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CFETP 2E6X3  
Parts I and II  
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# **AFSC 2E6X3**

## **TELEPHONE SYSTEMS**



## **CAREER FIELD EDUCATION AND TRAINING PLAN**

**TELEPHONE SYSTEMS  
AFSC 2E6X3  
CAREER FIELD EDUCATION AND TRAINING PLAN**

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**PART I**

***Preface***

1. Resource constraints in the Air Force are impacting the availability of our most valuable resource--people. This condition, which will continue to exist in the future, makes it essential for the work force to be effectively and efficiently trained to perform duties within each skill level of an Air Force Specialty (AFS). To meet the challenges of tomorrow the Air Force must place a greater emphasis on career field training. This Career Field Education and Training Plan (CFETP) is a management tool that enables the Air Force and each MAJCOM to place the needed emphasis on total career field training. It provides the framework and guidance necessary to plan and develop a career field training program. The plan, which is a "training road map" for the career field, identifies mandatory and optional training requirements. It includes initial skills, upgrade, and continuation training that individuals should receive during their career in this specialty.
2. The CFETP, which documents the career field training program, consists of two parts. Management uses both parts to plan, manage, and control training within the career field.
  - 2.1. Part I, Section A, provides the information necessary for overall management of training in the career field. It contains administrative details and explains the purpose and use of the CFETP. Section B provides a description of the specialty, suggests career field progression, provides career field information, documents training decisions, defines each skill level, and identifies MAJCOM continuation training options. Section C specifies qualification requirements for upgrade/progression in each subsequent skill level in the career field. It also identifies sources of training other than those provided by the Air Education and Training Command (AETC). Section D identifies known resource constraints.
  - 2.2. Part II of the CFETP contains the Specialty Training Standard (STS) and identifies the various training sources and courses available to members of the specialty. The STS is comprised of the Course Training Standard (CTS) and the Career Training Guide (CTG). The CTS includes the tasks and knowledge requirements for award of the three skill level. The CTG includes task and knowledge requirements for upgrade/progression to subsequent skill levels in the career field and identifies career development course (CDC) subject content. Supervisors and trainers at the unit level use Part I, Section C, and Part II of the CFETP to identify, plan, and conduct unit level training commensurate with the overall goals of this plan.
3. Use of the guidance provided in this CFETP ensures individuals in this career field receive effective and efficient training at the appropriate points in their careers. This plan enables the Air Force to train today's work force for tomorrow's jobs.

## ***Abbreviations/Terms Explained***

This section provides a common understanding of the terms that apply to the Telephone Systems Career Field and Education Training Plan.

**Advanced Training.** A formal course of training that leads to a technical or supervisory level of an AFS. Training is for selected airmen at the advanced level of an AFS.

**Air Education Training Command (AETC).**

**Air Force Career Field Manager (AFCFM).** Representative appointed by the respective HQ USAF Deputy Chief of Staff or Under Secretariat to ensure that assigned AF specialties are trained and utilized to support AF mission requirements.

**Air Force Institute for Advanced Distributed Learning (AFIADL).** The result of a merger between the Air Force Distance Learning Office and the Extension Course Institute (ECI).

**Air Force Job Qualification Standard (AFJQS).** A comprehensive task list that describes a particular job type or duty position. Supervisors use the AFJQS to document task qualification. The tasks on AFJQSs are common to all persons serving in the described duty position.

**Air Force Qualification Training Package (AFQTP).** An instructional course designed for use at the unit to qualify or aid qualification in a duty position, program, or on a piece of equipment. It may be printed, computer-based, or other audiovisual media.

**Air Force Specialty (AFS).** A group of positions (with the same title and code) that require common qualifications.

**Career Field Education and Training Plan (CFETP).** A comprehensive, multipurpose document, that encapsulates the entire spectrum of career field training. It outlines a logical growth plan that includes training resources and is designed to make career field training identifiable, eliminate duplication, and is budget defensible. CFETPs are officially posted at <http://afpubs.hq.af.mil/>.

**Career Training Guide (CTG).** A document that uses Task Modules (TM) in lieu of tasks to define performance and training requirements for a career field.

**Certifying Official.** A person assigned by the commander to determine an individual's ability to perform a task to the required standard.

**Computer Based Training (CBT).** A forum for training in which the student learns via a computer terminal. It is an especially effective training tool that allows the students to practice applications while they learn.

**Continuation Training.** Additional advanced training that exceeds the minimum upgrade training requirements and emphasizes present or future duty assignments.

**Core Task.** A task Air Force Career Field Managers (AFCFM) identify as a minimum qualification requirement within an AFSC or duty position.

**Course Training Standard (CTS).** A standard developed for all courses not governed by an STS, including specialized training packages and computer-based training courses.

**Enlisted Specialty Training (EST).** A mix of formal training (technical school) and informal training (on-the-job) to qualify and upgrade airmen in each skill level of a specialty.

**Exportable Training.** Additional training via computer assisted, paper text, interactive video, or other necessary means to supplement training.

**Field Operating Agency (FOA).** FOAs are subdivisions of the Air Force directly subordinate to a headquarters US Air Force functional manager. An FOA performs field activities beyond the scope of any of the MAJCOMs. The activities are specialized or associated with an Air Force-wide mission

**Go/No Go.** In OJT, it is the stage at which an individual has gained enough skill, knowledge, and experience to perform a task without supervision.

**Initial Skills Training.** A formal resident course resulting in award of the 3-skill level.

**Instructional System Development (ISD).** A deliberate and orderly (but flexible) process for planning, developing, implementing, and managing instructional systems. It ensures personnel are taught in a cost efficient way the knowledge, skills, and attitudes essential for successful job performance.

**Major Command (MAJCOM).** **Major Command (MAJCOM).** A MAJCOM represents a major Air Force subdivision having a specific portion of the Air Force mission. Each MAJCOM is directly subordinate to HQ USAF. MAJCOMs are interrelated and complementary, providing offensive, defensive, and support elements. aircraft, are assigned to ACC.

**Occupational Survey Report (OSR).** A detailed report showing the results of an occupational survey of tasks performed within a particular AFSC.

**On-the-Job Training (OJT).** Hands-on, over-the-shoulder training conducted to certify personnel in both upgrade (skill level award) and job qualification (duty position certification) training.

**Qualification Training.** Actual hands-on, task performance based training designed to qualify airmen in a specific duty position. This training program occurs both during and after the upgrade training process and is designed to provide skills training required to do the job.

**Resource Constraints.** Resource deficiencies (such as money, facilities, time, manpower, and equipment) that preclude desired training from being delivered.

**Skill Training.** A formal course that results in the award of a skill level.

**Specialty Training Package and COMSEC Qualification Training Package.** A composite of lesson plans, test material, instructions, policy, doctrine, and procedures necessary to conduct training. These packages are prepared by AETC, approved by National Security Agency (NSA), and administered by qualified communications security (COMSEC) maintenance personnel.

**Specialty Training Standard (STS).** An Air Force publication that describes skills and knowledge that an airman in a particular AFSC needs on the job. It further serves as a contract between AETC and the user to show the overall training requirements for an AFSC that the formal schools teach.

**Standard.** An exact value, a physical entity, or an abstract concept established and defined by authority, custom, or common consent to serve as a reference, model, or rule in measuring quantities or qualities, establishing practices or procedures, or evaluating results. It is a fixed quantity or quality.

**Task Module (TM).** A group of tasks performed together within an AFSC that require common knowledge, skills, and abilities. TMs are identified by an identification code and a statement.

**Total Force.** All collective components (active, reserve, guard, and civilian elements) of the United States Air Force.

**Training Capability.** The capability of a training setting to provide training on specified requirements, based on the availability of resources.

**Training Planning Team (TPT).** Comprised of the same personnel as a U&TW, TPTs are more intimately involved in training development and the range of issues examined is greater than in the U&TW forum.

**Training Requirements Analysis (TRA).** A detailed analysis of tasks for a particular AFSC to be included in the training decision process.

**Training Setting.** The type of forum in which training is provided (formal resident school, on-the-job, field training, mobile training team, self-study, etc.).

**Upgrade Training.** Training that leads to the award of a higher skill level.

**Utilization and Training Pattern.** A depiction of the training provided to and the jobs performed by personnel throughout their tenure within a career field or AFS. There are two types of patterns: 1) Current pattern, which is based on the training provided to incumbents and the jobs to which they have

been and are assigned; and 2) Alternate pattern, which considers proposed changes in manpower, personnel, and training policies.

**Utilization and Training Workshop (U&TW).** A forum of the AFCFM, MAJCOM functional managers, subject matter experts (SME), and AETC training personnel that determines career ladder training requirements.

## **Section A - General Information**

**1. Purpose of the CFETP.** This CFETP provides the information necessary for career field managers, training management, supervisors, and trainers to plan, develop, manage, and conduct an effective and efficient career field training program. The plan outlines the training that individuals should receive in order to develop and progress throughout their careers. For purposes of this plan, training is divided into three areas: initial skills, upgrade, and continuation training. Initial skills training is the AFS specific training an individual receives upon entry in the Air Force, normally conducted by AETC at one of the technical training centers. Upgrade training identifies the mandatory courses, task qualification requirements, and Career Development Course (CDC) completion required for award of the 5-, 7-, or 9-skill level. Continuation training is additional training provided to 3-, 5-, 7-, and 9-level personnel to increase their skills and knowledge beyond the minimum required for upgrade. The CFETP has several purposes, some of which are:

- 1.1. Serves as a management tool to plan, develop, manage, and conduct a career field training program. Also, ensures that established training is provided at the appropriate point in an individual's career.
- 1.2. Identifies task and knowledge training requirements for each skill level in the specialty and recommends training throughout each phase of an individual's career.
- 1.3. Lists training courses available in the specialty, identifies sources of the training, and provides the training medium.
- 1.4. Identifies major resource constraints that impact implementation of the desired career field training program.

**2. Use of the CFETP.** The CFETP is maintained by the Air Force Career Field Manager (AFCFM). MAJCOM Functional Managers and AETC review the plan annually to ensure currency and accuracy and forward recommended changes to the AFCFM. Using the list of courses in Part II, they determine whether duplicate training exists and take steps to eliminate/prevent duplicate efforts. Career field training managers at all levels use the plan to ensure a comprehensive and cohesive training program is available for each individual in the career ladder.

- 2.1. AETC training personnel develop/revise formal resident and exportable training based upon requirements established by the users and documented in the STS. They also develop procurement and acquisition strategies for obtaining resources needed to provide the identified training.
- 2.2. MAJCOM Functional Managers ensure their training programs complement the CFETP mandatory initial skill and upgrade requirements. They also identify the needed AFJQSSs/AFQTPs to document unique upgrade and continuation training requirements. Requirements are satisfied through OJT, resident training, or exportable courseware/courses. MAJCOM developed training to support this AFSCC must be identified for inclusion into this plan. Forward recommendations concerning this CFETP to your MAJCOM Functional Manager.
- 2.3. 81 TRSS Qualification Training Flight (Q-Flight) personnel develop AFJQSSs/AFQTPs based on requests submitted by the MAJCOMs and according to the priorities assigned by the Communications-Electronics (C-E) Maintenance Training Advisory Group (MATAG) Working Group.
- 2.4. Unit level training managers and supervisors manage and control progression through the career field by ensuring individuals complete the mandatory training requirements for upgrade specified in this plan and supplemented by their MAJCOM. The list of courses in Part II is used as a reference for planning continuation or career enhancement training.

**3. Coordination and Approval of the CFETP.** The AFCFM is the approval authority. MAJCOM representatives and AETC training personnel coordinate on the career field training requirements. The AFCA Mission Area Manager (MAM) reviews CFETPs for accuracy prior to submission for approval by the AFCFM.

## **Section B - Career Field Progression and Information**

**4. Specialty Description.** This information supplements that presented in AFMAN 36-2108.

### **4.1. Telephone Systems Apprentice/Journeyman.**

4.1.1. Specialty Summary. Installs, removes, refurbishes, tests, and troubleshoots fixed and mobile telephone switching equipment, telephone key systems, telephone subsets, T-carrier, fiber-optic modems, multiplexers, line drivers, associated hardware and wiring supporting command, control, communications, and computer (C4) systems.

4.1.2. Duties and Responsibilities:

4.1.2.1. Installs, removes, and maintains telephone systems. Maintains and repairs telephone switching equipment, telephone key equipment, and telephone subsets. Maintains and initiates call routing translations for lines, trunks, and special service circuits. Installs, removes, and repairs telephone wiring, modems, terminal blocks, and telephone instruments within a building. Straps key units; programs and assigns special line and trunk features. Climbs structures to install, remove, or maintain telephone wiring. Monitors and analyzes switch performance using log reports and operational measurement reports. Troubleshoots telephone and data circuits using diagrams and standard and engineered drawings. Monitors and analyzes the performance of C4 copper core and fiber optic systems. Maintains digital transmission facilities including D-4 channel banks, multiplexers, channel service units, fiber-optic drivers/multiplexers, digital echo suppressers, and T-1 span repeater terminating equipment's. Maintains ancillary equipment such as radio pager interface, land mobile radio interface, and power equipment including rectifiers, inverters, and both acid and jell cell battery banks.

4.1.2.2. Operates and performs operator maintenance on special purpose vehicles, tools, and test equipment.

4.1.2.3. Maintains records. Prepares, interprets, and updates communications and computer systems installation records (CSIRS) on the installation and maintenance of telephone systems and associated hardware. Maintains various telephone and circuit records, forms, databases, and technical manuals.

