NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS
CIN Q-2A-0391/0093/0491
Q-2A-8298/0591/1299

CNATRAINST 1542.147G
28 Feb 13

CHIEF OF NAVAL AIR TRAINING

ADVANCED MULTI-ENGINE MPTS

2013

DEPARTMENT OF THE NAVY
CHIEF OF NAVAL AIR TRAINING
250 LEXINGTON BLVD SUITE 102
CORPUS CHRISTI TX 78419-5041

CNATRAINST 1542.147G
N713
28 Feb 13

CNATRA INSTRUCTION 1542.147G

Subj: ADVANCED MULTI-ENGINE MULTI-SERVICE PILOT TRAINING SYSTEM (MPTS) CURRICULUM

1. Purpose. To publish the curriculum for training military aviators in the Undergraduate Advanced Multi-Engine phase of training.

2. Cancellation. CNATRAINST 1542.147F will be canceled when the last student enrolled completes the curriculum.

3. Action. This instruction is effective on receipt. No changes will be made without written authorization by the Chief of Naval Air Training (CNATRA).

4. Forms. The CNATRA forms required by this instruction are automated in the Training Integration Management System (TIMS) computer program. Additional CNATRA forms are available on the CNATRA website https://www.cnatra.navy.mil/pubs/forms.htm.

C. HOLLINGSWORTH
Chief of Staff

Distribution:
CNATRA Website

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SUMMARY OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	CHANGE DESCRIPTION	PAGES AFFECTED/ INITIALS

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COURSE DATA

1. Course Title. Advanced Multi-Engine Multi-Service Pilot Training System (MPTS).

2. Course ID Number (CIN). USN (P-3/P-8) Q-2A-0391, USMC Q-2A-0093, USCG Q-2A-0491, Tiltrotor Q-2A-8298, E-6 Q-2A-0591, and E-2/C-2 Q-2A-1299.

3. Location. Naval Air Station, Corpus Christi, Texas 78419.

4. Course Status. Active.

5. Course Mission. The mission of Advanced Multi-Engine MPTS is to develop proficiency in multi-engine flight, advanced instruments, Crew Resource Management/pilot-in-command proficiency, and track-specific tactics. At the successful completion of this phase of aviation training, the flight student will be designated a Naval Aviator qualified in multi-engine aircraft, and will have earned a standard instrument rating.

6. Prerequisite Training. Successful completion of MPTS Primary curriculum (Q-2A-0108), T-6A Joint Primary Pilot Training (AF AETC-P-V4A-J), or T-6B Joint Primary Pilot Training (Q-2A-0217); for Tiltrotor, successful completion of Intermediate Tiltrotor Helicopter MPTS curriculum (Q-2C-9298); for E-2/C-2, successful completion of T-45 Intermediate E-2/C-2 (Q-2A-0392).

7. Security Clearance Required. None.

8. Follow-on Training. As required by each service for each specific assignment.

9. Course Length. Overall time to train calculated in accordance with CNATRAINST 1550.6E. Training days are as follows:

	Total Training Days	Total Calendar Weeks
a. USN (P-3/P-8)	103.2	22.9
b. USMC C-130	103.2	22.9

c.	USCG	103.2	22.9
d.	Tiltrotor	103.2	22.9
e.	E-6	103.2	22.9
f.	E-2/C-2	67.6	15.0

10. Class Capacity. Variable.

11. Instructor/Requirements. As established by Chief of Naval Operations (CNO) planning factors.

12. Course Curriculum Model Manager. Commander, Training Air Wing FOUR (COMTRAWING FOUR).

13. Quota Management Authority. Chief of Naval Air Training.

14. Quota Control. Chief of Naval Operations.

15. Course Training Subjects

a. Ground Training

USN (P-3/P-8)/USCG/E-6 AND E-2/C-2 (TC-12B)		
Subject	**Symbol**	**Hours**
Indoctrination	G01	4.10
Instrument Flight Rules	G02/G08	70.50
Systems	G03	28.00
Aerodynamics	G04	24.50
Flight Procedures	G06	11.75
Crew Resource Management	G07	2.00
Total		**140.85**

USMC/TILTROTOR (TC-12B)		
Subject	**Symbol**	**Hours**
Indoctrination	G01	4.10
Instrument Flight Rules	G02/G08	70.50
Systems	G03	28.00
Aerodynamics	G04	24.50
Visual Navigation	G05	19.00
Flight Procedures	G06	11.75
Crew Resource Management	G07	2.00
Total		**159.85**

USN (P-3/P-8)/USCG/E-6 AND E-2/C-2 (T-44A)		
Subject	**Symbol**	**Hours**
Indoctrination	G01	4.10
Instrument Flight Rules	G02/G08	70.50
Systems	G03	29.50
Aerodynamics	G04	24.50
Flight Procedures	G06	11.75
Crew Resource Management	G07	2.00
Total		**142.35**

USMC (T-44A)		
Subject	**Symbol**	**Hours**
Indoctrination	G01	4.10
Instrument Flight Rules	G02/G08	70.50
Systems	G03	29.50
Aerodynamics	G04	24.50
Visual Navigation	G05	19.00
Flight Procedures	G06	11.75
Crew Resource Management	G07	2.00
Total		**161.35**

USN (P-3/P-8)/USCG/E-6 AND E-2/C-2 (T-44C)		
Subject	**Symbol**	**Hours**
Indoctrination	G01	4.10
Instrument Flight Rules	G02/G08	70.50
Systems	G03	34.50
Aerodynamics	G04	24.50
Flight Procedures	G06	11.75
Crew Resource Management	G07	2.00
Total		**147.35**

USMC (T-44C)		
Subject	**Symbol**	**Hours**
Indoctrination	G01	4.10
Instrument Flight Rules	G02/G08	70.50
Systems	G03	34.50
Aerodynamics	G04	24.50
Visual Navigation	G05	19.00
Flight Procedures	G06	11.75
Crew Resource Management	G07	2.00
Total		**166.35**

b. Flight Support

ALL SERVICES (T-44A/TC-12B) EXCEPT E-2/C-2		
Subject	**Symbol**	**Hours**
Contact Brief	C01*	5.0
Instrument Brief/Flight Management System	I01	5.0
Total		**10.0**

* C0101 only.

ALL SERVICES (T-44C) EXCEPT E-2/C-2		
Subject	**Symbol**	**Hours**
Contact Brief	C01*	5.0
Instrument Brief/Flight Management System	I01	7.0
Total		**12.0**

* C0101 only.

USN (P-3/P-8)/E-6		
Subject	**Symbol**	**Hours**
Maritime Formation Procedures	F01	1.0
Aerial Refueling Procedures	F02	1.0
Total		**2.0**

USMC C-130		
Subject	**Symbol**	**Hours**
Low-Level Ground School	N01	1.0
Joint Mission Planning System	N02	24.0
Tactical Formation Ground School	T01	5.0
Maritime Formation Procedures	F01	1.0
Total		**31.0**

TILTROTOR		
Subject	**Symbol**	**Hours**
Low-Level Ground School	N01	1.0
Joint Mission Planning System	N02	24.0
Tactical Formation Ground School	T01	5.0
Aerial Refueling Procedures	F02	1.0
Tiltrotor Formation	F03	1.0
Total		**32.0**

E-2/C-2 (T-44A/TC-12B)		
Subject	**Symbol**	**Hours**
Contact Briefs	C01*	10.0
Instrument Brief/Flight Management System	I01	5.0
Maritime Formation Procedures	F01	1.0
Total		**16.0**

*C0101-2.

E-2/C-2 (T-44C)		
Subject	**Symbol**	**Hours**
Contact Briefs	C01*	10.0
Instrument Brief/Flight Management System	I01	7.0
Maritime Formation Procedures	F01	1.0
Total		**18.0**

*C0101-2.

c. Flight Training. Below are the programmed times for each phase, stage, and media:

USN (P-3/P-8)								
Flight/Events	**CPT**		**SIM**		**T-44/TC-12**			
					Dual		**Solo**	
	Flts	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
Procedure Trainer	6	9.0						
Contact			1	1.5	11	20.0	1	0.3
Contact Check Ride					1	1.5		
Night Contact					2	3.0		
Instruments			15	22.5	18	44.0	1	2.0
Midstage Instrument Check Ride					1	1.5		
NATOPS Instrument Check Ride					1	2.0		
Navigation					1	2.0		
Maritime Formation and Aerial Refueling Fundamentals					1	3.0		
Totals	**6**	**9.0**	**16**	**24.0**	**36**	**77.0**	**2**	**2.3**

USMC C-130								
Flight/Events	**CPT**		**SIM**		**T-44/TC-12**			
					Dual		**Solo**	
	Flts	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
Procedure Trainer	6	9.0						
Contact			1	1.5	11	20.0	1	0.3
Contact Check Ride					1	1.5		
Night Contact					2	3.0		
Instruments			15	22.5	18	44.0	1	2.0
Midstage Instrument Check Ride					1	1.5		
NATOPS Instrument Check Ride					1	2.0		
Navigation			1	1.5	3	7.5		
Maritime Formation					1	2.0		
Tactical Formation					2	5.0		
Tactical Formation Check Ride					1	3.0		
Totals	**6**	**9.0**	**17**	**25.5**	**41**	**89.5**	**2**	**2.3**

USCG								
Flight/Events	**CPT**		**SIM**		**T-44/TC-12**			
					Dual		**Solo**	
	Flts	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
Procedure Trainer	6	9.0						
Contact			1	1.5	11	20.0	1	0.3
Contact Check Ride					1	1.5		
Night Contact					2	3.0		
Instruments			15	22.5	18	44.0	1	2.0
Midstage Instrument Check Ride					1	1.5		
NATOPS Instrument Check Ride					1	2.0		
Navigation					1	2.0		
Maritime Formation					1	2.0		
Tactical (SAR)					1	2.0		
Totals	**6**	**9.0**	**16**	**24.0**	**37**	**78.0**	**2**	**2.3**

TILTROTOR								
Flight/Events	**CPT**		**SIM**		**TC-12**			
					Dual		**Solo**	
	Flts	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
Procedure Trainer	6	9.0						
Contact			1	1.5	11	20.0	1	0.3
Contact Check Ride					1	1.5		
Night Contact					2	3.0		
Instruments			15	22.5	18	44.0	1	2.0
Midstage Instrument Check Ride					1	1.5		
NATOPS Instrument Check Ride					1	2.0		
Navigation			1	1.5				
Tiltrotor Formation					2	4.5		
Low Altitude					4	10.0		
Low Altitude Check Ride					1	3.0		
Totals	**6**	**9.0**	**17**	**25.5**	**41**	**89.5**	**2**	**2.3**

E-6								
Flight/Events	**CPT**		**SIM**		**T-44/TC-12**			
					Dual		**Solo**	
	Flts	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
Procedure Trainer	6	9.0						
Contact			1	1.5	11	20.0	1	0.3
Contact Check Ride					1	1.5		
Night Contact					2	3.0		
Instruments			15	22.5	18	44.0	1	2.0
Midstage Instrument Check Ride					1	1.5		
NATOPS Instrument Check Ride					1	2.0		
Maritime Formation and Aerial Refueling Fundamentals					1	3.0		
Totals	**6**	**9.0**	**16**	**24.0**	**35**	**75.0**	**2**	**2.3**

E-2/C-2								
Flight/Events	**CPT**		**SIM**		**T-44/TC-12**			
					Dual		**Solo**	
	Flts	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
Procedure Trainer	6	9.0						
Contact			1	1.5	7	12.0	1	0.3
Contact Check Ride					1	1.5		
Instruments			11	16.5	9	18.0	1	2.0
Midstage Instrument Check Ride					1	1.5		
NATOPS Instrument Check Ride					1	2.0		
Maritime Formation					1	2.0		
Totals	**6**	**9.0**	**12**	**18.0**	**20**	**37.0**	**2**	**2.3**

16. Training Time Analysis

ADDITIONAL TRAINING TIME PER CURRICULUM HOUR/EVENT			
Training Area	**Brief/Preflight/ Taxi**	**Taxi/Debrief**	**Total**
Flight	2.25	0.50	2.75
Simulator/CPT Dual Event	1.00	1.00	2.00
Simulator/CPT Single Event	0.50	0.67	1.17

17. Physical Requirements. As specified in the Manual of Medical Department, Chapter 15, and all applicable anthropometric standards.

18. Obligated Service. Refer to MILPERSMAN for Naval personnel.

19. Primary Instructional Methods. Lecture, computer-assisted instruction (CAI), self- and group-paced study, and in-flight instruction.

20. Preceding Curriculum Data. This curriculum replaces CNATRAINST 1542.147F.

21. Student Performance Measurement/Application of Standards. The standards outlined in Chapter VIII, Course Training Standards, are used to evaluate Student Military Aviator (SMA) performance of individual items and maneuvers. Final judgment regarding the satisfactory performance of any flight maneuver rests with the Instructor Pilot who must assess the environmental and systems factors affecting the conditions under which the performance is measured and the SMA's experience within the stage.

ABBREVIATIONS

The following is a list of abbreviations used in the curriculum:

ADIZ - Air Defense Identification Zone
ADS - Air Delivery System
AERO - Aerodynamics
AF - Adaptability/Flexibility (CRM Skill)
AGL - Above Ground Level
AIM - Aeronautical Information Manual
AIRMET - Airman's Meteorological Information
AP - Area Planning
AP1/B - Area Planning 1/B
ARTCC - Air Route Traffic Control Center
AS - Assertiveness (CRM Skill)
ASI - Aviation Student Indoctrination
ASOS - Automated Surface Observing System
ASR - Airport Surveillance Radar
ATC - Air Traffic Control
ATF - Aviation Training Form
ATIS - Automatic Terminal Information Service
ATJ - Aviation Training Jacket
ATS - Aviation Training Summary
AWL - Above Water Level
AWOS - Automated Weather Observing System
BAC - Basic Aircraft Control
BASH - Bird/Animal Strike Hazard
BC - Back Course
CAI - Computer-Assisted Instruction
CDO - Command Duty Officer
CIS - Contract Instructional Services
CM - Communication (CRM Skill)
CNATRA - Chief of Naval Air Training
CO - Commanding Officer
CPT - Cockpit Procedures Trainer
CRIT - Criterion Quiz or Exam
CRM - Crew Resource Management

CRM-F - Crew Resource Management Facilitator
CRM-I - Crew Resource Management Instructor
CS - Creeping Line Search
CTS - Course Training Standards
DCONFP - Day Contact Flight Procedures
DH - Decision Height
DHS - Department of Homeland Security
DINS - Defense Internet NOTAM System
DM - Decision Making (CRM Skill)
DME - Distance Measuring Equipment
DOD - Department of Defense
DP - Departure Procedure
DZ - Drop Zone
EFAS - Enroute Flight Advisory Service
EMFP - Emergency Flight Procedures
EOB - End of Block
EP - Emergency Procedure
ESIS - Electronic Standby Instrument System
ET - Extra Training
FAA - Federal Aviation Administration
FAF - Final Approach Fix
FAR - Federal Aviation Regulations
FD - Flight Director
FDC - Flight Data Center
FIH - Flight Information Handbook
FLIP - Flight Information Publication
FMS - Flight Management System
FP - Flight Procedures
FPC - Final Progress Check
FRR - Flight Rules and Regulations
FSS - Flight Support Services
FTI - Flight Training Instruction
GCA - Ground-Controlled Approach
GP - General Planning
GPS - Global Positioning Satellite
GPSFP - Global Positioning Satellite Flight Procedures

GPWS - Ground Proximity Warning System
HILO - Holding-In-Lieu-Of
IAF - Initial Approach Fix
IAW - In Accordance With
ICAO - International Civil Aviation Organization
IFM - Instrument Flight Manual
IFR - Instrument Flight Rules
ILS - Instrument Landing System
IMC - Instrument Meteorological Conditions
IMS - International Military Student
IMSO - International Military Student Officer
INAV - Instrument Navigation
INS - Inertial Navigation System
IP - Instructor Pilot
IPC - Initial Progress Check
IR - Instrument Route
JMPS - Joint Mission Planning System
JOG - Joint Operations Graphical (Chart)
KIAS - Knots Indicated Airspeed
LD - Leadership (CRM Skill)
LECT - Lecture
LL - Low-Level
LLNAV - Low-Level Navigation
LLNAVFP - Low-Level Navigation Flight Procedures
LL/TF - Low-Level/Tactical Formation
LOA - Letter of Agreement
LOC - Localizer
LOC-BC - Localizer-Back Course
LPV - Local Performance with Vertical Guidance
LS - Left Seat
LSC - Level Speed Change
LZ - Landing Zone
MA - Mission Analysis (CRM Skill)
MAP - Missed Approach Point
MARSA - Military Assumes Responsibility for Separation of Aircraft

MDA - Minimum Descent Altitude
Metro - Meteorology
MFD - Multi-Function Display
MIF - Maneuver Item File
MIL - Mediated Interactive Lecture
MOA - Military Operating Area
MPTS - Multi-Service Pilot Training System
NACO - National Aeronautical Charting Office
NATCAP - Naval Air Training Class Advisor Program
NATOPS - Naval Air Training Operating Procedures Standardization
NAVAID - Navigational Aid
NDB - Non-directional Beacon
NFS - Naval Flight Student
NGA - National Geospatial Intelligence Agency
NM - Nautical Mile
NMU - Number of Marginals and UNSATs
NOTAMs - Notices to Airmen
NRDO - Night Runway Duty Officer
NSS - Navy Standard Score
NTAP - National Track Analysis Program
ODP - Obstacle Departure Procedure
OIS - Obstacle Identification Surface
OLQ - Officer-Like Quality
ONAV - Over Water Navigation
OPARS - Optimum Path Aircraft Routing System
OPNAV - Office of the Chief of Naval Operations
OPS - Operations
ORM - Operational Risk Management
OSC - On-Scene Commander
PAPI - Precision Approach Path Indicator
PAR - Precision Approach Radar
PAS - Phase Aggregate Score
PF - Pilot Flying
PI - Point of Impact
PIC - Pilot-in-Command

PM - Pilot Monitoring
PMSV - Pilot-to-Metro Service
P/P - Pen/Pencil and Paper
PP - Partial Panel
PS - Parallel Search
PT - Procedure Turn
RAIM - Receiver Autonomous Integrity Monitoring
RCVA - Rockwell Collins Virtual Aircraft
RDO - Runway Duty Officer
RNAV - Area Navigation System
RNP - Required Navigation Performance
RON - Remain Overnight
RRU - Ready Room UNSAT
RS - Right Seat
RV - Radar Vectors
RVSM - Reduced Vertical Separation Minima
SA - Situational Awareness (CRM Skill)
SAR - Search and Rescue
SDO - Squadron Duty Officer
SID - Standard Instrument Departure
SIGMET - Significant Meteorological Information
SMA - Student Military Aviator
SMS - Student Monitoring Status
SNA - Student Naval Aviator
SOP - Standard Operating Procedure
SQDN - Squadron
SS - Self-Study
SSC - Surface Surveillance Coordination
SSE - Simulated Single Engine
SSR - Special Syllabus Requirement
STARS - Standard Terminal Arrivals
SYS - Systems
TAC - TACAN
TACAN - Tactical Air Navigation
TACFFP - Tactical Formation Flight Procedures
TAS - Traffic Avoidance System

TERPs - Terminal Instrument Procedures
TF - Tactical Formation
TLS - Track Line Search
TOA - Time of Arrival
TOLD - Takeoff and Landing Data
TOT - Time on Target
TPC - Tactical Pilotage Chart
TRB - Training Review Board
UNSAT - Unsatisfactory
USBAM - U.S. Bird Avoidance Model
USCG - United States Coast Guard
USMC - United States Marine Corps
USN - United States Navy
VASI - Visual Approach Slope Indicator
VCOA - Visual Climb Over Airfield
VDA - Vertical Descent Angle
VDP - Visual Descent Point
VFR - Visual Flight Rules
VHF - Very High Frequency
VMC - Visual Meteorological Conditions
Vmca - Minimum Control Airspeed (air)
Vmcg - Minimum Control Airspeed (ground)
VNAV - Visual Navigation
VNAVFP - Visual Navigation Flight Procedures
VOR - VHF Omnidirectional Range
VR - Visual Route
VS - Vertical Speed or Sector Search
WW - Weather Watch
WX - Weather
XO - Executive Officer

GLOSSARY

1. Advancing X. Completed event within the normal syllabus flow. Excludes events with last characters in the range 84-89.

2. Aviation Training Form. A grade sheet documenting SMA performance for all categories of training regardless of media, phase, or stage.

3. Aviation Training Jacket. The ATJ is the SMA's training record. It contains ATFs, calendar card, grade reports, and all other associated training information. It is filed in student control and follows the SMA through all phases of training.

4. Aviation Training Summary. A tabular sheet listing the MIF and maneuver grades within a training stage.

5. Block of Training. A sequential series of lessons within a training stage sharing an identical MIF. The third character in the lesson designator identifies a block.

6. Check Ride (SXX90). A flight check in any stage of training.

7. Contact. The stage of training that includes both day and night familiarization.

8. Course of Training. The entire program of preflight, flight, simulation, academics, and officer development conducted in all media during the programmed training days.

9. Course Training Standard (CTS). A description of required behaviors and standards of performance for a specific maneuver. These standards are in Chapter IX.

10. Courseware. The technical data, flight training instructions, audio, video, film, CAI, instructor guides, student study guides, and other training material developed to support and implement the syllabus of instruction.

11. Critical Item. Any maneuver coded with a plus sign (+). This symbol indicates the maneuver is required and must be accomplished to the specified standard in that block of training.

12. Deliverables. A CNATRA 1542/1827 (Rev. 4-04) Training Review Board Summary Form, generated by the TRB, which summarizes a specific SMA's progress in a given syllabus and provides detailed information on the application of MPTS training for that SMA. Deliverables indicate whether the quality and continuity of training provided was IAW CNATRAINST 1542.147G and indicate the degree of influence by "human factors" on the SMA's performance.

13. Demonstrate. Instructor performs the maneuver with precision and accompanying description. SMA is responsible for knowledge of the procedures prior to event brief and observes the maneuver.

14. Emergency Procedure. Any degradation of aircraft systems or flight conditions requiring pilot action or intervention.

15. End of Block. Last event in block. In order to progress past EOB, the SMA must meet or exceed MIF on all critical items, and all optional items attempted, by the end of the block. Flight shall consist of a cross-section of critical items; however, all critical items do not have to be accomplished on the last flight in block as long as MIF had been previously met.

16. Extra Training (SXX87). Additional SMA training flights ordered by the Operations Officer, or higher, in order to compensate for documented instructional deficiencies.

17. Final Progress Check (SXX89). A special check normally given by the CO or XO. The CO may designate, in writing, FPC duty to a qualified O-4 or above. This designation is only done if the CO or XO is unqualified or unavailable to instruct in the required stage. A satisfactory FPC returns the SMA to normal syllabus flow. An UNSAT FPC results in a TRB.

18. Flight Training Instruction. A CNATRA-approved manual describing flight procedures and techniques for each training stage.

19. Hours per X (H/X). The average length for each event in a block, rounded to the nearest tenth of an hour.

20. Initial Progress Check (SXX88). A special check, given by the Operations Officer or his representative designated in writing by the squadron CO. A satisfactory IPC returns the SMA to normal syllabus flow. An UNSAT IPC results in an FPC.

21. Introduce. Instructor coaches the SMA through the maneuver as necessary and/or may demonstrate the maneuver again. The SMA is responsible for knowledge of the procedures prior to the event brief and for performing the maneuver with coaching.

22. Lesson Designator. All syllabus events have a five-character lesson designator in the following format:

Char	**Meaning**	**Remarks**		
1st	Stage	G—Ground C—Contact	I—Instrument N—Navigation	F—Formation T—Tactical
2nd	Media	0—Ground Training	2—CPT 3—Simulator	4—Aircraft
3rd	Block	Sequential, indicating block within stage.		
4th & 5th	Event/Check Identifier	Sequential, indicating event within block, or other event types as shown below: 84—Adaptation 85—Practice Sim 86—Warmup 87—Extra Training	88—Initial Progress Check 89—Final Progress Check 90—Check Ride/Exam	

23. Maneuver Item File. A listing of required maneuvers and associated proficiency levels for each block of training.

24. Master Syllabus. Chapters I-VIII list all training syllabus activities, prerequisites, and training flow for MPTS.

25. Naval Air Training Class Advisor Program Officer. An Instructor Pilot assigned to provide counseling and guidance to a specific student pilot or pilots throughout the applicable syllabus.

26. Off-Wing Flight. A Contact flight not flown with the SMA's on-wing.

27. On-Wing. The SMA's assigned instructor in the contact stage per CNATRAINST 1500.4G.

28. Outcomes. Potential courses of action following a progress check. There are only two basic outcomes:

a. Pass – Return to training.

b. Fail – Proceed with the attrition process/attrite.

29. Phase of Training. A major division in the course of training. MPTS consists of three phases: Primary, Intermediate, and Advanced.

30. Pink ATF. A standard ATF that is printed on pink paper. The pink ATF is used to denote an UNSAT event generating a progress check.

