

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

AIR FORCE INSTRUCTION 13-101

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Space, Missile, Command and Control

EVALUATION OF GROUND RADAR SYSTEMS

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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OPR: HQ USAF/XOCE (CMSgt Reta Muasau)

Certified by: HQ USAF/XOC
(Brig General James Morehouse)

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This instruction implements AFD 13-1, *Theater Air Control Systems*. It provides guidance and procedures for the Air Force program for evaluating ground surveillance radar systems (fixed, tethered and mobile). This instruction applies to all ground radar units assigned to or gained by, Headquarters (HQ) Air Combat Command (ACC)/DOY, HQ Pacific Air Forces (PACAF)/DOY, HQ US Air Forces Europe (USAFE)/DOY, HQ Air Education and Training Command (AETC)/DOF and ACC/DOG (Air National Guard [ANG]). It does not apply to Air Force Reserve Command (AFRC) units and members. Affected systems include Joint Surveillance, North Warning, Tethered Aerostat Radar, North Atlantic Defense and Modular Control Systems. Major Commands (MAJCOMs) are to forward proposed MAJCOM-level supplements to this volume to HQ USAF/XOCE, through HQ ACC/DOY, for approval prior to publication in accordance with (IAW) Air Force Policy Directive 13-1. Copies of MAJCOM-level supplements, after approved and published, will be provided by the issuing MAJCOM to HQ USAF/XOCE, HQ ACC/DOY, and the user MAJCOM and National Guard Bureau offices of primary responsibility. Field units below MAJCOM level will forward copies of their supplements to this publication to their parent MAJCOM office of primary responsibility for post publication review. Send comments and suggested improvements to this publication on AF Form 847, **Recommendation for Change of Publication**, through channels, to HQ ACC/DOY, 205 Dodd Blvd, Suite 101, Langley AFB VA 23665-2789.

SUMMARY OF REVISIONS

This revision clarifies applicable Radar Systems and Evaluation procedures. The revision also reorganizes text and updates references and addresses. It designates HQ ACC/SCC as the lead MAJCOM Office of Primary Responsibility for requesting Radar Evaluations. In addition, an **Attachment 1**, Glossary of References and Supporting Information has been added to the instruction. A “[” indicates revised material since the last edition.

CHAPTER 1

INTRODUCTION

1.1. Introduction. Radar sensors and systems play a vital role in tactical, air defense and air traffic control. Many special types of configurations of radars are installed in numerous operational environments. It is imperative the capabilities and limitations of each radar sensor and system be determined so they can be configured to provide optimum performance and effectively meet their operational requirements.

1.2. Policy. The Air Force policy is to ensure tactical and strategic air defense ground radars and electronic resources are installed, maintained, and operated in a high state of readiness to provide a quick reaction to the threat of both limited and general wars. Ground electronics evaluation provides management with a tool for determining the capability of each radar to detect, identify, track and control aircraft; determine aircraft height; provide air-to-ground communications; and to maximize operational readiness and flight safety.

1.3. RESPONSIBILITIES

1.3.1. Headquarters ACC/DOY is the office of primary responsibility (OPR) for this instruction; HQ USAF/DOY, HQ PACAF/DOY, HQ AETC/DOF, HQ ACC/DOG and ANG/C4B are the offices of collateral responsibility (OCR).

1.3.2. Headquarters AC2ISRC will program funds for the evaluation of systems under the acquisition program.

1.3.3. MAJCOMs that operate ground surveillance radar systems will:

1.3.3.1. Establish command fixed, tethered and mobile surveillance radar systems periodic evaluation programs and define their programs in MAJCOM supplements. They will tailor programs to command mission requirements, provide an assessment of radar system effectiveness, and record any deterioration of detection capability.

1.3.3.2. Request services for baseline, special, and system radar evaluations according to [Chapter 4](#).

1.3.3.3. Update current year needs quarterly or as otherwise previously agreed with ACC/SCC.

1.3.3.4. Provide flight support for evaluating command fixed, tethered and mobile radars.

1.3.3.5. Program funds for the evaluation of systems under the commander's operational control and related flight support.

1.4. Executive Agency. ACC is the executive agency for the USAF Radar Evaluation Program. In addition to responsibilities noted in paragraph [1.1.](#), ACC will:

1.4.1. Maintain the Air Force's radar systems evaluation capability through the 84th Radar Evaluation Squadron (RADES), who will:

1.4.1.1. Conduct baseline, special, and system evaluations for ground surveillance radar systems.

1.4.1.2. Provide radar evaluations and related services to other DoD agencies, government and non-government organizations according to appropriate agreements.

1.4.1.3. Manage a radar system evaluation course to maintain specialized evaluation training.

1.4.1.4. Maintain a technical repository supporting Air Force radar systems evaluations.

1.4.1.5. Provide technical and engineering consultation on radar related matters, such as helping develop radar system specifications.

1.4.2. Publish procedures for securing radar evaluation services and for defining MAJCOM support responsibilities.

1.5. Waivers.

1.5.1. HQ ACC/DOY (ACC units), HQ PACAF/DOY (PACAF units), HQ AETC/DOF (AETC units), and HQ USAFE/DOY (USAFE units) will serve as the MAJCOM OPR with waiver authority for all waiver requests to this instruction. File a copy of approved written waivers with this volume IAW AFI 33-360, Volume 1.

1.5.2. All waiver requests will be submitted in writing through channels to the appropriate MAJCOM OPR.

1.6. Records Disposition. Dispose of documentation prescribed by this directive IAW AFMAN 37-139, Records Disposition Schedule.

