NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS
CIN Q-2A-0167, Q-2A-1167,
Q-2A-4167, Q-2A-5167

CNATRAINST 1542.167A
6 Nov 2014

CHIEF OF NAVAL AIR TRAINING

T-45 COMBINED MULTI-SERVICE PILOT TRAINING SYSTEM

2014

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

CNATRAINST 1542.167A
N715
6 Nov 2014

CNATRA INSTRUCTION 1542.167A

Subj: T-45 COMBINED MULTI-SERVICE PILOT TRAINING SYSTEM (MPTS)

1. Purpose. To publish the curriculum for training Student Military Aviators (SMA) in the Intermediate Jet and Advanced Strike phases of training.

2. Cancellation. CNATRAINST 1542.167 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 the 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.

D. M. EDGECOMB
Chief of Staff

Distribution:
CNATRA Sharepoint

BLANK PAGE

LIST OF EFFECTIVE PAGES

Original

Total number of pages is 422 consisting of the following:

Page Number	Issue
Letter – 2	
3/(4 blank)	
i – vi	
vii/(viii blank)	
ix – xiv	
xv/(xvi blank)	
xvii - xxviii	
I-1 – I-4	
I-5/(I-6 blank)	
I-7/(I-8 blank)	
I-9 - I-36	
I-37/(I-38 blank)	
II-1 – II-8	
III-1/(III-2 blank)	
IV-1 – IV-66	
IV-67/(IV-68 blank)	
V-1 – V-74	
VI-1/(VI-2 blank)	
VII-1 – VII-40	
VII-41/(VII-42 blank)	
VIII-1 – VIII-94	
VIII-95/(VIII-96 blank)	
IX-1 – IX-54	
IX-55/(IX-56 blank)	
X-1 – X-2	
X-3/(X-4 blank)	

BLANK PAGE

TABLE OF CONTENTS

CHAPTER IV. CONTACT TRAINING

CHAPTER V. INSTRUMENT TRAINING

CHAPTER VI. NAVIGATION TRAINING

CHAPTER VII. FORMATION TRAINING

CHAPTER VIII. TACTICAL TRAINING

SUMMARY OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	CHANGE DESCRIPTION	PAGES AFFECTED/ INITIALS

BLANK PAGE

COURSE DATA

1. Course Title. T-45 Combined Multi-Service Pilot Training System (MPTS).

2. Course ID Number (CIN)

Intermediate Jet (TW-1): Q-2A-0167
Intermediate Jet (TW-2): Q-2A-5167
Advanced Strike (TW-1): Q-2A-1167
Advanced Strike (TW-2): Q-2A-4167

3. Location(s). Naval Air Station Meridian, Mississippi, and Naval Air Station Kingsville, Texas.

4. Course Status. Active.

5. Course Mission. T-45 Combined Multi-service Pilot Training System is designed to provide commissioned officers in the U.S. Navy, U.S. Marine Corps, and selected foreign nationals with further training in areas associated with tactical jet aircraft and to develop airmanship skills prerequisite for transition to operational fleet aircraft.

6. Prerequisite Training. Successful completion of MPTS Primary Curriculum: Q-2A-0108 or T-6B Joint Primary Pilot Training: Q-2A-0416 or Q-2A-0417.

7. Security Clearance Requirements. None.

8. Follow-on Training. Designated Fleet Replacement Squadron.

9. Course Length. Overall time-to-train calculated in accordance with CNATRAINST 1550.6E. Training Days account directly or provide margin for factors including weather, personnel and equipment availability, briefing and preparation time, and historical delays. Calendar Weeks further account for weekends, holidays, safety standdowns, and other expected nonworking days throughout the year.

	TW-1 Training Days	TW-1 Calendar Weeks
Intermediate Jet (I-Jet):	123.3	27.4
Advanced Strike:	116.5	25.8

	TW-2 Training Days	TW-2 Calendar Weeks
Intermediate Jet:	120.6	26.8
Advanced Strike:	111.3	24.7

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 TWO (COMTRAWING TWO).

