

AFSC 3C1X2

ELECTROMAGNETIC SPECTRUM MANAGEMENT



Basic



Senior



Master

CAREER FIELD EDUCATION AND TRAINING PLAN

**ELECTROMAGNETIC SPECTRUM MANAGEMENT
AFSC 3C1X2
CAREER FIELD EDUCATION AND TRAINING PLAN**

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ELECTROMAGNETIC SPECTRUM MANAGEMENT AFSC 3C1X2 CAREER FIELD EDUCATION AND TRAINING PLAN

PART I

Preface

1. The changing Command, Control, Communications, Computer, and Intelligence (C4I) and Expeditionary Aerospace Forces (EAF) environments require vision, preparation, and attention to ensure people have the right skills and tools to deliver the C4I capabilities and the support required by the war fighter in meeting the Air Force mission of today and the vision of the future. Declining resources, expanding diversity of mission, and ever-changing technologies in the Air Force are impacting the availability of our most valuable resource--people. These factors will continue to exist in the future, making 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 Electromagnetic Spectrum Management Career Field Education and Training Plan (CFETP) is a comprehensive core-training document that identifies life-cycle training/education requirements, support resources, and minimum core task requirements for the 3C1X2 specialty. The plan is a "training road map" for the career field. It provides personnel a clear career path to success and makes career field training identifiable, measurable, and budget defensible.
2. The CFETP documents the career field training program and 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 Air Education and Training Command (AETC). Section D identifies known resource constraints. Section E identifies transition training requirements.
 - 2.2. Part II, Section A identifies the Specialty Training Standard (STS) and includes duties, tasks, technical references, Air Education and Training Command (AETC) conducted training, core tasks, and correspondence course requirements. Section B contains the course objective list/training standard supervisors use to determine if airmen satisfied training requirements. Section C contains support material relevant across the specialty including Air Force Job Qualification Standards/Air Force Qualification Training Packages (AFJQS/AFQTP). Section D lists all mandatory Air Force in-residence, field, Air Force Institute for Advanced Distributed Learning (AFIADL), and exportable courses used to support training for this specialty. Section E is used to identify MAJCOM unique requirements. 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 provides the foundation for effective and efficient training for individuals in this career field 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 Electromagnetic Spectrum Management Career Field and Education Training Plan.

Advanced Training (AT). 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 and Training Command (AETC). Responsible for the recruiting, training and education of Air Force personnel. AETC also provides pre-commissioning, professional military, and continuing education.

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.

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 CFETP is a comprehensive core-training document that identifies: life-cycle education and training requirements; training support resources, and minimum core task requirements for a specialty. The CFETP aims to give personnel a clear path and instill a sense of industry in career field training. CFETPs are officially posted at <http://www.e-publishing.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.

Certification. A formal indication of an individual's ability to perform a task to required standards.

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

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.

Command, Control, Communications, Computer, and Intelligence (C4I). Integrated systems of doctrine, procedures, organizational structures, personnel, equipment, facilities, and communications designed to support a commander's exercise of command and control through all phases of the operational continuum. C4 systems include base visual information support systems. ([Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms](#))

Communications-Computer Systems (C-CS). The facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned forces pursuant to the missions assigned.

Communications-Computer Systems Training Advisory Group (CTAG). Chaired by the HQ USAF C-CS AFCFM and attended by the C-CS MAJCOM and FOA functional managers. The CTAG sets training goals and priorities, reviews training programs, and evaluates emerging training technologies. The group meets, as required, to prioritize training product development.

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

Core Task. A task AFCFM's identify as a minimum qualification requirement for everyone within an AFSC, regardless of duty position. Core task may be specified for a particular skill level or in general across the AFSC. Guidance for using core task can be found in the applicable CFETP narrative.

Course Objective List (COL). A publication derived from initial/advanced skills Course Training Standard (CTS), identifying the tasks and knowledge requirements and respective standards provided to achieve a 3- or 7-skill level in this career field. Supervisors use the COL to assist in conducting graduate evaluations in accordance with AFI 36-2201, vol 1 thru 6, *Air Force Training Program*.

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

Critical Tasks - Critical Tasks are tasks that require specific training and certification above and beyond other tasks. Tasks may be defined as critical either through AFI, Technical Orders, higher headquarters, or at any level in the unit.

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.

Enterprise: The entire range of communications/networking within garrison and tactical realms to include voice, video, data, imagery and sensor.

Expeditionary Aerospace Force (EAF). The EAF concept is how the Air Force will organize, train, equip, and sustain itself by creating a mindset and cultural state that embraces the unique characteristics of aerospace power – range, speed, flexibility, precision – to meet the national security challenges of the 21st Century.

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.

Field Training. Technical, operator, and other training that either a field training detachment or field training team conducts at operational locations on specific systems and associated direct-support equipment for maintenance and aircrew personnel.

Go/No Go. Go-The stage at which a trainee has gained enough skill, knowledge, and experience to perform the tasks without supervision. Meeting the task standard. No Go Trainee has not

gained enough skill, knowledge, and experience to perform task without supervision. Does not meet task standard.

Inter-service Advisory Committee. A committee consisting of representatives from each branch of the Military Service including the Joint Service Command. This board ensures the course electromagnetic spectrum management course continues to meet the needs of the Department of Defense. Their sole purpose is to identify the course training tasks and supply resources to support any new requirements that have been identified by the board.

Initial Skills Training. A formal school course that results in an AFSC 3-skill level award for enlisted or mandatory training for upgrade to qualified officers.

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). 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.

Oracle Training Administration (OTA). An HQ AFPC/DPPAT managed computer support system that links Air Force units or activities. This system is used for planning, controlling, and funding formal training throughout the Air Force, including the MAJCOM TDY-to-School Program.

Proficiency Training. Additional training, either in-residence or exportable advanced training courses, or on-the-job training, provided to personnel to increase their skills and knowledge beyond the minimum required for upgrade.

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 Standard (STS). An Air Force publication that describes an Air Force specialty in terms of tasks and knowledge that an airman in that specialty may be expected to perform or to know on the job. Also identifies the training provided to achieve a 3-, 5-, or 7-skill level within an enlisted AFS. It further serves as a contract between AETC and the functional user to show which of the overall training requirements for an Air Force Specialty Code (AFSC) are taught in formal schools and correspondence courses.

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.

System Training Plan (STP). A living document that explains what training is needed for a system and how to obtain the training.

Task Module (TM). A group of tasks performed together within an AFS 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.

Wartime Tasks. Those tasks that must be taught when courses are accelerated in a wartime environment. These task are identified by an “#” in CFETP Part II, Section A, CTS. In response to a wartime scenario, these tasks will be taught in the 3- level course in a streamlined training environment. These tasks are only for those career fields that still need them applied to their schoolhouse tasks.

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 in AFSC 3C1X2 should receive in order to develop and progress throughout their careers. For purpose of this plan, training is divided into: initial skills, upgrade, qualification, and continuation training. Initial skills training is the AFS specific training an individual receives upon entering into the AFSC. This training is provided by the 336 Training Squadron (TRS) at Keesler AFB, MS. 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. Qualification training is actual hands-on task performance training designed to qualify an airman in a specific duty position. This training program occurs both during and after the upgrade training process. It is designed to provide the performance skills/knowledge training required to do the job. 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 3CXXX Air Force Career Field Manager (AFCFM), HQ USAF/ILCXD. 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 AFJQs/AFQTPs to document unique upgrade and continuation training requirements. Requirements are satisfied through OJT, resident training, contract training, or exportable courseware/courses. MAJCOM developed training to support this AFSC must be included into this plan.

2.3. 81 TRSS Qualification Training Flight (Q-Flight) personnel develop AFJQs/AFQTPs based on requests submitted by the MAJCOMs and according to the priorities assigned by the Communications-Computer Systems Training Advisory Group (CTAG).

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. In conjunction when available, the Core

Automated Maintenance System (CAMS) is the primary means of collecting and maintaining information pertaining to OJT training and is mandatory for use by all 3CXXX career fields.

2.5. Submit recommended CFETP improvements/corrections to the AFSC Training Manager at 336 TRS/TRR, 600 Hanger Road, Keesler AFB MS 39534-2235 or call DSN 597-8838.

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 Executive Agent 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, *Airman Classification*.

4.1. Electromagnetic Spectrum Management Apprentice/Journeyman/Craftsman/Supervisor (3C132/3C152/3C172/3C192)/Communications-Computer Systems Chief Enlisted Manager (CEM) (3C000).

4.1.1. Specialty Summary. Manages, supervises, and performs electromagnetic spectrum management activities. Related DoD Occupational Subgroup: 201.

4.1.2. Duties and Responsibilities:

4.1.2.1. Engineers, nominates, and assigns frequencies to support communications and operational requirements. Coordinates frequency needs with federal, military, and civil spectrum management offices. Secures operating authority and ensures minimum interference is caused or received by Air Force radio frequency (RF) operations. Reviews spectrum interference reports and helps resolve electromagnetic interference problems.

4.1.2.2. Analyzes RF spectrum requirements and determines compatibility with other users considering transmitter and receiver specifications, antenna data, emission characteristics, and modes of radio wave propagation. Examines radio link deficiencies and recommends corrective action to improve system performance. Reviews involved, unusual, and difficult spectrum engineering requirements. Recommends solutions to electromagnetic compatibility problems.

4.1.2.3. Maintains frequency records and associated databases. Provides guidance on the spectrum certification process for electromagnetic radiating and receiving equipment planned for introduction into the Air Force inventory, and for modifications to existing equipment. Reviews plans and programming documents to determine spectrum management actions. Prepares frequency annexes for contingency and operations plans. Examines spectrum allocation data and frequency assignment records to ascertain suitability of specific equipment planned for deployment.

4.1.2.4. Performs as joint task force spectrum manager. Provides spectrum management guidance to units deploying RF radiating equipment to support contingency, exercise, or wartime requirements. Analyzes and de-conflicts frequency assignments and databases to develop joint communications and electronics operating instructions.

4.1.2.5. Evaluates and assists electromagnetic spectrum management activities. Determines if spectrum management support is adequate and recommends changes to enhance operations. Educates customers on optimal and proper use of the RF spectrum. Plans for current and future RF spectrum needs.

4.2. Communications-Computer Systems Chief Enlisted Manager (CEM) (3C000).

4.2.1. Specialty Summary. Manages C-CS activities. Activities include system analysis and design, programming, systems operation and maintenance, resource management, and security management. Monitors functional C-CS. Helps develop C-CS plans and policy. Related DoD Occupational Subgroup: 532.

4.2.2. Duties and Responsibilities.

4.2.2.1. Plans and organizes C-CS activities. Plans and supervises installation, and evaluates facilities layout. Evaluates performance standards. Designs and develops organizational structures, and determines equipment, training, and supplies required for systems implementation and support. Interacts with customers to promote customer satisfaction. Establishes C-CS procedures.

