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AIR DEFENSE COMMAND AND CONTROL OPERATIONS

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

This instruction provides guidance for the Air Defense System (ADS) elements of the Continental United States (CONUS) and Air Forces Iceland (AFI). It implements policy found in AFPD 13-1, *Theater Air Control System*. This instruction applies to Air National Guard (ANG) units and members when published in ANGIN 2. It does not apply to Air Force Reserve Command (AFRC) units and members. Throughout this instruction, Weapons Director (WD) applies to officer and enlisted WDs. Reference to forms within this instruction also equates to computer-generated products when authorized. Send comments and suggested improvements to this publication on AF Form 847, **Recommendation for Change of Publication**, through channels, to HQ ACC/DOYG, 205 Dodd Blvd, Suite 101, Langley AFB VA 23665-2789. An asterisk (*) is used to indicate information changed by IC 98-1.

***SUMMARY OF REVISIONS**

Paragraph 4.6 was added to allow Iceland Air Defense System (IADS) to provide US Atlantic Command (USACOM) the air surveillance of the North Atlantic within the Military Air Defense Identification Zone (MADIZ). Paragraph 7.1 was changed to identify unique equipment. Paragraph 7.2.1 aligned MCC responsibilities under the ADC. Paragraph 7.2.2.1 aligned the 932 ACS/CC, DO, or designated representative responsibilities under the 85th Group Commander. Paragraph 7.3.1 established a requirement for the MCC/MCCT to provide direct C2 support to the ADC. Paragraph 7.3.3 established normal readiness conditions. Paragraph 7.3.3.1 aligned the IDT duties and responsibilities under the MCC/T, and paragraph 8.5 established a requirement for voice tape reporting. Terminology referring to Iceland Region Operations Control Center (ICEROCC) was changed to Iceland Control and Reporting Center (ICRC).

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Chapter 1

INTRODUCTION

1.1. General. This instruction and the references herein outline procedures to be followed by units/elements of the Air Combat Command (ACC) Air Defense System (ADS).

1.2. Reviews, Waivers, Changes and Supplements. Reviews, waivers, and recommendations for changes/supplements will be forwarded through command channels to HQ ACC/DOY for approval. Mailing address is 205 Dodd Blvd, Suite 101, Langley AFB VA 23665-2789.

1.3. Overview. The requirement to recognize and defend against an identifiable air breathing threat to North America and Iceland demands that air defense forces be maintained in an effective, reliable, secure and survivable state. Command and control (C²) of these forces must be proficient when implementing strategy, control of forces, and employment of weapons. Within the continental United States (CONUS) and Iceland, the vehicle to conduct such operations is the ADS. This instruction provides guidance for the ADS, which is comprised of the following elements:

- CONUS Region Operations Control Center (CONUS RAOC)
- Sector Air Operations Center (SAOC)
- Iceland Control and Reporting Center (ICRC)
- Sensor networks (Tethered Aerostat Radar System [TARS], Joint Surveillance Site [JSS], Over-the-Horizon Backscatter [OTH-B], North Warning System [NWS], Caribbean Basin Radar Network [CBRN])
- Airborne Warning and Control System (AWACS) aircraft.
- Additional C² inputs (e.g., Joint Operational Tactical System [JOTS], intelligence sources, Joint Tactical Air Operations [JTAO], etc.).

Chapter 2

MISSION

2.1. General:

2.1.1. **Air Defense System (ADS).** The mission of the ADS is to provide Commander-in-Chief, North American Aerospace Defense Command (CINCNORAD)/Commander-in-Chief, United States Atlantic Command (CINCUSACOM) with the means to detect, monitor, identify, intercept, report, and, if necessary, destroy an airborne object that may pose a threat to North America and/or Iceland, in fulfillment of the tactical threat warning/attack assessment (TW/AA) and collateral missions of NORAD. The ADS also supports the drug interdiction mission of the operational CINCs. The ADS provides CINCNORAD and CINCUSACOM the capability to integrate CONUS air defense forces with other service components and allies. To accomplish the mission of the ADS, associated units/elements perform functions that may be generally categorized as Air Surveillance, Force Management, and Airspace Control.

2.1.2. **Joint Surveillance System (JSS).** The JSS is a binational US Air Force (USAF) and Canadian Forces (CF) program for acquiring and operating RAOCS/SAOCs, a System Support Element, and the necessary communication and radar sensors to provide a modern air defense and surveillance capability for the CONUS, Alaska, and Canada, and to interface with like systems in Iceland and Hawaii. The primary mission of the JSS is peacetime air sovereignty. In the event of war, a SAOC will provide Sector C² for as long as it remains operational. Under normal circumstances, the SAOC will be augmented by the E-3 and other sensors to form an integrated system. When it becomes impractical/impossible to conduct the air battle from the SAOC, C² responsibility will transition to an expanding sector, as appropriate.

2.1.3. **Tethered Aerostat Radar System (TARS).** The TARS is a series of lighter-than-air platforms (balloons) called aerostats anchored to the ground by a tether, with an associated 'look down' capable radar. These systems are located at fixed locations across the US from Arizona to Florida and into the Caribbean. The system is designed to create an effective radar detection capability in the low and medium altitude drug corridors to support the counterdrug mission. The TARS augments the JSS radar system providing the low level coverage that a single ground radar is incapable of providing to support the air sovereignty mission.

2.1.4. Theater Air Control System (TACS):

2.1.4.1. The airborne element of the TACS (AETACS) is the E-3 Airborne Warning and Control System (AWACS). The system is designed to perform a variety of missions as an element of the US general purpose forces. In the air defense role, AWACS functions as an element of NORAD, providing early warning, surveillance, C², and decentralized identification. Its advanced surveillance radar provides long-range, low-level detection of aircraft targets over all types of terrain. The AWACS is a Tactical Digital Information Link A (TADIL-A)/Link 11 participant and interfaces through the RAOCS/AWACS Digital Information Link (RADIL).

2.1.4.2. The Modular Control System (MCS) is a weapons system that support aerospace roles as defined in AFM 1-1 of aerospace control, force application, force enhancement, and force support. The MCS provides the theater commander with the Air Force's ground radar elements of the TACS (GTACS). The MCS is a mobile; sustainable; ground; command, control, communications, and intelligence (C²I) component of the TACS. The MCS consists of ground elements that use Modular Control Equipment (MCE) to perform Control and Reporting Center (CRC) or Control and Reporting Element (CRE) functions depending on manning and equipment configuration. The system is capable of performing a variety of missions based upon the number and types of units employed. The MCS provides an integrated air picture via data links from multiple air/sea/land-based sensors, including its own long-range radars. It is capable of performing battle management, airspace and weapons control, surveillance, and identification, as part of the TACS. The system is capable of integrating with and directing Army air defense assets (HAWK/Patriot/Short Range Air Defense [SHORAD]) and theater missile defense (TMD) systems. Elements of the MCS are equipped with a wide spectrum of secure capable communications media and support equipment including generators and vehicles. Survivability is enhanced through the use of radar remoting, anti-radiation missile (ARM) decoys, and electronic protection measure (EPM)

capabilities. Elements can be readily tailored to meet specific mission requirements. The SAOC interfaces with the MCS via RADIL to the MCE. The Air Force MCE is comprised of the AN/TYQ-23(V)2 Operations Module (OM) with environmental pallet and the MCE interface group (MIG) located in the AN/TPS-75 radar set.

2.1.4.2.1. The CRC is the senior radar management element within the TACS and serves as a communications hub with its organic communications equipment. A CRC performs the tasks of battle management, weapons control, surveillance, identification, data link management, and TMD. A standard CRC consists of four OMs, two AN/TPS-75 radar sets, and associated communications/support equipment. One radar will be collocated with the OMs (within two kilometers) and the second radar may be remoted via Super High Frequency/Line-of-Sight (SHF/LOS) Troposcatter or SHF satellite communications (SATCOM) to a geographically separated location. This option affords extended radar surveillance coverage. A two-position manual control capability can be exercised from the remoted radar, until radio remoting is implemented.

2.1.4.2.2. A CRE is an execution element of the MCS that can be directed to perform limited battle management functions due to manning and equipment limitations. A CRE can perform the tasks of weapons control, surveillance, identification, and data link management, or support TMD warning. A standard CRE consists of two OMs, one AN/TPS-75 radar set, and associated communications/support equipment.

2.1.4.3. **GTACS Communications.** The MCS exchanges information using organic voice and data communication systems (secure and nonsecure). The communication systems available to the MCS include radios (High Frequency [HF], Very High Frequency [VHF], and Ultra High Frequency [UHF]), satellite (SHF), and SHF microwave switching systems. These systems provide the capability to conduct TADIL-A/Link 11, TADIL-B, TADIL-C, NATO Link-1, Army Tactical Data Link 1 (ATDL-1), and Joint Tactical Information Distribution System (JTIDS)/Interim JTIDS Message Specification (IJMS) operations.

2.2. Tactical Warning/Attack Assessment (TW/AA):

2.2.1. **Air Surveillance.** Air surveillance provides a current picture of air traffic, possible threats, and friendly forces within the designated area of responsibility (AOR). It includes:

2.2.1.1. Detection of airborne objectives that require identification under NORAD Instruction 10-15 and US Customs/US Coast Guard procedures or rules.

2.2.1.2. Reporting air activity to users, as required.

2.2.2. **Force Management.** The force management function supports the operational commander's role by planning, organizing, directing, coordinating, and controlling forces committed to accomplishing the assigned operational missions. Additionally, the operational commanders must be provided with the means to assess the threat. Threat assessment consists of warning, characterization, current assessment of defense, and penetration analysis. After consideration of the threat, the operational commander will require an assessment of friendly forces. This involves the total resources available, status, location, and any limitations to those resources. The combined assessment of enemy and friendly forces will permit the appropriate posturing of defensive forces to counter the threat.

2.2.3. **Airspace Control.** The airspace control function encompasses all aspects of air sovereignty/air defense operations to include interception, airborne identification, identification by electronic means, identification by procedural means, and engagement.

2.3. **Interoperability.** The purpose of this section is to provide information about other operational systems employed with the SAOC in the joint arena. Joint Tactical Air Operations (JTAO) concept, as established by the Joint Chiefs of Staff (JCS), requires the exchange of tactical information between component services on a real-time or near-real-time basis. The JTAO interface concept is designed to support air defense and air control operations and provide high-speed digital exchange between tactical data systems of the Air Force, Army, Marines, Navy, and Allies.

2.3.1. **TADIL-A.** TADIL-A (Link 11) is a crypto-secured, HF or UHF, broadcast data link employed netted communication techniques and standard message formats for the exchange of digital information

among airborne, land-based, and shipboard tactical data systems. Primary means of SAOC/AWACS connectivity.

2.3.2. **TADIL-B.** TADIL-B is a point-to-point digital data link. It is a full duplex link allowing both participants to transmit data to each other simultaneously. There are a large number of USAF and US Marine Corps (USMC) units capable of interfacing with the MCS and Marine Air Command and Control System (MACCS) and in-turn RADIL for purposes of air defense.

2.3.3. The following systems enable connectivity:

2.3.3.1. **RADIL.** The RADIL as a TADIL-A interface device is designed to enable data link operations between RAOCs/SAOCs and other Link 11 capable units, such as AWACS/Navy/Marine/Allied. This section supplements HQ NORAD guidance in CINCNORAD Operations Plan (OPORD) 3310 and NORAD Instruction 10-8, and HQ ACC guidance defined in MCI 11-E3 Volume 3. The Combined Air Forces (CAF) employment concept is to use the RADIL in the CONUS, Alaska, Iceland, and Hawaii AORs in concert with the AWACS. This section expands upon that concept to encompass the joint service interoperability requirements.

2.3.3.1.1. The RADIL system is a digital interface buffer that enables SAOC participation in the TADIL-A network by effecting the exchange of tactical digital data between AWACS or other CAF/JTAO platforms and the SAOC facilities. It provides the capability to receive and process TADIL-A messages and display the track data, as well as information management, electronic attack (EA), intelligence command, weapons engagement status, and point information. The RADIL system effects the exchange of data as follows:

2.3.3.1.1.1. For track data originating outside the SAOC, RADIL receives and stores the TADIL-A information, compares it with existing data through the RADIL operator, and forwards new or current data to the SAOC computer via lateral tell lines formatted as if it were an adjacent SAOC.

2.3.3.1.1.2. For track data originating from the SAOC, RADIL receives and stores the SAOC's information, compares it with existing data through the RADIL operator, and forwards new or current data from the SAOC via TADIL-A.

2.3.3.1.2. The RADIL system consists of an antenna, UHF and HF transceivers, data terminal set (DTS), modem, KG-40 encryption device, computer processor, data storage device, and color tactical displays. The associated hardware consists of two subsystems: the computer processors and communications. The software functions include system operation, peripheral management, link monitoring, data collection, scenario generation, on-line data reduction, and simulation.

