

21 JUNE 2001



Communications and Information

**ENGINEERING AND INSTALLATION
SERVICES**

NOTICE: This publication is available digitally on the AFDPO WWW site at: <http://afpubs.hq.af.mil>.

OPR: 38 EIG/GF (Mr. John Guinn)

Certified by: HQ USAF/SCXX
(Col Terry G. Pricer, Sr.)

Supersedes AFMAN 33-105, 1 May 1998

Pages: 32
Distribution: F

This manual implements Air Force Policy Directive (AFPD) 33-1, *Command, Control, Communications, and Computer (C4) Systems*, and AFPD 21-4, *Engineering Data*. It identifies the engineering and installation (EI) products and services available from the 38th Engineering Installation Group (EIG) and describes how users obtain the products and services to support their communication and information systems. This manual applies to personnel working in communications and information planning and implementation functions; other functions at major command (MAJCOM), Numbered Air Force (NAF), and wing level who require, plan, maintain, install, modify or remove communications and information systems. Refer technical questions and comments to 38 EIG/GF, 4057 Hilltop Road, Tinker AFB OK 73145-2713. Refer recommended changes and conflicts between this and other publications, using Air Force (AF) Form 847, **Recommendation for Change of Publication**, through channels, to Headquarters Air Force Communications Agency (HQ AFCA/ITPP), 203 W. Losey Street, Room 1100, Scott AFB IL 62225-5222. See **Attachment 1** for a glossary of references and supporting information used in this manual. Maintain and dispose of records created as a result of prescribed processes according to AFMAN 37-139, *Records Disposition Schedule* (will convert to AFMAN 33-322, Volume 4). The Paperwork Reduction Act (44 United States Code [U.S.C.] 3501 et seq.) and AFI 33-360, Volume 2, *Forms Management Program*, affect this publication.

SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

This revision incorporates changes due to the re-organization of the communication EI resources within the Air Force, including the deactivation of the 38 Engineering Installation Wing and many of its subordinate units, and the assignment of the 38 EIG as the senior EI organizational function.

Chapter 1—TYPES OF ENGINEERING AND INSTALLATION SERVICES AND PRODUCTS

1.1. General	4
1.2. Downward Directed Requirements	5

Report Documentation Page

Report Date 21 Jun 2001	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle Air Force Instruction 33-105, Communications and Information, Engineering and Installation Services	Contract Number	
	Grant Number	
	Program Element Number	
Author(s)	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) Secretary of the Air Force Pentagon Washington, DC 20330-1250	Performing Organization Report Number AFI33-105	
Sponsoring/Monitoring Agency Name(s) and Address(es)	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes		
Abstract		
Subject Terms		
Report Classification unclassified	Classification of this page unclassified	
Classification of Abstract unclassified	Limitation of Abstract UU	
Number of Pages 32		

1.3. Upward Generated Requirements 5

Chapter 2—METHODS OF FUNDING 6

2.1. Funding for 38 EIG Resources 6
2.2. Program Control 6
2.3. Funds Expiration 6
2.4. Direct Cite Travel 7
2.5. Customer Funding for 38 EIG Managed Contracts 7
2.6. The 38 EIG 7
2.7. The 38 EIG Funding Exceptions 8
2.8. Cutoff Dates for Receiving Customer Funding for Contract Installations 8

Chapter 3—PLANNING 9

3.1. Communications and Information Systems Blueprint 9
3.2. The Blueprint Phase Implementation Directive (BPID) 10
3.3. Out-of-Cycle Requirements 11

Chapter 4—IMPLEMENTATION 12

4.1. Processing Requirements for Implementation 12
4.2. Processing Engineering Assists (EA) 12
4.3. Technical Solution 12
4.4. Total Force Group (TFG) 13
4.5. Funds Management 13
4.6. Implementation Plan 13
4.7. EI Program Manager (PM) Responsibilities 13
4.8. Plans and Implementation (P&I) 13
4.9. Project Engineering 13
4.10. Project Support Agreement 14
4.11. Project Package 15
4.12. Materiel Acquisition and Disposition 16
4.13. Additional Customer Tasking of Deployed Installation Team 17
4.14. Work Stoppages 17
4.15. Project Drawings 17

AFMAN33-105 21 JUNE 2001	3
Chapter 5—CONTRACTING SUPPORT	18
5.1. General	18
5.2. EI Services Contracting	18
5.3. Communications Service Authorization (CSA)	19
5.4. Operation and Maintenance (O&M) Support	20
Chapter 6—SPECIALIZED ORGANIC EI SERVICES	21
6.1. Maintenance Assist	21
6.2. Antenna Preventive Maintenance Inspection (PMI) Program	21
6.3. Structural Platform Analysis	21
6.4. Specialized Engineering Workload	21
Chapter 7—ENGINEERING DATA	24
7.1. Engineering Data	24
7.2. Engineering Data Service Center (EDSC) Services	24
Chapter 8—REQUESTING WARTIME SUPPORT FOR SUPPORTED FORCES COMMANDER	25
8.1. Engineering and Installation Wartime Capabilities	25
8.2. Planning for Wartime Support	25
8.3. Special Purpose Vehicle Support for Deployed Engineering and Installation Personnel	26
8.4. Access to Engineering and Installation Wartime Forces	26
8.5. Information Collections, Records, and Forms	26
Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION	27

Chapter 1

TYPES OF ENGINEERING AND INSTALLATION SERVICES AND PRODUCTS

1.1. General . The 38 EIG provides several types of communications and information support products and services to Air Force, Department of Defense (DoD) and non-DoD customers. In the context of this manual, the customer refers to: Air Force (i.e., MAJCOM, NAF, and Wing), DoD agencies, and non-DoD agencies. This first chapter broadly defines those products and services, while subsequent chapters detail the products, services, and procedures necessary to obtain them. Customer requirements are satisfied by contract or, organically by active duty and Air National Guard (ANG) EI squadrons.

1.1.1. Planning Assistance, Technical Solutions, and Cost Estimates. The 38 EIG provides these services for communications and information requirements. Obtain these services through the systems telecommunications engineering manager (STEM) assigned to your base or MAJCOM. Refer to MAJCOM-level STEMs as STEM-C, and base-level STEMs as STEM-B. The ANG activities also have STEM-B's assigned to supporting ANG EI squadrons. Those customers without a STEM, send requests to 38 EIG/GF, 4057 Hilltop Road, Tinker AFB OK 73145-2713 (see [Chapter 3](#) for planning).

1.1.1.1. Planning Cycle. The base communications and information systems blueprint process as captured in the blueprint, investment plan, and workplan, documents each Air Force base's existing and targeted communications and information systems and plans for modernization. This document is referred to as the blueprint through the remainder of this manual. The STEM produces the blueprint, investment plan, and workplan products as part of the overall blueprint process.

1.1.1.2. Implementation Cycle. Defining the customer's requirements and identifying a technical solution, completes the initial planning cycle. Implement technical solutions using organic, contractors, or a mixture of both. Access these services through the MAJCOM workplan or a STEM-B/STEM-C assigned to each base and MAJCOM. Customers without a STEM-B/STEM-C can send requests for service to 38 EIG/GF (see [Chapter 4](#) for implementation).

1.1.2. Contracting Functions. The 38 EIG provides the following contracting support.

1.1.2.1. Telephone Service. Telephone companies provide support via a Communication Service Authorization (CSA) to all active duty Air Force locations, Air Force Reserve Units, ANG Units, and Recruiting Squadrons. As there is further deregulation of the telephone industry, the 38 EIG will convert all phone service to competitive contracts awarded under the requirements of the Competition in Contracting Act (CICA) and the Telecommunications Deregulation Act of 1996. Access to CSAs is available by coordinating new contract requirements with applicable STEM-B or STEM-C. Implement all contract administration items by contacting the 38 EIG/PKK, 4001 Hilltop Road, Tinker AFB OK 73145-2713.

1.1.2.2. Special Leasing Agreements. These agreements exist for telephone switches and cable plants at a few locations where it is in the best interest of the Air Force to continue leasing from the incumbent telephone company. Normally such sole source leasing agreements are justified as in the best interest of the Air Force because base closure is imminent or a competitive solution for a government-owned system is being developed. Coordinate requirements through 38 EIG/PKK (see paragraphs [5.3.2.](#) and [5.3.3.](#)).

1.1.2.3. Operations and Maintenance (O&M) Contracts. Contracts for O&M communication infrastructure such as telephone switches, cable plants, network control centers, and land mobile radios are provided at continental United States (CONUS) Air Force locations. Coordinate requirements through the applicable STEM-B or STEM-C (see paragraph 5.4.).

1.1.2.4. EI Contracts. Contracts are available for site survey, design and installation of communications systems including cable plant, local and wide area networks, radio and radar systems, air traffic control, landing systems and weather sensors and security systems. Coordinate requirements through the applicable STEM-B or STEM-C (see paragraph 5.4.).