4.2.2.2. Directs C-CS activities responsible for systems analysis and design, programming, operations and maintenance, security systems management, technical support, and resource management. Implements and interprets policies, directives, and procedures.

4.2.2.3. Establishes training requirements. Establishes training programs to meet local knowledge requirements and to enhance professional awareness of C-CS technology.

4.2.2.4. Inspects and evaluates C-CS activities for compliance with directives. Evaluates, rates, and prepares reports on C-CS activity effectiveness. Recommends and implements corrective action for improved methods and procedures. Evaluates effectiveness of equipment usage, personnel, systems performance, customer service, supplies, and systems scheduling, processing, and maintenance.

4.2.2.5. Manages C-CS development functions. Helps functional users define requirements. Recommends automated methods to enhance resource use. Supervises functional user requirement translation into automated systems capabilities. Organizes software development teams that use software methodologies. Oversees data base design to optimize collecting and retrieving information. Supervises test and evaluation efforts to determine errors in logic, information flow, and systems performance. Organizes and participates in C-CS implementation and conversion. Ensures continued interface between functional users, and programming and operations personnel for implemented systems. Ensures compliance with standards for systems software and documentation.

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 [3C1X2 Education and Training Path](#) table will ensure individuals receive viable training at appropriate points in their careers.

Apprentice (3-Level) Training
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.
Journeyman (5-Level) Training
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.
Craftsman (7-Level) Training
A seven-level can expect to fill various supervisory and management positions such as shift leader, team chief, supervisor, or task certifier.
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.
Superintendent (9-Level) Training
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 AFSC.
Chief Enlisted Manager (CEM) Training
Must be selected for CMSgt and possess qualifications in a feeder specialty (3C090, 3C191, 3C192, 3C291, or 3C391).
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 range of training requirements for the Electromagnetic Spectrum Management career field, using a building block approach (simple to complex). Included in this 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. This CFETP contains course additions identified during the January 2002 Inter-service Advisory Committee supplementing training decisions of the 4-7 December 2001 Utilization & Training Workshop.

6.1. Three-level training requirements. Three-level training requirements. Additional course material added to align with the current standardized joint communications-electronics operating instruction.

6.2. Seven-Level Upgrade Training Requirements. CDC completion is mandatory for all graduates of IRFMS class 98B and later.

6.3. 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. 81 TRSS (Q-Flight) develops AFJQSS/AFQTPs to support tasks relating to communications-electronics and communications-computer systems, functions, and duties. Completion of AFJQSS/AFQTPs is mandatory by duty position for personnel in upgrade or qualification training.

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. In order to be awarded the degree, the student must complete the degree program before they separate 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. The trade skill certification is annotated on DD Form 214, Certificate Of Release Or Discharge From Active Duty

7.3. The Information Systems Technology (0IYY) program applies to the 3C1X2 career field.

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

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

7.3.2. Technical Education (12-24 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. Requests to substitute comparable courses or to exceed

specified semester hour values in any subject/course must be approved in advance by the technical branch of the CCAF Administrative Center.

7.3.3. Leadership, Management, and Military Studies (6 semester hours): Professional military education (PME) 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.

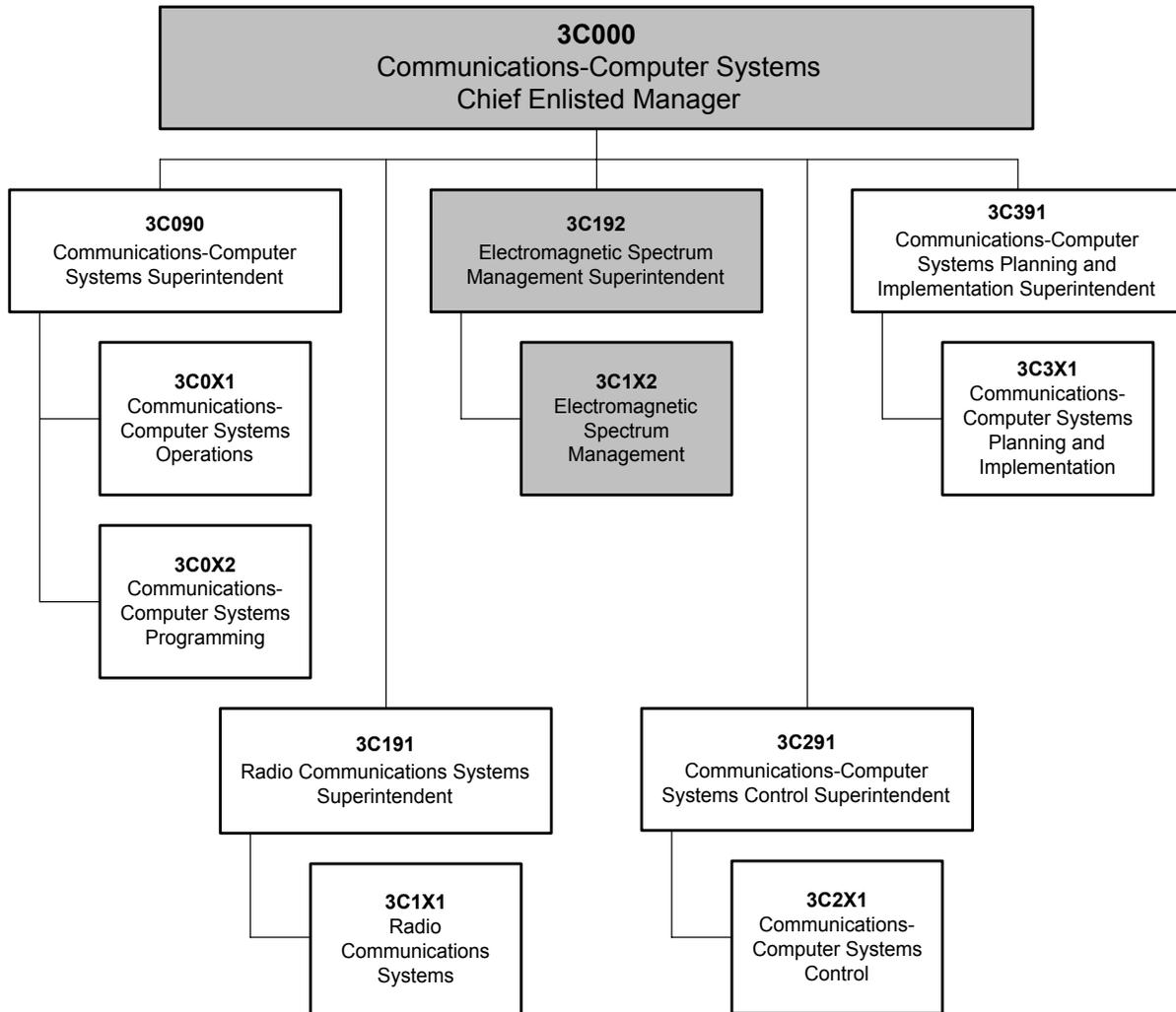
7.3.7. Technical Electives (0-12 Semester Hours) Courses must meet the criteria for application of courses in agreement with the definitions of applicable General Education subjects/courses as outlined in the CCAF General Catalog.

7.4. See the current CCAF General Catalog for details regarding the Associates of Applied Science in Information Systems Technology. The catalog is available at your education office 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. 3C1X2 personnel maintain their individual AFSC identifiers through the rank of SMSgt. At Chief, the 3C192 merges with other 3CXXX 9-level specialties to become a 3C000. Specific demographic information is available on the Web at <http://www.afpc.randolph.af.mil/demographics>

3CXXX Career Field Progression



**3C1X2, ELECTROMAGNETIC SPECTRUM MANAGEMENT
EDUCATION AND TRAINING PATH**

EDUCATION AND TRAINING REQUIREMENTS	AVERAGE SEW ON TIME AND COMMENTS
BASIC MILITARY TRAINING SCHOOL	
APPRENTICE TECHNICAL SCHOOL (3-SKILL LEVEL).....Mandatory	NOTE: 1
UPGRADE TO JOURNEYMAN (5-SKILL LEVEL) Minimum 9 months OJT training for re-trainees. Complete 5-Level CDCs.....Mandatory Specific AFJQs/AFQTPs for equipment at assigned location.Mandatory C-CS Management and Generic AFJQs/AFQTPs for various unit level duties.....Mandatory AETC Supplemental training courses as determined by MAJCOMOptional	SrA 3 years Earliest 28 Months 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: Qualified to perform the task to be trained; must attend formal OJT Trainer Training; and appointed by the Commander. Refer to AFI 36-2201 Vol 3, Chap 6
UPGRADE TO CRAFTSMAN (7-SKILL LEVEL) Minimum rank of SSgt. 12 months OJT training. Completion of AFQTP 3CXXX-212A, Work Center Supervisor's Handbook. Must be 7-level to sew on TSgt.Mandatory C-CS Management and Generic AFJQs/AFQTPs for various unit level duties.....Mandatory AETC Supplemental training courses as determined by MAJCOMOptional	SSgt 7.5 years Earliest 3 years HYT 20 years TSgt..... 12.5 years Earliest 5 years HYT 24 years CERTIFIER: Must be at least a SSgt (E-5) with a 5-skill level or civilian equivalent; attend the Air Force Training Course; be capable of evaluating the task being certified; evaluate training and certify qualifications. Refer to AFI 36-2201 Vol 3, Chap 6

**3C1X2, ELECTROMAGNETIC SPECTRUM MANAGEMENT
EDUCATION AND TRAINING PATH**

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. Mandatory</p> <p>NCOA Correspondence Course..... Optional</p>	<p>MSgt..... 16 years Earliest 8 years HYT 26years</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>MSgt..... 16 years Earliest 8 years HYT 26 years</p>
<p>UPGRADE TO SUPERINTENDENT (9-SKILL LEVEL) Awarded upon sew on of SMSgt..... Mandatory</p> <p>C-CS Management and Generic AFJQs/AFQTPs for various unit level duties..... Mandatory</p>	<p>SMSgt 19.2 years Earliest 11 years HYT 28 years</p>
	<p>CMSgt 21.5 years Earliest 14 years HYT 30 years</p>

NOTE 1: For entry into this specialty, the following is mandatory: Prior qualification at the 5-skill level in AFSC 1A3X1, 2A1X3, 2EXXX, or 3C1X1. Refer to AFI 36-2108, Enlisted Classification.

NOTE 2: 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 3: See Part II, Sections C and D for a list of AFJQs/AFQTPs and AETC supplemental training.

NOTE 4: All core/duty position tasks must be completed prior to upgrade.

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 Electromagnetic Spectrum Management career field of the Communications-Computer Systems career ladder. They are stated in broad, general terms and establish the standards of performance. Core tasks, knowledge items, and skill requirements for this specialty are identified in the STS, COL, CDCs, AFJQs/AFQTPs, etc. Completion of the mandatory 3-level skill awarding course, CDCs, 7-level course, and applicable AFJQs/AFQTPs define the Air Force core tasks for this specialty.