2.3.3.2. **US Navy (USN) Systems.** The Navy air defense systems that interface with RADIL include ships equipped with the Naval Tactical Data Systems (NTDS) and Navy Airborne Early Warning (AEW) and patrol aircraft equipped with the Airborne Tactical Data System (ATDS).

2.3.3.2.1. The NTDS, sometimes referred to as the Combat Director System (CDS), is the C² system used by the Navy for surface elements. NTDS is capable of both TADIL-A (Link 11) and TADIL-C (Link 14) information exchange. NTDS equipped ships can operate in a JTAO interface to exchange air defense information. NTDS can also use Link 14 to transmit a limited amount of track data via secure low speed communications to a RAOC/SAOC equipped with a Joint Operational Tactical System (JOTS).

2.3.3.2.2. The ATDS is an airborne early warning system that extends the range of the NTDS radars and provides surveillance and weapons control to the fleet. It is used on an E-2C turboprop aircraft equipped with a surveillance radar antenna.

2.3.3.2.3. In addition to the US Navy, some allied naval systems are equipped with TADIL-A (Link 11). Due to the area of operations of these ships, they are candidate systems for TADIL-A (Link 11) exchange via the RADIL.

2.3.3.3. **Modern Tracking System (MTS).** MTS is used to interface GTACS TPS-43E radars with the SAOCs. The MTS acts as an interface between input radar and the output operations center to provide tracks in Federal Aviation Administration (FAA) protocol.

2.3.3.4. **Anti-Drug Network (ADNET).** ADNET is an automated command, control and communications (C³) and intelligence decision and data display system designed to enhance tactical

interface needs of Department of Defense (DOD) and Law Enforcement Agencies (LEAs) supporting the counter-drug effort. ADNET supports two missions by reporting counter-drug intelligence and operations.

2.3.3.5. **NORAD Alert System.** The NORAD Alert System is an alert conferencing system that connects the alerting sites to the seven NORAD Control Centers (NCCs), namely: Cheyenne Mountain Complex (CMC), the Back-up Facility Space Command, and five SAOCs. Conferences of varied sizes are established from NCCs to the appropriate stations in the conference over the Defense Switched Network (DSN) by means of conference bridges (Digital Remote Programmable Conference Arranger [DRPCA]) placed at DSN switching nodes.

2.4. SAOC/AWACS Interoperable Missions:

2.4.1. AWACS operates or trains daily within the RAOC/SAOC AOR. AWACS missions may support NORAD, First Air Force units, CINCUSACOM, or ACC general purpose fighter training. These missions may include:

- Surveillance missions requiring SAOC interface.
- Surveillance missions not requiring SAOC interface.
- Fighter squadron training requiring air defense interface.
- Fighter squadron training not requiring air defense interface.
- Sector/NORAD exercises.
- Support of contingency operations.

2.4.2. The RAOC/SAOC and AWACS crews should maximize every opportunity to gain proficiency in RADIL operations. By consistent and thorough training on a daily basis, the operational staff will be better prepared for the proficient implementation of RADIL interfaces in support of contingency operations plans (e.g., CINCNORAD OPLAN 3310, Operations Order (OPORD) 3199, etc.) and the combined operations of a JTAO environment.

2.5. SAOC/GTACS Missions:

2.5.1. GTACS units interoperate frequently with the SAOCs in support of the daily training and counterdrug operations. These missions support CINCNORAD and LEA detection and monitoring operations. These missions may include:

- Surveillance only, voice tell.
- Surveillance only, MTS connectivity.
- Surveillance and control, voice tell.
- Surveillance and control, MTS connectivity.

2.5.2. Sector and associated GTACS units are authorized direct coordination to establish procedures for integration of these assets. Daily training and exercise use of these assets is encouraged to better familiarize both the GTACS units and SAOC personnel in these systems.

Chapter 3

CONTINENTAL UNITED STATES REGION AIR OPERATIONS CENTER (CONUS RAOC)

3.1. Mission. The First Air Force Commander (1 AF/CC), in his role as the CONUS NORAD Region Commander, provides CINCNORAD/Commander US Element NORAD with TW/AA, surveillance and control of the airspace of the United States and appropriate response against air attack. 1 AF organizes, trains, equips and provides support operations for the air defense of North America. The CONUS Region Commander is operationally responsible for centralized command of the CONUS Region Air Defense activities. Decentralized control may be executed by the three sectors through the SAOC. The CONUS Region Commander is responsible for forces employment, deployment, and execution in support of air defense operations during peacetime, transition, and wartime. This responsibility involves those resources (forces) assigned or made available to the CONUS NORAD Region.

3.2. Responsibilities. Responsibilities of the CONUS NORAD Region Staff, which are executed through the CONUS RAOC, include the following:

- 3.2.1. Attack warning and atmospheric threat assessment for the CONUS.
- 3.2.2. Employment planning for CONUS air defense.
- 3.2.3. Atmospheric defense of the CONUS.
- 3.2.4. Operational control of the three SAOCs and all forces available for air sovereignty, air defense and atmospheric attack warning.
- 3.2.5. Resources allocation within the CONUS.
- 3.2.6. Force deployment as needed for exercise or OPLAN support.
- 3.2.7. Joint and combined training.
- 3.2.8. OPLANs and exercises to ensure system readiness.
- 3.2.9. Continuity of operations.
- 3.2.10. OPORD execution within the CONUS AOR.
- 3.2.11. Rules of engagement (ROE) and engagement authorities in accordance with (IAW) CINCNORAD/Commander, US Element NORAD guidelines.
- 3.2.12. Planning interface with the Canadian and Alaskan NORAD Regions.
- 3.2.13. Appropriate response for weapons readiness states IAW CINCNORAD/Commander, US Element NORAD guidelines.
- 3.2.14. Alert condition (LERTCON) declaration IAW the CINCNORAD/Commander, US Element NORAD guidelines.
- 3.2.15. Force status reporting IAW CINCNORAD/Commander, US Element NORAD guidelines.
- 3.2.16. Intelligence collection, evaluation and dissemination affecting the CONUS.
- 3.2.17. Succession of command IAW CINCNORAD/Commander, US Element NORAD guidelines.
- 3.2.18. Air order of battle with Alaska and Canadian NORAD Regions.
- 3.2.19. Counterdrug operations.

3.3. Organization. CONUS RAOC operations are divided into four functional areas: Battle Staff (BS), Expanded Battle Staff (EBS), Air Defense Center (ADC), and Intelligence Center. The following paragraphs discuss the function of each.

3.3.1. Battle Staff (BS). The BS will be assembled to assist the commander. The BS is the primary command agency for coordination, decentralized execution on CONUS NORAD Region (CONR) air defense operations. The BS will assist the commander in executing CONR operations. Additionally, the BS will advise the Battle Commander (BC) in executing ROE, contingency and war plans, and provide for air defense forces. Essential to the CONUS Region operations is near-real-time indications and

warning (I&W) support focused on the strategic threat to North America. The support will address the intelligence situation, in-depth analysis of strategic air breathing threat in support of 1 AF, and time sensitive reporting of strategic indications of enemy bomber and naval deployments and movements. Additionally, it will furnish near-real-time tracking (via intelligence sources) and reporting of air breathing threats that may fly within the CONR AOR.

3.3.2. **Expanded Battle Staff (EBS).** The EBS supports cell chiefs in the BS. They respond to contingency situations, implement OPLANs, monitor and display status of forces and achieve optimum levels of war preparedness.

3.3.3 **Air Defense Center (ADC).** The ADC provides a centralized capability for the surveillance and control of air activities in the CONR AOR that could be detrimental to national sovereignty or a threat to national security.

3.4. Battle Staff. BS positions will include, but not be limited to, the following:

3.4.1. **Battle Commander (BC).** The BC is directly responsible to CINCNORAD for the centralized command of the Region's operational mission during peace and wartime. The BC's primary responsibilities and duties are:

- To implement all command directives and instructions from CINCNORAD.
- To conduct the Region air sovereignty mission.
- To direct strategic action and force management during crisis situations IAW applicable operations and contingency plans
- To coordinate C² functions with NORAD, Alaskan and Canadian Regions and the SAOCs.
- To exercise operational command over all assigned and augmentation air defense forces.

3.4.2. **Director of Operations (DO).** The DO is responsible to the BC for implementation of and control over the Region's OPLANs. The DO functions as the Region's director for force and battle management, and performs a liaison function with the sectors, NORAD Command Center (NCC), and other elements of the ADS.

3.4.3. **General, Deployment and Sustainment Officer (GDSO).** The GDSO is responsible to the BC through the DO. The GDSO provides expertise on the execution of OPLANs and OPORDs. The GDSO participates in the development of plans through the JCS crisis action system; monitors force generation, deployment and sustainment; and coordinates with the ACC BS on the availability of CONUS general purpose forces.

3.4.4. **Command and Control Officer (C²O).** The C²O is responsible to the BC through the DO. The C²O advises the DO on E-3, OTH, and JSS/radar resources management; CONR communications; and Security Control of Air Traffic (SCAT) matters. The C²O also coordinates with the ADC and Sectors to meet tactical warning and damage limitation needs for the CONR ADS.

3.4.5. **Fighter Officer (FO).** The FO is responsible to the BC through the DO for direction and recommendation for the use of Region assigned fighter resources. The FO uses applicable OPLANs/OPORDs and BC direction to ensure appropriate fighter employment. The FO works directly with the Sector BS to ensure applicable operations and contingency plans are carried by assigned fighter units and augmentation forces and tracks the combat readiness status of fighter units during peacetime, transition, wartime, and exercise situations.

3.4.6. **Intelligence Officer (IO).** The IO supports the BS and ADC. As the Region's intelligence specialist, the IO presents intelligence reports and threat assessment information for Region operations management and ensures that timely strategic and tactical intelligence reports are formulated and presented to the BC. The IO analyzes and formulates special intelligence reports and summaries so other supporting agencies can take preparatory contingency actions.

3.5. Expanded Battle Staff (EBS). The EBS supports cell chiefs in the BS. It consists of a GDSO cell, FO cell, C²O cell, IO cell, weather officer (WO), and the BS coordinator. EBS tasking includes data base management, force planning, distribution and execution, planning for force reconstitution, issuing

coordinated directives to subordinate units, providing expedited coordinated staff action for crisis situations, and accomplishing tasks as outlined in ACC, CINCNOAD, CINCUSACOM, or JCS OPLANs, OPORDs, and Contingency Plans (CONPLANs). The WO supports and advises the BC/DO and staff by providing weather briefings and forecasts. The WO also identifies any area of adverse weather within the Region that could affect safety or impact execution of the air battle.

3.6. Air Defense Center (ADC). The ADC is manned by personnel assigned to the 701st Air Defense Squadron (ADS), who are responsible to the 701 ADS/CC. The ADC is the 24-hour focal point for air sovereignty and air defense. It provides tactical warning to NORAD and confirmation of critical air events, including event assessments when appropriate. Additionally, it provides the facility through which the CONR Commander executes the NORAD, US Element NORAD (USELMNORAD), and 1 AF air defense mission responsibilities. Furthermore, the ADC duty staff monitors daily operations including status of forces, status of equipment and specified resources, and maintains an accurate and timely computer data base of forces, resources and equipment. The 701 ADS staff will provide augmentation during exercises or contingencies as required. Crews are organized, trained, and certified to conduct ADC operations. Additional responsibilities include:

3.6.1. Operational control of assigned E-3s.

3.6.2. Interpreting OTH-B radar inputs for early warning and intelligence analysis; directing OTH-B beam steering and establishing operational priorities as required; directs illumination of special interest areas; and providing inputs to OTH-B sites regarding friendly forces and intelligence or other radar data regarding threat aircraft approaching the OTH-B AOR to ensure an accurate and complete surveillance picture.

3.6.3. Interpreting intelligence information and responding IAW published plans, procedures, and authorities.

3.6.4. Back-briefing the Space Command (SPACC) Operations Center Director when the NCC is inoperative or as directed.

3.6.5. Participating in exercise and training sessions (such as SAOC/AWACS System Training Exercise [STE]) to increase and maintain crew and SAOC proficiency.

3.6.6. Preparing the air defense portion of the CONR/1 AF Commander's daily briefing.

3.6.7. Receiving and displaying forward tell track messages on the computer generated graphic display and the geographic location, speed, and altitude of the following tracks:

- Unknowns.
- HOSTILEs/FAKERs.
- AWACS/ships/subs of special interest (ships/subs manual only).
- Special tracks.
- Interceptors.

