

**BY ORDER OF THE COMMANDER  
50TH SPACE WING**

**50TH SPACE WING INSTRUCTION  
10-217**



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**Operations**

**AIR FORCE SATELLITE CONTROL  
NETWORK (AFSCN) USERS'  
OPERATIONS INSTRUCTIONS**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements AFPD 10-2, *Readiness*, by establishing requirements, responsibilities, products, and interfaces involved in the management and conduct of the Air Force Satellite Control Network (AFSCN) operations. This publication applies to all activities and organizations, including AFRC and ANG units, supporting and using AFSCN controlled resources. Contractor personnel requirements and responsibilities contained within this instruction may be modified for a specific purpose through a validated Performance Work Statement (PWS). The PWS must indicate specific paragraphs that are being modified. Each squadron, detachment, organization, section, or operational area may develop supplements to this instruction. Send one copy to 22 SOPS/DOK, 401 O'Malley Ave, Suite 51, Schriever AFB, CO 80912-3051. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*. Submit requests for waivers to the Publication OPR for non-tiered compliance items.

**SUMMARY OF CHANGES**

This interim change revises 50SWI 10-217 by (1) Replacing attachment 2 with an updated version of the priority matrix. A margin bar (|) indicates newly revised material.

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## Chapter 1

### AFSCN OVERVIEW

**1.1. Overview.** This chapter provides an overview of the Air Force Satellite Control Network (AFSCN) organizations, systems, products, and terminology.

**1.2. Air Force Satellite Control Network (AFSCN).** A global ground and space-based network comprised of two Operational Control Nodes (OCNs), land and space based Defense Information Systems Agency (DISA) communications connectivity, seven Remote Tracking Stations (RTSs) and one test resource facility dedicated to support Department of Defense (DOD) communications, weather, research and development, and intelligence gathering space programs.

**1.3. Operational Control Node (OCN).** Provides routing and switches that connect users to RTSs.

1.3.1. Schriever Air Force Base OCN (SAFB OCN) - located at Schriever Air Force Base (SAFB).

1.3.2. Vandenberg Air Force Base OCN (VAFB OCN) - located at the Ellison Onizuka Satellite Operations Facility (EOSOF) on Vandenberg Air Force Base (VAFB).

**1.4. Remote Tracking Station (RTS).**

1.4.1. Seven RTSs located around the world provide uplink and downlink connectivity to the space vehicle. Each station maintains at least two antennae, or sides. Each side can support a single contact at a time.

1.4.2. RTS Test Resource Facility (RTSTRF), located at SAFB, used for testing and evaluation of Inter Range Operations Number (IRON) databases and transport resources.

1.4.3. See Attachment 3 for a detailed list of the AFSCN RTSs.

**1.5. Roles and Responsibilities.** The following organizations are responsible for operating, maintaining, and managing AFSCN assets:

1.5.1. 50th Network Operations Group (50 NOG) - oversees all AFSCN operations and sustainment.

1.5.2. 21st Space Operations Squadron (21 SOPS) - oversees all AFSCN communications assets and those range assets located at Diego Garcia, Guam, Hawaii, and VAFB. 21 SOPS operates and maintains the AFSCN OCN facility on VAFB.

1.5.3. 22nd Space Operations Squadron (22 SOPS) - oversees all network management assets and those range assets at SAFB. 22 SOPS functions as the primary interface for all AFSCN users. They are responsible for developing, maintaining, and enforcing operational directives and policy within the AFSCN.

1.5.4. 23rd Space Operations Squadron (23 SOPS) - oversees those range assets located in Greenland, England, at Cape Canaveral, and at New Boston Air Force Station (AFS). 23 SOPS operates and maintains the New Boston AFS.

1.5.5. 50th Space Communications Squadron (50 SCS) - operates and maintains the AFSCN OCN facility on SAFB.

**1.6. AFSCN Resource.** Any physical asset within the AFSCN construct that provides support to authorized satellite operators.

1.6.1. Common User Element (CUE) - those resources available to multiple users.

1.6.2. Mission Unique Equipment (MUE) - those resources used only by a specific mission.

1.6.3. User assets - those assets outside direct AFSCN control that utilize AFSCN resources to support various space programs.

1.6.4. Range assets - those AFSCN ground assets that provide a direct interface with space-based systems.

1.6.5. Communications assets - those AFSCN assets that provide a conduit between user and range assets.

1.6.6. Network management assets - those AFSCN assets that direct and control the use of AFSCN resources.

**1.7. AFSCN User.** Any organization utilizing AFSCN resources.

1.7.1. Internal Users – AFSCN users assigned to 50th Space Wing (50 SW).

1.7.2. External Users (EXU) - AFSCN user organizations that are not assigned to the 50 SW.

**1.8. Inter-range Operational Number (IRON).** A randomly generated unclassified four-digit number assigned to each space vehicle, as supported in flight or pre-flight.

**1.9. Products.** Numerous documents are developed and distributed to support the AFSCN mission. Requirements for various messages not detailed here are obtained from the applicable Memorandums of Agreement (MOAs) for the supporting agencies. See **Chapters 2** through 4 for development and distribution of scheduling products. The following documents are applicable to AFSCN CUE resources:

1.9.1. **Network Tasking Order (NTO).** The culmination of all phases of NTO development, it is the official AFSCN tasking schedule published daily in 24-hour blocks. The NTO identifies which AFSCN resources (range assets, communications assets, and other supporting assets) are assigned to each flight and non-flight activity. These tasks are indicated in Electronic Schedule Dissemination (ESD) by equipment mnemonics at assigned specific support times for each site-side. The NTO is developed through completion of three basic phases:

1.9.1.1. Seven-day Forecast.

1.9.1.2. Conflict Briefing Operations.

1.9.1.3. Realtime period is the published Network Tasking Order (NTO).

1.9.2. **Three-month Forecast.** An official notification to all AFSCN users of the intent to schedule an activity. The three-month forecast includes upcoming major operations and planned downtimes.

1.9.3. **Seven-day Forecast.** Published within the seven-day Forecast phase of NTO development, it is a forecast of all flight and non-flight activities for the upcoming seven-day

period. The seven-day forecast is used to establish the initial definitive tasking schedule for AFSCN resources and frequency control messages for the Remote Ground Facility (RGF). Maintenance as well as user Satellite Acquisition Table (SAT) and Program Action Plan (PAP) information is loaded to ESD for the seven-day period.

1.9.4. **Pre-Deconfliction Listing.** Published within the Conflict Briefing Operations phase of NTO development, it identifies satellite contacts in conflict with other activities and provides any suggested modifications to nominal satellite configuration required to alleviate conflict.

1.9.5. **NTO.** Published every 24 hours, it consists of:

1.9.5.1. Conflict Briefing list which identifies AFSCN wide impacting maintenance downtime, Conflict Deletes, Conditional Deletes, and To Be Resolved (TBR) conflicts.

1.9.5.2. A 24-hour schedule that identifies authorized usage of AFSCN resources which includes all flight (launch support, satellite contacts) and non-flight (downtime, training, etc.) activity.

1.9.6. **Realtime Change Message.** Notification of a flight or non-flight activity change made to the current NTO. ESD provides realtime change notifications and tracks which AFSCN users and work centers have acknowledged receipt.

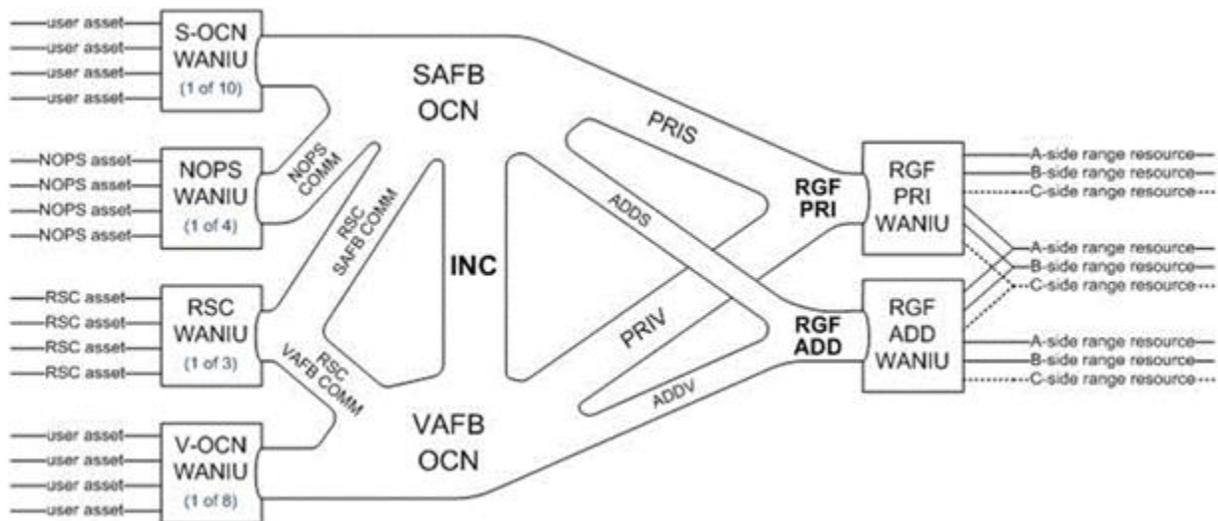
1.9.7. **Manning Schedule Change (MSC).** AFSCN users are required to submit an MSC to affect or acknowledge a change to their support requirements within the seven-day and conflict briefing periods. This MSC provides 22 SOPS authorization from the Satellite Control Authority (SCA) to add a new contact or to delete or modify an existing satellite contact previously entered to the schedule. An MSC provides an audit trail for subsequent review and investigation purposes should the need arise.

1.9.8. **Downtime request.** A formal request for maintenance, testing, validation, or system checkout that will cause a scheduled loss, limit, or risk of loss of AFSCN resources.

1.9.9. **AFSCN Outage Report.** An AFSCN outage report identifies and reports an unscheduled loss or limitation of AFSCN resources. It is used primarily by the user and network scheduler personnel to mitigate risk to space missions, and by maintenance and logistics personnel for trending purposes.

1.9.10. **Mission Impact Report (MIR).** Provides AFSCN users a process for reporting less than successful satellite contacts when problems encountered are suspected or known to be caused by AFSCN assets, or when the cause is unknown. A MIR will initiate the process for determining and addressing the reason for the unsuccessful support. MIRs are used to document anomalies, provide audit trails, and determine trending data for recurring problems. See [Chapter 6](#) for MIR requirements.

1.9.11. **Ancillary Event.** This product provides details of abnormal conditions of AFSCN assets when they are not captured by a downtime or outage report.

**Figure 1.1. AFSCN Communications Overview.**

**1.10. AFSCN Communications Network.** The AFSCN communications network is designed to provide operators the ability to create dynamic communications connections between user and range assets. See figure 1.1. The following describes the chief elements of the AFSCN communications network:

1.10.1. Inter-nodal communications (INC) - a communications link between the OCNs. INC provides a path for contingency routing should direct communications with either node fail. Communications connections across the AFSCN network automatically re-route across INC without operator intervention.

1.10.2. Primary communications (PRI) - the primary communications between an OCN and a RGF. PRI carries both Primary Secure Voice (PSV) and vehicle data.

1.10.3. Additional communications (ADD) - the additional communications between an OCN and a RTS. ADD provides operators with an additional route for mission data should PRI fail, or the opportunity to redirect telemetry or commanding in addition to using PRI.

1.10.3.1. Operators must explicitly connect to range resources using PRI and/or ADD. The AFSCN communications network is designed to keep PRI and ADD traffic separate, and places the onus on the operator to route operational traffic around failures or downtimes of either communications system.

1.10.4. Wide Area Network Interface Unit (WANIU) - provides users the interface into the AFSCN communications network. User and range assets are connected to ports of a WANIU, so operators may create dynamic connections between those assets.

1.10.4.1. RTS WANIU - Each RTS maintains a WANIU for Primary connectivity (PRI) and one for Additional connectivity (ADD).. EVCF maintains a single WANIU for PRI connectivity only. These WANIUs provide port connectivity for range assets, such as commanding, telemetry and IRIG-B signals, and port connectivity for transporting subsystems, such as secure voice and ESD.

1.10.4.2. OCN WANIU - provides port connectivity for user assets at the OCNs, and port connectivity for transporting subsystems, such as Secure Voice and ESD.

1.10.4.3. EXU (NOPS and RSC) WANIU - provides external users a direct interface into the AFSCN network.

1.10.4.4. OCN WANIUs and EXU WANIUs are not restricted to PRI or ADD and route over the communications system as configured by the operator.

1.10.5. Distributed Communications Controller (DCC) - the application, and the workstation on which it runs, that allows an operator to configure, monitor, and release communications resources between WANIU ports.

1.10.6. Control and Monitor (C&M) - AFSCN communications between DCC and WANIU, which provides the conduit for controlling and monitoring WANIUs, WANIU ports, and the dynamic connections between. C&M will route around failures of PRI or ADD.

1.10.7. AFSCN Operational Signals (AOS) - WANIU connections dynamically established by operators for each satellite contact.

1.10.8. Static Connections - WANIU connections permanently maintained by the communications work centers in support of various subsystems and user missions. Static connections with an RGF traverse either PRI or ADD depending on which RTS WANIU is assigned.

1.10.9. C&M, AOS, static connections, and test connections all share the same available bandwidth between locations. Users should be cognizant of possible limits in available bandwidth when establishing AOS. ADD typically provides less throughput, or bandwidth, for mission data than PRI.

**1.11. Electronic Schedule Dissemination (ESD)** . ESD is a global computer network used to disseminate AFSCN network management products.

**1.12. 22 SOPS Network Operations Center (22 SOPS NOC).** The 22 SOPS NOC produces and maintains the integrity of the NTO and is responsible for all operational aspects of the AFSCN. The 22 SOPS NOC includes the following functions:

1.12.1. Network Crew Commander / Network Crew Chief (NCMDR/NCCH) - provides operational command and control over all AFSCN resources, and oversees AFSCN outage reporting.

1.12.2. Network Scheduling - develops and publishes the NTO, allocates AFSCN resources, and manages Realtime activities.

1.12.3. Orbital Analysis - produces orbital products such as pointing data and Radio Frequency Interference (RFI) for NTO production.

1.12.4. 22 SOPS Mission Planning - coordinates, inputs, and tracks downtime requests and other non-flight activities.

**1.13. 50 SCS Comm Focal Point (CFP).** The CFP provides a focal point for discrepancy reports and maintenance activity. The AFSCN functions of the CFP include:

1.13.1. Maintain a historical record of AFSCN discrepancies and outages for trending.

1.13.2. Maintenance Control - oversees maintenance activities of AFSCN systems and processes requests for depot level maintenance support.

1.13.3. SAFB Tech Control Facility (SAFB TCF). The SAFB TCF maintains the AFSCN communications circuits terminating at SAFB, operates encryption gear for AFSCN services at SAFB, provides administrative support of AFSCN communications devices, and provides support for the integrated EXU assets located at SAFB. It prioritizes all maintenance activity occurring within Mod 3/4.

**1.14. SAFB Secure Voice Operations (SAFB SVO).** SAFB SVO supports voice connectivity through SAFB for AFSCN operations.

**1.15. 21 SOPS Network Operations Center (21 SOPS NOC).** 21 SOPS NOC oversees AFSCN operations at VAFB and includes the following sub-functions:

1.15.1. Network Operations - manages communications oversight for the AFSCN enterprise. This includes maintaining AFSCN comm situational awareness, reporting, and outage resolution coordination.

1.15.2. Comm Control - oversees the identification and resolution of communication failures and degradations, and provides support for the integrated EXU assets not located at SAFB.

**1.16. EOSOF Patch and Test Facility (PTF).** The EOSOF PTF maintains the AFSCN communications circuits terminating at the EOSOF, operates encryption gear for AFSCN services at EOSOF, and provides administrative support of AFSCN communications devices.

**1.17. VAFB Secure Voice Operations (VAFB SVO).** VAFB SVO supports voice connectivity through VAFB for AFSCN operations.

**1.18. RTS Comm Area.** RTSs maintain a communications area to provide support for operations and maintenance of collocated communications assets.

## Chapter 2

### REAL TIME OPERATIONS

**2.1. Real Time Operations.** The period from now until the end of the latest published NTO. ESD servers and workstations continuously display the end time of the latest published NTO known as the Real Time Boundary. Network Scheduling responds to all realtime changes necessitated by SCA requirements, outage conditions, or satellite anomalies.

#### **2.2. Policy:**

2.2.1. All AFSCN users, RGFs, and supporting agencies will adhere to the NTO.

2.2.2. The 22 SOPS NOC maintains operational command and control over AFSCN resources.

2.2.2.1. Any modification to the NTO that increases network tasking (i.e., early radiation requests, contact adds or extensions, including additional resources) must be coordinated with and approved by Network Scheduling prior to the action being taken.

2.2.2.2. The conflict resolution process is used for both planned (Conflict Briefing period) and unplanned (Realtime) conflict situations. If a conflict involves two requirements from within the same agency, it will be resolved internally by the agency, and the final solution provided to Network Scheduling. When a conflict involves separate agencies, scheduling will make every effort to resolve the conflict based on existing priorities within attachment 2, the approved classified priority matrix and any other dynamics involved. If unresolved this conflict becomes a TBR and is presented to the NCMDR/NCCH at least two hours prior to the start of the pre-pass for the earliest requested satellite contact in conflict. The NCMDR/NCCH will make the final decision and pass results to Network Scheduling at least 30 minutes prior to the start of the pre-pass for the earliest requested satellite contact in conflict.

2.2.2.3. The recognized Satellite Control Authority (SCA) for a vehicle is the only agency that may request changes to a flight activity, unless they have previously authorized and coordinated with 22 SOPS for another agency to do so.

2.2.2.4. AFSCN users may submit an MSC when a block change is required and is pre-coordinated with Network Scheduling. Scheduling will deconflict/coordinate as required to incorporate the requested changes.

2.2.2.5. AFSCN users are authorized to access AFSCN resources from the first second of start of prepass as scheduled on the NTO, and must release resources prior to the first second of the stop time listed on the NTO.

2.2.3. Network Scheduling is the approval agency for all RTS free-space radiation requests.

2.2.3.1. An RTS need not radiate during the entire block of time authorized on the NTO, but an RTS may not radiate outside of the authorized radiate times.

2.2.4. Non-flight activities requiring AFSCN CUE must be accomplished during the time specified on the NTO. The times that appear on the NTO are to be used for activity specified

in the schedule, and are not to be used for other purposes without prior coordination and approval.

2.2.5. Use secure communications whenever possible. When secure communications are not available, all parties will use appropriate call-back procedures.

2.2.6. Network Scheduling will notify all affected AFSCN users and work centers of changes to the NTO via ESD realtime change notifications or by voice when ESD is not available.

2.2.6.1. AFSCN users and work centers will acknowledge ESD change notifications upon receipt.

2.2.6.2. Network Scheduling will contact, by voice, any affected AFSCN users or work centers who have not acknowledged an ESD change notification when the start time is within two hours.

2.2.7. Network Scheduling will use the AFSCN Satellite Contact Priority List in Attachment 2 when approving, coordinating and processing adds, deletes, or modifications to the published NTO, and coordinate with the NCMDR/NCCH to provide resource allocation direction when established priority guidelines fail to resolve conflicts.

2.2.7.1. A classified Priority Matrix is available to the NCMDR/NCCH/NSCH to further clarify mission priority.

2.2.8. When a vehicle anomaly occurs, the impacted AFSCN user will immediately contact Network Scheduling and declare the appropriate satellite contact priority, using the AFSCN Satellite Contact Priority List available in Attachment 2.

2.2.9. AFSCN users and work centers will notify Network Scheduling of early termination of scheduled activities when there is a scheduled short turnaround to (TAT) the next scheduled activity or the activity is terminated early by five or more minutes.

**2.2.10. Outage Conditions: See 50SWI 10-224 for outage responsibilities**

2.2.10.1. Network Scheduling will contact those users adversely impacted by an outage condition to determine contact support alternatives.

2.2.10.2. Network Scheduling will not alter any flight activity in the NTO that cannot be supported due to an outage condition, unless the affected AFSCN user authorizes a deletion, limitation or a move of the impacted activity.

2.2.10.3. If a problem occurs during a satellite contact, the affected AFSCN user will immediately alert all personnel on the net supporting the satellite contact.

2.2.10.3.1. All alerted personnel will in return provide the status of equipment at their location.

2.2.10.3.2. The AFSCN user will report any mission impact IAW the MIR process ([Chapter 6](#)) and include in the report the statuses provided by each location.

**2.2.11. NOC Override:**

2.2.11.1. 22 SOPS will develop, distribute, enforce and maintain NOC Override procedures designed to quickly and efficiently enhance AFSCN access and enforce the NTO.

2.2.11.2. The NCMDR/NCCH will use the NOC override function to ensure the Network Tasking Order is strictly adhered to.

2.2.11.3. In the event of a request for a NOC Override, resources will not be released without confirmation of offending vehicle safing from the user. LEO supports that are more than 2 minutes beyond visibility fade will be released with no contact to the user.