10. Specialty Qualification Requirements.

10.1. Apprentice (3-Level) Training.

KNOWLEDGE	Radio propagation factors, including effects of antenna design, power, type of emission, frequency, and effects of terrain National, international, and military regulations governing use of the RF spectrum
EDUCATION	Completion of courses in algebra and geometry is desirable.
TRAINING	Completion of the Electromagnetic Spectrum Management course, E3ALR3C132 003 (PDS Code EGO) (See Part II, Section B for Course Objective List)
EXPERIENCE	None required
OTHER	Prior qualification at the 5-skill level in Communications-Electronics (C-E), Communications Computer systems or other technically oriented AFSC is highly desirable. See AFMAN 36-2108, Attachment 39 for additional entry requirements 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 skill level
IMPLEMENTATION	Attendance at the Electromagnetic Spectrum Management course is mandatory for award of the 3-skill level unless waived by the 3CXXX AFCFM

10.2. Journeyman (5-Level) Training.

KNOWLEDGE	All 3C132 knowledge qualifications apply to the 3C152 requirements
TRAINING	No mandatory AETC training courses are required for upgrade.
EXPERIENCE	Qualification in and possession of AFSC 3C132 Performing spectrum management engineering, selection, negotiation, and interference problems Completion of the 3C152 Career Development Course Completion of all STS core tasks Completion of applicable AFJQs/AFQTPs Completion of all local tasks assigned for the duty position
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 skill level
IMPLEMENTATION	Entry into formal journeyman upgrade training is accomplished once individuals are assigned to their first duty station. Qualification training is initiated anytime individuals are assigned duties for which they are not qualified. Use CDCs and AFJQs/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.

10.3. Craftsman (7-Level) Training.

KNOWLEDGE	All 3C152 knowledge qualifications apply to the 3C172 requirements
TRAINING	No mandatory AETC training courses are required for upgrade
EXPERIENCE	Qualification in and possession of AFSC 3C152 Performing or supervising problem solving electromagnetic spectrum engineering, selection, negotiation, and interference Completion of all STS core tasks Completion of AFQTP 3CXXX-212A, Work Center Supervisor's Handbook Completion of applicable AFJQs/AFQTPs Completion of all local tasks assigned for the duty position
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 skill level
IMPLEMENTATION	Entry into OJT 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 AFJQs/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.

10.4. Superintendent (9-Level) Training.

KNOWLEDGE	All 3C172 knowledge qualifications apply to the 3C192 requirements
TRAINING	No mandatory AETC training courses are required for upgrade.
EXPERIENCE	Qualification in and possession of AFSC 3C172 Managing solution of electromagnetic spectrum engineering, selection, negotiation, and interference problems
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 skill level
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. AFSC specific training – 336 TRS, Keesler AFB, MS at <https://wwwmil.keesler.af.mil/>.

10.5.2. CDC 3C152 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.

10.5.3. AFJQSS/AFQTPs are Air Force publications and are mandatory for use by personnel in upgrade or 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/index.htm>. Procedures for requesting development of AFJQSS/AFQTPs are contained in AFI 36-2233, *Air Force On-the-Job Training Products for Communications-Electronics Enlisted Specialty Training*. AFJQSS/AFQTPs are listed in Part II, Section C, of this CFETP.

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. This STS will be used for technical training provided by AETC for classes beginning 20040105 and graduating 20040414.

2. Purpose. As prescribed in AFI 36-2201, vol 5 this STS:

2.1. Lists in column 1 (Task, Knowledge, and Technical Reference) the most common tasks, knowledge, and technical references (TR) necessary for airman to perform duties in the 3-, 5-, and 7-skill level. Column 2 (Core Tasks) identifies, by asterisk (*), specialty-wide training requirements. NOTE: Core tasks are minimum task training requirements for upgrade to the 5-skill level.

2.2. Provides certification for OJT. Column 3 is used to record completion of tasks and knowledge training requirements. Use automated training management systems to document technician qualifications, if available. Task certification must show a certification/completion date. (As a minimum, use the following column designators: Stop Date, Certifier Initials). When available, Core Automated Maintenance System (CAMS) is the primary means of collecting and maintaining information pertaining to OJT training and is mandatory for use by all 3CXXX career fields. You must have prior approval by the Air Force Career Field Manager before using a different data collection system.

2.3. Shows formal training and correspondence course requirements. Column 4 shows the proficiency to be demonstrated on the job by the graduate as a result of training on the task/knowledge and the career knowledge provided by the correspondence course. See the AFIADL Catalog maintained at <http://www.maxwell.af.mil/au/afiadl> for current CDC listings.

2.4. Identifies qualitative requirements. Attachment 1 contains the proficiency code key used to indicate the level of training and knowledge provided by resident training and career development courses.

2.5. Becomes a job qualification standard (JQS) for on-the-job training when placed in AF Form 623, On-the-Job Training Record, and used according to AFI 36-2201. When used as a JQS, the following requirements apply:

2.5.1. Training Documentation. Identify duty position requirements to include core tasks by circling the subparagraph number next to the task statement (with the exception of electronic records). As a minimum for initial certification, complete the following columns in Part II of the CFETP:

2.5.1.1. Training start date (day, month, year), training complete date (day, month, year), trainee Initials, trainer Initials, certifier initials when required by AFCFM (for tasks requiring third-party certification).

2.5.2. Knowledge training documentation. Knowledge training is required if no CDC is available for the AFS or training must be documented for a CDC waiver. Document knowledge training by circling the corresponding letter in the applicable skill level CDC column (with the exception of electronic records). Use the following procedures to document the CFETP:

2.5.2.1. Training start date (day, month, year), training complete date (day, month, year), trainee Initials, trainer Initials.

2.5.3. Transcribing documentation. Transcribing from old document to new CFETP is an administrative function, not a re-evaluation of training. Upon publication of a new CFETP, use the following procedures to transcribe:

2.5.3.1. Use the new CFETP to identify and certify current training requirements and to retain previous qualifications from the previous version.

2.5.3.2. Tasks previously certified and required in the current duty position, circle the task (with the exception of electronic records) and enter the current date with the trainee and supervisor initials.

2.5.3.3. Tasks previously certified but not required in the current duty position (do not circle), transcribe only the previous certification date (no initials).

2.5.3.4. Annotate the AF Form 623a, (for example, "I certify the information contained in the CFETP dated XX was transcribed to the CFETP dated XX, and the trainee was given the superceded CFETP." Signed, dated, supervisor and trainee).

2.5.4. Maintenance of CFETPs for personnel in retraining status. Maintain CFETP from previous AFSC until commensurate skill level is achieved, then give the obsolete field CFETP to the individual.

2.5.5. Decertification and Recertification. When a supervisor determines an airman is unqualified on a task previously certified for their duty position, the supervisor erases the previous certification, or deletes certification when using automated system. Appropriate remarks pertaining to the reason for decertification are entered on the AF Form 623a.

2.5.6. Begin recertification (if required) following procedures in paragraph 2.5.1.

2.5.7. Training Standard. Tasks are trained and qualified to the go/no go level. Go means the individual can perform the task without assistance and meet local demands for accuracy, timeliness, and correct use of procedures.

2.6. Is a guide 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 SNCOs with extensive practical experience in their career fields. The tests sample knowledge of STS subject matter areas judged by test development team members as 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 Training Feedback Hotline (TSF) has been installed for the supervisors' convenience. For a quick response to concerns, call our TSF at DSN 597-4566, fax us at DSN 597-3790, or e-mail us at 81trg-tget@keesler.af.mil. Reference this STS and identify the specific area of concern (paragraph, training standard element, etc).

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

SUSAN A. O'NEAL
Assistant DCS/Installations & Logistics

Attachment:

3C1X2 Specialty Training Standard

3C172 Course Training Standard

PREFACE

NOTE 1: Users are responsible for annotating technical references to identify current references pending STS revision. Locate current Air Force publications at <http://www.e-publishing.af.mil/>, AFSSIs in AFIND 5 or at <https://www.afca.scott.af.mil/ip/>, DISA Circulars and Instructions at <https://disa-ca.dtic.mil/pubs/>, and Technical Orders (TO) at https://wpafbres34.wpafb.af.mil/aftox/AFTOX_DOCUMENTS/index.cfm

NOTE 2: 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 STS when applicable to the duty position.

NOTE 3: AFQTP 3CXXX-212A, Work Center Supervisor's Handbook is mandatory for upgrade to the 7-skill level in all 3CXXX career fields.

NOTE 4: All objectives are trained during wartime.

NOTE 5: When available, Core Automated Maintenance System (CAMS) is the primary means of collecting and maintaining information pertaining to OJT training and is mandatory for use by all 3CXXX career fields. You must have prior approval by the Air Force Career Field Manager before using a different data collection system.

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION: The individual
Task Performance Levels	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)
*Task Knowledge Levels	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)
**Subject Knowledge Levels	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)
EXPLANATIONS		
<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>- This mark is used alone instead of a scale value to show that no proficiency training is provided in the course or CDC.</p> <p>X This mark is used alone in course columns to show that training is required, but not given, due to limitations in resources.</p>		

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

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
1. ELECTROMAGNETIC SPECTRUM MANAGEMENT CAREER FIELD TR: AFH 33-337; AFMAN 10-400, 36-2108; 3C1X2 CFETP	*											
1.1. Structure							A			A	-	
1.2. Progression within Air Force Specialty Code (AFSC)							A			-	-	
1.3. Air Force Specialty Code (AFSC)												
1.3.1. Duties							A			-	-	
1.3.2. Responsibilities							A			-	-	
1.3.3. Qualifications							A			-	-	
1.3.4. Customer relations							A			-	-	
1.3.5. Associated Communications & Information (C&I) AFSCs							A			A	-	
1.4. Roles and Mission							A			A	-	
1.5. Aerospace Expeditionary Force (AEF)							A			B	-	
2. SUPERVISION TR: AFI 36-2618; AFQTP 3CXXX-212A												
2.1. Brief Newly Assigned Personnel TR: AFI 36-2110												
2.1.1. Safety							-			-	-	
2.1.2. Mission							-			-	-	
2.1.3. Responsibilities							-			-	-	
2.1.4. Recognition Programs TR: AFI 36-2845							-			-	-	
2.2. Interpret for Subordinates												
2.2.1. Policies							-			-	-	
2.2.2. Directives							-			-	-	
2.2.3. Procedures							-			-	-	
2.3. Plan and Schedule												