### **4.2. Telephone Systems Craftsman.**

4.2.1. Specialty Summary. Includes all information in paragraph 4.1.1., Telephone Systems Apprentice/Journeyman. Plans, schedules, and performs installation and maintenance on telephone switching equipment, telephone key systems, telephone subsets, T-carrier, fiber-optic modems, multiplexers, and line drivers and associated hardware.

4.2.2. Duties and Responsibilities.

4.2.2.1. Plans and schedules telephone system installation and maintenance actions. Interprets sketches and layout drawings for placement of equipment and telephones. Reviews, develops and implements changes to communication and computer systems installation records (CSIRs), standard and engineered drawings, wiring diagrams, project plans and worksheets. Instructs and performs installation procedures. Plans interior house wiring and wiring and programming of telephone system equipment. Tests and verifies equipment meets operational requirements.

4.2.2.2. Inspects and evaluates telephone system. Inspects telephone systems for operation, proper installation, and compliance with specifications. Interprets inspection reports and implements corrective action. Analyzes traffic load and telephone number assignments. Evaluates engineering plans for telephone systems.

4.2.2.3. Performs telephone system installation and maintenance actions. Installs, removes, and maintains telephone key systems, telephone subsets, and associated equipment. Maintains telephone switching equipment.

#### **4.3. Telephone and Distributed Systems Superintendent.**

4.3.1. Specialty Summary. Superintends installation and maintenance actions on all antenna, cable and telephone systems supporting command, control, communications, and computer (C4).

4.3.2. Duties and Responsibilities. This specialty "caps" at the Senior Master Sergeant level with those personnel who came-up through the 2E6X2 and 2E6X3 career fields. Therefore, the duties and responsibilities defined below encompass the complete spectrum of all three of these specialties.

4.3.2.1. Plans, organizes, and directs antenna, cable, and telephone installation and maintenance activities. Develops and improves work methods and procedures related to installation and maintenance actions on all antenna, cable and telephone systems.

4.3.2.2. Directs antenna, cable, and telephone installation and maintenance activities. Assigns project priorities. Organizes work teams. Schedules installation and maintenance actions.

4.3.2.3. Inspects and evaluates antenna, cable, and telephone project and maintenance actions. Develops antenna, cable, and telephone systems organizational structure. Conducts inspection of antenna, cable, telephone systems, and construction activities for C4 systems. Evaluates work for compliance with standards. Evaluates inspectors' findings and takes appropriate action. Interprets plans and

4.4. **Communications-Electronics Chief Enlisted Manager.** This specialty "caps" at the Chief Master Sergeant Level with those specialties that came up through the 2E0XX, 2E1XX, 2E2XX, and 2E6XX career ladders. Personnel attaining the rank of Chief are assigned broad ranging duties in directing and managing diverse functions such as activities that install, remove, relocate, repair, and maintain radar systems (air traffic control and aircraft control and warning), telephone systems, satellite, wideband and telemetry systems, ground radio systems, meteorological and navigation systems, visual, imagery and intrusion detection systems, computer, network, switching and cryptographic, and antenna and cable systems. Other challenges that these Chiefs face are assignments to the White House Communications Agency, Air Force Element at CENTCOM, the Air Force Communications Agency, Defense Information Systems Agency, NATO, etc.

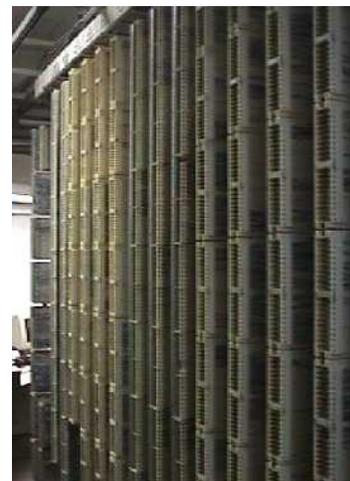
4.5. The following are some of the more common missions you may encounter as a 2E6X3.

### **FIXED COMMUNICATIONS**

#### **MSL-100 SuperNode**



#### **Main Distribution Frame**



**Maintenance Administration Position**



**66 Block – Wiring Closet**



**Secure  
Telephones**



**Administrative  
Telephones**

**TACTICAL COMMUNICATIONS**

**AN/TTC-39 Automatic Telephone Central Office**



**SB-3586 Automatic Telephone Switchboard**



**Theatre Deployable Communications**



**TD-1234 Remote Multiplexer Combiner**



**KY-68 Tactical  
Secure Telephone**



**TA-1042  
Non-Secure Telephone**

**5. Skill/Career Progression.** Adequate training and timely progression from the apprentice to superintendent skill levels play an important role in the Air Force's ability to accomplish its mission. It is essential that everyone involved in training do their part to plan, manage, and conduct an effective training program. The guidance provided in this part of the CFETP and the [2E6X3 Education and Training Path](#) table will ensure individuals receive viable training at appropriate points in their careers.

<b>Apprentice (3-Level) Training</b>
Upon completion of initial skills training a trainee will work with a trainer to enhance their knowledge and skills.
Utilize CDCs, AFJQs/AFQTPs, and other exportable courses to progress in the field.
Once task certified, a trainee may perform the task unsupervised.
<b>Journeyman (5-Level) Training</b>
Enter into continuation training to broaden experience base.
Five-levels may be assigned job positions such as team leader and shift supervisor.
Attend the Airman Leadership School (ALS) after serving 48 months in the Air Force or selection to rank of SSgt (active duty only). In-residence or correspondence course is required for Air National Guard/Air Force Reserve Command (ANG/AFRC) personnel.
Use CDCs and other references identified by the AFCFM to prepare for Weighted Airman Performance Systems (WAPS) testing.
Should continue pursuing a Community College of the Air Force (CCAF) degree.
<b>Craftsman (7-Level) Training</b>
A seven-level can expect to fill various supervisory and management positions such as shift leader, team chief, supervisor, or task certifier.
Seven-levels should take courses or obtain added knowledge on management of resources and personnel and attend the 7-level resident course.
Encouraged continuing academic education through CCAF and higher degree programs.
Attend the Noncommissioned Officer Academy (NCOA). In-residence or correspondence course is required for ANG/AFRC personnel.
<b>Superintendent (9-Level) Training</b>
A nine-level can be expected to fill positions such as flight chief, superintendents, and various staff positions.
Should pursue increased knowledge for budget, manpower, resources, and personnel management.
Recommend they pursue additional education and completion of courses outside of their AFS.
Attend Senior Noncommissioned Officer Academy (SNCOA)
<b>Chief Enlisted Manager (CEM) Training</b>
Must be selected for CMSgt and possess qualifications in a feeder specialty (2E190, 2E291, and 2E690).
CEMs work in a variety of similar jobs and functional areas where general managerial and supervisory abilities can be most effectively used and challenged.
Resident graduation of the USAF Senior NCO Academy (SNCOA) is a prerequisite for CMSgt sew-on (active duty only). In-residence or correspondence course required for ANG/AFRC personnel.

**6. Training Decisions.** This CFETP was developed to encapsulate an entire spectrum of training requirements for the Telephone Systems career field, using a building block approach (simple to complex). Included in this spectrum was the strategy of when, where, and how to meet the training requirements. The strategy must be apparent and affordable to reduce duplication of training and eliminate a disjointed approach to training. The following decisions were made by members of the 28-30 December 2000 Utilization and Training Workshop.

6.1. Initial Skills. The amount of time spent in the basic course training 1A2 key systems was scaled down, while training was added on ISDN familiarization and on the automated telecommunications systems management system. Training areas deleted from the course were the NT-40 and solid state intercom system.

6.2. Five-Level Upgrade Requirements. Upgrade requirements were updated to include eight standardized areas common to all career fields. The following list identifies the major areas covered: test equipment, standardized maintenance practices, computer security, standard installation practices, communication principles, expeditionary communications principles, information transport concepts, and electrical power systems. Additionally, a review of CDCs resulted in future development being restricted to six volumes. Development of this single set of CDCs will include three volumes which will be used by all 2EXXX career fields. The following table outlines 5-level CDC contents.

VOLUME 1	Electronic Principles (Computer Based Training)
VOLUME 2	Test Equipment
VOLUME 3	Communication Principles
VOLUME 4	AFSC Specific Information
VOLUME 5	AFSC Specific Information
VOLUME 6	AFSC Specific Information

6.3. Seven-Level Upgrade Requirements. Seven level training requirements were added to provide a common core of proficiency among all individuals in the 2EXXX arena. Training covers deployment concepts, system planning and implementation, and management principles.

6.4. Proficiency Training. This training is job qualification for an assigned duty position. Additional qualification training becomes necessary when personnel transfer to another duty position, the unit mission changes, a new personnel program comes on board, or any time changes in techniques or procedures occur.

6.5. Continuation Training: The purpose of the continuation training program is to provide additional advanced training, exceeding the minimum upgrade training requirements, with the emphasis on present and future duty positions. MAJCOMs may develop a continuation training program to ensure individuals in the career field receive the necessary training at the appropriate points in their careers. The training program will identify both mandatory and optional training requirements.

**7. Community College of the Air Force (CCAF) Academic Programs.** Enrollment in CCAF occurs upon completion of basic military training. CCAF provides the opportunity for all enlisted members to obtain an Associate in Applied Science degree. The degree must be completed before the student separates from the Air Force, retires, or is commissioned as an officer. In addition to its associates degree program, CCAF offers the following:

7.1. Occupational Instructor Certification. The College offers the Occupational Instructor Certification to instructors teaching full time in a CCAF affiliated school. To qualify, instructors must complete an instructor course, a teaching practicum, have two years teaching experience, hold an associate or higher degree, and be recommended by their commander/commandant.

7.2. Trade Skill Certification. When a CCAF student separates or retires, a trade skill certification is awarded for the primary occupational specialty. The College uses a competency based assessment process for trade skill certification at one of four proficiency levels-Apprentice, Journeyman, Craftsman/Supervisor, or Master Craftsman/Manager. All are transcribed on the CCAF transcript.

7.3. The Electronic Systems Technology (4VHP) program applies to 2EXXX career fields.

7.3.1. Degree Requirements: Individuals must hold the 5-skill level at the time of program completion.

	Semester hours
Technical Education .....	24
Leadership, Management, and Military Studies .....	6
Physical Education .....	4
General Education.....	15
Program Electives .....	15
<b>Total</b>	<b>64</b>

7.3.2. Technical Education (24 semester hours): A minimum of 12 semester hours of Technical Core subjects and courses must be applied and the remaining semester hours will be applied from Technical Core/Technical Elective subjects and courses.

7.3.3. Leadership, Management, and Military Studies (6 semester hours): Professional military education and/or civilian management courses. See CCAF General Catalog for application of civilian management courses.

7.3.4. Physical Education (4 semester hours): Satisfied upon completion of basic military training.

7.3.5. General Education (15 semester hours): Courses must meet the criteria for application of courses to the General Education requirement and be in agreement with the definitions of applicable General Education subjects/courses as outlined in the CCAF General Catalog.

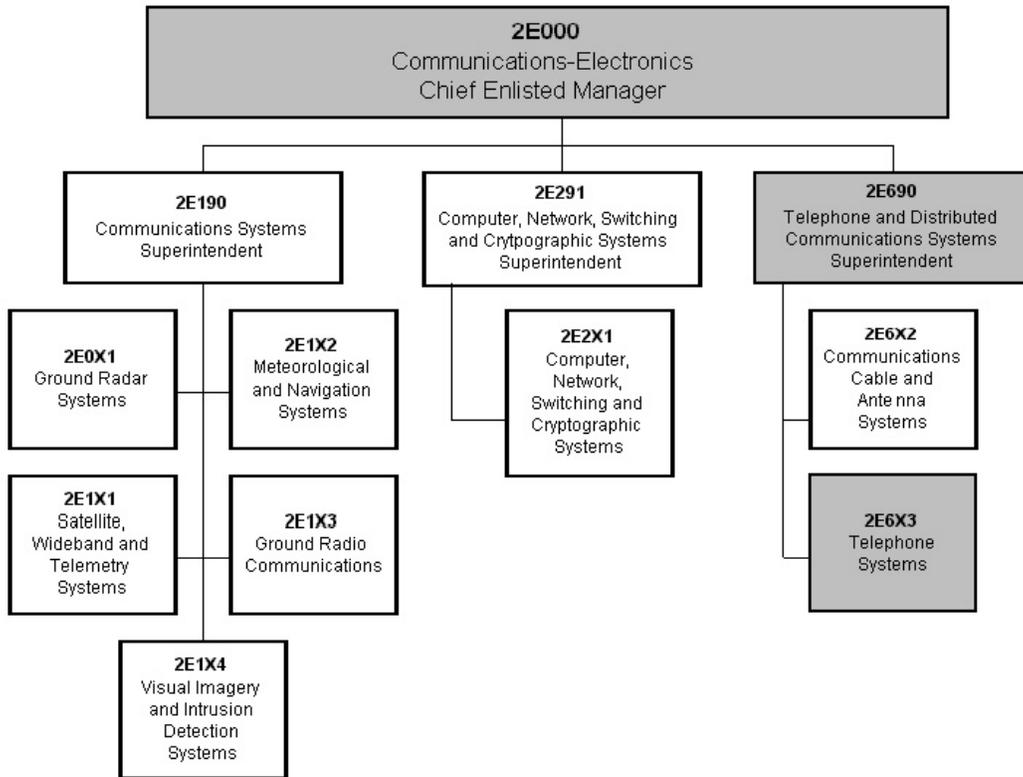
7.3.6. Program Elective (15 semester hours): Satisfied with applicable Technical Education; Leadership, Management, and Military Studies; or General Education courses, including natural science courses meeting General Education requirement application criteria. Six semester hours of CCAF degree applicable technical credit otherwise not applicable to this program may be applied.

