

**BY ORDER OF THE COMMANDER
434TH AIR REFUELING WING**

**434TH AIR REFUELING WING
INSTRUCTION 21-107**



6 APRIL 2015

Maintenance

**AIR TRAFFIC CONTROL EQUIPMENT
MAINTENANCE, RESTORATION, AND
COORDINATION**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available for downloading or ordering on the e-Publishing website at www.e-publishing.af.mil/

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: 434 OSS/OSM

Certified by: 434 OSS/CC
(Lt. Col. David L. Schmitt)

Supersedes: 434ARWI21-107,
14 September 2011

Pages: 15

This instruction implements Air Force Policy Directive (AFPD) 21-1 *Air and Space Maintenance*, Air Force Instruction (AFI) 13-203, *Air Traffic Control*, and AFI 13-204, *Functional Management of Airfield Operations, Chapter 4*. It establishes the responsibilities and procedures for reporting interruptions, malfunctions, restoration priority and response times for applicable work centers within the 434th Operational Support Squadron (OSS), and necessary coordination between offices involved in those actions. This instruction applies to the Air Traffic Control and Landing Systems (ATCALs) Maintenance and Air Traffic Control (ATC) agencies on Grissom Air Reserve Base; and attachments 4 and 5 will also apply to Grissom's Command Post, Airfield Management and Weather Station. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Form 847s from field through Major Command (MAJCOM) publication/forms managers. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afrims/afrims>. The use of the name or rank of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

This publication, 434ARW21-107, *Air Traffic Control Equipment Maintenance, Restorations, and Coordination* have been rescinded and a rewrite accomplished. To include adding ATCALS facilities auxiliary power information, paragraph 7.

1. Scope: Establishes the responsibilities, coordination, and procedures for reporting interruptions, malfunctions, NO-NOTICE Preventative Maintenance, and response times for outages in work centers under the 434th OSS Air Traffic Control and Landing Systems (ATCALS) maintenance responsibility. It also establishes the restoration priorities. Whenever an operational mission requirement dictates an amendment of the Preventive Maintenance Inspection Preventative Maintenance Inspection (PMI) schedule for ATCALS in (See Attachment 2), the Chief of Maintenance (COM) will make the request for change to the Airfield Operations Manager (AOM).

2. Scheduled Maintenance:

2.1. Prior to releasing equipment for scheduled PMIs (**Attachment 2**), ensure the following actions have been completed:

2.1.1. ATC WS/CIC will access the current forecasted weather conditions. Forecasted weather will be a least 3000ft ceiling and 5 miles visibility thru the period the requested ATCALS equipment is to be withdrawn from service.

2.1.2. WS/CIC will assess the current and known forecasted traffic conditions within Grissom's delegated airspace thru the forecasted PMI period.

2.1.3. After release WS/CIC will advise effected agencies that the ATCALS equipment has been removed from service.

2.1.4. No more than one ATCALS facility will be normally released for PMIs at a given time. The exception to this are the ILS facilities, installed at opposite ends of runway.

3. Unscheduled Maintenance:

3.1. Significant downtime request of ATCALS equipment that will impair the flying mission will be coordinated as far in advance as possible with the Airfield Operations Manager or in his absence the ATM during normal duty hours, Monday-Friday, 0730L to 1530L. This will allow the AOM/ATM to sufficiently coordinate the request and obtain Operations Group (OG/CC) approval. The following should be provided if known: ATCALS system affected, estimated start work day, estimated time that the ATCALS equipment will be removed from service, and if Flight Check will be required.

3.2. Non-significant downtime request of ATCALS equipment that will not impair flying mission—the requested equipment has a redundancy and/or the ATCALS equipment can be brought back to service in a moment notice—will be coordinated with WS/CIC and released at the discretion of the WS/CIC.

3.3. Maintenance request of significant ATCALS downtime outside normal duty hours (**Paragraph 5**) will be coordinated thru the WS/CIC. ATC WS/CIC will give notice of the specific equipment requested and downtime to the appropriate agencies; for example, the Command Post will relay to 434th OG or designated representative. ATC WS/CIC will defer maintenance downtime request until approved by the OG/CC or designated authority.