3.6.8. Displaying location of degraded radar sites with a depiction of their radar coverage.

3.6.9. Monitoring E-3s operating in the CONUS Region.

3.6.10. Displaying location of E-3 orbits with their notional radar coverage.

3.6.11. Responding as required to war and contingency OPLANs/OPORDs.

3.6.12. Maintaining satellite communications (SATCOM) links.

3.7. ADC Duty Positions. The following duty positions will be manned in the ADC:

3.7.1. **Air Defense Director (ADD).** The ADD represents the CONR Commander in daily administration and management of assigned air defense forces for the protection of the assigned AOR. The ADD also monitors and evaluates overall threat assessment and provides recommendations to CONR Commander and tasks assigned forces as directed. Interfaces with NORAD C² agencies to include the

NCC, Alaskan RAOC, Canadian ROCC, ICRC, and other multi-service agencies, and is responsible for implementation of CONPLANS. The ADD presents daily briefs to the commander and staff, and leads the crew in mission accomplishment.

3.7.2. **Air Defense Technician (ADT).** The ADT monitors air defense information received in the ADC and is responsible for the presentation of ground environment statuses (tabular and geographically) on computer workstation monitors, Large Screen Visual Displays (LSVD) and the Closed Circuit Television (CCTV) systems. The ADT assists the ADD in preparing daily briefings for the CONR Commander. Additionally, the ADT monitors, obtains, and provides additional information on forward tell messages for the CONUS, Iceland, OTH-B, and assigned E-3 assets. The ADT will monitor and validate as necessary potential threat traffic and special interest tracks approaching or within CONR AOR. Finally, the ADT is responsible for maintaining displays, updating manual inputs, monitoring reports, and current operational activities.

3.7.3. **Communications-Computer Operations (CCO).** The CCO is the focal point for all communications and electronic equipment in the CONUS RAOC through the Systems Communications Office (1 AF/SC). The CCO's duties include:

3.7.3.1. Monitoring and operating the mission support communications and responding to all problems.

3.7.3.2. Monitoring, operating and ensuring the cryptographic security of all secure systems interfacing with the CONUS RAOC are fully functional.

3.7.3.3. Monitoring the CONUS RAOC electronics and reporting detected problems.

3.7.3.4. Acting as communications security (COMSEC) controlling agent for CONUS RAOC.

Chapter 4

SENSORS

4.1. JSS Long Range Radars (LRR). The JSS radars are surveillance systems with a design range of 250 nautical miles (nm). They collectively form an element of the Integrated Tactical Warning and Assessment (ITW&A) function. JSS radars are strategically positioned to provide the SAOCs with digitized inputs of detected air activity. These inputs in turn are used in support of the SAOC's mandate of air sovereignty and drug interdiction.

4.2. Tethered Aerostat Radar System (TARS). The TARS is a balloon-borne radar system that is tethered at approximately 12,000 to 17,000 feet mean sea level. The radar's look-down coverage provides 150 NM of low level coverage. The system is capable of detecting surface vessels in 8- to 12-foot waves, as well as airborne objects. The system is stretched across the southern US and interfaces with the southeast and western air defense sectors, providing a TW/AA functions. In addition, TARS is used by the US Customs and Drug Enforcement Agency in the drug interdiction mission.

4.3. North Warning System (NWS). The NWS will be a vital component in the defense of North America because it lies in the path of the shortest route between the Commonwealth of Independent States and North America. The system is composed of 15 LRRs (11 in Canada and 4 in Alaska) and 39 Unattended Radars (UARs; formerly referred to as Short Range Radars (SRRs)) (36 in Canada and 3 in Alaska). The NWS will provide TW/AA to the Canadian and Alaskan NORAD Regions who will forward tell appropriate information to Cheyenne Mountain Air Force Station (CMAFS). When completed, the NWS will provide contiguous radar coverage across the Arctic Archipelago.

4.4. Caribbean Basin Radar Network (CBRN). The CBRN will provide US Southern Command (USSOUTHCOM) and US Atlantic Command (USACOM) with air surveillance of the Caribbean Region in support of the drug interdiction mission. The system will include 8 new radar sites located throughout the Caribbean, telling information to the Southern Region Operations Center (SROC) at Howard AFB, Panama; the Caribbean Region Operations Center (CARIBROC) at Key West, Florida; and/or the SE SAOC. Five existing radar sites in the Caribbean area will be integrated into the CBRN system. In addition, fixed and mobile radars in the Commonwealth of Puerto Rico will be merged at the Puerto Rican Radar Integration Site (PRIS) and sent to the CARIBROC and the Puerto Rican Operations Center (PROC).

4.5. CONUS Over-the-Horizon Backscatter (OTH-B) Radar System. The OTH-B radar (AN/FPS-118) provides extended range surveillance and tactical early warning required by the National Command Authorities (NCA) for decision making; for posturing of forces for increased survivability; and for countering an attack on North America. OTH-B is a bi-static radar (separated transmit and receive sites) that propagates Frequency Modulated (FM), Continuous Wave (CW), HF radar signals beyond line-of-sight via ionospheric refraction. The target's reflected energy signal is returned to the radar receiver by the same refraction process, called backscatter. All CONUS OTH-B systems will forward tell any uncorrelated track data to the appropriate SAOC where, via the Advanced Interface Control Unit (AICU), the data will be displayed on SAOC Operations Display Consoles (ODC) as well as forward told to CONR/Canadian ROCC (CANR)/NORAD. OTH-B coverage is accomplished using 60 degree sectors that extend 500-1800 nm from the facility. A radar detection barrier of approximately 400-500 nm width is placed in the segment between these ranges. Beam-to-beam positioning of the barrier is achievable through independent frequency selection, with placement determined by ionospheric conditions and operational requirements. The OTH-B radar systems are operated by ACC under the operational control of CONR. Both East and West coast systems are currently in warm storage and will transition to cold storage by 30 Sept 1997.

***4.6. Iceland.** The Iceland Air Defense System (IADS) will provide US Atlantic Command (USACOM) with air surveillance of the North Atlantic within the Military Air Defense Identification Zone (MADIZ) primarily and, secondly, to the limits of radar coverage. The system includes remote radar heads (RRHs) with FPS-117V5 radars on the four corners of Iceland, and the Iceland Control and Reporting Center (ICRC) at Keflavik NAS that controls operations. The ICRC Forward tells information to NORAD and CONTR, Lateral tells to Canada East and the North East SAOC, and links with Norway and the United Kingdom.

Chapter 5

*SECTOR AIR OPERATIONS CENTER (SAOC) (N/A ICRC)

5.1. Organization. The sector is divided into two functional areas: Battle Staff (BS) and the Operations Control Center (OCC), which is comprised of the Weapons, Air Surveillance, and Identification Sections. The OCC has a C² function.

5.2. Battle Staff. When formed, the BS directs Sector air defense/air sovereignty activities. Additionally, it directs and coordinates activities of subordinate radar units, relays instructions from senior ACC/NORAD elements to subordinate and lateral units, and coordinates allocation and employment of air defense resources. The BS is assigned or allocated air defense resources, e.g., interceptor, early warning aircraft, etc., that are necessary to defend its assigned AOR. These resources are used by the BC via the Mission Crew Commander (MCC) for the conduct of assigned responsibilities. The BS is comprised of, but not limited to, the following positions that will be manned at the discretion of the BC to accomplish the assigned mission.

5.2.1. Battle Commander (BC). The Sector commander will be designated as a BC. In the absence of the commander, the succession to the Sector commander list will be used. The BC shall be the senior ranking qualified officer not lower than the rank of Colonel. The BC is responsible for implementing air defense/air sovereignty through employment of the forces assigned or made available.

5.2.2. Director of Operations (DO). The DO is responsible to the BC for the supervision of all Sector operations. The DO will:

5.2.2.1. Implement NORAD/ACC policy and formulate methods and procedures for Sector operations.

5.2.2.2. Maintain and analyze operational records that are required by higher headquarters.

5.2.2.3. Identify personnel requirements to accomplish the assigned mission.

5.2.2.4. Be fully conversant with OPLANs/OPORDs pertinent to the Sector mission.

5.2.2.5. Be knowledgeable of the duties of the MCC.

5.2.3. Intelligence Officer (IO). The IO duties on the BS include, but are not limited to:

5.2.3.1. Advising the BC on the threat.

5.2.3.2. Planning and conducting training of operations personnel regarding intelligence matters.

5.2.3.3. Reviewing intelligence data including technical reports of equipment and estimating probable courses of actions, force structures, and characteristics and capabilities of potential threats.

5.2.3.4. Maintaining current situation maps, warning displays, local data base, and the intelligence library.

5.2.3.5. Coordinating and integrating intelligence data from all sources available to the SAOC. This includes tasking intelligence collection organizations.

5.2.3.6. Conducting studies of enemy forces and preparing intelligence reports and scenarios which realistically represent those forces.

5.2.3.7. Receiving and relaying all reports and other intelligence items to higher headquarters as required.

5.2.4. Aircraft Control and Warning Officer (ACWO) (13B). The ACWO is responsible to the BC through the DO. The ACWO will advise the BC on assigned sensor assets and function as the Sector's Ground Environment Resources Manager. The ACWO ensures the Sector's operations and contingency plans are carried out by ground environment units and provides BS E-3 employment recommendations.

5.2.5. Fighter Officer (FO). The FO is responsible to the BC through the DO for direction and recommendations for the use of assigned fighter resources, using applicable OPLANs and BC direction to ensure appropriate fighter employment. The FO ensures applicable operations and contingency plans are carried out by fighter units and tracks the combat readiness of assigned fighter units.

5.2.6. **Communications and Electronics Officer (CEO).** The CEO shall ensure that assigned communications and electronics equipment are serviceable to accomplish the mission; and shall track and initiate repairs on unserviceable equipment, and report same to the BC through the ACWO.

5.2.7. **Weather Officer (WO).** The WO supports and advises the BC and the DO by providing weather briefings and forecasts, and identifying the area of adverse weather with the Sector that could affect safety or impact on the execution of the air battle. Responds to specific weather requests for E-3 aircraft.

5.2.8. **E-3 Coordinator (1C5).** The E-3 Coordinator is responsible through the ACWO to the BC for coordinating all aspects of E-3 participation in the Sector's AOR. Specific duties include BS/NORAD Airborne Battle Staff (NABS) coordination on locating E-3 orbits and E-3 communications set-up.

5.2.9. **SAOC Director (13B).** The SAOC Director will be the senior C² advisor to the BC and is the chief of the OCC.

5.3. Sector Air Operations Center (SAOC). The SAOC is the focal point for the conduct of weapons, surveillance, and identification functions. It is tasked to support the NORAD mission on a continuous basis and is supervised by the MCC. The SAOC is manned by the following duty positions:

5.3.1. **MCC/Mission Crew Command Technician (MCCT) (13B/1C5X1).** The MCC is the on-duty representative for the Sector Commander and is responsible for the conduct of all air sovereignty/air defense operations, training and emergency actions within the Sector during the duty shift. The MCC will communicate directly with the CONUS RAOC ADD regarding operations IAW SAOC Operating Instructions (OIs). The MCC will exercise sound judgment, ensuring the safe and expeditious handling of all air sovereignty/air defense related events within the Sector. The MCC works for the SAOC Director administratively and is operationally responsive to the Sector Commander/DO in peacetime and BC/DO during increased alert status and exercises. The MCCT assists the MCC in supervising the conduct of air sovereignty/air defense operations and training.

5.3.2. **The Emergency Action Coordinator (EAC) (1C5X1).** The EAC is responsible for encrypting, and decrypting all Emergency Action Message (EAM) and provide emergency action guidance to battle staff IAW NR 55-5 Volume 3. The EAC will be familiar with emergency action team procedures and shall be fully conversant with all regulations and procedures that apply. The EAC works for the MCC under normal peacetime operations and works for the BC during increased alert status or exercises.

5.3.3. **Weapons:**

5.3.3.1. **Senior Director (SD)/Senior Director Technician (SDT) (13B/1C5X1).** The SD is responsible to the MCC for battle management and the use of the fighter forces in the assigned AOR. The SD will supervise the Weapons Director (WD) employment of resources during both daily training and wartime/peacetime missions. The SD will coordinate with other SDs) and the MCC to ensure effective battle management. The SDT assists the SD with the supervision of the weapons team.

5.3.3.2. **WD/Weapons Director Technician (WDT) (13B/1C5X1).** The WD is responsible to the SD for effective utilization of assigned forces during either wartime/peacetime operations or training. The WD and Aircrew are responsible for defending their AOR. The WDT, as the controller's assistant, handles all internal and external telephone coordination, all log keeping duties, and enters, as directed, computer instructions for the mission.

5.3.3.3. **Target Monitor Chief (TgMC)/Target Monitor Chief Technician (TgMCT) (13B/1C5X1).** The TgMC, generally the Target Monitor (TgM), is the supervisor of all target monitoring functions during live air defense exercises. The TgMC is responsible for developing initial target assignment for TgMs, conducting external pre-mission coordination, acting as trusted agent for the exercise director, and monitoring the performance of TgMs during the mission. The TgMC may or may not use an ODC.