7.4. See the current CCAF General Catalog for details regarding the Associates of Applied Science in Electronic Systems Technology. The catalog is available at your education officer or from <http://www.au.af.mil/au/ccaf>.

7.5. Additional off-duty education is a personal choice that is encouraged for all. Individuals desiring to become an AETC instructor should be actively pursuing an associate degree. A degreed faculty is necessary to maintain CCAF's accreditation through the Southern Association of Colleges and Schools.

**8. Career Field Path.** The following summarizes career progression and personnel allocations across the career ladder. 2E6X2 and 2E6X3 personnel maintain their individual AFSC identifiers through the rank of MSgt. Upon promotion to SMSgt, these AFSCs merge to become 2E690. At Chief, the 2E690 merges with other 2EXXX 9-level specialties to become a 2E000. Current demographic information is available on the Web at <http://www.afpc.randolpf.af.mil/demographics/demograf/CAFSC.html>.

### 2EXXX Career Field Progression



**2E6X3 TELEPHONE SYSTEMS  
EDUCATION AND TRAINING PATH**

EDUCATION AND TRAINING REQUIREMENTS	AVERAGE SEW ON TIME AND COMMENTS
BASIC MILITARY TRAINING SCHOOL	
APPRENTICE TECHNICAL SCHOOL (3-SKILL LEVEL)	Airman ..... 6 months
UPGRADE TO JOURNEYMAN (5-SKILL LEVEL) Minimum 15 months OJT training (9 months for retrainees). Completion of all 2E653 CTG core tasks and 5-Level CDCs. .... Mandatory  Specific AFJQs/AFQTPs for equipment at assigned location. .... Mandatory  Maintenance Management and Generic AFJQs/AFQTPs for various unit level duties. .... Mandatory  AETC Supplemental training courses as determined by MAJCOM ..... Optional  AFETS/CFS/SMT training as determined by MAJCOM ..... Optional	A1C..... 16 months  SrA..... 3 years Earliest..... 3 years HYT ..... 10 years
AIRMAN LEADERSHIP SCHOOL (ALS) Attendance is limited to SSgt selectees or those attaining 48 months Total Active Federal Military Service (TAFMS) and who have not been selected for promotion to SSgt. Completion is mandatory before assuming the rank of SSgt. ANG/AFRC may complete by correspondence course. .... Mandatory	TRAINER: Any rank may qualify as a trainer provided they attend a formal OJT Trainer course; are officially appointed by the commander; and are certified on the task they are training.
UPGRADE TO CRAFTSMAN (7-SKILL LEVEL) Minimum rank of SSgt. 12 months OJT training. Completion of all 2E673 CTG core tasks and AFQTP 2EXXX-201L, Communications-Electronics Work Center Manager's Handbook. Attendance at formal 7-level school. Must be 7-level to sew on TSgt. .... Mandatory  Maintenance Management and Generic AFJQs/AFQTPs for various unit level duties. .... Mandatory  AETC Supplemental training courses as determined by MAJCOM ..... Optional  AFCA Systems Seminar at Scott AFB. Consult your MAJCOM for course quotas ..... Optional  AFETS/CFS/SMT training as determined by MAJCOM ..... Optional	SSgt..... 7.5 years Earliest..... 3 years HYT ..... 20 years  TSgt ..... 12.5 years Earliest..... 5 years HYT ..... 22 years  CERTIFIER: Must be a SSgt and possess at least a 5-skill level or equivalent experience (civilian); attend a formal OJT Certifier course; be officially appointed by the commander; be certified on the task they are certifying, and be a person other than the trainer.

<b>2E6X3 TELEPHONE SYSTEMS EDUCATION AND TRAINING PATH</b>	
EDUCATION AND TRAINING REQUIREMENTS	AVERAGE SEW ON TIME AND COMMENTS
<p>NONCOMMISSIONED OFFICER ACADEMY (NCOA). Attendance is limited to TSgt and TSgt selectees. Completion is mandatory before assuming the rank of MSgt. ANG/AFRC may attend in-residence as SSgt or TSgt or complete correspondence course.</p> <p>NCOA Correspondence Course ..... Optional</p>	<p>MSgt ..... 16 years Earliest ..... 8 years HYT ..... 24 years</p>
<p>USAF SENIOR NONCOMMISSIONED OFFICER ACADEMY (SNCOA) Attendance is limited to SMSgt, SMSgt selectees, and selected MSgts. Completion is mandatory before assuming the rank of CMSgt. ..... Mandatory</p> <p>SNCOA Correspondence Course ..... Optional</p> <p>ANG/AFRC may complete by correspondence course. ANG/AFRC MSgts may attend in-residence. .... Mandatory</p>	<p>SMSgt ..... 19.2 years Earliest ..... 11 years HYT ..... 26 years</p>
<p>UPGRADE TO SUPERINTENDENT (9-SKILL LEVEL)</p> <p>Minimum rank of SMSgt.</p> <p>Complete SNCOA ..... Mandatory</p> <p>Complete AFQTP 2EXXX-201LB, Communications-Electronics Manager's Handbook ..... Mandatory</p> <p>Maintenance Management and Generic AFJQSs/AFQTPs for various unit level duties ..... Mandatory</p>	<p>CMSgt ..... 21.5 years Earliest ..... 14 years HYT ..... 30 years</p>

NOTE 1: Published sew on times are Air Force averages. Refer to the Air Force Personnel Center's homepage to determine career field specific information: <http://www.afpc.randolph.af.mil/eprom>.

NOTE 2: See Part II, Section D for a list of AFJQSs/AFQTPs, AETC supplemental, and AFETS/CFS/SMT training.

## Section C - Skill Level Training Requirements

**9. Purpose.** The various skill levels in the career field are defined in terms of tasks and knowledge requirements for each skill level in the Telephone Systems career field of the Communications-Electronics Systems career ladder. They are stated in broad, general terms and establish the standards of performance. An all encompassing core task list has not been developed for this specialty because of the diversity of the missions supported and the equipment installed to meet mission requirements. Core tasks, knowledge items, and skill requirements for this specialty are identified in the STS, CDCs, AFJQSs/AFQTPs, etc. Completion of the mandatory 3-level skill awarding course, CDCs, 7-level course, and applicable AFJQSs/AFQTPs define the Air Force core tasks for this specialty.

### 10. Specialty Qualification Requirements.

#### 10.1. Apprentice (3-Level) Training.

KNOWLEDGE	Electronic principles, telephony fundamentals, copper and fiber-optic transmission principles, telephone system installation practices  Computer System Installation Records (CSIR) and project/circuit diagram interpretation  Test equipment and special tools  Maintenance management practices
EDUCATION	Completion of high school with courses in analytical mathematics is desirable.
TRAINING	Electronics Principles, course L3AQR2E633 481 (PDS Code PO1) (See Attachment 1 of the STS for course training standard)  Telephone Systems Apprentice, course J3ABR2E633 002 PDS Code 857) (See Attachment 2 of the STS for course training standard)
EXPERIENCE	None required.
OTHER	Normal color vision is required for entry into this AFSC as defined by AFI 48-123, <i>Medical Examination and Standards</i> .  Qualification to operate government vehicles according to AFI 24-301, <i>Vehicle Operations</i> .  Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i> , is mandatory for award and retention of this AFSC.  Physical ability to perform climbing duties, freedom from fear of heights, and claustrophobia is mandatory for entry, award, and retention of this AFSC.
IMPLEMENTATION	Entry into training is accomplished by reserving a position in the career field upon entry into the Air Force.

10.2. Journeyman (5-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	No AETC training requirement.
EXPERIENCE	<p>Qualification and possession of AFSC 2E633</p> <p>Qualification in installing, troubleshooting and repairing telephone switching systems and associated equipment</p> <p>Completion of the 2E653 Career Development Course</p> <p>Completion of all 2E653 CTG core tasks (See Attachment 3 of the STS for career training guide)</p> <p>Completion of applicable equipment AFJQSS/AFQTPs</p> <p>Completion of all local tasks assigned for the duty position</p>
OTHER	<p>Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i>, is mandatory for award and retention of this AFSC.</p> <p>Physical ability to perform climbing duties, freedom from fear of heights, and claustrophobia is mandatory for entry, award, and retention of this AFSC.</p>
IMPLEMENTATION	Entry into formal upgrade is initiated upon assignment to the individual's first duty station. Qualification training is initiated anytime individuals are assigned duties for which they are not qualified. Use CDCs and AFJQSS/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.

### 10.3. Craftsman (7-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	<p>Communications-Electronics Career Advancement Course (In-residence), E3ACR2EX7X 002 (PDS 7SI) [Active Duty only]</p> <p>Communications-Electronics Career Advancement Course (Distance learning), E6ADL2EX7X 000 (PDS Code 4VI) [Guard/Reserve only]</p> <p>Communications-Electronics Career Advancement Course (Self-paced), E6AZS2EX7X 006 (PDS X2J) [Prerequisite for Guard/Reserve members prior to attending the above distance learning course]</p>
EXPERIENCE	<p>Qualification and possession of AFSC 2E653</p> <p>Experience in supervising installation, maintenance, and repair of telecommunications systems</p> <p>Completion of all 2E673 CTG core tasks (See Attachment 4 of the STS for career training guide)</p> <p>Completion of AFQTP 2EXXXX-201L, Communications-Electronics Work Center Manager's Handbook</p> <p>Completion of applicable equipment/unit management function AFJQSS/AFQTPs</p>
OTHER	<p>Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i>, is mandatory for award and retention of this AFSC.</p> <p>Physical ability to perform climbing duties, freedom from fear of heights, and claustrophobia is mandatory for entry, award, and retention of this AFSC.</p>
IMPLEMENTATION	<p>Entry into formal upgrade training is initiated when individuals obtain the necessary rank and skill level. Qualification training is initiated anytime an individual is assigned duties for which they are not qualified. Use CDCs and AFJQSS/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.</p>

#### 10.4. Superintendent (9-Level) Training.

KNOWLEDGE	Maintenance management principles, principles of telephony Electrical and lightwave communications fundamentals, wire and antenna transmissions phenomena Digital telephone switching systems, telephone equipment and data circuitry, cable systems, and antenna systems
TRAINING	No AETC training requirement.
EXPERIENCE	Qualification and possession of AFSC 2E671, 2E672, or 2E673 Experience is mandatory supervising installation and maintenance in areas such as:  Telephone switching, telephone subsets, telephone key systems and data transmission media systems circuitry (T-carrier, fiber optic end equipment, modems, multiplexers, line drivers, and associated hardware  Cable and antenna systems including supporting structures, radomes, transmission lines, buried, aerial, underground copper core, and fiber optic C4 cable systems  AFQTP 2EXXXX-201LB, Communications-Electronics Manager's Handbook
OTHER	Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i> , is mandatory for award and retention of this AFSC.
IMPLEMENTATION	Entry into OJT is initiated when individuals are selected for the rank of SMSgt. Qualification training is initiated anytime individuals are assigned duties for which they are not qualified.

#### 10.5. Training Sources.

10.5.1. Electronic Principles training - 344 TRS, Lackland AFB, TX at <http://www.lackland.af.mil/>.

10.5.2. AFSC specific training - 364 TRS, Sheppard AFB, TX at <https://webi.sheppard.af.mil/>.

10.5.3. 2EX7X Communications-Electronics Career Advancement course (7-Level School) – 338 TRS, Keesler AFB, MS at <https://wwwmil.keesler.af.mil/>.

10.5.4. CDC 2E653 is available for upgrade purposes through the unit training manager. For individual qualification and cross-utilization training, CDCs are ordered through the unit training office.

10.5.5. AFJQs/AFQTPs are Air Force publications and are mandatory for use in qualification training. They are developed by the 81 TRSS (Q-Flight), Keesler AFB, MS and may be downloaded from <https://wwwmil.keesler.af.mil/81trss/qflight/welcome.html>. Procedures for requesting development of AFJQs/AFQTPs are contained in AFI 36-2233 *Air Force On-the-Job Training Products for Communications-Electronics Enlisted Specialty Training*. AFJQs/AFQTPs are listed in Part II, Section D, of this CFETP.

10.5.6. Air Force Engineering and Technical Service (AFETS) (course listing found at [https://www.afca.scott.af.mil/c-e\\_maint/afets.htm](https://www.afca.scott.af.mil/c-e_maint/afets.htm)), Contract Field Service (CFS), and Special Maintenance Team (SMT) training may be requested to provide on-site training. The AFETS program is outlined in AFI 21-110, *Engineering and Technical Services Management and Control*. Direct requests for AFETS, CFS, or SMT training to your MAJCOM.

