

T&R MANUAL, METOC

CHAPTER 1

APPRENTICE METOC ANALYST - 6821

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CHAPTER 1

APPRENTICE METOC ANALYST - 6821

100. CORE COMPETENCIES/SKILLS

1. Meteorological and Oceanographic (METOC) Unit Mission. The mission of the Marine Corps METOC Unit is to provide meteorological, oceanographic, and space environmental information, products, and services required in support of joint, combined, and Marine Corps operations as directed.

2. Mission Essential Task List (METL)

a. Collect, record, and disseminate METOC parameters in support of joint, combined, and Marine Corps operations.

b. Analyze, evaluate, and forecast METOC parameters in support of joint, combined, and Marine Corps operations.

c. Assess and disseminate METOC impacts to weapons systems in support of joint, combined, and Marine Corps operations.

3. METOC Core Capability

a. Core competent aviation METOC units are capable of:

(1) Supporting continuous (24/7) aviation operations based from a forward operating base (FOB) with remote atmospheric sensing capabilities for up to two Forward Arming and Refueling Points (FARP).

(2) Providing continuous 24/7 environmental support to CONUS and OCONUS garrison Marine Corps Air Stations and Facilities in the form of seamless METOC surface and upper air observations and forecasts out to 96 hours.

(3) Providing timely and accurate weather warnings to local bases and stations for protecting resources.

b. Core competent METOC Support Teams (MST) are capable of:

(1) Providing continuous METOC support to non-aviation elements of the MAGTF during planning, execution, and debrief of all missions.

(2) Providing mission and task organized, rapidly deployable METOC capabilities that enhance the unit commander's ability to exploit the environment and facilitate mission success.

101. PROGRAMS OF INSTRUCTION (POI) FOR BASIC AND TRANSITION APPRENTICE METOC ANALYST

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-11	MARINE CORPS WEATHER OBSERVER/COMBAT CAPABLE	KEESLER AFB, MS
12-25	OBSERVER CERTIFICATION/COMBAT CAPABLE	LOCAL METOC
26-47	COMBAT READY TRAINING	LOCAL METOC
48-64	COMBAT QUALIFICATION TRAINING	LOCAL METOC

65-WC            FULL COMBAT QUALIFICATION TRAINING            LOCAL METOC

102. PROGRAM OF INSTRUCTION (POI) FOR RESERVE APPRENTICE METOC ANALYST

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-11	MARINE CORPS WEATHER OBSERVER/COMBAT CAPABLE	KEESLER AFB, MS
12-25	OBSERVER CERTIFICATION/COMBAT CAPABLE	LOCAL METOC
26-47	COMBAT READY TRAINING	LOCAL METOC
48-64	COMBAT QUALIFICATION TRAINING	LOCAL METOC
65-WC	FULL COMBAT QUALIFICATION TRAINING	LOCAL METOC

103. SUMMARY/INDEX OF LIVE/SIMULATED EVENTS. Tables 1-1 thru 1-4 contain listings of the Apprentice METOC Analyst's Combat Capable, Combat Ready, Combat Qualification and Full Qualification training events with associated page numbers.

Table 1-1.--Apprentice METOC Analyst Combat Capable Training Events.

<b>EVENT</b>	<b>GOAL</b>	<b>PAGE</b>
FAM-100	Familiarization basic meteorology	1-15
FAM-101	Familiarization with intermediate meteorology and oceanography	1-15
FAM-102	Familiarization with observations	1-16
FAM-103	Familiarization with the training and readiness manual	1-16
EFT-104	To certify knowledge of training and readiness manual	1-17
EFT-105	Familiarization with basic computer operations	1-17
EFT-106	Familiarization with meteorological satellites	1-18
EFT-107	Familiarization with advanced meteorology	1-18
EFT-108	Familiarization with meteorological chart analysis	1-19
EFT-109	Familiarization with meteorological equipment	1-19
EFT-110	Familiarization with advanced computer analysis	1-19
EFT-111	Familiarization with Doppler radar fundamentals and interpretation	1-20
EFT-112	Familiarization with routine METOC product processing	1-20
EFT-113	Familiarization with weather feature prognosis techniques	1-21
EFT-114	Familiarization with forecasting techniques and procedures	1-21
EFT-115	Familiarization with application of meteorological theories	1-21
ACP-116	Certify knowledge of METOC Standard Operating Procedures (SOP)	1-23
ACP-117	Certify knowledge of METOC mission	1-23
ACP-118	Certify knowledge of orders and directives governing METOC support	1-23
ACP-119	Certify knowledge of the quality assurance program	1-24
ACP-120	Complete security clearance/access request	1-24
ACP-121	Certify knowledge of security requirements	1-24
ACP-122	Certify knowledge of communication configurations and procedures	1-25
ACP-123	Certify knowledge of garrison METOC equipment	1-25

Table 1-1.--Apprentice METOC Analyst Combat Capable Training Events--  
Continued.

EVENT	GOAL	PAGE
ACP-124	Certify knowledge of tactical METOC equipment	1-25
ACP-125	Certify proficiency at operating hand-held meteorological devices	1-26
ACP-126	Certify knowledge of METOC software applications	1-26
ACP-127	Certify knowledge of locally generated METOC support products	1-26
ACP-128	Certify proficiency at weather warning dissemination procedures	1-27
ACP-129	Certify knowledge of dynamic meteorology fundamentals	1-27
ACP-130	Certify knowledge of surface observation fundamentals	1-28
ACP-131	Certify proficiency at Automated Surface Observing System (ASOS) system commands	1-28
ACP-132	Certify proficiency at ASOS observing procedures	1-28
ACP-133	Certify proficiency at manual sensing equipment operations	1-29
ACP-134	Certify knowledge of computed value procedures	1-30
ACP-135	Certify proficiency at calculating pressure altitude	1-30
ACP-136	Certify proficiency at calculating density altitude	1-30
ACP-137	Certify proficiency at wet bulb globe temperature index	1-31
ACP-138	Certify proficiency at electronic WBGTI operations	1-31
ACP-139	Certify proficiency at calculating wind chill temperatures	1-31
ACP-140	Certify proficiency at lightning detection equipment operation	1-32
ACP-141	Certify knowledge of basic meteorological radar operations	1-32
ACP-142	Certify knowledge of Doppler radar products	1-32
ACP-143	Certify knowledge of upper air messages and the Skew-T Log P diagram	1-33
ACP-144	Certify proficiency at plotting and analyzing a Skew-T Log P diagram	1-33
ACP-145	Certify proficiency at plotting warnings	1-34
ACP-146	Certify proficiency at plotting a local area work chart (LAWC)	1-34
ACP-147	Certify knowledge of ceiling balloon operations	1-34
ACP-148	Certify pilot balloon (PIBAL) procedures and equipment	1-34
ACP-149	Certify proficiency at conducting PIBALS	1-35
ACP-150	Certify proficiency at pilot report (PIREP) procedures	1-35
ACP-151	Certify knowledge of METOC reports	1-35
ACP-152	Certify proficiency at calculating astronomical data	1-36
ACP-153	Certify proficiency at calculating tidal data	1-36
AMO-155	Conduct weather watch functions	1-37

Table 1-2.--Apprentice METOC Analyst Combat Ready Training Events.

EVENT	GOAL	PAGE
AFM-200	Introduce the elements and terms used in surf observations	1-37
AFM-201	Introduce upper air observational equipment and procedures	1-38
AFM-202	Introduce subsystems inherent to the METMF(R)	1-38
AFM-203	Introduce locally generated forecast products	1-39
AFM-204	Introduce locally generated reports and messages	1-40
AFM-205	Introduce graphical METOC products	1-40
AFM-206	Introduce flight weather products	1-41
AFM-207	Introduce oceanographic/littoral warfare products	1-41
AFM-208	Introduce tactical decision aid (TDA) products	1-41
AFM-209	Introduce elements forecasted from a Skew-T Log P diagram	1-42
AFM-210	Introduce weather warning and advisory issuance criteria and procedures	1-42
AMO-211	Develop proficiency at establishing tactical observation operations	1-43
AMO-212	Develop proficiency at utilizing tactical automated sensing equipment	1-43
AMO-213	Develop proficiency at conducting surf observations	1-44
AMO-214	Develop proficiency at METMF(R) power operations	1-44
AMO-215	Develop proficiency at METMF(R) deployment procedures	1-44
AMO-216	Develop proficiency at upper air observation operations	1-45
AMO-217	Generate astronomical, tidal, and climatological data	1-45
AMO-218	Compute modified surf index (MSI)	1-45
AMO-219	Generate optimum path aircraft routing system (OPARS) products	1-46
AMO-220	Generate meteorological and oceanographic charts	1-46
AMO-221	Demonstrate knowledge of security procedures	1-46
AMO-222	Display operating knowledge of tactical satellite system(s)	1-47
AMO-223	Display operating knowledge of tactical Doppler radar system	1-47
AMO-224	Conduct limited METOC operations utilizing man portable METOC equipment.	1-47
AMO-225	Operate the garrison Doppler radar system	1-48
AMO-226	Install a wet bulb temperature index (WBGTI) set	1-48
AMO-227	Perform basic surface chart analysis	1-48
AMO-228	Perform basic thickness chart analysis	1-49
AMO-229	Perform basic upper atmospheric chart analysis	1-49
AMO-230	Perform basic satellite imagery analysis	1-49
AMO-231	Perform basic radar imagery analysis	1-50
CMO-232	Generate tactical decision aids in support of METOC assessment operations	1-50

Table 1-3.--Apprentice METOC Analyst Combat Qualification Training Events.

EVENT	GOAL	PAGE
AMO-300	Conduct watch turnover procedures	1-51
AMO-301	Conduct logistical support functions	1-51
AMO-302	Conduct forward area limited observational program (FALOP)	1-51
AMO-303	Maintain METOC data in central server database	1-52
AMO-304	Operate HF/VHF/UHF/SHF communication devices	1-52
AMO-305	Perform security procedures	1-52
AMO-306	Perform advanced meteorological radar operations	1-53
AMO-307	Perform advanced satellite system operations	1-53
AMO-308	Identify meteorological features on satellite imagery	1-54
AMO-309	Identify meteorological features on radar imagery	1-54
FST-310	Demonstrate knowledge of atmospheric physics	1-55
FST-311	Demonstrate knowledge of atmospheric dynamics	1-55
FST-312	State the advantages/disadvantages and analysis techniques of meteorological satellite imagery	1-56
FST-313	Introduce theories of atmospheric dynamics and physics application through synoptic scale analysis	1-56
FST-314	Introduce synoptic scale forecasting and prognosis techniques	1-57
FST-315	Introduce global and regional METOC model data	1-57
FST-316	Introduce weather element forecasting techniques	1-58
FST-317	Introduce forecasting convective and non-convective severe weather techniques	1-58
FST-318	Introduce aviation weather forecasting techniques and procedures	1-58
FST-319	Introduce weather warning and advisory criteria	1-59
FST-320	Brief a METOC chart set	1-59
FST-321	Certify knowledge of local area forecast content and format	1-59
FST-322	Certify knowledge of terminal aerodrome forecast content and format	1-60
FST-323	Introduce flight weather briefing knowledge	1-60
FST-324	Certify knowledge of flight weather packets	1-61
FST-325	Draft and conduct a climatological brief	1-61

Table 1-4.--Apprentice METOC Analyst Full Combat Qualification Training Events.

EVENT	GOAL	PAGE
AMO-400	Conduct tower visibility observer training	1-62
AMO-401	Conduct intermediate networking	1-62
AMO-402	Perform quality assurance check on observational, climatological, tidal, and station reports.	1-63
AMO-403	Implement established embarkation procedures for the METMF(R)	1-63

Table 1-4.--Apprentice METOC Analyst Full Combat Qualification Training Events--Continued.

EVENT	GOAL	PAGE
AMO-404	Maintain meteorological data in central server database	1-64
AMO-405	Generate a METOC capabilities briefing	1-64
FSC-406	To certify knowledge of atmospheric fundamentals	1-65
FSC-407	To certify knowledge of analyzing and interpreting upper atmospheric weather charts	1-66
FSC-408	To certify knowledge of analyzing and interpreting a surface chart	1-66
FSC-409	To certify knowledge of analyzing and interpreting a thickness chart	1-67
FSC-410	To certify knowledge of analyzing and interpreting a vorticity chart	1-67
FSC-411	To certify knowledge of conducting a streamline analysis	1-67
FSC-412	To certify knowledge of analyzing and forecasting atmospheric conditions from the Skew-T Log P diagram	1-68
FSC-413	To certify knowledge of applied meteorological reasoning in the forecasting of movement and intensity of synoptic scale features	1-68
FSC-414	To certify knowledge of forecasting severe weather	1-69
FSC-415	To certify briefing of METOC features from (re)analyzed products	1-69
FSC-416	To certify knowledge of terminal aerodrome forecast (TAF) content and forecast	1-70
FSC-417	To certify knowledge of weather warnings	1-70
FSC-418	To certify knowledge of flight weather briefing	1-71
FSC-419	To certify knowledge of flight weather packets	1-72
FSC-420	To certify knowledge of verifying meteorological model output	1-72
FSO-421	Conduct forecast support operations	1-73
FSO-422	Receive recommendation for attendance to MOAF course	1-73

104. SUMMARY/INDEX OF REQUIREMENTS/DESIGNATIONS AND QUALIFICATIONS. Table 1-5 contains a listing of the events for requirements, qualifications, and designations with associated page numbers.

Table 1-5.--Requirements, Qualification, Designation List.

EVENT	GOAL	PAGE
SEC-600	Tracking code for secret clearance	1-74
SEC-601	Tracking code for top secret clearance	1-74
ACA-602	Enroll and complete the Aerographer's Module 1	1-74
ACA-603	Enroll and complete the Aerographer's Module 2	1-74
ACA-604	Enroll and complete the principles of Oceanography	1-75

Table 1-5.--Requirements, Qualification, Designation List--Continued.

EVENT	GOAL	PAGE
ACA-605	Enroll and complete the Aerographer's Module 3	1-75
ACA-606	Enroll and complete the Aerographer's Module 4	1-75
ACA-607	Enroll and complete the Aerographer's Module 5	1-75
ACA-608	Enroll and complete introduction to forecasting	1-76
ACA-609	Obtain qualification as an Apprentice METOC Analyst	1-76
ACA-611	Obtain forecast support qualification	1-76
ACA-612	Designation of lead METOC apprentice	1-77

## 110. ACADEMIC TRAINING

1. General. Meteorological and oceanographic support revolves around products derived from raw data that will be plotted, analyzed, and interrogated using analytical rigor based on knowledge and application of meteorological theories, rules of thumb and computer model algorithms. In order to become proficient within the METOC structure, all 6800 personnel receive academic training in meteorological and oceanographic sciences.

### 2. Pre-requisites

a. The Military Occupational Specialties (MOS) Manual (MCO P1200.7) outlines the requirements for all MOS(s) in the Marine Corps.

b. Personnel in the 6821 MOS transition to the 6842 MOS through attendance and completion of the Meteorological and Oceanographic Analyst/Forecaster (MOAF) course aboard Keesler AFB, MS. Successful completion of the following pre-requisites are required in order to attend the course:

- (1) Oceanography Course (Event: ACA 604).
- (2) Aerographer's Mate Module 5 Course (Event: ACA-607) or Marine Corps Distance Learning Course Basic Meteorology - DT68005.
- (3) Introduction to Forecasting Course (Event: ACA-608).
- (4) Final Top Secret Clearance adjudicated by DONCAF. (Event: ACA-601).
- (5) Apprentice METOC Analyst Qualification (Event: QAL-609).
- (6) Forecast Support Qualification (Event: QAL-611).
- (7) Lead METOC Designation preferred (Event: DES-612).
- (8) Recommendation for MOAF attendance (Event: FSO-422).

3. Security. All personnel assigned the 6821 MOS are required to be eligible for top secret clearance per the MOS Manual.

4. Academic training. Formal academic training courses are required to ensure uniform levels of training in core competencies and skills. Formal schools are schools that receive Navy and Marine Corps educational funding and have approved syllabi.

a. Coding

(1) Formal schools are coded by the Course Identification Number (CIN) for Navy courses and Course Identification (CID) for Marine Corps courses.

(2) Informal course materials are coded to facilitate inclusion in the events.

b. Formal courses. Formal courses required for completion of the Basic Program of instruction (POI) are:

(1) the Marine Corps Weather Observer Course, or

(2) the Air Force Weather Apprentice Course.

c. Supplemental Courses. A listing of academic courses available to enhance the syllabus or required to complete the syllabus are listed in Appendix A.

5. References. Appendix B contains a listing of references utilized in the development of the training and readiness syllabus. Individual training events require adherence to the references contained within the table. Due to the comprehensive nature of the events, extensive references, and rapid changing content, including references in each event would not be prudent. Resident knowledge of the references lies within the METOC Analyst Instructor (MAI), Master METOC Analyst (MMA), and METOC officer.