**2.2.12. Non-flight Activities.** Network Scheduling will notify AFSCN users via ESD of any changes to downtimes that impact user required network resources.

2.2.12.1. The AFSCN work center responsible for a downtime will assess the status of the downtime at 30 minutes before the expiration of the scheduled downtime.

2.2.12.2. If the assessment indicates operational capability will not be restored by the end of the downtime, contact Network Scheduling and attempt to extend the downtime.

2.2.12.3. If the downtime cannot be extended without approval of Scheduling through coordination with an impacted user, the responsible work center will open an appropriate category outage within 10 minutes of the extension being denied.

**2.2.13. AFSCN Overloading and Optimization:**

2.2.13.1. Contingencies may occur that could cause overloading of available AFSCN resources. When conflicts present severe AFSCN mission impact, based on feedback from AFSCN users and work centers, or more than four Lost supports and/or Conflict Deletes occur in a six-hour period, the 22 SOPS NOC will consider taking the following steps to increase AFSCN availability:

2.2.13.1.1. Delete proficiency training.

2.2.13.1.2. Delete RTS maintenance activities on a case-by-case basis.

2.2.13.1.3. Continue to monitor MIRs and user feedback.

2.2.13.2. If training and maintenance have been reduced and on-orbit satellite contact activities are still impacted, Network Scheduling will conduct the following Level 1 to 4 reductions (sequentially) until the NCMDR/NCCH determines Lost supports and/or Conflict Deletes are reduced to an acceptable level:

2.2.13.2.1. Level 1 reduction - Delete exercise and network testing sorties.

2.2.13.2.2. Level 2 reduction - Maximize use of dedicated program resources. Consider reducing maintenance activity on the network.

2.2.13.2.3. Level 3 reduction - Cancel non-mission impacting on-orbit testing and monitoring/ tracking sorties.

2.2.13.2.4. Level 4 reduction - Eliminate lower priority sorties per Priority Matrix located in Attachment 2.

2.2.13.3. In the event that National Readiness is elevated, directives contained in the applicable 22 SOPS checklist will be followed.

### 2.3. Roles and Responsibilities:

#### 2.3.1. NCMDR/NCCH will:

- 2.3.1.1. Maintain operational command and control of all AFSCN resources.
- 2.3.1.2. Use all available resources when rendering the final decision for AFSCN resource use during conflict resolution of a TBR conflict.
- 2.3.1.3. Immediately notify Network Scheduling with resource allocation decisions.
- 2.3.1.4. Ensure compliance with the NTO using inherent authority and the NOC override process.
- 2.3.1.5. Assist users who cannot release resources due to DCC system anomalies.
- 2.3.1.6. Process depot level support requests for any site requiring it.
- 2.3.1.7. Immediately notify Network Scheduling when outages are reported or vehicle emergencies are declared.
- 2.3.1.8. When RTS operators report a site problem, or when MIR submission warrants, investigate the problem and ensure an outage is opened IAW 50 SWI 10-224, *AFSCN OUTAGE REPORTING SYSTEM*.
- 2.3.1.9. Maintain a thorough understanding of all program mission requirements for all users who conduct operations with the AFSCN.
- 2.3.1.10. Review and ensure reported outages are accurate prior to distribution to the AFSCN community.
- 2.3.1.11. Notify all AFSCN users of NOC or ESD limitations or evacuation events, to include any contact information.
- 2.3.1.12. Investigate all MIRs and voice reported problems submitted and determine potential for ongoing network impacts. If impacts are determined to be ongoing and negatively impact AFSCN user missions, ensure an outage is opened to reflect the impact.
  - 2.3.1.12.1. If user mission is not negatively impacted, coordinate with 21 SOPS NOC for troubleshooting requirements.
- 2.3.1.13. Notify NSCH of any JSTO, SPIN or SKIWEB taskings that impact the NTO.
- 2.3.1.14. Assist with RMI (RFI/EMI) identification and adjudication.

#### 2.3.2. Network Scheduling will:

- 2.3.2.1. Schedule AFSCN resources for satellite contacts in accordance with SCA requirements.
- 2.3.2.2. Resolve realtime conflicts IAW this instruction.
- 2.3.2.3. Notify the NCMDR/NCCH when any user attempts to use AFSCN resources without prior coordination and approval by Network Scheduling.

2.3.2.4. Immediately notify NCMDR/NCCH when vehicle emergencies are declared or when a scheduled downtime or unscheduled outage creates a change to SYSCAP/OPSCAP.

2.3.2.5. Notify impacted AFSCN users and work centers of vehicle emergency conditions in progress.

2.3.2.6. Grant or deny free-space radiation requests based on user approval.

2.3.2.7. Grant or deny AFSCN user requests to go active prior to scheduled satellite acquisition time.

### 2.3.3. AFSCN users will:

2.3.3.1. Ensure the NTO contains required attributes to support satellite contacts.

2.3.3.2. Ensure satellite contacts are conducted according to published NTO requirements.

2.3.3.2.1. Never conduct a support not listed on the NTO.

2.3.3.3. NOT radiate or send the active directive or request the RTS operator to manually go active prior to or after, their scheduled support time without prior coordination with Network Scheduling. This includes back-to-back supports by the same user.

2.3.3.3.1. Ensure resources in use are available (i.e., terminated) for the next user prior to the first second of the last minute listed on the NTO.

2.3.3.4. Immediately contact the NCMDR/NCCH if resources fail to release and request a NOC Override.

2.3.3.5. Immediately notify Network Scheduling of any vehicle emergency support requirements.

2.3.3.6. Notify Network Scheduling when upcoming minimum support requirements cannot be met due to an outage condition.

2.3.3.7. When required by the NCMDR/NCCH, provide mission objectives for satellite contacts in conflict and articulate the mission impact if AFSCN resources are not allocated to the satellite contact in question.

2.3.3.8. Contact Network Scheduling when requesting a change to a scheduled satellite contact

2.3.3.9. Verify the operational impact of each outage affecting the assigned program.

2.3.3.10. Notify 22 SOPS when evacuation of ops is required or has occurred, to include contact information for relocation area when possible.

2.3.3.11. When the cause of a mission impacting non-nominal support is known or suspected to be caused by AFSCN resources, or the cause is unknown, verbally notify 22 SOPS NCMDR via appropriate voice method within 15 minutes of support fade or immediately after determining a satellite contact was scored other than nominal during telemetry review.

2.3.3.11.1. Provide information that is known at that time. Provide detailed information in the content of the MIR per [chapter 6](#).

2.3.3.11.2. Do not provide a voice report when an outage is open for the problem that is encountered.

2.3.3.12. Immediately notify the supporting RGF of any detected problems during the support.

**2.3.4. RTS will:**

2.3.4.1. Notify Network Scheduling immediately upon identifying conflicting satellite contacts.

2.3.4.2. Serve as a backup for NOC Overrides. Operators will accept override direction only from authorized individuals listed on the NOC Override Authorization letter, updated every month by 22 SOPS.

2.3.4.3. Submit antenna radiation requests to Network Scheduling when free-space radiation is required.

2.3.4.4. Verify any non-standard configuration posted on the NTO with Network Scheduling.

2.3.4.5. Notify Network Scheduling when any user attempts to use AFSCN resources without prior coordination with, and approval from, Network Scheduling.

2.3.4.6. Review the vehicle folder or Operations Directive (OD), and verify the authorized active directive lead-time on the NTO, and verify the authorized start time for each support.

2.3.4.7. Report and update AFSCN Outage Conditions IAW 50SWI 10-224, *AFSCN OUTAGE REPORTING SYSTEM*.

2.3.4.8. Submit downtime requests and ancillary messages to 22 SOPS Network Scheduling.

2.3.4.9. Track reported anomalies by updating appropriate database systems; e.g. RTS Online Activity Database System (ROADS), with all pertinent information.

**2.3.5. 50 SCS CFP will:**

2.3.5.1. Advise the NCMDR/NCCH on all communications outages and status changes as they occur, to include potential impact to AFSCN resources and users.

2.3.5.2. Assist NCMDR/NCCH in investigating mission impact reports.

2.3.5.3. Gather and track anomalous sortie information, outage information, and 50 SW maintenance activities.

2.3.5.4. Notify 21 SOPS Comm Control of communications related problems, outage conditions, and trends.

2.3.5.5. Report and update AFSCN Outage Conditions IAW 50SWI 10-224, *AFSCN OUTAGE REPORTING SYSTEM*.

2.3.5.6. Coordinate with 22 SOPS to obtain any needed windows or downtime required to perform restoration actions.

2.3.5.7. Notify 22 SOPS when evacuation of ops is required or has occurred, to include contact information for relocation area when possible.

**2.3.6. 21 SOPS NOC will:**

2.3.6.1. Advise the NCMDR/NCCH on all communications outages and status changes as they occur, to include potential impact to AFSCN resources and users.

2.3.6.2. Monitor AFSCN network communications.

2.3.6.3. Report and update AFSCN Outage Conditions IAW 50SWI 10-224, *AFSCN OUTAGE REPORTING SYSTEM*.

2.3.6.4. Coordinate with TCF on the Operational Switch Replacement (OSR) Tech Net for any OSR troubleshooting efforts.

2.3.6.5. Coordinate with 22 SOPS to obtain any needed downtime required to perform restoration actions.

2.3.6.6. Notify 22 SOPS when evacuation of ops is required or has occurred, to include contact information for relocation area when possible.

**2.3.7. Orbital Analysis will:**

2.3.7.1. Accomplish investigations and resolution of EMI IAW AFI 10707.

2.3.7.2. Provide Network Scheduling with two-line mean element (TLE) sets, satellite acquisition tables (SATs), RFI data, Lunar and Sun RFI (SRFI) data.

2.3.7.3. Provide custom orbit products to AFSCN users as requested.

2.3.7.4. Accomplish post-event EMI/RFI investigations as required.

2.3.7.5. Perform RTS azimuth and elevation angle bias analysis following antenna maintenance or natural disasters.

## Chapter 3

### CONFLICT BRIEFING OPERATIONS

**3.1. Daily Conflict Resolution Process.** The daily conflict resolution process allocates AFSCN resources to an activity with the highest priority for a particular time and site. Resultant products include the NTO and the Daily Conflict Brief Listing which contains notifications to AFSCN users of specific conflicts which result in Conflict Deletes, Conditional Deletes, TBR conflicts, and downtimes that may impact multiple sites.

3.1.1. During this period all conflicts are identified and potential resolutions are presented to users in an attempt to minimize conflicts and ensure satellite operator mission success. During the conflict resolution process, all conflicts or imposed limitations are discussed and resolved at the lowest possible level commensurate with responsibility, authority, and available guidance.

3.1.1.1. This process is completed daily between the hours of 0000z – 1000z. During this process satellite PAP requirements will be strictly maintained.

3.1.2. MSCs will be submitted via ESD by users to effect and finalize any change to an existing contact or to add a new contact. Submit MSCs in the following format:

3.1.2.1. Date/Time (Z) - the date and time of a single support, or the time span encompassing several supports, which the requested change affects.

3.1.2.2. Site - Enter the site with “X” (i.e., BOSS-X) if either side may be used for this support, or the specific site and side if support must be run on a particular antenna. Use ANY for a request that impacts several supports (e.g., add ARSS) or when specific site/side is not required.

3.1.2.3. IRON - the IRON of the affected satellite contact. Use ANY for a line that impacts all contacts owned by the user within a stated period of time and/or on a stated Site/Side.

3.1.2.4. Rev - the specific revolution of the satellite contact. Use ANY when the change impacts several supports (ensure Date/Time or Site/Side encompasses the desired support contacts).

3.1.2.5. Func - the ESD function of this request.

3.1.2.6. **(Blank)** heading - “A” when adding a satellite contact, “M” when modifying an existing satellite contact, or “D” when deleting a satellite contact.

3.1.2.7. Comments - any clarifying comments to be included within the comments field of the impacted supports, or other additional information.

3.1.2.7.1. For any negotiated resolution with less than nominal requirements, the AFSCN user should state what deviations were accepted (e.g. short turnaround, substituted equipment, etc.)

3.1.2.7.2. For deleted satellite contacts, the AFSCN user will include if the deletion is a Conflict or Program Delete. If the type of deletion is not specified, Network Scheduling will categorize it as a Program Delete.

3.1.2.8. Reason for Change - a description of reason for the change.

**3.2. Conflict Period** . The 24-hour time period, 1600Z to 1600Z daily, that is being prepped for publication as the next NTO.

3.2.1. This is the forecast period for which Network Schedulers, AFSCN users, and other AFSCN work centers, resolve any remaining conflicts between program requests, scheduled downtimes, and other non-flight activities.

3.2.2. Users are notified of potential intra-AFSCN radio frequency interference and downtimes that may impact the entire AFSCN.

**3.3. Conflict Delete.** Those satellite contacts which cannot be scheduled due to limited resources, and cannot be fulfilled elsewhere, resulting in the loss of mission data are identified as Conflict Deletes. Conflict Deletes are documented on the Daily Conflict Briefing Listing.

**3.4. Conditional Delete.** Used by Network Scheduling in conjunction with a launch or downtime to indicate the Realtime disposition of each satellite contact impacted by a potential launch slip or potential completion time of a downtime. Conditional Deletes are listed on the Daily Conflict Briefing Listing.

3.4.1. Substantiating documentation, by MSC, from the AFSCN user must include all details and will contain all agreed upon conditions including a time tag delineating when the conditions are to be executed. The text of the conditional resolution, when practical, will be identical to the Conflict MSC, the Conflict Briefing Listing, and the NTO.

**3.5. Program Delete** - label assigned to a contact request from an AFSCN user withdrawn due to internal requirements, program requirements met with alternative satellite contacts, and so on.

3.5.1. Program Deletes are similar to Conflict Deletes, but are used when the satellite contact can be deleted (due to satellite contact requirements being reduced, dropped, or fulfilled elsewhere) without loss of mission data. Program Deletes do not appear on the Conflict Briefing Listing.

**3.6. To Be Resolved (TBR).** A conflict that cannot be resolved through normal processes prior to being placed in the Real Time schedule becomes a TBR issue and forwarded to the NCMDR/NCCH for resolution.

**3.7. Pre-Deconfliction Listing.** Published every day by 1100z, this output lists the satellite contacts requested by the Mission Command Center (MCC)/ Space Operations Center (SOC) and annotates those satellite contacts with conflicts (e.g. sun RFI, launches) or contact limitations imposed by resource availability issues.

**3.8. Frequency Control and Analysis Center (FCAC):** The FCAC is a Western Range Asset and is not part of the 50SW. They provide frequency control and analysis functions for the launch agency within 30SW. They will:

3.8.1. Resolve EMI/RFI conflicts to provide EMI/RFI protection to AFSCN satellites from various Western Range activities.

3.8.2. Coordinate through the RTS and inform Network Scheduling when protection from launch pad EMI/RFI cannot be provided to AFSCN satellites.

3.8.3. Inform Network Scheduling when RF restrictions are placed on Vandenberg Tracking Station to protect payloads on the Western Range.

**3.9. Network Scheduling will:**

- 3.9.1. Load Data Entry FormaT (DEFT) files.
- 3.9.2. Minimize conflicts while remaining within users stated requirements as much as possible.
- 3.9.3. Offer workable solutions outside of user's requirements to aid in conflict resolution.
- 3.9.4. Publish the Pre-Deconfliction listing.
- 3.9.5. Coordinate conflict resolution with involved users.
- 3.9.6. Prepare and publish the Daily Conflict Briefing Listing.

**3.10. AFSCN Users will:**

- 3.10.1. Review impacts to satellite contact requirements published in the Pre-Deconfliction Listing and resolve conflicts IAW this chapter.
- 3.10.2. Complete conflict resolution negotiation with, and submit MSCs to, Network Scheduling NLT 1100Z.
- 3.10.3. Include specific details of conflict resolution (including Conditional Deletes) on the MSC. Submit an MSC via ESD. If ESD is not available, submit a hard copy via fax, contact Network Scheduling by phone to notify them of the faxed document.
- 3.10.4. Ensure personnel with proper authority to resolve conflicts are available 24/7, or make arrangements for conflict resolution with 22 SOPS for any period the user is not available.
- 3.10.5. When applicable, submit 24 hour DEFTs by 0200Z daily.
- 3.10.6. Complete deconfliction by 1700z daily and submit MSCs by 1800z daily.

**3.11. 22 SOPS Orbital Analysis will:**

- 3.11.1. Provide SRFI and RFI data to Network Scheduling.

**3.12. 22 SOPS Mission Planning will:**

- 3.12.1. Respond to Network Scheduling on identified conflicts involving protected downtimes and Network Freeze impacts.
- 3.12.2. Negotiate conflict resolutions that impact downtimes.

**3.13. Procedures:**

3.13.1. The daily Conflict Briefing period must include all known requirements. Users are responsible for submitting new or changed requirements via MSC. Network Scheduling personnel will incorporate new and/or modified requirements into the daily Conflict Briefing period.

- 3.13.1.1. Network Scheduling will optimize the conflict period and identify resultant conflicts and limitations. During this process, satellite Program Action Plan (PAP) requirements will be strictly observed.

3.13.1.2. To aid in optimization, each satellite contact is assigned a satellite contact priority by the MCC/SOC responsible for the satellite contact based on the nature of the mission being supported (see Att. 2 for AFSCN Satellite Contact Priority List).

3.13.1.3. Network Scheduling may suggest modifications to original support requirements in order to gain conflict resolution.

3.13.2. The conflict resolution process begins when the pre-deconfliction listing is published at 1100Z. This listing contains all requested satellite contacts for the period of the next NTO and identifies supports in conflict, supports with reduced nominal equipment, supports with a reduced prepass from its nominal and scheduler suggested modifications intended to avoid stated conflicts.

3.13.2.1. Users will coordinate with Network Scheduling to ensure conflict resolution is achieved NLT 1700Z daily.

3.13.2.2. Conflict resolution is achieved when a decision has been made concerning who will receive the resource, or acceptance of a limitation is agreed upon, and MSCs have been received by Network Scheduling confirming all changes to requested satellite contacts.

3.13.3. If a conflict cannot be resolved, it will be published on the NTO as a TBR conflict and forwarded to the NCMDR/NCCH for further evaluation and resolution. The NCMDR/NCCH may be requested to engage at any time during the conflict resolution period in order to resolve a conflict.

**3.14. Submit MSCs to Network Scheduling for modifications, adds and deletes within the seven-day and conflict briefing periods via ESD.** An MSC provides an audit trail for later review and investigation purposes should the need arise.

3.14.1. For any negotiated resolution with less than nominal requirements, the MCC/SOC shall state what deviations were accepted (e.g. short turnaround, substituted equipment, etc.) for each support.

**3.15. For deleted satellite contacts-** Network Scheduling will assume a Program delete is appropriate unless otherwise specified on the user MSC.

**3.16. The conflict resolution process ends when the de-conflicted period is published as the latest NTO-** with its associated Conflict Brief Listing when required.

## Chapter 4

### SEVEN-DAY OPERATIONS

**4.1. Policy.** The seven day period beginning on the next Monday at 0000Z, this is the forecast period for which Network Schedulers load vehicle acquisition data, program requests, and non-flight activities into ESD.

4.1.1. The seven-day Forecast provides valuable non-flight allocation information to the users. Satellite contacts and non-flight activities are bulk loaded into the ESD database. Inputs for generation of the seven-day Forecast fall into two major categories. These categories are Satellite Acquisition Tables (SATs) and Program Action Plans (PAPs).

4.1.2. If several changes to a previously submitted PAP are required within a seven day period, Network Scheduling may request a new PAP and/or SAT in lieu of an MSC.

**4.2. Seven-day Forecast.** This forecast is published every Thursday at 2200Z and takes effect the following Monday at 0000Z. The published seven-day Forecast spans the seven-day period from Mon 0000Z to Mon 0000Z and combines user SAT and PAP data with the seven-day Maintenance Forecast into a single product. The product is used by user and scheduler personnel to forecast potential conflicts with major vehicle events and planned maintenance.

**4.3. Frequency Control Message.** Provided for GTS, HTS and VTS use for launch and aircraft radio frequency deconfliction.

**4.4. SAT Data.** Normally electronically submitted via ESD, SAT data is used to populate the scheduling database with vehicle visibilities. Submission of acquisition data varies with the type of orbit.

**4.5. PAP Data.** Normally electronically submitted via ESD, PAPs are profiles used by various MCCs/SOCs to identify their satellite contact requirements. Once the PAP has been loaded into the ESD database, any changes to user requirements must be accomplished by submitting an MSC. Agencies submitting paper PAPs shall ensure all entries are clear, in time sequence and do not contain crossed out information.

**4.6. Network Scheduling will:**

4.6.1. Ensure the latest acquisition (SAT) data and its associated PAP are on hand and loaded into the ESD database prior to publishing the seven-day Forecast.

4.6.2. Publish the seven-day Forecast every Thursday NLT 2200Z.

**4.7. AFSCN User will:**

4.7.1. Submit acquisition data to Network Scheduling. Updates to acquisition data will be submitted to Network Scheduling whenever acquisition times change.