## **Section D - Resource Constraints**

**11. Purpose.** This section identifies known resource constraints that preclude optimal/desired training from being developed or conducted, including information such as part numbers, national stock numbers, number of units required, cost, manpower, etc. Included are narrative explanations of each resource constraint and an impact statement describing what effect each constraint has on training. Finally, this section includes actions required, OPR, and target completion date. Resource constraints will be, at a minimum, reviewed and updated annually.

### **12. Apprentice (3-Level) Training.**

12.1. Constraints: None.

12.1.1. Impact. N/A

12.1.2. Resources Required. N/A

12.1.3. Action Required. N/A

12.2. OPR/Target Completion Date. N/A

### **13. Journeyman (5-Level) Training.**

13.1. Constraints: None.

13.1.1. Impact. N/A

13.1.2. Resources Required. N/A

13.1.3. Action Required. N/A

13.2. OPR/Target Completion Date. N/A

### **14. Craftsman (7-Level) Training.**

14.1. Constraints: None.

14.1.1. Impact. N/A

14.1.2. Resources Required. N/A

14.1.3. Action Required. N/A

14.2. OPR/Target Completion Date. N/A

## **Section E - Transition Training Guide**

**15.** There are currently no transition training requirements. This area is reserved.

## **PART II**

### **Section A - Specialty Training Standard**

**1. Implementation.** The implementation of training in support of this STS is with the class beginning 20020402 and graduating 20020710.

**2. Purpose.** As prescribed in AFI 36-2201, this STS:

2.1. The Course Training Standards (CTS) at Attachments 1 and 2:

2.1.1. Establishes the training requirements for airmen to perform 3-skill level duties in the Telephone Systems career ladder of the Airman Communications-Electronics Systems career field. The training tasks are based on an analysis of duties in AFMAN 36-2108 for AFSC 2E633.

2.1.2. Provides the basis for the development of more detailed training materials, training objectives, and training evaluation instruments for the course.

2.1.3. Shows formal training requirements. Attachment 1 lists the Electronic Principles requirements for this specialty and contains the proficiency code key pertaining to this attachment. Students receive this training through AETC course L3AQR2E633 481.

2.1.4. Attachment 2 contains a list of behavioral statements that describe knowledge and job performance requirements the graduate demonstrates on the job as a result of training received in course J3ABR2E633 002 as described in the Air Force Education and Training Course Announcements (ETCA) database (formerly AFCAT 36-2223, USAF Formal Schools Catalog). Part I, Section D, and the Preface to Attachment 2 explains constraints and/or guidelines to training. When notes or explanations describe constraints in the skill-awarding course, they indicate that training on those items is restricted due to the limitation described.

2.2. The Five-Level Career Training Guide (CTG) at Attachment 3:

2.2.1. Provides a complete list of continuation training requirements for the award of AFSC 2E653. Attachment 3 contains the behavioral code key used to indicate the type of training provided by CDCs.

2.2.2. Identifies the mandatory task and knowledge training that is required for the 5-skill level in the Telephone Systems career field of the Airman Communications-Electronic Systems career ladder. These are based on an analysis of duties and responsibilities as outlined in AFMAN 36-2108.

2.3. The Seven-Level Career Training Guide (CTG) at Attachment 4:

2.3.1. Provides a complete list of continuation training requirements for the award of AFSC 2E673. Attachment 4 contains the behavioral code key used to indicate the type of training that will be provided.

2.3.2. Identifies the mandatory task and knowledge training that is required for the 7-skill level in the Telephone Systems ladder of the Airman Communications-Electronics Systems career field. These are based on an analysis of duties and responsibilities as outlined in AFMAN 36-2108.

2.4. The CTGs at Attachments 3 and 4:

2.4.1. Provide OJT certification columns to record completion of task and knowledge training requirements. Use automated training management systems to document technician qualifications, if available. Task certification must show a start and stop date.

2.4.2. Become a job qualification standard for OJT when placed in AF Form 623, On-the-Job Training Record, and used according to AFI 36-2201. OJT tasks in column 1 are trained to the go/no go level. Go means the individual can perform the task without assistance and meet local requirements for accuracy, timeliness, and correct use of procedures.

2.4.2.1. Training Documentation. Document and certify completion of training. Identify duty position requirements by circling the subparagraph number next to the task statement. Complete the following columns in Part II of the CFETP:

2.4.2.1.1. Initial Certification. Evaluate qualifications and when verified, certify using:

2.4.2.1.1.1. Core/Critical Tasks. Start date, stop date, trainee's initials, trainer's initials, and certifier's initials.

2.4.2.1.1.2. Non-Core/Non-Critical Tasks. Start date, stop date, trainee's initials, and trainer's initials.

2.4.2.1.2. Transcribing from Old Document to CFETP. Evaluate current qualifications and when verified recertify using:

2.4.2.1.2.1. Tasks Previously Certified and Required in Current Duty Position (Core/Critical Tasks). Current date as completion date, trainee's initials, and certifier's initials.

2.4.2.1.2.2. Tasks Previously Certified and Required in Current Duty Position (Non-Core/Non-Critical Tasks). Current date as completion date, trainee's initials, and trainer's initials.

2.4.2.1.2.3. Tasks Previously Certified but Not Required in Current Duty Position. Carry forward only the previous completion date of certification (not the initials of another person). If and when transcribed tasks become duty position requirements, recertify using standard certification procedures.

2.4.2.1.2.4. The person whose initials appear in the trainer or certifier block during the transcription process must meet the requirements of their prescribed role.

2.4.2.1.2.5. Give the member the old CFETP upon completion of transcription.

2.4.2.1.3. Documenting Career Knowledge. When a CDC is not available: the supervisor identifies STS training references the trainee requires for career knowledge and ensures, as a minimum, that trainees cover the mandatory items in AFMAN 36-2108, *Developing, Managing, and Conducting Training*. For two time CDC course exam failures, supervisors identify all STS items corresponding to the areas covered by the CDC. The trainee completes study of the STS references, undergoes evaluation by the task certifier, and receives certification on the STS. NOTE: Career knowledge must be documented prior to submitting a CDC waiver.

2.4.2.1.4. Decertification and Recertification. When an airman is found to be unqualified on a task previously certified, the supervisor lines through the previous certification or deletes the previous certification when using an automated system. Appropriate remarks are entered on the AF Form 623A, On-The-Job Training Record Continuation Sheet, as to the reason for decertification. The individual is recertified using the normal certification process.

2.4.3. Indicates career knowledge provided in the 5-skill level CDCs. See Air Force Institute for Advanced Distributed Learning (AFIADL) catalog maintained by the unit OJT manager for current CDC listings or go to <http://www.maxwell.af.mil/au/afiadl>.

2.4.4. Are guides for development of promotion tests used in the Weighted Airman Promotion System (WAPS). Specialty Knowledge Tests (SKT) are developed at the USAF Occupational Measurement Squadron by senior NCOs with extensive practical experience in their career fields. The tests sample knowledge of CTG subject matter areas judged by test development team members to be most appropriate for promotion to higher grades. Questions are based upon study references listed in the WAPS catalog. Individual responsibilities are listed in chapter 1 of AFI 36-2605, *Air Force Military Personnel Testing System*. WAPS is not applicable to the Air National Guard or Air Reserve forces.

**3. Recommendations.** Comments and recommendations are invited concerning the quality of AETC training. A Customer Service Information Line (CSIL) has been installed for the supervisors' convenience. For a quick response to concerns, call our CSIL at DSN 597-4566, or fax us at DSN 597-3790, or e-mail us at, [81trg-tget@keesler.af.mil](mailto:81trg-tget@keesler.af.mil). Reference this CTS and identify the specific area of concern (paragraph, training standard element, etc).

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

MICHAEL E. ZETTLER, Lieutenant General, USAF  
Deputy Chief of Staff /Installations & Logistics

Attachments:

1. Electronic Principles Course Training Standard
2. Course Training Standard, 2E633
3. Five-Level Career Training Guide, 2E653
4. Seven-Level Career Training Guide, 2E673

**PREFACE**

NOTE 1: Dashed items in this CTS are not part of the original CTS created at the August 1999 Electronic Principles U&TW however, they are the specific objectives taught in the Electronic Principles course designed to meet the CTS requirements.

NOTE 2: Unless otherwise stated, students may be allowed two assists from the instructor and still successfully achieve the proper level of proficiency. An instructor assist is anytime an instructor must intercede to provide guidance to a student which leads to a satisfactory completion of the objective or to prevent the student from continuing in a manner that will lead to an unsatisfactory conclusion, safety violation, or damage to equipment.

NOTE 3: All objectives are trained during wartime.

<b>PROFICIENCY CODE KEY</b>		
	<b>SCALE VALUE</b>	DEFINITION: The individual
<b>Task Performance Levels</b>	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
<b>*Task Knowledge Levels</b>	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step-by-step procedures for doing the task. (PROCEDURES)
	c	Can identify why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, isolate, and resolve problems about the task. (COMPLETE THEORY)
<b>**Subject Knowledge Levels</b>	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
<b>EXPLANATIONS</b>		
<p>* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b)</p> <p>** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task or for a subject common to several tasks.</p> <p>X This mark is used alone instead of a scale value to show that no proficiency training is provided in the course.</p> <p>- This mark is used alone in course columns to show that training is required, but not given, due to limitations in resources.</p>		

PROFICIENCY  
CODE

**1. ELECTRONIC SUPPORT SUBJECTS.**

- 1.1. Safety. B  
– Identify safety precautions pertaining to electronics.
- 1.2. First Aid. B  
– Identify first aid procedures for electrical injuries.
- 1.3. Electrostatic Discharge (ESD) Control. B  
– Identify electrostatic discharge (ESD) sensitive device control methods.
- 1.4. Electromagnetic Effects (EMP/EMI). B  
– Identify the techniques used to protect electronic equipment from the effects of electromagnetics (EMP/EMI).
- 1.5. Metric Notation.
- 1.5.1. Powers of Ten. B  
– Convert decimal numbers to scientific notation and vice versa.  
– Perform math operations of numbers expressed as scientific notation.
- 1.5.2. Electrical Prefixes. B  
– Convert decimal numbers to electrical prefixes and vice versa.  
– Convert electrical prefix values to other equivalent electrical prefix values.

**2. TEST EQUIPMENT.**

- 2.1. Analog Multimeter. 2b  
– Identify the operating principles of the analog multimeter.  
– Identify procedures for analog multimeter usage.  
– Measure selected electrical values using analog and digital multimeters.
- 2.2. Digital Multimeter. 2b  
– Identify the operating principles of the digital multimeter.  
– Identify procedures for digital multimeter usage.  
– Measure selected electrical values using analog and digital multimeters.
- 2.3. Oscilloscope. 2b  
– Identify oscilloscope operating principles.  
– Identify the procedures for oscilloscope usage.  
– Measure selected electrical values using an oscilloscope and signal generator.
- 2.4. Signal Generator. 2b  
– Identify the procedures for signal generator usage.  
– Measure selected electrical values using an oscilloscope and signal generator.

PROFICIENCY  
CODE

**3. BASIC CIRCUITS.**

3.1. Direct Current (DC).

3.1.1. Terms.

- Identify terms associated with direct current (DC) principles

B

3.1.2. Theory.

- Identify circuit schematic symbols.
- Identify basic circuit operating principles.
- Determine the results of parameter changes on DC resistive circuits.
- Identify resistor voltage divider operating principles.

B

3.1.3. Calculations.

- Calculate values for a series resistive DC circuit diagram.
- Calculate values for a parallel resistive DC circuit diagram.
- Calculate values for a series-parallel resistive DC circuit diagram.

B

3.2. Alternating Current (AC).

3.2.1. Terms.

- Identify terms associated with AC principles.

B

3.2.2. Calculations.

- Calculate AC voltage values.
- Calculate AC frequency/time values.

B

**4. BASIC CIRCUIT COMPONENTS.**

4.1. Resistors.

4.1.1. Theory.

- Identify resistor characteristics.

B

4.1.2. Color Code.

- Using resistor color code, determine the ohm/tolerance value of resistors.

B

4.1.3. Troubleshoot.

- Troubleshoot a series-parallel resistive circuit to a faulty resistor.

2b

4.2. Inductors.

4.2.1. Theory.

- Identify characteristics of inductors.
- Identify inductor DC operating principles.
- Identify inductor AC operating principles.

B

4.2.2. Troubleshoot.

- Troubleshoot a faulty inductor in a circuit.

2b

PROFICIENCY  
CODE

4.3. Capacitors.	
4.3.1. Theory.	B
– Identify characteristics of capacitors.	
– Identify capacitor DC operating principles.	
– Identify capacitor AC operating principles.	
4.3.2. Troubleshoot.	2b
– Troubleshoot a faulty capacitor in circuit.	
4.4. Resistive-Capacitive-Inductive (RCL) Circuit Theory.	
4.4.1. Basic.	B
– Identify RCL circuit operating principles.	
4.4.2. Resonant.	B
– Identify resonant RCL circuit operating principles.	
4.4.3. Frequency Sensitive Filter.	B
– Identify frequency sensitive filter operating principles.	
<b>5. ELECTROMAGNETIC DEVICES.</b>	
5.1. Transformers.	
5.1.1. Theory.	B
– Identify characteristics of transformers.	
– Identify transformer operating principles.	
5.1.2. Troubleshoot.	2b
– Troubleshoot a faulty transformer.	
5.2. Relays and Solenoids.	
5.2.1. Theory.	B
– Identify relay and solenoid operating principles.	
5.2.2. Troubleshoot Relays.	2b
– Troubleshoot a faulty relay in a circuit.	
5.3. Motor Theory.	
5.3.1. Direct Current.	B
– Identify DC motor operating principles.	
5.3.2. Alternating Current.	B
– Identify AC motor operating principles.	