5.3.3.4. **TgM/Target Monitor Technician (TgMT) (13B/1C5X1).** The TgM is responsible for monitoring those live target aircraft assigned by the TgMC and ensuring that flight safety between participating and nonparticipating aircraft is achieved. Communications shall be immediately available to contact the appropriate WDs to advise of unsafe conditions. The TgMT is responsible for conducting all internal and external agency coordination (WDTs, TgMCT, FAA, adjacent Sectors, etc.), maintaining all required logs, and responding to all directions from the TgM.

5.3.4. **Identification (1C5X1).** The Identification Technician (IDT) is responsible to the MCC for the identification of all traffic IAW governing regulations. The IDT monitors all tracks of special interest to ensure they conform to the approved route/altitude of flight or reports deviations to the MCC for appropriate action. The IDT coordinates as necessary with the appropriate air traffic control facility regarding the identification of aircraft with the SAOC's AOR.

5.3.5. **Surveillance (1C5X1).** The Air Surveillance section is responsible for detecting, tracking and reporting of air surveillance data and interfacing of other source data such as the RADIL, Anti-Drug Network (ADNET), and Air Operations Center (AOC) Interface Control Unit (AOCAICU) into one complete air picture. This section also directs the optimum configuration of sensors for effective radar coverage.

5.3.5.1. **Air Surveillance Officer (ASO) (13B).** The ASO is responsible to the MCC for the maintenance of an optimal air picture with the Sector AOR including interfacing data from other resources such as E-3 and OTH-B. The ASO supervises two subsections: Air Surveillance and Interface Control. The ASO is responsible for the management of all surveillance/interface control functions and personnel.

5.3.5.2. **Air Surveillance Technician (AST) (1C5X1).** The AST is responsible to the ASO for the maintenance of an optimal air picture within the Sector's AOR. The AST is responsible for the management of all air surveillance functions and personnel within their section.

5.3.5.3. **Data Quality Monitor (DQM) (1C5X1).** The DQM is responsible to the AST for maintaining the best air picture possible through judicious use of available LRR electronic protection (EP) fixes and SAOC computer capabilities. The DQM is responsible for coordinating this activity with the JSS/FAA supervisors at the Sector's LRRs.

5.3.5.4. **Manual Inputs Technician (MIT) (1C5X1).** The MIT is responsible to the AST for inserting into the SAOC computer the data required to initialize the system as well as that data that is not automatically fed into the system. The MIT will also monitor the auto-fed data and be prepared to manually input this information if required.

NOTE: The SAOC director may delete the MIT position and realign those duties to other sections, as appropriate. However, personnel performing duties as a MIT must be qualified IAW instruction.

5.3.5.5. **Tracking Technician (TT) (1C5X1).** The TT is responsible to the AST for performing tracking (active and passive); height checks, if required; and manual track telling duties as assigned. The TT is responsible for an assigned AOR.

5.3.5.6. **Interface Control Officer (ICO)/Interface Control Coordinator (ICC) (13B/1C5X1).** The ICC is responsible to the ASO for the configuration and operation of the RADIL, ADNET, AOCAICU, and other interface equipment within this section. The ICC is responsible for initiating communications with data link participants, and monitoring the quality and quantity of track data received from and sent to external sources other than Sector radar sites.

5.3.6. **Simulation.** During exercises and crew training periods, an additional section is formed to simulate external participants. All duties positions within the simulation section are unit certified.

5.3.6.1. **Simulation Supervisor (Sim Sup) (13B or 1C5X1).** The Sim Sup is responsible to the exercise director for planning, organizing, and implementing the scenario of events, scripted inputs, and sim tapes that are part of the Sector exercise and evaluation program. The Sim Sup will be responsible to the MCC for crew level training.

5.3.6.2. **Interceptor Pilot Simulator (IPS) (13B or 1C5X1).** The IPS is responsible to the Sim Sup. The IPS provides realistic simulation of fighter aircraft.

5.3.6.3. **Air Base Simulator (ABS) (1C5X1).** The ABS is responsible to the Sim Sup. The ABS simulates a base, Fighter Interceptor Squadron (FIS), Combat Alert Center, or an Operational Dispatch Center. The ABS must scramble simulated aircraft as directed, obtain aircraft status, and inform the SD/SDT of all status changes.

5.3.6.4. **Flight Path Simulator (FPS) (11XX/13BX/1C5X1).** The FPS team is responsible to the Sim Sup and simulates higher headquarters and lateral agencies that are not actively participating in the exercise.

5.4. SAOC Minimum Manning Requirements. The SAOC requires the necessary manning to adequately conduct the assigned mission continuously. Manning requirements will be determined by the SAOC Director. It will cover day-to-day operations, periods of increased readiness, and exercises; however, manning shall not be less than that shown in Table 5.1.

Table 5.1. SAOC Minimum Manning Requirements.

POSITION	MIDS	DAYS (Note 3)	SWINGS
MCC	1	1	1
MCCT	1	1	1
EAC	1 (Note 1)	2 (Note 1)	1 (Note 1)
SD	1	1	1
SDT	1	1	1
WD	1 (Note 4)	3	2 (Note 4)
WDT	1 (Note 4)	3	2 (Note 4)
ASO/AST	1 (Note 3)	1	1
DQM	1 (Note 2)	1	1 (Note 2)
TT	2	2	2
IDO/IDT	2 (Note 3)	2	2
MIT	Optional (Note 1)	Optional	Optional
ICC	1	1	1
NOTES:			
1. A qualified person in this position may be manned against another position requiring equal qualification.			
2. AST may also perform DQM functions if qualified (night shifts only).			
3. The SAOC Director may determine minimum manning requirements to meet the SAOC's operation workload on weekends and holidays, but they will never fall below the minimum manning set for mids.			
4. WD/WDT minimum requirements will remain as indicated for each shift until the day's flying, including any active air defense scramble in progress, is terminated. Following the conclusion of daily flying, at the SAOC director's discretion, the minimum requirement for WD/WDT may be reduced on night shifts, provided the SD and SDT are also qualified as WD and WDT, respectively.			

5.5. Sector Expansion Procedures. The ability of SAOCs to expand into adjacent, Partially/Non-Mission Capable (P/NMC) sectors provides additional flexibility in the prosecution of the air defense mission. When notified of possible expansion and the expanding Sector(s) is (are) Fully Mission Capable (FMC), the expansion tape will be loaded and cycled on the alternate string. Actual seizing of the circuits for radar and communications should start when notified by the NMC MCC to implement expansion. If the expanding Sector is PMC, the expansion tape will be cycled on the air sovereignty string immediately upon notification of NMC by NMC SC. The Maintenance Operations Center (MOC) will advise the MCC/MCCT within 5 minutes of the Sector's NMC condition as to the FMC/PMC Estimated Time to Return to Operation (ETRO). If the ETRO is in excess of 20 minutes, expansion procedures will be implemented. If the ETRO is less than 20 minutes, expansion will not take place. If no ETRO can be established within 5 minutes of a NMC condition, expansion will be implemented. During expansion, the NMC Sector will retain command of its resources unless total communications outage does not allow contact with the FMC Sector. Operational control (OPCON) of resources will rest with the Sector that is FMC. Identification of air traffic, scramble and hand-off of interceptors will be accomplished through coordination between SAOCs. During an expansion test, if all the radars are not successfully acquired, the MCC will determine whether to assume air sovereignty or cancel the test. During actual expansion, the appropriate Sector will expand and assume air sovereignty regardless of the

number of radars successfully acquired. Once expansion has successfully taken place, the gaining unit will maintain air sovereignty for a minimum of 30 minutes.

5.5.1. **Responsibilities.** The expanding Sector shall assume the following duties:

5.5.1.1. The MCC/MCCT is responsible for:

- Dissemination of expansion status information.
- Coordination with P/NMC Sector MCC/MCCT.
- Recall of personnel as required.

5.5.1.2. The AST is responsible for:

- Coordinating with the P/NMC Sector AST.
- Assigning surveillance and DQM manning.

5.5.1.3. The DQM is responsible for:

- Disseminating the completion time of established radar and Ground/Air/Ground (G/A/G) circuits.
- Expansion loop discipline.

5.5.1.4. The SD/SDT is responsible for:

- Assigning a G/A/G operator.
- Coordinating with the P/NMC Sector SD/SDT.

5.5.1.5. The IDT is responsible for:

- Assigning optimum ID manning.
- Coordinating with P/NMC Sector IDT.

5.5.2. After the determination that the expanded condition is no longer required, the MCC shall direct the release of data circuits and G/A/G circuits to the controlling Sector. All actions shall be taken to ensure that the integrity of the air defense mission is not compromised in either Sector during the expansion process.

5.5.3. Sectors may supplement expansion procedures with local specific OIs. All such supplements shall be forwarded to 1 AF/DOY for approval.

5.6. **SAOC Equipment.** The SAOC is supported by the following major pieces of equipment:

5.6.1. **H5118ME Central Computer (CC).** The CC is a solid state, dual processor machine. The CC is duplexed and provides the executive system to control program execution, interface communications, and recovery procedures.

5.6.2. **HMD-22 ODC.** The ODC allows operations personnel to maintain close surveillance of the air situation; to detect and track targets in radar clutter; to control aircraft intercepts; and to monitor flight plans. A great amount of pertinent data can be displayed regarding each track or flight plan, but at the same time unnecessary data can be eliminated since selective switching is available.

5.6.3. **Radar Display Unit (RDU).** The RDU has similar configuration controls, surface quality and displays as the ODC. The DQM operator can define up to three live data Sector maps and three simulator data Sector maps for each radar. These Sector maps, in addition to other RDU functions, control the data quality and quantity permitted to be processed within the H5118ME.

5.6.4. **Remote Access Terminal (RAT).** The RAT permits additional information to be entered into the H5118ME data base. The types of data that may be entered are fighter statuses, air base statuses, etc.

5.6.5. **RADIL.** The RADIL permits exchange of TADIL-A information between the H5118ME computer and the AWACS's CC-2 computer.

5.6.6. **NORAD Alert System (NAS).** The NAS permits EAMs to be disseminated throughout the NORAD system. The EAMs generated by command authorities can be forwarded by EAM technician to subordinate units using the NAS circuits.

5.6.7. **AOCAICU.** The AOCAICU is an interface control unit that allows OTH-B data connectivity within the air defense system via the SAOC computer. The AOCAICU will make format changes by reading all incoming and outgoing (forward and backtell) messages and will translate the messages into a format acceptable to all addressees. The AOCAICU basic operation allows present SAOC microwave data forward told to CMAFS to be changed into the advanced communications protocol (ADCCP) Module 128, plus integrate the OTH-B system into the RAOC/SAOC and CMAFS. The unit has two distinct parts: the unit that performs the protocol and a stand-alone terminal, which consists of a monitor, keyboard, disk and printer.

5.6.7.1. For OTH-B integration purposes, the AOCAICU will allow five OTH-B output messages: track, system status, interrogate beam, EA, and free text. All forwarded OTH-B data must pass through the AOCAICU for display at the SAOC and forwarding to SAOC/RAOC/CMAFS. OTH-B track messages are displayed on existing SAOC ODCs while all other OTH-B data will be sent to the stand-alone terminal for display and/or printout. The AOCAICU also allows the RAOC/SAOCs to backtell free text and tasking messages to the OTH-B operations center as required.

5.6.7.2. If at any time the AOCAICU is deemed to be working unsatisfactorily during operations, it may be turned off only after coordination with the CONR Air Defense Director who will in turn notify NORAD ADOC. Taking the AOCAICU off-line will not negatively impact SAOC to CMAFS data; however, without the AOCAICU, OTH-B data cannot be digitally told.

5.6.8. **AICU.** The AICU will replace the AOCAICU. It will have all of the capabilities of the AOCAICU, will be able to accept data from several OTH-B systems, and will also exchange data with multiple US Navy Relocatable Over-the-Horizon Radar (ROTHR) sites and/or Fleet Oceanic Surveillance and Intelligence Center (FOSICs).

5.6.9. **Link Monitoring System (LMS).** The LMS-11 monitors TADIL-A links within the ADS. The LMS-11 displays to the RADIL operator the configuration of the TADIL-A net, e.g., picket unit addresses, net controller, problems associated with the links, etc. It is also used by the RADIL operator to configure the net control system. The LMS-11 is also a useful maintenance tool to detect technical malfunctions and perform diagnostic checks.

5.6.10. **Joint Visual Information Display System (JVIDS).** JVIDS is a software application currently used to process and display information for the ADNET.