120. EVENT TRAINING

1. Progression Model. Figure 1-1 depicts the training progression model for the 6821 MOS.

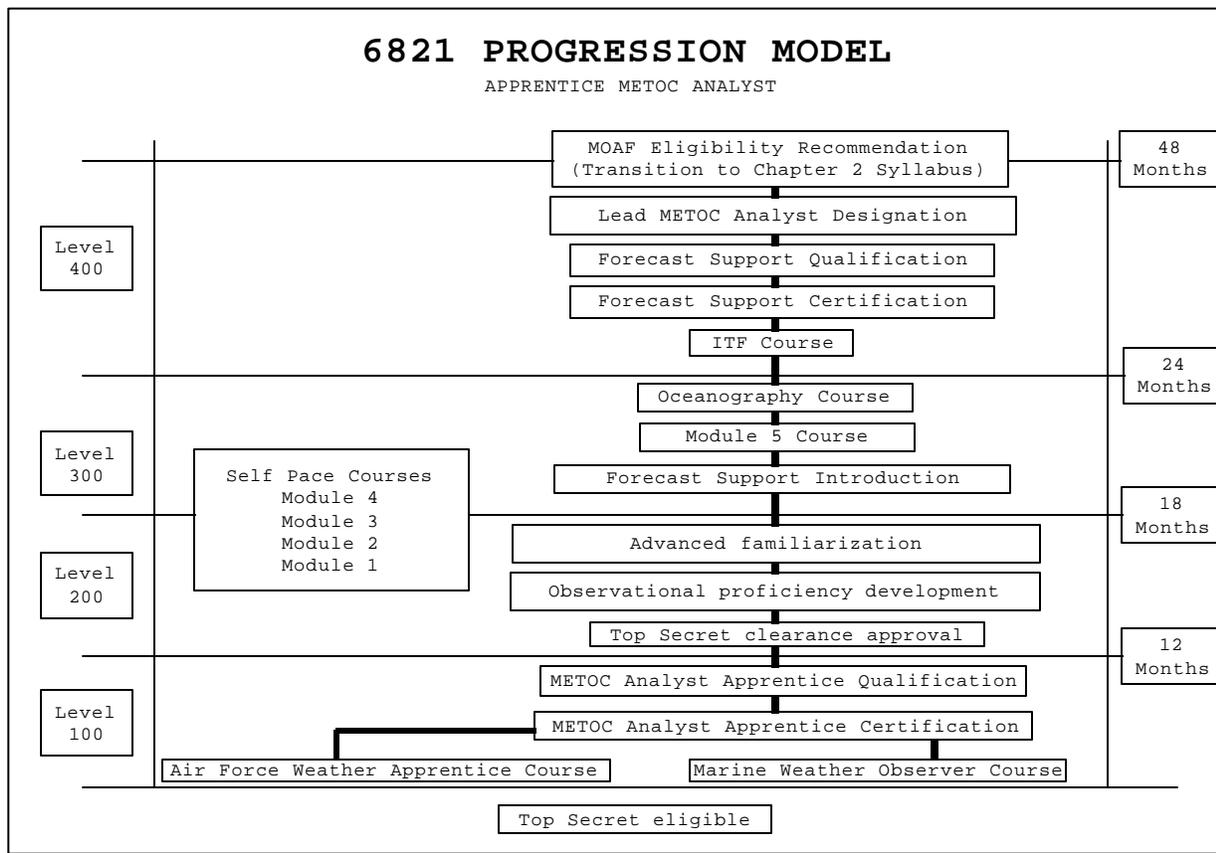


Figure 1-1.--Progression Model for 6821 Military Occupational Specialty.

121. EVENT/CRP. Table 1-6 provides a listing of the events, hours and combat readiness percentages for each stage/phase of the syllabus.

Table 1-6.--Event/CRP Breakdown Table.

COMBAT CAPABLE STAGE OF TRAINING			
STAGE	EVENTS	HOURS	PERCENT
FAMILIARIZATION (FAM)	4	424	40
ENHANCED FAMILIARIZATION TRAINING (EFT)	12	305.5	40
APPRENTICE CERTIFICATION PROCESS (ACP)	38	164	15
APPRENTICE METOC OPERATIONS (AMO)	1	180	5
<b>COMBAT CAPABLE TOTALS:</b>	<b>55</b>	<b>1073.5</b>	<b>60</b>
COMBAT READY STAGE OF TRAINING			
ADVANCED FAMILIARIZATION (AFM)	11	66	5
APPRENTICE METOC OPERATIONS (AMO)	21	206	10
<b>COMBAT READY TOTALS:</b>	<b>32</b>	<b>272</b>	<b>15</b>

Table 1-6.--Event/CRP Breakdown Table--Continued.

COMBAT QUALIFICATION STAGE OF TRAINING			
APPRENTICE METOC OPERATIONS (AMO)	10	72	10
FORECAST SUPPORT TRAINING (FST)	16	131	10
<b>COMBAT QUALIFICATION TOTALS:</b>	<b>26</b>	<b>203</b>	<b>20</b>
FULL COMBAT QUALIFICATION STAGE OF TRAINING			
APPRENTICE METOC OPERATIONS (AMO)	6	13	1
FORECAST SUPPORT CERTIFICATION (FSC)	15	118	2
FORECAST SUPPORT OPERATIONS (FSO)	2	61	2
<b>FULL COMBAT QUALIFICATION TOTALS:</b>	<b>23</b>	<b>192</b>	<b>5</b>

### 130. EVENT PERFORMANCE REQUIREMENTS

1. Purpose. The purpose of training and readiness (T&R) manual events is to enhance combat readiness of METOC units. Core and core plus skills are advanced through the implementation of events, approved by fleet representation, to provide a measurable and chronological advancement of skills.

#### 2. General

a. This Manual is written to allow for local requirements and yet remain unclassified. DC AVN and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest in training requirements.

b. Live Training. Training event condition codes listed as **L** (live), **L/S** (live preferred/simulator optional) in this syllabus designate training to be conducted without the aid of simulator devices. Training not conducted in the live training environment shall be replaced with simulation where applicable as indicated in the condition code. A number of the live and simulated events require interaction with external C3 agencies. This interaction/interface is important to the individual, crew, and agency training.

c. Simulator Training. Training event condition codes listed as **S** (simulator), and **S/L** (simulator preferred/live optional) in this syllabus designate training to be conducted as indicated in the condition code. A number of the live and simulated events require interaction with external agencies. This interaction/interface is important to the individual, crew, and agency training.

3. Evaluation of Training. Evaluation will be conducted by either written/oral examination or a combination of the two means. Operational and system related subjects will be evaluated by practical application means whenever possible. At the commanders' discretion, a Marine may receive credit for task completion through an oral explanation of the steps rather than by performing the task.

#### 4. Implementation

a. Unit commanders are the designating authority. Unit commanders may further delegate, in writing, designation authority to the METOC Officer in Charge (OIC) or senior Staff Non-commissioned in charge in the absence of a METOC Officer. Assigning completion credit for events resides with the designating authority and may be delegated as outlined.

b. Events shall be conducted by the designated trainee and administered, evaluated, and documented (once completed) by the designating authority.

c. Documentation and tracking of event completion and progression will be completed by use of the ATRIMS program and in individual training jackets.

5. Components of a T&R Event. An event contained within a T&R Manual is an individual or collective training standard and the following elements, dependent on the tier in which they are contained:

1/ SAM-XXX	2/ 0.5	3/ T,C,R, E	4/ EQUIP	5/ EQUIP	6/ L/S (NS)	7/ L/S (NS)
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Goal. State the terminal-learning objective.

Requirement. List the specific tasks for the event; indicate what the crew/individual must accomplish.

Performance Standards. Describe the measurable level of proficiency for that core competency/skill.

Prerequisite. Provides a listing of academic training or other T&R events that must be completed before satisfying the task.

External Syllabus Support. A listing or description of the external support requirements that may be required to satisfy the completion of the task. May include range requirements, support aircraft, targets, training devices, or other personnel and equipment.

#### NOTES:

1/ Events are coded per Appendix B of Aviation T&R Program Manual.

2/ Projected event duration is furnished as a planning tool.

3/ Denotes the applicable Program of Instruction (Basic POI is understood), Z is reserve, R is refresher.

4/ An "E" indicates an Evaluated event.

5/ The equipment or activity subcategory is listed **GE** = Garrison Equipment; **M** = METMF(R); **N** = NITES IV; **C** = Computer System

6/ Requirement Code: **L** = live Training; **S** = simulator training; **L/S** = live preferred/simulator optional; **S/L** = simulator preferred/live optional; **N** = Night; Where contained within ( ) denotes optional conditions.

7/ Elements of the events may be deleted if not applicable to the event. (example: External Syllabus Support may be deleted if not required for the event)

6. Event Codes. Table 1-7 provides a listing of event codes utilized in Chapter 1 of the syllabus.

Table 1-7.--Event Code and Description.

Event Code	Description
FAM	FAMILIARIZATION
EFT	ENHANCED FAMILIARIZATION TRAINING
ACP	APPRENTICE CERTIFICATION PROCESS
AMO	APPRENTICE METOC OPERATIONS
AFM	ADVANCED FAMILIARIZATION TRAINING
FST	FORECAST SUPPORT TRAINING
FSC	FORECAST SUPPORT CERTIFICATION
FSO	FORECAST SUPPORT OPERATIONS
ACA	ACADEMIC TRACKING CODES
SEC	SECURITY TRACKING CODES
QAL	QUALIFICATIONS
DES	DESIGNATIONS

### 131. COMBAT CAPABLE TRAINING

#### 1. Familiarization (FAM)

a. Purpose. To introduce the Basic METOC Marine to the core skills of mission knowledge, products, equipment, security, and operations required for METOC support.

#### b. General

(1) Administrative Notes. Events in this portion will be completed and documented at the Marine Corps Weather Observer Course held at Keesler Air Force Base, Mississippi.

(2) Prerequisites. Eligible for Secret Clearance.

(3) Crew Requirements. Basic METOC Marine, Formal Schools Instructor.

#### c. Academic training

(1) Consideration is being given to the introduction of all Core Skills during the initial assession training of 6800 personnel. In order to ensure training standards reflect this consideration, two assession tracks are contained within this chapter. Currently all personnel are required to complete only the Familiarization (FAM) stage of the syllabus. Enhanced familiarization training events are for selected personnel that attend the Air Force Apprentice Forecaster Course.

(2) Academic training for each event in this phase shall be conducted by a Qualified Formal Schools Instructor.

(3) Event academic pre-requisites must be completed before the commencement of the event. No waivers for academic pre-requisites will be acceptable to ensure comprehensive knowledge of the subject.

d. Event Training

FAM-100	51	Z	E	N/A	L
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Goal. Familiarization with basic meteorology.

Requirement. Receive academic training on the core meteorological skills and knowledge listed and exhibits retention of the knowledge through formal (written) testing.

- (1) Heat transfer.
- (2) Atmospheric physics.
- (3) General circulations.
- (4) Composition of the atmosphere.
- (5) Winds.
- (6) Pressure systems.
- (7) Frontal systems.
- (8) Turbulence.
- (9) Cloud physics.
- (10) Convective severe weather phenomena.
- (11) Non-convective severe weather phenomena.
- (12) Tropical weather systems.
- (13) Icing.
- (14) Air mass types and source regions.
- (15) Weather sensitivities.
- (16) Space environment.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction.

External Syllabus Support. Marine Corps Weather Observer Course.

FAM-101	48	Z	E	N/A	L
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Goal. Familiarization with intermediate meteorology and oceanography.

Requirement. Receive academic training on the core meteorological skills and knowledge listed and exhibits retention of the knowledge through formal (written) testing.

- (1) Descriptive regional climatology.
- (2) Heat transfer.
- (3) Atmospheric physics.
- (4) General circulation.
- (5) Atmospheric composition.
- (6) Winds.
- (7) Jet streams.
- (8) Advection.

- (9) Cloud physics.
- (10) Air mass type and source regions.
- (11) Air mass modifiers.
- (12) Oceanography - currents.
- (13) Oceanography - vertical motions.
- (14) Oceanography - waves and tides.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, FAM-100.

External Syllabus Support. Marine Corps Weather Observer Course.

FAM-102	68	Z	E	N/A	L
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Goal. Familiarization with observations.

Requirement. Receive academic training on the core meteorological skills and knowledge listed and exhibits retention of the knowledge through formal (written) testing.

- (1) METAR requirements and procedures.
- (2) Decode METAR observations.
- (3) Encode pilot reports.
- (4) Decode pilot reports.
- (5) Decode land synoptic observations.
- (6) Decode ship synoptic observations.
- (7) Decode Rawinsonde reports.
- (8) Air mass sounding evaluations.

Performance Standard. Identify and technically discuss the subjects listed. The Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction. FAM-100 to FAM-101.

External Syllabus Support. Marine Corps Weather Observer Course.

FAM-103	1	Z	E	N/A	L
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Goal. Familiarization with the Training and Readiness Manual.

Requirement. Exhibit knowledge of the composition and requirements associated with Training and Readiness Manual.

Performance Standard. Discuss the components, composition and procedures for completing requirements of the Training and Readiness Manual.

Prerequisite. Academic periods of instruction, FAM 100 to FAM-102.

External Syllabus Support. Marine Corps Weather Observer Course.

2. Enhanced Familiarization Training (EFT)

a. Purpose. To introduce intermediate core fundamentals of meteorological theories and principles require to collect, record, analyze, forecast and assess METOC parameters required of the Basic METOC Marine.

b. General

(1) Administrative Notes. Events in this portion are for personnel who attend the Air Force Weather Apprentice course ONLY. All other personnel can have this portion of the syllabus waived and advance to the next stage of instruction (Apprentice Certification Phase).

(2) Prerequisites. Eligible for Secret Clearance.

(3) Crew Requirements. Basic METOC Marine, Formal Schools Instructor.

c. Academic Training

(1) Consideration is being given to the introduction of all Core Skills during the initial assession training of 6800 personnel. In order to ensure training standards reflect this consideration, two assession tracks are contained within this chapter. Currently all personnel are required to complete only the Familiarization (FAM) stage of the syllabus. Enhanced familiarization training events are for selected personnel that attend the Air Force Apprentice Forecaster Course.

(2) Academic training for each event in this phase shall be conducted by a Qualified Formal Schools Instructor.

(3) Event academic prerequisites must be completed before the commencement of the event. No waivers for academic prerequisites will be acceptable to ensure comprehensive knowledge of the subject.

d. Event Training

EFT-104	1	Z	E	N/A	L
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Goal. To certify knowledge of Training and Readiness Manual.

Requirement. Exhibit knowledge of the composition and requirements associated with Training and Readiness Manual.

Performance Standard. Discuss the components, composition and procedures for completing requirements of the Training and Readiness Manual.

Prerequisite. Academic periods of instruction.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-105	10	Z	E	C	L
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Goal. Familiarization with basic computer operations.

Requirement. Receive academic training on basic computer operating skills and exhibit retention of the knowledge through formal (written) testing.

Performance Standard. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-106	40.5	Z	E	N/A	L
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Goal. Familiarization with meteorological satellites.

Requirement. Receive academic training on the meteorological satellite skills and knowledge listed, then exhibit retention of the knowledge through formal (written) testing.

- (1) Types of meteorological satellites.
- (2) Evaluation of satellite imagery features.
- (3) Microwave products.
- (4) Relationships of satellite data to meteorological events.
- (5) Deriving wind flow from satellite imagery.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-107	45	Z	E	N/A	L
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Goal. Familiarization with advanced meteorology.

Requirement. Receive academic training on the advanced meteorological skills and knowledge listed and exhibit retention of the knowledge through formal (written) testing and practical application.

- (1) Pressure systems.
- (2) Frontal systems.
- (3) Turbulence.
- (4) Vorticity.
- (5) Convective severe weather phenomena.
- (6) Non-convective severe weather phenomena.
- (7) Icing.
- (8) Vertical consistency evaluation.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-106.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-108      68                      Z                      E                      N/A                      L

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Goal. Familiarization with meteorological chart analysis.

Requirement. Receive academic training on meteorological chart analysis and exhibit retention of the knowledge through formal (written) testing and practical application.

- (1) Analyze upper-air features.
- (2) Analyze surface charts.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-107.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-109      12                      Z                      E                      N/A                      L

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Goal. Familiarization with meteorological equipment.

Requirement. Receive academic training on the meteorological equipment listed. Familiarization of equipment denotes ability to identify, operate, and state the capabilities of the equipment. Upon completion of academic training, exhibit retention of the knowledge through formal (written) testing.

- (1) Cloud height equipment.
- (2) Visibility equipment.
- (3) Wind equipment.
- (4) Pressure equipment.
- (5) Temperature and dewpoint equipment.
- (6) Precipitation measuring equipment.
- (7) Automated sensors.
- (8) Organizational structure of the DOD/DCS global weather communication system.

Performance Standard. Identify and technically discuss the equipment listed per the requirement. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-108.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-110      12                      Z                      E                      N/A                      L

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Goal. Familiarization with advanced computer analysis.

Requirement. Receive academic training on the advanced meteorological computer analysis techniques listed. Upon completion, exhibit retention of the knowledge through formal (written) testing and practical application.

- (1) Navigate the operating system.

- (2) Software applications.
- (3) Depict wind flow on satellite imagery.
- (4) Analyze thickness features.
- (5) Perform streamline analysis.
- (6) Reanalyze computer surface products.
- (7) Reanalyze computer upper air products.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-109.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-111	40.5	Z	E	N/A	L
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Goal. Familiarization with Doppler radar fundamentals and interpretation.

Requirement. Receive academic training on the Doppler radar fundamentals and image assessment skills and knowledge listed. Exhibit retention of the knowledge through formal (written) testing and practical application.

- (1) Weather radar theories.
- (2) Radar system concepts.
- (3) Radar products.
- (4) Radar product assessment.
- (5) Identification of radar features.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-110.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-112	40.5	Z	E	N/A	L
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Goal. Familiarization with routine METOC product processing.

Requirement. Receive academic training on the routine METOC product processes listed. Exhibit retention of the knowledge through formal (written) testing and practical application.

- (1) Decode a Terminal Aerodrome Forecast (TAF).
- (2) Decode numerical forecast products.
- (3) Extract climatological data.
- (4) Interpret numerical weather prediction products (text).
- (5) Interpret numerical weather prediction products (fine scale model visualization).
- (6) Evaluate weather cross-section products.