31. Practice. Instructor observes SMA with minimal coaching; may also demonstrate the maneuver if necessary. The SMA must perform maneuver with minimal coaching.

32. Progress Check Pilot. An Instructor Pilot authorized to administer Initial or Final Progress Checks.

33. Ready Room UNSAT (RRU). An UNSAT grade given for inadequate knowledge of flight procedures, systems, discuss items, emergency procedures, or deficient preflight planning.

34. Special Syllabus Requirement. One time, ungraded demonstration item(s).

35. Stage of Training. All training of a particular type (Ground, Contact, Instruments, Navigation, Formation, Tactical) within a phase. The first letter in the lesson designator identifies the stage of each lesson (Example: F4101 is in the Formation Stage).

36. Student Monitoring Status. Squadron-initiated status to address substandard SMA performance.

37. Training Media. MPTS media include aircraft, simulator, CPTs, ground training, and CAI. The second character in the lesson identifier designates the training media.

38. Training Review Board. A fact-finding board generated by a failed FPC that considers the circumstances relevant to the SMA's training, such as quality and continuity of training, outside influences, and extenuating circumstances. The TRB does not make attrition/retention recommendations.

39. Warmup Event (SXX86). Additional events given to allow an SMA to regain a level of proficiency previously demonstrated which has diminished due to an extended break in training.

40. Yellow ATF. A standard ATF that is printed on yellow paper. The yellow ATF is used to denote an UNSAT event that does not generate a progress check.

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Chapter I

General Instructions

1. Syllabus Management

a. Distribution. Participating squadron personnel.

b. Interpretation. The syllabus is directive. Should circumstances create situations not covered within the scope of this syllabus, or specific course of action appears to conflict with other directives, consult CNATRA (N71).

c. Deviations. Document all deviations on the event's ATF.

d. Changes. Recommended changes shall be submitted in accordance with CNATRAINST 1550.6E.

e. Execution. SMAs will execute all the curriculum events except as listed below:

Academics: N0101 is for USMC C-130 and Tiltrotor only.
N0201-3 are for USMC C-130 and Tiltrotor only.
T0101-2 are for USMC C-130 and Tiltrotor only.
F0101 is for USN (P-3/P-8), E-6, E-2/C-2, USMC C-130, and USCG only.
F0201 is for USN (P-3/P-8), E-6, and Tiltrotor only.
F0301 is for Tiltrotor only.
C0102 is for E-2/C-2 only.
G05 is for USMC C-130 and Tiltrotor only.

Simulators: N3101 is for USMC C-130 and Tiltrotor only.
E-2/C-2 course flow only includes: C21, C32, I32, I33, and I34 blocks.

Flight Events: F41 block is for USMC C-130, USCG, and E-2/C-2.
F42 block is for Tiltrotor only.
F43 block is for USN (P-3/P-8) and E-6 only.
N41 block is for USN (P-3/P-8) and USCG only.
N42 block is for USMC C-130 only.
T41 block is for USCG only.
T42 block is for USMC C-130 only.

T43 block is for USMC C-130 only.
T44 and T45 blocks are for Tiltrotor only.
E-2/C-2 course flow only includes blocks C42, C43, C44, C45, I42, I43, I45, I46, I47, and F41.

f. Syllabus Description. Advanced Multi-Engine MPTS consists of multi-engine training for USN, USMC, USCG, and International SMAs who will go to multi-engine follow-on pipelines. This training is flown in either the T-44A, T-44C, or TC-12B aircraft. Each phase is divided into stages. Stages are grouped by like flight training regimes: Contact, Instrument, Navigation, Formation, and Tactical. Each stage is subdivided into training blocks. The training blocks consist of a specified number of flights. Maneuver item files identify the acceptable level of performance that must be achieved at the completion of each training block.

g. Grade Calculation

(1) Phase Aggregate Score. An NFS's PAS is a comparative ranking based on the previous population of completers for a specific phase or portion of a phase of aviation training. PAS indicates only NFS performance relative to a normative population of other recent NFSs. Under the MPTS system, PAS is not by itself an indication of whether an NFS has met the criteria necessary for winging or continuation in aviation training. PAS is calculated for each block within a curriculum, for the subset of blocks completed by an NFS still in training (Interim PAS), and for the entire phase.

MPTS SNA Calculations. From a population of previous SNAs, an SNA's PAS is calculated using equation (1), below:

$$SNA\_PAS = 50 + 10 * \left(0.9 * \frac{S - M1}{S1} + 0.1 * \frac{M2 - NMU}{S2} \right) \quad (1)$$

Where

S – SNA Score
NMU – SNA NMU
M1 – Squadron Average Score
M2 – Squadron Average Number of Marginals and UNSATs (NMU)
S1 – Standard Deviation of Squadron Score
S2 – Standard Deviation of Squadron NMU

(2) NSS. NSS is calculated to correct for potential non-normality in the distribution of PAS. NSS is calculated for the entire phase. NSS is calculated from PAS by using equation (2), below:

$$NSS = 50 + 10 * \left(\frac{PAS - MPAS}{SDPAS} \right) \quad (2)$$

Where

PAS – NFS PAS
MPAS – Squadron Average PAS
SDPAS – Standard Deviation of Squadron PAS

2. Training Management

a. Syllabus Progression. Fly syllabus events within each stage sequentially. Do not start a block without all prerequisites. SMAs may be in different stages or blocks simultaneously. Where applicable, SMAs will be eligible for, and shall be prepared for, more than one syllabus event. SMAs must complete all events except as listed in paragraph 1e. The flowcharts on pages I-5, I-7, and I-9 delineate the sequence of flying events and their ground training prerequisites except as listed in paragraph 1e and 2b. System training management is designed to facilitate two graded events (flight, simulator, or exam) per SMA per day.

b. Accelerated Progression. Under exceptional circumstances, an SMA's previous flight experience or demonstrated proficiency may warrant accelerated progression. The squadron CO may advance the SMA to the next block of instruction when all required items for the current block of instruction meet EOB MIF. This policy shall not be used to accelerate squadron production goals. It is strictly for the rare instances where the SMA's demonstrated proficiency makes completion of all events within a block of instruction unnecessary. For example, pipeline reassignment of SMAs from Strike may warrant acceleration through the Instrument Phase based on previous instrument training. All records for the accelerated SMA, including the ATJ and mini-ATJ, will be clearly marked ACCELERATED PROGRESSION. ATFs for the events not flown will be completed with a note in the remarks section stating "ACCELERATED PROGRESSION – EVENT NOT FLOWN. ATF COMPLETED FOR ADMINISTRATIVE PURPOSES ONLY IAW CNATRAINST 1542.SERIES."

c. Maneuver Continuity. SMAs must accomplish previously introduced maneuvers frequently enough to ensure required proficiency is maintained.

d. Hours/X (H/X). Instructor Pilots shall plan and execute missions to meet H/X as closely as practical. If actual event length varies from H/X by more than 0.3 hours, annotate reason(s) in the ATF's general comments section. An SMA's deficiency is not an acceptable reason to exceed H/X by more than 0.3 hours.

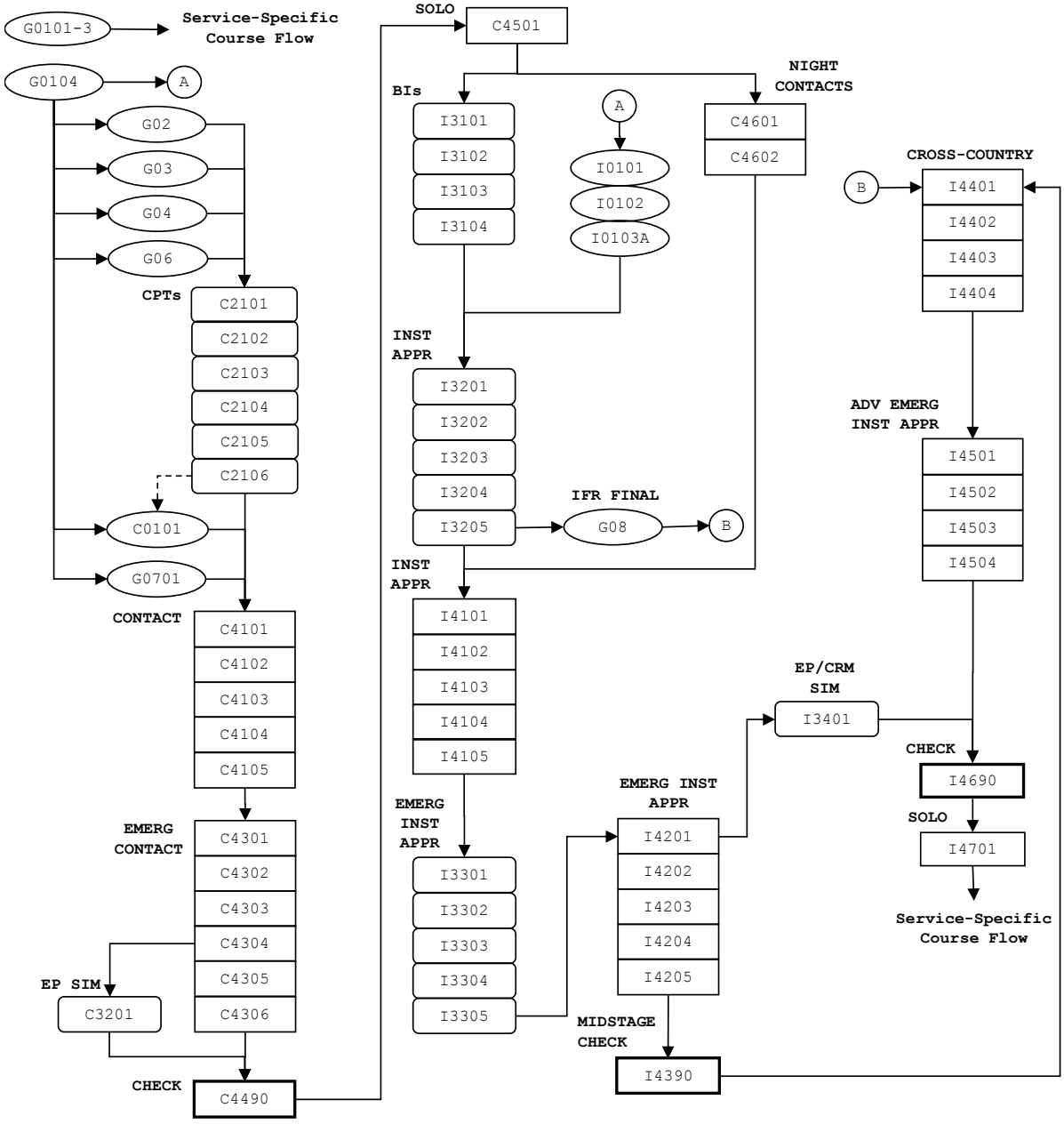
e. Special Syllabus Requirements. The SSRs are allocated to blocks. Unless noted otherwise, IPs may accomplish SSRs on any flight within the block. The SSRs shall be completed in the specified block. Annotate completed SSR in the following three places on the TIMS ATF: Enter a remark in the Comments section, assign NG/1 as the SSR maneuver grade, and date/save SSR exposure on the ATF SSR tab.

f. Aviation Training Jacket Reviews. The Class Advisor shall conduct weekly jacket reviews in accordance with the NATCAP (CNATRAINST 5351.1B). ATS forms are required to be reviewed before each flight or simulator event. ATJ reviews may be made as often as warranted by the individual SMA's progress, subject to the following guidelines:

(1) All reviews shall be annotated on the CNATRA-GEN 1542/66, Jacket Review Divider, in the ATJ.

(2) SMAs placed on SMS require weekly ATJ reviews by the Student Control Officer for as long as the SMA remains on SMS.

USN (P-3/P-8), USMC C-130, USCG, E-6, AND TILTROTOR CORE COURSE FLOW



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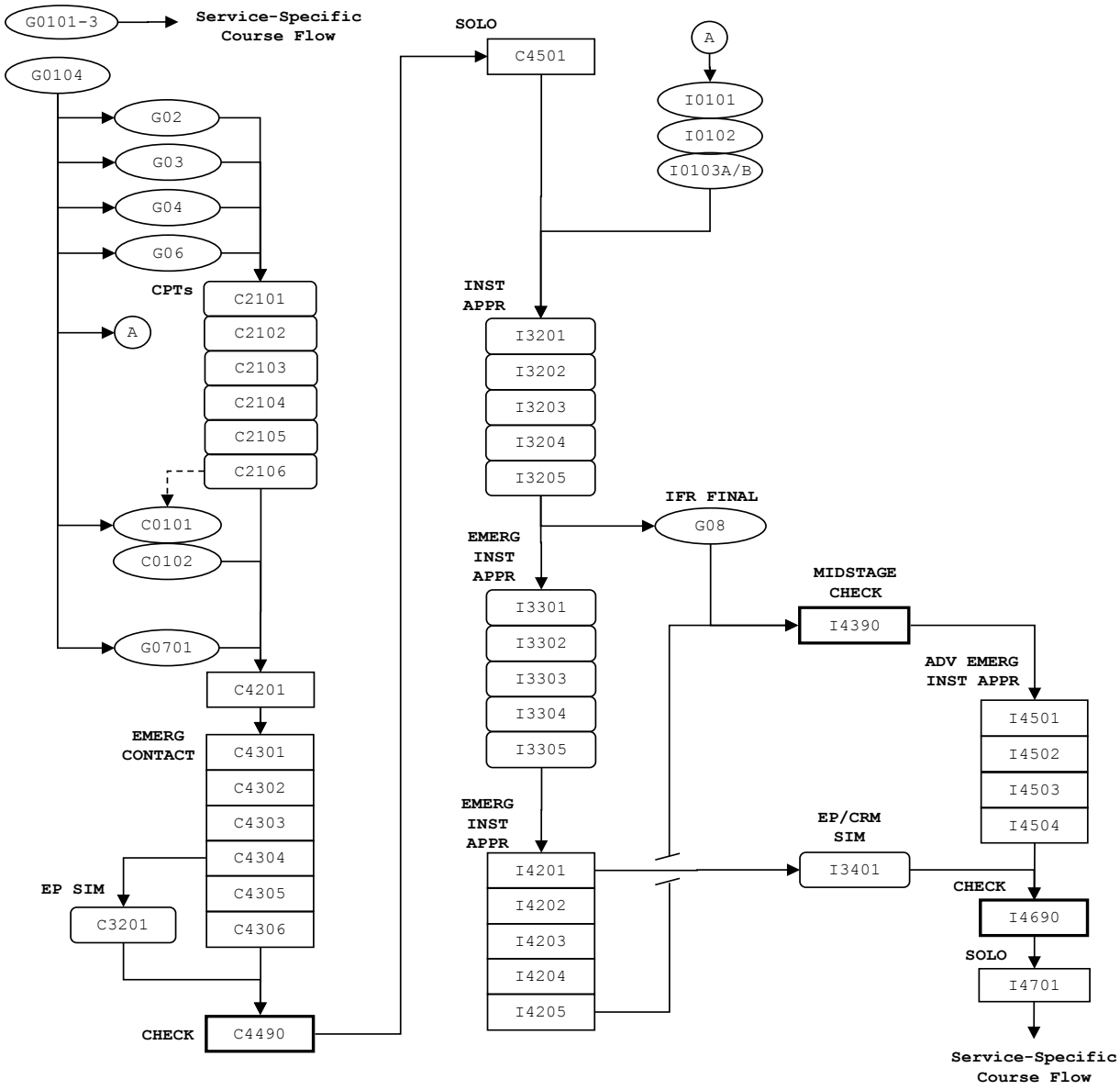
E-2/C-2 COURSE FLOW



Ground Training
Flight
Simulator
Flow Connector

G0101-4 - Indoctrination
G02 - IFR - Phase I
G03 - Systems
G04 - Aerodynamics
G06 - Flight Procedures
G07 - CRM Block
G08 - IFR - Phase II
C01 - Contact Briefs
I01 - Instrument Brief/FMS
------ = Alternate Flow

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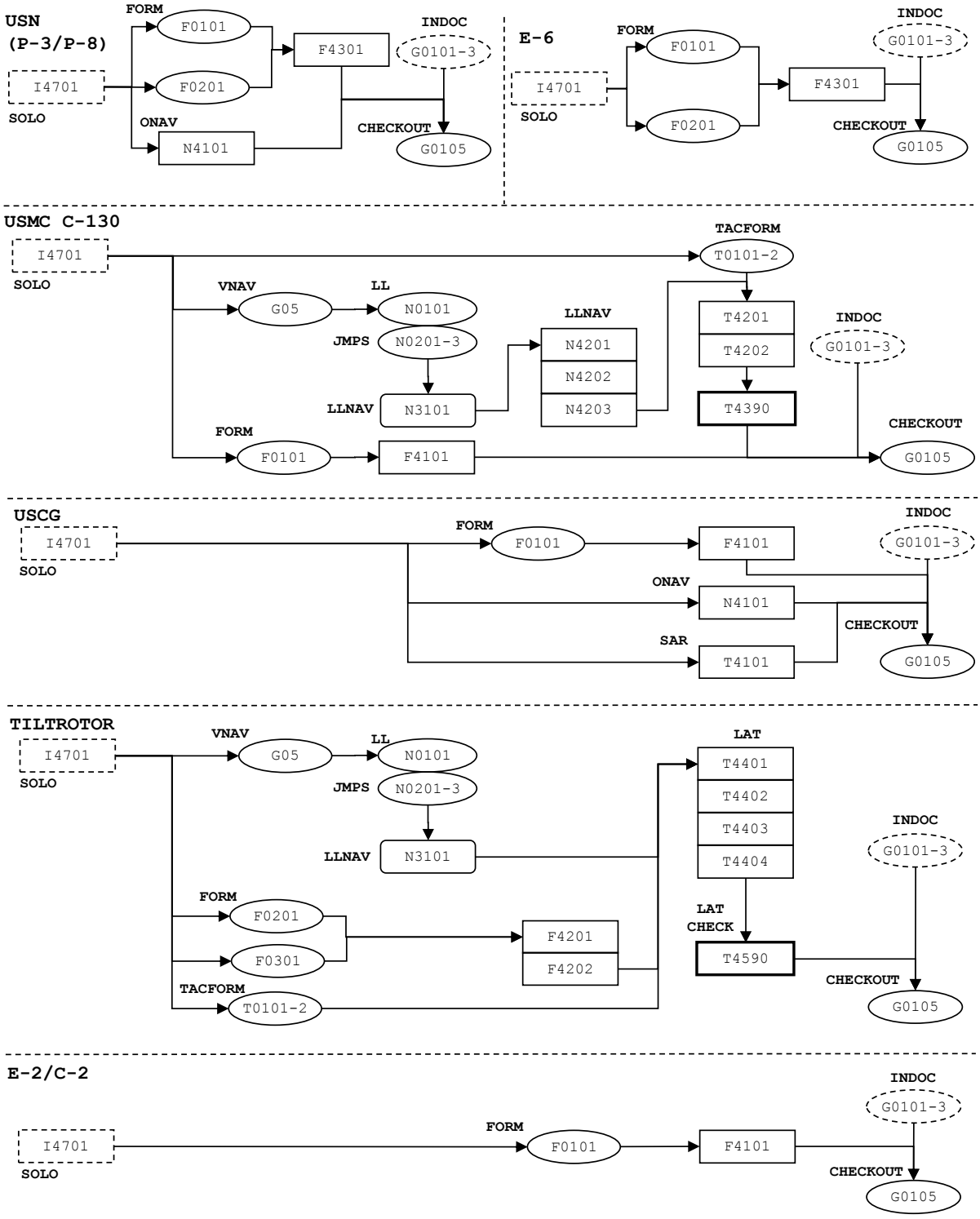
**USN (P-3/P-8), USMC C-130, USCG,
TILTROTOR, E-2/C-2, AND E-6
POST-I4701 COURSE FLOW**



3. UNSAT Performance. (See also ***Progress Check Procedures***, Chapter I, paragraph 10c(3).

a. Flight/Simulator

(1) If syllabus events remain in the block, the SMA shall progress to the next syllabus event, until the second ***consecutive*** UNSAT or third ***cumulative*** UNSAT in the block.

(2) If no syllabus events remain, repeat the last syllabus event in the block until the SMA meets MIF, the second consecutive UNSAT, or the third cumulative UNSAT.

(3) An UNSAT check ride (SXX90), two consecutive UNSATs, or three cumulative UNSATs (in the same block) result in an IPC. Document the failed check ride or second consecutive/ third (in block) cumulative UNSAT on a pink ATF for that syllabus event.

(4) A subsequent check ride failure, two further consecutive UNSATs, or three more cumulative UNSATs (in block) result in an FPC. Document the subsequent failed check ride, second consecutive/third (in block) cumulative UNSAT on a pink ATF generating the progress check.

(5) Failing an FPC results in a TRB.

b. Ready Room UNSAT (RRU). An RRU is defined as either of the following situations:

(1) The SMA is inadequately prepared for the scheduled event. A "Ready Room UNSAT" is awarded when an SMA demonstrates UNSAT knowledge during a brief. A pink ATF shall be generated for all "Ready Room UNSATs" and at least one item on the ATF shall be graded UNSAT. A missed brief does not constitute a "Ready Room UNSAT" and should be dealt with using other disciplinary methods. Use a supplemental ATF to document a missed brief and then administer counseling/discipline as required by the squadron CO.

(2) The SMA fails an examination during the brief (ops limits quiz, NATOPS quiz, etc.).

c. Academic. Failing two exams triggers an IPC or FPC as appropriate. Academic and ready room UNSATs are equivalent.

d. Remediation

(1) A ground evaluation emphasizing the deficient areas may clear an UNSAT check ride or end of block syllabus event caused solely by ground operations.

(2) End of block UNSAT syllabus events in the Instrument stage may be cleared in the simulator if these conditions are met:

(a) The cause of the UNSAT is specific to the maneuver.

(b) The simulator is suited to the failed maneuver.

e. Restrictions. Until remediating the UNSAT:

(1) The SMA shall not fly solo.

(2) The SMA shall not accomplish any training except academic classes, examinations, and ground training events, provided the UNSAT event was not a prerequisite.

4. Training Review Board

a. Scope. Consider the circumstances relevant to the SMA's training, for example:

(1) Quality of training provided in accordance with applicable FTI.

(2) Continuity of training provided.

(3) Outside influences/extenuating circumstances.

(4) The TRB ***shall not*** make attrition/retention recommendations.

b. Composition

(1) Voting Members. The board consists of three voting members, one of which is the Senior Member. The TRAWING Commander designates the Senior Member in writing.

(2) Other Members/Observers. At least one member will be from the SMA's parent service. For IMSs, where possible, include the country liaison officer and the squadron IMSO as observers.

(3) Academic Failures. TRBs convened due to academic failures may include one qualified civilian instructor as a voting member.

(4) Exclusion. The following conditions exclude an instructor from acting as a voting member on an SMA's TRB:

(a) The SMA's on-wing.

(b) Any instructor who has been on a previous TRB for the SMA.

(c) Any instructor who has awarded an UNSAT to the SMA in the relevant training stage.

(d) The IMSO, in the case of an international SMA.

c. Deliverables

(1) A background paper assessing the SMA's training quality and highlighting any irregularities.

(2) A CNATRA 1542/1827 (Rev. 4-04), Training Review Board Summary form.

5. Instructor Continuity

a. SMAs shall fly Contact syllabus events C4101-5 and C4301-2 with their on-wing. E-2/C-2 on-wing flights will be C4201-C4302.

b. Any Contact Stan IP may substitute as on-wing in the event the SMA's on-wing is not available and an on-wing change is not prudent.

c. There are no other continuity requirements unless specified by the Flight Leader for SMS SMAs.

6. Break in Training Warmup Events (SXX86)

a. A nonsyllabus warmup event is one given to regain flight proficiency due to an extended nonsyllabus training delay. Eligibility is based on the number of days since the last flight or simulator in the same stage. The following guidelines will be used to determine warmup criteria:

(1) Optional warmups shall be scheduled and flown as the next event. If performance warrants a warmup, it shall be coded as the previous completed dual event.

(2) If the break in training occurs during the transition from aircraft to simulator, a mandatory warmup shall be flown and coded as the last completed simulator in stage.

(3) If the break in training occurs between two aircraft or two simulator events, mandatory warmup shall be flown and coded as the previously completed (dual) event.

(4) All warmups shall be dual (flight) or instructional (simulator).

(5) For safe-for-solo and/or any other delays less than seven days in phase, specific warmup criteria promulgated in each curriculum shall apply.

(6) Warmup events shall be coded as a SXX86 event (e.g., C4186).

(7) The instructor is required to state on the ATF the reason(s) for awarding the warmup event.

(8) End-of-block check rides are considered “in block” for warmup purposes.

(9) The following table is a quick reference on policy regarding the use of warmups with respect to breaks in training.

