Raytheon

CDRL Sequence No. A012-EDW-004

Digital Airport Surveillance Radar (DASR)

Final Site Activation and Transition Plan (SATP) – Edwards AFB, California

Contract No. F19628-96-D-0038

23 March 2007

Prepared for
GATSG/PK
75 Vandenberg Drive, Bldg. 1630
Hanscom AFB, MA 01731-2103

Prepared by
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Air Traffic Management Systems
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FOREWORD

This Site Activation and Transition Plan (SATP) was prepared for Department of Defense Contract F19628-96-D-0038, Contract Data Requirements List (CDRL) No. A012 and is formatted in accordance with Data Item Description (DID) OT-95-SATP. The format was modified by request from the FAA ATO-T-440/ASR-11 organization as follows: This SATP describes the processes that will be used to implement an ASR-11 system at Edwards AFB, CA. This location is designated as the "R-2508 Complex". The R-2508 Complex TRACON is served by approach radar and six gap filler radars. All seven will be replaced with the ASR-11 in a multiyear modernization program. This SATP includes plans for all seven replacements. The basic document contains concepts that are common to each with site-specific data provided in an attachment. Section 1 describes national and local management of the Digital Airport Surveillance Radar (DASR). Section 2 describes Raytheon's approach and methodology for site design, site preparation, installation and checkout, transition, and equipment dismantling planning. Section 3 contains implementation flowchart and local schedule.

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1. ASR-11 SITE ACTIVATION AND TRANSITION PLAN OVERVIEW

1.1 Scope

This Site Activation and Transition Plan (SATP) describes the processes required to implement an Airport Surveillance Radar Model 11 (ASR-11) at Federal Aviation Administration (FAA) airports. This plan includes site design, site preparation of the radar facility, installation and checkout of the radar equipment, and transition to the ASR-11 from the existing radar system. The focus of the document is coordination of activities and the impact that the processes will have on airport and air traffic control operations. This SATP covers activities in detail from site design through site acceptance. An overview of activities from site acceptance through commissioning is also included. These activities, occurring between site acceptance and commissioning, are covered in detail in a separate ASR-11 Transition Plan to be developed by the FAA for each site.

1.2 Purpose

This SATP describes the processes that will be used to implement an ASR-11 system at Edwards AFB, CA. This location is designated as the "R-2508 Complex". The R-2508 Complex TRACON is served by an approach radar and six gap filler radars. All seven will be replaced with the ASR-11 in a multiyear modernization program. This SATP includes plans for all seven replacements. The basic document contains concepts that are common to each with site-specific data provided in an attachment. The SATP is developed to ensure that the project will be performed in an efficient and coordinated manner. It is a planning tool for national, regional, and local FAA and Raytheon personnel for the activities associated with ASR-11 site activation and transition.

1.3 SATP Development Process

This site-specific SATP is developed based on data collected during the site design survey. It is first issued as a Preliminary SATP. This version is reviewed for accuracy and completeness by the FAA and comments are forwarded to Raytheon via ATO-T-440/ASR-11. Raytheon will hold onto the comments until the FAA provides Raytheon authorization to bid the approved Facility/Antenna Tower Design (FATD). At that point, Raytheon will complete a second site design survey to validate the SATP and a Final SATP will be generated incorporating all FAA comments received earlier. The Final SATP will be reviewed by the FAA and subsequently approved. Once the document is final, changes to the document may still be accommodated. Comments should be forwarded to ATO-T-440/ASR-11.

1.4 SATP Layout

This SATP is organized into the following sections:

Section 1 includes general information about the ASR-11 project, roles and responsibilities, and site activation and transition scenarios.

Section 2 includes the detailed plan for site activation and transition from site design through site acceptance. It also includes an overview of activities from site acceptance to commissioning and existing ASR deactivation. It includes details about the events that occur, their sequence, the impact of those events, and the coordination required.

Section 3 presents a typical project schedule and activity flowchart.

Attachments 1-7 contain site-specific information for each radar site.

Appendix A contains a glossary of terms.

Appendix B contains detailed procedures.

Appendix C contains the summary of the RF Interference Mitigation Analysis.

1.5 ASR-11 System Equipment

The following equipment is included with the ASR-11 System and will be installed as described in Section 2:

- **Radar Site**. The ASR-11 System consists of an integrated Primary Surveillance Radar (PSR) and Monopulse Secondary Surveillance Radar (MSSR) system and the supporting facility.
- **Communications Data Link**. Includes redundant radar data paths, either fiber optic, leased telephone lines, or microwave link. For most sites, this will consist of redundant fiber optic cables encased in concrete running from the radar site to the R-2508 Complex TRACON.
- **Remote Auxiliary Equipment**. May include one or several Moving Target Indicator (MTI) Reflectors and a single MSSR Remote System Monitor (MRSM).
- **Equipment at the R-2508 Complex TRACON**. The following automation system interface and display equipment will be installed at the R-2508 Complex TRACON:
  - **Communications Rack**. May include redundant SIUs that translate ASR-11 data for Standard Terminal Automation Replacement System (STARS) input. This rack also includes communications equipment such as modems, VDCUs, DVGs, DVG Switches, SMC, patch panels and LAN surge protection, switches, and hubs.
  - **Operator Maintenance Terminal (OMT)**. This is a SUN workstation used for control, status monitoring, and diagnostics of the ASR-11 from the R-2508 Complex TRACON equipment room.
  - **Radar Control Panel (RCP)**. The RCP allows basic control and status monitoring of the ASR-11 System for use by AT personnel.

1.6 Key Personnel

Table 1 in each attachment includes the contact information for personnel involved with this ASR-11 project. Their roles and responsibilities are described generally in the paragraphs that follow. Detailed actions performed by these personnel are described in Section 2.

1.6.1 Key Raytheon Personnel

Raytheon personnel have the organizational structure demonstrated in Figure 1-1 and described in the following paragraphs.

1.6.1.1 National Raytheon Personnel

- **Site Activation Manager**. The Site Activation Manager is responsible for the integration, control, and coordination of all site implementation activities to assure conformance with the Digital Airport Surveillance Radar (DASR) Statement of Work, the NAS DASR System Siting Plan, the Facilities Reference Document (FRD), and all applicable compliance documents referenced in the DASR Contract. The Site Activation Manager also coordinates planning and scheduling, subcontracting, performance analysis and reporting, internal financial management, and cost control. The Site Activation Manager reports directly to the DASR Program Manager.
  - **Facilities Manager**. The Facilities Manager provides design support for the development of the Facility/Antenna Tower Design (FATD). The Facilities Manager is responsible for all ASR-11 site design and site preparation activities. This position reports directly to the Site Activation Manager and supervises all design and construction engineers, drafters, and construction inspectors. The Facilities Manager is also responsible for the manpower requirements for the site design and preparation teams.
    - **Lead Design Engineer.** The Lead Design Engineer manages field topographic and geotechnical surveys, collects additional facilities-related field information as required, and performs the site design survey. Once field information is gathered, the Lead Design Engineer assigns and supervises civil, electrical, and mechanical engineers and drafters for preparation of related portions of the FATD. The Lead Design Engineer remains in close contact with the Lead Construction Engineer, transferring pertinent design and construction data.
    - **Lead Construction Engineer.** Following the approval of the FATD, the Lead Construction Engineer manages the research efforts to identify potential site preparation subcontractors, handles bid requests, and is involved in the selection of the winning subcontractor. The Lead Construction Engineer oversees the arrangement for and attends selected preconstruction meetings and supervises shop drawing procedures and activities involved in contacting power and telephone companies. This position provides home office support to the Site Construction Engineer (SCE) and prepares construction reports.
  - **Site Activation and Transition Plan (SATP) Manager**. The SATP Manager supervises the national deployment of the SATP Field Engineers and is the focal point for all local site activation and transition activities. The purpose of the SATP is to communicate Raytheon's plan on how to integrate the ASR-11 System into the present ATC environment. The SATP integrates information obtained from the Site Survey Report (SSR), Facilities/Antenna Tower Design (FATD), and local information obtained during the site design survey.
    - **SATP Engineer.** The SATP Engineer collects field data necessary to generate a site-specific Site Activation and Transition Plan. The information gathered on-site includes ATCT and R-2508 Complex TRACON facility floor plans, R-2508 Complex TRACON operations room and ATCT console layouts, ATCT/R-2508 Complex TRACON power distribution diagrams, radar equipment room inventory (including types of ARTS, DBRITE, Video Mappers, and Display systems), various interconnection diagrams for radar equipment, and the type and location of both the existing ASR and any alternatives that may exist.

- **Installation and Checkout (I&CO) Manager**. The I&CO Manager reports directly to the Site Activation Manager and is responsible for all ASR-11 equipment installation teams. It is the responsibility of the I&CO Manager, working closely with the Site Installation Team Lead (SITL), to provide continual updates on the status of each installation project to the Site Activation Manager. The I&CO Manager will also provide technical assistance, equipment, parts, and personnel required to maintain the equipment installation schedule.

1.6.1.2 On-site Raytheon Personnel

- **Site Construction Engineer (SCE)**. The SCE is assigned to each site at the time of the site preparation subcontractor's mobilization and oversees all site preparation activities through to the acceptance of the facility. The primary responsibility of the SCE is to ensure that the facility is constructed in strict conformance with the plans and specifications. This position is also responsible for ensuring that proper safety, environmental, and quality assurance procedures are followed by the site preparation subcontractors. All site administration documentation and reporting procedures during site preparation are the responsibility of the SCE.
- **Site Installation Team Lead (SITL)**. The SITL reports to the I&CO Manager and is responsible for directing and coordinating the ASR-11 System installation and all electrical testing and acceptance activities at a particular ASR-11 site. The SITL oversees the subcontractor and supervises the I&CO team members during the off-loading, unpacking, inspection, and placement of the ASR-11 System equipment. The SITL's responsibilities include monitoring the progress of equipment installation and submitting reports on a daily basis to the I&CO Manager. The SITL is also responsible for the following: 1) coordination with on-site operations and maintenance personnel (via the TOR and AF Coordinator), 2) supervision of other equipment installation team members, 3) supervision of subcontractor electronic equipment movers when required, and 4) maintenance of the Engineering Operations Log (EOL), preparation of trouble failure reports (TFRs), preparation of service reports (SRs), and the signing-off of all checklists and acceptance test data packages.

1.6.2 Key FAA Personnel

The following paragraphs present a brief overview of the roles and responsibilities for the various FAA organizations involved with this ASR-11 project. All of these organizations will be responsible for reviewing this SATP to ensure that it is accurate, complete, and represents an acceptable process for accomplishing the site activation and transition.

1.6.2.1 National FAA Personnel

- **ATB-T-410**. ATB-T-410 is the ASR-11 program sponsor and is responsible for ensuring that the ASR-11 System meets the requirements of the users (both AT and AF). ATB-T-410 validates requirements and acts as an advocate for those requirements. They are also responsible for developing and maintaining air traffic coverage requirements for each airport receiving an ASR-11.
- **ATO-T-440/ASR-11**. ATO-T-440/ASR-11 is the FAA ASR-11 program office. This office has overall responsibility for acquisition, program management, system engineering, and deployment of the ASR-11 Systems. The Department of Defense (DoD) is the lead acquisition agency, so ATO-T-440/ASR-11 is responsible for interfacing with DoD for purposes of coordinating contract activities. ATO-T-440/ASR-

11 initiates and manages delivery orders for ASR-11 processes such as site designs and system purchases. ATO-T-440/ASR-11 personnel are involved with all steps of site activation and transition to ensure that each ASR-11 project is successfully implemented.

- **ASU-250**. ASU-250 is the office responsible for quality assurance on the ASR-11 program. The primary responsibility for this group is to participate in site acceptance testing to assure that each ASR-11 System meets all contract requirements. Upon the successful completion of site acceptance testing, the ASU-250 Contracting Officer's Technical Representative (COTR) will make a preliminary signature on the DD Form 250 that acknowledges that Raytheon has met all contractual obligations and forwards the form to the Contracting Officer (CO) for final signature.
- **ANI**. ANI personnel are implementation specialists that will participate in key ASR-11 implementation activities such as construction/installation monitoring, system optimization, joint acceptance inspection, and commissioning. ANI also supports other key activities such as site surveys and site acceptance testing. ANI is also the interface between the ATO-T-440/ASR-11 and regional and field FAA airway facilities personnel.
  - ANI-90 is the nationally based group responsible for consistent implementation processes throughout all regions.
  - ANI-X60 is based at each regional office and is responsible for implementation activities in that region. ANI-X60 includes the Surveillance Programs Managers and supporting engineers that provide the interface between ATO-T-440/ASR-11 and that region.
- **AOS-230**. AOS-230 is responsible for key program activities such as developing maintenance manuals and optimization procedures, and for participating in system testing to ensure the ASR-11 will be maintainable and supportable. For the first twenty (20) ASR-11 Systems, AOS-230 will be the FAA organization primarily responsible for ensuring that the systems are properly optimized (this responsibility will be assumed by ANI for subsequent systems). In the future, AOS-230 will be responsible for all second level engineering activities, such as software configuration management and field upgrades and on-site and telephone technical support for local site personnel.

1.6.2.2 Regional FAA Personnel

- **AXX-510**. AXX-510 is the Requirements Branch of the Air Traffic (AT) Division at each FAA region. This organization provides input to all implementation processes that could potentially impact air traffic operations and ensures that terminal radar requirements are met throughout each region.
- **AXX-470**. AXX-470 is the Operations Branch of Airway Facilities (AF) Division at each FAA region. As the eventual support organization for ASR-11 Systems within each region, AXX-470 personnel will be invited to participate in key site activities such as system optimization and site acceptance testing. AXX-470 will participate in joint acceptance inspections and commissioning activities.

1.6.2.3 Field/Site FAA Personnel

- **SMO ASR-11 Point of Contact (POC)**. The System Management Office (SMO) is responsible for managing equipment at numerous airports. A POC, identified also as the Technician-in-Depth (TID), will be designated from the SMO for each ASR-11 site. This person will participate in key activities throughout the implementation process to ensure a smooth transition to FAA ownership and operation of

the ASR-11 System. The SMO POC will participate in the JAI process and JAI Board as determined by the SMO.

- **AF Coordinator**. An AF Coordinator will be designated for each ASR-11 site. Generally, this person will be from the local System Support Center (SSC). The AF Coordinator has the critical role of coordinating site activities with local AT, AF, and airport personnel as required. The AF Coordinator will participate in the JAI process and JAI Board as determined by SMO.
- **SSC Manager**. The AF SSC Manager has primary responsibility for the maintenance of operational equipment throughout that manager's assigned area. The manager will coordinate access to the equipment area, provide maintenance personnel to supervise certain installation events, and ensure that personnel are trained in time to support maintenance of the ASR-11 after the system is operational. The SSC Manager will participate in the JAI process and JAI Board as determined by SMO.
- **ATCT Manager**. The ATCT manager has overall responsibility for air traffic operations at a facility. The manager, or designated person, will coordinate activities that impact operations such as radar outages or operational equipment installation. This person will also ensure that AT personnel are trained in time to use the ASR-11 System when it is ready for operation. The ATCT Manager will participate in the JAI process and JAI Board as determined by SMO.
- **RE**. Resident Engineer (RE) will be assigned by ANI to each site throughout the site preparation process. The RE will monitor site preparation activities, witness key site preparation events, and participate in site acceptance testing. The RE will participate in the JAI process and JAI Board as determined by SMO.
- **TOR**. The Technical On-site Representative (TOR) will be assigned by ANI to each site throughout the installation and checkout and transition processes, and will be responsible for monitoring system installation activities and coordinating these activities with the AF Coordinator. The TOR will be an Air Traffic Systems Specialist (ATSS). The TOR will witness key installation activities, advise Raytheon during system optimization, and participate in site acceptance testing. The TOR will assume primary responsibility for the system between site acceptance testing and commissioning. The TOR will participate in the JAI process and JAI Board as determined by SMO.

1.7 Coordination of Activities

1.7.1 Coordination Flowchart

In general, coordination of on-site activities will be in accordance with Figure 1-1. The RE and TOR are the focal point for coordination of activities with Raytheon. The RE or TOR, in turn, coordinates with the regional level through the Surveillance Programs Manager and with the local level through the AF Coordinator. This coordination is further described in paragraph 1.7.2.

1.7.2 Coordination of On-site Activities

All activities that occur on-site, either at the radar site or in FAA facilities such as ATCT or R-2508 Complex TRACON, are coordinated between Raytheon and the FAA via two key points of contact as follows:

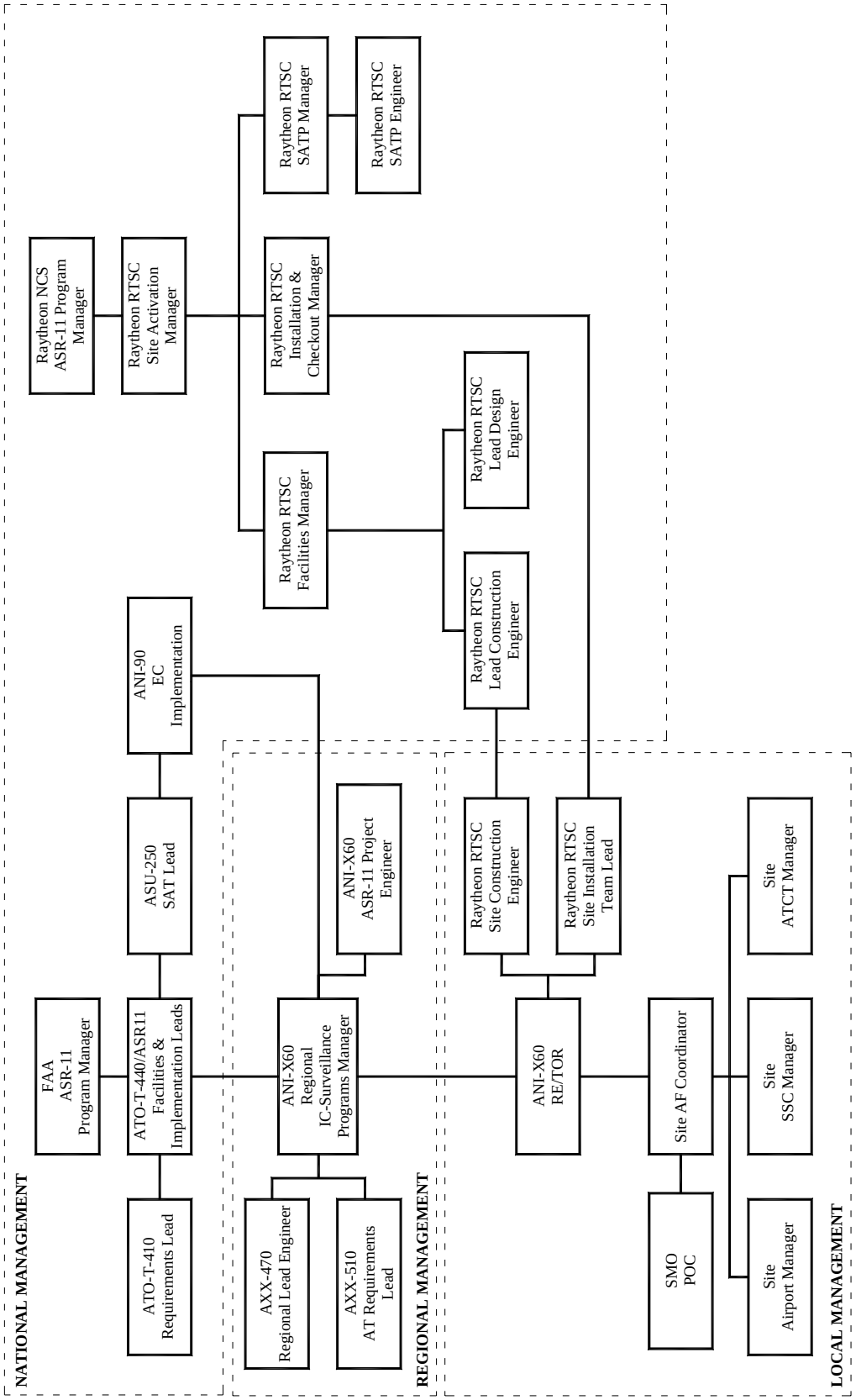

Figure 1-1. ASR-11 Program Coordination Flowchart

- During **site preparation**, coordination of all activities occurs through the Raytheon Site Construction Engineer and the FAA Resident Engineer (RE). The RE will convey all information and coordination requirements to local FAA through the AF Coordinator. During the entire site preparation process, a weekly meeting is required among the Raytheon Site Construction Engineer, the RE, and the AF Coordinator. During this meeting, the attendees will discuss coordination of the events for the upcoming week.
- During **installation and checkout**, coordination of all activities occurs through the Raytheon Site Installation Manager and the FAA Technical On-site Representative (TOR). During this process, the TOR will convey all information and coordination requirements to local FAA through the AF Coordinator. A weekly meeting will take place with the Site Installation Team Lead, TOR, and AF Coordinator. During this meeting, the attendees will discuss the events for the upcoming week.
- During the **overlap period**, when both site preparation and installation personnel are on site at the same time, the Raytheon Site Construction Engineer and the FAA TOR will assume primary responsibility for coordination.
- Before any event that could pose a risk to the operation of the facility (such as work occurring in the R-2508 Complex TRACON or radiation of the ASR-11 that could interfere with the existing ASR), or would require equipment downtime, the SITL will be coordinated in advance and coordinated with the AF Coordinator on a daily basis prior to beginning work. **All such events are stated in Section 2**.

1.8 Overview of Site Activation and Transition Process

ASR-11 site activation and transition processes are defined below. Also provided is a brief overview of responsibilities involved in each process. The detailed processes and responsibilities are listed in Section 2. (Note: The process of determining the location for the radar system occurs prior to development of the SATP and is not discussed here. Refer to the Final Site Survey Report.)

1.8.1 Site Design Process

The site design process includes the development of the engineering plans and drawings necessary for site preparation and equipment installation and checkout. This process begins with the site design survey and concludes with the approval of the 100% Facility/Antenna Tower Design (FATD) and the Final SATP. The site design survey is conducted on site to collect all data necessary for the development of the FATD and SATP. Raytheon and the FAA (national, regional, and local) participate in this survey.

Raytheon is responsible for collecting all data and developing a complete FATD and SATP. ATO-T-440/ ASR-11, ANI-90, ANI-X60, AXX-510, AXX-470, SMO and site AF, and site AT have responsibility for providing data and reviewing all documents for completeness and accuracy.

1.8.2 Site Preparation Process

The site preparation process includes all activities associated with the implementation of the FATD, including preparing the radar site (such as grading, road construction, site drainage), construction of the radar facility (such as tower foundation, tower fabrication, equipment building, engine generator housing, etc.), and outfitting the equipment building (such as electrical wiring installation). It also includes construction of any duct banks required for the data link to the R-2508 Complex TRACON and preparations inside the R-2508 Complex TRACON and ATCT (such as electrical wiring work). This process begins when Raytheon submits the FATD to competitive bid and ends when the work is accepted at the conclusion of the facility Site Acceptance Test (SAT).

Raytheon is responsible for managing the site preparation subcontractor. The FAA RE is responsible for monitoring this process and coordinating all activities. ASU-250 and ATO-T-440/ASR-11 will monitor the site preparation process with information provided by the RE and through site visits. ASU-250 and ATO-T-440/ ASR-11 will participate in facility inspections and the facility SAT. Site personnel are responsible for providing access to the radar site and R-2508 Complex TRACON/ATCT as required.

1.8.3 Installation and Checkout Process

Installation and Checkout (I&CO) is the process of installing the ASR-11 System hardware and ensuring its proper operation. This includes the radar equipment at the site and equipment in the R-2508 Complex TRACON and ATCT. It also includes system optimization and site acceptance testing, including a 72-hour continuous operations demonstration. This process begins when the SCE notifies the I&CO Lead that the facility is ready for radar system installation and concludes with the successful completion of the Radar SAT. This process will typically overlap the site preparation process by four weeks.

Raytheon is responsible for performing the I&CO process. The FAA TOR is responsible for monitoring this process and coordinating activities with the AF Coordinator. ASU-250 and ATO-T-440/ASR-11 will monitor the I&CO process with information provided by the TOR and through site visits. ASU-250 and ATO-T-440/ASR-11 will participate in Radar SAT. Local SSC personnel are responsible for providing access to the R-2508 Complex TRACON/ATCT as required. Local SSC technicians will be needed to participate in key I&CO events such as R-2508 Complex TRACON/ATCT installation and the dry run of the cutover procedures. The FAA (ANI/AOS/AXX-470, site-dependent) will be responsible for participating in system optimization to ensure that the best performance of the system is achieved.

1.8.4 ASR-11 Transition Process

Transition is the process of accepting the ASR-11 System from Raytheon, cutting it over to operational use, and commissioning it for operation in the NAS. This process overlaps the I&CO process, but is presented separately to highlight the prominent responsibilities of the FAA in this process. Transition begins with system optimization and ends with commissioning. Key events are optimization, SAT, partial Joint Acceptance Inspection (JAI), flight inspection, system certification, cutover, field familiarization, final JAI, and commissioning.

The transition process is a FAA responsibility, but will be a cooperative effort with Raytheon during key events such as optimization and SAT. After successful completion of the SAT, ANI-90, ANI-X60, AOS-230, AXX-510, AXX-470, SMO, and site personnel will be responsible for commissioning the ASR-11 System.

Section 2 of this report provides an overview of the transition process. It describes the steps involved, the most likely sequence, and the responsibilities for each step. This document does not cover these events in detail, such as the configuration of the R-2508 Complex TRACON equipment or level of service available during flight inspection. A detailed plan that covers these activities will be prepared for each site by ANI-X60.

1.8.5 Existing ASR Deactivation Process

After the ASR-11 is commissioned, the existing ASR will be decommissioned and preparations will begin for deactivation. This will include packaging of the radar for shipment, disposal of hazardous waste, and restoration or demolition of the facility building as required.

ATO-T-440/ASR-11 will be responsible for developing a deactivation plan which will include requirements for the disposal of hazardous waste and the dismantling and subsequent packaging of the radar components for shipping. ANI-X60 will be responsible for shipping the radar, demolishing the radar building, if required, and restoring the site (funding to be provided by ATO-T-440/ASR-11). This process concludes with a final inspection and acceptance of the work performed.

1.9 Scenarios for Site Activation and Transition

There are several scenarios that will be used during site activation and transition, depending on the particular site. These scenarios are discussed generally below. A discussion of which scenario is appropriate for a particular site will take place during the site design survey. The scenario that is chosen will be detailed in Section 2, paragraph 2.3.2.1. For detailed analysis, refer to Appendix D, RF Interference Mitigation Analysis Summary, which will be added to this SATP once frequencies have been assigned by ASR-100.

1.9.1 Simultaneous Radiation Scenario

In this scenario, both the ASR-11 and existing ASR will be able to radiate simultaneously, which is possible if the systems are separated sufficiently in distance and frequency to prevent interference between the two. In order to accomplish this scenario, the following planning activities will take place for each site:

1. FAA national Spectrum Management (ASR-100), in cooperation with regional Spectrum Management, will assign frequencies that will allow the ASR-11 System to operate in the given environment. The primary criteria for frequency selection are to obtain frequencies that will not be a source or receptor of interference with other systems. These frequencies will also be separated as much as possible from the existing ASR frequencies to make simultaneous operation possible. These frequencies will be used during all portions of the ASR-11 implementation and may be the permanent operating frequencies.
2. Raytheon will perform a frequency interference mitigation study. This study will determine, based on the distance and frequency separation of the existing ASR and the ASR-11, what steps will be necessary to allow simultaneous operation. These steps may include any combination of sector blanking and waveguide filters for either system.

This scenario is preferred because it allows uninterrupted service of the existing ASR for most of the project and will be used whenever possible. The only downtime that will be required is about one day during filter installation in the existing ASR, if required, and one day during SAT when ASR-11 data are required on the operational automation displays.

1.9.2 Coordinated Radiation Scenario

In this scenario, it is not possible for the existing ASR and the ASR-11 to radiate simultaneously without interference. It may not be possible to assign permanent frequencies that are different from the existing ASR or the systems may be too close to mitigate the interference. In this case, the existing ASR must be turned off (switched to "standby") when the ASR-11 is in operation. This scenario may be agreeable if the facility has usable backup radar service. The only time nonradar procedural control of air traffic would be required is when ASR-11 data is required on the operational displays (during SAT or flight inspection). This scenario is less desirable than the first because more radar downtime has to be coordinated.

1.9.3 Temporary Frequency Scenario

If it is not possible to assign frequencies different from the existing ASR, and if it is not possible to coordinate downtime, it may be desirable to utilize a temporary frequency until cutover. In this case, FAA Spectrum Management will assign temporary frequencies in addition to the operational frequencies. This scenario is less desirable because of the added cost of frequency crystals, the added time and expense of switching frequencies, and the likely limitation of coverage sectors available on the temporary frequencies. Additionally, the FAA would need to re-optimize the weather channel and perform a second flight check using a dedicated aircraft once the final frequencies are installed.

1.10 Schedules

Section 3 of this SATP contains a typical schedule of events from site design through commissioning. This schedule is for planning purposes only. Once the project begins, updated project schedules will be available as follows:

- **Site Preparation Schedule**. The site preparation subcontractor is required to provide a schedule at the preconstruction meeting and to update this schedule every two weeks throughout the entire process. This schedule will be available on site throughout the project.
- **Installation and Checkout Schedule**. The Raytheon Site Installation Team Lead will provide the installation and checkout schedule at the preinstallation meeting. This schedule will be updated and available on site until completion of the SAT.

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2.0 METHODOLOGY AND APPROACH

The purpose of this section is to detail the methodology and approach to integrate and transition the ASR-11 System into the radar surveillance environment at Edwards AFB, Rosamond, California. The intent is to ensure that the transition from the existing ASR to the ASR-11 will take place in an efficient, coordinated manner and will serve as a guide at the national, regional, and local FAA/Raytheon level. The project will start with the receipt of the delivery order from the FAA to Raytheon. The schedule of events is contained in Section 3, Figure 3-2, and will be updated from the site as the installation progresses.

The location designated as the "R-2508 Complex" is a jointly-managed, jointly-used combination of Restricted Areas, Military Operations Areas (MOA), and Air Traffic Control Assigned Airspace (ATCAA) that has been established for the flight testing of aircraft and training of military and civilian aircrew members. The size of the area is approximately 21,000 square miles. The management and infrastructure includes Navy, Air Force, and FAA participation. The R-2508 Complex TRACON is served by approach radar and six gap filler radars. All seven will be replaced with the ASR-11 in a multiyear modernization program. This SATP includes plans for all seven replacements. The basic document contains concepts that are common to all with site-specific data provided in each site-specific attachment. Additionally, installation of interface equipment normally installed in a TRACON will be installed, for the most part, in the R-2508 TRACON. Since this might not be true for all seven ASR-11s, the generic term 'ATC facility' has been substituted for TRACON. References to exact equipment locations are provided in Table 2 of each site-specific attachment.

2.1 Site Design Process

The site design process includes the development of the engineering plans and drawings necessary for site preparation and equipment installation and checkout. This process begins with the site design survey and concludes with the approval of the 100% Facility/Antenna Tower Design (FATD) and the Final SATP. The site design survey is conducted on site to collect all data necessary for the development of the FATD and SATP. Raytheon and the FAA (national, regional, and local) participate in this survey.

Raytheon is responsible for collecting all data and developing a complete FATD and SATP. ATO-T-440/ASR-11,ANI-90, ANI-960, AWP-510, AWP-470, Desert-to-the-Sea (DTS) SMO, and local AF and AT have responsibility for providing data and reviewing all documents for completeness and accuracy.

2.1.1 Site Design Survey

The purpose of the Site Design Survey (SDS) is to gather information pertinent to the development of the Site Activation and Transition Plan (SATP) and the Facility/Antenna Tower Design (FATD) which will detail the processes and plans required to install and transition from the existing ASR to the new ASR-11. The SDS will begin with the initial coordination to conduct a combination "kick-off" and SDS meeting. This meeting will provide an overview of the project, requirements, coordination, schedule of events, and impacts of the project.

The following items will need to be accomplished before the meeting:

- ANI-90/ANI-960/Site AF will collect presite design survey checklist items. These will be required to be on site before the site design survey.
- ATO-T-440/ASR-11/Raytheon/ANI-960 will coordinate the site design survey.

- ATO-T-440/ASR-11/ANI-960 will provide the site point of contact (AF Coordinator).

The following items will need to be accomplished during or soon after the meeting:

- ATO-T-440/ASR-11/ANI-960 will verify the status of land acquisition for the site plot, MTI Reflectors, and MRSM. The lease or purchase will need to be completed prior to site preparation.
- ATO-T-440/ASR-11 will send a letter to Raytheon authorizing changes to the Generic FATD as decided during the SDS.

Site-specific information for each of the seven ASR-11 sites is found in Attachments 1 through 7 located toward the end of this document. Table 2 in each attachment pertains to General Site Data for the specific ASR-11 site. Refer to the FATD for detailed design information.

2.1.2 Site Activation and Transition Plan

The SATP portion of the site design process begins with the reduction of the data collected during the site design survey into a comprehensive report that details the procedure required to transition from the existing ASR to the ASR-11 System. The SATP report will contain site-specific details, coordination flow, contact information, delineation of responsibilities, site-specific drawings, and interconnection diagrams.

The SATP is organized into three sections. Section 1 contains general information concerning the ASR-11 project. Section 2 includes the detailed plan for the site activation and transition from site design to acceptance and an overview of activities from site acceptance to commissioning, and existing ASR decommissioning and removal. Section 3 contains an implementation flowchart and site-specific implementation schedule.

The SATP will be submitted first as a preliminary within four months of the site design survey. This Preliminary SATP will be reviewed and comments will be submitted to Raytheon via ATO-T-440/ASR-11. Raytheon will hold these comments until ATO-T-440/ASR-11 submits the letter authorizing the Final FATD to go to bid. At that time, Raytheon will request that ATO-T-440/ASR-11 assist in scheduling a SATP validation survey within two weeks of the receipt of that letter. Raytheon will submit the Final SATP within 45 days of the SATP validation survey. If comments and new site data has been adequately incorporated, the Final SATP will be approved.

2.1.3 Radio Frequency Interference Mitigation Plan

Raytheon will conduct a radio frequency interference analysis using information obtained from the site design survey and taking into consideration the existing ASR and ASR-11 antenna focal point heights, frequencies, and power handling capability at both ends. A RF interference mitigation plan will be developed from this information. Outcome of the analysis will be included in paragraph 2.3.2.1 of this document. The purpose of the plan is to define what is required to minimize or eliminate the effects of RF interference between the existing ASR and the ASR-11 during the installation and testing process.

2.1.4 Facility/Antenna Tower Design

The FATD contains plans, specifications, and the basis of design for construction of ASR-11 System facilities (i.e., radar building, antenna tower, engine generator building, etc.) in accordance with the Facilities

Requirements Document (FRD), based on the data collected during the site design survey. The FATD details all work that will be performed by Raytheon's construction subcontractor.

The establishment of the ASR-11 facility will require typical construction activities involving earth works, trenching, steel work, and construction. Therefore, before any work can proceed, the following records, reports, and permits will be obtained and/or generated by Raytheon for the purpose of site activation and forwarded to the FAA (ATO-T-440/ASR-11):

- ☐ Geotechnical Investigation Report (which includes the Soil Resistivity Report)
- ☐ Topographical Survey Report
- ☐ Drainage Analysis Report (if required)

The following must be accomplished before the end of this activity:

- ☐ Raytheon completes FAA Form 7460, "Notice of Proposed Construction"
- ☐ Raytheon completes Form 1050-13A, "Hazardous Material Work Permit"
- ☐ Raytheon completes Form 1050-6A, "Work Request Review"
- ☐ Raytheon completes Form 1050-3, "Data Sheet for Asbestos Sampling"
- ☐ Raytheon submits FAA Work Request (must be approved by Desert-to-the-Sea (DTS) SMO Environmental Compliance Manager).
- ☐ FAA Western Pacific Region provides Compliance Action Plan (asbestos survey inventory)

The FATD will be submitted as 45%, 95%, and 100% versions. Both the 45% and 95% versions will be reviewed in detail. If all comments have been adequately incorporated, the 100% FATD will be approved.

2.1.5 SATP/FATD Approvals

Once the Final SATP and 100% FATD have been submitted and all prior comments have been adequately addressed, these documents will be approved. At this point, the site design process is complete and ready for the site preparation process to begin.

2.2 Site Preparation Process

The site preparation process begins with the issuance of a delivery order after the approval of the Final SATP and the 100% FATD report. The FATD report contains the site-specific engineering data for the construction of the ASR-11. A bid ready package will be prepared by Raytheon from the data contained in the FATD report and submitted for bid through the Raytheon procurement office under federal procurement guidelines.

The site preparation process will include the following activities that will occur during the ASR-11 facility construction: construction activities at the ASR-11 site, subcontractor activities inside the ATC facility, installation of the moving target indicator (MTI) Reflectors, and MSSR remote system monitoring (MRSM) facility construction.

2.2.1 Subcontract Award

The Raytheon procurement office will issue the subcontract for site preparation. The subcontractors will be managed by the on-site Raytheon SCE. Also, the following item should be accomplished at this time:

- ☐ Raytheon has notified ATO-T-440/ASR-11 of impending preconstruction meeting (10 days in advance of meeting).

2.2.2 Notice to Proceed

A Notice to Proceed (NTP) will be provided to the subcontractor from Raytheon after the appropriate key submittals have been received. Raytheon will notify ATO-T-440/ASR-11 that an NTP has been issued.

At this point, the following items will have been completed:

- ☐ ATO-T-440/ASR-11/ANI-960 have confirmed that all land acquisition has been completed.
- ☐ ATO-T-440/ASR-11/ANI-960 have confirmed that FAA Form 7460-1 has been approved.
- ☐ ATO-T-440/ASR-11/ANI-960 have coordinated request for subcontractor access.
- ☐ Raytheon has coordinated the preconstruction meeting.
- ☐ ANI-960 has assigned and will mobilize the RE.
- ☐ Raytheon has assigned and will mobilize SCE.
- ☐ Raytheon provides 30-day advance notification of planned trenching activities.
- ☐ If Raytheon has been tasked to perform existing ASR dismantling, a FAA Work Request (approved by the Desert-to-the-Sea (DTS) SMO Environmental Compliance Manager) has been submitted to the SMO for the existing ASR facility.
- ☐ Raytheon has confirmed approval of all required work permits:
  - ☐ Form 1050-13A, “Hazardous Material Work Permit”
  - ☐ Form 1050-6A, “Work Request Review”
  - ☐ Form 1050-3, “Data Sheet for Asbestos Sampling”

- ☐ FAA Work Request (approved by the Desert-to-the-Sea (DTS) SMO Environmental Compliance Manager)

2.2.3 Preconstruction Meeting

The ASR-11 site construction and site preparation for the installation of the ASR-11 interface equipment will involve a significant amount of subcontractor activities in the various Air Traffic Control (ATC) facilities and on the airport. In an effort to minimize any adverse impact to air traffic control and airport operations during these activities, Raytheon will hold a preconstruction meeting one week prior to the actual start of work.

The purpose of the meeting will be to have a detailed review of the work to be performed at the radar site, the activities on the field, the type and extent of the work to be performed by Raytheon and the subcontractor in the ATC facilities, the expected impact, the schedule of events, and the coordination process. Representatives from Raytheon, Airway Facilities, Air Traffic, the Airport (Engineering and Police), and the subcontractors, as appropriate, will be invited to attend. The meeting will be conducted at an airport facility.

At the completion of the preconstruction meeting, the following activities will be completed:

- ☐ ASR-100 will assign the frequency and ATO-T-440/ASR-11 will provide the frequency for the ASR-11 system. Upon approval by NTIA, AWP-470 will provide the Final Transmitting Authorization (FTA) to the site.
- ☐ Once frequencies are assigned, Raytheon will conduct an interference mitigation study and incorporate the results into paragraph 2.3.2.1 and Appendix C in each Attachment of this SATP.
- ☐ Raytheon will have submitted a request for subcontractor access to the ATC facility where the interface equipment will be installed. Refer to Table 2 in the attachments for interface equipment locations specific to each ASR-11 site.
- ☐ ATO-T-440/ASR-11/ANI-960 will have initiated a request for the REHOST-2 software build-up. This request will be required no later than the preinstallation meeting. (Refer to paragraph 2.3.2)
- ☐ The local Airway Facilities and Air Traffic Control Managers will have initiated a request for personnel training through AFZ-100. All personnel will need to be trained prior to completion of the SAT. Refer to Section 3, Figure 3-2 for the dates scheduled for these events.
- ☐ Raytheon SCE will have identified an NTP for the planned trenching activities.
- ☐ Raytheon SCE will have arranged for equipment to off-load ASR-11 system equipment.
- ☐ Raytheon SCE will have arranged for temporary storage of radar equipment and a staging area for the delivery truck when it arrives on site.

The preconstruction information contained in Table 3 of each attachment was obtained during the site design survey meeting and will be verified during the preconstruction meeting.

At this point, all necessary documentation, coordination, briefings, permits, and subcontracting have been completed and the ASR-11 facility site preparation can begin.

2.2.3.1 FAA Air Traffic and Airway Facilities Personnel Training

At the preconstruction meeting, the system is approximately 7 months from the completion of the SAT. At the completion of SAT, the system will be nearly ready for operational use. The Air Traffic and Airway Facilities Managers should plan to have all personnel trained by the completion of SAT.

- **AT Training**. The Air Traffic training course is approximately 4 hours of computer-based instruction (CBI). All personnel should have completed initial training by the completion of the SAT. The time period between SAT and integration of the ASR-11 can be used to refresh all personnel on the material (1 hour per person).
- **AF Training**. The maintenance training will require approximately 40 hours of self-instruction using a course and simulator developed by the FAA Academy. Once this material is completed, a two-week lab will be required at the FAA Academy. Both courses should be completed prior to the completion of the SAT.

2.2.4 Mobilize Subcontractor

The subcontractor will be mobilized after the necessary OSHA documentation and safety plans have been submitted and approved by the Raytheon contracting office.

2.2.5 Radar Site Preparation

The site preparation begins after the SCE and subcontractor arrive on site. The site preparation may involve the movement of heavy equipment on the field, trenching across the field, and construction activities in the various ATC facilities, and near the runways. Advance coordination of these types of activities is mandatory. During this process, the Raytheon SCE will coordinate all activities associated with site preparation with the FAA RE. The site preparation subcontractor will be required to provide a schedule at the preconstruction meeting and will update this schedule on a weekly basis. The SCE will use existing guidelines such as weekly job meeting agendas, inspection and test procedures, and written clarification forms to ensure that work is performed on schedule and in strict accordance with the FATD.

Raytheon will ensure that the following items listed below have been completed prior to the start of any work:

- ☐ At least 30 days prior to the start of work, Raytheon will have submitted a formal notice of intent to start work to ATO-T-440/ASR-11 and confirmed that all permits have been obtained.
- ☐ Raytheon will have confirmed that all subcontractors have completed the necessary security clearance requirements, including driver training.
- ☐ Prior to any excavation activities, the Raytheon subcontractor will notify the local underground utility locator service (Dig-Safe, Call Before You Dig, etc.) so that utility runs can be marked.
- ☐ Diagrams of all known buried cables will be provided by the FAA RE with the proposed cable trenching route and ASR-11 site access road plotted against this information to minimize the risk of accidental cable cut.

Cable requirements for each of the ASR-11 sites are found in Table 4 of the attachment for that site.

For additional information concerning main power and utility requirements, refer to the FATD.

When the radar site preparation is complete, the subcontractor is ready to begin work in the ATC facilities to prepare for installation of the SIUs, OMT and RCPs. Refer to the Table 2 in the attachments for each ASR-11 interface equipment location. The Installation and Checkout (I&CO) team will be mobilized (see paragraph 2.3.1) to the site to oversee this activity. Refer to Section 3, Figure 3-1, for the implementation flowchart. The Raytheon SCE will confirm that access to the ATC facility has been approved prior to site preparation.

2.2.6 ASR-11 Site Ready to Receive System Equipment

Prior to the mobilization of the I&CO team, the ASR-11 facility will be completed to a point where it is ready to receive the ASR-11 System equipment. The Raytheon SCE will notify the Raytheon Site Activation Manager that the site is ready to accept equipment. The Raytheon Site Activation Manager will, in turn, notify the Raytheon I&CO Manager who can than dispatch the Site Installation Team Lead (SITL) to the site to prepare for system equipment delivery and to confirm the actual equipment delivery date.

2.2.7 ATC Facility Site Preparation

The site preparation of the various ATC facilities involves the installation of power outlets and wiring from existing power panel(s) to the equipment locations of the Communications Rack, OMT, and RCP location.

Prior to the start of any activities in the various ATC facilities:

- ☐ Raytheon will confirm that all the necessary permits for site preparation work have been approved.
- ☐ The Raytheon SCE has coordinated with the FAA RE for subcontractor access.
- ☐ Prior to any work, the Raytheon SCE will submit a work plan each day and notify the FAA RE daily of the work to be performed.
- ☐ Local AT will order the digital maps for the Digital Video Mapper (DVM) or REHOST-2 oriented for the ASR-11 as required. These maps will be required no later than the preinstallation meeting (refer to paragraph 2.3.2).

2.2.7.1 Sequence of Events

After coordination with the FAA RE to confirm the location of the ASR-11 interface equipment, the sequence of events for the ATC facility site preparation is as follows:

1. The subcontractor will install the electrical hardware (conduits, pull-boxes, etc.) in the ATC facility console for the RCPs and in the power duct nearest the Communications Rack and OMT locations.
2. The subcontractor will install conduit/duct from the power panels to the ASR-11 equipment listed above.
3. The subcontractor will install circuit breakers, as required, in a power panel near the Communications Rack. Refer to Table 11 of the attachments for the site-specific breaker assignments.
4. The subcontractor will install circuit breakers, as required, in a power panel near the RCP.
5. The subcontractor will install a circuit breaker in a power panel near the OMT.

6. The subcontractor will install and terminate electrical wiring between the designated power panels and the ASR-11 equipment locations.

7. Careful attention shall be given to the potential for disturbing asbestos-containing material (ACM) or lead-based paint (LBP). Appropriate abatement procedures shall be followed to contain and remove any ACM or LBP, if required.

IMPACT

Summary	The installation of the electrical hardware will require that work be performed in an area that may contain asbestos-containing material (ACM) or lead-based paint (LBP).
Duration	The installation is scheduled for 2 weeks.
Impact	An environmental impact will delay the project schedule until the material is safely removed and disposed of.
Coordination	The SITL will coordinate with the TOR prior to the start of any work. A work request will be submitted in advance and approved by the Desert-to-the-Sea (DTS) Environmental Compliance Manager.
Risk	There is a risk that ACM or LBP will be discovered in the ATC facility work area and create a work stoppage. The SITL will not allow any work to be performed until the work request has been approved.

IMPACT

Summary	The installation of power cables from the existing power panels to the ASR-11 equipment will involve opening the power panels and working around circuit breakers feeding existing equipment.
Duration	The power cabling activity is scheduled for 2 days.
Impact	The subcontractor working in the various power panels will require a FAA technician to be available. Local conditions and the FAA technician will determine whether or not the panels can be worked with the panel energized. Power panels may be required to be shut off during installation of new circuit breakers, which will require a scheduled outage. If the panel is shut off, use proper lockout and tagout procedures. Possible outage to existing equipment may occur if existing breakers or wiring are disturbed. New circuit breakers will remain off until wiring is completed and checked.
Coordination	The Raytheon SCE will coordinate with the RE before any activity in the power panel occurs. The RE will coordinate with the FAA before work begins.
Risk	• There is a risk of accidentally interrupting a circuit breaker feeding operational equipment and causing an outage. The SCE will closely monitor the activities of the subcontractor and review the procedure with the subcontractor before any activity takes place.

	IMPACT
Risk	• When working in a live power panel, there is a risk of shorting out the power source for the operational equipment. The SCE will review the procedures with the subcontractor and verify that they are fully familiar with the task in order to prevent accidental power interruption.

Refer to Table 5 of the attachments for cabling activities associated with site preparation in the various ATC facilities.

2.2.8 MRSM Site Preparation

Refer to Table 2 of each attachment for the location of the MRSM equipment. The subcontractor will install electrical wiring, outlets, and circuit breaker, as required, at the MRSM equipment location. For more information, refer to the FATD.

2.2.9 MTI Reflector Site Preparation

Refer to Table 2 of each attachment for the location(s) of the MTI Reflectors. The subcontractor will provide a mounting structure, if required, for mounting of the reflector units. For more information, refer to the FATD.