Performance Standard. Be able to identify and technically discuss the processes and procedures listed. Marine must successfully pass all progress checks and exams with 70% proficiency..

Prerequisite. Academic periods of instruction, EFT-105 to EFT-111.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-113	12	Z	E	N/A	L
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Goal. Familiarization with weather feature prognosis techniques.

Requirement. Receive academic training on the weather feature prognosis techniques listed and exhibit retention of the knowledge through formal (written) testing and practical application.

- (1) Surface weather features prognosis.
- (2) Upper air weather feature prognosis.
- (3) Components of an effective regime forecast process.

Performance Standard. Identify and technically discuss the subjects listed. Must successfully achieve 70% proficiency on end of block testing.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-112.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-114	12	Z	E	N/A	L
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Goal. Familiarization with forecasting techniques and procedures.

Requirement. Receive academic training on the forecasting techniques and procedures listed. Exhibit retention of the knowledge through formal (written) testing and practical application.

- (1) Forecast sounding evaluation.
- (2) Forecast weather elements (synoptic scale).
- (3) Forecast weather elements (mesoscale).
- (4) Forecast weather elements (convective).
- (5) Forecast weather elements (non-convective).

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-113.

External Syllabus Support. Air Force Weather Apprentice Course.

EFT-115	12	Z	E	N/A	L/S
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Goal. Familiarization with the application of meteorological theories and dynamics.

Requirement. Perform the listed tasks within a live laboratory environment simulating operations at a garrison weather facility.

- (1) Perform quality assurance.
- (2) Operate pilot to Metro radio.
- (3) Encode PIREPS.

- (4) Prepare Terminal aerodrome forecast (TAF).
- (5) Encode TAFS.
- (6) Prepare a route forecast.
- (7) Prepare a range forecast.
- (8) Prepare weather warnings.
- (9) Prepare weather advisories.
- (10) Prepare and brief flight weather products.
- (11) Prepare and brief watch changeover briefs.

Performance Standard. Identify and technically discuss the subjects listed. Marine must successfully pass all progress checks and exams with 70% proficiency.

Prerequisite. Academic periods of instruction, EFT-105 to EFT-114.

External Syllabus Support. Air Force Weather Apprentice Course.

### 3. Apprentice Certification Process (ACP)

a. Purpose. To certify the retention of initial assessment knowledge before the qualification of a Basic METOC Marine as a Apprentice METOC Analyst. Personnel shall also be introduced to command specific knowledge during this stage.

#### b. General

##### (1) Administrative Notes

(a) Events in this portion will be completed after assignment to the first METOC unit upon graduation of the initial assessment formal training (Marine Corps Weather Observer Course (FAM) or Air Force Weather Apprentice Course (EFT)).

(b) The Marine shall not receive signature authority for observational elements until completion of the ACP stage, completion of the QAL-609 event, and has received letter of qualification from the designated authority.

(2) Tracking. To assist local commands in tracking and to ensure continuity of training by all METOC units, all units shall utilize the Apprentice Certification Checklist. The checklist is contained as Appendix C of this Manual. Upon completion of the checklist, which covers the events, the checklist shall be forwarded to the Master METOC Analyst for convening of the METOC Analyst Qualification board.

(3) Prerequisites. Eligible for Secret clearance.

(4) Crew Requirements. Basic METOC Marine and Qualified METOC Analyst Instructor (MAI).

#### c. Academic training

(1) Academic training (POIs and TMIs) for each event in this phase shall be conducted by a qualified MAI.

(2) Event academic prerequisites must be completed prior to the commencement of the event. No waivers for academic prerequisites will be accepted to ensure comprehensive knowledge of the subject.

d. Event Training

ACP-116      1                                  Z                                  E                                  N/A                                  L

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Goal. Certify knowledge of METOC standard operating procedures (SOP).

Requirement. Review SOP and security SOP with MAI. Demonstrate the knowledge of the SOP by stating, at a minimum, the information listed. Local commands shall establish local requirements to complete this event.

- (1) Local security procedures.
- (2) Airfield description.
- (3) Watch routine.
- (4) METOC equipment.
- (5) Command structure.
- (6) Warning criteria/procedures.

Performance Standard. Complete a verbal/written test on the local SOP with 80% accuracy.

Prerequisite. The student shall read and comprehend local SOP and local security SOP.

ACP-117      1                                  Z                                  E                                  N/A                                  L

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Goal. Certify knowledge of METOC missions.

Requirement. Review MCWP 3-35.7 and SOP with MAI. State the mission and composition of each echelon of MAGTF METOC support.

- (1) Marine Corps METOC community.
- (2) Local METOC mission.
- (3) Apprentice METOC Analyst mission.
- (4) Airfield Operations.
- (5) Marine Corps Aviation.
- (6) Deployable METOC units.
  - (a) MWSS.
  - (b) MST.

Performance Standard. Without error or aid of reference complete the requirement.

Prerequisite. Academic training. Read and comprehend MCWP 3-35.7 and SOP.

ACP-118      1                                  Z                                  E                                  N/A                                  L

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Goal. Certify knowledge of orders and directives governing METOC support.

Requirement. Review listed items with MAI. Demonstrate the required knowledge level of the following orders and directives:

- (1) Desktop procedures.

- (2) NAVMETOCCOMINST 3141.2 Surface METAR Observation User's manual.
- (3) OPNAVINST 3140.24( ) Warning and Conditions of Readiness.
- (4) NAVMETOCCOMINST 3142.1( ) Pilot Reports.
- (5) OPNAVINST 3710.7( ) NATOPS Manual.
- (6) Local Destructive Weather Order.
- (7) MCWP 3-35.7 MAGTF METOC Support.

Performance Standard. Complete a verbal/written test on the orders and directives with 80% accuracy.

Prerequisite. Academic training. Read and comprehend listed orders and directives.

ACP-119      1                      Z                      E                      N/A                      L

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Goal. Certify knowledge of the quality assurance (QA) program.

Requirement. Review QA program with MAI. State and discuss the roles, implementation and purpose of the quality assurance program

Performance Standard. Without error, state the responsibilities of the Apprentice METOC Analyst within the conscribes of the program.

Prerequisite. Academic training. Read and comprehend QA program.

ACP-120      6                      Z                      E                      N/A                      L

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Goal. Complete security clearance/access request.

Requirement. Complete procedures required for applying for security clearance and access.

- (1) Attend command security indoctrination briefing.
- (2) Attend required security training as denoted in the references.
- (3) Complete required paperwork (electronic/manual) required for submission of security clearance request.
- (4) Define and state the responsibilities pertaining to the Emergency Action Plan.

Performance Standard. Satisfactory completion of this event will be met when individual has attended required training and has been granted an interim Secret Clearance.

Prerequisite. Academic training. Read and comprehend security SOP.

External Syllabus Support. Security in-doctrination briefing.

ACP-121      68                      Z                      E                      N/A                      L

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Goal. Certify knowledge of security requirements.

Requirement

- (1) Read and comprehend local security standing operating procedures.
- (2) Define and state responsibilities pertaining to the listed security programs.

- (a) Physical security program.
- (b) Information security program.
- (c) Personal security program.
- (d) Communications security program.

Performance Standard. Must pass a written or verbal test with a 80% accuracy.

Prerequisite. Academic training. Security indoctrination briefing. Read and comprehend security SOP.

External Syllabus Support. Academic training. Read and comprehends security SOP.

ACP-122    1                    Z                    E                    GE,TE            L

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Goal. Certify knowledge of communication configurations and procedures.

Requirement. Demonstrate knowledge of communication configurations and procedures by identifying and then discussing the procedures for utilizing the listed items.

- (1) Telephone procedures.
  - (a) Recalls.
  - (b) Secure communications.
- (2) Telephone access numbers.
- (3) Command and facsimile numbers.
- (4) Pilot to METRO frequencies and procedures.
- (5) Email address and responsibilities.
- (6) Tower radio/phone procedures.

Performance Standard. Complete a verbal/written test on the local Standard Operating Procedures regarding communications with 80% accuracy.

Prerequisite. Marine Corps Weather Observer Course.

ACP-123    1                    Z                    E                    GE                    L

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Goal. Certify knowledge of garrison METOC equipment.

Requirement. Physically or verbally, identify the location, nomenclature, and capabilities of garrison primary and secondary equipment used in METOC support missions.

Performance Standard. Must achieve a proficiency of 80% or greater on a written or verbal test.

Prerequisite. Marine Corps Weather Observer Course.

ACP-124    1                    Z                    E                    TE                    L

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Goal. Certify knowledge of tactical METOC equipment.

Requirement. Physically or verbally identify the location, nomenclature, and capabilities of primary and secondary tactical equipment used in METOC support missions.

Performance Standard. Must achieve a proficiency of 80% or greater on a written or verbal test.

Prerequisite. Marine Corps Weather Observer Course.

ACP-125     3                     Z                     E                     N                     L

Goal. Certify proficiency at operating handheld meteorological devices.

Requirement. Exhibit working knowledge of all handheld sensing devices indigenous to the unit by conducting sensing of environmental elements utilizing the devices. (Devices may vary from site to site, units commanders shall identify devices to evaluate SNM on)

- (1) Wind sensing devices.
- (2) Pressure sensing devices.
- (3) Temperature sensing devices.

Performance Standard. Conduct sensing of environmental elements utilizing the handheld device(s) without error.

Prerequisite. Marine Corps Weather Observer Course.

ACP-126     3                     Z                     E                     GE,TE,N                     L

Goal. Certify knowledge of METOC software applications.

Requirement. State the software used by METOC units and discuss the output of each software suite. The Marine shall, at a minimum, identify the use of the following suites:

- (1) Tactical decision aids.
- (2) METOC applications.
- (3) Command and Control (C2) applications.
- (4) Geospatial applications.

Performance Standard. Tested, verbally or written, on applications. Responses must be in accordance with applicable orders.

Prerequisite. Marine Corps Weather Observer Course.

ACP-127     6                     Z                     E                     C                     L

Goal. Certify knowledge of locally generated METOC support products.

Requirement. Identify the locally prepared products listed and discuss the content thereof.

- (1) Terminal aerodrome forecast.
- (2) Horizontal weather depiction.
- (3) Flight Weather Briefing package.
- (4) DD 175-1 Flight Weather Briefing.
- (5) Daily Weather Forecast.
- (6) Chemical Downwind Message.
- (7) Astronomical Data.
- (8) Tidal Data.
- (9) Climatological Data.

- (10) Surf Forecasts.
- (11) Surface Observations.
- (12) Upper Air Observations.
- (13) Blast forecast.
- (14) Drop Zone Forecast.

Performance Standard. Tested, verbally or written, on products and content. Responses must be in accordance with applicable orders.

Prerequisite. Marine Corps Weather Observer Course.

ACP-128    1                    Z                    E                    C                    L/S

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Goal. Certify proficiency at weather warning dissemination procedures.

Requirement. Upon receipt of a weather warning or advisory (live or simulated), disseminate the weather warning or advisories.

Performance Standards. Disseminate the weather warning or advisory to all units in accordance with local policies and procedures.

Prerequisite. Marine Corps Weather Observer Course.

ACP-129    12                    Z                    E                    C                    L

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Goal. Certify knowledge of dynamic meteorology fundamentals.

Requirement. Discuss with the MAI the listed topics/subjects and respond to questions posed by the MAI.

- (1) Earth-sun relationship.
- (2) Greenhouse effect.
- (3) Insolation.
- (4) Inversion.
- (5) Temperature scales.
- (6) Climate controls.
- (7) Air masses.
- (8) Pressure/density altitude.
- (9) Synoptic scale features.
- (10) Stages of tropical systems.
- (11) Cloud formation.
- (12) Precipitation.
- (13) Hydrometers.
- (14) Lithometers.
- (15) Electrometers.
- (16) Photometers.
- (17) Wind.
- (18) Tornadoes.
- (19) Thunderstorm.
- (20) Synoptic Scale Circulation Patterns.
- (21) Mesoscale and Microscale Circulation.
- (22) Mesoscale and Microscale Features.

Performance Standard. Evaluation of knowledge can be obtained through oral or written exam. The MAI shall determine successful completion of the event.

Prerequisite. Marine Corps Weather Observer Course.

ACP-130    2                    Z                    E                    C                    L

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Goal. Certify knowledge of surface observation fundamentals.

Requirement. Receive training on the topics listed. Discuss, in detail, the elements that comprise a surface observation. The discussion will include rules governing taking and observing the elements, the conversion or computation (as required), and encoding.

- (1) Sky condition.
- (2) Visibility.
- (3) Weather and obstructions to vision.
- (4) Pressure.
- (5) Temperature.
- (6) Wind.
- (7) Remarks/additive data.
- (8) Special Criteria.
- (9) Local Criteria

Performance Standard. Evaluation of knowledge can be obtained through oral or written exam. Responses must be in accordance with applicable references. The MAI shall determine successful completion of the event.

Prerequisites. Marine Corps Weather Observer Course.

ACP-131    2                    Z                    E                    GE                    L

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Goal. Certify proficiency at Automated Surface Observing System (ASOS) system commands.

Requirement. Given an ASOS system and observing knowledge, exhibit the ability to operate the automated site observing system to retrieve, archive, and adjust weather elements to ensure most accurate weather information is provided. Perform the following:

- (1) Power on system.
- (2) Log on as user.
- (3) Manipulate software to display desired product.
- (4) Manipulate software to alter automated products when required.
- (5) Ensure archiving of data is achieved.

Performance Standard. Without aid of reference complete the requirement.

Prerequisite. Marine Corps Weather Observer Course.

ACP-132    50                    Z                    E                    GE                    L

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Goal. Certify proficiency at ASOS observing procedures.

Requirement. Evaluate, record and decode elements from automated sensing equipment under supervision. Perform the following:

- (1) Determine and record type of observation.
- (2) Record time of observation.

- (3) Verify and record wind direction, speed, character, and significant wind events.
- (4) Evaluate, verify and record visibility.
  - (a) Types and direction of obscuring phenomena.
  - (b) Types and intensity of weather.
- (5) Determine and record sky condition.
  - (a) Cloud type.
  - (b) Cloud height.
  - (c) Cloud direction and movement.
  - (d) Cloud amount.
- (6) Read and record dry bulb and dew point temperatures.
- (7) Read and record current altimeter setting.
- (8) Encode and record applicable remarks.
- (9) Read and record station pressure.
- (10) Read and record sea level pressure.
- (11) Proof read recorded elements.
- (12) Initial observation, confirming accuracy of report.
- (13) Record summary of the day.

Performance Standard. In accordance with the reference, evaluate and record the following elements 200 times with an accuracy rate of 97.0%: winds, temperatures, pressure, visibility, current weather, and sky condition. 50% of the total observations must take place in a nighttime environment.

Prerequisite. Marine Corps Weather Observer Course.

ACP-133    50                    Z                    E                    GE,TE                    L

Goal. Certify proficiency at manual sensing equipment operations.

Requirement. Evaluate, record and decode elements from manual sensing equipment under supervision. Perform the following:

- (1) Determine and record type of observation.
- (2) Record time of observation.
- (3) Determine and record wind direction, speed, character, and significant wind events.
- (4) Evaluate, verify and record visibility.
  - (a) Types and direction of obscuring phenomena.
  - (b) Types and intensity of weather.
- (5) Determine and record sky condition.
  - (a) Cloud type.
  - (b) Cloud height.
  - (c) Cloud direction and movement.
  - (d) Cloud amount.
- (6) Determine and record, dry bulb and wet bulb temperatures.
- (7) Calculate dew point temperature.
- (8) Determine and record current altimeter setting.
- (9) Encode and record applicable remarks.
- (10) Determine and record station pressure.
- (11) Determine and record sea level pressure.
- (12) Proof read recorded elements.
- (13) Initial observation, confirming accuracy of report.
- (14) Determine and record summary of the day.

Performance Standard. In accordance with the reference, evaluate and record the following elements 200 times with an accuracy rate of 97.0%: wind, temperature, pressure, visibility, current weather, and sky condition. 50% of the total observations must take place in a nighttime environment.

Prerequisite. Marine Corps Weather Observer Course.

ACP-134    2                    Z                    E                    GE,TE,C        L

Goal. Certify knowledge of computed value procedures.

Requirement. Define the products listed, the parameters required for computation and verbally state the computation procedures.

- (1) Pressure altitude.
- (2) Density altitude.
- (3) Altimeter.
- (4) Wet Bulb Globe Temperature Index.
- (5) Wind Chill Temperature.
- (6) Fahrenheit to Celsius.
- (7) Relative Humidity.
- (8) Knots to Miles per hour.
- (9) Dew point.

Performance Standard. List the parameters required for computations and state the computation procedures without error.

Prerequisite. Marine Corps Weather Observer Course.

ACP-135    1                    Z                    E                    GE,TE,C        L

Goal. Certify proficiency at calculating pressure altitude.

Requirement. Utilizing available equipment and in accordance with references, calculate pressure altitudes.

Performance Standards. Accurately calculate pressure altitude 20 times in accordance with the references.

Prerequisite. Marine Corps Weather Observer Course.

ACP-136    1                    Z                    E                    GE,TE,C        L

Goal. Certify proficiency at calculating density altitude.

Requirement. Utilizing available equipment and in accordance with references, calculate density altitudes.

Performance Standard. Accurately calculate density altitude 20 times in accordance with the references.

Prerequisite. Marine Corps Weather Observer Course.

ACP-137    1                            Z                            E                            GE,TE,C                            L

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Goal. Certify proficiency at calculating wet bulb globe temperature index (WBGTI).