CRITERIA FOR AWARDING WARMUP EVENTS IN A STAGE OR BLOCK		
Break* (Days)	**Warmup Events**	**Remarks**
7-13 Sim to A/C	1 Mandatory Simulator	• Mandatory warmup is not an advancing "X."
7-13 All others	1 Optional	• Based on performance. • Required if overall event grade is Marginal or UNSAT. • Prohibited if: ► Performance meets MIF/standard. ► Break occurs between stages (see paragraph 6b).
14-30 Sim to A/C	2 Mandatory Simulators	• Mandatory warmups are not advancing "X's."
14-30 All others	1 Mandatory 1 Optional	• Mandatory warmup is not an advancing "X." • Optional warmup based on performance. • Required if overall event grade is Marginal or UNSAT.

*Break = (Current Julian Date) – (Julian Date of last event, regardless of stage).

b. Training Delays and Warmup Events between Blocks, Stages, or Modules. Warmups are intended for nonsyllabus breaks in training. Each syllabus is designed to allow sufficient time for academics, simulators, and flights. First flights and simulators in block following ground training are designed and graded with the delay factored in and normally do not require a warmup.

(1) Between stages or blocks, a mandatory warmup is required if 14-30 days have elapsed since any syllabus flight or simulator event (unless otherwise specified in the curriculum guide).

(2) All warmup events or SXX86 events between blocks, stages, or modules shall be recorded in the ATJ with an ATF for the event deemed most consistent with the procedures reviewed.

c. Extended Training Delays. If the period between events is greater than 30 days within a curriculum, the squadron CO shall determine an appropriate warmup training plan to regain SMA proficiency with the following guidance considered.

(1) Generally a warmup training plan should consist of a representative cross-section of events completed prior to the break in training.

(2) At the completion of the warmup training plan, or when proficiency is regained prior to the completion of the warmup training plan, the SMA shall resume the normal curriculum flow.

(3) If the SMA has not regained proficiency sufficient to resume training following the designated warmup training plan, additional warmup training is left to the CO's discretion.

(4) A copy of the warmup training plan and any subsequent modifications shall be filed in the SMA's ATJ.

7. Additional Flights/Simulators

a. Extra Training Events (SXX87). All ETs shall be dual and coded as SXX87, e.g., C4187. ET events include, but are not limited to:

(1) IPC/FPC ET Events. Only award these events to compensate for training inadequacies, e.g., poor event/maneuver continuity, or improper instruction.

(a) Preceding an IPC. The Operations Officer may authorize one ET prior to an IPC.

(b) Preceding an FPC. The Commanding Officer may authorize as many as two ETs prior to an FPC.

(c) IPC/FPC 87 events ***shall not*** be awarded to remediate UNSAT SMA performance unrelated to unit/ instructional training inadequacies.

(d) Document the awarding of IPC/FPC 87 events and the associated training inadequacy using a CNATRA-GEN 1542/16, Supplementary Jacket Form.

(2) International SMAs. The Operations Officer may authorize additional events to international SMAs IAW CNATRAINST 1500.4G.

(3) Additional Events to Meet Minimum Syllabus Time. An event flown to meet minimum nighttime shall be flown as a C4687 and will meet the MIF for the block in which the ET is flown. All critical items need not be completed on this additional event.

b. Adaptation Events (SXX84). The Operations Officer may grant events required for adaptation to the flying environment when requested by the flight surgeon, e.g., airsickness, eyeglasses, etc.

8. Student Monitoring Status (SMS)

a. An SMA who receives two UNSATs in a block of training, or three UNSATs within a single stage of training shall be considered Marginal and placed on SMS. The objective of SMS is to focus supervisory attention to an SMA's progress in training, specific deficiencies, and potential to complete the program. It may also be applied to SMAs who require supervisory attention while trying to resolve personal issues.

b. The Flight Leader shall place the SMA on SMS to address substandard or marginal performance in a specific area.

c. SMS is intended as a short-term program. SMS requires specific goals. SMS should include, but is not limited to, training tailored to correct deficiencies as determined by the Flight Leader and Operations Officer or to address personal issues as determined by the Class Advisor. The goals and the required period in SMS must be annotated in a supplemental ATF in the SMA's ATJ.

d. If the SMA achieves the goals within the SMS period or when personal issues are resolved, the SMA returns to normal training flow. If the SMA is unable to meet the specific goals of SMS or performance does not improve, the SMA shall progress to an FPC.

9. Ground Training and Briefing Requirements

a. Mission Preparation, Briefings, and Debriefings

(1) EOB Events. The IP shall carefully review the Aviation Training Summary in planning the EOB event to ensure the profile includes opportunities to reach MIF on all critical items and optional items attempted in the block.

(2) Preparation. SMAs shall arrive for each flight with:

(a) Thorough knowledge of:

1. The flight's Discuss Items, as listed in Chapters IV-VIII.

2. Procedural knowledge of the critical items for the event's training block.

(b) A flight profile tailored to training requirements, weak areas, and continuity.

(c) The latest ATS for the stage.

(3) Briefing. Thoroughly cover the mission's:

(a) Event Discuss Items, as listed in Chapters IV-VIII.

(b) Specific objectives.

(c) Techniques and required procedures for accomplishing those objectives.

(d) Planned profile and contingencies.

(4) Debriefing

(a) After each event, the instructor shall critique the SMA's performance using cause/effect analysis, particularly with respect to the CTS.

(b) The mission's complexity and SMA's progress will govern the time required for the debrief.

b. Emergency Procedures (EP) Briefing and Training

(1) EP training builds the SMA's confidence in the aircraft. The IP shall conduct EP training on all dual aircraft events, either on the ground or in the aircraft. Correct procedural deficiencies through additional instruction and study assignments.

(2) Incorporate EP training into simulator events when practical; however, instructional block objectives take precedence.

(3) Grade the SMA's overall EP knowledge and performance under Emergency Procedures.

10. Mission Grading Procedures and Evaluation Policies

a. General Grading and Evaluation Policy. Maneuver item files listed in the MPTS are minimum stage/phase completion standards per maneuver.

b. Grading Procedures (Aircraft and Training Devices)

(1) Absolute Maneuver Grading. Use the following grading scale to document the SMA's characteristic performance on maneuvers attempted during each dual event. This grading scale is an absolute grading scale. Judge the SMA's proficiency ***only*** against the item's course training standard. (See ***Student Performance Measurement/Application of Standards,*** page xviii, Course Data, paragraph 21.)

(a) Demonstrated (NG/1 Level). Enter "No Grade":

1. When the IP demonstrates the maneuver and the SMA does not subsequently perform it during the event.

2. For solo flights, where an IP cannot observe individual graded items.

3. To indicate accomplishing all SSRs for that event. Specify completed SSRs in the ATF's SSR comments section.

(b) Unable (U/2 Level). Performance is unsafe or lacks sufficient knowledge, skill, or ability. Deviations greatly exceed CTS, significantly disrupting performance. Corrections significantly lag deviations or aggravate the deviation.

(c) Fair (F/3 Level). Performance is safe, but with limited proficiency. Deviations exceed CTS, detracting from performance. Corrections noticeably lag deviations, and may not be appropriate.

(d) Good (G/4 Level). Characteristic performance is within CTS. Deviations outside CTS are allowed, provided they are brief, minor, and do not affect safety of flight. Corrections must be appropriate and timely.

(e) Excellent (E/5 Level). Greatly surpasses CTS. Performance is correct, efficient, and skillful. Deviations are very minor. Corrections, if required, are initiated by the SMA and are appropriate, smooth, and rapid.

(2) Solo Events

(a) Assign NG/1 for performed maneuvers.

(b) Any IP may grade maneuvers observed to be either unsafe or exceptional on the solo ATF. These grades shall count toward overall PAS.

(3) Overall Event Grades. Overall event grades represent the SMA's progression through MPTS. Grade events "Pass," "Marginal," or "UNSAT." Use the following definitions to characterize event grades.

(a) Pass

1. Prior to EOB: progress is adequate to meet standards by EOB.

2. EOB: the SMA's performance meets or exceeds standards.

(b) Marginal. Ability to meet the standards by the end of the block is questionable. IPs may not award a Marginal on an EOB event or check ride.

(c) UNSAT. The SMA exhibits dangerous tendencies, or progress towards meeting EOB standards is insufficient.

(4) Awarding Overall Event Grades. The SMA's overall grade is based on the SMA's performance against the MIF for that event. The following rules govern overall event grading:

(a) EOB. Performance must meet MIF by EOB. If the SMA has previously met MIF in the block, he must still meet MIF in the EOB flight if the maneuver is reattempted.

(b) Prior to EOB. Performance must meet/exceed previous block MIF. EXAMPLE:

1. C41 MIF requires an F/3 for No-Flap Landings. C43 MIF requires a G/4.

2. The SMA must meet or exceed F/3 to progress out of C41.

3. The SMA must maintain or exceed F/3 until the last C43 event, by which time the SMA must attain G/4.

(c) Exception. SMAs shall maintain or exceed MIF performance from one block to the next within stage or between media within stage. The exception is when MIF on a subsequent block is below the preceding block MIF. In this case, the lower MIF applies.

(5) Regression Rules. Regression rules allow for uneven progress through training. Regression rules do not apply to the first simulator or flight block in each stage. The following specifies allowable regression:

(a) The SMA is allowed up to two maneuver grades of F/3 where a G/4 is required on previous block MIF, and:

1. The SMA has previously demonstrated G/4 proficiency when a G/4 was required on a previous block MIF.

2. The maneuver was not a check ride/safe-for-solo critical (+) item.

3. The IP is satisfied the SMA is ready to progress to the next event.

(b) The IP must award an overall UNSAT if:

1. Regression was to a U/2 where F/3 or G/4 is required on previous block MIF, or

2. Performance on the same maneuver for two consecutive events resulted in an F/3 where a G/4 is required on previous block MIF, or

3. There was regression on more than two items during an event.

(6) Maneuver Requirements. For each block:

(a) Mandatory Items. Items with a number and a plus (+) are mandatory and the SMA must meet the required proficiency by EOB. When a maneuver is performed multiple times in a block of training, the last grade assigned for the maneuver will determine if the SMA meets EOB MIF.

(b) Optional Items. Items with a number but without a plus (+) are optional; however, if flown, the SMA must meet the required proficiency by EOB.

(c) Not Demonstrated/Not Performed. The IP will not demonstrate, nor will the SMA perform:

1. Unnumbered items.

2. Items not in the stage.

3. Exceptions:

a. Weather-driven instrument approaches.

b. Prebriefed maneuvers for IP proficiency.

(7) Incomplete Events. In general, IPs should consider an event complete if able to accomplish the requirements in

paragraph (a) below. This is particularly true when weather precludes accomplishing certain maneuver items, but the IP is able to emphasize training on other maneuver items. Subsequent events in the block, when available, can reverse this emphasis, hence achieving overall training balance. If an SMA has had ample opportunity to learn a task and subsequently flies a short mission, do not incomplete the mission solely to provide unwarranted extra training.

(a) Assessment. Assess the event complete if:

1. Seventy-five percent of the event's H/X was used for training, and

2. Sufficient events remain in the block to redress the imbalance, and

3. Individual maneuvers can still be accomplished within the block.

4. Otherwise, assess the event incomplete.

(b) Completion Events

1. An event may both complete a previous event and count as an advancing X.

2. For events flown exclusively to clear an incomplete, grades on maneuvers repeated from the incomplete event do not count towards the SMA's PAS.

(c) Simulator Event Completion. Assess a simulator event complete if the SMA has received a full 1.5-hour training period.

c. Policies for Evaluation Flights and Ground Evaluations

(1) Authorized Evaluators. The squadron CO will designate check pilots for each stage.

(2) Check Rides (SXX90)

(a) Single Event Training Blocks. Check rides amount to single event training blocks. Therefore, all rules regarding progressing out of a block apply, except as noted below:

1. Should fly a representative cross section of optional maneuvers.

2. Up to two optional maneuvers may be graded F/3 where G/4 is required without requiring an overall UNSAT.

3. Check pilots may allow SMAs to reattempt maneuvers.

4. The entire event should be devoted to assessing the SMA's ability and readiness to progress to the next stage of training. All maneuvers indicated with a plus (+) are check ride critical and must be accomplished to MIF. ***Regression rules do not apply***.

5. The SMA should be able to demonstrate required levels of proficiency without instructor assistance; however, instruction is allowed on check rides and SMAs may reattempt maneuvers at the check pilot's discretion.

(b) Incomplete Check Ride. The check ride shall be incomplete when:

1. Any (+) item was not flown, or

2. The check pilot was unable to sample sufficient examples of a given maneuver to assess the SMA's overall performance.

Note: The subsequent flight need only include maneuvers required to complete the check.

3. Exceptions. The check is complete and the overall grade is UNSAT if:

a. Any critical item is below MIF, or

b. More than two optional items were graded F/3 where G/4 is required, or

c. Any maneuver is graded U/2.

(c) Instrument or Navigation Stage Check Failure. If the SMA fails an Instrument or Navigation stage check because of an UNSAT pattern/landing not directly related to the stage being evaluated, any subsequent ET event may be flown as a contact event, and the resulting progress check may also be a contact event.

(d) UNSAT Check Ride—Ground Operations. A check ride graded UNSAT solely for ground operations requires a progress check. The Operations Officer will decide whether to perform the progress check as a ground evaluation, in the simulator, or in the aircraft.

(3) Progress Check Procedures

(a) The Progress Check Pilot shall consider the SMA's proficiency, judgment, situational awareness, and overall ability to maneuver the aircraft safely and confidently. The SMA must also demonstrate the potential to successfully complete advanced training. All progress checks must meet MIF for the most recently completed block of training. Progress checks shall be full mission profiles emphasizing the SMA's weak areas and a representative cross section of area and pattern maneuvers. All critical items do not need to be accomplished. Document failed progress checks on the respective pink ATF for the failed event generating the progress check. Flight and Ready Room UNSATs proceed in separate, parallel tracks:

1. An SMA's first flight progress check (in the advanced phase) is an IPC (SXX88) event. Any subsequent flight progress check is an FPC (SXX89). Previous RRUs do not affect this progression.

2. Similarly, the first RRU or second academic test failure generates an IPC. A subsequent RRU or academic test failure generates an FPC. Previous flight progress checks do not affect this progression.

(b) IPC. The following defines when to conduct an IPC, IPC outcomes, and IPC IPs.

1. Criteria for an IPC are:

a. Failed check ride.

b. Two consecutive or three cumulative UNSAT events in the same block, not including XX87 events.

c. Following a single RRU event.

d. Following two academic test failures.

e. Operations Officer or above may direct an IPC when the SMA's potential to complete MPTS is in doubt. (See paragraph 8d, failure to meet specific goals of SMS.)

2. Outcomes are:

a. Passing returns the SMA to normal syllabus flow.

b. Failing results in an FPC.

3. IPC IPs. The Operations Officer or his representative designated in writing by the squadron CO, usually a Standardization pilot, will administer the IPC. Neither an SMA's on-wing nor the IP that generated the UNSAT grade resulting in the IPC shall administer the IPC. A qualified IPC check pilot shall monitor an IPC conducted in a simulator. The squadron IPC IP is responsible for making a "return to training" or "continue the attrition process" recommendation to the squadron CO. An IPC instructor who awards an UNSAT grade on the IPC shall not fly with that SMA again during that particular stage of training.

(c) FPC. The following defines when to conduct an FPC, FPC outcomes, and FPC Check Pilots.

1. Criteria for an FPC are:

a. Following a failed IPC.

b. If the conditions requiring an IPC exist and the SMA has already accomplished an IPC in phase.

c. A Commanding Officer-directed FPC will be performed when the SMA's potential to complete MPTS is in doubt (see paragraph 8d, failure to meet specific goals of SMS).

2. Outcomes are:

a. Passing returns the SMA to normal syllabus flow.

b. Failing results in an attrition recommendation by the CO to the TRAWING Commander and a subsequent TRB.

3. FPC IPs. The CO, XO, or a CO-designated representative administers the FPC. It is the intent of CNATRA that wherever possible, the CO or in his absence the XO, shall conduct FPCs. In the event that neither the CO nor XO are qualified or available to instruct in the required stage, the CO may designate, in writing, a senior officer (O-4 or above) to conduct the FPC by direction. Neither the SMA's on-wing nor the IP that generated the UNSAT grade resulting in the FPC shall administer the FPC. A qualified FPC IP shall monitor an FPC conducted in the simulator. The FPC IP is responsible for the attrition/retention decision to the TRAWING Commander.

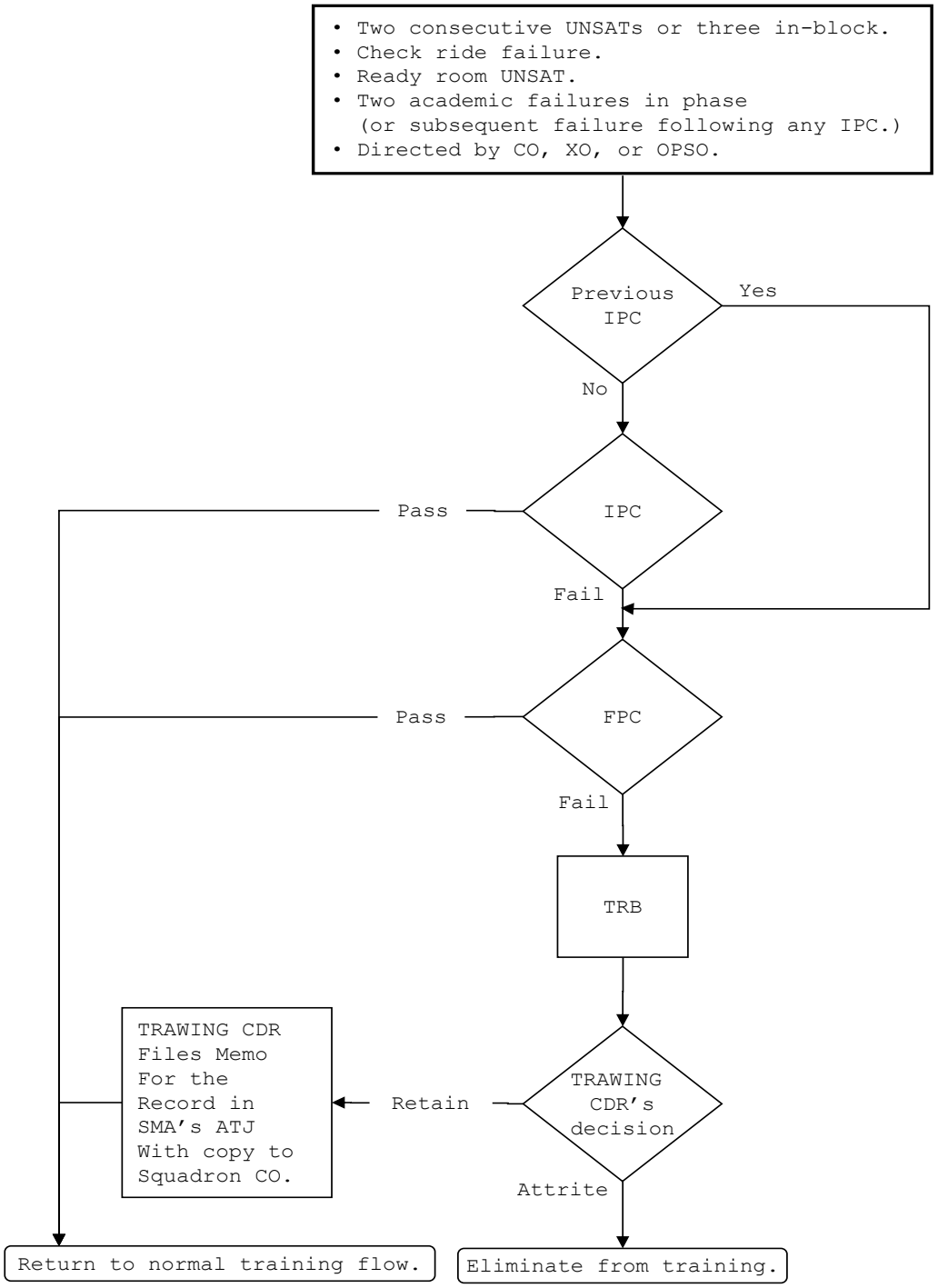
d. Progress Check Counseling

(1) Prior to an IPC. The SMA's Flight Leader or the Operations Officer shall counsel the SMA on the Progress Check Training Review Process and document counseling using CNATRA-GEN 1542/16, Supplementary Jacket Form.

(2) Upon Completion of an IPC. The IPC IP or Operations Officer shall counsel the SMA on the Progress Check Training Review Process. When conducted by the IPC IP, document counseling on the IPC ATF. When conducted by the Operations Officer (and the Operations Officer was not the IPC IP), document counseling using CNATRA-GEN 1542/16, Supplementary Jacket Form.

(3) Upon Completion of an FPC. The CO or his designated representative will counsel the SMA. Counseling should consist of, at a minimum, the Progress Check Training Review Process, attrition/retention recommendations, and future courses of action. The CO shall document counseling on the FPC ATF. If conducted by a designated representative, document counseling using CNATRA-GEN 1542/16, Supplementary Jacket Form.

MPTS PROGRESS CHECK TRAINING REVIEW PROCESS



11. Special Instructions and Restrictions

a. Flight Hour/Event Requirements and Restrictions

(1) Programmed Hours and Events. Programmed syllabus flight hours are listed on pages xii – xvii. Event lengths, SXX86, 87, 88, and 89 events will cause variation. Accomplish all syllabus events.

(2) Minimum Night Hours. 10.0 hours all tracks except E-2/C-2, which does not have a night-hour minimum.

(3) Minimum Solo Hours. At least 80% of the H/X for each solo event must be logged to count the event complete. SMAs should accumulate a minimum of 2.4 hours of first pilot time on I4701.

(4) Maximum Daily SMA Activities (Aircraft, Simulator, or Academic). SMAs shall not exceed two graded activities during one duty day.

(5) Minimum SMA Turn-Times. One hour is required between debriefing of an event and the brief for a follow-on or simulator event. This does not apply to out-and-in, cross-country, or safe-for-solo to hot-seat profiles; however, the instructor shall ensure adequate debrief and brief time is allocated.

(6) Crew Day. The period from the beginning of the SMA's first event or official duty of the day until the completion of the last event of the day, including associated paperwork and debrief. Crew day shall not exceed 12 hours.

(7) Crew Rest. The period from the end of one crew day until the start of the next shall be no less than 12 hours for SMAs. After six consecutive scheduled days, SMAs shall receive one day off. SMAs shall not be scheduled within 12 hours after debrief.

b. Solo Restrictions

(1) Documentation. The ATF for the event preceding the solo event must include "Safe for Solo" or "Unsafe for Solo" in the general comments section.

(2) Solo not Permitted. The SMA may not fly solo unless that ATF states "Safe for Solo."

(3) Briefing. The Runway Duty Officer shall brief the SMA for Contact solos and the Command Duty Officer shall brief I4701 Solo Airways Navigation SMAs. The flight briefing must cover mission profile, objectives, and contingencies.

c. Aircraft/Simulator Interchangeability. Simulator events may be substituted in the aircraft when the simulator is unavailable for extended periods of time.

Chapter II

Ground Training

Blk #	Media	Title	Events	Hrs	Blk Name
G01	Sqdn/ Class	Indoctrination	5	4.1	ASI

1. Prerequisites

a. G0101 prior to G0102-3 (in order).

b. Prerequisites for G0105 vary by service (see flow charts).

2. Events

G0101	Lect	Squadron Welcome Aboard	1.0
G0102	Sqdn	Squadron Policies	1.0
G0103	Sqdn	Facilities Tour	1.0
G0104	Lect	Academic Indoctrination (Class)	1.0
G0105	Admin	Checkout	0.1

3. Syllabus Notes

a. G0104 conducted in BLDG 1824.

b. G0105 is an administrative event and allows a final check that all requirements for completion of syllabus have been met.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G02	Class/ CAI	Instrument Flight Rules— Phase I	21 (TC-12B) 21 (T-44A/C)	48.5 48.5	See Below

1. Prerequisites

a. G0104 prior to G0201.

b. G0201 prior to G0202, G0203, G0204A or G0204B, G0206, G0207, G0208, G0209, G0210, G0211, G0213, G0214, G0215,and G0216.

c. G0203 prior to G0205A.

d. G0205A-C in order.

e. G0209, G0210, and G0211 prior to G0212.

f. G0213-16 prior to G0217.

g. G0206 prior to G0218.

h. G0204A or G0204B, G0205C, G0207, G0208, G0212, and G0217 prior to G0290.