1.1.3. Maintenance Services. Route requests for emergency maintenance and requests for cable and antenna system maintenance actions to 738 Engineering Installation Squadron (EIS)/DOO, 801 Vandenberg Ave, Keesler AFB MS 39534-2638, according to Technical Order (TO) 00-25-108, *Communication-Electronics (C-E) Depot Support*.

1.1.4. Specialized Engineering Support. The 738 EIS, Keesler AFB MS, conducts services, such as telecommunications test and analysis, electromagnetic environmental effects, and measurements. Send requests and funding for these services to the 738 EIS/EEE (see paragraph 6.4.).

1.1.5. Engineering Data Services. The 38 EIG, Communications and Information Systems Electronic Data Service Center (EDSC) provides various engineering data services. Send requests for their services to 38 EIG/TS, 4012 Hilltop Road, Tinker AFB OK 73145-2713 (see Chapter 7).

1.1.6. Unit Type Codes (UTC). Active duty and ANG UTCs are available to the supported force's commander in contingencies and war. Access to UTCs is via the supported command, gaining MAJCOM, or lead military service communications and information war and contingency planning office (see Chapter 8).

1.2. Downward Directed Requirements . These requirements result from Program Management Directives (PMD) that are Air Staff driven and funded. For example, the Combat Information Transport System is a downward directed program formally documented in a PMD.

1.3. Upward Generated Requirements . These are requirements that originate from either base or MAJCOM-level. MAJCOMs must list upward generated requirements requesting EI assistance on their MAJCOM Workplan and must fund for the required EI support.

Chapter 2

METHODS OF FUNDING

2.1. Funding for 38 EIG Resources .

2.1.1. Customer Funding: The 38 EIG accepts any authorized funding documents for temporary duty (TDY) or contractual requirements between Air Force, DoD and non-DoD activities. Utilize funds by direct cite method. **NOTE:** See Air Force Instruction (AFI) 65-601 Volume 1, *Budget Guidance and Procedures*, and Defense Finance Accounting System (DFAS)-DE 7010.1-R, *General Accounting and Finance Systems at Base-Level*. Do not send funding documents to the 38 EIG unless you have coordinated with the 38 EIG Funding Manager. Send funding for EI services to 38 EIG MAJCOM Production Implementation Division (PID) as follows: 38 EIG/GC for Air Combat Command and Air Force Special Operations Command; 38 EIG/GM for Air Force Materiel Command and Air Force Space Command; 38 EIG/GP for Pacific Air Forces, Air Mobility Command, and Air Force Reserve Command; and 38 EIG/GU for United States Air Force Europe and Air Education and Training Command. If a DD Form 448, **Military Interdepartmental Purchase Request (MIPR)**, is provided, the appropriate PID prepares a DD Form 448-2, **Acceptance of MIPR**, accepting the funds direct cite category II for contract requirements. Receipt of the DD Form 448-2, category II commits funds. Obligation occurs upon receipt of a delivery order and posted by the customer operating location (OPLOC). The 38 EIG/PC provides a copy of the contract to the point of contact (POC) on your funding document to confirm obligation by your OPLOC. The 38 EIG can accept funds for a single project or for multiple projects as long as the 38 EIG accepts and approves the projects for implementation. Your funding documents must site the correct accounting classification for the services ordered. Example: 3400 O&M TDY cites element of expense investment code (EEIC) 409, to purchase contract services cite EEIC 592XX. You may not direct cite one EEIC to purchase multiple services. You must provide separate funding documents for each service. The 38 EIG accepts a MIPR as category I reimbursement on a case-by-case basis.

2.1.2. Gaining MAJCOMs provide funding for day-to-day operations of UTCs. Tasking agencies (MAJCOMs, Joint Commands, etc.) provide funding for UTC deployments to include TDY fund and ANG Work Days.

2.2. Program Control will :

2.2.1. Provide consultation services to customers on 38 EIG funding methods and assist customers in obtaining obligation documents, if required.

2.2.2. Manage customer funds provided for contractual requirements.

2.2.3. Return unexpended funds upon customer request and 38 EIG funding manager coordination.

2.2.4. Provide contract documents to customer POCs. Customer OPLOC receives obligating documents through Joint Electronic Document Access obligating documents.

2.3. Funds Expiration .

2.3.1. The 38 EIG returns any expiring fiscal year (FY) funds to the customer upon request by the customer or after reconciliation of contract obligation. Each funding document must contain an expiration date determined by the customer.

2.3.2. The 38 EIG can carry over non-expiring funds as appropriation rules allow in support of future projects. Coordinate with the PID implementation funds manager.

2.4. Direct Cite Travel . There will be no cut-off date for 38 EIG accepting a direct cite for travel. Issue funds on AF Form 616, **Fund Cite Authorization**, message, or MIPR. Obtain travel arrangements and required documentation information from the appropriate 38 EIG PID.

2.5. Customer Funding for 38 EIG Managed Contracts . Customers will:

2.5.1. Provide funding to initiate new Indefinite Delivery/Indefinite Quantity (ID/IQ) type contracts that cover the minimum guaranteed by the contract in accordance with paragraphs 2.1. through 2.4.

2.5.2. Provide funding needed to satisfy the total value of any requested order.

2.5.3. Pay any surcharges associated with contracts used to satisfy customer's requirement.

2.5.4. Provide necessary funds for contractual changes derived from differing site conditions, environmental impediments, changes in customer requirements, etc.

2.5.5. Provide funding for TDY associated with the training of customer's Quality Assurance Evaluators (QAE) or Contract Monitors (CM) for those base personnel appointed to perform as QAEs/CMs.

2.5.6. Provide funding for TDY travel and per diem for (as required) program management, engineering, and contracting personnel to the customer's site to support the requirements identification, solicitation, and contract administration phases of the contracting effort. Trips for site surveys, pre-award, and post-award conferences, may be customer requested and funded when needing on-site assistance to resolve problems during contract administration.

2.5.7. Provide funding for a yearly site visit by the 38 EIG contract administrator (for O&M contracts) to ensure requirements are correctly reflected and there are no contractual or performance-related problems.

2.5.8. For O&M and CSA contracts, provide the appropriate funding document (normally an AF Form 9, **Request for Purchase**, or AF Form 1218, **Request for Communications Service**) to initiate contract action or request issuance of orders or changes under existing contracts managed by the 38 EIG. These contracts include CSAs, special leasing arrangements, O&M contracts, and EI services contracts. Provide funding to 38 EIG/PKK for existing CSAs and special leases, and to 38 EIG/PKL, 4079 Hilltop Road, Tinker AFB OK 73145-2713, for existing O&M contracts

2.6. The 38 EIG . The 38 EIG (except as noted), when developing contracts for general use, will:

2.6.1. Provide and fund for necessary manpower (engineering, contracting, and legal) to award and administer such contracts.

2.6.2. Pay any surcharges with contracts used to satisfy their (38 EIG's) own requirements.

2.6.3. Consider the proper funding source when funding for and establishing contract minimums. The 38 EIG customers typically provide funding for contract minimums on ID/IQ contracts.

2.6.4. Fund for costs associated with initial tasks of contract development efforts. These costs include, but are not limited to: defining and establishing the requirements baseline; conducting the risk analysis; preparing risk analysis and analysis of alternative documentation; developing the contract strategy; preparing the draft and final Request For Proposal; and conducting source selections.

MAJCOM participation is highly encouraged throughout the contract development effort. MAJCOM/user participation is customer funded.

2.7. The 38 EIG Funding Exceptions :

2.7.1. The customer funds any changes, such as differing site conditions or environmental impediment. The 38 EIG will not fund environmental impediments.

2.7.2. The customer funds all equitable adjustment requests submitted by the contractor, that the Contracting Officer determines to be due to the customer.

2.8. Cutoff Dates for Receiving Customer Funding for Contract Installations . Implementing authority occurs when the 38 EIG receives an approved and funded requirement from the MAJCOM or customer. Opportunities to satisfy customer requirements using expiring funds rapidly become limited as the end of the FY approaches. Depending on the requirement and contract vehicle being utilized, the cutoff dates for the 38 EIG to obligate customer funding can range from 30 July to 25 September of the FY. The customer may request the return of funds at any time prior to funds obligation by 38 EIG.

Chapter 3

PLANNING

3.1. Communications and Information Systems Blueprint . This document, prepared by PIDs, provides the plan to modernize the base-level infrastructure with cost-effective, base-wide, communications and information capability supporting digital transmission of voice, data, video, imagery, and telemetry needs. It complies with the Joint Technical Architecture-Air Force (JTA-AF). Each Blueprint Phase Implementation Directive (BPID) solution quotes a JTA-AF section, if applicable. The 38 EIG develops all communications and information requirements through the blueprint and revises it quarterly. See paragraph **3.3.** for exceptions.