Requirement. Given a WBGTI set, correctly read, calculate and annotate the WBGTI. Perform the following:

- (1) Take Readings from:
  - (a) Dry bulb thermometer.
  - (b) Wet bulb thermometer.
  - (c) Black bulb thermometer.
- (2) Enter readings on locally prepared forms.
- (3) Apply standard calculations to readings.
- (4) Compare sum of corrected readings to index table.

Performance Standard. Processes and computes values 10 times, values must be within .1 degree Fahrenheit.

Prerequisite. Marine Corps Weather Observer Course.

ACP-138    1                            Z                            E                            GE,TE,N                            L

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Goal. Certify proficiency electronic WBGTI equipment operations.

Requirement. Given a WBGTI set, correctly operate sensing device to obtain values for use in WBGTI computations. Perform the following:

- (1) Power on system.
- (2) Select appropriate scales.
- (3) Ensure system is configured as per references.
- (4) Ensure sensing device is maintained per the references.
- (5) Conduct operator preventative maintenance.

Performance Standard. Complete the requirement accurately 10 times. Computed values shall be verified by the MAI for accuracy.

Prerequisite. Marine Corps Weather Observer Course.

ACP-139    .5                            Z                            E                            GE,TE,C                            L

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Goal. Certify proficiency at calculating wind chill temperature.

Requirement. Given appropriate software, manual devices, or tables, calculate the wind chill temperature. Perform the following:

- (1) Take Readings from:
  - (a) Dry bulb thermometer.
  - (b) Wet bulb thermometer.
- (2) Obtain wind speed.
- (3) Calculate wind chill temperatures.

Performance Standard. Complete the requirement accurately 10 times. Computed values shall be verified by the MAI for accuracy.

Prerequisite. Marine Corps Weather Observer Course.

ACP-140    1                    Z                    E                    GE,TE            L

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Goal. Certify proficiency at lightning detection equipment operations.

Requirement. Given a lightning detection system, conduct power up and down procedures, reset range alarms, determine azimuth and distance of lightning from the area of interest, and manipulation of display. Perform the following:

- (1) Power on system.
- (2) Log on to the system.
- (3) Establish communications.
- (4) Turn on/off directed alarm ranges.
- (5) Manipulate display to support mission.
- (6) Configure and archive data.

Performance Standard. Complete requirement until all steps are completed without error.

Prerequisite. Marine Corps Weather Observer Course.

ACP-141    1                    Z                    E                    GE,TE            L

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Goal. Certify knowledge of basic meteorological radar operations.

Requirement. Given meteorological radar and applicable manuals, complete the basic operations listed while maintaining both operator and equipment safety.

- (1) Perform power up/power down procedures.
- (2) Perform log on/log off functions.
- (3) Identify proper connectivity.
- (4) Disable alarms and identify threshold exceeded.
- (5) Retrieve and display radar products.

Performance Standard. Complete requirement until all steps are completed without error.

Prerequisite. Marine Corps Weather Observer Course.

ACP-142    3                    Z                    E                    GE,TE            L

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Goal. Certify proficiency knowledge of Doppler radar products.

Requirement. State the base and derived products of the Doppler radar.

- (1) Base Reflectivity.
- (2) Base Velocity.
- (3) Storm relative products.
- (4) Echo tops.
- (5) Max tops.
- (6) VAD.
- (7) VIL.
- (8) TVS.

Performance Standard. Complete requirement until all steps are completed without error.

Prerequisite. Marine Corps Weather Observer Course.

ACP-143    1                    Z                    E                    GE,TE,C            L

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Goal. Certify knowledge of the upper air messages and the Skew-T Log P.

Requirement. State how to decode upper atmospheric soundings and exhibit an understanding of the scales and features of a Skew-T Log P diagram.

- (1) Decode the upper atmospheric sounding in accordance with the references.
- (2) Identify the scales and use of scales located on the Skew T Log-P diagram.

Performance Standard. Tested, verbally or written, on decoding upper atmospheric soundings and the components of the Skew-T Log P diagram.

Prerequisite. Marine Corps Weather Observer Course.

ACP-144    1                    Z,R                    E                    GE,TE,C            L

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Goal. Certify proficiency at plotting and analyzing a Skew-T Log-P diagram.

Requirement. Utilizing a blank Skew-t diagram and/or appropriate software and upper air sounding, plot and analyze upper-air data. Perform the following:

- (1) Obtain Upper Air Observation Data.
- (2) Plot mandatory levels, significant levels, and significant wind data.
- (3) Analyze for the following:
  - (a) CCL.
  - (b) LCL.
  - (c) LFC.
  - (d) PEA.
  - (e) NEA.
  - (f) SSI.
  - (g) T1.
  - (h) T2.
  - (i) Forecasted maximum temperature.
  - (j) Forecasted minimum temperature.
  - (k) Freezing level.
  - (l) Contrails.
  - (m) Tropopause.

Performance Standard. Within 30 minutes, the Basic METOC Marine will plot and analyze a Skew-T Log P diagram in accordance with the Master solution.

Prerequisite. Marine Corps Weather Observer Course.

ACP-145 .25 Z E GE,TE,C L

Goal. Certify proficiency at plotting warnings/advisories.

Requirement. Given the warning or advisory data and the appropriate chart or software, plot the warning data. Perform the following:

- (1) Select the scale.
- (2) Plot the warning.
- (3) Check plots for accuracy.

Performance Standard. Within 15 minutes, plot warning or advisory without error.

Prerequisite. Marine Corps Weather Observer Course.

ACP-146 1 Z E GE,TE,C L

Goal. Certify proficiency at plotting a local area work chart (LAWC).

Requirement. Plot the local area work chart with all available data using the appropriate chart or software.

Performance Standard. Complete the standard within 100% accuracy.

Prerequisite. Marine Corps Weather Observer Course.

External Syllabus Support. Alphanumeric METOC data.

ACP-147 .5 Z E GE,TE,C L

Goal. Certify knowledge of ceiling balloon operations.

Requirement. Read and comprehends the procedures for determining ceiling heights utilizing ceiling balloons. State the procedures for determining ceiling height utilizing ceiling balloons.

Performance Standard. Tested, verbally or written. Must complete without error.

Prerequisite. Marine Corps Weather Observer Course.

ACP-148 .5 Z E GE,TE,C L

Goal. Certify knowledge of pilot balloon (PIBAL) procedures and equipment.

Requirement. Identify the equipment, state the equipment purpose, and the procedures for conducting PIBAL observations. Visually identify and state the use of the following equipment:

- (1) Theodollite.
- (2) Plotting board or appropriate software.
- (3) Appropriate balloon based on sky condition.
- (4) Required weight sets.
- (5) Appropriate conversion tables.

Performance Standard. Identify the equipment, state the equipment purpose, and state the procedures for conducting PIBAL observations during a written or oral test with 80% accuracy.

Prerequisite. Marine Corps Weather Observer Course.

ACP-149      5                              Z                              E                              GE,TE,C                              L

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Goal. Certify proficiency at PIBAL observations.

Requirement. Utilizing a theodollite, the appropriate balloon and in accordance with local regulations, track a balloon until no longer visible. Complete the following:

- (1) Determine size and color of balloon.
- (2) Assemble, level and orient the theodolite.
- (3) Launch balloon.
- (4) Annotate entries every 60 seconds on form.
- (5) Using current software enter elevation and azimuth entries.  
(Manual devices may be substituted if available)
- (6) Retrieve, encode and disseminate.

Performance Standard. In accordance with the references, accurately track a pibal and compute (manually or computer aided) flight level wind speed and direction a minimum of 5 times.

Prerequisite. Marine Corps Weather Observer Course.

ACP-150      .25                              Z                              E                              GE,TE,C                              L

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Goal. Certify proficiency at pilot reports (PIREPs) procedures.

Requirement. Given a PIREP and appropriate forms, correctly encode and disseminate the PIREP within 10 minutes of receipt. Perform the following:

- (1) Receive PIREP via available communication device.
- (2) Annotate the TEI's on the correct form.
- (3) Disseminate the PIREP.

Performance Standard. Must meet the requirement a minimum of 10 times IAW the references.

Prerequisite. Marine Corps Weather Observer Course.

ACP-151      1                              Z                              E                              C                              L

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Goal. Certify knowledge of METOC reports.

Requirement. Identify the following locally prepared reports and discuss the content thereof.

- (1) Earthquake Report.
- (2) Tsunami Report.
- (3) Pilot Report.
- (4) Volcano Report.
- (5) Station Information Report.

Performance Standard. Tested, verbally or written, 100 % proficiency required.

Prerequisite. Marine Corps Weather Observer Course.

ACP-152    1                    Z                    E                    C                    L

Goal. Certify proficiency at calculating astronomical data.

Requirement. Utilizing available equipment, software, and in accordance with references, calculate solar and lunar data for 5 specified locations.

Performance Standard. Must accurately calculate solar and lunar data in accordance with the references.

Prerequisite. Marine Corps Weather Observer Course.

ACP-153    1                    Z                    E                    C                    L

Goal. Certify proficiency at calculating tidal data.

Requirement. Utilizing available equipment, software, and in accordance with references, calculate tidal data for 5 specified locations.

Performance Standard. Must accurately calculate tidal data in accordance with the references.

Prerequisite. Marine Corps Weather Observer Course.

#### 4. Apprentice METOC Operations (AMO)

a. Purpose. To enhance and develop proficiency in initial assessment training through practical application in real-time, controlled operations.

b. General

(1) Administrative Notes. Events in this portion will be completed at the initial Fleet METOC unit upon graduation of the Marine Corps Weather Observer Course.

(2) Prerequisites. Eligible for Secret clearance.

(3) Crew Requirements. Qualified Apprentice METOC Analyst and MAI.

c. Academic training

(1) Academic training for each event in this phase shall be conducted by a MAI and has been designated by the appropriate authority.

(2) Event academic prerequisite must be completed prior to the commencement of the event. No waivers for academic prerequisites will be acceptable to ensure comprehensive knowledge of the subject.

d. Event Training

AMO-155      180                      Z,R                      E                      GE,TE                      L

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Goal. Conduct weather watch functions.

Requirement. In accordance with locally established procedures and references, conduct the following watch functions:

- (1) Ensure all duties are fully completed.
- (2) Conduct security procedures.
- (3) Mentor subordinates on watch functions.
- (4) Identify logistic requirements.
- (5) Conduct quality assurance procedures.
- (6) Monitor data ingest of METOC information.
- (7) Identify observational special criteria relevant to locally produced forecast products and locally produced warnings.
- (8) Identify and correct Apprentice METOC Analyst training deficiencies.
- (9) Ensure the timely and accurate dissemination of locally produced METOC data and products.
- (10) Ensure the timely and accurate dissemination of locally produced warnings/advisories.

Performance Standard. Conduct the requirement under the supervision of a designated Lead METOC apprentice for a period of 1 month prior to conducting the watches on own.

Prerequisite. Marine Corps Weather Observer Course, ACP events.

132. COMBAT READY TRAINING1. Advanced Familiarization Training (AFM)

a. Purpose. To introduce the Apprentice METOC Analyst to core plus skills and competencies.

b. General. Documentation of training events shall be completed and reported in ATRIMS as well as local training jackets. Personnel must have the Apprentice METOC Analyst qualification (QAL 609) prior to assignment to this stage of training.

c. Requirement. A MAI shall conduct training. The MAI shall locally document and forward documentation of events to the Master METOC Analyst for approval of completion.

d. Event Training

AFM-200      .5                      Z                      E                      GE,TE,N                      L/S

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Goal. Introduce the elements and terminology utilized in conducting surf observations.

Requirement. Define the elements and terminology required to conduct a surf observation.

- (1) Appropriate observation point.
- (2) Significant breaker height.
- (3) Maximum breaker height.
- (4) Wave period.
- (5) Breaker types.
- (6) Littoral current.
- (7) Surf zone.

Performance Standard. Verbally or written tested, must achieve 80% accuracy.

Prerequisite. Academic training by MAI on subject.

AFM-201	.5	Z	E	M	L/S
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Goal. Introduction to upper air observational equipment and procedures.

Requirement. Identify components, state use of the components and procedures required for taking an upper air observation.

- (1) Identify the following components:
  - (a) UMQ 12.
  - (b) UMQ 12 antenna.
  - (c) Radiosonde.
  - (d) Required weight sets.
- (2) State the use of the following components:
  - (a) UMQ 12.
  - (b) UMQ 12 antenna.
  - (c) Radiosonde.
  - (d) Required weight sets.
- (3) Read and comprehend the procedures for conducting upper air observations contained in the references.

Performance Standard. Verbally or written tested, must achieve 80% accuracy.

Prerequisite. Academic training by MAI on subject.

AFM-202	5	Z	E	M,N	L/S
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Goal. Introduce subsystems inherent to the METMF(R).

Requirement. Visually identify each component of the subsystems within the METMF(R) and briefly discuss the capabilities of each.

- (1) Shelter Subsystem (SSS).
  - (a) Shelter.
  - (b) ECU.
  - (c) Door mounted safety equipment.
  - (d) Power distribution unit.
- (2) Processing Subsystem (PCS).
  - (a) WINNT domain.
  - (b) UNIX Operating systems.
  - (c) Connectivity Devices/ Cryptological devices.
- (3) Meteorological Radar System (MRS).
  - (a) Nomenclature.
  - (b) Max Range.

- (c) Frequency and Power.
- (d) Software.
- (e) Basic Outputs.
- (4) Meteorological Satellite Subsystem (MSS).
  - (a) Nomenclature.
  - (b) Frequencies.
  - (c) Encryption.
  - (d) Antenna array.
  - (e) Receiver.
  - (f) Software
  - (g) Basic Outputs.
- (5) Communications Subsystem (CSS).
  - (a) Nomenclature(s).
  - (b) Connectivity/ Cryptological devices.
  - (c) Antenna Arrays.
- (6) Portable Meteorological Subsystem (PMS).
  - (a) Nomenclature(s).
  - (b) Connectivity.
  - (c) Receivers.
- (7) Local Sensor Subsystem (LSS).
  - (a) Nomenclature.
  - (b) Software.
  - (c) Operating Ranges.
- (8) Remote Sensor Subsystem (RSS).
  - (a) Nomenclature.
  - (b) Software.
  - (c) Operating Ranges.
  - (d) Connectivity.
- (9) Rawinsonde subsystem (RWS).
  - (a) Nomenclature.
  - (b) Connectivity.
  - (c) Frequencies.
  - (d) Antenna arrays.
- (10) Video Subsystem (VSS).
  - (a) Nomenclature.
  - (b) Connectivity.

Performance Standard. Without error, visual identify each component of the subsystems within the METMF(R) and briefly discuss the capabilities of each.

Prerequisite. Academic training by MAI on subject.

AFM-203    4                    Z                    E                    GE,M,N                    L/S

Goal. Introduce locally generated forecast products.

Requirement. Identify the products listed and discuss the content of the product.

- (1) Terminal Aerodrome forecasts.
- (2) Search and rescue forecasts.
- (3) Local Area forecasts.
- (4) Synoptic scale forecasts.
- (5) Mesoscale forecasts.
- (6) Severe Weather forecasts.
- (7) Drop Zone forecasts.

(8) Sound propagation forecasts.

Performance Standard. Discuss content and sources used for each forecast product listed above without error.

Prerequisite. Academic training by MAI on subject.

AFM-204    10                    Z                    E                    C                    L/S

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Goal. Introduce locally generated reports and messages.

Requirement. Gain familiarity with the reports listed below through academic training and mentorship.

- (1) Casualty reports (CASREP).
- (2) General administrative message (GENADMIN).
- (3) Joint Operational Area Forecast (JOAF).
- (4) Basic Wind Message (BWM).
- (5) Weather Observation message.
- (6) Route Weather Forecast (WEAX).
- (7) Tactical Atmospheric Summary (TAS).
- (8) Strike Forecast (STRKFCST).
- (9) Severe Weather (SVRWX).
- (10) Assault Forecast (ASLTFCST).
- (11) Amphibious Objective Area Forecast (AOAFCST).
- (12) Chemical Downwind Message (CDM).
- (13) Weather warning (WW).

Performance Standard. State the content of the listed messages/reports with 80% accuracy.

Prerequisite. Academic training by MAI on subject.

AFM-205    20                    Z                    E                    GE,M,N                    L/S

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Goal. Introduce graphical METOC products.

Requirement. Gain familiarity with the graphical METOC products listed below through academic training and mentorship.

- (1) Horizontal Weather Depiction.
- (2) Satellite imagery.
- (3) Radar imagery.
- (4) Surface chart.
- (5) Upper Air Charts.
- (6) Oceanographic Charts.
- (7) Local Area Work Charts.
- (8) Tropical Weather Charts.
- (9) Vorticity Charts.
- (10) Thickness charts.

Performance Standard. Identify features and uses of the charts listed in the requirements to the satisfaction of the MAI.

Prerequisite. Academic training by MAI on subject.

AFM-206      4                              Z                              E                              GE,M,N                              L/S

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Goal. Introduce flight weather products.

Requirement. Gain familiarity with the content and orders governing the preparation and use of the following flight weather products.

- (1) DD 175-1 flight weather briefing.
- (2) Flight Weather Folder.
- (3) Squadron Briefings.
- (4) Aviation Strike Brief.
- (5) Convective Sigmets/Airmets.
- (6) Non-Convective Sigmets/Airmets.

Performance Standard. Identify and locate reference sources governing each product listed without error.

Prerequisite. Academic training by MAI on subject.

AFM-207      6                              Z                              E                              GE,M,N                              L/S

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Goal. Introduce oceanographic/littoral warfare products.

Requirement. Gain familiarity with the content and orders/directives governing the preparation and use of the following oceanographic/littoral warfare products.