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
2.3.1. Work assignments							-			-	-	
2.3.2. Shifts							-			-	-	
2.3.3. Priorities							-			-	-	
2.4. Establish												
2.4.1. Work methods							-			-	-	
2.4.2. Controls							-			-	-	
2.4.3. Performance standards							-			-	-	
2.5. Brief Subordinates on Local and Standard Procedures							-			-	-	
2.6. Provide Feedback and Evaluate Work Performance TR: AFI 36-2406							-			-	-	
2.7. Initiate Action to Correct Substandard Personnel Performance TR: AFI 36-2907, 36-3208							-			-	-	
2.8. Rate Personnel Performance							-			-	-	
2.9. Counsel Personnel on Personal and Military Related Problems							-			-	-	
2.10. Identify												
2.10.1. Personnel requirements							-			-	-	
2.10.2. Equipment requirements							-			-	-	
2.11. Resolve Technical Problems Encountered by Subordinates							-			-	-	
2.12. Observe Equipment Operation to Ensure Conformance with Established Standards							-			-	-	
2.13. Demonstrate how to Operate Equipment							-			-	-	
2.14. Facility Maintenance												
2.14.1. Plan							-			-	-	
2.14.2. Schedule							-			-	-	
2.14.3. Supervise							-			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
2.15. Operating Instructions (OI)												
2.15.1. Prepare local operating procedures							-			-	-	
2.15.2. Issue							-			-	-	
2.15.3. Review							-			-	-	
2.16. Self-Inspections/ Quality Indicators												
2.16.1. Prepare							-			-	-	
2.16.2. Review							-			-	-	
2.16.3. Issue							-			-	-	
2.16.4. Conduct							-			-	-	
2.16.5. Follow-up							-			-	-	
2.17. Develop Budget Input												
2.17.1. Analyze costs and utilization							-			-	-	
2.17.2. Create budget							-			-	-	
3. TRAINING TR: AFCAT 36-2223; AFIs 36-2201, vol 3&5, 36-2233; AFMANs 36-2236, 36-2201, vol 5, 36-2247; AFQTP 3CXXX-212A												
3.1. Evaluate Personnel for Need of Training							-			-	-	
3.2. Enlisted Specialty Training (EST) Management												
3.2.1. Prepare job qualification standard (JQS)							-			-	-	
3.2.2. Procure training material							-			-	-	
3.2.3. Motivate trainers and trainees							-			-	-	
3.2.4. Develop training materials							-			-	-	
3.2.5. Counsel trainees on training progress							-			-	-	
3.2.6. Monitor Effectiveness of:												
3.2.6.1. Career knowledge upgrade training progress							-			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
3.2.6.2. Job proficiency upgrade training							-			-	-	
3.2.6.3. Qualification training							-			-	-	
3.3. Maintain Training Records							-			-	-	
3.4. Evaluate Effectiveness of Training Programs							-			-	-	
3.5. Recommend Personnel for Training							-			-	-	
4. OPERATIONAL RISK MANAGEMENT (ORM) TR: AFIs 90-901, 91-301, 91-302; AFOSH STDs 91-50, 91-64	*											
4.1. Hazards of AFSC 3C1X2 (e.g. high voltages)							A			-	-	
4.2. AFOSH Standards for AFSC							A			-	-	
4.3. Use Consistent Safety Practices							-			B	-	
4.4. Maintain Clean Work Environment							-			-	-	
5. C-CS ADMINISTRATIVE FUNCTIONS TR: AFINDs 2, 5, 8; AFIs 33-Series; AFMAN 37-139, DISAN 210-0-1												
5.1. Publications												
5.1.1. Air Force Manuals (AFMAN)							-			-	-	
5.1.2. Air Force Policy Directives (AFPD)							-			-	-	
5.1.3. Air Force Instructions (AFI)							-			-	-	
5.1.4. Air Force Pamphlets (AFPAM)							-			-	-	
5.1.5. Joint Army Navy Air Force Publications (JANAP)							A			-	-	
5.1.6. Allied Communications Publications (ACP)							A			-	-	
5.1.7. Operating Instructions (OI)							-			-	-	
5.1.8. Commercial/vendor publications							-			-	-	
5.1.9. DISA Publications							A			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
5.1.10. Technical Orders (TO)							-			-	-	
5.1.11. Military Standard (MIL STD)							-			A	-	
5.2. Publications Handling												
5.2.1. Order documents and changes							-			-	-	
5.2.2. Post changes							-			-	-	
5.3. Locate Publication Numbers and Titles Using Indexes	*						-			-	-	
5.4. Use Publications to Locate Operating Procedures and Technical Data							-			-	-	
5.5. Supply Functions												
5.5.1. Maintain accounts							-			-	-	
5.5.2. Keep records							-			-	-	
5.6. Equipment Records							-			B	-	
5.7. Office Records Management							-			-	-	
5.8. System Software Support							-			B	-	
5.9. Magnetic Media Handling and Disposition							-			-	-	
6. C4I SECURITY TR: ACP 122; AFDIR 33-303; AFIs 33-110, 33-129, 33-206, 33-210, 33-219, 33-332; AFKAG-1&2; AFMAN 33-326; AFSSI 5021; DISAC 310-90-1; DOD 5200.1-R												
6.1. Operations Security (OPSEC) TR: AFI 10-1101; AFRD 10-11												
6.1.1. Definition	*						A			A	-	
6.1.2. Background							A			A	-	
6.1.3. Relationship of OPSEC to other security programs							A			A	-	
6.1.4. Vulnerabilities	*						A			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
6.1.5. Critical information							A			-	-	
6.2. Information Security TR: AFI 31-401; AFD 31-4, 33-2												
6.2.1. Classification process							-			-	-	
6.2.2. Declassification process							-			-	-	
6.2.3. Information safeguards	*											
6.2.3.1. Unclassified												
6.2.3.1.1. Privacy Act							-			A	-	
6.2.3.1.2. For Official Use Only (FOUO) TR: AFSSI 5009							-			A	-	
6.2.3.1.3. Sensitive But Unclassified (SBU)							-			A	-	
6.2.3.2. Classified							A			A	-	
6.3. Communications Security (COMSEC) TR: AFI 33-211, 33-212; AFD 33-2												
6.3.1. Definition	*						-			A	-	
6.3.2. Vulnerabilities	*						-			A	-	
6.3.3. Critical information	*						-			A	-	
6.3.4. Safeguarding classified information	*						A			b	-	
6.3.5. COMSEC equipment security							-			-	-	
6.3.6. COMSEC equipment use												
6.3.6.1. Operate on-line							-			-	-	
6.3.6.2. Operate off-line							-			-	-	
6.3.7. Identify/report insecurities	*						A			b	-	
6.4. Emission Security (EMSEC) TR: AFI 33-203; AFD 33-2												
6.4.1. Definition	*						-			A	-	
6.4.2. Notifications							-			b	-	

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6.5. Computer Security (COMPUSEC) TR: AFI 33-202, 33-207; AFD 33-2; AFSSI 5021												
6.5.1. Definition	*						A			A	-	
6.5.2. Vulnerabilities	*						A			B	-	
6.5.3. Processing classified information							A			b	-	
6.5.4. Identify/report security violations							A			b	-	
6.5.5. Software license management							A			b	-	
6.5.6. Protective Measures							A			b	-	
6.6. Physical Security TR: AFI 31-101; AFD 31-1												
6.6.1. Definition	*						A			A	-	
6.6.2. Secure area access management							A			B	-	
6.6.3. Facility security requirements							A			B	-	
6.6.4. Classified material control												
6.6.4.1. Storage							A			B	-	
6.6.4.2. Shipment							A			B	-	
6.6.4.3. Handling							A			B	-	
6.6.4.4. Destruction							A			B	-	
6.6.4.5. Classified waste							A			B	-	
6.6.5. Identify/report violations							A			b	-	
6.7. Information Assurance TR: AFI 33-204, CJCSM 6510-10	*											
6.7.1. Definition							-			-	-	
6.7.2. Threats and vulnerabilities							-			-	-	
6.7.3. Identify/report insecurities							-			-	-	
6.7.4. Protective measures							-			-	-	

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		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
7. Regulation of Spectrum Management TR: ITU Regulations, Radio Regulations; AFI 33-118; AFMAN 33-120; NTIA Manual; MCEB Pub 7												
7.1. International Telecommunications Union (ITU) Radio regulations												
7.1.1. Purpose							B			A	-	
7.1.2. Structure							B			B	-	
7.1.3. Responsibilities							B			B	-	
7.1.4. Radio Regulations							B			B	-	
7.1.5. Terminology							B			B	-	
7.1.6. International Frequency Table of Allocations							B			B	-	
7.2. National and Government TR: AFI 33-118; AFMAN 33-120; NTIA Manual; MCEB Pub 7												
7.2.1. U.S. National Policy Regulation							B			-	-	
7.2.2. DoD Policy							B			B	-	
7.2.3. National Telecommunications & Information Administration (NTIA)							B			B	-	
7.2.4. Federal Communications Commission (FCC)							B			A	-	
7.2.5. NTIA Manual							B			A	-	
7.2.6. Channeling Plans							B			A	-	
7.2.7. Spectrum Legislation							B			-	-	
7.3. DoD Spectrum Management Organization TR: AFI 33-118, AFMAN 33-120, DODD 4650.1, MCEB Pub 7												
7.3.1. Office of Assistant Secretary of Defense Command, Control Communications and Intelligence (OASD C3I)							A			-	-	
7.3.2. Office of Spectrum Analysis Management (OSAM)							A			A	-	

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		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
7.3.3. Joint Chiefs of Staff United States Military Communications Electronics Board (JCS USMCEB)							A			-	-	
7.3.4. Military Communications-Electronics Board (MCEB) Frequency Panel (FP)							A			-	-	
7.3.5. Joint Spectrum Center (JSC)							A			-	-	
7.3.6. Unified/Specified Command							A			-	-	
7.3.7. DoD Area Frequency Coordinator							A			-	-	
7.3.8. MAJCOM							A			B	-	
7.3.9. Wing/Base							A			B	-	
7.3.10. Test Ranges							A			A	-	
7.3.11. US Army Spectrum Organization							A			-	-	
7.3.12. US Navy Spectrum Organization							A			-	-	
7.3.13. US Marine Corps Spectrum Organization							A			-	-	
7.3.14. US Air Force Spectrum Organization	*						A			B	-	
7.4. DoD Spectrum Usage							A			-	-	
7.5. NATO Frequency Management Structure							A			-	-	
7.6. Spectrum Certification TR: AFI 33-118, AFMAN 33-120; CJSCSM 3320.01 {Annex F}; NTIA Manual {Chapter 10}; Spectrum Certifications System (SCS) Online Help												
7.6.1. Process							B			B	-	
7.6.2. DD Form 1494							B			-	-	
7.6.3. Foreign release/ coordination							B			B	-	
7.6.4. JF-12 Database	*										-	
7.6.4.1. Query database.							2b			-	-	
7.6.4.2. Perform title Search							2b			-	-	
7.7. Coordination Policy TR: AFI 33-118, AFMAN 33-120, CJCSI 3220.01, CJCSM 3220.01, ACP 190 (A), ACP190 USSUPP-1(C)	*											
7.7.1. Coordination agencies							B			B	-	
7.7.2. Peacetime process							B			B	-	