5.7. Automated Air Movement Data System (AAMDS). The AAMDS, which replaces the Air Movement Information System (AMIS), provides the timely and reliable transfer of air movement data from the FAA to enhance RAOC/SAOC operational capability.

Chapter 6

*AWACS-SAOC OPERATING PROCEDURES (N/A ICRC)

6.1. AWACS CONUS-SAOC Operating Procedures-General. This chapter establishes procedures of the operations of AWACS aircraft operating with the CONR SAOCs. This chapter complements MCR 55-33, AFI 11-214 (as supplemented), and NR 55-6. Sector BS procedures are included only to the extent that they affect SAOC and AWACS mission crew operations. Internal AWACS procedures are included for SAOC personnel to understand what is required for effective operations with their AWACS counterparts.

6.2. Command and Control. AWACS will normally be under the tactical control (TACON) of a Region. Additionally, there are three levels of decentralization IAW NR 55-16. Initially, the Sector Battle Commander retains authority to declare HOSTILEs (FAKERS), order tactical action (e.g., visual identification, engagement, etc.), determine Combat Air Patrol (CAP) manning, and control fighter flow (launch authority over fighters). AWACS will normally be decentralized Level I. When the BC decentralizes authorities, these authorities are delegated to the SAOC SC or the NABS. When the BC decentralizes, AWACS should expect Level III authorities.

6.2.1. Transition to AWACS decentralized Level III should be considered if equipment problems, EA, and/or the target load stress the SAOC's span of control. In the event of lost communications, AWACS will follow NORAD procedures for succession to command and continuity of operations.

6.2.2. **Joint Procedures--General.** When radio contact can be established, the NABS or the AWACS MCC will contact the Sector BS for E-3 TABS and EAM. If the BS is not manned, contact the MCC via phone patch.

6.2.2.1. En route to station, the AWACS mission crew will:

6.2.2.1.1. Contact the SAOC as soon as possible after takeoff on UHF SATCOM, HF, or UHF Air Intercept Control Common (AICC) for an update briefing on mission taskings, authorities, coordination procedures, air bases statuses, etc. Secure radio connectivity may be attempted; otherwise, KL-43 encrypted messages will be used to pass equipment problems. KY-68 and KY-58 secure devices are also used to communicate.

6.2.2.1.2. The AWACS AST will contact the SAOC AST on the surveillance frequency to review the AWACS/SAOC surveillance procedures; to discuss factors affecting their respective system's performance; agree upon the primary common reference point(s) to be used for point out(s); and discuss identification support that the SAOC can provide.

6.2.2.1.3. The AWACS Communication System Operator (CSO) will contact the ICO to establish RADIL operations and confirm Operations Data (OPDAT) details, link frequency, Net Control Station (NCS) designation, the Data Link Reference Point (DLRP) and Participating Unit (PU) designations. If only two HFs are usable, data tell procedures will be the primary means to exchange track information.

6.2.2.1.4. The AWACS MCC will contact the SD to obtain a summary of the current air situation, fighter base weather updates, and fighter flow plans. Status information will be followed by a review of the procedures to be used for coordinating tactical actions and hand-offs.

6.2.2.1.5. AWACS WDs will establish a listening watch on their counterpart SAOC WD frequencies. When the tactical situation permits, agree on a primary reference point for point outs, obtain fighter statuses, and resolve any procedural questions.

6.2.2.2. The MCC will declare ON STATION and pass additional data to indicate equipment status. Mission crew personnel will inform their SAOC counterparts that they are on station. For weapons, it means the AWACS is ready to accept fighter hand-off IAW ATO instructions; for surveillance, it means AWACS is ready to assist with trouble tracks and commence voice-tell as required. Unless otherwise briefed, the ON STATION call will also signify that the AWACS is capable of interrogating Mode 4 and classifying tracks friendly based on positive replies.

6.2.3. **Surveillance and Identification--General.** To ensure effective battle management, surveillance and identification operations will provide the SAOC and AWACS an identical air track picture within the area of interest. Interoperability among all participants will be facilitated by procedures designed to

provide a common designator for each track in both systems. Any track in one system and not in the other will be told through the RADIL or by voice.

6.2.3.1. Surveillance Procedures:

6.2.3.1.1. When ready, AWACS surveillance will contact SAOC surveillance to initiate a correlation check; 5 miles is the maximum tolerable limit. Once the correlation check is completed, the AWACS (assuming the link is up) will tell all non-interceptor tracks in the assigned area to the RADIL. They will start with priority area/trouble tracks and other low level tracks that may be beneath/outside SAOC radar coverage. Following this, systematic and complete pointouts of other tracks in the area will be passed starting nearest to the coast or exercise target complex/bomb release line (BRL) and proceeding outwards toward the periphery of radar coverage.

6.2.3.1.2. If the SAOC has a track that correlated with a point out by the AWACS, the SAOC will reply with the SAOC track number and, if necessary, correct the identity. Track IDs and category differences will be handled IAW JCS Pub 3.56, 'Tactical Command and Control Planning Guidance and Procedures for Joint Operations.'

6.2.3.1.3. If the SAOC does not have the track pointed out by the AWACS and if a TADIL-A link has been established, the TT doing voice tell will contact the ICO on the surveillance loop and ask for the lateral tell of the track to the SAOC. On the SAOC console, the track will be displayed with a Sector track number. Once displayed, the SAOC will pass any identity change required to the AWACS.

6.2.3.1.4. If the TADIL-link is not up, the AWACS will pass the tracks using a US Message Text Format (USMTF) voice tell format. If the track classification is pending, AWACS will include any applicable modes and codes. **Do not pass Mode 2 codes in the clear.**

6.2.3.2. Identification Procedures:

6.2.3.2.1. All tracks detected within assigned AOR will be classified PENDING and identified using NORAD identification rules published in NI 10-15 and NORADRs, 55-67 and/or 55-68. All tracks not FRIENDLY or SPECIAL will be classified UNKNOWN or FAKER, pending on the identification rules. During exercises, the target monitor team will direct track classification changes in the event a nonparticipant is erroneously classified UNKNOWN or FAKER. All track classification decisions/changes will be passed to the AWACS on the surveillance net by voice, using the common track number.

6.2.3.2.2. AWACS will point out and downtell as FRIENDLY all detected tracks displaying positive Mode 4. Until wartime identification rules are implemented, all other non-interceptor tracks will be pointed out/told as PENDING. The SAOC ID section will classify all PENDINGs and pass the appropriate classification or identity to AWACS. After decentralization (exercise), the TgM teams will identify all exercise participants. Non-exercise tracks will be downtold FRIENDLY if Identification Friend or Foe (IFF) criteria are met; all other non-exercise tracks within the Air Defense Identification Zone (ADIZ) will be downtold PENDING.

6.2.3.2.3. The TgM teams will reclassify neutralized FAKER to ROUND ROBIN and back to FAKER if and when they are regenerated as FAKER by the exercise director. SAOC/AWACS TgM team coordination is necessary to ensure both agencies have the same track classifications. SAOC and AWACS surveillance personnel must be alert for track classification changes.

6.2.4. Weapons Control--General:

6.2.4.1. AWACS MCC will contact the SD to obtain call signs of all interceptors airborne or in airborne/scramble order status. As communications and the tactical situation allow, the SAOC SD will provide interceptor/tanker availability/intentions, post-attack intentions, etc., to the AWACS MCC. Alternatively, the SAOC SD, with AWACS/MCC concurrence, may direct SAOC WDs to pass this information directly to the AWACS WDs.

6.2.4.2. When able, AWACS WDs will come up on the primary SAOC control frequency and establish radio contact with the SAOC WDs for the area. Using IFF/Selective Identification Feature (SIF) and/or pointouts, AWACS WDs will identify and assign symbology to airborne interceptors.

6.2.4.3. The SAOC SD and AWACS MCC will maintain a listening watch on a discrete frequency. The SD and AWACS SD will keep one another informed of observed air situations that may affect air battle management decisions. The SAOC SD will:

- Process all airborne and scramble orders.
- Inform the AWACS SD of bases in Mandatory Scramble Order (MSO) status.
- Inform the AWACS SD of individual aircraft status.

6.2.4.4. Tactical actions and commit priorities taken by the Sector BC are normally passed to the AWACS by the ACWO/E-3 Coordinator. The AWACS may be assigned an area and delegated commit authority within it. The SD should, time permitting, pre-coordinate all tactical actions with the AWACS SD. The AWACS BC or NABS will pass the results of all AWACS tactical actions to the ACWO/C²10/E-3 Coordinator. If the AWACS BC or NABS is unable to contact the ACWO/C²10/E-3 Coordinator, the AWACS MCC will pass the results of all AWACS tactical actions to the SAOC SD. WDs will maintain situational awareness by monitoring the control frequency.

6.2.4.5. Initial fighter check-in will be to the agency controlling the airspace IAW AFI 11-214. Tactical situation and time permitting, PICTURE information for the fighter's assigned lane will be provided in the following sequence:

- Aircraft positioning potential safety problems.
- Uncommitted BANDITs and BOGEYs (including UNSAFE FAKERs, closest first).
- Paired (committed) fighter and targets.
- CAP fighters.

NOTE: The following guidance assumes that the SAOC WD is responding; if that is not the case, simply reverse the AWACS and SAOC roles in the following instructions/examples. After the initial check-in sequence is complete, the AWACS WD will advise the SAOC WD if they do not have radio and/or radar contact with the fighter. If this occurs, the SAOC WD will respond with the fighter's bearing and range from a CAP or JSS site. If AWACS still cannot locate the fighter, the AWACS WD will continue to search the area, requesting additional pointouts as required. If doing so will interfere with tactical action in progress, request assistance through the MCC-SD link.

6.2.4.6. **Handover/Commit.** As a standard operating procedure, the SAOC WD will hand-off a fighter to the AWACS WD when there is a tactical advantage to do so and when a target is in the SAOC's control area but is a trouble track on which AWACS has better radar/tracking data. The fighter will normally be handed back to the SAOC when the mission is accomplished. The AWACS WD, not the SAOC, will determine when this is necessary. The AWACS MCC will coordinate generalized post-attack instructions with the SAOC, based on the threat and battle management plan at the time. WD queries about the other control agency's intentions or the mission is determined by the SAOC SD in coordination with the AWACS MCC. On taking control, the SAOC WD will obtain weapons and fuel state.

6.3. Degraded SAOC Control Environment. There are three basic types of degradation to the SAOC's control ability. In ascending order of severity of impact, they are: loss of radar, loss of computer, and loss of communications. The type of degradation affects both the transfer of surveillance and control from the SAOC to other agencies and the delegation of command authorities. The availability of an on-station E-3 will determine the actions taken when degradation occurs.

6.3.1. SAOC Degraded Radar Procedures:

6.3.1.1. **Surveillance.** When the loss of a radar picture prevents the SAOC from detecting aircraft:

6.3.1.1.1. TADIL-A link or voice tell from an AWACS will be displayed in the SAOC computer and identified using standard operating procedures. The SAOC AST will take immediate action to establish the tell required, determining priority areas of voice tell to ensure mission requirements are met. If an AWACS is on station with ADIZ coverage, its surveillance AOR will be expanded within the ADIZ

without an orbit change. The SAOC AST, through the MCC, will recommend to the DO an AWACS orbit change and/or other means to reconfigure the Sector to support the active air defense mission as necessary.

6.3.1.1.2. An AWACS orbit may be adjusted to cover the loss of a single site's radar. The orbit change would offset the loss of ADIZ coverage without degrading overall coverage.

6.3.1.1.3. If available, GTACS can be used in-garrison to provide surveillance capability.

6.3.1.2. **Weapons.** Interceptor control would be provided solely by AWACS or site (assuming radar and deployed WDs are available at the source) in the area affected. The extent of the radar coverage loss would dictate whether or not the Sector Commander would transition the AWACS from Level I to Level II. If the SAOC has degraded coverage in an area, AWACS should anticipate transition to Level II or Level III, depending on the air situation at the time. Command would be retained at the SAOC. Airborne fighters would be informed of the situation by the SAOC WD and directed to contact the AWACS, JSS site, or augmenting GTACS unit as appropriate.

6.3.2. **SAOC Computer Non-Mission Capable (NMC) Procedures.** Loss of the SAOC computer prevents the SAOC from detecting, identifying or controlling aircraft anywhere in the Sector Commander's AOR. AWACS will receive direction to transition to Level III. JSS sites or augmenting GTACS would be tasked to provide available services in areas that AWACS is unable to control. The TADIL-A link to the RADIL would be maintained to facilitate rapid reconstruction of the SAOC air picture and to provide key BS personnel a visual reference to any critical air situation. All communications links would be maintained. Airborne fighters would be informed of the situation and directed to contact AWACS, JSS site, or GTACS unit as appropriate. Once restored to at least PMC, the SAOC will direct the AWACS to resume operations at the level directed.