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

14. Quota Control. Chief of Naval Operations.

15. Course Training Subjects

a. Ground Training

INTERMEDIATE JET GROUND TRAINING		
Stage	**Symbol**	**Hours**
Aviation Student Indoctrination	ASI01*	7.7
Engineering	ENG01	33.2
Aerodynamics	AER01	6.0
Meteorology	MET01	4.0
Instrument Navigation	NAV01	10.1
Total		**61.0**

*ASI0101-10

ADVANCED STRIKE GROUND TRAINING		
Stage	**Symbol**	**Hours**
Aviation Student Indoctrination	ASI0111	0.1
Operational Navigation (ONAV) Ground School	ON01	20.5
Total		**20.6**

b. Flight Support

INTERMEDIATE JET FLIGHT SUPPORT		
Stage	**Symbol**	**Hours**
Crew Resource Management	CRM11	3.0
Operational Risk Management	ORM11	1.0
NACES Flight Physiology	SEA11	3.0
Cockpit Orientation	CO11	7.3
Emergency Procedures	EP11	14.5
BI/RI Course Rules	CR11	1.0
Course Rules	CR12	3.0
Familiarization Flight Procedures	FAM11	8.5
Out-of-Control Flight (OCF) Procedures	OCF11	2.0
NATOPS/NATOPS Examinations	NA11	6.0
Night Familiarization Flight Procedures	NFM11	3.5
Basic Instrument Flight Procedures	BI11	10.5
Radio Instrument Flight Procedures	RI11	8.5
Airways Navigation Flight Procedures	AN11	2.0
Instrument Rating Flight Procedures	IR11	4.0
Section Formation Flight Procedures	FRM11	5.5
Division Formation Flight Procedures	DIV11	2.5
Field Carrier Landing Flight Procedures	FCL11	2.5
Total		**88.3**

ADVANCED STRIKE FLIGHT SUPPORT		
Stage	**Symbol**	**Hours**
Operational Navigation Flight Procedures	ON11	3.7
Section Low-Level Flight Procedures	ON12	2.5
Road Recce Flight Procedures	RR11	2.5
Strike Flight Procedures	STK11	5.0
Night Formation Flight Procedures	NFR11	2.2
Tactical Formation Flight Procedures	TAC11	4.0
1 V 1 Basic Fighter Maneuvering Flight Procedures	BFM11	5.8
2 V 1 Section Engaged Maneuvering Flight Procedures	SEM11	3.7
Carrier Qualification Landing Flight Procedures	CQL11	6.0
Total		**35.4**

c. Flight/Simulator Training Summary. The programmed times for each phase, stage, and media are:

INTERMEDIATE JET								
Flight/Events	**IFT***		**OFT**		**T-45C**			
					Dual		**Solo**	
	Flts	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
CO	4	6.0						
EP	4	5.2						
BI	9	13.5			3	4.5		
RI	3	4.5	5	7.5	6	9.6		
AN			7	10.3	5	7.4		
FAM			10	15.0	12	13.4	1	1.2
OCF			1	1.5	1	0.5		
FRM			4	5.8	11	15.3	2	2.6
DIV					4	6.0	1	1.4
NFM			2	2.4	2	2.8	1	1.4
IR	1	1.5	3	4.5	3	4.7		
FCL			2	2.8	2	1.4	6	3.6
Totals	**21**	**30.7**	**34**	**49.8**	**49**	**65.6**	**11**	**10.2**

* IFT only at Naval Air Station Meridian. Any IFT event may be flown in OFT.

ADVANCED STRIKE								
Flight/Events	IFT*		OFT		T-45C			
					Dual		Solo	
	Flts	Hrs	Flts	Hrs	Flts	Hrs	Flts	Hrs
AN			2	3.0	4	5.9	2	2.4
ON			3	3.9	8	9.6		
RR					3	3.8	1	1.1
STK			7	7.9	6	6.0	3	3.0
NFR			2	2.4	3	4.3	2	2.6
TAC					7	8.2	3	3.3
BFM			1	1.0	9	9.0	4	4.1
SEM					3	3.0	1	1.0
CQL			3	4.3	1	0.7	13	11.4
Totals			**18**	**22.5**	**44**	**50.5**	**29**	**28.9**

* IFT only at Naval Air Station Meridian. Any IFT event may be flown in OFT.