2. Events

G0201	Lect	Introduction to IFR	0.5	IFR
G0202	Lect	Sensory Problems/Spatial Disorientation	1.0	IFR
G0203	Lect	Navigational Aids	1.0	IFR
G0204A	CAI	TC-12B INAV Instrument Approach Procedures	3.5	IFR
G0204B	CAI	T-44A/C INAV Instrument Approach Procedures	3.5	IFR
G0205A	MIL	INAV (Day 1)	2.5	IFR
G0205B	MIL	INAV (Day 2)	6.0	IFR
G0205C	MIL	INAV (Day 3)	1.5	IFR
G0206	CAI	INAV Flight Planning	3.5	IFR
G0207	P/P	INAV Practice Exam	2.0	IFR
G0208	Lect	INAV Review	3.0	IFR
G0209	CAI	Meteorology	4.0	Metro
G0210	MIL	Meteorology	3.0	Metro
G0211	Lect	Meteorology Review	2.0	Metro
G0212	CAI	Meteorology Exam	2.0	Metro
G0213	CAI	FRR	3.0	FRR
G0214	Lect	FRR	2.0	FRR
G0215	P/P	FRR Practice Exam	2.0	FRR
G0216	Lect	FRR Review	1.0	FRR
G0217	CAI	FRR Exam	2.0	FRR
G0218	Lect	Review Flight Planning	1.0	IFR
G0290	CAI	Instrument Navigation Exam	2.0	IFR

3. Syllabus Notes. All events conducted in BLDG 1824.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G03	Class /CAI	Systems	31 (TC-12B) 35 (T-44C) 30 (T-44A)	28.0 34.5 29.5	SYS

1. Prerequisites

a. G0104 prior to G0301A/B.

b. After completion of G0301A/B, academic instructors determine order of completion of remaining events with the exception of the Course Review, Aircraft Systems Exam, and Aircraft Systems Exam Review. These events are accomplished in order after all the other events (except G0343A/B) in the block are completed. G0343A/B can be scheduled at any time prior to C2101.

2. Events

G0301A	MIL	TC-12B Introduction to Aircraft Systems	0.5
G0301B	MIL	T-44C Introduction to Aircraft Systems	0.5
G0301C	MIL	T-44A Introduction to Aircraft Systems	0.5
G0302A	CAI	TC-12B General Aircraft	0.5
G0302B	CAI	T-44C General Aircraft	0.5
G0302C	CAI	T-44A General Aircraft	0.5
G0303A	MIL	TC-12B General Aircraft	0.5
G0303B	MIL	T-44C General Aircraft	0.5
G0303C	MIL	T-44A General Aircraft	0.5
G0304A	CAI	TC-12B Power Plant and Related Systems	2.0
G0304B	CAI	T-44C Power Plant and Related Systems	2.0

2. Events (Cont)

G0304C	CAI	T-44A Power Plant and Related Systems	2.0
G0305A	MIL	TC-12B Power Plant and Related Systems	1.0
G0305B	MIL	T-44C Power Plant and Related Systems	1.0
G0305C	MIL	T-44A Power Plant and Related Systems	1.0
G0306A	CAI	TC-12B Propeller System	1.0
G0306B	CAI	T-44C Propeller System	1.0
G0306C	CAI	T-44A Propeller System	1.0
G0307A	MIL	TC-12B Propeller System	1.0
G0307B	MIL	T-44C Propeller System	1.0
G0307C	MIL	T-44A Propeller System	1.0
G0308A	CAI	TC-12B Fuel System	1.0
G0308B	CAI	T-44C Fuel System	1.0
G0308C	CAI	T-44A Fuel System	1.0
G0309A	MIL	TC-12B Fuel System	1.0
G0309B	MIL	T-44C Fuel System	1.0
G0309C	MIL	T-44A Fuel System	1.0
G0310A	CAI	TC-12B Flight Control System	0.5
G0310B	CAI	T-44C Flight Control System	0.5
G0310C	CAI	T-44A Flight Control System	0.5
G0311A	MIL	TC-12B Flight Control System	0.5
G0311B	MIL	T-44C Flight Control System	0.5
G0311C	MIL	T-44A Flight Control System	0.5
G0312A	CAI	TC-12B Landing Gear System	1.0

2. Events (Cont)

G0312B	CAI	T-44C Landing Gear System	1.0
G0312C	CAI	T-44A Landing Gear System	1.0
G0313A	MIL	TC-12B Landing Gear System	1.0
G0313B	MIL	T-44C Landing Gear System	1.0
G0313C	MIL	T-44A Landing Gear System	1.0
G0314A	CAI	TC-12B Environmental Systems	1.5
G0314B	CAI	T-44C Environmental Systems	1.5
G0314C	CAI	T-44A Environmental Systems	1.5
G0315A	MIL	TC-12B Environmental Systems	1.5
G0315B	MIL	T-44C Environmental Systems	1.5
G0315C	MIL	T-44A Environmental Systems	1.5
G0316A	CAI	TC-12B Electrical System	1.0
G0316B	CAI	T-44C Electrical System	1.0
G0316C	CAI	T-44A Electrical System	1.0
G0317A	MIL	TC-12B Electrical System	1.5
G0317B	MIL	T-44C Electrical System	1.5
G0317C	MIL	T-44A Electrical System	1.5
G0318A	CAI	TC-12B Flight Instruments	0.5
G0318B	CAI	T-44C Flight Instruments	0.5
G0318C	CAI	T-44A Flight Instruments	0.5
G0319A	MIL	TC-12B Flight Instruments	0.5
G0319B	MIL	T-44C Flight Instruments	0.5
G0319C	MIL	T-44A Flight Instruments	0.5
G0320A	CAI	TC-12B Avionics	1.0
G0320B	CAI	T-44A Avionics	1.0

2. Events (Cont)

G0321A	MIL	TC-12B Avionics	1.5
G0321B	MIL	T-44A Avionics	1.5
G0322	CAI	T-44C Navigation and Communication	1.0
G0323	MIL	T-44C Navigation and Communication	1.5
G0324A	CAI	TC-12B Weather Radar	0.5
G0324B	SS	T-44C Weather Radar	0.5
G0324C	CAI	T-44A Weather Radar	0.5
G0325A	MIL	TC-12B Weather Radar	0.5
G0325B	MIL	T-44A Weather Radar	0.5
G0326	CAI	T-44C Autopilot System	1.0
G0327	MIL	T-44C Autopilot System	1.0
G0328	CAI	T-44A RNAV	1.0
G0329	MIL	T-44A RNAV	1.0
G0330	CAI	TC-12B GPWS	0.5
G0331	MIL	TC-12B GPWS	0.5
G0332	CAI	TC-12B Annunciator Lights	0.5
G0333	MIL	TC-12B Annunciator Lights	0.5
G0334	CAI	T-44C Multi-Function Display	1.0
G0335	MIL	T-44C Multi-Function Display	1.0
G0336	CAI	T-44C Flight Management System	1.0
G0337	MIL	T-44C Flight Management System	1.0
G0338	SS	T-44C Flight Guidance Panel	1.0
G0339A	Sqdn	TC-12B Aircraft Tour	1.0
G0339B	Sqdn	T-44C Aircraft Tour	1.0

2. Events (Cont)

G0339C	Sqdn	T-44A Aircraft Tour	1.0
G0340	SS	T-44C Messages and Annunciations	0.5
G0341A	Lect	TC-12B Course Review	1.0
G0341B	Lect	T-44C Course Review	2.0
G0341C	Lect	T-44A Course Review	2.0
G0390A	CAI	TC-12B Aircraft Systems Exam	2.0
G0390B	CAI	T-44C Aircraft Systems Exam	2.0
G0390C	CAI	T-44A Aircraft Systems Exam	2.0
G0342A	Lect	TC-12B Aircraft Systems Exam Review	0.5
G0342B	Lect	T-44C Aircraft Systems Exam Review	0.5
G0342C	Lect	T-44A Aircraft Systems Exam Review	0.5
G0343A	Lect	T-44C Simulator Brief	0.5
G0343B	Lect	T-44A Simulator Brief	0.5

3. Syllabus Notes

a. All events conducted in BLDG 1824.

b. The following events are to be completed on the RCVA: G0324B, G0338, and G0340.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G04	Class/ CAI	Aerodynamics	8 (TC-12B) 8 (T-44A/C)	24.5 24.5	AERO

1. Prerequisites

a. G0104 prior to G0401A or G0401B and G0402A or G0402B.

b. For T-44A/C, G0402A prior to G0403A, G0403B, G0404A, G0404B, and G0405.

c. For TC-12, G0402B prior to G0403C, G0403D, G0404C, G0404D, and G0405.

d. For T-44A/C, G0401B, G0403A, G0403B, G0404A, G0404B, and G0405 in any order prior to G0490B.

e. For TC-12, G0401A, G0403C, G0403D, G0404C, G0404D, and G0405 in any order prior to G0490A.

2. Events

G0401A	CAI	TC-12B Aerodynamics/Power Performance	4.0
G0401B	CAI	T-44A/C Aerodynamics/Power Performance	4.0
G0402A	Lect	Introduction to T-44 Aerodynamics	5.0
G0402B	MIL	Introduction to TC-12 Aerodynamics	5.0
G0403A	Lect	T-44 Aerodynamics Lecture (Weight and Balance)	2.5
G0403B	Lect	T-44 Aerodynamics Lecture (TOLD)	2.5
G0403C	MIL	TC-12 Aerodynamics Lecture (Weight and Balance)	2.5
G0403D	MIL	TC-12 Aerodynamics Lecture (TOLD)	2.5
G0404A	Lab	T-44 Aerodynamics Lab (Weight and Balance Problem)	3.0
G0404B	Lab	T-44 Aerodynamics Lab (TOLD Problem)	3.0
G0404C	MIL	TC-12 Aerodynamics Lab (Weight and Balance Problem)	3.0
G0404D	MIL	TC-12 Aerodynamics Lab (TOLD Problem)	3.0
G0405	Lect	Aerodynamics Review	0.5
G0490A	P/P	TC-12B Aerodynamics Exam	4.0
G0490B	P/P	T-44A/C Aerodynamics Exam	4.0

3. Syllabus Notes. All events conducted in BLDG 1824.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G05	Class/ SS/CAI	Visual Navigation	10	19.0	VNAVFP

1. Prerequisites

a. I4701 prior to G0501 and G0501 prior to G0502-8.

b. Academic instructors determine order of completion of G0502-8; complete G0502-8 in any order prior to G0509 and complete G0509 prior to G0590.

2. Events

G0501	MIL	Introduction to Visual Navigation Concepts	1.5
G0502	MIL	Chart Interpretation and Legend Review	1.5
G0503	MIL	Using CR-2 & E6B Navigation Computers	2.0
G0504	MIL	VFR Mission Planning Procedures	2.0
G0505	MIL	Chart CHUMing Procedures	0.5
G0506	SS	Chart Prep and Plotting Exercise	5.0
G0507	CAI	FLIP Area Planning – 1B Military Training Routes and SOP Review	0.5
G0508	MIL	FLIP Area Planning – 1B Military Training Routes and SOP Review	1.0
G0509	Lect	VNAV Review	1.0
G0590	P/P	VNAV Exam	4.0

3. Syllabus Notes

a. G05 is not applicable for USN (P-3/P-8), USCG, E-6, and E-2/C-2 SMAs.

b. All events conducted in BLDG 1824.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G06	Class/ CAI	Flight Procedures	6 (TC-12B) 6 (T-44C) 6 (T-44A)	11.75 11.75 11.75	See Below

1. Prerequisites

   a. G0104 prior to this block.

   b. Academic instructors determine order of completion.

2. Events

G0601A	P/P	TC-12B CRIT Exams	2.00	FP
G0601B	P/P	T-44A/C CRIT Exams	2.00	FP
G0602A	CAI	TC-12B Emergency Flight Procedures	2.00	EMFP
G0602B	CAI	T-44A/C Emergency Flight Procedures	2.00	EMFP
G0603A	CAI	TC-12B Contact Flight Procedures	2.00	DCONFP
G0603B	CAI	T-44A/C Contact Flight Procedures	2.00	DCONFP
G0604A	Lect	TC-12B Flight Procedures Lecture	2.50	FP
G0604B	Lect	T-44A/C Flight Procedures Lecture	2.50	FP
G0605	MIL	Course Rules Lecture	2.50	FP
G0606	Lect	Flight Line Driver's License Brief	0.75	FP

3. Syllabus Notes. All events conducted in BLDG 1824.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G07	Class	Crew Resource Management	1	2.0	CRM

1. Prerequisite. G0104.

2. Events

G0701	MIL	Seven CRM Skills	2.0

3. Syllabus Notes. G0701 is required for all SMAs.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G08	Class/ SS	IFR—Phase II	10	22.0	IFR2

1. Prerequisites

   a. I3205 prior to G0801 and G0802.

   b. G0802 prior to G0803-8.

   c. G0801 and G0803-8 in any order prior to G0809.

   d. G0809 prior to G0890.

2. Events

G0801	Lect	DD-175 Lecture and Advanced Multi-Engine Fuel Log Review	1.0
G0802	Lect	Introduction to Advanced Flight Planning	1.0
G0803	SS	FLIP Review	3.0
G0804	SS	CR-2 Exercises	1.5
G0805	SS	Metro Review	1.5
G0806	SS	DD-175 Flight Plans	1.0
G0807	SS	Multi-Engine Fuel Logs	1.0
G0808	SS	Practice Flight Planning	5.5
G0809	MIL	IFR Final Exam Review	2.5
G0890	P/P	IFR Final Exam	4.0

3. Syllabus Notes. Examination conducted in BLDG 1824.

4. Discuss Items. None.

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Chapter III

NATOPS Training

This chapter does not apply to Multi-Engine training.

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Chapter IV

Contact Training

1. Matrices. The following matrices are an overview of the entire Contact Stage by track. The purpose of these matrices is to provide the SMA and IP the easiest way to track progress, regression, and overall status in relation to the MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Stage MIF (USN (P-3/P-8), USMC C-130, USCG, E-6, Tiltrotor)

Simulator Event
Check Ride Event

CONTACT STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**C2106**	**C4105**	**C4306**	**C3201**	**C4490**	**C4501**	**C4602**
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4	4+
2	Emergency Procedures	3+	3+	4+	3+	4+	4	4+
2	Start Malfunctions	4+	4+	4+	4	4		4
2	Windmilling Airstart			3+				
2	Starter-Assisted Airstart			3+				
3	Headwork/Situational Awareness	2+	3+	4+	4+	4+	4	4+
4	Basic Air Work	3+	3+	4+	3+	4+	4	4+
5	Mission Planning/ Briefing/Debriefing	3+	3+	3+	3+	3+		3+
6	Ground Operations	3+	3+	4+	4+	4		4+
7	Takeoff	3+	3+	4+	4+	4+		4+
8	Aborted Takeoff	2+	3+	4+	4+	4		4+
9	Departure		3+	4+	4+	4		4+

MIF continued on next page.

CONTACT STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**C2106**	**C4105**	**C4306**	**C3201**	**C4490**	**C4501**	**C4602**
10	SSE at Altitude		2+	3		3		
11	Dynamic Engine Cut	2	2+	4+	4	4+		
12	LSC		4+		4	4		
12	Turn Pattern		4+	4	4	4		
12	Slow Flight		4+	4	4	4		
12	Approach to Stalls		4+	4+	4	4+		
12	SSE Waveoff at Altitude		2+	3		3		
14	Emergency Descent		3+	3+				
15	Power On Ditch	2+	3+	4+	3	4		
15	SSE Ditch		3+	4+	3	4		
15	Power Off Ditch		3	4+	3	4		
17	In-Flight Planning		3+	4+		4+		
18	Cockpit Procedures	4+	4+	4+	4+	4+		4+
19	Radio Communications	2+	3+	3+	3	3+	3	3+
23	Overhead/Break Entry		3+	4+		4		4+
24	Course Rules		3+	4+		4		4
31	Waveoff		3+	4+	4	4+		4+
31	SSE Waveoff		2	4+	3	4+		4+
32	Landing Pattern		4+	4+		4+		4+
32	No-Flap Pattern		3+	4+		4+		4+
33	SSE Landing Pattern		2+	4+		4+		4+
34	Landing		3+	4+		4+		4+
34	NFL		3+	4+		4+		4+
34	FFL		3+	3+		3		3+
34	SSE Landing		2+	4+		4+		4+
35	Touch and Go		3+	4+		4+		4+
36	SSE Full Stop			3+				

MIF continued on next page.

CONTACT STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**C2106**	**C4105**	**C4306**	**C3201**	**C4490**	**C4501**	**C4602**
37	Pilot Flying/CRM	2+	3+	3+	3+	3+	3	3+
38	Pilot Monitoring/CRM	2	3+	3+	3	3+	3	3+
48	Clearing		4+	4+		4+		4+
	Special Syllabus Requirements	1	1	1				1

3. Stage MIF (E-2/C-2)

Simulator Event
Check Ride Event

CONTACT STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**C2106**	**C4201**	**C4306**	**C3201**	**C4490**	**C4501**
1	General Knowledge/Procedures	4+	4+	4+	4+	4+	4
2	Emergency Procedures	3+	3+	4+	3+	4+	4
2	Start Malfunctions	4+	3+	4+	4	4	
2	Windmilling Airstart			3+			
2	Starter-Assisted Airstart			3+			
3	Headwork/Situational Awareness	2+	3+	4+	4+	4+	4
4	Basic Air Work	3+	3+	4+	3+	4+	4
5	Mission Planning/ Briefing/Debriefing	3+	3+	3+	3+	3+	
6	Ground Operations	3+	3+	4+	4+	4	
7	Takeoff	3+	3	4+	4+	4+	
8	Aborted Takeoff	2+	3	4+	4+	4	
9	Departure		3+	4+	4+	4	
10	SSE at Altitude		2	3		3	
11	Dynamic Engine Cut	2	2	4+	4	4+	

MIF continued on next page.

CONTACT STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**C2106**	**C4201**	**C4306**	**C3201**	**C4490**	**C4501**
12	LSC		3+		4	4	
12	Turn Pattern		3+	4	4	4	
12	Slow Flight		3+	4	4	4	
12	Approach to Stalls		3+	4+	4	4+	
12	SSE Waveoff at Altitude		2	3		3	
14	Emergency Descent		3	3+			
15	Power On Ditch	2+	3	4+	3	4	
15	SSE Ditch		3	4+	3	4	
15	Power Off Ditch		3	4+	3	4	
17	In-Flight Planning		3+	4+		4+	
18	Cockpit Procedures	4+	4+	4+	4+	4+	
19	Radio Communications	2+	3+	3+	3	3+	3
23	Overhead/Break Entry		3+	4+		4	
24	Course Rules		3+	4+		4	
31	Waveoff		3+	4+	4	4+	
31	SSE Waveoff		2	4+	3	4+	
32	Landing Pattern		3+	4+		4+	
32	No-Flap Pattern		3+	4+		4+	
33	SSE Landing Pattern		2	4+		4+	
34	Landing		3+	4+		4+	
34	NFL		3+	4+		4+	
34	FFL		3+	3+		3	
34	SSE Landing		2	4+		4+	
35	Touch and Go		3+	4+		4+	
36	SSE Full Stop			3+			
37	Pilot Flying/CRM	2+	3+	3+	3+	3+	3
38	Pilot Monitoring/CRM	2	3+	3+	3	3+	3
48	Clearing		4+	4+		4+	
	Special Syllabus Requirements	1	1	1			

Blk #	Media	Title	Events	Hrs	Blk Name
C01	Flight Line	Contact Briefs	2	10.0	DCONFP

1. Prerequisites

a. G0104 (Academic Indoctrination) prior to C0101.

b. C0101 prior to C0102 – E-2/C-2.

2. Events

C0101	Flight Line	Contact Brief	5.0
C0102	Flight Line	E-2/C-2 Supplemental Contact Brief	5.0

3. Syllabus Notes

a. C0101 has no required location, but the briefing should include a visit to Base Ops/Weather Shop, Aircraft Issue, the squadron briefing spaces, and the aircraft.

b. Although not required, C2106 will normally be completed prior to C0101.

c. C0101 is required for all; C0102 is required only for E-2/C-2.

4. Discuss Items

C0101
CRM – seven skills and callouts, FTI/NATOPS manual use (verify changes posted), local operations, flight schedule, PIC/CRM, observer duties, safety/standardization programs, weight and balance, performance charts, go/no-go criteria, Training Time Out policy, ditching, forced landing, area and course rules familiarization, FAA Letter of Agreement, squadron SOP, squadron standardization notes, Wing SOP, TAS operation (T-44C only), headset operation, personal and emergency equipment, aircraft interior/exterior inspection, emergency egress procedures, SDO indoctrination, and oxygen system operation and requirements.

C0102

Outside scan techniques, see and avoid, takeoff, crosswind takeoff and landing, aborted takeoff, landing pattern, full stop landings, touch-and-go procedures, Training Time Out, NATOPS brief, dual engine waveoffs, aircraft engine operating limits, engine start procedures, abnormal starts/malfunctions, and brake system/malfunctions. Porpoised landings, aircraft airframe operating limits, full-flap landings, engine fire on deck, MFD operation (T-44C only), and stalls/spin recovery. Lost communications (VFR), smoke and fire of unknown origin, oxygen system use, emergency descent, smoke and fume elimination, and no-flap landings. Engine failure during takeoff, dynamic engine cut, ditching - power on, right-hand pattern, simulated single engine (SSE) at altitude, and night/IMC ditch versus day VMC ditch. Engine failure after takeoff, SSE touch-and-go procedures, SSE waveoff at altitude, SSE ditching, PIC/crew resource management during SSE, SSE pattern work, and SSE landings/waveoffs/touch and go.

Blk #	Media	Title	Events	Hrs	H/X
C21	CPT	Cockpit Procedures	6	9.0	1.5

1. Prerequisites

a. G0202 (Sensory Problems/Spatial Disorientation).

b. G0324B, G0338, and G0340 (RCVA events) - T-44C only.

c. G0218 (Review Flight Planning).

d. G0390A/B/C (TC-12B/T-44C/T-44A Aircraft Systems Exam).

e. G0342A/B/C (TC-12B/T-44C/T-44A Aircraft Systems Exam Review).

f. G0343A/B (T-44C/T-44A Simulator Brief).

g. G0490A/B (TC-12B or T-44A/C Aerodynamics Exam).

h. All G06 events (Flight Procedures block).

2. Syllabus Notes

a. Practice all checklists, applicable FTI briefings, radio calls, and basic aircraft control. Ensure SMA's checklist proficiency is adequate to proceed to flight operations.

b. Multiple items are listed as discuss items; however, due to time constraints, it will not be possible to discuss all items prior to the simulator event (SIM). Therefore, a ***Discuss Item*** may be addressed during the SIM and/or prior to the SIM.

c. During all C21XX events, each normal checklist should be performed if it has been previously introduced or discussed.

3. Special Syllabus Requirements

C2103
Mechanical stops in throttle quadrant.

C2104
Landing pattern (TC-12B only).

C2105
V_{mca} demo.

4. Discuss Items

C2101
Seat/rudder pedal adjustment, fuel management panel, pilot instrument panel, engine instruments and switches, center instrument panel, annunciator panel/analysis, right seat instrument panel, circuit breaker panels, control pedestal, overhead control panel, MFD (T-44C only), checklists: before start, engine start, after start, brake check (out of chocks), engine runup, takeoff, after landing, and secure.

C2102
Takeoff procedures, checklist management, landing procedures, checklists: climb, cruise, descent, approach, landing, start malfunctions, and MFD operations (T-44C only).

C2103
Loss of brakes, hot brakes, brake fire, mechanical stops in throttle quadrant, inadvertent condition lever to fuel cutoff, engine failure at altitude, autopilot disengagement, and ground emergencies.

C2104
Flap malfunctions, no-flap landings, gear malfunctions, unsafe gear/gear up landings, dynamic engine cut, engine failure/fire during or after takeoff, and electrical malfunctions.

C2105
Wing/uncontrollable fire, V_{mca} demo, fuel system malfunctions, engine malfunctions, smoke/fume emergencies, and airstarts.

C2106
Anti-ice/deice systems, CRM callouts, windshield heating failure, in-flight damage/bird strikes, pressurization system malfunctions, propeller malfunctions, and ditching.

5. Block MIF

CTS REF	MANEUVER	C2106
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
2	Start Malfunctions	4+
3	Headwork/Situational Awareness	2+
4	Basic Air Work	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	3+
7	Takeoff	3+
8	Aborted Takeoff	2+
11	Dynamic Engine Cut	2
15	Power On Ditch	2+
18	Cockpit Procedures	4+
19	Radio Communications	2+
37	Pilot Flying/CRM	2+
38	Pilot Monitoring/CRM	2
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
C41	Acft	Contact	5	10.0	2.0

1. Prerequisites

a. C2106.

b. G0701 (Seven CRM Skills).

c. C0101 (Contact Brief).

2. Syllabus Notes

a. E-2/C-2 SMAs will not fly this block.

b. This block should concentrate on basic air work, high work maneuvers, landing patterns, and checklist management.

c. On-wing flights will be C4101-5 and C4301-2, except for E-2/C-2. E-2/C-2 on-wing will be C4201 and C4301-2.

d. On-wing SMAs shall taxi aircraft for all of C4100 block.

e. On a flight where a system is briefed, the SMA shall be given a simulated malfunction associated with that system.

f. Complete a minimum of two passes in landing pattern per event with IP as PF and SMA as PM.

3. Special Syllabus Requirements

C4101
Oxygen mask familiarization and utilization.