At this point the site preparation of the radar site and the various ATC facilities has been completed and the facility is ready for the facility completion inspection prior to the installation of the electronic equipment.

2.2.10 Facility Completion Inspection

The Raytheon SCE, together with the subcontractor, the Raytheon SITL, and the FAA RE, will determine when the site construction is complete. ASU-250 will be notified by the FAA RE and will participate in this inspection. The site preparation construction will be inspected for conformance to the bid package, including any modifications authorized by FAA and/or Raytheon. This inspection is known as the Facility Completion Inspection. The purpose of the inspection is to determine what items remain incomplete. If any exist, they are listed on the punch list.

At this point the radar site construction has been completed, the site preparation has been completed at the various ATC facilities, and field cables have been installed, checked out, and terminated. The subcontractor will reduce the level of activity at the site, returning to resolve any items from the construction phase prior to the facilities SAT, Part I (see paragraph 2.3.11).

2.3 Installation & Checkout Process

The I&CO process begins at the preinstallation meeting when the ASR-11 System equipment is scheduled to arrive on site. The I&CO includes all installation activities of the radar system at the radar site and installation activities required for the establishment and integration of the ASR-11 into the existing automation environment. As the installation progresses, the FAA will have an increasingly greater role in the installation and transition.

2.3.1 Installation & Checkout Team Mobilized

The I&CO team will be mobilized when the radar site is ready to receive the radar equipment. The site preparation in the ATC facilities will begin after the I&CO team has been mobilized, which gives the I&CO team the opportunity to supervise the placement of the equipment components (installed by the site preparation subcontractor) in their respective locations to ensure that power will be placed in the desired location. The preinstallation meeting will be scheduled to coincide with the delivery date of the system equipment immediately following I&CO team mobilization on site.

Prior to the preinstallation meeting, the following information and/or equipment will need to be obtained. Raytheon will confirm the following:

- ☐ Raytheon has coordinated the preinstallation meeting.
- ☐ ATO-T-440/ASR-11/AOS-230 has initiated a NCP for the existing ASR filter installation, if required.
- ☐ ANI-960 has assigned and mobilized the TOR to the site.
- ☐ The FAA has provided digital maps as required for the new ASR-11 site.
- ☐ The FAA has provided software updates for the REHOST-2 or future STARS.
- ☐ The FAA has supplied leased lines to feed ASR-11 data to remote FAA facilities as required. Refer to Table 8 in each attachment for the leased line requirements.
- ☐ The FAA has installed Raytheon-procured dual-frequency rejection filters in the transmit/receive path of the existing ASR and recertified system if required (see paragraph 2.3.2.1).

2.3.2 Preinstallation Meeting

The purpose of the preinstallation meeting is to review the plan for the installation of the electronic equipment at the radar site and various ATC facilities, the impact on ATC operations, airport operations, planned outages, access to the facilities, installation schedule, completion of activities, and radar system interference. The meeting will review the coordination process, security badges, driver training for field access, and vehicle radios/markings. The preinstallation meeting will be a joint Raytheon/FAA meeting with the local airport operations personnel invited to attend. Refer to Table 3 in each attachment for information about site and facility access, security, and coordination requirements for meetings.

Prior to the meeting, the following should have occurred:

- ☐ ATO-T-440/ASR-11/ANI-960 have confirmed that the ASR-11 video maps and REHOST-2 or future STARS software builds are available.

- ☐ Raytheon has submitted the 30-day advance notification for the ATC facility installation activities at each location.
- ☐ ATO-T-410 has coordinated with the local Air Traffic Manager and confirmed that the coverage requirements in the Final Site Survey Report are still valid. A memo to ATO-T-440/ASR-11, with any necessary changes, has been forwarded. Coverage requirements are confirmed to ensure the latest requirements are available for optimization (see paragraph 2.3.9).

2.3.2.1 Results of RF Interference Mitigation Analysis

As discussed earlier, Raytheon is required to perform a radio frequency interference mitigation study. The study will determine, based on the distance and frequency separation of the existing ASR and the ASR-11, what steps are necessary to allow simultaneous operation of the two radar systems. These steps may include any combination of sector blanking and waveguide filters for either system. The scenario that is chosen will be detailed in Appendix D, RF Interference Mitigation Analysis Summary, which will be added to this SATP after frequencies have been assigned by ASR-100. Refer to Table 6 in each attachment for a summary of the results of the analysis.

2.3.3 System Equipment Delivered to ASR-11 Site and ATC Facility

ASR-11 Site Equipment

The ASR-11 site equipment and the ATC facility interface equipment will be delivered according to the schedule in Figure 3-2. The Raytheon SITL will confirm the delivery date and time, which will be coordinated with the FAA TOR one day in advance of the actual delivery.

The location, access route, coordination and escort requirements for each of the ASR-11 radar sites is described in Table 3 of each attachment. When the delivery truck arrives on site, the truck can be staged at each site. Contact the AF Coordinator for approval prior to the actual off-loading of the equipment. The AF Coordinator and telephone number is listed in Table 1 of each attachment.

ATC Facility Equipment

Prior coordination and identification is required for access to the various ATC facilities serving Edwards AFB. Movement of the ATC facility interface equipment from temporary storage will require advance coordination for access to the ATC facility area. Coordinate equipment deliver vehicle parking (for off-loading operations) and temporary equipment storage, if required, with the AF Coordinator listed in Table 1 of each attachment.

Raytheon will confirm the following:

The Raytheon SITL will confirm that the local airport management office has been advised of the planned activity.

2.3.4 Radar Site System Installation

2.3.4.1 Control and Resolution of Discrepancy Reports

Prior to equipment installation, or during installation and testing, the equipment will be checked for damage. If any damage is found, a Service Request (SR) will be initiated. The FAA TOR and the Raytheon SCE and SITL

can generate SRs. The SCE and/or SITL will assign a case number, make copies, and distribute the SRs as required. The original SRs will be forwarded to the Raytheon I&CO Manager for tracking purposes. A timely review of each SR will be conducted to determine the source of the problem encountered and the cause and recommended course of action to resolve problems attributable to the ASR-11 system not achieving FRD requirements contained in the FRD. The Raytheon I&CO Manager and the SITL will account for each SR and track each SR's disposition status for corrective action.

Once the discrepancy has been corrected, the FAA TOR will sign the SR, thus confirming approval of the corrective action. Copies of the original signed and approved SRs will be generated and distributed and the original forwarded to the Raytheon I&CO Manager for tracking purposes. Copies of all SRs will be forwarded to the ATO-T-440/ASR-11/ASU-250 as part of the SAT Report and the DD Form 250 submission.

Electronic equipment failures will be recorded in the Engineering Operations Log (EOL) by the SITL. Depending on the type of failure, a SR will be filled out on site and forwarded to the Raytheon I&CO Manager. The Raytheon I&CO Manager will coordinate corrective action and decide if the SR warrants an Investigation Request (IR). The results of the SR will then be noted by the SITL in the EOL.

2.3.4.2 ASR-11 Site Activities

After the radar equipment is delivered to the site, the Raytheon I&CO team will install the radar site equipment, including PSR and MSSR equipment racks and interconnection cables, and cabling and waveguide in the previously installed tower assemblies. The I&CO team will perform ASR-11 System initialization, checkout, and alignment procedures at the ASR-11 site before any connection is made to operational equipment at the various ATC facilities.

Online PSR and MSSR antenna transmissions will be scheduled with both FAA AT and AF representatives through the FAA TOR. The ASR-11 System electronic equipment will be installed in accordance with the procedures outlined in the ASR-11 I&CO procedures and system technical manuals.

At the completion of the equipment installation at the radar site, the Raytheon SITL will coordinate with the FAA TOR to confirm access to the various ATC facilities.

At this point, the following items will have been completed:

- Raytheon will confirm that AOS-230 has installed existing ASR filters, if required.
- The Raytheon SITL will provide a schedule of activities to the FAA TOR and will update this schedule on a weekly basis. The Raytheon SITL will coordinate any activities that will impact ATC operations with the FAA TOR at least one day in advance.
- The Raytheon SITL will coordinate all activities associated with system installation with the FAA TOR. The Raytheon SITL will use existing guidelines such as weekly job meeting agendas, inspection and test procedures, and service reports to ensure that work is performed on schedule and in strict accordance with the ASR-11 System Installation and Checkout Procedures, CDRL No. B003.

2.3.4.3 MRSM Installation

Raytheon will install the MRSM equipment, including the MRSM chassis, rack, antenna and antenna cabling, for each of the ASR-11 facilities according to the equipment rack layout and MRSM site layout described in FATD Drawing E18 of each radar site.

The Raytheon I&CO team will install the MRSM chassis in the host rack or new rack located in the building, room, and rack identified in Figure 6 of each attachment. If possible, the MRSM will utilize available power outlet inside the host rack. The installation of this equipment is necessary since it will be used in the optimization and alignment of the Monopulse Secondary Surveillance Radar (MSSR). Refer to FATD Drawing E18 of each radar site for MRSM chassis location.

The MRSM antenna location is also designated in FATD Drawing E18 of each radar site. The Raytheon I&CO team will route an adequate length of low loss coaxial cable from the MRSM chassis location to the MRSM antenna. The path that coaxial cable will take to get from the chassis to the antenna including cable lightning protection configuration if available is described in FATD Drawing E18 of each radar site.

2.3.4.4 MTI Reflector Installation

The ASR-11 systems are supplied with two MTI Reflectors. The MTI Reflector locations and procedures for access are described in Table 2 of each attachment. Raytheon will install the MTI Reflectors in accordance with the technical manual and standard installation practices.

2.3.5 ATC Facility Equipment Installation

The purpose of this section is to outline the activities for installation of the electronic equipment in the various ATC facilities associated with Edwards AFB as outlined in the attachments, connection of the equipment to the power source as installed in paragraph 2.2.7, and routing of all the data cables to the appropriate equipment locations. See FATD Drawing E34 (EDW) or Drawing E35 (all other sites) for a list of all equipment to be installed at each ATC facility associated with the individual ASR-11 implementations.

The ATC facility installation process will involve the installation of the electronic equipment and the interconnecting cables. The ASR-11 interconnecting data and video cables will be installed but not connected to the existing automation system. It will not alter or interfere with the existing ASR data at this point. Daily coordination will occur between the Raytheon SITL and the FAA TOR until all ASR-11 System installation activities inside the ATC facility have been completed.

Refer to Appendix B, installation procedures B1 through B3, for standard installation processes.

Refer to Table 12 of each attachment for a Cable Run List, FATD Drawing E34 (EDW) or Drawing E35 (all other sites) for an Interconnection Diagram, FATD Drawing E20 for the ATC facility equipment room floor plan and operations room floor plan as required.

Raytheon will ensure that the following items are accomplished before proceeding with the installation process:

- ☐ Raytheon SITL will coordinate with the FAA TOR for access to the ATC facility. The FAA TOR will, in turn, coordinate with the local AF Coordinator.

- ☐ Raytheon SITL will coordinate with the FAA TOR each day for work to be performed inside the ATC facility.
- ☐ The Raytheon SITL will coordinate with the FAA TOR prior to any installation activities in the vicinity of any operational equipment.
- ☐ The Raytheon SITL will coordinate with the FAA TOR before any cables are pulled or placed into position.

2.3.5.1 Sequence of Events

The typical sequence of events for the installation of the ASR-11 interface electronic equipment and the associated interunit cabling is as follows:

1. The Raytheon SITL will coordinate with the FAA TOR to confirm the placement of the Communications Rack(s), the RCP(s), and the OMT(s).

2. The Raytheon SITL will verify that power feeds from circuit breakers to equipment location outlets are correct and labeled. Refer to Table 11 of each attachment for the circuit breaker assignments.

3. The Raytheon I&CO team will install the equipment as outlined in paragraph 2.3.5.2.

2.3.5.2 Equipment Placement and Interconnection

For interconnection details, refer to FATD Drawing E34 (EDW) or Drawing E35 (all other sites) and Table 12 of each attachment for the system interconnection diagram and a cable run list. The following describes the typical Raytheon I&CO team activities to be performed in the ATC facility to support the ASR-11 System installation:

Communications Rack

Refer to Table 2 of the each attachment for Communications Rack locations specific to each site.

OMT

Refer to Table 2 of the each attachment for OMT locations specific to each site.

IMPACT

Summary	The installation and placement of the Communications Rack, OMT, and associated equipment in their specified locations will involve placement of the equipment, connection to power provided by the Raytheon site preparation subcontractor, routing and connection of interunit and intraunit cabling, and mounting of the racks to the floor and to adjacent equipment racks (if required locally).
Duration	The installation time varies by equipment from 1 to 4 hours.
Impact	There will be additional personnel and activity in the equipment rooms where the equipment will be located. At this point, the equipment mentioned above does not connect to any operational equipment in the ATC facility equipment room, and no other impact is expected from this operation (no outage is required).

	IMPACT
Coordination	The Raytheon SITL will coordinate each day's activities with the FAA TOR before any work is performed.
Risk	• There is a risk of the Raytheon I&CO team interfering with the daily ATC operation as a result of the added personnel in the ATC environment. The Raytheon SITL will coordinate with the FAA TOR each day and will review the daily activities with the installation personnel to prevent any interference. • Installing the cables in existing ducts will involve manipulating old cables and may cause an outage due to a data loss from a cable break. The Raytheon SITL will coordinate with the FAA RE who will coordinate with FAA AT and AF prior to any installation activities.

At this point, the following activities should have been accomplished:

The Raytheon SITL will coordinate access to the specific RCP locations during off-hours for removing a specified panel available for the EDW Radar Control Panel (RCP) in the Operations Room area.

RCP

Refer to Table 2 of each attachment for RCP locations specific to each site.

	IMPACT
Summary	The installation and placement of the RCPs in their specified locations may involve removing existing equipment in operational console panels, removing the panel and cutting a mounting hole for the RCP at each location, placement of the panel back in the console, replacing all removed equipment and reconnecting all cables, and connection of the RCPs to the OMT.
Duration	The installation time varies per console panel from 1 to 2 hours at each RCP position.
Impact	Work will need to be accomplished during low activity hours as specified in Table 2 of each attachment. A FAA technician will need to be available to assist the Raytheon I&CO team during those off-hours to remove certified equipment from the console panels scheduled for removal, to oversee cutting of the panels, and to replace the equipment back in the panels for placement back in the consoles.
Coordination	The Raytheon SITL will coordinate each day's activities with the FAA TOR before any work is performed. Work will only be performed during those times approved by the FAA TOR in advance and only in the presence of a FAA technician.
Risk	Installing the cables in existing ducts will involve manipulating old cables and may cause an outage due to a data loss from a cable break. The Raytheon SITL will coordinate with the FAA RE who will coordinate with FAA AT and AF prior to any installation activities.

System Interconnection

Install interunit cabling as follows:

1. From the **ASR-11 Data Link** to the **Communications Rack**
2. From the **Communications Rack** to the **OMT**
3. From the **OMT** to the **RCP**

IMPACT

Summary	The installation of the electronic equipment in the various ATC facilities will involve installing the ASR-11 interface equipment and the associated interunit cabling.
Duration	The equipment installation is scheduled for 2 weeks.
Impact	There will be additional personnel and activity in the ATC facility Operations and Equipment Rooms. A FAA technician will be required to be available in the event of equipment problems.
Coordination	The Raytheon SITL will coordinate each day's activities with the FAA TOR before any work is performed.
Risk	• There is a risk of the Raytheon I&CO team interfering with the daily ATC operation as a result of added personnel in the ATC environment. The Raytheon SITL will coordinate with the FAA TOR each day and will review the daily activities with the installation personnel to prevent any interference. • Installing the cables in existing ducts will involve manipulating old cables and may cause an outage due to a data loss from a cable break. The Raytheon SITL will coordinate with the FAA RE who will coordinate with FAA AT and AF prior to any installation activities.

IMPACT

Summary	The installation of the electronics equipment will require that work be performed in an area that may contain asbestos-containing material (ACM) or lead-based paint (LBP).
Duration	The equipment installation is scheduled for 2 weeks.
Impact	An environmental impact will delay the project schedule until the material is safely removed and disposed.
Coordination	The Raytheon SITL will coordinate with the FAA TOR prior to the start of any work. A work request will be submitted in advance and approved by the Desert-to-the-Sea (DTS) Environmental Compliance Manager.
Risk	There is a risk that ACM or LBP will be discovered in the ATC facility work area and create a work stoppage. The SITL will not perform any work until the work request has been approved.

At this point the following tasks have been accomplished:

1. The OMT has been installed and connected to the SCDI LAN cables originating at the Communications Rack.

2. The RCPs have been installed and connected via data cables to the OMT.

3. The MRSM has been installed and is operational.

2.3.5.3 Connection to Operational Equipment

At this point, the ASR-11 Sensis transition equipment is ready to interface with the operational REHOST-2 or future STARS. As stated earlier, all equipment necessary for interface into the operational configuration has been installed and cables have been routed up to the operational equipment.

The Raytheon SITL will coordinate with the FAA TOR to have a FAA radar technician available during this activity.

2.3.6 ASR-11 System Power-Up, Checkout, and Alignment

At this point, the site construction has been completed, primary power has been supplied to the facility, and the HVAC has been installed and is functioning. The radar will be energized for the first time and the purpose of this test is to verify that there are no problems with the power distribution system. All of the circuits will be energized and verified prior to energizing the transmitter. The antenna will be turned on and checked for proper electrical and mechanical function.

After the ASR-11 has been energized, the radar will be ready to radiate in a test status. The Raytheon SITL will verify through the FAA TOR that the Frequency Transmitting Authorization (FTA) is on site prior to energizing the transmitter. Additionally, the Raytheon SITL will coordinate with the FAA TOR to determine the specific time and duration of the test. The FAA TOR will coordinate with the FAA Coordinator to ensure that technicians will be available to identify any interference to the existing ASR system.

The Raytheon SITL will establish communications with the ATC facility so that a determination can be made immediately if there is interference and the ASR-11 transmitter can be deenergized.

Prior to conducting this test transmission, the ASR-11 will be set to blank transmission of the PSR as described in Table 6 of each attachment as required.

The next step for the I&CO team is the radar system optimization (paragraph 2.3.9).

- ☐ Raytheon has notified ATO-T-440/ASR-11 of the date for the start of site optimization. ATO-T-440/ASR-11/ANI-960 will coordinate with AOS-230 and AWP-470 for optimization start.

IMPACT

Summary	The system power-up will involve the ASR-11 radiating for the first time as part of the equipment checkout process.

IMPACT	
Duration	The initial testing of the transmitter is scheduled for 5 minutes.
Impact	FAA technicians will be required to assist in mitigating any effects of interference during testing of the transmitter. ATC may experience radar interference.
Coordination	The Raytheon SITL will coordinate with the FAA TOR one day in advance of the planned transmitter test and confirm prior to ASR-11 System radiation.
Risk	There is a risk that the ASR-11 will interfere with the existing radar and ATC operations. The Raytheon SITL will coordinate with the FAA TOR prior to energizing the ASR-11 transmitter. The SITL will establish communications with the ATC facility so that a determination can be made immediately if there is interference and the ASR-11 transmitter can be deenergized.

2.3.7 Raytheon Facility Inspection

At this point in the process, Raytheon will assure that items identified during the facility completion inspection (see paragraph 2.2.10), and any others identified by the FAA and Raytheon personnel, are closed out prior to beginning the facilities SAT, Part I. Any items that cannot be resolved will be identified at the facilities SAT, Part I, pretest in-brief meeting. A clearing action and closure dates will be identified and the responsible parties will be assigned to the clearing action.

2.3.8 Dry Run Site Acceptance Test (SAT)

The purpose of the dry run SAT is to verify that all of the facility systems (power and HVAC) are operating satisfactorily and the radar system is functioning correctly prior to the formal Facilities and Radar SAT.

The dry run SAT will be a Raytheon activity and will be conducted according to the following CDRL A022-001 ASR-11 Site Acceptance Test (SAT) and technical manuals:

- **ASR-11 System Technical Manual, Site Operation and Maintenance, CDRL B001** – Defines how the equipment described in the Nondevelopmental Item (NDI) and Commercial Off-the-Shelf (COTS) technical manuals are integrated into a single operational system.
- **TI 6310.47, Volume 1**, System Operation and Maintenance Instructions for the Digital Airport Surveillance Radar (ASR-11), FA-14200.
- **TI 6310.47, Volume 2**, Field Installation Manual for the Digital Airport Surveillance Radar (ASR-11), FA-14200.
- **NDI and COTS Technical Manuals** – Supports site-level operation and maintenance activities of assemblies, subassemblies, and Line Replaceable Units (LRUs) as stand-alone items. NDI and COTS manuals to be provided will include:
  - Equipment Manual, S-Band Airport Surveillance Radar ASR-11 (Pub G584380)
  - Installation and Maintenance Manual for Model 174100 ASR-11 S-Band Antenna (Pub 79680)
  - Digital Airport Surveillance Radar (DASR) ASR-11 Antenna Pedestal System Field Maintenance Manual

- Technical Manual for Moving Target Indicator (MTI) Reflector, S-Band PSI Model A-150a (Pub 110907)
- Rotary Joint RJ 6940/01 Technical Manual
- Site Technical Manual and Assembly Procedures for the Digital Airport Surveillance Radar (DASR) Tower (Pub 6000-004) Equipment Manual for Condor LVA Antenna 807480/00X, Second Edition (Pub EQM 807480/00X)
- Equipment Manual for RF Changeover Unit 808136/005 (Pub EQM 808136/005)
- System Manual for MSSR System 808390/000 for DASR (Pub SYM 808390/000)
- Installation, Operation, and Maintenance Manual for the System Interface Unit of the Airport Surveillance Radar (ASR-11) Data Translator Equipment (Pub 780-004232)
- Installation Manual for International Power Machines Balanced Power 30-80 KVA Uninterruptible Power System (Pub 164201014)
- Operational Manual for International Power Machines Balanced Power 30-160 KVA Uninterruptible Power System (Pub 164201016)
- Workstation Manuals, Sun SPARC Station 5
- Equipment Manual for the MRSM
- Equipment Manual for the MRSM Antenna

Raytheon will ensure that the following actions have been accomplished:

- ☐ Raytheon has notified ATO-T-440/ASR-11 of the start date of the formal SAT at least 10 working days prior to the scheduled start date.
- ☐ The Raytheon SITL will coordinate with the FAA TOR and the AF Coordinator to establish a date/time for ASR-11 integration.

IMPACT

Summary	The dry run SAT will involve the testing of the radar site facilities (power, HVAC, E/G, and the radar equipment). Radiation of the ASR-11 may be required.
Duration	The dry run acceptance testing is scheduled for 5 days.
Impact	An FAA technician will be required to be available each day to assist with any interference to the existing ASR system that may be caused by testing the ASR-11.
Coordination	The Raytheon SITL will coordinate with the FAA TOR one day in advance.
Risk	There is a risk that the ASR-11 may interfere with the existing radar. The Raytheon SITL will be in contact with the ATC facility to determine immediately if any interference occurs so that the ASR-11 radiation can be terminated.

2.3.9 System Optimization

The ASR-11 system optimization will start after the installation and integration of all the electronic equipment. At this point all of the electronic equipment has been installed, power and data cables installed, the site construction is complete, the MRSM has been installed, and MTI Reflectors, if required, are installed and verified for proper operation.

Raytheon will be performing the optimization procedures in accordance with Digital Airport Surveillance Radar (DASR) ASR-11 Installation and Checkout CDRL No. B003, Section IX. Upon completion of the DD Form 250, ANI-960/AOS-230 will determine if further (FAA specified) optimization is required.

Optimization of the ASR-11 System will be accomplished using targets of opportunity, when possible. This will be a data collection activity to demonstrate that the system is properly optimized and ready for SAT.

2.3.10 Dry Run Cutover Test

A dry run cutover test is not required at this facility. Most probably, this test will be substituted for a REHOST integration test performed by the Government to ensure correct presentation of ASR-11 data on the REHOST system displays.

At this point, the following items will be accomplished:

- ☐ The Raytheon I&CO Manager will formally notify the Government Contracting Officer of the intended start date for the facilities SAT, Part I, at least 10 days in advance. The Raytheon SCE will coordinate with the FAA RE who will coordinate with the FAA AF coordinator for the date/time to conduct the formal Facilities SAT, Part I.

2.3.11 Facilities SAT, Part I

The Facilities SAT is a joint FAA and Raytheon effort for the purpose of a final review of the site construction to verify that the facility performs to the specification of the systems under test. Raytheon will complete the Facilities Site Configuration List in accordance with the SAT procedures. The Raytheon SCE, the FAA TOR and RE, ASU-250, and other local and national FAA representatives will participate in the Facilities SAT, Part I.

The SAT will be performed in accordance with CDRL A022, Part 1. The duration of the facilities SAT is scheduled for 5 working days.

At this point the following items will be accomplished:

- ☐ The Raytheon SITL will coordinate with the FAA TOR who will coordinate with the FAA coordinator for the date/time to conduct the formal radar SAT Part II.

2.3.12 Radar SAT, Part II

The Radar SAT will be a joint effort between the FAA and Raytheon for the purpose of performing a final test of the ASR-11 System, collecting data for the FAA's Facility Reference Data File (FRDF) including radiation

hazard (RADHAZ) data, and verifying that all items requiring resolution from the REHOST integration test have been cleared. Raytheon will complete the Facilities Site Configuration List in accordance with the SAT procedures. Participants in the Radar SAT will be the Raytheon SITL, the FAA TOR, ASU-250, and other local and national FAA representatives.

Part of the SAT procedures is a formal flight inspection. This flight inspection is to be accomplished with a dedicated aircraft. This test will include an evaluation of all air traffic coverage requirements by the FAA with reference to the evaluation as reported in the Final Site Survey Report. Once the analysis is complete, a flight check analysis report will be issued that lists which requirements have been met.

The Radar SAT is the final testing for the radar equipment prior to acceptance of the system by the FAA. The SAT will be performed in accordance with CDRL A022, Part 2, and the duration is scheduled for 10 working days.

At the conclusion of SAT, the FAA TOR will assume responsibility for the ASR-11 System, until the Partial JAI (for custodianship) is signed. If parts require replacement, the TOR or local AF technician will order replacements using standard procedures through the Logistics Inventory System (LIS) as outlined in the Integrated Logistics Support Plan (ILSP) for the Digital Airport Surveillance Radar Model 11 (DASR/ASR-11). Questions can be referred to JoEllen Kleindienst at (202)385-8646.

Once the Radar SAT has been completed, the radar system is at a level of operation that the System Acceptance can begin.

2.3.13 System Acceptance

At this point, the radar site has been completed and accepted, the ASR-11 has been optimized to the local site coverage requirements, and the transition equipment has been installed and tested in an operational configuration as a total ASR-11/REHOST-2 or future STARS system. The FAA and Raytheon can begin execution of DD Form 250. The SAT report is submitted to the FAA within 30 days of the completion of the Radar SAT. Once the FAA approves the SAT report, Raytheon files the DD Form 250 with the Government for payment. The ASR-11/REHOST-2 or future STARS system can be placed into service as described in the Transition Process, paragraph 2.4.

2.4 Transition Process

The transition process includes transfer of responsibility for the ASR-11 System from Raytheon to the FAA and initiating operational use of the system. This process overlaps the installation and checkout process to emphasize the FAA's key role in joint activities such as system optimization and site acceptance testing. This process begins with system optimization and ends when the system is commissioned. The transition plan presented in this SATP is an overview that highlights the necessary activities and their most likely sequence. The detailed site-specific transition plan will be developed by ANI-960.

2.4.1 Participate in System Optimization

Raytheon will perform the optimization procedures as described previously in paragraph 2.3.9.

As part of the optimization process, a targets-of-opportunity test will be performed. The test will confirm that the system meets its performance requirements and is ready for site acceptance testing.

After optimization, the FAA TOR will collect and record system data for the technical reference data record (Section 4) of the Facility Reference Data File (FRDF) in accordance with FAA Order 6030.45A. (Electronic templates for all required sections of the FRDF are available from ATO-T-440/ASR-11 and will be provided to each TOR.)

2.4.2 Participate in SAT

The SAT will be performed as described previously in paragraphs 2.3.11 and 2.3.12. These tests will confirm that the ASR-11 system complies with all system performance specifications. The FAA participants will include the RE, TOR, ATO-T-440/ASR-11, and ASU-250/COTR as a minimum. The RE (SAT, Part 1) and TOR (SAT, Part 2) will have the authority to sign off on test results and specify which requirements have not been met. The ASU-250/COTR will act as a backup to the on-site RE/TOR and will sign for the test results only when the RE/TOR is unavailable. ASU-250/COTR office will have the authority to create, sign, and send a Site Acceptance letter to the DoD Contracting Officer who will in turn sign the DD Form 250. No FAA signatures are allowed on DD Form 250.

At the conclusion of SAT, Raytheon will prepare both the SAT Report (CDRL A024) and an As-Built Drawing Set (CDRL A026) for submission to the Government for review and approval. Once approved, the DD Form 250 will be signed by the DoD Contracting Officer. The FAA TOR will assume responsibility for the ASR-11 system at the conclusion of SAT until the Partial JAI (for custodianship) is signed. If parts require replacement, they will be available through the Interim Contractor Support (ICS) contract. The TOR or local AF technician will call (877) 745-2401 to order the part and ship the failed part back to Raytheon's depot. Fessler Technical Services is under contract and has the contract funds and Federal Express account numbers to pay for all equipment and shipping associated with replacement parts (after the DD Form 250 has been signed).

After the DD Form 250 is signed, the FAA may perform additional optimization to the system to verify that all system performance requirements have been met. This activity will take 2 to 3 weeks to complete. Once complete, the FAA TOR will collect and record system performance data in the FRDF Section 4, Technical Reference Data Record.

2.4.3 Conduct Pre-Integration/Flight Inspection Meeting

The FAA TOR will present the schedule for conducting flight inspection, system integration, certification and commissioning. This will include the flight inspection, schedule of events, level of radar service available at each step, and the coordination required.

ANI-960 is responsible for developing the Flight Inspection Plan and scheduling the flight inspection aircraft. The flight inspection will be performed in accordance with the latest revision of the United States Flight Inspection Manual. All coordination and any impacts associated with conducting the flight inspection are the responsibility of ANI-960 and shall be clearly defined in the FAA Transition Plan. This plan will include the configuration of all ATC facility equipment, the level of radar service available, the duration of the flight inspection, and the coordination required.

At this point, Raytheon and both local and national FAA AT and AF representatives will confirm that the facility is ready for flight inspection and subsequent operational use. All AT and AF training should be completed and all major JAI exceptions should be closed. As previously stated, the flight inspection takes place as part of the Radar SAT, Part II (see paragraph 2.3.12 for more information concerning this joint event).

Based on the input from the meeting, the FAA Transition Plan may need to be revised. This revision will be completed by the TOR prior to proceeding.

2.4.4 Perform Flight Inspection

The flight inspection is to be accomplished with a dedicated aircraft. This test will include an evaluation of all air traffic coverage requirements by the FAA with reference to the evaluation as reported in the Final Site Survey Report. Once the analysis is complete, a flight check analysis report will be issued that lists which requirements have been met.

2.4.5 Perform Field Familiarization

The Field Familiarization is a 30-day period that begins after flight check. During this period, local AF and AT representatives will have the opportunity to conduct training. The Operational Suitability Demonstration (OSD) can be conducted during this 30-day period. Additionally, ATO-T-440/ASR-11 encourages the participation of local AF personnel during the SAT (see paragraph 2.4.3). The Field Familiarization process leads to a declaration of Initial Operating Capability (IOC). The IOC is the declaration by the site personnel that the system is ready for conditional operational use in the NAS. If the temporary radiation scenario was utilized (see paragraph 1.9.3 and Table 2-5), the weather channel must be re-optimized. Re-optimization of the weather channel will require one day of clear weather.

The FAA Transition Plan will specify the coordination and procedure to be used if the ASR-11 fails and the existing ASR service needs to be restored.

2.4.6 Perform Plants JAI

The Plants JAI is conducted after the start of Field Familiarization. The JAI is entirely an FAA responsibility. This inspection gains the consensus of the involved offices that the radar facilities have been completed in

accordance with applicable standards and specifications, and the system and facility are capable of providing the required service. The TOR and/or RE will be responsible for coordinating this inspection with all participants. Raytheon is not required to participate in this event. The timing for the inspection will be as coordinated by the FAA TOR and/or RE. The FAA TOR will record the results of the JAI in the FRDF Section 2, JAI/CAI Reports. All coordination and any impacts associated with performing the JAI are either the FAA TOR's or RE's responsibility and shall be clearly defined in the site-specific FAA Transition Plan to be developed as described in paragraph 2.4.

2.4.7 Operational Suitability Demonstration

After the ASR-11 system achieves IOC, site personnel will be able to use the new system operationally. This period of time after IOC and before commissioning of the system is referred to as the Operational Suitability Demonstration (OSD). The FAA Transition Plan will specify the coordination and procedure to be used if the ASR-11 fails during this demonstration and the existing ASR service needs to be restored. The Operational Readiness Date (ORD) signifies the end of the OSD, and at this time, integration of the ASR-11 system can be performed.

2.4.8 Perform Electronics JAI

The Electronics JAI gains the consensus of the involved offices that the radar system has been incorporated into the automation environment in accordance with applicable standards and specifications, and the system and facility are capable of providing the required service. The TOR and/or RE will be responsible for coordinating this inspection with all participants. The FAA TOR will record the results of the JAI in the FRDF Section 2, JAI/CAI Reports. All coordination and any impacts associated with performing the JAI are either the FAA TOR's or RE's responsibility and shall be clearly defined in the site-specific FAA Transition Plan to be developed as described in paragraph 2.4.

2.4.9 Integrate ASR-11 into the REHOST System

The integration of the ASR-11 into the REHOST system will be done in accordance with the procedures in the FAA transition plan. The coordination required to complete the integration will be the TOR's responsibility and will take place in accordance with the FAA Transition Plan.

2.4.10 Perform System Certification

After the JAI and SAT are signed and integration is achieved, AF maintenance personnel will certify the ASR-11 as part of the overall automation environment.

2.4.11 Commission ASR-11 Facility

Upon successful completion of the Field Familiarization, the Final JAI will be signed and the ASR-11 System will be officially commissioned. At this time, control and maintenance responsibility of the system will have been transferred to FAA operations.

2.5 Existing Radar Deactivation Process

If required, Raytheon will begin the process for deactivating the existing ASR upon receipt of the delivery order from the Government Contracting Office. Raytheon's equipment deactivation team will remove the existing ASR and associated beacon and beacon performance monitor after receipt of the appropriate delivery order. A prequalified subcontractor performing Davis-Bacon work will assist in the orderly removal, marking, packing, and inventory of the existing ASR system.

The Raytheon Site Deactivation Team Lead (SDTL) is responsible for all deactivation activities and removal of the following items: primary and secondary antenna systems, waveguide and coaxial cables, interface cabling, antenna tower, power and signal distribution panels, and electronic equipment cabinets. All items will be properly marked and packaged to ensure adequate protection from corrosion, deterioration, and physical damage during shipment and handling. Special care will be taken with equipment susceptible to electronic discharge. John LaFontaine, (661) 258-4436 will arrange the shipment of all deactivated items.

2.5.1 Site Deactivation Survey

The purpose of the Site Deactivation Site Survey is to confirm site information that was obtained during the original ASR-11 site survey and to include any new data on the site. Raytheon will determine what existing ASR equipment must be removed including radar control panels, interconnection cabling, and field cables.

Raytheon will request the assistance of the FAA in scheduling a Site Deactivation Survey to gather information pertinent to the development of two key documents: 1) Deactivation Specification Bid Package, and 2) a revision, if necessary, to paragraph 2.5 of this SATP.

At this point the following activities have been completed:

- ☐ Verify that a Notice of Proposed Construction or Alteration form, FAA Form 7460-1, has been filed for the dismantling process (required for crane operations during tower dismantling).
- ☐ Ensure that the Airport Operations Manager has been informed of the time frame for the scheduled deactivation work so that a Notice to Airman (NOTAM) can be issued, if necessary.
- ☐ Plans have been developed and approved by local FAA AF and airport personnel for the disposition of the existing radar building.
- ☐ Raytheon and ATO-T-440/ ASR-11/ANI-960 will coordinate the Site Deactivation Survey.
- ☐ ATO-T-440/ASR-11/ANI-960 will provide the site point of contact (AF Coordinator).

2.5.2 Prepare Deactivation Plan

The Site Deactivation Plan will be prepared by Raytheon or the FAA following the Site Deactivation Survey and will contain the details for the deactivation process, coordination, security, and access control. Raytheon will submit the Specification Bid Package to the FAA for review. Once approved, Raytheon will submit the Specification Bid Package for a 30-day bidding period. At the appropriate time, the FAA will provide Raytheon with a Notice to Proceed (NTP) with the deactivation process.

The following activities will be included in the deactivation plan:

1. Inventory all equipment, test equipment, spare parts, and documentation that are to be shipped and prepare necessary property transfer records. Request procedural information and list of required forms from John LaFontaine, (661) 258-4436.

2. Disassemble, package, and prepare for shipment all radar equipment and its associated waveguide, filters, couplers, diplexers, intercabinet wiring, etc. Shipment of the equipment cabinets to their Receive Site is the responsibility of ATO-T-440/ASR-11/ANI-960.

3. Disassemble, package, and prepare for shipment the secondary (beacon) antenna and the primary radar antenna assembly, including the rotary joint. Shipment of the antenna units to the Receive Site is the responsibility of ATO-T-440/ASR-11/ANI-960.

4. Dismantle, package, and prepare the radar tower for shipment. Shipment of the radar tower to the Receive Site is the responsibility of the ATO-T-440/ASR-11/ANI-960.

5. Remove, package, and prepare for shipment all radar system power panels except the House Lights Distribution Panels and the AC Transfer Junction Boxes for Rooms A and B. The House Lights Distribution Panels and the AC Transfer Junction Boxes are not required at the Receive Site and thus, are surplus. These panels are fed by the Room A Power Distribution Panel, which is being shipped to the Receive Site. Consequently, if the shelters are to be reused, the FAA will have to install a replacement for the main panel.

6. Remove, package, and prepare for shipment all Indicator Site equipment that is to be reused to the Receive Site. The Radar Control Junction Box (RCJB) is available for relocation along with the insert and lightning protection devices.

7. Remove package, and prepare for shipment any existing old MTI Reflectors, as well as any beacon performance monitoring equipment (e.g., RABM chassis and antenna).

8. Provide plans for temporary storage.

9. Clean up the site.

2.5.3 Submit Dismantling Plan For Bid

The deactivation plan will be submitted for bid through open competition under Federal Procurement guidelines. The bid will be open for 30 days. At the close of the bidding period, Raytheon will award a subcontract for site deactivation and will notify the Government of its readiness to begin site deactivation. The contracts for the subcontractors will be issued by the Raytheon Procurement Office. The subcontractors will be managed by the Raytheon Site Construction Engineer.

2.5.4 Notice to Proceed

The Notice to Proceed (NTP) will be provided by Raytheon to the subcontractors after the subcontracts have been awarded.

At this point, the following items have been completed:

☐ Raytheon SCE submits request for access to the ATC facility for removal of all ASR related equipment.

2.5.5 Predeactivation Meeting

Raytheon will conduct a predeactivation meeting on site in the presence of the FAA TOR, local Air Traffic and Airway Facilities representatives, and the local Airport Management and Security representatives. The purpose of the predeactivation meeting is to identify roles and responsibilities of both Raytheon and FAA representatives during the existing ASR deactivation process. The following itinerary for the meeting will be followed:

1. Deactivation process and roles and responsibilities
2. Estimated duration of deactivation activities
3. Schedule of events (manner of accomplishment)
4. Coordination paths

Specific information relating to access, disposition, security, coordination, and vehicle requirements for deactivation is described in Table 7 of each attachment. The information will be verified and corrected, if necessary, during the predeactivation meeting.

The dismantling process will require that the FAA provide guidance concerning the following:

- Disconnection of power and communication cables
- Facility test equipment

IMPACT

Summary	The removal of the electronic equipment in the various ATC facilities will involve Raytheon personnel working in the TRACON area.
Duration	Equipment removal is scheduled for 2 days.
Impact	There will be additional personnel and activity in the various ATC facility Operations and Equipment Rooms. A FAA technician will be required to be available in the event of equipment problems.
Coordination	The Raytheon SCE will coordinate each day's activities with the FAA RE before any work is performed.
Risk	• There is a risk of Raytheon personnel disrupting the daily operation of Air Traffic Control with the added personnel in the ATC environment. The Raytheon SCE will coordinate with the FAA RE each day and will review each day's activities with the deactivation team to prevent any interference. • Removing the equipment in the ATC facility will involve manipulating old cables and may cause an outage due to a data loss from a cable break. The Raytheon SCE will coordinate with the FAA RE who will coordinate with ATC prior to any installation activities.

IMPACT

Summary	The deactivation of the ASR equipment will involve the deactivation team requiring access to the radar site on a daily basis.
Duration	The deactivation activities are scheduled for 4 weeks.
Impact	The sites are located at an off airport locations, which will have no impact or risk for ATC or airport operations.
Coordination	The Raytheon SCE will coordinate with the FAA RE to provide a schedule of activities each week. The FAA RE will coordinate with the FAA, airport operations, and security office.
Risk	• There is a risk of access security problems with personnel transiting through a fence gate. The Raytheon SCE and the FAA RE will closely monitor the access point to ensure that the gate is not left open and only authorized personnel are allowed inside.

At this point, all of the necessary documentation, coordination, briefings, permits, and subcontracting have been completed and the existing ASR facility is ready to begin the deactivation activities.

2.5.6 Mobilize Deactivation Team

The subcontractor will be mobilized after the necessary OSHA documentation and safety plans have been submitted and approved by the Raytheon contracting office.

The following items should be cleared before proceeding to the next step in the deactivation process:

- ☐ Raytheon SCE will ensure availability of all tools and materials required, (i.e., boxes, skids, padding, etc.).
- ☐ Raytheon SCE will ensure availability of all safety gear required, (i.e., goggles, harnesses, hardhats, first aid kit, etc.).
- ☐ Raytheon SCE will confirm schedule and facility access plans with subcontractors, (i.e., crane rental company, movers, etc.).
- ☐ Ensure all members of work crew have a solid understanding of their individual tasks, responsibilities, personal and equipment safety, and any other information necessary to perform the job properly and efficiently.
- ☐ Confirm the availability of temporary storage facilities, if required.

2.5.7 Disposal of Hazardous Materials

The existing ASR facilities contain hazardous materials that require disposal. Any hazardous materials will be disposed of by a licensed hazardous waste disposal contractor in accordance with applicable federal, state, and local waste laws, management plans, and regulations.

2.5.8 Deactivate Old Radar Equipment and Prepare for Shipment

The existing ASR will be deactivated and prepared for shipment. After the deactivation team and the subcontractors have been mobilized, the schedule of events for the deactivation is as follows:

- Raytheon and the subcontractor will commence in the process of deactivating the existing ASR system including inventory, removal, disassembly and packaging of all equipment, waveguide systems, cables, spare parts, test equipment, documentation, and the antenna tower.
- Raytheon and the subcontractor will continue preparing system equipment for shipment, as well as performing site cleanup and damage repair and redlining of as-built drawings.

2.5.9 Perform Final Inspection/Execute DD Form 250 (Final)

The Raytheon SCE, ASU-250, FAA RE, and local FAA will perform a Final Inspection to confirm that the old radar site has been restored to the condition specified by the FAA. The FAA and Raytheon can execute DD Form 250 to close out all activities to be performed at this site. ASU-250 will have the authority to sign DD Form 250. Raytheon is responsible for formally notifying the Government Contracting Office of the start date of the Final Inspection/Acceptance at least 10 calendar days in advance.

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3.0 IMPLEMENTATION FLOWCHART AND SCHEDULE

3.1.1 Implementation Flowchart

The implementation process for the ASR-11 is contained in Figure 3-1. This figure is provided as an aid to help guide both national and local ASR-11 implementation personnel through the implementation process from the beginning of site design to ASR-11 System commissioning. Paragraph references have been provided below each box in the flowchart to point the reader to the appropriate section heading in the SATP.

3.1.2 Implementation Schedule

Refer to Figure 3-2 for a typical ASR-11 implementation schedule. This schedule contains an anticipated sequence of events with an estimated duration for each activity. Once the project begins, the updated project schedule is available as follows:

- **Site Preparation Schedule**. The site preparation subcontractor is required to provide a schedule at the preconstruction meeting and to update this schedule every two weeks throughout the entire process. This schedule will be available on site throughout the project.
- **Installation and Checkout Schedule**. The I&CO schedule will be provided by the Raytheon Site Installation Team Lead at the preinstallation meeting. This schedule will be updated and available on site until completion of the Site Acceptance Test (SAT).