16. Training Preparation Time. In addition to the hours formally planned for classes, simulators, and flights, significant additional time to prepare and study should be expected outside of scheduled training hours. This range will vary depending on the complexity of the material and individual student's needs, and may be up to several hours per event. For simulator and flight events, specific brief and debrief times will be programmed into TIMS and accounted for on the flight schedule, per the following table:

ADDITIONAL TRAINING TIME PER CURRICULUM HOUR/EVENT			
Training Area	**Brief/ Preflight**	**Debrief**	**Total**
Simulator/CPT	0.50	0.5	1.00
Flight (all except the following):	1.75	1.0	2.75
SEM4101, BFM4301, BI4101, STK4102, FAM4101, FRM4101, TAC4101, RR4101, ON4101	2.00	1.0	3.00

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, simulators, and in-flight instruction.

20. Preceding Curriculum Data. This curriculum replaces all versions of CNATRAINST 1542.167.

21. Student Performance Measurement/Application of Standards. The standards outlined in Chapter IX, Course Training Standards, are used to evaluate Student Naval Aviator (SNA) 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.

22. Summary of Lead/Chase Overhead. The summary of the Instructor Lead/Chase planning factor hours for the T-45 Combined MPTS are tabulated below. The tables are a compilation of the events requiring Instructor Chase that can be found in Chapters IV through VIII of this publication.

INTERMEDIATE JET				
Flight/Event	**# Events**	**Lead/Chase Hrs/Event**	**# of Students per Chase**	**Hrs/ Student**
FRM41	6	1.2	1	7.20
FRM42	1	1.1	1	1.10
FRM44	3/1	1.2/1.1	1	4.70
FRM45	1	1.1	1	1.10
DIV41	4	1.3	2	2.60
DIV42	1	1.2	2	0.60
NFM42	1	1.1	2	0.55
Totals	**18**	**N/A**	**10**	**17.85**

ADVANCED STRIKE				
Flight/Event	**# Events**	**Lead/Chase Hrs/Event**	**# of Students per Chase**	**Hrs/ Student**
ON42	1	1.0	1	1.0
RR42	1	1.0	2	0.5
STK41	4	0.9	3	1.2
STK42	2	0.9	3	0.6
STK43	1	0.9	3	0.3
STK44	1	0.9	3	0.3
STK45	1	0.9	3	0.3
NFR41	2	1.2	1	2.4
NFR42	1	1.1	1	1.1
NFR43	1	1.2	1	1.2
TAC41	3	1.1	1	3.3
TAC42	1	1.0	1	1.0
TAC43	2/2	1.0/1.1	1	4.2
TAC44	2	1.0	1	2.0
BFM42	1	0.9	1	0.9
BFM43	3	0.9	1	2.7
BFM44	1	0.9	1	0.9
BFM45	2	0.9	1	1.8
BFM46	1	1.0	1	1.0
BFM47	2	0.8	1	1.6
BFM48	2	0.8	1	1.6
SEM41	2/1	0.9/0.8	2	1.3
SEM42	1	0.8	2	0.4
CQL44	1	4.2	6/4	2.8
Totals	**42**	**N/A**	**36.5**	**33.2**

NOTE: Lead/Chase Hours per Event are approximate and are derived by subtracting 0.2 hours from the student event length for all events except ON, RR, TAC, STK, BFM, and SEM, where Lead/Chase Hours are 0.1 hours less than student event length. This accounts for student touch-and-goes.

BLANK PAGE

ABBREVIATIONS

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

A-STK	-	Advanced Strike
A/G	-	Air-to-Ground
ACP	-	Armament Control Panel
ADC	-	Air Data Computer
ADI	-	Attitude Director Indicator
AGL	-	Above Ground Level
AOA	-	Angle of Attack
AS	-	Airspeed
ASR	-	Airport Surveillance Radar
ATC	-	Air Traffic Control
ATF	-	Aviation Training Form
ATJ	-	Aviation Training Jacket
ATS	-	Aviation Training Summary
AW	-	Attack Window
AWE	-	Attack Window Entry
BFM	-	Basic Fighter Maneuvering
BTX	-	Blown Tire Exercise
BVR	-	Beyond Visual Range
CAI	-	Computer-Assisted Instruction
CCC	-	Course Curriculum Coordinator
CCIP	-	Continuously Computed Impact Point
CDI	-	Course Deviation Indicator
CEP	-	Circular Error Probability
CNI	-	Communication, Navigation, and Identification
CO	-	Commanding Officer