4. Discuss Items

C4101
Outside scan techniques, see and avoid, takeoff, crosswind takeoff and landing, aborted takeoff, landing pattern, full stop landings, touch-and-go procedures, Training Time Out, NATOPS brief, dual engine waveoffs, aircraft engine operating limits, engine start procedures, abnormal starts/malfunctions, and brake system/malfunctions.

C4102
Porpoised landings, aircraft airframe operating limits, full-flap landings, engine fire on deck, MFD operation (T-44C only), stalls/spin recovery, and fuel system/malfunctions.

C4103
Lost communications (VFR), smoke and fire of unknown origin, oxygen system use, emergency descent, smoke and fume elimination, no-flap landings, and environmental/ pressurization system/malfunctions.

C4104
Engine failure during takeoff, dynamic engine cut, ditching - power on, right-hand pattern, simulated single engine (SSE) at altitude, night/IMC ditch versus day VMC ditch, and engine system/malfunctions.

C4105
Engine failure after takeoff, SSE touch-and-go procedures, SSE waveoff at altitude, SSE ditching, PIC/crew resource management during SSE, SSE pattern work, SSE landings/waveoffs/touch and go, and electrical system/malfunctions.

5. Block MIF

CTS REF	MANEUVER	C4105
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
2	Start Malfunctions	4+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	3+
7	Takeoff	3+
8	Aborted Takeoff	3+

MIF continued on next page.

CTS REF	MANEUVER	C4105
9	Departure	3+
10	SSE at Altitude	2+
11	Dynamic Engine Cut	2+
12	LSC	4+
12	Turn Pattern	4+
12	Slow Flight	4+
12	Approach to Stalls	4+
12	SSE Waveoff at Altitude	2+
14	Emergency Descent	3+
15	Power On Ditch	3+
15	SSE Ditch	3+
15	Power Off Ditch	3
17	In-Flight Planning	3+
18	Cockpit Procedures	4+
19	Radio Communications	3+
23	Overhead/Break Entry	3+
24	Course Rules	3+
31	Waveoff	3+
31	SSE Waveoff	2
32	Landing Pattern	4+
32	No-Flap Pattern	3+
33	SSE Landing Pattern	2+
34	Landing	3+
34	NFL	3+
34	FFL	3+
34	SSE Landing	2+
35	Touch and Go	3+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3+
48	Clearing	4+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
C42	Acft	E-2/C-2 Contact	1	2.0	2.0

1. Prerequisites

a. C2106.

b. G0701 (Seven CRM Skills).

c. C0102 (E-2/C-2 Supplemental Contact Brief).

2. Syllabus Notes

a. E-2/C-2 SMAs only will fly this block.

b. This block should concentrate on basic air work, high work maneuvers, landing patterns, and checklist management.

c. E-2/C-2 on-wing will be C4201 through C4302.

d. SMAs shall taxi aircraft for all on-wing flights.

e. On a flight where a system is briefed, the SMA shall be given a simulated malfunction associated with that system.

f. Complete a minimum of two passes in landing pattern with IP as PF and SMA as PM.

3. Special Syllabus Requirements

C4201
Oxygen mask familiarization and utilization.

4. Discuss Items. Discussion items at the discretion of the IP.

5. Block MIF

CTS REF	MANEUVER	C4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
2	Start Malfunctions	3+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	3+
7	Takeoff	3
8	Aborted Takeoff	3
9	Departure	3+
10	SSE at Altitude	2
11	Dynamic Engine Cut	2
12	LSC	3+
12	Turn Pattern	3+
12	Slow Flight	3+
12	Approach to Stalls	3+
12	SSE Waveoff at Altitude	2
14	Emergency Descent	3
15	Power On Ditch	3
15	SSE Ditch	3
15	Power Off Ditch	3
17	In-Flight Planning	3+
18	Cockpit Procedures	4+
19	Radio Communications	3+
23	Overhead/Break Entry	3+
24	Course Rules	3+
31	Waveoff	3+
31	SSE Waveoff	2

MIF continued on next page.

CTS REF	MANEUVER	C4201
32	Landing Pattern	3+
32	No-Flap Pattern	3+
33	SSE Landing Pattern	2
34	Landing	3+
34	NFL	3+
34	FFL	3+
34	SSE Landing	2
35	Touch and Go	3+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3+
48	Clearing	4+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
C43	Acft	Emergency Contact	6	10.0	See Syllabus Note c.

1. Prerequisites

a. C4105 – all course flows except E-2/C-2.

b. C4201 – E-2/C-2.

2. Syllabus Notes

a. The purpose of this block is to continue basic air work while introducing additional emergency procedures, specifically Simulated Single Engine work.

b. Crew Resource Management should be emphasized during all flights, especially during SSE training.

c. C4301 and C4302 – 2.0 hours per event. C4303 thru C4306 – 1.5 hours per event.

d. E-2/C-2 on-wing flights will be C4201 and C4301-2.

e. Windmilling airstart shall be accomplished once during C43XX and annotated in the comments section of the ATF.

f. Starter-assisted airstart shall be accomplished once during C43XX block and annotated in the comments section of the ATF.

g. SSE full stop shall be accomplished and graded during this block following IP demonstration.

h. Complete a minimum of two passes in landing pattern per event with IP as PF and SMA as PM.

3. Special Syllabus Requirements

C4301 (all course flows)
SSE full-stop demo.

C4302
Manual gear extension.

C4306
Right seat responsibilities as PM during three IP landings.

4. Discuss Items

C4301
Actual versus simulated engine shutdown, engine secure and restart, PIC/crew resource management during SSE, P-factor, starter-assisted airstart, SSE pattern work, SSE landings/waveoffs/touch and go, SSE full stop, Vmca, and landing gear system/malfunctions.

C4302
Simulated dual engine failure, ditching - power off, windmilling airstart, landing gear manual extension, and propeller system/malfunctions.

C4303
Engine fire in flight, anti-icing system, and flight control system/malfunctions.

C4304
Aircraft operating limits, forced landing, fuel system, and environmental/pressurization system.

C4305
Engine system and electrical system.

C4306
Inadvertent IMC, right seat positioning, pilot monitoring/right seat responsibilities, and propeller system.

5. Block MIF

CTS REF	MANEUVER	C4306
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
2	Start Malfunctions	4+
2	Windmilling Airstart	3+
2	Starter-Assisted Airstart	3+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	4+
7	Takeoff	4+
8	Aborted Takeoff	4+
9	Departure	4+
10	SSE at Altitude	3
11	Dynamic Engine Cut	4+
12	Turn Pattern	4
12	Slow Flight	4
12	Approach to Stalls	4+
12	SSE Waveoff at Altitude	3
14	Emergency Descent	3+
15	Power On Ditch	4+
15	SSE Ditch	4+
15	Power Off Ditch	4+
17	In-Flight Planning	4+
18	Cockpit Procedures	4+
19	Radio Communications	3+
23	Overhead/Break Entry	4+
24	Course Rules	4+
31	Waveoff	4+

MIF continued on next page.

CTS REF	MANEUVER	C4306
31	SSE Waveoff	4+
32	Landing Pattern	4+
32	No-Flap Pattern	4+
33	SSE Landing Pattern	4+
34	Landing	4+
34	NFL	4+
34	FFL	3+
34	SSE Landing	4+
35	Touch and Go	4+
36	SSE Full Stop	3+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3+
48	Clearing	4+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
C32	SIM	Contact Emergency Procedures/CRM Simulator	1	1.5	1.5

1. Prerequisite. C4304.

2. Syllabus Notes

a. At least one presentation of malfunctions for each major system should be used. In addition, instructors are encouraged to give SMAs simulated emergencies during contact maneuvers to improve basic aircraft control.

b. Emphasis will be placed on procedural knowledge, judgment, and crew resource management skills. With two SMAs in the simulator, PM shall be evaluated on radio communications and CRM.

c. Communications with simulated Seagull, Approach Control, or Tower are required.

d. SMAs shall follow all EP scenarios to a logical conclusion, unless the IP resets aircraft conditions.

3. Special Syllabus Requirements. None.

4. Discuss Items. Maintaining aircraft control during emergencies, pattern considerations, communications, and CRM.

5. Block MIF

CTS REF	MANEUVER	C3201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
2	Start Malfunctions	4
3	Headwork/Situational Awareness	4+
4	Basic Air Work	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	4+
7	Takeoff	4+
8	Aborted Takeoff	4+
9	Departure	4+
11	Dynamic Engine Cut	4
12	LSC	4
12	Turn Pattern	4
12	Slow Flight	4
12	Approach to Stalls	4
15	Power On Ditch	3
15	SSE Ditch	3
15	Power Off Ditch	3
18	Cockpit Procedures	4+
19	Radio Communications	3
31	Waveoff	4
31	SSE Waveoff	3
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3

Blk #	Media	Title	Events	Hrs	H/X
C44	Acft	Contact Check Ride	1	1.5	1.5

1. Prerequisites

a. C4306.

b. C3201.

2. Syllabus Notes

a. This event will be an evaluation of Contact and VFR flying involving a representative cross section of maneuvers previously presented.

b. At the discretion of IP, pilot monitoring/right seat responsibilities during three IP landings may be reaccomplished if break (Julian date – Julian date last flown) is greater than three days between C4306 and C4490.

c. IP shall include "Safe for Solo" on the ATF for a satisfactory complete event.

3. Special Syllabus Requirements. None.

4. Discuss Items. CRM, pilot monitoring responsibilities, and touch-and-go abort decisions. Operation limits quiz and RDO briefing.

5. Block MIF

CTS REF	MANEUVER	C4490
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
2	Start Malfunctions	4
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	4

MIF continued on next page.

CTS REF	MANEUVER	C4490
7	Takeoff	4+
8	Aborted Takeoff	4
9	Departure	4
10	SSE at Altitude	3
11	Dynamic Engine Cut	4+
12	LSC	4
12	Turn Pattern	4
12	Slow Flight	4
12	Approach to Stalls	4+
12	SSE Waveoff at Altitude	3
15	Power On Ditch	4
15	SSE Ditch	4
15	Power Off Ditch	4
17	In-Flight Planning	4+
18	Cockpit Procedures	4+
19	Radio Communications	3+
23	Overhead/Break Entry	4
24	Course Rules	4
31	Waveoff	4+
31	SSE Waveoff	4+
32	Landing Pattern	4+
32	No-Flap Pattern	4+
33	SSE Landing Pattern	4+
34	Landing	4+
34	NFL	4+
34	FFL	3
34	SSE Landing	4+
35	Touch and Go	4+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3+
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
C45	Acft	Student Pattern Solo	1	0.3	0.3

1. Prerequisite. C4490.

2. Syllabus Notes

a. This event should be completed immediately following the C4490 check to the maximum extent possible. The SMA will complete a minimum of three approach flap landings as briefed by the RDO.

b. If not completed within three days of C4490, a C4486 event shall be flown by the SMA prior to C4501.

3. Special Syllabus Requirements. None.

4. Discuss Item. RDO briefing.

5. Block MIF

CTS REF	MANEUVER	C4501
1	General Knowledge/Procedures	4
2	Emergency Procedures	4
3	Headwork/Situational Awareness	4
4	Basic Air Work	4
19	Radio Communications	3
37	Pilot Flying/CRM	3
38	Pilot Monitoring/CRM	3

Blk #	Media	Title	Events	Hrs	H/X
C46	Acft	Night Contact	2	3.0	1.5

1. Prerequisite. C4501.

2. Syllabus Notes

a. E-2/C-2 SMAs will not fly this block.

b. An instrument approach shall be demonstrated by the IP on each event with SMA as PM, emphasizing CRM callouts and radio communications.

3. Special Syllabus Requirements

C4602
Visual approach demonstration.

4. Discuss Items

C4601
Local operations, night flying environment, field lighting, aircraft lighting, observer duties, outside scan techniques, see and avoid, porpoised landing, CRM guidelines/callouts, and night instrument approaches.

C4602
Right-hand pattern and CRM night/IMC ditching, runway/taxiway/parking signs and symbols, runway markings, and night visual approaches.

5. Block MIF

CTS REF	MANEUVER	C4602
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
2	Start Malfunctions	4
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	4+
7	Takeoff	4+
8	Aborted Takeoff	4+
9	Departure	4+
18	Cockpit Procedures	4+
19	Radio Communications	3+
23	Overhead/Break Entry	4+
24	Course Rules	4
31	Waveoff	4+
31	SSE Waveoff	4+
32	Landing Pattern	4+
32	No-Flap Pattern	4+
33	SSE Landing Pattern	4+
34	Landing	4+
34	NFL	4+
34	FFL	3+
34	SSE Landing	4+
35	Touch and Go	4+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3+
48	Clearing	4+
	Special Syllabus Requirements	1

Chapter V

Instrument Training

1. Matrices. The following matrix is an overview of the entire Instrument Stage. The purpose of this matrix is to provide the SMA and IP the easiest way to track progress, regression, and overall status in relation to the MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Stage MIF (USN (P-3/P-8), USMC C-130, USCG, Tiltrotor, E-6)

Simulator Event
Check Ride Event

INSTRUMENT STAGE MANEUVER ITEM FILE												
CTS REF	**MANEUVER**	**I3104**	**I3205**	**I4105**	**I3305**	**I4205**	**I4390**	**I4404**	**I4504**	**I3401**	**I4690**	**I4701**
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4
2	Emergency Procedures	3+	3+	3+	4+	4+	4+	4+	4+	4+	4+	4
3	Headwork/Situational Awareness	3+	3+	3+	4+	4+	4+	4+	4+	4+	4+	4
4	Basic Air Work	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4
5	Mission Planning/ Briefing/Debriefing	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4
6	Ground Operations			4+		4+	4+	4+	4+		4+	
7	Instrument Takeoff	3+	4+	4+	4+	4+	4	4+	4+	4+	4	
9	Departure	3+	3+	3+	4+	4+	4+	4+	4+	4+	4+	
12	Approach to Stalls	3+										
12	Turn Pattern	4+										
12	LSC	4+										
13	Enroute Procedures		3+	3+	4+	4+	4+	4+	4+		4+	
13	Point-to-Point		3+	3+	3+	3+	3	4	4+		4	

MIF continued on next page.

INSTRUMENT STAGE MANEUVER ITEM FILE												
CTS REF	**MANEUVER**	**I3104**	**I3205**	**I4105**	**I3305**	**I4205**	**I4390**	**I4404**	**I4504**	**I3401**	**I4690**	**I4701**
16	Partial Panel/ESIS Approach to Stalls	3+										
16	Partial Panel/ESIS Turns, Climbs/Descents	3+										
16	Bravo Pattern	4+										
16	Charlie Pattern	4+										
16	Oscar Pattern	4+										
16	Partial Panel/ESIS Oscar Pattern	3+										
16	Yankee Pattern (SSE)	3+										
16	Unusual Attitude Recovery	4+										
16	Partial Panel/ESIS Unusual Attitudes	4+										
17	In-Flight Planning/ Clearance Compliance	3+	3+	3+	4+	4+	4+	4+	4+	4+	4+	
18	Cockpit Procedures	3+	3+	4+	4+	4+	4+	4+	4+	4+	4+	
19	Radio Communications	3+	3+	3+	4+	4+	4+	4+	4+	4+	4+	4
20	Enroute Descent			3	3	3	3	4+	4+		4	
21	Holding		3+	3+	4+	4+	4+	4	4+		4	
22	High Altitude Approach		3+					3				
25	PAR		3+	3+	4+	4+	4	4	4+		4	
25	ILS		3+	3+	4+	4+	4	4	4+		4	
25	SSE Precision Approach				3+	3+	3	3	4+		4	
25, 26, 27	Partial Panel/ESIS Approach				3	3+	3	3	4+		4	
26, 27	VOR		3+	3+	4+	4+	4	4	4+		4	

MIF continued on next page.

INSTRUMENT STAGE MANEUVER ITEM FILE												
CTS REF	**MANEUVER**	**I3104**	**I3205**	**I4105**	**I3305**	**I4205**	**I4390**	**I4404**	**I4504**	**I3401**	**I4690**	**I4701**
26, 27	TAC		3+	3+	4+	4+	4	4	4+		4	
26, 27	NDB		3+	3	3	3	3	3	3		3	
26, 27	SSE Non-Precision Approach				3+	3+	3+	3	4+		4	
25, 27	Needle Only Approach		3	3+	4+	4+	4	4	4+	4	4	
27	Localizer		3+	3+	4+	4+	4	4	4+		4	
27	Localizer Back Course		3+	3	4+	4	4	4	4+		4	
27	RNAV/GPS Approach		3+	3+	4+	4+	4	4	4+		4	
27	ASR		3+	3+	4+	4+	4	4	4+		4	
28	Circling Approach		2+	3+	3+	4+	4	4	4+		4	
28	SSE Circling Approach				3+	3+	3	3	4+		4	
29	Transition to Landing		3	3+	4	4+	4+	4+	4+		4+	
4, 29	Visual Approach			3		3		3+	4+		4	
30	Missed Approach		3+	3+	4+	4+	4+	4	4+		4	
30	SSE Missed Approach				3+	3+	3	4	4+		4+	
30	Circling Missed Approach		2+	3+	3+	4+	4	4	4+		4	
34	Landing			4+		4+	4+	4+	4+		4+	
35	Touch and Go			4+		4+	4	4	4+		4	
36	SSE Full Stop								4+			
37	Pilot Flying/CRM	3+	3+	3+	4+	4+	4+	4+	4+	4+	4+	4
38	Pilot Monitoring/CRM	3	3	3+	4	4+	4	4+	4+	4	4	4
39	Radar Operation			3		3		4+	4			
40	Autopilot/Flight Director Operation	3	3+	3+	3+	3+	3	4+	4+	4	4+	

MIF continued on next page.

INSTRUMENT STAGE MANEUVER ITEM FILE												
CTS REF	**MANEUVER**	**I3104**	**I3205**	**I4105**	**I3305**	**I4205**	**I4390**	**I4404**	**I4504**	**I3401**	**I4690**	**I4701**
41	FMS Operation		3+	3+	3+	4+	4	4+	4+		4	
48	Clearing			4+		4+	4+	4+	4+		4+	
	Special Syllabus Requirements			1				1				

3. Stage MIF (E-2/C-2)

Simulator Event
Check Ride Event

INSTRUMENT STAGE MANEUVER ITEM FILE									
CTS REF	**MANEUVER**	**I3205**	**I3305**	**I4205**	**I4390**	**I4504**	**I3401**	**I4690**	**I4701**
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4+	4+	4
2	Emergency Procedures	3+	4+	4+	4+	4+	4+	4+	4
3	Headwork/Situational Awareness	3+	4+	4+	4+	4+	4+	4+	4
4	Basic Air Work	4+	4+	4+	4+	4+	4+	4+	4
5	Mission Planning/ Briefing/Debriefing	4+	4+	4+	4+	4+	4+	4+	4
6	Ground Operations			4+	4+	4+		4+	
7	Instrument Takeoff	4+	4+	4+	4	4+	4+	4	
9	Departure	3+	4+	4+	4+	4+	4+	4+	
13	Enroute Procedures	3+	4+	4+	4+	4+		4+	
13	Point-to-Point	3+	3+	3+	3	4+		4	
17	In-Flight Planning/ Clearance Compliance	3+	4+	4+	4+	4+	4+	4+	
18	Cockpit Procedures	3+	4+	4+	4+	4+	4+	4+	

MIF continued on next page.

INSTRUMENT STAGE MANEUVER ITEM FILE									
CTS REF	**MANEUVER**	**I3205**	**I3305**	**I4205**	**I4390**	**I4504**	**I3401**	**I4690**	**I4701**
19	Radio Communications	3+	4+	4+	4+	4+	4+	4+	4
20	Enroute Descent		3	3	3	4+		4	
21	Holding	3+	4+	4+	4+	4+		4	
22	High Altitude Approach	3+							
25	PAR	3+	4+	4+	4	4+		4	
25	ILS	3+	4+	4+	4	4+		4	
25	SSE Precision Approach		3+	3+	3	4+		4	
25, 26, 27	Partial Panel/ESIS Approach		3	3+	3	4+		4	
26, 27	VOR	3+	4+	4+	4	4+		4	
26, 27	TAC	3+	4+	4+	4	4+		4	
26, 27	NDB	3+	3	3	3	3		3	
26, 27	SSE Non-Precision Approach		3+	3+	3+	4+		4	
25, 27	Needle Only Approach	3	4+	4+	4	4+	4	4	
27	Localizer	3+	4+	4+	4	4+		4	
27	Localizer Back Course	3+	4+	4	4	4+		4	
27	RNAV/GPS Approach	3+	4+	4+	4	4+		4	
27	ASR	3+	4+	4+	4	4+		4	
28	Circling Approach	2+	3+	4+	4	4+		4	
28	SSE Circling Approach		3+	3+	3	4+		4	
29	Transition to Landing	3	4	4+	4+	4+		4+	
4, 29	Visual Approach			3		4+		4	

MIF continued on next page.

INSTRUMENT STAGE MANEUVER ITEM FILE									
CTS REF	**MANEUVER**	**I3205**	**I3305**	**I4205**	**I4390**	**I4504**	**I3401**	**I4690**	**I4701**
30	Missed Approach	3+	4+	4+	4+	4+		4	
30	SSE Missed Approach		3+	3+	3	4+		4+	
30	Circling Missed Approach	2+	3+	4+	4	4+		4	
34	Landing			4+	4+	4+		4+	
35	Touch and Go			4+	4	4+		4	
36	SSE Full Stop					4+			
37	Pilot Flying/CRM	3+	4+	4+	4+	4+	4+	4+	4
38	Pilot Monitoring/CRM	3	4	4+	4	4+	4	4	4
39	Radar Operation			3		4			
40	Autopilot/Flight Director Operation	3+	3+	3+	3	4+	4	4+	
41	FMS Operation	3+	3+	4+	4	4+		4	
48	Clearing			4+	4+	4+		4+	
	Special Syllabus Requirements			1					

Blk #	Media	Title	Events	Hrs	Blk Name
I01	CAI/ Class	Instrument Brief/FMS	3 (TC-12B) 3 (T-44C) 3 (T-44A)	5.0 7.0 5.0	GPSFP

1. Prerequisites

a. G0104 (Academic Indoctrination) prior to I0101.

b. I0101 prior to I0102.

c. I0102 prior to I0103A/B.

2. Events

I0101	Lect	GPS/Radio Instrument Procedures	3.0
I0102	MIL	ME GPS FMS	1.0
I0103A	Lect	T-44A/TC-12 Flight Director Operation	1.0
I0103B	Lect	T-44C Flight Director Operation	3.0

3. Syllabus Notes

a. Complete I0103A for T-44A/TC-12 SMAs.

b. Complete I0103B for T-44C SMAs.

c. T-44C SMAs will complete the RCVA flight scenario during I0103B.

4. Discuss Items. CRM callouts, runway/taxiway/parking signs and symbols, runway markings, local flying environment, pub bag, NOTAMS, WX products, DoD FLIPs, FAR/AIM, Instrument Flight Manual, canned routes, coded departures, SIDs, Base OPS/filing, FSS, communications, the six T's, GPS approach, RAIM, approach modes, local instrument approaches, and RCVA operation/scenario (T-44C only).

Blk #	Media	Title	Events	Hrs	H/X
I31	SIM	Basic Instruments	4	6.0	1.5

1. Prerequisite. C4501.

2. Syllabus Notes

a. This block shall emphasize control and performance of basic instrument flight.

b. E-2/C-2 SMAs will not fly this block.

c. I3104 should include maneuvers incorporating autopilot/flight director usage.

3. Special Syllabus Requirements. None.

4. Discuss Items

I3101
Instrument crosscheck, instrument takeoff, full-panel approach-to-stalls, control and performance concept.

I3102
Partial panel scan, wet compass characteristics, and departure procedures.

I3103
Unusual attitudes, anti-icing system, emergency/minimum fuel state, TERPs.

I3104
Pitot-static system, flight instrument characteristics, IFR Enroute Supplement, Flight Information Handbook, NOTAMs, and autopilot/flight director usage.

5. Block MIF

CTS REF	MANEUVER	I3104
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
7	Instrument Takeoff	3+
9	Departure	3+
12	Approach to Stalls	3+
12	Turn Pattern	4+
12	LSC	4+
16	Partial Panel/ESIS Approach to Stalls	3+
16	Partial Panel/ESIS Turns, Climbs/Descents	3+
16	Bravo Pattern	4+
16	Charlie Pattern	4+
16	Oscar Pattern	4+
16	Partial Panel/ESIS Oscar Pattern	3+
16	Yankee Pattern (SSE)	3+
16	Unusual Attitude Recovery	4+
16	Partial Panel/ESIS Unusual Attitudes	4+
17	In-Flight Planning/Clearance Compliance	3+
18	Cockpit Procedures	3+
19	Radio Communications	3+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3
40	Autopilot/Flight Director Operation	3

Blk #	Media	Title	Events	Hrs	H/X
I32	SIM	Instrument Approaches	5	7.5	1.5

1. Prerequisites

a. I3104 – all course flows except E-2/C-2.

b. C4501 – E-2/C-2.

c. I0103 (Flight Director Operation).

2. Syllabus Notes

a. Simulator equipment-dependent emphasis items are:

(1) I3201 – GPS approaches (shall accomplish one of each) – HILO approach, "T" approach, and radar vectors.