3.1.1. Content of Blueprint. The blueprint provides three primary products to the customers. The blueprint is a *Roadmap* that documents the current baseline to the target base configuration to support present and future requirements, and provides a time-phased transition plan. The *Investment Plan* translates this roadmap into required dollars and documents a funding strategy for each MAJCOM to meet specific customer needs. The *Workplan* captures the investment plan elements that the MAJCOM expects to be funded. The MAJCOM prioritizes the workplan based on operational needs and funding availability. The existing blueprint is broken down into sections, as follows:

3.1.1.1. Executive Summary. This section provides a high-level summary of the target infrastructure, and outlines other pertinent general information such as recommended priorities, impacts, etc.

3.1.1.2. Sections 1-4. These sections relate to the systems development strategy, provide background information, discuss the current communications and information environment, the target architecture, and outline a transition strategy.

3.1.1.3. Section 5. This section is the Blueprint Implementation Plan (BIP). The BIP is a breakdown of the plan by elements that eventually lead to the target infrastructure when implemented. The BIP develops requirements by logically combining elements to produce a capability. The STEM-B documents the combination of appropriate elements in a BPID, when requested by the organization, for implementation planning (see paragraph **3.2.**).

3.1.1.4. Appendices. The blueprint also contains appendices that include, but are not limited to, the base mission statements, discussions of facility construction/modification efforts, upgrades, cost details, and a list of acronyms.

3.1.1.5. Index. A subjective index allows easy location of the contents.

3.1.2. The Blueprint Process. The STEM-B develops and maintains the blueprint. The STEM-B works jointly with the customer (MAJCOMs and bases) and the STEM community to produce the most viable product possible. The process entails capturing and validating new communications and information requirements, comprehensive data gathering, military construction project reviews, analysis, and continual update. Obtain data by base surveys and through various other sources (e.g., coordination with base level, Standard Systems Group, and Electronic Systems Center program offices, databases). Update data on existing communications and information systems on the Communications and Information Systems Installation Records (CSIR) according to AFI 21-404, *Developing and Maintaining Communications and Information Systems Installation Records*.

3.1.2.1. As data is collected, the STEM-B reviews and analyzes it, documents the baseline, develops the target architecture, and formulates a transition strategy to comply with the established target architecture. The BIP reflects this transition strategy.

3.1.2.2. The STEM also manages the out-of-cycle and BPID requirements, ensuring they are rolled into the blueprint as needed.

3.1.2.3. The STEM-C works closely with the MAJCOMs to: provide technical consultant services; assist in requirements definition; and create, with the MAJCOM communications and information staff, a MAJCOM blueprint that outlines the command's vision and target architecture. The STEM-C provides general and technical guidance to the STEM-B, ensuring the blueprint reflects Air Force and MAJCOM architectures and objectives. The STEM-C reviews and approves all blueprints before release to the customer.

3.1.2.4. The Joint STEM (STEM-J) works with joint agencies (e.g., the unified commands, Defense Information Systems Agency [DISA], and the Joint Staff). They focus on the Global Information Grid, and Joint Agency Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems planning to include planning/assessing impact of programs on the infrastructure.

3.1.3. The BIP. All requirements planned within the communications and information systems blueprint are broken down into elements and documented in the BIP to allow for implementation. Users can request a BPID for anything included in the BIP. Use the BIP for both base-level and MAJCOM Program Objective Memorandum funding efforts for communications and information requirements.

3.1.4. The Blueprint Approval Process. The MAJCOM Communications and Information Systems Officer (CSO) is the approval authority for subordinate base blueprints. The wing commander is the approval authority at the base for the blueprint. The STEM-B meets at least annually with the appropriate base or MAJCOM personnel (to include representatives of the operations, support, logistics, intelligence, and communications and information communities) to review the blueprint for architectural compliance, proper classification, and functional support. STEM-Cs work with the MAJCOMs to establish an annual review cycle.

3.1.4.1. Endorsement falls within three categories: (1) approved; (2) approved, with exceptions--in which case the STEM-B takes care of the exceptions with the next quarterly revision; and (3) disapproved. If a blueprint is disapproved, the previous edition remains in effect until superseded.

3.1.4.2. The 38 EIG keeps the official copy of the blueprint on file, and it is the official source document for all BPIDs. If, at any time, a base or MAJCOM wishes to withdraw its support of a blueprint, a memorandum to the STEM-B or STEM-C takes it out of circulation until issues are resolved. The previous version then falls back into effect.

3.2. The Blueprint Phase Implementation Directive (BPID). The BPID, when signed by the approving official, is the authority to expend resources to implement a portion of the blueprint.

3.2.1. The BPID is the primary method of implementing a communications and information requirement. When the customer is ready for implementation, the CSO or designated representative requests the STEM-B to provide the BPID.

3.2.1.1. The BPID breaks the estimate provided in the BIP into cost categories, defines the requirement sufficiently to enter into implementation, and provides other information such as general scope of allied support, related program information, etc.

3.2.2. Upon request, the STEM-B develops the BPID and provides it to the wing commander for approval. When wing commanders concur with the BPID as written, they approve it by letter or endorsement for implementation. **NOTE:** The wing commander may delegate this approval authority to the CSO.

3.2.2.1. If the customer desires the 38 EIG to implement, they send the Request for BPID Implementation, according to the communications and information system blueprint, Section 5, to the STEM-B who in turn sends it to the implementation function of the 38 EIG.

3.2.2.2. If the customer desires another method of implementation (such as a 38 EIG contract, local contract, or self-help), the customer coordinates this with the STEM-B for tracking and update of the blueprint, as required.

3.3. Out-of-Cycle Requirements . Requirements not included in the blueprint are considered out-of-cycle requirements. When a requirement is known, the CSO should negotiate with the requester and STEM-B to have it included in the next quarterly blueprint update. If it is of a more urgent nature, submit the requirement according to the format in AFI 33-103, *Requirements Development and Processing*. In this case, the 38 EIG provides a technical solution and cost estimate within 30 days. Base CSOs must coordinate urgent requirements with the appropriate MAJCOM for inclusion into the workplan.

Chapter 4

IMPLEMENTATION

4.1. Processing Requirements for Implementation . The STEM-B submits requirements for implementation to the appropriate MAJCOM PID. The MAJCOM PID manages the processing of all approved and funded communications and information requirements in the applicable workplan. Each PID contacts the customer to:

- 4.1.1. Ensure the requirement is thoroughly understood.
- 4.1.2. Confirm funds availability.
- 4.1.3. Verify services need date.
- 4.1.4. Identify other factors that may impact implementation of the requirement.

4.2. Processing Engineering Assists (EA) . The EA is the mechanism used to request technical assistance from the 38 EIG or engineers assigned to 738 EIS and ANG squadrons. There are two types of EAs. One does not require any documentation (such as attending a meeting to provide technical advice). The other requires formal documentation, such as statement of work (SOW) or contract effort. The customer funds for EAs, as required. The 38 EIG, 738 EIS, and ANG squadrons provide EA support when resources are available. If organic resources are not available, the 38 EIG can provide EA support via contract vehicle.

- 4.2.1. Do not put EAs that do not require 38 EIG documentation in the workplan. The PID determines if organic resources can accomplish the EA. If organic resources are not available, the PID informs the customer and advises them if a contract capability exists.
- 4.2.2. The PID places EAs requiring 38 EIG documentation on the workplan, when the MAJCOM approves. The PID tasks the appropriate engineering activity. If organic capabilities do not exist, the PID advises the customer of the alternatives and manages the EA until the requirement is satisfied.

4.3. Technical Solution . The STEM-B (38 EIG or ANG) manages implementation of requirements as documented and validated in a base blueprint. Implementation proceeds as outlined in the BPID developed for a given element or set of elements in the BIP.

- 4.3.1. Broad gauge technical solutions. The STEM-B outlines a technical approach and an estimate of funds necessary for implementation of the requirement identified during site visits or upon customer request. This product identifies allied support, projected funding levels, and associated implementation resources, and will be provided to the customer for consideration within 30 days.
- 4.3.2. Detailed technical solutions. The customer decision to proceed with requirement implementation (based upon funds availability, priority, contingency, etc.) requires project placement in the MAJCOM workplan. Upon preliminary issue for requirement definition, the assigned engineer activity proceeds with development of a detailed technical solution. The development of detailed technical solutions includes a detailed project cost estimate. The customer funds this effort. The engineering activity provides the final detailed technical solution and cost estimate (allied support may or may not be included), to the STEM-B. The STEM-B verifies that it is blueprint compliant. Once verified, the STEM-B sends the technical solution, including the detailed costing, to the customer for an implementation decision.

4.4. Total Force Group (TFG) . The TFG consists of representatives from the 19 ANG, the 738 EIS, and the 38 EIG. It operates as the single focal point to interact with the STEM community and MAJCOM project managers. The MAJCOMs submit projects they wish to have implemented organically through their STEM-B and STEM-C to the TFG members for review. TFG members select projects based upon the projected training needs and individual unit capabilities. Selected projects are engineered and implemented organically by specific ANG squadrons, the 738 EIS, or a combination of EI units. The TFG returns non-selected projects to the MAJCOM for contract implementation.