4.7.2. Submit accurate satellite contact requirements via PAP no later than 2000Z Tuesday, six days prior to the effective seven-day forecast. Submit satellite acquisition data to 22 SOPS/DOUA for new vehicle or launch no later than Tuesday, thirteen days prior to the date of the effective seven-day forecast.

4.7.3. Submit satellite positional data to 22 SOPS/DOUA in accordance with ICD-509. Additional SAT inputs are provided as needed for maneuvers and orbital updates.

4.7.4. Participate in the weekly downtime meeting (either by attendance or teleconference) conducted every Friday by 22 SOPS Mission Planning.

4.7.4.1. Determine if any critical operations (launches, on-orbit maneuvers, etc.) will be impacted by forecast downtimes.

4.7.4.2. Participate in conflict resolution when potential impacts to critical operations are identified.

4.7.5. Provide orbit track data to RTS or 22 SOPS Orbital Analysis for entry into the NORAD Element Data Set (NEDS).

**4.8. RTS will:**

4.8.1. Provide forecast downtimes to 22 SOPS Mission Planning NLT Tuesday at 1600 (Mountain Time) six days prior to the effective seven-day forecast.

4.8.2. Submit requests or changes to non-flight activities to 22 SOPS/MAO during 22 SOPS normal duty hours, Monday through Friday or to Network Scheduling after normal duty hours and on weekends or holidays

**4.9. 22 SOPS Orbital Analysis will:**

4.9.1. Generate and distribute satellite visibility data for AFSCN users and remote tracking stations.

4.9.2. Submit 14 days of acquisition data via SAT on TUESDAY and FRIDAY by 2200z prior to the date of the effective seven-day forecast. Friday's delivery only consists of 2SWS and all low flyers. Additional SAT inputs are provided as needed for maneuvers and orbital updates.

4.9.3. Provide Predictive Radio Frequency Interference (PRFI) report to Network Scheduling at least once per week.

4.9.4. Provide Predictive Sun RFI report to Network Scheduling at least once per week during the seasonal equinoxes for primary and additional AFSCN communication links.

**4.10. 22 SOPS Mission Planning will:**

4.10.1. Process and ensure the accuracy of non-flight requirements.

4.10.2. Enter non-flight seven-day requirements into the ESD database by 2000Z Thursday of each week.

4.10.3. Ensure the seven-day non-flight activities in NTO are reviewed for accuracy and also to ensure there is no AFSCN SYSCAP impact below an amber rating for this period.

## Chapter 5

### CERTIFICATE TO OPERATE

**5.1. Purpose.** The purpose of this chapter is to establish procedures for AFSCN users to demonstrate to 22 SOPS their proficiency in the use of DCC workstations to configure and deconfigure AFSCN resources and their understanding of policy surrounding the NOC Override function. Paragraphs 5.2 through 5.4 do not apply to existing authorized users. Paragraph 5.5 applies to all users of the AFSCN.

**5.2. Certification to Operate (CTO).** Organizations new to the AFSCN are required to certify through a “train the trainer” approach prior to using the AFSCN communications resources.

5.2.1. Demonstrated proficiency is a prerequisite for users to obtain a CTO.

5.2.2. The 22 SOPS/CC or 22 SOPS/DO is the approval authority for CTO.

5.2.3. All activities and organizations using AFSCN resources are required to meet this policy.

5.2.4. CTO must be completed NLT 30 days prior to launch, assumption of program responsibility, or any operations using AFSCN resources.

5.2.5. In the event a user cannot meet these requirements due to configuration or other justifiable limitations, a waiver may be requested.

5.2.5.1. Request for a waiver must be submitted to 22 SOPS/CC through 22 SOPS/DOK. The request should explain the reasons the user cannot meet the requirements outlined in this chapter, provide possible workarounds to ensure no negative impact to the network, and provide any possible get well dates for documented deficiencies.

**5.3. Certification Process.** 22 SOPS/DOK manages and administers the CTO program.

5.3.1. 22 SOPS/DOK will observe the performance of the organization trainer (SME) while they are responding to the proficiency tasks identified below. 22 SOPS/DOK will monitor and assess training and certification supports from the 22 SOPS NOC and ensure that the user understands NOC Override purpose, process and requirements.

5.3.2. The SME is required to successfully complete five monitored proficiency tasks prior to certification.

5.3.3. Upon successful completion of the CTO process, the organization trainer will in turn certify operators within his or her organization.

**5.4. Proficiency Tasks.** This section details the tasks for which a user must demonstrate proficiency. During the training satellite contacts, the SME will:

5.4.1. Acquire all required resources within 30 seconds of being given the direction to acquire, Set Asynchronous Response Mode (SARM) and release all resources after the SARM within 15 seconds of being given the direction to release.

5.4.2. Successfully request a NOC override of currently configured resources. The SME will state which RGF site-side requires a release of resources, what time to release resources, and confirm their vehicle is safed.

5.4.3. Release resources within 15 seconds of receiving a call, prior to the scheduled fade time of the support, from 22 SOPS ordering an immediate release of resources.

**5.5. Decertification Process.** 22 SOPS/DO oversees the decertification process.

5.5.1. A user organization that accumulates three or more Personnel Errors (PEs) within a 30-day period, which resulted in a NOC override of user resources, will be issued a warning by the 22 SOPS/DO.

5.5.2. If a user organization receives two warnings within a 30 day period from the 22 SOPS/DO, or upon 22 SOPS/DO discretion, the user will be directed to recertify IAW with section 5.3 of this chapter. Only mission essential operations will be allowed until the user organization completes recertification.

## Chapter 6

### MISSION IMPACT REPORTING (MIR)

**6.1. Purpose.** The MIR provides AFSCN users a process for reporting less than successful satellite contacts when problems encountered are unknown, suspected or known to be caused by AFSCN assets or user equipment. A MIR will initiate the process for determining and addressing the reason for the unsuccessful support. MIRs are used to document anomalies, provide audit trails, and determine trending data for recurring problems. MIRs help identify scheduling discrepancies, procedural issues, and possible outage conditions. Users must continue to submit MIRs after an outage has been opened at the RTS.

#### **6.2. AFSCN users will:**

6.2.1. Gather as much information as is available and attempt to identify the cause of a problem as soon as it is detected. If the problem occurs during a satellite contact, the user will alert all personnel supporting the satellite contact and gather the status of supporting equipment.

6.2.2. Notify the RTS operator of any satellite contact scored lost, failed, or marginal, either in post-pass or after determining a satellite contact was scored other than nominal.

6.2.3. Notify 22 SOPS NCMDR within 15 minutes of determining a support was non-nominal. Provide known information such as mission impact and observed behavior. Investigation details will be included on the subsequent MIR.

6.2.4. Complete a MIR, using 50 SW Form 79 for any satellite contact scored lost, failed, or marginal within one hour of determination via secure means whenever possible.

6.2.4.1. Ensure information provided for the support matches information contained within the NTO.

6.2.4.2. Determine the Satellite Contact Score for all non-nominal satellite contacts according to 50SWI 10-220, Table-1.

6.2.4.3. Classify the completed MIR according to the unit's Security Classification Guide and provide appropriate declassification instructions when required.

6.2.4.4. Submit MIR to the 50 SCS MOC and 22 SOPS NCMDR via SIPR email, NIPR using the "Low-to-High" website or via NIPR as a last resort.

6.2.4.4.1. Low-to-High Website: <https://dots.dodiis.mil>

6.2.4.4.2. MOC SIPR: [usaf.schriever.50sw-nog.mbx.50-scs-maint-control@mail.smil.mil](mailto:usaf.schriever.50sw-nog.mbx.50-scs-maint-control@mail.smil.mil)

6.2.4.4.3. MOC NIPR: [MOCMPR@us.af.mil](mailto:MOCMPR@us.af.mil)

6.2.4.4.4. AFSCN NCMDR SIPR: [usaf.schriever.50sw-nog.mbx.afscn-ncmdr-sipr-mirs@mail.smil.mil](mailto:usaf.schriever.50sw-nog.mbx.afscn-ncmdr-sipr-mirs@mail.smil.mil)

6.2.4.4.5. AFSCN NCMDR NIPR: [22SOPS.NCMDR.MIR@us.af.mil](mailto:22SOPS.NCMDR.MIR@us.af.mil)

6.2.5. Provide MIR closure meeting feedback to MOC.

**6.3. 50 SCS/MOC will:**

- 6.3.1. Assign a unique MPR number, investigate, and archive MIRs.
- 6.3.2. Coordinate with the NCMDR/NCCH regarding potential system or range outage conditions.
- 6.3.3. Coordinate with 21 SOPS ACCC regarding potential communications outage conditions.
- 6.3.4. Provide MIR feedback to the submitting user when the reported problem is resolved.
- 6.3.5. Attend the 22 SOPS MIR Review Board (MRB).

**6.4. NCMDR/NCCH will:**

- 6.4.1. Review MIRs for accuracy of IRON, time and location of support and work center assignment. Notify MOC of any required corrections.
- 6.4.2. Investigate reported anomalies and perform real time trend analysis to determine if a system outage condition exists.
- 6.4.3. Coordinate real time trend analysis investigation with appropriate agencies as required, i.e. 50 SCS, RTS operator or ACCC.
- 6.4.4. Provide notification to 22 SOPS/DO when users fail to adhere to par 6.2.3.

**6.5. 21 SOPS ACCC will :** Investigate reported anomalies and determine if a communications outage condition exists.

**6.6. RTS will :** Track reported anomalies and determine if a range outage condition exists.

**6.7. 22 SOPS MAF will:**

- 6.7.1. Manage the MIR Review Board (MRB) and processes.
- 6.7.2. Determine and socialize appropriate frequency and participants for MRB occurrence.
- 6.7.3. THE MRB will:
  - 6.7.3.1. Review MIRs whose cause has not been determined. Coordinate with RTSs, users, 50 SCS MOC, ACCC and other agencies as required to provide insight to any unknown issues.
  - 6.7.3.2. Coordinate with 50 SCS MOC to ensure submitting users concur with closures.
  - 6.7.3.3. Determine follow on actions as required, such as outages, deficiency reports, AF Form 1067 Modification Proposal, etc.
  - 6.7.3.4. Submit MIRs suspected to be caused by space weather to: JSpOC Weather Team: [usaf.vandenberg.afspc.mbx.jspoc-weather-team@mail.smil.mil](mailto:usaf.vandenberg.afspc.mbx.jspoc-weather-team@mail.smil.mil). 2d Weather Squadron - Dr. Mills: [boniface.j.mills.civ@mail.smil.mil](mailto:boniface.j.mills.civ@mail.smil.mil)

## Chapter 7

### FREE SPACE RADIATION REQUEST

**7.1. Policy.** 22 SOPS Network Operations Scheduling is the approval agency for all RTS free space radiation requests and any user request for early radiation. RTS and AFSCN users will not radiate beyond those times approved on the NTO without authorization from Network Scheduling.

**7.2. Network Scheduling will:**

7.2.1. Be the granting authority for all AFSCN radiation requests.

7.2.2. Perform an interference analysis on each request to determine which AFSCN satellites may be at risk with frequencies requested during the radiation period.

7.2.3. Contact potentially impacted users to determine impact to their space vehicle(s).

7.2.4. Deny or modify the request for the following reasons:

7.2.4.1. When users deny the radiation request due to risk to their vehicle.

7.2.4.2. In the absence of user input, if a satellite using the same frequency(s) is visible, or a LEO within 5 minutes of rise or fade, at the requesting RTS.

7.2.5. If the requested radiation times/ channels can be modified to eliminate risk to impacted users, coordinate changes with the requesting RTS and any impacted users and enter the granted request. Scheduling may approve a different antenna direction, command type based on user concurrence, or the use of an open channel to eliminate possible interference.

7.2.6. Grant the request only when it is clearly evident that a need to radiate exists, and only when the radiation time will not conflict with any other AFSCN operation.

7.2.7. Ensure the approved RTS free space radiation request appears on the NTO.

**7.3. RTS will:**

7.3.1. Verbally submit antenna radiation (free space) request to Network Scheduling.

7.3.2. Submit a new free space radiation request if any deviation from the original request is necessary.

## Chapter 8

### LAUNCH OPERATIONS

**8.1. Description.** 22 SOPS is responsible for the planning, coordination, resolution, allocation, status, and tasking of AFSCN resources deemed necessary for launch and early-orbit operations, and ensuring the AFSCN is properly dispositioned when executing a launch.

8.1.1. Launch operations supported by the Network will be afforded a Priority 4 for a time period of launch +6 hours for High Earth Orbit (HEO) and Medium Earth Orbit (MEO) vehicles and launch +6 revs for all Low Earth Orbit (LEO) vehicles. However, this priority does not apply to booster or upper-stage support after spacecraft separation.

8.1.1.1. Major orbit transfer maneuvers and satellite contacts necessary for the collection of critical attitude data required to accomplish those transfer maneuvers, as well as critical first acquisition of sun/earth/stars and critical initial deployments (solar wings, antennas, etc) will also be granted a launch priority of 4.

8.1.2. Guidance for Operations Requirement Letter (ORL) and Freeze message input and timelines is contained within 50SWI 101208, *Launch Readiness and Responsibilities*.

8.1.3. Slip Windows. Slip windows are a scheduling tool only and represent the window for launch vice an actual launch time. This allows potential conflicts to be identified and resolved while allowing satellite contacts to be scheduled as Conditional Deletes against the launch profile. Users agree to terms of support based on potential launch status during deconfliction. If the launch goes as planned, users in conflict will be deleted based on their previous acceptance of the Conditional Delete. If the launch does not impact the contact due to slipping 24 hours or, in the case of a contact in conflict with the slip window only, launching on time, the contact can be supported as scheduled.

8.1.4. Network Freeze. A Network freeze ensures ECP (Engineering Change Proposal), TCM (Test Case Modification), TCC (Temporary Change Configuration), and routine maintenance activities remain static and CUE/RTS configurations are not modified until after launch or critical flight activities are completed. Non-interference basis (NIB) maintenance activities are not addressed. Reference 50 SWI 10-1208, *Launch Readiness and Responsibilities* for further guidance.

**8.2. Launch Readiness and Responsibilities.** In addition to the below requirements, all launch agencies utilizing the AFSCN for support will perform requirements outlined in 50 SWI 101208, *Launch Readiness and Responsibilities*.

**8.3. Network Scheduling will:**

8.3.1. Input launch requests into ESD when electronic PAP is received.

8.3.2. Refuse and return user PAP submissions that display several errors, contain incorrect information, or contain incorrect functions (e.g., PASS vice RPAS)

8.3.3. Enforce the launch freeze request IAW 50SWI 10-1208.

**8.4. 22 SOPS Orbital Analysis will:**

8.4.1. Provide SAT DATA to scheduling at L-3 weeks for all agencies except MESA and NOPS.

8.4.2. Provide Network RFI to Network Scheduling for any scheduled launch at L-1 day.

8.4.3. Provide updated network RFI files where product delivery is dependent upon receiving updated orbital parameters from the SOC and allowing 2 hours of system processing in the event of a source data anomaly.

8.4.4. Post TLE to ESD and notify scheduling for payload support activities at L-1 where product delivery is dependent upon receiving updated orbital parameters from the SOC and allowing 2 hours of system processing in the event of a source data anomaly.

8.4.5. Coordinate with launch agency Orbit Analyst during pre- and post-launch activities to ensure accurate data is entered into ESD.

#### **8.5. 22 SOPS Mission Planning will:**

8.5.1. Ensure all required resources identified on ORL are available for launch support.

8.5.2. Develop and maintain the 50 SW 90-day Launch Forecast.

8.5.3. Publish and distribute AFSCN Freeze and Freeze release messages

#### **8.6. MESA and NOPS will:**

8.6.1. Provide SAT DATA directly to Network Scheduling via ESD at L –10 days.

8.6.2. Post required TLE(s) in ESD at L –1 day. Any instructions for loading these TLE will be provided to 22 SOPS at the time they are posted.

#### **8.7. All Launch Agencies will:**

8.7.1. Provide an electronic PAP or DEFT via ESD to Network Scheduling by L-10 days.

8.7.1.1. Do not include any slip window in the body of requested supports. The slip window will be a separate function added to the end of supports within the first six hours of a GEO, MEO and HEO launch or the first six revs of a LEO launch in order to accomplish the deconfliction process.

8.7.1.2. Do not include any time required for prepass checks in the body of the support. The pre-pass is defined by your ESD PAP and is distinctive part of the launch support.

8.7.1.3. Identify Priority 4 support requirements for inclusion into ESD comments and any other specific information that may need to be communicated to the RTSS or schedulers. (i.e., No Station Change, Dual Support, etc.)

8.7.1.3.1. Use Attachment 2 to determine priority requirements for each PAP'd support.

8.7.1.4. Submit PAPs prior to launch in rehearsal format (Function = RPAR, RPAS). After launch they will be in the standard format.

8.7.2. Provide a launch primary POC to 22 SOPS scheduling, with contact phone numbers where they can be reached pre-launch and post-launch. It is highly recommended that the primary POC perform any deconfliction of this vehicle with 22 SOPS.

8.7.2.1. Ensure a knowledgeable person is available for each shift. This individual should be able to answer general questions regarding the launch after hours.

8.7.3. Use MSCs to add Testing and Data Flow transfers.

8.7.4. In the event ESD is not available, submit a hard copy PAP to scheduling by any means available.

## Chapter 9

### DOWNTIMES

**9.1. Policy.** 22 SOPS is the final authority for the placement of requested downtime into the NTO. This chapter provides direction on requesting resource downtime for maintenance and testing of, or training on, AFSCN resources.

**9.2. Downtime.** A downtime is a scheduled loss, limit, or risk of loss, of an AFSCN resource or resources.

9.2.1. An AFSCN resource will not be voluntarily removed from service without an approved, scheduled downtime within the NTO, or the requestor has verbal authority from 22 SOPS scheduling.

**9.3. NCMDR/NCCH** will process real time request for Depot level maintenance.

**9.4. Network Scheduling will:**

9.4.1. Process downtime requests appropriately.

9.4.2. Notify all impacted parties of any limitations.

**9.5. 22 SOPS Mission Planning will:**

9.5.1. Coordinate downtime requests that fall within all but the realtime and conflict briefing periods.

9.5.2. Track all downtime requests.

9.5.3. Process routine requests for downtime.

9.5.4. Load all approved Modification Control Board (MCB) and properly coordinated downtimes into the seven-day forecast period.

9.5.5. Notify Network Scheduling when all requested downtimes for a given seven-day period are loaded into that period.

9.5.6. Conduct a weekly downtime meeting on Friday at 1600Z to discuss possible operational conflicts with the seven-day forecast.

9.5.7. Inform all users of upcoming scheduled downtime maintenances that impact mission requirements through publication and distribution of the 3 month and THURLIST reports.

**9.6. Requesting work center will:**

9.6.1. Request downtime for any effort that will impact or risk AFSCN resources.

**9.7. Process:** Downtime requests are submitted via ESD to the 22 SOPS NOC. The following paragraphs detail the content.

9.7.1. Downtime request information is indexed into a nine line format. A downtime request is commonly referred to as a "Nine-Line".

9.7.2. Downtime requests will identify specific equipment impacted, or potentially impacted, by the intended action and clearly identify possible impacts to AFSCN users.

**9.8. Complete the Downtime Request (Nine-Line subject).**

9.8.1. A downtime request will be identified as one of the following. Enter the correct description into the Subject line of the Nine-Line request:

9.8.1.1. Routine. A routine downtime request is used for any downtime that falls within or later than the current seven-day period. This request is processed and tracked by 22 SOPS Mission Planning.

9.8.1.2. Pre-coordinated. A pre-coordinated downtime request is a follow-up to a voice authorized downtime request whereby a hard copy downtime request is still required for documentation and tracking.

9.8.1.3. Realtime. A realtime downtime request is used for any downtime required that falls within the already published NTO. A realtime downtime request is processed by Network Scheduling.

9.8.1.4. Urgent. An urgent downtime request is submitted for efforts to resolve outage conditions when the maintenance action required will further impact AFSCN operations. This request is processed and tracked by 22 SOPS Mission Planning should it fall beyond deconfliction, or by Network Scheduling if it should fall within the deconfliction period.

9.8.2. Line 1 - Job Number (required entry). The three-digit serially assigned number preceded by a letter prefix that identifies the requesting work center. This downtime number appears in the NTO for a non-flight activity in place of an IRON. A record of the three-digit numbers used should be maintained by the requesting work center in accordance with locally published procedures. Attachment 4 provides a list of downtime number prefixes. Numbers range from 001 to 999, with 901 to 999 normally reserved for specific purposes and 001 thru 900 used sequentially as new requirements arise.

9.8.3. Line 2 - Place Work Will Be Performed (required entry). Enter UNDISCLOSED if the location is unavailable or classified.

9.8.4. Line 3 - Description/ Reason (required entry). Provide a brief description and reason for the work to be accomplished.

9.8.5. Line 4, part a - Start Time (required entry). Include date and time. Precede with TS (Time Specific) when the start time must remain stationary. Include any window for the downtime in the comments section below.

