actions completed for the change and its attendant retrofit.

For sustaining engineering projects, the ROC Retrofit Management Team (RMT) acquires kit components, coordinates cataloging with W/OPS14, deploys and tracks retrofits in accordance with the milestones identified in the approved ECP schedule. When the first kit is deployed, the RMT will report this activity to the Project Team Lead who in turn will report to the TRC. When the last kit is reported installed, the retrofit will be reported as closed by the ROC RMT and removed to an archive database of closed modifications. The ROC RMT will maintain a data base which details when and by whom the retrofit was reported as installed.

Monthly review of individual modifications and total WSR-88D System modifications in progress will be performed by the ROC RMT. The ROC RMT will provide monthly reports to Agency management and WSR-88D site personnel, and make the reports available on the ROC web page to cover the following areas at a minimum:

a. Agency and NWS Retrofit performance data.

b. Uncompleted Retrofits by Agency/Site.

c. Upcoming Retrofits

5.2 Retrofit Implementation Guidelines

5.2.1 Test and Evaluation

The Project Team is responsible for the engineering, testing, kit proofing, qualification testing, and field testing of modifications, and coordination of these activities with the Agencies and sites which may be affected.

5.2.2 Test and Training Systems

Test and training systems must remain compatible with operational WSR-88D System configuration(s) throughout the life cycle. The ROC Operations Branch is responsible for ensuring that the ROC Test Bed systems are maintained in WSR-88D baseline configuration. When Category 3, 4, or 5 modifications are implemented in operational WSR-88D Systems, particularly those modifications affecting safety or performance, they will first be implemented in ROC Test Bed Systems. Training systems at Keesler AFB, MS, and Kansas City, MO, will be modified at the earliest available date which their training class schedules can accommodate.

5.2.3 Training

The Project Team is responsible for ensuring identification, costing, and early development of training materials to support modification programs. Moreover, the Project Team is responsible for ensuring delivery of modification program source materials for training updates in time to reasonably meet the operations, maintenance, and Hotline training requirements for implementation of the modification in operational WSR-88D Systems. The WSR-88D Agencies are responsible for incorporation of modification programs into maintenance and operations training courses. The ROC Operations Branch is responsible for ensuring that Hotline staff participate in testing and acquire early training on modifications.

5.2.4 Support and Test Equipment

On-site peculiar support and test equipment and depot level support equipment, test equipment, and test program sets installed at the centralized WSR-88D depot repair facility, the National Reconditioning Center (NRC), in Kansas City, MO will be modified concurrently with the implementation of modifications in operational WSR-88D Systems.

The Project Team is responsible for ensuring identification, costing, and development of support equipment, test equipment, and test program sets to support modification programs. The Project Team is responsible for documentation and tri-agency approval of Support Equipment Recommendation Data (SERD) requirements, procurement, and delivery of modification program common and peculiar support equipment, test equipment, and test program sets in time to reasonably meet the maintenance requirements for implementation of the modification in operational WSR-88D Systems.

5.2.5 Combined Modification Documents

Category 3, 4, and 5 modifications will be documented in Time Compliance Technical Orders (TCTO) per Air Force Technical Order 00-5-3 and Military Specification, MIL-T-38804; for the DOC in a Modification Note, Maintenance Note or Software Note; and for the DOT in an Electronic Engineering Modification (EEM). The requirements for

modification installation documentation for all three Agencies have been combined into one Modification Document which is approved by each Agency. DOD has delegated approval authority for TCTOs to the ROC PGM Chief. The term Combined Modification Document will be used throughout this document when referring to any agencies' modification document unless the requirement is specific to an agency.

The Project Team is responsible for ensuring identification, costing, and development of operational and maintenance technical documentation to support modification programs. The Project Team is responsible for ensuring delivery of modification program Combined Modification Documents and related documentation in time to reasonably meet the operations and maintenance training requirements for implementation of the modification in operational WSR-88D Systems.

5.2.6 Engineering Drawings, Specifications and Related Data

Category 3, 4, and 5 modifications will be documented as revisions to existing engineering drawings and specifications or as new engineering drawings and specifications. Engineering drawings and specifications will be initiated during the prototype development and completed prior to procurement of the modification program.

The Project Team is responsible for ensuring identification, costing, and development of engineering drawings and specifications to support modification programs, including delivery of modification program drawings and specifications prior to procurement of the modification. The Project Team is responsible for performing Functional and Physical Configuration audits related to the modification.

5.2.7 Spares

The Project Team will ensure that Category 3, 4, and 5 modifications are supported with initial spare parts delivered to the NLSC before the modifications are fielded. As an alternative, depot spares and on-site installed and spare parts are sometimes modified by the NRC or a contractor. When this occurs, retrofit planning must take into account the need for both modified and unmodified spare parts for the duration of the retrofit, and ensure that as the retrofit progresses a balance is maintained finally ending with all depot spares and on-site installed and spare parts modified.

The Project Team is responsible for ensuring identification and costing of kit requirements and spares to support modification programs. The Project Team is responsible for procurement package preparation, performing Contracting Officer's Technical Representative (COTR) duties and ensuring delivery of modification program spare parts in time to reasonably meet the maintenance requirement for spare parts to NLSC to support installed modifications in operational WSR-88D Systems.

5.2.8 Funding

Funding to support modification programs must, to the fullest extent possible, be identified and documented prior to its consideration for implementation in operational WSR-88D Systems by the CCB. Each Project Team member assigned to prepare an ECP is responsible for identifying and documenting appropriate funding requirements for all elements of the modification in his/her functional area of expertise. For example, funds should be identified for software engineering, hardware engineering, systems engineering, test and evaluation, procurement and installation of modification kits and spares, and all support elements such as support equipment, technical data, drawings, specifications, training materials, training, and facilities construction.

The Project Team is responsible for submission of modification budgetary cost estimates for each ECP which is forwarded for approval by the WSR-88D CCB. Once approved, the OOS is responsible for providing the combined cost estimate information for all changes approved for inclusion in the Agencies' WSR-88D Program budget submission.

5.2.9 Contracting

Acquisitions of supplies and services required to support modification programs will, to the fullest extent possible, specify needs in a manner designed to promote full and open competition. Solicitations will include specifications and purchase descriptions developed to promote and permit full and open competition with due regard to the nature of the supplies or services to be acquired and reflect the minimum acceptable needs for the modification tailored to the requirement. Restrictive provisions or conditions will be included only to the extent necessary to satisfy the minimum needs or as authorized by law.

5.2.10 Modification Life Cycle Use

Modifications will be done only when sufficient service life remains on the radar system or subsystem to justify performing the modification. Recognizing the extended lead time required for the total modification process the following rules apply to all modifications except safety modifications:

a. A modification may be planned, programmed, and budgeted only if 2 or more years of programmed life are forecast to remain after the completion of the modification.

b. During actual implementation of the modification as forecasts of programmed life become more certain, only WSR-88D Systems which are forecast to have at least 4 or more years of programmed life remaining after installation of the modification will be modified.

5.2.11 System Integration

System Integration must be addressed at the beginning of the modification development program and continue iterations until the modification is completely installed, that is, from the beginning of advanced development through rescission of the installation Combined Modification Document.

For Sustaining Engineering Projects, the ROC Engineering (ENG) Branch is responsible for providing WSR-88D System engineering capability and for providing the Project Team leader unless otherwise directed by the TRC, WSR-88D CCB, or PMC. For NPI Projects, the NWS SEC is responsible for providing WSR-88D System engineering capability and for providing the Project Team Leader unless otherwise directed by the WSR-88D CCB or the PMC. The Project Team will plan the total integration of Category 3, 4, and 5 modifications to ensure maximum system operational availability. Particularly close attention must be given to modifications with interfacing systems and equipment. Modification implementation must be carefully coordinated to ensure interoperability.

5.2.12 Implementation Level

To the greatest extent possible, urgent or safety-related modifications to operational WSR-88D Systems will be accomplished at the field activity level. The maintenance level utilized for modification installation is dependent on urgency, expected hours of system downtime, expected man-hour expenditure, and level of skill required to accomplish the modification. Normally not more than 8 clock hours of system downtime and not more than 25 staff hours will be utilized for a field level modification installation. Modifications exceeding these limits are usually accomplished at the depot, by depot level teams traveling to field sites, or by contractor teams. Another factor to be considered in determining maintenance level for installation of a modification is the number of other active modifications and the modification backlog at the field level.

5.2.13 Implementation Scheduling

The Project Team will prepare a planned program for timely accomplishment of all proposed modifications prior to the Combined Modification Document rescission date. In planning modification schedules, the team will develop a modification work schedule for Combined Modification Document compliance which considers agency resources for field level modifications, and agency availability requirements for the system. The schedule development and coordination process may lead to consideration of depot level teams or contracted modification implementation.

5.2.14 Safety Modifications

The Project Team will schedule installation of safety modifications for completion on all affected systems as soon as possible after availability of kits or materials. Installation

will be at the field activity level if possible or by depot or contractor teams depending on the urgency. Safety modifications should not be scheduled for accomplishment at the depot level unless the modification is of such size and complexity that depot installation is required.

5.2.15 Trial Installation and Prototype

Generally, a trial installation of approved Category 3, 4, and 5 modifications will be accomplished before procurement of modification kits. This ensures that the modification will correct the deficiency or enhance performance without degrading WSR-88D System functions. Prototyping may also try several different alternatives which are usually installed on non-operational systems or test beds. For approved Category 5 modifications, an engineering prototype is generally required before proceeding with the release of funds for acquisition of retrofit modification kits. The Project Team Leader in coordination with the Project Team members is responsible for planning and accomplishing trial installations.

5.2.16 Modification Proofing

Modification (Kit) proofing will be accomplished in accordance with Air Force Technical Order 00-5-15 or the non-DOD equivalent policy to ensure that all kit parts fit correctly, special tooling is adequate, drawings, Technical Manual changes, Combined Modification Documents, and spares are satisfactory for deployment of the change. Proofing also confirms that the modification can be installed at the specified level of maintenance and within the times estimated; therefore, operational maintenance personnel will usually perform the kit proof while being observed by Project Team members. The requirement for modification proofing may only be waived by concurrence of all the Project Team members. The Project Team Leader is responsible for planning, scheduling, accomplishing, and coordinating kit proof activities and results with all Project Team members. Participation and support from various functional areas within the Project Team may be necessary to adequately kit proof changes for deployment readiness. For complex modifications with impact to several different WSR-88D configurations, it may be necessary to kit proof several modification kit variations and installation instructions. Likewise, it is necessary for the Project Team to perform Physical Configuration Audit (PCA) of baseline drawings and specifications developed or changed by the modification either before or immediately after the Kit Proof.

5.3 Summary of Modification Flow Process

For both NPI and Sustaining Engineering Projects, the change requirements identification, documentation, solution development, acquisition, and implementation are part of a process which involves the integrated performance of tasks in many functional areas in order to successfully make a change to operational WSR-88D systems. To summarize the activities which occur on sustaining engineering projects

and their relationship to each other a Modification Flow Process Diagram is provided in Appendix B of this plan. This flow process includes all sustaining engineering project activities performed by functional groups within and external to the Project Team which may be required to implement a change requirement. Appendix C contains several subsets of the Modification Flow Process which are called Sub-Routines. The Sub-Routines along with the narrative for each provide further detail into the activities of functional areas and groups working on sustaining engineering projects. A high level summary of the flow process follows:

1) Agency or ROC document and submit requirement for change to ROC CMT

2) Agencies review and approve requirements

3) ROC TRC Assign Project Team members

4) Project Team confirm classification and priority

5) Engineering Development and Preliminary Design Review (PDR);

6) Detailed Engineering Development and Critical Design Review (CDR);

7) Prototype System Integration and Test/Functional Configuration Audit;

8) Technical Data Validation;

9) Production Procurement and First Article Test/PCA;

10) Technical Data Verification/Kit Proof;

11) Modification Kit Acceptance;

12) Agency approvals for Combined Modification Document Release;

13) Modification Kit Issuance to Field;

14) Modification/Retrofit Completion Status Reporting;

15) Modification Close-out; and

16) Recurring Operational Support/Spares Replenishment.

APPENDIX A - WSR-88D Modification/Retrofit Plan

AGILE™ HARDWARE CM TOOL ATTACHMENT M
WSR-88D Modification/Retrofit Plan

Block 1 - Date Prepared:

Block 2 - ECP Number: *(Same as Agile Cover page)*

Block 3 - Title of Change: *(Same as Agile Cover page)*

Block 4 - Part Numbers/Drawings Impacted: *note: Agile Affected Items Tab does not show "From" CAGE and P/N*

From CAGE	From P/N	Item Name	To P/N	To CAGE

Block 5 - Software Requirements:

Block 6 - Related Retrofit Requirements:

Retrofit No./Dependency (indicate before or after)	ECP No.	Date Approved

Block 7 - Implementation Recommended:
(Check one)
Contractor
Government

Block 8 - Summary of Retrofit Approach:

Block 9 - Staff Hours per Unit to Install Retrofit Kit:

Site Level / Depot Level (indicate one or the other)	_____ hours
Staff Hours to Conduct System Tests Before/After Retrofit:	_____ hours
Total Retrofit Time:	_____ hours
Total Out of Service Time	_____ hours

Block 10 - Existing Material Disposition Requirements:

Block 11 - Support Equipment Recommendation Data (SERD) Requirements:

Block 12 - National Stock Number Assignment Required:

Item Name	NSN/ASN	P/N	NSIN #

Block 13 - Stock Item Changes Required:

Item Name	NSN/ASN	P/N	Action	SIC #

Block 14 - Kit Identification Number:
Quantity Required:
Kit Cost:
Consists of:

Qty	Item name	P/N	NSN	ASN

Kit Identification Number:
Quantity Required:
Kit Cost:
Consists of:

Qty	Item name	P/N	NSN	ASN

Block 15 - ECP Item Purchase Requirements:

NSN: ASN: P/N:	Item Name	1st Article Qty: Production Qty: Spares Qty: Total Qty:	Unit Cost: Total Cost:
NSN: ASN: P/N:	Item Name	1st Article Qty: Production Qty: Spares Qty: Total Qty:	Unit Cost: Total Cost:
NSN: ASN: P/N:	Item Name	1st Article Qty: Production Qty: Spares Qty: Total Qty:	Unit Cost: Total Cost:

Block 16 - Modification Test and Evaluation Status:

First Article Receipt Date:	Part Number	T&E Completion Date:	Evaluation Results:

Block 17 - Retrofit Effectivity Summary:

Kits Required	DOD - Qty	DOT - Qty	DOC - Qty	Total
On Site Spares (Recommended On-Site Spares List)				
NRC				
NLSC Spares				
TOTAL				

Block 18 - Retrofit Effectivity List By Agency:

DOC Sites: *(Sort by NWS Region, then NEXRAD Site Name)*

NEXRAD Site Name	City, State	Equipment	SID	Org Code	Kit Qty

DOD Sites:

NEXRAD Site Name	City, State	Equipment	SID	Org Code	Kit Qty

DOT Redundant Sites:

NEXRAD Site Name	City, State	Equipment	SID	Org Code	Kit Qty

Instructions for Completing Modification/Retrofit Plan

Block 1
Date Prepared — MM/DD/YY, i.e., 10/12/00

Block 2
ECP Number — ROC CMT assigned ECP Number. Same as Agile Cover Page.

Block 3
Change Title — Descriptive title of the ECP. Same as Agile Cover Page.

Block 4
Part Numbers/Drawings Impacted

Corresponding to the name of the configuration part affected or the component affected is the actual part number for the configuration part. If there is a new configuration part being proposed, then the new part number must be indicated in the TO column. The Contractor and Government Entity (CAGE) code for the source of the identified part number must also be identified, especially if vendor sources are changing. The component name should be indicated next to each part identified. The FROM part number and CAGE will indicate the part being replaced.

Block 5
Software Requirements — Software requirements and impacts related to this change.

Block 6
Related Retrofit Requirements:

Retrofit No. — This is the Modification/Retrofit Plan number assigned to the related retrofit program.

Dependency — This identifies the dependency of the related retrofit to the subject retrofit addressed by this plan. Only one of the following designations is allowed: BEFORE - to be performed in advance of the subject retrofit, AFTER - to be performed upon completion of the subject retrofit, or CONCURRENT - to be performed at the same time as the subject retrofit.

ECP No. This is the ECP No. addressed by the related retrofit.

Date Approved MM/DD/YY the ECP was approved by the TRC, WSR-88D CCB or the PMC.

Block 7
Implementation Recommended

Check whether Government or Contractor Implementation is being recommended by the Project Team.

Block 8
Summary of Retrofit Approach Provide a narrative summary of how the retrofit will be accomplished. As the Project Team evaluates the retrofit approach, the final recommendation from the team will be indicated here.

Block 9
Staff Hours per Unit to Install Retrofit Kit:

Site Level/Depot Level Indicate whether the retrofit will be performed at site level or at the depot level, and indicate the staff hours required to install the retrofit.

Staff Hours to Conduct System Tests Before and After Retrofit

Indicate the staff hours required to conduct system tests before and/or after retrofit installation.

Total Retrofit Time Indicate the total time to perform the retrofit in hours or parts of hours including out of service time.

Total Out of Service Time

Indicate the out of service hours or parts of hours associated with this retrofit installation.

Block 10
Existing Material Disposition Requirements

Indicate what is to be done with material or parts removed in the field because of this change. For example, dispose on site, return to depot for disposal, or return to depot for upgrade. This information will be incorporated into the Combined Modification Document.

Block 11
Support Equipment Recommendation Data (SERD) Requirements

Identify new Common, Peculiar, or Shared Support Equipment requirements, or any impacts to existing Support Equipment caused by the change.