(2) I3202 – PAR, ASR, and ILS approaches.

(3) I3203 – LOC and LOC-BC approaches.

(4) I3204 – VOR, NDB, and TACAN approaches.

(5) I3205 – discretion of the simulator instructor.

b. Events shall have a minimum of three approaches per event and include at least two full procedure turn approaches.

c. Normal two-engine approaches should be emphasized in this block, but may introduce minor malfunctions (no partial panel/ESIS or SSE).

d. Each event shall include a minimum of one approach with the flight director and one approach without the flight director.

e. Holding should be accomplished and graded on at least four different events.

f. All events shall include a missed approach; include at least two circling missed approaches in the block.

g. SMA in right seat shall be PM and graded accordingly, emphasizing CRM callouts and radio communications.

h. For E-2/C-2 students, I3205 shall focus on CRM/automation training.

3. Special Syllabus Requirements. None.

4. Discuss Items

I3201
IAF/FAF procedures (6Ts, descent, and lead turns), CRM callouts and techniques, GPS approach types (LNAV, LNAV/VNAV, LPV, TAA, T's, and HILO), GPS configuration point, RAIM, GPS sensitivity modes (enroute, terminal, and approach), NAVAID setup (takeoff, enroute, approach, and missed approach), visual descent point (VDP), vertical descent angle (VDA), landing transition, ATIS/AWOS/ASOS, and cockpit procedures (long enroute procedures versus multiple terminal approaches/task management).

I3202
Holding, GCA approach, PAR/ILS/ASR configuration point, ASR recommended altitudes, NAVAID characteristics (ILS, LOC, and LOC-BC (service volumes, operation principles, NATOPS procedures, and cockpit presentation)), FLIP (GP, FIH, and IFR enroute supplement, AP series), and MFD usage (T-44C only).

I3203
ILS/LOC/LOC-BC approach (configuration, presentation, MA, and FAF identification by other than DME), reverse sensing, AIM, FAA Instrument Procedures Handbook, FAA Instrument Flying Handbook, NATOPS Instrument Flight Manual, SOPs, local instructions, NATOPS, circling procedures, and circling missed approach.

I3204
Point-to-point navigation, NAVAID characteristics (VOR, TACAN, and NDB (service volumes, operation principles, NATOPS procedures, and cockpit presentation)), VOR/TAC approach procedures, NDB approach procedures, and missed approach (determining MAP and continuation beyond MAP).

I3205
High altitude approach/penetration, lost communications (FIH/LOA) (IFR - VMC versus IMC), partial panel approach/ESIS procedures, needle only approach procedures, and SSE approach procedures (configuration, power required, and descent profile).

5. Block MIF

CTS REF	MANEUVER	I3205
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
7	Instrument Takeoff	4+
9	Departure	3+
13	Enroute Procedures	3+
13	Point-to-Point	3+
17	In-Flight Planning/Clearance Compliance	3+
18	Cockpit Procedures	3+
19	Radio Communications	3+
21	Holding	3+
22	High Altitude Approach	3+
25	PAR	3+
25	ILS	3+
26,27	VOR	3+
26,27	TAC	3+
26,27	NDB	3+
25,27	Needle Only Approach	3
27	Localizer	3+
27	Localizer Back Course	3+

MIF continued on next page.

CTS REF	MANEUVER	I3205
27	RNAV/GPS Approach	3+
27	ASR	3+
28	Circling Approach	2+
29	Transition to Landing	3
30	Missed Approach	3+
30	Circling Missed Approach	2+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3
40	Autopilot/Flight Director Operation	3+
41	FMS Operation	3+

Blk #	Media	Title	Events	Hrs	H/X
I41	Acft	Instrument Approaches	5	10.0	2.0

1. Prerequisites

a. C4602 – all course flows except E-2/C-2.

b. I3205 – all course flows except E-2/C-2.

2. Syllabus Notes

a. E-2/C-2 SMAs will not fly this block.

b. IP shall make a note on the ATF if unable to accomplish emphasis items on appropriate flight. Weather and aircraft/ATC equipment-dependent emphasis items are:

(1) I4101 – GPS approaches.

(2) I4102 – PAR, ASR, and ILS approaches.

(3) I4103 – LOC and LOC-BC approaches.

(4) I4104 – VOR and TACAN approaches.

(5) I4105 – discretion of the IP, but should include an SMA visual approach and an IP demonstration of SSE approach/waveoff.

c. Events should have a minimum of four approaches per event and include at least two procedure turn approaches. Normal two-engine approaches should be emphasized in this block, but may introduce minor malfunctions (no partial panel/ESIS or SSE).

d. For T-44A and TC-12, a minimum of two approaches should be flown using the flight director during the block. For T-44C, each event shall include a minimum of one approach with the flight director.

e. Holding should be accomplished and graded on at least two events, one of which should be GPS holding.

f. All events shall include a missed approach and should include at least two circling missed approaches in the block.

g. Minimum of one approach per event with IP as PF and SMA as PM, emphasizing CRM callouts and radio communications. To allow SMAs additional radio communication practice, one approach during each event should be flown with the SMA handling radio communications as PF.

h. SMAs shall bring a DD-175 flight plan or FAA flight plan to correspond with the appropriate flight plan discuss item for each event in this block. This flight plan will be filled out as a practice flight plan to demonstrate the applicable knowledge of the different types of DD-175 and FAA flight plans. Additionally, during each event brief, SMAs shall fill out a DD-175 flight plan for the actual event profile as required.

3. Special Syllabus Requirements

I4101
Coupled approach demo.

I4105
IP demonstrate SSE approach to SSE missed approach.

4. Discuss Items

I4101
Local operations, NOTAMs (FDC: General/ARTCC/airports, facilities, procedural/special FDC, military flight safety/civilian "D" NOTAMS, NTAP, GPS, and DINS), IAF/FAF procedures (6Ts, descent, and lead turns), CRM callouts, GPS approach types (LNAV, LNAV/VNAV, LPV, TAA, T's, and HILO), GPS configuration point, RAIM, GPS sensitivity modes (enroute, terminal, and approach), overlay approach, IFR landing transition and approach lighting, observer IFR duties/visual clearing, spatial disorientation, UNICOM voice reports, LNAV, LNAV/VNAV (T-44C only), LPV, autopilot/flight director, cockpit procedures (long enroute procedures versus multiple terminal approaches/task management), NAVAID setup (takeoff, enroute, approach, and missed approach), and basic departure to destination DD-175.

I4102
Holding, GCA approach, PAR/ILS/ASR configuration point, PAR versus ASR descent point, ASR recommended altitudes, NAVAID characteristics (ILS, LOC, LOC-BC (service volumes, operation principles, NATOPS procedures, and cockpit presentation)), ATC communication (clearance delivery, ground, tower, center, approach, tower, and ground), uncontrolled airfields (communications, canceling IFR, and procedures), holding in lieu of (HILO) PT approach, approach plate titles and notes, ATIS/AWOS/ASOS, DD-175-1, and terminal area delay DD-175.

I4103
Procedure turns (methods and types), instrument publications (DoD (NGA), FAA (NACO), Jeppesen/other), DPs (ODP/SID/vector/diverse, and uncontrolled field), VDP, VDA, landing transition, low close-in obstacles, ILS/LOC/LOC-BC approach (configuration, presentation, MA, and FAF identification by other than DME), reverse sensing, and stopover DD-175.

I4104
Point-to-point navigation; TERPS required obstacle clearance (ROC) for initial, intermediate, final, and circling phases; NAVAID characteristics (VOR, TACAN, and NDB (service volumes, operation principles, NATOPS procedures, and cockpit presentation)); VOR/TAC/NDB approach procedures; missed approach (determining MAP and continuation beyond MAP), circling procedures and circling missed approach; procedure track (arc/radial combination and teardrop); VDP; RNAV (FMS, GPS, DME/DME, VOR/DME, and INS); and FAA flight plan.

I4105
Pilot-controlled lighting, lost communications (FIH/LOA) (IFR - VMC versus IMC), windshear, visual approach, contact approach, partial panel/ESIS approach procedures, needle only approach procedures, SSE approach procedures, TERPS (FAA Order 8260.3B), Trouble T (OIS, low close-in obstacles, climb gradients, alternate routing, nonstandard takeoff weather minimums, and VCOA).

5. Block MIF

CTS REF	MANEUVER	I4105
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Instrument Takeoff	4+
9	Departure	3+
13	Enroute Procedures	3+
13	Point-to-Point	3+
17	In-Flight Planning/Clearance Compliance	3+
18	Cockpit Procedures	4+
19	Radio Communications	3+
20	Enroute Descent	3
21	Holding	3+
25	PAR	3+
25	ILS	3+
26,27	VOR	3+
26,27	TAC	3+
26,27	NDB	3
25,27	Needle Only Approach	3+
27	Localizer	3+
27	Localizer Back Course	3
27	RNAV/GPS Approach	3+
27	ASR	3+
28	Circling Approach	3+

MIF continued on next page.

CTS REF	MANEUVER	I4105
29	Transition to Landing	3+
4,29	Visual Approach	3
30	Missed Approach	3+
30	Circling Missed Approach	3+
34	Landing	4+
35	Touch and Go	4+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3+
39	Radar Operation	3
40	Autopilot/Flight Director Operation	3+
41	FMS Operation	3+
48	Clearing	4+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
I33	SIM	Emergency Instrument Approaches	5	7.5	1.5

1. Prerequisites

a. I4105 – all course flows except E-2/C-2.

b. I3205 – E-2/C-2.

2. Syllabus Notes

a. Simulator equipment-dependent emphasis items are emergency procedures during:

(1) I3301 – GPS approaches.

(2) I3302 – PAR, ASR, and ILS approaches.

(3) I3303 – LOC and LOC-BC approaches.

(4) I3304 – VOR, NDB, and TACAN approaches.

(5) I3305 – discretion of the simulator instructor.

b. Minimum of three approaches per event.

c. Each event shall include a minimum of one approach with the flight director and one approach without the flight director.

d. Holding should be accomplished and graded on at least four different events.

e. All events shall include a missed approach; at least two circling missed approaches in the block.

f. SMA in right seat shall be PM and graded accordingly, emphasizing CRM callouts and radio communications.

3. Special Syllabus Requirements. None.

4. Discuss Items

I3301
SSE GPS approach, SSE configuration point with or without VNAV (T-44C), emergency voice reports (souls/fuel/emergency/ intentions), flight director malfunctions, and autopilot malfunctions/disconnect procedures.

I3302
Weather filing criteria, approach and landing minimums, partial panel/ESIS approach, SSE GCA approach, SSE PAR configuration point, SSE ILS approach, SSE ILS configuration point, and SSE ASR configuration point with or without recommended altitudes.

I3303
SSE LOC approach, SSE LOC-BC approach, procedure track (arc/radial combination and teardrop), and partial panel/ESIS LOC/LOC-BC.

I3304
Enroute weather facilities (FSS/EFAS/METRO), STARS (filing, planning, and lost comms), SSE VOR/TAC/NDB approach procedures, SSE circling approach, SSE missed approach, and needle only VOR and TAC approach procedures.

I3305
DPs (SID/ODP/vector/diverse), turbulence, windshear, and icing.

5. Block MIF

CTS REF	MANEUVER	I3305
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
7	Instrument Takeoff	4+

MIF continued on next page.

CTS REF	MANEUVER	I3305
9	Departure	4+
13	Enroute Procedures	4+
13	Point-to-Point	3+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
20	Enroute Descent	3
21	Holding	4+
25	PAR	4+
25	ILS	4+
25	SSE Precision Approach	3+
25,26, 27	Partial Panel/ESIS Approach	3
26,27	VOR	4+
26,27	TAC	4+
26,27	NDB	3
26,27	SSE Non-Precision Approach	3+
25,27	Needle Only Approach	4+
27	Localizer	4+
27	Localizer Back Course	4+
27	RNAV/GPS Approach	4+
27	ASR	4+
28	Circling Approach	3+
28	SSE Circling Approach	3+
29	Transition to Landing	4
30	Missed Approach	4+
30	SSE Missed Approach	3+
30	Circling Missed Approach	3+
37	Pilot Flying/CRM	4+

MIF continued on next page.

CTS REF	MANEUVER	I3305
38	Pilot Monitoring/CRM	4
40	Autopilot/Flight Director Operation	3+
41	FMS Operation	3+

Blk #	Media	Title	Events	Hrs	H/X
I42	Acft	Emergency Instrument Approaches	5	10.0	2.0

1. Prerequisite. I3305.

2. Syllabus Notes

a. Each flight should consist of a mix of approaches flown in the I4100 block.

b. Events should have a minimum of four approaches per event and include at least two procedure turn approaches. Emergency procedures should be emphasized in this block.

c. For T-44A and TC-12, a minimum of two approaches should be flown using the flight director during the block. For T-44C, each event shall include a minimum of one approach with the flight director.

d. Holding should be accomplished and graded on at least two events, one of which should be GPS holding.

e. All events shall include a missed approach and should include at least two circling missed approaches in the block.

f. Minimum of one approach per event with IP as PF and SMA as PM, emphasizing CRM callouts and radio communications. To allow SMAs additional radio communication practice, one approach during each event should be flown with the SMA handling radio communications as PF.

g. During each event brief, SMAs shall fill out a DD-175 flight plan for the actual event profile as required.

3. Special Syllabus Requirements (E-2/C-2 only)

I4201
Coupled approach demo. IP demo SSE approach to SSE missed approach.

4. Discuss Items

I4201
SSE approach procedures (configuration, airspeeds/power in the descent, and descent rate), SSE circling approach/missed approach, emergency voice reports, propeller system/malfunctions, in-flight damage/bird strikes, partial panel/ESIS (T-44C) approach, and simulated versus actual EP.

I4202
Needle only VOR and TAC approach procedures, landing minimums, flight director malfunctions, autopilot malfunctions/disconnect procedures, electrical system/malfunctions, anti-ice/deice system, windshield heating, and flight control system/malfunctions.

I4203
Procedure track (arc/radial combination and teardrop), VDP, VDA, smoke and fume emergencies, smoke and fire of unknown origin, avionics system/malfunctions, and airfield diagrams and symbols.

I4204
Hazardous weather, pitot static system/malfunctions (alternate static and related avionics equipment), and engine system/malfunctions (engine failure/fire after takeoff).

I4205
STARS (filing, planning, and lost comms), fuel planning (required totals and reserve, and NATOPS performance information), fuel system/malfunctions, brake system/malfunctions, wake turbulence, windshear, PULL UP warning (T-44C), and weight and balance form F.

5. Block MIF

CTS REF	MANEUVER	I4205
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Instrument Takeoff	4+
9	Departure	4+
13	Enroute Procedures	4+
13	Point-to-Point	3+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
20	Enroute Descent	3
21	Holding	4+
25	PAR	4+
25	ILS	4+
25	SSE Precision Approach	3+
25,26, 27	Partial Panel/ESIS Approach	3+
26,27	VOR	4+
26,27	TAC	4+
26,27	NDB	3
26,27	SSE Non-Precision Approach	3+
25,27	Needle Only Approach	4+
27	Localizer	4+
27	Localizer Back Course	4

MIF continued on next page.

CTS REF	MANEUVER	I4205
27	RNAV/GPS Approach	4+
27	ASR	4+
28	Circling Approach	4+
28	SSE Circling Approach	3+
29	Transition to Landing	4+
4,29	Visual Approach	3
30	Missed Approach	4+
30	SSE Missed Approach	3+
30	Circling Missed Approach	4+
34	Landing	4+
35	Touch and Go	4+
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4+
39	Radar Operation	3
40	Autopilot/Flight Director Operation	3+
41	FMS Operation	4+
48	Clearing	4+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
I43	Acft	Midstage Instrument Check Ride	1	1.5	1.5

1. Prerequisites

a. I4205 - all course flows.

b. G0890 (IFR Final Exam) – E-2/C-2.

2. Syllabus Notes

a. This event will be an evaluation of IFR procedures, involving a representative cross section of maneuvers previously presented.

b. SMAs shall bring one DD-175 flight plan per SMA and one DD-175-1 per aircraft for their planned profile to brief. SMAs shall draft a flight plan that will execute the required maneuvers for the event(s).

c. Events shall have a minimum of three approaches per event and include at least one procedure turn approach.

d. Each event shall include a minimum of one approach with the flight director and one approach without the flight director.

3. Special Syllabus Requirements. None.

4. Discuss Items. Operations limits quiz, IAF/FAF entry procedures (6Ts, descent, and lead turns), pressurization system/malfunctions, electrical system, and OPNAVINST 3710.7U weather filing criteria.

5. Block MIF

CTS REF	MANEUVER	I4390
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Instrument Takeoff	4
9	Departure	4+
13	Enroute Procedures	4+
13	Point-to-Point	3
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
20	Enroute Descent	3
21	Holding	4+
25	PAR	4
25	ILS	4
25	SSE Precision Approach	3
25,26, 27	Partial Panel/ESIS Approach	3
26,27	VOR	4
26,27	TAC	4
26,27	NDB	3
26,27	SSE Non-Precision Approach	3+
25,27	Needle Only Approach	4
27	Localizer	4
27	Localizer Back Course	4

MIF continued on next page.

CTS REF	MANEUVER	I4390
27	RNAV/GPS Approach	4
27	ASR	4
28	Circling Approach	4
28	SSE Circling Approach	3
29	Transition to Landing	4+
30	Missed Approach	4+
30	SSE Missed Approach	3
30	Circling Missed Approach	4
34	Landing	4+
35	Touch and Go	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4
40	Autopilot/Flight Director Operation	3
41	FMS Operation	4
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
I44	Acft	Cross-Country	4	16.0	4.0

1. Prerequisites

a. I4390 – USN (P-3/P-8), USMC C-130, USCG, Tiltrotor, E-6.

b. G0890 (IFR Final Exam).

2. Syllabus Notes

a. E-2/C-2 SMAs will not fly this block.

b. Shall be conducted out of the local area concentrating on enroute cross-country navigation with a minimum of two approaches conducted per event or a total of eight approaches. Flight director shall be used for one approach per event. Autopilot with flight director should be used during this block.

c. Should be flown above FL180 to emphasize high altitude enroute navigation.

d. The CNATRAINST 1500.4G limit for the ***maximum SMA instructional flight hours in one day*** is removed for ***this block only***. SMA ***shall not*** exceed the 12-hour workday.

e. I4401 and I4403 are right seat events for SMA.

f. Should fly a SID and a STAR during the block.

3. Special Syllabus Requirement

I4401
Demonstrate weather radar procedures.

4. Discuss Items

I4401
CRM Seven Skills, callouts, ATC communications (clearance delivery, ground, tower, center, approach, tower, and ground), preflight planning (nav bag, fuel planning/packet, weight and balance, NOTAMS (destination, alternates, and enroute), OPNAVINST 3710.7U weather filing criteria, OPARS, AIRMETS, and SIGMETS), unfamiliar field operations, and MFD operation (T-44C only).

I4402
DPs (ODP/SID/vector/diverse), checklist management, enroute charts, airfield markings and lighting, STARs (filing, planning, and lost comms), enroute weather facilities (FSS/EFAS/METRO), airport diagrams and symbols, circling and circling missed approach (TAS considerations (T-44C only)), and securing/RON procedures.

I4403
Contacting FSS, performance data, anti-icing systems, RNP, lost communications (enroute/VMC versus IMC), and course deviations for weather.

I4404
Filing in flight, SSE enroute, FMS enroute navigation, RNAV procedures (T-44A only), wake turbulence, arrival transition, and procedure turn (holding technique).

5. Block MIF

CTS REF	MANEUVER	I4404
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Instrument Takeoff	4+
9	Departure	4+
13	Enroute Procedures	4+
13	Point-to-Point	4
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
20	Enroute Descent	4+
21	Holding	4
22	High Altitude Approach	3
25	PAR	4
25	ILS	4
25	SSE Precision Approach	3
25,26, 27	Partial Panel/ESIS Approach	3
26,27	VOR	4
26,27	TAC	4
26,27	NDB	3
26,27	SSE Non-Precision Approach	3
25,27	Needle Only Approach	4
27	Localizer	4

MIF continued on next page.

CTS REF	MANEUVER	I4404
27	Localizer Back Course	4
27	RNAV/GPS Approach	4
27	ASR	4
28	Circling Approach	4
28	SSE Circling Approach	3
29	Transition to Landing	4+
4,29	Visual Approach	3+
30	Missed Approach	4
30	SSE Missed Approach	4
30	Circling Missed Approach	4
34	Landing	4+
35	Touch and Go	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4+
39	Radar Operation	4+
40	Autopilot/Flight Director Operation	4+
41	FMS Operation	4+
48	Clearing	4+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
I45	Acft	Advanced Emergency Instrument Approaches	4	8.0	2.0

1. Prerequisites

a. I4404 – USN (P-3/P-8), USMC C-130, USCG, Tiltrotor, E-6.

b. I4390 – E-2/C-2.

2. Syllabus Notes

a. This block is a scenario-based, comprehensive review of instrument procedures, involving a representative cross section of IFR approaches, and will prepare the student for initial instrument rating. Each event should include degradation of aircraft systems, avionics automation, and IP/PM CRM. These events must emphasize the following: CRM, PIC decision making, situational awareness, instrument proficiency, and multi-engine airmanship.

b. SMAs shall contact the IP prior to the event for an assignment related to flight. If the IP is unavailable, contact the CDO for an assignment. SMAs shall bring one DD-175 flight plan per SMA and one DD-175-1 per aircraft for their planned profile to every brief. SMAs shall draft a flight plan that will execute the required maneuvers for the event(s).

c. Minimum of one approach per event with IP as PF and SMA as PM, emphasizing CRM callouts and radio communications. To allow SMAs additional radio communication practice, one approach during each event should be flown with the SMA handling radio communications as PF.

d. Should have a minimum of four approaches per event, including a minimum of two non-local.

3. Special Syllabus Requirements. None.

4. Discuss Items

I4501

V_{mca}, V_{mcg}, PIC decision making, WW versus convective SIGMET, approach lighting, weight and balance form F, and other discussion items at the discretion of the IP.

I4502

Airspace and RVSM, weight and balance form F, "land as soon as practicable versus possible," RNP, and other discussion items at the discretion of the IP.

I4503

Student brief CRM case study, threat and error management, CRM, ORM, and other discussion items at the discretion of the IP.

I4504

Density altitude considerations (true airspeed, descents required, and circling rate of turn), instrument rating request form OPNAVINST 3710/2 and other discussion items at the discretion of the IP.

5. Block MIF

CTS REF	MANEUVER	I4504
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Instrument Takeoff	4+
9	Departure	4+
13	Enroute Procedures	4+
13	Point-to-Point	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
20	Enroute Descent	4+
21	Holding	4+
25	PAR	4+
25	ILS	4+
25	SSE Precision Approach	4+
25,26, 27	Partial Panel/ESIS Approach	4+
26,27	VOR	4+
26,27	TAC	4+
26,27	NDB	3
26,27	SSE Non-Precision Approach	4+
25,27	Needle Only Approach	4+
27	Localizer	4+
27	Localizer Back Course	4+
27	RNAV/GPS Approach	4+

MIF continued on next page.

CTS REF	MANEUVER	I4504
27	ASR	4+
28	Circling Approach	4+
28	SSE Circling Approach	4+
29	Transition to Landing	4+
4,29	Visual Approach	4+
30	Missed Approach	4+
30	SSE Missed Approach	4+
30	Circling Missed Approach	4+
34	Landing	4+
35	Touch and Go	4+
36	SSE Full Stop	4+
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4+
39	Radar Operation	4
40	Autopilot/Flight Director Operation	4+
41	FMS Operation	4+
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
I34	SIM	Instrument Emergency Procedures/CRM Simulator	1	1.5	1.5

1. Prerequisite. I4201.

2. Syllabus Notes

a. First half of event will include various aircraft and instrument malfunctions.

b. Second half will consist of a real world scenario commencing at crew brief/takeoff. Emphasis will be placed on procedural knowledge, judgment, and crew resource management skills. PM SMA shall be graded on CRM, radio communications, and callouts. The scenario will be carried through to a logical conclusion.

c. IP or CIS, CRM-I or CRM-F, shall evaluate SMA IAW OPNAVINST 1542.7C. Upon successful completion, CRM-I or CRM-F shall record flight evaluation on CRM Training/Evaluation Record for inclusion in SMA's NATOPS jacket. IP or CIS shall include on ATF "Successful completion of initial CRM evaluation IAW OPNAVINST 1542.7C."

3. Special Syllabus Requirements. None.

4. Discuss Items. CRM and simulated scenario background.

5. Block MIF

CTS REF	MANEUVER	I3401
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
7	Instrument Takeoff	4+
9	Departure	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
25,27	Needle Only Approach	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4
40	Autopilot/Flight Director Operation	4

Blk #	Media	Title	Events	Hrs	H/X
I46	Acft	NATOPS Instrument Check Ride	1	2.0	2.0

1. Prerequisites

a. I4504.

b. I3401.