- (1) Sea Surface Temperature Charts.
- (2) Current and tidal charts.
- (3) Modified Surf Index.
- (4) Beach Survey charts.
- (5) STOIC
- (6) SAIL
- (7) Riverine Survey Charts.

Performance Standard. Identify and locate reference sources governing each product listed without error.

Prerequisite. Academic training by MAI on subject.

AFM-208      12                              Z                              E                              GE,M,N                              L/S

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Goal. Introduce tactical decision aid (TDA) products.

Requirement. Gain familiarity with TDA products listed below through academic training and mentorship.

- (1) Electro-Optical TDA.
- (2) Electro-Magnetic TDA.
- (3) Space Weather TDA.
- (4) Impact charts.
- (5) Sound propagation.
- (6) Hazard Prediction Assessment.

Performance Standard. Apprentice METOC Analyst shall discuss what information is contained in the listed products, requirements to obtain product, and the customer for each product, without error.

Prerequisite. Academic training by MAI on subject.

AFM-209      2                              Z                              E                              C                              L/S

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Goal. Introduce elements forecasted from a Skew-T Log P.

Requirement. Discuss and define elements that can be forecasted from the Skew-T Log P diagram.

- (1) Thunderstorm probability.
- (2) Max/ Min Temps.
- (3) Turbulence.
- (4) Icing.
- (5) Hail size.
- (6) Convective Gusts.
- (7) Fog Dissipation.
- (8) Contrails.
- (9) Cloud types and coverage.
- (10) Precipitation.

Performance Standard. Complete the requirement to the satisfaction of the MAI.

Prerequisite. Academic training by MAI on subject.

AFM-210      2                              Z                              E                              GE,M,N                              L/S

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Goal. Introduce criteria and procedures for issuing weather warnings and advisories.

Requirement

- (1) Define the criteria for setting weather warnings and advisories.
- (2) State the processes for issuing weather warnings or advisories.

Performance Standard. Complete the requirement to the satisfaction of the MAI.

Prerequisite. Academic training by MAI on subject.

## 2. APPRENTICE METOC OPERATIONS (AMO)

a. Purpose. To enhance proficiency in core skills and core plus skills through practical application.

b. General. This portion of the training syllabus is comprised of On-Job and event driven training. Documentation of training events shall be completed and reported in ATRIMS as well as local training jackets.

c. Requirement. A METOC Analyst Instructor shall conduct training. The METOC Analyst Instructor shall locally document and forward documentation of events to the Master METOC Analyst.

d. Event Training

AMO-211      8                                  R                                  E                                  M,N                                  L/S

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Goal. Develop proficiency at establishing tactical observational operations.

Requirement. Establish the point of observation, sensor array, and configure software organic to the meteorological mobile facility to observe weather elements. In accordance with the references, complete the following tasks.

- (1) Establish observational point.
- (2) Set up sensor array(s).
- (3) Configure software for ingest.
- (4) Archive observational data.
- (5) Conduct operator level troubleshooting.

Performance Standard. Without supervision and in accordance with the references. The Marine must complete the requirement a minimum of 3 times for successful completion of the event.

Prerequisite. Academic training by MAI on subject.

AMO-212      50                                  Z                                  E                                  M,N                                  L/S

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Goal. Develop proficiency at utilizing automated tactical sensing equipment.

Requirement. Utilizing automated tactical sensing equipment, conduct observational operations. Conduct the listed tasks.

- (1) Determine and record type of observation.
- (2) Record time of observation.
- (3) Verify and record wind direction, speed, character, and significant wind events.
- (4) Evaluate, verify and record visibility.
  - (a) Types and direction of obscuring phenomena.
  - (b) Types and intensity of weather.
- (5) Determine and record sky condition.
  - (a) Cloud type.
  - (b) Cloud height.
  - (c) Cloud direction and movement.
  - (d) Cloud amount.
- (6) Read and record dry bulb and dew point temperatures.
- (7) Read and record current altimeter setting.
- (8) Encode and record applicable remarks.
- (9) Read and record station pressure.
- (10) Read and record sea level pressure.
- (11) Proof read recorded elements.
- (12) Initial observation, confirming accuracy of report.
- (13) Record summary of the day.

Performance Standard. In accordance with the references, evaluate and record the listed elements 200 times with an accuracy rate of 97.0%: wind, temperature pressure, visibility, current weather, and sky condition. 50% of the total observations must take place in a nighttime environment.

Prerequisite. Academic training by MAI on subject.

AMO-213    1.5                    Z,R                    E                    N/A                    L/S

Goal. Develop proficiency at conducting surf observations.

Requirement. Utilize appropriate timing device and temperature sensing equipment to observe and annotate a surf observation. Perform the following:

- (1) Determine point of observations.
- (2) Determine and annotate:
  - (a) Significant breaker height.
  - (b) Maximum breaker height.
  - (c) Period.
  - (d) Breaker types.
  - (e) Angle of breaker relative to beach.
  - (f) Littoral current.
  - (g) Surf zone.
  - (h) Additional remarks.

Performance Standard. Complete the requirement 3 times in accordance with the appropriate references.

Prerequisite. Academic training by MAI on subject.

AMO-214    1.5                    Z                    E                    M,N                    L/S

Goal. Develop proficiency at Meteorological Mobile Facility Replacement {METMF(R)} power operations.

Requirement. Conduct power up and power down procedures within the METMF(R). In accordance with the reference, conduct graceful shutdown and reboot of each system within the mobile meteorological facility.

Performance Standard. Without supervision and in accordance with the reference, complete the requirement without corruption of METOC data or operating systems.

Prerequisite. Academic training by MAI on subject.

AMO-215    16                    Z                    E                    M,N                    L/S

Goal. Develop proficiency at METMF(R) embarkation/debarkation.

Requirement. Complete the listed tasks in accordance with the references and security procedures.

- (1) Pack up of the MetMF(R) and subsystems.
- (2) Pack up of ancillary equipment items.
- (3) 30-day inventory.
- (4) Load the MetMF(R).

- (5) Unpack the MetMF at the designated area.
- (6) Set up the MetMF Configuration.
- (7) Conduct calibration and functional checks.

Performance Standard. Without supervision and in accordance with the reference complete the requirement.

Prerequisite. Academic training by MAI on subject.

External Syllabus Support. Heavy Equipment Support.

AMO-216      6                      Z,R                      E                      M                      L/S

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Goal. Develop proficiency at upper atmosphere observations operations.

Requirement. Utilizing the AN/UMQ-12, appropriate balloon, and mini-rawinsonde, successfully receive and process data from the surface to 100 mb.

- (1) Energize AN/UMQ-12.
- (2) Prepare balloon and sonde.
- (3) Enter the surface observation and coefficients.
- (4) Tune radiosonde.
- (5) Compare readings with current surface observation.
- (6) Ensure adequate satellite synchronization.
- (7) Obtain clearance and launch sounding.
- (8) Post process sounding.
- (9) Save data to appropriate location.
- (10) Encode and disseminate alphanumeric data as appropriate.

Performance Standard. Complete the requirement IAW with the references a minimum of 3 times.

Prerequisite. Academic training by MAI on subject.

AMO-217      1                      Z                      E                      GE,M,N                      L/S

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Goal. Generate astronomical, tidal, and climatological data.

Requirement. Given mission parameters and appropriate software or forms, generate astronomical, tidal, and climatological data for the 5 locations.

Performance Standard. The MAI shall determine the locations 300 nautical miles apart. The MAI shall evaluate the produced product for content and format prior to awarding completion credit.

Prerequisite. Academic training by MAI on subject.

AMO-218      1                      Z                      E                      GE,M,N                      L/S

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Goal. Compute Modified Surf Index (MSI).

Requirement. Given mission parameters, forecasted parameters and appropriate software or forms, generate MSI for 3 separate locations.

Performance Standard. The MAI shall determine the locations and provide forecast data. The MAI shall evaluate MSI for format and content IAW the references prior to awarding completion credit.

Prerequisite. Academic training by MAI on subject.

AMO-219      5                      Z                      E                      GE,M,N              L/S

Goal. Generate Optimum Path Aircraft Routing System (OPARS) products.

Requirement. Given mission parameters and appropriate software or forms, generate OPARS support products for five routes of flight.

Performance Standard. The MAI shall provide the mission parameters. The MAI shall evaluate OPARS products for format and content IAW the references prior to awarding completion credit.

Prerequisite. Academic training by MAI on subject.

AMO-220      4                      Z                      E                      GE,M,N              L/S

Goal. Generate meteorological and oceanographic charts.

Requirement. Utilizing METOC equipment and software, retrieve and/or generate METOC charts in support of forecast process. The MAI shall state the products to be generated.

Performance Standard. The MAI shall provide the forecast to be generated and the required products. The MAI shall evaluate generated products for format and content IAW the references prior to awarding completion credit.

Prerequisite. Academic training by MAI on subject.

AMO-221      1                      Z                      E                      N/A                      L/S

Goal. Demonstrate knowledge of security procedures.

Requirement. Define, discuss and identify security terms/designations in accordance with current references.

- (1) Clearances.
- (2) Access.
- (3) Compromise Procedures.
- (4) Need-to-know.
- (5) Physical security.
- (6) NATO Classifications.
- (7) Classifying authority.
- (8) Ensure Completion of Security Checks.

Performance Standard. Without error complete the requirement during verbal or written testing.

Prerequisite. Academic training by MAI on subject.

AMO-222    2                    Z                    E                    M                    L/S

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Goal. Display operating knowledge of tactical satellite system(s).

Requirement. Given a tactical satellite system, applicable operating manuals, and understanding the limitations and capabilities of satellite imagery acquisition and enhancements, display a working knowledge of satellite system operations.

- (1) Conduct power up/power down procedures.
- (2) Conduct log on/log off functions.
- (3) Schedule receipt of imagery.
- (4) Update of Ephemeris Data.
- (5) Ensure product path for received products is correct.
- (6) Ensure naming conventions are adhered to.
- (7) Ensure signal decryption values are set for reception of scheduled passes.
- (8) Archive imagery for retrieval at a later time.

Performance Standard. Without error complete the requirement during verbal or written testing.

Prerequisite. Academic training by MAI on subject.

AMO-223    8                    Z                    E                    M                    L/S

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Goal. Display operating knowledge of tactical Doppler radar system(s).

Requirement. Given a tactical radar meteorological system, applicable operating manuals display a working knowledge of Radar operations. Complete the following tasks.

- (1) Conduct power up/power down procedures.
- (2) Conduct log on/log off functions.
- (3) Discuss the core Doppler radar products and the products derived from them.
- (4) Display desired Doppler radar products.

Performance Standard. Completion of the requirement without violating system integrity, configuration or communications.

Prerequisite. Academic training by MAI on subject.

AMO-224    2                    Z                    E                    M,N                    L/S

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Goal. Conduct limited METOC operations utilizing man-portable METOC components (NITES IV).

Requirement. Utilizing the NITES IV, complete the following tasks:

- (1) Unpack components.
- (2) Connect peripherals.
- (3) Establish observational sensing.
- (4) Establish workgroup or network connectivity.
- (5) Conduct satellite operations.
- (6) Conduct graphic product retrieval.
- (7) Conduct alphanumeric data retrieval.

Performance Standard. The Apprentice METOC Analyst shall complete the requirement IAW the references without assistance.

Prerequisite. Academic training by MAI on subject.

AMO-225      3                      Z                      E                      GE                      L/S

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Goal. Operate the garrison Doppler radar system.

Requirement. Given a Principle User's Processor and Systems Console and in accordance with the reference(s), operate the applicable Doppler Radar. Discuss and operate the following:

- (1) System peripherals.
- (2) Monitor system performance.
- (3) Archive data.
- (4) Ability to retrieve and display data.

Performance Standard. Without aid of reference complete the requirement.

Prerequisite. Academic training by MAI on subject.

AMO-226      1                      Z                      E                      GE,M,N                      L/S

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Goal. Install a wet bulb globe temperature index set.

Requirement. Establish a WBGTI sensor site IAW the references. Complete the following tasks IAW the reference(s).

- (1) Install mounting stand.
- (2) Install components on stand.
- (3) Verify installation is correct.
- (4) Perform maintenance as required.

Performance Standard. The WBGTI setup shall be completed with aid of reference. Evaluation of sensor setup shall be conducted by the MAI.

Prerequisite. Academic training by MAI on subject.

AMO-227      10                      Z                      E                      GE,M,N                      L/S

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Goal. Perform basic surface chart analysis.

Requirement. Given a surface chart with regional plots, complete (re)analysis for the listed features without violating data.

- (1) Isobars.
- (2) High and Low pressure centers.
- (3) Frontal boundaries.

Performance Standard. Complete the analysis 10 times. After each analysis, the MAI shall conduct a professional discussion with the apprentice to refine analytical techniques.

Prerequisite. Academic training by MAI on subject.

AMO-228      10                      Z                      E                      GE,M,N                      L/S

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Goal. Perform basic thickness chart analysis.

Requirement. Given a thickness chart, complete an analysis of the chart for the listed features without violating data or rules.

- (1) Warm and cold air advection.
- (2) High and low pressure centers.
- (3) Troughs and ridges.

Performance Standard. Complete the analysis 10 times. After each analysis, the MAI shall conduct a professional discussion with the apprentice to refine analytical techniques.

Prerequisite. Academic training by MAI on subject.

AMO-229      50                      Z                      E                      GE,M,N                      L/S

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Goal. Perform basic upper atmospheric chart analysis.

Requirement. Given a chart set, complete an analysis of the chart for the listed features without violating data or rules.

- (1) Isoheights.
- (2) Isotherms.
- (3) Areas of significant moisture.
- (4) Major short wave axis, troughs and ridges.
- (5) Minor short wave axis, troughs and ridges.
- (6) High and Low height centers.

Performance Standard. Complete the analysis 10 times. After each analysis, the MAI shall conduct a professional discussion with the apprentice to refine analytical techniques.

Prerequisite. Academic training by MAI on subject.

AMO-230      5                      Z                      E                      GE,M,N                      L/S

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Goal. Perform basic satellite imagery analysis.

Requirement. Given a satellite image, complete an analysis of the satellite image for the listed features without violating data or rules.

- (1) Jet stream axis.
- (2) Basic cloud types and formations.
- (3) Land/terrain features.
- (4) Significant weather phenomena.

Performance Standard. Complete the analysis 10 times. After each analysis, the MAI shall conduct a professional discussion with the apprentice to refine analytical techniques.

Prerequisite. Academic training by MAI on subject.

AMO-231      5                      Z                      E                      GE,M,N                      L/S

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Goal. Perform basic radar imagery analysis.

Requirement. Given a radar image, complete an analysis of the radar image for the listed features without violating data or rules.

- (1) Base reflectivity products.
  - (a) Thunderstorm features.
  - (b) Outflow boundaries.
- (2) Base velocity products.
  - (a) Outflow patterns.
  - (b) Regions of shear.
- (3) Base spectrum width products.

Performance Standard. Complete the analysis 10 times. After each analysis, the MAI shall conduct a professional discussion with the apprentice to refine analytical techniques.

Prerequisite. Academic training by MAI on subject.

AMO-232      15                      Z                      E                      GE,M,N                      L/S

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Goal. Generate tactical decision aids required in support of operations.

Requirement. Given mission parameters and forecasted data, produce basic tactical decision aid products used by the JMA in impact assessment. The listed products shall be produced at a minimum.

- (1) Historical environmental prediction condition (HEPC) summary.
- (2) Refractive index profile.
- (3) Radar coverage diagrams.
- (4) Radar propagation loss.
- (5) Platform vulnerability.
- (6) Probability of detection.
- (7) Electronic support measures.
- (8) Electronic countermeasures.
- (9) AREPS.
- (10) SLAP.
- (11) TAWS.

Performance Standard. METOC Analyst Instructor shall evaluate successful completion of the all the requirements per references.

Prerequisite. Academic training by MAI on subject.

### 133. COMBAT QUALIFICATION TRAINING

#### 1. Apprentice METOC Operations (AMO)

a. Purpose. To enhance proficiency in core skills and core plus skills through practical application.

b. General. This portion of the training syllabus is comprised of on-job and event driven training. Documentation of training events shall be completed and reported in ATRIMS as well as local training jackets.

c. Requirement. A METOC Analyst Instructor shall conduct training. The METOC Analyst Instructor shall locally document and forward documentation of events to the Master METOC Analyst.

d. Event Training

AMO-300      4                      Z                      E                      GE,M,N                      L/S

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Goal. Conduct a watch turnover procedures.

Requirement. When directed, conduct watch turnover procedures. The Apprentice METOC Analyst shall complete the listed tasks.

- (1) Brief current weather conditions.
- (2) Brief equipment status.
- (3) Brief current watches, warnings and advisories.
- (4) Brief personnel status.

Performance Standard. The MAI will evaluate the Apprentice METOC Analyst on the performance of the requirement for successful completion of the event. Requirement shall be fulfilled 10 times.

Prerequisite. Academic training by MAI on subject.

AMO-301      4                      Z                      E                      C                      L/S

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Goal. Conduct logistic support functions.

Requirement. Conduct the listed logistical support functions IAW references.

- (1) Inventory consumables and identify deficiencies to the METOC chief.
- (2) Initiate request for supplies and equipment.
- (3) Execute hazardous materials program procedures.
- (4) Execute deployment of METOC equipment when directed.

Performance Standard. The MAI will evaluate the performance of the requirement for successful completion IAW the references.

Prerequisite. Academic training by MAI on subject.

AMO-302      2                      Z                      E                      C                      L/S

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Goal. Conduct a forward area limited observation program (FALOP) procedures.

Requirement. Given a request for information (RFI), respond with requested support products. Complete the following.

- (1) Encode observational data requested.
- (2) Record observational data requested.
- (3) Disseminate observational data requested.