PROFICIENCY  
CODE

5.4. Generator Theory.	
5.4.1. Direct Current. – Identify DC generator operating principles.	B
5.4.2. Alternating Current. – Identify AC generator operating principles.	B
5.5. Synchro/Servo.	
5.5.1. Theory. – Identify servo/synchro operating principles.	B
5.5.2. Fault Isolate. – Identify servo/synchro fault isolation procedures.	2b
5.6. Transducer Theory. – Identify transducer operating principles.	B
<b>6. SOLID STATE DEVICES.</b>	
6.1. Diodes.	
6.1.1. Theory. – Identify solid state diode operating principles.	B
6.1.2. Troubleshoot. – Identify diode fault isolation techniques. – Troubleshoot a diode circuit.	2b
6.2. Bipolar Junction Transistors.	
6.2.1. Theory. – Identify bipolar transistor operating principles.	B
6.2.2. Troubleshoot. – Troubleshoot a bipolar junction transistor circuit.	2b
6.3. Special Purpose Device Theory.	
6.3.1. Zener Diode. – Identify zener diode operating principles.	B
6.3.2. Light Emitting Diode (LED). – Identify LED operating principles.	B
6.3.3. Liquid Crystal Display (LCD). – Identify LCD operating principles.	B

	PROFICIENCY CODE
6.3.4. Integrated Circuits (IC). <ul style="list-style-type: none"><li>– Identify integrated circuit (IC) operating principles.</li></ul>	B
6.3.5. Metal Oxide Semiconductor Field Effect Transistor (MOSFET). <ul style="list-style-type: none"><li>– Identify MOSFET operating principles.</li></ul>	B
6.3.6. Operational Amplifier (OP AMP). <ul style="list-style-type: none"><li>– Identify OP AMP operating principles.</li></ul>	B
<b>7. TRANSISTOR AMPLIFIER CIRCUITS.</b>	
7.1. Theory. <ul style="list-style-type: none"><li>– Identify the transistor amplifier configurations.</li><li>– Identify common emitter amplifier operating principles.</li><li>– Identify common collector amplifier operating principles.</li><li>– Identify common base amplifier operating principles.</li></ul>	B
7.2. Stabilization. <ul style="list-style-type: none"><li>– Identify transistor amplifier temperature stabilization operating principles.</li></ul>	B
7.3. Coupling. <ul style="list-style-type: none"><li>– Identify coupling circuit operating principles.</li></ul>	B
7.4. Troubleshoot. <ul style="list-style-type: none"><li>– Troubleshoot a transistor amplifier circuit to a faulty component.</li></ul>	2b
<b>8. POWER SUPPLY CIRCUITS.</b>	
8.1. Theory.	
8.1.1. Rectifiers. <ul style="list-style-type: none"><li>– Identify power supply rectifier operating principles.</li></ul>	B
8.1.2. Filters. <ul style="list-style-type: none"><li>– Identify power supply filter operating principles.</li></ul>	B
8.1.3. Voltage Regulators. <ul style="list-style-type: none"><li>– Identify shunt regulator operating principles.</li><li>– Identify series electronic voltage regulator (EVR) operating principles.</li></ul>	B
8.2. Troubleshoot. <ul style="list-style-type: none"><li>– Identify types of malfunctions in a filtered power supply circuit.</li><li>– Troubleshoot a filtered power supply circuit to a faulty component.</li><li>– Troubleshoot a series EVR circuit to a faulty component.</li></ul>	2b

PROFICIENCY  
CODE

**9. WAVE GENERATING CIRCUITS.**

9.1. Theory.

9.1.1. Oscillators.

- Identify the characteristics of oscillator circuits.
- Identify LC oscillator operating principles.
- Identify crystal oscillator operating principles.

B

9.1.2. Multivibrators.

- Identify astable multivibrator operating principles.
- Identify monostable multivibrator operating principles.
- Identify bistable multivibrator operating principles.

B

9.1.3. Waveshaping Circuits.

- Identify RC integrating/differentiating circuit operating principles.
- Identify sawtooth generator operating principles.

B

9.2. Fault Isolate.

- Fault isolate a wave generating circuit.

2b

**10. DIGITAL NUMBERING SYSTEMS.**

10.1. Conversions.

10.1.1. Binary.

- Identify principles of binary conversions.

B

10.1.2. Octal.

- Identify principles of octal conversions.

B

10.1.3. Hexadecimal.

- Identify principles of hexadecimal conversions.

B

10.1.4. Binary Coded Decimal.

- Identify principles of binary coded decimal (BCD) conversions.

B

10.2. Binary Math Operations.

- Determine the results of math operations.

B

**11. DIGITAL LOGIC CIRCUITS.**

11.1. Theory.

11.1.1. Gates.

- Identify principles of logic gate operation.

B

11.1.2. Flip-Flops.

- Identify principles of flip-flop operation.

B

	PROFICIENCY CODE
11.1.3. Counters. – Identify operating principles of counters.	B
11.1.4. Registers. – Identify operating principles of registers.	B
11.1.5. Combinational Logic Circuits. – Identify operating principles of combinational logic circuits.	B
11.2. Troubleshoot. – Troubleshoot a combinational logic circuit.	B
11.3. Digital-to-Analog (D/A) and Analog-to-Digital (A/D) Converter Theory. – Identify operating principles of a digital-to-analog (D/A) converters. – Identify operating principles of analog-to-digital (A/D) converters.	B
<b>12. BASIC COMPUTER FUNDAMENTALS.</b>	
12.1. Computer Theory.	
12.1.1. Hardware. – Identify computer hardware operating principles.	B
12.1.2. Software.	
12.1.2.1. Operating Systems. – Identify computer operating systems principles.	B
12.1.2.2. Virus Protection. – Identify computer virus protection operating principles.	B
12.1.2.3. Diagnostics. – Identify computer diagnostics operating principles.	B
12.1.2.4. Applications. – Identify computer applications operating principles.	B
12.1.3. Peripherals. – Identify computer peripheral devices operating principles.	B
12.2. Network Theory.	
12.2.1. Components. – Identify basic network hardware component operating principles.	B
12.2.2. Types. – Identify basic network communication system types.	B
12.2.3. Topologies. – Identify basic network physical topologies.	B

	PROFICIENCY CODE
12.2.4. Communication Mediums. – Identify network medium operating principles.	B
<b>13. BASIC COMMUNICATIONS THEORY.</b>	
13.1. Antenna. – Identify antenna operating principles.	B
13.2. Transmission Lines. – Identify transmission line theory of operation.	B
13.3. Waveguides. – Identify waveguide operating principles.	B
13.4. Transmitters.	
13.4.1. Amplitude Modulation (AM). – Identify AM transmitter operating principles.	B
13.4.2. Frequency Modulation (FM). – Identify FM transmitter operating principles.	B
13.5. Receivers.	
13.5.1. AM Receivers. – Identify AM receiver operating principles.	B
13.5.2. FM Receivers. – Identify FM receiver operating principles.	B
<b>14. SOLDER AND DESOLDER.</b>	
14.1. Terminal Connection. – Solder a wire to a terminal connector. – Desolder a wire from a terminal connector.	2b
14.2. Printed Circuit Board (PCB). – Solder three components to a PCB. – Desolder three components from a PCB.	2b
14.3. Multipin Connector. – Solder a tinned wire into a pin for use in a multipin connector. – Desolder a wire from a pin used in a multipin connector.	2b
14.4. Coaxial Connector. – Solder a coaxial connector center contact to a coaxial cable. – Desolder a coaxial connector center contact from a coaxial cable.	2b

PROFICIENCY  
CODE

**15. ASSEMBLE SOLDERLESS CONNECTORS.**

- |   |    |
|---|----|
| 15.1. Crimped Connection.   | 2b |
| – Splice two wires together using a crimp connector.                |    |
| – Crimp a terminal lug to a wire.                                   |    |
| 15.2. Coaxial Connector.  | 2b |
| – Assemble a solderless coaxial cable connector to a coaxial cable. |    |
| 15.3. Multipin Connector.   | 2b |
| – Crimp a wire into a pin for use in a multipin connector.          |    |
| – Assemble a multipin connector.                                    |    |

**PREFACE**

NOTE 1: Unless otherwise stated in the objective, the student may be allowed two assists from the instructor and still successfully achieve the proper level of proficiency. An instructor assist is defined as anytime an instructor must intercede to provide guidance to a student which leads to a satisfactory completion of the objective or to prevent a student from continuing in a manner which will lead to an unsatisfactory conclusion, safety violation, or damage to the equipment.

NOTE 2: All equipment related objectives are performed by following procedures from technical orders, technical manuals, or student instructional material developed by the training facility. Test equipment used throughout the course includes:

- Handheld Telephone Test Set
- Multimeters
- Handheld Analog Test Set
- Vibraground

NOTE 3: The equipment items identified below are used as training vehicles within the skill awarding course since it incorporates most of the basic principles and procedures found in the remainder of the AFSC's equipment inventory.

- Telephones (Substation and Key)
  - 1A2 Key Telephone Units
  - 1A2 Key Service Panels
- Solid State Intercom
- Electronic Key Systems (ITT 3100 and TIE Businesscom Plus)
- Digital Switch (DMS-100, MSL-100) and associated peripheral equipment
- NetPlus Telecommunications Management System (TMS)

NOTE 4: All objective references are performed as terminal objectives. Knowledge required to perform CTS elements is inherent in each objective. This includes, but is not limited to, defining the capabilities, limitations, and theory of operation of the stated item.

NOTE 5: All objectives are trained during wartime.

OPERATIONAL RISK MANAGEMENT (ORM).

TR: AFI 91-301; AFOSH STD 91-50; TO 00-25-232

- 1.1. Describe safety and health hazards as they apply to AFSC 2E6X3.
- 1.2. Explain how AFOSH standards apply to AFSC 2E6X3.
- 1.3. Use safety practices when working with live circuits.
- 1.4. Use safety practices when using specialized hand tools.
- 1.5. Use safety practices when using test equipment.
- 1.6. Use safety practices when using ladders.

2. TELEPHONE SYSTEM FUNDAMENTALS.

TR: TOs 31W-3-6, 31W2-4-330 series

- 2.1. Describe how sound principles are used in telephone systems.
- 2.2. Explain telephone transmitter and receiver principles.
- 2.3. Identify general principles of telephone systems.

3. COMMUNICATION-COMPUTER RECORDS - WIRE COMMUNICATIONS SYSTEMS.

TR: TO 00-20-5 and applicable commercial manuals

- 3.1. Automated telecommunications records management system.
  - 3.1.1. Describe cable, fiber, and key system management process.
  - 3.1.2. Describe the work order process.
  - 3.1.3. Describe the trouble ticketing process.
- 3.2. Identify data on the cable transfer worksheet.
- 3.3. Use circuit layout records.
- 3.4. Use storage battery records.
- 3.5. Use telephone equipment line records.

4. SUB-STATION INSTALLATION.

TR: TOs 31W-3-6, 31W-1-102, 31-10-2, 31-10-7, 31W2 series, 31W3-10-20; TIA/EIA 568-A

- 4.1. Install/terminate inside cable using a wire wrap tool.
- 4.2. Install/terminate inside cable using an impact tool.
- 4.3. Install an amphenol connector on a cable.
- 4.4. Install a single line telephone.
- 4.5. Install miscellaneous premise equipment such as external bells and connecting blocks.

- 4.6. Install cross-connects for premise wiring.
- 4.7. Install protective grounding devices.
- 4.8. Perform operational test on telephones.
- 4.9. Perform corrective maintenance.
- 4.10. Explain the procedures for installing Category-5 cable.

5. 1A2 KEY TELEPHONE SYSTEM AND MAINTENANCE.  
TR: TOs 31W1-1-271, 31W2 series

- 5.1. Describe the principles of system operation.
- 5.2. Explain the capabilities of 400 series key telephone units (KTU).
- 5.3. Explain the capabilities of key service panels (KSP).
- 5.4. Explain equipment operations and capabilities of a solid state intercom system.
- 5.5. Describe capabilities of power supplies.
- 5.6. Install single/multiple line series telephones.
- 5.7. Perform an operational test.
- 5.8. Perform corrective maintenance.

6. STATION PROGRAMMABLE ELECTRONIC KEY TELEPHONE SYSTEM  
TR: Applicable commercial manuals

- 6.1. Describe the principles of system operation.
- 6.2. Explain system capabilities.

7. KEYBOARD PROGRAMMABLE PABX/ELECTRONIC KEY TELEPHONE SYSTEM.  
TR: Applicable commercial manuals

- 7.1. Describe the principles of system operation.
- 7.2. Explain system capabilities.
- 7.3. Use the installation plan.
- 7.4. Install and program.
- 7.5. Perform an operational test.
- 7.6. Perform corrective maintenance.

8. TRANSMISSION PRINCIPLES.  
TR: TO 31-3-6, 31-10-34, 33A1-12-310-1, 33A1-4-4-11, 33A1-3-533-1; commercial manuals

- 8.1. Describe fiber optics and wire transmission principles.