6.3.3. **SAOC Communications Out Procedures.** Loss of most or all of the SAOC's communications would probably dictate a change in the C² identifiers. AWACS would assume Level II or III, depending on the situation existing at the time of the communications loss and its communications connectivity. Airborne fighters would have to recognize the communications loss and contact either the AWACS or an adjoining Sector, as appropriate. If unable, Aircrew would commence autonomous operations. Peacetime constraints require employment of specific procedures and the use of SAOC safety monitors when practicing autonomous operations during exercises.

6.3.4. **Degraded AWACS Environment.** As with the SAOC, the AWACS can experience various levels of degraded capability. Depending upon the nature and severity of degradation, the SAOC may alter the designated AOR for the AWACS, its surveillance and weapons control responsibilities, or communications connectivity. With the exception of a complete loss of radar, most system degradations can be compensated for in this manner. The MCC will normally consult with the SAOC MCC to determine appropriate alterations or work-arounds to AWACS responsibilities following equipment outages or degradations. When the BS is formed, the MCC will contact the Sector ACWO to report equipment outages or degradations.

Chapter 7

*ICELAND CONTROL AND REPORTING CENTER (ICRC)

***7.1. Organization.** The ICRC has unique operations equipment. This equipment creates unique operational situations and procedures that set it aside from other RAOCS and SAOCS. The ICRC is comprised of the MCC/MCCT, and the weapons, air surveillance, and identification sections. The ICRC operational procedures outlined below will be supplemented, and amplified as required, by Director of Operations Operating Instructions (DOOIs).

7.2. Chain of Command:

***7.2.1. Operationally.** The MCC is responsible to the Air Defense Commander (ADC) (DESIGNATED HAMMER) for the ICRC operations. The ADC is the AFI/CC's representative located at the 85th Group Command Post (CP) and is responsible for employment of forces during peacetime and through all phases of conflict. In the event the AFI Command Post is evacuated, CP personnel and the ADC will deploy to the ICRC to continue operations.

7.2.2. Administratively:

***7.2.2.1. The 932d Air Control Squadron (ACS).** The 932 ACS/CC, DO, or designated representative are responsible to the 85th Group Commander (85 Gp/CC). All squadron personnel are responsible to the 932 ACS/CC. Although the 932 ACS/CC may be a qualified MCC, duties during increased readiness may preclude that duty.

7.2.2.2. The 932 ACS/DO. The 932 ACS/DO is responsible to the 932 ACS/CC for ICRC personnel's compliance with operations, training, and stan/eval directives. During periods of increased readiness, the 932 ACS/DO will act as the deputy commander and fulfill those duties as directed by the 932 ACS/CC.

7.3. ICRC Operational Procedures:

***7.3.1. MCC/MCCT.** The MCC/MCCT (13B/1C5) will provide direct support to the ADC in C2 operations. The MCC is responsible for the conduct of all air sovereignty operations and training within the region during the duty shift. The MCC is normally in standby status and takes position during contingencies, exercises, and as needed. The MCC will communicate directly with the ADC or 85 Gp/CC regarding peacetime air sovereignty operations IAW AFI/932 ACS DOOIs. The MCC will exercise sound judgment, ensuring the safe and expeditious handling of all air sovereignty-related events, and up-channel reporting procedures within the region. The MCCT is responsible to the MCC and assists the MCC in supervising the conduct of air sovereignty operations and training in peacetime and air defense operations in transition and wartime. The MCCT is responsible for the administrative and operational conduct of the enlisted personnel in the flight.

7.3.2. Weapons Section. The weapons section provides the control necessary for employment/positioning of air defenses resources IAW governing regulations. The missions conducted within the ICRC AOR could include air defense, air sovereignty, assistance to aircraft in distress, flight follow, and air refueling. Weapons control procedures and techniques are contained in MCM 3-1, AFI 11-214 as supplemented, and local governing directives. Weapons positions are SD, SDT, WD, WDT, and TgM.

7.3.2.1. The SD is responsible to the MCC for all WDs assigned to the weapons section and manages interceptor scrambles, target selection, and weapons assignment. The SD will be a fully qualified WD and be highly proficient in the operation of the console and associated communications equipment. The SD must also be capable of rapidly evaluating the air defense threat situation and making timely defensive countermeasures. The SD will supervise the allocation of weapons and management of the weapons function at subordinate units. The SD will:

7.3.2.1.1. Conduct the weapons portion of the crew briefing prior to going on duty. Briefings will include, but are not limited to, the following:

- Weapons manning.
- Control AOR.

- Subordinate/lateral unit control AOR.
- Strategic Orbit Point (STOP)/CAP.
- Air defense fighter status.
- Surface-to-air missile/air defense artillery status.
- Emergency procedures to include divert air bases, if available.
- Rules of Engagement (ROE).

7.3.2.1.2. Understanding system capabilities and limitations of unit equipment and equipment used at subordinate/lateral units.

7.3.2.1.3. Commit air defense weapons to counter the threat.

7.3.2.1.4. Assign control of missions to WDs and coordinate aircraft handovers with other control agencies.

7.3.2.1.5. Monitor assigned missions to ensure effective mission accomplishment and flight safety.

7.3.2.1.6. Assign radio frequencies to specific consoles commensurate with mission requirements.

7.3.2.1.7. Specify in advance and/or as specified in the OPORD, aircraft handover points where control will be passed as launch and recovery.

7.3.2.1.8. Execute ROE.

7.3.2.1.9. Coordinate interceptor fighter scrambles and airborne orders.

7.3.2.1.10. Assign aircraft control to WD and provide mission status briefings.

7.3.2.1.11. Coordinate with the Operations Training Officer (OTO) to allocate training sorties to meet Minimum Training Requirements (MTR). Ensure all missions are briefed/debriefed.

7.3.2.1.12. Provide a thorough position briefing to the relieving SD.

7.3.2.1.13. Ensure that all WDs are aware of existing and forecast weather conditions for their AOR and recovery bases.

7.3.2.1.14. Coordinate with the AST before initiating drop track switch actions.

7.3.2.2. **SDT.** The SDT is operationally responsible to the SD and will assist the SD as directed. The SDT will be a qualified WDT and be thoroughly familiar with WDT duties and responsibilities. The SDT will:

7.3.2.2.1. Understand system capabilities and limitation of unit equipment and equipment used at subordinate/lateral units.

7.3.2.2.2. Be familiar with publications/procedures pertaining to weapons control, employment, and ordnance jettison.

7.3.2.2.3. Coordinate with the WDTs and other control agencies for the smooth transfer of tactical mission aircraft.

7.3.2.2.4. Be thoroughly familiar with authentication procedures.

7.3.2.2.5. Be thoroughly familiar with filing airborne and scramble orders and coordinating airspace for daily training missions.

7.3.2.2.6. Ensure usable voice transmission recordings are being accomplished IAW local directives.

7.3.2.2.7. Complete all forms and records required by the SD. Review all forms prepared by the weapons section for accuracy and content.

7.3.2.2.8. Be thoroughly familiar with the daily flying schedule and ensure WDTs are available for applicable missions.

7.3.2.2.9. Coordinate all airspace requests at least 1 hour prior to takeoff time for scheduled training sorties and as soon as possible after receipt of airborne/scramble orders.

7.3.2.2.10. Provide a thorough positional briefings to the relieving SDT.

7.3.2.3. **WD.** The WD is responsible to the SD for effective utilization to assigned forces during either wartime operations or peacetime training. The WD and Aircrew of assigned interceptors are responsible for defending their assigned AOR. The WD will:

7.3.2.3.1. Understand capabilities/limitations of unit equipment and equipment of other services/allied C² systems.

7.3.2.3.2. Be thoroughly familiar with the performance and ordnance characteristics of all assigned weapons systems.

7.3.2.3.3. Ensure expeditious fighter positioning for interception and/or engagement of assigned airborne targets.

7.3.2.3.4. Ensure an orderly flow of aircraft for hand-off and recovery to other control agencies.

7.3.2.3.5. Inform the SD of conditions/situations that may affect successful mission completion or aircraft safety.

7.3.2.3.6. Inform other WDs of any actions being taken that may affect their control actions.

7.3.2.3.7. Keep Aircrew advised of tactical information that may affect mission accomplishment.

7.3.2.3.8. Pass control instructions to Aircrew and receive Aircrew reports as required.

7.3.2.3.9. Obtain pilot weather reports from aircraft under control and relay them to the SD/SDT.

7.3.2.3.10. Ensure maximum flight safety consistent with overall mission requirements.

7.3.2.3.11. Provide navigational and emergency assistance as required.

7.3.2.3.12. Ensure completion of all appropriate logs/forms.

7.3.2.3.13. Maintain track continuity of assigned aircraft.

7.3.2.3.14. Thoroughly brief the relieving WD on the current operational situation.

7.3.2.3.15. Be proficient in the use of authentication tables.

7.3.2.4. **WDT.** As the controller's assistant, the WDT handles all internal and external telephone coordination, all logkeeping duties, and enters computer instructions for the mission. The WDT will:

7.3.2.4.1. Understand capabilities/limitations of unit equipment and equipment of other services/allied C² systems.

7.3.2.4.2. Be thoroughly familiar with the performance and ordnance characteristics of all assigned weapons systems.

7.3.2.4.3. Report equipment outages/malfunctions to the SDT for relay to the AST.

7.3.2.4.4. Be proficient in the use of authentication tables.

7.3.2.4.5. Report mission results/inflight reports to the SDT.

7.3.2.4.6. Ensure adequate operations support supplies are available for WD use.

7.3.2.4.7. Complete all required forms/logs.

7.3.2.4.8. Thoroughly brief the relieving WDT on the current operational situation.

7.3.2.5. **TgM.** The TgM will be a fully qualified WD responsible to the exercise director for the control and separation of target aircraft during exercise/training operations. The TgM will be provided with a console, air/ground communications, immediate internal communications to all WDs to advise of unsafe conditions, and a TgMT. The TgMT is not a primary duty position, and personnel will be certified rather than evaluated. Although exercise OPORDs will outline specific TgM duties, general TgM duties will include:

7.3.2.5.1. Adherence to the provisions of the exercise Iceland Defense Force/Iceland Directorate of Civil Aviation (IDF/IDCA) Letters of Agreement (LOA) including the requirement to contain participating aircraft within the assigned exercise airspace.

7.3.2.5.2. Identification and establishment of radio contact with each target aircraft upon entry into the TgM's AOR.

7.3.2.5.3. Declaration of target aircraft as 'safe' or 'unsafe.' Instruction of unsafe targets to squawk appropriate modes/codes.

7.3.2.5.4. Notification of WD, SD, and MCC anytime a target has been declared unsafe or has reached a Bomb Release Line (BRL)/Missile Release Line (MRL) without being neutralized.

7.3.2.5.5. Instruction to target Aircrew to return IFF/Selective Identification Feature (SIF) to normal and squawk proper modes/codes upon neutralization or upon reaching BRL/MRL.

7.3.2.5.6. Monitoring the progress of actions against all target aircraft to ensure flight safety.

7.3.2.5.7. Providing current weather and safe recovery information to target aircrews, as required.

7.3.2.5.8. Ensuring the completion of all appropriate logs/forms as required by the exercise OPORD.

***7.3.3. Identification Section.** During normal readiness conditions, the primary requirement is to detect and identify any aircraft entering or passing through the Icelandic Military Air Defense Identification Zone (MADIZ). Establishment of fighter engagement zones, automatic identification zones, safe passage routes, and identification procedures will depend upon the current status of military operations required in Iceland.

***7.3.3.1. The IDT (IC5).** The IDT is responsible to the MCC/T for the identification of all traffic IAW applicable regulations. The IDT monitors all tracks of special interest to ensure they conform to the approved route/altitude of flight, or reports deviations to the MCC for appropriate action. The IDT coordinates as necessary with the appropriate air traffic control facility regarding the identification of aircraft with the ICRC's AOR. The IDT will:

*7.3.3.1.1. Ensure all tracks are properly identified IAW applicable directives.

*7.3.3.1.2. Notify the MCC/MCCT of all tracks that cannot be identified IAW established criteria and pursue all means available to obtain an identity.

*7.3.3.1.3. Notify the MCC/MCCT of all incidents of identification difficulties in the identification section.

*7.3.3.1.4. Disseminate flight plan information on all specific tracks to adjacent air defense control facilities.

*7.3.3.1.5. Be responsible for adherence to identification criteria in accordance with ROE and other air defense procedures.

7.3.4. Air Surveillance Section. The air surveillance section provides for detection, collection, and reporting of air surveillance data. This section also directs the optimum configuration for effective radar coverage under the prevailing atmospheric conditions.