Performance Standard. The MAI will evaluate the performance of the requirement for successful completion IAW the references.

Prerequisite. Academic training by MAI on subject.

AMO-303    1                    Z                    E                    GE,M,N            L/S

Goal. Maintain meteorological data in central server database.

Requirement. Utilizing meteorological processing systems, network applications, and in accordance with system technical manuals, perform the following:

- (1) Archive locally derived products to METOC database.
- (2) Archive METOC message traffic into METOC database.
- (3) Archive locally derived mission support briefs into METOC database.
- (4) Monitor incoming data streams into the METOC database.
- (5) Disseminate products from the METOC database as required.

Performance Standard. The MAI shall evaluate the completion of the requirement to ensure that the Apprentice METOC Analyst does not violate system or data integrity.

Prerequisite. Academic training by MAI on subject.

AMO-304    24                    Z                    E                    GE,M,N            L/S

Goal. Operate HF/VHF/UHF/SHF radio receivers/transceivers.

Requirement. Utilize HF/VHF/UHF/SHF radio receivers/transceivers and in accordance with system technical manuals. Perform the following:

- (1) Select a frequency.
- (2) Tune for optimum reception.
- (3) Monitor output.
- (4) Patch to appropriate output device.
- (5) Fill SINCGARS.
- (6) Operate receivers/transmitters in clear and covered mode.
- (7) Operate in a single channel and frequency-hopping mode.

Performance Standard. The MAI shall evaluate the Apprentice METOC Analyst's performance of the requirement to ensure that procedures are in accordance with the references and do not violate system or data integrity.

Prerequisite. Academic training by MAI on subject.

AMO-305    2                    Z                    E                    N/A                L/S

Goal. Perform security procedures.

Requirement. Perform METOC operations IAW security procedures without violation of security orders and regulations. Perform the following:

- (1) Enforce physical security awareness program.
- (2) Load communication security (COMSEC) equipment.
- (3) Prevent compromise of classified material.
- (4) Exercise emergency action/destructive plans.
- (5) Maintain security logbook.

Performance Standard. The MAI shall evaluate the Apprentice METOC Analyst's performance of the requirement to ensure that procedures are in accordance with the references and do not violate security procedures.

Prerequisite. Academic training by MAI on subject.

AMO-306    24                    Z                    E                    GE,M                    L/S

Goal. Perform advanced operations on meteorological radar.

Requirement. Given meteorological radar and applicable manuals complete advanced operations while maintaining both operator and equipment safety. Perform the listed tasks.

- (1) Select Product type for generation.
- (2) Transfer radar product type to database.
- (3) Perform:
  - (a) Archive product functions.
  - (b) Zoom functions.
  - (c) Loop functions.
  - (d) 3-d display functions.
  - (e) Range height indicator (RHI) applications.
  - (f) Color scale adjustments for product display.
  - (g) Cross-section functions.
- (4) Setup and implement job scheduling of radar products.

Performance Standard. The MAI shall evaluate the Apprentice METOC Analyst's performance of the requirement to ensure that procedures are in accordance with the references. Professional discussion of the actions and uses of the imagery retrieved shall be conducted by the MAI to enhance understanding.

Prerequisite. Academic training by MAI on subject.

AMO-307    7                    Z                    E                    GE,M                    L/S

Goal. Perform advanced operations on available satellite system.

Requirement. Utilizing the available equipment and manuals, perform the listed tasks.

- (1) Transfer satellite imagery product to database.
- (2) Perform archive product function.
- (3) Perform zoom functions.
- (4) Execute loop functions.
- (5) Execute pre-established product set enhancement curves.
- (6) Perform color scale adjustments for product display.

Performance Standard. The MAI shall evaluate the Apprentice METOC Analyst's performance of the requirement to ensure that procedures are in accordance with the references. Professional discussion of the processes and uses of the imagery retrieved shall be conducted by the MAI to enhance understanding.

Prerequisite. Academic training by MAI on subject.

AMO-308      2                      Z                      E                      GE,M,N                      L/S

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Goal. Identify meteorological features on satellite imagery.

Requirement. Utilizing current satellite imagery, correctly identify basic meteorological features in accordance with the reference.

- (1) Areas of high pressure.
- (2) Areas low pressure.
- (3) Frontal boundaries.
- (4) Thunderstorms.
- (5) Significant cloud elements.
- (6) Jet streams.

Performance Standard. The MAI shall evaluate the Apprentice METOC Analyst's performance of the requirement to ensure that procedures are in accordance with the references. Professional discussion of the identification of the features and uses of the analyzed features shall be conducted by the MAI to enhance understanding.

Prerequisite. Academic training by MAI on subject.

AMO-309      2                      Z                      E                      GE,M,N                      L/S

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Goal. Identify meteorological features on meteorological radar products.

Requirement. Utilizing current meteorological radar products, correctly identify basic meteorological features in accordance with the reference.

- (1) Cloud tops.
- (2) Cloud and precipitation.
- (3) Maximum wind.
- (4) Severe weather events.

Performance Standard. The MAI shall evaluate the Apprentice METOC Analyst's performance of the requirement to ensure that procedures are in accordance with the references. Professional discussion of the identification of the features and uses of the analyzed features shall be conducted by the MAI to enhance understanding.

Prerequisite. Academic training by MAI on subject.

## 2. Forecast Support Training (FST)

a. Purpose. To familiarize and train personnel in forecast support roles.

### b. General

(1) Administrative Notes. Training shall be completed locally by a qualified MAI. Close oversight of this stage of training by the METOC chief is essential to ensure a solid base of knowledge for progression within the METOC community.

#### (1) Prerequisites

- (a) Minimum of 3 years in operational apprentice METOC billet.

(b) Rank of Lance Corporal to Sergeant.

(c) Recommended by a qualified journeyman and assignment to syllabus by the METOC Officer.

(d) Completion of events 600, 602, 603, 604.

(3) Stage End Performance. Upon completion of this stage of the syllabus the Apprentice METOC Analyst shall have a base knowledge and techniques for providing limited forecast support.

c. Crew Requirements. Qualified Apprentice METOC Analyst, METOC Analyst Instructor, and Qualified Journeyman Analyst.

d. Academic Training. Academic training is required for successful completion of this stage of the syllabus. Units are encouraged to utilize all training materials, text, computer based, on-job, and simulations to solidify knowledge of the events listed.

e. Event Training

FST-310	5	Z	E	GE,M,N	L/S
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Goal. Introduce the core knowledge of atmospheric physics.

Requirement. Exhibit knowledge of the following subjects:

- (1) Atmospheric structure.
- (2) Atmospheric Variables.
- (3) Vectors.
- (4) Pressure.
- (5) Temperature and moisture.
- (6) Fundamentals of atmospheric concepts.
- (7) Advection.
- (8) Thermal winds.
- (9) Thickness charts.
- (10) Heat transfer.
- (11) Cloud formation and dissipation.
- (12) Precipitation types

Performance Standard. The Apprentice METOC Analyst shall be able to identify and technically discuss the subjects listed on a written or verbal test and achieve a proficiency of 80% or higher. MAI shall determine completion of the event based on confidence exhibited by the apprentice when answering questions and achievement of proficiency on the test.

Prerequisite. Academic training by MAI on subject.

FST-311	5	Z	E	GE,M,N	L/S
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Goal. Demonstrate the core knowledge of atmospheric dynamics.

Requirement. Exhibit knowledge of the following subjects:

- (1) Rotational and circular motion.

- (2) Atmospheric forces.
- (3) Divergence.
- (4) Vorticity.
- (5) Jet streams.
- (6) Atmospheric wave terminology.
- (7) 500 mb heights and vorticity chart.
- (8) Vertical motions.
- (9) Air masses.
- (10) Frontal systems.
- (11) Evolution of frontal systems.
- (12) Synoptic scale systems.
- (13) Evolution of synoptic scale baroclinic systems.
- (14) Local modification to large scale circulations.

Performance Standard. The Apprentice METOC Analyst shall be able to identify and technically discuss the subjects listed on a written or verbal test and achieve a proficiency of 80% or higher. MAI shall determine completion of the event based on confidence exhibited by the apprentice when answering questions and achievement of proficiency on the test.

Prerequisite. Academic training by MAI on subject.

FST-312	2	Z	E	N/A	L/S
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Goal. State the advantages and disadvantages, and analysis of meteorological satellite imagery.

Requirement. Exhibit knowledge of the following subjects:

- (1) Advantages and disadvantages.
- (2) Principles of weather satellite imagery.
- (3) Weather Satellite types.
- (4) Weather Satellite imagery and enhancements.
- (5) Weather Satellite derived products.
- (6) Weather Satellite viewing considerations.
- (7) Weather Satellite analysis.

Performance Standard. The Apprentice METOC Analyst shall be able to identify and technically discuss the subjects listed on a written or verbal test and achieve a proficiency of 80% or higher. MAI shall determine completion of the event based on confidence exhibited by the apprentice when answering questions and achievement of proficiency on the test.

Prerequisite. Academic training by MAI on subject.

FST-313	6	Z	E	N/A	L/S
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Goal. Introduce theories of atmospheric dynamics and physics application through synoptic scale analysis.

Requirement. Exhibit knowledge of theoretical dynamics and physics by initializing, analyzing, briefing meteorological features and providing sound meteorological reasoning for placement of features. The Apprentice METOC Analyst shall:

- (1) Initialize model data.
- (2) Analyze or re-analyze:
  - (a) Surface chart.
  - (b) Thickness chart.
  - (c) Vorticity.
  - (d) Standard Upper Air chart set.
  - (e) Satellite imagery.
  - (f) Radar imagery.
  - (g) Weather depiction charts.
- (3) Discuss meteorological reasoning for analyzed features.

Performance Standard. The Apprentice METOC Analyst shall be able to identify, depict and provide technical reasoning for meteorological features depicted. Apprentice METOC Analyst shall complete the requirement without violating meteorological rules.

Prerequisite. Academic training by MAI on subject.

FST-314	10	Z	E	N/A	L/S
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Goal. Introduce synoptic scale forecasting and prognosis techniques.

Requirement. Analyze centrally prepared products and applying academic principles, forecast synoptic scale features by completing the listed items.

- (1) Initial model data.
- (2) Analyze or re-analyze:
  - (a) Surface chart.
  - (b) Thickness chart.
  - (c) Vorticity.
  - (d) Standard Upper Air chart set.
  - (e) Satellite imagery.
  - (f) Radar imagery.
  - (g) Weather depiction charts.
- (3) Develop forecasted intensity and location of weather features.
- (4) Discuss meteorological reasoning for forecasted elements.

Performance Standard. The Apprentice METOC Analyst shall be able to identify, depict and provide technical reasoning for meteorological features depicted. Apprentice METOC Analyst shall complete the requirement without violating meteorological rules.

Prerequisite. Academic training by MAI on subject.

FST-315	2	Z	E	N/A	L/S
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Goal. Global and regional METOC model data.

Requirement

- (1) Identify the model type.
- (2) State the strengths and weakness for each type of model runs.

Performance Standard. Without error.

Prerequisite. Academic training by MAI on subject.

FST-316	24	Z	E	N/A	L/S
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Goal. Introduce weather element forecasting (Mesoscale analysis and forecasting) techniques.

Requirement. Upon completion of academic training, exhibit a comprehensive knowledge of Mesoscale forecasting by analyzing, forecasting, and briefing Mesoscale meteorological features.

Performance Standard. Must successfully pass written measurement and complete the requirement without violating meteorological theories.

Prerequisite. Academic training by MAI on subject.

FST-317	6	Z	E	N/A	L/S
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Goal. To introduce techniques and procedures for forecasting convective and non-convective severe weather.

Requirement. Given required charts, shall forecast the convective and non-convective severe weather elements listed and provide meteorological justification for forecast.

- (1) Vertical and horizontal wind shear gradients.
- (2) Tornadic activity.
- (3) Thunderstorm activity.
- (4) Winter Storms.

Performance Standard. Given METOC data, knowledge of atmospheric physics and dynamics, and in accordance with the references, forecast for the specified severe weather elements.

Prerequisite. Academic training by MAI on subject.

FST-318	2	Z	E	N/A	L/S
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Goal. Introduce aviation weather forecasting techniques and procedures.

Requirement. Receive training on aviation weather forecasting, generation of aviation weather products, and briefing products. At a minimum, analyze and forecast for:

- (1) Turbulence.
- (2) Icing.
- (3) Take off weather.
- (4) Upper level weather elements.
- (5) Arrival weather elements.

Performance Standard. Given academic training, METOC data, mission data, and in accordance with the references, forecast for specified forecast aviation weather elements and provide aviation weather support products within course tolerances.

Prerequisite. Academic training by MAI on subject.

FST-319	1	Z	E	N/A	L/S
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Goal. Introduce weather warnings and advisories.

Requirement. Become familiar with weather warnings and advisories, the content of each, and the forecasting techniques to determine the required warning and/or advisory.

Performance Standard. Upon completion of academic training, student shall take a written exam. Minimum score 80%.

Prerequisite. Academic training by MAI on subject.

FST-320	10	Z	E	N/A	L/S
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Goal. Brief chart set.

Requirement. Utilizing Analyzed Chart set, brief 5 chart sets. Each chart set shall contain, at a minimum, the charts listed. Brief meteorological features that have been analyzed.

- (1) Surface chart.
- (2) Upper air charts:
  - (a) 850.
  - (b) 700.
  - (c) 500.
  - (d) 300.
- (3) Support charts:
  - (a) Satellite Imagery.
  - (b) Vorticity.
  - (c) 1000-500MB Thickness.

Performance Standard. The MAI shall evaluate the Apprentice METOC Analyst's performance of the requirement to ensure that procedures are in accordance with the references. Professional discussion of the identification of the features and uses of the analyzed features shall be conducted by the MAI to enhance understanding.

Prerequisite. Academic training by MAI on subject.

FST-321	3	Z	E	N/A	L/S
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Goal. To certify knowledge of local area forecasting content and format.

Requirement. In accordance with the references, utilize local, regional, and global meteorological models to assess and determine the current and forecast meteorological elements. Prepare a local area forecast for a 96 hour period. At a minimum complete the following tasks:

- (1) Forecast cloud types and amount.
- (2) Forecast precipitation types and probability.
- (3) Forecast surface visibility.
- (4) Forecast weather and obstruction to visibility.
- (5) Forecast Maximum/Minimum temperatures.
- (6) Forecast wind Speed, Direction, and character.
- (7) Forecast icing type, height, and intensity.
- (8) Forecast turbulence type, height, and intensity.

Performance Standard. MAI will evaluate the product for content and verification.

Prerequisite. Academic training by MAI on subject.

FST-322    25                    Z,R                    E                    GE,M,N                    L/S

Goal. To certify knowledge of Terminal Aerodrome Forecast (TAF) content and format.

Requirement. In accordance with the references and utilizing local, regional, and global meteorological models, assess the determine current and forecast meteorological elements and prepare a Terminal Aerodrome Forecast. At a minimum, complete the following tasks.

- (1) Minimum altimeter setting.
- (2) Cloud types, amounts, and layer heights.
- (3) Precipitation types.
- (4) Surface visibility.
- (5) Weather and obstruction to visibility.
- (6) Maximum/Minimum temperatures.
- (7) Wind Speed, Direction, and character.
- (8) Icing type, height, and intensity.
- (9) Turbulence type, height, and intensity.
- (10) Encode forecast meteorological elements in accordance with reference.

Performance Standard. MAI will ensure 50% of the TAFS are for a location other than their current location. Must complete the requirement a minimum of 25 times and be in accordance with references.

Prerequisite. Academic training by MAI on subject.

FST-323    8                    Z                    E                    GE,M,N                    L/S

Goal. Conduct flight weather briefing (DD175-1).

Requirement. Under the supervision of a MAI and when given a DD175 or like flight weather request, graphic METOC products, alphanumeric meteorological products, appropriate software and hardware, and knowledge of forecasting rules and theories, prepare a minimum of 20 flight weather briefings and 5 VFR Stamp flight weather briefings. For each brief the Apprentice METOC Analyst will complete the following steps.

- (1) Evaluate current atmospheric parameters along the flight path.
- (2) Forecast the following atmospheric impacts along the flight path.
  - (a) Turbulence.
  - (b) Icing.
  - (c) Thunderstorm Activity.
  - (d) Flight visibility.
  - (e) Flight level Winds and temperature.
- (3) Forecast the following meteorological conditions at destinations and alternates.
  - (a) Sky Conditions.
  - (b) Visibility.

- (c) Type and character of Precipitation or obstruction to visibility.
- (d) Wind Direction.
- (e) Wind Speed (within 5 knots of actual conditions)
- (f) Altimeter Setting.

Performance Standard. Requirement must be met within 10 minutes of receipt and be in accordance with orders and directives. Specific criteria for content are:

- (1) Sky Conditions (within 500 feet of actual arrival conditions).
- (2) Visibility (within 1 mile of the actual arrival conditions).
- (3) Type and character of Precipitation or obstruction to visibility.
- (4) Wind Direction (within 30 degrees if wind speed greater than six knots of actual arrival conditions).
- (5) Wind Speed (within 5 knots of actual conditions)
- (6) Altimeter Setting (within 2 in. of mercury of actual arrival conditions).

Prerequisite. Academic training by MAI on subject.

FST-324	10	Z	E	GE,M,N	L/S
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Goal. To certify knowledge of flight weather packets.

Requirement. Given a flight weather packet request, prepare and brief a flight weather packet. Flight weather packet shall include the following products.