9.8.6. Line 4, part b - Advanced Notice (required entry). This is the advance notice the requesting work center requires prior to the beginning of the downtime. Typically is "None".

9.8.7. Line 5 - Equipment (required entry). Identify impacted AFSCN resources. This information should match as closely as possible to the resource as it normally appears in the NTO.

9.8.8. Line 6 - Office/Contact/Extension (required entry). The contact information for the requesting work center.

9.8.9. Line 7 - Shift/Limitation (required entry). Enter any shift limitations for which the activity will be performed. i.e., "DAYSHIFT ONLY" or "WEEKDAY", enter "NONE" when there is no limitation.

9.8.10. Line 8, part a - Requested (required entry). The total time requested (desired) to accomplish this downtime activity.

9.8.11. Line 8, part b - Required (required entry). This is the minimum amount of time required to accomplish this downtime. The requested and required times normally are the same.

9.8.12. Line 8, part c Recovery (required entry). Recovery time to place the equipment into full ops capability in the event of a recall after the downtime has begun. If a downtime activity cannot be recovered prematurely after it has begun, then the recovery time should match the minimum time required.

9.8.13. Line 9 - Comments (optional). Provide any further information to assist in the scheduling of the downtime activity, such as an applicable window or if the downtime may occur concurrent with other scheduled RTS activity. Any important information not already captured in the previous lines should be here.

**9.9. Routine Request.** Submit routine downtime requests to scheduling at least 10 days prior to downtime start time.

9.9.1. Network Scheduling will deconflict downtimes with non-flight and flight activities during the deconfliction process. Approved downtimes will be published in the NTO.

## Chapter 10

### DISA AUTHORIZED SERVICE INTERRUPTIONS

**10.1. Purpose.** This chapter outlines responsibilities for managing DISA Authorized Service Interruptions (ASI) and it provides a process to minimize disruption to AFSCN operations due to a DISA ASI or Demand Maintenance.

**10.2. DISA ASI.** DISA provides the majority of the communications services for the AFSCN communications network. Whenever a DISA facility has to interrupt service for maintenance or any other activity, they use the process of notification described in DISAC 310-70-1, *DII Technical Control*. The process includes notifying the circuit actions functions of 50 SCS CFP and 21 SOPS PTF when an ASI will impact AFSCN services.

**10.3. Demand Maintenance.** A priority maintenance activity in which DISA may seize AFSCN communications services with no notification to, or concurrence from, AFSCN personnel.

**10.4. 50 SCS TCF and 21 SOPS PTF will:**

10.4.1. Ensure DISA ASI requests that impact AFSCN services are forwarded to 21 SOPS comm control.

10.4.2. Ensure AFSCN concur/non-concur for an ASI reaches appropriate requesting DISA facility.

10.4.3. Ensure 21 SOPS comm control receives notification of any conflict with a non-concur response.

10.4.4. Develop local procedures in coordination with 21 SOPS comm control and 22 SOPS NOC to ensure efficient and timely execution of these requirements.

10.4.5. Investigate and resolve any failure to be notified of an ASI that impacts AFSCN services.

**10.5. 21 SOPS Comm Control will:**

10.5.1. Determine ASI impact to AFSCN resources and submit an appropriate downtime request to 22 SOPS NOC.

10.5.2. Ensure 50 SCS and 21 SOPS Circuit Actions receive the concur/non-concur from 22 SOPS NOC.

10.5.3. Notify 22 SOPS should DISA still plan on disrupting AFSCN services even after they receive AFSCN non-concurrence for the ASI.

10.5.4. Submit outage reports when communications links are seized or otherwise removed from service un-expectedly, resulting in disruption to AFSCN operations.

10.5.5. Develop local procedures in coordination with 50 SCS Circuit Actions, 21 SOPS Circuit Actions, and 22 SOPS NOC to ensure efficient and timely execution of these requirements.

**10.6. 22 SOPS NOC will:**

10.6.1. Determine concur/non-concur IAW with downtime procedures in **Chapter 9** of this instruction.

10.6.2. Provide concur/non-concur to 21 SOPS comm control.

10.6.3. Manage IAW chapters above a heads-up notification that DISA still plans on disrupting AFSCN services even after receiving an AFSCN non-concurrence.

10.6.4. Develop local procedures in coordination with 21 SOPS comm control to ensure efficient and timely execution of these requirements.

**10.7. Procedures.** 50 SCS CFP, 21 SOPS PTF, 21 SOPS comm control, and 22 SOPS NOC will develop local procedures to meet the responsibilities as directed above. In addition to responsibilities stated above, local procedures will include:

10.7.1. Appointed individuals acting as primary POC for handling an ASI.

10.7.2. Contact numbers for each primary POC and supporting work center.

10.7.3. A process to investigate, and correct when possible, any failure to coordinate an ASI, while mitigating future risk.

## Chapter 11

### VOICE OPERATIONS

**11.1. Purpose.** This chapter establishes a single primary source of standard voice procedures for conducting satellite operations within the AFSCN community. The AFSCN utilizes multiple voice switching systems to support operational voice requirements and to provide redundancy.

**11.2. Defense Red Switch Network (DRSN).** DRSN is a DoD asset providing secure voice services to various DoD and federal agencies. The AFSCN utilizes the DRSN switches at SAFB and VAFB to support satellite operations.

**11.3. Integrated Services Telephone (IST).** An IST is the primary end instrument for access to DRSN. The IST may be used to provide access to both secure DRSN services and non-secure local base telephone services if the supporting infrastructure is in place and properly configured. ISTs located at the RTSs are configured to provide DRSN services to the SAFB DRSN switch and to the VAFB DRSN switch.

**11.4. PRI Secure Voice (PSV).** PSV is the secure voice capability of an RTS. The conveyance for the secure voice with a RTS is provided by static connections terminating at the RTS PRI WANIU. RTS secure voice capability with SAFB and with VAFB are treated as two separate resources in the NTO.

**11.5. Satellite Secure Voice Net.** The secure voice services provided in support of AFSCN operations includes dedicated conferences for each RGF site and side. Attachment 5 provides details for accessing these nets.

11.5.1. SAFB SVO and VAFB SVO can connect secure calls to any of the RTS nets or to an RTS IST extension through SAFB PSV or VAFB PSV.

11.5.2. SAFB SVO merges IST net buttons for AFSCN users at SAFB with specific site and side based on the NTO. This prevents users from accessing the same site and side operational nets simultaneously without prior coordination.

11.5.3. Some AFSCN work centers, such as 21 SOPS comm control, have continuous access to all RTS nets. Continuous access to RTS nets is restricted to those work centers with proper approval.

**11.6. Defense Switch Network (DSN).** DSN is a DoD asset providing inter-base non-secure voice telephone services.

**11.7. Private Branch Exchange (PBX).** AFSCN facilities are located on federal or military installations and have access to the local base PBX for non-secure voice services. The local base PBX provides AFSCN operational areas and work centers with access to both DSN and commercial telephone networks.

**11.8. Tie-line.** A tie-line is a dial-up trunk between two PBXs. A caller dialing a tie-line's access number will get the dial tone of the remote PBX and be able to dial a number as if the caller was on a local telephone at that remote location. Access restrictions can be assigned to a tie-line to prevent abuse.

11.8.1. Both SAFB and VAFB have tie-lines established between their local base PBX and most of the RGFs. The conveyance for these tie-lines is provided by static connections terminating at one of the RTS WANIUs. These tie-lines are not scheduled resources and outage conditions for these tie-lines are not reported.

**11.9. Conference Bridge.** A conference bridge provides a way for various parties to all dial into an established telephone conference, given a dial-in number for the bridge and a code for accessing the conference.

11.9.1. Both SAFB and VAFB have base conference bridges on which have been pre-established and dedicated conferences, also referred to as meet-me-nets (MMN), for each RGF site and side. Both the SAFB and VAFB bridges have the additional capability of *blast dialing*, calling a pre-established number when a command code is entered by a participant who has moderator privileges for the conference call. The RGF MMN *blast dials* the appropriate RGF operational area. Attachment 7 provides details. **Note:** Generally, the MMNs *blast dial* a DSN number. If there is loss of DSN capability at either location, the blast dial will fail.

11.9.2. The Tech Net and backup Tech Net are also dedicated conferences established on the VAFB and SAFB conference bridges and are configured to *blast dial* 21 SOPS comm control.

**11.10. AFSCN Voice Operations.** The primary method for supporting operations with a RGF is by using PSV. If an AFSCN user does not have access to PSV, or PSV is unavailable due to a downtime or outage condition, the user may instead use a MMN. If a MMN is not viable or otherwise unavailable, a user may dial the site directly using other non-secure voice (NSV) means, such as DSN, commercial networks, or a tie-line. Attachments 7 and 8 provide further details.

11.10.1. A user requiring secure voice communications, where PSV is not available, may dial direct using Secure Telephone Equipment (STE) to secure the call. Attachment 7 provides further details. **Note:** All operational and support areas are responsible for meeting OPSEC and COMSEC requirements.

**11.11. AFSCN user will:**

11.11.1. Establish voice communications with all required parties.

11.11.2. Determine and use the existing AFSCN voice method that best meets their operational and security requirements.

11.11.3. Use the proper terminology IAW Attachment 9, AFSCN Common Operations Terminology Lexicon.

11.11.4. Immediately notify 50 NOG CFP of any detected faults.

**11.12. SAFB Secure Voice Operations (SVO) will:**

11.12.1. Provide assistance connecting callers securely with AFSCN operational areas and work centers.

11.12.2. Maintain an up-to-date directory of AFSCN operational areas and work centers connected to the SAFB DRSN switch.

11.12.3. Assist 21 SOPS comm control with fault detection, fault isolation, and fault resolution.

11.12.4. Operate and maintain secure voice recordings of operational nets.

11.12.5. Perform playbacks of secure voice recordings for cleared individuals.

**11.13. VAFB Secure Voice Operations (SVO) will:**

11.13.1. Provide assistance connecting callers securely with AFSCN operational areas and work centers.

11.13.2. Maintain an up-to-date directory of AFSCN operational areas and work centers connected to the VAFB DRSN switch.

11.13.3. Assist in 21 SOPS comm control with fault detection, fault isolation, and fault resolution.

11.13.4. Operate and maintain secure voice recordings of operational nets.

11.13.5. Perform playbacks of secure voice recordings for cleared individuals.

**11.14. 21 SOPS comm control** will report and resolve any PSV outage conditions IAW 50SWI 33-101.

**11.15. Secure Voice Operations.** When personnel are going to discuss classified information, all parties must prepare for secure communications. Do not discuss classified information until ALL individuals on the net have acknowledged their area as secured for classified discussion.

11.15.1. Individuals about to initiate a classified conversation will inform everyone on the net.

11.15.2. All parties on the net will acknowledge and advise if their area is secure or not.

11.15.3. When a classified discussion is at an end, all parties will acknowledge the end of classified discussion.

**11.16. Prepass Briefing.** Use of proper terminology is important to ensure all parties understand briefings, directions, and status. Reference attachment 9 for common terminology use. Satellite operators will clearly brief all information required to support a satellite contact and any subsequent playback activities prior to the beginning of the pass. The tempo must be slow enough so the briefing can be fully understood and acknowledged by all parties and properly transcribed by the RTS operator. The SOC operator will confirm all information read back from the RTS operator is correct. The following information will be briefed and requested in the following chronological order as applicable to the satellite operator:

11.16.1. The satellite operator will:

11.16.1.1. Ask the RTS for a brief of any new problems that occurred during the previous satellite contacts not already shown in ESD.

11.16.1.2. Brief the classification and scheduled satellite contact times.

11.16.1.3. Request station status, system time, and RTS operator's name. A satellite operator should be aware of any outages conditions that may affect the support and change the prepass brief.

11.16.1.4. Brief Command/Control/Status (C/C/S) and telemetry routing. The satellite operator will include the WANIU telemetry channel designation and data rate for each expected telemetry stream, and the PRI and ADD routing of C/C/S and telemetry. WANIU telemetry channels are designated as TLM-1 through TLM-5 or Telemetry-1 through Telemetry-5.

11.16.1.5. Brief exact IRON configuration ID which consists of a 4-digit IRON number followed by alphanumeric identifiers.

11.16.1.6. Brief required non-standard equipment configurations. Non-standard includes any configuration changes that have to be made to the equipment after loading the IRON configuration ID into ARTS or RTS Block Change (RBC) and all patching requirements.

11.16.1.7. Brief space vehicle acquisition time, acquisition azimuth antenna angle, and acquisition elevation antenna angle.

11.16.1.8. Brief expected downlink signal strength, especially if there is a difference between normal and expected values due to a known or suspected anomaly.

11.16.1.9. Brief mid-pass time, mid-azimuth antenna angle, maximum elevation antenna angle, and two-axis antenna keyhole instructions, if keyhole is expected.

11.16.1.10. Brief fade time, fade-azimuth antenna angle, and fade-elevation antenna angle.

11.16.1.11. Brief the RBC Operator to manually offset the third axis or enter Acquisition of Signal (AOS) and Loss of Signal (LOS) parameters if a TLE is not available. Brief all acquisition, mid-pass, and fade azimuth and elevation angles to use AOS/LOS parameters to offset the third axis.

11.16.1.12. Brief ARTS Automatic Main Beam Acquisition (AMBA) parameters, if required, to include acquisition azimuth and elevation rates.

11.16.1.13. Brief transmitter active and uplink modulation enable instructions to include uplink power and channel.

11.16.1.14. Brief downlink carrier programmed turn-on and turn-off times.

11.16.1.15. Brief approximate expected range number in nautical miles.

11.16.1.16. Brief loss of communications procedures, as appears in Attachment 8.

11.16.1.17. Brief ARTS/ RBC telemetry recording disposition not covered by or when deviating from the OD.

11.16.1.18. Request prepass read back and any questions or comments, to include confirmation of soft or hard antenna obscure.

11.16.2. RTS operator will, time permitting or upon satellite operator request:

11.16.2.1. Provide station status to include problems and outages, system time, and operator's name.

11.16.2.2. Read back the briefing.

11.16.2.2.1. Read back the five to seven character IRON configuration exactly as it appears in the ARTS PASS ID field or as it appears on the RBC Contact Schedule Execution (CSE) GUI.

11.16.2.2.2. Make any required modifications or changes to the equipment configuration during the appropriate periods and then read back those changes as they appear on the appropriate ARTS or RBC displays.

11.16.2.2.3. Read back the actual TLE number in use and time offset entered, if TLE is available.

11.16.2.2.4. Read back the actual satellite contact start time as displayed.

**11.17. Prepass Checks.** Command, telemetry, and antenna pointing tests will be performed when sufficient time is available to test signal routing and mission equipment.

11.17.1. Command Test. The RTS operator will report when command tones are active and any anomalous conditions such as echo check errors or Control and Status (C&S) alarms.

11.17.2. Telemetry Test. The RTS operator will report when a telemetry test directive is received and confirm bit synchronizer lock on the appropriate telemetry streams. The satellite operator will confirm WANIU channel lock on the appropriate telemetry streams.

11.17.3. Antenna Pointing (Slave Bus) Test. The RTS operator will report when a C/C/S slave bus is received and the antenna is at the briefed point of acquisition. The RTS operator will advise the satellite operator of any differences between the briefed and actual point of acquisition.

11.17.4. The satellite operator will report all prepass test results to the RTS operator.

**11.18. Satellite Contact.** The following details the responsibilities and procedures during a satellite contact.

11.18.1. The RTS operator will:

11.18.1.1. Report the time the transmitter active directive was received and visually confirms the transmitter is active, i.e. transmitting to the antenna instead of dummy load.

11.18.1.2. Enable the uplink modulation, as briefed by the satellite operator, confirm on system summary screen uplink modulation is enabled, and report the time uplink modulation was enabled.

11.18.1.3. Confirm good auto-track status and report acquisition signal strength.

11.18.1.4. Report range acquisition time and confirm range value.

11.18.1.5. Monitor all equipment for proper status and report any anomalies.

11.18.1.6. Report telemetry events, as briefed by the satellite operator.

11.18.1.7. During high elevation space vehicle contacts utilizing a two-axis antenna, take the appropriate steps to minimize data loss by following the briefed keyhole procedure or briefed loss of voice contingency procedures (keyhole not briefed). Report loss and re-acquisition of downlink signal.

11.18.1.8. Report when the transmitter goes passive.

11.18.1.9. Report loss of downlink signal at fade, as appropriate.

11.18.1.10. Brief any new problems discovered during the satellite contact immediately. It is critical that all parties accurately and clearly report symptoms, provide recommendations for problem resolution, and coordinate their actions. Problem resolution for satellite contacts will be directed by the satellite operator.

11.18.1.11. When a problem is encountered during the support the satellite operator will:

11.18.1.11.1. Ask all parties to standby and take no action because any problem resolution activity could cause adverse mission impact or;

11.18.1.11.2. Take full control of the problem resolution process or;

11.18.1.11.3. Ask that each party attempt to locally resolve and report actions taken.

**11.19. Post-Pass.** The following details the responsibilities and procedures after fading from a satellite contact.

11.19.1. Satellite operator will direct space vehicle termination or ensure contact is automatically terminated at the scheduled stop time.

11.19.2. The satellite operator will inform all parties when the satellite contact is over, what resources are no longer required, and that reconfiguration for the next satellite contact can take place.

11.19.3. NLT 30 seconds after end of the scheduled satellite contact period the satellite operator will brief any playback requirement and inform all parties of any problems and scoring (successful, marginal, failed, or lost).

11.19.4. All scheduled resources will be de-configured unless the same SOC is immediately scheduled as the next RTS support. The Satellite operator will send a disconnect directive to allow the RTS operator to accurately report a good connection on the following support after receiving a SARM.

11.19.5. The RTS operator will verbally remind the satellite operator to disconnect the ARTS or RBC resource, if they fail to drop.

**11.20. Emergency Satellite Contacts.** Any satellite operator declaring a vehicle emergency must contact 22 SOPS Network Scheduling and inform them of the situation and requirements. 22 SOPS must resolve the declared emergency based on priority, and then verbally contact all parties involved. If resources are currently in support, 22 SOPS will be added to the voice nets used to support the satellite contact.

**11.21. Request for Satellite Contacts Not Shown in the NTO.** If a satellite operator calls for a satellite contact not shown in the NTO, the RTS operator will:

11.21.1. Inform the satellite operator the satellite contact is not listed in the NTO.

11.21.2. Query the other parties on the voice net to determine if the satellite contact is shown on a different schedule.

11.21.3. Ask the satellite operator to immediately contact 22 SOPS Network Scheduling or add Network Scheduling to the voice net. Adding Network Scheduling to the voice net ensures all parties are properly informed of the outcome.

11.21.4. Inform the satellite operator how much time is available before the anticipated roll call for the next scheduled satellite contact.

11.21.5. If there is no impact to scheduled operations, initialize the satellite contact for the requested satellite while waiting for Network Scheduling response. Do not go active without Network Scheduling approval.

**11.22. Contingency Operations.** If at any time an operational area must evacuate their operations area, they must contact 22 SOPS Network Scheduling and provide their new phone numbers as soon as possible.

11.22.1. If 22 SOPS Network Scheduling must evacuate their operations area, they will contact all operational areas and provide alternate contact information.

**11.23. Voice Communication Failures.** A failure to establish voice connectivity, or the loss of voice communications during a satellite contact, may impact a satellite operator's ability to successfully support a mission. Severity depends upon the cause and available contingency procedures. Attachment 8 details voice operations contingencies.

11.23.1. Alternate voice communications must be established regardless of operational contingencies for the following:

11.23.1.1. Incorrect IRON configuration listed in the NTO.

11.23.1.2. Mission impact of an outage condition is unclear and RTS clarification is required.

11.23.1.3. RTS is not provided with adequate voice communication failure procedures. It is the responsibility of each satellite operator to ensure the RTS operator understands what coordinated actions to take during a voice communication failure.

11.23.1.4. Set Asynchronous Response Mode (SARM) coordination required. The satellite operator must verbally coordinate a SARM with the RTS operator before sending unless the voice communication failure procedure allows for an autonomous SARM at ETA minus 5 minutes.

11.23.1.5. SARM failure.

11.23.1.6. Improper RTS status received. After sending a SARM and establishing a link, the satellite operator should monitor critical RTS status to ensure the antenna is at the proper point-of-acquisition, Radiation Warning System (RWS) has timed out and transmitter is active, good auto-track has occurred, and valid range is acquired.

11.23.1.7. Equipment failure detected.

11.23.1.8. Prepass testing required.

11.23.1.9. Communication failure procedures state transmitter active is done by satellite operator direction only.

11.23.1.10. Communication failure procedures state enabling uplink modulation is done by satellite operator direction only.

11.23.1.11. Critical RTS event verification required.

11.23.1.12. Support terminated early or support period extended.

**11.24. Negative Voice Communications.** If the satellite operator has not contacted the RTS by the normal start of prepass tests or by ETA minus 5 minutes (whichever occurs first), the RTS operator will follow the negative voice communications procedure provided by the applicable program OD. The RTS operator will check if primary voice is operational and contact 22 SOPS Network Operations scheduling to determine if the satellite contact was deleted. See attachment 8 for further details.