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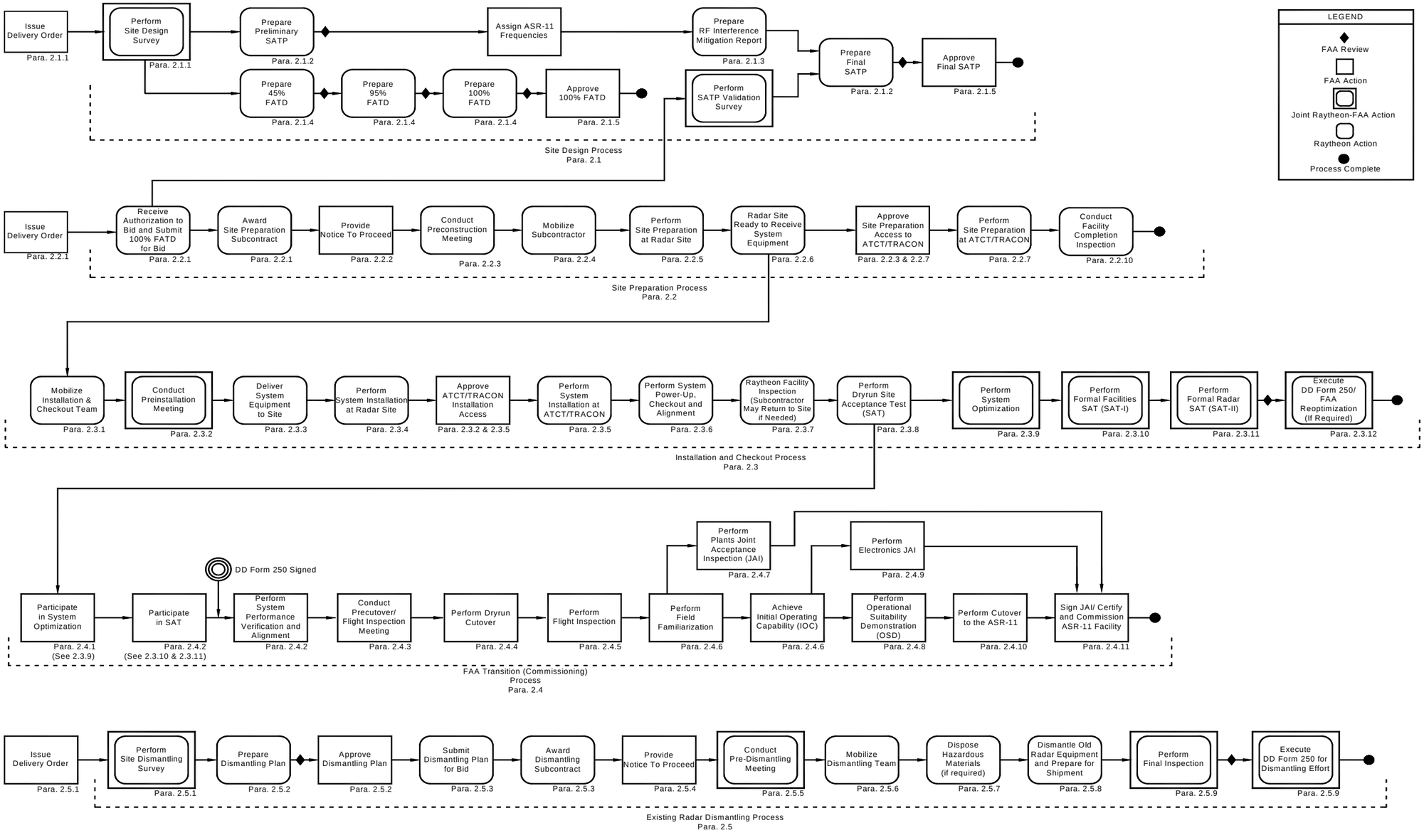
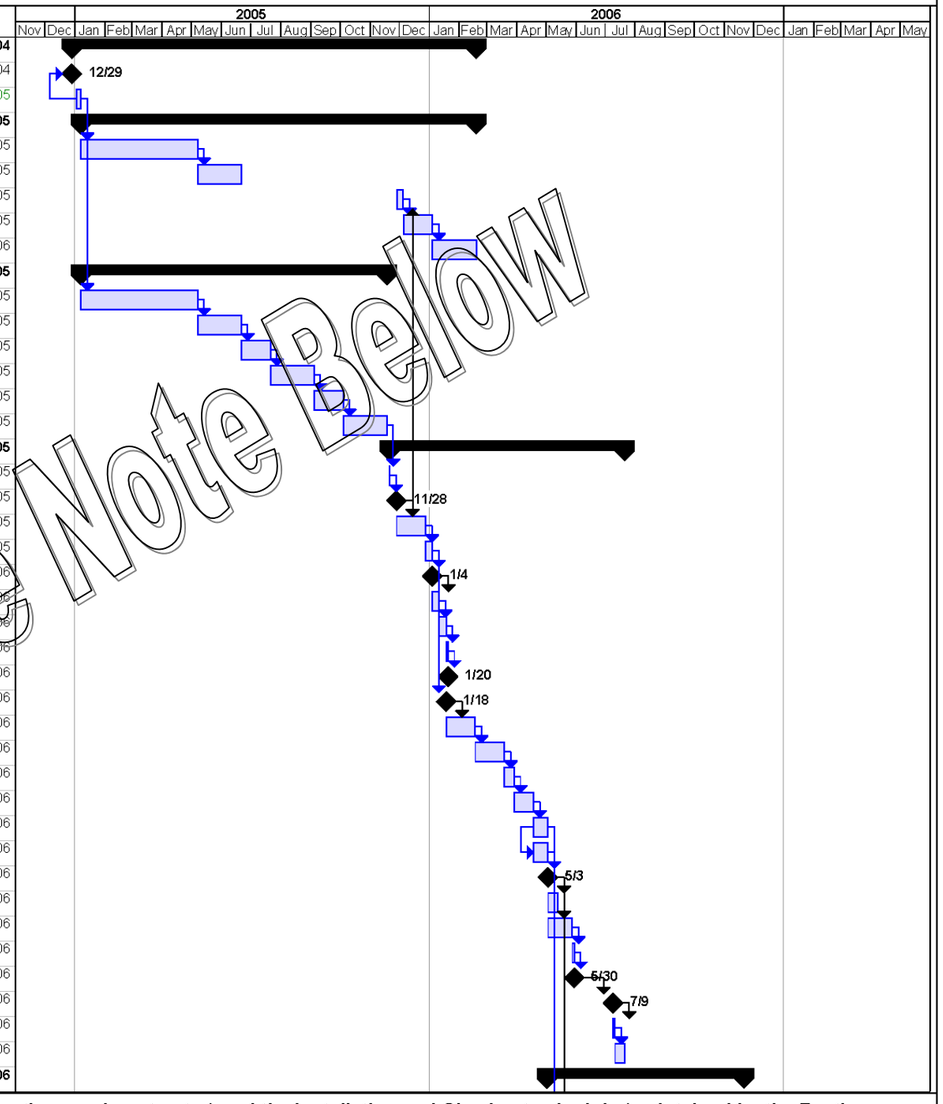


Figure 3-1. Implementation Flowchart

TYPICAL FAA ASR-11 IMPLEMENTATION SCHEDULE (CONFIGURATIONS 3 AND 4)

ID	Task Name	Duration	Start
1	**SITE DESIGN PROCESS (All Raytheon Activities Except Where Noted)**	**298 days**	**Wed 12/29/04**
2	Delivery Order Received from FAA for Site Design	0 days	Wed 12/29/04
3	Perform Site Design Survey	5 days	Mon 1/3/05
4	**Site Activation and Transition Plan (SATP), CDRL A012**	**290 days**	**Fri 1/7/05**
5	Prepare Preliminary SATP	120 edays	Fri 1/7/05
6	FAA Reviews Preliminary SATP	45 edays	Sat 5/7/05
7	Perform SATP Validation Survey	5 days	Tue 11/29/05
8	Prepare Final SATP	30 edays	Mon 12/5/05
9	FAA Reviews and Approves Final SATP	45 edays	Wed 1/4/06
10	**Facilities/Antenna Tower Design (FATD), CDRL A011**	**225 days**	**Fri 1/7/05**
11	Prepare 45% FATD	120 edays	Fri 1/7/05
12	FAA Reviews 45% FATD	45 edays	Sat 5/7/05
13	Prepare 95% FATD	30 edays	Tue 6/21/05
14	FAA Reviews 95% FATD	45 edays	Thu 7/21/05
15	Prepare 100% FATD	30 edays	Sun 9/4/05
16	FAA Reviews and Approves 100% FATD	45 edays	Tue 10/4/05
17	**SITE PREPARATION PROCESS (All Raytheon Activities Except Where Noted)**	**175 days**	**Mon 11/21/05**
18	Delivery Order Received from FAA for Site Preparation	1 day	Mon 11/21/05
19	Submit 100% FATD for Bid	0 days	Mon 11/28/05
20	Subcontractor Bidding Period	30 edays	Mon 11/28/05
21	Award Site Preparation Contract	7 edays	Wed 12/28/05
22	Submit Subcontractor Access Letter	0 days	Wed 1/4/06
23	Subcontractor Prepares/Delivers Key Submittals	7 edays	Wed 1/4/06
24	FAA Provides Notice to Proceed Decision	7 edays	Wed 1/11/06
25	Conduct Pre-Construction Meeting	2 edays	Wed 1/18/06
26	Submit Work Permit for ATCT/TRACON Site Preparation	0 days	Fri 1/20/06
27	Mobilize Subcontractor Onsite	0 days	Wed 1/18/06
28	Subcontractor Completes Foundations (incl. Site Fill and Grade)	30 edays	Wed 1/18/06
29	Subcontractor Completes Tower Erection and Electrical	30 edays	Fri 2/17/06
30	Subcontractor Completes Pedistal and Antenna Installation	10 edays	Sun 3/19/06
31	Subcontractor Completes Lighting, Grounding, Fiber Optics, and Utilities (incl. E/G and Fuel Tank)	20 edays	Wed 3/29/06
32	Subcontractor Completes Shelter to Prepare for System Equipment Delivery (incl. HVAC and Electrical)	15 edays	Tue 4/18/06
33	Subcontractor Completes Site Preparation (incl. Walkways, Parking and Fence Installation)	15 edays	Tue 4/18/06
34	Deliver System Equipment to Site	0 days	Wed 5/3/06
35	Subcontractor Performs Site Preparation Activities in the ATCT/TRACON	10 edays	Wed 5/3/06
36	Subcontractor Marks Location of Racks in Shelter/Begins Waveguide Installation	25 edays	Wed 5/3/06
37	Raytheon/Subcontractor/FAA Performs Facility Completion Inspection (Creates Punchlist)	2 edays	Sun 5/28/06
38	Subcontractor Departs Site	0 days	Tue 5/30/06
39	Subcontractor Returns to Site for Final Site/Raytheon Facility Inspection	0 days	Sun 7/9/06
40	Raytheon/Subcontractor/FAA Perform Final Site/Raytheon Facility Inspection (Clears Punchlist)	2 edays	Sun 7/9/06
41	Raytheon/Subcontractor Completes Punchlist (Contract Closeout)	10 edays	Tue 7/11/06
42	**INSTALLATION AND CHECKOUT PROCESS (All Raytheon Activities Except Where Noted)**	**146 days**	**Tue 5/2/06**



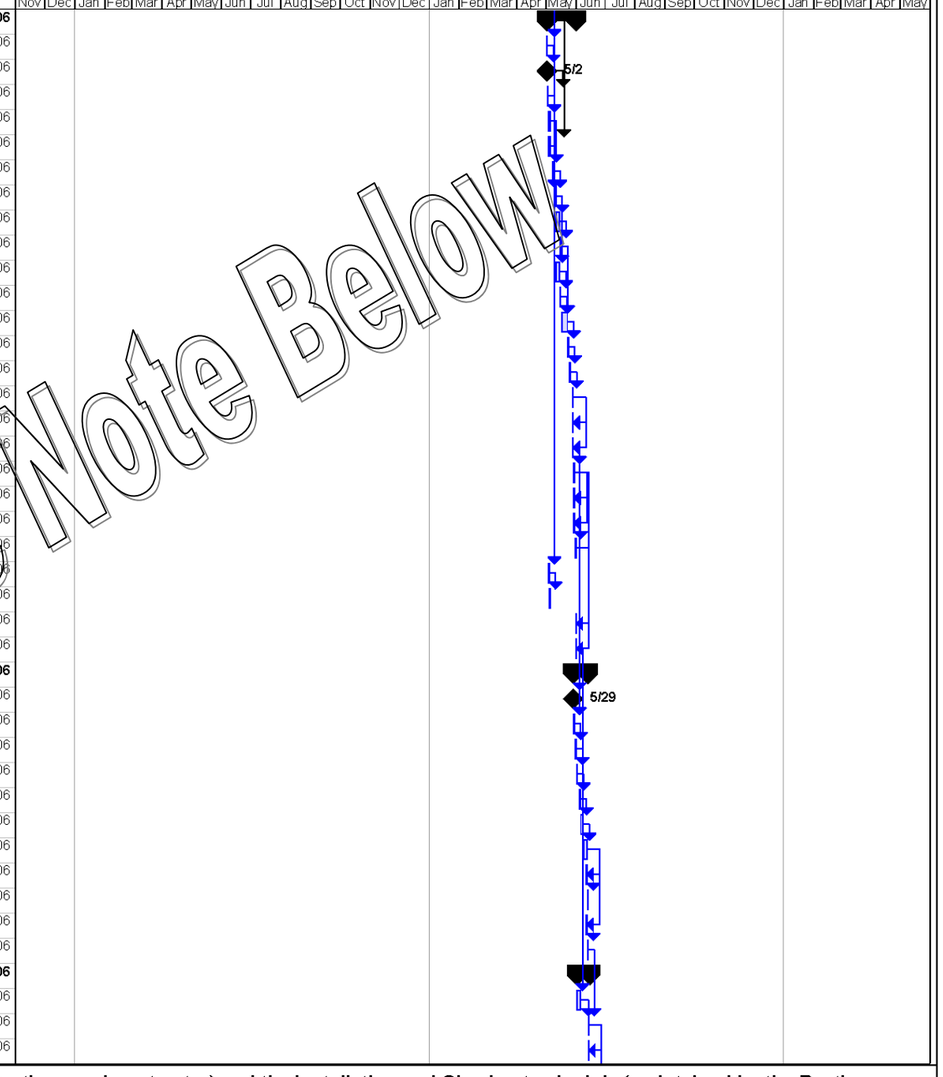
Typical - See Note Below

NOTE: This schedule will be superceded on site by both the Site Preparation schedule (maintained by the Raytheon subcontractor) and the Installation and Checkout schedule (maintained by the Raytheon SITL). Refer to paragraph 3.1.2 for more information.

Figure 3-2. Implementation Schedule (Sheet 1 of 4)

TYPICAL FAA ASR-11 IMPLEMENTATION SCHEDULE
(CONFIGURATIONS 3 AND 4)

ID	Task Name	Duration	Start
43	**Installation Activities at ASR-11 Site**	**23 days**	**Tue 5/2/06**
44	Conduct Pre-Installation Meeting	1 day	Tue 5/2/06
45	Notify Air Traffic of Impending ATCT/TRACON Work	0 days	Tue 5/2/06
46	Conduct Pre-Installation Inspection	1 day	Wed 5/3/06
47	Unpack Deliverable Equipment & Inspect	2 days	Thu 5/4/06
48	Perform Deliverable Material & Documentation Inventory	2 days	Thu 5/4/06
49	Verify Site Power and Grounding/Bonding	2 days	Mon 5/8/06
50	Install Rotary Joint/Optical Encoders	2 days	Wed 5/10/06
51	Install PSR/MSSR Antenna Waveguide & Coax	2 days	Fri 5/12/06
52	Install PSR Antenna Interface Interconnections	2 days	Tue 5/16/06
53	Install Pedestal Interface Interconnections	2 days	Fri 5/12/06
54	Install Wind Speed Monitor	1 day	Tue 5/16/06
55	Install Tower PSR Waveguide/MSSR Coax	4 days	Thu 5/18/06
56	Place PSR Cabinets (Do Not Bolt Down)	1 day	Wed 5/24/06
57	Install Microwave Assembly Unit 6/4A20	2 days	Thu 5/25/06
58	Interface PSR Cabinets to Target Low Beam Waveguide	1 day	Mon 5/29/06
59	Perform Waveguide Pressurization Check	1 day	Mon 5/29/06
60	Perform PSR/MSSR VSWR and Insertion Loss Check	1 day	Mon 5/29/06
61	Install MSSR Cabinets and Workstation Area	1 day	Tue 5/30/06
62	Install MSSR Changeover Unit	1 day	Tue 5/30/06
63	Install SCDIs and MSSR CMS	1 day	Tue 5/30/06
64	Install PSR/MSSR Interconnection Cabling	2 days	Wed 5/31/06
65	Install MTI Reflector(s) (if applicable)	1 day	Thu 6/1/06
66	Install MRSM	1 day	Fri 5/5/06
67	Install Radar Data Remoting Equipment	1 day	Thu 6/1/06
68	Verify Fiberoptic Cable Terminated & Tested	1 day	Thu 6/1/06
69	**Installation Activities at ATCT/TRACON**	**11 days**	**Mon 5/29/06**
70	Confirm Approval Received for Commencing Work in ATCT/TRACON with TOP	0 days	Mon 5/29/06
71	Verify Electrical Layout Complete (IAW FATD)	1 day	Tue 5/30/06
72	Install/Populate Communications/SIU Interface Rack	2 days	Wed 5/31/06
73	Install Surveillance Data Translator Rack	1 day	Fri 6/2/06
74	Install SDT Mode Controller (SMC)	1 day	Mon 6/5/06
75	Install Digital Video Generators	3 days	Tue 6/6/06
76	Install Video Display Control Units	2 days	Fri 6/9/06
77	Install Radar Control Panel(s)	1 day	Mon 6/12/06
78	Install SMC Local Control Unit and Remote Control Unit	1 day	Tue 6/13/06
79	Install Remote Operator Maintenance Terminal	1 day	Mon 6/12/06
80	Perform Data Interface Interconnections	1 day	Tue 6/13/06
81	**Perform AC Primary Power Checks**	**10 days**	**Fri 6/2/06**
82	Install PSR/MSSR AC Power Connections	2 days	Fri 6/2/06
83	Perform PSR AC Power Checks	1 day	Wed 6/14/06
84	Perform MSSR AC Power Checks	1 day	Wed 6/14/06



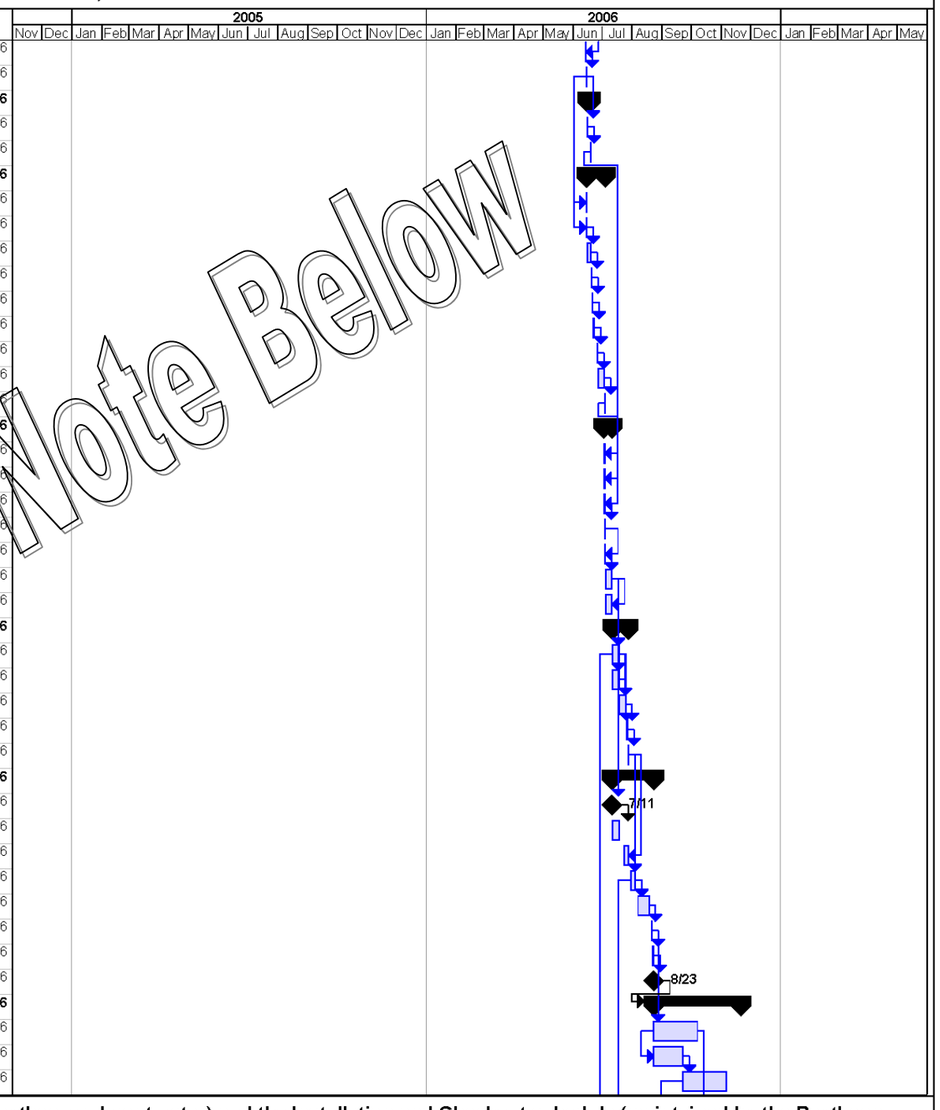
Typical - See Note Below

NOTE: This schedule will be superceded on site by both the Site Preparation schedule (maintained by the Raytheon subcontractor) and the Installation and Checkout schedule (maintained by the Raytheon SITL). Refer to paragraph 3.1.2 for more information.

Figure 3-2. Implementation Schedule (Sheet 2 of 4)

TYPICAL FAA ASR-11 IMPLEMENTATION SCHEDULE
(CONFIGURATIONS 3 AND 4)

ID	Task Name	Duration	Start
85	Perform Pedestal AC Power Checks	1 day	Wed 6/14/06
86	Perform System Interlocks Test	1 day	Thu 6/15/06
87	**Bandpass Filter Installation & Test**	**2 days**	**Fri 6/16/06**
88	Install & Test Filters In Existing S-Band Radar	1 day	Fri 6/16/06
89	Install & Test Filters In ASR-11	1 day	Mon 6/19/06
90	**System Power-Up and Integration Activities**	**14 days**	**Thu 6/15/06**
91	PSR DC Power Supply Installation	1 day	Thu 6/15/06
92	PSR DC Power Supply Checkout	1 day	Thu 6/15/06
93	Populate PSR Cabinets	2 days	Fri 6/16/06
94	Perform System Power-Up Sequence (Non-Radiating)	1 day	Tue 6/20/06
95	Perform System Software Integration	1 day	Wed 6/21/06
96	Perform Antenna/Pedestal Group Integration	2 days	Thu 6/22/06
97	Perform Facilities/Engine Generator/UPS Integration	1 day	Mon 6/26/06
98	Perform PSR/MSSR Integration and Test	5 days	Tue 6/27/06
99	Set-Up Radiation Blanking Zones	1 day	Tue 7/4/06
100	**System Checkout Activities**	**7 days**	**Mon 7/3/06**
101	Radiate System and Verify Non-Interference	1 day	Mon 7/3/06
102	Perform Radiation Hazard Checks	1 day	Mon 7/3/06
103	Perform Acoustic Noise Measurements	1 day	Mon 7/3/06
104	Perform PSR Insertion Loss/VSWR Checks	1 day	Tue 7/4/06
105	Check PSR Feed Using Test Antenna	1 day	Tue 7/4/06
106	Perform PSR Alignments	5 days	Wed 7/5/06
107	Perform MSSR Alignment/Calibration	5 days	Wed 7/5/06
108	**System Optimization**	**13 days**	**Wed 7/12/06**
109	Perform PSR Optimization	5 days	Wed 7/12/06
110	Perform MSSR Optimization	5 days	Wed 7/12/06
111	Perform Weather Channel Optimization	5 days	Wed 7/19/06
112	Perform Targets-of-Opportunity Flight Inpection (SAT-II 14.6 - 14.8)	2 days	Wed 7/26/06
113	Submit Data for Analysis	1 day	Fri 7/28/06
114	**System Acceptance**	**31 days**	**Tue 7/11/06**
115	Notify FAA of Impending Formal System Acceptance Test (SAT), Parts I & II	0 days	Tue 7/11/06
116	Perform Dry Run Site Acceptance Test Procedure	5 days	Wed 7/12/06
117	Verify Site Deliverables and System Configuration	5 days	Mon 7/24/06
118	Raytheon/FAA Conducts Formal SAT-I (Facilities)	5 days	Mon 7/31/06
119	Raytheon/FAA Conducts Formal SAT-II (Radar) (including Flight Inspection)	10 days	Mon 8/7/06
120	Forward SAT Data to Home Office	1 day	Mon 8/21/06
121	Pack & Ship Tools and Test Equipment	2 days	Tue 8/22/06
122	Depart Site	0 days	Wed 8/23/06
123	**DD Form 250 Signatures**	**64 days**	**Wed 8/23/06**
124	Prepare SAT Report (CDRL A024)	45 edays	Wed 8/23/06
125	Prepare As-Built Drawings (CDRL A026)	30 edays	Wed 8/23/06
126	FAA Reviews & Approves As-Built Drawings	45 edays	Fri 9/22/06



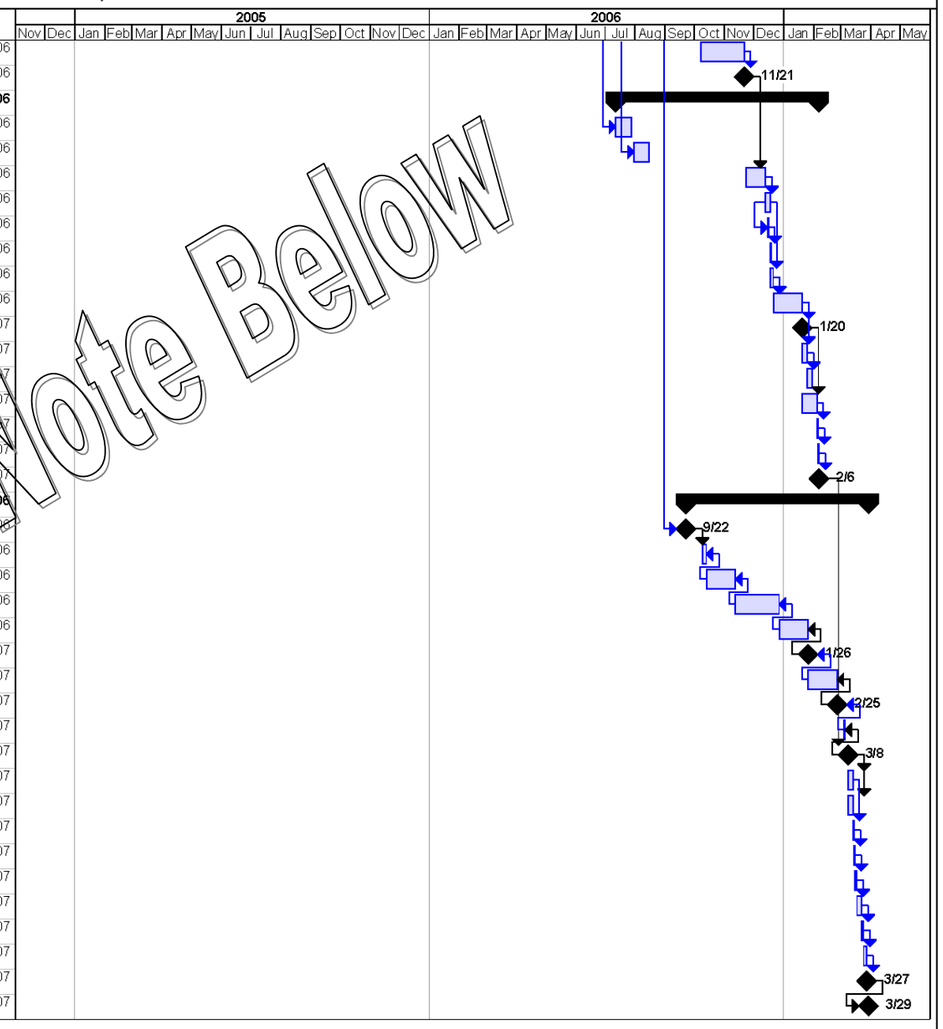
Typical - See Note Below

NOTE: This schedule will be superceded on site by both the Site Preparation schedule (maintained by the Raytheon subcontractor) and the Installation and Checkout schedule (maintained by the Raytheon SITL). Refer to paragraph 3.1.2 for more information.

Figure 3-2. Implementation Schedule (Sheet 3 of 4)

TYPICAL FAA ASR-11 IMPLEMENTATION SCHEDULE
(CONFIGURATIONS 3 AND 4)

ID	Task Name	Duration	Start
127	FAA Reviews & Approves SAT Report	45 edays	Sat 10/7/06
128	DOD Contracting Officer Signs DD Form 250	0 days	Tue 11/21/06
129	**FAA TRANSITION (COMMISSIONING) PROCESS (All FAA Activities Except Where Noted)**	**150 days**	**Wed 7/12/06**
130	Participate in System Optimization	13 days	Wed 7/12/06
131	Participate in SAT, Parts I & II	15 edays	Mon 7/31/06
132	Perform System Performance Verification and Alignment or Re-optimization (As Required)	20 edays	Thu 11/23/06
133	Complete Technical Performance Records	5 edays	Wed 12/13/06
134	Conduct Pre-Cutover/Commissioning Flight Inspection Meeting	1 eday	Fri 12/15/06
135	Perform Dry Run ASR-11/ASR-X Cutover Procedures	2 days	Mon 12/18/06
136	Perform Commissioning Flight Inspection	3 edays	Mon 12/18/06
137	Perform Field Familiarization	30 edays	Thu 12/21/06
138	Achieve Initial Operational Capacity (IOC)	0 days	Sat 1/20/07
139	Perform Plants JAI	5 edays	Sat 1/20/07
140	Perform Electronics JAI	5 edays	Thu 1/25/07
141	Perform Operational Suitability Demonstration (OSD)	15 edays	Sat 1/20/07
142	Perform Cutover to ASR-11	1 eday	Sun 2/4/07
143	Perform System Certification	1 eday	Mon 2/5/07
144	Commission ASR-11	0 days	Tue 2/6/07
145	**EXISTING RADAR DISMANTLING PROCESS (IF REQUIRED)**	**134 days**	**Fri 9/22/06**
146	Delivery Order Received from FAA for Dismantling Process	0 days	Fri 9/22/06
147	Perform Site Dismantling Survey	4 edays	Mon 10/9/06
148	Prepare Dismantling Specification Bid Package/SATP Dismantling Addendum	30 edays	Fri 10/13/06
149	FAA Reviews and Approves Dismantling Specification Bid Package/SATP Addendum	45 edays	Sun 11/12/06
150	Raytheon Incorporates FAA Comments on Dismantling Specification Bid Package	30 edays	Wed 12/27/06
151	Submit Specification Bid Package for Bid	0 days	Fri 1/26/07
152	Subcontractor Bidding Process	30 edays	Fri 1/26/07
153	Award Dismantling Contract	0 days	Sun 2/25/07
154	Conduct Pre-Dismantling Meeting	1 eday	Sun 3/4/07
155	Subcontractor Mobilizes Onsite	0 days	Thu 3/8/07
156	Subcontractor Removes and Disposes Hazmat Containing Items	5 edays	Thu 3/8/07
157	Remove Shelter Equipment & Crate for Shipment	5 edays	Thu 3/8/07
158	Subcontractor Removes SSR Antenna & Crates for Shipment	1 eday	Tue 3/13/07
159	Subcontractor Removes PSR Antenna & Crates for Shipment	1 eday	Wed 3/14/07
160	Subcontractor Removes Pedestal and Housing and Prepares for Shipment	2 edays	Thu 3/15/07
161	Subcontractor Dismantles Tower & Bundles for Shipment	5 edays	Sat 3/17/07
162	Remove Remaining System Equipment from ATCT/TRACON	2 edays	Thu 3/22/07
163	FAA/Raytheon/Subcontractor Performs Final Inspection	3 edays	Sat 3/24/07
164	DOD Contracting Officer Signs DD Form 250 for Dismantling	0 days	Tue 3/27/07
165	Raytheon/Subcontractor Leaves Site	0 days	Thu 3/29/07



Typical - See Note Below

NOTE: This schedule will be superceded on site by both the Site Preparation schedule (maintained by the Raytheon subcontractor) and the Installation and Checkout schedule (maintained by the Raytheon SITL). Refer to paragraph 3.1.2 for more information.

Figure 3-2. Implementation Schedule (Sheet 4 of 4)

ATTACHMENT 1

EDWARDS ASR-11 Tables, Appendix B (Procedures) and Appendix C (RF Interference Mitigation Analysis)

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TABLE OF CONTENTS

Tables:

Figures

Appendices:

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Table 1. Key Personnel

Organization/Title	Name	Telephone
Raytheon/FATD Engineer	Mark D. Murphy	(781) 238-2788
Raytheon/SATP Engineer	Hank Hyche	(770) 907-3346
Raytheon/Site Construction Engineer	Mike Schneider	(617) 930-0745
Raytheon/Site Installation Team Lead	Mike Schneider	(617) 930-0745
FAA ATB-410/ASR-11 Requirements Lead	JoEllen Kleindienst	(202) 385-8646
FAA ATO-T/ASR-11/Deployment Lead	Tom Jones	(202)-385-8729
FAA ATO-T/FATD POC	Bill Rhine	(202) 548-3772
FAA ATO-T/SATP POC	Bill Smith	(301) 231-1051
FAA ASU-250/Site Acceptance Test Lead	Jamal Abuswai	(202) 267-5740
FAA ANI-90/NAS Implementation POC	Neil Angelotti	(202) 493-6596
FAA ANI-960 Surveillance Programs Manager	Jerry Duhonich	(310) 725-7770
FAA AWP-510/Regional AT Requirements	Rose Sardisco	(310) 725-6510
FAA AWP-470/Regional Lead Engineer	Joseph Heil	(310) 725-3478
FAA SMO ASR-11 POC	Robert Ellington	(661) 277-9604
FAA AF Coordinator	John LaFontaine	(661) 258-4436
FAA SSC/AF Manager	Mike Flynn	(661) 258-4436
FAA Air Traffic Manager	Mark Heinrich	(661) 258-6300
FAA ANI-960/Resident Engineer (RE)	Trip French	(540) 335-8747
FAA ANI-960/Technical On-site Representative (TOR)	TBD	
Airport Manager (Director of Operations)	Bill Shelton	(661) 277-9831

Table 2. General Site Data

New ASR-11 Site Data	
Site Location	Edwards AFB, CA
ASR-11 Antenna Coordinates	Latitude N *34° 52' 22.62*" Longitude W *117° 54' 32.49*" (NAD83) Site Elevation 2,407.00 feet above mean sea level (AMSL), Source- FATD Drawing C1, revision 3, dated 04/08/05.
Recommended Tower Height and PSR Antenna Tilt	57 feet above ground level (AGL) and 0° relative to the horizon (mechanical). Final PSR tilt may change during system optimization.
Radome Required?	No
Fiber Optic Cable Link Distance	Approximately 50,000 feet total. Splice into existing system one twelve (12) strand, single mode fiber optic cables, 550 foot run to the site from the existing fiber.
Access Road Length and Type	200 feet, gravel
Location of EDW Communications Rack	The Raytheon I&CO team will install the EDW Communications Rack in its permanent location inside the equipment room, Room 118, located on the first floor of the new R-2508 TRACON building without connection to the operational equipment. The rack AC outlets will be hard-wired to their respective power feeds. Space will be made available in the EDW Communications Rack for installation of the SIUs for STARS. Fiber optic cables (originating at the Edwards ASR-11 site and entering the R-2508 TRACON via the TELCO room will be routed to inside the EDW Communications Rack and all intercabinet cables will be installed. See FATD drawings E34, E32 and E20 for a System Interface Diagram, EDW Communications Rack Configuration, and R-2508 TRACON Equipment Room Plan. Refer to Appendix B, Installation Procedure B1.
Location of the OMT	The OMT will be installed in the Coordinators Area located in the first floor of the new R-2508 TRACON building and connected to the Ethernet Switches (ASR-11 LAN) mounted in the EDW Communications Rack. Refer to FATD drawing E34 for Interconnection Diagram, FATD drawing E20 for Equipment Location, and Appendix B, Installation Procedure B2.
Location of the RCP	The RCP will be installed in the R-2508 TRACON as shown in FATD drawing E20 for the R-2508 TRACON Coordinators Area of the equipment room. The RCP will be connected to the OMT as shown in FATD drawing E34, System Interconnection Diagram. New Category 5 cable will be required between the OMT and the R-2508 TRACON RCP. The new cable will be routed between the OMT located in the Coordinators Area of the equipment room and the R-2508 TRACON operations room panel location via the existing under-the-floor cable trays. Refer to Appendix B, Procedure B3, for RCP installation procedures.
Location of MTI Reflector # 1	Latitude N 34° 53' 32" Longitude W 118° 00' 31" (NAD83, Source-FATD drawing C8) MTI#1 will be located on the existing ASR-8 MTI Reflector pole. The MTI Reflector is located approximately 5.06 nautical miles from the ASR-11 antenna at an azimuth of 283.2° true.
Location of MTI Reflector # 2	Delivered but not installed.

Table 2. General Site Data (Continued)

New ASR-11 Site Data	
MRSM	Latitude N 34° 55' 8.46 Longitude W 117° 54' 8.30" (NAD83, Source- FATD drawing C8) The MRSM antenna is located on the roof of the new R-2508 TRACON building. The MRSM antenna is located approximately 2.79 nautical miles from the ASR-11 antenna at an azimuth of 6.831° true. Approximately 50 feet of RG-214 coaxial cable will be routed from the MRSM chassis location to the MRSM antenna. Line of sight from the ASR-11 antenna to the MRSM antenna location was verified during the initial site survey.
Permanent Echoes	The Site Survey Report indicated visibility to the following permanent echoes: 1) EIFEL at a distance of 35.11 nautical miles at an azimuth of 235.01° true azimuth and, 2) TOOMEY at a distance of 50.66 nautical miles at an azimuth of 84.55°.
Plot Size	200 feet by 200 feet
Fenced Area	160 feet by 160 feet
Approved Modifications to the Generic Design	Modifications to the Generic Design as discussed at the site design survey have been approved under Government letter E-DASR-02-0435, dated 6 November 2002.
Frequency Assignment	2,810 and 2,875 MHz
FAA Address	FAA – Edwards SSC, Attn: John LaFontaine, Edwards AFB, CA, 93523
Existing Surveillance Environment Data	
Primary Radar Type	ASR-8
Beacon Type	ATCBI-4
Antenna Coordinates	Latitude N 34° 52' 23" Longitude W 117° 54' 41.1" (NAD83, Source-GPS, Accuracy-+-17 feet) Site Elevation 2,350 feet AMSL, Source-GPS The existing ASR-8 is located approximately 713 feet from the ASR-11 antenna center at an azimuth of 272.6° true.
Tower Height and PSR Antenna Tilt	17 feet above ground level (AGL) and 1° relative to the horizon (mechanical).
Type of Automation System	REHOST-2
Automation Display Configuration	The R-2508 TRACON utilizes a unique Automation/Display System called REHOST 2. The system includes a mosaic display with inputs from multiple radars. This is an interim system that will eventually be replaced with STARS. In addition the ASR-11 will provide a feed to six additional locations. Each of the locations will require a "CD-2 format" data input. The feeds will include landlines, microwave links, TELCO, and possible F/O cable. **NOTE: The interface and distribution have not been developed and the required engineering package is not a part of this delivery order.**
DBRITE Configuration	None. A REHOST tower display is utilized. Interface by others.
Hours of Low Activity	12:00 AM to 6:00 AM for the R-2508 TRACON Operations Room
Frequency Assignment	2,780 and 2,712 MHz

Table 3. Preconstruction Meeting Information

ASR-11 Site Access	Enter Edwards AFB at west gate (State hwy 14) and continue east on Rosamond to 2508 Rosamond (R-2508 TRACON). From the R-2508 TRACON travel southwest on Rosamond and then turn left on Lancaster, left on Jones, right on Sage, left on South Street. The site is located 800 feet east of the existing ASR-8 radar site (visible from road).
FAA Facility Access	Enter Edwards AFB at west gate (State Hwy 14) and continue east on Rosamond to 2508 Rosamond.
Security	The facilities are located on Edwards AFB and entry to the base requires coordination. Security levels and requirement for entry are subject to change. Provide to Robert.ellington@edwards.af.mil the following: Full name, date and place of birth, name of your organization. Two forms of identification, i.e., drivers license, FAA or company ID are required to enter. Additional security requirements will be provided at the time of requested access. Contact John LaFontaine (661) 258-4436.
Coordination	All coordination for access to the base, to radar site and R-2508 TRACON must be through John LaFontaine, (661) 258-4436.
Vehicles	All POV's operating on Edwards AFB must be insured with $15,000 personal liability, $30,000 each accident, $5,000 property damage. Decals are obtained from security police Pass and Registration Section, Bldg 2860. Vehicles are required to be registered within 10 days of arrival. To register a vehicle on base, a registration, drivers license, and ID card is required. Vehicles registered outside the state of California must have a smog check before registering.

Table 4. ASR-11 Site Cable Requirements

Radar Data Communication Media	One continuous fiber optic cable (single mode with twelve fibers minimum) will run from the ASR-11 equipment shelter (Ethernet Transceivers A1 and B1), splice into existing base F/O system which is 550 feet from the site, to the new R-2508 TRACON Building, equipment room (Room 118), to the EDW Communications Rack. The total fiber optic cable distance is approximately 50,000 feet.
Telephone Cables	• The site telecommunications system requires a minimum of three single voice-grade lines to connect to the local telephone system. Telephones for voice communications will be located in the ASR-11 equipment shelter, the ASR-11 engine generator shelter, and the mezzanine level of the antenna tower. • The Edwards AFB Standards and Planning Division provide all TELCO and Fiber Optic cables on the Base. The POC is John Kellas (661) 277-3810 and Herman Lewis (661) 277-8484. The voice circuits will tie into the Base Telephone System. The S&P Division will provide a demark point within the ASR-11 building for connecting the voice link to the base PBX system.
ASR-11 Facility Power	The electrical power requirement is for a 480/277 VAC, three-phase, four-wire 112.5 kVA feed. The AF Base will provide all wiring, ducts, and connections to the primary side of the Raytheon-provided transformer. Extending the power service from the secondary side of the transformer to the main disconnect switch, as well as for installing the meter socket in a location mutually agreed to with the Edwards Base Power company will be accomplished by the Raytheon subcontractor. Raytheon's subcontractor assumes responsibility for leased material and temporary service during site preparation up through the completion of the Facility SAT (SAT, Part I). Once completed, Raytheon will assume responsibility for power service until the Government signs the DD Form 250. Once the DD Form 250 has been signed, the Government will assume responsibility for service.

Table 5. R-2508 TRACON Cable Requirements

Radar Data Communication Media	The fiber optic cables enter the R-2508 TRACON directly into the equipment room from a manhole on the NW corner of the building and continue in existing cable trays inside a raised floor plenum and are routed to the EDW Communications Rack (Ethernet Switches AA and BB) located in the R-2508 TRACON equipment room. See FATD drawing E32 for the EDW Communications Rack configuration. An extra 75 feet of fiber optic cable will be spooled by the subcontractor at the cable entrance point (inside the R-2508 TRACON equipment room) for eventual routing by the I&CO team during the installation and checkout process described in paragraph 2.3.5 See FATD drawing E20 for proposed equipment location.
Internal Cables	Refer to FATD drawing E34 and Table 12, for a complete communications interconnect diagram and cable lists. NOTE: The interface and distribution have not been developed and the required engineering package is not a part of this delivery order.
Electrical Power	A subcontractor will position electrical power connections for the ASR-11 equipment in the R-2508 TRACON Operations and Equipment Rooms. Power will be derived from critical power panels using circuit breakers assigned by local FAA AF personnel. See Attachment 1, Table 11 and FATD drawings E18 and E20 for proposed circuit breaker assignments and equipment location. Refer to the FATD drawings E32 and E33 for specific power and grounding details inside the R-2508 TRACON Operations and Equipment Rooms.

Table 6. RF Interference Mitigation Analysis Recommendations

Recommended Transmission Scenario	Temporary Radiation Scenario (See Section 1, paragraph 1.9.3)
Facilities Analyzed	The existing ASR is the only S-band emitter noted.
Filter Requirements	Filters will be installed in the ASR-11.
Transmitter Blanking Requirements	The ASR-11 will be sector blanked from between 263° and 283° true. Additionally, the ASR-11 will be sector blanked between the azimuths of 21° and 31° and 204° and 214° per the Table of Frequency Assignments for the ASR-11.
Personnel Safety Requirements	• The existing ASR is located 714 feet (217.6 meters) from the ASR-11. Utilizing equations provided in the report entitled, "Radiofrequency Impact Analysis for Airport Surveillance Radar-11" by SRI International, the main lobe emissions from the existing ASR at the ASR-11 tower are below the industry standard permissible exposure limitations as set forth in IRPA, NCRP, and FCC guidelines, as well as the more restrictive requirements defined by Raytheon. No radiation mitigation with respect to subcontractor personnel safety is required. • Additionally, based on ANSI/IEEE guidelines as adopted by the FAA, personnel should be excluded from the area within 500 feet directly in front of the ASR-11 (within the main beam) when the radar is operating in maintenance mode (when the antenna is stationary and transmitting a signal for maintenance and or testing purposes).

Table 7. Predeactivation Meeting Information

Existing ASR Site Access	Enter Edwards AFB at west gate (State hwy 14) and continue east on Rosamond to 2508 Rosamond (R-2508 TRACON). From the R-2508 TRACON travel southwest on Rosamond and then turn left on Lancaster, left on Jones, right on Sage, left on South Street. The site is visible from road.
Disposition Requirements	The existing building will be retained for storage and to house the existing Communications Equipment. The radar tower will be deactivated. The engine generator is to be removed.
FAA Facility Access	Enter Edwards AFB at west gate (State hwy 14) and continue east on Rosamond to 2508 Rosamond. The address is: 100 E. Sparks Drive, Bldg 2580, Edwards AFB, CA, 93523.
Security	The facilities are located on Edwards AFB and entry to the base requires coordination. Security levels and requirement for entry are subject to change. Provide to Robert.ellington@edwards.af.mil the following: Full name, date and place of birth, name of your organization. Two forms of identification, i.e., drivers license, FAA or company ID are required to enter. Additional security requirements will be provided at the time of requested access. Contact John LaFontaine (661) 258-4436.
Coordination	All coordination for access to the base, to radar site and R-2508 TRACON must be through John LaFontaine, (661) 258-4436.
Vehicles	All POV's operating on Edwards AFB must be insured with $15,000 personal liability, $30,000 each accident, $5,000 property damage. Decals are obtained from security police Pass and Registration Section, Bldg 2860. Vehicles are required to be registered within 10 days of arrival. To register a vehicle on base, a registration, driver's license, and ID card is required. Vehicles registered outside the state of California must have a smog check before registering.

Table 8. Leased Line Service Requirements

Name of Service:	ASR-11 Data Link
Service Requirements	No requirements identified
ASR-11 Address Contact Name Termination Point	ASR-11 Shelter 15 Jones Road Edwards, CA 93524
R-2508 TRACON Address Contact Name Termination Point	R-2508 TRACON 100 Sparks Drive Edwards, CA 93524
Date Service Required	
Additional Service Requirements	

Table 9. Equipment Parts List

FIND NO. (Per G710560-1, Rev E)	PART NUMBER	DESCRIPTION	VENDOR	QTY.
17	SRM-5A/M/RJ-45/NEW	Modem, 2.4 KBPS, Sync. Short Haul, 25-pin Male RJ-45	RAD-DATA	1
19	2014MC-MT	Cable, V.35 to EIA-530, 6 ft.	Patton	8
31	**G710563-1**	**Cable Configuration Drawing (See FNs 31 (1) & 31 (2))**		**1**
31 (1)	G710564-1	Cable Assembly, Cross Connect, 6 in. (Pins Crossed: 3 & 4, 5 & 6)	Black Box	1
31 (2)	FM508	Coupler, RJ45 (M) to RJ45 (M)	Black Box	1
34	TRD450CR-50	Cable, 10Base-T Crossover, 50 ft. (Pins Crossed: 1 & 3, 2 & 6), Nonshielded	L-COM	2
36	CPX-1501-BA	RS530 Line Splitter, Rack Mountable	The Logical Co.	6
37	FAB-1001-A	Rack Mount for CPX-1501-BA	The Logical Co.	2
38	SRM-5A/F/RJ-45/NEW	Modem, 2.4 KBps, Sync. Short Haul, 25-pin Female RJ-45	RAD-DATA	1
39	PSA	Power Supply Adapter	RAD-DATA	1
41	G780408-2-5	Cable Configuration Drawing for Interface Cable, ASR-11 to STARS (XX specifies length)	Globaltec	6
41	G780408-2-300	Cable Configuration Drawing for Interface Cable, ASR-11 to STARS (XX specifies length)	Globaltec	4
49	6100	Switch, Ethernet, 24-port w/ FX Expansion Port	Omnitron	2
51	6311-2	Module, Singlemode FX Plugin	Omnitron	2
53	6551-2	Switch, FlexSwitch 600XC, 1 FX + 4 UTP Ports	Omnitron	2
60	02655	Extension Cable, DB25 (M) to DB25 (F)	Cables to Go	1
64	MR64	DSU/CSU	Telenetics	8
P/O 65		A/B Switch		2
	525075-3F	**Rack, 23" (w/ Side Panels) - (Communications Rack)**	**Black Box**	**1**
	RM589	23" Shelves, Vented, Fixed, 22-1/4" Deep - 7/8" Height	Black Box	4
	37906	Rack Mount Adapter Set, 19" to 23" Rack Mount, 1U (1.75" high)	Black Box	3
	37907	Rack Mount Adapter Set, 19" to 23", 2U (3.50" high)	Black Box	1
	37908	Rack Mount Adapter Set, 19" to 23", 3U (5.25" high)	Black Box	2
	37910	Rack Mount Adapter Set, 19" to 23", 5U (8.75" high)	Black Box	2
	AS-055293-00	MRSM Rack, Half-Height	Emcor	1
	CXCG -20	Guide Brackets for MRSM Chassis	Emcor	1
	LAB16128RAYN2XPO	MRSM Lightning Arrestor Enclosure	Harger	1
	555-1009-0063	F/O Patch Panel Kit	Telect	1
		SIU DTE System	Sensis	2

Table 10. Space Requirements

Find #	Equipment	Height (in.)	Width (in.)	Depth (in.)	Power Requirement
17	Modem (RAD SRM-5A/M/RJ-45/NEW)	0.7	2.1	2.1	N/A (Powered from DTE)
18	Modem (Motorola DDS/MR64)	2.5	7.0	9.6	120VAC. 300mA
36	Line Splitter (Logical Co. CPX-1501-BA)	5.1	3.4	1.0	120V, 10mA
37	Rack Mount (for Line Splitter)	5.25	19.0	3.0	N/A
38	Modem (RAD SRM-5A/F/RJ-45/NEW)	0.7	2.1	2.1	N/A (Powered from DCE)
39	Power Supply Adapter for FN 38 (above)	0.7	2.1	2.1	120VAC, 500mA
P/O 47	Modem (RAD SRM-9/V.24/RJ-45)	0.7	2.1	2.1	120VAC, 25mA
P/O 47	Power Transformer (for remote VDCU)	1.3	2.3	3.6	120VAC, 500mA
48	Ethernet Switch, 8-Port (Omnitron 6700)	1.75	6.0	4.0	110VAC, 300mA
49	Ethernet Switch (Omnitron 6100)	1.75	19.0	8.0	110VAC, 300mA
52	Ethernet Switch, 4-Port for Multimode Fiber (Omnitron 6551-0)	1.75	6.5	8.0	110VAC, 300mA
53	Ethernet Switch, 4 Port for Single mode Fiber (Omnitron 6551-2)	1.75	6.5	8.0	110VAC, 300mA
P/O 57	Router (Cisco 1605)	2.19	11.15	8.67	120VAC, 225mA
P/O 58	Router (Cisco 1602)	2.19	11.15	8.67	120VAC, 225mA
P/O 59	Router (Cisco 1721)	3.1	11.2	8.7	120VAC, 500mA
Raytheon	SIU Communications Rack (19” Rack)	78.5	23.88	32.88	N/A
Raytheon	SIU Communications Rack (23” Rack)	78.5	27.88	32.88	N/A
Raytheon	OMT	19.0	16.0	17.0	120VAC, 3A
Raytheon	RCPs 1 through 3	12.0	16.0	4.0	120VAC, 500mA
Raytheon	MRSM Rack	52.5	24.0	35.0	N/A
Raytheon	MRSM Chassis	10.5	19.0	15.0	120VAC, 1A
Raytheon	LAN Surge Suppression Panel	3.5	19.0	4.0	N/A
Sensis	SIU Chassis A and B	5.20	19.0	10.0	Each 120VAC, 500mA
Sensis	SDT Rack	33.4	24.1	29.4	2 Circuits, each 120VAC, 2.5A
Sensis	CMC	17	24.1	29.4	120VAC, 3A
Sensis	Ethernet Hub A and B	1.8	17.0	10.6	Each 120VAC, 1A
Sensis	DVG Switches 1 and 2	5.25	19.0	8.0	Each 120VAC, 1.75A
Sensis	DVGs 1 through 12	8.4	9.1	16.2	Each 120VAC, 3A
Sensis	VDCUs 1 through 12	7.4	8.5	2.5	N/A
Sensis	SDT Mode Controller (Future)	8.4	9.1	16.2	120VAC, 3A (estimated)
Sensis	SDT Mode Control Local/Remote Control Unit (Future)	10	10	5	Each 120VAC, 1A

NOTE: This table includes dimensions and power requirements for all equipment (excluding radar system equipment at the radar site) required for system communications to the ATCT and/or TRACON or Remote Automation Facility. Refer to Table 11 for specific equipment required for this implementation.