4.5. Funds Management . The implementation funds manager monitors funding obligation rates. Upon MAJCOM or base request, the implementation funds manager provides near real time status of MAJCOM MIPRs via spreadsheet or other means.

4.6. Implementation Plan . The PID personnel reviews and clarifies the requirement and consults with the appropriate STEM. The lead implementing organization assembles a team (attendees determined based on the scope of the requirement). The team addresses contract implementation vehicles, milestones and other requirement issues. Once the requirement is adequately defined and the implementation contract selected, the team develops the implementation plan and sends it to the customer for approval. Once approved, the team develops the contract package. The team follows the 38 EIG/PK contracting implementation process.

4.6.1. Once implemented, the PID updates all applicable databases and documentation, i.e., Information Systems Data Base/C4 Infrastructure Planning System or appropriate database, workplan, and blueprint.

4.6.2. The PID implementation funds manager is responsible for acceptance and distribution of funds; tracking and management of all contract services customer funds to ensure obligation or return prior to expiration date.

4.7. EI Program Manager (PM) Responsibilities . The EI PM interfaces with customers, engineers, and EI teams from project inception to project completion. PMs ensure all aspects of engineering, allied support, funding, materiel acquisition, and project installation proceed on schedule by resolving any issues or problems that arise. Other duties include the following:

4.7.1. Verify completion of all customer-required support and materiel is on-site.

4.7.2. Coordinate host base support for EI teams prior to arrival and during the project.

4.7.3. Work with customers and support personnel to prevent potential work stoppages.

4.7.4. Monitor all project milestones.

4.8. Plans and Implementation (P&I) . The customer P&I function is normally the point of contact and support for deployed EI teams and the EI project manager. P&I support responsibilities closely parallel EI PM duties. AFI 33-104, *Base-Level Planning and Implementation*, details P&I duties and responsibilities. AFI 21-116, *Maintenance Management of Communications-Electronics (C-E)*, contains maintenance support for EI projects.

4.9. Project Engineering . The project engineering process begins when the project engineer/team chief receives the communications and information system requirement. The engineer/team chief reviews the

requirement and determines the requirement for either a desktop or on-site survey. Once the survey is performed and all the preliminary requirements are identified, a Project Support Agreement (PSA) is written and endorsed by the customer. The engineer/team chief then develops a list of materiel (LOM) installation task instructions, and other support documents that may include, but are not limited to, an Initial Spare Supply List (ISSL), maintenance tools, test equipment, and any procured items not on approved MAJCOM or base approved standard solutions, or qualified products lists to complete the project package.

4.9.1. Survey Methods. Project engineers/team chiefs gather information by two different survey methods: desk top and on-site.

4.9.1.1. Perform desktop surveys by using CSIRs, available data, and telephone coordination with the customer to obtain technical information used in preparation of projects for non-complex installations and removals.

4.9.1.2. Perform on-site surveys when task complexity is difficult or when there is inadequate reference data to determine precisely where and how to install equipment and document it in a PSA.

4.9.1.3. On occasion, select projects need a project engineer on-site during the installation phase. The engineer performs the survey and develops the project package in conjunction with the installation. Short lead-time or highly visible projects are two examples when you may require an engineer on-site.

4.9.2. Cost Verification. On occasion, a project engineer/team chief conducting a survey discovers the original technical solution and cost estimate did not project sufficient funds to cover implementation costs. In these instances, the project engineer/team chief notifies the PM, who in turn, notifies the customer of required additional resources.

4.10. Project Support Agreement . The PSA is a formal document prepared by the project engineer/team chief, that details all host-base project support requirements. Support items identified in the PSA may include equipment being installed or removed, sites or locations agreed upon, services required, supporting construction, waivers, limitations, restrictions, and operational, technical, or other constraints affecting the communications and information systems requirement. The PSA also designates the responsibilities of the host base civil engineer, the base CSO's staff, other supporting activities, and the customer.

4.10.1. Attachment 1 of the PSA contains the siting and project installation data concerning specific sites and locations for equipment placement according to PSA drawings.

4.10.2. Attachment 2 of the PSA contains the civil engineering support requirements the host base civil engineer (BCE) or contractor provides. These services include architectural, mechanical, electrical, and support construction requirements. Also identified are special services such as trenching, landscaping, obtaining cranes, staking buried utilities, and shop services, such as sheet metal, fabrication, etc.

4.10.3. Attachment 3 of the PSA addresses the communications support requirements for leased and O&M furnished equipment, circuit requirements, secure systems, TEMPEST guidelines, and downtime requirements.

4.10.4. Allied Support and Host Base Support. Allied support and host base support are two distinct topics addressed within the PSA. The following paragraphs describe the differences.

4.10.4.1. Allied support services include minor exterior and interior construction work, space allocation, reserving heavy equipment, environmental support, and any other support necessary to satisfy a customer's requirement. Some examples include clearing landscape and installing telephone and utility poles, power panels, and breaker boxes.

4.10.4.2. Host base support for the installation team includes secure and dry storage areas, living and dining facilities, special vehicle support, warehouse inventory space, emergency medical/fire rescue support, and the availability of local purchase items.

4.10.4.3. During SOW and PSA development, determine the availability of storage space for project materiel. If storage space is not available on-site, then include as a contractor or customer requirement. The customer is responsible for funding this requirement.

4.10.5. On-Site PSA, PSA Concurrence, and Statement of Intent.

4.10.5.1. When feasible, the project engineer/team chief prepares an on-site PSA after survey completion, and prior to departing the TDY location. The decision to leave an on-site PSA is site specific and depends upon the particular application. Instances where the engineer cannot leave the PSA include an engineering services contractor, projects with short lead times, a requirement for post-survey coordination, and projects with substantial technical complexity.

4.10.5.2. On-site PSA concurrence is highly encouraged to expedite project implementation and is accomplished at the discretion of the project engineer/team chief and base CSO.

4.10.5.3. If the PSA cannot be left on-site, the engineer/team chief writes and leaves a Statement of Intent (SOI). The SOI informally records the requirements presented and the tentative support agreements reached. It also serves as a preliminary coordination document showing designated space, reserved facilities, and coordinated support requirements. The customer, CSO, P&I, BCE, and interested parties must review the SOI and upon concurrence, sign it. Upon the project engineer/team chief's return from the site survey, they expedite the completion of the PSA and send it to all PSA addressees.

4.10.5.4. The PSA endorsement covers all support requirements identified in the PSA and its attachments. The PSA endorsement is a binding contract between the host base and EI unit. The success of the PSA endorsement hinges on the ability of the tasked organizations to support the requirements, not when work identified in PSA Attachments 1 through 3 can be accomplished. Organizations with concerns regarding conditions of the PSA should consolidate their responses in the PSA endorsement.

4.10.6. Statement of Work (SOW)/Performance Work Statement (PWS). The SOW/PWS specifies the type and quantity of work required and the services a contractor or installation team must provide. The SOW/PWS may also require the contractor to provide end-items of equipment that they purchase through an equipment performance specification document. The SOW can provide task instructions for organic installations.

4.11. Project Package . A project package translates a funded and approved requirement into the engineering, supply, and installation data necessary to establish or upgrade a capability. The package consists of two primary documents:

4.11.1. Tab A (the LOM). A LOM identifies all of the equipment and hardware required for a particular project installation. The LOM normally contains two parts: Part I identifies end items of equip-

ment that the customer procures; Part II identifies hardware necessary to install the end items, such as solder, nuts, bolts, screws, twine, tape, lugs, fuses, etc. Part II of the LOM is normally procured by EI from a sole source vendor or through General Services Administration (GSA) contracts. Depending upon the situation, the customer may also agree to procure the LOM, Part II.

4.11.2. Tab B includes installation descriptions, task instructions, and associated drawings.

4.11.2.1. The project engineer/team chief prepares Tab B in sufficient detail to permit the installation and testing of the project without further clarification. This includes providing project drawings, sketches, maps, and circuit diagrams to show complete details of the installation.

4.11.2.2. The depth and detail of project packages are driven by project complexity. Frequently, abbreviated forms of project packages are used. An abbreviated project package contains the bare essential documentation necessary to successfully complete the project.

4.11.2.3. Most of the time, an abbreviated project package is written for an on-site engineering requirement. In order to give the installation team chief an overview of the requirement, the abbreviated package should contain as much detail as possible, including bullet task instructions and drawings.

4.12. Materiel Acquisition and Disposition . Having the right materiel in correct quantities at the job site when required is critical to a timely installation. Equipment and materiel can be procured or requisitioned from various sources.

4.12.1. Program Funded Equipment. For centrally funded, downward-directed projects, end items of equipment are normally centrally procured under the direction of the System Program Office (SPO) and shipped to the installation location through the SPO. All LOM, Part II, materiel is also centrally funded and may be procured by the SPO or the EI engineer.