Block 12
National Stock Number (NSN) Assignment Required

Identify items required by the change which are not cataloged by NWS or DLIS. Include the Item Name, NSN and Agency Stock Number (ASN) (after assignment), Part Number (P/N), and the New Stock Item Notification (NSIN) cataloging request number forwarded to W/OPS14.

Block 13
Stock Item Changes Required

Identify items required by the change which need a change to any data previously cataloged by NWS or DLIS. Include the Item Name, NSN and ASN, P/N, the change which is required, and the Stock Item Change (SIC) request number forwarded to W/OPS14.

Block 14
Kit Identification Number

Identify all of the kits required to implement the change including the number of kits required, the kit cost, and all items which make up the kit by Item Quantity (Qty), Item Name, Item P/N, Item NSN, And Item ASN.

Block 15
ECP Item Purchase Requirements

Identify all items requiring procurement in order to implement the change. For each item enter NSN, ASN, P/N, Item Name. Enter the Quantity of 1st Article items required to be procured as Contract Line Item Number (CLIN) 0001 for test and inspection by ROC. Enter the Production Quantity to be procured as CLIN 0002 in order to build up the required kits, and enter the Spares Quantity of items to be procured as CLIN 0003 which will remain in the NLSC as spares to support the recurring demands caused by the change. Finally, enter the Total Quantity to be procured for the item and its Unit Cost and the Total Cost of the procurement.

Block 16
Modification Test and Evaluation Status

Enter the date the 1st Article item , CLIN 0001, is

received, its Part Number, the Date that Test and Evaluation (T&E) is completed. In the Evaluation Results indicate whether the 1st Article was passed or failed and whether there is a test report at Agile Attachment T.

Block 17
Retrofit Effectivity Summary

This summary includes all kit requirements by Agency and Total for: Kits required for retrofit of Field Sites, Kits required for retrofit of On-Site Spares, Kits Required for retrofit of NRC, and Kits required for retrofit of Spares and Next Higher Assembly (NHA) Spares at NLSC.

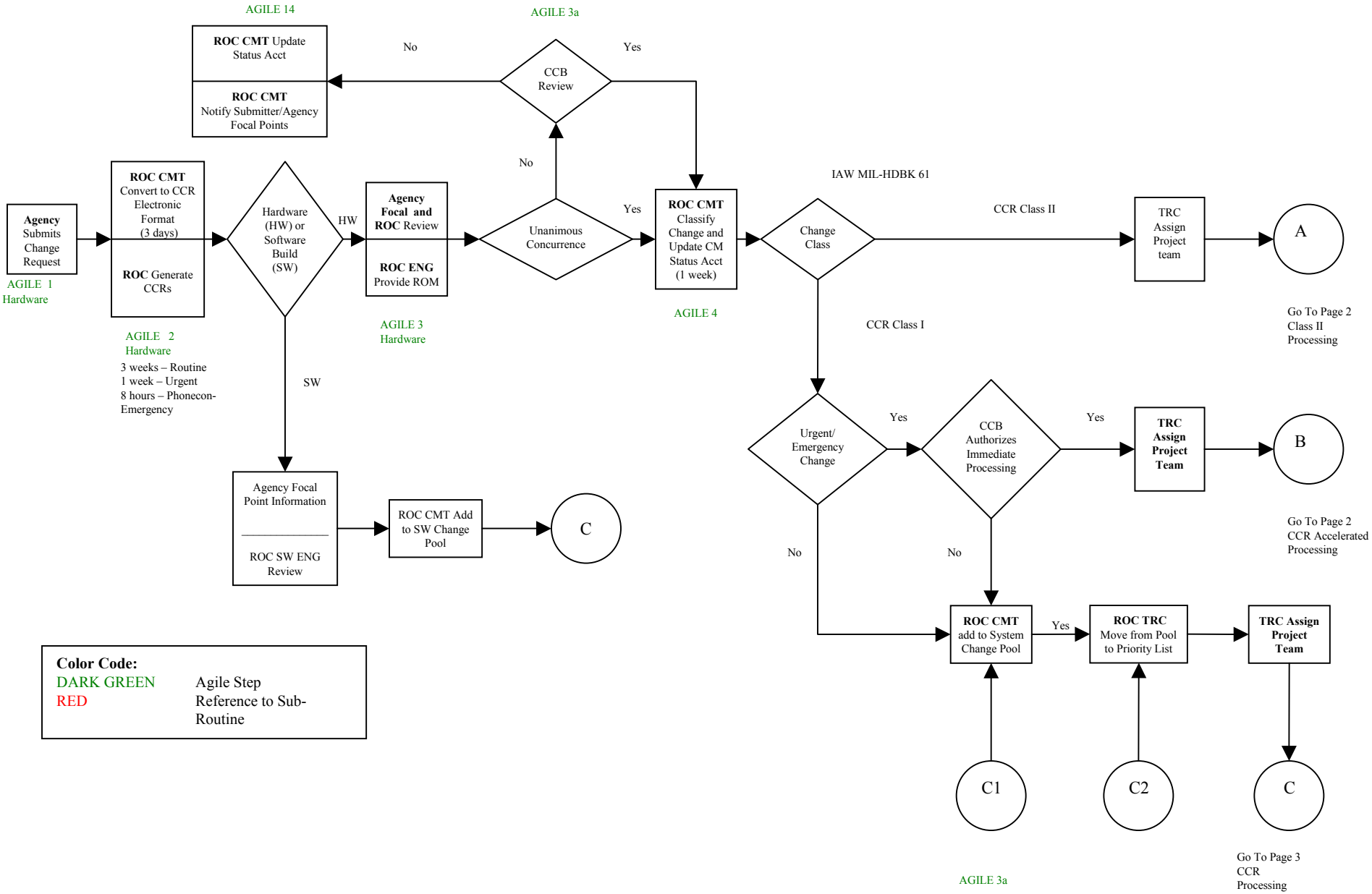
Block 18
Retrofit Effectivity List By Agency

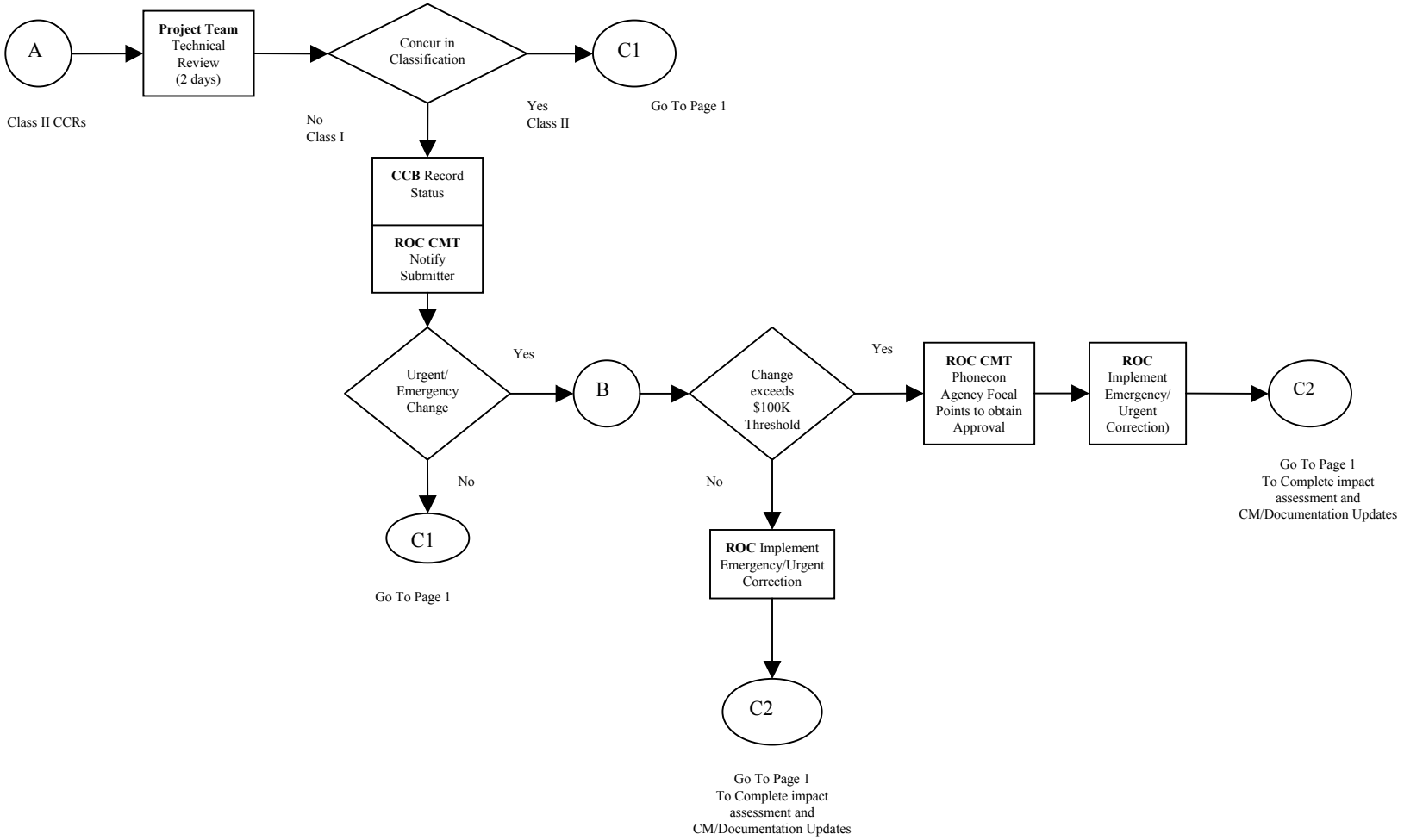
For each Agency list all WSR-88D Systems or PUPs affected by this change including the following information: NEXRAD Site Name (from the ROC Site Data Base), City, State, Equipment affected (RDA, RPG, etc), Site Identification (SID), and Organization Code or DOD Activity Address Code (DODAAC).