Table 11. Circuit Breaker Assignments

Power Panel and Circuit Breaker Assignment	Circuit Breaker Rating	Location and Name of Load	Expected Load
R-2508 TRACON Equipment Room			
CP118A, CB#**	20 A, single pole	EDW Communications Rack, Circuit 1, Phase A	SIU A (0.5A), Line Splitter A (EDW) (0.2A), Line Splitter G (EDW) (0.2A), Ethernet Switch AA (0.3A), DSU A1 (0.3A) = 120VAC, **1.50 A**
CP118A, CB#**	20 A, single pole	EDW Communications Rack, Circuit 2, Phase B	SIU B (0.5A), Line Splitter B (EDW) (0.2A), Line Splitter H (EDW) (0.2A), Ethernet Switch BB (0.3A), DSU B1 (0.3A) = 120VAC, **1.50 A**
CP118A, CB#**	20 A, single pole	EDW Communications Rack, Circuit 3, Phase A	SIU C (0.5A), Line Splitter D (EDW) (0.2A), Line Splitter F (EDW) (0.2A), Line Splitter I (EDW) (0.2A), DSU C1 (0.3A) = 120VAC, **1.40 A**
CP118A, CB#**	20 A, single pole	EDW Communications Rack, Circuit 4, Phase B	SIU D (0.5A), Line Splitter C (EDW) (0.2A), Line Splitter E (EDW) (0.2A), Line Splitter J (EDW) (0.2A), DSU D1 (0.3A) = 120VAC, **1.40 A**
CP118A, CB#**	20 A, single pole	OMT workstation	120VAC, 3.0 A (estimated)
R-2508 TRACON Operations Room			
CP118A, CB#**	15 A, single pole	RCP	120VAC, 0.5 A (with modem)
MRSM Location			
CP118A, CB#**	15 A, single pole	MRSM Rack	120VAC, 1.0 A
SPORT (remote REHOST)			
CP#TBD, CB#**	15 A, single pole	TBD	DSU A2 (0.3A), DSU B2 (0.3A) = 120VAC, **0.6 A**
PALMDALE (remote REHOST)			
CP#TBD, CB#**	15 A, single pole	TBD	DSU D2 (0.3A) = 120VAC, **0.3 A**
FOX FIELD (remote REHOST)			
CP#TBD, CB#**	15 A, single pole	TBD	DSU C2 (0.3A) = 120VAC, **0.3 A**

** Spare breaker to be assigned by FAA AF technician at installation.

Table 12. Fixed Cable List (Fiber Optic Configuration)

REF #	FROM	TO	TYPE	LABEL (F)	LABEL (T)	LENGTH (FT)
DFF001	Ethernet Switch (ESW) A1 Port 1	SCDI A Port A	Cat-5E Shielded	ESW_A1/P1 (SCDI_A/PA)	SCDI_A/PA (ESW_A1/P1)	6
DFF002	ESW A1 Port 2	SCDI B Port A	Cat-5E Shielded	ESW_A1/P2 (SCDI_B/PA)	SCDI_B/PA (ESW_A1/P2)	6
DFF003	ESW A1 Port 3	MPS800 A	Cat-5E Shielded	ESW_A1/P3 (MPS800_A)	MPS800_A ESW_A1/P3	6
DFF004	ESW B1 Port 1	SCDI A Port B	Cat-5E Shielded	ESW_B1/P1 (SCDI_A/PB)	SCDI_A/PB (ESW_B1/P1)	6
DFF005	ESW B1 Port 2	SCDI B Port B	Cat-5E Shielded	ESW_B1/P2 (SCDI_B/PB)	SCDI_B/PB (ESW_B1/P2)	6
DFF006	ESW B1 Port 3	MPS800 B	Cat-5E Shielded	ESW_B1/P3 (MPS800_B)	MPS800_B ESW_B1/P3	6
DFF007	ESW A1 ST/SPC Port	Fiber Optic Patch Panel (Radar Site), Cable A, Strands 1 and 2	Fiber Cable, SM Duplex ST/SPC to ST/SPC, 40 in.	ESW_A1/FIBER_OUT (FPP/J1&J2)	FPP/J1&J2 (ESW_A1/FIBER_OUT)	3 ft. 4 in.
DFF008	ESW B1 ST/SPC Port	Fiber Optic Patch Panel (Radar Site), Cable B, Strands 1 and 2	Fiber Cable, SM Duplex ST/SPC to ST/SPC, 40 in.	ESW_B1/FIBER_OUT (FPP/J7&J8)	FPP/J7&J8 (ESW_B1/FIBER_OUT)	3 ft. 4 in.
DFF009	Fiber Optic Patch Panel (Communications Rack), Cable A, Strands 1 and 2	ESW AA ST/SPC Port	Fiber Cable, SM Duplex ST/SPC to ST/SPC, 40 in.	FPP/J1&J2 (ESW_AA/FIBER_IN)	ESW_AA/FIBER_IN (FPP/J1&J2)	3 ft. 4 in.
DFF010	Fiber Optic Patch Panel (Communications Rack), Cable B, Strands 1 and 2	ESW BB ST/SPC Port	Fiber Cable, SM Duplex ST/SPC to ST/SPC, 40 in.	FPP/J7&J8 (ESW_BB/FIBER_IN)	ESW_BB/FIBER_IN (FPP/J7&J8)	3 ft. 4 in.
DFF011	ESW AA Port 1	SIU A A1J1	Cat-5E Shielded	ESW_AA/P1 (SIU_A/A1J1)	SIU_A/A1J1 (ESW_AA/P1)	3
DFF012	ESW AA Port 7	NIMS Port A (Reserved)	Cat-5E Shielded	ESW_AA/P7 (NIMS/PA)	NIMS/PA (ESW_AA/P7)	50
DFF013	ESW AA Port 1	SIU C A1J1	Cat-5E Shielded	ESW_BB/P1 (SIU_C/A1J1)	SIU_C/A1J1 (ESW_BB/P1)	3
DFF014	ESW BB Port 7	NIMS Port B (Reserved)	Cat-5E Shielded	ESW_BB/P7 (NIMS/PB)	NIMS/PB (ESW_BB/P7)	50
DFF014.1	ESW BB Port 2	SIU B A1J1	Cat-5E Shielded	ESW_AA/P1 (SIU_B/A1J1)	SIU_B/A1J1 (ESW_AA/P1)	3
DFF014.2	ESW BB Port 2	SIU D A1J1	Cat-5E Shielded	ESW_BB/P1 (SIU_D/A1J1)	SIU_D/A1J1 (ESW_BB/P1)	3

Table 12. Variable Cable List (Fiber Optic Configuration)

REF #	FROM	TO	TYPE	LABEL (F)	LABEL (T)	LENGTH (FT)
DVF005	ESW AA Port 4	OMT Port A	Cat-5E Shielded Crossover Cable	ESW_AA/P4 (OMT/PA)	OMT/PA (ESW_AA/P4)	See Table C-6, Find # 34
DVF006	ESW BB Port 4	OMT Port B	Cat-5E Shielded Crossover Cable	ESW_BB/P4 (OMT/PB)	OMT/PB (ESW_BB/P4)	See Table C-6, Find # 34
DVF009	Modem (MDM) A1 (OMT Serial Port A End)	Modem (MDM) A2 at RCP A	Cat-5E Shielded	MDM_A1 (RCP A)	RCPA (MDM_A1)	40
DVF054	SIU B	Line Splitter C	G780408-1	SIU_B (SPLTR_C)	SPLTR_C (SIU_B)	5
DVF055	SIU C	Line Splitter B	G780408-1	SIU_C (SPLTR_B)	SPLTR_B (SIU_C)	5
DVF056	SIU D	Line Splitter E	G780408-1	SIU_D (SPLTR_E)	SPLTR_E (SIU_D)	5
DVF057	Line Splitter A	REHOST A (EDW)	G780408-2	SPLTR_A (REHOST_A)	REHOST_A (SPLTR_A)	300
DVF058	Line Splitter A	REHOST B (EDW)	G780408-2	SPLTR_A (REHOST_B)	REHOST_B (SPLTR_A)	300
DVF059	Line Splitter B	REHOST TEST (EDW)	G780408-2	SPLTR_B (REHOST_TEST)	REHOST_TEST (SPLTR_B)	300
DVF060	Line Splitter B	REHOST BACKUP (EDW)	G780408-2	SPLTR_B (REHOST_BKUP)	REHOST_BKUP (SPLTR_B)	300
DVF061	Line Splitter C	DSU A1 (EDW)	RS530 to V.35	SPLTR_C (DSU_A1)	DSU_A1 (SPLTR_C)	6
DVF062	Line Splitter C	DSU C1 (EDW)	RS530 to V.35	SPLTR_C (DSU_C1)	DSU_C1 (SPLTR_C)	6
DVF063	Line Splitter C	A/B Switch 1	G780408-2	SPLTR_C (ABSW_1)	ABSW_1 (SPLTR_C)	5
DVF064	Line Splitter C	Line Splitter D	Globaltech Interface Cable	SPLTR_C (SPLTR_D)	SPLTR_D (SPLTR_C)	4
DVF065	Line Splitter D	A/B Switch 2	G780408-2	SPLTR_D (ABSW_2)	ABSW_2 (SPLTR_D)	5
DVF066	Line Splitter D	A/B Switch 3	G780408-2	SPLTR_D (ABSW_3)	ABSW_3 (SPLTR_D)	5
DVF067	Line Splitter E	DSU B1 (EDW)	RS530 to V.35	SPLTR_E (DSU_B1)	DSU_B1 (SPLTR_E)	6
DVF068	Line Splitter E	DSU D1 (EDW)	RS530 to V.35	SPLTR_E (DSU_D1)	DSU_D1 (SPLTR_E)	6
DVF069	Line Splitter E	A/B Switch 1	G780408-2	SPLTR_E (ABSW_1)	ABSW_1 (SPLTR_E)	5
DVF070	Line Splitter E	Line Splitter F	Globaltech Interface Cable	SPLTR_E (SPLTR_F)	SPLTR_F (SPLTR_E)	4
DVF071	Line Splitter F	A/B Switch 2	G780408-2	SPLTR_F (ABSW_2)	ABSW_2 (SPLTR_F)	5

Table 12. Variable Cable List (Fiber Optic Configuration) (Continued)

REF #	FROM	TO	TYPE	LABEL (F)	LABEL (T)	LENGTH (FT)
DVF072	Line Splitter F	A/B Switch 3	G780408-2	SPLTR_F (ABSW_3)	ABSW_3 (SPLTR_F)	5
DVF073	A/B Switch 1	DSU E1 (EDW)	RS530 to V.35	ABSW_1 (DSU_E1)	DSU_E1 (ABSW_1)	6
DVF074	A/B Switch 2	DSU F1 (EDW)	RS530 to V.35	ABSW_2 (DSU_F1)	DSU_F1 (ABSW_2)	6
DVF075	A/B Switch 3	DSU G1 (EDW)	RS530 to V.35	ABSW_3 (DSU_G1)	DSU_G1 (ABSW_3)	6
DVF076	DSU A1 - G1 (6 connections)	EDW Comm Rack Demarc (6 connections)	Cat-5E Shielded	DSU_A1-G1 (EDW_DEMARC)	EDW_DEMARC (DSU_A1-G1)	6 (each)
DVF077	EDW Comm Rack Demarc (6 connections)	TELCO Room Demarc (6 connections)	Cat-5E Shielded	EDW_DEMARC (TELCO_DEMARC)	TELCO_DEMARC (EDW_DEMARC)	60
DVF078	SPORT TELCO Demarc	DSU A2 (SPORT)	Cat-5E Shielded	SPORT_DEMARC (DSU_A2)	DSU_A2 (SPORT_DEMARC)	5
DVF079	SPORT TELCO Demarc	DSU B2 (SPORT)	Cat-5E Shielded	SPORT_DEMARC (DSU_B2)	DSU_B2 (SPORT_DEMARC)	5
DVF080	CHINA LAKE TELCO Demarc	DSU C2 (CHINA LAKE)	Cat-5E Shielded	CHLK_DEMARC (DSU_C2)	DSU_C2 (CHLK_DEMARC)	5
DVF081	CHINA LAKE TELCO Demarc	DSU D2 (CHINA LAKE)	Cat-5E Shielded	CHLK_DEMARC (DSU_D2)	DSU_D2 (CHLK_DEMARC)	5
DVF082	EDW TOWER TELCO Demarc	DSU E2 (EDW TOWER)	Cat-5E Shielded	EDWTWR_DEMARC (DSU_E2)	DSU_E2 (EDWTWR_DEMARC)	5
DVF083	PALMDALE TELCO Demarc	DSU F2 (PALMDALE)	Cat-5E Shielded	PLMDL_DEMARC (DSU_F2)	DSU_F2 (PLMDL_DEMARC)	5
DVF084	FOXFIELD TELCO Demarc	DSU G2 (FOXFIELD)	Cat-5E Shielded	FXFLD_DEMARC (DSU_G2)	DSU_G2 (FXFLD_DEMARC)	5
DVF085	DSU A2 (SPORT)	REHOST A (SPORT)	RS530 to V.35	DSU_A2 (REHOST_A_SP)	REHOST_A_SP (DSU_A2)	6
DVF086	DSU B2 (SPORT)	REHOST B (SPORT)	RS530 to V.35	DSU_B2 (REHOST_B_SP)	REHOST_B_SP (DSU_B2)	6
DVF087	DSU C2 (CHINA LAKE)	REHOST A (CHINA LAKE)	RS530 to V.35	DSU_C2 (REHOST_A_CHNLK)	REHOST_A_CHNLK (DSU_C2)	6
DVF088	DSU D2 (CHINA LAKE)	REHOST B (CHINA LAKE)	RS530 to V.35	DSU_D2 (REHOST_B_CHNLK)	REHOST_B_CHNLK (DSU_D2)	6
DVF089	DSU E2 (EDW TOWER)	REHOST (EDW TOWER)	RS530 to V.35	DSU_E2 (REHOST_EDWTWR)	REHOST_EDWTWR (DSU_E2)	6
DVF090	DSU F2 (PALMDALE)	REHOST (PALMDALE)	RS530 to V.35	DSU_F2 (REHOST_PLMDL)	REHOST_PLMDL (DSU_F2)	6
DVF091	DSU G2 (FOXFIELD)	REHOST (FOXFIELD)	RS530 to V.35	DSU_G2 (REHOST_FXFLD)	REHOST_FXFLD (DSU_G2)	6

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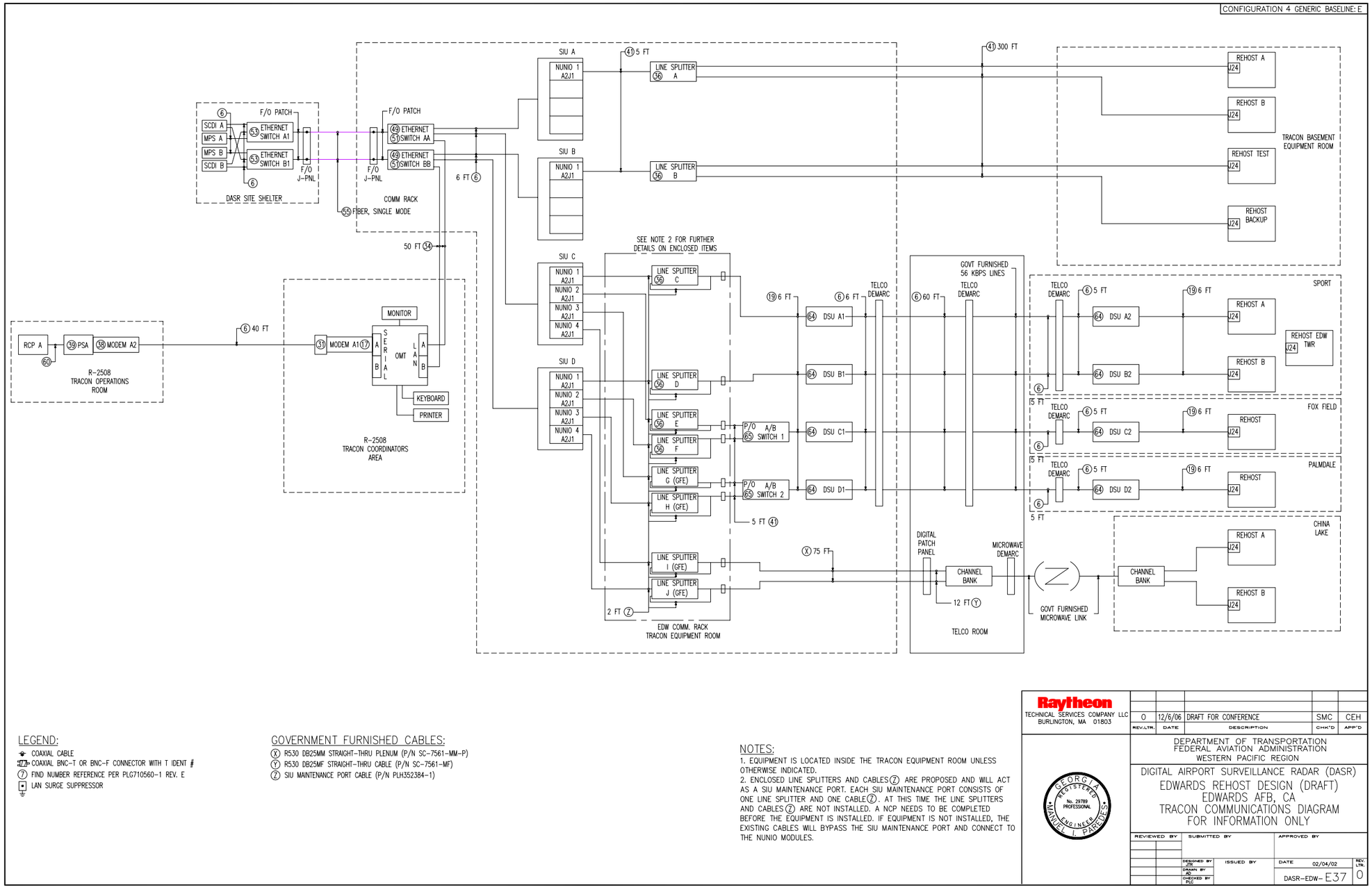

LEGEND:
- COAXIAL CABLE
- COAXIAL BNC-T OR BNC-F CONNECTOR WITH T IDENT #
- (7) FIND NUMBER REFERENCE PER PLG710560-1 REV. E
- LAN SURGE SUPPRESSOR

GOVERNMENT FURNISHED CABLES:
- (X) R530 DB25MM STRAIGHT-THRU PLENUM (P/N SC-7561-MM-P)
- (Y) R530 DB25MF STRAIGHT-THRU CABLE (P/N SC-7561-MF)
- (Z) SIU MAINTENANCE PORT CABLE (P/N PLH352384-1)

NOTES:
1. EQUIPMENT IS LOCATED INSIDE THE TRACON EQUIPMENT ROOM UNLESS OTHERWISE INDICATED.
2. ENCLOSED LINE SPLITTERS AND CABLES (Z) ARE PROPOSED AND WILL ACT AS A SIU MAINTENANCE PORT. EACH SIU MAINTENANCE PORT CONSISTS OF ONE LINE SPLITTER AND ONE CABLE (Z). AT THIS TIME THE LINE SPLITTERS AND CABLES (Z) ARE NOT INSTALLED. A NCP NEEDS TO BE COMPLETED BEFORE THE EQUIPMENT IS INSTALLED. IF EQUIPMENT IS NOT INSTALLED, THE EXISTING CABLES WILL BYPASS THE SIU MAINTENANCE PORT AND CONNECT TO THE NUNIO MODULES.

Raytheon
TECHNICAL SERVICES COMPANY LLC
BURLINGTON, MA 01803

REV.LTR.	DATE	DESCRIPTION	CHK'D	APP'D
0	12/6/06	DRAFT FOR CONFERENCE	SMC	CEH

GEORGIA REGISTERED No. 29789 PROFESSIONAL ENGINEER MANUEL I. PAREDES

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WESTERN PACIFIC REGION

DIGITAL AIRPORT SURVEILLANCE RADAR (DASR)
EDWARDS REHOST DESIGN (DRAFT)
EDWARDS AFB, CA
TRACON COMMUNICATIONS DIAGRAM
FOR INFORMATION ONLY

REVIEWED BY	SUBMITTED BY	APPROVED BY

DESIGNED BY ITR
DRAWN BY
CHECKED BY PLC
ISSUED BY
DATE 02/04/02
REV. LTR. 0
DASR-EDW-E37

Figure 1. System Interconnection Diagram

APPENDIX B

PROCEDURES

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B1. EDW Communications Rack

Equipment Placement – The EDW Communications Rack will be installed in the location identified in FATD drawing E31.

Power and Grounding Connections – Power for the EDW Communications Rack has been placed near the rack location from the designated power panel. Verify that circuit breakers in the panel have been correctly connected and labeled on the panel before connecting any equipment. Connect the four power strips mounted in the EDW Communications Rack to the appropriate circuits made available by the site preparation subcontractor near the rack location. Ensure rack is properly connected to the existing multipoint ground plate per FAA-STD-019b, Paragraph 3.11 (Electronic Multipoint Ground System Requirements). Any electronic equipment installed in this FAA facility must be grounded in accordance with FAA-STD-020b.

Rack Configuration – Refer to the Installation, Operation, and Maintenance Manual for the System Interface Unit (SIU), Section 6, for details on the installation, assembly, and connection of the SIU Hub and Module. After the rack is mounted in place, populate the rack with Ethernet Switches AA and BB, Ethernet Hubs A and B, and routers, modems, fiber optic patch panel, and DVGs and VDCUs, as required. Refer to FATD drawing E32 for rack configuration. After the equipment is mounted in the rack, connect the internal and external rack cabling as listed below and shown in FATD drawing E34.

NOTE: Ethernet Switches AA and BB (and Ethernet Switches A1 and B1 at the Radar Site) must be configured for 10Base-T/Half Duplex operation prior to installation. Refer to manufacturers' documentation for complete procedure.

Internal Connections – Route and connect the supplied Category 5 LAN cables between components. Connect the following cables as required by FATD drawing E34:

___ 1. Fiber Optic Patch Panel, Bank 0, Port 1 and 2, to Ethernet Switch AA
___ 2. Fiber Optic Patch Panel, Bank 1, Port 1 and 2, to Ethernet Switch BB
___ 3. Ethernet Switch AA, Port 1 to SIU A, A1J1
___ 4. Ethernet Switch BB, Port 1 to SIU C, A1J1
___ 5. Ethernet Switch AA, Port 2 to SIU B, A1J1
___ 6. Ethernet Switch BB, Port 2 to SIU D, A1J1

External Connections – Route and label appropriate length cables between components. Connect the following cables as required by FATD drawing E34:

___ 1. Fiber Optic Cables (from Radar Site) to Fiber Optic Patch Panel, Bank 0, Port 1 and 2, and Bank 1, Port 1 and 2
___ 2. Ethernet Switch AA, Port 4 to OMT, Port 1
___ 3. Ethernet Switch AA, Port 7 to NIMS, Port 1 (if applicable)
___ 4. Ethernet Switch BB, Port 4 to OMT, Port 2
___ 5. Ethernet Switch BB, Port 7 to NIMS, Port 2 (if applicable)
___ 6. SIU A to Line Splitter A (EDW)
___ 7. SIU B to Line Splitter B (EDW)
___ 8. SIU C Nunio 1 to Line Splitter C (EDW)
___ 9. SIU C Nunio 2 to Line Splitter E (EDW)
___ 10. SIU C Nunio 3 to Line Splitter G (EDW)
___ 11. SIU C Nunio 4 to Line Splitter I (EDW)
___ 12. SIU D Nunio 1 to Line Splitter D (EDW)

___ 13. SIU D Nunio 2 to Line Splitter F (EDW)
___ 14. SIU D Nunio 3 to Line Splitter H (EDW)
___ 15. SIU D Nunio 4 to Line Splitter J (EDW)
___ 16. Line Splitter A (EDW) to REHOST A
___ 17. Line Splitter A (EDW) to REHOST B
___ 18. Line Splitter B (EDW) to REHOST TEST
___ 19. Line Splitter B (EDW) to REHOST BACKUP
___ 20. Line Splitter C (EDW) to DSU A1 (EDW)
___ 21. Line Splitter D (EDW) to DSU B1 (EDW)
___ 22. Line Splitter E (EDW) to A/B Switch 1
___ 23. Line Splitter F (EDW) to A/B Switch 1
___ 24. Line Splitter G (EDW) to A/B Switch 2
___ 25. Line Splitter H (EDW) to A/B Switch 2
___ 26. A/B Switch 1 to DSU C1 (EDW)
___ 27. A/B Switch 2 to DSU D1 (EDW)
___ 28. DSU A1 (EDW) – DSU D1 (EDW) to EDW Comm Rack Demarc (4 ea.)
___ 29. Line Splitter I to Digital Patch Panel
___ 30. Line Splitter J to Digital Patch Panel
___ 31. EDW Comm Rack Demarc connection for DSU A1-D1 to Telco Room Demarc
___ 32. Digital Patch Panel for Line Splitter I and J to EDW Microwave Channel Bank
___ 33. PALMDALE TELCO Demarc to DSU D2 (PLMDL)
___ 34. FOXFIELD TELCO Demarc to DSU C2 (FXFLD)
___ 35. DSU D2 (PLMDL) to REHOST (PLMDL)
___ 36. DSU C2 (FXFLD) to REHOST (FXFLD)

The following cables will be provided but installed by local personnel:
___ 37. SPORT TELCO Demarc to DSU A2 (SPORT)
___ 38. SPORT TELCO Demarc to DSU B2 (SPORT)
___ 39. CHINA LAKE Microwave Channel Bank to REHOST A (CHNLK)
___ 40. CHINA LAKE Microwave Channel Bank to REHOST B (CHNLK)
___ 41. DSU A2 (SPORT) to REHOST A (SPORT)
___ 42. DSU B2 (SPORT) to REHOST B (SPORT)

B2. Operator Maintenance Terminal (OMT)

Equipment Placement – The OMT will be placed at a location specified and/or provided by the FAA (GFE) as identified in FATD drawing E20.

Power Connection and Equipment Placement – Verify that the new location for the OMT is available and ready to receive the equipment. Power for the OMT has already been placed near the OMT location from the designated power panel. Verify that circuit breakers in the panel have been correctly connected and labeled on the panel before connecting any equipment.

External Connections – Verify the existence of the SCDI LAN cables (two each) for the OMT connection. The SCDI LAN cables are new CAT-5 cables terminated with RJ-45 connectors and routed between the Communications Rack (Ethernet Switches AA and BB) and the OMT.

B2.1. Mac Address Verification:

___ 1. Perform the following procedure to validate the Mac Addresses:

- ___ a. At SCDI/OMT, select "Update Users"
- ___ b. Enter username and password
- ___ c. In the UNIX window that appears, type: "su root" and press enter
- ___ d. Enter password: "root" and press enter
- ___ e. At prompt, type "arp –a" and press enter
- ___ f. Ensure that omt1 and omt1-2 have unique Mac Addresses. The Mac Address is the address located in the right column with heading "Phys Address". See Table-B-1 for examples of Mac Addresses using the "arp –a" command:

Table B-1. OMT Mac Address Examples

Device	IP Address	Mask	Flags	Physical Address
Qfe3	scdia-ext-2	255.255.255.255		08:00:20:f6:91:af
Qfe3	scdib-ext-2	255.255.255.255		08:00:20:f4:ba:0b
Qfe2	scdib-ext-1	255.255.255.255		08:00:20:f4:ba:0a
Qfe2	scdia-ext-1	255.255.255.255		08:00:20:f6:91:ae
Qfe2	omt1	255.255.255.255	SP	08:00:20:f4:b7:fe
Qfe3	omt1-2	255.255.255.255	SP	08:00:20:f4:b7:ff
Qfe3	224.0.0.0	224.0.0.0	SM	01:00:5e:00:00:00
Qfe2	224.0.0.0	255.255.255.255	SM	01:00:5e:00:00:00

___ 2. All addresses for the "scdia", "scdib", "omt1" and "omt1-2" are different. If addresses are the same, set unique Mac Addresses for the SCDI/OMT using the following procedure:

- ___ a. Left click on SCDI/OMT screen to bring up the site pop-up menu
- ___ b. Select Local Workstation Actions
- ___ c. Select SCDI shutdown
- ___ d. Enter Username and Password. Wait for application to go down
- ___ e. When OK prompt appears, type: "setenv local-mac-address? true" and press enter. Process responds with "local-mac-address? = true"
- ___ f. At OK prompt, type "boot" and press enter. The SCDI/OMT will now reboot

___ g. When application returns, go to Site pop-up menu and select Local Workstation Actions
___ h. Select Update Users
___ i. Enter username and password
___ j. In the UNIX window that appears, type “su root” and enter password: root
___ k. At prompt, type “arp –a” and press enter. Ensure that “omt1” and “omt1-2” have unique Mac Addresses
___ l. If you would like to save the arp table to a file to download to your PC, use the command “arp -a > arptable.txt”
___ m. Close the window

B3. Radar Control Panels (RCP)

Equipment Location - The RCP will be installed in the location identified in FATD drawing E20. Refer to Figure B-1 for RCP cutout dimensions.

Power and Grounding Connections – Power for the RCPs should already be in place and connected to the designated power panels. Verify that circuit breakers in the panels have been correctly connected and labeled on the panels before connecting any equipment. Each RCP chassis should be grounded to the nearest multipoint ground plate in accordance with FAA-STD-020b.

External Connections – Route and label appropriate length cables between components. Connect the following cables as shown in FATD drawing E34:

R-2508 Complex TRACON - The distance between the OMT and RCP is greater than 15 feet and less than 18,000 feet . Utilize the following equipment and connect the cables and modems between the OMT and RCP:

___ 1. 25-pin to 9-pin adapter cable (Find #20) (required for serial port B only)
___ 2. RAD SRM-5A/M/RJ-45/NEW modem (Find #17)
___ 3. Short Haul Modem Cable Kit (Find #31)
___ 4. RAD SRM-5A/F/RJ-45/NEW modem (Find #38)
___ 5. RAD PSA (PS-115/9/300) Power Supply and Adapter Cable (Find #39)
___ 6. DB25 male to DB25 female extension cable (Find #60)

RAD Modem Configuration – Ensure RAD Modems (at both OMT and RCP ends) are properly configured as Data Communication Equipment (DCE). Modems are installed using standard installation procedures provided by the manufacturer.

Motorola DDS/MR64 Configuration – Refer to Raytheon’s ASR-11 System Field Installation Manual (B003, latest revision), subsection 17.5, for MR64 software configuration.

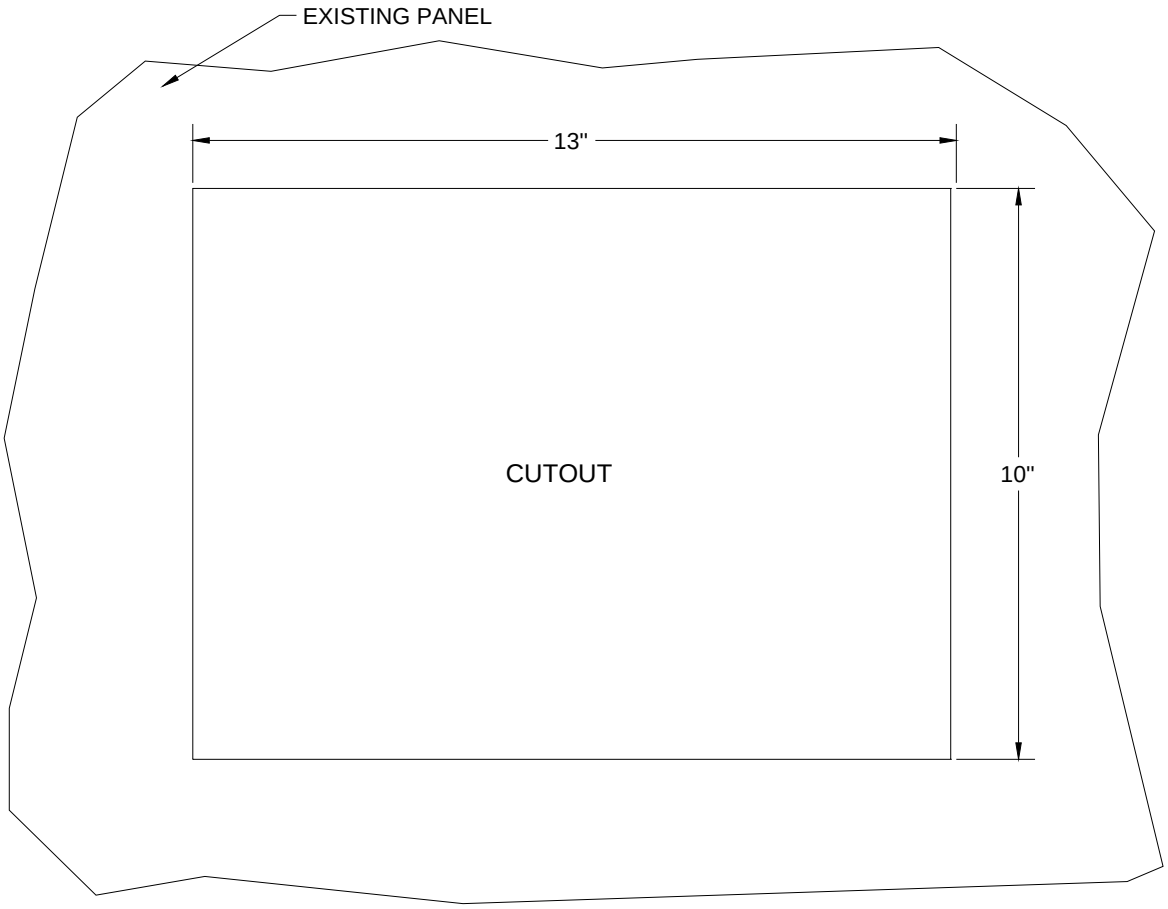

Figure B-1. RCP Cutout Dimensions

B4a. ARTS IIE Surveillance Data Translator (SDT) and Control and Maintenance Console (CMC)

N/A

B4b. REHOST Interface

The distance between SIUs A and B and REHOST Rack is less than 3,937 feet. Utilizing existing cable trays (either overhead or under a raised floor), route the patch cables G780408-1 (Find #41) from the EDW Communications Rack to the REHOST Rack.

Note: SIUs A and B are delivered set to the default IP addresses of 10.1.1.32 (SIU A) and 10.1.2.32 (SIU B). Ensure that the SIUs are set in their default IP configurations prior to any testing.

APPENDIX C

RESULTS OF THE RF INTERFERENCE MITIGATION ANALYSIS

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Attachment 5

R-2508 Panamint Valley ASR-11 Tables, Appendix B (Procedures) and Appendix C (RF Interference Mitigation Analysis)

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Table 1. Key Personnel

Organization/Title	Name	Telephone
Raytheon/FATD Engineer	Mark D. Murphy	(781) 238-2788
Raytheon/SATP Engineer	Hank Hyche	(770) 907-3346
Raytheon/Site Construction Engineer	Jim Gaved	(208) 244-2577
Raytheon/Site Installation Team Lead	TBD	
FAA ATB-460/ASR-11 Requirements Lead	JoEllen Kleindienst	(202) 493-4229
FAA ATO-T/Deployment Lead	Tom Jones	(202) 385-8729
FAA ATO-T/FATD POC	Isaac Coleman	(405) 200-4530
FAA ATO-T/SATP POC	Dwight Bradford	(301) 565-2970
FAA ASU-250/Site Acceptance Test Lead	Jamal Abuswai	(202) 267-5740
FAA ANI-90/NAS Implementation POC	Neil Angelotti	(202) 493-6596
FAA ANI-960 Surveillance Programs Manager	Jerry Duhonich	(310) 725-7770
FAA AWP-510/Regional AT Requirements	Rose Sardisco	(310) 725-6510
FAA AWP-470/Regional Lead Engineer	Joseph Heil	(310) 725-3478
FAA SMO ASR-11 POC	Robert Ellington	(661) 277-9604
FAA AF Coordinator	John LaFontaine	(661) 816-3726
FAA SSC/AF Manager	Michael Flynn	(661) 258-4436
FAA Air Traffic Manager	Mark Heinrich	(661) 258-6300
FAA ATO-T/Regulus-Group Resident Engineer (RE)	Trip French	(540) 335-8747
FAA ANI-960/Technical Onsite Representative (TOR)	TBD	
Airport Manager (Director of Operations)	Bill Shelton	(661) 277-9831

Table 2. General Site Data

New ASR-11 Site Data	
Site Location	Panamint Valley, CA
ASR-11 Antenna Coordinates	Latitude N 36° 02' 02.11" Longitude W 117° 16' 10.72" (NAD83, Source-survey, Accuracy+-16ft) Site Elevation 1,196 feet above mean sea level (AMSL), Source-Handheld GPS
Recommended Tower Height and PSR Antenna Tilt	17 feet above ground level (AGL) and 0° relative to the horizon (mechanical). Final PSR tilt may change during system optimization.
Radome Required?	No
Fiber Optic Cable Link Distance	N/A
Access Road Length and Type	Existing gravel road
Location of QPM Communications Rack	The Raytheon I&CO team will install the QPM Communications Rack in its permanent location inside the equipment room, room 118, located on the first floor of the new R-2508 TRACON building without connection to the operational equipment. The rack AC outlets will be hard-wired to their respective power feeds. Space will be made available in the QPM Communications Rack for installation of the SIUs for REHOST. Communications from the Panamint radar site will be over microwave and enters the R-2508 TRACON via the TELCO room and routes to inside the QPM Communications Rack and all intercabinet cables will be installed. See FATD drawings E35, E32 and E20 for a System Interconnection Diagram, QPM Communications Rack Configuration, and R-2508 TRACON Equipment Room Plan. Refer to Appendix B, Installation Procedure B1.
Location of the OMT	The OMT will be installed in the Coordinators Area located in the first floor of the new R-2508 TRACON building and connected to the Router CC mounted in the QPM Communications Rack. Refer to FATD drawing E35 for Interconnection Diagram, drawing E20 for Equipment Location, and Attachment 5 Appendix B, Installation Procedure B2.
Location of the RCP	N/A
Location of MTI Reflector # 1	Latitude N 35° 53' 54.0" Longitude W 117° 17' 18.2" (NAD83, Source-Handheld GPS, Accuracy-+-15 Ft) MTI#1 will be located on the existing tower at the Slate Range RLMR site. The MTI reflector is located approximately 49,668.903 feet from the ASR-11 antenna at an azimuth of 186.418° true.
Location of MTI Reflector # 2	Delivered but not installed.
MRSM	Latitude N 35° 53' 54.0" Longitude W 117° 17' 18.2" (NAD83, Source-GPS, Accuracy-+-15 feet) The MRSM antenna is located on the existing tower at the Slate Range RLMR site. The MRSM antenna is located approximately 49,668.903 feet from the ASR-11 antenna at an azimuth of 186.418° true.
Permanent Echoes	According the site survey report, FAA-provided permanent echoes would not be detected by the ASR-11. Permanent echoes will need to be determined during optimization.
Plot Size	ASR-11 will be constructed inside fence at existing radar site.
Fenced Area	ASR-11 will be constructed inside fence at existing radar site.

Table 2. General Site Data (Continued)

Approved Modifications to the Generic Design	The following modifications were approved by the FAA via letter F-FAASS-05-0024, dated 15 March 2005.
Frequency Assignment	2,825 and 2,895 MHz
FAA Address	FAA – Edwards SSC, 2508 Rosamond, Attn: John LaFontaine, Edwards AFB, CA, 93523
Existing Surveillance Environment Data	
Primary Radar Type	ASR-8
Beacon Type	ATCBI-5
Antenna Coordinates	Latitude N 36° 02' 03" Longitude W 117° 16' 11" (NAD83, Source-FAA Facility Transmission Authority document) Site Elevation 1,196 feet AMSL, Source-FAA The existing ASR-8 is located approximately 92.891 feet from the ASR-11 antenna center at an azimuth of 345.667° true.
Tower Height and PSR Antenna Tilt	17 feet above ground level (AGL) and 2.2° relative to the horizon (mechanical).
Type of Automation System	REHOST-2
Automation Display Configuration	The TRACON utilizes a unique Automation/Display System called REHOST 2. The system includes a mosaic display with inputs from multiple radars. This is an interim system that will eventually be replaced with STARS. In addition the ASR-11 will provide a feed to two additional locations. Each of the locations will require a “CD-2 format” data input. The feeds will include landlines, microwave links, TELCO, and possible F/O cable. **NOTE: The REHOST-2 interface and distribution design has not been developed and is not a part of this delivery order.**
DBRITE Configuration	None. A REHOST tower display is utilized. Interface by others.
Hours of Low Activity	12:00 AM to 6:00 AM for the R-2508 TRACON Operations Room
Frequency Assignment	2,865 and 2,735 MHz

Table 3. Preconstruction Meeting Information

ASR-11 Site Access	From Ridgecrest, CA, travel northeast on Highway 178 for approximately 45 miles and turn right on Ballarat Road, go approximately 1 mile and the existing radar site will be visible to the left on a gravel road.
FAA Facility Access	Enter Edwards AFB at west gate (State Hwy 14) and continue east on Rosamond to 2508 Rosamond.
Security	The Panamint Valley radar site is located off base property. The TRACON facility is located on Edwards AFB and entry to the base requires coordination. Security levels and requirement for entry are subject to change. Provide to Robert.ellington@edwards.af.mil the following: Full name, date and place of birth, name of your organization. Two forms of identification, i.e. driver's license, FAA or company ID are required to enter. Additional security requirements will be provided at the time of requested access. Contact John LaFontaine (661) 258-4436 or (661) 816-3726 (cell).
Coordination	All coordination for access to the base, to radar site and TRACON must be through John LaFontaine, (661) 258-4436 or (661) 816-3726 (cell).
Vehicles	All POV's operating on Edwards AFB must be insured with $15,000 Personal liability, $30,000 each accident, $5,000 property damage. Decals are obtained from security police Pass and Registration Section, Bldg 2860. Vehicles are required to be registered within 10 days of arrival. To register a vehicle on base a registration, drivers license, and ID card is required. Vehicles registered outside the state of California must have a smog check before registering.

Table 4. ASR-11 Site Cable Requirements

Radar Data Communication Media	Radar data communications requires two government provided microwave 128 KBps digital data service (DDS) lines between the ASR-11 equipment shelter (at the site TELCO demarcation), the TRACON Telco room #119 and the TRACON equipment room (Communications Rack) inside the TRACON facility. The OMT link requires at least one Government provided 56 KBps DDS line (two lines are required at all ATC facilities). Refer to Table 8 of Attachment 5 for microwave service requirements.
Telephone Cables	• The site telecommunications system requires a minimum of three single voice-grade lines to connect to the local telephone system. Telephones for voice communications will be located in the ASR-11 equipment shelter, the ASR-11 engine generator shelter, and the mezzanine level of the antenna tower. • All telecommunications will be by microwave link through existing microwave equipment. The Edwards AFB Standards and Planning Division provide all TELCO and Fiber Optic cables on the Base. The POC is John Kellas (661) 277-3810 and Herman Lewis (661) 277-8484. The voice circuits will tie into the base telephone system. The S&P Division will provide a demark point within the ASR-11 building and inside the new TRACON building for both data link and voice.
ASR-11 Facility Power	The electrical power requirement is for a 480/277 VAC, three-phase, four-wire 112.5 kVA feed. Power to the site will originate at an existing pole south of the site and be run underground to the transformer inside the fence by Southern California Edison. Extending the power service from the secondary side of the transformer to the main disconnect switch, as well as for installing the meter socket in a location mutually agreed to with Southern California Edison will be accomplished by the Raytheon subcontractor. Raytheon's subcontractor assumes responsibility for leased material and temporary service during site preparation up through the completion of the Facility SAT (SAT, Part I). At this date, the Government will assume responsibility for service.

Table 5. TRACON Cable Requirements

Radar Data Communication Media	The government-provided microwave circuits will be available at the microwave LAN demarcation rack inside the TRACON Telco room #119 of the TRACON building. Additional cables will be routed between the DDS demarcation and the Communications Rack (Routers AA, BB, CC and DD). See Table 8 of Attachment 5 for microwave DDS requirements. See FATD drawing E20 for proposed equipment location.
Internal Cables	• Refer to FATD drawing E35 and Table 12, contained in Attachment 5, for a complete communications interconnect diagram and cable lists. • The ASR-11 will provide a feed to two additional locations. Each of the locations, which are listed below, will require a "CD-2 format" data input. The feeds will include landlines, microwave links, TELCO, and possible F/O. The interface and distribution is not included in this SATP. The following is the planned distribution: High Desert TRACON, Sport, China Lake (North Base). NOTE: The REHOST-2 interface and distribution design has not been developed and is not a part of this delivery order.
Electrical Power	A subcontractor will position electrical power connections for the ASR-11 equipment in the TRACON Operations and Equipment Rooms. Power will be derived from critical power panels using circuit breakers assigned by local FAA AF personnel. See Table 11 and FATD drawing E20 for proposed circuit breaker assignments and equipment location. Refer to the FATD for specific power and grounding details inside the TRACON Operations and Equipment Rooms.

Table 6. RF Interference Mitigation Analysis Recommendations

Recommended Transmission Scenario	Simultaneous Radiation Scenario (See Section 1.9.1 for details).
Facilities Analyzed	The existing ASR is the only S-band emitter noted.
Filter Requirements	Filters will be installed in the ASR-11. The ASR-11's receiver STC will need to be adjusted to +72 dB between 345.6° and 5.6° true to diminish reception of the ASR-8 transmissions.
Transmitter Blanking Requirements	The ASR-11 will be sector blanked from 345.6° and 5.6°. The existing ASR-8 will be sector blanked from 155.6 ° and 175.6 °.
Personnel Safety Requirements	• The existing ASR is located 92.891 feet (28.313 meters) from the ASR-11. Utilizing equations provided in the report entitled, "Radiofrequency Impact Analysis for Airport Surveillance Radar-11" by SRI International, the main lobe emissions from the existing ASR at the ASR-11 tower are below the industry standard permissible exposure limitations as set forth in IRPA, NCRP, and FCC guidelines, as well as the more restrictive requirements defined by Raytheon. No radiation mitigation with respect to subcontractor personnel safety is required. • Additionally, based on ANSI/IEEE guidelines as adopted by the FAA, personnel should be excluded from the area within 500 feet directly in front of the ASR-11 (within the main beam) when the radar is operating in maintenance mode (when the antenna is stationary and transmitting a signal for maintenance and or testing purposes).