**11.25. Procedures Common to All Loss of Communications Situations.** The satellite operator has the responsibility to ensure voice contact is established or adequate procedures are available for continued support for any voice communication problems. See Attachment 8 for further details.

## Chapter 12

### RTS IRON DATABASE CHANGE PROCESS

**12.1. Purpose.** This process describes how a user submits RTS configuration requirements into the IRON Database Office (IDO) for incorporation into both the ARTS and RBC ground systems. It also describes the validation process in order to ensure accurate and timely implementation of IRON databases to meet users' requirements.

#### 12.2. Procedures:

12.2.1. Process Flow. The overall IRON database change process can be seen in Figure 12.2 which illustrates the responsibilities of the five different organizations (User, IDO, 22 SOPS MAF, 22 SOPS/MI and the RTS Operations Teams at BOSS and/or COOK).

12.2.2. IRON Database Change Request (IDCR) Input. Users and 22 SOPS/Mission Integration (MI) generate IDCR forms utilizing current version of the QUICK or RAPID Tools, downloadable from Web Based Data Analysis Repository (WeB DART). (<https://webdart.schriever.af.mil/webdart/common/main.jsp>).

12.2.2.1. RTS All Parameter IRON Data (RAPID) and Question User's IRON Configuration Knowledge (QUICK) Tools. RAPID and QUICK are desktop computer tools that allow users to create accurate IRON Database Change Requests (IDCRs), verify changes made within each IRON database delivery and manage RTS Telemetry, Tracking and Commanding (TT&C) parameters. Users and support agencies are encouraged to download these tools from the access controlled WeB DART site: <https://webdart.schriever.af.mil/webdart/common/main.jsp>

12.2.2.2. User generates and sends IDCR to MI ([22sopsmsnint@schriever.af.mil](mailto:22sopsmsnint@schriever.af.mil)) via e-mail attachment for technical review. MI will validate information prior to submitting to the IDO ([DLCO22IRONDB@Honeywell.com](mailto:DLCO22IRONDB@Honeywell.com)) via e-mail as an authorized IDCR.

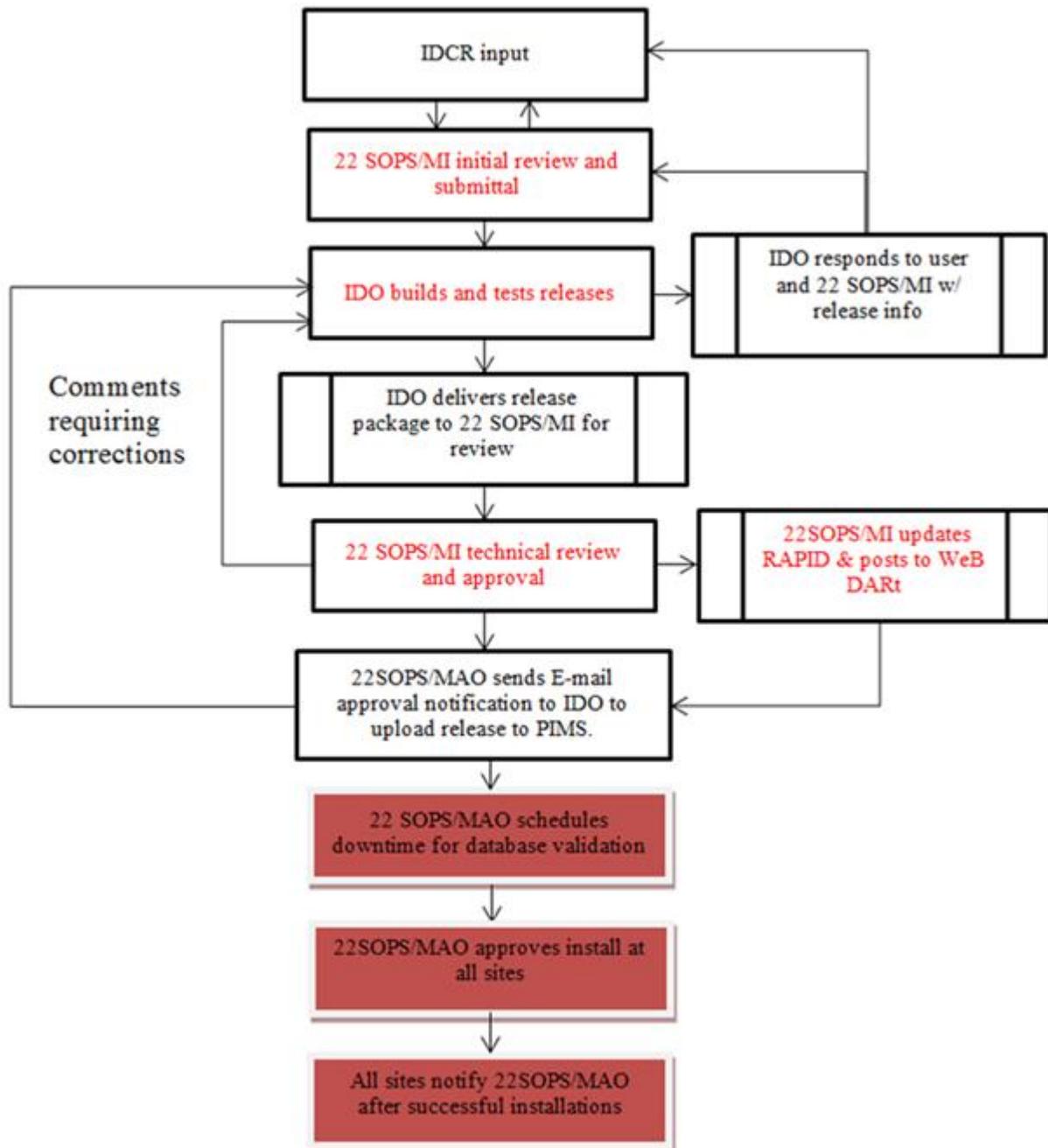
12.2.2.3. OPSEC. All content in the IDCR will be kept at the unclassified level. The only reference to the satellite or booster being supported will be the four digit IRON(s) pre-assigned to the user(s) by 22 SOPS/MAF. No details about upcoming launches or critical mission events are to be included on the form. The Need Date is the only "Need to Know" information required on the form.

12.2.2.4. Need Date. The IDCR form includes a space for a user-defined need date. The user specifies the date the new or modified configuration is required at the RTS(s) in order to support an activity. If no specific need date is required then the word "Routine" will be entered in this space, with the understanding the requested configuration(s) will be available at the RTS within six months of submittal. Typically all IDCRs should be implemented and available at the RTSs within 60 days of submission. On rare occasions, this process time may be compressed to meet unforeseen mission requirements with a "Quick Turn" submission. "Quick Turn" submissions should be kept to a minimum due to the large amount of time and resources needed to fulfill these requests. Users must plan for configuration contingencies, utilize the temporary "build and save" capability at the ARTS sites and make real-time parameter changes with RBC sites wherever possible in order to keep "Quick Turn" requests to a minimum.

12.2.3. MI Initial Review. MI conducts an initial technical review of the IDCR prior to submittal to the IDO. This will include a Need Date validation with the User if the IDCR is considered a Quick Turn. MI will evaluate and modify the IDCR when required, with the user's concurrence prior to IDO submittal. This may include signal quality, operational improvements, and/or adding other IRONs owned by users requiring the same changes.

12.2.4. IDO Receives the IDCR, builds, tests, and delivers the release package for review.

**Figure 12.1. RTS IRON Database Change Process Flowchart**



12.2.4.1. The IDO will analyze all IDCRs submitted and request clarification or information from MI if necessary. The IDO will “Rack and Stack” the received IDCRs in the upcoming release packages based on the identified Need Dates and IDO workload. The IDO will then respond to the IDCR submittal (within two business days of receipt) with an e-mail addressed to both MI and the user, identifying the planned IRON Database release version in which the change will be implemented, along with an estimated delivery date of the release’s review package. The package delivery date will be at least two weeks prior to the earliest Need Date included in the package. The two week period is necessary for an MI technical review, correction and re-verification (if necessary), delivery, installation and final checkout at BOSS and/or COOK.

12.2.4.2. IDO will input the applicable IDCR parameters into the ARTS and RBC IRON databases and test the newly built or modified IRON configurations in the ARTS Development and Modification Facility (ADMF) and/or the RBC Integrated Support Suite (RISS). Quick Look Reports (QLRs) will identify which configurations were tested along with any test failures or discrepancies.

12.2.4.3. IDO will provide a 22 SOPS Review Package that includes details of which ARTS and RBC IRON Configurations were built, modified or deleted and sufficient parameter displays or information to enable MI to assess whether the IRON databases were modified according to the user inputs. ARTS IRON Database Table additions and modification information will also be included for review. The package should include the following: the ARTS Release Description Document (RDD), RBC Screenshots (including the System Summary, Downlink, Uplink and Track Displays) of new or modified configurations, and the QLRs.

12.2.5. MI Review and Technical Approval. MI will assess the Review Package documents within three business days of receipt to determine if all user inputs were correctly implemented in both the ARTS and RBC releases. MI will respond via e-mail to the IDO and user if any discrepancies are discovered in the review requiring IDO rework. Once it is determined the release is technically accurate, MI will send an e-mail to 22 SOPS/MAF recommending technical approval of the release.

12.2.5.1. RAPID Tool Update. MI will update RAPID with the new release information as it is received and OMINS Network Support will announce when it has been posted to WeB DART coinciding with the technical approval of the release.

12.2.6. 22 SOPS/MAF will generate an e-mail to the IDO, approving the release for RTS distribution and another e-mail to COOK and BOSS approving the release for immediate ARTS and RBC installation and final delivery inspection. COOK and/or BOSS will utilize the “Change” and “New” buttons on the “All Parameters” page of the updated RAPID Tool to confirm the updates to the databases have been made correctly. Upon the successful verification of the releases at COOK and BOSS they will leave the release on their systems and inform 22 SOPS/MAF the release matches the IDCR. If any possible mission impacting errors or discrepancies are found during the COOK and/or BOSS verification the release will be pulled from the COOK and/or BOSS installations until the IDO corrects the errors and updates the release. 22 SOPS will then send an e-mail to all RTSs clearing the release for installation, pending local downtime approval.

12.2.6.1. All RTS sites will send an e-mail to 22 SOPS/MAF, the NSOM Representative and the 22SOPS/ Mission Integration mailbox with the date the release was loaded on each side of each RTS, completing this process.

### **12.3. Roles and Responsibilities:**

#### **12.3.1. User Responsibilities:**

12.3.1.1. Generate and/or approve the IDCR content prior to MI submittal to the IDO.

12.3.1.2. Work with MI and the IDO to provide clarifications or resolve any problems that come up during the IDCR Process.

#### **12.3.2. MI Responsibilities:**

12.3.2.1. Review and correct (when necessary) users' IDCR(s) prior to IDO submission. Ensure the user is informed and agrees with any changes to the IDCR prior to IDO submission.

12.3.2.2. Draft proposed IDCRs for users' review and possible follow-on IDO submission in order to clean up existing errors in the database.

12.3.2.3. Work with the IDO and users to resolve any problems that come up during the IDCR Process.

12.3.2.4. Periodically review the entire ARTS and RBC IRON Databases to ensure the RAPID Tool remains accurate and up-to-date. Provide suggested database improvements to the IDO in the form of general IDCRs when an individual user's configurations are not directly related (i.e. when currently un-used ARTS Tables have existing errors in them).

12.3.2.5. Review the IDO's IRON database releases for technical accuracy and provide technical approval of the releases to 22 SOPS/MAF.

12.3.2.6. Update the RAPID Tool with changes made in each release and post on WeB DART for User, RTS and AFSCN support group use.

#### **12.3.3. IDO Responsibilities:**

12.3.3.1. Provide feedback to the user and MI with an estimate of release version and delivery date of review package for each IDCR.

12.3.3.2. Work with MI and the users to receive clarifications or resolve any problems that come up during the IDCR Process.

12.3.3.3. Build, test, document and deliver the ARTS and RBC IRON database releases to MI for review and the RTSs for installation, based on the IDCR inputs received.

12.3.3.4. Correct and re-deliver the database in a timely manner if any errors or discrepancies are discovered during the review process.

#### **12.3.4. 22 SOPS/MAF Responsibilities:**

12.3.4.1. Overall approval authority for IRON Database Release and RTS installation, including notification to the community of the current release installation at each RTS via the 50 SW Modification Control Board (MCB) slides.

#### **12.3.5. NSOM Responsibilities:**

12.3.5.1. The BOSS and/or COOK operations teams load and verify that the new release matches the IDCR prior to all other RTS installations.

12.3.5.2. When the releases are approved all other RTS operations teams will load the new releases as soon as their schedule permits and with a consideration for upcoming mission requirements such as launches and data flow tests.

## Chapter 13

### TRANSMIT INHIBIT ZONE (TIZ) AND OBSCURA MANAGEMENT

**13.1. Purpose.** Accurate TIZ and Obscura data is essential to satellite contact efficiency and safety.

**13.2. Procedure .** Obscura data resides in the Web Base Data Analysis and Repository (WeB DART) database which is maintained by 22 SOPS/MAO and is used to maximize satellite contact times during mission operations. 22 SOPS/MAO is the only granting authority for both TIZs and Obscura data at each of the RGFs. Both obscura and TIZ values must be determined and implemented to establish when a satellite is visible from an antenna and provide safe operating parameters for RTS personnel on-site. The RTS uses these TIZs for radiation safety compliance during antenna operation. Obscura and TIZ data must be accurate and current for use in the AFSCN.

13.2.1. Obscura surveys identify 360-degree horizon profiles for each site antenna. Both hard and soft obscura data are obtained for each site's horizon profile. Hard obscura includes terrain, and structures both on and off site. Soft obscura includes the vegetation height above the hard obscura.

13.2.2. TIZs identify ranges of Azimuth and Elevation in which antenna transmission is prohibited. This prevents unsafe RF exposure to personnel on terrain, equipment or in buildings within the radiation hazard (RadHaz) distance from each antenna per IEEE C95.1-2005, *Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*. There are two types of TIZs, temporary and permanent. TIZs are considered temporary when the duration they are implemented is 30 days or less. Permanent TIZs are in place for more than 30 days and are installed in WeB DART.

13.2.3. Periodic obscura/TIZ assessments must be accomplished to identify temporary or permanent changes to antenna views and/or safe parameters to determine the need for detailed obscura/TIZ surveys. The 22 SOPS Obscura Integrated Product Team (IPT) monitors RTS working groups gather information about construction and other site activities that may cause changes to obscura and TIZ profiles from RTS personnel, RNL personnel or other agencies that are performing modifications to the RTS that will impact the current Obscura or TIZs. Obscura and TIZ profiles are continuously monitored and should be reevaluated at least every 2 years to determine the need for on-site obscura surveys.

13.2.4. If obscura/TIZ values change for a Remote Tracking Antenna, the new approved profiles will be integrated into WeB DART by the Obscura IPT. Updates will be placed in WeB DART and an automated message will be sent to all WeB DART users so that they may implement the change in their software. These changes are also sent to the RTS to update the TIZs.

JAMES P. ROSS, Colonel, USAF  
Commander

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

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ICD-509

***Prescribed Forms***

50 SW Form 79

***Adopted Forms***

Air Force (AF) Form 847, ***Recommendation for Change of Publication***

*Abbreviations and Acronyms*

**ADD**— Additional Communications  
**ADMF**— ARTS Development and Modification Facility  
**AF**— Air Force  
**AFB**— Air Force Base  
**AFI**— Air Force Instruction  
**AFMAN**— Air Force Manual  
**AFS**— Air Force Station  
**AFSCN**— Air Force Satellite Control Network  
**AFSPC**— Air Force Space Command  
**AFSPCI**— Air Force Space Command Instruction  
**AMBA**— Automatic Main Beam Acquisition  
**AOS**— AFSCN Operational Signals  
**AOS**— Acquisition of Signal  
**ARS**— Archival Recording System  
**ARTS**— Automated Remote Tracking Station  
**ATM**— Asynchronous Transfer Mode  
**C&M**— Control and Monitor  
**C&S**— Control and Status  
**CAT**— Category  
**CAT A**— Category Amber  
**CAT R**— Category Red  
**CCS**— Command, Control, and Status  
**CFP**— Communications Focal Point  
**COLA**— Collision Avoidance  
**COMM**— Communications  
**COMSEC**— Communications Security  
**CONUS**— Continental United States  
**CPCA**— Camp Parks  
**CRF**— Change Request Form  
**CSE**— Contact Schedule Execution  
**CSM**— Contact Support Message

**CTS**— Colorado Tracking Station  
**CUE**— Common User Elements  
**DAF**— Department of the Air Force  
**DATMS**— Defense ATM Service  
**DCC**— Distributed Communications Control  
**DEFT**— Data Entry FormAT  
**DGS**— Diego Garcia Tracking Station  
**DISA**— Defense Information System Agency  
**DISN**— Defense Information System Network  
**DISAC**— DISA Circular  
**DoD**— Department of Defense  
**DRSN**— Defense Red Switch Network  
**DSCS**— Defense Satellite Communications System  
**DSN**— Defense Switch Network  
**DTG - Date-and**—Time Grouping  
**ECP**— Engineering Change Proposal  
**EDD**— Estimated Delivery Date  
**ELSET**— See TLE  
**EMI**— Electromagnetic Interference  
**EOSOF**— Ellison Onizuka Satellite Operations Facility  
**ESD**— Electronic Schedule Dissemination  
**ETIC**— Estimated Time in Commission/ Estimated Time for Completion  
**ETRO**— Estimated Time Return to Operation  
**EVCF**— Eastern Vehicle Checkout Facility  
**EXU**— AFSCN External User  
**FCAC**— **Frequency** Control and Analysis Center  
**GC**— Ground Controller  
**GMT**— Greenwich Mean Time  
**GSO**— Ground System Operator  
**GTS**— Guam Tracking Station  
**HEO**— High Earth Orbit  
**HTS**— Hawaii Tracking Station

**HVAC**— Heating, Ventilation, and Air Conditioning

**IAW**— In Accordance With

**ICD**— Interface Control Document

**IDCR**— IRON Database Change Request

**IDO**— IRON Database Office

**INC**— Inter-nodal Communications

**IRON**— Inter-range Operations Number

**IPT**— Integrated Product Team

**IST**— Integrated Sources Telephones

**JCN**— Job Control Number

**LEO**— Low Earth Orbit

**LOS**— Loss of Signal

**LSET**— See TLE

**MCC**— Mission Control Complex

**MCB**— Modification Control Board

**MI**— Mission Integration

**MIP**— Maintenance in Progress

**MIR**— Mission Impact Report

**MMN - Meet-Me**—Net

**MLP - Multi**—Line Phone

**MOA**— Memorandum of Agreement

**MSC**— Manning Schedule Change

**MUE**— Mission Unique Equipment

**NAF**— Numbered Air Force

**NCC**— Network Communications Complex

**NCC**— Network Control Center

**NCMDR**— Network Crew Commander

**NCCH**— Network Crew Chief

**NEDS**— NORAD Element Data Sets

**NHS**— New Hampshire Tracking Station

**NIB**— Non-interference Basis

**NORAD**— North American Air Defense

**NOC**— Network Operations Center

**NOPS**— NRO Operations Squadron

**NRO**— National Reconnaissance Office

**NTO**— Network Tasking Order

**OA**— Orbital Analysis

**OCN**— Operational Control Node

**OCN**— Outage Control Number

**OD**— Operations Directive

**OPSEC**— Operations Security

**OSR**— Operational Switch Replacement

**PAP**— Program Action Plan

**PRI**— Primary Communications

**PTF**— Patch and Test Facility

**QLR**— Quick Look Report

**QUICK**— Question User's IRON Configuration Knowledge

**RAF**— Royal Air Force

**RAPID - Remote Tracking Station (RTS) All Parameters Inter**—Range Operations Number (IRON) Data

**RBC**— RTS Block Change

**RDD**— Release Description Document

**RGF**— Remote Ground Facility (See RTS, Both are used to describe AFSCN antenna sites)

**RFI**— Radio Frequency Interference

**RISS**— RBC Integrated Support Suite

**RNL**— Range Network Logistics

**RSC**— RTD&E Satellite Center

**RTD&E**— Research, Testing, Development, and Evaluation

**RTS**— Remote Tracking Station (See RGF)

**RWS**— Radiate Warning System

**SAFB**— Schriever Air Force Base

**SARM**— Set Asynchronous Response Mode

**SAT**— Satellite Acquisition Table

**SCA**— Satellite Control Authority

**SKIWEB**— Strategic Knowledge Integration Web

**SME**— Subject Matter Expert  
**SOC**— Satellite Operations Center  
**SOPS**— Space Operations Squadron  
**SSO**— Satellite System Operator  
**STE**— Secure Telephone Equipment  
**SV**— Secure Voice  
**SVO**— Satellite Vehicle Operator  
**SWI**— Space Wing Instruction  
**TAT**— Turnaround To  
**TBR**— To Be Resolved  
**TCF**— Tech Control Facility  
**TCS**— RAF Oakhanger Telemetry & Command Station  
**TCSS**— Telephone Connection and Switching Subsystem  
**TLE**— Two Line Mean Element Set (Replaces ELSET/ LSET/ 2LMNES)  
**TSIP**— Troubleshooting In Progress  
**TT&C**— Telemetry, Tracking and Commanding  
**TTS**— Thule Tracking Station  
**TLM**— Telemetry  
**UTC**— Coordinated Universal Time  
**VAFB**— Vandenberg Air Force Station  
**VTS**— Vandenberg Tracking Station  
**WANIU**— Wide Area Network Interface Unit  
**WeBDARt**— Web Based Data Analysis Repository  
**Z**—Zulu

### *Terms*

**Seven—day** - is the scheduling element consisting of all flight and non-flight activities for the seven day period beginning Monday at 0000Z.