- (1) Construct a horizontal weather depiction.
- (2) Construct a ditch-heading chart.
- (3) Construct an altimeter setting chart.
- (4) Construct an upper-level wind chart.
- (5) Construct a sea surface temperature chart.
- (6) Prepare DD-175-1 flight weather brief.
- (7) Prepare an OPNAV 3140/25 flight forecast folder.
- (8) Include mission essential products as applicable.

Performance Standard. Flight weather packet must be in accordance with the references, be completed within 2 hours, and be accomplished a minimum of 5 times.

Prerequisite. Academic training by MAI on subject.

FST-325	12	Z	E	N/A	L/S
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Goal. Draft and conduct a climatology brief.

Requirement. Research, prepare, and conduct a 3 month climatology brief, which includes the listed items as determined by the MAI.

- (1) Overview.
- (2) Geography.
- (3) Terrain.
- (4) Oceanography.
- (5) Astronomical.

- (6) Seismic activity.
- (7) Specific weather elements, if applicable:
  - (a) Relative humidity.
  - (b) Temperature.
  - (c) Thunderstorms/precipitation.
  - (d) Prevailing winds.
  - (e) Sky condition.
  - (f) IFR/VFR/Marginal VFR percentages.
  - (g) Ice thickness and flow.
  - (h) Volcanic activity.

Performance Standard. Completed brief must contain the items determined by the MAI and be representative of the climate in the selected area. The MAI shall determine the area of interest, location and content of the brief.

Prerequisite. Academic training by MAI on subject.

#### 134. FULL COMBAT QUALIFIED

##### 1. Apprentice METOC operations

a. Purpose. To extend the proficiency in core skills and core plus skills to special METOC operations that require completion by a limited number of personnel.

b. General. This portion of the training syllabus is comprised of on-job and event driven training. Documentation of training events shall be completed and reported in ATRIMS as well as local training jackets.

c. Requirement. A METOC Analyst Instructor shall conduct training. The METOC Analyst Instructor shall locally document and forward documentation of events to the Master METOC Analyst.

##### d. Event Training

AMO-400	1	Z	E	N/A	L/S
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Goal. Conduct tower visibility observer training.

Requirement. Conduct tower visibility observer certification training. Upon completion, prepare and disseminate correspondence to the certifying authority for approval.

Performance Standard. Train Air Traffic Control personnel on observing visibility.

Prerequisite. Academic training by MAI on subject.

AMO-401	2	Z	E	M,N	L/S
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Goal. Intermediate networking.

Requirement. Given data and a METOC data network, be able to discuss standard network components and activity with non-resident technicians during troubleshooting processes. The Apprentice METOC Analyst must also

be able to draft outage reports. The Apprentice METOC Analyst will identify, discuss, or conduct the following:

- (1) Components of a basic network.
- (2) Purpose of basic network components.
- (3) General network commands.
- (4) Preparation of draft outage messages.
- (5) Identify possible system/software upgrades.
- (6) Follow flow charts for troubleshooting systems.

Performance Standard. Must discuss subject without reference.

Prerequisite. Academic training by MAI on subject.

AMO-402      2                              Z                              E                              C                              L/S

Goal. When assigned as the logs corrector, perform quality assurance checks on observational, climatological, tidal, and station reports.

Requirement. Given each type of report(s), the individual will conduct quality assurance checks. The Apprentice METOC Analyst will ensure reports are correct for:

- (1) Content.
- (2) Format.
- (3) Coding.
- (4) Timeliness.

Performance Standard. The designated Logs Corrector shall conduct quality assurance checks to 100% accuracy.

Prerequisite. Academic training by MAI on subject.

AMO-403      3                              Z,R                              E                              M,C                              L/S

Goal. When assigned as assistant embarkation representative, implement established embarkation procedures for the METMF(R) in the absence of the embarkation (S)NCO.

Requirement. Utilizing the established embarkation procedures contained in the embarkation desktop procedures, Apprentice METOC Analyst will conduct embarkation operations for the METMF(R) and identify deficiencies in the procedures to the Embarkation (S)NCO. The Apprentice METOC Analyst will perform the following:

- (1) A quarterly review of the embarkation plan.
- (2) Identify deficiencies in procedures.
- (3) Identify deficiencies in the load plans.
- (4) Proper marking of all embarkation containers.
- (5) Attend all embarkation meetings.

Performance Standard. Plans must be in accordance with the references.

Prerequisite. Academic training by MAI on subject.

AMO-404      2                      Z                      E                      GE,M,N                      L/S

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Goal. Maintain meteorological data in central server database.

Requirement. Utilizing meteorological processing systems and network applications, perform METOC database functions. The Apprentice METOC Analyst will perform the following:

- (1) Perform basic setup functions.
- (2) Perform diagnostic check through configuration menus.
- (3) Perform functionality checks between network meteorological systems.
- (4) Maintain shortcut icons, toolbars and hot buttons.
- (5) Save meteorological product sets to a local database.
- (6) Using transmission control protocol (TCP) Internet protocols (TCP/IP), disseminate individual product sets to central processor.

Performance Standard. Conduct the requirement IAW with local policies, procedures and applicable references to ensure database functionality.

Prerequisite. Academic training by MAI on subject.

AMO-405      3                      Z                      E                      GE,M,N                      L/S

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Goal. Generate a METOC capabilities briefing.

Requirement. Given mission parameters and appropriate software or forms, the Apprentice METOC Analyst shall generate a METOC capabilities brief.

Performance Standard. Utilizing the mission parameters and appropriate software or forms, the Apprentice METOC Analyst will complete a METOC capabilities brief, in accordance with the references, that shall be evaluated by a MAI or JMA for content and format.

Prerequisite. Academic training by MAI on subject.

## 2. Forecast Support Certification (FSC)

a. Purpose. To certify the Qualified Apprentice METOC Analyst's knowledge required for Forecast Support Qualification.

### b. General

(1) Administrative Notes. This stage of the syllabus reinforces the knowledge introduced to the Apprentice during initial assessment training and introduce more in-depth and comprehensive training event toward applying the knowledge learned. Appendix D provides a checklist for qualification in Forecast Support.

### (2) Prerequisites

- (a) Minimum of 3 years in an operational apprentice METOC billet.
- (b) Rank of Lance Corporal to Sergeant.

(c) Recommended by a qualified journeyman and assignment to syllabus by the METOC Officer.

(d) Completion of events 600, 602, 603, 604.

(3) Refresher Training. Refresher events shall be completed annually, as per Subject Matter Qualification, or when assigned.

c. Crew Requirements. Qualified JMA, METOC Analyst Instructor, Apprentice METOC Analyst.

d. Academic Training. Computer Based Training (CBT) courses, locally derived periods of instruction, and mentorship greatly enhance the training events in this stage. Local METOC units are encouraged to utilize all training mediums and materials to ensure comprehensive understanding of the topics contained within the events.

e. Event Training

FSC-406	10	Z	E	N/A	L/S
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Goal. To certify knowledge of atmospheric fundamentals.

Requirement. Verbally define and discuss the atmospheric fundamentals listed below during a technical discussion with qualified MAI, Master METOC Analysts and/or METOC Chief.

- (1) Long/short wave trough/ridges.
  - (a) Deepening/building/intensifying.
  - (b) Filling/weakening.
  - (c) Cyclogenesis/frontogenesis.
  - (d) Cyclolysis/frontolysis.
- (2) Pressure systems.
  - (a) Baroclinic/barotropic.
  - (b) Warm/cold air advection.
  - (c) Dry/moist air advection.
- (3) Frontal systems.
  - (a) Active/inactive cold fronts.
  - (b) Active/inactive warm fronts.
  - (c) Stationary fronts.
  - (d) Warm/Cold occlusions.
  - (e) Type "A"/"B" occlusions.
- (4) Jet features.
  - (a) Polar front jet stream.
  - (b) Subtropical jet stream.
  - (c) Conduction/radiation/advection/convection.
- (5) Vorticity.
- (6) Thickness.
- (7) Condensation/evaporation/sublimation.
- (8) Convergence/confluence.
- (9) Divergence/diffluence.
- (10) Types of baroclinic/barotropic low-pressure systems.
- (11) Types of baroclinic/barotropic high-pressure systems.
- (12) Gradient wind.
- (13) Geostrophic wind.
- (14) Relative/absolute/specific humidity.
- (15) Pressure gradient.

(16) Cloud identification/formation.

Performance Standard. The Apprentice METOC Analyst shall discuss 10 topics assigned by the MAI from the topics listed in the requirement and respond to questions posed.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-407	6	Z	E	N/A	L/S
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Goal. To certify knowledge of analyzing and interpreting upper atmospheric weather charts.

Requirement. Given reference materials, analyze and interpret the 925/850/700/500/300/250/200 mb constant pressure charts for the features listed, without violating data and analyzation rules, within 6 hours, to exhibit application of upper atmospheric dynamics and physics.

- (1) Isoheights.
- (2) Isotherms.
- (3) Areas of significant moisture.
- (4) Major short wave axis, troughs and ridges.
- (5) Minor short wave axis, troughs and ridges.
- (6) High and Low height centers.
- (7) Warm and cold pockets.
- (8) Upper fronts (where applicable).

Performance Standard. Upon completion of analysis, the Apprentice METOC Analyst will be required to discuss meteorological reasoning for placement of features until confidence in knowledge is achieved.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-408	.75	Z	E	N/A	L/S
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Goal. To certify knowledge of analyzing and interpreting a surface chart.

Requirement. When given a surface chart, apply analytical techniques and depict the features listed. Discuss meteorological reasoning for placement of features

- (1) Isobars.
- (2) High and Low pressure centers.
- (3) Fronts.
- (4) Highlight weather symbols.
- (5) Troughs.
- (6) Label air masses.
- (7) Dry lines.
- (8) Isallobars.
- (9) Isodrotherms.
- (10) Identify outflow boundaries.

Performance Standards. Complete the requirement within 45 minutes and without violating meteorological theories. Discuss meteorological reasoning for placement of features.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-409 .5 Z E N/A L/S

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Goal. To certify knowledge of analyzing and interpreting a thickness chart.

Requirement. Given a thickness chart, shall apply analytical techniques and depict the features listed. Discuss meteorological reasoning for placement of features.

- (1) Warm/cold air advection.
- (2) High and Low pressure centers.
- (3) Fronts.
- (4) 540Dam Line
- (5) Troughs.
- (6) Label air masses.
- (7) Jet stream.

Performance Standards. Complete the requirement within 30 minutes and without violating meteorological theories. Discuss meteorological reasoning for placement of features.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-410 .5 Z E N/A L/S

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Goal. To certify knowledge of analyzing and interpreting a vorticity chart.

Requirement. When given a vorticity chart, apply analytical techniques and depict the features listed. Discuss meteorological reasoning for placement of features.

- (1) Positive/negative vorticity areas.
- (2) Shear lobes.
- (3) Advection lobes.
- (4) Vorticity lobes.
- (5) X-N distribution.
- (6) Jet stream
- (7) UVM/DVM

Performance Standards. Complete the requirement within 30 minutes and without violating meteorological theories. Discuss meteorological reasoning for placement of features.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-411 1 Z E N/A L/S

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Goal. To certify knowledge of conducting streamline analysis.

Requirement. When given a wind chart, conduct a streamline analysis denoting the features listed. Discuss meteorological reasoning for placement of features.

- (1) Streamlines.
- (2) Asymptotes (convergent/divergent).

- (3) Neutral points.
- (4) Label cyclonic and anti-cyclonic centers.
- (5) Isotachs.
- (6) Wind maximums and minimums.

Performance Standards. Complete the requirement within 1 hour and without violating meteorological theories.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-412	1	Z	E	N/A	L/S
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Goal. To certify knowledge of analyzing and forecasting atmospheric conditions from the Skew-T Log P Diagram.

Requirement. Analyze a Skew-T Log P diagram for elements listed. Discuss how the analyzed elements are applicable to current and forecasted weather phenomenon.

- (1) Compute indices.
  - (a) Lifted index.
  - (b) KI index.
  - (c) Sweat index.
  - (d) Showalter's index.
  - (e) Total Totals.
- (2) Analyze negative/positive energy areas.
- (3) Analyze for equilibrium levels.
- (4) Compute turbulent areas.
- (5) Compute tops of convective activity.
- (6) Compute contrails.
- (7) Compute icing types and levels.
- (8) Compute maximum and minimum temperatures.
- (9) Compute hail.
- (10) Compute thunderstorm gusts.
- (11) Analyze freezing level.
- (12) Analyze for areas of moisture.
- (13) Compute D-Values.
- (14) Compute Relative humidity.

Performance Standard. Must analyze a Skew-T Log P diagram for the elements listed above and state how the derived values/elements apply to forecasting. Evaluation can be written, verbal or practical application.

Prerequisite. AFM-209.

FSC-413	6	Z	E	N/A	L/S
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Goal. To certify knowledge of applied meteorological reasoning in the forecasting of movement and intensity of synoptic scale features.

Requirement. When given required charts, forecast intensity and movement of features listed in the performance steps and provide meteorological justification for forecast.

- (1) Forecast movement and intensity changes in major short wave troughs/ridges.

- (2) Forecast movement and intensity in upper level high and low pressure system.
- (3) Forecast isotherms in major short wave features.
- (4) Forecast moisture in major short wave features.
- (5) Forecast movement and intensity in minor short waves.
- (6) Forecast cyclogenesis of baroclinic low-pressure systems.
- (7) Forecast cycloysis of baroclinic low-pressure systems.
- (8) Forecast anticyclogenesis of baroclinic high-pressure systems.
- (9) Forecast anticyclolysis of baroclinic high-pressure systems.
- (10) Forecast movement and intensity changes in surface pressure systems.
- (11) Forecast movement and intensity changes in surface frontal systems.
- (12) Forecast synoptic scale precipitation.
- (13) Forecast long wave patterns.
- (14) Forecast movement of jet maxes.

Performance Standard. When given required charts and evaluated by a qualified METOC instructor, forecast intensity and movement of features listed in the requirement and provide meteorological justification for the derived forecast.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-414	4	Z	E	N/A	L/S
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Goal. To certify knowledge of forecasting severe weather.

Requirement. When given required charts, analyze and forecast for severe weather elements listed and provide meteorological reasoning for each.

- (1) Vertical and horizontal wind shear gradients.
- (2) Severe Icing.
- (3) Severe/Extreme Turbulence.
- (4) Tornadic activity.
- (5) Thunderstorm activity.
- (6) Winter Storms.

Performance Standard. Derived forecast and reasoning must be in accordance with references. Live evaluation shall be conducted under the direct supervision of a qualified METOC instructor. Forecast shall be completed in such a manner to allow for earliest warning of all destructive weather phenomena.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-415	3	Z	E	N/A	L/S
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Goal. To certify briefing of METOC features from (re)analyzed products.

Requirement. Utilizing Appendix E, analyze and brief (formally or informally) atmospheric dynamic fundamentals.

Performance Standard. Training and preparation of briefing shall be conducted under the mentoring of the METOC instructor. Brief shall be presented to Qualified Journeyman and Master METOC analysts prior to

qualification events. The Apprentice METOC Analyst must meet the requirement in a period of 3 hours.

Prerequisite. FST-310 through FST-320 inclusive.

FSC-416	25	Z,R	E	N/A	L/S
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Goal. To certify knowledge TAF content and format.

Requirement. In accordance with the references and utilizing local, regional, and global meteorological models, assess the determine current and forecast meteorological elements and prepare a Terminal Aerodrome Forecast. At a minimum, complete the following tasks.

- (1) Minimum altimeter setting.
- (2) Cloud types, amounts, and layer heights.
- (3) Precipitation types.
- (4) Surface visibility.
- (5) Weather and obstruction to visibility.
- (6) Maximum/Minimum temperatures.
- (7) Wind Speed, Direction, and character.
- (8) Icing type, height, and intensity.
- (9) Turbulence type, height, and intensity.
- (10) Encode forecast meteorological elements in accordance with reference.

Performance Standard. MAI will ensure 50% of the TAFS are for a location other than their current location. Complete the requirement a minimum of 25 times and be in accordance with references.

Prerequisite. FST-310 through FST-322 inclusive.

FSC-417	24	Z	E	N/A	L/S
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Goal. To certify knowledge of weather warnings.

Requirement. In accordance with references and local procedures, assess and forecast conditions phenomenon requiring generation of the listed weather warnings. Generate (live or simulated) each warning 5 times.

- (1) Thunderstorm warnings.
- (2) Severe Thunderstorm warnings/watches.
- (3) Tornado warnings/watches.
- (4) Wind warnings.
- (5) Storm warning.
- (6) Gale warning.
- (7) Flood warning.
- (8) Flash flood warning.
- (9) Freeze/Hard Freeze warning.
- (10) Small craft warnings/advisories.

Performance Standard. Generate the warnings listed (either simulated or live) in accordance with the references. Live completion of the event shall be monitored and supervised by the METOC instructor to ensure accuracy and safety.

Prerequisite. FST-310 through FST-319 inclusive.

FSC-418    25                    Z                    E                    N/A                    L/S

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Goal. To certify knowledge of flight weather briefing.

Requirement. When given a DD175 or like flight weather request, graphic METOC products, alphanumeric meteorological products, appropriate software and hardware, and knowledge of forecasting rules and theories, prepare a minimum of 20 flight weather briefings and 5 VFR Stamp flight weather briefings. For each brief the Apprentice METOC Analyst will complete the following steps.