3.4. Emergency conditions that warrant the immediate withdraw of Grissom's ATCALS will be immediately reported to WS/CIC through the COM with the final determination and coordination to shut down the ATCALS equipment by ATC.

3.5. When manpower or other limitation to resources does not permit simultaneous repair of multiple ATCALS outages, the restoral priorities listed (Attachment 4) will be adhered to unless otherwise specified coordinated between COM (or a designated representative) and the customer.

3.6. The RAPCON is designated as the primary NOTAM monitor facility and serves as the focal point for all information concerning ATCALS performance. ATC/CIC will advise Airfield Management for NOTAM dissemination and/or airfield advisory, and Federal Aviation Administration (FAA) affected agencies if approved.

3.7. To maximum extent possible, planned interruptions of ATCALS will be scheduled during periods which ensure the least impact to operational flying activities.

4. Responsibilities and Coordination:

4.1. ATC will:

4.1.1. The WS/CIC will ensure that the equipment outage and completion of the requested equipment downtime is appropriately logged in the RAPCON and/or Control Tower Facility Event log.

4.1.2. The WS/CIC will notify ATM when equipment identified in [paragraph 4.1.1](#) returns to operational service.

4.1.3. When request for unscheduled ATCALS equipment downtime is denied such as for less than adequate weather, the WS/CIC will ensure that the ATCALS technician is afforded an alternate time table and the time is coordinated prior as noted above.

4.1.4. Notify ATM/ATCALS Maintenance of all interruptions/malfunctions of assigned equipment/systems that affect Approach Control Operations (ACO).

4.1.5. The Supervisor on duty will log out the affected equipment with ATCALS at extension 688-4444 (Airfield Systems) and/or 688-3135 (Radar). After ATCALS maintenance normal duty hours, see paragraph 5, follow equipment restoration priority (Attachment 4) and call-back procedures (Attachment 6). Immediately report the shutdown or failure of ATCALS to the NOTAM dispatch center, Airfield Management, to include RAPCON/TOWER published frequencies, Air Traffic Information System (ATIS), etc. Notify the ATM and Airfield Operations when equipment identified in [paragraph 4.1.1](#) returns to operational service if a NOTAM is in effect.

4.1.6. Coordinate the release of ATCALS equipment that will affect approach control operations with the opposite facility prior to releasing the equipment to maintenance.

4.1.7. Notify the duty weather observer of any suspected problems with the FMQ-19 wind information for verification.

4.1.8. Verify equipment outage status with ATCALS maintenance (Phone Numbers [Paragraph 4.1.5](#)) on weekdays, except holidays, between 0730-0830 local.

4.1.9. Report immediately the shutdown or failure of RAPCON primary frequencies and/or DASR to the tower and Chicago Air Routine Air Traffic Control Center (ARTCC).

4.1.10. Notify all affected facilities when wind velocity is forecasted/sustained at 55 knots or greater. Watch supervisor will implement procedures for free-wheeling the DASR antenna ([Attachment 3](#)).

4.2. ATCALs will:

4.2.1. Ensure when the ATCALs facility is removed from service, the identification feature is turned off.

4.2.2. Coordinate approvals with the WS/CIC, who will in-turn notify other affected facilities if necessary when:

4.2.2.1. Maintenance requires shutdown of an operation position.

4.2.2.2. Equipment modifications or changes in technical data, which affect operator use of the equipment, are accomplished.

4.2.2.3. Federal Aviation Administration (FAA) flight check with —monitors will render ILS out of service.

4.2.3. Radar maintenance will advise the RAPCON WS/CIC watch Supervisor or Controller when a situation precludes continued operation of DASR.

4.2.4. If a delay occurs between when the approval is given for shutdown and the time the NAVAID actually will be shutdown, the ATCALs maintenance technician will again verify with the WS/CIC concurrence prior to taking the affected ATCALs facility off the air.