7.3.4.1. AST. The AST is responsible to the MCC for accomplishment of surveillance functions and for both training and supervision of all surveillance personnel. The AST will coordinate with the SD, DQM, and IDT to ensure an accurate display of air surveillance data. The AST will:

7.3.4.1.1. Supervise all functions of the surveillance section: DQM, TT, and ICC.

7.3.4.1.2. Supervise the timely and accurate collection, display and dissemination of air surveillance data.

7.3.4.1.3. Brief the oncoming crew members on current or anticipated operations and equipment and communications operational status.

7.3.4.1.4. Ensure the Air Surveillance section manning is adequate to meet mission requirements.

7.3.4.1.5. Understand system capabilities and limitations, and advise the MCC/MCCT, DQM and maintenance operations center of any malfunctions or equipment degradation that has occurred.

7.3.4.1.6. Assign surveillance AORs to each TT and the E-3 when necessary.

7.3.4.1.7. Analyze and report unusual scope presentations (EA, weather, and transient interference) to the appropriate agencies.

7.3.4.1.8. Ensure proper procedures are maintained for lateral and forward tell between all appropriate agencies.

7.3.4.1.9. Ensure completion of all required reports and logs.

7.3.4.2. **DQM.** The DQM is responsible to the AST for maintaining the best possible air picture through the aggressive use of radar auxiliaries, EP fixes, and ROCC computer capabilities. The DQM must coordinate with the maintenance operations center, radar technicians, computer operators, and communications technicians to ensure a high quality of input data display and output data to lateral agencies and higher headquarters.

7.3.4.3. **TT.** The TT is responsible to the AST for track detection, initiation, and telling of all airborne objects within the ICRC AOR. Additionally, the TT will correlate data from adjacent Regions to ensure track continuity.

7.3.4.4. **ICC.** The ICC is responsible to the AST for the set-up and operation of the RADIL equipment. The ICC is responsible for initiating and maintaining data link with all link participants and monitoring the quality of track data received from and sent to the participants.

***Table 7.1. ICRC Minimum Manning Requirements--Peacetime Operations.**

POSITION	MIDS	DAYS	SWINGS
MCC	(NOTE 1)	(NOTE 1)	(NOTE 1)
MCCT	1	1	1
SD	(NOTES 1, 2)	(NOTES 1, 2)	(NOTES 1, 2)
SDT	(NOTES 1, 2)	(NOTES 1, 2)	(NOTES 1, 2)
WD	(NOTE 2)	(NOTE 2)	(NOTE 2)
WDT	(NOTE 2)	(NOTE 2)	(NOTE 2)
AST	1 (NOTE 3)	1 (NOTE 3)	1 (NOTE 3)
DQM	(NOTE 3)	(NOTE 3)	(NOTE 3)
TT	1	1	1
IDT	1	2	1
ICT	1	1	1

NOTES:

1. MCC will be available for notification and recall within 45 minutes, SD/SDT within 1 hour.
2. Weapons teams will man the ICRC for all contingencies, exercises, and daily training missions. Number of teams is dictated by mission requirements.
3. When a DQM is not present, the AST will be DQM-qualified.

Chapter 8

DOCUMENTATION

8.1. General. Management and control of publications, records, forms and required documentation is essential for the effective management of the ADS. This chapter establishes the requirements and provides guidance for the maintenance of required publications, forms, and documentation.

8.2. RAOC/SAOC Operations Instructions (RAOC/SAOC OIs). A set of OIs will be prepared to detail the local operational policy and procedures that may not be fully explained in higher headquarters directives. All crew positional checklists will have an OI as the basis of authority if no higher headquarters direction exists. OIs may cover such diversified subjects as EAM procedures, aircraft emergencies, commander's notifications, and duty crew administrative policy. OIs will be signed by the appropriate level of authority.

8.3. Operations Information File (OIF). The OIF is required to ensure that information essential to the conduct of operations or emergency conditions is available in the SAOC. Procedures for the OIF are contained in ACCI 13-SACOIF, Volume 3. 1 AF/Air Divisions/Sectors submit draft supplements to ACCI 13-SACOIF, Volume 3 to HQ ACC/DOY. OIs are recommended to establish local procedures for maintenance of the OIF.

8.4. Logbooks:

8.4.1. Logbooks must be maintained at the MCC, AST, DQM, ICC, and any other position as determined by the sector commander. Logbooks are official records of events that occurred during a crew's tour of duty. The purpose is to maintain an accurate and detailed record of all significant events pertaining to operations. The Operations Officer will ensure that the section supervisors properly maintain logbooks. At the SAOC Director's option, AF Form 1924 may be used for exercises.

8.4.2. The following procedures apply for all logbooks:

8.4.2.1. Logbooks will be maintained in a permanently bound book, such as a ledger or journal. A recommended ledge may be obtained under GSA Stock Number 7530-00-286-8363.

8.4.2.2. Logbooks will be classified SECRET as they will contain information concerning actual or simulated exercise alert warnings, states of preparedness, IFF/SIF modes and codes of the day, air-to-ground frequencies, system capabilities, outages, and so forth. Logbooks will be marked, handled, and stored IAW AFI 31-207. Disposition of logbooks will be determined IAW AFM 37-139.

8.4.3. Entries in logbooks will be made in black or blue ink. Erasures will not be made. Errors will be corrected by lining through incorrect words and will be initialed by the person making the correction.

8.4.4. All logbooks will be opened at 0001 or the beginning of each duty day and closed at 2400Z or the end of each duty day. All entries will be made using ZULU time.

8.4.5. It is not necessary to record information that has already been noted in another authorized document, unless it is deemed appropriate for clarity and understanding.

8.4.6. The following entries are required in all logbooks:

- Time of each entry (ZULU).
- Signature of the responsible individual at the beginning and end of the duty day.
- Call sign of unit to which information is passed or received.
- Initial of both individual passing and receiving information.
- Verbal orders or instructions that deviate from standard operating procedures, including name, rank, and organization of the authorizing party. Include any authentication used and if reply was appropriate.
- Requested reports from other units.

8.4.7. Applicable message traffic may be identified in the logbook and stored in a file in the back of the logbook or in a file adjacent to the logbook.

8.4.8. **MCC Logbook.** Entries in addition to the above will include, but are limited to:

- MCC's signature at the beginning and end of duty tour.
- All changes in alert warnings and states of preparedness. Indicate whether actual or simulated or exercise.
- All information concerning aircraft accidents, near misses, and declared emergencies (Operations Report (OPREP) items or other items of significance to the Sector).
- Tactical action taken (when required) against tracks classified non-friendly.
- Weather warnings.
- Mandatory scramble status of assigned air bases, to include reason for mandatory status.
- Start and stop times of all exercises.
- Significant equipment outages affecting operations.

8.4.9. **AST/DQM Logbook:**

- AST/DQM signature at the beginning and end of the tour of duty.
- Equipment status reports submitted or received. Also details concerning major equipment outages that affect unit operations.
- Communications checks.
- Automatic data link up/down status and link establish information.
- Changes in local equipment configuration.
- Real Time Quality Control (RTQC) results.
- Record all monitor checks, EA missions, operational actions, configuration changes, and other entries as required.
- The DQM will also log DQM actions, spectrum interference incidents/reports, Electronic Combat Tactical Action Reports (ECTAR), EA missions, FAA case buzzers/EA denials, and other items that may or do affect the management of the SAOC air picture.

***8.5. Voice Tape Recording.** Tape recording of live air sovereignty mission activity is essential to provide necessary information concerning aircraft accidents, declared emergencies, and/or any event resulting in subsequent investigation. Tape recordings also provide an excellent training tool. The ICRC will additionally use an optical disk system to record and store mission-related data.

8.5.1. **General.** The recommended voice circuits requiring recording are as follows:

8.5.1.1. UHF Guard channel.

8.5.1.2. UHF primary and discrete tactical frequencies.

8.5.1.3. AICC.

8.5.1.4. Other air/ground/air frequencies while in use.

8.5.1.5. External point-to-point communications involving aircraft control.

8.5.1.6. C² lines.

8.5.2. The AST will ensure the recorder is properly prepared. Responsibilities include:

8.5.2.1. Loading and replacing recording tapes.

8.5.2.2. Ensuring the tape recorder is operational at the beginning of the duty tour.

8.5.2.3. Performing checks to confirm recorder serviceability periodically during duty tour.

8.5.2.4. Logging the following information at the beginning of the duty tour:

- Tape number.
- Recorded frequencies and channels.
- Start numbers/point.
- Data and ZULU time.
- Name of person changing tape.

8.5.2.5. The AST will ensure each completed tape is marked with the following:

- Tape number.
- Period covered by the tape.

8.5.2.6. The AST will ensure the completed tapes are placed in proper storage.

8.5.2.7. Tape Retention:

8.5.2.7.1. **Normal.** Recording tapes containing routine information will be retained for a minimum of 15 days. Routine tapes will be reused/recycled in order of their original use.

8.5.2.7.2. **Special.** Recording tapes containing information concerning an accident/incident will be identified, marked and retained in a secure location indefinitely or until the incident is resolved. The MCC or higher authority may direct the tapes to be retained for a specific reason. In such a case, the tape will be marked appropriately with the requester's name, rank, duty title, organization, and disposition instructions.

8.6. COMSEC Requirements. The MCC will ensure that required COMSEC materials (codes and authentication tables) are available to the duty crew. COMSEC materials will be signed out from the unit custodian. Issue, protection and disposition of COMSEC material will IAW AFI 31-209 and AFKAG-1.

8.7. Operations Checklist:

8.7.1. **General.** Operations checklists are listing of steps that must be taken in sequence to respond properly to a particular event. All steps in a checklist must normally be taken before the desired response is complete. Quick reference guides are similar to checklists but do not need sequential steps and can contain charts, maps, telephone listings, etc., in any format or arrangement. Both checklists and guides will list the specific reference documents upon which the procedures are based (manuals, regulations, technical orders, operations instructions, etc.).

8.7.2. **Administrative Requirements.** Operations checklists will be maintained IAW the following administrative guidelines:

8.7.2.1. The size of the checklists and binders will be standardized for each section at each unit. Size choice is optional.

8.7.2.2. The first page of each checklist will contain a sheet showing date reviewed and the initials of the operations officer/reviewer. Signature of the operations officer/reviewer signifies checklists are current. Checklists will be marked according to AFI 31-209 security instructions.

8.7.2.3. The first checklist in any binder/holder will always be the 'Aircraft Emergency' checklist.

8.7.2.4. If checklists are combined with other types of operational guides or documents such as locally developed operator handbooks, the checklists will be placed to the front and separated from other material.

8.7.2.5. Each unit will develop internal review procedures to ensure that only current checklists are in use. All checklists will be reviewed annually at a minimum.

8.8. Quick Reference Guides (QRG). Within the ADS, QRGs will be prepared for all WD duty positions. QRGs may contain the following types of information at a minimum:

- Emergency airfield data and emergency procedures.
- Aircraft resources.
- Air bases and aircraft units.
- Radar units.
- Safe passage corridors.
- ROE.
- Identification criteria.
- Jettison/bail out areas.
- IFF/SIF procedures.
- Communications and frequency information.
- Search and rescue procedures.
- AOR.
- Console and communications procedures.

8.9. Disposition of Documentation. All forms completed during the tour of duty will be appropriately marked and filed together chronologically by date. Forms will maintained a minimum of 90 days and disposed of IAW AFI 73-139.

Chapter 9

*RADAR DATA MANAGEMENT (N/A ICRC)

9.1. Data Quality Monitoring:

9.1.1. **SAOC/JSS.** The DQM and AST positions will be manned with qualified personnel to ensure the highest quality radar inputs are available. The SAOC will develop Letters of Agreement (LOAs)/Memorandum of Agreement (MOAs) between the Sector and FAA for FAA/USAF joint-use LRRs. As a minimum, these agreements will address procedures for the management of data controls and equipment malfunction reporting. The provision contained in JRPG minutes Number 73, Policy and Procedures Document, will be used as a basis for all LOAs/MOAs. The following guidelines will be used for determining the point of contact for reporting equipment malfunctions that affect operating parameters.

9.1.1.1. **Equipment Malfunctions.** All malfunctions will be reported and coordinated through the AD Sector maintenance operations center.

9.1.1.2. **JSS Operating Parameters--Joint Use Radar Sites.** For joint use radar sites, the DQM is responsible for coordinating with the FAA System Engineer (SE) at the appropriate Air Route Traffic Control Center (ARTCC) for any changes to the basis operating parameters.

9.1.2. The appropriate SAOCs will develop LOAs/MOAs with Domestic Air Indication Coordination Center (DAICC) East or West to develop local operating procedures for TARS.

9.2. Radar Configuration Changes. Actions that affect the flow of data could affect the overall air defense picture. The following procedures for configuration changes will apply, unless specifically directed otherwise by the SAOC.