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		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
7.7.3. Air Force Frequency Assignment Process							B			B	-	
7.7.4. Wartime/ contingency process							B			B	-	
8. PRINCIPLES OF SPECTRUM ADMINISTRATION TR: AFMAN 33-120, NTIA Manual, ACP 190 (A), MCEB Pub 7												
8.1. Bandwidth TR: NTIA Manual												
8.1.1. Types	*						B			B	-	
8.1.2. Documentation							B			B	-	
8.1.3. Identify necessary bandwidth							B			B	-	
8.1.4. Identify authorized bandwidth							B			B	-	
8.1.5. Identify occupied bandwidth							B			B	-	
8.2. Emission Designators TR: NTIA Manual, AFMAN 33-120, MCEB Pub 7	*											
8.2.1. Composition							B			-	-	
8.2.2. Formulation							B			-	-	
8.2.3. Interpret emission designators							2b			-	-	
8.2.4. Determine emission designators							2b			-	-	
8.3. Radio Communications Service and Station Classes TR: NTIA Manual, AFMAN 33-120, MCEB Pub 7												
8.3.1. Principles							B			-	-	
8.3.2. Types							B			-	-	
8.3.3. Research table of allocations							2b			-	-	
8.3.4. Research footnotes, provisions and remarks							2b			-	-	
8.3.5. Determine radio service							2b			-	-	
8.3.6. Determine type station class							2b			-	-	
8.4. Standard Frequency Action Format (SFAF) TR: ACP 190(A), AFMAN 33-120, MCEB Pub 7	*											
8.4.1. Administrative data							B			-	-	
8.4.2. Emission characteristics data							B			-	-	
8.4.3. Organizational data							B			-	-	
8.4.4. Transmitter data							B			-	-	
8.4.5. Space systems data							B			-	-	
8.4.6. Receiver data							B			-	-	

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8.4.7. Supplemental details data.							B			-	-	
8.4.8. SFAF processing							B			-	-	
8.4.9. Prohibited data entries							B			-	-	
8.4.10. Restricted data entries							B			-	-	
8.4.11. Data item occurrence identifiers							B			-	-	
8.4.12. Data item purge identifier							B			-	-	
8.4.13. Mass purge identifier							B			-	-	
8.4.14. Multiple record identifiers							B			-	-	
8.4.15. Types of input for SFAF proposals							B			-	-	
8.4.16. Mass record changes							B			-	-	
8.4.17. SFAF transaction security rules							B			-	-	
8.4.18. Classification of aggregate frequency records							B			-	-	
8.5. National and International Databases TR: ITU Regulations, MCEB Pub 7, NTIA Manual												
8.5.1. Frequency Resource Record System (FRRS)	*						B			-	-	
8.5.2. Government Master File (GMF)	*						B			-	-	
8.5.3. Federal Communications Commission (FCC) File							B			-	-	
8.5.4. International Frequency List							B			-	-	
8.5.5. Area Studies	*						B			-	-	
8.6. Automated Systems											-	
8.6.1. Spectrum XXI							B			-	-	
8.6.2. Military services automated systems							A			-	-	
8.6.3. System Planning, Engineering and Evaluation Device (SPEED)							2b			-	-	
9. MATHEMATICS OF SPECTRUM MANAGEMENT TR: TO 31-1-141-5												
9.1. Algebra basics												
9.1.1. Literal numbers							-			B	-	
9.1.2. Terms							-			B	-	
9.1.3. Like (similar) terms							-			B	-	
9.1.4. Coefficient							-			B	-	

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9.1.5. Exponent							-			B	-	
9.1.6. Laws of algebra							-			B	-	
9.1.7. Maintaining equality							-			B	-	
9.1.8. Inverse operation							-			B	-	
9.1.9. Cross multiplication							-			B	-	
9.1.10. Order of Operations							-			B	-	
9.1.11. Substitution							-			B	-	
9.1.12. Solve unknown values of equations							2b			B	-	
9.2. Use exponents and scientific notation												
9.2.1. Base number							2b			B	-	
9.2.2. Exponent							2b			B	-	
9.2.3. Multiplication							2b			B	-	
9.2.4. Raising a power to a power							2b			B	-	
9.2.5. Exponents of 1, 0, & 10							2b			B	-	
9.2.6. Powers of 10							2b			B	-	
9.2.7. Scientific notation							2b			B	-	
9.2.8. Prefixes							2b			B	-	
9.2.9. Convert between units of power, voltage and frequency							2b			B	-	
9.3. Geometric Forms												
9.3.1. Calculate circumference of a circle							2b			B	-	
9.3.2. Calculate areas of a circle							2b			B	-	
9.3.3. Calculate areas of a rectangle							2b			B	-	
9.4. Right Triangles												
9.4.1. Calculate right triangle sides (hypotenuse, opposite, & adjacent)							2b			-	-	
9.4.2. Calculate angles							2b			-	-	
9.5. Logarithms												
9.5.1. Express equation in logarithm format							2b			-	-	
9.5.2. Solve problems using common logarithms							2b			-	-	
9.6. Decibel Conversion	*						2b			B	-	
9.7. Power												
9.7.1. Relationship between power, voltage, current & resistance							B			B	-	

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9.7.2. Calculate power, current, voltage, & resistance using power formula							2b			-	-	
9.7.3. Calculate power, current, voltage & resistance using Ohms law							2b			-	-	
9.7.4. Calculate power using logarithms							2b			-	-	
9.7.5. Metric conversion							2b			-	-	
10. COMMUNICATIONS ELECTRONICS PRINCIPLES TR: TO 31-1-141 SERIES												
10.1. Modulation Techniques TR: TOs 31-1-141 Series	*											
10.1.1. Amplitude Modulated							B			B	-	
10.1.2. Frequency Modulated							B			B	-	
10.1.3. Pulse/Phase Modulated							B			B	-	
10.1.4. Principles of Transmitters/ Receivers							B			B	-	
10.2. Receiver Sensitivity TR: TO 31-1-141-9, TO 31-1-141-10												
10.2.1. Theory internal							B			B	-	
10.2.2. Calculate noise threshold							2b			-	-	
10.2.3. Calculate signal to noise ratio							2b			-	-	
10.2.4. Calculate fade margin							2b			-	-	
10.2.5. Calculate fade margin threshold							2b			-	-	
10.3. Receiver Selectivity TR: TO 31-1-141-9, TO 31-1-141-10							B			B	-	
10.4. Transmission Lines TR: TOs 31-1-141-7, 31-1-141-8, and 31-1-141-11												
10.4.1. Coaxial cables (Flexible, semirigid, & rigid)							B			B	-	
10.4.2. Open/parallel lines							B			B	-	
10.4.3. Wave guides							B			B	-	
10.4.4. Fiber optics							B			B	-	
10.4.5. Dielectric types							B			B	-	
10.4.6. Attenuation							B			B	-	
10.4.7. Standing wave ratios							B			B	-	
10.4.8. Effective Isotropic Radiated Power (EIRP)							2b			B	-	
10.4.9. Effective Transmit Power (ETP)							2b			B	-	

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10.5. Antenna Principles TR: TO 31-1-141-12; JSC HDBK 98-091	*											
10.5.1. Common Antennas												
10.5.1.1. Dipole							B			B	-	
10.5.1.2. Whip							B			B	-	
10.5.1.3. Longwire							B			B	-	
10.5.1.4. Horn							B			B	-	
10.5.1.5. Helical							B			B	-	
10.5.1.6. Parabolic							B			B	-	
10.5.1.7. Reflector							B			B	-	
10.5.1.8. Array							B			B	-	
10.5.2. Antenna Efficiency							B			B	-	
10.5.3. Antenna Waves							B			B	-	
10.5.4. Antenna Selection considerations							B			B	-	
10.5.5. Mutual Interference							B			B	-	
10.5.6. Antenna Gain							B			B	-	
10.5.7. Impedance Matching							B			B	-	
10.5.8. Resonant & non resonant antennas							B			B	-	
10.5.9. Law of Reciprocity							B			B	-	
10.5.10. Polarization							B			B	-	
10.5.11. Relationship of antenna height and take off angle							B			B	-	
10.5.12. Calculate Electrical Length							2b			B	-	
10.5.13. Calculate physical length							2b			B	-	
10.5.14. Beamwidth							B			B	-	
10.6. Electromagnetic Wave Propagation Theory TR: TO 31-1-141 Series	*											
10.6.1. Radio Wave Propagation												
10.6.1.1. Freespace							B			B	-	
10.6.1.2. Refraction							B			B	-	
10.6.1.3. Reflection							B			B	-	
10.6.1.4. Diffraction							B			B	-	
10.6.1.5. Knife edge diffraction							B			B	-	
10.6.2. Path loss							B			B	-	
10.6.3. Atmospheric attenuation							B			B	-	
10.6.4. Multipathing							B			B	-	

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10.6.5. Free space loss							B			B	-	
10.6.6. Anomalous propagation							B			B	-	
10.6.7. Calculate Path Loss							2b			B	-	
10.7. Jam Resistant Communications TR: Talk II - SINCGARS "Multiservice Communications Procedures for the SINCGARS" CJCSM 6230.05 "Joint Have Quick Planners Manual" JSUG "JTIDS/MIDS Spectrum Users Guide" CJCSI 6232.01 "Link 16 Spectrum De-confliction within the US&P"												
10.7.1. Frequency Hopping Theory							A			B	-	
10.7.2. Spread Spectrum Theory							A			B	-	
10.7.3. Jam Resistant Systems Employment							A			B	-	
10.7.4. Frequency Agile Systems											-	
10.7.4.1. Have Quick Systems							A			B	-	
10.7.4.2. Single Channel Ground and Airborne Radio System (SINCGARS)							A			B	-	
10.7.4.3. Joint Tactical Information Distribution System (JTIDS)							A			B	-	
10.7.4.4. Situational Awareness Data Link (SADL) TR: JSUG							A			A	-	
10.7.4.5. Joint Tactical Radios System							A			A	-	
11. SPECTRUM PLANNING FOR HIGH FREQUENCY (HF) SYSTEMS TR: TO 31-1-141-12, DoD ECAC HDBK-CR-82-125												
11.1. Solar Ionospheric Physics												
11.1.1. Physical & non physical emissions from the sun							B			B	-	
11.1.2. Ionization							B			B	-	
11.1.3. Recombination							B			B	-	
11.1.4. Earth's atmosphere							B			B	-	
11.1.5. Sunspots							B			B	-	
11.1.6. Sunspot number							B			B	-	
11.1.7. Solar flares							B			B	-	