Table 7. Predismantling Meeting Information

Existing ASR Site Access	From Ridgecrest CA travel northeast on Highway 178 for approximately 45 miles and turn right on Ballarat Road, go approximately 1 mile and the existing radar site will be visible to the left on a gravel road.
Disposition Requirements	The existing building will be removed. The radar tower will be dismantled. The engine generator is to be removed. These facilities will be removed in phases during construction.
FAA Facility Access	Enter Edwards AFB at west gate (State hwy 14) and continue east on Rosamond to 2508 Rosamond. The address is: 100 E. Sparks Drive, Bldg 2580, Edwards AFB, CA, 93523
Security	The Panamint Valley radar site is located off base property. The TRACON facility is located on Edwards AFB and entry to the base requires coordination. Security levels and requirement for entry are subject to change. Provide to Robert.ellington@edwards.af.mil the following: Full name, date and place of birth, name of your organization. Two forms of identification, i.e., drivers license, FAA or company ID are required to enter. Additional security requirements will be provided at the time of requested access. Contact John LaFontaine (661) 258-4436 or (661) 816-3726 (cell).
Coordination	All coordination for access to the base, to radar site and TRACON must be through John LaFontaine, (661) 258-4436 or (816) 3726 (cell).
Vehicles	All POV's operating on Edwards AFB must be insured with $15,000 Personal liability, $30,000 each accident, and $5,000 property damage. Decals are obtained from security police, Pass and Registration Section, Bldg 2860. Vehicles are required to be registered within 10 days of arrival. To register a vehicle on base, a registration, drivers license, and ID card is required. Vehicles registered outside the state of California must have a smog check before registering.

Table 8. DDS Line Service Requirements

Name of Service:	ASR-11 Data Link
Service Requirements	Government Furnished Microwave Link 2 x 56 KBPS lines for the OMT (1 56 KBPS line is for additional government provided OMT) 2 x 128 KBPS lines for the SIU's
ASR-11 Address Contact Name Termination Point	ASR-11 Site Ballarat Road Panamint Valley, CA John LaFontaine (661) 258-4436 or (661) 816-3726 (cell) Telco Demarcation ASR-11 Shelter
TRACON Address Contact Name Termination Point	FAA Edwards SSC BLDG. 2580 Edwards AFB, CA 93524 John LaFontaine (661) 258-4436 or (661) 816-3726 (cell) Telco Demarcation Room 119
Date Service Required	6 August 2006
Additional Service Requirements	

Table 9. Equipment Parts List

FIND NO. (Per G710560-1, Rev E)	PART NUMBER	DESCRIPTION	VENDOR	QTY.
17	SRM-5A/M/RJ-45/NEW	Modem, 2.4 KBPS, Sync. Short Haul, 25-pin Male RJ-45	RAD-DATA	1
19	2014MC-MT	Cable, V.35 to EIA-530, 6 ft.	Patton	4
31	**G710563-1**	**Cable Configuration Drawing (See FNs 31 (1) & 31 (2))**(Government Furnished Equipment**)**		**1**
31 (1)	G710564-1	Cable Assembly, Cross Connect, 6 in. (Pins Crossed: 3 & 4, 5 & 6)	Black Box	1
31 (2)	FM508	Coupler, RJ45 (M) to RJ45 (M)	Black Box	1
34	TRD450CR-50	Cable, 10Base-T Crossover, 50 ft. (Pins Crossed: 1 & 3, 2 & 6), Nonshielded	L-COM	2
36	CPX-1501-BA	RS530 Line Splitter, Rack Mountable	The Logical Co.	2
37	FAB-1001-A	Rack Mount for CPX-1501-BA	The Logical Co.	1
38	SRM-5A/F/RJ-45/NEW	Modem, 2.4 KBps, Sync. Short Haul, 25-pin Female RJ-45	RAD-DATA	1
39	PSA	Power Supply Adapter	RAD-DATA	1
41	G780408-2-300	Cable Configuration Drawing for Interface Cable, ASR-11 to REHOST	Globaltec	4
43	G780408-1-5	Cable Configuration Drawing for Interface Cable, ASR-11 to REHOST	Globaltec	2
48	6500	Switch, Ethernet, 8-port	Omnitron	2
49	6100	Switch, Ethernet, 24-port w/ FX Expansion Port	Omnitron	2
57	PLG780342-1	OMT Router Assembly	- See PLG -	2
59	PLH331078-2	SDT Router Assembly, 128K FT1 Configuration	- See PLG -	4
60	02655	Extension Cable, DB25 (M) to DB25 (F)	Cables to Go	1
71	MTV132V-R2	DSU/CSU	Black Box	4
	525075-3F	**Rack, 23" (w/ Side Panels) - (Communications Rack)**	**Black Box**	**1**
	RM589	23" Shelves, Vented, Fixed, 22-1/4" Deep - 7/8" Height	Black Box	4
	37907	Rack Mount Adapter Set, 19" to 23", 2U (3.50" high)	Black Box	3
	37908	Rack Mount Adapter Set, 19" to 23", 3U (5.25" high)	Black Box	2
	37910	Rack Mount Adapter Set, 19" to 23", 5U (8.75" high)	Black Box	2
	CXCG -20	Guide Brackets for MRSM Chassis	Emcor	1
	G584025-2	Rack Mount Kit for RCP	Raytheon	1
		SIU DTE System	Sensis	2

For information regarding quantities for Panamint Valley (QPM), contact Hank Hyche, RTSC, AT (770) 907-3346.
Date Completed: 06/22/05.

The following equipment should be shipped to:
FAA Edwards SSC
BLDG 2580
Edwards AFB, CA 93524
POC: John LaFontaine (661) 258-4436

Table 9a. Government Furnished Equipment Parts List (Above Normal Installation)

FIND NO. (Per G710560-1, Rev E)	PART NUMBER	DESCRIPTION	VENDOR	QTY.
57	PLG780342-1	OMT Router Assembly	- See PLG -	2
34	TRD450CR-100	Cable, 10Base-T Crossover, 100 ft. (Pins Crossed: 1 & 3, 2 & 6), Nonshielded	L-COM	2
66	PLH364726-1	SIU Maintenance Port	Raytheon Parts List	2
	G534265-40	Operator Maintenance Terminal (OMT)	Raytheon Spec.	1

For information regarding quantities for Panamint Valley (QPM), contact Hank Hyche, RTSC, AT (770) 907-3346.
Date Completed: 06/22/05.

The following equipment should be shipped to:
FAA Edwards SSC
BLDG 2580
Edwards AFB, CA 93524
POC: John LaFontaine (661) 258-4436

Table 10. Space Requirements

Find #	Equipment	Height (in.)	Width (in.)	Depth (in.)	Power Requirement
17	Modem (RAD SRM-5A/M/RJ-45/NEW)	0.7	2.1	2.1	N/A (Powered from DTE)
18	Modem (Motorola DDS/MR64)	2.5	7.0	9.6	120VAC. 300mA
36	Line Splitter (Logical Co. CPX-1501-BA)	5.1	3.4	1.0	120V, 10mA
37	Rack Mount (for Line Splitter)	5.25	19.0	3.0	N/A
38	Modem (RAD SRM-5A/F/RJ-45/NEW)	0.7	2.1	2.1	N/A (Powered from DCE)
39	Power Supply Adapter for FN 38 (above)	0.7	2.1	2.1	120VAC, 500mA
P/O 47	Modem (RAD SRM-9/V.24/RJ-45)	0.7	2.1	2.1	120VAC, 25mA
P/O 47	Power Transformer (for remote VDCU)	1.3	2.3	3.6	120VAC, 500mA
48	Ethernet Switch, 8-Port (Omnitron 6700)	1.75	6.0	4.0	110VAC, 300mA
49	Ethernet Switch (Omnitron 6100)	1.75	19.0	8.0	110VAC, 300mA
52	Ethernet Switch, 4-Port for Multimode Fiber (Omnitron 6551-0)	1.75	6.5	8.0	110VAC, 300mA
53	Ethernet Switch, 4 Port for Single mode Fiber (Omnitron 6551-2)	1.75	6.5	8.0	110VAC, 300mA
P/O 57	Router (Cisco 1605)	2.19	11.15	8.67	120VAC, 225mA
P/O 58	Router (Cisco 1602)	2.19	11.15	8.67	120VAC, 225mA
P/O 59	Router (Cisco 1721)	3.1	11.2	8.7	120VAC, 500mA
Raytheon	SIU Communications Rack (19” Rack)	78.5	23.88	32.88	N/A
Raytheon	SIU Communications Rack (23” Rack)	78.5	27.88	32.88	N/A
Raytheon	OMT	19.0	16.0	17.0	120VAC, 3A
Raytheon	RCPs 1 through 3	12.0	16.0	4.0	120VAC, 500mA
Raytheon	MRSM Rack	52.5	24.0	35.0	N/A
Raytheon	MRSM Chassis	10.5	19.0	15.0	120VAC, 1A
Raytheon	LAN Surge Suppression Panel	3.5	19.0	4.0	N/A
Sensis	SIU Chassis A and B	5.20	19.0	10.0	Each 120VAC, 500mA
Sensis	SDT Rack	33.4	24.1	29.4	2 Circuits, each 120VAC, 2.5A
Sensis	CMC	17	24.1	29.4	120VAC, 3A
Sensis	Ethernet Hub A and B	1.8	17.0	10.6	Each 120VAC, 1A
Sensis	DVG Switches 1 and 2	5.25	19.0	8.0	Each 120VAC, 1.75A
Sensis	DVGs 1 through 12	8.4	9.1	16.2	Each 120VAC, 3A
Sensis	VDCUs 1 through 12	7.4	8.5	2.5	N/A
Sensis	SDT Mode Controller (Future)	8.4	9.1	16.2	120VAC, 3A (estimated)
Sensis	SDT Mode Control Local/Remote Control Unit (Future)	10	10	5	Each 120VAC, 1A

NOTE: This table includes dimensions and power requirements for all equipment (excluding radar system equipment at the radar site) required for system communications to the ATCT and/or TRACON or Remote Automation Facility. Refer to Table 11 for specific equipment required for this implementation.

Table 11. Circuit Breaker Assignments

Power Panel and Circuit Breaker Assignment	Circuit Breaker Rating	Location and Name of Load	Expected Load
TRACON Equipment Room			
CP219A, CB#**	20 A, single pole	QPM Communications Rack, Circuit 1, Phase A	SIU A (0.15A), Ethernet Switch AA (0.3A), Router AA (0.4A), Line Splitter A (0.2A) = 120VAC, **1.05 A**
CP219A, CB#**	20 A, single pole	QPM Communications Rack, Circuit 2, Phase B	SIU B (0.15A), Ethernet Switch BB (0.3A), Router BB (0.4A), Line Splitter B (0.2A) = 120VAC, **1.05 A**
CP219A, CB#**	20 A, single pole	QPM Communications Rack, Circuit 3, Phase A	SIU C (0.15A), Router CC (0.4A), Line Splitter C (0.2A), Line Splitter E (0.2A), DSU A1 (0.3A) = 120VAC, **1.25 A**
CP219A, CB#**	20 A, single pole	QPM Communications Rack, Circuit 4, Phase B	SIU D (0.15A), Line Splitter D (0.2A), Line Splitter F (0.2A), DSU B1 (0.3A) = 120VAC, **0.85 A**
CP#219A, CB#**	15 A, single pole	RCP	RCP (with modem) 120 VAC, 0.5A
CP219A, CB#**	20 A, single pole	OMT workstation	120VAC, 3.0 A (estimated)
MRSM Location (Slate Range RLMR Building)			
CP#TBD, CB#**	15 A, single pole	MRSM (in existing rack)	120VAC, 1.0 A
SPORT (remote REHOST)			
CP#TBD, CB#**	20 A, single pole	DSUs	DSU A2 (QPM) (0.3A), DSU B2 (QPM) (0.3A) = 120VAC, **0.6 A**
CHINA LAKE (remote REHOST)			
N/A	N/A	N/A	N/A
INYOKERN AIRPORT (remote REHOST)			
CP#TBD, CB#**	20 A, single pole	*OMT workstation	120VAC, 3.0 A (estimated)
CP#TBD, CB#**	15 A, single pole	*Router DD	120 VAC, 0.4A

* Government provided and installed equipment

** Spare breaker to be assigned by FAA AF technician at installation.

Table 12. Cable Run List

REF #	FROM	TO	TYPE	LABEL (F)	LABEL (T)	LENGTH (FT)
CL001	Ethernet Switch (ESW) A1 Port 1	SCDI A Port A	Cat-5E Shielded	ESW_A1/P1 (SCDI_A/PA)	SCDI_A/PA (ESW_A1/P1)	6
CL002	ESW A1 Port 2	SCDI B Port A	Cat-5E Shielded	ESW_A1/P2 (SCDI_B/PA)	SCDI_B/PA (ESW_A1/P2)	6
CL003	ESW A1 Port 3	MPS800 A	Cat-5E Shielded	ESW_A1/P3 (MPS800_A)	MPS800_A ESW_A1/P3	6
CL004	ESW A1 Port 4	Router A1 LAN Input	Cat-5E Shielded	ESW_A1/P4 (RTR_A1/LAN_IN)	RTR_A1/LAN_IN ESW_A1/P4	30
CL005	ESW A1 Port 5	Router C1 Port A	Cat-5E Shielded	ESW_A1/P5 (RTR_C1/PA)	RTR_C1/PA (ESW_A1/P5)	30
CL006	ESW B1 Port 1	SCDI A Port B	Cat-5E Shielded	ESW_B1/P1 (SCDI_A/PB)	SCDI_A/PB (ESW_B1/P1)	6
CL007	ESW B1 Port 2	SCDI B Port B	Cat-5E Shielded	ESW_B1/P2 (SCDI_B/PB)	SCDI_B/PB (ESW_B1/P2)	6
CL008	ESW B1 Port 3	MPS800 B	Cat-5E Shielded	ESW_B1/P3 (MPS800_B)	MPS800_B ESW_B1/P3	6
CL009	ESW B1 Port 4	Router B1 LAN Input	Cat-5E Shielded	ESW_B1/P4 (RTR_B1/LAN_IN)	RTR_B1/LAN_IN ESW_B1/P4	30
CL010	ESW B1 Port 5	Router C1 Port B	Cat-5E Shielded (Government Provided and Installed)	ESW_B1/P5 (RTR_C1/PB)	RTR_C1/PB (ESW_B1/P5)	30
CL011 (GFE)	ESW A1 Port 6	Router D1 Port A	Cat-5E Shielded (Government Provided and Installed)	ESW_A1/P6 (RTR_D1/PA)	RTR_D1/PA ESW_A1/P6	30
CL012 (GFE)	ESW B1 Port 6	Router D1 Port B	Cat-5E Shielded (Government Provided and Installed)	ESW_B1/P6 (RTR_D1/PB)	RTR_D1/PB ESW_B1/P6	30
CL013	Router A1 TELCO Out	Radar Site MW Demarc (Circuit 1 - 128KBPS)	Cat-5E Shielded	RTR_A1/TELCO_OUT (SITE_DEMARC/CKT1)	SITE_DEMARC/CKT1 (RTR_A1/TELCO_OUT)	50
CL014	Router B1 TELCO Out	Radar Site MW Demarc (Circuit 2 - 128KBPS)	Cat-5E Shielded	RTR_B1/TELCO_OUT (SITE_DEMARC/CKT2)	SITE_DEMARC/CKT2 (RTR_B1/TELCO_OUT)	50
CL015	Router C1 TELCO Out	Radar Site MW Demarc (Circuit 3 - 56KBPS)	Cat-5E Shielded	RTR_C1/TELCO_OUT (SITE_DEMARC/CKT3)	SITE_DEMARC/CKT3 (RTR_C1/TELCO_OUT)	50
CL016 (GFE)	Router D1 TELCO Out	Radar Site MW Demarc (Circuit 4 - 56KBPS)	Cat-5E Shielded (Government Provided and Installed)	RTR_D1/TELCO_OUT (SITE_DEMARC/CKT4)	SITE_DEMARC/CKT4 (RTR_D1/TELCO_OUT)	50
CL018	Microwave Demarc (Circuit 1 - 128KBPS)	Comm Rack Router AA TELCO Input	Cat-5E Shielded	M/W_DEMARC/CKT1 (RTR_AA/TELCO_IN)	RTR_AA/TELCO_IN (M/W_DEMARC/CKT1)	60
CL019	M/W Demarc (Circuit 2 - 128KBPS)	Comm Rack Router BB TELCO Input	Cat-5E Shielded	M/W_DEMARC/CKT2 (RTR_BB/TELCO_IN)	RTR_BB/TELCO_IN (M/W_DEMARC/CKT2)	60
CL020	M/W Demarc (Circuit 3 - 56KBPS)	Comm Rack Router CC TELCO Input	Cat-5E Shielded	M/W_DEMARC/CKT3 (RTR_CC/TELCO_IN)	RTR_CC/TELCO_IN (M/W_DEMARC/CKT3)	60
CL020 (GFE)	M/W Demarc (Circuit 4 - 56KBPS)	Digital Patch Panel	Cat-5E Shielded (Government Provided and Installed)	M/W_DEMARC/CKT4 (DIGITAL_PATCH/ASR-11)	DIGITAL_PANEL/ASR-11 (M/W_DEMARC/CKT4)	15
CL021 (GFE)	Digital Patch Panel	Digital Patch Panel	Cat-5E Shielded (Government Provided and Installed)	DIGITAL_PATCH/ASR-11 (DIGITAL_PATCH/INYO)	DIGITAL_PATCH/INYO (DIGITAL_PATCH/ASR-11)	4

Table 12. Cable Run List (Continued)

REF #	FROM	TO	TYPE	LABEL (F)	LABEL (T)	LENGTH (FT)
CL022 (GFE)	Digital Patch Panel	M/W Demarc (Circuit 5 - 56KBPS)	Cat-5E Shielded (Government Provided and Installed)	DIGITAL_PANEL/INYO (M/W_DEMARC/CKT5)	M/W_DEMARC/CKT5 (DIGITAL_PATCH/INYO)	15
CL023 (GFE)	INYOKERN M/W Demarc (Circuit TBD - 56KBPS)	INYOKERN Router DD TELCO Input	Cat-5E Shielded (Government Provided and Installed)	M/W_DEMARC/CKTX (RTR_EE/TELCO_IN)	RTR_EE/TELCO_IN (M/W_DEMARC/CKTX)	TBD
CL024	RTR CC Port 1	OMT Port A	Cat-5E Shielded Crossover Cable	RTR_CC/P1 (OMT/PA)	OMT/PA (RTR_CC/P1)	See Table C-6, Find # 34
CL025	RTR CC Port 2	OMT Port B	Cat-5E Shielded Crossover Cable	RTR_CC/P2 (OMT/PB)	OMT/PB (RTR_CC/P2)	See Table C-6, Find # 34
CL026	Modem (MDM) A1 (OMT Serial Port A End)	RCP A	Cat-5E Shielded	MDM_A1 (RCP_A)	RCP_A (MDM_A1)	40
CL027 (GFE)	RTR DD Port 1	OMT Port A (INYOKERN AIRPORT)	Cat-5E Shielded Crossover Cable (Government Provided and Installed)	RTR_DD/P1 (OMT/PA)	OMT/PA (RTR_DD/P1)	See Table C-6, Find # 34
CL028 (GFE)	RTR DD Port 2	OMT Port B (INYOKERN AIRPORT)	Cat-5E Shielded Crossover Cable (Government Provided and Installed)	RTR_DD/P2 (OMT/PB)	OMT/PB (RTR_DD/P2)	See Table C-6, Find # 34
CL023	Router AA	ESW AA	Cat-5E Shielded	RTR_AA (ESW_AA)	ESW_AA (RTR_AA)	6
CL024	Router BB	ESW BB	Cat-5E Shielded	RTR_BB (ESW_BB)	ESW_BB (RTR_BB)	6
CL025	ESW AA Port 21	SIU A A1J1	Cat-5E Shielded	ESW_AA/P2 (SIU_A/A1J1)	SIU_A/A1J1 (ESW_AA/P2)	4
CL026	ESW BB Port 2	SIU B A1J1	Cat-5E Shielded	ESW_BB/P2 (SIU_B/A1J1)	SIU_B/A1J1 (ESW_BB/P2)	4
CL027	ESW AA Port 3	SIU C A1J1	Cat-5E Shielded	ESW_AA/P3 (SIU_C/A1J1)	SIU_C/A1J1 (ESW_AA/P3)	6
CL028	ESW BB Port 3	SIU D A1J1	Cat-5E Shielded	ESW_BB/P3 (SIU_D/A1J1)	SIU_D/A1J1 (ESW_BB/P3)	6
CL035	SIU A	Line Splitter A	G780408-1-5	SIU_A (SPLTR_A)	SPLTR_A (SIU_A)	See Table 9, Find # 43
CL036	SIU B	Line Splitter B	G780408-1-5	SIU_B (SPLTR_B)	SPLTR_B (SIU_B)	See Table 9, Find # 43
CL037 (GFE)	SIU C Nunio 1	Line Splitter C (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_C/NUNIO_1 (SPLTR_C)	SPLTR_C (SIU_C/NUNIO_1)	2
CL038 (GFE)	SIU C Nunio 2	Line Splitter E (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_C/NUNIO_2 (SPLTR_E)	SPLTR_E (SIU_C/NUNIO_2)	2
CL041 (GFE)	SIU D Nunio 1	Line Splitter D (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_D/NUNIO_1 (SPLTR_D)	SPLTR_D (SIU_D/NUNIO_1)	2

Table 12. Cable Run List (Continued)

REF #	FROM	TO	TYPE	LABEL (F)	LABEL (T)	LENGTH (FT)
CL042 (GFE)	SIU D Nunio 2	Line Splitter F (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_D/NUNIO_2 (SPLTR_F)	SPLTR_2 (SIU_D/NUNIO_2)	2
CL045	Line Splitter A	REHOST A (EDW)	G780408-2-300	SPLTR_A (REHOST_A)	REHOST_A (SPLTR_A)	See Table 9, Find # 41
CL046	Line Splitter B	REHOST B (EDW)	G780408-2-300	SPLTR_B (REHOST_B)	REHOST_B (SPLTR_B)	See Table 9, Find # 41
CL047	Line Splitter A	REHOST TEST (EDW)	G780408-2-300	SPLTR_A (REHOST_TEST)	REHOST_TEST (SPLTR_A)	See Table 9, Find # 41
CL048	Line Splitter B	REHOST BACKUP (EDW)	G780408-2-300	SPLTR_B (REHOST_BKUP)	REHOST_BKUP (SPLTR_B)	See Table 9, Find # 41
CL049	Line Splitter C (SIU MAINTENANCE PORT)	DSU A1 (EDW)	RS530 to V.35	SPLTR_C (DSU_A1)	DSU_A1 (SPLTR_C)	See Table 9, Find # 19
CL050	Line Splitter D (SIU MAINTENANCE PORT)	DSU B1 (EDW)	RS530 to V.35	SPLTR_D (DSU_B1)	DSU_B1 (SPLTR_D)	See Table 9, Find # 19
CL051 (GFE)	Line Splitter E (SIU MAINTENANCE PORT)	EDWARDS DIGITAL PATCH PANEL	R530 DB25MM Straight-Thru (Government Provided and Installed)	SPLTR_E (EDW_PATCH)	EDW_PATCH (SPLTR_E)	75
CL052 (GFE)	Line Splitter F SIU MAINTENANCE PORT)	EDWARDS DIGITAL PATCH PANEL	R530 DB25MM Straight-Thru (GOVERNMENT FURNISHED AND INSTALLED)	SPLTR_F (EDW_PATCH)	EDW_PATCH (SPLTR_F)	75
CL057	DSU A1 - B1 (2 connections)	TELCO Room Demarc (2 connections)	Cat-5E Shielded	DSU_A1-B1 (EDW_DEMARC)	EDW_DEMARC (DSU_A1-B1)	60 (each)
CL060	SPORT TELCO Demarc	DSU A2 (SPORT)	Cat-5E Shielded	SPORT_DEMARC (DSU_A2)	DSU_A2 (SPORT_DEMARC)	5
CL061	SPORT TELCO Demarc	DSU B2 (SPORT)	Cat-5E Shielded	SPORT_DEMARC (DSU_B2)	DSU_B2 (SPORT_DEMARC)	5
CL067 (GFE)	EDWARDS DIGITAL PATCH PANEL	EDWARDS MICROWAVE CHANNEL BANK	R530 DB25MM Straight-Thru (Government Provided and Installed)	EDW_PATCH (EDW_CHANNEL_BANK)	EDW_CHANNEL_BANK (EDW_PATCH)	12
CL068 (GFE)	EDWARDS DIGITAL PATCH PANEL	EDWARDS MICROWAVE CHANNEL BANK	R530 DB25MM Straight-Thru (Government Provided and Installed)	EDW_PATCH (EDW_CHANNEL_BANK)	EDW_CHANNEL_BANK (EDW_PATCH)	12
CL069	DSU A2 (SPORT)	REHOST A (SPORT)	RS530 to V.35	DSU_A2 (REHOST_A_SP)	REHOST_A_SP (DSU_A2)	See Table 9, Find # 19
CL070	DSU B2 (SPORT)	REHOST B (SPORT)	RS530 to V.35	DSU_B2 (REHOST_B_SP)	REHOST_B_SP (DSU_B2)	See Table 9, Find # 19
CL073 (GFE)	CHINA LAKE MICROWAVE CHANNEL BANK	REHOST A (CHINA LAKE)	TBD (Government Provided and Installed)	CHLK_CHANNEL_BANK (REHOST_CHLK)	REHOST_CHLK (CHLK_CHANNEL_BANK)	TBD
CL074 (GFE)	CHINA LAKE MICROWAVE CHANNEL BANK	REHOST B (CHINA LAKE)	TBD (Government Provided and Installed)	CHLK_CHANNEL_BANK (REHOST_CHLK)	REHOST_CHLK (CHLK_CHANNEL_BANK)	TBD

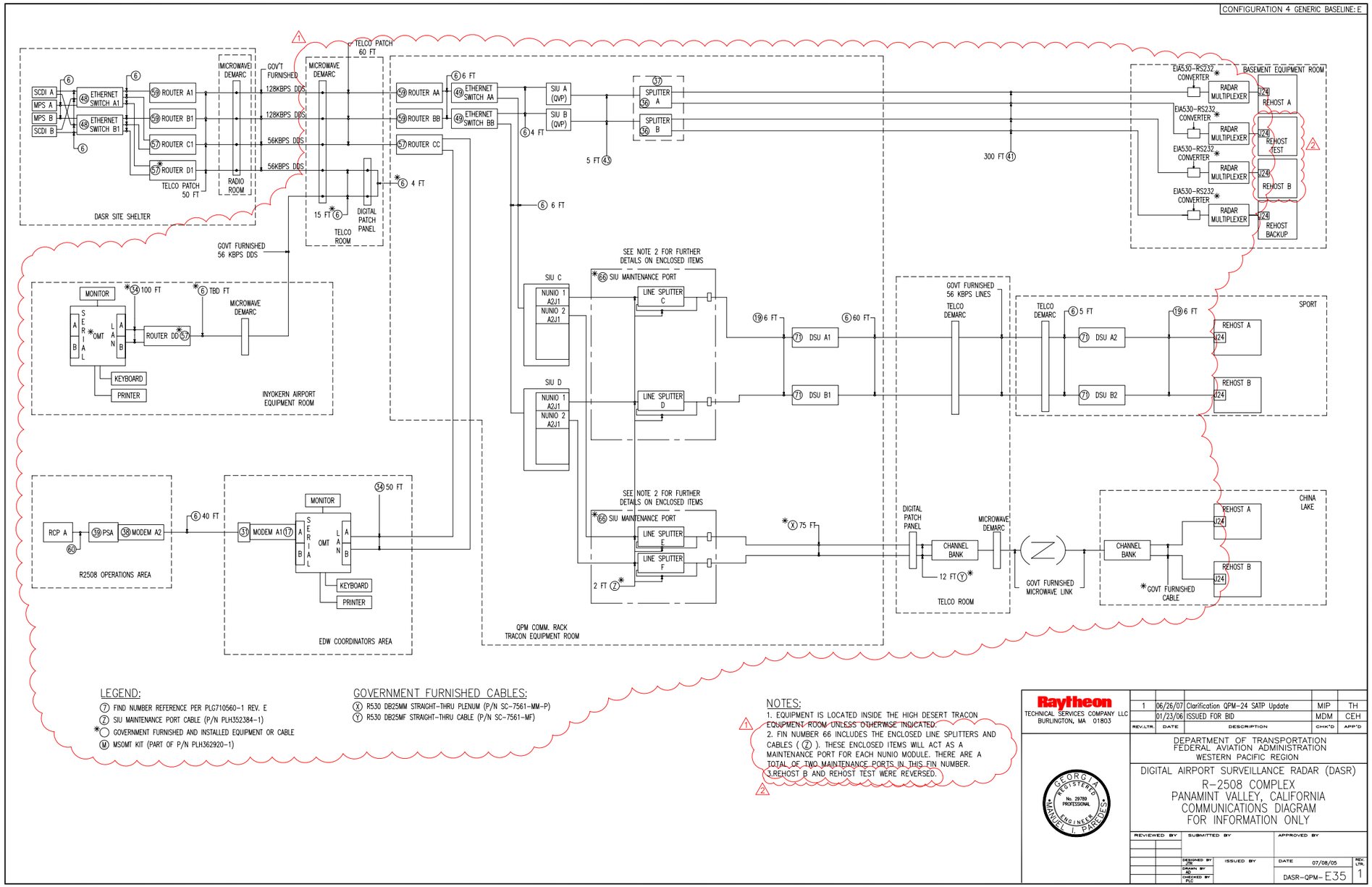

Figure 1. System Interconnection Diagram

R-2508 Panamint Valley Addendum to the Edwards AFB SATP
Appendix B

PROCEDURES

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B1. Communications Rack

Equipment Placement – The Communications Rack will be installed in the location identified in FATD drawing E20.

Power and Grounding Connections – Power for the Communications Rack has been placed near the rack location from the designated power panel. Verify that circuit breakers in the panel have been correctly connected and labeled on the panel before connecting any equipment. Connect the four power strips mounted in the Communications Rack to the appropriate circuits, made available by the site preparation subcontractor near the rack location. Ensure rack is properly connected to the existing multipoint ground plate per FAA-STD-019b, Paragraph 3.11 (Electronic Multipoint Ground System Requirements). Any electronic equipment installed in this FAA facility must be grounded in accordance with FAA-STD-020b.

Rack Configuration – Refer to the Installation, Operation, and Maintenance Manual for the System Interface Unit (SIU), Section 6, for details on the installation, assembly, and connection of the SIU Hub and Module. After the rack is mounted in place, populate the rack with Ethernet Switches AA and BB, Ethernet Hubs A and B, and routers, modems, fiber optic patch panel, and DVGs and VDCUs, as required. Refer to FATD drawing E32 for rack configuration. After the equipment is mounted in the rack, connect the internal and external rack cabling as listed below and shown in FATD drawing E35.

NOTE: Ethernet Switches AA and BB (and Ethernet Switches A1 and B1 at the Radar Site) must be configured for 10Base-T/Half Duplex operation prior to installation. Refer to manufacturers' documentation for complete procedure.

Cable Connections – Route and connect the supplied appropriate length cables between components. Connect the following cables as required by FATD drawing E35:

___ 1. Router AA to Ethernet Switch AA, Port 1
___ 2. Router BB to Ethernet Switch BB, Port 1
___ 3. Ethernet Switch AA, Port 2 to SIU A, A1J1
___ 4. Ethernet Switch BB, Port 2 to SIU B, A1J1
___ 5. Ethernet Switch AA, Port 3 to SIU C, A1J1
___ 6. Ethernet Switch BB, Port 3 to SIU D, A1J1
___ 7. Microwave Demarcation to Routers AA, BB, and CC
___ 8. Router CC, Ports 1 and 2 (LAN A and B), to the OMT
___ 9. Modem A1 to Modem A2
___ 10. Ethernet Switch CC, Port 7 to NIMS, Port 1 (if applicable)
___ 11. Ethernet Switch DD, Port 7 to NIMS, Port 2 (if applicable)
___ 12. SIU A to Line Splitter A (QPM)
___ 13. SIU B to Line Splitter B (QPM)
___ 14. Line Splitter A (QPM) to REHOST A
___ 15. Line Splitter A (QPM) to REHOST TEST
___ 16. Line Splitter B (QPM) to REHOST B
___ 17. Line Splitter B (QPM) to REHOST BACKUP
___ 18. Line Splitter C (QPM) to DSU A1 (QPM)
___ 19. Line Splitter D (QPM) to DSU B1 (QPM)
___ 20. DSU A1 (QPM) to TELCO Demarc
___ 21. DSU B1 (QPM) to TELCO Demarc
___ 22. Line Splitter E (QPM) to Digital Patch Panel
___ 23. Line Splitter F (QPM) to Digital Patch Pane

The following cables will be provided but installed by local personnel:

___ 24. SPORT TELCO Demarc to DSU A2 (SPORT)
___ 25. SPORT TELCO Demarc to DSU B2 (SPORT)
___ 26. DSU A2 (SPORT) to REHOST A (SPORT)
___ 27. DSU B2 (SPORT) to REHOST B (SPORT)

The following cables will be provided and installed by the government:

___ 28. Microwave Demarcation to Digital Patch Panel
___ 29. Digital Patch Panel to Digital Patch Panel
___ 30. Digital Patch Panel to Microwave Demarcation
___ 31. Inyokern Microwave Demarcation to Router DD
___ 32. Router CC, Ports 1 and 2 (LAN A and B), to the OMT
___ 33. SIU C Nunio 1 to Line Splitter C (QPM)
___ 34. SIU C Nunio 2 to Line Splitter E (QPM)
___ 35. SIU D Nunio 1 to Line Splitter D (QPM)
___ 36. SIU D Nunio 2 to Line Splitter F (QPM)
___ 37. Digital Patch Panel to EDW Channel Bank
___ 38. Digital Patch Panel to EDW Channel Bank
___ 39. CHINA LAKE Channel Bank to REHOST A (CHNLK)
___ 40. CHINA LAKE Channel Bank to REHOST B (CHNLK)

B2. Operator Maintenance Terminal (OMT)

Equipment Placement – The OMT will be placed at a location specified and/or provided by the FAA (GFE) as identified in FATD drawing E20.

Power Connection and Equipment Placement – Verify that the new location for the OMT is available and ready to receive the equipment. Power for the OMT has already been placed near the OMT location from the designated power panel. Verify that circuit breakers in the panel have been correctly connected and labeled on the panel before connecting any equipment.

External Connections – Verify the existence of the SCDI LAN cables (two each) for the OMT connection. The SCDI LAN cables are new Cat-5 cables terminated with RJ-45 connectors and routed between the Communications Rack (Router CC) and the OMT.

B2.1. Mac Address Verification

___ 1. Perform the following procedure to validate the Mac Addresses:

- ___ a. At SCDI/OMT, select “Update Users”
- ___ b. Enter username and password
- ___ c. In the UNIX window that appears, type: “su root” and press enter
- ___ d. Enter password: “root” and press enter
- ___ e. At prompt, type “arp –a” and press enter

___ f. Ensure that omt1 and omt1-2 have unique Mac Addresses. The Mac Address is the address located in the right column with heading "Phys Address". See Table B-1 for examples of Mac Addresses using the "arp –a" command:

Table B-1. OMT Mac Address Examples

Device	IP Address	Mask	Flags	Physical Address
Qfe3	scdia-ext-2	255.255.255.255		08:00:20:f6:91:af
Qfe3	scdib-ext-2	255.255.255.255		08:00:20:f4:ba:0b
Qfe2	scdib-ext-1	255.255.255.255		08:00:20:f4:ba:0a
Qfe2	scdia-ext-1	255.255.255.255		08:00:20:f6:91:ae
Qfe2	omt1	255.255.255.255	SP	08:00:20:f4:b7:fe
Qfe3	omt1-2	255.255.255.255	SP	08:00:20:f4:b7:ff
Qfe3	224.0.0.0	224.0.0.0	SM	01:00:5e:00:00:00
Qfe2	224.0.0.0	255.255.255.255	SM	01:00:5e:00:00:00

___ 2. All addresses for the "scdia", "scdib", "omt1" and "omt1-2" are different. If addresses are the same, set unique Mac Addresses for the SCDI/OMT using the following procedure:

___ a. Left click on SCDI/OMT screen to bring up the site pop-up menu
___ b. Select Local Workstation Actions
___ c. Select SCDI shutdown
___ d. Enter Username and Password. Wait for application to go down
___ e. When OK prompt appears, type: "setenv local-mac-address? true" and press enter. Process responds with "local-mac-address? = true"
___ f. At OK prompt, type "boot" and press enter. The SCDI/OMT will now reboot
___ g. When application returns, go to Site pop-up menu and select Local Workstation Actions
___ h. Select Update Users
___ i. Enter username and password
___ j. In the UNIX window that appears, type "su root" and enter password: root
___ k. At prompt, type "arp –a" and press enter. Ensure that "omt1" and "omt1-2" have unique Mac Addresses
___ l. If you would like to save the arp table to a file to download to your PC, use the command "arp -a > arptable.txt"
___ m. Close the window

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ATTACHMENT 5 - APPENDIX C

RESULTS OF THE RF INTERFERENCE MITIGATION ANALYSIS

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ADDENDUM
RFI Mitigation Analysis

ASR-11 and Existing ASR-8

Panamint Valley Radar

Panamint Valley, CA

RECOMMENDATION

Recommendations for implementing ASR-11 into existing environment:

- The ASR-11's receiver STC will need to be adjusted to +72 dB between 345.6° and 05.6° true which would diminish reception of the ASR-8 transmissions.
- Install Filters in the ASR-11.
- Sector blank the ASR-8 in the direction of the ASR-11 (155.6 ° and 175.6 °).

Suggestions for mitigating ASR-11's effect on the ASR-8:

- The ASR-11 will be sector blanked from 345.6° and 5.6°.

SUMMARY OF PROBLEM

ASR-8s Effect on the ASR-11 (Cases 1-4):

1. Main Lobe - Main Lobe — 74.1 dB above receiver LNA saturation level; I/N = 116.6 dB (interference not handled by RIS)
2. Side Lobe - Main Lobe — 40.1 dB above receiver LNA saturation level; I/N = 82.6 dB (interference handled by RIS)
3. Main Lobe - Side Lobe — 49.1 dB above receiver LNA saturation level; I/N = 91.6 dB (interference not handled by RIS)
4. Side Lobe - Side Lobe — I/N = 57.6 dB (interference handled by RIS)

SUMMARY OF MITIGATION

ASR-8s Effect on the ASR-11 (Cases 1-4):

1.	Main Lobe - Main Lobe	Adjust ASR-11 receiver STC to +72 dB in the sector between azimuths of 345.6° and 05.6° true for all ranges. Sector blank the ASR-8 between azimuths 155.6 ° and 175.6 °.
1.	Side Lobe - Main Lobe	Adjust ASR-11 receiver STC to +72 dB in the sector between azimuths of 345.6° and 05.6° true for all ranges
2.	Main Lobe - Side Lobe	Install filters in the ASR-11
3.	Side Lobe - Side Lobe	Handled by ASR-11's RIS

The ASR-8 transmissions do not require mitigation due to personnel safety during construction. Without blanking, the average power density calculated from the ASR-8 main lobe transmissions along the ASR-11 tower is approximately 0.075 mW/cm2. APD from side lobe transmissions is approximately 1% of the main lobe, or 0.75 μW/cm2. These levels are below the permissible exposure limits (0.5 mW/cm2) as specified by the IEEE Std. C95.1 and Raytheon policy). (Without blanking, the average power density calculated from the ASR-11 main lobe transmissions along the ASR-8 tower is approximately 0.21 mW/cm2.

ANALYSIS

Analytical Parameters

The ASR-11 is located 92.8 feet (.015 nautical miles) from the existing ASR-8 at an azimuth of 165.6° true which is considered in the far-field of both systems.

The ASR-8 frequency assignments are 2,735 and 2,865 MHz. ASR-11 frequency assignments of 2,825 and 2,895 MHz were used for this analysis.

The nominated ASR-11 frequencies can be the final permanent operating frequencies provided that no receiver blanking is required. If, however, receiver blanking is required, the ASR-11 will need to transition to the existing radar's frequencies during the flight check phase of commissioning.

The antenna tilt for the ASR-11 is assumed to be 2.5° above horizon (electrical) and will be adjusted at optimization. The tilt setting for the existing ASR-8 was 2.0° (mechanical) which provides an electrical tilt of 4.5°.

Ground signal reflection of up to 6 dB is not included in this analysis. This analysis only considers line of sight.

Existing ASR-8 Effects on the ASR-11

Co-Site Analysis, ASR-8 Main Lobe to ASR-11 Main Lobe, No Filters (Case 1)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

THE ASR-11 MINIMUM DISCERNIBLE SIGNAL IS -112 dBm.

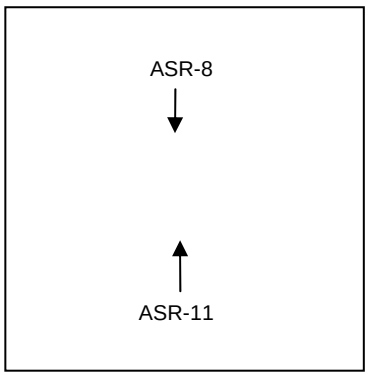
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

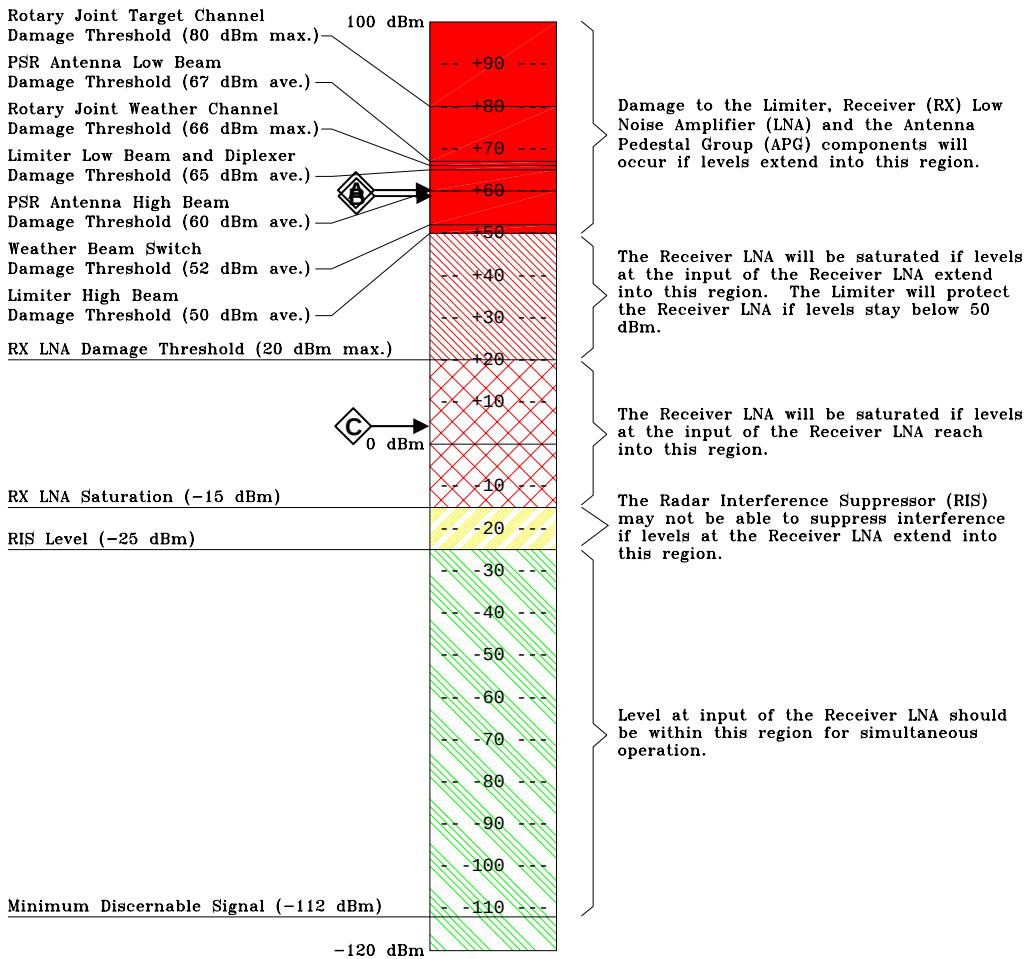
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: 60.4 dBm (A)

POWER AT THE INPUT TO THE ASR-11 RECEIVER: 59.1 dBm (B)

INTERFERENCE LEVEL: 4.6 dBm (C)

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

Co-Site Analysis, ASR-8 Side Lobe to ASR-11 Main Lobe, No Filters (Case 2)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

THE ASR-11 MINIMUM DISCERNIBLE SIGNAL IS -112 dBm.

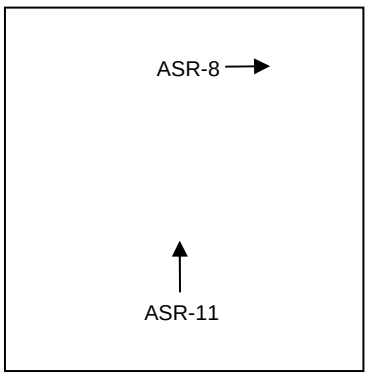
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

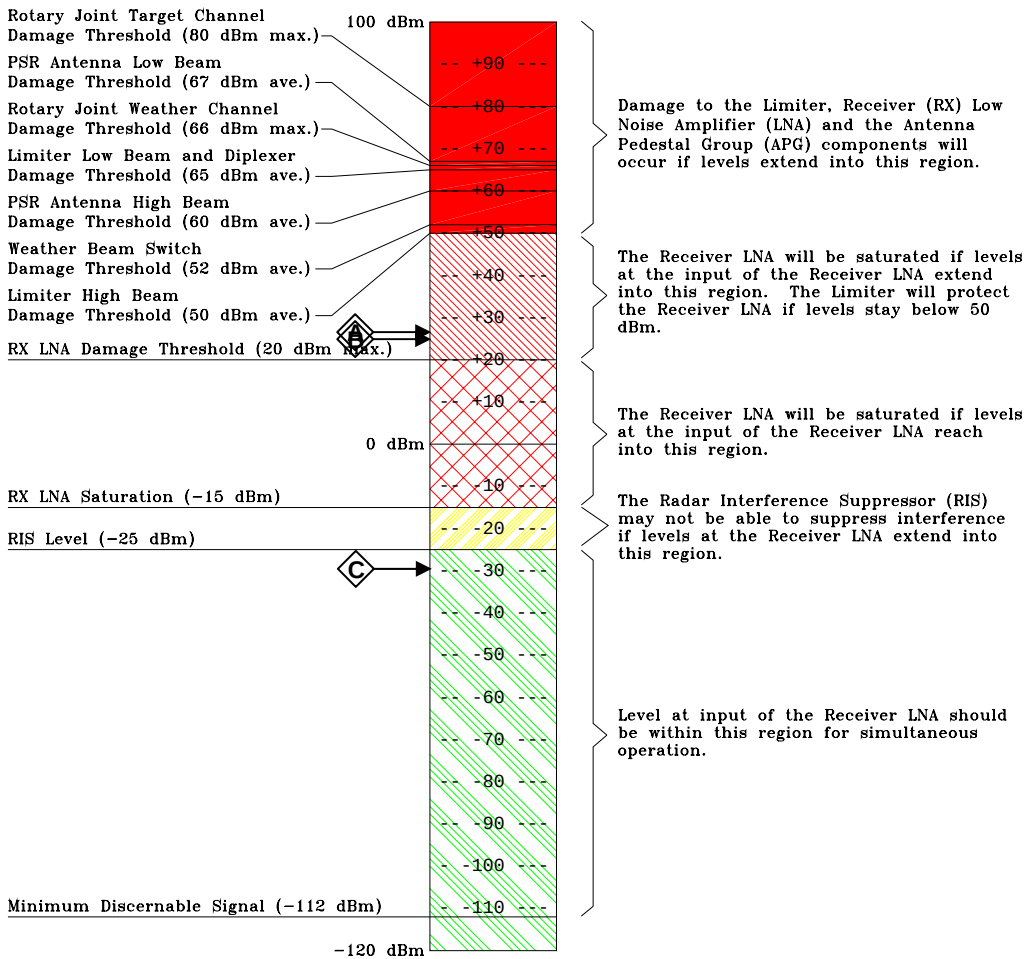
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: 26.4 dBm (A)

POWER AT THE INPUT TO THE ASR-11 RECEIVER: 25.1 dBm (B)

INTERFERENCE LEVEL: -29.4 dBm (C)

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

Co-Site Analysis, ASR-8 Main Lobe to ASR-11 Side Lobe, No Filters (Case 3)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

THE ASR-11 MINIMUM DISCERNIBLE SIGNAL IS -112 dBm.