- (1) Evaluate current atmospheric parameters along the flight path.
- (2) Forecast the following atmospheric impacts along the flight path.
  - (a) Turbulence.
  - (b) Icing.
  - (c) Thunderstorm Activity.
  - (d) Flight visibility.
  - (e) Flight level Winds and temperature.
- (3) Forecast the following meteorological conditions at destination(s) and alternate(s).
  - (a) Turbulence.
  - (b) Icing.
  - (c) Thunderstorm Activity.
  - (d) Flight visibility.
  - (e) Flight level Winds and temperature.
- (4) Forecast the following meteorological conditions at destination(s) and alternate(s).
  - (a) Sky Conditions.
  - (b) Visibility.
  - (c) Type and character of Precipitation or obstruction to visibility.
  - (d) Wind Direction.
  - (e) Wind Speed (within 5 knots of actual conditions).
  - (f) Altimeter Setting.

Performance Standard. Requirement must be met within 10 minutes of receipt and be in accordance with orders and directives. Specific criteria for content are:

- (1) Sky Conditions (within 500 feet of actual arrival conditions).
- (2) Visibility (within 1 mile of the actual arrival conditions).
- (3) Type and character of Precipitation or obstruction to visibility.
- (4) Wind Direction (within 30 degrees if wind speed greater than six knots of actual arrival conditions).
- (5) Wind Speed (within 5 knots of actual conditions).
- (6) Altimeter Setting (within 2 in. of mercury of actual arrival conditions).

Prerequisite. FST-310 through FST-323 inclusive.

FSC-419	10	Z	E	N/A	L/S
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Goal. To certify knowledge of flight weather packets.

Requirement. Given a flight weather packet request, prepare and brief a flight weather packet. Flight weather packet shall include the following products.

- (1) Construct a horizontal weather depiction.
- (2) Construct a ditch-heading chart.
- (3) Construct an altimeter setting chart.
- (4) Construct an upper-level wind chart.
- (5) Construct a sea surface temperature chart.
- (6) Prepare DD-175-1 flight weather brief.
- (7) Prepare an OPNAV 3140/25 flight forecast folder.
- (8) Include mission essential products as applicable.

Performance Standard. Flight weather packet must be in accordance with the references, be completed within 2 hours, and be accomplished a minimum of 5 times.

Prerequisite. FST-310 through FST-324 inclusive.

FSC-420	2	Z	E	N/A	L/S
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Goal. To certify knowledge of verifying meteorological model output.

Requirement. Through practical application, verify meteorological model output by identifying strengths and weaknesses of global, regional, and mesoscale numerical models.

Performance Standard. Through practical application, verify model output with 12/24/36/48 analyses. Demonstrate knowledge of available numerical models

Prerequisite. FST-310 through FST-315 inclusive.

### 3. Forecast Support Operations (FSO)

a. Purpose. This stage of the enhance and re-enforce the knowledge of forecast support after certification and qualification.

b. General

(1) Administrative Notes. Training shall be completed locally by a qualified MAI. Close oversight of this stage of training by the METOC chief is essential to ensure a solid base of knowledge for progression within the METOC community.

(2) Prerequisites

- (a) Completion of FST events.
- (b) Completion of FSO level 600 events.
- (c) Rank of Lance Corporal to Sergeant.

(3) Stage End Performance. Upon completion of this stage of the syllabus the Apprentice METOC Analyst shall have a base knowledge and techniques for providing limited forecast support.

c. Crew Requirements. Qualified Apprentice METOC Analyst, METOC Analyst Instructor, and Qualified Journeyman Analyst.

d. Academic Training. Academic training is required for successful completion of this stage of the syllabus. Units are encouraged to utilize all training materials, text, computer based, on-job, and simulations to solidify knowledge of the events listed.

e. Event Training

FSO-421	60	Z	E	GE,M,N	L/S
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Goal. Conduct forecast support operations.

Requirement. Conduct forecast support operations for garrison activities. Personnel assigned may:

- (1) Conduct flight weather briefings.
- (2) Generate aviation weather products. (TAF, Daily Forecast, route forecasts, etc.)
- (3) Conduct security operations.
- (4) Conduct warning and advisories functions.
- (5) Conduct METOC system operations.
- (6) Conduct basic METOC system and network functions.

Performance Standard. Qualified FSO personnel shall conduct operations under the supervision of a qualified JMA to enhance knowledge and assist in non routine scenarios.

Prerequisite. QAL-611.

FSO-422	1	Z	E	N/A	L/S
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Goal. Receive recommendation for attendance to MOAF course.

Requirement. Recommendation must be received for attendance to MOAF.

Performance Standard. A Lead METOC Apprentice must possess the technical and professional knowledge as well as exhibit sound leadership and be nominated for assignment to the MOAF Course.

Prerequisite. QAL 611, recommended 6 months OJT as QAL-611.

## 150. REQUIREMENTS, DESIGNATIONS, AND QUALIFICATION

### 1. Requirements

a. General. This portion of the training syllabus is comprised of requirements for progression within the occupational specialty 6821. Documentation of training events shall be completed and reported in ATRIMS as well as local training jackets.

b. Combat Readiness Percentage. Completion of the events in this stage do not have combat readiness percentages attached.

c. Event Training

SEC-600 E L

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Goal. Tracking code for secret clearance.

Requirement. To ensure secret security clearance is obtained and maintained by the Marine.

Performance Standard. The Marine will complete and submit periodic reviews as required by the references.

Prerequisite. ACP-120, ACP-121.

SEC-601 E L

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Goal. Tracking code for top secret clearance.

Requirement. To ensure secret security clearance is obtained and maintained by the Marine.

Performance Standard. The Marine will complete and submit periodic reviews as required by the references.

Prerequisite. SEC-600.

ACA-602 E L

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Goal. Enroll and complete online the AG module 1.

Requirement. The Marine will perform the following:

- (1) Complete the Module utilizing the materials provided.
- (2) Log onto the CNET website.
- (3) Transfer answers to on-line form.

Performance Standard. Utilizing the reference and a desktop computer achieve the minimum passing score of 80%.

Prerequisite. None.

ACA-603 E L

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Goal. Enroll and complete online the AG module 2.

Requirement. The Marine will perform the following:

- (1) Complete the Module utilizing the materials provided.
- (2) Log onto the CNET website.
- (3) Transfer answers to online form.

Performance Standard. Utilizing the reference and a desktop computer achieve the minimum passing score of 80%.

Prerequisite. ACA-602.

ACA-604 E L

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Goal. Enroll and complete on line principles of oceanography.

Requirement. The Marine will perform the following:

- (1) Complete the course utilizing the materials provided.
- (2) Submit the answer sheet to be locally graded.

Performance Standard. Utilizing the reference achieve the minimum passing score of 80%.

Prerequisite. ACA-602, ACA-603.

ACA-605 E L

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Goal. Complete AG module 3.

Requirement. The Marine will perform the following:

- (1) Complete the Module utilizing the materials provided.
- (2) Log onto the CNET website.
- (3) Transfer answers to online form.

Performance Standard. Utilizing the reference and a desktop computer achieve the minimum passing score of 80%.

Prerequisite. ACA-602, ACA-603.

ACA-606 E L

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Goal. Complete AG module 4.

Requirement. The Marine will perform the following:

- (1) Complete the Module utilizing the materials provided.
- (2) Log onto the CNET website.
- (3) Transfer answers to online form.

Performance Standard. Utilizing the reference and a desktop computer achieve the minimum passing score of 80%.

Prerequisite. ACA-602 through ACA-605 inclusive.

ACA-607 E L

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Goal. Complete AG module 5.

Requirement. The Marine will perform the following:

- (1) Complete the Module utilizing the materials provided.
- (2) Log onto the CNET website or MarineNet.
- (3) Transfer answers to online form.

Performance Standard. Utilizing the reference and a desktop computer achieve the minimum passing score of 80%.

Prerequisite. None.

ACA-608 E L

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Goal. Complete Introduction To Forecasting (ITF).

Requirement. The Marine will perform the following:

- (1) Complete the course utilizing the material provided.
- (2) Take and pass locally administered math test.
- (3) Take and pass locally administered meteorological test.

Performance Standard. Utilizing the reference achieve a passing score of 80%.

Prerequisite. ACA-602 through ACA-607 inclusive.

## 2. Qualifications

a. General. Qualifications are based on the competency and proficiency in specific skills as determined by the designating authority. Qualifications do not have CRP values assigned.

b. Requirement. Documentation of training events shall be completed and reported in ATRIMS as well as local training jackets.

### c. Event Training

QAL-609 E L/S

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Goal. Obtain qualification as an Apprentice METOC Analyst.

Requirement. SNM will be the subject of a certification board comprised of, at a minimum, a Master METOC Analyst, qualified Apprentice METOC Analyst, and METOC officer. The board will determine the knowledge of all level 100 events through practical applications and response to questions. Upon completion of event, SNM will be granted signature authority for observations. Event shall be completed within 90 days of assignment to first operational unit.

Performance Standard. SNM must successfully exhibit comprehensive knowledge of materials contained in events and respond to questions in a clear and concise manner to be recommended for qualification as a Apprentice METOC Analyst.

Prerequisite. Events FAM-100 through AMO-155 inclusive.

QAL-611 E L/S

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Goal. Obtain forecast support qualification.

Requirement. SNM will be the subject of a certification board comprised of, at a minimum, a Journeyman METOC Analyst, a Master METOC Analyst, METOC Chief and/or METOC officer. The board will determine the knowledge

of analysis and forecasting techniques through practical applications and response to questions.

Performance Standard. SNM must successfully exhibit comprehensive knowledge of materials contained in events and respond to questions in a clear and concise manner to be recommended for qualification.

Prerequisite. QAL-609; AFM-200 through FSO-420; ACA-604; ACA-607; ACA-608.

### 3. Designations

a. General. Designations are based on the leadership capabilities as determined by the designating authority. Designations do not have CRP values assigned.

b. Requirement. Documentation of training events shall be completed and reported in ATRIMS as well as local training jackets.

#### c. Event Training

DES-612

E

L/S

Goal. Obtain lead METOC apprentice.

Requirement. A Lead METOC Apprentice must exhibit the technical knowledge and leadership qualities to be recommended for designation by a Master METOC analyst.

Performance Standard. A Lead METOC Apprentice must possess the technical and professional knowledge as well as exhibit sound leadership and mentor other METOC apprentices.

Prerequisite. SEC-600, ACA-604, ACA-607, ACA-608 and QAL-611.

180. EVENT CRP/HOURS/REFRESH BREAKDOWN. Tables 1-8 through 1-12 at the end of chapter provides a listing of the events, hours and combat readiness percentage for each stage of the syllabus.

Table 1-8.--Apprentice METOC Analyst Combat Capable Events.

Combat Capable Training Events (Events, Hours, Interval and CRP)					
STAGE	CODE	HRS	Interval	CRP	Notes
FAM	100	51	N/A	1	Marine Corps Weather Observer Course
FAM	101	48	N/A	1	Marine Corps Weather Observer Course
FAM	102	68	N/A	1	Marine Corps Weather Observer Course
FAM	103	1	N/A	1	Marine Corps Weather Observer Course
EFT	104	1	N/A	1	Air Force Weather Apprentice Course
EFT	105	10	N/A	1	Air Force Weather Apprentice Course
EFT	106	40.5	N/A	1	Air Force Weather Apprentice Course
EFT	107	45	N/A	1	Air Force Weather Apprentice Course
EFT	108	68	N/A	1	Air Force Weather Apprentice Course
EFT	109	12	N/A	1	Air Force Weather Apprentice Course
EFT	110	12	N/A	1	Air Force Weather Apprentice Course
EFT	111	40.5	N/A	1	Air Force Weather Apprentice Course
EFT	112	40.5	N/A	1	Air Force Weather Apprentice Course
EFT	113	13	N/A	1	Air Force Weather Apprentice Course
EFT	114	12	N/A	1	Air Force Weather Apprentice Course
EFT	115	12	N/A	1	Air Force Weather Apprentice Course
ACP	116	1	N/A	1	Air Force Weather Apprentice Course
ACP	117	1	N/A	1	
ACP	118	1	N/A	1	
ACP	119	1	N/A	1	
ACP	120	6	N/A	1	
ACP	121	1	N/A	1	
ACP	122	1	N/A	1	
ACP	123	1	N/A	1	
ACP	124	1	N/A	1	
ACP	125	3	N/A	1	
ACP	126	3	N/A	1	
ACP	127	6	N/A	1	
ACP	128	1	N/A	1	
ACP	129	12	N/A	1	
ACP	130	2	N/A	1	
ACP	131	2	N/A	1	
ACP	132	50	N/A	1	
ACP	133	50	N/A	1	
ACP	134	2	N/A	1	

Table 1-8.--Apprentice METOC Analyst Combat Capable Events--Continued.

ACP	135	1	N/A	1	
ACP	136	1	N/A	1	
ACP	137	1	N/A	1	
ACP	138	1	N/A	1	
ACP	139	15	N/A	1	
ACP	140	1	N/A	1	
ACP	141	1	N/A	1	
ACP	142	3	N/A	1	
ACP	143	1	N/A	1	
ACP	144	1	N/A	1	
ACP	145	.25	N/A	1	
ACP	146	1.0	N/A	1	
ACP	147	.5	N/A	1	
ACP	148	.5	N/A	1	
ACP	149	5	N/A	1	
ACP	150	.25	N/A	1	
ACP	151	1.0	N/A	1	
ACP	152	1	N/A	1	
ACP	153	1	N/A	1	
AMO	155	155	N/A	6	
TOTALS		811		60	

Table 1-9.--Apprentice METOC Analyst Combat Ready Events.

Combat Ready Training Events (Events, Hours, Interval and CRP)					
STAGE	CODE	HRS	Interval	CRP	Notes
AFM	200	.5		.5	
AFM	201	.5		.5	
AFM	202	5		.5	
AFM	203	4		.5	
AFM	204	10		.5	
AFM	205	20		.5	
AFM	206	4		.5	
AFM	207	6		.5	
AFM	208	12		.5	
AFM	209	2		.5	
AFM	210	2		.5	
AMO	211	8	180	.5	
AMO	212	50	180	.5	

Table 1-9.--Apprentice METOC Analyst Combat Capable Events--Continued.

AMO	213	1.5	365	.5	
AMO	214	1.5	90	.5	
AMO	215	16	365	.5	
AMO	216	6	180	.5	
AMO	217	1	180	.5	
AMO	218	1	365	.5	
AMO	219	5	180	.5	
AMO	220	4	90	.5	
AMO	221	1	365	.5	
AMO	222	2	90	.5	
AMO	223	8	90	.5	
AMO	224	2	180	.5	
AMO	225	3	365	.5	
AMO	226	1		.5	
AMO	227	10	90	.5	
AMO	228	10	90	.5	
AMO	229	50	90	.5	
AMO	230	5	90	.5	
AMO	231	5	90	.5	
AMO	232	15	365	.5	
TOTALS		272		15	

Table 1-10.--Apprentice METOC Analyst Combat Qualified Events.

Combat Qualified Training Events (Events, Hours, Interval and CRP)					
STAGE	CODE	HRS	Interval	CRP	Notes
AMO	300	4		.8	
AMO	301	4		.8	
AMO	302	2		.8	
AMO	303	1		.8	
AMO	304	24	180	.8	
AMO	305	2		.8	
AMO	306	24	180	.8	
AMO	307	7	180	.8	
AMO	308	2	90	.8	
AMO	309	2	90	.8	
FST	310	5	180	.8	
FST	311	5	180	.8	
FST	312	2		.8	
FST	313	6	365	.8	

Table 1-10.--Apprentice METOC Analyst Combat Qualified Events--Continued.

FST	314	10	365	.8	
FST	315	2		.8	
FST	316	24		.8	
FST	317	6		.8	
FST	318	2		.8	
FST	319	1		.8	
FST	320	10	90	.8	
FST	321	3		.8	
FST	322	25		.8	
FST	323	8		.8	
FST	324	10		.8	
FST	325	12		.8	
TOTALS		203		20	

Table 1-11.--Apprentice METOC Analyst Full Combat Qualified Events.

Full Combat Qualified Training Events (Events, Hours, Interval and CRP)					
STAGE	CODE	HRS	Interval	CRP	Notes
AMO	400	1		.2	
AMO	401	2		.2	
AMO	402	2		.2	
AMO	403	3		.2	
AMO	404	2		.2	
AMO	405	3		.2	
FSC	406	10	90	.2	
FSC	407	6	90	.2	
FSC	408	1	90	.2	
FSC	409	.5	90	.2	
FSC	410	.5	90	.2	
FSC	411	1	90	.2	
FSC	412	1	90	.2	
FSC	413	6	90	.2	
FSC	414	4	90	.2	
FSC	415	3	90	.2	
FSC	416	25	90	.2	
FSC	417	24	90	.2	
FSC	418	25	90	.2	
FSC	419	10	90	.2	
FSC	420	2	90	.2	
FSO	421	60	90	.2	
FSO	422	1		.2	

Table 1-12.--Requirements, Qualifications, and Designations Events.

Requirements, Qualification, Designations Events (Events, Hours, Interval and CRP)					
STAGE	CODE	HRS	Interval	CRP	Notes
SEC	600				
SEC	601				
ACA	602				Requires training completion certificate
ACA	603				Requires training completion certificate
ACA	604				Requires training completion certificate
ACA	605				Requires training completion certificate
ACA	606				Requires training completion certificate
ACA	607				Requires training completion certificate
ACA	608				Requires training completion certificate
QAL	609		180		Require designating authority letter
QAL	611		180		Require designating authority letter
DES	612				Require designating authority letter

190. EVENT CHAINING. Tables 1-13 provides a listing of the events and chained events.

Table 1-13.--Event Chaining Table.

Event	Events Updated
AMO-216	AFM-201
AMO-213	AFM-200
AMO-306	AMO-223
AMO-307	AMO-222
FST-320	AMO-227, AMO-228, AMO-229, AMO-230, AMO-231
FSC-407	AMO-229
FSC-408	AMO-227
FSC-409	AMO-228