9.2.1. **USAF LRRs.** When the FAA SE requires setting changes to the beacon, search radar or the common digitizer that affect both users, coordination will be accomplished with the respective Sector/DQM at the appropriate SAOC.

9.2.2. **USAF/FAA Joint Use LRRs.** All radar changes at FAA/USAF joint use LRRs must be coordinated with FAA IAW established LOAs/MOAs prior to ADE. At ADE, actions taken to obtain data are considered dynamic in nature and are exempt from prior coordination. When immediate or emergency action is required, and prior coordination with AST/ASO is not feasible, the DQM will direct and approve all configuration changes requiring immediate or emergency action; however, the AST/ASO will be notified of the changes as soon as possible. Procedures will be developed for configuration changes requiring immediate or emergency actions. After the procedures have been coordinated and approved by the ADS/DO, checklists will be published and used to ensure expediency of configuration changes. When the Sector/DQM requires setting changes for live flying exercises, in-flight emergency, execution of OPLAN 3310 or missions against an unknown target, coordination will be accomplished with the SE to return the feature/device change to their normal day-to-day setting at the termination of the event.

9.2.3. **TARS.** Procedures for TARS radar setting changes will be set forth in LOAs/MOAs and will include coordination with the appropriate C³I facility prior to implement.

9.3. Monitor Checks. Each Sector will develop data quality monitor check procedures IAW ACCR 55-74.

9.3.1. **Equipment Status Reports (ESR).** Sector will report equipment status and malfunctions IAW NR 55-1. Specific procedures for reporting equipment outages for subordinate units will be established to ensure that the maintenance operations center is notified of all equipment malfunctions.

9.3.2. Spectrum interference and ECTAR reporting will be IAW applicable directives. Sectors will ensure that all real-world spectrum interference reports include 1 AF/DO as an information addressee. Assistance required to locate the source or resolve frequency conflicts will be requested IAW AFI 10-701. Spectrum interference reports, including drawings, will be kept on file and disposed of IAW AFI 37-139. Spectrum interference reports and ECTARs will be logged in the Station Log. Drawings of spectrum interference incidents will not be reconstructed in the Station Log.

9.3.3. DQM reports will be IAW ACCR 55-74.

9.4. Equipment Status Display. The SAOC will establish a means of displaying their LRRs and TARS current search, common digitizer parameters, equipment outages, and other items as determined by the SAOC. The DQM on duty is responsible for keeping the information current.

Chapter 10

*SAOC COMPUTER SOFTWARE SUPPORT (N/A ICRC)

10.1. General. Computer software support is provided by the SAOC Program Support Office (PSO).

10.2. Mission:

10.2.1. Support the SAOC operations staff in resolving computer software issues.

10.2.2. Support the NORAD Software Support Facility (NSSF) software releases and ensure that NSSF software releases meet the operational requirements of their particular SAOC.

10.3. Specific PSO Responsibilities:

10.3.1. Document, research, verify, and report suspected software problems.

10.3.2. Prepare new software versions for operational use by the SAOC.

10.3.2.1. Apply adaptation/geography.

10.3.2.2. Assist staff in testing changes and updating documentation.

10.3.2.3. Provide information to operations staff on impact of software modifications.

10.3.3. Advise staff on system capabilities and limitations.

10.3.4. Assist staff in analyzing, documenting, validating, and submitting computer software change proposals.

10.3.5. Maintain internal training programs for PSO personnel.

10.3.6. Maintain expansion tape assigned to SAOC and ensure procedures are in place to support software updates and implementation.

10.3.7. Modify and test versions/sub-versions by:

10.3.7.1. Providing and verifying an operational tape for each new version/sub-version, adapted with all site unique environmental data and unique changes.

10.3.7.2. Modifying system exercise and data reduction tape with local adaptation listings to the NSSF after the version/sub-version operational date.

10.3.7.3. Participating in Sector and multi-Sector version verification tests as required.

10.3.7.4. Preparing local version descriptions.

10.3.8. Maintain versions/sub-versions by:

10.3.8.1. Documenting and reporting program problems.

10.3.8.2. Loading Sector expansion tape adaptation changes, unique changes and approved corrections on master tape.

10.3.9. Provide programming support.

10.3.9.1. Validate load decks.

10.3.9.2. Coordinate with other Sector PSOs.

10.3.9.3. Coordinate with NSSF and headquarters agencies on software issues.

10.3.9.4. Discuss and provide software expertise to Sector staff.

10.3.10. Respond to questions from operations and computer maintenance personnel regarding the computer software program.

10.3.11. Provide software support to NSSF for testing, as required.

10.3.12. Publish and maintain the Sector unique TM(NORAD)820/02X, if applicable.

10.3.13. Attend Configuration Review Boards and Sub-Boards, as required.

10.3.14. Maintain lateral and forward tell test procedures.

10.3.15. Support external agency testing (i.e., CONUS RAOC, NSSF, NORAD) as required.

10.3.16. Document research, verify and report suspected RADIL software problems. Test and verify new RADIL software releases.

Attachment 1

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

**Abbreviations and Acronyms*

AAMDS	Automated Air Movement Data System
ABS	Air Base Simulator
ACC	Air Combat Command
ACC/OAC	Area Control Center/Oceanic Area Control
ACCI	Air Combat Command Instruction
ACWO	Aircraft Control and Warning Officer
ADC	Air Defense Center
ADCCP	Advanced Communications Protocol
ADCF	Air Defense Control Facility
ADD	Air Defense Director
ADE	Air Defense Emergency
ADIZ	Air Defense Identification Zone
ADNET	Anti-Drug Network
ADS	Air Defense Squadron; Air Defense System
*ADSI	Air Defense Systems Integrator
ADT	Air Defense Technician
AETACS	Airborne Elements of the Theater Air Control System
AEW	Airborne Early Warning
AICC	Air Intercept Control Common
AICU	Advanced Interface Control Unit
AMD	Air Movement Data
AMIS	Air Movement Information System
ANGB	Air National Guard Base
AOCAICU	Air Operations Center AICU
AOR	Area of Responsibility
ARTCC	Air Route Traffic Control Center
ASO	Air Surveillance Officer
AST	Air Surveillance Technician
ATDL	Army Tactical Data Link
ATDS	Airborne Tactical Data System
MTS	Advanced Tracking System
AWACS	Airborne Warning and Control System
BC	Battle Commander
BRL	Bomb Release Line
BS	Battle Staff
C²	Command and Control
C²O	Command and Control Officer
C³	Command, Control, and Communications
C³I	Command, Control, Communications, and Intelligence
CAF	Combined Air Forces
CANR	Canadian ROCC
CAP	Combat Air Patrol
CARIBROC	Caribbean Region Operations Center
CBRN	Caribbean Basin Radar Network
CC	Central Computer
CCO	Communications-Computer Operations
CCTV	Closed Circuit Television
CDS	Combat Director System
CEO	Communications and Electronics Officer
CF	Canadian Forces
CINC	Commander-in-Chief

CINCUSACOM	Commander-in-Chief, Atlantic
CINCNORAD	Commander-in-Chief, North American Aerospace Defense Command
CMAFS	Cheyenne Mountain Air Force Station
CMC	Cheyenne Mountain Complex
COMAFICE	Commander Air Forces Iceland
COMICEDEFOR	Commander, Iceland Defense Forces
COMSEC	Communications Security
CONPLAN	Contingency Plan
CONR	CONUS NORAD Region
CONUS	Continental United States
CONUS RAOC	CONUS Region Operations Control Center
CP	Command Post
CRC	Control and Reporting Center
CRE	Control and Reporting Element
CSO	Communication System Operator
CW	Continuous Wave
DAICC	Domestic Air Indication Coordination Center
DE	Defense Emergency
DEFCON	Defense Condition
DLRP	Data Link Reference Point
DO	Director of Operations
DOD	Department of Defense
DOOI	Director of Operations Operating Instruction
DQM	Data Quality Monitor
DRPCA	Digital Remote Programmable Conference Arranger
DSN	Defense Switched Network
DTS	Data Terminal Set
EA	Electronic Attack
EAC	Emergency Action Coordinator
EAM	Emergency Action Message
EBS	Expanded Battle Staff
ECRS	East Coast Radar System
ECTAR	Electronic Combat Tactical Action Reports
EP	Electronic Protection
EPM	Electronic Protection Measures
ESR	Equipment Status Report
ETRO	Estimated Time to Return to Operation
FAA	Federal Aviation Administration
FIS	Fighter Interceptor Squadron
FM	Frequency Modulated
FMC	Fully Mission Capable
FO	Fighter Officer
FOSIC	Fleet Oceanic Surveillance and Intelligence Center
FPS	Flight Path Simulator
G/A/G	Ground/Air/Ground
GDSO	General, Deployment and Sustainment Officer
GTACS	Ground Theater Air Control System
HF	High Frequency
I&W	Indications and Warning
IAW	In accordance with
ICC	Interface Control Coordinator
ICO	Interface Control Officer
*ICRC	Iceland Control and Reporting Center
IDF/IDCA	Iceland Defense Force/Iceland Directorate of Civil Aviation
IDT	Identification Technician

IFF/SIF	Identification Friend or Foe/Selective Identification Feature
IJMS	Interim JTIDS Message Specification
IO	Intelligence Officer
IPS	Interceptor Pilot Simulator
ITW&A	Integrated Tactical Warning and Assessment
JCS	Joint Chiefs of Staff
JOTS	Joint Operational Tactical System
JSS	Joint Surveillance Site
JTAO	Joint Tactical Air Operations
JTIDS	Joint Tactical Information Distribution System
JVIDS	Joint Visual Information Display System
LEA	Law Enforcement Agency
LERTCON	Alert Condition
LMS	Link Monitoring System
LOA	Letter of Agreement
LOS	Line-of-Sight
LRR	Long Range Radar
LSVD	Large Screen Visual Display
MACCS	Marine Air Command and Control System
MADIZ	Military Aircraft Identification Zone
MCC	Mission Crew Commander
MCCT	Mission Crew Commander Technician
MCE	Modular Control Equipment
MCS	Modular Control System
MIG	MCE Interface Group
MIT	Manual Inputs Technician
MOA	Memorandum of Understanding
MOC	Maintenance Operations Center
MRL	Missile Release Line
MTR	Minimum Training Requirements
NABS	NORAD Airborne Battle Staff
NAS	NORAD Alert System
NCA	National Command Authorities
NCC	NORAD Command Center
NCS	Net Control System
NM	Nautical mile
NMC	Non-Mission Capable
NORAD	North American Aerospace Defense Command
NOTAM	Notices to Airmen
NSSF	NORAD Software Support Facility
NTDS	Naval Tactical Data Systems
NWS	North Warning System
OCC	Operations Control Center
ODC	Operations Display Console
OG	Operations Group
OI	Operating Instructions
OIF	Operations Information File
OM	Operations Module
OPCON	Operational Control
OPDAT	Operations Data
OPLAN	Operations Plan
OPORD	Operations Order
OPREP	Operations Report
OTH-B	Over-the-Horizon Backscatter
OTO	Operations Training Officer

P/NMC	Partially/Non-Mission Capable
PRIS	Puerto Rican Radar Integration Site
PROC	Puerto Rican Operations Center
PSO	Program Support Office
PU	Participating Unit
QRG	Quick Reference Guide
RADIL	RAOC/AWACS Digital Information Link
RAOC	Region Air Operations Center
RAT	Remote Access Terminal
RDU	Radar Display Unit
ROE	Rules of Engagement
ROTHR	Relocatable Over-the-Horizon Radar
RTQC	Real Time Quality Control
SATCOM	Satellite Communications
SCAT	Security Control of Air Traffic
SD	Senior Director
SDT	Senior Director Technician
SE	Southeast; System Engineer
SHF	Super High Frequency
SHORAD	Short Range Air Defense
SAOC	Sector Air Operations Center
SPACC	Space Command
SROC	Southern Region Operations Center
SRR	Short Range Radar
STE	System Training Exercise
STOP	Strategic Orbit Point
TACON	Tactical Control
TACS	Theater Air Control System
TADIL	Tactical Digital Information Link
TARS	Tethered Aerostat Radar System
TFA	Temporary Free Area
TgM	Target Monitor
TgMC	Target Monitor Chief
TgMCT	Target Monitor Chief Technician
TgMT	Target Monitor Technician
TT	Tracking Technician
TW/AA	Threat Warning/Attack Assessment
UAR	Unattended Radar
UHF	Ultra High Frequency
USAF	US Air Force
USELMNORAD	US Element NORAD
USACOM	US Atlantic Command
USMC	United States Marine Corps
USMTF	United States Message Text Format
USN	US Navy
USSOUTHCOM	US Southern Command
VHF	Very High Frequency
WCRS	West Coast Radar System
WD	Weapons Director
WDT	Weapons Director Technician
WO	Weather Officer