4.12.2. MAJCOM Funded Equipment. For upward generated requirements, the originator or the MAJCOM is responsible to procure National Stock Number (NSN) coded end items of equipment through the Base Supply System. Non-NSN coded equipment, known as commercial off-the-shelf, may be procured (usually through base contracting) directly from vendors or manufacturers.

4.12.3. Vendor/GSA Acquisition. The EI engineer, through specific vendors or via GSA procurement contracts, executes the majority of LOM, Part II materiel acquisition. Project required operational dates, location of the installation in relation to the source of supply, and the most favorable pricing all influence the engineer's decision and selection of the supply source.

4.12.4. Local Purchase of Materiel. For small projects, it may be feasible for customers to locally purchase and store all LOM, Part II materiel. Another method is for the team chief to use an International Merchant Purchase Authorization Card to obtain all needed expendable equipment at the job site. A third option, that applies mainly to small projects located in close geographic proximity, is for the EI unit to purchase expendable materiel and transport it to the job site.

4.12.5. Expendability, Recoverability, Reparability Cost Designator (ERRCD) XD/XF Items. Installing major end items of equipment frequently requires extensive testing, troubleshooting, and alignment. If not part of a downward directed, centrally procured project, it's likely an ISSL for the equipment or system is not available. In this case, the customer is responsible to fund for all ERRCD XD/XF line replaceable units consumed during the test and acceptance phase of the project.

4.12.6. Excess Materiel. Upon completion of an installation project, the team chief identifies, by category, all excess serviceable materiel.

4.12.6.1. If the MAJCOM or base funded the materiel, the team chief turns over the excess to the customer.

4.12.6.2. If the materiel was centrally procured for a downward-directed project, the EI PM coordinates with the appropriate SPO to determine disposition of the excess.

4.12.7. If missing, incorrect, or damaged materiel is identified during the pre-installation survey, the team chief notifies the customer and EI PM. Action taken depends upon the source of supply. Additional funding of project materiel is a customer responsibility.

4.12.7.1. Incorrect Equipment. The assigned team chief identifies deficiencies to the customer and EI PM. The requisitioning activity is responsible to correct deficiencies.

4.12.7.2. Damaged or Unserviceable Equipment. In all other instances, it is the requisitioning organization's responsibility to follow up on damaged or unserviceable equipment using the materiel deficiency report, depot level repairable procedures, or contacting the local transportation personnel, as appropriate, for reimbursement.

4.13. Additional Customer Tasking of Deployed Installation Team . The EI installation unit must approve all taskings for additional workload through coordination between the team chief and EI PM.

4.14. Work Stoppages . Work stoppages can occur for equipment repairs, shortages, wrong equipment, allied support not complete, safety reasons, or if the organic resource receives an immediate contingency tasking. If an anticipated work stoppage is about to occur due to unforeseen circumstances, make every effort to resolve the situation before an actual work stoppage occurs. The team chief will work directly with base agencies to resolve problems that can lead to potential work stoppages. In the event an actual work stoppage occurs, the local communications unit P&I flight, parent workload control, and the EI PM determine what action to take in the best interest of the customer and the deployed EI team. Any individual on an installation team has the authority to stop a project in progress based on safety of team personnel and equipment.

4.15. Project Drawings . Upon project completion, the team chief annotates two sets of CSIR drawings. The team chief leaves one set with the communications unit (normally the CSIR manager) and sends the other set to the communications and information systems EDSC. CSIRs are annotated copies of project drawings compiled by the team chief on completion or installation of a project at a particular location. They are commonly called "as installed" drawings and annotated to reflect the as-installed conditions that vary from the actual project drawings furnished to the team chief by the communications and information systems EDSC.

Chapter 5

CONTRACTING SUPPORT

5.1. General . The 38 EIG provides contracting support for implementation of communication and information systems including distribution systems, local and wide area networks, switching systems, radio systems and a variety of radar and other flight facility systems. The 38 EIG also provides contracting support for telecommunications services to include competitive local exchange phone services (purchased via the CSA), competitive contracts for phone service, special leasing agreements, and operations and maintenance contracts for communication and information infrastructure such as telephone switches, cable distribution plants, network control centers, land mobile radios, etc. CSOs must ensure that planning is included up front to provide support for all contracting activity.

5.2. EI Services Contracting . The 38 EIG/PKE provides complete contractual support or assists 38 EIG customers in locating contractual vehicles for use by MAJCOM/base contracting offices to implement all communications systems, worldwide.

5.2.1. The 38 EIG/PKE has ordering authority for and utilizes a variety of existing contracts from DoD, Air Force, and other federal agencies to quickly implement customer requirements ranging from engineering assistance to a complete system inclusive of site survey, design, equipment, and installation. Although most of our effort involves providing complete contractual solutions (from site survey through installation completion), the 38 EIG/PKE can contract for only a portion of a project, i.e., engineering only for installation at a future date, or installation of a previously engineered requirement. When an existing contract cannot satisfy customer requirements (e.g., contract expiration, outdated technology, and cost of performance consideration), the 38 EIG/PKE may develop and award new contracts to satisfy customer's needs. In this instance, the 38 EIG works closely with the customer throughout contract development, award, and implementation. Should the customer desire implementation via their own contracting office, the 38 EIG/PKE assists the customer in locating contract vehicles for use by their local contracting squadron. If the customer desires implementation via a contract for which the 38 EIG/PKE has no ordering authority, the 38 EIG/PKE acts as a liaison for the customer with the contracting agency throughout the process until complete implementation.

5.2.2. The MAJCOM/base sends upward generated requirements for engineering and installation of communications and information systems to the applicable STEM-B or from the SPO for downward directed programs to the 38 EIG/GF. Integrated Product Teams (IPT) comprised of 38 EIG technical and contractual specialists, as well as the customer, review requirements and develop an implementation plan including recommended contract vehicle for implementation of the requirement. Once approved and funded by the customer, the IPT proceeds with the selected strategy. IPT members, including the customer, review contractor proposals and may participate in negotiation with the contractor, if requested. The IPT provides award documents, schedules, and a pre-performance briefing to the customer prior to commencement of a project.

5.2.3. When the 38 EIG develops a contract specifically to satisfy a customer's requirement, the 38 EIG personnel work closely with customer representatives in the preparation of the requirements documents. Lead-time for development of new contracting vehicles varies with complexity of the requirement. The 38 EIG advises customers early in the process of the level of involvement required so they may commit the necessary resources.

5.2.4. Following contract award, the 38 EIG/PKE provides the full range of contract administration services such as processing contract changes (modifications), adding or deleting requirements, addressing labor violations and/or disputes, receiving and reviewing QAE reports, etc. Customer participation is an integral part of contract administration and management of delivery orders. To achieve optimum performance, it is imperative that the customer provides focused QAE or CM support.

5.2.5. Customers may be asked to provide an on site QAE, Contracting Officer Technical Representative, or CM to oversee contractor installation activities. The extent of oversight is dependent upon the system being installed. If the base has qualified personnel, the 38 EIG/PKW and PKE provide QAE training at no cost (other than TDY expense if at base location) to personnel designated to serve in the above functions.

5.2.6. If a customer desires to utilize a contract that 38 EIG/PKE does not have ordering authority for, and the customer does not desire to work directly with the agency holding the contract, the 38 EIG/PKE provides assistance as a liaison.

5.3. Communications Service Authorization (CSA) .

5.3.1. By Air Staff assignment, the 38 EIG centrally manages CSAs for all Air Force activities. Identify a requirements for new or renewal CSAs and request on an approved AF Form 1218 for submission to the applicable STEM. The using activity must provide any funding and local coordination letters for safety, and all necessary justification and approval (J&A) documents. These documents, when assembled, constitute the customer's procurement package support for a new contract award. The 38 EIG provides the engineering support documentation to complete the procurement package. The bases process all requests for modifications to existing contracts via an AF Form 1218 directly to the 38 EIG/PKK.

5.3.2. The 38 EIG provides full contract administration management and support on all CSA contracts to include: (1) collecting and reporting of contract expenditures against CSA documents, (2) managing J&A thresholds and proactively managing delegation of procurement authority thresholds or approvals to ensure limitations are not exceeded, and (3) providing statistical data on CSA contracts as required. The base customer ensures the annual expenditure reported by the contracting officer at the beginning of each fiscal year is accurate or alternatively provides a corrected amount prior to 30 September of the reporting year. Letter or e-mail to the contracting officer furnishes correction. Negotiate contract modifications and changes throughout the life of the individual contracts.

5.3.3. Competitive Contracts for Telephone Service. The 38 EIG negotiates, awards, and administers competitive contracts to replace regulated services under federal telecommunications deregulation initiatives.

5.3.4. Leasing Agreements.

5.3.4.1. Leases of Telephone Switches and Cable Distribution Plants from the local telephone company. Some of these leases still exist, although no new leases are let. The 38 EIG and customer must work closely to phase out these leases as quickly as possible, in the best interest of the Air Force.