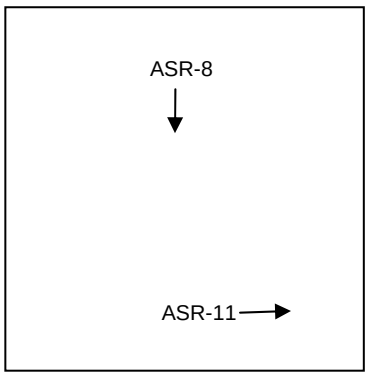
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

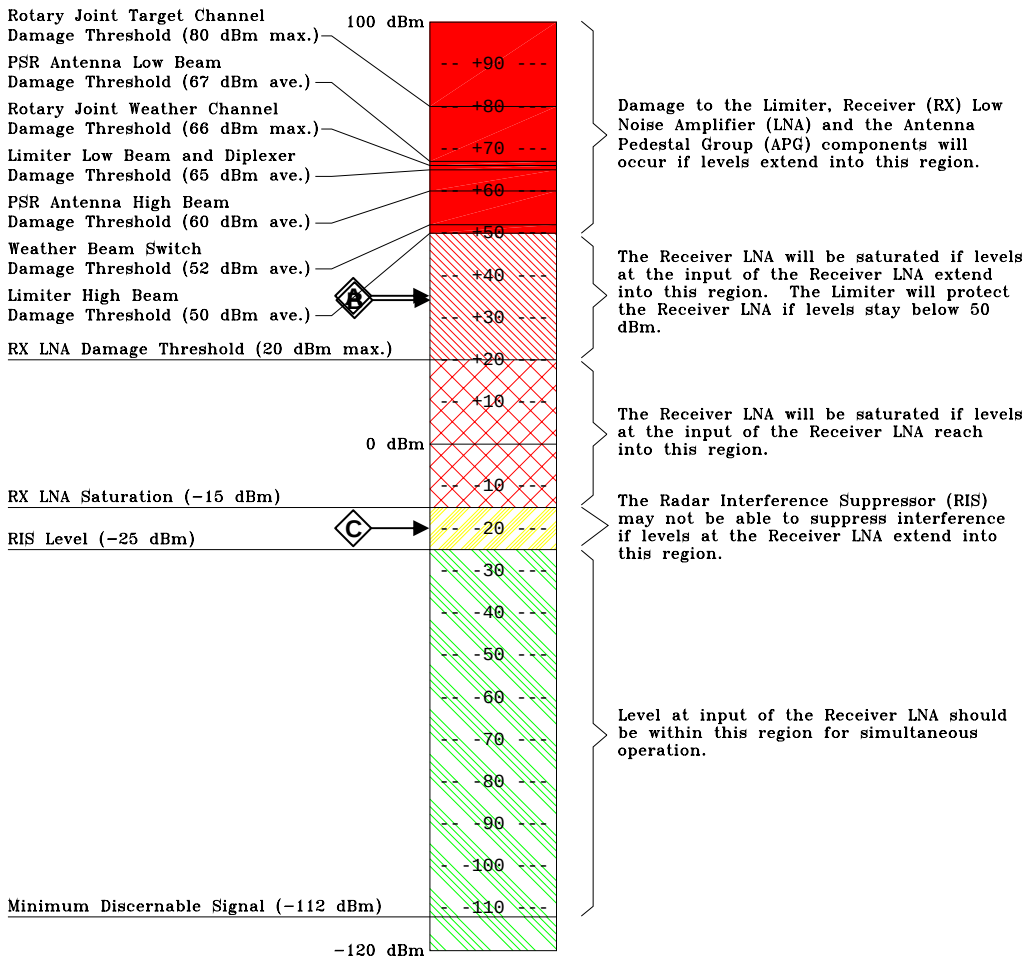
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: 35.4 dBm (A)

POWER AT THE INPUT TO THE ASR-11 RECEIVER: 34.1 dBm (B)

INTERFERENCE LEVEL: -20.4 dBm (C)

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

Co-Site Analysis, ASR-8 Side Lobe to ASR-11 Side Lobe, No Filters (Case 4)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

THE ASR-11 MINIMUM DISCERNIBLE SIGNAL IS -112 dBm.

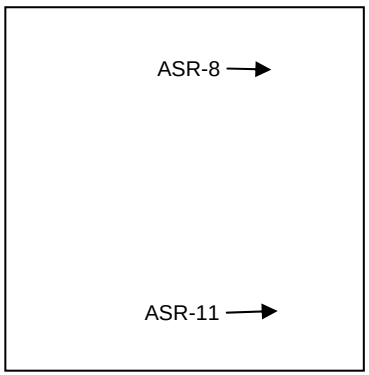
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

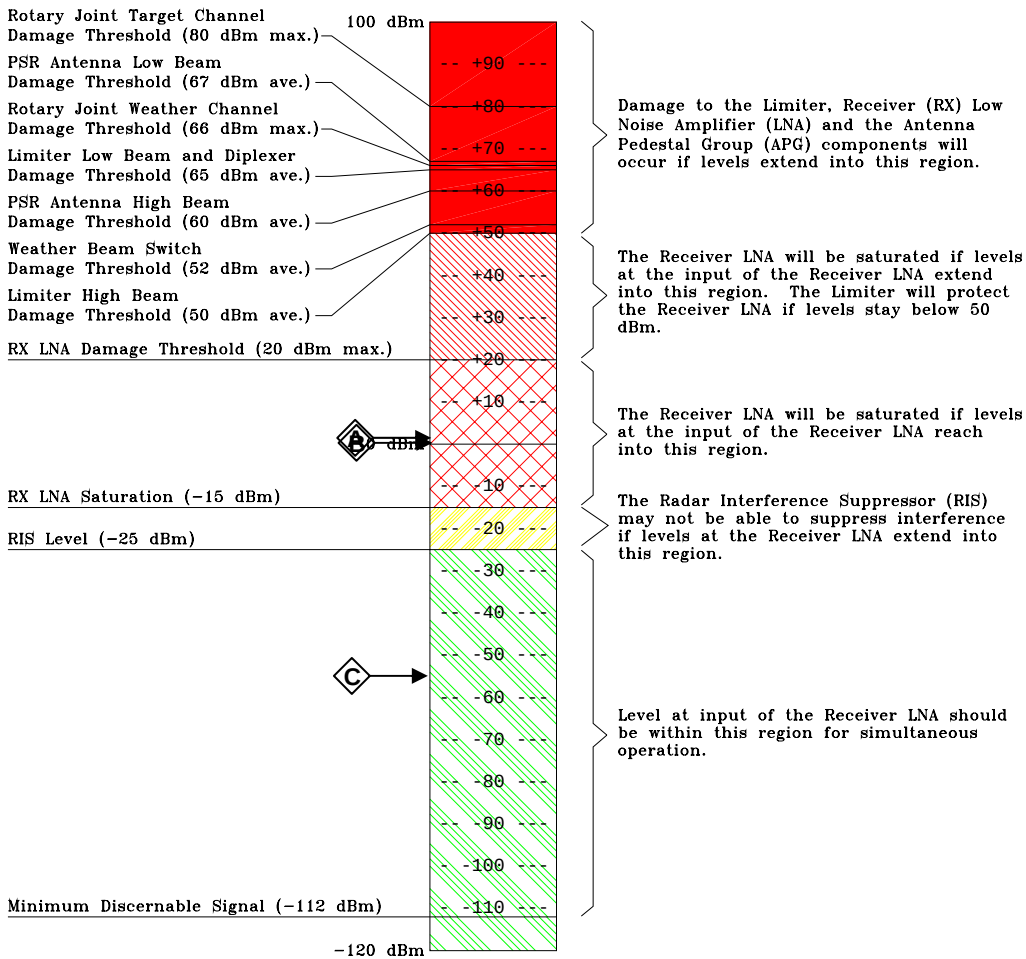
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: 1.4 dBm (A)

POWER AT THE INPUT TO THE ASR-11 RECEIVER: 0.1 dBm (B)

INTERFERENCE LEVEL: -54.4 dBm (C)

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

DATA ANALYSIS
Existing ASR-8s Effect on the ASR-11 (Cases 1 through 4)

- Coupled levels at ASR-11 Antenna (Damage Assessment)
  - ASR-8 Main Lobe to ASR-11 Main Lobe: 60.4 dBm (1)
  - ASR-8 Side Lobe to ASR-11 Main Lobe: 26.4 dBm (2)
  - ASR-8 Main Lobe to ASR-11 Side Lobe: 35.4 dBm (3)
  - ASR-8 Side Lobe to ASR-11 Side Lobe: 1.4 dBm (4)
- The case 1 level is above the damage threshold for some Antenna Group components. Cases 2-4 should cause no damage to the antenna pedestal group (APG), receiver low noise amplifier (LNA), or limiter.
- Coupled levels at ASR-11 receiver LNA (Saturation Assessment)
  - ASR-8 Main Lobe to ASR-11 Main Lobe: 59.1 dBm (1)
  - ASR-8 Side Lobe to ASR-11 Main Lobe: 25.1 dBm (2)
  - ASR-8 Main Lobe to ASR-11 Side Lobe: 34.1 dBm (3)
  - ASR-8 Side Lobe to ASR-11 Side Lobe: 0.1 dBm (4)
- The receiver LNA under Case 1 will be in saturation by 74.1 dB. The receiver LNA under Case 2 will be in saturation by 40.1 dB. The receiver LNA under Case 3 will be in saturation by 49.1 dB. The levels for Case 4 are below the LNA saturation level.

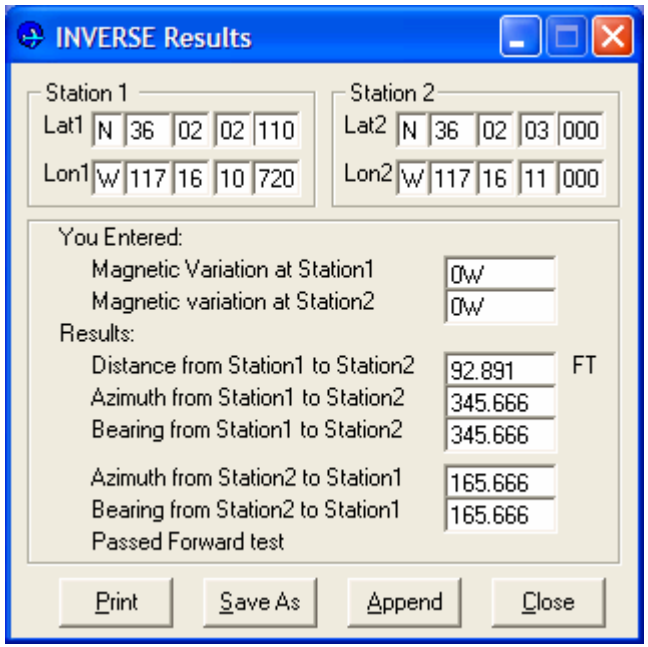
DATA ANALYSIS (Continued)
Existing ASR-8's Effect on the ASR-11
(Cases 1 through 4)

- Interference Assessment - With the additional off-frequency rejection provided inside the ASR-11 receiver, the levels are shown below:
  - ASR-8 Main Lobe to ASR-11 Main Lobe: 4.6 dBm (1)
  - ASR-8 Side Lobe to ASR-11 Main Lobe: - 29.4 dBm (2)
  - ASR-8 Main Lobe to ASR-11 Side Lobe: - 20.4 dBm (3)
  - ASR-8 Side Lobe to ASR-11 Side Lobe: - 54.4 dBm (4)

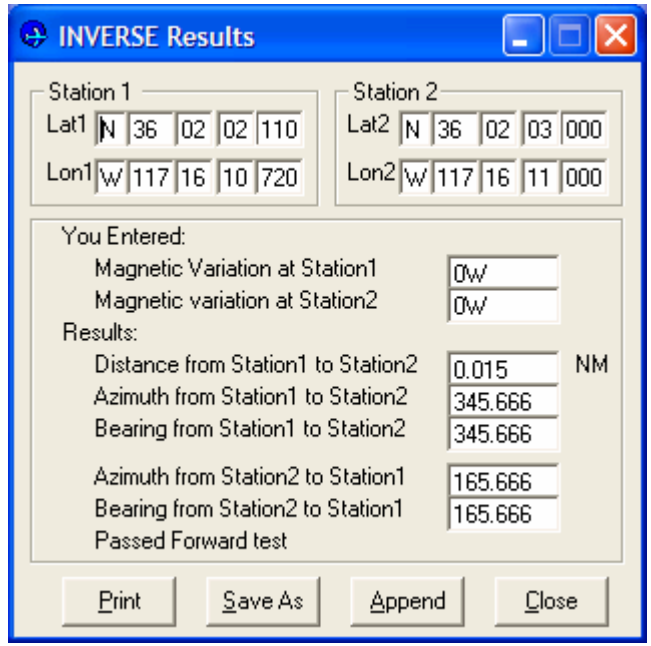
- The interference level for cases 1 and 3 will not be handled by the RIS (RIS max. level –25 dBm) . All other cases are within acceptable limits and interference will be handled by the RIS.

Attachment A

Coordinate Calculations:



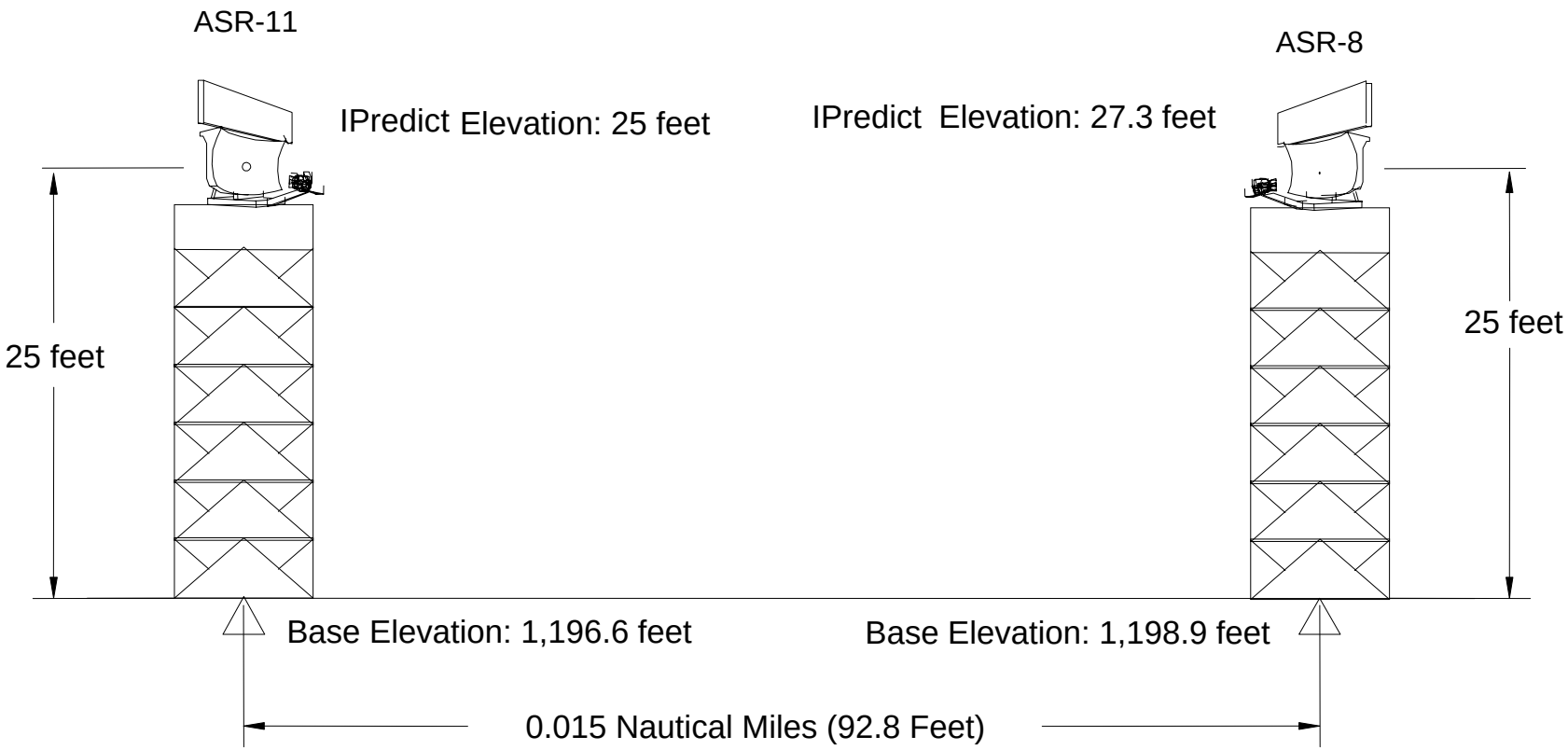
STATION 1: ASR-11
STATION 2: ASR-8



STATION 1: ASR-11
STATION 2: ASR-8

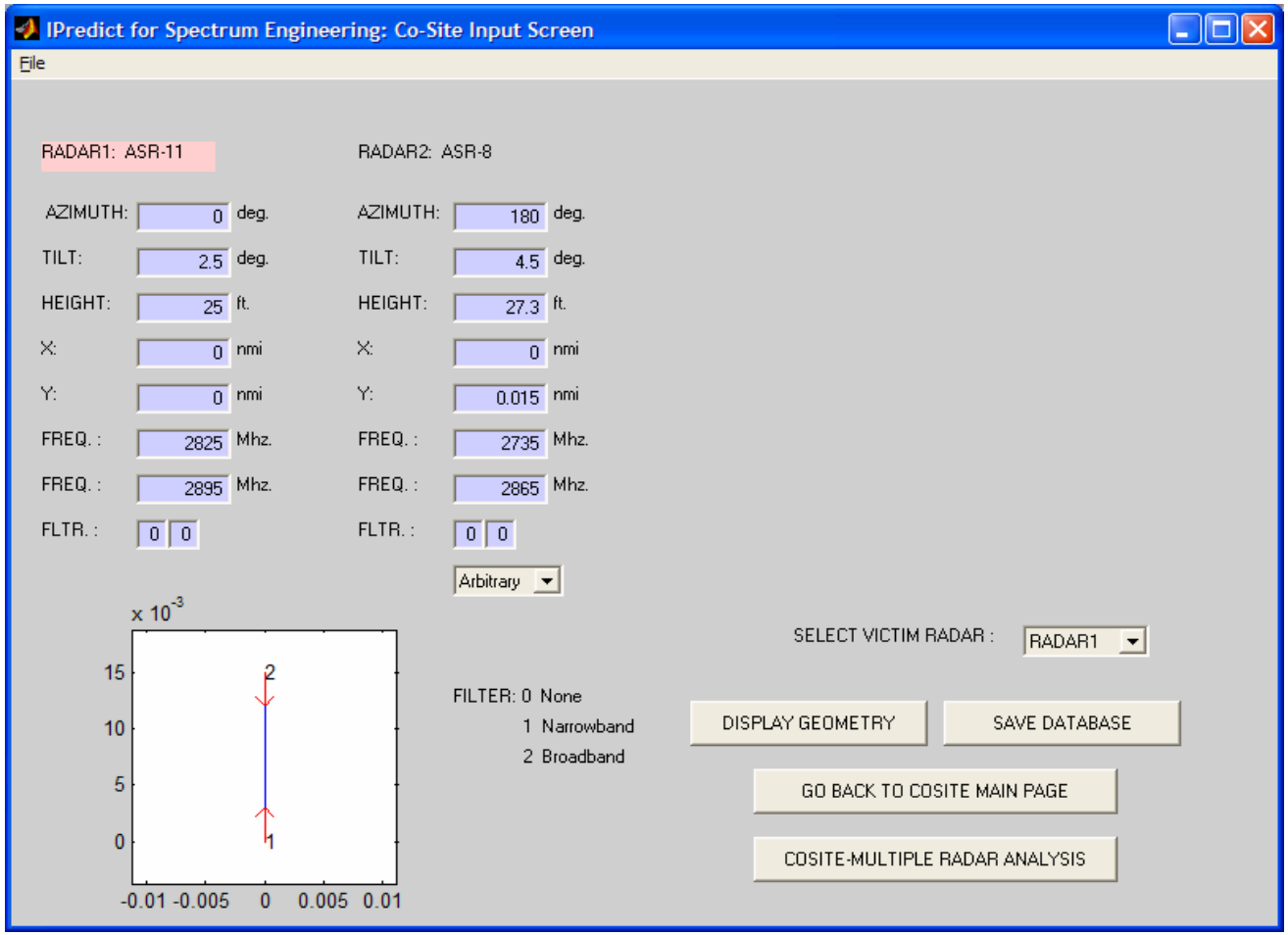
Attachment B

IPredict Height Calculation:



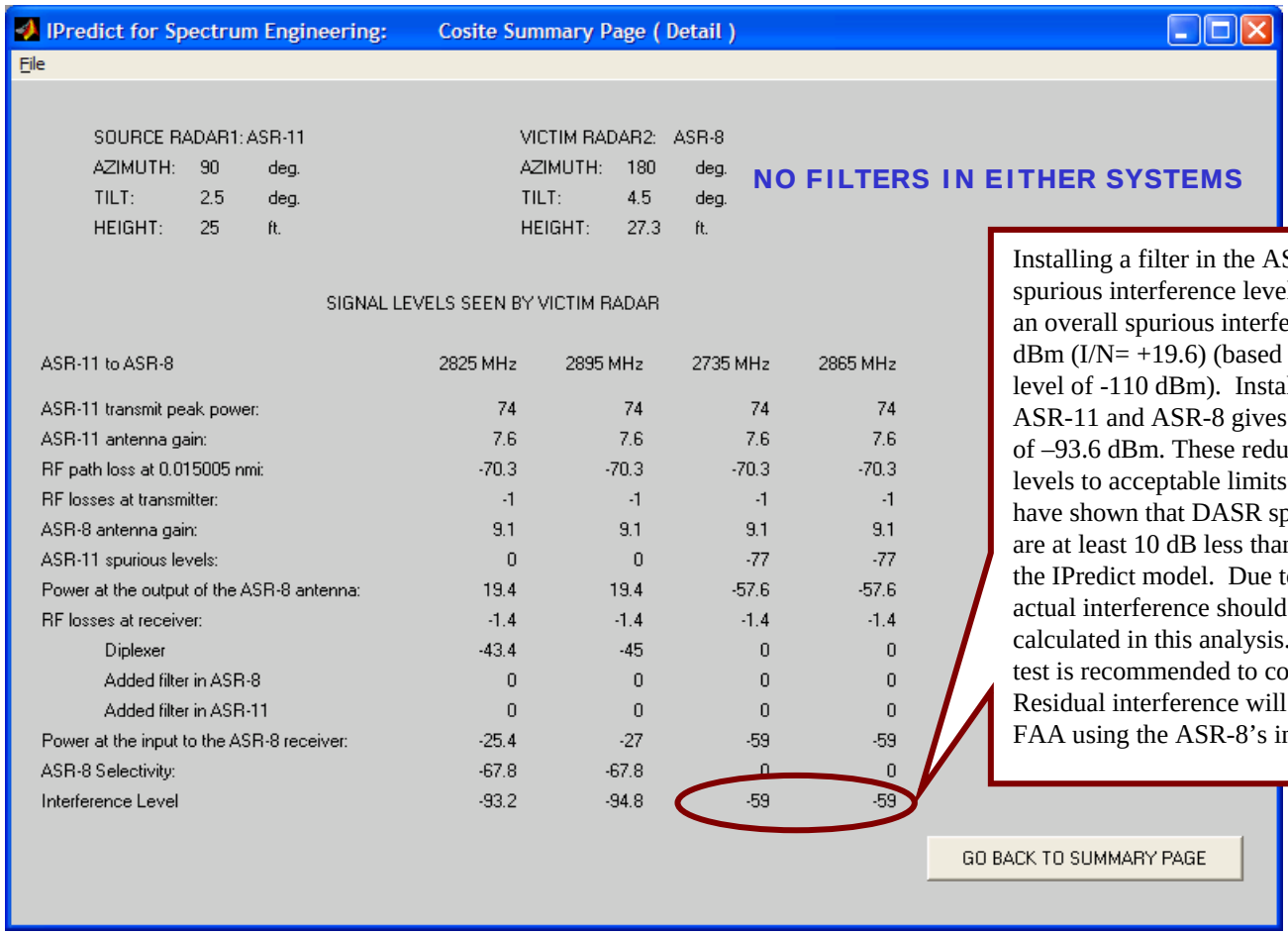
Attachment C

Screenshot of IPredict Data Input Page: (ASR-8 Mainlobe to ASR-11 Mainlobe)



Attachment D

Screenshot of IPredict Detail Page (ASR-11 Sidelobe to ASR-8 Mainlobe)



IPredict for Spectrum Engineering: Cosite Summary Page (Detail)

File

SOURCE RADAR1:	ASR-11		VICTIM RADAR2:	ASR-8		NO FILTERS IN EITHER SYSTEMS
AZIMUTH:	90	deg.	AZIMUTH:	180	deg.	
TILT:	2.5	deg.	TILT:	4.5	deg.	
HEIGHT:	25	ft.	HEIGHT:	27.3	ft.	

SIGNAL LEVELS SEEN BY VICTIM RADAR

ASR-11 to ASR-8	2825 MHz	2895 MHz	2735 MHz	2865 MHz
ASR-11 transmit peak power:	74	74	74	74
ASR-11 antenna gain:	7.6	7.6	7.6	7.6
RF path loss at 0.015005 nmi:	-70.3	-70.3	-70.3	-70.3
RF losses at transmitter:	-1	-1	-1	-1
ASR-8 antenna gain:	9.1	9.1	9.1	9.1
ASR-11 spurious levels:	0	0	-77	-77
Power at the output of the ASR-8 antenna:	19.4	19.4	-57.6	-57.6
RF losses at receiver:	-1.4	-1.4	-1.4	-1.4
Diplexer	-43.4	-45	0	0
Added filter in ASR-8	0	0	0	0
Added filter in ASR-11	0	0	0	0
Power at the input to the ASR-8 receiver:	-25.4	-27	-59	-59
ASR-8 Selectivity:	-67.8	-67.8	0	0
Interference Level	-93.2	-94.8	-59	-59

GO BACK TO SUMMARY PAGE

Installing a filter in the ASR-11 would reduce the spurious interference level by –34.6 dB, giving an overall spurious interference level of –90.4 dBm (I/N= +19.6) (based upon the ASR-8 MDS level of -110 dBm). Installing a filter in both the ASR-11 and ASR-8 gives an interference level of –93.6 dBm. These reductions do not lower the levels to acceptable limits. However, recent tests have shown that DASR spurious transmissions are at least 10 dB less than what is calculated in the IPredict model. Due to these measurements, actual interference should be less than what is calculated in this analysis. An interoperability test is recommended to confirm this expectation. Residual interference will be reduced by the FAA using the ASR-8's internal MTI processing.

Attachment 7

R-2508 Velvet Peak ASR-11 Tables, Appendix B (Procedures) and Appendix C (RF Interference Mitigation Analysis)

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TABLE OF CONTENTS

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Table 1. Key Personnel

Organization/Title	Name	Telephone
Raytheon/FATD Engineer	Mark D. Murphy	(781) 238-2788
Raytheon/SATP Engineer	Hank Hyche	(770) 907-3346
Raytheon/Site Construction Engineer	Robert Bradshaw	(303) 349-6733
Raytheon/Site Installation Team Lead	Michael Smith	(617) 930-0767
FAA ATB-460/ASR-11 Requirements Lead	JoEllen Kleindienst	(202) 493-4229
FAA ATO-T-440/Deployment Lead	Tom Jones	(202) 385-8729
FAA ATO-T-440/FATD POC	Bill Rhine	(202) 548-3772
FAA ATO-T-440/SATP POC	Jay Sanders	(301) 231-1042
FAA ASU-250/Site Acceptance Test Lead	Jamal Abuswai	(202) 267-5740
FAA ANI-90/NAS Implementation POC	Neil Angelotti	(202) 493-6596
FAA ANI-960 Surveillance Programs Manager	Jerry Duhonich	(310) 725-7770
FAA AWP-510/Regional AT Requirements	Rose Sardisco	(310) 725-6510
FAA AWP-470/Regional Lead Engineer	Joseph Heil	(310) 725-3478
FAA SMO ASR-11 POC	Bob Ellington	(661) 277-9604
FAA AF Coordinator	John LaFontaine	(661) 258-4436
FAA SSC/AF Manager	Karl Kraus	(760) 762-5360
FAA Air Traffic Manager	Mark Heinrich	(661) 258-6300
FAA ANI-960/Resident Engineer (RE)	Juan Taisague	(405) 820-9239
FAA ANI-960/Technical On-site Representative (TOR)	Juan Taisague	(405) 820-9239
Airport Manager (Director of Operations)	Bill Shelton	(661) 277-9831

Table 2. General Site Data

New ASR-11 Site Data	
Site Location	Velvet Peak, CA
ASR-11 Antenna Coordinates	Latitude N 35° 03' 36.67" Longitude W 117° 00' 54.00" (NAD83, Source-survey) Site Elevation 4,211 feet above mean sea level (AMSL), Source-survey
Recommended Tower Height and PSR Antenna Tilt	17 feet above ground level (AGL) and 0° relative to the horizon (mechanical). Final PSR tilt may change during system optimization.
Radome Required?	No
Fiber Optic Cable Link Distance	N/A
Access Road Length and Type	Existing gravel road
Location of QVP Communications Rack	The Raytheon I&CO team will install the QVP Communications Rack in its permanent location inside the equipment room, Room 118, located on the first floor of the new R-2508 TRACON building without connection to the operational equipment. The rack AC outlets will be hard-wired to their respective power feeds. Space will be made available in the QVP Communications Rack for installation of the SIUs for REHOST. Communications from the Velvet Peak radar site will be over microwave and will enter the R-2508 TRACON via the TELCO room. They will then route to inside the QVP Communications Rack and all intercabinet cables will be installed. See FATD drawings E35, E32 and E20 for a System Interconnection Diagram, QVP Communications Rack Configuration, and R-2508 TRACON Equipment Room Plan. Refer to Appendix B, Installation Procedure B1.
Location of the OMT	One OMT will be installed in the Coordinators Area located in the first floor of the new R-2508 TRACON building and connected to the Router CC mounted in the QVP Communications Rack. A second government-furnished OMT and Router DD will be installed at the Boron SSC in a location to be specified by the SSC Manager. Refer to FATD drawing E35 for Interconnection Diagram, drawing E20 for Equipment Location, and Attachment 7 Appendix B, Installation Procedure B2.
Location of the RCP	N/A
Location of MTI Reflector # 1	Latitude N 34° 50' 53.5" Longitude W 117° 02' 35.7" (NAD83, Source-Handheld GPS, Accuracy +/-14 Ft.) MTI#1 will be located on the existing tower at the Barstow RCAG site. The MTI Reflector is located approximately 12.775 nautical miles from the ASR-11 antenna at an azimuth of 186.269° true.
Location of MTI Reflector # 2	Delivered but not installed.
MRSM	Latitude N 34° 50' 53.5" Longitude W 117° 02' 35.7" (NAD83, Source- GPS, Accuracy +/-14 feet) The MRSM antenna is located on the existing tower at the Barstow RCAG site. The MRSM antenna is located approximately 12.775 nautical miles feet from the ASR-11 antenna at an azimuth of 186.269° true.
Permanent Echoes	The Site Survey Report indicated visibility to only one permanent echo: Boron PE at a distance of 27.96 nmi at an azimuth of 272.86° true azimuth. According to the site survey report, only one FAA-provided permanent echo would be detected by the ASR-11. Permanent echoes will need to be determined during optimization.
Plot Size	ASR-11 will be constructed inside fence at existing radar site.
Fenced Area	ASR-11 will be constructed inside fence at existing radar site.

Table 2. General Site Data (Continued)

New ASR-11 Site Data (Continued)	
Approved Modifications to the Generic Design	The following modifications were approved by the FAA via letter F-FAASS-05-0024, dated 15 March 2005.
Frequency Assignment	2,745 and 2,850 MHz
FAA Address	FAA – Edwards SSC, 2508 Rosamond, Attn: John LaFontaine, Edwards AFB, CA, 93523
Existing Surveillance Environment Data	
Primary Radar Type	ASR-8
Beacon Type	ATCBI-5
Antenna Coordinates	Latitude N 35° 03' 36.306" Longitude W 117° 00' 54.337" (NAD83, Source-Metes and Bound Survey) Site Elevation 4,168 feet AMSL, Source-FAA The existing ASR-8 is located approximately 46.253 feet from the ASR-11 antenna center at an azimuth of 217.28° true.
Tower Height and PSR Antenna Tilt	17 feet AGL and 0° relative to the horizon (mechanical).
Type of Automation System	REHOST-2
Automation Display Configuration	The TRACON utilizes a unique automation/display system called REHOST 2. The system includes a mosaic display with input from multiple radars. This is an interim system that will eventually be replaced with STARS. In addition, the ASR-11 will provide a feed to six additional locations. Each of the locations will require a "CD-2 format" data input. The feeds will include landlines, microwave links, TELCO, and possible F/O cable. **NOTE: The interface and distribution have not been developed and the required engineering package is not a part of this delivery order.**
DBRITE Configuration	None. A REHOST tower display is utilized. Interface by others.
Hours of Low Activity	12:00 AM to 6:00 AM for the R-2508 TRACON Operations Room
Frequency Assignment	2,895 and 2,775 MHz

Table 3. Preconstruction Meeting Information

ASR-11 Site Access	From Barstow, CA travel north on Irwin Road for approximately 7 miles, turn left onto Copper City Road a gravel road, travel approximately 8 miles to another gravel road on the left, then travel approximately 2 miles to the top of Velvet Peak to the radar site. Once on Copper City Road, it is best to follow the power lines. There is a convergence of side roads at the base of the hill where a truck and trailer can turn around to back up the hill to the site with equipment.
FAA Facility Access	Enter Edwards AFB at west gate (State hwy 14) and continue east on Rosamond to 2508 Rosamond.
Security	The Velvet Peak radar site is located off base property. The TRACON facility is located on Edwards AFB and entry to the base requires coordination. Security levels and requirement for entry are subject to change. Provide to Robert.Ellington@edwards.af.mil the following: Full name, date and place of birth, name of your organization. Two forms of identification; i.e, driver's license, FAA or company ID are required to enter. Additional security requirements will be provided at the time of requested access. Contact John LaFontaine, (661) 258-4436.
Coordination	All coordination for access to the base, radar site and TRACON must be through John LaFontaine, (661) 258-4436.
Vehicles	All POVs operating on Edwards AFB must be insured with $15,000 personal liability, $30,000 each accident, $5,000 property damage. Decals are obtained from security police Pass and Registration Section, Bldg 2860. Vehicles are required to be registered within 10 days of arrival. To register a vehicle on base, a registration, driver's license, and ID card is required. Vehicles registered outside the state of California must have a smog check before registering.

Table 4. ASR-11 Site Cable Requirements

Radar Data Communication Media	Radar data communications requires two government provided microwave 128 KBps digital data service (DDS) lines between the ASR-11 equipment shelter (at the site TELCO demarcation), the TRACON TELCO Room #119 and the TRACON equipment room (Communications Rack) inside the TRACON facility. The OMT link requires two 56 KBps DDS lines. Refer to Table 8 of Attachment 7 for microwave service requirements.
Telephone Cables	• The site telecommunications system requires a minimum of three single voice-grade lines to connect to the local telephone system. Telephones for voice communications will be located in the ASR-11 equipment shelter, the ASR-11 engine generator shelter, and the mezzanine level of the antenna tower. • All telecommunications will be by microwave link through existing microwave equipment. The Edwards AFB Standards and Planning (S&P) Division provide all TELCO and Fiber Optic cables on the base. The POC is John Kellas (661) 277-3810 and Herman Lewis (661) 277-8484. The voice circuits will tie into the base telephone system. The S&P Division will provide a demark point within the ASR-11 building and inside the new TRACON building for both data link and voice.
ASR-11 Facility Power	The electrical power requirement is for a 480/277 VAC, three-phase, four-wire 112.5 kVA feed. Power to the site is along a 12 mile run from the highway on poles specifically for this site, and the connection for the site will originate at the last existing pole east of the site, and be run underground to the transformer inside the fence by Southern California Edison. Extending the power service from the secondary side of the transformer to the main disconnect switch, as well as for installing the meter socket in a location mutually agreed to with Southern California Edison will be accomplished by the Raytheon subcontractor. Raytheon's subcontractor assumes responsibility for leased material and temporary service during site preparation; up through the completion of the Facility SAT (SAT, Part I). At this date, the government will assume responsibility for service.

Table 5. TRACON Cable Requirements

Radar Data Communication Media	The government provided microwave circuits will be available at the microwave LAN demarcation rack inside the TRACON TELCO Room #119 of the TRACON building. Additional cables will be routed between the DDS demarcation and the Communications Rack (Routers AA, BB, CC and DD). See Table 8 of Attachment 7 for microwave DDS requirements. See FATD drawing E20 for proposed equipment location.
Internal Cables	• Refer to FATD drawing E35 and Table 12, contained in Attachment 7, for a complete communications interconnect diagram and cable lists. • The ASR-11 will provide a feed to five additional locations. Each of the locations, which are listed below, will require a "CD-2 format" data input. The feeds will include landlines, microwave links, TELCO, and possible F/O. The interface and distribution is not included in this SATP. The following is the planned distribution: High Desert TRACON, Sport, China Lake (North Base), Ft Irwin, Nellis AFB**.** **NOTE: The interface and distribution have not been developed and the required engineering package is not a part of this delivery order.**
Electrical Power	A subcontractor will position electrical power connections for the ASR-11 equipment in the TRACON operations and equipment rooms. Power will be derived from critical power panels using circuit breakers assigned by local FAA AF personnel. See Table 11 and FATD drawing E20 for proposed circuit breaker assignments and equipment location. Refer to the FATD for specific power and grounding details inside the TRACON operations and equipment rooms.

Table 6. RF Interference Mitigation Analysis Recommendations

Recommended Transmission Scenario	Simultaneous Radiation Scenario (See Section 1, paragraph 1.9.1)
Facilities Analyzed	The existing ASR is the only S-band emitter noted.
Filter Requirements	According to the analysis, the ASR-11 will radiate over the ASR-8 and filters in the ASR-11 or the ASR-8 should not be required. However, as discovered at Willow Grove, PA, extreme near-field characteristics of both the ASR-11 and existing ASR antenna radiation patterns are somewhat chaotic and act like an omni-directional antenna. In other words, Raytheon recommends that filters for the ASR-11 and ASR-8 be procured and that an interoperability test be performed (as soon as possible) to confirm the need for filters in either system. If the interoperability test confirms that filters are not required, filters will be returned to Chelton Microwave (filter supplier) and retuned for use at another ASR-11 location.
Transmitter Blanking Requirements	The ASR-11 will be sector blanked from 207.3° and 227.3°. Additionally, the ASR-11's receiver STC should be adjusted to +72 dB between 207.3° and 227.3° true as a precaution. The ASR-8 will be sector blanked from 27.3° and 47.3° due to personnel safety requirements.
Personnel Safety Requirements	• The existing ASR is located 46.253 feet (14.098 meters) from the ASR-11. Utilizing equations provided in the report entitled, "Radiofrequency Impact Analysis for Airport Surveillance Radar-11" by SRI International, the main lobe emissions from the existing ASR at the ASR-11 tower are above the industry standard permissible exposure limitations as set forth in IRPA, NCRP, and FCC guidelines, as well as the more restrictive requirements defined by Raytheon. • The existing ASR will need to be blanked in the direction of the ASR-11 from start of tower construction through ASR-11 commissioning. If requested, the ASR-11 tower construction schedule could be adjusted to minimize impact. • Additionally, based on ANSI/IEEE guidelines as adopted by the FAA, personnel should be excluded from the area within 500 feet directly in front of the ASR-11 (within the main beam) when the radar is operating in maintenance mode (when the antenna is stationary and transmitting a signal for maintenance and or testing purposes).

Table 7. Predeactivation Meeting Information

Existing ASR Site Access	From Barstow, CA travel north on Irwin Road for approximately 7 miles, turn left onto Copper City Road a gravel road, travel approximately 8 miles to another gravel road on the left, then travel approximately 2 miles to the top of Velvet Peak to the radar site. Once on Copper City Road, follow the power lines. There is a convergence of side roads at the base of the hill where a truck and trailer can turn around to back up the hill to the site with equipment.
Disposition Requirements	The existing building will be removed. The radar tower will be dismantled. The engine generator is to be removed. These facilities will be removed in phases during construction.
FAA Facility Access	Enter Edwards AFB at west gate (State hwy 14) and continue east on Rosamond to 2508 Rosamond. The address is: 100 E. Sparks Drive, Bldg 2580, Edwards AFB, CA, 93523
Security	The Velvet Peak radar site is located off base property. The TRACON facility is located on Edwards AFB and entry to the base requires coordination. Security levels and requirement for entry are subject to change. Provide to Robert.ellington@edwards.af.mil the following: Full name, date and place of birth, name of your organization. Two forms of identification; i.e., driver's license, FAA or company ID are required to enter. Additional security requirements will be provided at the time of requested access. Contact John LaFontaine (661) 258-4436.
Coordination	All coordination for access to the base, radar site and TRACON must be through John LaFontaine, (661) 258-4436.
Vehicles	All POVs operating on Edwards AFB must be insured with $15,000 personal liability, $30,000 each accident, $5,000 property damage. Decals are obtained from security police Pass and Registration Section, Bldg 2860. Vehicles are required to be registered within 10 days of arrival. To register a vehicle on base, a registration, driver's license, and ID card is required. Vehicles registered outside the state of California must have a smog check before registering.

Table 8. DDS Line Service Requirements

Name of Service:	ASR-11 Data Link
Service Requirements	Government Furnished Microwave Link 1 x 56 KBPS lines for the OMT at EDW TRACON 1 x 56 KBPS line is for additional government provided OMT at the Boron SSC 2 x 128 KBPS lines for the SIUs
ASR-11 Address Contact Name Termination Point	ASR-11 Site Copper City Road Off Irwin Road outside of Barstow, CA Velvet Peak, CA John LaFontaine (661) 258-4436 TELCO Demarcation ASR-11 Shelter
TRACON Address Contact Name Termination Point	FAA Edwards SSC Bldg. 2580 Edwards AFB, CA 93524 John LaFontaine (661) 258-4436 TELCO Demarcation Room 119
Date Service Required	1 February 2006
Additional Service Requirements	

Table 9. Equipment Parts List

FIND NO. (Per G710560-1, Rev E)	PART NUMBER	DESCRIPTION	VENDOR	QTY.
17	SRM-5A/M/RJ-45/NEW	Modem, 2.4 KBps, Sync. Short Haul, 25-pin Male RJ-45	RAD-DATA	1
19	2014MC-MT	Cable, V.35 to EIA-530, 6 ft.	Patton	4
31	**G710563-1**	**Cable Configuration Drawing (See FNs 31 (1) & 31 (2))**		**1**
31 (1)	G710564-1	Cable Assembly, Cross Connect, 6 in. (Pins Crossed: 3 & 4, 5 & 6)	Black Box	1
31 (2)	FM508	Coupler, RJ45 (M) to RJ45 (M)	Black Box	1
34	TRD450CR-50	Cable, 10Base-T Crossover, 50 ft. (Pins Crossed: 1 & 3, 2 & 6), Nonshielded	L-COM	2
36	CPX-1501-BA	RS530 Line Splitter, Rack Mountable	The Logical Co.	2
37	FAB-1001-A	Rack Mount for CPX-1501-BA	The Logical Co.	1
38	SRM-5A/F/RJ-45/NEW	Modem, 2.4 KBps, Sync. Short Haul, 25-pin Female RJ-45	RAD-DATA	1
39	PSA	Power Supply Adapter	RAD-DATA	1
41	G780408-2-300	Cable Configuration Drawing for Interface Cable, ASR-11 to REHOST (XX specifies length)	Globaltec	4
43	G780408-1-5	Cable Configuration Drawing for Interface Cable, ASR-11 to REHOST	Globaltec	2
48	6500	Switch, Ethernet, 8-port	Omnitron	2
49	6100	Switch, Ethernet, 24-port w/ FX Expansion Port	Omnitron	2
57	PLG780342-1	OMT Router Assembly	- See PLG -	2
59	PLH331078-2	SDT Router Assembly, 128K FT1 Configuration	- See PLG -	4
60	02655	Extension Cable, DB25 (M) to DB25 (F)	Cables to Go	1
71	MTV132V-R2	DSU/CSU	Black Box	4
	525075-3F	**Rack, 23" (w/ Side Panels) - (Communications Rack)**	**Black Box**	**1**
	RM589	23" Shelves, Vented, Fixed, 22-1/4" Deep - 7/8" Height	Black Box	4
	37907	Rack Mount Adapter Set, 19" to 23", 2U (3.50" high)	Black Box	3
	37908	Rack Mount Adapter Set, 19" to 23", 3U (5.25" high)	Black Box	2
	37910	Rack Mount Adapter Set, 19" to 23", 5U (8.75" high)	Black Box	2
	CXCG -20	Guide Brackets for MRSM Chassis	Emcor	1
	G584025-2	Rack Mount Kit for RCP	Raytheon	1
		SIU DTE System	Sensis	2

For information regarding quantities for Velvet Peak (QVP), contact Hank Hyche, RTSC, AT (770) 907-3346.
Date Completed: 04/2/07.

The following equipment should be shipped to:
FAA Edwards SSC
BLDG 2580
Edwards AFB, CA 93524
POC: John LaFontaine (661) 2

Table 9a. Government Furnished Equipment Parts List (Above Normal Installation)

FIND NO. (Per G710560-1, Rev E)	PART NUMBER	DESCRIPTION	VENDOR	QTY.
19	2014MC-MT	Cable, V.35 to EIA-530, 6 ft.	Patton	4
34	TRD450CR-50	Cable, 10Base-T Crossover, 50 ft. (Pins Crossed: 1 & 3, 2 & 6), Nonshielded	L-COM	2
57	PLG780342-1	OMT Router Assembly	- See PLG -	2
66	PLH364726-1	SIU Maintenance Port	Raytheon Parts List	4
71	MTV132V-R2	DSU/CSU	Black Box	8
	PLH362920-1	Multi Site OMT	Raytheon Parts List	1

For information regarding quantities for Velvet Peak (QVP), contact Hank Hyche, RTSC, AT (770) 907-3346.
Date Completed: 04/2/07.

The following equipment should be shipped to:
FAA Edwards SSC
BLDG 2580
Edwards AFB, CA 93524
POC: John LaFontaine (661) 258-4436

Table 10. Space Requirements

Find #	Equipment	Height (in.)	Width (in.)	Depth (in.)	Power Requirement
17	Modem (RAD SRM-5A/M/RJ-45/NEW)	0.7	2.1	2.1	N/A (Powered from DTE)
18	Modem (Motorola DDS/MR64)	2.5	7.0	9.6	120VAC. 300mA
36	Line Splitter (Logical Co. CPX-1501-BA)	5.1	3.4	1.0	120V, 10mA
37	Rack Mount (for Line Splitter)	5.25	19.0	3.0	N/A
38	Modem (RAD SRM-5A/F/RJ-45/NEW)	0.7	2.1	2.1	N/A (Powered from DCE)
39	Power Supply Adapter for FN 38 (above)	0.7	2.1	2.1	120VAC, 500mA
P/O 47	Modem (RAD SRM-9/V.24/RJ-45)	0.7	2.1	2.1	120VAC, 25mA
P/O 47	Power Transformer (for remote VDCU)	1.3	2.3	3.6	120VAC, 500mA
48	Ethernet Switch, 8-Port (Omnitron 6700)	1.75	6.0	4.0	110VAC, 300mA
49	Ethernet Switch (Omnitron 6100)	1.75	19.0	8.0	110VAC, 300mA
52	Ethernet Switch, 4-Port for Multimode Fiber (Omnitron 6551-0)	1.75	6.5	8.0	110VAC, 300mA
53	Ethernet Switch, 4 Port for Single mode Fiber (Omnitron 6551-2)	1.75	6.5	8.0	110VAC, 300mA
P/O 57	Router (Cisco 1605)	2.19	11.15	8.67	120VAC, 225mA
P/O 58	Router (Cisco 1602)	2.19	11.15	8.67	120VAC, 225mA
P/O 59	Router (Cisco 1721)	3.1	11.2	8.7	120VAC, 500mA
Raytheon	SIU Communications Rack (19” Rack)	78.5	23.88	32.88	N/A
Raytheon	SIU Communications Rack (23” Rack)	78.5	27.88	32.88	N/A
Raytheon	OMT	19.0	16.0	17.0	120VAC, 3A
Raytheon	RCPs 1 through 3	12.0	16.0	4.0	120VAC, 500mA
Raytheon	MRSM Rack	52.5	24.0	35.0	N/A
Raytheon	MRSM Chassis	10.5	19.0	15.0	120VAC, 1A
Raytheon	LAN Surge Suppression Panel	3.5	19.0	4.0	N/A
Sensis	SIU Chassis A, B, C, and D	5.20	19.0	10.0	Each 120VAC, 500mA
Sensis	SDT Rack	33.4	24.1	29.4	2 Circuits, each 120VAC, 2.5A
Sensis	CMC	17	24.1	29.4	120VAC, 3A
Sensis	Ethernet Hub A and B	1.8	17.0	10.6	Each 120VAC, 1A
Sensis	DVG Switches 1 and 2	5.25	19.0	8.0	Each 120VAC, 1.75A
Sensis	DVGs 1 through 12	8.4	9.1	16.2	Each 120VAC, 3A
Sensis	VDCUs 1 through 12	7.4	8.5	2.5	N/A
Sensis	SDT Mode Controller (Future)	8.4	9.1	16.2	120VAC, 3A (estimated)
Sensis	SDT Mode Control Local/Remote Control Unit (Future)	10	10	5	Each 120VAC, 1A

NOTE: This table includes dimensions and power requirements for all equipment (excluding radar system equipment at the radar site) required for system communications to the ATCT and/or TRACON or Remote Automation Facility. Refer to Table 11 for specific equipment required for this implementation.