4.2.5. Maintenance technicians will contact the affected ATC facility prior to beginning maintenance on any online ATCALs equipment. Prior coordination is also required for maintenance activities, which may interfere with online equipment, i.e., testing spare radios on an operational frequency. No work may begin until ATC is contacted and releases the equipment to maintenance.

4.2.6. Maintenance technicians will inform the appropriate facility when maintenance action has been stopped/completed. The appropriate facility then determines the operational status of equipment and will notify ATCALs as soon as equipment operation is verified. Maintenance will return ATCALs component to ATC NLT the expiration of the scheduled downtime. This will ensure sufficient time for ATC checks and alignments.

4.2.7. Radar maintenance will advise tower prior to making adjustments to the DASR, which may affect the performance of the TDW, unless safety of flight requires immediate action.

4.2.8. ATCALs COM will coordinate ATCALs flight inspection activities and is the central point of contact for flight inspections and/or operational evaluation deficiencies. If flight check is going to be required following a maintenance activity, notify the ATM as far in advance as possible so appropriate scheduling can be accomplished with the OG, and Flight Inspection Field Office (FIFO).

4.2.9. Airfield Systems will coordinate with the tower and perform navigational aid evacuation (bailout) alarms checks ([Attachment 7](#)).

4.2.10. ATCALs maintenance will respond to outages IAW response time requirements listed in ([Attachment 5](#)).

5. ATCALs Maintenance Hours:

5.1. Normal ATCALs Maintenance duty hours are defined, except of holidays, as Monday thru Friday, 0715-1600 local. Specific start and stop times vary for each technician.

6. ILS Ground Checks:

6.1. While performing ILS ground checks, ATCALs maintenance will comply with 434 ARWI 13-202, Controlled Movement Area Awareness. Also, see [Attachment 8](#).

7. ATCALs Facilities Auxiliary Power:

7.1. All ATCALs facilities at Grissom have auxiliary power. Facilities are identified to be equipped in having the following auxiliary power:

7.1.1. VORTAC, building #714, facility/site has backup power generator also system on UPS.

7.1.2. 05 Localizer, building #702, shelter has backup generator also system on batteries. Batteries are rated to sustain localizer for minimum of 30 minutes.

7.1.3. 05 Glide Slope, building #731, shelter has backup generator also system on batteries. Batteries are rated to sustain glide slope system for minimum of 30 minutes.

7.1.4. 23 Localizer, building #705, shelter has backup generator also system on batteries. Batteries are rated to sustain localizer for minimum of 30 minutes.

7.1.5. DASR, building #624, facility/site has backup generator.

7.1.6. GATR, building #715, facility/site has backup power generator

7.2. Base Civil Engineering Contract Maintenance, DMS, performs all maintenance and monthly testing according to contractual agreement outlined in BOS contract.

7.3. DMS will perform generator start-ups when generator fails to start on its own. All installed generators have an automatic transfer switch sensing the loss of commercial power.

7.3.1. Generator training for ATCALs Maintenance not required.

7.4. DMS performs monthly generator start-ups running generator for minimum one-half hour.

7.5. DMS notifies ATCALs maintenance prior to generator test.

7.6. DMS notifies ATCALs Maintenance when generator degrades from a green status.

7.6.1. ATCALs will notify Airfield Operations Management and ATM of degraded generator status.

7.7. During power outage, ATCALs Maintenance ensures affected facilities are operational. If not, ATCALs notifies CE, Airfield Operations Management, and ATM.