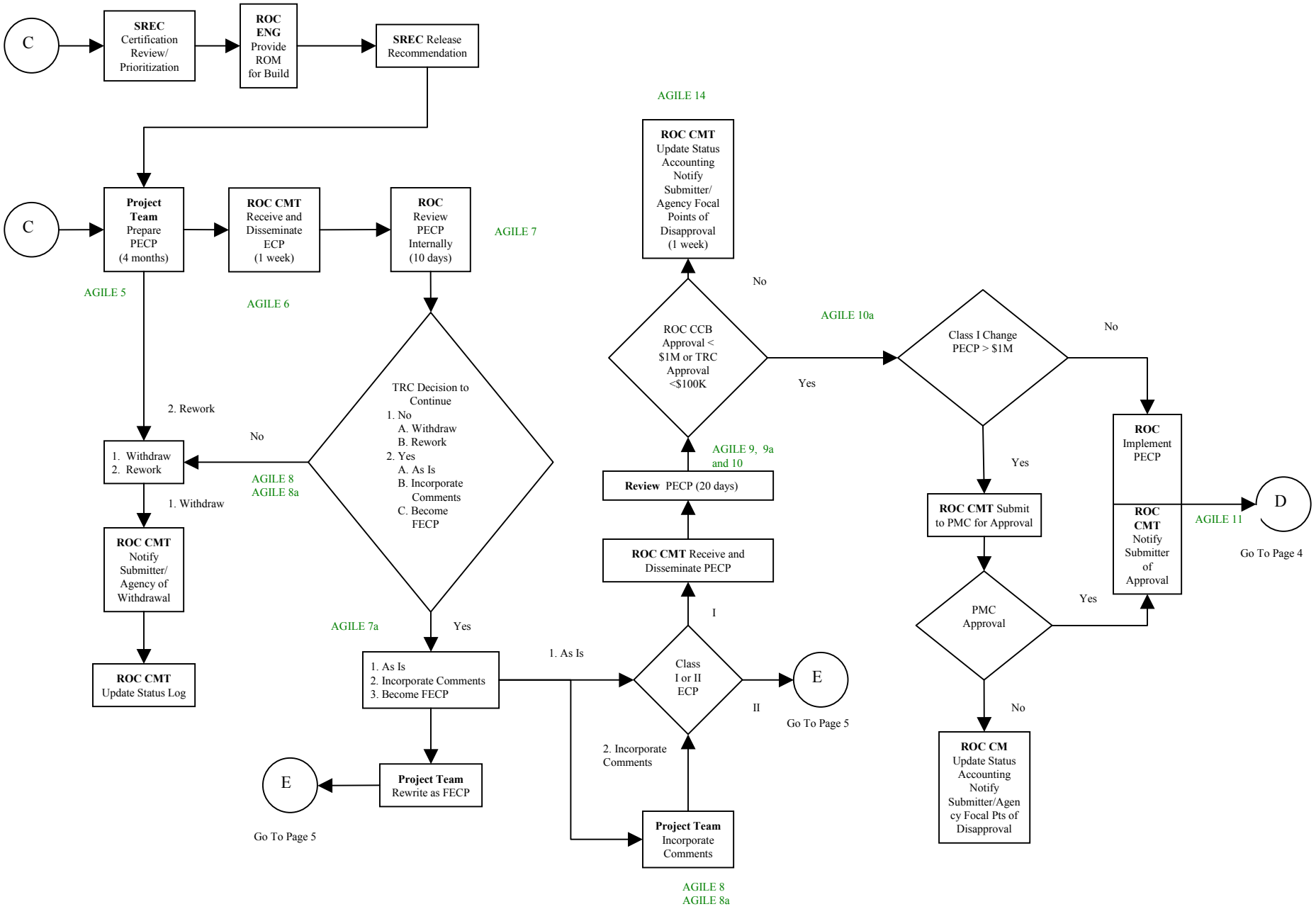
APPENDIX B

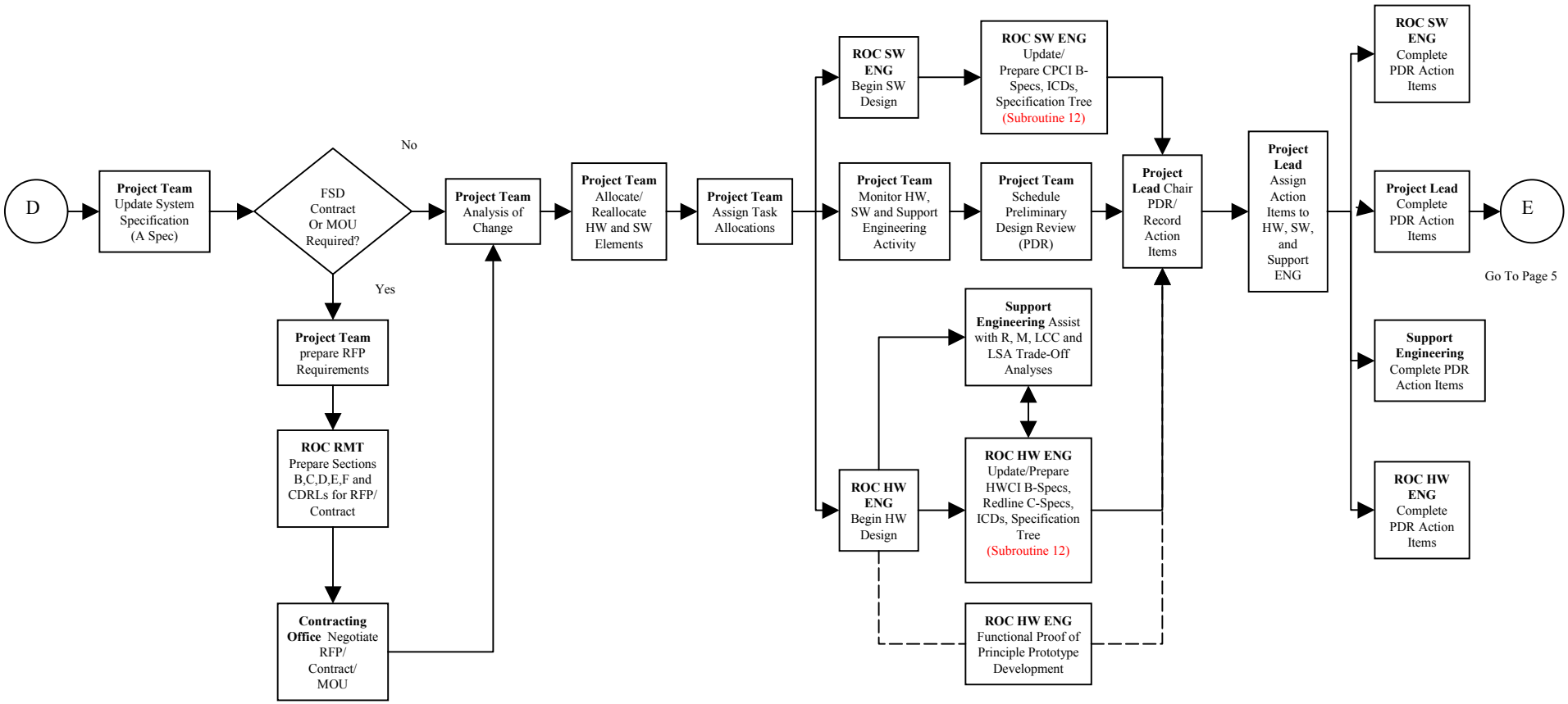
MODIFICATION FLOW PROCESS

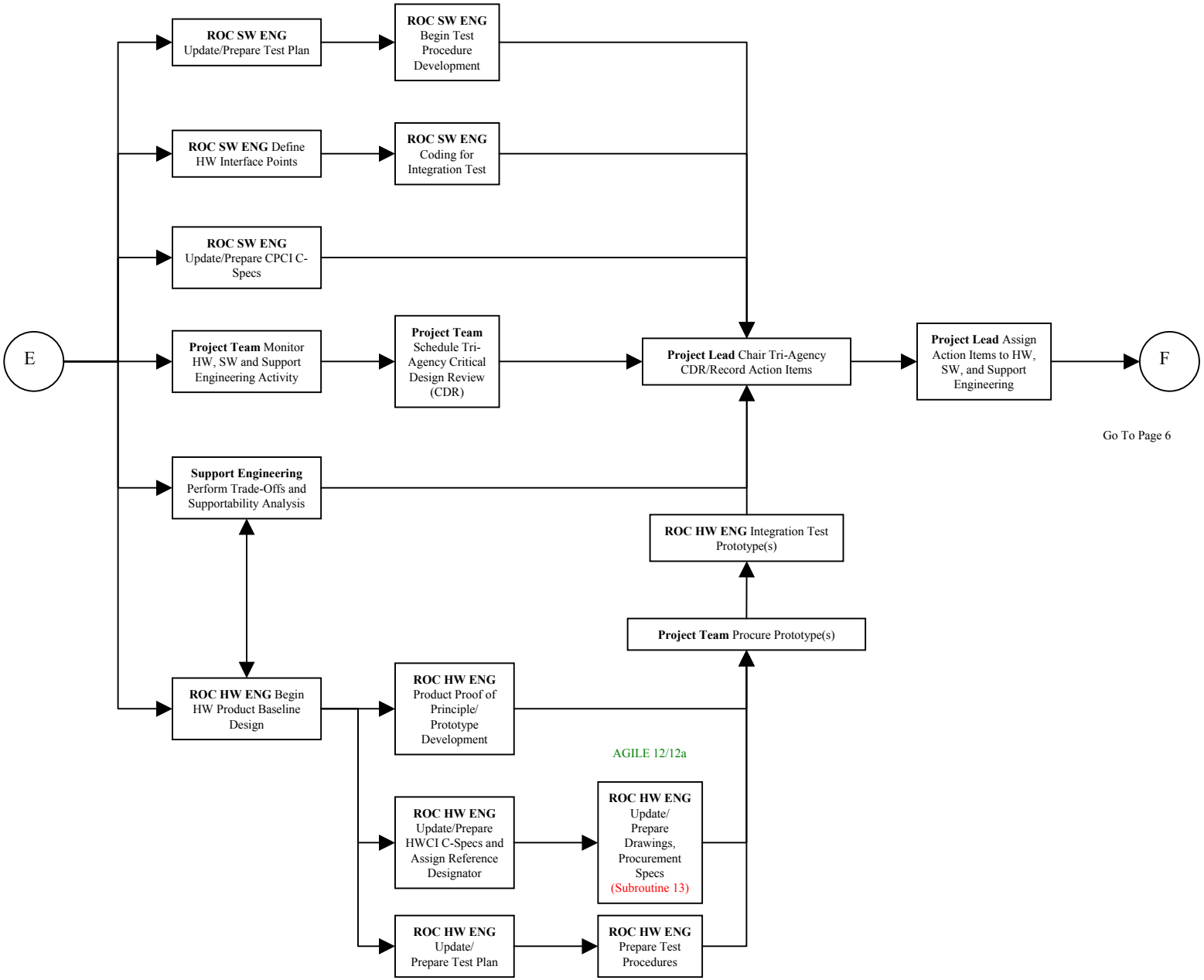
MODIFICATION FLOW PROCESS

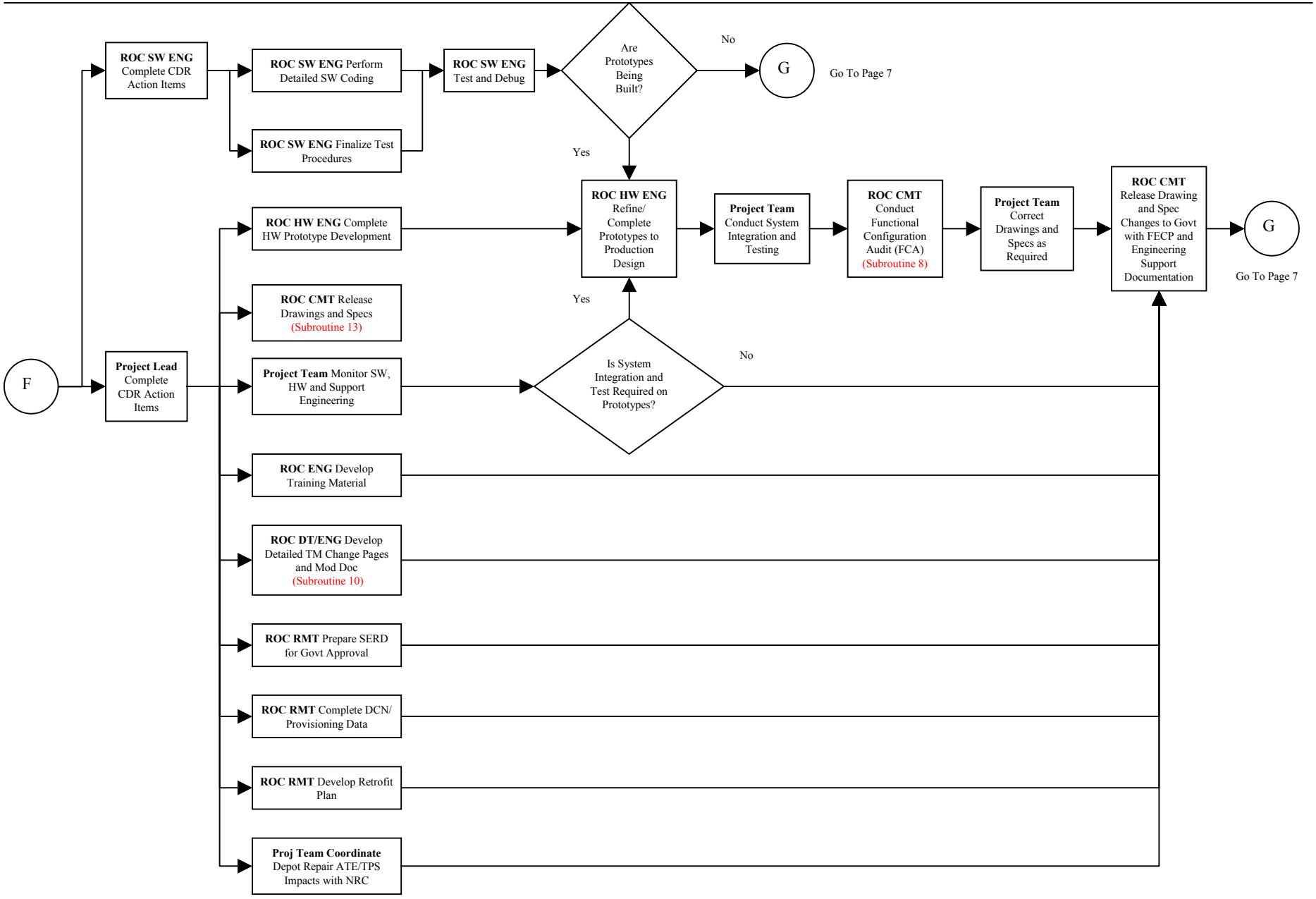


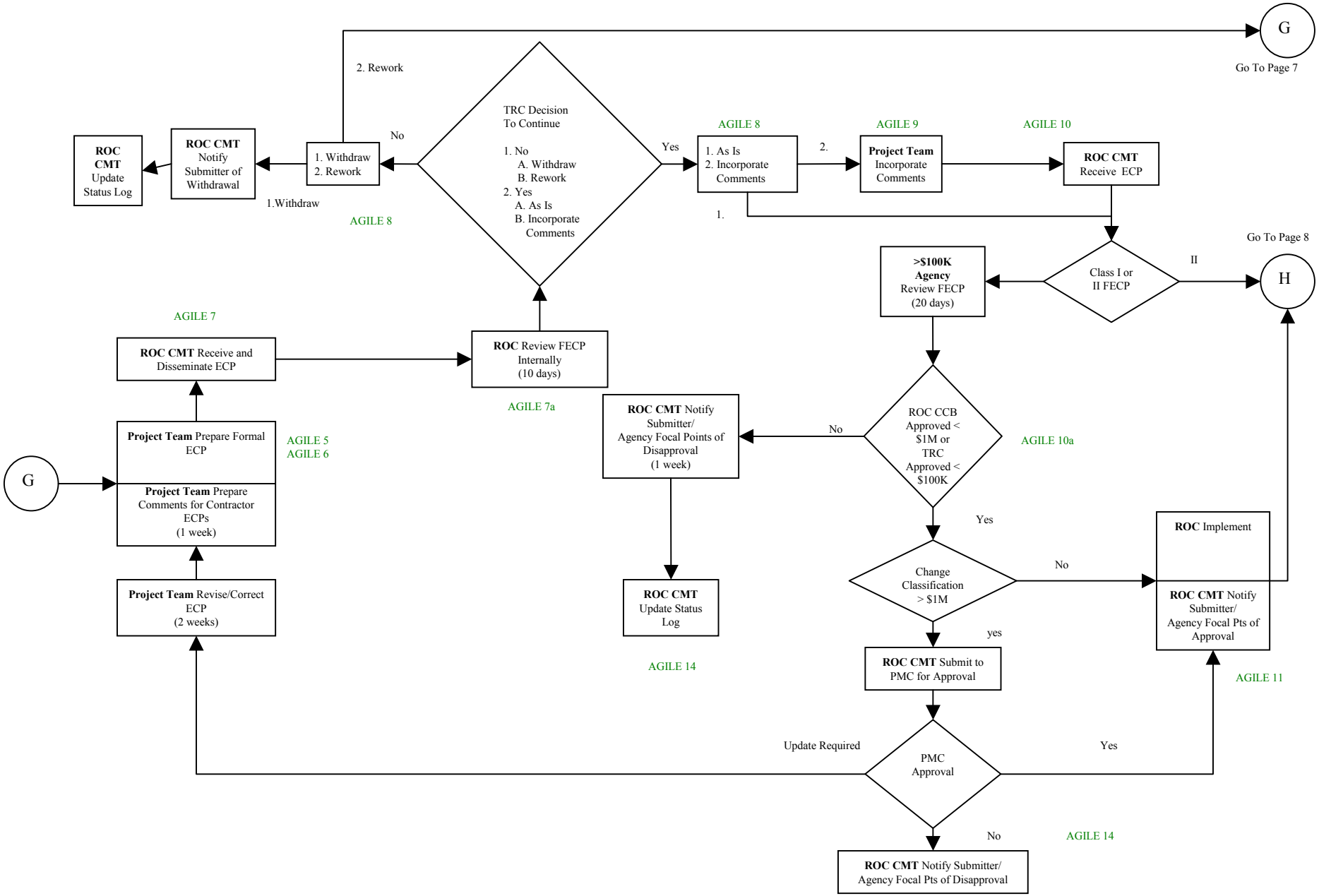

A
Class II CCRs
Project Team Technical Review (2 days)
Concur in Classification
No Class I
Yes Class II
C1
Go To Page 1
CCB Record Status
ROC CMT Notify Submitter
Urgent/ Emergency Change
Yes
B
No
C1
Go To Page 1
Change exceeds $100K Threshold
Yes
ROC CMT Phonecon Agency Focal Points to obtain Approval
ROC Implement Emergency/ Urgent Correction)
C2
Go To Page 1 To Complete impact assessment and CM/Documentation Updates
No
ROC Implement Emergency/Urgent Correction
C2
Go To Page 1 To Complete impact assessment and CM/Documentation Updates

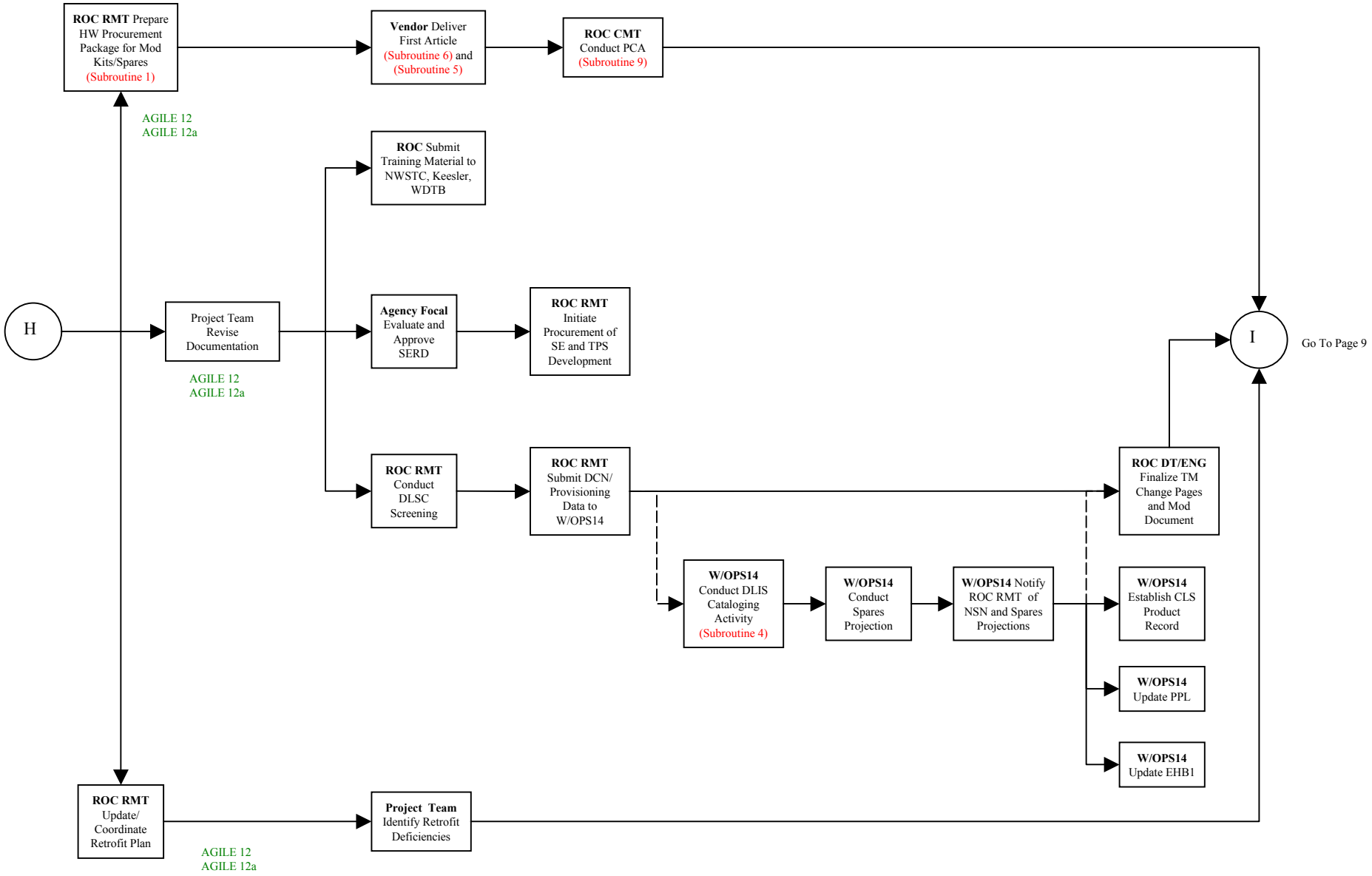

C
SREC Certification Review/ Prioritization
ROC ENG Provide ROM for Build
SREC Release Recommendation
C
Project Team Prepare PECP (4 months)
ROC CMT Receive and Disseminate ECP (1 week)
ROC Review PECP Internally (10 days)
AGILE 7
AGILE 5
AGILE 6
2. Rework
No
TRC Decision to Continue
1. No
A. Withdraw
B. Rework
2. Yes
A. As Is
B. Incorporate Comments
C. Become FECP
1. Withdraw
2. Rework
AGILE 8
AGILE 8a
1. Withdraw
ROC CMT Notify Submitter/ Agency of Withdrawal
ROC CMT Update Status Log
AGILE 7a
Yes
1. As Is
2. Incorporate Comments
3. Become FECP
E
Project Team Rewrite as FECP
Go To Page 5
1. As Is
Class I or II ECP
I
II
E
Go To Page 5
2. Incorporate Comments
Project Team Incorporate Comments
AGILE 8
AGILE 8a
ROC CMT Receive and Disseminate PECP
Review PECP (20 days)
AGILE 9, 9a and 10
ROC CCB Approval < $1M or TRC Approval <$100K
No
Yes
AGILE 14
ROC CMT Update Status Accounting Notify Submitter/ Agency Focal Points of Disapproval (1 week)
AGILE 10a
Class I Change PECP > $1M
No
Yes
ROC CMT Submit to PMC for Approval
PMC Approval
Yes
No
ROC CM Update Status Accounting Notify Submitter/Agency Focal Pts of Disapproval
ROC Implement PECP
ROC CMT Notify Submitter of Approval
AGILE 11
D
Go To Page 4