Table 11. Circuit Breaker Assignments

Power Panel and Circuit Breaker Assignment	Circuit Breaker Rating	Location and Name of Load	Expected Load
TRACON Equipment Room			
CP219A, CB#**	20 A, single pole	QVP Communications Rack, Circuit 1, Phase A	SIU A (0.15A), Ethernet Switch AA (0.3A), Router AA (0.4A), Line Splitter A (0.2A) = 120VAC, **1.05 A**
CP219A, CB#**	20 A, single pole	QVP Communications Rack, Circuit 2, Phase B	SIU B (0.15A), Ethernet Switch BB (0.3A), Router BB (0.4A), Line Splitter B (0.2A),) = 120VAC, **1.05 A**
CP219A, CB#**	20 A, single pole	QVP Communications Rack, Circuit 3, Phase A	SIU C (0.15A), Router CC (0.4A), *Line Splitter C (0.2A), *Line Splitter E (0.2A), *Line Splitter G (0.2A), *Line Splitter I (0.2A), *DSU A1 (0.3A), *DSU D1 (0.3A), *DSU F1 (0.3A), = 120VAC, **2.25 A**
CP219A, CB#**	20 A, single pole	QVP Communications Rack, Circuit 4, Phase B	SIU D (0.15A), *Line Splitter D (0.2A), *Line Splitter F (0.2A), *Line Splitter H (0.2A), *Line Splitter J (0.2A), *DSU B1 (0.3A), *DSU E1 (0.3A), *DSU G1 (0.3A) = 120VAC, **1.85 A**
CP219A, CB#**	15 A, single pole	RCP	RCP (with modem) 120 VAC, 0.5A
CP219A, CB#**	20 A, single pole	OMT workstation	120VAC, 3.0 A (estimated)
MRSM Location (Barstow RCAG Building)			
CP#TBD, CB#**	15 A, single pole	MRSM (in existing rack)	120VAC, 1.0 A
SPORT (remote REHOST)			
CP#TBD, CB#**	20 A, single pole	TBD	DSU A2 (QVP) (0.3A), DSU B2 (QVP) (0.3A) = 120VAC, **0.6 A**
CHINA LAKE (remote REHOST)			
N/A	N/A	N/A	N/A
BORON SSC			
CP#TBD, CB#**	20 A, single pole	*OMT workstation	120VAC, 3.0 A (estimated)
CP#TBD, CB#**	15 A, single pole	*Router	*Router DD (0.4A) 120 VAC, 0.7 A
FT IRWIN (FUTURE)			
CP#TBD, CB#**	20 A, single pole	*DSUs	*DSU D2 (0.3A), *DSU E2 (0.3A) = 120 VAC, **0.6 A**
NELLIS AFB (FUTURE)			
CP#TBD, CB#**	20 A, single pole	*DSUs	*DSU F2 (0.3A), *DSU G2 (0.3A) = 120 VAC, **0.6 A**

* Government provided and installed equipment

** Spare breaker to be assigned by FAA AF technician at installation.

Table 12. Cable Run List

REF #	FROM	TO	TYPE	LABEL (F)	LABEL (T)	LENGTH (FT)
CL001	Ethernet Switch (ESW) A1 Port 1	SCDI A Port A	Cat-5E Shielded	ESW_A1/P1 (SCDI_A/PA)	SCDI_A/PA (ESW_A1/P1)	6
CL002	ESW A1 Port 2	SCDI B Port A	Cat-5E Shielded	ESW_A1/P2 (SCDI_B/PA)	SCDI_B/PA (ESW_A1/P2)	6
CL003	ESW A1 Port 3	MPS800 A	Cat-5E Shielded	ESW_A1/P3 (MPS800_A)	MPS800_A ESW_A1/P3	6
CL004	ESW A1 Port 4	Router A1 LAN Input	Cat-5E Shielded	ESW_A1/P4 (RTR_A1/LAN_IN)	RTR_A1/LAN_IN ESW_A1/P4	30
CL005	ESW A1 Port 5	Router C1 Port A	Cat-5E Shielded	ESW_A1/P5 (RTR_C1/PA)	RTR_C1/PA (ESW_A1/P5)	30
CL006	ESW B1 Port 1	SCDI A Port B	Cat-5E Shielded	ESW_B1/P1 (SCDI_A/PB)	SCDI_A/PB (ESW_B1/P1)	6
CL007	ESW B1 Port 2	SCDI B Port B	Cat-5E Shielded	ESW_B1/P2 (SCDI_B/PB)	SCDI_B/PB (ESW_B1/P2)	6
CL008	ESW B1 Port 3	MPS800 B	Cat-5E Shielded	ESW_B1/P3 (MPS800_B)	MPS800_B ESW_B1/P3	6
CL009	ESW B1 Port 4	Router B1 LAN Input	Cat-5E Shielded	ESW_B1/P4 (RTR_B1/LAN_IN)	RTR_B1/LAN_IN ESW_B1/P4	30
CL010	ESW B1 Port 5	Router C1 Port B	Cat-5E Shielded (Government Provided and Installed)	ESW_B1/P5 (RTR_D1/PB)	RTR_D1/PB (ESW_B1/P5)	30
CL011 (GFE)	ESW A1 Port 6	Router D1 Port A	Cat-5E Shielded (Government Provided and Installed)	ESW_A1/P6 (RTR_D1/PA)	RTR_D1/PA ESW_A1/P6	30
CL012 (GFE)	ESW B1 Port 6	Router D1 Port B	Cat-5E Shielded (Government Provided and Installed)	ESW_B1/P6 (RTR_D1/PB)	RTR_D1/PB ESW_B1/P6	30
CL013	Router A1 TELCO Out	Radar Site MW Demarc (Circuit 1 - 128KBPS)	Cat-5E Shielded	RTR_A1/TELCO_OUT (SITE_DEMARC/CKT1)	SITE_DEMARC/CKT1 (RTR_A1/TELCO_OUT)	50
CL014	Router B1 TELCO Out	Radar Site MW Demarc (Circuit 2 - 128KBPS)	Cat-5E Shielded	RTR_B1/TELCO_OUT (SITE_DEMARC/CKT2)	SITE_DEMARC/CKT2 (RTR_B1/TELCO_OUT)	50
CL015	Router C1 TELCO Out	Radar Site MW Demarc (Circuit 3 - 56KBPS)	Cat-5E Shielded	RTR_C1/TELCO_OUT (SITE_DEMARC/CKT3)	SITE_DEMARC/CKT3 (RTR_C1/TELCO_OUT)	50
CL016 (GFE)	Router D1 TELCO Out	Radar Site MW Demarc (Circuit 4 - 56KBPS)	Cat-5E Shielded (Government Provided and Installed)	RTR_D1/TELCO_OUT (SITE_DEMARC/CKT4)	SITE_DEMARC/CKT4 (RTR_D1/TELCO_OUT)	50
CL017	Microwave Demarc (Circuit 1 - 128KBPS)	Comm Rack Router AA TELCO Input	Cat-5E Shielded	M/W_DEMARC/CKT1 (RTR_AA/TELCO_IN)	RTR_AA/TELCO_IN (M/W_DEMARC/CKT1)	60
CL018	M/W Demarc (Circuit 2 - 128KBPS)	Comm Rack Router BB TELCO Input	Cat-5E Shielded	M/W_DEMARC/CKT2 (RTR_BB/TELCO_IN)	RTR_BB/TELCO_IN (M/W_DEMARC/CKT2)	60
CL019 (GFE)	M/W Demarc (Circuit 3 - 56KBPS)	Comm Rack Router CC TELCO Input	Cat-5E Shielded (Government Provided and Installed)	M/W_DEMARC/CKT3 (RTR_CC/TELCO_IN)	RTR_CC/TELCO_IN (M/W_DEMARC/CKT3)	60
CL020 (GFE)	M/W Demarc (Circuit 4 - 56KBPS)	Digital Patch Panel	Cat-5E Shielded (Government Provided and Installed)	M/W_DEMARC/CKT4 (DIGITAL_PATCH/ASR-11)	DIGITAL_PANEL/ASR-11 (M/W_DEMARC/CKT4)	15
CL021	Digital Patch Panel	Digital Patch Panel	Cat-5E Shielded (Government Provided and Installed)	DIGITAL_PATCH/ASR-11 (DIGITAL_PATCH/BORON)	DIGITAL_PATCH/BORON (DIGITAL_PATCH/ASR-11)	4

Table 12. Cable Run List (Continued)

CL022	Digital Patch Panel	M/W Demarc (Circuit 5 - 56KBPS)	Cat-5E Shielded (Government Provided and Installed)	DIGITAL_PANEL/BORON (M/W_DEMARC/CKT5)	M/W_DEMARC/CKT5 (DIGITAL_PATCH/BORON)	15
CL023 (GFE)	BORON M/W Demarc (Circuit TBD - 56KBPS)	BORON SSC Router DD TELCO Input	Cat-5E Shielded (Government Provided and Installed)	M/W_DEMARC/CKTX (RTR_EE/TELCO_IN)	RTR_EE/TELCO_IN (M/W_DEMARC/CKTX)	TBD
CL024	RTR CC Port 1	OMT Port A	Cat-5E Shielded Crossover Cable	RTR_CC/P1 (OMT/PA)	OMT/PA (RTR_CC/P1)	See Table C-6, Find # 34
CL025	RTR CC Port 2	OMT Port B	Cat-5E Shielded Crossover Cable	RTR_CC/P2 (OMT/PB)	OMT/PB (RTR_CC/P2)	See Table C-6, Find # 34
CL026	Modem (MDM) A1 (OMT Serial Port A End)	RCP A	Cat-5E Shielded	MDM_A1 (RCP_A)	RCP_A (MDM_A1)	40
CL027 (GFE)	RTR DD Port 1	OMT Port A (BORON SSC)	Cat-5E Shielded Crossover Cable (Government Provided and Installed)	RTR_DD/P1 (OMT/PA)	OMT/PA (RTR_DD/P1)	See Table C-6, Find # 34
CL028 (GFE)	RTR DD Port 2	OMT Port B (BORON SSC)	Cat-5E Shielded Crossover Cable (Government Provided and Installed)	RTR_DD/P2 (OMT/PB)	OMT/PB (RTR_DD/P2)	See Table C-6, Find # 34
CL029	Router AA	ESW AA	Cat-5E Shielded	RTR_AA (ESW_AA)	ESW_AA (RTR_AA)	6
CL030	Router BB	ESW BB	Cat-5E Shielded	RTR_BB (ESW_BB)	ESW_BB (RTR_BB)	6
CL031	ESW AA Port 1	SIU A A1J1	Cat-5E Shielded	ESW_AA/P1 (SIU_A/A1J1)	SIU_A/A1J1 (ESW_AA/P1)	4
CL032	ESW BB Port 1	SIU B A1J1	Cat-5E Shielded	ESW_BB/P1 (SIU_B/A1J1)	SIU_B/A1J1 (ESW_BB/P1)	4
CL033	ESW AA Port 2	SIU C A1J1	Cat-5E Shielded	ESW_AA/P2 (SIU_C/A1J1)	SIU_C/A1J1 (ESW_AA/P2)	6
CL034	ESW BB Port 2	SIU D A1J1	Cat-5E Shielded	ESW_BB/P2 (SIU_D/A1J1)	SIU_D/A1J1 (ESW_BB/P2)	6
CL035	SIU A	Line Splitter A	G780408-1-5	SIU_A (SPLTR_A)	SPLTR_A (SIU_A)	See Table 9, Find # 43
CL036	SIU B	Line Splitter B	G780408-1-5	SIU_B (SPLTR_B)	SPLTR_B (SIU_B)	See Table 9, Find # 43
CL037 (GFE)	SIU C Nunio 1	Line Splitter C (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_C/NUNIO_1 (SPLTR_C)	SPLTR_C (SIU_C/NUNIO_1)	2
CL038 (GFE)	SIU C Nunio 2	Line Splitter E (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_C/NUNIO_2 (SPLTR_E)	SPLTR_E (SIU_C/NUNIO_2)	2
CL039 (GFE)	SIU C Nunio 3	Line Splitter G (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_C/NUNIO_3 (SPLTR_G)	SPLTR_G (SIU_C/NUNIO_3)	2
CL040 (GFE)	SIU C Nunio 4	Line Splitter I (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_C/NUNIO_4 (SPLTR_I)	SPLTR_I (SIU_C/NUNIO_4)	2
CL041 (GFE)	SIU D Nunio 1	Line Splitter D (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_D/NUNIO_1 (SPLTR_D)	SPLTR_D (SIU_D/NUNIO_1)	2

Table 12. Cable Run List (Continued)

CL042 (GFE)	SIU D Nunio 2	Line Splitter F (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_D/NUNIO_2 (SPLTR_F)	SPLTR_2 (SIU_D/NUNIO_2)	2
CL043 (GFE)	SIU D Nunio 3	Line Splitter H (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_D/NUNIO_3 (SPLTR_H)	SPLTR_H (SIU_D/NUNIO_3)	2
CL044 (GFE)	SIU D Nunio 4	Line Splitter J (SIU MAINTENANCE PORT)	PLH352384-1 SIU MAINT PORT CABLE (Government Provided and Installed)	SIU_D/NUNIO_4 (SPLTR_J)	SPLTR_J (SIU_D/NUNIO_4)	2
CL045	Line Splitter A	REHOST A (EDW)	G780408-2-300	SPLTR_A (REHOST_A)	REHOST_A (SPLTR_A)	See Table 9, Find # 41
CL046	Line Splitter A	REHOST TEST (EDW)	G780408-2-300	SPLTR_A (REHOST_TEST)	REHOST_TEST (SPLTR_A)	See Table 9, Find # 41
CL047	Line Splitter B	REHOST B (EDW)	G780408-2-300	SPLTR_B (REHOST_B)	REHOST_B (SPLTR_B)	See Table 9, Find # 41
CL048	Line Splitter B	REHOST BACKUP (EDW)	G780408-2-300	SPLTR_B (REHOST_BKUP)	REHOST_BKUP (SPLTR_B)	See Table 9, Find # 41
CL049	Line Splitter C (SIU MAINTENANCE PORT)	DSU A1 (EDW)	RS530 to V.35	SPLTR_C (DSU_A1)	DSU_A1 (SPLTR_C)	6
CL050	Line Splitter D (SIU MAINTENANCE PORT)	DSU B1 (EDW)	RS530 to V.35	SPLTR_D (DSU_B1)	DSU_B1 (SPLTR_D)	6
CL051 (GFE)	Line Splitter E (SIU MAINTENANCE PORT)	EDWARDS DIGITAL PATCH PANEL	R530 DB25MM Straight-Thru (Government Provided and Installed)	SPLTR_E (EDW_PATCH)	EDW_PATCH (SPLTR_E)	75
CL052 (GFE)	Line Splitter F SIU MAINTENANCE PORT)	EDWARDS DIGITAL PATCH PANEL	R530 DB25MM Straight-Thru (Government Provided and Installed)	SPLTR_F (EDW_PATCH)	EDW_PATCH (SPLTR_F)	75
CL053 (GFE)	Line Splitter G (SIU MAINTENANCE PORT)	DSU D1 (EDW) (FUTURE)	RS530 to V.35 (Government Provided and Installed)	SPLTR_G (DSU_D1)	DSU_D1 (SPLTR_G)	See Table 9, Find # 19
CL054 (GFE)	Line Splitter H (SIU MAINTENANCE PORT)	DSU E1 (EDW) (FUTURE)	RS530 to V.35 (Government Provided and Installed)	SPLTR_H (DSU_E1)	DSU_E1 (SPLTR_H)	See Table 9, Find # 19
CL055 (GFE)	Line Splitter I (SIU MAINTENANCE PORT)	DSU F1 (EDW) (FUTURE)	RS530 to V.35 (Government Provided and Installed)	SPLTR_I (DSU_F1)	DSU_F1 (SPLTR_I)	See Table 9, Find # 19
CL056 (GFE)	Line Splitter J (SIU MAINTENANCE PORT)	DSU G1 (EDW) (FUTURE)	RS530 to V.35 (Government Provided and Installed)	SPLTR_J (DSU_G1)	DSU_G1 (SPLTR_J)	See Table 9, Find # 19
CL057	DSU A1 - B1 (2 connections) (FUTURE)	TELCO Room Demarc (2 connections) (FUTURE)	Cat-5E Shielded	DSU_A1-B1 (TELCO_DEMARC)	TELCO_DEMARC (DSU_A1-B1)	60 (each)
CL058 (GFE)	DSU D1 - G1 (4 connections) (FUTURE)	TELCO Room Demarc (4 connections) (FUTURE)	Cat-5E Shielded (Government Provided and Installed)	DSU_D1-G1 (EDW_DEMARC)	EDW_DEMARC (DSU_D1-G1)	60 (each)
CL059	SPORT TELCO Demarc	DSU A2 (SPORT)	Cat-5E Shielded	SPORT_DEMARC (DSU_A2)	DSU_A2 (SPORT_DEMARC)	5
CL060	SPORT TELCO Demarc	DSU B2 (SPORT)	Cat-5E Shielded	SPORT_DEMARC (DSU_B2)	DSU_B2 (SPORT_DEMARC)	5

Table 12. Cable Run List (Continued)

CL061	EDWARDS DIGITAL PATCH PANEL	EDWARDS MICROWAVE CHANNEL BANK	R530 DB25MF Straight-Thru	EDW_PATCH (EDW_CHANNEL_BANK)	EDW_CHANNEL_BANK (EDW_PATCH)	12
CL062	EDWARDS DIGITAL PATCH PANEL	EDWARDS MICROWAVE CHANNEL BANK	R530 DB25MF Straight-Thru	EDW_PATCH (EDW_CHANNEL_BANK)	EDW_CHANNEL_BANK (EDW_PATCH)	12
CL063	DSU A2 (SPORT)	REHOST A (SPORT)	RS530 to V.35	DSU_A2 (REHOST_A_SP)	REHOST_A_SP (DSU_A2)	6
CL064	DSU B2 (SPORT)	REHOST B (SPORT)	RS530 to V.35	DSU_B2 (REHOST_B_SP)	REHOST_B_SP (DSU_B2)	6
CL065 (GFE)	CHINA LAKE MICROWAVE CHANNEL BANK	REHOST (CHINA LAKE)	TBD (Government Provided and Installed)	CHLK_CHANNEL_BANK (REHOST_CHLK)	REHOST_CHLK (CHLK_CHANNEL_BANK)	TBD
CL066 (GFE)	CHINA LAKE MICROWAVE CHANNEL BANK	REHOST (CHINA LAKE)	TBD (Government Provided and Installed)	CHLK_CHANNEL_BANK (REHOST_CHLK)	REHOST_CHLK (CHLK_CHANNEL_BANK)	TBD
CL067 (GFE)	FT IRWIN TELCO Room Demarc (2 connections)	DSU D2 - E2 (2 connections) (FUTURE)	Cat-5E Shielded (Government Provided and Installed)	TELCO_DEMARC (DSU_D2-E2)	DSU_D2-E2 (TELCO_DEMARC)	TBD
CL068 (GFE)	NELLIS AFB TELCO Room Demarc (2 connections)	DSU F2 - G2 (2 connections) (FUTURE)	Cat-5E Shielded (Government Provided and Installed)	TELCO_DEMARC (DSU_F2-G2)	DSU_F2-G2 (TELCO_DEMARC)	TBD

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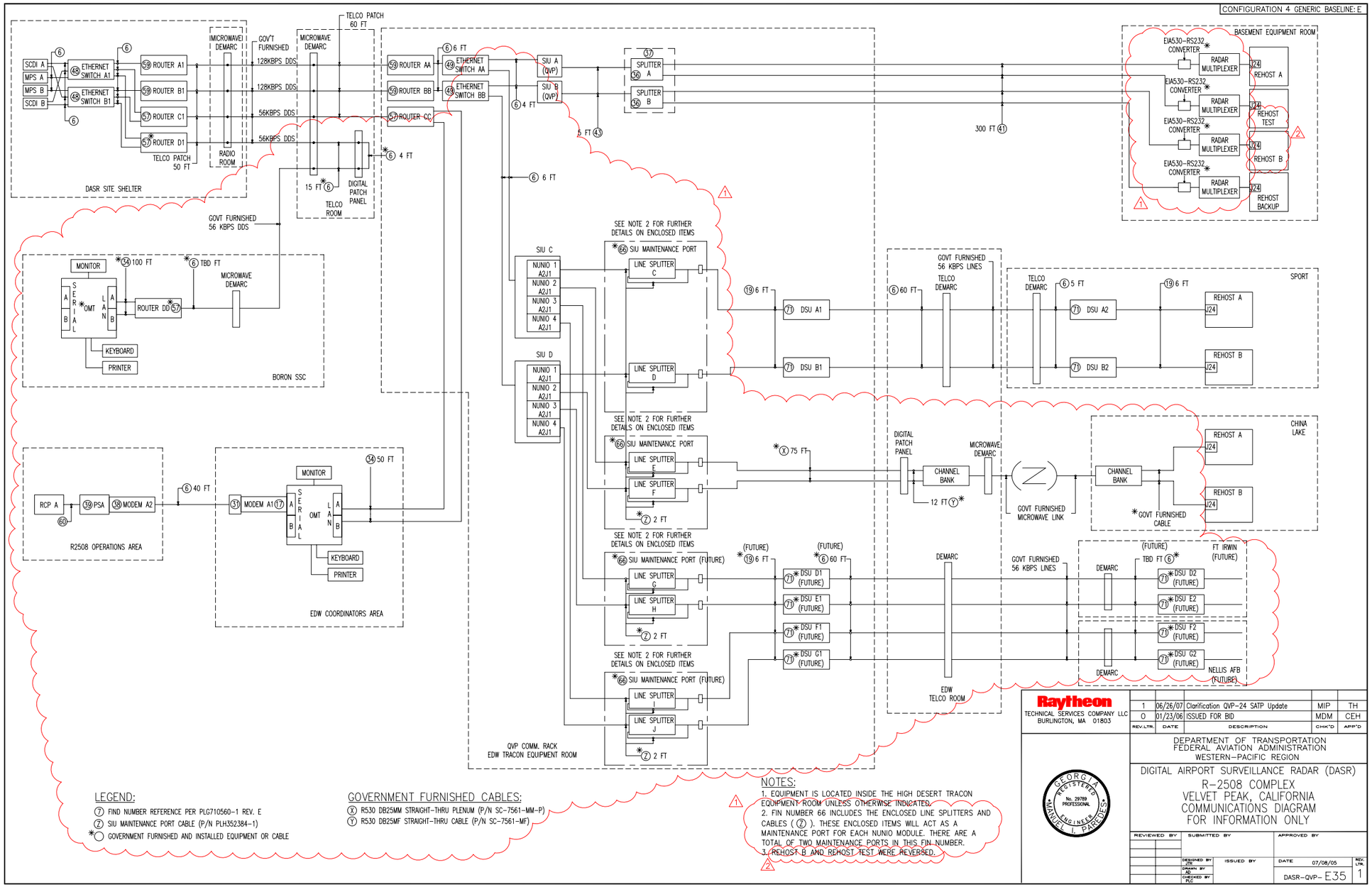

Figure 1. System Interconnection Diagram (Telco Configuration)
ATT7-23/24

R-2508 Velvet Peak Addendum to the Edwards AFB SATP
Appendix B

PROCEDURES

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B1. Communications Rack

Equipment Placement – The Communications Rack will be installed in the location identified in FATD drawing E20.

Power and Grounding Connections – Power for the Communications Rack has been placed near the rack location from the designated power panel. Verify that circuit breakers in the panel have been correctly connected and labeled on the panel before connecting any equipment. Connect the four power strips mounted in the Communications Rack to the appropriate circuits made available by the site preparation subcontractor near the rack location. Ensure rack is properly connected to the existing multipoint ground plate per FAA-STD-019b, Paragraph 3.11 (Electronic Multipoint Ground System Requirements). Any electronic equipment installed in this FAA facility must be grounded in accordance with FAA-STD-020b.

Rack Configuration – Refer to the Installation, Operation, and Maintenance Manual for the System Interface Unit (SIU), Section 6, for details on the installation, assembly, and connection of the SIU Hub and Module. After the rack is mounted in place, populate the rack with Ethernet Switches AA and BB, Ethernet Hubs A and B, and routers, modems, fiber optic patch panel, and DVGs and VDCUs, as required. Refer to FATD drawing E32 for rack configuration. After the equipment is mounted in the rack, connect the internal and external rack cabling as listed below and shown in FATD drawing E35.

NOTE: Ethernet Switches AA and BB (and Ethernet Switches A1 and B1 at the Radar Site) must be configured for 10Base-T/Half Duplex operation prior to installation. Refer to manufacturers' documentation for complete procedure.

Cable Connections – Route and connect the supplied appropriate length cables between components. Connect the following cables as required by FATD drawing E35:

___ 1. Router AA to Ethernet Switch AA, Port 1
___ 2. Router BB to Ethernet Switch BB, Port 1
___ 3. Ethernet Switch AA, Port 1 to SIU A, A1J1
___ 4. Ethernet Switch BB, Port 1 to SIU B, A1J1
___ 5. Ethernet Switch AA, Port 2 to SIU C, A1J1
___ 6. Ethernet Switch BB, Port 2 to SIU D, A1J1
___ 7. Microwave Demarcation to Routers AA, BB, and CC
___ 8. Router CC LAN A Port to the OMT LAN A
___ 9. Router CC LAN B Port to the OMT LAN B
___ 10. Modem A1 (OMT) to Modem A2 (RCP)
___ 11. Ethernet Switch CC, Port 7 to NIMS, Port 1 (if applicable)
___ 12. Ethernet Switch DD, Port 7 to NIMS, Port 2 (if applicable)
___ 13. SIU A to Line Splitter A (QVP)
___ 14. SIU B to Line Splitter B (QVP)
___ 15. Line Splitter A (QVP) to REHOST A
___ 16. Line Splitter A (QVP) to REHOST TEST
___ 17. Line Splitter B (QVP) to REHOST B
___ 18. Line Splitter B (QVP) to REHOST BACKUP
___ 19. Line Splitter C (QVP) to DSU A1 (QVP)
___ 20. Line Splitter D (QVP) to DSU B1 (QVP)
___ 21. DSU A1 (QVP) to TELCO Demarc
___ 22. DSU B1 (QVP) to TELCO Demarc
___ 23. Line Splitter E (QVP) to Digital Patch Panel

___ 24. Line Splitter F (QVP) to Digital Patch Panel

The following cables will be provided but installed by local personnel:

___ 25. SPORT TELCO Demarc to DSU A2 (SPORT)
___ 26. SPORT TELCO Demarc to DSU B2 (SPORT)
___ 27. DSU A2 (SPORT) to REHOST A (SPORT)
___ 28. DSU B2 (SPORT) to REHOST B (SPORT)

The following cables will be provided and installed by the government:

___ 29. Microwave Demarcation to Digital Patch Panel
___ 30. Digital Patch Panel to Digital Patch Panel
___ 31. Digital Patch Panel to Microwave Demarcation
___ 32. Boron SSC Microwave Demarcation to Router DD
___ 33. Router DD to the OMT
___ 34. Router DD to the OMT
___ 35. SIU C Nunio 1 to Line Splitter C (QVP)
___ 36. SIU C Nunio 2 to Line Splitter E (QVP)
___ 37. SIU C Nunio 3 to Line Splitter G (QVP)
___ 38. SIU C Nunio 4 to Line Splitter I (QVP)
___ 39. SIU D Nunio 1 to Line Splitter D (QVP)
___ 40. SIU D Nunio 2 to Line Splitter F (QVP)
___ 41. SIU D Nunio 3 to Line Splitter H (QVP)
___ 42. SIU D Nunio 4 to Line Splitter J (QVP)
___ 43. Digital Patch Panel to EDW Channel Bank
___ 44. Digital Patch Panel to EDW Channel Bank
___ 45. CHINA LAKE Channel Bank to REHOST A (CHNLK)
___ 46. CHINA LAKE Channel Bank to REHOST B (CHNLK)
___ 47. Line Splitter G (QVP) to DSU D1 (QVP) (Future)
___ 48. Line Splitter H (QVP) to DSU E1 (QVP) (Future)
___ 49. Line Splitter I (QVP) to DSU F1 (QVP) (Future)
___ 50. Line Splitter J (QVP) to DSU G1 (QVP) (Future)
___ 51. DSU D1-G1 (QVP) to TELCO Demarc (4 connections) (Future)
___ 52. FT IRWIN TELCO Demarc to DSU D2-E2 (2 connections) (Future)
___ 53. NELLIS AFB TELCO Demarc to DSU F2-G2 (2 connections) (Future)

B2. Operator Maintenance Terminal (OMT)

Equipment Placement – The OMT will be placed at a location specified and/or provided by the FAA (GFE) as identified in FATD drawing E20.

Power Connection and Equipment Placement – Verify that the new location for the OMT is available and ready to receive the equipment. Power for the OMT has already been placed near the OMT location from the designated power panel. Verify that circuit breakers in the panel have been correctly connected and labeled on the panel before connecting any equipment.

External Connections – Verify the existence of the SCDI LAN cables (two each) for the OMT connection. The SCDI LAN cables are new CAT-5 cables terminated with RJ-45 connectors and routed between the Communications Rack (Router CC) and the OMT.

B2.1. Mac Address Verification:

___ 1. Perform the following procedure to validate the Mac Addresses:

- ___ a. At SCDI/OMT, select "Update Users"
- ___ b. Enter username and password
- ___ c. In the UNIX window that appears, type: "su root" and press enter
- ___ d. Enter password: "root" and press enter
- ___ e. At prompt, type "arp –a" and press enter
- ___ f. Ensure that omt1 and omt1-2 have unique Mac Addresses. The Mac Address is the address located in the right column with heading "Phys Address". See Table B-1 for examples of Mac Addresses using the "arp –a" command:

Table B-1. OMT Mac Address Examples

Device	IP Address	Mask	Flags	Physical Address
Qfe3	scdia-ext-2	255.255.255.255		08:00:20:f6:91:af
Qfe3	scdib-ext-2	255.255.255.255		08:00:20:f4:ba:0b
Qfe2	scdib-ext-1	255.255.255.255		08:00:20:f4:ba:0a
Qfe2	scdia-ext-1	255.255.255.255		08:00:20:f6:91:ae
Qfe2	omt1	255.255.255.255	SP	08:00:20:f4:b7:fe
Qfe3	omt1-2	255.255.255.255	SP	08:00:20:f4:b7:ff
Qfe3	224.0.0.0	224.0.0.0	SM	01:00:5e:00:00:00
Qfe2	224.0.0.0	255.255.255.255	SM	01:00:5e:00:00:00

___ 2. All addresses for the "scdia", "scdib", "omt1" and "omt1-2" are different. If addresses are the same, set unique Mac Addresses for the SCDI/OMT using the following procedure:

- ___ a. Left click on SCDI/OMT screen to bring up the site pop-up menu
- ___ b. Select Local Workstation Actions
- ___ c. Select SCDI shutdown
- ___ d. Enter Username and Password. Wait for application to go down
- ___ e. When OK prompt appears, type: "setenv local-mac-address? true" and press enter. Process responds with "local-mac-address? = true"
- ___ f. At OK prompt, type "boot" and press enter. The SCDI/OMT will now reboot

___ g. When application returns, go to Site pop-up menu and select Local Workstation Actions
___ h. Select Update Users
___ i. Enter username and password
___ j. In the UNIX window that appears, type “su root” and enter password: root
___ k. At prompt, type “arp –a” and press enter. Ensure that “omt1” and “omt1-2” have unique Mac Addresses
___ l. If you would like to save the arp table to a file to download to your PC, use the command “arp -a > arptable.txt”
___ m. Close the window

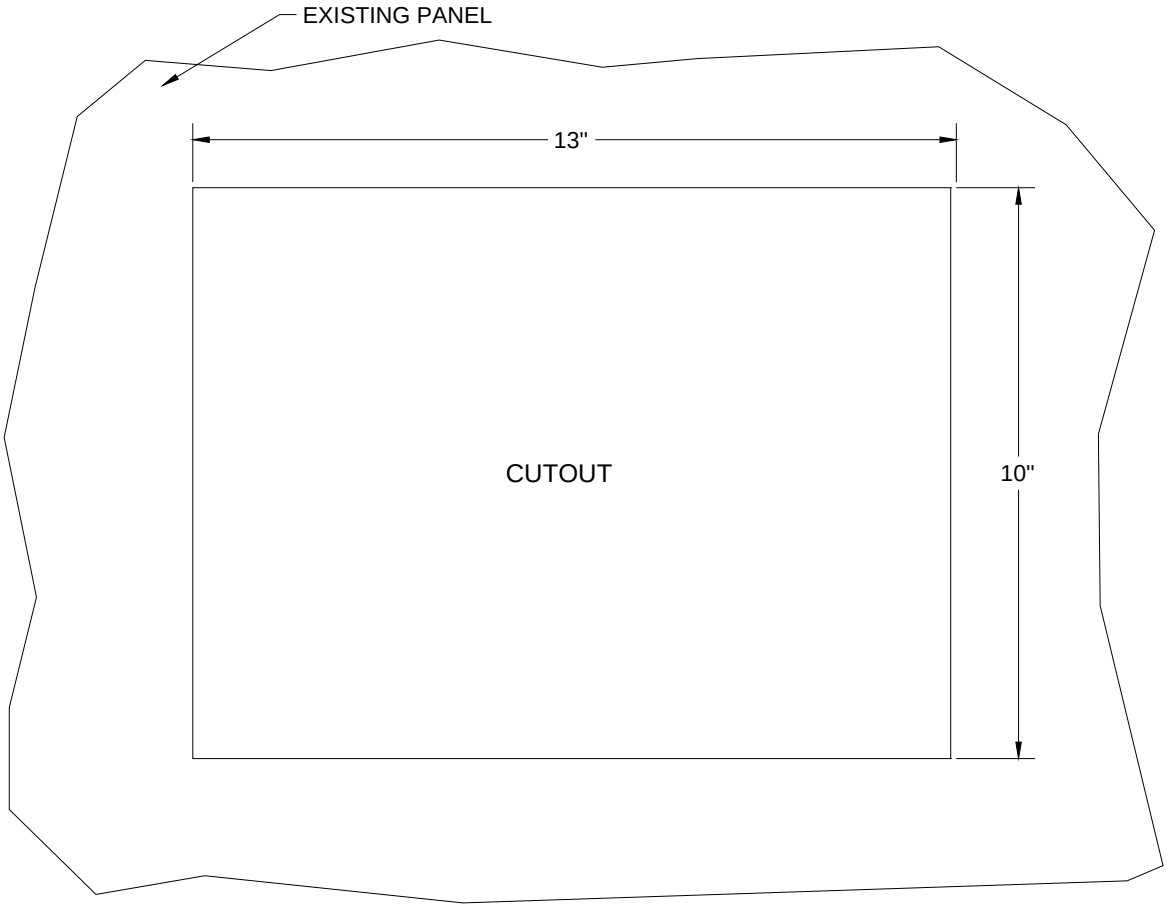

Figure B-1. RCP Cutout Dimensions

ATTACHMENT 7 - APPENDIX C

RESULTS OF THE RF INTERFERENCE MITIGATION ANALYSIS

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ADDENDUM
RFI Mitigation Analysis

ASR-11 and Existing ASR-8

Velvet Peak Radar

San Bernardino County, CA

Analytical Parameters

The ASR-11 is located 46.3 feet (0.008 nautical miles) from the existing ASR-8 at an azimuth of 37.3° true which is considered in the near-field of both systems.

The ASR-8 frequency assignments are 2,775 and 2,895 MHz. ASR-11 frequency assignments of 2,745 and 2,850 MHz were used for this analysis.

The nominated ASR-11 frequencies can be the final permanent operating frequencies provided that no receiver blanking is required. If, however, receiver blanking is required, the ASR-11 will need to transition to the existing radar's frequencies during the flight check phase of commissioning.

The antenna tilt for the ASR-11 is assumed to be 2.5° above horizon (electrical) and will be adjusted at optimization. The tilt setting for the existing ASR-8 was 0° (mechanical) which provides an electrical tilt of 2.5°.

Ground signal reflection of up to 6 dB is not included in this analysis. This analysis only considers line of sight.

RECOMMENDATION

Recommendations for implementing ASR-11 into existing environment:

- The ASR-11's receiver STC should be adjusted to +72 dB between 207.3° and 227.3° true as a precaution. According to the analysis, the ASR-11 will radiate over the ASR-8 and filters in the ASR-11 or the ASR-8 should not be required. However, as discovered at Willow Grove, PA, extreme near-field characteristics of both the ASR-11 and existing ASR antenna radiation patterns are somewhat chaotic and act like an omni-directional antenna. In other words, Raytheon recommends that filters for the ASR-11 and ASR-8 be procured and that an interoperability test be performed (as soon as possible) to confirm the need for filters in either system. If the interoperability test confirms that filters are not required, filters will be returned to Chelton Microwave (filter supplier) and retuned for use at another ASR-11 location.

- Sector blank the ASR-8 in the direction of the ASR-11 (27.3° and 47.3°) if possible as a precaution against interference. See below for further restrictions on the ASR-8 transmissions.

- The ASR-8 transmissions does require mitigation due to personnel safety during construction. Without blanking, the average power density calculated from the ASR-8 main lobe transmissions along the ASR-11 tower is approximately 937.0 $\mu W/cm^2$. APD from side lobe transmissions is approximately 1° of the main lobe, or 9.370 $\mu W/cm^2$. These levels are above the permissible exposure limits as specified by the IEEE Std. C95.1 and Raytheon policy. Therefore, the ASR-8 will need to be sector blanked in the direction of the ASR-11 (27.3° and 47.3°) during construction.

Suggestions for mitigating ASR-11's effect on the ASR-8:

- The ASR-11 will be sector blanked from 207.3° and 227.3°.

- Filters will be procured for both the ASR-11 and the ASR-8 (see above for more detail)

SUMMARY OF PROBLEM

ASR-8s Effect on the ASR-11:

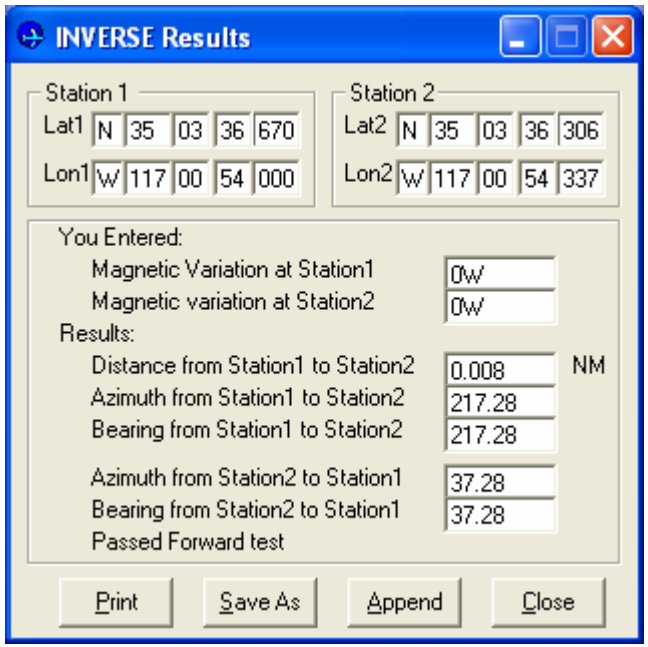
According to the IPredict modeling tool, the ASR-8 antenna focal point will be positioned 45.4° below the receiving pattern of the ASR-11. The gain of the ASR-11 antenna at that angle is very low and, therefore, interference is not expected. Refer to Attachment B for the antenna profile diagram and Attachment C, Sheet 2, for output screen of the IPredict modeling tool.

ASR-11s Effect on the ASR-8:

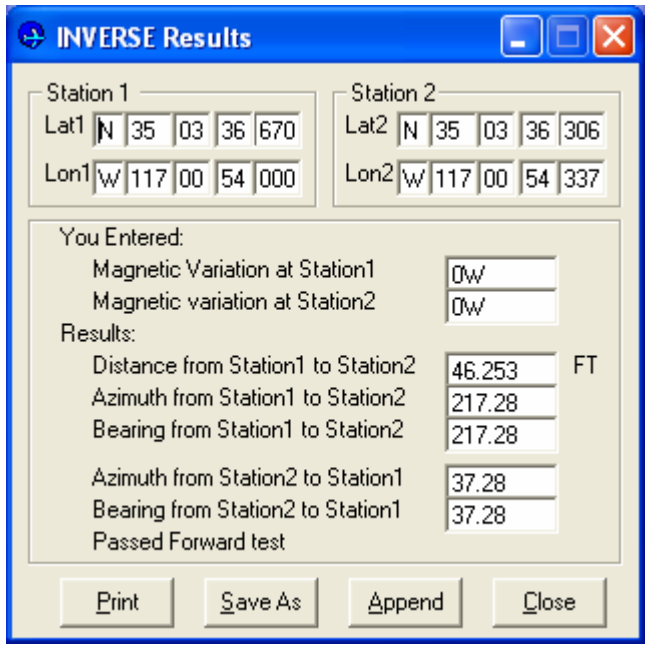
As indicated above, the ASR-11 main beam is directed 45.4° above the ASR-8 antenna. At that position, the transmit gain of the ASR-11 antenna is very low and interference is not expected. Refer to Attachment B for the antenna profile diagram and Attachment C, Sheet 2, for output screen of the IPredict modeling tool.

Attachment A

Coordinate Calculations:



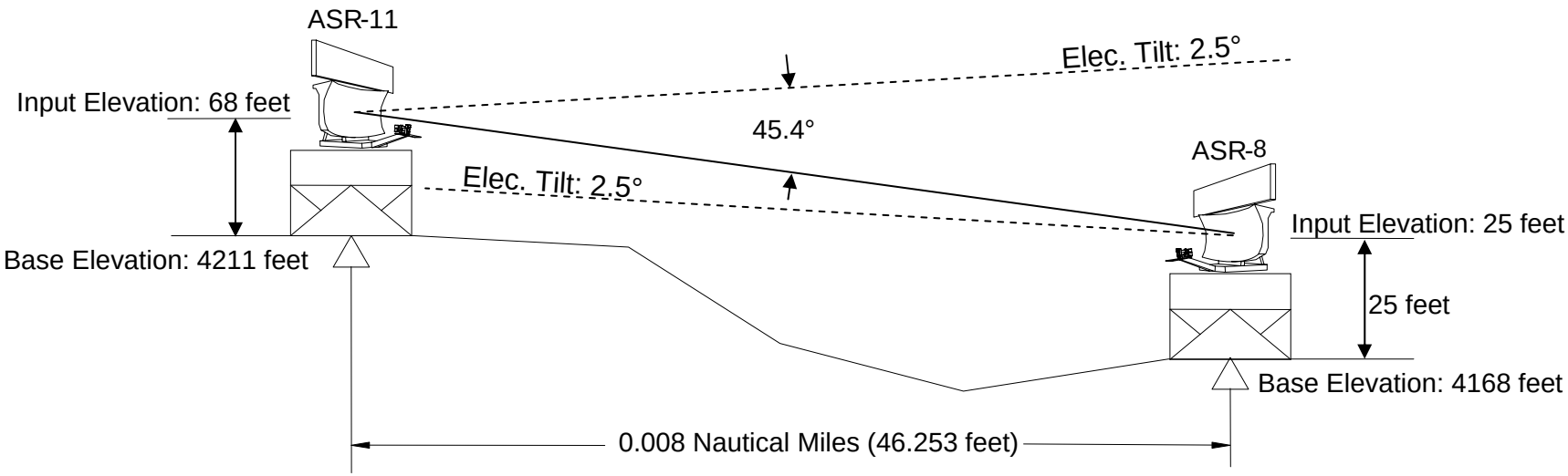
STATION 1: ASR-11
STATION 2: ASR-8



STATION 1: ASR-11
STATION 2: ASR-8

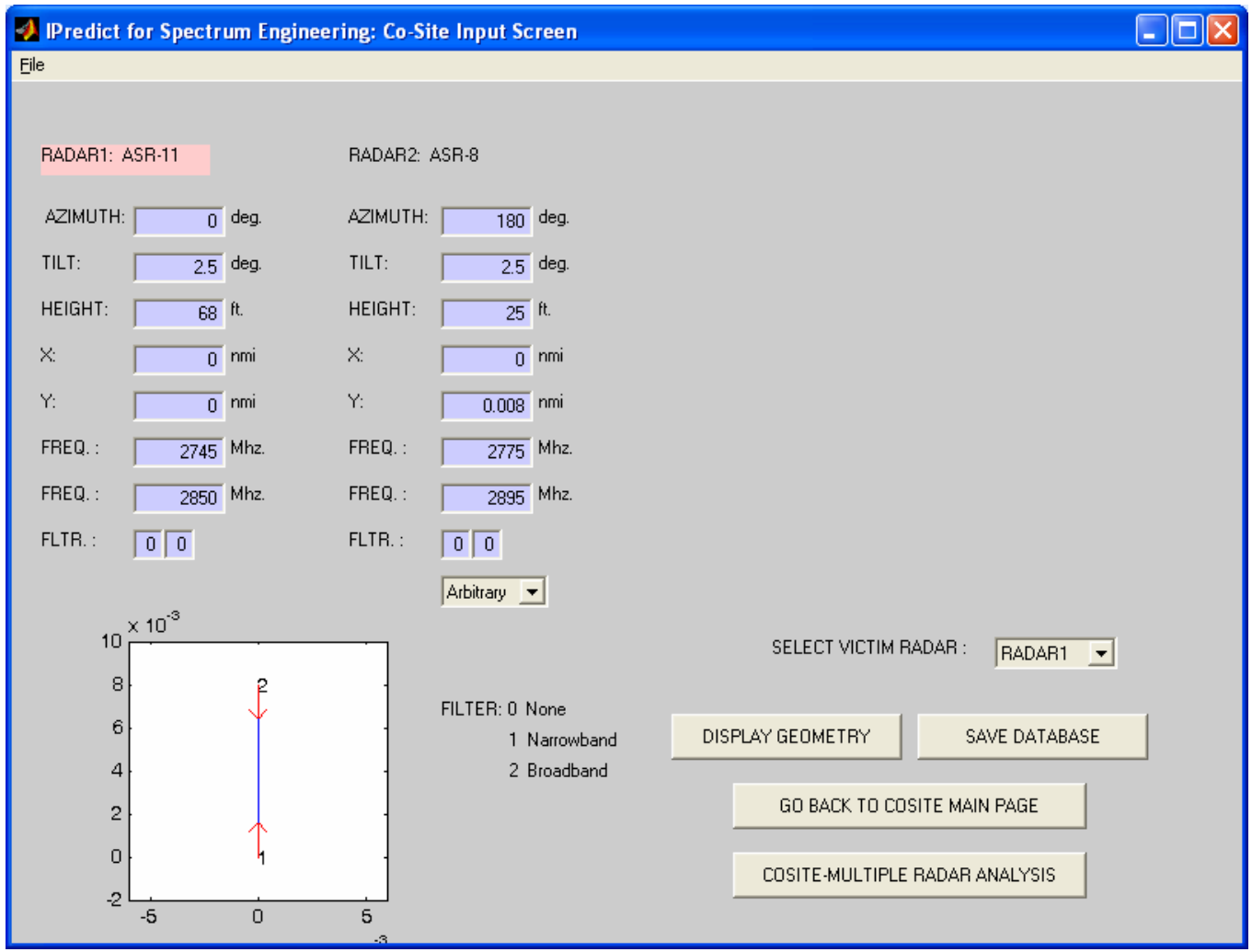
Attachment B

IPredict Height Calculation:



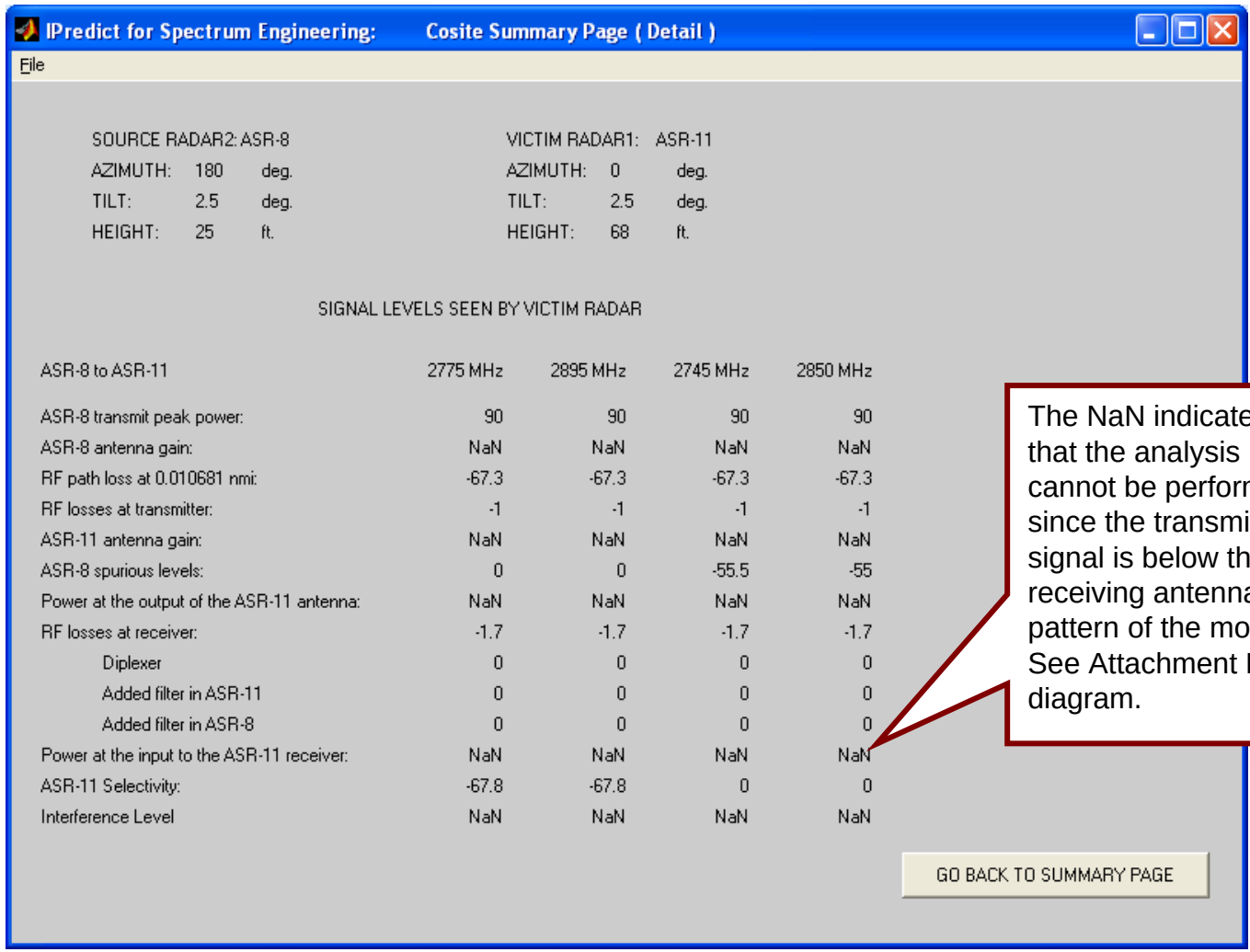
Attachment C

Screenshot of IPredict Data Input Page: (ASR-8 Mainlobe to ASR-11 Mainlobe)



Attachment D

Screenshot of IPredict Detail Page (ASR-11 Mainlobe to ASR-8 Mainlobe)



IPredict for Spectrum Engineering: Cosite Summary Page (Detail)

File

SOURCE RADAR2: ASR-8			VICTIM RADAR1:	ASR-11	
AZIMUTH:	180	deg.	AZIMUTH:	0	deg.
TILT:	2.5	deg.	TILT:	2.5	deg.
HEIGHT:	25	ft.	HEIGHT:	68	ft.