CHAPTER 2

REQUIREMENTS

2.1. Baseline Evaluation. An initial baseline evaluation is required as soon as possible after a unit completes installation acceptance testing and resolves major exceptions. The radar should be operationally stable and properly connected with its control center. A baseline evaluation and integration to the control center is required before the radar is fully mission capable. Mobile radar systems require a baseline evaluation only at their in-garrison location (unless a deployed location becomes fixed).

2.1.1. Re-baseline and integration into the control center is necessary following major repairs, major modifications, or permanent radar relocation or as specified in AFMAN 11-225, *United States Standard Flight Inspection Manual*.

2.1.2. A baseline evaluation, in conjunction with the Federal Aviation Administration (FAA) is required prior to FAA commissioning radars in the Joint Surveillance System.

2.1.3. Verify performance of previously baselined radars every 10 years. Perform a special or baseline evaluation if necessary.

2.2. Manpower Requirements . HQ AFPC assigns personnel to the 84 RADES to conduct radar evaluation. Normally, enlisted personnel will have a 5-skill level. Upon upgrade, the 84 RADES Commander will ensure the special experience identifier is in the members records and ensure an assignment availability code is annotated IAW the ACC stabilized tour guides.

CHAPTER 3

TYPES OF EVALUATIONS

3.1. Baseline Evaluation. This evaluation is performed to:

3.1.1. Determine optimum configuration of adjustable and selectable features (software and hardware), capabilities and limitations, including airspace coverage. It is tailored to individual radar site and missions and includes effects of weather and terrain on detection and tracking performance. Dedicated flights are required to make this assessment.

3.1.2. Provide a performance database, determine operational parameters, and airspace coverage as a basis for developing a periodic evaluation program.

3.2. Special Evaluation. This evaluation is performed to:

3.2.1. Isolate the cause of substandard performance that cannot be resolved by the operating organization.

3.2.2. Determine the effects of proposed and existing modifications on the operational capability and recommend configuration.

3.2.3. Determine the best siting or positioning of a radar and the optimum setting of adjustable features for use under varying conditions.

3.2.4. Support radar acquisitions, developmental and operational test and evaluation programs, and system integration.

3.3. System Evaluation. This evaluation determines how well multiple sensors integrate into a central facility or system.

3.4. Periodic Evaluation. This is an on-going evaluation process performed on previously baselined radars. The data collected during the baseline evaluation is used for initial pass/fail criteria. The periodic evaluation program detects radar performance deviations from established standards based on radar performance and long-term trend analysis. This process of continuous sampling and analysis of radar system performance assesses system effectiveness and deterioration in detection capability.

CHAPTER 4

REQUESTING EVALUATIONS

4.1. Request for Evaluations. To ensure that evaluation requests flow through the proper channels, it is imperative that organizations submit evaluation requests to HQ ACC/SCC (Lead MAJCOM office of primary responsibility) for radar evaluations. The email address is <mailto:acc.scc@langley.af.mil>. ACC/SCC will coordinate the request with ACC Communications Group (<mailto:accg.cc@langley.af.mil>) and ACC/DOY (<mailto:acc/doyg@langley.af.mil>). To expedite processing of the request, organizations may send informational copies to the <mailto:84rades.cc@hill.af.mil> and <mailto:84rades.ca@hill.af.mil>.

4.2. Request for Non-DoD Evaluations. Non-DoD organizations will request evaluation services through HQ USAF/XOCE.

4.3. Evaluation Information. All requests will, as a minimum contain the following information:

- 4.3.1. Purpose. Define problems and state the reason for the request
- 4.3.2. Location
- 4.3.3. Type of radar and associated equipment to be evaluated
- 4.3.4. Desired evaluation date
- 4.3.5. Mission impact if the evaluation is not performed by the desired date
- 4.3.6. Special items of concern and other pertinent information
- 4.3.7. Points of contact
- 4.3.8. Funding source to conduct requested evaluation. Non-DoD radar evaluations are requestor funded. After being tasked, 84 RADES will contact requesting unit to provide cost estimate and secure fund cite.

4.4. Radar Evaluation Priority. Prioritizations for requests are:

- 4.4.1. Priority 1. DoD operational system, off the air
- 4.4.2. Priority 2. DoD operational system, degraded
- 4.4.3. Priority 3. DoD new program
- 4.4.4. Priority 4. DoD operational system
- 4.4.5. Priority 5. Non-DoD new program
- 4.4.6. Priority 6. Non-DoD operational system
- 4.4.7. Priority 7. All others

CHARLES F. WALD, Lt General, USAF
DCS/Air & Space Operations

ATTACHMENT 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 13-1, Theater Air Control System, 11 May 1995

Public Law 104-13, *Paperwork reduction Act of 1995, 22 May 1995*

AFI 33-360, Volume 1, *Publications Management Program*

AFMAN 11-225, *United States Standard Flight Inspection Manual*

AFMAN 37-139, *Records Disposition Schedule*

Abbreviations and Acronyms

ACC—Air Combat Command

AETC—Air Education and Training Command

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPC—Air Force Personnel Center

AFRC—Air Force Reserve Command

ANG—Air National Guard

DoD—Department of Defense

FAA—Federal Aviation Administration

MAJCOM—Major Command

OCR—Office of Collateral Responsibility

OPR—Office of Primary Responsibility

PACAF—Pacific Air Forces

RADES—Radar Evaluation Squadron

USAFE—US Air Forces Europe