5.3.4.2. Reciprocal Leases. Reciprocal leases are leases established between the Air Force and the local telephone company for telephone company reimbursement to the Air Force for using Government owned/leased cable providing service to unofficial customers on a base. When

requesting the assistance of the 38 EIG/PKK and an inventory of the on base circuits that require compensation are identified, the 38 EIG/PKK negotiates and awards reciprocal leases between Air Force bases and telephone companies at the request of the base customer and the MAJCOM representative. **NOTE:** In accordance with public law, no base can allow use of Government cable without some form of reimbursement. Customers are encouraged to assemble the necessary information and to request support from the 38 EIG approximately 180 days prior to the required date for these lease agreements. Address requests for service to 38 EIG/PKK via the AF Form 1218.

5.4. Operation and Maintenance (O&M) Support . The 38 EIG provides contract support services for fielded base communications and information systems (telephone switch and distribution systems, network control centers, land mobile radios, etc.) at Air Force bases and facilities in the CONUS.

5.4.1. The 38 EIG works closely with the MAJCOM and base to develop SOWs, data items, and contract line item structure to support each individual base's mission. MAJCOM representative and base customer involvement plays an integral role in the operations and maintenance process. The 38 EIG then solicits, negotiates, and awards replacement contracts to ensure uninterrupted services and support, comprehensive and capable of meeting a wide variety of Air Force support requirements. Submit requests for support to the appropriate STEM according to AFI 33-103.

5.4.2. Following contract award, the 38 EIG/PKL provides the full range of contract administration services for O&M contracts (processing contract changes [modifications], adding or deleting requirements to support the customer, addressing labor violations and/or disputes, receiving and reviewing monthly QAE reports, certifying contractor's invoices for payment, etc).

Chapter 6

SPECIALIZED ORGANIC EI SERVICES

6.1. Maintenance Assist . Organic EI resources (active duty and ANG) may be available to assist in repair and restoration of critical communication and information systems. This includes cable, antenna, ground radio, satellite, wide-band radio systems, secure communications, and air traffic control and landing systems. EI organic resources may also be available to perform assessments of current capabilities or equipment condition and recommend maintenance actions or configuration changes necessary to improve equipment or system reliability and operability. Availability of EI personnel resources and the criticality of need are major factors in determining EI response to requests for assistance. Customers must route all requests for base-level maintenance assistance through their parent MAJCOM to the 738 EIS/DOO. The TO 00-25-108 contains detailed procedures for requesting assistance and specifically addresses cable and antenna maintenance requirements.

6.2. Antenna Preventive Maintenance Inspection (PMI) Program . This program is designed to support bases with no organic antenna maintenance capability by performing antenna PMIs and performing repairs of identified discrepancies. The ANG EI units and the 738 EIS have responsibility to perform PMIs. The 738 EIS/DOO establishes and maintains the PMI schedule and coordinates with the responsible EI unit to track PMI accomplishment and update the master PMI schedule. To take part in the PMI program, base-level units submit their requirements to their parent MAJCOM on AFTO Form 229, **Maintenance Requirements, Validations, and Accomplishments**. Upon MAJCOM approval, send the request to 738 EIS/DOO who coordinates with ANG/C4 to assign the PMIs. **NOTE:** The customer funds maintenance assists and antenna PMIs.

6.3. Structural Platform Analysis . The user, when needed, should contact the 738 EIS/DOO for assessment of any equipment platform, such as an antenna tower. The user can also contact the 738 EIS/DOO for help in identifying any needed repair work to communication platforms. The 738 EIS/DOO works directly with the user to develop a schedule that meets the user's needs without impacting the workload of the 738 EIS. Based on the mutually developed schedule and receipt of funding from the user, the 738 DOO provides a team to conduct an on-site visit to assess the situation and gather data. When feasible, the team provides a solution before leaving the site. However, if a detailed analysis is required, the team sends the results and recommendations back to the site upon completion.

6.4. Specialized Engineering Workload . The 738 EIS/EEE provides worldwide communications and information systems testing and engineering analysis. These services are provided to all DoD, Air Force, and other government organizations on a cost reimbursement basis with customers directly tasking the flight. Engineering consultation on communications and information systems is available for most Air Force initiatives with contractors and government organizations through the sections indicated.

6.4.1. Telecommunications Section. This section specializes in testing command and control data systems and performing measurements, analyses, and troubleshooting on a wide variety of digital and analog C-E facilities, systems, and subsystems, including those using fiber optic, copper, satellite, local area network, and other transmission media. They perform:

6.4.1.1. Digital and Analog Communications and Information Circuit Analysis. This ensures users can communicate with the distant end or send and receive information accurately. It

includes the analysis of problems and determines corrective actions to ensure that users get the quality of service for which they are paying.

6.4.1.2. Fiber Optic Technology Investigation. Investigates new technology in fiber optics (connectors, splices, test equipment) and performs tests to ensure proper operation of fiber optic systems.

6.4.1.3. Local Area Networks Tests. Performs tests to ensure transmission media (metallic, fiber optic, free-space) will: support the network, send and receive packets of information, and perform to commercial and/or local performance criteria.

6.4.1.4. Cable Evaluation. Determines if cable will support a proposed system (T-carrier, high-speed data, etc.), identify sources and causes of problems, and recommend corrective action for repair, if necessary.

6.4.1.5. Systems Acceptance of Communications and Information Facilities. Prepares detailed test procedures that verify a system meets specifications and operates properly. This ensures a smooth transition from old to new system.

6.4.1.6. Satellite Transmission Testing. Tests are performed over the total path from user to user to verify that a system and system interfaces operate properly.

6.4.1.7. AC Power and Grounding Systems Testing and Evaluation. Resolves voltage transient and distortion problems for communications and computer facilities. Performs lightning surveys and evaluates facilities to minimize hazards to personnel, equipment, and structures.

6.4.1.8. Network Performance Analysis. A study conducted to determine data traffic between bases/sites and recommended improvement areas to enhance communications without the need for additional materiel and manpower.

6.4.2. Electromagnetic Section. This section specializes in electromagnetic compatibility, electromagnetic interference, electromagnetic radiation hazards and high altitude electromagnetic pulse. They perform:

6.4.2.1. Electromagnetic Compatibility (EMC) measurement surveys and desktop analysis studies to prevent retrofits due to interference. This prevents costly over-engineering and uncovers potential problems before they occur. EMCs include studies and surveys for land mobile radio and ground to air radio optimum antenna siting, and coverage and blind spot problems.

6.4.2.2. Electromagnetic Interference on-site investigations to identify interference sources, that result in degradation or malfunction of operational systems under the Quick Fix Interference Reduction Capability Program. Capabilities include the engineering personnel and deployable test equipment resources to provide direction finding support for USAF units worldwide according to DoDD 3222.3/AF SUP 1, *USAF Electromagnetic Compatibility (EMC) Program*, and AFI 10-707, *Spectrum Interference Resolution Program*.

6.4.2.3. Electromagnetic Radiation Hazards (EMRH) on-site measurements and desktop studies of radar and other high power emitters to determine areas that can cause detonation of ordnance, damage to equipment, or injury to personnel according to DoDD 3222.3/AF SUP 1. The EMRH measurements prevent costly litigation due to personnel overexposure. Unique assets include a mobile-shielded laboratory for measurements in high intensity fields.

6.4.2.4. High Altitude Electromagnetic Pulse design, quality control and testing services that are aimed at assisting DoD agencies with establishing, maintaining, repairing, and verifying nuclear electromagnetic pulse protection. Basic testing capabilities include low-level continuous wave shielding effectiveness measurements, both discrete and swept frequency, low level pin drive, and threat relatable pulse current injection. Existing capabilities are targeted at fixed and mobile ground communications facilities but can be adapted to other nuclear and non-nuclear applications.

6.4.2.5. High frequency (HF) radio measurements and antenna systems testing for return loss and noise. Measuring and cataloging noise values for HF facilities assist in containment of industrial encroachment and help in establishing zoning restrictions.

6.4.2.6. Shielding effectiveness testing for all types of shielded enclosures, fixed and portable. Susceptibility testing can be performed on welded steel, aluminum, and screen rooms to protect sensitive equipment from high-level signals. Evaluation of testing performed by contractors is available.

Chapter 7

ENGINEERING DATA

7.1. Engineering Data . The 38 EIG/TS operates the communications and information systems EDSC according to AFPD 21-4 and AFI 21-404. The EDSC:

- 7.1.1. Administers the 38 EIG Scientific and Technical Information program per AFI 61-204, *Disseminating Scientific and Technical Information*.
- 7.1.2. Coordinates with appropriate offices on Freedom of Information Act requests.
- 7.1.3. Manages communications and information systems base blueprints.
 - 7.1.3.1. Provides worldwide reproduction and distribution of blueprints in electronic formats.
 - 7.1.3.2. Archives blueprints for future reference and audit trail.