2. Syllabus Notes

a. This event will be a comprehensive evaluation of IFR procedures, involving a representative cross section of instrument approaches and emergency procedures.

b. Complete a minimum of four approaches to include one precision and one non-precision approach.

c. SMAs are required to bring a completed instrument rating request form to the brief.

d. IFR final must be within previous 60 days.

e. IP shall include "Safe for Solo" on the ATF for a satisfactory complete event.

f. Successful completion shall lead to issuance of OPNAV 3710/2 initial instrument rating.

3. Special Syllabus Requirements. None.

4. Discuss Items. Instrument rating request form OPNAVINST 3710/2, Trouble T (OIS, low close-in obstacles, climb gradients, alternate routing, nonstandard takeoff weather minimums, and VCOA), operations limits quiz, and additional discussion items at the discretion of the IP.

5. Block MIF

CTS REF	MANEUVER	I4690
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Instrument Takeoff	4
9	Departure	4+
13	Enroute Procedures	4+
13	Point-to-Point	4
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
20	Enroute Descent	4
21	Holding	4
25	PAR	4
25	ILS	4
25	SSE Precision Approach	4
25,26, 27	Partial Panel/ESIS Approach	4
26,27	VOR	4
26,27	TAC	4
26,27	NDB	3
26,27	SSE Non-Precision Approach	4
25,27	Needle Only Approach	4
27	Localizer	4
27	Localizer Back Course	4

MIF continued on next page.

CTS REF	MANEUVER	I4690
27	RNAV/GPS Approach	4
27	ASR	4
28	Circling Approach	4
28	SSE Circling Approach	4
29	Transition to Landing	4+
4,29	Visual Approach	4
30	Missed Approach	4
30	SSE Missed Approach	4+
30	Circling Missed Approach	4
34	Landing	4+
35	Touch and Go	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4
40	Autopilot/Flight Director Operation	4+
41	FMS Operation	4
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
I47	Acft	Solo Airways Navigation	1	2.0	2.0

1. Prerequisite. I4690.

2. Syllabus Notes

a. I4701 must be accomplished within three days of I4690. If break (Julian date – Julian date last flown) is greater than three days, the SMA shall fly an I4686 event prior to I4701.

b. Conduct airways navigation solo brief with Command Duty Officer.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	I4701
1	General Knowledge/Procedures	4
2	Emergency Procedures	4
3	Headwork/Situational Awareness	4
4	Basic Air Work	4
5	Mission Planning/Briefing/ Debriefing	4
19	Radio Communications	4
37	Pilot Flying/CRM	4
38	Pilot Monitoring/CRM	4

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Chapter VI

Navigation Training

1. Matrices. The following matrices are an overview of the entire Navigation Stage for each track, except USN (P-3/P-8)/ USCG/E-6. USN (P-3/P-8)/USCG is only a single matrix and Navigation training does not apply to E-6 SMAs. The purpose of these matrices is to provide the SMA and IP the easiest way to track progress, regression, and overall status in relation to the MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Stage MIF (USMC C-130, Tiltrotor*)

Simulator Event

NAVIGATION STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**N3101***	**N4203**
1	General Knowledge/Procedures	4+	4+
2	Emergency Procedures	4+	4+
3	Headwork/Situational Awareness	4+	4+
4	Basic Air Work		4+
5	Mission Planning/Briefing/ Debriefing	4+	4+
6	Ground Operations		4+
17	In-Flight Planning/Clearance Compliance	4+	4+
18	Cockpit Procedures		4+
19	Radio Communications	4+	4+
34	Right Seat Landings		3
37	Pilot Flying/CRM	3+	4+
38	Pilot Monitoring/CRM	3+	4+
39	Radar Operation		3

MIF continued on next page.

NAVIGATION STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**N3101***	**N4203**
41	FMS Operation		4
47	Chart Preparation	3+	4+
47	Modified Contour/Navigation Procedures		3+
47	Night Low-Level Navigation (First Route)	3+	
47	Low-Level Navigation (First Route)		3+
47	Low-Level Navigation (Second Route)		3+
47	Penetration Descent	3+	3
47	Enroute Time Control (First Route)		4+
47	Enroute Time Control (Second Route)		4+
47, 44	Night Slowdown/Airdrop/Escape	3	
47	Low-Level Navigation	3	
47	Enroute Time Control	3	
47, 44	Slowdown/Airdrop/Escape/LZ	3	3+
48	Clearing	4+	4+

*Tiltrotor SMAs complete only N3101.

Blk #	Media	Title	Events	Hrs	Blk Name
N01	Class	Low-Level Ground School	1	1.0	LLNAVFP

1. Prerequisite. G0590 (VNAV Exam).

2. Events

N0101 MIL Low-Level Navigation Procedures 1.0

3. Syllabus Notes

a. Conducted in squadron spaces for USMC C-130 and Tiltrotor.

b. Read LL portion of LL/TF FTI (P-557) before class and be prepared to create charts.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
N02	Class	Joint Mission Planning System	3	24.0	LLNAVFP

1. Prerequisite. N0101 prior to N0201-3 (in order) for USMC C-130 and Tiltrotor.

2. Events

N0201	MIL	JMPS Lecture, Part 1	8.0
N0202	MIL	JMPS Lecture, Part 2	8.0
N0203	MIL	JMPS Lecture, Part 3	8.0

3. Syllabus Notes. Conducted in BLDG 1824 for USMC C-130 and Tiltrotor SMAs (not USCG).

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
N41	Acft	Over Water Navigation	1	2.0	2.0

1. Prerequisite. I4701.

2. Syllabus Notes

a. N41 applicable to USN (P-3/P-8) and USCG only.

b. SMA will create a composite flight plan and IP will review.

c. Call IP the night prior to flight to coordinate planning.

d. SMA required to complete two quick rigs and two eight-point rigs.

3. Special Syllabus Requirements. None.

4. Discuss Items. Sea state, SSC, OPNAVINST 3710 survival conditions, controlling agencies, rigging procedures, operations below 1000 feet AWL, composite flight plan, ADIZ procedures, lost aircraft, and ditching procedures.

5. Block MIF

CTS REF	MANEUVER	N4101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	4+
7	Takeoff	4
9	Departure	4
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
29	Transition to Landing	4
34	Landing	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4
39	Radar Operation	3
42	Composite Flight Plan	4+
42	Proceed VFR	4+
42	VFR Descent	4+
42	VFR Climb	4+
42	IFR Pickup	4+
42	Fuel Planning	4+
42,43	Rigging Procedures	4+
42,43	Operations Below 1000 Feet AWL	4+
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
N31	SIM	Low-Level Navigation	1	1.5	1.5

1. Prerequisite. N0201-3 (JMPS Lectures).

2. Syllabus Notes

a. N31 applicable to USMC C-130 and Tiltrotor only.

b. SMA to prepare TPC and JOG for Mellon Route. Day and night navigation shall be accomplished.

c. A high-altitude penetration descent to an airfield shall be accomplished following the route.

d. Event is to be accomplished in the TC-12 simulator until visual is added to the T-44 simulator.

e. Autopilot may be used for the route.

3. Special Syllabus Requirements. None.

4. Discuss Items. Low-level mission brief, turnpoint briefs, enroute timing control techniques, slow down, airdrop, escape, penetration descent, LZ procedures, JOG/TPC charts, CHUM, student chart critique, CRM during airdrops, and modified contour/ navigation procedures.

5. Block MIF

CTS REF	MANEUVER	N3101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
5	Mission Planning/Briefing/ Debriefing	4+
17	In-Flight Planning/Clearance Compliance	4+
19	Radio Communications	4+
37	Pilot Flying/CRM	3+
38	Pilot Monitoring/CRM	3+
47	Chart Preparation	3+
47	Night Low-Level Navigation (First Route)	3+
47	Penetration Descent	3+
47,44	Night Slowdown/Airdrop/Escape	3
47	Low-Level Navigation	3
47	Enroute Time Control	3
47,44	Slowdown/Airdrop/Escape/LZ	3
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
N42	Acft	Low-Level Navigation	3	7.5	2.5

1. Prerequisite. N3101.

2. Syllabus Notes

a. N42 applicable to USMC C-130 only.

b. Two separate routes shall be flown on each flight (a minimum of one route based on a TOA to an LZ).

c. Call the IP the night prior to the flight to confirm route planning.

d. SMA sits in the right seat for N42.

3. Special Syllabus Requirements. None.

4. Discuss Items

N4201
Low-level mission brief, JOG/TPC charts, CHUM, SMA chart critique, pilot monitoring duties during airdrops, BASH, USBAM, and penetration descent.

N4202
Low-level mission brief, off-course maneuvering, advanced low-level navigation techniques, and visual disparity at different altitudes.

N4203
Modified contour/navigation procedures.

5. Block MIF

CTS REF	MANEUVER	N4203
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
34	Right Seat Landings	3
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4+
39	Radar Operation	3
41	FMS Operation	4
47	Chart Preparation	4+
47	Modified Contour/Navigation Procedures	3+
47	Low-Level Navigation (First Route)	3+
47	Low-Level Navigation (Second Route)	3+
47	Penetration Descent	3
47	Enroute Time Control (First Route)	4+
47	Enroute Time Control (Second Route)	4+
47,44	Slowdown/Airdrop/Escape/LZ	3+
48	Clearing	4+

Chapter VII

Formation Training

1. Matrices. All stages included in this chapter each contain only a single block. There is a single matrix following each block description in this chapter. Regression does not apply to these blocks.

2. Maritime Formation Stage MIF. None.

3. Tiltrotor Formation Stage MIF. None.

4. Maritime Formation and Aerial Refueling Fundamentals Stage MIF. None.

Blk #	Media	Title	Events	Hrs	Blk Name
F01	Class	Maritime Formation Procedures	1	1.0	FORMFP

1. Prerequisite. I4701.

2. Events

F0101	Lect	Maritime Formation Procedures		1.0

3. Syllabus Note. F0101 applicable to all SMAs except Tiltrotor.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
F02	Class	Aerial Refueling Procedures	1	1.0	FORMFP

1. Prerequisite. I4701.

2. Events

F0201	Lect	Aerial Refueling Procedures		1.0

3. Syllabus Note. F0201 applicable to USN (P-3/P-8), E-6, and Tiltrotor SMAs only.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
F03	Class	Tiltrotor Formation	1	1.0	FORMFP

1. Prerequisite. I4701.

2. Events

F0301	Lect	Tiltrotor Formation Ground School	1.0

3. Syllabus Note. Conducted in squadron spaces for Tiltrotor only.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
F41	Acft	Maritime Formation	1	2.0	2.0

1. Prerequisite. F0101 (Maritime Formation Procedures).

2. Syllabus Notes

a. F41 applicable to USCG, USMC C-130, and E-2/C-2 SMAs only.

b. Complete formation sequence IAW FTI and Formation Brief Guide.

c. All maneuvers will be demonstrated by IP and introduced to SMA. Repeat sequence with all maneuvers practiced by SMA.

3. Special Syllabus Requirements. None.

4. Discuss Items. Formation flight procedures, flight sequence, and formation emergency procedures.

5. Block MIF

CTS REF	MANEUVER	F4101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Formation Takeoff	4
9	Departure	4
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
24	Course Rules	4
34	Landing	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4
46	Running Rendezvous	3+
46	Parade Position	3+
46	Parade Turns	3+
46	Crossunder	3+
46	Free Cruise	3+
46	Breakup and Rendezvous	3+
46	Maritime Lead Change	3+
46	Maritime Lead	3+
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
F42	Acft	Tiltrotor Formation	2	4.5	See Syllabus Note a.

1. Prerequisites

   a. F0201 (Aerial Refueling Procedures).

   b. F0301 (Tiltrotor Formation Ground School).

2. Syllabus Notes

   a. Allow 2.5 hrs for F4201 and 2.0 hrs for F4202.

   b. F42 applicable to Tiltrotor course flow only.

   c. Completes formation sequence IAW FTI and Formation Brief Guide.

3. Special Syllabus Requirements. None.

4. Discuss Items

   F4201
   Formation flight procedures and flight sequence, formation emergency procedures, aborted takeoff, flight integrity, parade checkpoints, lead/Dash-2 responsibilities, comm. procedures, combat cruise checkpoints, combat spread checkpoints, and tactical formation maneuvers.

   F4202
   Lost contact, inadvertent IMC (IIMC), lost communications, cruise checkpoints, cruise principles, MARSA, and tanker rendezvous procedures.

5. Block MIF

CTS REF	MANEUVER	F4202
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Formation Takeoff	4
9	Departure	4
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
24	Course Rules	4
34	Landing	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4
46	Running Rendezvous	4+
46	TACAN Rendezvous	3
46	Parade Position	4+
46	Parade Turns	4+
46	Crossunder	4+
46	Cruise Position	4+
46	Cruise Maneuvering	4+
46	Breakup and Rendezvous	4+
46	Maritime Lead Change	4+
46	Maritime Lead	4+
48	Clearing	4+
49	Combat Cruise Position	3+
49	Combat Spread Position	3+
49	Tanker Rendezvous	3+
49	Tactical Formation Maneuvering	3+
50	Formation Navigation	4+

Blk #	Media	Title	Events	Hrs	H/X
F43	Acft	Maritime Formation and Aerial Refueling Fundamentals	1	3.0	3.0

1. Prerequisites

a. F0101 (Maritime Formation Procedures).

b. F0201 (Aerial Refueling Procedures).

2. Syllabus Notes

a. F4301 applicable to USN (P-3/P-8) and E-6 SMAs only.

b. Complete formation sequence IAW FTI and formation brief guide.

3. Special Syllabus Requirements. None.

4. Discuss Items

a. Formation flight procedures, flight sequence, and formation emergency procedures.

b. Aerial refueling flight procedures, AP-1B (Chapter 4) track procedures, DD-175 filing requirements, FMS management, flight sequence, and aerial refueling emergency procedures.

5. Block MIF

CTS REF	MANEUVER	F4301
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+

MIF continued on next page.

CTS REF	MANEUVER	F4301
7	Formation Takeoff	4
7	FMS Operation	4
9	Departure	4
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
19	Communications	4+
24	Course Rules	4
24	Traffic Entry	4
34	Landing	4
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4
46	Running Rendezvous	3+
46	Parade Position	3+
46	Parade Turns	3+
46	Crossunder	3+
46	Free Cruise	3+
46	Breakup and Rendezvous	3+
46	Maritime Lead Change	3+
46	Maritime Lead	3+
48	Clearing	4+
52	Tanker Procedures	4
52	Receiver Procedures	4+
52	RV Delta (Point Parallel) Rendezvous	4+
52	RV Golf (Enroute) Rendezvous	4
52	Alternate Rendezvous	4
52	Anchor Refueling Procedures	4
52	Track Refueling Procedures	4
52	Rendezvous Overrun/Underrun	4

MIF continued on next page.

CTS REF	MANEUVER	F4301
52	Precontact Position	4+
52	Contact Position	4+
52	Boom Limits Demonstration	4

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Chapter VIII

Tactical Training

1. Matrices. The following matrices are an overview of the entire Tactical Stage for each track, except USN (P-3/P-8), E-6, and E-2/C-2, which do not receive Tactical Training. The purpose of these matrices is to provide the SMA and IP the easiest way to track progress, regression, and overall status in relation to the MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Stage MIF (USCG* and USMC C-130)

Check Ride Event

TACTICAL STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**T4101***	**T4202**	**T4390**
1	General Knowledge/Procedures	3+	4+	4+
2	Emergency Procedures	4+	4+	4+
3	Headwork/Situational Awareness	4+	4+	4+
4	Basic Air Work	4+	4+	4+
5	Mission Planning/Briefing/ Debriefing	3+	4+	4+
6	Ground Operations	4+	4+	4+
7	Takeoff	4		
9	Departure	4+		
17	In-Flight Planning/Clearance Compliance	4+	4+	4+
18	Cockpit Procedures	4+	4+	4+
19	Radio Communications	4+	4+	4+
25, 27	Precision/Non-Precision Approach	4		
29	Transition to Landing	4+		
34	Landing	4+		

MIF continued on next page.

TACTICAL STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**T4101***	**T4202**	**T4390**
34	Right Seat Landings		3	3
37	Pilot Flying/CRM	4+		
38	Pilot Monitoring/CRM	4+		
39	Radar Operation	3	3	3
41	FMS Operation	4	4	4
42	Composite Flight Plan	4+		
42, 43	Rigging Procedures	4+		
42, 43	Operations Below 1000 Feet AWL	4+		
43	Scanning Techniques	4+		
43	Search Pattern	4+		
43	Survivor Relocation	4+		
43	Delivery Pattern	4+		
43	Over Water Navigation	4+		
45	Formation Radio Procedures		4+	4+
45	Wing In-Trail Position		3+	3+
45	Line Abreast Position		3+	3+
45	Fluid Trail		3+	3+
45	Wingman Consideration		3+	4+
45	Lead Change		3+	4+
45	Formation Recovery		3+	4+
47	Chart Preparation		4+	4+
47	Modified Contour/Navigation Procedures		3+	3+
47	Pilot Monitoring Low-Level Responsibilities		4+	4+
47	Low-Level Navigation (As Lead)		4+	4+
47	Enroute Time Control (As Lead)		4+	4+

MIF continued on next page.

TACTICAL STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**T4101***	**T4202**	**T4390**
47, 44	Slowdown/Airdrop/Escape/LZ		3+	3+
48	Clearing	4+	4+	4+

*USCG SMAs fly only T41 block, not T42 or T43 blocks.

3. Stage MIF (Tiltrotor)

Check Ride Event

TACTICAL STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**T4404**	**T4590**
1	General Knowledge/Procedures	4+	4+
2	Emergency Procedures	4+	4+
3	Headwork/Situational Awareness	4+	4+
4	Basic Air Work	4+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+
6	Ground Operations	4+	4+
7	Takeoff	4	4
9	Departure	4+	4+
17	In-Flight Planning/Clearance Compliance	4+	4+
18	Cockpit Procedures	4+	4+
19	Radio Communications	4+	4+
34	Landing	4+	4+

MIF continued on next page.

TACTICAL STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**T4404**	**T4590**
34	NFL	3	3
34	FFL	3	3
35	Touch and Go	3+	3+
37	Pilot Flying/CRM	4+	4+
46	Running Rendezvous	4	4
46	Parade/Cruise Formation	4	4
46	Underrun	4	4
46	VFR Entry to Controlled Field	4+	
48	Clearing	4+	4+
49	Lead Responsibilities	4+	4+
49	Dash-2 Responsibilities	4+	4+
49	Tactical Formation Maneuvering	3+	3+
49	Recovery	4+	4+
50	Course Corrections	4+	4+
50	Time Control	4+	4+
50	Formation Navigation	4+	4+
50	Chart Interpretation	4+	4+
51	Fuel Management	4+	4+

Blk #	Media	Title	Events	Hrs	Blk Name
T01	Class/ SS	Tactical Formation Ground School	2	5.0	TACFFP

1. Prerequisite. I4701 prior to T0101-2 (any order) - USMC C-130 and Tiltrotor.

2. Events

T0101	SS	Tactical Formation Navigation Procedures	3.0
T0102	Lect	Tactical Formation Navigation Procedures	2.0

3. Syllabus Notes

a. Conducted in conjunction with N0101 for USMC C-130 and Tiltrotor SMAs in squadron spaces.

b. Read TF portion of LL/TF (P-557) FTI before class.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
T41	Acft	Search and Rescue Fundamentals	1	2.0	2.0

1. Prerequisite. I4701.

2. Syllabus Notes

a. T41 applicable to USCG only.

b. Call the IP the night prior to coordinate planning.

c. ATC limitations may prevent execution of composite flight plan. In this case, SMA will create composite flight plan and IP will brief execution.

d. SMA executes a minimum of one search pattern (PS, TLS, CS, VS), one survivor relocation pattern, two ADS patterns, and one sea rescue kit delivery pattern.

3. Special Syllabus Requirements. None.

4. Discuss Items. Composite flight planning, due regard, on-scene planning – fuel/winds/endurance, sacrifice criteria, National SAR Manual, search ideology and phraseology, search patterns, OSC responsibilities, survivor relocation pattern, delivery patterns.

5. Block MIF

CTS REF	MANEUVER	T4101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	3+
6	Ground Operations	4+
7	Takeoff	4
9	Departure	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
25,27	Precision/Non-Precision Approach	4
29	Transition to Landing	4+
34	Landing	4+
37	Pilot Flying/CRM	4+
38	Pilot Monitoring/CRM	4+
39	Radar Operation	3
41	FMS Operation	4
42	Composite Flight Plan	4+
42,43	Rigging Procedures	4+
42,43	Operations Below 1000 Feet AWL	4+
43	Scanning Techniques	4+
43	Search Pattern	4+
43	Survivor Relocation	4+
43	Delivery Pattern	4+
43	Over Water Navigation	4+
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
T42	Acft	Tactical Formation	2	5.0	2.5

1. Prerequisites

a. N4203.

b. T0101-2 (Tactical Formation Ground School).

2. Syllabus Notes

a. T42 applicable to USMC C-130 only.

b. When possible, one event should be scheduled as a three-ship formation.

c. Call the IP the night prior to each flight to confirm route planning.

d. SMA sits in the right seat for T42.

3. Special Syllabus Requirements. None.

4. Discuss Items

T4201
Tactical formation mission brief, formation lead changes, formation radio procedures, BASH, and USBAM.

T4202
Tactical formation mission brief, inadvertent weather penetration procedures.

5. Block MIF

CTS REF	MANEUVER	T4202
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
34	Right Seat Landings	3
39	Radar Operation	3
41	FMS Operation	4
45	Formation Radio Procedures	4+
45	Wing In-Trail Position	3+
45	Line Abreast Position	3+
45	Fluid Trail	3+
45	Wingman Consideration	3+
45	Lead Change	3+
45	Formation Recovery	3+
47	Chart Preparation	4+
47	Modified Contour/Navigation Procedures	3+
47	Pilot Monitoring Low-Level Responsibilities	4+
47	Low-Level Navigation (As Lead)	4+
47	Enroute Time Control (As Lead)	4+
47,44	Slowdown/Airdrop/Escape/LZ	3+
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
T43	Acft	Tactical Formation Check Ride	1	3.0	3.0

1. Prerequisite. T4202.

2. Syllabus Notes

a. T43 applicable to USMC C-130 only.

b. SMA shall have check ride route approved by qualified TACFORM IP prior to flight brief.

c. SMA sits in the right seat for T4390.

3. Special Syllabus Requirements. None.

4. Discuss Items. Modified contour/navigation procedures, check ride route selection and design.

5. Block MIF

CTS REF	MANEUVER	T4390
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
34	Right Seat Landings	3
39	Radar Operation	3
41	FMS Operation	4
45	Formation Radio Procedures	4+
45	Wing In-Trail Position	3+
45	Line Abreast Position	3+
45	Fluid Trail	3+
45	Wingman Consideration	4+
45	Lead Change	4+
45	Formation Recovery	4+
47	Chart Preparation	4+
47	Modified Contour/Navigation Procedures	3+
47	Pilot Monitoring Low-Level Responsibilities	4+
47	Low-Level Navigation (As Lead)	4+
47	Enroute Time Control (As Lead)	4+
47,44	Slowdown/Airdrop/Escape/LZ	3+
48	Clearing	4+

Blk #	Media	Title	Events	Hrs	H/X
T44	Acft	Low Altitude Tactics	4	10.0	2.5

1. Prerequisites

a. F4202.

b. N3101.

c. T0101-2.

2. Syllabus Notes

a. T44 applicable to Tiltrotor course flow only.

b. SMA shall call the IP the night prior to coordinate planning.

c. Conduct all flights in block on a timed route to a TOT using tactical mission profile.

d. All events shall be flown as a section only.

3. Special Syllabus Requirements. None.

4. Discuss Items

T4401
Low-level mission brief, JOG/TPC charts, CHUM, chart construction, LZ transition, tactical formation maneuvers, formation lead changes, formation radio procedures, descent planning, IR/VR/SR routes, course/timing corrections, and low altitude hazards.

T4402
Off-course maneuvering, advanced low-level navigation techniques, visual disparity at different altitudes, inadvertent weather penetration procedures, scatter plan, tactical formation maneuvers, IMC-to-VMC transition, rendezvous point, and non-course rules VFR entry to tower-controlled field.

T4403
Modified contour/navigation procedures, tactical formation maneuvers, and any emergency procedure.

T4404
Tactical formation maneuvers, night hazards, night navigation, and any emergency procedure.

5. Block MIF

CTS REF	MANEUVER	T4404
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Takeoff	4
9	Departure	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
34	Landing	4+
34	NFL	3
34	FFL	3
35	Touch and Go	3+
37	Pilot Flying/CRM	4+
46	Running Rendezvous	4
46	Parade/Cruise Formation	4
46	Underrun	4
46	VFR Entry to Controlled Field	4+
48	Clearing	4+

MIF continued on next page.