7.8. DMS has mobile generator available to support loss of facility primary backup generator.

7.9. DMS monitors generator fuel tank for fuel consumption adding fuel as needed for continual auxiliary power support.

DOUGLAS J. SCHWARTZ, Col, USAFR
Commander

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 13-203, *Air Traffic Control*

AFPD 21-1, *Air and Space Maintenance*

AFI 13-204, *Functional Management of Airfield Operations, Chapter 4*

Abbreviations and Acronyms

ACO—Approach Control Operations

AF—Air Force

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFSATCOM—Air Force Satellite Communication

AFPD—Air Force Policy Directive

AOM—Airfield Operations Manager

ARW—Air Refueling Wing

ASR—Airport Surveillance Radar

ATC—Air Traffic Control

ATCALS—Air Traffic Control and Landing Systems

ATIS—Automatic Terminal Information System

ATM—Air Traffic Manager

CE—Civil Engineering

CMA—Controlled Movement Area

COM—Chief of Maintenance

CP—Command Post

CS—Communication Squadron

DASR—Digital Airport Surveillance Radar

ETVS—Enhanced Terminal Voice Switch

FIFO—Flight Inspection Field Office

ILS—Instrument Landing System

LED—Light-Emitting Diode

MAJCOM—Major Command

NOTAM—Notice to Airmen

OPR—Office of Primary Responsibility
PIDP—Programmable Indicator Data Processor
PMI—Preventative Maintenance Inspection
PSR—Primary Surveillance Radar
RAPCON—Radar Approach Control
RCP—Radar Control Panel
RDS—Records Disposition Schedule
SCAMP—Single Channel Anti-Jam Manportable
SCDI—Site Control and Data Interface
SSR—Secondary Surveillance Radar
STARS—Standard Terminal Automation Replacement System
TDW—Tower Display Workstation
WS/CIC—Watch Supervisor/Controller-in-Charge

Attachment 2

SCHEDULED PREVENTIVE MAINTENANCE INSPECTION

<u>SYSTEMS</u>	<u>TIME</u>	<u>DAY</u>
FRN-44	0800-1000	TUESDAY
FRN-45	0800-1000	TUESDAY
GRN-29	0800-1000	THURSDAY
GPN-30 (DASR)	0700-0900	MONDAY
FSQ-208 (STARS)	0700-0900	WEDNESDAY

Attachment 3

PROCEDURES FOR FREE-WHEELING/STOPPING THE DASR ANTENNA

- A3.1.** Ensure that the Radar Control Panel (RCP) has control.
- A3.2.** Determine which channels of the Primary Surveillance Radar (PSR), Secondary Surveillance Radar (SSR), and Site Control Monitoring Interface (SCDI) are selected.
- A3.2.1. Look at the SELECTED buttons/indicators.
 - A3.2.1.1. Green Light-Emitting Diode LED beneath A: Channel A is selected.
 - A3.2.1.2. Green LED beneath B: Channel B is selected.
- A3.3.** Place the unselected channels of the PSR, SSR, and SCDI into Maintenance mode.
- A3.3.1. Press the PSR/SSR/ACDI A or B buttons for the unselected channels.
 - A3.3.1.1. LEDs will change to amber.
- A3.4.** Place the unselected channels of the PSR, SSR, and SCDI into Maintenance mode.
- A3.4.1. Press the PSR/SSR/SCDI A or B buttons for the unselected channels.
 - A3.4.1.1. LEDs will change to amber. NOTE: If any of the channel LEDs illuminates red instead of amber or green, continue with the procedure. Even though red indicates a failed channel, the antenna can still be shut down.
- A3.5.** Press the Antenna button.
- A3.5.1. LED will change from green to red, indicating the antenna has stopped rotating.
 - A3.5.1.1. Several buttons on the RCP will illuminate red, because stopping the antenna causes both the PSR and SSR transmitters to shut down.

Attachment 4

EQUIPMENT PRIORITY LIST

PRIORITY 1

AIRFIELD SYSTEMS:

AN/GRN-30 (Active Localizer)

AN/FRN-45

AN/FRN-44

AN/GRN-31 (Active Glide Slope)

RADAR:

DASR

STARS

AIRFIELD SYSTEMS (GROUND RADIO):

Air Traffic Control Radios

CP AN/FSC-125 SCAMP Radio, Fixed-Based

CP UHF Radios (GRC-221)

Air Traffic Control Recorders

PRIORITY 2

AIRFIELD SYSTEMS:

AN/GRN-30 (Inactive Localizer)

AN/GRN-31 (Inactive Glide Slope)

Automatic Meteorological Station (AN/FMQ-19)

AIRFIELD SYSTEMS (GROUND RADIO):

Flight Data System

ATIS (Automatic Terminal Information Service)

Base Operation Radio

Base Weather Radio

Note: An active runway ILS system will always take precedence over an inactive runway ILS system.