7.2. Engineering Data Service Center (EDSC) Services . The communications and information systems EDSC provides various engineering data services to DoD, Air Force, and the 38 EIG, customers worldwide. The communications and information systems EDSC:

- 7.2.1. Acts as a focal point for all customers to obtain 38 EIG CSIR products.
- 7.2.2. Ensures all 38 EIG CSIR procedures comply with AFI 21-401, *Engineering Data Storage, Distribution, and Control*; AFI 21-404; and AFI 61-204. Refer to AFI 31-401, *Information Security Program Management*, for procedures in handling classified or sensitive CSIRs.
- 7.2.3. Assigns drawing and document numbers on all CSIR data.
- 7.2.4. Maintains an index of all EDSC data.
- 7.2.5. Serves as the Data Management Officer for:
 - 7.2.5.1. Communications and Information Systems Installation Records (CSIR). CSIRs consist of over 50,000 site-specific digital drawings of 650 Air Force locations worldwide. These records support base-level operations, maintenance, planning; STEM planning; project engineering, and installation.
 - 7.2.5.1.1. Provides guidance and technical advice to base CSIR managers regarding digital file structures for C4ISR local contract development. Local contractors will submit digital drawings in this format to facilitate integration of the data into the EDSC database.
 - 7.2.5.2. Provides drafting services for the development of project drawings. The 38 EIG/EDSC manages the assignment of project drawing numbers, whether produced in drafting or directly by the project engineer. Project drawings are maintained in the database until installation, to ensure configuration control.
 - 7.2.5.3. Is the focal point for all TRI Service computer-aided drawing/geographic information systems standard issues. This includes responsibility for implementation of the Military Standards and Specifications Reform program.

Chapter 8

REQUESTING WARTIME SUPPORT FOR SUPPORTED FORCES COMMANDER

8.1. Engineering and Installation Wartime Capabilities . The EI assets maintain a readiness posture that allows deployment within the Time-Phased Force and Deployment Data (TPFDD)-designated time frame, not to exceed 72 hours. Deployment timing is also addressed in unit design operational capability statements. EI assets deploy during any phase of a contingency and are applied in a wide range of operations from peacetime scenarios, such as humanitarian relief efforts, to major theater wars. The EI assets consist of the 738 EIS and 19 ANG EI squadrons. The active duty 738 EIS is organized into a Rapid Response Force postured to provide immediate EI resources to the Air Expeditionary Wing/Air Expeditionary Force in a crisis scenario. The ANG units provide a more sustained force in a deliberate planning scenario. EI forces provide in-theater support of communications and information systems, to include air traffic control and landing systems. They are capable of providing the services as reflected in the mission capabilities portion of the appropriate UTC contained in the Manpower Force Element Listing communications UTC Group (6KQXX). The USAF War and Mobilization Plan (WMP), Volume III, contains the availability (quantity) of EI UTCs. Forces reside in active duty and gained ANG units, with access to ANG forces dependent on congressional mobilization of reserve forces or volunteerism (see AFI 10-416, *Personnel Readiness And Mobilization*).

8.1.1. EI readiness forces provide: cable, antenna, radio frequency interference, satellite/wideband, meteorological and navigational, radio, secure communications, deployable local area network, radio direction finding, and initial communication engineering and installation teams.

8.1.2. EI readiness forces do not include the communications and information systems, equipment, and/or spare parts, as this is a supported command responsibility. EI readiness forces may, on a case-by-case basis, accompany systems and equipment procured on behalf of the supported command (command funded) to expedite enhancement, expansion, installation, and/or operational repair of required communications and information services.

8.1.3. EI sustaining forces can support requirements at staging, en route, and pre-deployment locations, to include a deployed force multiplier via the "Reach back Concept" for engineering expertise or specialized installation teams.

8.1.4. The host agency at the deployed locations provides the required base operating support requirements; petroleum, oil, and lubricants; test, measurement, and diagnostic equipment; etc.

8.2. Planning for Wartime Support . Customers submit requirements for EI wartime and contingency forces via specific EI UTC capability determined by analysis of support required. Process requirements into the applicable plan (operation or contingency). Reflect concurrence or validation of the requirement as an entry into the applicable TPFDD, an action performed by the supported command, host MAJCOM, or lead military service communications and information war and contingency planning office see AFI 10-403, *Deployment Planning and Execution*, AFI 10-408, *Mobility for Air Force Material Command Support Forces*, and AFI 10-416).

8.2.1. If you need assistance to determine appropriate EI UTCs to meet requirements, or to expedite emergency response in meeting approved requirements, contact 738 EIS/DOO or ANG/C4CE.

8.2.2. Requirements flow applies to requests for standard EI UTCs as listed in the Type Unit Characteristics data file or non-standard UTC that are Air Force Specialty Code specific.

8.3. Special Purpose Vehicle Support for Deployed Engineering and Installation Personnel. Special purpose vehicles required to expedite or facilitate responding to requirements by deployed EI UTCs are available in a deployable fleet identified as standard UTCs in the communication group as series 6KQX4. Obtain specialized vehicle support via the normal UTC tasking process.

8.4. Access to Engineering and Installation Wartime Forces . Customers provide funding for requirements for communications and information assets (materiel, equipment, systems) in which the supported command, host MAJCOM, or lead military service desires the supporting command or its executive agent to act in their behalf. Customers must completely identify requirements for communications and information assets to permit expedient processing, to determine availability, or to make suitable substitutions to meet the stated requirement.

8.5. Information Collections, Records, and Forms .

8.5.1. Information Collections. No information collections are created by this publication.

8.5.2. Records. The following records are originated in this manual and disposition guidance is prescribed in AFMAN 37-139 (will convert to AFMAN 33-322, Volume 4), Table 33-2, Rules 5, 6, and 7: Blueprint Implementation Plan, Blueprint Phased Implementation Directive, and Communications and Information Systems Blueprint. Manage disposition of other records addressed, such as EDSC and scientific and technical records, under other specific tables in AFMAN 37-139 (will convert to AFMAN 33-322, Volume 4).

8.5.3. Forms Adopted and Prescribed.

8.5.3.1. The following forms are adopted by this manual: DD Form 488, DD Form 488-2, AF Form 9, AF Form 616, AF Form 1218, and AFTO Form 299.

8.5.3.2. No forms are prescribed by this manual.

JOHN L. WOODWARD, JR., Lt Gen, USAF
DCS/Communications and Information

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

Competition in Contracting Act (CICA) and the Telecommunications Deregulation Act of 1996
DoDD 3222.3/AF Sup 1, Dec 93, *USAF Electromagnetic Compatibility (EMC) Program*
AFPD 21-4, *Engineering Data*
AFPD 33-1, *Command, Control, Communications, and Computer (C4) Systems*
AFI 10-403, *Deployment Planning and Execution*
AFI 10-408, *Mobility for Air Force Material Command Support Forces*
AFI 10-416, *Personnel Readiness And Mobilization*
AFI 10-707, *Spectrum Interference Resolution Program*
AFI 21-116, *Maintenance Management of Communications-Electronics*
AFI 21-401, *Engineering Data Storage, Distribution, and Control*
AFI 21-404, *Developing and Maintaining Communications and Information Systems Installation Records*
AFI 31-401, *Information Security Program Management*
AFI 33-101, *Communications and Information Management Guidance and Responsibilities*
AFI 33-103, *Requirements Development and Processing*
AFI 33-104, *Base-Level Planning and Implementation*
AFI 61-204, *Disseminating Scientific and Technical Information*
AFI 65-601, *Volume 1, Budget Guidance and Procedures*
AFMAN 37-139, *Records Disposition Schedule* (will convert to AFMAN 33-322, Volume 4)
DFAS-DE 7010.1-R, *General Accounting and Finance Systems at Base-Level*
TO 00-25-108, *Communication-Electronics (C-E) Depot Support*