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11.1.8. Solar variations							B			B	-	
11.2. Skywave Fundamentals TR: ECAC-CR-82-125, JSC HDBK 98-091-200, TO 31-1-141-12												
11.2.1. Skip distance							B			B	-	
11.2.2. Skip Zone							B			B	-	
11.2.3. Critical angle							B			B	-	
11.2.4. Critical frequency							B			B	-	
11.2.5. Maximum Usable Frequency (MUF)							B			B	-	
11.2.6. Frequency Optimum Transmission (FOT)							B			B	-	
11.2.7. Lowest Usable Frequency (LUF)							B			B	-	
11.2.8. Factors for refraction							B			B	-	
11.2.9. Ionospheric sounders TR: ACP191(B)							B			B	-	
11.2.10. Automatic Link Establishment (ALE)							B			A	-	
11.3. Antenna Radiation Patterns TR: ECAC-CR-82-200							B			B	-	
11.4. Antenna Planning TR: ECAC-CR-83-200												
11.4.1. Physical properties of antennas							B			-	-	
11.4.2. Select HF antennas based on patterns versus path requirements							2b			-	-	
11.5. Long-wire Antennas TR: ECAC-CR-82-125												
11.5.1. Characteristics and variations							B			-	-	
11.5.2. Effects of termination on directivity							B			-	-	
11.6. HF Tuning Techniques TR: NTIA Manual												
11.6.1. Principles of sideband techniques							B			B	-	
11.6.2. Compute the reference frequency and assigned frequency							2b			B	-	
11.6.3. Compute the occupied spectrum for an assigned frequency							2b			-	-	
11.7. HF Groundwave Propagation and Predictions TR: ECAC-CR-82-125												
11.7.1. Fundamentals							B			B	-	
11.7.2. Reliability factors							B			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
11.7.3. Interpret propagation prediction products							B			-	-	
11.8. Use Automated HF Prediction Systems							2b			A	-	
11.9. Near Real Time Propagation HF Updates							B			-	-	
11.10. HF Systems Engineering TR: ECAC-CR-82-125, ECAC-CR-82-200, JSC HDNBK 98-091, AFMAN 33-120, MCEB Pub 7												
11.10.1. Principles of HF system planning	*						B			B	-	
11.10.2. Determine best antenna for requirements							2b			-	-	
11.10.3. Determine path requirements using propagation data							2b			-	-	
11.10.4. Engineer groundwave communications							2b			-	-	
11.10.5. Engineer skywave communications							2b			-	-	
11.10.6. Complete SFAF proposals for HF requirements	*						2b			-	-	
11.10.7. Assign HF frequencies							2b			-	-	
12. SPECTRUM PLANNING FOR VERY HIGH (VHF) & ULTRA HIGH FREQUENCY (UHF) SYSTEMS TR: NTIA Manual, AFMAN 33-120, MCEB Pub 7, AFI 33-106 and AFI 33-118												
12.1. VHF/UHF Amplitude Modulated (AM)/ Frequency Modulated (FM) Air/Ground/Air (A/G/A) Systems												
12.1.1. Calculate area coverage of A/G/A systems							2b			-	-	
12.1.2. Engineer AM/FM Air/Ground communications							2b			-	-	
12.1.3. Complete SFAF proposals for VHF/UHF AM/FM A/G/A requirements	*						2b			-	-	
12.1.4. Assign VHF/UHF AM A/G/A frequencies							2b			-	-	
12.2. VHF/UHF Frequency Modulated (FM) Systems												

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
12.2.1. Principles of VHF/UHF FM systems planning							B			B	-	
12.2.2. Spectrum support for Land Mobile Radio (LMR) Systems												
12.2.2.1. Simplex							B			B	-	
12.2.2.2. Duplex/ Repeater							B			B	-	
12.2.2.3. Trunking							B			B	-	
12.2.3. Calculate system parameters (distance, reliability, antenna height, frequency, receive signal level and systems gain/ losses)							2b			B	-	
12.2.4. Complete SFAF proposals for LMR requirements	*						-			-	-	
12.2.5. Assign LMR frequencies							-			-	-	
12.2.6. Complete SFAF proposals for VHF/UHF G/G requirements	*						2b			-	-	
12.2.7. Assign VHF/UHF G/G frequencies							2b			-	-	
13. SPECTRUM PLANNING FOR MULTICHANNEL SYSTEMS TR: TOs 31-1-141 (SERIES), AFMAN 33-120, NTIA Manual, MCEB Pub 7, AFI 33-118												
13.1. Microwave Antennas TR: TO 31-141-12 and NTIA Manual												
13.1.1. Parabolic Antennas							B			-	-	
13.1.2. Horn Antennas							B			-	-	
13.1.3. Reflectors							B			-	-	
13.1.4. Calculate the gain of parabolic antennas							2b			-	-	
13.1.5. Calculate the gain of flat passive reflectors							2b			-	-	
13.2. Line of Site (LOS) Systems TR: TO 31-1-141-12												
13.2.1. Principles of refraction							B			A	-	
13.2.2. Principles of direct and ground propagation paths	*						B			B	-	
13.2.3. Determine the usable frequency range							2b			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
13.2.4. Advantages/disadvantages of LOS systems in communications							B			-	-	
13.2.5. LOS equipment capabilities and limitations							B			-	-	
13.2.6. Basic configurations of LOS systems							B			-	-	
13.2.7. Propagation considerations in LOS communications							B			-	-	
13.2.8. Calculate Free Space Loss for LOS systems communications							2b			-	-	
13.2.9. Explain a path profile on selected LOS systems							B			-	-	
13.2.10. Determine LOS systems predicted reliability							2b			-	-	
13.2.11. Develop SFAF proposals for LOS requirements	*						2b			-	-	
13.2.12. Assign LOS systems frequencies							2b			-	-	
13.3. Troposcatter (TROPO) Systems TR: TO 31-141-11, TO 31-1-141-12,												
13.3.1. TROPO theory	*						B			B	-	
13.3.2. Capabilities/limitations of TROPO systems							B			-	-	
13.3.3. Calculate TROPO Total propagation Loss (TPL)							2b			-	-	
13.3.4. Calculate TROPO Receive signal level (RSL)							2b			-	-	
13.3.5. Calculate TROPO median receiver input signal level							2b			-	-	
13.3.6. Calculate TROPO minimum receiver input signal level							2b			-	-	
13.3.7. Calculate TROPO fade margin and reliability							2b			-	-	
13.3.8. Calculate TROPO total path loss							2b			-	-	
13.4. Principles of Global Positioning System (GPS)							A			-	-	
14. SPECTRUM PLANNING FOR SATELLITE SYSTEMS TR: AFMAN 33-120, AFSATCOM Procedures Vol 1 and Vol 2, NTIA Manual, MCEB Pub 7												
14.1. Application of Satellite Systems	*						A			B	-	
14.2. Satellite terminology	*						A			B	-	

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		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
14.3. Satellite Orbits							A			B	-	
14.4. Interference mechanisms affecting up/down link performance							A			-	-	
14.5. Complete SFAF proposals for satellite requirements	*						2b			-	-	
14.6. Determine satellite look and elevation angles							2b			-	-	
14.7. Satellite Access Request (SAR) Procedures											-	
14.7.1. Complete Ground Mobile Forces SAR							2b			-	-	
14.7.2. Complete Tactical UHF SAR							2b			-	-	
14.8. DoD use of commercial satellites TR: AU-18, Space handbook							A			B	-	
14.9. Demand Assigned Multiple Access (DAMA) and Demand Single Multiple Access (DASA)							A			-	-	
14.10. Scintillation							A			B	-	
15. SPECTRUM PLANNING FOR NON-COMMUNICATIONS SYSTEMS TR: TO 131-1-141-14, AFI 33-118, AFMAN 33- 120; NTIA Manual; MCEB Pub 7												
15.1. Radar Systems												
15.1.1. Principles of radar operations	*						B			B	-	
15.1.2. Radar types and functions							B			-	-	
15.1.3. Relationship between Radar and IFF/SIF operation							B			-	-	
15.1.4. Calculate radar distance							2b			-	-	
15.1.5. Complete SFAF proposals for Radar requirements	*						2b			-	-	
15.1.6. Assign Radar frequencies							2b			-	-	
15.2. Navigational Aid (NAVAID) Systems											-	
15.2.1. Principles of NAVAID operations	*						B			B	-	
15.2.2. NAVAID types and functions							B			-	-	
15.2.3. NAVAID frequencies							B			-	-	
15.2.4. Complete SFAF proposal for NAVAID requirements	*						2b			-	-	
15.2.5. Assign NAVAID frequencies							2b			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
16. ELECTROMAGNETIC COMPATIBILITY (EMC) TR: AFI 33-118, NTIA MANUAL, DODD 3222.3/ AF Sup 1; AFI 10-707 AFMAN 33-120												
16.1. Fundamentals of EMC												
16.1.1. DoD EMC programs							B			-	-	
16.1.2. Effects of electromagnetic interference (EMI)	*						B			-	-	
16.2. Harmonics and Intermodulation TR: TO 31Z-10-6												
16.2.1. EMI potential							B			-	-	
16.2.2. Generate harmonic-free compliment							2b			-	-	
16.2.3. Generate intermodulation-free compliment							2b			-	-	
16.3. Transmitter and Receiver Related Problems TR: TO 31Z-10-2; NTIA Manual												
16.3.1. Interference entry mechanisms							B			-	-	
16.3.2. Adjacent channel interference							B			-	-	
16.3.3. Effects of spurious responses							B			-	-	
16.3.4. Effects of spurious emissions							B			-	-	
16.3.5. Function of the intermediate frequency							B			-	-	
16.3.6. Tolerances							B			-	-	
16.4. Electronic countermeasures (ECM) and Electronic Warfare (EW) TR: CJCSM 3212.02, AFI 10-706 JP 3-51												
16.4.1. Types							B			B	-	
16.4.2. Clearance Process							B			B	-	
16.4.3. Coordination							A			B	-	
16.5. DoD Electromagnetic Environmental Effects (E3) program TR: TO 31Z-10-4, DODD 3222.3/ AF Sup 1	*											
16.5.1. DoD RADHAZ program							A			-	-	
16.5.2. Effects of non-ionizing radiation on personnel, fuels, and ordnance							A			A	-	

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		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
16.6. RF Spectrum Interference Resolution TR: AFI 10-707, CJCSM 3220-02	*											
16.6.1. Joint Spectrum Interference Resolution (JSIR) Program							B			B	-	
16.6.2. Air Force Spectrum Interference Resolution (AFSIR) Program							-			B	-	
17. SPECTRUM MANAGEMENT IN A JOINT ENVIRONMENT TR: CJCSM 3220.01, CJCSI 3220.01, Joint Pub (JP)1-01.1, 3-0, 5-0, JP 6.0												
17.1. Joint Task Force (JTF) Structure	*											
17.1.1. JTF terminology							A			B	-	
17.1.2. Associated publications/ directives							A			B	-	
17.1.3. JTF notional organizations							A			B	-	
17.1.4. JTF command & control TR: JP 6-0							A			B	-	
17.1.5. JTF operational phases							A			B	-	
17.2. Information Warfare (purpose and relationship) TR: CJCSM 6510.01	*						A			B	-	
17.3. JTF Planning, Deployment Buildup and Employment TR: CJCSI 3220.01, JP 3-0, JP 5-0, JP 6-0, CJCSM 3220.01												
17.3.1. Crisis Action Planning (CAP) Process	*						A			B	-	
17.3.2. CAP spectrum management responsibilities	*						A			B	-	
17.3.3. Global Command & Control System and joint Operational Planning Execution System in CAP							A			B	-	
17.3.4. Information Operation (IO)							A			B	-	
17.3.5. Battlefield spectrum use considerations							-			B	-	
17.3.6. Air Expeditionary Force (AEF)/ Expeditionary Air Force (EAF) TR: AFI 10-400							B			B	-	
17.4. Spectrum XXI TR: Spectrum XXI Users Manual	*											
17.4.1. Overview							B			-	-	
17.4.2. Install							-			-	-	