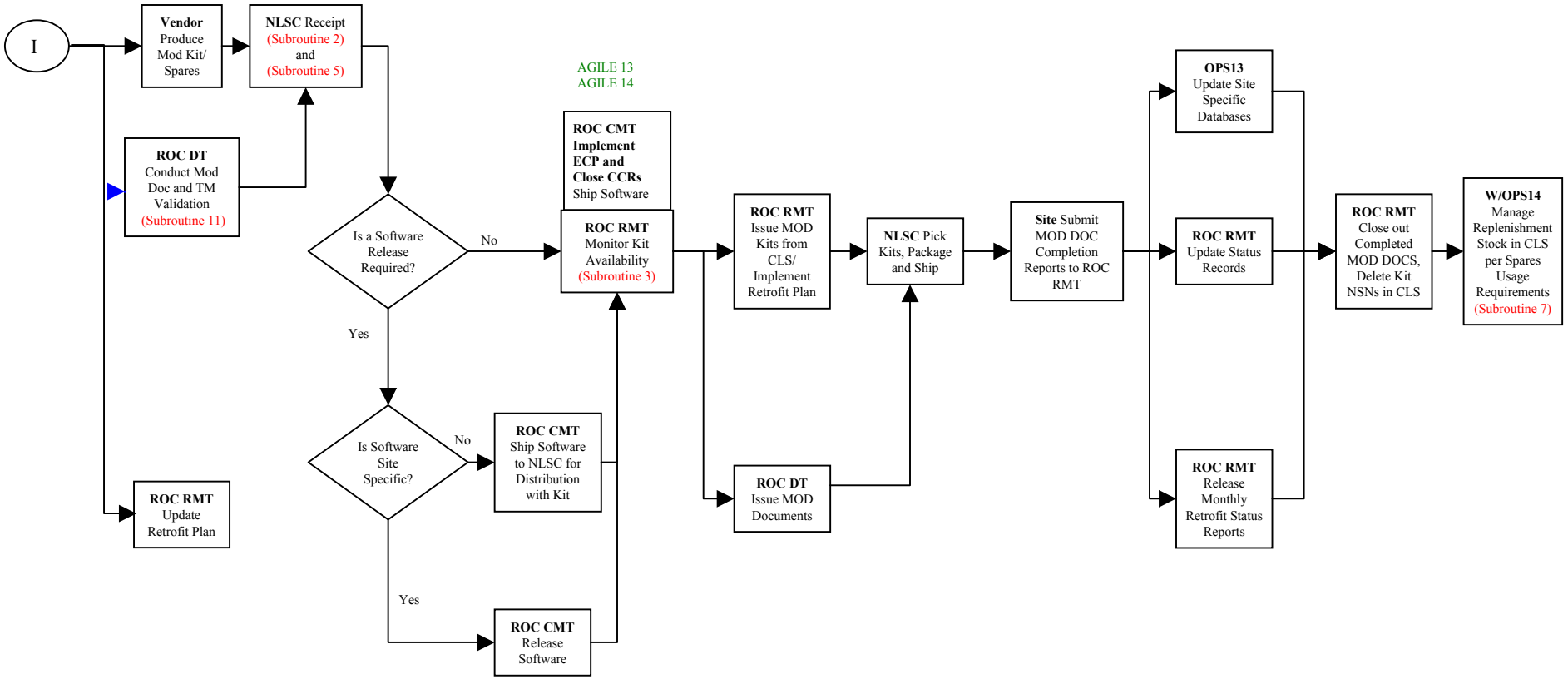

D
Project Team Update System Specification (A Spec)
FSD Contract Or MOU Required?
No
Yes
Project Team prepare RFP Requirements
ROC RMT Prepare Sections B,C,D,E,F and CDRLs for RFP/ Contract
Contracting Office Negotiate RFP/ Contract/ MOU
Project Team Analysis of Change
Project Team Allocate/ Reallocate HW and SW Elements
Project Team Assign Task Allocations
ROC SW ENG Begin SW Design
ROC SW ENG Update/ Prepare CPCI B-Specs, ICDs, Specification Tree (Subroutine 12)
Project Team Monitor HW, SW and Support Engineering Activity
Project Team Schedule Preliminary Design Review (PDR)
Project Lead Chair PDR/ Record Action Items
Support Engineering Assist with R, M, LCC and LSA Trade-Off Analyses
ROC HW ENG Begin HW Design
ROC HW ENG Update/Prepare HWCI B-Specs, Redline C-Specs, ICDs, Specification Tree (Subroutine 12)
ROC HW ENG Functional Proof of Principle Prototype Development
Project Lead Assign Action Items to HW, SW, and Support ENG
ROC SW ENG Complete PDR Action Items
Project Lead Complete PDR Action Items
Support Engineering Complete PDR Action Items
ROC HW ENG Complete PDR Action Items
E
Go To Page 5


E
ROC SW ENG Update/Prepare Test Plan
ROC SW ENG Begin Test Procedure Development
ROC SW ENG Define HW Interface Points
ROC SW ENG Coding for Integration Test
ROC SW ENG Update/Prepare CPCI C-Specs
Project Team Monitor HW, SW and Support Engineering Activity
Project Team Schedule Tri-Agency Critical Design Review (CDR)
Project Lead Chair Tri-Agency CDR/Record Action Items
Project Lead Assign Action Items to HW, SW, and Support Engineering
F
Go To Page 6
Support Engineering Perform Trade-Offs and Supportability Analysis
ROC HW ENG Integration Test Prototype(s)
Project Team Procure Prototype(s)
ROC HW ENG Begin HW Product Baseline Design
ROC HW ENG Product Proof of Principle/ Prototype Development
AGILE 12/12a
ROC HW ENG Update/Prepare HWCI C-Specs and Assign Reference Designator
ROC HW ENG Update/ Prepare Drawings, Procurement Specs (Subroutine 13)
ROC HW ENG Update/ Prepare Test Plan
ROC HW ENG Prepare Test Procedures


F
Project Lead Complete CDR Action Items
ROC SW ENG Complete CDR Action Items
ROC SW ENG Perform Detailed SW Coding
ROC SW ENG Finalize Test Procedures
ROC SW ENG Test and Debug
Are Prototypes Being Built?
No
G
Go To Page 7
Yes
ROC HW ENG Complete HW Prototype Development
ROC CMT Release Drawings and Specs (Subroutine 13)
Project Team Monitor SW, HW and Support Engineering
ROC HW ENG Refine/ Complete Prototypes to Production Design
Project Team Conduct System Integration and Testing
ROC CMT Conduct Functional Configuration Audit (FCA) (Subroutine 8)
Project Team Correct Drawings and Specs as Required
ROC CMT Release Drawing and Spec Changes to Govt with FECP and Engineering Support Documentation
G
Go To Page 7
Yes
Is System Integration and Test Required on Prototypes?
No
ROC ENG Develop Training Material
ROC DT/ENG Develop Detailed TM Change Pages and Mod Doc (Subroutine 10)
ROC RMT Prepare SERD for Govt Approval
ROC RMT Complete DCN/ Provisioning Data
ROC RMT Develop Retrofit Plan
Proj Team Coordinate Depot Repair ATE/TPS Impacts with NRC


G
Go To Page 7
2. Rework
TRC Decision To Continue
1. No
A. Withdraw
B. Rework
2. Yes
A. As Is
B. Incorporate Comments
No
Yes
AGILE 8
1. As Is
2. Incorporate Comments
AGILE 9
2.
Project Team Incorporate Comments
AGILE 10
ROC CMT Receive ECP
1.
1. Withdraw
2. Rework
ROC CMT Notify Submitter of Withdrawal
ROC CMT Update Status Log
1.Withdraw
AGILE 8
Go To Page 8
Class I or II FECP
II
H
>$100K Agency Review FECP (20 days)
AGILE 7
ROC CMT Receive and Disseminate ECP
ROC Review FECP Internally (10 days)
AGILE 7a
ROC CMT Notify Submitter/ Agency Focal Points of Disapproval (1 week)
No
ROC CCB Approved < $1M or TRC Approved < $100K
AGILE 10a
G
Project Team Prepare Formal ECP
AGILE 5
AGILE 6
Project Team Prepare Comments for Contractor ECPs (1 week)
Yes
ROC Implement
Change Classification > $1M
No
ROC CMT Notify Submitter/ Agency Focal Pts of Approval
Project Team Revise/Correct ECP (2 weeks)
ROC CMT Update Status Log
AGILE 14
yes
ROC CMT Submit to PMC for Approval
AGILE 11
Update Required
PMC Approval
Yes
No
AGILE 14
ROC CMT Notify Submitter/ Agency Focal Pts of Disapproval


ROC RMT Prepare HW Procurement Package for Mod Kits/Spares (Subroutine 1)
AGILE 12
AGILE 12a
Vendor Deliver First Article (Subroutine 6) and (Subroutine 5)
ROC CMT Conduct PCA (Subroutine 9)
ROC Submit Training Material to NWSTC, Keesler, WDTB
H
Project Team Revise Documentation
AGILE 12
AGILE 12a
Agency Focal Evaluate and Approve SERD
ROC RMT Initiate Procurement of SE and TPS Development
ROC RMT Conduct DLSC Screening
ROC RMT Submit DCN/ Provisioning Data to W/OPS14
W/OPS14 Conduct DLIS Cataloging Activity (Subroutine 4)
W/OPS14 Conduct Spares Projection
W/OPS14 Notify ROC RMT of NSN and Spares Projections
ROC DT/ENG Finalize TM Change Pages and Mod Document
W/OPS14 Establish CLS Product Record
W/OPS14 Update PPL
W/OPS14 Update EHB1
I
Go To Page 9
ROC RMT Update/ Coordinate Retrofit Plan
AGILE 12
AGILE 12a
Project Team Identify Retrofit Deficiencies


I
Vendor Produce Mod Kit/ Spares
NLSC Receipt (Subroutine 2) and (Subroutine 5)
ROC DT Conduct Mod Doc and TM Validation (Subroutine 11)
ROC RMT Update Retrofit Plan
Is a Software Release Required?
No
Yes
AGILE 13
AGILE 14
ROC CMT Implement ECP and Close CCRs Ship Software
ROC RMT Monitor Kit Availability (Subroutine 3)
Is Software Site Specific?
No
ROC CMT Ship Software to NLSC for Distribution with Kit
Yes
ROC CMT Release Software
ROC RMT Issue MOD Kits from CLS/ Implement Retrofit Plan
ROC DT Issue MOD Documents
NLSC Pick Kits, Package and Ship
Site Submit MOD DOC Completion Reports to ROC RMT
OPS13 Update Site Specific Databases
ROC RMT Update Status Records
ROC RMT Release Monthly Retrofit Status Reports
ROC RMT Close out Completed MOD DOCS, Delete Kit NSNs in CLS
W/OPS14 Manage Replenishment Stock in CLS per Spares Usage Requirements (Subroutine 7)

TRI-AGENCY CHANGE PROCESS IN AGILE
WORK PRACTICE INSTRUCTION - WPI0001

AGILE 1 — CCR Originator
(1) Launch Agile Content Manager or Internet Content Manager
(2) Create New CCR (File/New/CCR)
(3) Complete Cover Page tab & User/CM Info tab
(4) Attach electronic attachments (RC, Case File, etc.)

AGILE 2 — CCR Originator Submit for Approval (Action/Submit)

AGILE 3 — CM Analyst
(1) Verify Cover Page tab & User/CM Info tab are complete. Assist Originator as needed.
(2) Ensure necessary electronic attachments are included
(3) Route for CCB Approval (Action/Route)

AGILE 3a — CCB Members
(1) Launch Agile Content Manager or Internet Content Manager (double-click on Agile Icon in e-mail)
(2) Approve, Reject, or Comment (Signoff/Approve, Reject, or Comment) in Agile. Include Project Lead and CM Analyst in the address list.

AGILE 4 — CM Analyst
(1) Verify CCB approval (view signoff tab of CCR)
(2) Release CCR (Action/Release)

AGILE 5 — Project Team
(1) Launch Agile Content Manager or Internet Content Manager
(2) Create New ECP (File/New/ECP)
(3) Complete Cover Page tab, Detail tab, and ECP Page 3 tab.
(4) Attach electronic attachments (DD 1692, Gantt Chart, Cost spreadsheet, etc.) on the Attachment tab
(5) Attach redlined documents/drawings on the Attachment tab

AGILE 6 — Project Team Submit for Eng Branch Chief Approval/Submit to CM Analyst (Action/Submit)

AGILE 7 — CM Analyst
(1) Verify Cover Page tab, Detail tab and ECP Page 3 tab are complete
(2) Ensure necessary electronic attachments are included
(3) Route for TRC Approval (Action/Route)

AGILE 7a — TRC Members
(1) Launch Agile Content Manager or Internet Content Manager (double-click on Agile Icon in e-mail)
(2) Send comments to CM Analyst and Project Lead (File/Send)

AGILE 8 — CM Analyst Return to originator to ameliorate comments or for submission to CCB if the value is > $100,000 (Action/Return to Originator)

AGILE 9 — Project Team After all dissenting TRC comments have been resolved: Submit for CCB Approval if value > $100,000 (Action/Submit)

AGILE 10 — CM Analyst
(1) Verify Cover Page tab, Detail tab, and ECP Page 3 tab are complete

(2) Ensure necessary electronic attachments are included on the Attachment tab
(3) Verify TRC approval
(4) Route for CCB Approval if value > $100,000 (Action/Route)

AGILE 10a CCB Members
(1) Launch Agile Content Manager or Internet Content Manager (double-click on Agile Icon in e-mail)
(2) Approve, Reject, or Comment (Signoff/Approve, Reject, or Comment) Include Project Lead and CM Analyst in the address list.

AGILE 11 CM Analyst
(1) Verify CCB approval (view signoff tab of ECP)
(2) Release ECP (Action/Release)

AGILE 12 Project Team
For each Agile Document, add completed drawings, modification document, schedule, retrofit plan to Attachments tab (Click Add Attachments Icon)

AGILE 12a Project Team
(1) Incorporate the drawings and other documents (Click Incorporate Icon)
(2) Notify CM Analyst that ECP is ready for Implementation

AGILE 13 CM Analyst Implement the ECP (Action/Implement)

AGILE 14 CM Analyst Close each CCR satisfied by ECP.
(1) Identify CCRs from Page 2 of ECP
(2) Open each CCR
(3) Close each CCR (Action/Close)

Additional Steps for ECP Changes and Revisions

AGILE 8a CM Analyst Return ECP to Project Lead for Change/revision

AGILE 9a Project Team Create Change or Revision ECP:
(1) Open Existing ECP
(2) From Cover Page (File/Save As) Use name like 0090C1, 0090R1
(3) Make required change to Cover Page tab, Detail tab, and ECP Page 3 tab
(4) Cull attachments in Attachments tab
(5) Add attachment deltas to Attachments tab

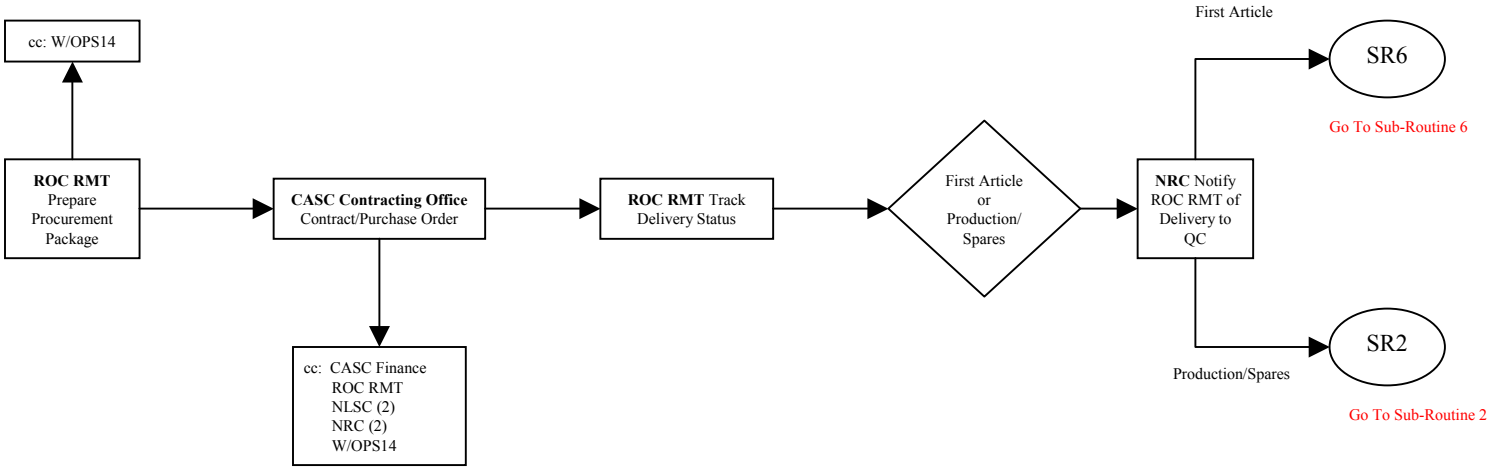
The remaining steps for ECP Changes or Revisions pick up at Process Step 6 if the value of the Change or Revision exceeds $2,500.

APPENDIX C

MODIFICATION FLOW PROCESS SUB-ROUTINES

MODIFICATION FLOW PROCESS

SUBROUTINE 1 (SR1) – MODIFICATION PROCUREMENT PROCESS



-CD 435
-Draft Contract Sections C, D, E, F, G, H, J
-Sec 570 – Small Business Set Aside
-CD 492 – Sole Source Justification
-Reasonable Cost Assessment
-Suggested Sources
-Specifications/Drawings
-Test and Acceptance Criteria
-3 CLINs: 01 – First Article
02 – Production
03 – Spares
- Check QC % in CLS

Modification Flow Process
Subroutine 1 (SR1) - Modification Procurement Process

This description of the flow process is from left to right and top to bottom. The purpose of this process is to procure the stock of items required to support approved modifications.

1. ROC RMT Prepare Procurement Package ROC RMT generate a CD-435 and provide a copy of the package to W/OPS14. For other than simplified purchases, the following items accompany the CD-435:

a. SEC 570 - Small Business Set aside determination by the Small Business Liaison Officer.
b. CD-492 Sole Source Justification, if needed.
c. Reasonable cost assessment. The price from a previous procurement or like item is used.
d. Suggested Sources. Market research for procurement sources or use previous procurement or like items.
e. Engineering Specifications/Drawings.
f. Test and Acceptance Criteria
f. Contract Line Items (CLINs). Separate CLINs are specified as follows:
CLIN 01, 04, 07, etc. - First Article Item(s) for shipment to ROC RMT.
CLIN 02, 05, 08, etc. - Production Item(s) required to build retrofit kits for shipment to NLSC.
CLIN 03, 06, 09, etc. - Spares Item(s) required for spares stock at NLSC for shipment to NLSC.