Abbreviations and Acronyms

AF—Air Force

AFI—Air Force Instruction

AFPD—Air Force Policy Directive

ANG—Air National Guard

BCE—Base Civil Engineer

BIP—Blueprint Implementation Plan

BPID—Blueprint Phase Implementation Directive

C4—Command, Control, Communications and Computers

C4I—Command, Control, Communications, Computers, and Intelligence

C4ISR—Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance

C-E—Communications-Electronics

CICA—Competition in Contract Act

CM—Contract Monitor

CONUS—Continental United States

CSA—Communications Service Authorization

CSIR—Communications and Information Systems Installation Record

CSO—Communications and Information Systems Officer

DFAS—Defense Finance Accounting System

DISA—Defense Information Systems Agency

DoD—Department of Defense

EA—Engineering Assist

EDSC—Engineering Data Service Center

EEIC—Element of Expense Investment Codes

EI—Engineering and Installation

EIG—Engineering Installation Group

EIS—Engineering Installation Squadron

EMC—Electromagnetic Compatibility

EMRH—Electromagnetic Radiation Hazards

ERRCD—Expendability, Recoverability, Reparability Cost Designator

FY—Fiscal Year

GSA—General Services Administration

HF—High Frequency

HQ AFCA—Headquarters Air Force Communications Agency

ID/IQ—Indefinite Delivery/Indefinite Quantity

IPT—Integrated Product Team

ISSL—Initial Spare Supply List

IT—Information Technology

J&A—Justification and Approval

JTA—Joint Technical Architecture

JTA-AF—Joint Technical Architecture-Air Force
LOM—List of Materiel
MAJCOM—Major Command
MIPR—Military Interdepartmental Purchase Request
NAF—Numbered Air Force
NSN—National Stock Number
O&M—Operation and Maintenance
OPLOC—Operating Location
P&I—Plans and Implementation
PID—Planning and Implementation Division
PM—Program Manager
PMD—Program Management Directive
PMI—Preventive Maintenance Inspection
POC—Point of Contact
PSA—Project Support Agreement
PWS—Performance Work Statement
QAE—Quality Assurance Evaluator
SOI—Statement of Intent
SOW—Statement of Work
SPO—System Program Office
STEM—Systems Telecommunications Engineering Manager
STEM-B—Base-Level STEM
STEM-C—MAJCOM-Level STEM
STEM-D—Deployability STEM
STEM-E—STEM Engineering
STEM-J—Joint STEM
STEM-TM—STEM-Telecommunications Manager
TDY—Temporary Duty
TFG—Total Force Group
TO—Technical Order
TPFDD—Time-Phased Force and Deployment Data
UTC—Unit Type Code

WMP—War and Mobilization Plan

Terms

Blueprint Phase Implementation Directive (BPID)—A document from the STEM that reflects a portion of the communications and information systems blueprint, and authorizes and directs implementation. It may serve as the technical solution, cost estimate, and implementation directive.

Command, Control, Communications and Computer (C4) System—An integrated system of doctrine, procedures, organizational structures, personnel, equipment, facilities, and communications designed to support a commander's exercise of command and control across the range of military operations. Also called C4 systems or communications and information systems in the Air Force.

Communications and Information System—An integrated combination of doctrine, procedures, organizational structures, personnel, equipment, C-E equipment and systems, facilities, and communications designed to support a commander's exercise of command and control through all operational phases. It includes base visual information support systems.

Communications and Information Systems Blueprint—Document that provides the requirements engineering plan to modernize the base-level infrastructure with cost-effective, base-wide communications and information capability to support digital transmission of voice, data, video, imagery, and telemetry needs. It documents the baseline, identifies a target base configuration to support present and future requirements, and provides a time-phased plan and estimated costs for logical transition.

Communications and Information Systems Officer (CSO)—The officer responsible for communications and information systems and functions at any Air Force organizational level. At base-level, the "base CSO" is the commander of the communications unit responsible for carrying out base systems duties, including management of the base-wide C4 infrastructure. At the MAJCOM-level, the MAJCOM commander designates the "MAJCOM CSO." The MAJCOM CSO is responsible for the overall management of the MAJCOMs communications and information assets. For detailed functions and responsibilities, refer to AFI 33-101, *Communications and Information Guidance and Responsibilities*.

Communications and Information Systems Requirement—Either a document that identifies a communications and information systems mission shortfall, a system need to the CSO, or a need itself. A communications and information systems requirement arises when an organization cannot accomplish its current or new mission; can increase operational efficiency or cut operational costs by using advances in technologies; or can modernize an existing communications and information system by applying modern technology to satisfy evolving communications and information systems requirements, improve mission performance, and reduce current or future operation and support costs.

Information Technology (IT)—(1) With respect to an executive agency, means any equipment or interconnected system or subsystem of equipment, used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency. For purposes of the preceding sentence, equipment is used by an executive agency if it is used directly, or used by a contractor under a contract with the executive agency that (a) requires the use of such equipment, or (b) requires the use, to a significant extent, of such equipment in the performance of a service or the furnishing of a product. (2) The term information technology includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources. (3) Notwithstanding

subparagraphs (1) and (2), the term information technology does not include any equipment acquired by a Federal contractor incidental to a Federal contract.

Joint Technical Architecture (JTA)—(1) A common set of mandatory IT standards and guidelines to be used by all emerging systems and systems upgrades including Advanced Concept Technology Demonstrations. The JTA is applicable to Command, Control, Communications, Computers, and Intelligence (C4I) and automated information systems and the interfaces of other key assets with C4I systems (e.g., weapons systems, and sensors). (2) DoD's minimum set of rules governing the arrangement, interaction, and interdependence of the parts or elements, whose purpose is to ensure that systems conform to a specific set of requirements. It identifies system services, interfaces, standards, and their relationships.

Joint Technical Architecture-Air Force (JTA-AF)—A comprehensive set of interfaces, services, and supporting formats, plus user aspects for interoperability or for portability of applications, data, or people, as specified by information technology standards and profiles. Provides corporate direction on the use of IT to support Air Force missions. The JTA-AF provides a means to increase interoperability and cost-effective sharing of information. It complies with the DoD JTA while providing additional guidance for Air Force systems. The JTA-AF provides implementation timelines for these IT standards, common building blocks, and products; all as an aid to making informed decisions. This technical architecture advances interoperability while permitting procurement of systems that meet mission needs. The JTA-AF is a living document, undergoing a continuous cycle of assessment and resolution under control and authority of the JTA-AF Configuration Control Board.

Program Manager (PM)—A general term of reference to those organizations directed by individual managers, exercising authority over the planning, direction, and control of tasks and associated functions essential for support of designated weapons of equipment systems. The authority vested in this organization may include such functions as research, development, procurement, production, materiel distribution, and logistic support, when so assigned. The individual in the implementing command who has authority or responsibility for managing a program. There is only one PM for a given program, but a PM may manage more than one program.

Program Management Directive (PMD)—The official Air Force document used to direct acquisition or modification responsibilities to appropriate MAJCOMs for the development, acquisition, or modification of a specific weapon system, subsystem, or piece of equipment. It is used throughout the acquisition cycle to terminate, initiate, or direct research; development; production, or modifications for which sufficient resources have been identified. States program unique requirements, goals, and objectives, especially those to be met at each acquisition milestone or program review.

Project Support Agreement (PSA)—A document normally prepared by the communications and information engineer that describes: what equipment to install, sites agreed upon; supporting construction; services required; operational, technical, or other constraints affecting a communications and information systems requirement; and the responsibilities of the host base civil engineer, base communications and information systems staff, and other supporting activities, including the user.

Self-Help Project—A communications and information systems requirement satisfied by the local communications unit using available base resources (manpower, materiel, technical expertise, and so forth) including contractual services. The 38 EIG normally does not provide installation services to self-help projects. Coordinate significant self-help projects that may impact the base infrastructure with the STEM-B, before implementation.

Systems Telecommunications Engineering Manager—(STEM) A communications and information systems engineer who provides technical engineering planning services in support of communications and information systems and base infrastructures. The base-level STEM (STEM-B) has technical responsibility for engineering management and assists the base CSO in systems engineering and configuration control. The STEM-C provides technical assistance to the MAJCOM and coordinates with STEM-Bs on future MAJCOM mission changes, programs, and efforts at the MAJCOM-level. The STEM-J is assigned to a unified command, joint staff, or DISA to promote interoperability by providing an interface between those activities and the Air Force, MAJCOMs, and bases. The telecommunications manager (STEM-TM) assists the STEM-B and C. The Deployability STEM (STEM-D) assists MAJCOMs on deployment issues. The Engineering STEM (STEM-E) carries the roles of a program manager and system engineer.

Technical Solution—A detailed and costed description of a system that satisfies the requirement, can be incorporated into the base infrastructure, and is compliant with downward directed architectures and standards.

Unit Type Code (UTC)—A five-character, alphanumeric designator that uniquely identifies each type unit of the Armed Forces.

War and Mobilization Plan (WMP)—The Air Force supporting plan to the Joint Strategic Capabilities Plan. The six volumes of the WMP extend through the Future Years Defense Program to provide continuity in short- and mid-range war and mobilization planning. It provides current planning cycle policies and planning factors for the conduct and support of wartime operations. It establishes requirements for the development of mobilization and production-planning programs to support sustained contingency operations of the programmed forces. The WMP encompasses all functions necessary to match facilities, manpower, and materiel with planned wartime activity.

Addresses

38 EIG/GF
4057 Hilltop Road
Tinker AFB OK 73145-2713

38 EIG/PKK
4001 Hilltop Road
Tinker AFB OK 73145-2713

ANG/C4CE
1411 Jefferson Davis Highway
Arlington, VA 22202-3231

738 EIS Specialized Engineering Flight (738 EIS/EEE)
738 EIS Telecommunications Element (738 EIS/EEET)
738 EIS Electromagnetic Element (738 EIS/EEEM)
738 EIS Project Engineering Element (738 EIS/EEEP)
801 Vandenberg Avenue, Suite 201
Keesler AFB MS 39534-2633

38 EIG/TS
4012 Hilltop Road
Tinker AFB OK 73145-2713
738 EIS/DOO
801 Vandenberg Ave
Keesler AFB MS 39534-2638