SIGNAL LEVELS SEEN BY VICTIM RADAR

ASR-8 to ASR-11	2775 MHz	2895 MHz	2745 MHz	2850 MHz
ASR-8 transmit peak power:	90	90	90	90
ASR-8 antenna gain:	NaN	NaN	NaN	NaN
RF path loss at 0.010681 nmi:	-67.3	-67.3	-67.3	-67.3
RF losses at transmitter:	-1	-1	-1	-1
ASR-11 antenna gain:	NaN	NaN	NaN	NaN
ASR-8 spurious levels:	0	0	-55.5	-55
Power at the output of the ASR-11 antenna:	NaN	NaN	NaN	NaN
RF losses at receiver:	-1.7	-1.7	-1.7	-1.7
Diplexer	0	0	0	0
Added filter in ASR-11	0	0	0	0
Added filter in ASR-8	0	0	0	0
Power at the input to the ASR-11 receiver:	NaN	NaN	NaN	NaN
ASR-11 Selectivity:	-67.8	-67.8	0	0
Interference Level	NaN	NaN	NaN	NaN

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The NaN indicates that the analysis cannot be performed since the transmitted signal is below the receiving antenna pattern of the model. See Attachment B for diagram.

ADDENDUM
RFI Mitigation Analysis

ASR-11 and Existing ASR-8

Edwards AFB (High Desert), CA

RECOMMENDATION

Recommendations for implementing ASR-11 into existing environment:

- The ASR-11's receiver STC will need to be adjusted to +72 dB between 263° and 283° true which would prevent reception of the ASR-8 transmissions.
- Install Filters in the ASR-11 to help mitigate ASR-11 receiver saturation in the ASR-8 main lobe to ASR-11 side lobe case.

Suggestions for mitigating ASR-11's effect on the ASR-8:

- The ASR-11 will be sector blanked from between 263° and 283° true. Additionally, the ASR-11 will be sector blanked between the azimuths of 21° and 31° and 204° and 214° per the Table of Frequency Assignments for the ASR-11.
- With filters deployed in the ASR-11, minimal interference is expected (see Attachment D). However, since the FAA uses MTI video for air traffic control and the level of interference expected from the ASR-11 will be processed out via MTI circuitry (ASR-11 transmissions are zero-Doppler) additional mitigation should not be required.

SUMMARY OF PROBLEM

ASR-8s Effect on the ASR-11 (Cases 1-4):

1. Main Lobe - Main Lobe — 56.3 dB above receiver LNA saturation level; I/N = 98.8 dB (interference not handled by RIS)
2. Side Lobe - Main Lobe — 22.3 dB above receiver LNA saturation level; I/N = 64.8 dB (interference handled by RIS)
3. Main Lobe - Side Lobe — 31.3 dB above receiver LNA saturation level; I/N = 73.8 dB (interference handled by RIS)
4. Side Lobe - Side Lobe — I/N = 39.8 dB (interference handled by RIS)

SUMMARY OF MITIGATION

ASR-8s Effect on the ASR-11 (Cases 1-4):

1. Main Lobe - Main Lobe	Adjust ASR-11 receiver STC to +72 dB in the sector between azimuths of 263° and 283° true for all ranges.
2. Side Lobe - Main Lobe	Adjust ASR-11 receiver STC to +72 dB in the sector between azimuths of 263° and 283° true for all ranges.
3. Main Lobe - Side Lobe	Install filters in the ASR-11.
4. Side Lobe - Side Lobe	Install filters in the ASR-11.

ANALYSIS

Analytical Parameters

The ASR-11 is located 713 feet (0.118 nautical miles) from the existing ASR-8 at an azimuth of 92.6° true which is considered in the near-field of both systems.

The ASR-8 frequency assignments are 2,780 and 2,712 MHz. A temporary frequency assignment of 2,810 and 2,875 MHz was provided for ASR-11.

The antenna tilt for the ASR-11 is assumed to be 2.5° above horizon (electrical) and will be adjusted at optimization. The tilt setting for the existing ASR-8 was 1.0° (mechanical) which provides an electrical tilt of 3.5°.

Ground signal reflection of up to 6 dB is not included in this analysis. This analysis only considers line of sight.

Existing ASR-8 Effects on the ASR-11

Co-Site Analysis, ASR-8 Main Lobe to ASR-11 Main Lobe, No Filters (Case 1)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

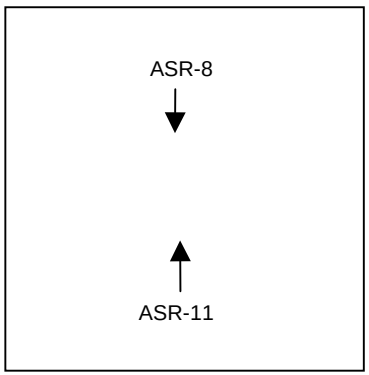
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

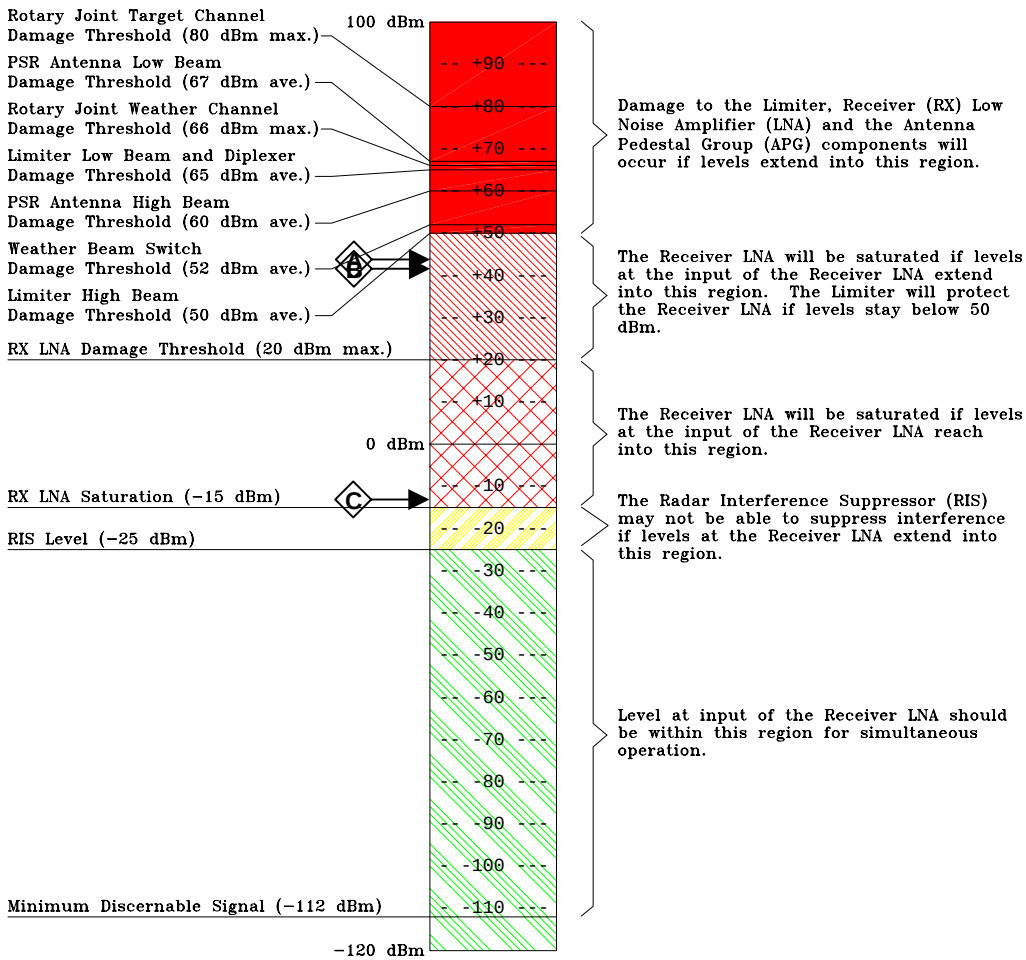
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: 43.1 dBm (A)

POWER AT THE INPUT TO THE ASR-11 RECEIVER: 41.3 dBm (B)

INTERFERENCE LEVEL: -13.2 dBm (C)

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

Co-Site Analysis, ASR-8 Side Lobe to ASR-11 Main Lobe, No Filters (Case 2)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

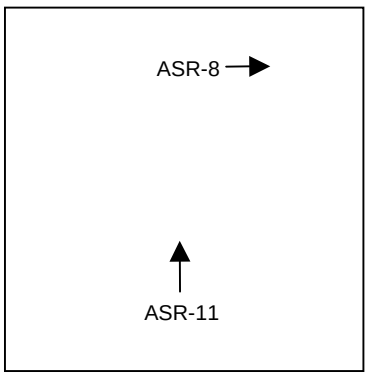
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

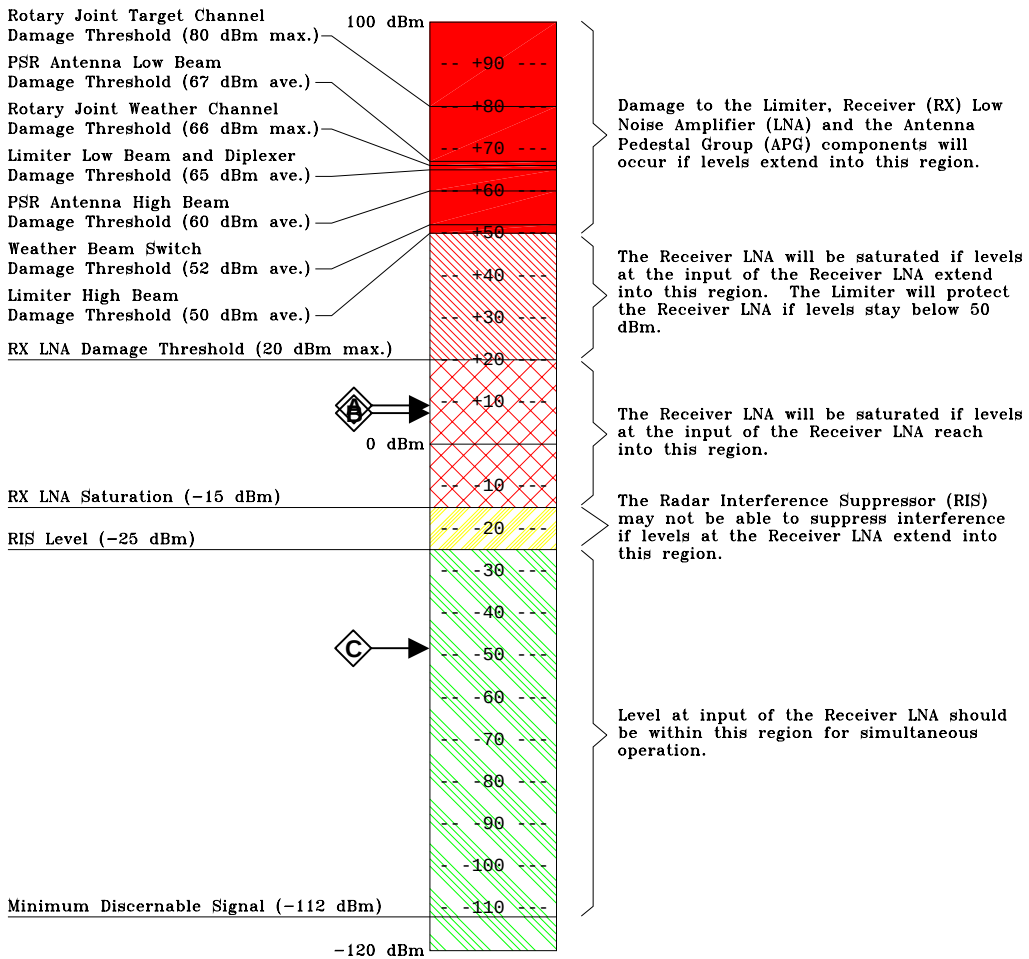
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: 9.1 dBm (A)

POWER AT THE INPUT TO THE ASR-11 RECEIVER: 7.3 dBm (B)

INTERFERENCE LEVEL: -47.2 dBm (C)

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

Co-Site Analysis, ASR-8 Main Lobe to ASR-11 Side Lobe, No Filters (Case 3)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

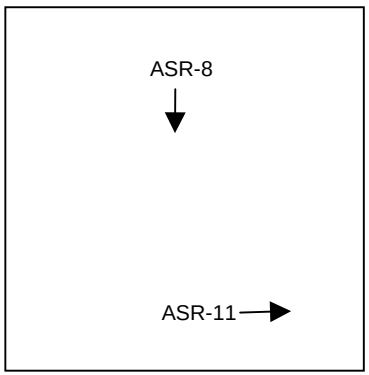
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

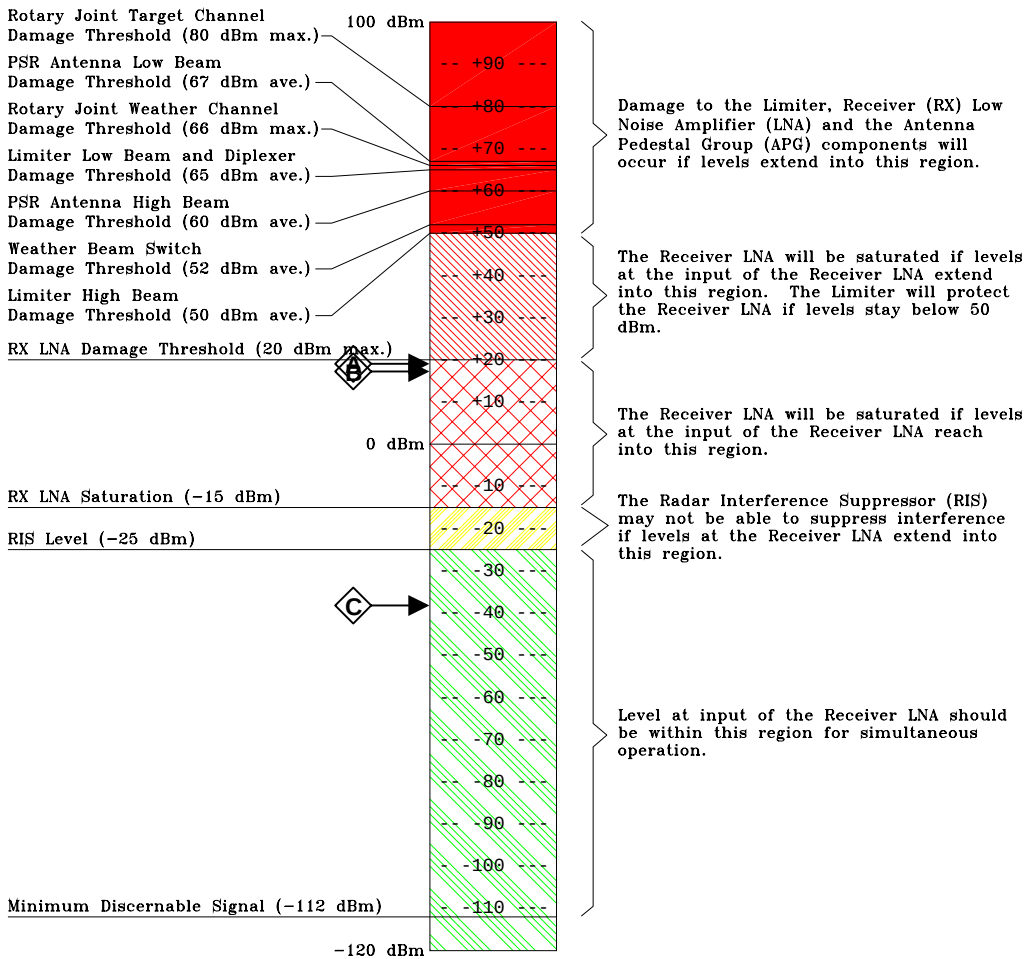
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: 18.1 dBm (A)

POWER AT THE INPUT TO THE ASR-11 RECEIVER: 16.1 dBm (B)

INTERFERENCE LEVEL: -38.2 dBm (C)

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

Co-Site Analysis, ASR-8 Side Lobe to ASR-11 Side Lobe, No Filters (Case 4)

SIGNAL LEVELS SEEN BY VICTIM RADAR ASR-11
(EXCERPT FROM IPREDICT PROGRAM)

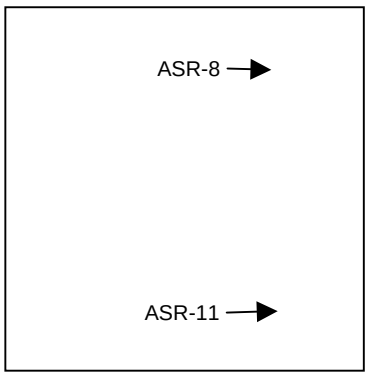
CONTRIBUTION FROM: **ASR-8 (RADAR2)**

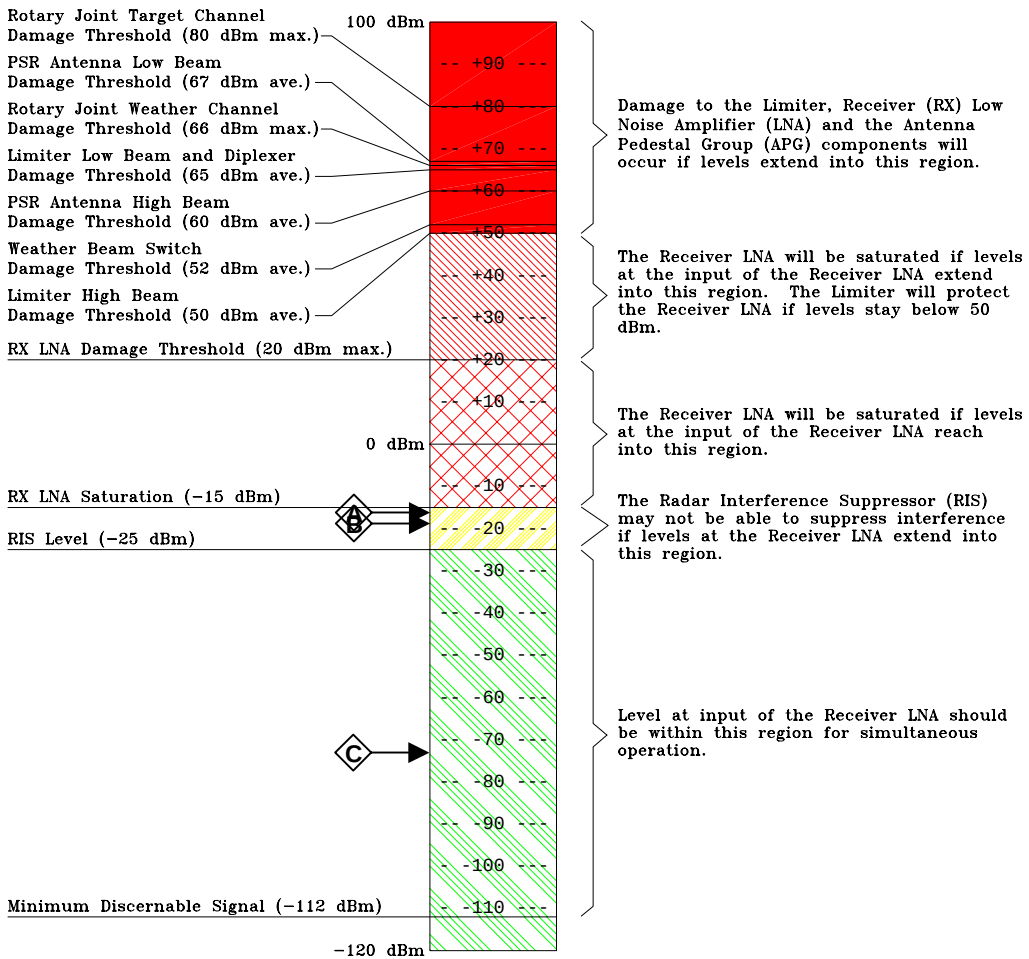
POWER AT THE OUTPUT OF THE ASR-11 ANTENNA: -15.9 dBm Ⓐ

POWER AT THE INPUT TO THE ASR-11 RECEIVER: -17.1 dBm Ⓑ

INTERFERENCE LEVEL: -72.2 dBm Ⓒ

RADAR GEOMETRY





ASR-11 Damage/Interference Thresholds

DATA ANALYSIS
Existing ASR-8s Effect on the ASR-11 (Cases 1 through 4)

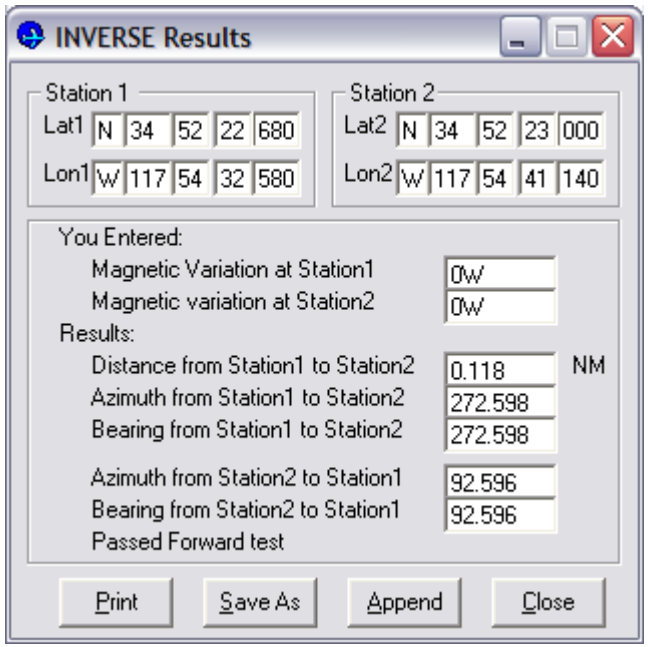
- Coupled levels at ASR-11 Antenna (Damage Assessment)
  - ASR-8 Main Lobe to ASR-11 Main Lobe: 43.1 dBm (1)
  - ASR-8 Side Lobe to ASR-11 Main Lobe: 9.1 dBm (2)
  - ASR-8 Main Lobe to ASR-11 Side Lobe: 18.1 dBm (3)
  - ASR-8 Side Lobe to ASR-11 Side Lobe: -15.9 dBm (4)
- These levels are below any damage thresholds. No damage to the antenna pedestal group (APG), receiver low noise amplifier (LNA), or limiter is expected.
- Coupled levels at ASR-11 receiver LNA (Saturation Assessment)
  - ASR-8 Main Lobe to ASR-11 Main Lobe: 41.3 dBm (1)
  - ASR-8 Side Lobe to ASR-11 Main Lobe: 7.3 dBm (2)
  - ASR-8 Main Lobe to ASR-11 Side Lobe: 16.3 dBm (3)
  - ASR-8 Side Lobe to ASR-11 Side Lobe: -17.7 dBm (4)
- The receiver LNA under Case 1 will be in saturation by 56.3 dB. The receiver LNA under Case 2 will be in saturation by 22.3 dB. The receiver LNA under Case 3 will be in saturation by 31.3 dB. Case 4 levels are below LNA receiver saturation levels.

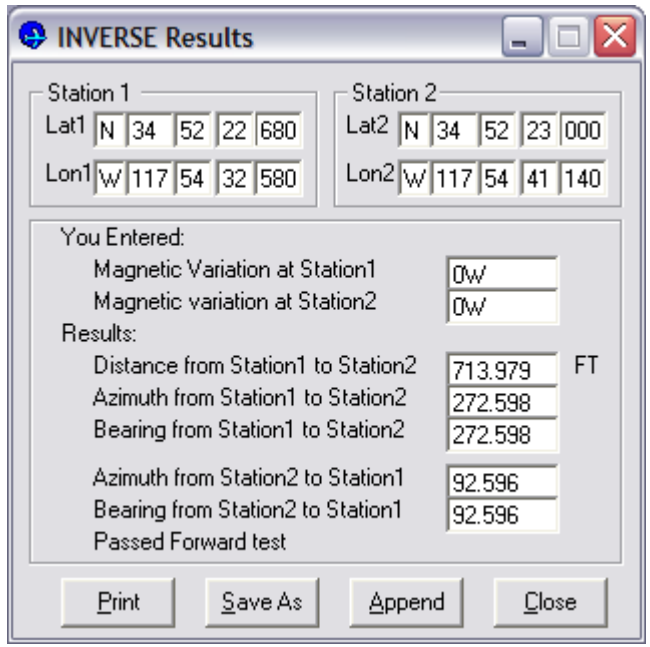
DATA ANALYSIS (Continued)
Existing ASR-8's Effect on the ASR-11
(Cases 1 through 4)

- Interference Assessment - With the additional off-frequency rejection provided inside the ASR-11 receiver, the levels are shown below:
  - ASR-8 Main Lobe to ASR-11 Main Lobe: -13.2 dBm (1)
  - ASR-8 Side Lobe to ASR-11 Main Lobe: -47.2 dBm (2)
  - ASR-8 Main Lobe to ASR-11 Side Lobe: -38.2 dBm (3)
  - ASR-8 Side Lobe to ASR-11 Side Lobe: -72.2 dBm (4)
- The interference levels for Case 1 is 11.8 dB above the acceptable limits and therefore interference will not be handled by the RIS. The interference levels for Cases 2 thru 4 are within acceptable limits and interference will be handled by the RIS.

Attachment A

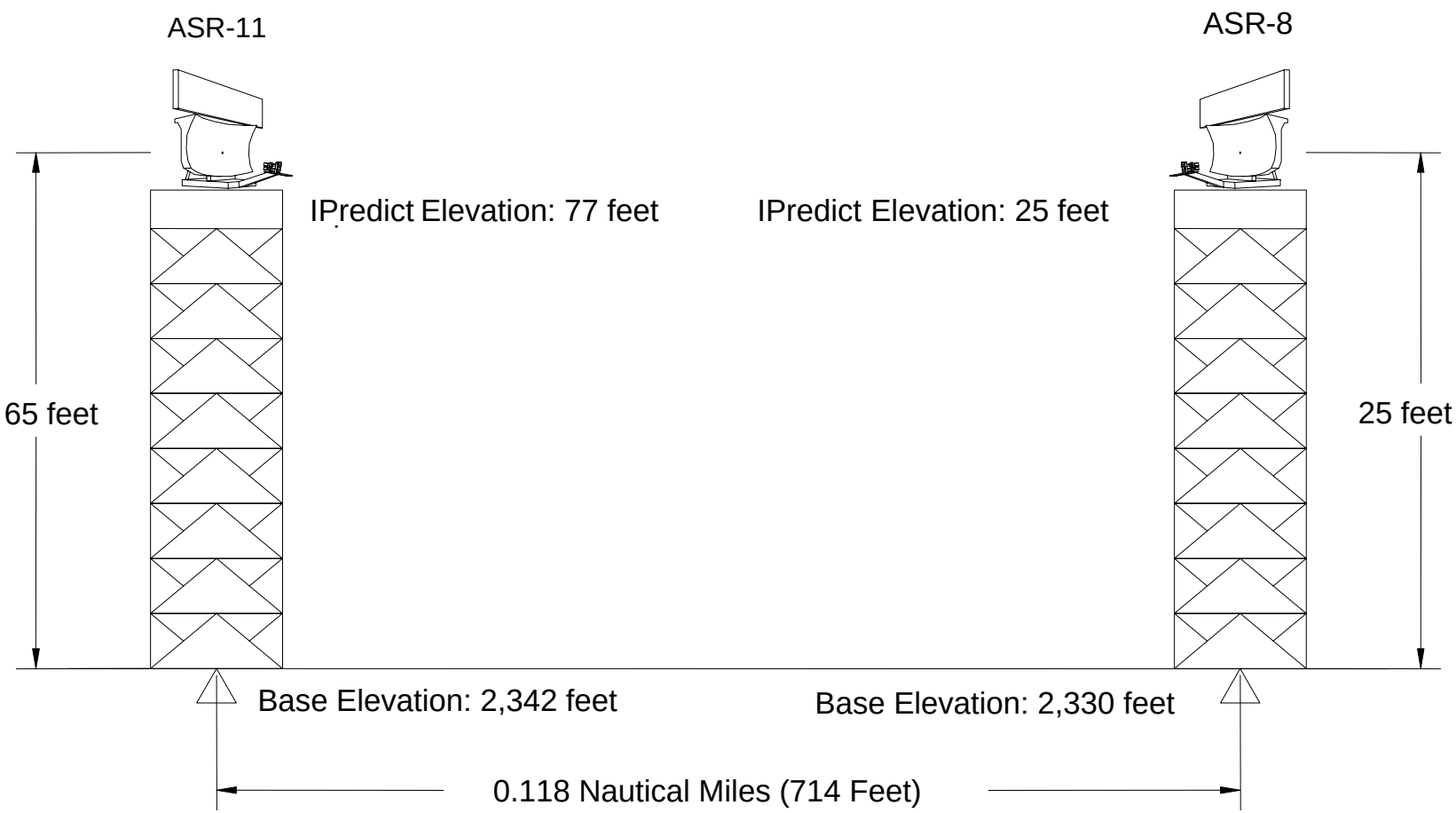
Coordinate Calculations:





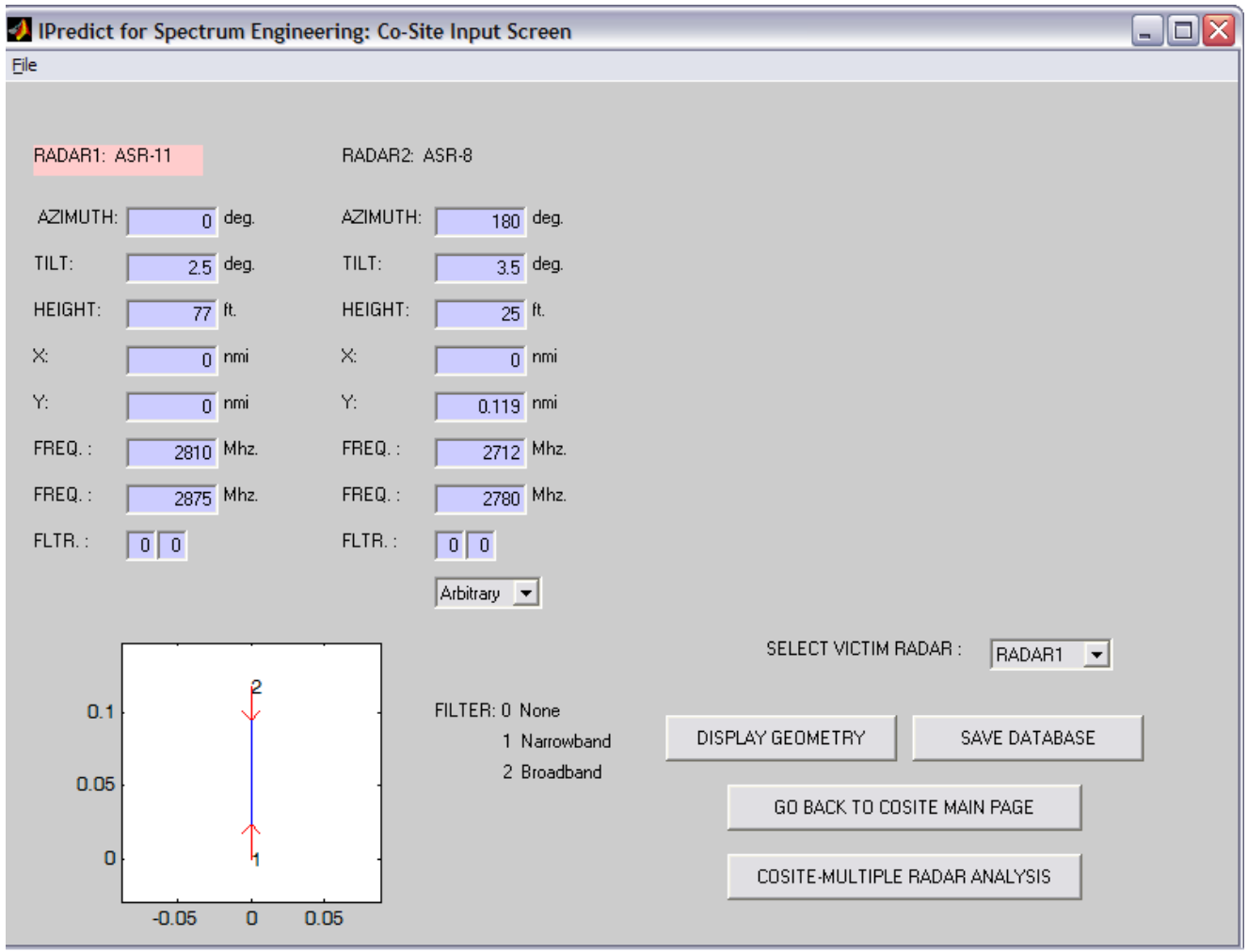
Attachment B

IPredict Height Calculation:



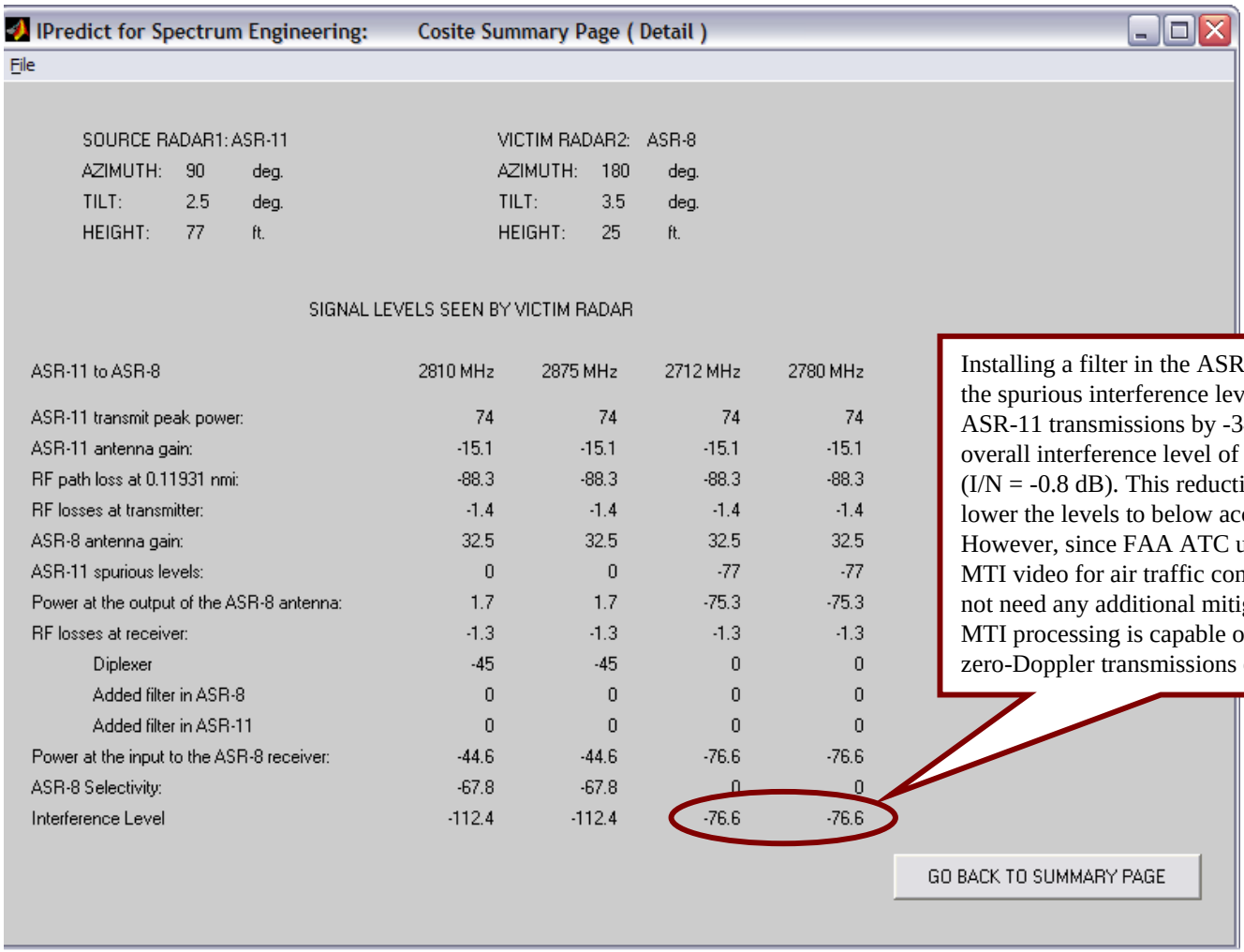
Attachment C

Screenshot of IPredict Data Input Page:



Attachment D

Screenshot of IPredict Detail Page (ASR-11 Side Lobe to ASR-8 Main Lobe)



IPredict for Spectrum Engineering: Cosite Summary Page (Detail)

File

SOURCE RADAR1: ASR-11
AZIMUTH: 90 deg.
TILT: 2.5 deg.
HEIGHT: 77 ft.

VICTIM RADAR2: ASR-8
AZIMUTH: 180 deg.
TILT: 3.5 deg.
HEIGHT: 25 ft.

SIGNAL LEVELS SEEN BY VICTIM RADAR

ASR-11 to ASR-8	2810 MHz	2875 MHz	2712 MHz	2780 MHz
ASR-11 transmit peak power:	74	74	74	74
ASR-11 antenna gain:	-15.1	-15.1	-15.1	-15.1
RF path loss at 0.11931 nmi:	-88.3	-88.3	-88.3	-88.3
RF losses at transmitter:	-1.4	-1.4	-1.4	-1.4
ASR-8 antenna gain:	32.5	32.5	32.5	32.5
ASR-11 spurious levels:	0	0	-77	-77
Power at the output of the ASR-8 antenna:	1.7	1.7	-75.3	-75.3
RF losses at receiver:	-1.3	-1.3	-1.3	-1.3
Diplexer	-45	-45	0	0
Added filter in ASR-8	0	0	0	0
Added filter in ASR-11	0	0	0	0
Power at the input to the ASR-8 receiver:	-44.6	-44.6	-76.6	-76.6
ASR-8 Selectivity:	-67.8	-67.8	0	0
Interference Level	-112.4	-112.4	-76.6	-76.6

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Installing a filter in the ASR-11 would reduce the spurious interference levels produced by the ASR-11 transmissions by -34.6 dB, giving an overall interference level of -108.8 dBm (I/N = -0.8 dB). This reduction is not enough to lower the levels to below acceptable limits. However, since FAA ATC utilizes the ASR-8's MTI video for air traffic control, the FAA may not need any additional mitigation since the MTI processing is capable of processing out the zero-Doppler transmissions of the ASR-11.

APPENDIX A

GLOSSARY OF TERMS

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Glossary of Terms

ACM	Asbestos Containing Material
ACP	Azimuth Change Pulse
AF	Airway Facilities
ANSI	American National Standards Institute
ASC	Acquisition Signal Conditioner
AOA	Aircraft Operating Area
ARP	Azimuth Reference Pulse
ARTS	Automated Radar Terminal System
AT	Air Traffic
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
ATCT	Airport [RB1]Traffic Control Tower
ATSS	Air Traffic Systems Specialist
BCN	Beacon
CAD	Computer-Aided Drafting
CBI	Computer Based Instruction
CCA	Circuit Card Assembly
CDRL	Contract Data Requirements List
CENRAP	Center Radar Processing (Trigger Simulator)
CMC	Control and Maintenance Console
CMS	Control and Monitoring System
CMU	Concrete Masonry Unit
CO	Contracting Officer
COMM	Communications
COTR	Contracting Officer's Technical Representative
COTS	Commercial Off-the-Shelf
DASR	Digital Airport Surveillance Radar
DBRITE	Digital Bright Radar Indicator Tower Equipment
DCE	Data Communication Equipment
DDS	Digital Data Service
DoD	Department of Defense

DSC	Digital Scan Converter (DBRITE)
DTE	Data Terminal Emulator
DTS	Desert-to-the-Sea
DVG	Digital Video Generator
DVG	Display Video Generator (ARTSIIE CCA)
DVM	Digital Video Mapper
E/G	Engine Generator
EOL	Engineering Operations Log
ETVS	Enhanced Terminal Voice System
FAA	Federal Aviation Administration
FATD	Facility/Antenna Tower Design
FCC	Federal Communications Commission
FMAC	Facilities Monitoring and Control
FRB	Failure Review Board
FRD	Facilities Requirements Document
FRDF	Facilities Reference Data File
FTA	Frequency Transmitting Authorization
GFD	Government Furnished Drawings
GFE	Government-Furnished Equipment
GFI	Government-Furnished Information
HVAC	Heating, Ventilating, and Air Conditioning
I&CO	Installation and Checkout
ICS	Interim Contractor Support
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IFB	Invitation for Bid
ILSP	Integrated Logistics Support Plan
IMT	Integrated Management Team
IPT	Integrated Product Team
IR	Investigation Request
IRPA	International Radiation Protection Association
JAI	Joint Acceptance Inspection
KDC	Keyboard Device Controller (ARTSIIE CCA)
LAN	Local Area Network

LBP	Lead Based Paint
LCU	Local Control Unit (part of the SMC)
LIS	Logistics Inventory System
LRU	Line Replaceable Unit
MALA	Mode S ASR-9 Line Adapter
MDI	Medium Dependant Interface
MIPS	Master Integrated Program Schedule
MOA	Military Operations Area
MPS	Maintenance Processor Subsystem
MRSM	MSSR Remote System Monitor
MSSR	Monopulse Secondary Surveillance Radar
MTI	Moving Target Indicator
NAS	National Airspace System
NCP	National Change Proposal
NCRP	National Council on Radiation Protection and Measurements
NDI	Nondevelopmental Item
NIMS	NAS Infrastructure Management System
NOTAM	Notice to Airmen
NTIA	National Telecommunications and Information Administration
NTDS	Navy Tactical Data System
NTP	Notice to Proceed
O&M	Operation and Maintenance
OMT	Operator Maintenance Terminal
OSD	Operational Suitability Demonstration
OT&E	Operational Test and Evaluation
PC	Personal Computer
PIDP	Programmable Integrated Data Processor
POC	Point of Contact
PPI	Plan Position Indicator
PSR	Primary Surveillance Radar
PTRG	Pretrigger
RADS	Radar Alphanumeric Display Subsystem
RABM	Range Azimuth Beacon Monitor

RADHAZ	Radiation Hazard(s)
RAMP	Radar Modernization Program
RAPCON	Radar Approach Control
RCJB	Radar Control Junction Box
RCP	Radar Control Panel
RCU	Remote Control Unit (part of the SMC)
RF (rf)	Radio Frequency
RMS	Remote Monitoring System
RSSC	Raytheon Support Services Company
RTSC	Raytheon Technical Services Company
SAPT	Site Activation Product Team
SAT	Site Acceptance Test
SATP	Site Activation and Transition Plan
SAWG	Site Activation Working Group
SCDI	Site Control and Data Interface
SCE	Site Construction Engineer
SDC	Services During Construction
SDS	Site Design Survey
SDT	Surveillance Data Translator
SDTL	Site Deactivation Team Lead
SE&SI	Systems Engineering and Site Integration
SITL	Site Installation Team Lead
SIU	System Interface Unit
SMC	SDT Mode Controller
SMO	System Management Office
SR	Service Report
SRAP	Sensor Receiver and Processor
SRCH	Search (or MTI)
SSC	System Support Center
SSR	Site Survey Report
STARS	Standard Terminal Automation Replacement System
TDWR	Terminal Doppler Weather Radar
TELCO	Telephone Company

TFR	Trouble Failure Report
TOR	Technical On-Site Representative
TRACON	Terminal Radar Approach Control
TRIG	Trigger
UPS	Uninterruptible Power Supply
VCSS	Voice Communications Switching System
VDCU	Video Display Control Unit
VID	Video
VSP	Variable Site Parameter
WTHR	Weather (or Normal)

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