CTS REF	MANEUVER	T4404
49	Lead Responsibilities	4+
49	Dash-2 Responsibilities	4+
49	Tactical Formation Maneuvering	3+
49	Recovery	4+
50	Course Corrections	4+
50	Time Control	4+
50	Formation Navigation	4+
50	Chart Interpretation	4+
51	Fuel Management	4+

Blk #	Media	Title	Events	Hrs	H/X
T45	Acft	Low Altitude Tactics Check Ride	1	3.0	3.0

1. Prerequisite. T4404.

2. Syllabus Notes

a. T45 applicable to Tiltrotor course flow only.

b. SMA shall call the IP the night prior to the flight to confirm route planning.

c. Event shall be flown as a section only.

3. Special Syllabus Requirements. None.

4. Discuss Items. Tactical formation maneuvers, check ride route selection and design, any emergency procedure, and aircraft systems.

5. Block MIF

CTS REF	MANEUVER	T4590
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Ground Operations	4+
7	Takeoff	4
9	Departure	4+
17	In-Flight Planning/Clearance Compliance	4+
18	Cockpit Procedures	4+
19	Radio Communications	4+
34	Landing	4+

MIF continued on next page.

CTS REF	MANEUVER	T4590
34	NFL	3
34	FFL	3
35	Touch and Go	3+
37	Pilot Flying/CRM	4+
46	Running Rendezvous	4
46	Parade/Cruise Formation	4
46	Underrun	4
48	Clearing	4+
49	Lead Responsibilities	4+
49	Dash-2 Responsibilities	4+
49	Tactical Formation Maneuvering	3+
49	Recovery	4+
50	Course Corrections	4+
50	Time Control	4+
50	Formation Navigation	4+
50	Chart Interpretation	4+
51	Fuel Management	4+

Chapter IX

Course Training Standards (CTS)

1. Purpose. These standards outline the tasks and proficiency required of graduates of this syllabus.

2. Student Duties and Responsibilities

a. Plan the mission.

b. Ensure the aircraft is preflighted, inspected, and equipped for the assigned mission.

c. Operate the aircraft to accomplish the mission using sound judgment and airmanship.

3. General Proficiency Standards

a. Achieve training standards for VMC maneuvers in conjunction with visual clearing.

b. Unless otherwise specified, use ***Basic Air Work (BAW)*** standards for all items with altitude, airspeed, or heading parameters.

c. "Standard" equates to ***good*** (G/4).

d. Aircraft control must be smooth and positive. Performance may be within CTS and still not warrant a grade of ***good*** if control inputs are delayed, erratic, imprecise, or inappropriate. Slight deviations in establishing or maintaining the proper or desired aircraft attitude or position may occur during the maneuver being performed.

e. Momentary deviations outside CTS that do not compromise flight safety are acceptable if subsequent corrections are timely.

f. Procedural knowledge and application must comply with applicable directives and allow efficient mission accomplishment. If individual tasks require pre-mission planning, the standards from ***Mission Planning*** apply.

4. Execution. The MIF regulates SMA progression to meet required standards prior to phase completion. Instructor Pilots shall evaluate SMA performance against these standards.

5. Job Tasks. Specific performance and standards required are described as follows:

BEHAVIOR STATEMENT	STANDARDS
GRADED ITEM	
• A brief description of the behavior, required action, and/or conditions.	• The specific standards for the action. May be read as "The SMA …"

6. Graded Items. The MIF for specific graded items varies for each stage. Several items are graded on all complete syllabus events. The standards for these universally graded items are listed first.

7. Course Training Standards

BEHAVIOR STATEMENT	STANDARDS
1. General Knowledge/Procedures	
• Maintain working knowledge of all appropriate flight training instructions and directives.	• Recites, discusses, and/or performs all applicable items essential to the operation of the airplane.
2. Emergency Procedures	
• Maintain in-depth knowledge of NATOPS and appropriate directives.	• Correctly analyzes situation. • Performs/recites critical action steps from memory. • Uses checklist when conditions permit. • Completes procedures in a timely manner.

BEHAVIOR STATEMENT	STANDARDS
3. Headwork/Situational Awareness	
• Comply with the FTI and NATOPS while maintaining situational awareness sufficient for flight safety.	• Understands instructions, demonstrations, and explanations. • Foresees and avoids possible difficulties. • Remains alert and spatially oriented.
4. Basic Air Work	
• Establish and maintain desired altitude, airspeed, and heading during flight.	• Maintains aircraft within 100 feet, 10 KIAS, 10° of heading. • Appropriately uses power, attitude, and trim. • Levels off within 100 feet of desired altitude. • Accomplishes within ±10 seconds of correct time as applicable.
5. Mission Planning/Briefing/Debriefing	
• Flight room or base operations environment.	• Plans mission in a timely manner to meet all maneuver requirements. • Acquires appropriate flight planning/weather data. • Clearly defines the mission overview and mission goals with NATOPS briefing guide. • Effectively uses the mission debriefing to reinforce skills and identify key points in mission performance.

BEHAVIOR STATEMENT	STANDARDS
6. Ground Operations	
• Begins when departing for the aircraft and ends when the power is applied for takeoff. • Begins again when aircraft clears the runway and continues until power is advanced for a subsequent takeoff or when postflight duties are complete and the aircrew is clear of the aircraft.	• Complies with NATOPS and training directives. • Determines aircraft status and TOLD. • Properly operates aircraft systems on ground. • Ensures clearance of line personnel, ground equipment, and other aircraft using appropriate signals. • Taxies aircraft at speeds commensurate with traffic and surface conditions. • Maintains taxiway boundaries (including hold-short) and gives way to other aircraft as appropriate.
7. Takeoff	
• Begins when advancing power for takeoff and ends when aircraft is safely airborne, gear and flaps are retracted, and climb power and airspeed are established.	• Checks aircraft performance IAW NATOPS. • Maintains ±10 feet of centerline. • Rotates at V_R +5/-0 knots. • Transitions to instrument flight, if required. • Smoothly accelerates to appropriate climb speed. • Maintains runway situational awareness to include Go/No-Go criteria.
8. Aborted Takeoff	
• Begins from the recognition of malfunction or possible abort condition. • Ends when aircraft is stopped and radio call is completed.	• Handles IAW NATOPS. • Verbalizes “abort” internally and on the radio. • Remains ±10 feet of centerline. • Brings aircraft smoothly to a full stop utilizing brakes and/or reverse.

BEHAVIOR STATEMENT	STANDARDS
9. Departure	
• Begins when climb airspeed is established and ends when published departure is complete or established in assigned working area. • If no published departure, begins when initiating pitch change for level-off.	• Complies with ATC/departure/ flight plan clearance or course rules, as appropriate.
10. SSE at Altitude	
• Begins with initial pitch and power setting. • Ends when aircraft is stabilized in straight-and-level flight, on climb profile (V_x or V_y), or in position for the next maneuver.	• Executes maneuver IAW NATOPS and FTI procedures.
11. Dynamic Engine Cut	
• Begins with initial pitch and power setting. • Ends when aircraft is stabilized in straight-and-level flight, on climb profile (V_x or V_y), or in position for the next maneuver.	• Executes maneuver IAW NATOPS and FTI. • Maintains ±10 degrees of heading; demonstrates appropriate rudder use. • Does not descend below initial altitude, and airspeed is never below 91 knots (T-44) or 104 knots (TC-12B).

BEHAVIOR STATEMENT	STANDARDS
12. Training Area Maneuvers	
• Begins with initial pitch and power setting. • Ends when aircraft is stabilized in straight-and-level flight, on climb profile (V_x or V_y), or in position for the next maneuver.	• Executes all maneuvers IAW NATOPS and FTI. • Turn pattern/steep turns: ±100 feet, ±5° bank, ±10 knots, rolls out ±5°. • Approach-to-stalls: (a) minimizes altitude loss, (b) once approach-to-stall is stopped, avoids secondary approach-to-stall indications, (c) performs smooth, controlled recovery. • Slow flight: +5/-0 knots, ±100 feet.
13. Enroute Procedures	
• Begins when established at assigned altitude, airspeed, and power setting. • Ends with initial power reduction for descent or entering enroute holding.	• Updates/validates planned time and fuel computations as required to safely and efficiently accomplish the mission. • Effectively uses FSS, PMSV, and ATIS as required. • Maintains course centerline between all NAVAIDs and fixes with minor deviations (if IFR). • Executes point-to-point within ±2 NM.
14. Emergency Descent	
• Begins with initial power reduction. • Ends when straight and level, and recovery is complete.	• Performs procedure IAW NATOPS and FTI. • Flies maneuver at maximum rate of descent for configuration. • Initiates and completes recovery IAW FTI at prescribed altitudes.

BEHAVIOR STATEMENT	STANDARDS
15. Ditching	
• Begins when the decision to ditch is made. • Ends when the aircraft arrives at simulated impact.	• Executes maneuver IAW NATOPS and FTI. • Performs simulated impact at wings-level within ±20 degrees of ditch heading and +5/-0 knots. • Maintains rate of descent at 100 feet per minute or less (SSE or dual engine) **or** less than 500 feet per minute (power off).
16. Basic Instrument Maneuvers	
• Begins with initial pitch and power setting. • Ends when aircraft is stabilized in straight-and-level flight or in position for the next maneuver.	• Accomplishes all maneuvers IAW FTI. • Maintains Basic Aircraft Control parameters. • Maintains VSI within ±200 FPM of established parameters, if applicable.
17. In-Flight Planning/Clearance Compliance	
• Has general understanding of mission flow and area orientation, both vertically and horizontally, recognizing and avoiding potential hazards.	• Demonstrates effective time management. • Accomplishes mission maneuver items. • Complies with ATC clearance. • Remains within assigned airspace.
18. Cockpit Procedures	
• Prioritizes and manages crew tasks during mission profile; ensures complete checklist discipline and the following of all standard operating procedures.	• Correctly prioritizes multiple tasks; uses all available resources to manage workload. • Accomplishes all required normal and emergency checklists for each phase of flight; completes checklists in a timely manner with all items addressed. • Completes all ground checklists and is prepared for takeoff in a timely manner.

BEHAVIOR STATEMENT	STANDARDS
19. Radio Communications	
• Performs verbal communications during mission profile (normally PM).	• Uses precise, properly formatted radio calls with standard terminology. • Acknowledges all communications. • Understands and prioritizes transmissions in a multiple communications environment. • Asks for and provides clarification when necessary. • Asks questions when uncertain.
20. Enroute Descent	
• Begins with initial power reduction at cruise. • Ends when crossing the holding fix, IAF, or established on radar vectors cleared for approach.	• Complies with ATC/STAR/flight plan clearance. • Arrives at assigned/briefed altitude with sufficient time to slow and configure (if required) prior to the terminal fix.
21. Holding	
• Begins when crossing the holding fix and ends when departing the holding pattern for a subsequent fix or the approach.	• Computes proper entry turn. • Estimates wind direction and applies appropriate corrections. • Establishes and maintains aircraft with holding airspace.
22. High Altitude Approach (Penetration)	
• Begins when crossing the high IAF and ends at the FAF.	• Complies with all altitude restrictions. • Maintains airspeed IAW FLIP, NATOPS, and FTI.
23. Overhead/Break Entry	
• Begins when commencing the break. • Ends when arriving wings-level on the downwind leg at pattern altitude.	• Complies with FTI procedures. • Maintains altitude ±50 feet of FTI requirements.

BEHAVIOR STATEMENT	STANDARDS
24. Course Rules	
• Begins from VFR takeoff. • Ends when commencing the break, established on straight-in final, or wings-level on downwind.	• Accomplishes IAW NATOPS, FTI, and Course Rules, as appropriate.
25. Precision Approach	
• Begins when cleared for the approach on radar vectors or when intercepting glidepath on a published approach procedure. • Ends at transition to landing or applying power to execute a missed approach/ waveoff.	• ILS approach: Maintains ±1 dot width of localizer and glideslope. • PAR approach: Does not exceed "well above/below glidepath" or "well left/right of course" and complies with the controller's instructions in a timely manner. • Maintains +5/-0 knots of approach airspeed. • Maintains arcs ±1 NM.
26. Non-Precision Procedure Turn/Arc	
• Begins on crossing IAF on a published approach procedure. • Ends when crossing FAF on a published approach procedure.	• Executes course reversal IAW NATOPS, FTI, and FAR/AIM, as appropriate. • Adjusts outbound leg to stay inside "remain within distance." • Maintains +10/-0 knots of approach airspeed. • Maintains arcs ±1 NM.

BEHAVIOR STATEMENT	STANDARDS
27. Non-Precision Approach	
• Begins when cleared for the approach on radar vectors or when crossing the FAF on a published approach procedure. • Ends at transition to landing or applying power to execute a missed approach/waveoff.	• FAF to MAP: (a) Begins timing within ±5 seconds if appropriate, (b) +10/-0 knots of approach airspeed, (c) Course ±1 dot width. • Arrives at the MDA prior to MAP in a safe position to make a normal visual descent to land. • MDA +100/-0 feet. • NDB final approach: Maintains ±5° bearing. • ASR approach: Does not exceed "well left/right of course" and complies with the controller's instructions in a timely manner.
28. Circling Approach	
• Begins when initiating the circle and ends at landing phase or applying power to execute a missed approach/waveoff.	• Accomplishes circle IAW FTI and FAR/AIM. • Maintains circling altitude +100/-0 feet. • Maintains circling airspeed +10/-0 knots. • Arrives at threshold +10/-0 knots of V_{REF} speed.
29. Transition to Landing	
• Begins when departing the MDA or DH on a visual glidepath to the runway and ends at landing phase.	• Maintains a normal visual glidepath to the runway. • Follows visual approach guidance as appropriate, i.e., VASI, PAPI, etc. • Arrives at threshold +10/-0 knots of V_{REF} speed.

BEHAVIOR STATEMENT	STANDARDS
30. Missed Approach	
● Begins when advancing power and ends when aircraft is safely airborne, gear and flaps are retracted, appropriate airspeed is established, and missed approach/climbout instructions are complied with or closed pullup/crosswind turn is initiated.	● Accomplishes IAW FTI and NATOPS. ● Complies with FLIP missed approach procedures or climbout instructions, as appropriate. ● Establishes runway/assigned heading ±5°, if appropriate. ● Initiates when field not in sight and ► Nonprecision ▪ Inside FAF and full scale CDI deflection. ▪ At specified MAP DME. ▪ At expiration of timing in the absence of DME. ► Precision, first of ▪ Decision height, ▪ Controller-directed, ► Or, not in position for safe landing.
31. Waveoff/SSE Waveoff	
● Begins when advancing power levers. ● Ends when aircraft is safely airborne, gear and flaps are retracted, appropriate airspeed is established, and crosswind turn is initiated.	● Complies with NATOPS and FTI procedures. ● Initiates waveoff when: ► Aircraft requires more than 30-degree AOB to avoid overshooting final. ► Landing clearance not received by short final. ► Directed. ► Unsafe gear indication after rolling onto final. ► Aircraft is not in a safe position to make a safe landing.

BEHAVIOR STATEMENT	STANDARDS
32. VFR Landing Pattern	
• Begins when commencing the break, initiating crosswind, wings-level on downwind leg, or established on straight-in final. • Ends at landing phase or when adding power for waveoff.	• Complies with NATOPS and FTI procedures. • Maintains +5/-0 knots of FTI established pattern airspeeds prior to threshold. • Dual engine, arrives at threshold +5/-0 knots of V_{REF} speed. • Altitude ±50 feet of FTI requirements throughout pattern.
33. SSE Landing Pattern	
• Begins when initiating crosswind traffic, wings-level on downwind leg at pattern altitude, or established on straight-in final. • Ends at landing phase or when adding power for waveoff.	• Complies with NATOPS and FTI procedures. • Maintains +5/-0 knots of FTI-established pattern airspeeds prior to threshold; arrives at threshold +10/-0 knots of V_{REF} speed. • Maintains ±50 feet of FTI requirements throughout pattern.
34. Landing	
• Begins when crossing the threshold or initiating the roundout, whichever occurs first. • Ends when slowed to a safe taxi speed or when advancing power for touch-and-go takeoff.	• Dual engine, arrives at threshold +5/-0 knots of V_{REF} speed. • SSE, arrives at threshold +10/0 knots of V_{REF} speed. • Touches down in the prescribed landing zone. • Lands and maintains within ±10 feet of runway centerline. • Touches down <300 feet/min. • Applies proper crosswind correction.

BEHAVIOR STATEMENT	STANDARDS
35. Touch and Go	
• Begins when advancing power after landing. • Ends when aircraft is safely airborne, gear and flaps are retracted (if appropriate), and appropriate airspeed is established.	• Accomplishes IAW NATOPS and FTI. • Maintains runway centerline ±10 feet.
36. SSE Full Stop	
• Begins at touchdown on the runway and ends when the aircraft has come to a slow taxi speed on the runway.	• Performs maneuver IAW FTI. • Maintains centerline ±25 feet.

BEHAVIOR STATEMENT	STANDARDS
37. Pilot Flying/Crew Resource Management (CRM)	
• Decision Making. • Assertiveness. • Mission Analysis. • Communications (PM will normally make all external radio communications, graded item 19). • Leadership. • Adaptability/ Flexibility. • Situational Awareness (individually graded item). • As PF, embraces Threat and Error Management and callouts, acting as a complete team member. • Although PIC can act as PM or PF, PIC shall be graded under item 37.	• Gathers available data before arriving at final decision; clearly states decisions to the crew; and provides rationale for decisions. • Displays assertive behavior when necessary and accepts assertive behavior from other crewmembers. • Assesses risks and makes decisions; identifies probable contingencies and alternatives. • Facilitates effective, open, and clear internal communications; uses exact checklist and callout verbiage IAW FTI and NATOPS. • Recognizes and eliminates hazardous attitudes in self and other crewmembers; resolves conflict in a positive manner. • Provides positive leadership to the crew; encourages crew participation in the decision-making process. • Adapts to meet new situational demands. • Demonstrates the ability to maintain awareness of what is happening on the ground, in the air, and with other crewmembers; copes with any subsequent mission impact as a result of these happenings.

BEHAVIOR STATEMENT	STANDARDS
38. Pilot Monitoring/CRM	
• Decision Making. • Assertiveness. • Mission Analysis. • Communications (PM will normally make all external radio communications, graded item 19). • Leadership. • Adaptability/ Flexibility. • Situational Awareness (individually graded item). • As PM, embraces Threat and Error Management and callouts, acting as a complete team member. • Although PIC can act as PM or PF, PIC shall be graded under item 37.	• Gathers available data before arriving at final decision; clearly states decisions to the crew; and provides rationale for decisions. • Displays assertive behavior when necessary and accepts assertive behavior from other crewmembers. • Assesses risks and makes decisions; identifies probable contingencies and alternatives. • Facilitates effective, open, and clear internal communications; uses exact checklist and callout verbiage IAW FTI and NATOPS. • Recognizes and eliminates hazardous attitudes in self and other crewmembers; resolves conflict in a positive manner. • Provides positive leadership to the crew; encourages crew participation in the decision-making process. • Adapts to meet new situational demands. • Demonstrates the ability to maintain awareness of what is happening on the ground, in the air, and with other crewmembers; copes with any subsequent mission impact as a result of these happenings.
39. Radar Operation	
• Understands and applies system operation and limitations.	• Demonstrates ability to use radar for weather observation and avoidance.

BEHAVIOR STATEMENT	STANDARDS
40. Autopilot/Flight Director Operation	
• Understands and applies system operation and limitations.	• Correctly and appropriately uses autopilot in the horizontal and vertical modes to improve pilot task loading/clearing. • With autopilot engaged, maintains aircraft control within course training standards for the given phase of flight.
41. FMS Operation	
• Understands and applies system operation and limitations.	• Effectively and accurately programs and navigates using the FMS. • Able to store and retrieve flight plans. • Able to use system features to enhance situational awareness. • Accomplishes tasks in a timely manner.
42. ONAV Maneuvers	
• Begins after IFR departure when initiating descent to the VFR CHOP point. • Ends after climbing and obtaining IFR clearance for return to base or new destination.	• Accomplishes mission IAW ONAV FTI and ONAV Student Briefing Guide; arrives at brief with a properly completed DD-175 IFR/VFR composite flight plan IAW ONAV FTI and FLIP GP. • Adheres to standard descent practices below 1000 feet AWL as briefed including rate of descent not in excess of altitude and level-off at 500 feet AWL; initiates timely recovery for all deviations below minimum altitude. • Maintains good VFR scan. • Executes correct procedures for Quick and Eight-Point Rig, adhering to all the rules of engagement outlined in the FTI.

BEHAVIOR STATEMENT	STANDARDS
43. Search and Rescue Maneuvers (SAR)	
• Begins after IFR departure when initiating descent to the VFR CHOP point. • Ends after climbing and obtaining IFR clearance for return to base or new destination.	• Accomplishes mission IAW SAR FTI, SAR Student Briefing Guide, and National Search and Rescue Manual, Volumes I and II. • Arrives at brief with a properly completed DD-175 IFR/VFR composite flight plan IAW ONAV FTI and FLIP GP. • Demonstrates knowledge of SAR terminology, responsibilities of OSC, search planning variables, and specific search plans as described in above references. • Determines correct search plan for given SAR scenario; briefs and uses standard techniques for scanning, sighting, and identification, search pattern departure, and returning to a search pattern. • Executes search, survivor relocation, ADS and sea rescue kit delivery patterns IAW SAR FTI. • Adheres to FTI flight parameters and rules of engagement during SAR pattern execution.
44. Airdrop/LZ Arrival	
• Begins when lead initiates slowdown and ends after the escape maneuver when established at next segment parameters.	• Positively identifies the drop zone or LZ; makes timely and assertive radio and ICS advisory calls to execute a safe slowdown, airdrop or landing, and escape. • Aligns the aircraft properly over the DZ on the inbound course. • Arrives at objective ±1 minute of planned arrival time.

BEHAVIOR STATEMENT	STANDARDS
45. Tactical Formation Maneuvers	
• Begins with formation taxi and ends when the formation is split up for recovery or in the pattern.	• Accomplishes mission IAW mission brief and LL/TF FTI; demonstrates a working knowledge of procedures in FTI. • Maintains in-trail position, co-altitude with lead, out of prop wash, and distance ±100 feet of proper position. • Maneuvers to line abreast and fluid trail positions safely.
46. Maritime Formation Maneuvers	
• Begins with formation taxi and ends when the formation is split up for recovery or in the pattern.	• Accomplishes maneuvers IAW the mission brief and the FTI. • Demonstrates a working knowledge of formation procedures as established in the FTI. • Maintains wingman position stabilized with safe separation between aircraft. • Demonstrates wingman consideration while lead.
47. Low-Level Maneuvers	
• Begins when the aircraft is maneuvered to enter the low-level route and ends with aircraft level-off after departing the low-level route.	• Accomplishes mission IAW LL/TF FTI. • Navigates primarily by prepared low-level chart; arrives at brief with a neat chart that incorporates proper CHUM updates. • Applies accepted techniques to correct course and timing deviations; directs aircraft to turnpoints, drop zone, and recovery field.

BEHAVIOR STATEMENT	STANDARDS
48. Clearing	
• Begins at engine start and ends with both engines shut down and parking brake set.	• Accomplishes flight deck and mission tasks while remaining visually and aurally alert to and avoiding other in-flight and ground obstacles. • Effectively uses accepted visual clearing techniques to avoid conflicts. • Effectively uses radios and other crewmembers to aid in clearing.
49. Tactical Formation Maneuvers	
• Begins when flight assumes combat cruise/combat spread formation. • Ends when the formation returns to parade/cruise position.	• Accomplishes mission IAW mission brief and LL/TF FTI; demonstrates a working knowledge of procedures in FTI. • Maneuvers to combat cruise and combat spread positions safely. • Demonstrates ability to make proper considerations when transitioning to LZ.
50. Formation Navigation	
• Begins when the aircraft is maneuvered to enter the low-level route. • Ends with aircraft level-off after departing the low-level route.	• Accomplishes mission IAW LL/TF FTI and Tactical Formation Ground School. • Navigates primarily by prepared low-level chart; arrives at brief with a neat chart that incorporates proper CHUM updates. • Applies accepted techniques to correct course and timing deviations; directs aircraft to turnpoints, drop zone, and recovery field.

BEHAVIOR STATEMENT	STANDARDS
51. Fuel Management	
• Maintains fuel awareness throughout flight. • Keeps track of fuel for all formation members.	• Monitors fuel status on deck at intended point of landing. • Adjusts course or destination in order to satisfy applicable directives. • As lead – keeps track of Dash-2's fuel state with appropriate fuel checks performed IAW FTI and local standards. • As Dash-2 – ensures lead is aware of fuel state through compliance with fuel checks performed IAW FTI and local standards.
52. USN Aerial Refueling Maneuvers (AR)	
• Begins when the aircraft is maneuvered to the Aerial Refueling Initial Point or the Aerial Refueling Control Point and ends after departing the aerial refueling track.	• Accomplishes maneuvers IAW mission brief and the FTI. • Demonstrates a working knowledge of aerial refueling procedures as established in the FTI. • Maintains a stabilized rendezvous with safe separation between aircraft. • Demonstrates stabilized precontact position while receiver. • Maintains precise control of the aircraft while demonstrating aerial refueling limits.