8.2. Describe the following transmissions test principles.

8.2.1. Frequency response test.

8.2.2. Idle channel noise test.

8.2.3. Impulse noise test.

8.2.4. Bit Error Rate test.

8.3. Perform:

8.3.1. DC loop resistance test.

8.3.2. Station ground resistance test.

8.3.3. Insulation resistance test.

9. NORTEL DIGITAL SWITCHING SYSTEMS.

TR: Northern Telecom Practices (NTP); applicable commercial manuals

9.1. Introduction to Digital Switching.

9.1.1. Associate components with the appropriate major area.

9.1.2. Describe analog-to-digital (A/D) and digital-to-analog (D/A) conversion.

9.1.3. Describe the principles of time division multiplexing.

9.2. Locate desired information using NTPs and commercial manuals

9.3. Principles of Digital Switching Technology.

9.3.1. Describe the characteristics of the Peripheral Module (PM) area.

9.3.2. Describe the characteristics of the Network (NET) area.

9.3.3. Describe the characteristics of the SuperNode.

9.3.4. Describe the characteristics of the maintenance and administration area.

9.3.5. Describe the operation of switch related power equipment.

9.3.6. Describe the characteristics of the Office Alarm Unit (OAU).

9.3.7. Describe the characteristics of the NTI DE-4 channel bank.

9.3.8. Describe the characteristics of T-Span equipment.

9.3.9. Describe the characteristics of modems.

9.3.10. Describe the characteristics of a disk drive unit (DDU).

9.3.11. Describe the characteristics of the magnetic tape drive.

9.3.12. Operate the E-MAP terminal.

9.3.13. Operate the line printer.

9.3.14. Store and retrieve data using the disk drive unit.

9.3.15. Store and retrieve data using the magnetic tape drive.

#### 10. DIGITAL SWITCHING SYSTEM PREVENTIVE MAINTENANCE.

TR: Northern Telecom Practices; commercial manuals, TO 31W2-4-1-346WC-1

10.1. Describe the procedure to take an office image from the SuperNode front end.

10.2. Describe the procedure for cleaning the magnetic tape drive.

10.3. Explain the procedure for cleaning the cooling unit.

10.4. Explain the preventive maintenance requirements and procedures for the OAU.

10.5. Perform preventive maintenance procedures on the power converters and inverters.

10.6. Explain preventive maintenance requirements and procedures for batteries.

10.7. Explain preventive maintenance procedures for distribution frames.

#### 11. DIGITAL SWITCHING SYSTEM FAULTS.

TR: Northern Telecom Practices

11.1. Diagnose and correct faults in single and dual unit peripheral modules.

11.2. Diagnose line faults using the automatic line testing (ALT) feature.

11.3. Correct line faults using manual line testing procedures.

11.4. Diagnose and correct faults in the attendant console.

11.5. Diagnose trunk faults using the automatic trunk testing (ATT) feature.

11.6. Correct trunk faults using manual trunk testing procedures.

11.7. Diagnose and correct faults in the network.

11.8. Diagnose and correct faults in the SuperNode to include the computing module (CM), message switch (MS), and system load module (SLM).

11.9. Diagnose and correct faults in the I/O Device (IOD) subsystem.

11.10. Diagnose and correct faults on a channel service unit (CSU) and digital service cross-connect (DSX).

11.11. Diagnose and correct faults on a DE-4 channel bank.

11.12. Interpret and list the procedures required for the routing of log utilities (LOGUTIL) reports.

11.13. Explain the purpose and how to generate an operational measurement (OM) report.

12. SOFTWARE UTILITIES.

TR: NTP

12.1. Identify the purpose/function of data base facilities.

12.2. Identify the structure of translation data tables.

12.3. Initiate service order for Integrated Business Network (IBN) and Business sets to include Multiple Appearance Directory Numbers (MADN).

13. RED SWITCH.

TR: Applicable commercial manuals

13.1. Identify the major components of a Red Switch to include Integrated Digital Network Exchange (IDNX).

13.2. Explain the Red Switch distribution system.

13.3. Identify types of Red Switch instruments and consoles.

14. DEPLOYABLE COMMUNICATIONS.

TR: Arm45

y TC 24-20; CJCSM 6231; 31W2-2TTC-39 Series; Redcom commercial manuals.

14.1. Explain the deployable communication environment.

14.2. Describe a deployable distribution system.

14.3. Identify different types of deployable telephones.

14.4. Describe characteristics of deployable switching systems.

15. SWITCH SECURITY.

TR: AFI 33-111

15.1. Describe basic switch security and access control.

15.2. Identify threats and vulnerabilities.

15.3. Explain security policy.

16. INTEGRATED SERVICES DIGITAL NETWORK (ISDN).

TR: Applicable commercial manuals

16. Describe ISDN principles.

16.2. Describe installation and interface procedures.

**BEHAVIORAL FORMAT CTG CODING SYSTEM**

Each CTG element is written as a behavioral statement. The detail of the statement and verb selection reflects the level of training provided.

Code	Definition
K	Subject Knowledge Training - The verb selection identifies the individual's ability to identify facts, state principles, analyze, or evaluate the subject.
-	When this code is used in the OJT Upgrade Column it indicates that the certification or qualification on this task is a local determination. When this code is used in the CDC Column it indicates that no training for this subject is provided in the CDCs.
X	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level. This code indicates that training to satisfy this requirement is either provided through OJT, CDCs, or a combination of OJT and CDCs.
X*	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level if the assigned duty position is responsible to maintain/operate equipment or system indicated as assigned by the local work center supervisor. This code indicates that training to satisfy this requirement is normally provided through OJT.

**CFETP versus AFJQS task coding.** AFJQSs/AFQTPs annotated in the CFETP with an “X” denotes the AFJQS is mandatory. Within the AFJQS are individual tasks that are coded either “X” or “X\*.” If the tasks are coded “X,” they are mandatory. If coded “X\*,” they are duty position specific.

The identification blocks listed below are to be used when the trainer is other than the trainee's immediate supervisor.

<p><i>THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY</i></p> <p>Personal Data - Privacy Act of 1974</p>		
PRINTED NAME OF TRAINEE ( <i>Last, First, Middle Initial</i> )	INITIALS ( <i>Written</i> )	SSAN
PRINTED NAME OF CERTIFYING OFFICIAL AND WRITTEN INITIALS		
N/I	N/I	

## PREFACE

NOTE 1: Users are responsible for annotating technical references to identify current references pending CTG revision.

NOTE 2: AFJQS 2EXXX-200B, 2EXXX C-E Enlisted Specialty Training is mandatory for use in conjunction with this CTG. It sets the Air Force standard for qualification and certification for the following subject areas:

- Career Progression Information
- Information Security (INFOSEC)
- Communications Security (COMSEC)
- Protect MAJCOM/FOA Critical Mission Information
- Physical Security
- Electronic Emission Security (TEMPEST)
- Electronic Warfare
- Operational Risk Management
- Training
- Work Center Administration
- Operator Care of Assigned Government Vehicles
- Supply
- Technical Orders (TO) and Technical Publications
- Supervision
- C-E Equipment Maintenance Management
- C-E Equipment Maintenance System Inspecting, Reporting, and Forms

NOTE 3: Equipment/system knowledge and/or performance tasks are defined in the AFJQS. AFJQS items set the standard for qualification and certification and are mandatory for use in conjunction with this CTG. AFQTPs listed in the CTG are generally handbooks which do not have task listings, therefore tracking through the Core Automated Maintenance System (CAMS) is not possible. Annotate completion of these products on AF Form 623A.

NOTE 4: When an AFJQS is loaded into CAMS, letters in the AFJQS identifier are converted to the number representing each letter's alphabetical position (e.g., 200B would be loaded as 200.2). To save space, individual AFJQS tasks are not normally listed within the CTG. However, if a CTG task is closely related to an AFJQS task or area, the AFJQS task/heading is listed (e.g., 200.2.12) and the related CTG task is listed under it (e.g., 200.2.12.75). To prevent potential task numbering conflicts between AFJQS tasks and subordinate CTG tasks, subordinate CTG tasks start with the number 75. This creates gaps in the final task numbering sequence, but integrates related CTG and AFJQS tasks so they will be listed on your training documents in the same area and in order.

NOTE 5: When loading AFJQS tasks into the CAMS database, tasks are loaded as STS not 797 items.