**Additional communications (ADD—)** - the additional communications between an OCN and a RTS.

**Air Force Satellite Control Network (AFSCN) Resources**— Resources which consist of Remote Tracking Stations, Software Development and Test Laboratories, Vehicle Checkout Facilities, Communications Centers, and any other resources committed to supporting AFSCN operations.

**AFSCN Operational Signals (AOS)**— the communications across the AFSCN communications network between range and user assets.

**Category Outage**— an AFSCN outage condition or outage report for an AFSCN resource or resources.

**Command Restrictions**— restrictions in commanding imposed by proximity to pad activities and telemetry interference from adjoining ranges.

**Common User Element (CUE)**— AFSCN resource commonly available to multiple users.

**Communications Assets**— AFSCN assets that provide a conduit between user and range assets.

**Communications Outage**—A communications outage is an outage condition, or the report for an outage condition, on those systems, subsystems, and equipment identified as part of the AFSCN communications network and voice systems.

**Conditional Delete**— Used by Network Scheduling in conjunction with a launch or downtime to indicate the Realtime disposition of each satellite contact impacted by a potential launch slip or potential completion time of a downtime. Conditional Deletes are listed on the Daily Conflict Briefing Listing.

**Conflict**— marker assigned to a satellite contact(s) identified during the optimization phase of pre-deconfliction or during real time deconfliction tasks where Network Scheduling was unable to schedule the contact without violating PAP constraints or user requirements due to resource demands exceeding available resources, or program requirements that cannot be met because of technical limitations.

**Conflict Briefing Listing**— listing identifying Conflict Deletes, Conditional Deletes, TBRs, or potentially severe AFSCN network limitations.

**Conflict Briefing Period**— the upcoming 24-hour period starting at the end of Realtime for which schedulers are optimizing resource allocation while minimizing conflicts.

**Conflict Delete**— label assigned to a program request that did not make it into the NTO but where the user mission is impacted. If no alternative satellite contact or satellite contact configuration can fulfill the mission requirements, then the user will designate the original request as a Conflict Delete.

**Config Net**— voice conference dedicated to configuration operations with a specific RTS side and side.

**Control & Monitor (C&M)**— layer of communications across the AFSCN communications network between DCC and WANIU. DCCs control and monitor the dynamic connections (AOS, static, and test connections) made between WANIUs. Loss of C&M does not necessarily disrupt the connections between WANIUs, but does prevent operators from making changes and from determining the status of those connections.

**Critical Spares**— spare parts vital to the support of unit operations for single-points-of-failure. A list of critical spares will normally be a subset of the unit's total spare parts requirement.

**Crypto**— shortened version of encryption gear. Telecommunications equipment used to securely encrypt transmitted information to meet OPSEC or COMSEC requirements.

**Daily Conflict Resolution**— The daily conflict resolution process permits allocation of AFSCN resources to an activity with the highest priority for a particular time and site.

**Data Entry Format (DEFT)**— method for submitting resource requests for low-orbit vehicles. DEFT is an ESD file format that provides both vehicle visibilities and required contact supports within the same file.

**Electromagnetic Interference (EMI)/ Radio Frequency Interference (RFI)**— electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of a signal. EMI/RFI can be intentional or unintentional, manmade or phenomena.

**Electronic Schedule Dissemination (ESD)**— dedicated computer network used to distribute the NTO as well as all other scheduling products and requests.

**Element Set (TLE)**— provides pointing data for RTS acquisition of a satellite vehicle for a satellite contact

**End User**— Final beneficiary of mission data downloaded from a space vehicle.

**External Agencies**— Organizations not assigned to the 50th Space Wing, but who use AFSCN resources.

**Failed Support**— Indicates that problems were encountered during the satellite contact resulting in the failure to meet all planned mission objectives of the satellite contact defined by operational directives or pre-established by the unit, but the user was not impacted.

**Flight Activity**— task involving a launch or on-orbit support of a particular satellite or space-based program.

**Flight Support**— activity performed to provide direct launch or flight support of a satellite or ballistic vehicle, including countdown activities, and RTS/vehicle satellite contacts.

**Inter-nodal communications (INC)** - the communications between the two OCNs. INC provides a path for contingency routing should direct communications with either node fail.

**Inter-Range Operations Number (IRON)** - randomly generated four-digit number assigned by the AFSCN to each space vehicle, as supported in flight or pre-flight.

**Lost Support**— Indicates problems were encountered during the satellite contact that resulted in not meeting all mission objectives defined by operational directives or pre-established by the unit and the user was impacted.

**Manning Schedule Change (MSC)**— formal correspondence with a user for adding, modifying, or deleting satellite contact requirements falling within the Conflict Briefing, To-Do, and seven-day scheduling periods. An MSC provides an audit trail for later review and investigation should the need arise.

**Marginal Support**— Problems were encountered during the satellite contact but all mission objectives were met and the user was not impacted.

**Mission Impact Report (MIR)**— report submitted detailing any anomaly encountered during a scheduled satellite contact. MIRs are used to document anomalies, provide audit trails, and determine trending data for recurring problems.

**Mission Unique Equipment (MUE—)** - AFSCN resource dedicated to a unique mission.

**Network Operations Center (NOC—)** - either the 21 SOPS NOC, responsible for overseeing communications assets and 21 SOPS range locations, or the 22 SOPS NOC, responsible for managing the NTO and network management assets.

**Network Scheduling—** function of the 22 SOPS NOC at SAFB responsible for real time integrity, allocation of AFSCN CUE resources, and management of realtime activities.

**Network Tasking Order (NTO—)** - Identifies the authorized and scheduled use of AFSCN resources.

**NIB activity—** Non-Impacting Basis, a task deemed non-impacting to regular AFSCN operations.

**Non—Flight Activity** - task requiring AFSCN resources but not involving a launch or on-orbit support of a particular satellite or space-based program. Non-flight activities are scheduled in the NTO as downtimes.

**Operations Directive—** a standardized document within the Universal Documentation System used by agencies launching boosters and/or satellites and is supported by the Air Force (launch ranges/facilities) and the Air Force Satellite Control Network GSUs. This document is used to detail support requirements across a wide variety of areas (telemetry recording, video recording, safety, etc.) prior to launch and subsequent satellite on-orbit supports.

**PART—** Satellite contact that uses a portion of a satellite's visibility. Typically a contact that supports mid, geo-stationary, geo-synchronous, and high earth orbits.

**PASS—** Satellite contact that uses the entire satellite's visibility. Typically a contact that supports a vehicle in a low earth orbit, where the time the vehicle is visible to the ground facility is limited.

**Path—** used during outage reporting to identify the portion of communications between two locations. The path is defined as the communications from bulk encryption to bulk encryption, including the encryption gear, but not including equipment on the unencrypted side of the bulk encryption.

**Playback—** playback of telemetry recorded at an RTS from a previous satellite contact to the user. A playback uses scheduled resources for playback and transport the information from RTS to user.

**Pre-Deconfliction Listing—** listing produced by Network Scheduling during the Conflict Briefing time period after the optimization phase has minimized the number of satellite contact conflicts based on PAP requirements.

**Predicted Radio Frequency Interference (RFI—)** - potential for radio frequency interference based on shared frequency and proximity of two or more vehicles. Describes the frequencies, minimum separation of the vehicles involved, and the times the vehicles are relationally in close proximity, therefore describing the time frame that the threat for interference exists.

**Pre-Flight Support—** activity involving flight preparation prior to a launch countdown.

**Pre-Pass Briefing**— voice conference during the turnaround time prior to actual support time in which users verify with an RTS acquisition data, pass requirements, communication and equipment configurations, and other information needed for a successful satellite contact.

**Primary communications (PRI—)** - the primary communications between an OCN and a RGF.

**Program Action Plan (PAP—)** - detailed profile of a user's satellite contact requirements.

**Program Delete**— label assigned to a contact request from an AFSCN user withdrawn due to internal requirements, program requirements met with alternative satellite contacts, and so on.

**QUICK**— Question User's IRON Configuration Knowledge. Desktop computer tool that allows users to create accurate IDCs based on program requirements for specific Telemetry, Tracking and Commanding (TT&C) parameters.

**Radiation Request**— request from an RTS for permission to radiate for engineering or maintenance tests.

**Range Outage**—A range outage is an outage condition, or the report for an outage condition, on those systems, subsystems, and equipment at an RGF supporting AFSCN operations not already identified as a communications asset.

**Range Resource**— AFSCN resource that provides a direct interface with space-based systems.

**RAPID**— Remote Tracking Station (RTS) All Parameters Inter-Range Operations Number (IRON) Data. Desktop computer tool that allows users to create accurate IDCs, verify changes made within each IRON database delivery and manage RTS Telemetry, Tracking and Commanding (TT&C) parameters.

**Realtime Conflict**— two or more satellite contacts requiring the same equipment simultaneously during the realtime period.

**Realtime Period**— period covered by the published NTO. Realtime can extend as much as 45 hours into the future when the latest 24-hour portion of the NTO is published on time.

**Remote Tracking Station (RTS—)** (Also Remote Ground Facility or RGF) - Refers to one of seven stations located geographically around the world.

**Satellite Acquisition Table (SAT—)** - detailed listing of where and when each space vehicle is visible at each RTS.

**Satellite Contact**— the time allocated at an RTS site-side for a pass (PASS) or partial pass (PART) support.

**Satellite Contact Priority**— prioritization of satellite contact mission types used to resolve conflicts. Attachment 2 contains approved priority schema.

**Satellite Control Authority (SCA—)** - agency recognized as the authority to make decisions regarding a satellite.

**Satellite Operations Center (SOC—)** - work center for satellite command and control operations.

**Strategic Knowledge Integration Web (SKIWEB—)** - Internet based tool used to provide two way blogging communications with JSpOC.

**Sun RFI Conflict**— conflict where the sun and a satellite simultaneously cross within the beam width of an antenna. Users will be notified of these conflicts in the NTO.

**Support**— See “Satellite Contact”.

**Support Priority**— See “Satellite Contact Priority”.

**System Outage**—A system outage is an outage condition, or the report for an outage condition, on an AFSCN mission capability that cannot be identified as a communications or range asset, or attributed to a facility failure.

**Technical Control/Patch and Test (TCF/PTF)**— facility responsible for maintaining military telecommunications for a station IAW DISA Circulars.

**Task**— Any item in the ESD database which uses or limits CUE or MUE resources. Includes satellite contacts, maintenance downtimes, tests, and other non-orbit AFSCN resource impacting activities.

**To Be Resolved (TBR)**— - deferred conflict where the negotiation process awaits completion of an event or milestone which could alter the relative priority of the competing users.

**To—Do Period** - transition period between the seven-day and Conflict Briefing periods.

**Turnaround Conflict**— label assigned to a satellite contact scheduled with less pre-pass time than normal. Standard turnaround requirements for routine satellite contacts are established for each spacecraft prior to launch.

**Two—line Mean Element Sets (TLE)** - backup pointing angles for vehicle satellite contacts, should auto-track capability fail, provided to each RTS via ESD.

**User element**— All AFSCN user assets or a single AFSCN user or AFSCN asset dedicated to integrating a satellite operator with the AFSCN.

**Vehicle Folder**— Provides the RTS operator with contact preparation and operating instructions for supporting launch, early orbit, and on-orbit activities.

**Vehicle Emergency**— unexpected or serious situation that will, without prompt action, result in mission loss or degradation of the satellite.

## Attachment 2

## AFSCN PRIORITY MATRIX

Table A2.1. AFSCN Priority Matrix.

PRIORITY	TYPE	SUB-TYPE	DESCRIPTION
1	EMERGENCY	a. Human	Human mission.
		b. Non-Human	1. Impending (i.e. within 6 hours) loss of a spacecraft. 2. Impending (i.e. within 6 hours) permanent loss of a spacecraft's primary payload.
2	U.K. NATIONAL REQUIREMENT		IAW the International Agreement between the US and the United Kingdom (UK), this is a UK national operational requirement which applies to TCS-A or TCS-B (but not both simultaneously) only.
3	SPACE/CYBER SUPERIORITY	a. Counter Space/Cyber Operations	Contact required to execute offensive or defensive counter space/cyber operations.
		b. Space Force Enhancement	Contact required to provide Space Force Enhancement (e.g., Flex Power) to a supported combatant commander or national level agency.
		c. Collision Avoidance	Spacecraft maneuvers to avoid imminent (i.e. less than 6 hours) collision with another space object.
4	LAUNCH AND EARLY ORBIT	1. Launch	Launch + 6 hours (6 revs for LEO satellites) for all vehicles (does not include booster or upper-stage support after separation).
		b. Early Orbit	Includes critical orbit transfer maneuvers, critical attitude data collection contacts required to accomplish orbit transfer maneuvers, first acquisition of sun/earth/stars and initial deployments (solar arrays, antennas, etc.) required beyond six hours after launch.
5	CRITICAL COMMANDING	a. Payload	1. Payload commanding which, if delayed, will result in the loss of critical mission data*. 2. Payload commanding which, if delayed, will result in payload capability going NMC. 3. Other mission data collection, whether the collect occurs on the AFSCN or not.
		b. Bus	Bus commanding required which, if delayed, will result in payload or bus capability going NMC.
		1. LEO/MEO Disposal	Contact required to safely place a LEO or MEO vehicle into a disposal orbit. Applies to critical maneuvers or critical data collection related to the disposal.

<b>PRIORIT Y</b>	<b>TYPE</b>	<b>SUB-TYPE</b>	<b>DESCRIPTION</b>
<b>6</b>	URGENT COMMANDING	a. Payload	Payload commanding which, if delayed, will result in payload capability going PMC.
		b. Bus	Bus commanding which, if delayed, will result in payload or bus capability going PMC.
<b>7</b>	SINGULARLY IMPORTANT US GOVT R&D EVENT		Contact with a research & development spacecraft where there is a one-time window of opportunity to perform mission data collection or other mission analysis.
<b>8</b>	UNSCHEDULED CRITICAL AFSCN EQUIPMENT MAINTENANCE		These requests apply to the Real-Time period and were not previously scheduled. Such an input must be requested by the RTS commander or the site supervisor and approved by the Network Commander. Do not request this priority unless appropriate personnel and equipment are available to accomplish the requested downtime.
<b>9</b>	MANEUVER	a. Station Change	Supports required to maneuver a satellite to a new position, to include GEO disposal and non-critical LEO/MEO disposal contacts.
		b. Station Keeping	Supports required for satellite station keeping.
<b>10</b>	PRE- COORDINATED MAINTENANCE		These requests apply to downtimes in Real-Time which can be accomplished with little, as defined by the 22 SOPS Network scheduler, or no impact to the NTO.
<b>11</b>	NON-MISSION DATA RELATED HOUSEKEEPIN G	a. Payload	Includes, but is not limited to, calibrations, tests, checkouts, etc.
		b. Bus	Includes, but is not limited to, battery reconditioning, sensor updates, eclipse activities, vector uploads, etc.
<b>12</b>	STATE OF HEALTH	a. Constrained	State of health satellite contacts which, if missed, result in a violation of Orbital Operations Handbook criteria.
		b. Non- constrained	All other state of health satellite contacts.
<b>13</b>	NON-SPACE FLIGHT DEVELOPMENT		Preflight activities required such as launch rehearsals, compatibility tests, exercises, data flows, etc.
<b>14</b>	PASSIVE TRACK	a. Constrained	Passive track and record satellite contacts which, if missed, result in a violation of Orbital Operations Handbook criteria.
		b. Non- constrained	All other track and record satellite contacts.

PRIORITY	TYPE	SUB-TYPE	DESCRIPTION
15	NON-CRITICAL		All non-critical activities to include Test and Check Out (TACO) satellite contacts, training, proficiencies, currencies, backup satellite contacts, etc., not meeting other criteria contained within this priority scheme.
16	** NON-TIME SENSITIVE PLAYBACKS		Transfer of non-time-critical spacecraft data between the RTS and the AFSCN user.
<p><b>Note:</b> Mission priority for specific IRONs or individual missions may be altered based upon direction from Commander USSTRATCOM or Commander Joint Functional Component Command Space (JFCC)-SPACE through the Joint Space Operations Center (JSpOC).</p> <p>* Critical Mission data is defined as data that directly supports a Combatant Commander or National Level Agency.</p> <p>**Time sensitive playbacks will retain the same priority as the original support.</p>			

## Attachment 3

## REMOTE GROUND FACILITIES

**A3.1.** There are currently two types of range antenna core systems: Automated Remote Tracking Station (ARTS), and its replacement, Remote Block Change (RBC).

**Table A3.1. AFSCN Remote Ground Facilities**

RGF	Call-sign	Sides	Organization	Location
CTS	PIKE		22 SOPS	Schriever AFB, CO
DGS	REEF	-A, -B	21 SOPS Det 1	Diego Garcia, Indian Ocean
GTS	GUAM	-A, -B	21 SOPS Det 2	Andersen AFB, Guam
HTS	HULA	-A, -B	21 SOPS Det 3	Kaena Point, Oahu, HI
NHS	BOSS	-A, -B	23 SOPS	New Hampshire AFS, NH
TCS	LION	-A, -B, -C	23 SOPS OL-A	RAF Oakhanger, Hampshire, England
TTS	POGO	-A, -B	23 SOPS Det 1	Thule AFB, Greenland
VTS	COOK	-A, -B	21 SOPS	Vandenberg AFB, CA
EVCF	BEACH	-A, -B	23 SOPS	Cape Canaveral, FL

**Colorado Tracking Station (CTS)** PIKE is used for testing, training and verification of various ground system upgrades and is not used for nominal AFSCN operations.

**Diego Garcia Tracking Station (DGS)** has two range tracking antennas: A-side is an ARTS antenna, B-side is a RBC antenna.

**Guam Tracking Station (GTS)** has two range tracking antennas: GUAM-A, an ARTS antenna, and GUAM-B, an RBC antenna.

**Hawaii Tracking Station (HTS)** has two range tracking antennas: HULA-A, an ARTS antenna, and HULA-B, an ARTS antenna.

**New Hampshire Tracking Station (NHS)** has two range tracking antennas: BOSS-A, an ARTS antenna, and BOSS-B, an ARTS antenna.

**Oakhanger Telemetry and Tracking Squadron (TCS)** has three range tracking antennas: LION-A, an ARTS antenna, LION-B, an ARTS antenna, and LION-C, an RBC antenna.

**Thule Tracking Station (TTS)** has two range tracking antennas: POGO-A, an ARTS antenna and POGO-B, an ARTS antenna.

**Vandenberg Tracking Station (VTS)** has two range tracking antennas: COOK-A, an upgraded RBC antenna, and COOK-B, an ARTS antenna.

**Eastern Vehicle Checkout Facility (EVCF)** has no range tracking antennas, but instead supports the checkout of space systems at the launch facilities at Cape Canaveral using RBC and ARTS equipment. The A-side is an ARTS antenna; B-side is an RBC antenna

**Attachment 4**  
**SITE DOWNTIME PREFIXES**

**Table A4.1. NTO Function Codes**

<b>Prefix</b>	<b>Work Center</b>	<b>Purpose</b>
A		
B	NHS (BOSS)	NHS maintenance and troubleshooting.
C	VTS (COOK)	VTS maintenance and troubleshooting.
D	CTS (PIKE)	CTS maintenance and troubleshooting.
E		
F	50 SCS	SAFB Comm Testing
G	GTS (GUAM)	GTS maintenance and troubleshooting.
H	HTS (HULA)	HTS maintenance and troubleshooting.
I	SCNC (Depot)	ECP and other depot level modifications.
J		
K	TCS (LION)	TCS maintenance and troubleshooting.
L		
M	SCNC (Depot)	Depot level maintenance and troubleshooting.
N		
O		
P	TTS (POGO)	TTS maintenance and troubleshooting.
Q		
R		
S		
T	50 SCS TCF	SAFB OCN maintenance and troubleshooting.
U		
V	EVCF (BEACH)	EVCF maintenance and troubleshooting.
W	21 SOPS NOC	AFSCN communications maintenance and troubleshooting.
X	21 SOPS NOC	DISA Authorized Service Interruptions (ASIs).
Y	DGS (REEF)	DGS maintenance and troubleshooting.
Z	22 SOPS NOC	Network management maintenance and troubleshooting.