2. CASC Procurement Office Prepare Contract/Purchase Order CASC Procurement Office awards either a Contract or a Purchase Order to obtain the requested items. They also provide copies of the awarding documents to the ROC RMT, W/OPS14, NLSC and NRC.

3. ROC RMT Track Delivery Status ROC RMT track delivery status of the procurement for First Articles and Production/Spares.

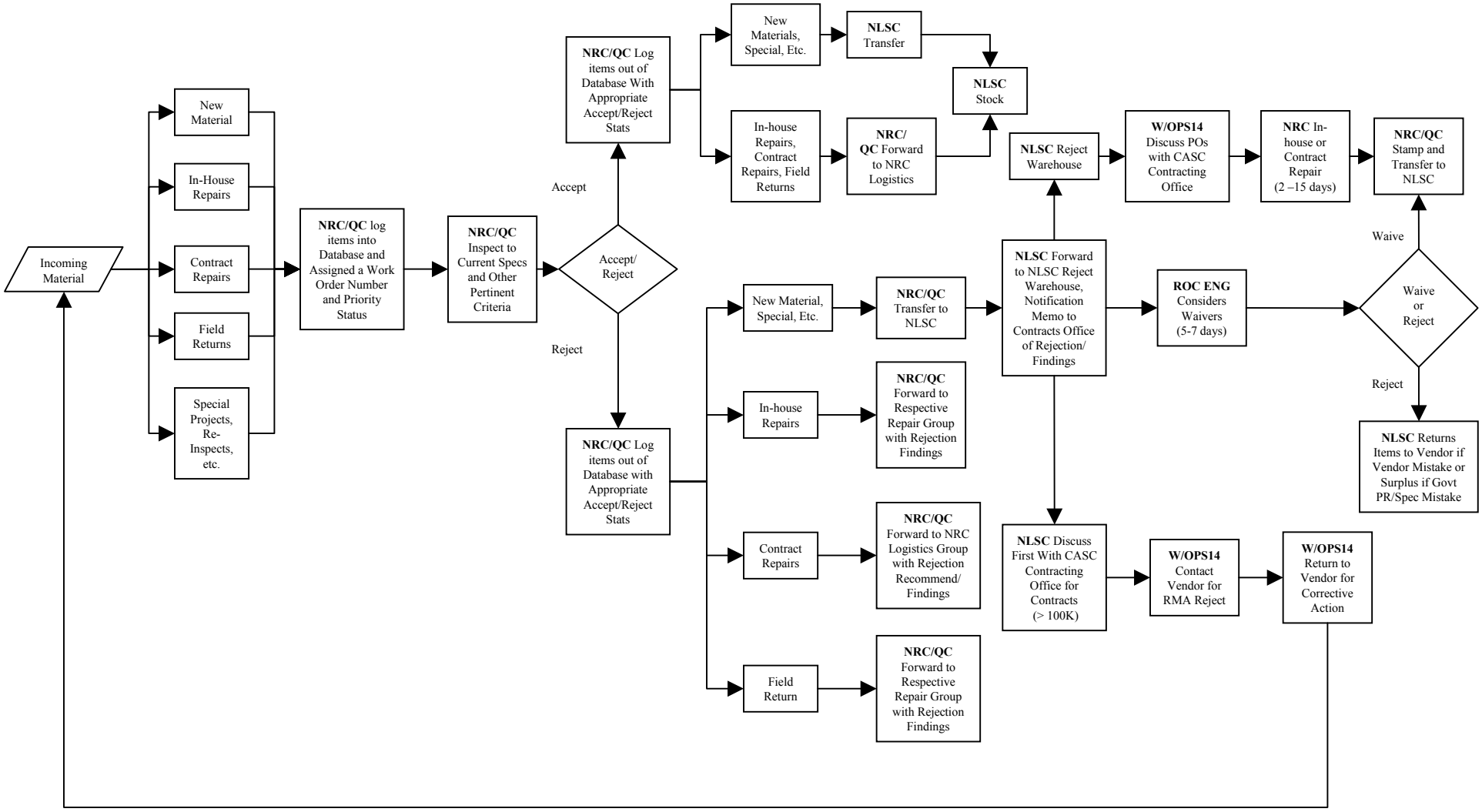
4. NRC notify ROC RMT of Delivery to Quality Control (QC) NRC notify ROC RMT of delivery of contracted items to NRC QC.

5. For First Article deliveries, proceed to SR6.

6. For Production and Spares deliveries, proceed to SR2.

MODIFICATION FLOW PROCESS

SUBROUTINE 2 (SR2) – RECEIPT/REJECT PROCESS



Modification Flow Process
Subroutine 2 (SR2) - Receipt/Reject Process

The following narrative describes the NEXRAD Quality Control process as shown on Subroutine 2 of the Modification Flow Process:

1. Material enters NRC QC from five (5) sources; new, in-house repairs, contract repairs, field returns and special projects, re-inspects, etc. New items are transferred directly from and to NLSC (an exception being first article items which follow Subroutine 6). All other items are received at the NRC. All material is logged into the QC database system with a unique numerical identifier (NLSC transfer number on new items and an internal NRC work order number on all other items). New material is generally sample inspected, with the QC shop able to set the sample size. Ten percent is a nominal initial sample size, with more product inspected if any rejects are found. Every attempt is made to inspect 100% of all repairs, both in-house and contract.

2. All items are inspected to current engineering specification(s) and documentation and in accordance with this Modification Flow Process. If the item being inspected has Emergency back orders, it is processed immediately and hand carried through the NRC. If the item being inspected has Routine back orders, it is handled as quickly as possible with an internal goal of less than three days maximum. An inspection goal of seven days maximum is used for new and contract repairs to satisfy contractual requirements for prompt vendor payment.

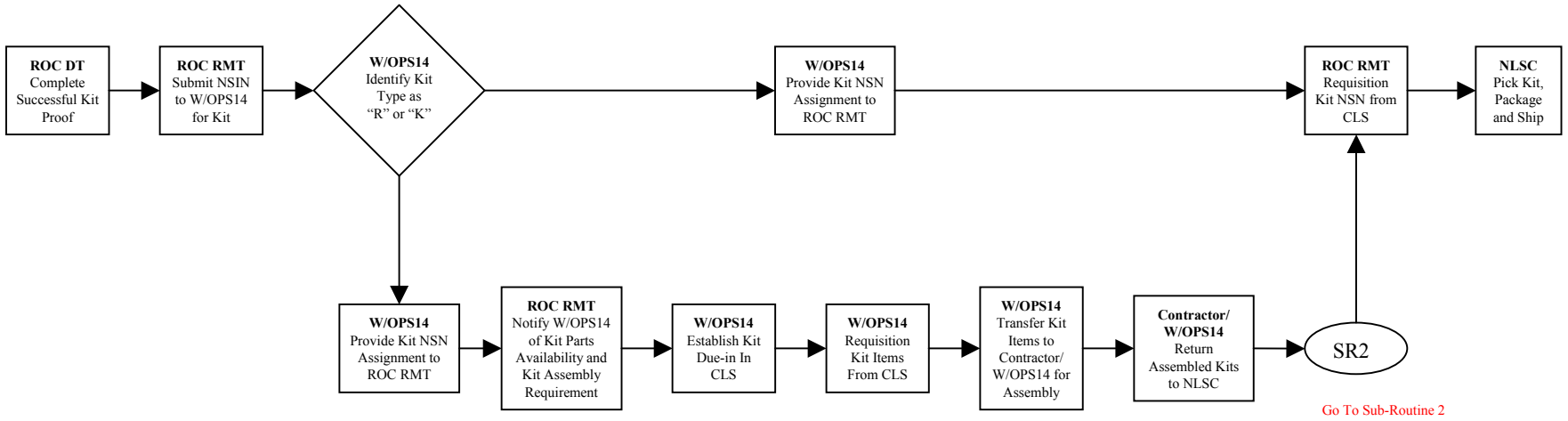
3. Accepted new parts are logged out of the QC database and transferred directly to NLSC, where they are placed into stock (with the exception of first article items which follow Subroutine 6). Accepted repaired parts are logged out of the QC database and transferred through NRC logistics to NLSC, where they are placed into stock.

4. Rejected new parts are logged out of the QC database and transferred directly to the NLSC reject warehouse pending disposition instructions from logistics/contract personnel. A QC rejection memo is then generated to notify the appropriate contracting officer, OPS14 Logistics Branch, and ROC ENG Branch and ROC RMT of the rejection findings/recommendations.

5. Rejected repaired parts are logged out of the QC database and forwarded with rejection/recommendations findings to either the NRC repair group for in-house repairs or the NRC logistics group for contract repairs. If a repaired part is rejected three times by QC, a flag is raised and alternate repair methods or even survey of the part is discussed with the appropriate NRC repair shop.

MODIFICATION FLOW PROCESS

SUBROUTINE 3 (SR3) – KITTING/INTEGRATION PROCESS



Modification Flow Process
Subroutine 3 (SR3) - Kitting/Integration Process

This process has two processing legs. One for "K" kits and one for "R" kits. The differences in the processing occur at item 3 below, but converge at items 5 and 6 at the top right of the page. This description of the flow process is from left to right and top to bottom.

1. POC DT Complete Successful Kit Proof ROC DT documents the successful installation of prototype kit(s). All parts used in the kit proofing may or may not be drawn from NLSC stock. In some cases the "Proof Kit" may be first article items.

2. ROC RMT Submit NSIN to W/OPS14 for Kit ROC RMT submits a New Stock Item Notification (NSIN) to the W/OPS14. They in turn create CLS data product records for each kit.

3. W/OPS14 Identify Kit Type as "R" or "K" W/OPS14 identifies the type of kit to be stocked in the NLSC. The "R" kit is a kit is that packaged/boxed under one NSN. The "K" kit is a kit where each individual item is stocked under its individual NSN, and kit assembly occurs during the warehouse "picking" process.

** Decision point - "K" Kit leg of processing flow**

4. W/OPS14 Provide Kit NSN assignment to ROC RMT W/OPS14 provides the National Stock Number assigned to the kit when it is received from the Defense Logistics Information Service.

5. ROC RMT Requisition Kit NSN from CLS ROC RMT requisitions kits for shipment to using field units.

6. NLSC Pick Kit, Package and Ship The NLSC personnel respond to "pick ticket", pull the corresponding items to comprise a kit from stock, and ship it to the indicated addressee.

** Decision point - "R" Kit leg of processing flow**

7. W/OPS14 Provide Kit NSN Assignment to ROC RMT W/OPS14 provides the National Stock Number assigned to the kit when it is received from the Defense Logistics Information Service.

8. ROC RMT Notify W/OPS14 of Kit Parts Availability and Kit Assembly Requirement ROC RMT notifies W/OPS14 of kit parts availability and kit assembly requirement.

9. W/OPS14 Establish Kit Due-in In CLS Under the kit NSN, W/OPS14 establishes due-ins for the final assembled kit in CLS.

10. W/OPS14 Requisition Kit Items From CLS W/OPS14 requisitions all of the kit items from NLSC stock for transfer to the contractor who will assemble the kits.

11. Transfer Kit Items to Contractor/W/OPS14 for Assembly W/OPS14 provides tasking to the kit assembly contractor to come to the NLSC and pick up kit piece parts and assemble them into boxed kits.

12. Assembled Kits Returned to NLSC Upon completion of kit assembly the contractor delivers the completed kits back to the NLSC for intake processing.

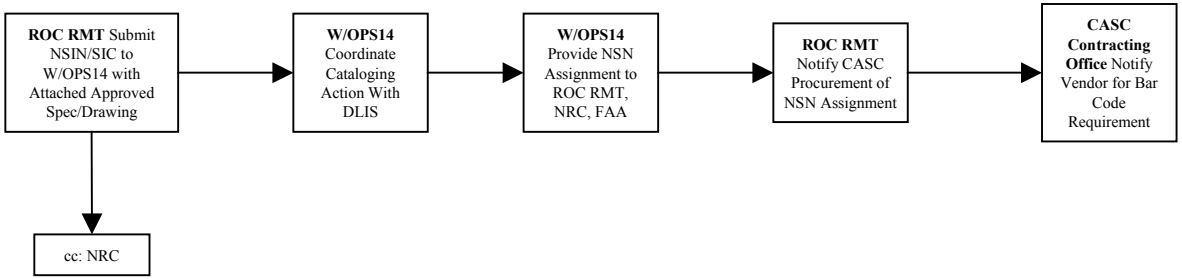
** At this point the assembled kits are processed in accordance with Sub Routine 2 (SR2) Receipt/ reject process and the accepted kits are returned to the NLSC as ready for issue stock.**

5. ROC RMT Requisition Kit NSN from CLS ROC RMT requisitions kits "R" for shipment to using field units.

6. NLSC Pick Kit, Package and Ship The NLSC personnel respond to "R" kit "pick ticket", pull the corresponding kit from stock, and ship it to the indicated addressee.

MODIFICATION FLOW PROCESS

SUBROUTINE 4 (SR4) – CATALOGING PROCESS



Modification Flow Process
Subroutine 4 (SR4) - Cataloging Process

This description of the flow process is from left to right and top to bottom. The purpose of the cataloging process is to obtain National Stock Numbers (NSNs) for maintenance significant items. These are items that are determined to be required by field personnel to restore failed items of equipment back to operation.

1. ROC RMT Submits NSIN/SIC to W/OPS14 with Attached Approved Spec/Drawing
ROC RMT submits a New Stock Item Notification (NSIN) or Stock Item Change (SIC) to the W/OPS14. Attached to the NSIN or SIC is a copy of the latest revision of the approved specifications and drawings for the items to be cataloged. A copy of the request is provided to the NRC.

2. W/OPS14 Coordinates Cataloging Action With DLIS W/OPS14 requests the appropriate National Stock Number from the Defense Logistics Information Service for each items to be cataloged.

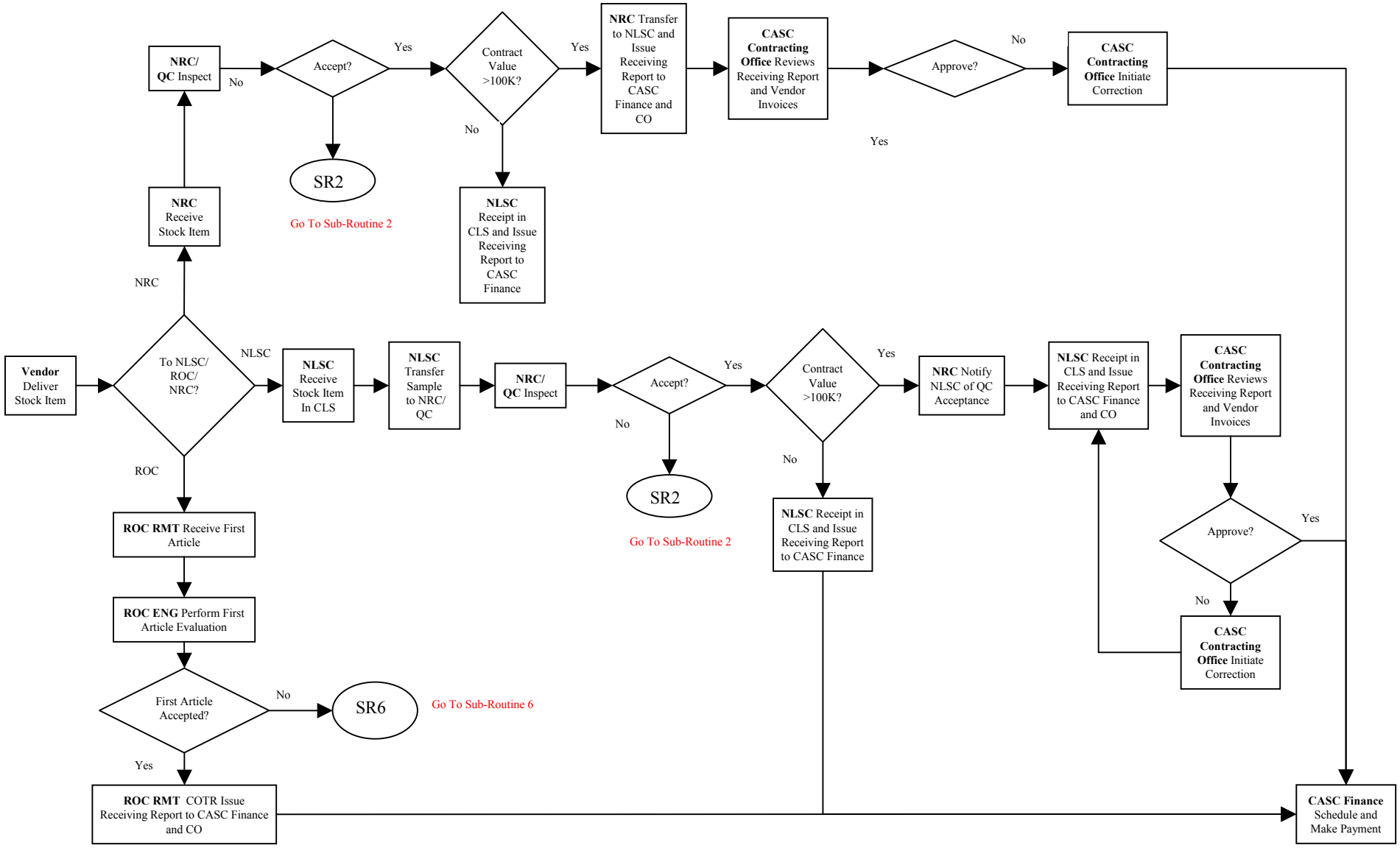
3. W/OPS14 Provide NSN Assignment to ROC RMT, NRC, FAA. When W/OPS14 receives the assigned NSN's they are disseminated to the ROC, NRC, and FAA. Further action is required by the Federal Aviation Administration to place their Major Entity Rules against the NSN in the DLIS data base. This same flow applies to the all departments of the DOD.