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
17.4.3. System Preferences Certification							B			-	-	
17.4.4. Help Files							B			-	-	
17.4.5. Spectrum Certification System (SCS)												
17.4.5.1. Purpose							B			B	-	
17.4.5.2. Install							b			-	-	
17.4.5.3. Manipulate SCS data							2b			-	-	
17.4.6 Topographic Data TR: Spectrum XXI Users Manual												
17.4.6.1. Purpose							B			B	-	
17.4.6.2. Install Topographic Manager (TOPOMAN)							2b			-	-	
17.4.6.3. Perform Data files Creation							2b			-	-	
17.4.6.4. Managing Data files							2b			-	-	
17.4.7. Data Exchange												
17.4.7.1. Purpose							B			B	-	
17.4.7.2. Initial Data Exchange Transfer							2b			-	-	
17.4.7.3. System Interfaces (STU-III, STE, SIPRNET)							B			-	-	
17.4.8. Frequency Assignment Module												
17.4.8.1. Purpose							B			B	-	
17.4.8.2. Load initial frequency Assignments							2b			-	-	
17.4.8.3. Perform database query							2b			-	-	
17.4.8.4. Manipulate database query							2b			-	-	
17.4.8.5. Use proposal functions							2b			-	-	
17.4.8.6. Status codes							B			-	-	
17.4.8.7. Produce management reports							2b			-	-	
17.4.8.8. Use System Manager Module							2b			-	-	
17.4.8.9. Use Allotment Plans Module							2b			-	-	
17.4.8.10. Use Interference Analysis Module							2b			-	-	
17.4.8.11. Use Interference Report Module							2b			-	-	
17.4.8.12. Use Engineering Tools Module							2b			-	-	
17.4.8.13. Use Joint Restricted Frequency List Editor Module							2b			-	-	
17.4.8.14. Use Electronic Warfare Deconfliction Module							2b			-	-	

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		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
17.5. Joint Automated Communication Electronics Operation Instructions (JCEOI) System (JACS) TR: CJCSM 6230.04,CJCSM 3220.04												
17.5.1. Master Net List												
17.5.2. Build						2b			-	-		
17.5.3. Manipulate						2b			-	-		
17.5.4. Import Data												
17.5.5. JACS						2b			-	-		
17.5.6. Complete Frequency Analysis						2b			-	-		
17.5.7. Generate SFAF Proposals Import/Export						2b			-	-		
17.5.8. Use Resource Manager Import/Export						2b			-	-		
17.5.9. Import SFAF Assignments						2b			-	-		
17.5.10. Generate JCEOI						2b			-	-		
17.5.11. Produce JCEOI Outputs												
17.5.11.1. Prints						2b			-	-		
17.5.11.2. Reports						2b			-	-		
17.5.12. Operations												
17.5.12.1. Build HOPSET						2b			-	-		
17.5.12.2. Build LOADSET						2b			-	-		
17.6. Revised Battlefield Electronic Communications Electronic Operating Instruction System (RBECS)												
17.6.1. Produce JCEOI						2b			-	-		
17.6.2. Produce HOPSET						2b			-	-		
17.6.3. Produce LOADSET						2b			-	-		
17.7. Service communications operations plan TR: CJCSI 3320.01A												
17.7.1. Annex K	*					A			B	-		
17.7.2. Air Tasking Order (ATO)/Special Instructions (SPINS)	*					A			B	-		
17.7.3. Operational Tasking of communications (OPTASKCOMS)												
17.7.3.1. OPTASKCOMS						A			-	-		
17.7.3.2. Shipboard Radar Assignments						A			-	-		
17.7.3.3. Battle Group Radar De-confliction						A			-	-		

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. CORE TASKS	3. CERTIFICATION FOR OJT					4. PROFICIENCY CODES USED TO INDICATE TRAINING/INFORMATION PROVIDED					
		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
17.7.4. Joint Communications Electronic Operational Instruction (JCEOI)	*						-			-	-	
17.7.5. Advanced Communications Electronic Operational Instruction (ACEOI)							B			-	-	
17.7.6. Special Operations Instruction (SOI) Compare/Contrast							B			-	-	
17.8. JTF Tactical Exercise												
17.8.1. Perform as component spectrum manager												
17.8.1.1. Engineer system requirements							3c			-	-	
17.8.1.2. Consolidate requirements							3c			-	-	
17.8.1.3. Submit SFAF proposals							3c			-	-	
17.8.2. Perform as JTF spectrum manager												
17.8.2.1. Obtain frequencies to satisfy requirements							2b			-	-	
17.8.2.2. Assign frequencies							2b			-	-	
17.8.2.3. Create spectrum database							2b			-	-	
17.8.2.4. Input JCEOI data							2b			-	-	
17.8.2.5. Generate JCEOI							2b			-	-	
17.8.2.6. Produce a final JCEOI using JACS							2b			-	-	
18. Communications Systems TR: System User Manuals												
18.1. Unmanned Aerial Vehicle (UAV)							A			-	-	
18.2. Joint Tactical Information Distribution System (JTIDS)							A			-	-	
18.3. Joint Surveillance Tactical Airborne RADAR System (JSTARS)							A			-	-	
18.4. Situational Awareness Data Link (SADL)							A			-	-	
18.5. Enhanced Tactical Collision Avoidance System (E-TCAS)							A			-	-	
18.6. HAVE QUICK System							A			-	-	
18.7. Joint Tactical Radio System							A			A	-	

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		A	B	C	D	E	A 3 SKILL LEVEL		B 5 SKILL LEVEL		C 7 SKILL LEVEL	
		START DATE	STOP DATE	TRAINEE INITIALS	TRAINER INITIALS	CERTIFIER INITIALS	(1) Course	(2) CDC	(1) Course	(2) CDC	(1) Course	(2) CDC
19. Wireless Technologies TR: NITA Manual							-			B	-	
200. AIR FORCE JOB QUALIFICATION STANDARDS APPLICABLE TO AFSC 3C1X2. TR: AFI 36-2233, CFETP 3C1X2 (See Note 2)												
200.1. Command, Control and Communications Protection												
200.1.1. AFQTP XXXXX-200A, Introduction to Command, Control and Communications Protection												
211.14. AFJQS XXXXX-211N, Installation Spectrum Management												
212.1. Work Center Supervisor's												
212.1.1. AFQTP 3CXXX-212A, Work Center Supervisor's Handbook (See Note 3)												

JOINT TASK FORCE SPECTRUM MANAGEMENT

1. Implementation of training in support of this CTS is with class beginning 20020909 and graduating 20020925.
2. Purpose. This course training standard:
 - a. Establishes the training requirements using tasks, knowledge, and proficiency levels for course E3AZR3C172 001, Joint Task Force Spectrum Management.
 - b. Provides the basis for the development of more detailed training materials, training objectives, and training evaluation instruments for the course.
3. Course Description. This course provides training for interservice personnel in the knowledge and skills needed to perform the duties of a Joint Task Force Spectrum Manager. The scope of this training includes the following: JTF Spectrum Management Lifecycle; tasks and required activities of a JTF Spectrum Manager; structure of a doctrinal JTF and the role of it's components; importance of coordinated use of the spectrum; spectrum dependent systems used by the joint organizations and service component forces; Spectrum Manager's Role in Information Operations; and the Spectrum Manager's role in Deliberate and Crisis Action Planning. The course also provides advanced training on automated spectrum management tools such as SPECTRUM XXI and Joint Automated Communications-Electronics Operating Instruction System (JACS)
4. Qualitative Requirements. Attachment 1 contains the task, knowledge, and proficiency levels referenced in paragraph 2.
5. Recommendations. Comments and recommendations are invited concerning quality of AETC training. Reference this CTS and address correspondence regarding changes to 336 TRS/TRR, 600 Hangar Road, Keesler AFB, MS 39534-2235. A Customer Service Information Line has been installed at Keesler AFB MS, for the supervisors' convenience to identify graduates who may have received over or under training on task/knowledge items listed in this training standard. For a quick response to problems, call our Customer Service Information Line, DSN 597-4566, anytime day or night.

OFFICIAL

THOMAS L. FOSSEN, Colonel, USAF
Commander

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Chief, Group IM

Atch:
Qualitative Requirements

Supersedes:
Prepared by:
Distribution: X (Continued on page 2)

Task, Knowledge, and Proficiency Levels

1. JOINT TASK FORCE (JTF) ORGANIZATIONAL STRUCTURE
 - a. Terminology B
 - b. Organizational Structure and Responsibilities B
 - (1) CINC B
 - (2) Joint Staff B
 - (3) Generic makeup of a doctrinal JTF B
 - (4) J1-J6 staff functional areas
 - (a) Joint Operational Cell B
 - (b) Joint Communications control Center (JCCC) B
 - (c) Theater Communications Control Center (TCCC) B
 - (5) Components
 - (a) Service
 - 1 Air Force Forces (AFFOR) B
 - 2 Army Forces (ARFOR) B
 - 3 Navy Forces (NAVFOR) B
 - 4 Marine Forces (MARFOR) B
 - (b) Functional
 - 1 Joint Force Air Component Commander (JFACC) B
 - 2 Joint Force Land Component Commander (JFLCC) B
 - 3 Joint Force Maritime Component Commander (JFMCC) B
 - 4 Joint Force Special Operations Component Commander (JFSOCC) B
 - 5 Joint Psychological Operations Task Force (JPOTF) B
2. SPECTRUM MANAGEMENT COORDINATION
 - a. International
 - (1) North Atlantic Treaty Organization (NATO) B
 - (2) Combined Communications-Electronics Board (CCEB) B
 - (3) Australia-New Zealand-United States (ANZUS) Treaty B
 - (4) Organization of American States (OAS) B
 - (5) Gulf Coordinating Council (GCC) B
 - (6) Coalition B
 - (7) Allies B
 - (8) Neutrals B
 - (9) Non-governmental Organizations (NGO) B