## Attachment 5

## SECURE VOICE PROCEDURES

**A5.1. Secure Voice Conference Nets.** Many AFSCN areas have one or more DRSN ISTs configured to access the Configuration Nets. The classification for any conversation is limited to SECRET.

A5.1.1. Access the Net and announce your presence using the following format:  
<your call-sign> + “on” + optionally “the net”

**A5.2. DRSN Direct-dial.** Many AFSCN areas have one or more DRSN ISTs between which a direct call can be made. The classification for any call is established IAW DISAC.

A5.2.1. When calling a DRSN extension from the same DRSN switch (locally), simply dial the last four numbers of the DRSN number.

A5.2.2. When calling from a different DRSN switch, dial 80 followed by the full DRSN number.

A5.2.3. Tables A5.1 to A5.9 provides the DRSN numbers for each RTS positions. An RTS IST is connected to both the SAFB and VAFB DRSN switches and can receive a call through either switch as if local to that location.

**Table A5.1. DGS DRSN Direct-Dial Numbers**

IST	RTS Position	SAFB DRSN	VAFB DRSN
DGS 1	REEF-A ARTS	560-4261	276-3961
DGS 2	REEF COMM	560-4262	276-3962
DGS 3	REEF ARCH	560-4263	276-3963
DGS 4	REEFB-RBC	560-4264	276-3964

**Table A5.2. GTS DRSN Direct-Dial Numbers**

IST	RTS Position	SAFB DRSN	VAFB DRSN
GTS 1	GUAM-A ARTS	560-4221	276-3921
GTS 2	GUAM-A COMM	560-4222	276-3922
GTS 3	GUAM-B ARTS	560-4223	276-3923
GTS 4	GUAM-B COMM	560-4224	276-3924
GTS 5	GUAM COMM-1	560-4225	276-3925
GTS 6	GUAM COMM-2	560-4226	276-3926
GTS 7	GUAMB-RBC	560-4227	276-3927

**Table A5.3. HTS DRSN Direct-Dial Numbers**

IST	RTS Position	SAFB DRSN	VAFB DRSN
HTS 1	HULA-A-1	560-4211	276-3911
HTS 2	HULA-A-2	560-4212	276-3912
HTS 3	HULA-B-1	560-4213	276-3913
HTS 4	HULA-B-2	560-4214	276-3914

IST	RTS Position	SAFB DRSN	VAFB DRSN
HTS 5	HULA COMM-A	560-4215	276-3915
HTS 6	HULA COMM-B	560-4216	276-3916

**Table A5.4. NHS DRSN Direct-Dial Numbers**

IST	RTS Position	SAFB DRSN	VAFB DRSN
NHS 1	BOSS-A ARTS	560-4241	276-3941
NHS 2	BOSS-B ARTS	560-4242	276-3942
NHS 3	BOSS SRB	560-4243	276-3943
NHS 4	BOSS COMM	560-4244	276-3944

**Table A5.5. TCS DRSN Direct-Dial Numbers**

IST	RTS Position	SAFB DRSN	VAFB DRSN
TCS 1	LION-A ARTS	560-4231	276-3931
TCS 2	LION-A REC	560-4232	276-3932
TCS 3	LION-B ARTS	560-4233	276-3933
TCS 4	LION-B REC	560-4234	276-3934
TCS 5	LION COMM	560-4235	276-3935
TCS 6	LION-C REC	560-4236	276-3936

**Table A5.6. TTS DRSN Direct-Dial Numbers**

IST	RTS Position	SAFB DRSN	VAFB DRSN
TTS 1	POGO-A ARTS	560-4271	276-3971
TTS 2	POGO-B ARTS	560-4272	276-3972
TTS 4	POGO COMM	560-4276	276-3976

**Table A5.7. VTS DRSN Direct-Dial Numbers**

IST	RTS Position	SAFB DRSN	VAFB DRSN
VTS 1	COOK-A COMM	560-4252	276-3952
VTS 2	COOK-B ARTS	560-4253	276-3953
VTS 3	COOK-B COMM	560-4254	276-3954
VTS 4	COOK DLT	560-4255	276-3955
VTS 5	COOK SCR	560-4256	276-3956
VTS 6	COOK-A RBC	560-4257	276-3957

## Attachment 6

## AFSCN WORK CENTERS CONTACT INFORMATION

## A6.1. Network Crew Commander / Network Crew Chief (NCMDR/NCCH)

Table A6.1. NCMDR/NCCH Contact Information

Purpose	Commercial	DSN
Unclassified Voice (STE capable)	719-567-6919	560-6919
NOC Override	719-567-6767	
Purpose	DRSN	
Classified Voice (IST)	4417	

## A6.2. Network Scheduling.

Table A6.2. Network Scheduling Contact Information

Purpose	Commercial	DSN
Unclassified Voice (STE capable)	719-567-5445	560-5445
Unclassified Fax	719-567-5846	560-5846
Purpose	DRSN	
Classified Voice (IST)	4415	

## A6.3. Orbital Analysis (OA).

Table A6.3. OA Contact Information; contact NMCDR after hours

Purpose	Commercial	DSN
Unclassified Voice (STE capable)	719-567-7856	560-7856
Unclassified Fax	719-567-3748	560-3748

## A6.4. 22 SOPS Mission Planning.

Table A6.4. 22 SOPS Mission Planning Contact Information

Purpose	Commercial	DSN
Unclassified Voice	719-567-2879	560-2879
Unclassified Fax	719-567-3264	560-3264
Classified Voice (STE capable)	719-567-5445	560-5445
Purpose	DRSN	
Classified Voice (IST)	4415	

## A6.5. 50 NOG Communications Focal Point (CFP).

**Table A6.5. CFP Contact Information**

<b>Purpose</b>	<b>Commercial</b>	<b>DSN</b>
Unclassified Voice	719-567-2666	560-2666
Unclassified Fax	719-567-6406	560-6406
Classified Voice (STE)	719-567-2638	560-2638

**A6.6. SAFB Tech Control Facility (SAFB TCF).****Table A6.6. SAFB TCF Contact Information**

<b>Purpose</b>	<b>Commercial</b>	<b>DSN</b>
Classified Voice (IST)	560-4109	560-4109
Unclassified Voice	719-567-2212	560-2212

**A6.7. SAFB Secure Voice Operations (SAFB SVO).****Table A6.7. SAFB Secure Voice Operations (SAFB SVO).**

<b>SAFB Work Center</b>	<b>SAFB DRSN</b>
SAFB Secure Voice Operator	6501 6502 6503

**A6.8. EOSOF Patch and Test Facility (EOSOF PTF).****Table A6.8. EOSOF Patch and Test Facility (EOSOF PTF).**

<b>Purpose</b>	<b>Commercial</b>	<b>DSN</b>
Unclassified Voice	805-606-3276	276-3276

**A6.9. VAFB Secure Voice Operations (VAFB SVO).****Table A6.9. VAFB Secure Voice Operations (VAFB SVO).**

<b>VAFB Work Center</b>	<b>VAFB DRSN</b>
VAFB Secure Voice Operator	3651 3652 3653

**A6.10. 21 SOPS comm control.**

**Table A6.10. 21 SOPS comm control Contact Information**

<b>Purpose</b>	<b>Commercial</b>	<b>DSN</b>
Unclassified Voice	805-605-3840	275-3840
Unclassified Fax	805-606-9143	276-9143
Classified Voice (STE)	805-606-9123	276-9123
Classified Fax (STE)	805-606-9323	276-9323
<b>Purpose</b>	<b>DRSN</b>	
21 SOPS NOC (Comm Control)	4500	
21 SOPS Crypto Operations (DICECOMM)	4501	
21 SOPS PTF (DICE TECH)	6591/2	

## Attachment 7

## NON-SECURE VOICE PROCEDURES

**A7.1. Meet-me-net (MMN).** To access an operational MMN:

A7.1.1. Dial into the appropriate bridge using the number provided in Table A7.1. Table A7.2 identifies on which bridge each MMN resides. You should hear, “Welcome.”

A7.1.2. Dial the appropriate moderator code. You should hear either, “*Thank you. You will now be added to the conference,*” or “*First.*”

A7.1.3. If “first”, or if the RGF area does not appear to be already in the conference, dial the *blast dial* code.

**Table A7.1. Conference Bridge Access Numbers**

Bridge	DSN	Commercial	Local	Blast Dial
SAFB-A	560-1116	719-567-1116	567-1116	23#1
SAFB-B	560-1117	719-567-1117	567-1117	23#1
VAFB	276-9960	805-606-9960	606-9960	23#1

**Table A7.2. RGF Meet-Me-Net Moderator Codes**

Ops Area	SAFB Bridge	VAFB Bridge	Moderator Code
PIKE	SAFB-A	VAFB	7000#
REEF-A	SAFB-B	VAFB	7001#
REEF-B	SAFB-A	VAFB	7003#
GUAM-A	SAFB-A	VAFB	7004#
GUAM-B	SAFB-B	VAFB	7005#
HULA-A	SAFB-A	VAFB	7006#
HULA-B	SAFB-B	VAFB	7007#
BOSS-A	SAFB-A	VAFB	7008#
BOSS-B	SAFB-B	VAFB	7009#
LION-A	SAFB-A	VAFB	7010#
LION-B	SAFB-B	VAFB	7011#
LION-C	SAFB-B	VAFB	5413#
POGO-A	SAFB-A	VAFB	7012#
POGO-B	SAFB-B	VAFB	7013#
COOK-A	SAFB-B	VAFB	7016#
COOK-B	SAFB-B	VAFB	7018#
EVCF	SAFB-A	VAFB	7002#

**A7.2. Non-secure Voice (NSV).** To contact an RGF operational area dial one of the contact numbers from Table A7.3. The local numbers are used when local or using a tie-line.

**Table A7.3. RGF Operational Area Contact Numbers**

<b>Ops Area</b>	<b>DSN</b>	<b>Commercial</b>		
PIKE	560-6778	719-567-6778		
REEF-A	315-370-7215	011-246-370-7215		
REEF-B	315-370-7288	011-246-370-7288		
GUAM-A	315-366-9131	671-366-9131		
GUAM-B	315-366-9108	671-366-9108		
HULA-A	315-446-5261	808-697-4261		
HULA-B	315-446-5240	808-697-4240		
BOSS-A	489-2292 489-2293	603-471-2292 603-471-2293		
BOSS-B	489-2290 489-2291	603-471-2290 603-471-2291		
LION Comm	314-250-4011	011-44-1420-404000		
LION-A	314-250-4159	011-44-1420-404011		
LION-B	314-250-4080	011-44-1420-477961		
LION-C	314-250-4096	011-44-1420-404096		
POGO Comm				
POGO-A	629-6270 629-6383	719-474-3840 ext 6270 719-474-3840 ext 6383		
POGO-B	629-6272 629-6383	719-474-3840 ext 6272 719-474-3840 ext 6383		
COOK-A	275-7501	805-605-7501		
COOK-B	275-7339	805-605-7339		
EVCF	467-5053 467-5054	321-853-5053 321-853-5054		

## Attachment 8

## VOICE OPERATIONS CONTINGENCY PROCEDURES

**A8.1. Failure to Establish Voice Communication for C/C/S or CCS-C Support.** Action to be taken if no communications are established versus loss of voice communications.

**Table A8.1. Voice Communications Failure, Prepass Start Time**

<b>Satellite Operator</b>	<b>RTS Operator</b>
Initialize session to establish WANIU connection. Follow NOC override procedure if required resources are not available. If non-standard equipment configurations are required, the voice communication failure procedure must provide written direction either (1) instructing the RTS to wait for establishment of voice communications before configuring or (2) giving permission for autonomous configuration.	Initialize the configuration listed on the NTO. Make any non-standard configuration changes. Follow the Loss of Voice Communications procedure in the applicable operations directive or letter. Check if primary voice is operational and contact 22SOPS Network Operations scheduling to determine if the contact was deleted.
Report fatal or degrading communication problem to the NCC.	Enable RWS (Radiate Warning System).
Bypass prepass testing.  The voice communication failure procedure must provide written direction when a coordinate SARM is required.	Ensure NEDS is disabled if a coordinated SARM is required. Wait for establishment of alternate voice while monitoring equipment status. Immediately report any new fatal or degrading RTS problems to the NCC. Monitor ESD for schedule change. Terminate or extend the satellite contact as required. Monitor WANIU resources availability (channel maps). Check ESD for scheduled change if maps not established.

**Table A8.2. Voice Communications Failure, ETA minus 5 Minutes**

<b>Satellite Operator</b>	<b>RTS Operator</b>
Transmit SARM Directive. Validate a successful SARM and active C/C/S or CCS-C link.	Look for a SARM and C&S port connection.
Transmit antenna-pointing angles.	Monitor for SOC generated antenna-pointing angles (C/C/S or CCS-C Slave bus).
Determine to continue or terminate satellite contact.	Ensure uplink modulation is disabled unless otherwise stated in the OD.

**Table A8.3. Voice Communications Failure, ETA minus 2 Minutes**

<b>Satellite Operator</b>	<b>RTS Operator</b>
Verify antenna at point-of-acquisition.	Enable NEDS if C/C/S or CCS-C Slave bus is not available. Ensure (1) cable unwrap completed (Waiting for ETA displayed in the ARTS Tracking Event Window), and (2) antenna is at the predicted point-of-acquisition.
Verify RWS status.	Verify RWS timeout complete and transmitter able to go active. Monitor for the active directive.

**Table A8.4. Voice Communications Failure, ETA minus 0 Minutes**

<b>Satellite Operator</b>	<b>RTS Operator</b>
Send transmitter active directive (antenna dummy load). Verify transmitter status.	Active directive received – enable uplink modulation if voice communication failure procedures states to enable after active.
Verify autotrack status.	Ensure space acquisition and autotrack.
Verify valid range.	Enable uplink modulation if voice communication failure procedures states to enable uplink modulation after good autotrack. Verify valid range acquisition.
Voice communication procedure must provide written direction detailing when to break autotrack, slave the antenna, and re-acquire the space vehicle.	Keyhole (2-axis antenna). Slave antenna and re-acquire the space vehicle per the briefing. If the RTS operator fails to receive a briefing prior to a loss of voice communications, then the operator (1) monitors antenna performance when elevation angle reaches 10 degrees prior to E-max (maximum sustainable autotrack elevation), (2) slaves the antenna at the start of acceleration lag or loss of autotrack, and (3) re-acquires the space vehicle with good tracking error after mid-pass.

**Table A8.5. Voice Communications Failure, Scheduled Support Termination Time**

<b>Satellite Operator</b>	<b>RTS Operator</b>
Send disconnect directive and release WANIU resources.	Fade the active ARTS configuration at scheduled termination time.

**A8.2. Procedures Common to All Loss of Communications Situations.**

**Table A8.6. Procedures Common to All Loss of Communications Situations**

<b>Satellite Operator</b>	<b>All Net Participants</b>	<b>RTS Operator</b>
<p>1. Attempt to re-establish communication with RTS</p> <p>2. The SOC will continue with normal support functions as much as possible.</p>	<p>1. Continue to announce actions taken on the nets until nets are working again. This will ensure actions are documented on tape and keeps the far end aware of what is happening in the event that the communication failure is on the local end receive side only.</p>	<p>1. Verify C/C/S or CCS-C Capabilities: Check that good slave angles are being received from the SOC.</p> <p>2. Support terminations: Terminate satellite contact at the briefed termination time (if a satellite contact termination time is briefed) or at the scheduled stop time (satellite contact termination time not briefed).</p>

**A8.3. Loss of Communications Situations Procedures.****Table A8.7. Loss of Communications Procedures, Procedure #1**

<b>Activity</b>	<b>Action</b>
WANIU Resources	Attempt to connect resources.
NOC Override	IAW 22 SOPS Procedures
SARM	Ensure NEDS is disabled until C&S port connection.
Establish Alternate Voice	Satellite operator will attempt to establish.
Non-standard Equipment Configurations	Configure IAW Vehicle Folder if not briefed.
Antenna Pointing Angles/Vehicle Acquisition	Acquire space vehicle via C/C/S or CCS-C Slavebus. NEDS may be used in the absence of a C/C/S or CCS-C Slavebus if current TLE is available. Manually acquire using briefed or locally printed angles when appropriate.
Transmitter Passive Active	C/C/S or CCS-C Slavebus Present: If passive, wait for the SOC to go active at the brief time. Manually go active by ETA+30 seconds if active directive not received. If active, remain active. Manually go passive one minute prior to end of support if passive directive not received. C/C/S or CCS-C Slavebus Not Present: If passive, remain passive. If active, remain active. Manually go passive one minute prior to end of support if passive direct not received.
Uplink Modulation	Enable 10 Seconds after going active.
Autotrack	ETA+0
Telemetry	Transmit telemetry both primary and additional links. Record through end of support time.
Keyhole (2-axis	Slave antenna and reacquire the space vehicle per the briefing. If the RTS

antenna)	operator fails to receive a briefing prior to a loss of voice communications, then the operator (1) monitors antenna performance when elevation angle reaches 10 degrees prior to E-Max (maximum sustainable autotrack elevation), (2) slave the antenna at the start of acceleration lag or loss of autotrack, and (3) re-acquire the space vehicle with good tracking error after mid-pass.
Support Termination	Monitor for C&S port disconnection. Manually disconnect C&S port(s) and fade active ARTS configuration at scheduled time.

**Table A8.8. Loss of Communications Procedures, Procedure #2**

<b>Activity</b>	<b>Action</b>
WANIU Resources	DO NOT attempt to connect resources.
NOC Override	IAW 22 SOPS Procedures
SARM	N/A
Establish Alternate Voice	Satellite operator will attempt to establish.
Non-standard Equipment Configurations	Configure IAW Vehicle Folder if not briefed.
Antenna Pointing Angles/Vehicle Acquisition	Do not attempt.
Transmitter Passive Active	C/C/S or CCS-C Slavebus Present: If passive, wait for the SOC to go active at the brief time. Manually go active by ETA+30 seconds if active directive not received. If active, remain active. Manually go passive one minute prior to end of support if passive directive not received. C/C/S or CCS-C Slavebus Not Present: If passive, remain passive. If active, remain active. Manually go passive one minute prior to end of support if passive direct not received.
Uplink Modulation	Do not enable.
Autotrack	Do not attempt.
Telemetry	N/A
Keyhole (2-axis antenna)	Slave antenna and reacquire the space vehicle per the briefing. If the RTS operator fails to receive a briefing prior to a loss of voice communications, then the operator (1) monitors antenna performance when elevation angle reaches 10 degrees prior to E-Max (maximum sustainable autotrack elevation), (2) slave the antenna at the start of acceleration lag or loss of autotrack, and (3) re-acquire the space vehicle with good tracking error after mid-pass.
Support Termination	Monitor for C&S port disconnection. Manually disconnect C&S port(s) and fade active ARTS configuration at scheduled time.

**Table A8.9. Loss of Communications Procedures, Procedure #3**

<b>Activity</b>	<b>Action</b>
WANIU Resources	Attempt to connect resources.
NOC Override	IAW 22 SOPS Procedures
SARM	Ensure NEDS is disabled until C&S port connection.
Establish Alternate Voice	Satellite operator will attempt to establish.
Non-standard Equipment Configurations	Configure IAW Vehicle Folder if not briefed.
Antenna Pointing Angles/Vehicle Acquisition	Acquire space vehicle via C/C/S or CCS-C Slavebus. NEDS may be used in the absence of a C/C/S or CCS-C Slavebus if current TLE is available. Manually acquire using briefed or locally printed angles when appropriate.
Transmitter Passive Active	C/C/S or CCS-C Slavebus Present: If passive, wait for the SOC to go active at the brief time. Manually go active by ETA+30 seconds if active directive not received. If active, remain active. Manually go passive one minute prior to end of support if passive directive not received. C/C/S or CCS-C Slavebus Not Present: If passive, remain passive. If active, remain active. Manually go passive one minute prior to end of support if passive direct not received.
Uplink Modulation	Do not enable.
Autotrack	ETA+0
Telemetry	Transmit telemetry both primary and additional links. Record through end of support time.
Keyhole (2-axis antenna)	Slave antenna and reacquire the space vehicle per the briefing. If the RTS operator fails to receive a briefing prior to a loss of voice communications, then the operator (1) monitors antenna performance when elevation angle reaches 10 degrees prior to E-Max (maximum sustainable autotrack elevation), (2) slave the antenna at the start of acceleration lag or loss of autotrack, and (3) re-acquire the space vehicle with good tracking error after mid-pass.
Support Termination	Monitor for C&S port disconnection. Manually disconnect C&S port(s) and fade active ARTS configuration at scheduled time.