4. ROC RMT Notify CASC Procurement of NSN Assignment. The ROC RMT notifies the appropriate CASC contracting officer that an item's NSN has been obtained and requests the NSN be provided to the vendor providing the item. This allows the vendor to mark the part(s) with the proper NSN.

5. CASC Procurement Notify Vendor for Bar Code Requirement. Through a contract modification the vendor is notified of the NSN(s) and the package marking requirements for shipment of items to NLSC.

MODIFICATION FLOW PROCESS

SUBROUTINE 5 (SR5) – FINANCIAL PROCESS



Modification Flow Process
Subroutine 5 (SR5) - Financial Process

This financial process is invisible to CASC procurement who has no way on knowing when items are received at NLSC or paid. It is the responsibility of the requesting office to track receivables and handle problems directly with the vendors. When the requesting office has a problem which can not be resolved, they contact the Purchasing Agent/Contracting Officer for assistance with resolution.

When a small purchase order is issued (an order $100K or less) the following occurs:

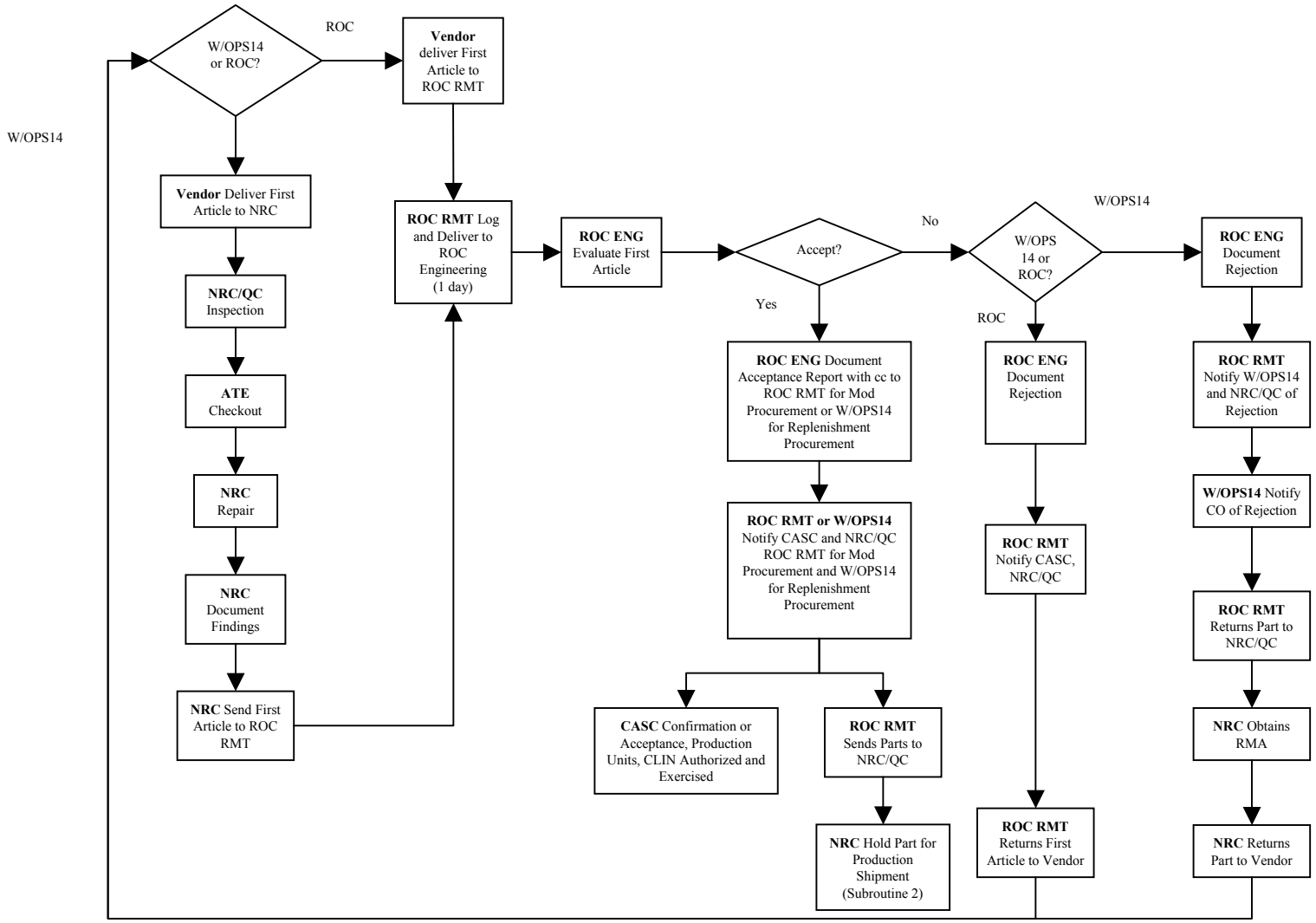
1. NLSC receives items delivered from the order
2. NRC inspects items received and accepts and notifies NLSC
3. NLSC issues a receiving report to Finance
4. Finance schedules and makes payment
5. If an item is rejected, NLSC is notified (Follow SR2 and SR6).
6. Items are transferred to W/OPS14 on site representative at NLSC who works with the Purchasing Agent and the requesting office to resolve the reason for rejection
7. When resolved, items sent back to NRC
8. NRC accepts
9. NLSC issues a receiving report for the items to Finance
10. Finance makes payment

For contracts (Orders over $100K), the following process occurs:

1. Contracts or delivery orders against contracts are awarded
2. NLSC receives items delivered from the order
3. NRC inspects items received and accepts
4. Notification of acceptance is issued by NRC to NLSC
5. NLSC issues a receiving report to the Contracting Officer and Finance
6. The Contracting Officer receives invoices from the Contractor
7. The Contracting Officer reviews the receiving report and approves the invoice for payment and forwards to Finance.
8. Finance makes payment.
9. If an item is rejected, NRC notifies the Contracting Officer (Follow SR2 and SR6).
10. Items are transferred to W/OPS14 on site representative at NLSC.
11. The Contracting Officer contacts the Contractor for resolution and works with the W/OPS14 on site representative at NLSC and the requesting office to resolve the reason for rejection.
12. When resolved, items sent back to NRC
13. NRC accepts
14. NLSC issues a receiving report for the items to Finance
15. Finance makes payment

MODIFICATION FLOW PROCESS

SUBROUTINE 6 (SR6) – FIRST ARTICLE ACCEPTANCE/REJECTION PROCESS



Modification Flow Process
Subroutine 6 (SR6) - First Article Acceptance/Rejection Process

This process addresses both first articles from new items being introduced into the baseline through ROC implemented changes when qualifying new sources or proposed substitutions (due to Line Replaceable Unit (LRU) discontinuance) from the original vendor for W/OPS14 initiated procurements for replenishment stock. All contracts and first articles should indicate that first articles are not subject to the prompt payment act.

1. For W/OPS14 initiated procurements, the first article is shipped to NRC via NLSC (to maintain accountability and payment in Consolidated Logistics System (CLS)). NRC/QC performs an initial inspection, where applicable, the first article is tested using ATE.

2. NRC QC documents inspection findings and provides copies to W/OPS14, CASC Procurement, and ROC RMT. NRC forwards first article to ROC RMT regardless of NRC findings on the material in question. This will permit ROC Engineering to confirm NRC findings and to perform additional evaluation to ascertain acceptability based upon configuration management, ECPs, markings, maintenance, documentation impacts, etc. and to consider whether engineering deviations/waivers are advisable or acceptable. Upon arrival at the ROC, the first article is logged in by the ROC RMT and delivered within one day to the ROC ENG Branch for evaluation as described in step 3.

3. For ROC RMT initiated procurements, the first article is shipped directly to the ROC RMT. It is logged in and provided to the ROC ENG Branch within one day. The ROC ENG Branch evaluates the first article in accordance with the previously prepared first article test plan. This first article evaluation must consider all operational and non-operational specifications including CM, documentation, markings, maintenance, etc.

There will be situations when a portion of the first article inspection is completed at the vendor's facility with Government witnessing or approving a vendor test report.

4. If the ROC ENG Branch Accepts the first article as fully compliant, the ROC ENG Branch documents their findings in an acceptance report to ROC RMT for Modification Procurements and to W/OPS14 for Replenishment Procurements.

5. For Modification Procurements, ROC RMT notifies CASC Procurement and NRC/QC of acceptance and issues a receiving report to CASC Finance for authorization of payment for first article. For Replenishment Procurements, W/OPS14 notifies CASC Procurements and NRC/QC of acceptance and issues a receiving report to CASC Finance for authorization of payment for first article. ROC RMT returns the first article parts to NRC/QC.

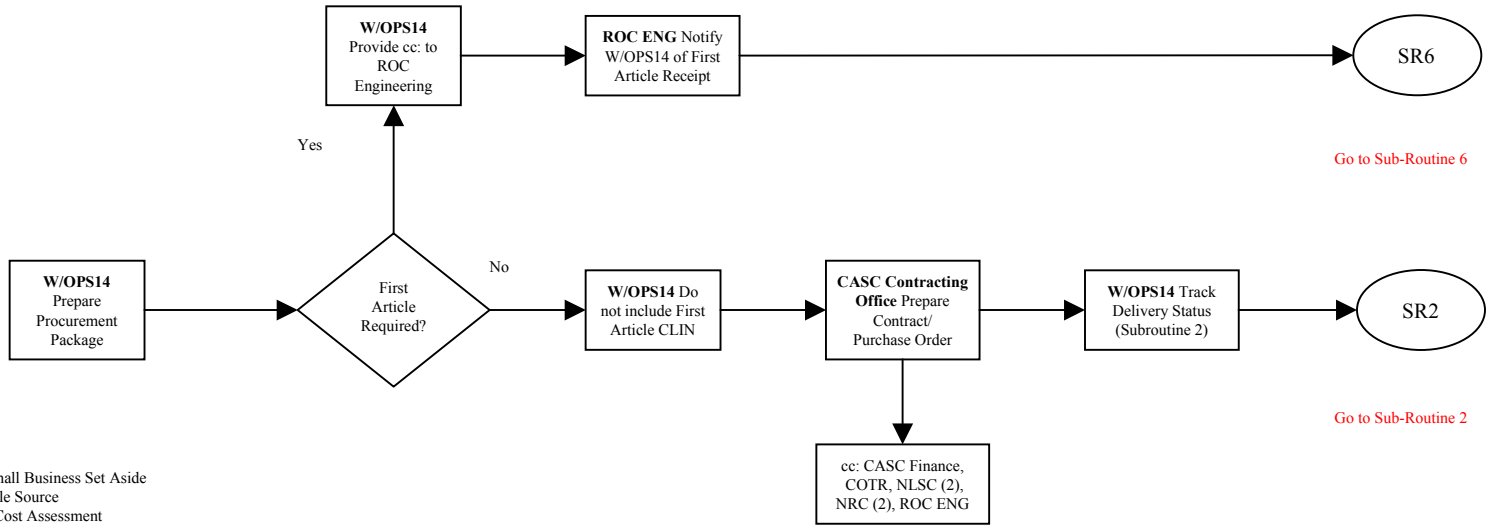
6. CASC Procurement authorizes the Contractor to proceed with delivery of production units. CASC Finance makes payment.

7. For first articles rejected, ROC ENG Branch documents the Rejection. For ROC RMT initiated procurements, ROC RMT notifies CASC Procurement and NRC/QC, obtains a Return Material Authorization (RMA), and returns the first article to the vendor for correction of the deficiencies.

For W/OPS14 initiated replenishment procurements, ROC RMT notifies W/OPS14 and NRC/QC of the Rejection. W/OPS14 then notifies the CO or Purchasing Agent of the Rejection. ROC RMT returns the rejected part to NRC/QC, NRC obtains a RMA, and NRC returns the rejected part to the vendor for correction of deficiencies.

MODIFICATION FLOW PROCESS

SUBROUTINE 7 (SR7) – REPLENISHMENT PROCUREMENT PROCESS



-CD 435
-Sec 570 – Small Business Set Aside
-CD 492 – Sole Source
-Reasonable Cost Assessment
-Suggested Sources
-Specifications, Drawings, Additional SOW
-2 CLINS: 01 – First Article (If Required)
02 – Spares
- Check QC% in CLS

Modification Flow Process
Subroutine 7 (SR7) - Replenishment Procurement Process

This description of the flow process is from left to right and top to bottom. The purpose of this process is to replenish the stock of repair parts within the NLSC.

This process has two processing legs. One is for items that do not require 1st article testing which is the majority of the purchases. The other leg is for items that require 1st article testing/qualification. The differences in the processing occur at item 2 below.

1. W/OPS14 Prepare Procurement Package W/OPS14 item managers generate a CD-435. For negotiated contracts the following items accompany the CD-435:
   a. SEC 570 - Small Business Set aside determination by the Small Business Liaison Officer.
   b. CD-492 Sole Source Justification.
   c. Reasonable cost assessment. The CLS price from the previous procurement is used.
   d. Suggested Sources. Previous procurement sources are provided from the CLS data base. A new source recommendation is provided if one exists.
   e. Specifications or drawings. The appropriate drawings and specifications are included if the items is slated for open competition.
   f. Contract Line Item Numbers (CLINs). Separate CLINs are specified as required.

2. First Article Required Decision point - Is a First Article required ? Yes/no for the processing flow.

** For procurements requiring a 1st article test the following flow applies**

3. W/OPS14 Provide cc: to ROC Engineering. For procurements with a first article requirement a copy of the CD-435 is provided to the ROC ENG Branch.

4. ROC Notify W/OPS14 of First Article Receipt (see SR6) ROC notifies W/OPS14 upon receipt of the contract first article. Further processing is accomplished per SR6

For procurements that do not require a 1st article test the following flow applies

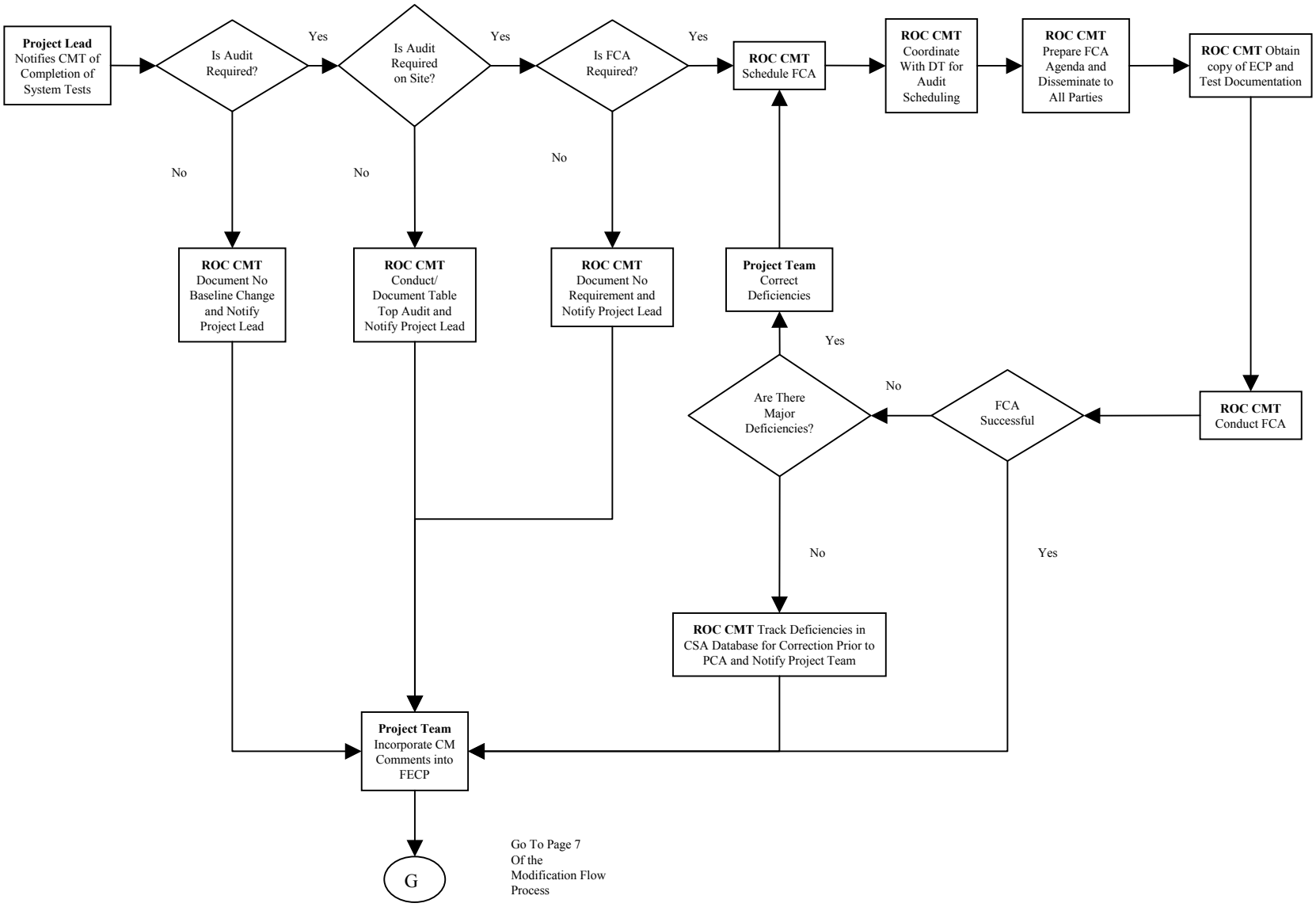
5. W/OPS14 do not include First Article CLIN The appropriate documents to accomplish the procurement are forwarded to CASC Procurement. These procurements are by vendor part number, or a drawing from the established CM data base.