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
1. ELECTRONIC PRINCIPLES (EP). TR: EP CBT and TO 31-1-141 series							
1.1. Identify principles and capabilities of electronic devices and circuits.	-	K					
2. TEST EQUIPMENT. TR: TO 33K-1-100, Applicable test equipment technical orders							
2.1. Identify principles, capabilities, and limitations of the following test equipment items:							
2.1.1. Analog oscilloscope.	-	K					
2.1.2. Digital oscilloscope.	-	K					
2.1.3. Spectrum analyzer.	-	K					
2.1.4. Analog multimeter.	-	K					
2.1.5. Digital multimeter.	-	K					
2.1.6. Power meter.	-	K					
2.1.7. Optical time domain reflectometer.	-	K					
2.1.8. Time domain reflectometer.	-	K					
2.1.9. Bit error rate test set.	-	K					
2.1.10. RF signal generator.	-	K					
2.1.11. Frequency counter.	-	K					
2.1.12. Analog handheld telephone test set.	-	K					
2.1.13. ISDN handheld telephone test set.	-	K					
2.2.14. Transmission impairment measurement set.	-	K					
2.2.15. Bit error rate test set.	-	K					
2.2.16. T-span and repeater test set.	-	K					
2.2. Perform equipment maintenance using the following test equipment/devices:							
2.2.1. Multimeter.	X*	-					
2.2.2. Analog handheld telephone test set.	X*	-					
2.2.3. ISDN handheld telephone test set.	X*	-					
2.2.4. Telephone tone generator.	X*	-					
2.2.5. Inductive amplifier.	X*	-					
2.2.6. Telephone test board.	-	-					
2.2.7. Frequency selective voltmeter.	-	-					
2.2.8. Frequency counter.	-	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
2.2.9. Telephone test oscillator.	-	-					
2.2.10. Noise measurement test set.	-	-					
2.2.11. Impulse noise test set.	-	-					
2.2.12. Transmission impairment measurement set.	-	-					
2.2.13. Bit error rate test set.	-	-					
2.2.14. T-span and repeater test set.	-	-					
2.2.15. PCM channel access test set.	-	-					
2.2.16. Oscilloscope.	-	-					
2.2.17. Fiber optic power meter/light source.	-	-					
2.2.18. Megohmmeter.	-	-					
2.2.19. Station ground test set.	-	-					
3. STANDARD MAINTENANCE PRACTICES.							
3.1. Describe basic troubleshooting procedures.	X*	-					
3.2. Interpret results of diagnostic programs.	X*	-					
3.3. Interpret diagrams for fault isolation.	X*	-					
3.4. Locate elements such as unit, module, row, column, component, pin, connector, or test point using alphanumeric designator.	X*	-					
3.5. Solder and desolder electronic equipment components.	X*	-					
4. COMPUTER SECURITY (COMPUSEC). TR: AFI 33-202 and AFQTP 2EXXX-202D							
4.1. Define COMPUSEC.	X	-					
4.2. Identify vulnerabilities and incidents.	X	-					
4.3. Describe data protection techniques.	X	-					
4.4. Describe basic countermeasures.	X	-					
4.5. Describe reporting procedures.	X	-					
4.6. Explain malicious logic.	X	-					
4.7. Describe methods of malicious logic protection.	X	-					
4.8. Describe TEMPEST suppression techniques.	X*	-					
4.9. Perform TEMPEST maintenance.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
5. STANDARD INSTALLATION PRACTICES. TR: TOs 31-10-7, 31-10-11, 31-10-13, 31-10-24, 31W-3-6, 31W-1-102, 31W2-4-330 series, and 31W3-10-20; TIA/EIA 568A & 569; AFJQS 2EXXX-202B							
5.1. State facts related to the following practices:							
5.1.1. Installation.	X	K					
5.1.2. Configuration.	X	K					
5.1.3. Interconnection.	X	K					
5.1.4. Inspection.	X	K					
5.2. Explain the importance of cable labeling and installation documentation.	X	K					
5.3. Describe wire color coding standards.	X*	K					
5.4. Describe fiber optics installation concepts.	X*	K					
5.5. Describe the concepts of:							
5.5.1. Grounding.	X	K					
5.5.2. Bonding.	X	K					
5.5.3. Shielding.	X	K					
5.5.4. Lightning protection.	X	K					
5.6. Remove or install equipment grounds.	X*	-					
5.7. Check quality of equipment grounds.	X*	-					
5.8. Identify procedures to terminate multi-conductor cables.	X*	-					
5.9. Construct the following cable connectors:							
5.9.1. Multi pin.	X*	-					
5.9.2. Modular.	X*	-					
5.9.3. Coaxial.	X*	-					
5.9.4. Fiber.	X*	-					
5.10. Isolate and repair malfunctions in cable assemblies.	X*	-					
6. COMMUNICATIONS PRINCIPLES. TR: TO 31-1-141 Series							
6.1. State facts relating to the following:							
6.1.1. Amplitude Modulation (AM).	-	K					
6.1.2. Frequency Modulation (FM).	-	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
6.1.3. Phase Modulation (PM).	-	K					
6.1.4. Pulse Code Modulation (PCM).	-	K					
6.1.5. Bandwidth.	-	K					
6.1.6. Lightwave communications.	-	K					
6.1.7. Asynchronous/synchronous communication modes.	-	K					
6.1.8. Error detection and correction.	-	K					
6.2. State facts relating to the theory of operation of the following interface standards and protocols:							
6.2.1. EIA/RS-232C.	-	K					
6.2.2. EIA/RS-449.	-	K					
6.2.3. EIA/RS-422.	-	K					
6.2.4. EIA/RS-423.	-	K					
6.2.5. EIA-530.	-	K					
6.2.6. EIA-568.	-	K					
6.2.7. V.35.	-	K					
6.2.8. MIL STD 188-114A.	-	K					
6.2.9. TCP/IP. TR: CBT Volume--Microsoft TCP/IP on Windows NT 4.0: Introduction to TCP/IP and IP Addressing <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>	-	-					
6.2.10. X.25/1822.	-	-					
6.2.11. GOSIP.	-	-					
6.3. State facts relating to the theory of operation of communication protocols/addressing. TR: CBT Volume--Internetworking Essentials: Introduction to Common Networking Protocols and Internetworking Overview <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>	-	-					
6.4. State facts relating to the following switching methods: TR: CBT Volume--WAN Technologies <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
6.4.1. Circuit.	-	-					
6.4.2. Message.	-	-					
6.4.3. Packet.	-	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
6.4.4. Asynchronous transfer mode (ATM). TR: CBT Volume--WAN Technologies: ATM Principles <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>	-	-					
6.5. State facts relating to the following multiplexing methods: TR: CBT Volume--Internetworking Essentials: 1) Data Communications: Signals and Systems 2) WAN Technologies <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
6.5.1. Frequency Division Multiplexing (FDM).	-	-					
6.5.2. Time Division Multiplexing (TDM).	-	-					
6.5.3. T1 rate and higher.	-	-					
6.6. State facts relating to the following cryptology methods:							
6.6.1. Secret key/symmetrical (traditional cryptographic equipment).	-	-					
6.6.2. Public key/asymmetrical (FORTEZZA).	-	-					
7. INFORMATION TRANSPORT CONCEPTS.							
7.1. State facts relating to the theory of operation of the following network configurations: TR: CBT Volume--Novell Networking Technologies: Concepts and Services; CBT Volume--Internetworking Essentials: LAN Fundamentals; and CBT Volume--LAN Technologies: LAN Topologies and Techniques at <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
7.1.1. Network topologies (Star, Ring, Bus, etc.).	X	-					
7.1.2. Network types (LAN, WAN, VPN).	X	-					
7.2. State facts relating to the theory of operation of the following information transport devices: TR: CBT Volume--Internetworking Essentials: Fundamentals of Internetworking; CBT Volume--LAN Technologies: LAN Media and Components <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
7.2.1. Routers.	X	-					
7.2.2. Hubs (concentrators).	X	-					
7.2.3. Bridges.	X	-					
7.2.4. Gateways.	X	-					
7.2.5. Switches.	X	-					
7.2.6. Data terminal equipment (DTE).	X	-					
7.2.7. Data communications equipment (DCE).							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
7.2.7.1. Modems.	X	-					
7.2.7.2. Data service units/channel service units (DSU/CSU).	X	-					
7.2.8. Multiplexers.	X	-					
7.2.9. Network interface card	X	-					
7.2.10. Common encryption devices used in AF and DOD communication networks.	-	-					
7.2.11. Integrated Digital Network Exchange (IDNX).	-	-					
8. EXPEDITIONARY COMMUNICATIONS CONCEPTS. TR: <a href="https://aefcenter.acc.af.mil">https://aefcenter.acc.af.mil</a>							
8.1. Identify basic concepts of the Aerospace Expeditionary Force (AEF) deployment process. TR: AFI 10-400, Chap 1 thru 3	X	K					
8.2. Explain basic concepts of Unit Type Codes (UTC) and Force Packaging as it relates to the AEF tasking process. TR: AFMAN 10-401, Chap 4 thru 6; <a href="http://www.fas.org/man/dod-101/usaf/docs/cwpc/4200-FO.htm">http://www.fas.org/man/dod-101/usaf/docs/cwpc/4200-FO.htm</a>	X	K					
8.3. Describe deployment procedures. TR: AFMAN 10-100; MAJCOM and Local Directives							
8.3.1. Pre-deployment.	X	K					
8.3.2. Employment.	X	K					
8.3.3. Post deployment.	X	K					
8.3.4. Recovery.	X	K					
8.4. Identify deployable communications systems associated with this AFSC.	X	K					
8.5. Accomplish the following mobility procedures: TR: Applicable MAJCOM directives; TOs 00-20-series							
8.5.1. Pre-deployment inspections.	X*	-					
8.5.2. Air mobility equipment preparation.	X*	-					
8.5.3. Road mobility equipment preparation.	X*	-					
8.5.4. Post-deployment turn around.	X*	-					
9. ELECTRICAL POWER SYSTEMS.							
9.1. Describe the application of the following types of uninterruptible power supplies:							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
9.1.1. Batteries. TR: AFJQS 3E0X2-214D, Module 1	X*	-					
9.1.2. Switched electrical power systems. TR: AFQTP 3E0X2-213YA, Modules 1 and 2	X*	-					
9.2. Describe the application of the following types of generators:							
9.2.1. Fixed.	X*	-					
9.2.2. Mobile/tactical.	X*	-					
9.2.3. 60 Hertz.	X*	-					
9.2.4. 400 Hertz.	X*	-					
9.3. Describe commercial power requirements.	X*	-					
9.4. Describe power phasing requirements.	X*	-					
10. TELECOMMUNICATION SYSTEMS RECORDS. TR: TO 00-20-5 and AFI 21-404, Commercial Manuals							
10.1. Interpret base cable plant configuration.	X	-					
10.2. Telephone and wire communications records.							
10.2.1. Maintain cable records.	X*	-					
10.2.2. Use cable transfer worksheets.	-	-					
10.2.3. Maintain circuit layout record/trouble reports.	X*	-					
10.2.4. Maintain line record cards.	X*	-					
10.2.5. Process work order requests.	X*	-					
10.2.6. Maintain storage battery records.	-	-					
11. SPECIALIZED TOOLS. TR: Applicable technical publications							
11.1. Use impact tool.	X*	-					
11.2. Use scotch-lock tool.	X*	-					
11.3. Use amphenol tool.	X*	-					
12. TELEPHONE SYSTEM FUNDAMENTALS. TR: TO 31W-3-6 and 31W2-4-330							
12.1. Describe the principles of sound, transmitters, and receivers as used in telephone systems.	X	K					
12.2. Describe the principles of telephone systems.	X	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
13. SUBSTATION INSTALLATION AND MAINTENANCE. TR: TOs 31-10-7, 31-10-11, 31-10-13, 31W-3-6, 31W-1-102, 31W2-4-330 series, 31W3-10-20, TIA/EIA 568A & 569							
13.1. Install cable.	X*	-					
13.2. Secure cable.	X*	-					
13.3. Fan cable.	X*	-					
13.4. Form cable.	X*	--					
13.5. Terminate cable using:							
13.5.1. Wire wrap method.	X*	-					
13.5.2. Punch-on method.	X*	-					
13.5.3. Amphenol method.	X*	-					
13.6. Install cross-connects on distribution frames.	X*	-					
13.7. Terminate strapping connections using solderless connectors.	-	-					
13.8. Install single line telephones.	X*	-					
13.9. Install premise equipment.	X*	-					
13.10. Install cross-connects for premise wiring.	X*	-					
13.11. Install protective grounding devices.	-	-					
13.12. Perform substation operation test.	X*	-					
13.13. Perform substation corrective maintenance.	-	-					
14. SOLID STATE TELEPHONE INTERCOM SYSTEMS. TR: Applicable technical publications							
14.1. Describe single/multi talk link system principles of operation.	-	K					
14.2. Describe single/multi talk link system capabilities.	-	K					
14.3. Install single/multi link system.	-	-					
14.4. Perform system operational test.	-	-					
14.5. Perform system corrective maintenance.	-	-					
15. WIRE TRANSMISSION PRINCIPLES. TR: TOs 31W-3-5, 31W-3-6, 31W3-10-15, and applicable technical publications							
15.1. Identify the principles of wire transmission.	X	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
15.2. Perform and interpret the following cable transmission tests:							
15.2.1. DC loop resistance.	-	-					
15.2.2. Frequency response.	-	-					
15.2.3. Idle channel noise.	-	-					
15.2.4. Impulse noise.	-	-					
15.2.5. Bit error rate.	-	-					
15.2.6. Insulation resistance.	-	-					
15.2.7. Station ground resistance.	-	-					
16. FIBER OPTICS. TR: TO 31-10-34 and applicable technical publications. Supplemental Course: J3AZR2E652 007, Fiber Optic Cable Installation, Splicing, and Maintenance.							
16.1. Describe the principles of light wave communications.	-	K					
16.2. Describe the principles of fiber optic modem operation.	-	K					
16.3. Describe the principles of fiber optic multiplexer operation.	-	K					
16.4. Describe the types and applications of fiber optic connectors.	-	K					
16.5. Describe the principles of single mode fiber optic cable.	-	K					
16.6. Describe the principles of multimode fiber optic cable.	-	K					
16.7. Test fiber optic cable using fiber optic power meters/light sources.	-	-					
16.8. Troubleshoot fiber optic modems.	-	-					
16.9. Troubleshoot fiber optic multiplexers.	-	-					
17. INTRODUCTION TO DIGITAL SWITCHING SYSTEMS.							
17.1. Describe the major components of digital switching systems.	X	K					
17.2. Describe the principles of analog-to-digital and digital-to-analog conversion.	X	K					
17.3. Describe the functions and characteristics of database facilities.	X	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
17.4. Describe the functions and characteristics of data tables.	X	K					
17.5. Describe the principles of time division multiplexing.	X	K					
18. ANCILLARY EQUIPMENT.							
18.1. Describe the functions and characteristics of the following ancillary equipment:							
18.1.1. Power equipment.	X*	K					
18.1.2. Office alarm unit (OAU).	X*	K					
18.1.3. DE-3/DE-4 Channel Banks.	X*	K					
18.1.4. Modems.	X*	K					
18.1.5. Disk drives.	X*	K					
18.1.6. Magnetic tape drives.	X*	K					
18.1.7. External conferencing systems.	X*	K					
18.1.8. Land mobile radio interface equipment.	-	K					
18.1.9. Channel service unit (CSU).	X*	K					
19. RED SWITCH. TR: Applicable commercial publications							
19.1. Identify the major components of a Red Switch to include the Integrated Digital Network Exchange (IDNX).	-	-					
19.2. Describe the Red Switch distribution system.	-	-					
19.3. Identify types of Red Switch instruments and consoles.	-	-					
20. SWITCH SECURITY. TR: AFI 33-111							
20.1. Describe basic switch security and access control.	X	K					
20.2. Identify threats and vulnerabilities.	X	K					
20.3. Explain security policies.	X	K					
21. CATEGORY-5 INTRA-BUILDING DISTRIBUTION SYSTEMS. TR: EIA/TIA 568 Series, TIA/EIA 606 <a href="http://www.cablemgmt.com/tia.htm">www.cablemgmt.com/tia.htm</a> ; Telecommunications System Bulletin (TSB) - 67							
21.1. Describe principles of intra-building wiring distribution system.	X*	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
21.2. Installation Principles and Associated Hardware.							
21.2.1. Route, form, and terminate cables.	-	-					
21.2.2. Install racks, patch panels, and wire management systems.	-	-					
21.2.3. Label, test, and certify distribution system.	-	-					
22. CAREER FIELD RELATED FUNCTIONS							
22.1. Quality Assurance Evaluator.	-	K					
22.2. Commercial Communications.	-	K					
200. AIR FORCE JOB QUALIFICATIONS STANDARDS APPLICABLE TO AFSC 2E653. TR: AFI 21-116, 36-2233, CFETP 2E6X3 (See Notes 3 and 4)							
200.2. AFJQS 2EXXX-200B, 2EXXX C-E Enlisted Specialty Training. (See Note 2)	X						
200.4. AFJQS XXXXX-200D, Aerospace Expeditionary Force (AEF) Qualification Training.	X*						
201.3. AFJQS 2EXXX-201C, Corrosion Prevention and Control.	X						
201.5. AFJQS 2EXXX-201E, Communications-Electronics (C-E) Core Automated Maintenance System (CAMS).	X*						
201.7. AFJQS 2EXXX-201G, Maintenance Support.	X*						
201.8. AFJQS 2EXXX-201H, Work Center Deficiency/Discrepancy Reporting.	X*						
201.10. AFJQS 2EXXX-201J, Maintenance Training Program.	X*						
201.16. AFJQS 2EXXX-201P, Work Center Test Equipment Management.	X*						
201.24. AFJQS 2EXXX-201X, Engineering Installation (EI) Quality Assurance.	X*						
202.1. AFQTP 2EXXX-202A, Electrostatic Discharge Familiarization Handbook.	X*						
202.2. AFJQS 2EXXX-202B, SIPT Electronics and Inside Plant (E&I).	X*						
202.4. AFQTP 2EXXX-202D, EI Tempest Installation Handbook.	X*						
207.18.1. AFJQS 2E6X3-207RA, DMS/MSL Digital Switch Translations.	X*						