Attachment 5

EQUIPMENT RESTORATION RESPONSE TIMES

A5.1. Operational capability is the ability of the assigned system to satisfy mission requirements and is defined as follows:

A5.1.1. Outage: Red-Ability of the equipment is limited or degraded to a point that mission requirements cannot be met.

A5.1.2. Impairment: Amber-Ability of the equipment is limited; however, mission requirements can still be met.

A5.1.3. Fully Operational: Green-Equipment is fully mission capable.

A5.2. The customer may determine that response to any priority is not required until the next duty day if adequate back-up capability exists to satisfy mission requirements.

A5.3. ATCALS technicians are not to exceed the listed response times unless unusual circumstances warrant a delay—for example, weather, higher priority maintenance, runway closer, etc..

A5.4. Normal ATCALS duty hours are defined as Monday through Friday, with core duty hours as 0900-1500 (except for holidays). Specific start and stop times vary for each functional area.

A5.5. Response Times (During Normal Duty Hours): The response times listed below may vary IAW **paragraph 4.3**.

Table A5.1. Response Times (During Normal Duty Hours).

PRIORITY	RED OUTAGE	AMBER OUTAGE
1	NLT 1 Hour	NLT 1 Hour
2	NLT 1 Hour	NLT Next Duty Day

A5.6. Response Times (During After Duty Hours): The response times listed below may vary IAW **paragraph 4.3**.

Table A5.2. Response Times (During After Duty Hours).

PRIORITY	RED OUTAGE	AMBER OUTAGE
1	NLT 3 Hours (plus travel)	NLT 4 Hours (plus travel)
2	NLT 4 Hours (plus travel)	Next Duty Day

Attachment 6

ATCALs MAINTENANCE AFTER-DUTY-HOURS CALL-BACK PROCEDURES

A6.1. NOTE: The call-back procedures will be utilized for calling in ATCALs equipment outages. This procedure pertains only to systems listed in the equipment priority list, [Attachment 3](#).

A6.2. Call ATCALs maintenance supervisor's cellular phone: Supervisor's cellular phone number will be made available.

A6.3. If no answer, call the ATCALs supervisor's home number. Home number will be made available. If no answer, leave message on voice mail.

Attachment 7**PROCEDURES FOR TESTING THE EVACUATION ALARMS AT ILS SHELTERS**

A7.1. The Localizer/Glide Slope evacuation alarm (bailout alarm) testing will be performed as part of the ATCALs maintenance routine PMI, 28-day.

A7.2. Airfield Systems Technician will:

A7.2.1. Contact ATC tower controller either by LMR or telephone.

A7.2.2. Request ATC tower controller to active evacuation alarm and remain on LMR/telephone standby while sounding alarm.

A7.2.3. Listen for alarm to sound at shelter.

A7.2.4. Reply back to tower controller with alarm status and to de-active alarm; test completed. If alarm didn't sound, take normal maintenance action.

Attachment 8

CONTROLLED MOVEMENT AREA AWARENESS- ILS GROUND CHECKS

A8.1. ATCALs maintenance ILS ground check areas that are inside of the CMA:

A8.1.1. 23 Localizer near-field degree marks- 10/90 thru 10/150

A8.1.2. 05 and 23 Localizer centerline far-field markers

A8.2. CMA procedures, definition, and diagram are located in 434th Air Refueling Wing Instruction (ARW) 13-202 GRISSOM AIRFIELD FLIGHTLINE DRIVING PROGRAM and 434ARWI 13-201 (GRISSOM AIR RESERVE BASE AIRFIELD OPERATIONS).