6. CASC Procurement Office Prepare Contract/Purchase Order CASC Procurement Office awards either a Contract or a Purchase Order to obtain the requested items. They also provide copies of the awarding documents to the W/OPS14, the NLSC and NRC.

7. W/OPS14 Track Delivery Status (see SR2). W/OPS14 tracks delivery status using the internal procurement tracking program for overdue items. When delivered to the NLSC status is tracked per SR2.

MODIFICATION FLOW PROCESS

SUBROUTINE 8 (SR8) – FUNCTIONAL CONFIGURATION AUDIT (FCA)



Modification Flow Process
Subroutine 8 (SR8) - Functional Configuration Audit (FCA)

The description of the flow process is from left to right and top to bottom. The purpose of this process is to perform verify that the proposed equipment/ modification performance complies with all applicable specifications and functional qualification requirements.

This process has two processing legs. One is for modifications that do not require a functional configuration audit, or require "Table Top" audit only. The other leg is for modifications that require functional qualification and testing prior to acceptance into the functional baseline.

1. Project Lead Notifies ROC CMT of Completion of System Tests

2. Decision point: Project Team determines if an Audit Required? [Yes/No]

If no, ROC CMT:

a. Documents "No Baseline Change" in the Configuration Status Accounting (CSA) Database(Agile) by Attaching a File to the Item Record.
b. Notifies the Project Team.
c. Project Lead incorporates "No Audit Required" decision in the Associated ECP.

If yes, Proceed to Process Step 3.

3. Decision point: Is Audit required to be performed on site?

If no, ROC CMT:

a. Obtains all Test Data and associated ECP and conducts a Table Top Audit.
b. Documents findings in the Official FCA Minutes and CSA Database.
c. Creates Open Item Listing for correction prior to PCA.
d. Notifies Project Team of Audit Findings

If yes, Proceed to Process Step 4.

4. Decision Point: Is an FCA Required?

If no, ROC CMT:

a. Documents "No FCA Required" in CSA Database by attaching a file to the Item Record.
b. Notifies Project Team

If yes: Proceed to Process Step 5.

5. ROC CMT Develops FCA Schedule

6. ROC CMT coordinates Audit Schedule with DT for scheduling and site/Agency notification and coordination.

7. ROC CMT prepares FCA Agenda and disseminates to all parties. Agenda Content/Format is at a minimum:

a. Audit Authority
b. Audit site and scheduled dates
c. Audit Objectives
d. List of Documents to be Audited
e. Team Composition

8. ROC CMT obtains copy of ECP and all Test Documentation

9. ROC CMT conducts FCA in format as follows:

a. Opening remarks and Listing of Material/Documentation to be audited
b. Statement of Known Open Items and/or Deficiencies
c. Review List of Documentation and identify items to be accepted
d. Review ECP, Modification, and any Deviation/Waivers
e. Review any Shortages and unincorporated Design Changes
f. Review Test Procedures and Test Results
g. Define Proposed Product Baseline for PCA
h. Record FCA Minutes and Action Items
a. Complete Pre-FCA Checklist for each CI Audited
j. Complete FCA Checklist for each CI Audited
k. Complete FCA Certification Attachment for each CI Audited in format as follows:

(1) Scope/Purpose
(2) FCA Certification Sheet No. 1, Review of Qualification/DT&E Test Procedures and Results.
(3) FCA Certification Sheet No. 2, Review of Deviations/Waivers/Modifications
(4) FCA Formal Qualification Review Verification/Certification Sheet.

10. Decision point: Was FCA Successful?

If yes, ROC CMT Document FCA Status in the FCA Report and Notify Project Team.

If no, proceed to Process Step 11.

11. Decision point: Are There Major Deficiencies?

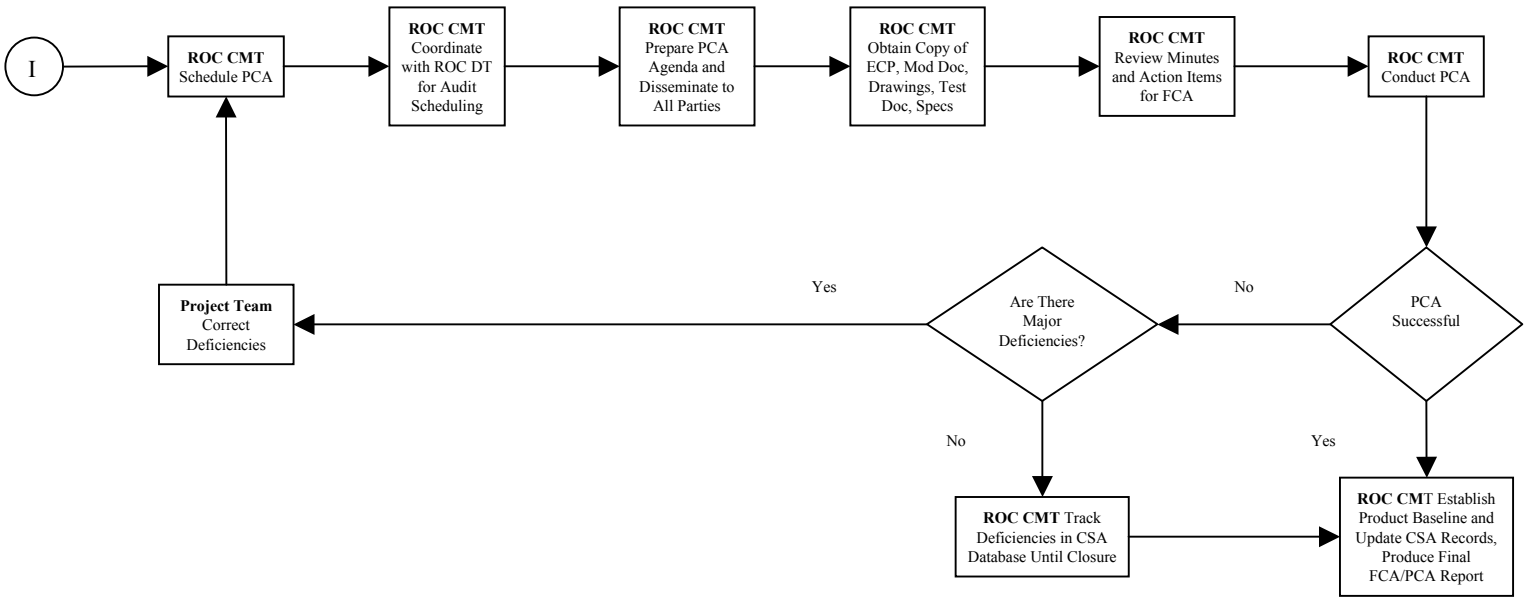
If yes, ROC CMT complete FCA Open Item/Deficiency Report and submit to the Project Team for correction. Go back to Step 5 and repeat process.

If no, Proceed to Step 12.

12. ROC CMT track Deficiencies via the FCA Open Item Report and record deficiencies in the CSA Database. Notify Project Team.

MODIFICATION FLOW PROCESS

SUBROUTINE 9 (SR9) – PHYSICAL CONFIGURATION AUDIT (PCA)



Modification Flow Process
Subroutine 9 (SR9) - Physical Configuration Audit (PCA)

The description of the flow process is from left to right and top to bottom. The purpose of this process is to perform verify that the proposed equipment/ modification performance complies with all applicable specifications and functional qualification requirements.

This process has one processing leg. It describes the process used to (1) establish the Equipment Product Baseline, (2) to verify the released engineering data, and (3) verify that data included or referenced in the Product Specification adequately and accurately identifies the equipment proposed for inclusion into the WSR-88D Product Baseline.

1. ROC CMT schedules PCA to coincide with kit proof of the change (see SR11).

2. ROC CMT coordinates Audit Schedule with DT for scheduling and site/Agency notification and coordination.

3. ROC CMT prepares PCA Agenda and disseminates to all parties. Agenda Content/Format is at a minimum:

   a. Audit Authority
   b. Audit site and scheduled dates
   c. Audit Objectives
   d. List of Documents to be Audited
   e. Team Composition

4. ROC CMT obtains copy of ECP, Combined Modification Document, Engineering drawings, Test Documentation, specifications and FCA minutes.

5. ROC CMT reviews Minutes and Action items from FCA

6. ROC CMT conducts PCA using PCA Checklist and List of Documentation to be audited. Completes PCA Certification in format as follows:

PCA Certification Package consisting of the following (See Attachment 3):

   a. PCA Checklist
   b. PCA Certification Package Cover Sheet
   c. PCA Scope/Purpose
   d. PCA Certification Sheet No. 1, Proposed Product Baseline
   e. PCA Certification Sheet No. 2, Specification Review and Validation
   f. PCA Certification Sheet No. 3, Drawing Review Listing
   g. PCA Certification Sheet No. 4, Acceptance Test Procedures and Test Results

   h. PCA Certification Sheet No. 5, Review of Shortages and Unincorporated

Design Changes
i. PCA Certification Sheet No. 6, Review of Waivers/Deviations
j. PCA Certification Sheet No. 7, Examination of Proposed DD Form 250
k. PCA Certification Sheet No. 8, Review of Contractors' Engineering Release and Change Control System
l. PCA Certification Sheet No. 9, Review of Logistics Support Plan for Pre-operational Support and Review of Long Lead Time and Provisioned Items Processed Prior to PCA.
m. Record PCA Minutes and Action Items

7. Decision point: Was PCA Successful?

If yes, ROC CMT establishes Product Baseline and updates CSA Records, and produces the final FCA/PCA Report.

If no, proceed to Process Step 8.

8. Decision point: Are There Major Deficiencies?

If yes, ROC CMT track PCA Open Item/Deficiency Report as the Project Team corrects deficiencies. Go back to process Step 1 and repeat process.

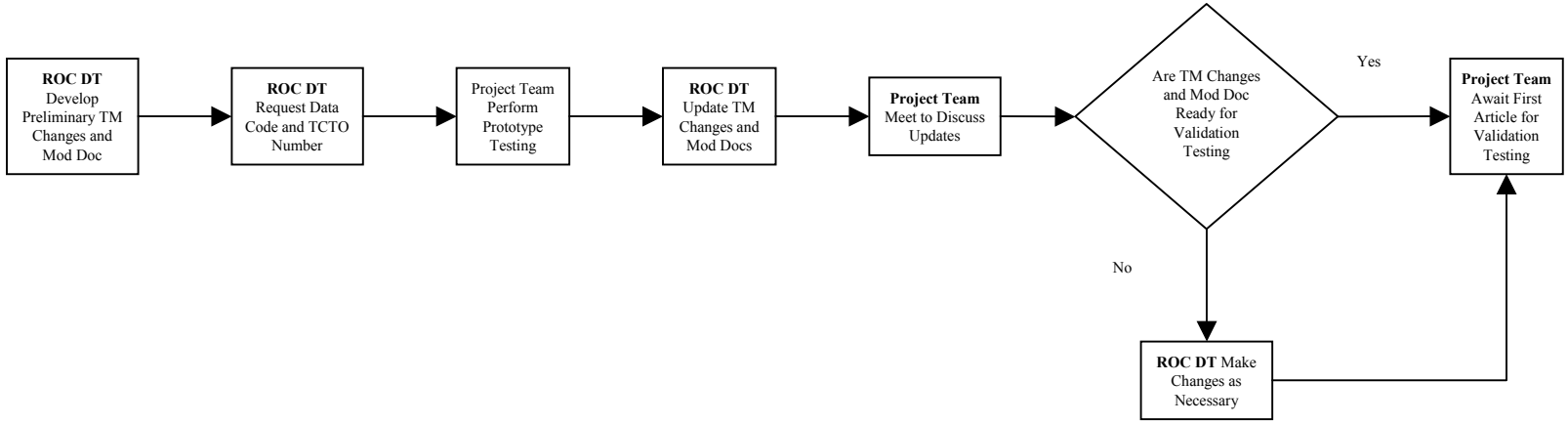
If no, proceed to Step 9.

9. ROC CMT Track Deficiencies via the PCA Open Item Report and record deficiencies in the CSA Database until closure is completed by the Project Team.

10. ROC CMT establishes Product Baseline and updates CSA Records, and produces the final FCA/PCA Report.

MODIFICATION FLOW PROCESS

SUBROUTINE 10 (SR10) – MODIFICATION DOCUMENT AND TECHNICAL MANUAL CHANGES



Modification Flow Process
Subroutine 10 (SR10) - Combined Modification Document and Technical Manual Changes

This description of the flow process is from left to right and top to bottom. The purpose of this process is to develop Technical Manual changes and the Combined Modification Document for the ECP.

1. Documentation Team (DT) uses Publication Change Requests (PCR) and inputs from the Project Team to develop the TM changes and the Combined Modification Document.

2. DT requests data code and Time Compliance Technical Order (TCTO) number from the Air Force.

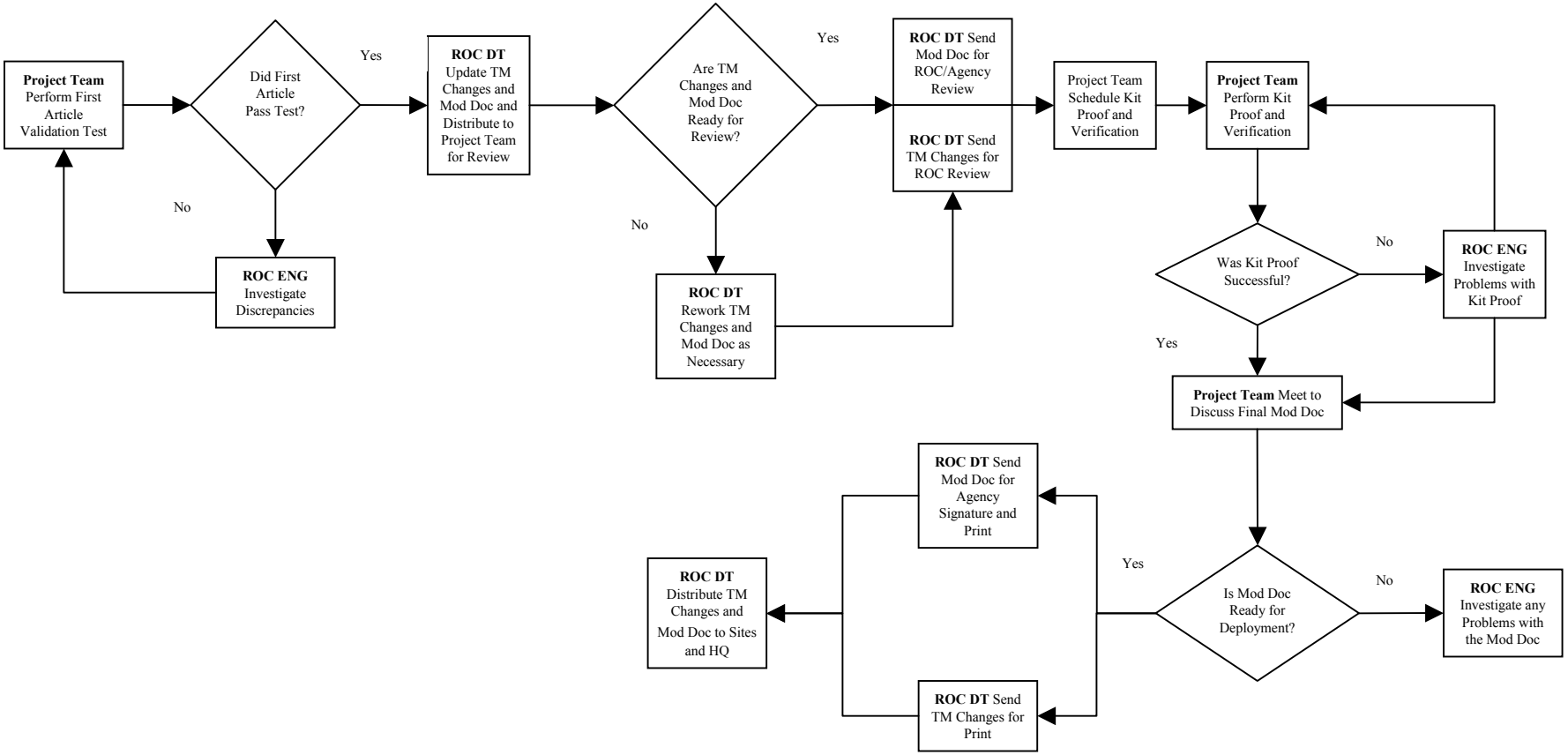
3. DT participates in the modification prototype testing with Project Team members from ROC ENG Branch, Operations Branch and CMT.

4. DT makes changes found during prototype testing to TM and Combined Modification Documents.

5. DT attends Project Team meeting to discuss updated TM changes and Combined Modification Document procedures. The Project Team determines if all documentation is ready for First Article Validation testing. If not, corrections are made to make them ready.

MODIFICATION FLOW PROCESS

SUBROUTINE 11 (SR11) – MODIFICATION DOCUMENT AND TECHNICAL MANUAL VERIFICATION AND VALIDATION



Modification Flow Process
Subroutine 11 (SR11) - Combined Modification Document and Technical Manual Verification and Validation

This description of the flow process is from left to right and top to bottom. The purpose of this process is to verify and validate all documentation to implement the modification.