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b.	United States Government Organizations	
	(1) Defense Information Systems Agency (DISA)	B
	(2) Office of Spectrum Analysis and Management (OSAM)	B
	(3) Joint Spectrum Center (JSC)	B
	(4) Regional Space Support Center (RSSC)	B
	(5) Joint Communications Support Element (JCSE)	B
	(6) National Imagery and Mapping Agency (NIMA)	B
	(7) Joint Information Operations Center (JIOC)	B
	(8) Governmental organizations (GO)	B
c.	Security Considerations	
	(1) Releasability to Host Nations	C
	(2) Foreign disclosure and releasability	C
3.	SPECTRUM MANAGER DUTIES	
a.	Joint Frequency Management Office (JFMO) Responsibilities	C
b.	Joint Spectrum Management Element (JSME)	C
c.	JTF Service and Functional Components	C
d.	JTF Spectrum Manager	C
4.	CAMPAIGN PLANNING PROCESS	
a.	Deliberate Planning	
	(1) Operational Phases	B
	(2) Spectrum Management inputs to operational Plans (OPLANS)	B
b.	Crisis Action Planning	
	(1) Operational Phases	B
	(2) Spectrum Management inputs to operational Plans (OPLANS)	B
c.	Force Entry vs peacekeeping	B
5.	INFORMATION OPERATIONS AND SPECTRUM MANAGEMENT	
a.	Information Operation Cell (IO Cell)	B
b.	Electronic Warfare (EW)	
	(1) Electronic Attack (EA)	B
	(2) Electronic Protect (EP)	B
	(3) EW Support (ES)	B
c.	Joint Restricted Frequency List (JRFL)	B

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6. AUTOMATION TOOLS AND THE SPECTRUM MANAGER	
a. SPECTRUM XXI	B
b. Frequency Assignment Record System (FARS)	B
c. Joint Automated Communications Electronics Operating Instructions (CEOI) System (JACS)	B
d. Joint Operational Planning & Execution System (JOPES)	B
e. Global Command & Control System (GCCS)	B
f. Theater Battlefield Management Core System (TBMCS)	B
7. ELECTROMAGNETIC BATTLESPACE MANAGEMENT	
a. Develop Spectrum Use Plan	2b
b. Allotment, Allocation and Assignment	B
c. Intelligence System Coordination	B
(1) Classification Requirements	A
(2) Coordination Processes	A
(3) Spectrum Requirements	A
d. Electromagnetic Battlespace (EMB)	
(1) Area of Interest (AOI)	C
(2) Electromagnetic Environment (EME)	C
(3) Area of Operation (AO)	C
(4) Area of Responsibility	C
(5) Electronic Order of Battle (EOB)	C
(6) Electromagnetic Environmental Effects (E3)	C
e. Electromagnetic Environmental Effects (E3)	C
8. DEVELOP THE EMB USING SPECTRUM XXI	
a. Build database by importing data	
(1) ITU	3c
(2) FRRS	3c
(3) NTIA's Government Master File (NTIA GMF)	3c
(4) Federal Communications Commission (FCC)	3c
(5) Joint Spectrum Center (JSC) Area Studies	3c
b. Update database using data exchange	3c
c. Assign frequencies, provide to the requestor and update database	3c
d. Import allotments into the Allotment Plan Generator (APG)	3c

Task, Knowledge, and Proficiency Levels

e. Import Frequency proposals	3c
f. Nominate	3c
g. Assign Frequencies	3c
h. Data Exchange (update database)	3c
i. Export Assignments using JACS	3c
j. Import JACS modified frequency assignments	3c
k. Create entries to the JRFL	
(1) Assignment Database	3c
(2) CEOI Manager	3c
(3) Manual Entry (keyboard)	3c
l. Perform EW de-confliction	3c
m. Perform Interference Analysis	3c
n. Utilize System Manager	3c
o. Research JF-12 Database	3c
p. Engineering Tools	3c
q. Complete an Interference Report	3c
9. JACS	
a. Import Resources from Spectrum XXI	3c
b. Export Frequency Proposals to Spectrum XXI	3c
c. Create Master Net List	
d. CINC/JOINT/Air Component (AC) net names and descriptions	B
e. RBECS	
(1) Import	3c
(2) Export	3c
f. CEOIs	
(1) Merge	3c
(2) Modify	3c
g. Develop	
(1) Smoke/Pyrotechnics Pages	3c
(2) Sign/Counter Sign List	3c
(3) Suffixes/Expander List	3c
(4) Quick reference pages	3c

Task, Knowledge, and Proficiency Levels

h. Generate	
(1) JCEOI	3c
(2) Transmission security (TRANSEC) Keys (TSK)	2b
(3) Single Channel Ground & Air Radio (SINCGARS) Hopsets	2b
i. Develop load sets	3c
j. Publish JCEOI	3c
k. Disseminate JCEOI	3c
l. Export JCEOI for Spectrum XXI	3c
10. PRODUCT FAMILIARIZATION	
a. Air Tasking Order (ATO)	A
b. Electromagnetic Compatibility Analysis Program (EMCAP) Plan	A
c. Operational Task Communications (OPTASK COMM)	A
11. PROCEDURES FOR REPORTING INTERDERENCE	C
12. JTF SPECTRUM DEPENDENT SYSTEMS	
a. JTF Air Ground System	
(1) Air Force Theater Air Control System (TACS)	B
(2) Army Air-Ground System (AAGS)	B
(3) Marine Air Command and Control System (MACCS)	B
(4) Navy Tactical Air control System (NTACS)	B
b. Land Area Support	
(1) Echelon Above Corps (EAC)	A
(2) Corps	A
(3) Infantry Division	A
(4) Brigade Combat Team (BCT)	A
(5) Long Range Surveillance Detachment (LRSD)	A
c. Maritime Support	
(1) Carrier Battle Group (CVBG)	A
(2) Surface Warfare Operations	A
(3) Logistic Force Units	A
(4) Mine Warfare Units	A
(5) Naval Coastal Warfare Participants	A
d. Amphibious Expeditionary/Support	
(1) Marine Air-Ground Task Force (MAGTF)	A
(2) Marine Expeditionary Force (MEF)	A

Task, Knowledge, and Proficiency Levels

(3) Marine Expeditionary Brigade (MEB)	A
(4) Marine Expeditionary Unit (MEU)	A
(5) Amphibious Readiness Group (ARG)	A
e. Air Expeditionary Support	
(1) Air Expeditionary Forces (AEF)	A
(2) Special Operations Forces (SOF)	A
13. SPECTRUM USE CONSIDERATIONS	
a. Navigational Systems	A
b. Airborne Radar Systems	A
c. Airborne Command and Control Platforms	A
d. Unmanned Aerial Vehicles (UAV)	A
e. Satellite Systems	A
f. Naval Radar Systems	A
g. Microwave Systems	A
h. Ground Radar Systems	A
i. Airborne Data Links	A
j. EW Platforms	A
k. Weapons Systems	A
l. Tropo-Satellite Support Radio (TSSR)	A
m. Air Defense Missile Systems	A
n. Wide Band Systems	A
o. Line-Of-Sight (LOS) Systems	A
p. Spread Spectrum Systems	A
q. Frequency Agile Systems	A
r. National Command Authority (NCA) Systems	A
s. Commercial Systems	A
t. Land Mobile Radio (LMR) Systems	A
u. Air Refueling Tracks	A
v. Frequency Hopping Systems	A
14. SPECTRUM MANAGEMENT PUBLICATIONS AND DIRECTIVES	
a. Chairman, Joint Chiefs of Staff Instruction (CJCSI) 3320 Series	B
b. Chairman, Joint Chiefs of Staff Instruction (CJCSI) 3320 Series	B

Task, Knowledge, and Proficiency Levels

c. Military Communications Electronics Board (MCEB) Pub 7	B
d. Allied Communications Publications (ACP)	B
e. Joint Army, Navy, Air Force Publication (JANAP)	B
15. INFORMATION SOURCES & DATABASES	
a. United States Electromagnetic Systems (USELMS)	A
b. JSC Data Access Web Server (JDAWS)	A
c. Tactical Database (TACDB)	A
d. Electronic Order of Battle (EOB)	A
e. Equipment Characteristics Systems (ECS)	A
f. SPACECOM UHF Channelization Database	A
g. Janes Defense Publications	A
h. DoD Flight Information Pamphlet (FLIP)	A
i. World Radio & Television Handbook (WRTH)	A

Section B - Course Objective List

4. Measurement. Each objective is indicated as follows: W indicates task or subject knowledge which is measured using a written test, PC indicates required task performance which is measured with a performance progress check, and PC/W indicates separate measurement of both knowledge and performance elements using a written test and a progress check.

5. Standard. The standard is 70% on written examinations. Standards for performance measurement are indicated in the objective and delineated on the individual progress checklist. Instructor assistance is provided as needed during the progress check, and students may be required to repeat all or part of the behavior until satisfactory performance is attained.

6. Proficiency Level. Most task performance is taught to the "2b" proficiency level which means the student can do most parts of the task, but does need assistance on the hardest parts of the task (partially proficient). The student can also determine step-by-step procedures for doing the task.

7. Course Objectives. These objectives are listed in the sequence taught by Block of Instruction. Because the communications career field is ever changing, we are providing a website with a "living" course objective list (COL). As changes are made to the courses they will also be made to the website. Use the following link to get started, then navigate to the COL by selecting the 81 TRW, 81 TRG, and finally the 336 TRS to locate the COL for the C-CS Operations courses. <https://wwwmil.keesler.af.mil/>.

Section C - Support Materials

8. The following list of support materials is not all-inclusive; however, it covers the most frequently referenced areas. The most current products can be found at the 81 TRSS/TSQ web page, and are available for download from the web site at <https://wwwmil.keesler.af.mil/81trss/qflight/index.htm>. These training products are also listed in AFIND 8, though not as current. Procedures for requesting product development are found in AFI 36-2233.

8.1. Generic AFJQSs/AFQTPs training products applicable to AFSC 3C1X2:

<u>Publication No.</u>	<u>Pseudo File Code</u>	<u>Publication Title</u>
AFQTP XXXXX-200A	N/A	Introduction to Command, Control and Communications Protection
AFJQS XXXXX-211N	XXXXX-211.14	Installation Spectrum Management
AFQTP 3CXXX-212A	N/A	Work Center Supervisor's Handbook

Section D - Training Course Index

9. Purpose. This section of the CFETP identifies training courses available for continuation/ supplemental training. 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://etca.randolph.af.mil/>.

10. Air Force In-Residence Courses.

<u>Course Number</u>	<u>Course Title</u>	<u>Location</u>
E3ALR3C132 003	Electromagnetic Spectrum Management	Keesler

11. Air Force Institute for Advanced Distributed Learning (AFIADL) Courses.

For a current listing of AFIADL courses go to <http://www.maxwell.af.mil/au/afiadl>.

12. Exportable Courses.

For a current list of the available CBT courses refer to https://www.smartforce.com/learning_community/Custom/USAF/login.asp

13. Courses Under Development/Revision.

<u>Course Number</u>	<u>Course Title</u>	<u>Location</u>
E3AZR3C172 001	Joint Task Force Spectrum Manager	Keesler

Section E - MAJCOM Unique Requirements

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