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
207.18.3. AFJQS 2E6X3-207RC, DMS/MSL 100/200 Traffic Analysis.	X*						
207.18.4. AFQTP 2E6X3-207RD, DMS/MSL 100/200 Digital Switch Security Procedures/Precautions Handbook.	X*						
208.18. AFJQS 2E6X3-208R, DMS/MSL 100/200 and SuperNode Telephone Switching Systems. TR: Applicable technical publications Supplemental Course: J3AZR2E653 010, Digital Switching (NORTEL) and AFJQS 2E6X3-208R.	X*						
208.18.75. Locate required information in applicable Northern Telecom documentation.	X*	-					
208.18.76. Describe the functions and characteristics of the peripheral area.	X*	K					
208.18.77. Describe the functions and characteristics of the network areas.	X*	K					
208.18.78. Describe the functions and characteristics of the SuperNode processor.	X*	K					
208.18.79. Describe the functions and characteristics of the maintenance and administration area.	X*	K					
208.18.80. Database Administration.							
208.18.80.1. Describe the functions and characteristics of SERVORD.	X*	K					
208.18.80.2. Log Utilities (LOGUTIL).							
208.18.80.2.1. Identify the functions and characteristics of LOGUTIL reports.	X*	K					
208.18.80.3. Describe the functions and characteristics of operational measurements.	X*	K					
208.18.81. Perform preventive maintenance on the following equipment:							
208.18.81.1. SuperNode processor.	X*	-					
208.18.81.2. OAU.	X*	-					
208.18.81.3. Batteries.	X*	-					
208.18.81.4. Distribution frames.	X*	-					
208.18.82. Troubleshoot and Repair.							
208.18.82.1. Digital Trunk Controller Integrated Services Digital Network (DTCI).	-	-					
208.18.82.2. Remote Cluster Controller (RCC).	-	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
208.18.82.3. Attendants consoles.	-	-					
208.18.82.4. Trunks using automatic trunk testing procedures.	-	-					
208.18.82.5. Network area (ENET).							
208.18.82.5.1. Cross point cards	-	-					
208.18.82.5.2. Matrix	-	-					
208.18.82.5.3. Links	-	-					
208.18.82.5.4. Paddle boards	-	-					
208.18.82.6. Input/output devices.							
208.18.82.6.1. Device controller.	-	-					
208.18.82.6.2. Device Independent Recording Package (DIRP).	-	-					
208.18.82.7. Ancillary equipment.							
208.18.82.7.1. Power system.	-	-					
208.18.82.7.2. OAU.	-	-					
208.18.82.7.3. DE-3/DE-4 Channel Banks.	-	-					
208.18.82.7.4. Modems.	-	-					
208.18.82.7.5. Disk drives.	-	-					
208.18.82.7.6. Magnetic tape drives.	-	-					
208.18.82.7.7. External conferencing systems.	-	-					
208.18.82.7.8. Land mobile radio interface equipment.	-	-					
208.18.82.7.9. CSU.	-	-					
208.18.82.7.10. Voice Mail.	-	-					
208.23. AFJQS 2E6X3-208W, T1 Carrier System (Terminal End Equipment).	X*						
210.24. AFJQS 2E6X3-210X, DE-3/DE-4 Channel Bank Maintenance.	X*						
210.25. AFJQS 2E6X3-210Y, Siemens KNS 4100 Electronic Telephone Systems.	X*						
211.6. AFJQS 2E6X3-211F, 1A2 Key Telephone Systems.	X*						
211.10.2. AFJQS 2E6X3-211JB, Electronic Key Systems.	X*						
211.12. AFJQS 2E6X3-211L, Telephone Surveys (Government Owned Plants).	X*						

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
212.8. AFJQS 2E6X3-212H, Commercial Communication Management.	X*						
213.21. AFJQS XXXXX-213U, Tactical Generator Operation for Non Power Production Personnel.	X*						
213.22. AFJQS XXXXX-213V, Power Plant Operation for Non-Power Production AFSCs.	X*						

**BEHAVIORAL FORMAT CTG CODING SYSTEM**

Each CTG element is written as a behavioral statement. The detail of the statement and verb selection reflects the level of training provided.

Code	Definition
K	Subject Knowledge Training - The verb selection identifies the individual's ability to identify facts, state principles, analyze, or evaluate the subject.
-	When this code is used in the OJT Upgrade Column it indicates that the certification or qualification on this task is a local determination. When this code is used in the CDC Column it indicates that no training for this subject is provided in the CDCs.
X	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level. This code indicates that training to satisfy this requirement is either provided through OJT, CDCs, or a combination of OJT and CDCs.
X*	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level if the assigned duty position is responsible to maintain/operate the equipment or system indicated as assigned by the local work center supervisor. This code indicates that training to satisfy this requirement is normally provided through OJT

**CFETP versus AFJQS task coding.** AFJQSs/AFQTPs annotated in the CFETP with an “X” denotes the AFJQS is mandatory. Within the AFJQS are individual tasks that are coded either “X” or “X\*.” If the tasks are coded “X,” they are mandatory. If coded “X\*,” they are duty position specific.

The identification blocks listed below are to be used when the trainer is other than the trainee's immediate supervisor.

<p><i>THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY</i></p> <p>Personal Data - Privacy Act of 1974</p>		
PRINTED NAME OF TRAINEE ( <i>Last, First, Middle Initial</i> )	INITIALS ( <i>Written</i> )	SSAN
<p>PRINTED NAME OF CERTIFYING OFFICIAL AND WRITTEN INITIALS</p>		
N/I	N/I	

## **PREFACE**

NOTE 1: Users are responsible for annotating technical references to identify current references pending CTG revision.

NOTE 2: Completion of AFQTP 2EXXX-201L, Work Center Manager's handbook is mandatory for upgrade to the 7-level.

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	7-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
70. DEPLOYMENT CONCEPTS.							
70.1. Deployment Plans. TR: AFI 10-401							
70.1.1. Describe the purpose of the following:							
70.1.1.1. OPLAN communications requirements.	X	-					
70.1.1.2. Time Phased Force Deployment Document (TPFDD).	X	-					
70.1.1.3. Unit readiness reporting procedures.	X	-					
70.1.1.4. Report UTC status to command authorities.	X	-					
70.2. Unit Type Code (UTC) Development and Reporting. TR: AFMAN 10-401							
70.2.1. Identify UTC development process.	X	-					
70.2.2. Identify UTC adjustment procedures.	X	-					
70.3. Deployment Procedures. TR: AFIs 10-403, 33-211; and 21-109; AFMAN 23-110							
70.3.1. Develop load plan.	X*	-					
70.3.2. Explain pallet build-up procedures.	X*	-					
70.3.3. Explain hazardous cargo preparation.	X*	-					
70.3.4. Prepare documentation.	X*	-					
70.3.5. Determine site selection requirements.	X*	-					
70.3.6. Determine site preparation requirements.	X*	-					
70.3.7. Determine site configuration requirements.	X*	-					
70.3.8. Determine requirements for constructing deployment site utility grids.	X*	-					
70.3.9. Describe control of COMSEC material.	X*	-					
71. SYSTEM PLANNING AND IMPLEMENTATION. TR: AFI 33-104 and AFI 21-404; TO 32-series; AFQTP 2EXXX-202B							
71.1. Identify systems support requirements for new or modified systems.	X	-					
71.2. Describe how to manage planning and implementation of new systems.	X	-					
72. State facts relating to the following work center management principles. (See Note 2) TR: AFQTP 2EXXX-201L							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	7-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
72.1. Principles of management.	X						
72.2. Training.	X						
72.3. Supply.	X						
72.4. Core Automated Maintenance System (CAMS).	X						
72.5. Work center management.	X						
72.6. Safety and security.	X						
72.7. Maintenance standards.	X						
72.8. Performance reports.	X						
72.9. Awards and recognition.	X						
72.10. Mobility/deployment.	X						
72.11. Manpower.	X						
72.12. Financial management.	X						
72.13. Publications management.	X						

## Section B - Course Objective List

4. This section not used.

## Section C - Support Materials

5. The following is a list of available support materials.

5.1. **Computer Based Training Products.** Air Force computer based training products can be found at <http://afcbt.den.disa.mil>.

### 5.2. Air Force Job Qualification Standards and Air Force Qualification Training Packages

5.2.1. Refer to AFIND8, Numerical Index of Specialty Education/Training Publications, for the list of published AFJQSs/AFQTPs or download these products from <https://wwwmil.keesler.af.mil/81trss/qflight/welcome.html>. Refer to AFI 36-2233, *Air Force On-the-Job Training Products for Communications-Electronics Enlisted Specialty Training*, for information on how to request development of AFJQSs/AFQTPs.

5.2.2. AFJQSs/AFQTPs applicable to AFSC 2E6X3:

<b><u>Publication No.</u></b>	<b><u>Pseudo Code</u></b>	<b><u>Publication Title</u></b>
AFJQS 2E6X3-207RA	2E6X3-207.18.1	DMS/MSL Digital Switch Translations
AFJQS 2E6X3-207RC	2E6X3-207.18.3	DMS/MSL 100/200 Traffic Analysis.
AFQTP 2E6X3-207RD	2E6X3-207.18.4	DMS/MSL 100/200 Digital Switch Security Procedures/Precautions Handbook
AFJQS 2E6X3-208R	2E6X3-208.18	DMS/MSL 100/200 and SuperNode Telephone Switching Systems
AFJQS 2E6X3-208W	2E6X3-208.23	T1 Carrier System (Terminal End Equipment)
AFJQS 2E6X3-210X	2E6X3-210.24	DE-3/DE-4 Channel Bank Maintenance
AFJQS 2E6X3-210Y	2E6X3-210.25	Siemens KNS 4100 Electronic Telephone Systems
AFJQS 2E6X3-211F	2E6X3-211.6	1A2 Key Telephone Systems
AFJQS 2E6X3-211JB	2E6X3-211.10.2.	Electronic Key Systems
AFJQS 2E6X3-211L	2E6X3-211.12	Telephone Surveys (Government Owned Plants)
AFJQS 2E6X3-212H	2E6X3-212.8	Commercial Communication Management

5.2.3. Additional AFJQS/AFQTP maintenance management and generic training products applicable to this specialty.

<b><u>Publication No.</u></b>	<b><u>Pseudo Code</u></b>	<b><u>Publication Title</u></b>
AFJQS 2EXXX-200B	2EXXX-200.2	2EXXX C-E Enlisted Specialty Training
AFJQS XXXXX-200D	XXXXX-200.4.	Aerospace Expeditionary Force (AEF) Qualification Training
AFJQS 2EXXX-201C	2EXXX-201.3	Corrosion Prevention and Control
AFJQS 2EXXX-201E	2EXXX-201.5	Communications-Electronics (C-E) Core Automated Maintenance System
AFJQS 2EXXX-201G	2EXXX-201.7	Maintenance Support
AFJQS 2EXXX-201H	2EXXX-201.8	Work Center Deficiency/Discrepancy Reporting
AFJQS 2EXXX-201J	2EXXX-201.10	Maintenance Training Program
AFQTP 2EXXX-201L	2EXXX-201.12	Communications-Electronics (C-E) Work Center Manager's Handbook
AFQTP 2EXXX-201LB	2EXXX-201.12.2	Communications-Electronic (C-E) Manager's Handbook
AFJQS 2EXXX-201P	2EXXX-201.16	Work Center Test Equipment Management
AFJQS 2EXXX-201X	2EXXX-201.24	Engineering Installation (EI) Quality Assurance
AFQTP 2EXXX-202A	2EXXX-202.1	Electrostatic Discharge Familiarization Handbook
AFJQS 2EXXX-202B	2EXXX-202.2	SIPT Electronics and Inside Plant (E&I)

<u>Publication No.</u>	<u>Pseudo Code</u>	<u>Publication Title</u>
AFQTP 2EXXX-202D	2EXXX-202.4	EI Tempest Installation Handbook
AFJQS XXXXX-213U	XXXXX-213.21	Tactical Generator Operation For Non Power Production Personnel
AFJQS XXXXX-213V	XXXXX-213.22	Power Plant Operation for Non-Power Production AFSCs
AFQTP 3E0X2-213YA	N/A	Solid State Uninterruptible Power System Principles
AFJQS 3E0X2-214D	3E0X2-214.4	Stationary Battery Banks

### **Section D - Training Course Index**

6. The following is a list of the available Air Force in-residence, field, and/or exportable training courses.

6.1. **Air Force In-Residence Courses.** For information on all formal courses, refer to the Air Force Education and Training Course Announcements (ETCA) database, formerly AFCAT 36-2223, USAF Formal Schools Catalog at <https://hq2af.keesler.af.mil/etca.htm>.

<u>Course Number</u>	<u>Course Title</u>	<u>Location</u>
J3ABR2E633 002	Telephone Systems	Sheppard
J3AZR2E653 010	Digital Switching Course (Nortel)	Sheppard

6.2. **Air Force Engineering Technical Services (AFETS) Training.** For a listing of AFETS courses, refer to the *Catalog of Communications-Electronics Air Force Engineering and Technical Services Courses*. This catalog is revised annually and is available through your MAJCOM's C-E MATAG Working Group representative or can be downloaded from [https://www.afca.scott.af.mil/c-e\\_maint/afets.htm](https://www.afca.scott.af.mil/c-e_maint/afets.htm).

### **Section E - MAJCOM Unique Requirements**

7. There are currently no MAJCOM unique requirements. This area is reserved.