1. DT participates with Project Team members from ROC ENG Branch, Operations Branch and CMT in the First Article Validation Test. The validation team determines if the first article is acceptable and makes documentation changes if needed.

2. DT makes all documentation updates, distributes for Project Team review, and coordinates with the Project Team in preparation for ROC and Agency review.

3. DT distributes the Combined Modification Document for ROC and Agency review. They also distribute the TM changes for ROC review.

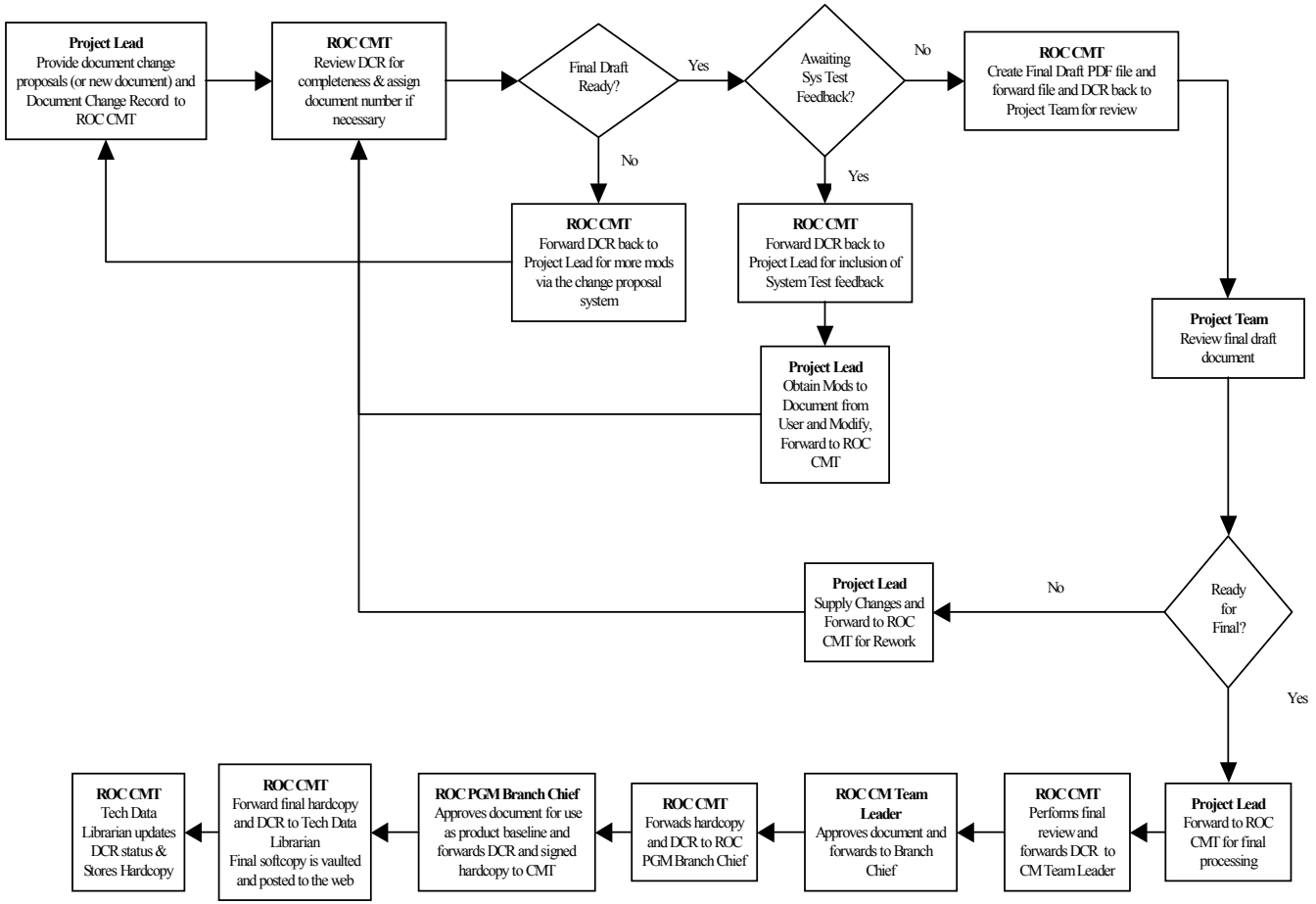
4. DT and the Project Team select and schedule kit proof location(s).

5. DT participates in kit proof with Project Team members from ROC ENG Branch, Operations Branch and CMT. The kit proof team determines if the kit proof was successful and identifies any necessary documentation changes.

6. DT participates in post kit proof Project Team meeting to discuss kit proof and determine if the modification is deployment ready. If the modification is deployment ready, DT sends the TM changes to GPO for printing and distribution. DT also sends the Combined Modification Document to Agencies for signature, then to GPO for print, delivery to NLSC, and distribution through the Consolidated Logistics System.

MODIFICATION FLOW PROCESS

SUBROUTINE 12 (SR12) – BASELINE DOCUMENTATION CHANGE



Modification Flow Process
Subroutine 12 (SR12) - Baseline Documentation Change

The purpose of this process is to coordinate change activities for all product baseline documentation with Configuration Management. Please reference the following documents for more details:

- 2710012 Process Specification for the NEXRAD WSR-88D Radar Operations Center Baseline Documentation Change Procedure
- WPI0011 Document Change Record (DCR) Originator Instructions, Work Practice Instructions

Project Lead:

a. Modifies existing baseline document through the Dynamic Object Oriented Requirements System (DOORS) Change proposal system or creates new baseline document in DOORS.
b. Creates Document Change Record (DCR) object in Agile to officially begin the change process. Selects “Draft Submission (DS)” status in DCR object in Agile.
c. Forwards DCR to ROC CMT.

CMT receives the DCR and change proposals and reviews both for completeness. If the document is a new document, ROC CMT assigns a document number.

Decision Point: Final Draft Ready?

If yes, proceed to process step 4.

If no, ROC CMT routes the DCR back to the Project Team requesting more information or modifications.

Project Lead:

a. Submits changes via DOORS Change Proposal System
b. Selects “Draft Rework (DRW)” status in DCR object in Agile.
c. Routes DCR to ROC CMT.

4. Decision Point: Awaiting System Test Feedback?

If no, proceed to process step 5.

If yes, ROC CMT routes DCR back to Project Lead for re-submission with System Test Feedback.

Project Lead:

a. Holds DCR until System Test Feedback is obtained

b. Submits changes to document via DOORS CPS.
c. Selects “System Test Feedback (STF)” status in DCR and routes DCR to ROC CMT.
d. Proceed to step 2.

5. ROC CMT:
   a. Creates and formats final softcopy, Portable Data Format (PDF).
   b. Attaches PDF to DCR object in Agile and selects “FMDS”
   c. Routes DCR with attached PDF to Project Team

6. Project Team reviews document.

7. Decision Point: Ready for Final?

If yes, proceed to process step 8.

If no, Project Team:
   a. Submits changes via DOORS CPS
   b. Enter comments into DCR object in Agile
   c. Selects “Draft Rework (DRW)” status in DCR object in Agile.
   d. Routes DCR to ROC CMT.
   e. Proceed to Step 2.

8. Project Lead:
   a. Forwards DCR to ROC CMT.

9. ROC CMT:
   a. Reviews DCR and draft for completeness and comments.
   b. Selects “CM Final Review (CMFR)” status in DCR object in Agile.
   c. Routes DCR to ROC CM Section Lead
   d. Prints hard copy of final document

10. ROC CM Section Lead
   a. Reviews document for final approval.
   b. Selects “CM Authentication (CMA)” status in DCR object in Agile.
   c. Routes DCR to ROC CMT

11. ROC CMT:
   a. Routes DCR to ROC PGM Branch Chief
   b. Forwards hard copy of the final document for authentication

12. ROC PGM Branch Chief
   a. Approves document for use as product baseline
   b. Signs hard copy of document
   c. Selects “ROC Branch Chief Approval (BCA)” status in DCR object in Agile.

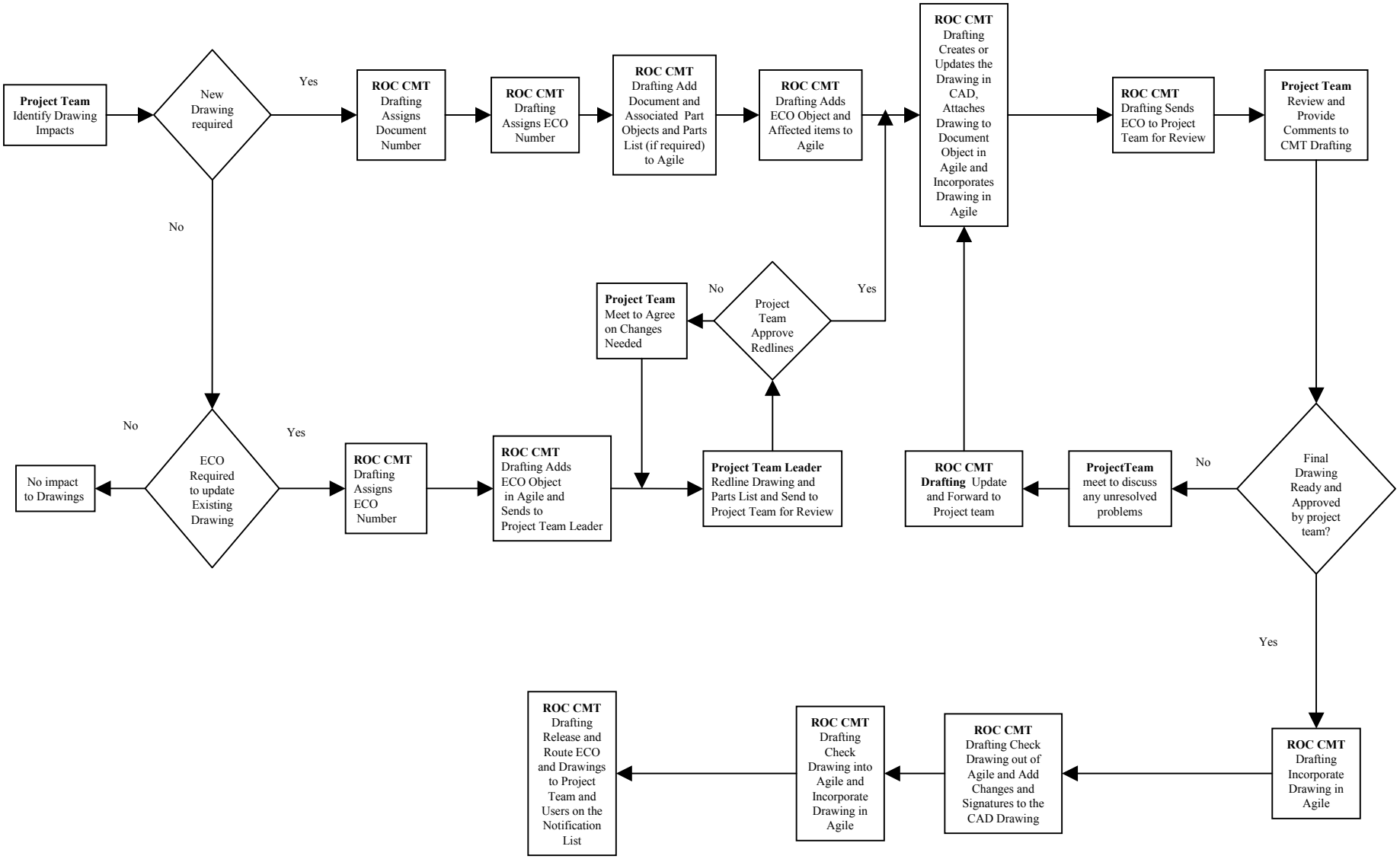
d. Routes DCR to ROC CMT
e. Forwards hard copy to ROC CMT

13. ROC CMT:
    a. Routes DCR to Technical Data Librarian
    b. Forwards signed hard copy to Tech Data Library
    c. Forwards applicable PDF to webmaster for posting to web page

14. Technical Data Librarian
    a. Receives final signed hard copy from ROC CMT
    b. Selects “Library Acquisition Date (LAD)” status in DCR object in Agile.
    c. Enters the current date into the DCR object and saves the DCR.
    d. Prints DCR History tab to be stored with hard copy document.

MODIFICATION FLOW PROCESS

SUBROUTINE 13 (SR13) – ENGINEERING DRAWING DEVELOPMENT/UPDATE PROCESS



Modification Flow Process
Subroutine 13 (SR13) - Engineering Drawing Development / Update Process

This description highlights the flow process for creating new and/or revising existing engineering drawings and lists associated with a hardware related modification to fielded systems.

Introduction: Following the approval of the Configuration Change Request (CCR) and Engineering Change Proposal (ECP), the Project Team (PT), assigned by the Technical Review Committee (TRC), is delegated the responsibility to identify, coordinate, monitor and release all new and revised engineering drawings associated with the approved change vehicle.

a. The Project Team (PT), typically comprised of representatives from all ROC functional groups/areas, shall meet to determine the complete range of engineering drawings impacted by the change. This will consist of new and existing drawings.

b. New Drawings:

a) The Engineering representative on the (PT) shall obtain, from the Design/Drafting (D/D) area of the Configuration Management Team (CMT), a new drawing number(s) and Engineering Change Order (ECO) number)s) for each new drawing. Engineering is responsible to provide any/all technical information as well as dimensional sketches, etc. to (D/D) whereby the ECO and the new engineering drawing(s) can be created and incorporated into Agile.

b) The newly created engineering drawing(s) is returned to the (PT) for review and approval. Review comments are returned to (D/D) for incorporation. Approval of the new drawing by the (PT) is forwarded to (D/D) whereby cognizant approval signatures are noted on the ECO and to the drawing prior to it's formal release into Agile.

3) Revised Drawings:

a) The Engineering representative on the (PT) shall obtain, from (D/D), an ECO for each affected engineering drawing, complete the ECO form as well as redline mark-ups to the drawing, reflecting the required from-to information.

c) The (PT) shall review and approve the redline mark-ups to the engineering drawing. s.

c) Following (PT) approval of the ECO package, (D/D) incorporates the change into the affected engineering drawing. The updated drawing is forwarded to the (PT) for approval whereby (D/D) formally releases the revised drawing into Agile.

APPENDIX D

ACRONYMS

APPENDIX D - Acronyms

AFWA	- Air Force Weather Agency
ASN	- Agency Stock Number
CAGE	- Commercial and Government Entity Code
CAMS	- Core Automated Maintenance System
CCB	- Configuration Control Board
CCR	- Configuration Change Request
CDR	- Critical Design Review
CI	- Configuration Item
CLIN	- Contract Line Item Number
CLS	- Consolidated Logistics System
CM	- Configuration Management
CMT	- ROC Configuration Management Team
COTR	- Contracting Officer's Technical Representative
CSA	- Configuration Status Accounting
DCR	- Document Change Record
DOC	- Department of Commerce
DOD	- Department of Defense
DODAAC	- DOD Activity Address Code
DOORS	- Dynamic Object Oriented Requirements System
DOT	- Department of Transportation
DT	- ROC Documentation Team
ECO	- Engineering Change Order
ECP	- Engineering Change Proposal
EEM	- Electronic Engineering Modification
EIA	- Electronic Industries Alliance
ENG	- ROC Engineering Branch
FAA	- Federal Aviation Administration
FCA	- Functional Configuration Audit
ILSP	- Integrated Logistics Support Plan
IPM	- Integration Program Manager
LRU	- Line Replaceable Unit
MOA	- Memorandum of Agreement
MIL HDBK	- Military Handbook
MIL STD	- Military Standard
NEXRAD	- Next Generation Weather Radar
NHA	- Next Higher Assembly
NLSC	- National Logistics Supply Center
NPC	- NEXRAD Program Council
NPI	- NEXRAD Product Improvement
NRC	- National Reconditioning Center
NSIN	- New Stock Item Notification
NSN	- National Stock Number
NWS	- National Weather Service
O&M	- Operation and Maintenance

OPS	- NWS Office of Operational Systems
OS	- NWS Office of Climate, Water, and Weather Services
OST	- NWS Office of Science and Technology
OSF	- Operational Support Facility now renamed Radar Operations Center
PCA	- Physical Configuration Audit
PCR	- Publication Change Request
PDR	- Preliminary Design Review
PGM	- Program Branch
PMC	- Program Management Committee
P/N	- Part Number
PPD	- Program Plans Division, W/OST1
PT	- Project Team
QC	- Quality Control
Qty	- Quantity
RC	- NWS Request for Change
REMIS	- Reliability Engineering Management Information System
RMA	- Return Material Authorization
RMT	- ROC Retrofit management team
ROC	- Radar Operations Center
SEC	- Systems Engineering Center, W/OST3
SERD	- Support Equipment Recommendation Data
SIC	- Stock Item Change
SID	- Site Identification
SR	- Modification Process Sub Routine
TCTO	- Time Compliance Technical Order
T&E	- Test and Evaluation
TRC	- Technical Review Committee
W/OPS	- NWS Office of Operational Systems
W/OPS1	- NWS OPS Maintenance, Logistics, and Acquisition Division
W/OPS4	- NWS OPS Radar Operations Center
W/OS	- NWS Office of Climate, Water, and Weather Services
W/OST	- NWS Office of Science and Technology
W/OST1	- NWS OST Program Plans Division
W/OST2	- NWS OST Meteorological Development Laboratory
W/OST3	- NWS OST Systems Engineering Center
WPI	- Work Practice Instruction
WSR-88D	- Weather Surveillance Radar, 1988 Doppler