**Table A8.10. Loss of Communications Procedures, Procedure #4**

<b>Activity</b>	<b>Action</b>
WANIU Resources	Attempt to connect resources.
NOC Override	IAW 22 SOPS Procedures
SARM	Ensure NEDS is disabled until C&S port connection.
Establish Alternate Voice	Satellite operator will attempt to establish.
Non-standard Equipment Configurations	Configure IAW Vehicle Folder if not briefed.
Antenna Pointing Angles/Vehicle Acquisition	Acquire space vehicle via C/C/S or CCS-C Slavebus, if available. NEDS may be used in the absence of a C/C/S or CCS-C slavebus if current TLE is available. Manually acquire using briefed or locally printed angles when appropriate.
Transmitter Passive Active	C/C/S or C/C/S-C Slavebus Present: If passive, wait for the SOC to go active at the briefed time. Manually go active by ETA+30 seconds if active directive not received. If active, remain active. Manually go passive one minute prior to end of support if passive directive not received. C/C/S-C Slavebus Not Present: If passive, remain passive. If active go passive.
Uplink Modulation	Enable 10 Seconds after going active. Disable after passive.
Autotrack	ETA+0
Telemetry	Transmit telemetry both primary and additional links. Record through end of support time.
Keyhole (2-axis antenna)	Slave antenna and reacquire the space vehicle per the briefing. If the RTS Operator fails to receive a briefing prior to a loss of voice communications, then the operator (1) monitors antenna performance when elevation angle reaches 10 degrees prior to E-max (maximum sustainable autotrack elevations), (2) slaves the antenna at the start of acceleration lag or loss of autotrack, and (3) re-acquires the space vehicle with good tracking error after mid-pass.
Event Verification	

**Table A8.11. Loss of Communications Procedures, Procedure #5**

<b>Activity</b>	<b>Action</b>
WANIU Resources	Attempt to connect resources.
NOC Override	IAW 22 SOPS Procedures
SARM	Ensure NEDS is disabled until C&S port connection.
Establish Alternate Voice	Satellite operator will attempt to establish.
Non-standard Equipment Configurations	Configure IAW Vehicle Folder if not briefed.
Antenna Pointing Angles/Vehicle Acquisition	Acquire space vehicle via C/C/S or CCS-C Slavebus, if available. NEDS may be used in the absence of a C/C/S or CCS-C slavebus if current TLE is available. Manually acquire using briefed or locally printed angles when appropriate.
Transmitter Passive Active	C/C/S or C/C/S-C Slavebus Present: If passive, wait for the SOC to go active at the briefed time. Manually go active by ETA+30 seconds if active directive not received. If active, remain active. Manually go passive one minute prior to end of support if passive directive not received. C/C/S-C Slavebus Not Present: If passive, remain passive. If active go passive.
Uplink Modulation	Enable 10 Seconds after going active. Disable after passive.
Autotrack	ETA+0
Telemetry	Transmit telemetry both primary and additional links. Record through end of support time.
Keyhole (2-axis antenna)	Slave antenna and reacquire the space vehicle per the briefing. If the RTS Operator fails to receive a briefing prior to a loss of voice communications, then the operator (1) monitors antenna performance when elevation angle reaches 10 degrees prior to E-max (maximum sustainable autotrack elevations), (2) slaves the antenna at the start of acceleration lag or loss of autotrack, and (3) re-acquires the space vehicle with good tracking error after mid-pass.
Event Verification	If so briefed, verify turnoff of subcarrier 30 seconds after transmitter passive.

**Table A8.12. Loss of Communications Procedures, Procedure #6**

<b>Activity</b>	<b>Action</b>
WANIU Resources	Attempt to connect resources.
NOC Override	IAW 22 SOPS Procedures
SARM	Ensure NEDS is disabled until C&S port connection.
Establish Alternate Voice	Satellite operator will attempt to establish.
Non-standard Equipment Configurations	Configure IAW Vehicle Folder if not briefed.
Antenna Pointing Angles/Vehicle Acquisition	Acquire space vehicle via C/C/S or CCS-C Slavebus, if available. NEDS may be used in the absence of a C/C/S or CCS-C slavebus if current TLE is available. Manually acquire using briefed or locally printed angles when appropriate.
Transmitter Passive Active	C/C/S or C/C/S-C Slavebus Present: If passive, wait for the SOC to go active at the briefed time. Manually go active by ETA+30 seconds if active directive not received. If active, remain active. Manually go passive one minute prior to end of support if passive directive not received. C/C/S-C Slavebus Not Present: If passive, remain passive. If active go passive.
Uplink Modulation	Enable after solid autotrack.
Autotrack	At Turn-On.
Telemetry	Transmit telemetry both primary and additional links. Record through end of support time.
Keyhole (2-axis antenna)	Slave antenna and reacquire the space vehicle per the briefing. If the RTS Operator fails to receive a briefing prior to a loss of voice communications, then the operator (1) monitors antenna performance when elevation angle reaches 10 degrees prior to E-max (maximum sustainable autotrack elevations), (2) slaves the antenna at the start of acceleration lag or loss of autotrack, and (3) re-acquires the space vehicle with good tracking error after mid-pass.
Event Verification	

**Table A8.13. Loss of Communications Procedures, Procedure #7**

<b>Activity</b>	<b>Action</b>
WANIU Resources	Satellite operator attempts to establish.
NOC Override	IAW 22 SOPS Procedures
SARM	RTS ensure NEDS is disabled until C&S port connection.
Establish Alternate Voice	Satellite operator will attempt to establish.
Non-standard Equipment Configurations	RTS will configure IAW vehicle folder if not briefed.
Antenna Pointing Angles/Vehicle Acquisition	<ol style="list-style-type: none"> <li>1. Acquire space vehicle via C/C/S or CCS-C slavebus.</li> <li>2. NEDS may be used in the absence of a C/C/S or CCS-C slavebus if current TLE is available.</li> <li>3. Manually acquire using briefed or locally printed angles when appropriate.</li> </ol>
Transmitter Passive/Active C/C/S or CCS-C Slavebus Present	<ol style="list-style-type: none"> <li>1. SOC will transmit the active directive.</li> <li>2. If passive, remain passive.</li> <li>3. If active, remain active.</li> <li>4. Go passive 1-minute prior to scheduled stop time.</li> </ol>
Transmitter Passive/Active C/C/S or CCS-C Slavebus Not Present	<ol style="list-style-type: none"> <li>1. If passive, remain passive.</li> <li>2. If active, remain active.</li> <li>3. Go passive 1-minute prior to scheduled stop time.</li> </ol>
Uplink Modulation	Enable after active.
Autotrack	ETA +0
Telemetry	Transmit telemetry both primary and additional links. Record through end of support time.
Keyhole (2-axis antenna)	<p>Slave antenna and reacquire the space vehicle per the briefing. If the RTS operator fails to receive a briefing prior to loss of voice communications, then the RTS operator:</p> <ol style="list-style-type: none"> <li>1. Monitors antenna performance when elevation reaches 10 degrees prior to E-Max (maximum sustainable autotrack elevation).</li> <li>2. Slaves the antenna at the start of acceleration lag or loss of autotrack.</li> <li>3. Re-acquires the space vehicle with good tracking error after mid-pass.</li> </ol>
Event Verification	N/A
Support Termination	Monitor for C&S port disconnection. Manually disconnect C&S port(s) and fade active ARTS configuration at scheduled time.

## Attachment 9

## AFSCN COMMON OPERATIONS TERMINOLOGY LEXICON

Table A9.1. AFSCN Common Operations Terminology Lexicon

Abbreviation	Phrase	Definition	Use
2-LMES	Two-Line Mean Element Set	Two 69-character lines of data used to determine the position and velocity of a space vehicle.	Both ARTS & RBC
ACU	Antenna Control Unit	Used by ARTS to control the ground station antenna.	ARTS
ADCCP	Advanced Data Communication Control Procedures	Protocol used to provide point-to-point or point-to-multipoint data transmission. To remotely command the space vehicle, point the ground station antenna, provide limited control of RTS equipment, and request status.	Both
ALM	Automatic Local Mode	Standard ARTS mode of operation for local operator control.	ARTS
AOS/LOS	Acquisition of Signal/Loss of Signal	One of two methods for manually offsetting antenna third axis using briefed azimuth and elevation angles.	RBC
ARTS	Automated Remote Tracking Station	Ground station equipment installed at the Remote Tracking Stations.	ARTS
BER	Bit Error Rate	Ratio of the number of bits incorrectly received to the total number sent during a specific time period. Used to measure downlink, uplink, and communications equipment performance.	Both
BMP	Bump	Local ARTS command for setting the Contact Start Time to the current time plus the time required to complete a TRR mini-calibration.	ARTS

C&S	Control and Status	Computer subsystem for ground station equipment configuration and control.	Both
C/C/S	Command/Control/Status	The ADCCP link between the control center and RTS.	Both
CSE	Contact and Schedule Execution	RBC GUI for viewing and modifying the RBC contact schedule.	RBC
CSM	Contact Support Message	Displays and allows changes to the high level ARTS IRON database configuration.	ARTS
CST	Contact Start Time	Scheduled start time of a space vehicle contact.	Both
DEU	Digital Electronics Unit	Used by RBC to control the ground station antenna.	RBC
DSP	Digital Signal Processor	Used by RBC to demodulate the downlink signals and generate uplink signals.	RBC
EIRP	Equivalent/Effective Isotropically Radiated Power	RF power at the antenna aperture based on the amount of antenna gain.	Both
ELSET	Element Set	Two 69-character lines of data used to determine the position and velocity of a space vehicle.	Both
FSK	Frequency Shift Keying	Modulation scheme in which commands are transmitted through discrete frequency changes of the carrier wave.	Both
HPA	High Power Amplifier	Used to amplify the uplink signal to a power level necessary to support the space vehicle.	Both
IRON	Inter-range Operations Number	Identification number assigned to a space vehicle.	Both
LIP	Legacy Interface Processor	RBC processor used to process the different AFSCN serial command formats (ADCCP, binary, and external user).	RBC
LNA	Low Noise Amplifier	Device placed after the antenna feed used to amplify the received downlink signal while injecting a minimal amount of noise.	Both

MLE	Maximum Likelihood Estimation	RBC receiver designed to track space vehicles that emit very low signal levels, exhibit rapid signal strength fluctuations, or exhibit high Doppler rates.	RBC
NEDS	NORAD Element Data Set	ARTS processor chassis for providing local antenna pointing data, command backup, pointing angle reports, and testing the C&S C/C/S ports.	ARTS
NSGLS	Non-SGLS	Term given to a RF space vehicle downlink other than Carrier-1 state-of-health or Carrier-2. Also used for binary commanding.	Both
PRN	Pseudo Random Noise	A pseudo-random binary code used to determine range or distance between the ground station and space vehicle.	Both
RBC	RTS Block Upgrade	Replacement of the ARTS ground station equipment.	RBC
RF	Radio Frequency	Frequency of electrical signals used to produce and detect radio waves.	Both
RTS	Remote Tracking Station	AFSCN site or ground station used to (1) relay commands and telemetry, and (2) provide tracking, range, range rate, and telemetry recording.	Both
RWS	Radiate Warning System	Visual and audible safety system for warning personnel of a possible radiation hazard. Antenna radiation is prohibited during the initial warning period.	Both
SARM	Set Asynchronous Response Mode	Transmitted by the control center to initialize the Command/Control/Status link.	Both
SGLS	Space Ground Link Subsystem	S-Band uplink, FSK commanding, and L-band SOH downlink used by the AFSCN for telemetry, tracking, and commanding.	Both
SOH	State-of-Health	SV status normally on a 1.024 MHz, 1.25 MHz or 1.7 MHz subcarrier.	Both
TDR	Telemetry Data Receiver	Used by ARTS to support NSGLS RF	ARTS

		downlink signals.	
TRR	Telemetry, Range, and Range Rate Receiver	Used by ARTS to support SGLS Carrier-1, SGLS Carrier-2, range function, and range rate function.	ARTS
UA	Unnumbered Acknowledgment	Response sent from the ARTS C&S after receiving a SARM.	Both
WANIU	Wide Area Network Interface Unit	Device to provide a connection to the AFSCN Wide Area Network by multiplexing and de-multiplexing an ATM aggregate signal.	Both

Phrase	Definition	Use
Acquisition	Intercepting, detecting, and tracking the RF signal from a space vehicle.	Both
Active	Ground station transmission of the uplink carrier by switching the HPA output from the dummy load to the antenna input.	Both
Auto-track	Mode which allows the antenna to automatically track the space vehicle after meeting certain preconditions such as signal present, receiver lock, and signal strength threshold.	Both
Break Lock	Used to force a receiver to acquire a different RF downlink signal component. Normally used when a side-band acquisition is suspected.	Both
Binary Commanding	Binary data stream directly or BPSK modulated on the uplink carrier.	Both
Bump the clock	SOC directing the RTS operator to initiate the BMP command.	ARTS
Carrier	A RF or radio signal used to convey (carry) information such as data or voice.	Both
Carrier-1	Term given to the primary state-of-health RF space vehicle downlink carrier.	Both

Coherent Mode	Space vehicle transponder mode for measuring valid range rate in which the downlink carrier frequency is coherent to the ground station uplink frequency at an exact ratio of 256/205.	Both
Command Tones	FSK tones representing a “1”, “0”, and “S” commanding scheme.	Both
Directive	Information found inside an ADCCP message.	Both
Disconnect	Directive transmitted by the control center to terminated data transfer on the C/C/S link.	Both
Doppler	Change in the perceived frequency or wavelength of a downlink signal due to the motion of the space vehicle.	Both
Down-converter	Used by RBC to convert the RF downlink signal frequency to a 70 MHz intermediate frequency before sending it to the DSP.	RBC
Downlink	RF signal transmitted by a space vehicle.	Both
Downlink Channel	One of twenty possible receiver channel assignments between 2202.5 MHz and 2297.5 MHz.	ARTS
Downlink Frequency	Downlink carrier frequency between 2.2 GHz and 2.3 GHz.	Both
Dummy Load	Device used to absorb the RF energy at the HPA output instead of sending it to the antenna for transmission.	Both
Echo	Sample of commands taken at the HPA output used for validation.	Both
Enable NEDS	RTS operator will enable locally generated ephemeris if a 2LMES is available.	Both
Enable uplink modulation or uplink mod after active	RTS operator will enable uplink modulation after the receipt of an active directive and confirming the transmitter is in an active state.	Both
Enable uplink modulation or uplink	RTS operator will enable uplink modulation after confirming antenna is tracking the main lobe.	Both

mod after auto-track		
Enable uplink modulation or uplink mod by direction	RTS operator will enable uplink modulation only on specific verbal direction from the SOC operator.	Both
Forced Track	Mode which ignores any auto-track preconditions forcing the antenna to attempt track on the RF signal from a space vehicle.	Both
Equipment String	String of equipment required to process telemetry and/or generate an uplink carrier. ARTS has three basic telemetry equipment strings (TRR, TDR-1, and TDR-2). RBC has five equipment strings consisting of a down converter, Digital Signal Processor, and up converter (String-1, String-2, String-3, String-4, and String-5) which handles both telemetry processing and uplink carrier generation.	Both
Keyhole	Region directly above a 2-axis parabolic antenna where tracking and telemetry data is lost due to antenna servo velocity and acceleration limitations.	ARTS
FSK Commanding	Frequency Shift Key used to modulate 1, 0, or S-tones on the uplink carrier.	Both
Manual Position Guide	One of two methods of manually positioning the antenna third axis using briefed azimuth and elevation acquisition angles combined with the Manual Position Guide table.	RBC
Message	Data contents in the ADCCP information field sent from the control center.	Both
Mode-1 Commanding	When a missing command packet is detected, commands to the space vehicle will halt when the command buffer is empty.	Both
Mode-2 Commanding	When a missing command packet is detected, commands will continue to the space vehicle. The faulty command packet will be processed and transmitted.	Both
Modulation	The process of varying a RF signal or waveform in order to use that signal to convey information such as data or voice.	Both

Nulls	Ground station transmits no command tones during idle periods. S-tones are normally transmitted during command idle periods.	Both
Obscure	Any obstacle blocking the transmission/reception path between the space vehicle and ground station antenna classified as "soft" or "hard". "Soft" obscure is a semi-transparent object (radome, tower) that doesn't fully block the transmission/reception path, and may only cause signal attenuation.	Both
OP-1	ARTS TRR equipment string designation normally used to support SGLS SOH.	ARTS
OP-2	ARTS TRR or TDR equipment string designation normally used to support SGLS SOH or NSGLS FM/FM.	ARTS
OP-3	ARTS TRR or TDR equipment string designation normally used to support SGLS Carrier-2 or NSGLS FM/FM.	ARTS
OP-4	TDR equipment string designation normally used to support higher NSGLS data rates.	ARTS
OP-5	TDR equipment string designation normally used to support higher NSGLS data rates.	ARTS
Passive or Go Passive	Termination of the ground station uplink carrier transmission by switching the HPA output from the antenna input to the dummy load.	Both
Passive, track and record	During a loss of voice communications, the RTS operator will (1) ensure the transmitter is in a passive state, (2) continue to track the space vehicle and (3) record available telemetry until the scheduled termination time.	Both
Range	Measured distance or communications path length between the ground station and space vehicle using PRN and Doppler.	Both
Range Rate	Measure velocity or speed of the space vehicle using Doppler but only valid in the coherent mode.	Both
Raster Scan	A scanning pattern of horizontal (azimuth) and vertical (elevation) lines that form a grid square.	RB C

Receiver Lock	Phase lock of a RF signal by a receiver after detecting signal present. Also called narrowband tracking due to the selection of a very narrow receiver bandwidth.	Both
Sector Scan	A horizontal or azimuth only (no elevation movement) scanning pattern in which antenna rotation is less than 360 degrees.	Both
Side-band	Frequencies higher or lower than the carrier frequency, as a result of the modulation process, containing power. The ground station receivers are supposed to lock to the carrier frequency and not a side-band.	Both
Side-lobe	Lobes produced by an antenna beam pattern on each side of the main beam normally lower in signal strength. The ground station antenna is supposed to track the main lobe and not a side-lobe.	Both
Signal Present	Detection of a RF signal by a receiver. Signal must be within the beamwidth of the antenna and receiver bandwidth.	Both
Signal Strength	Signal strength of the detected RF downlink signal, measure in dBm, referenced to the LNA input.	Both
Slave	To position the ground station antenna using antenna pointing data sent by the control center or provided by a local source.	Both
Slave-bus	Antenna pointing data sent by the control center or provided by a local source.	Both
Special Frequency	Uplink or downlink carrier frequency not assigned to channels 1 through 20.	Both
Spiral Scan	A scanning pattern consisting of a planar or flat curve that winds around a fixed point.	RBC
Standby for connects	SOC alerting the RTS operator a SARM is being sent.	Both
Stream-1 or TLM-1	Designation for the first of five WANIU isochronous telemetry channels. ARTS can route the output of OP-1 through OP-5 to the WANIU TLM-1 channel. RBC can route the output of String-1 through String-5 to the WANIU TLM-1 channel.	Both

Stream-2 or TLM-2	Designation for the second of five WANIU isochronous telemetry channels. ARTS can route the output of OP-1 through OP-5 to the WANIU TLM-2 channel. RBC can route the output of String-1 through String-5 to the WANIU TLM-2 channel.	Both
Stream-3 or TLM-3	Designation for the third of five WANIU isochronous telemetry channels. ARTS can route the output of OP-1 through OP-5 to the WANIU TLM-3 channel. RBC can route the output of String-1 through String-5 to the WANIU TLM-3 channel.	Both
Stream-4 or TLM-4	Designation for the fourth of five WANIU isochronous telemetry channels. ARTS can route the output of OP-1 through OP-5 to the WANIU TLM-4 channel. RBC can route the output of String-1 through String-5 to the WANIU TLM-4 channel.	Both
Stream-5 or TLM-5	Designation for the fifth of five WANIU isochronous telemetry channels. ARTS can route the output of OP-1 through OP-5 to the WANIU TLM-5 channel. RBC can route the output of String-1 through String-5 to the WANIU TLM-5 channel.	Both
String-1	RBC equipment string designation consisting of Downconverter-1, Digital Signal Processor-1, and Upconverter-1 normally used for SGLS SOH telemetry, range, range rate, and uplink commanding.	RBC
String-2	RBC equipment string designation consisting of Downconverter-2, Digital Signal Processor-2 and Upconverter-2 normally used to support higher NSGLS data rates.	RBC
String-3	RBC equipment string designation consisting of Downconverter-3, Digital Signal Processor-3 and Upconverter-3 normally used to support higher NSGLS data rates.	RBC
String-4	RBC equipment string designation consisting of Downconverter-4, Digital Signal Processor-4 and Upconverter-4 normally used to support higher NSGLS data rates.	RBC
String-5	RBC redundant equipment string designation consisting of Downconverter-5, Digital Signal Processor-5 and	RBC

	Upconverter-5.	
Track	Ability of the RTS antenna to automatically follow the RF downlink signal from a space vehicle based on position error signals normally generated in the antenna feed.	Both
Transmit Inhibit	Programmable zones which inhibits the antenna from radiating.	Both
TRR Mini-Calibration	Self-calibration routine performed by the TRR receiver.	ARTS
Up-converter	Used by RBC to convert the 70 MHz DSP output to the required uplink or test frequency.	RBC
Uplink	RF signal transmitted by a ground station.	Both
Uplink Channel	One of twenty possible transmitter channel assignments between 1763.720703 MHz and 1839.794922 MHz.	ARTS
Uplink Frequency	Downlink carrier frequency between 1.75 GHz and 1.85 GHz.	Both