CONTR AUG	-	Control Augmentation
CQL	-	Carrier Qualification Landing
CRM	-	Crew Resource Management
CTS	-	Course Training Standard
CV	-	Carrier
CWS	-	Centralized Warning System
DACM	-	Defensive Air Combat Maneuver
DBFM	-	Defensive Basic Fighter Maneuvering
DBT	-	Defensive Break Turn
DEU	-	Display Electronics Unit
DF	-	Direction Finder
DME	-	Distance Measuring Equipment
DP	-	Departure Procedure (Instrument)
DR	-	Dead Reckoning
ECA	-	Engine Control Amplifier
ECS	-	Environmental Control System
EDP	-	Engine-Driven Pump
EMER	-	Emergency
EOB	-	End of Block
EP	-	Emergency Procedure
ET	-	Extra Training
FC	-	Front Cockpit - Fly in front cockpit with a qualified flight instructor onboard providing instruction, assistance, or supervision.
FCLP	-	Field Carrier Landing Practice
FLOLS	-	Fresnel Lens Optical Landing System
FP	-	Flight Procedures
FPC	-	Final Progress Check

FSL	-	Front-Seat Landing
FTI	-	Flight Training Instruction
FWD	-	Forward
GCA	-	Ground-Controlled Approach
GINA	-	GPS/Inertial Navigation Assembly
GLOC	-	“G” Induced Loss of Consciousness
GPS	-	Global Positioning System
GTS	-	Gas Turbine Starter
Guns D	-	Guns Defense
H	-	Hooded
HA BFM	-	High-Aspect Basic Fighter Maneuvering
HSI	-	Horizontal Situation Indicator
HUD	-	Head-Up Display
HYD	-	Hydraulics
IFF	-	Identification Friend or Foe
IFLOLS	-	Improved Fresnel Lens Optical Landing System
IFR	-	Instrument Flight Rules
IFT	-	Instrument Flight Trainer (2F137 – non-visual)
I-Jet	-	Intermediate Jet
ILS	-	Instrument Landing System
IMC	-	Instrument Meteorological Conditions
IMS	-	International Military Student
IMSO	-	International Military Student Officer
IP	-	Instructor Pilot
IPC	-	Initial Progress Check
IROK	-	Inspect/Inflate, Release, Options, Koch Fittings

ITO	-	Instrument Takeoff
LAB	-	Laboratory/Practical Problem
LAR	-	Launch Acceptability Region
LECT	-	Lecture
LOC	-	Localizer
LP	-	Low Pressure
LSO	-	Landing Signal Officer
MFD	-	Multifunction Display
MIF	-	Maneuver Item File
MIL	-	Mediated Interactive Lecture
MPTS	-	Multi-Service Pilot Training System
NACES	-	Navy Aircrew Common Ejection Seat
NATOPS	-	Naval Air Training and Operating Procedures Standardization
NAVAIDS	-	Navigational Aids
NIFM	-	NATOPS Instrument Flight Manual
NORDO	-	No Radio
NWS	-	Nose Wheel Steering
OBOGS	-	On-Board Oxygen Generating System
OBT	-	Offensive Break Turn
OFT	-	Operational Flight Trainer (2F138 - visual)
OLS	-	Optical Landing System
OPAREA	-	Operations Area
OPLAN	-	Operations Plan
OPS	-	Operations
P/P	-	Partial Panel; Non-CAI Administered Examination
PA	-	Precautionary Approach

PADS	-	Position, Altitude, Distance, and Speed
PAR	-	Precision Approach Radar
PAS	-	Phase Aggregate Score
QOD	-	Question of the Day
QTR	-	Quarter
RAT	-	Ram Air Turbine
RC	-	Rear Cockpit - Fly in rear cockpit with a qualified flight instructor onboard providing instruction, assistance, or supervision.
RECCE	-	Reconnaissance
ROE	-	Rules of Engagement
RRU	-	Ready Room UNSAT
RTB	-	Return to Base
S/B	-	Speed Brakes
SA	-	Situational Awareness
SAR	-	Search and Rescue
SIF	-	Selected Identification Features
Sim	-	Simulator
Simo	-	Simultaneous Tracking
SMS	-	Student Monitoring Status
SNA	-	Student Naval Aviator (includes IMS)
Solo	-	Flight without a qualified flight instructor.
SRT	-	Standard Rate Turn
SSR	-	Special Syllabus Requirement
TACAN	-	Tactical Air Navigation
TRB	-	Training Review Board
TTC	-	Tap-the-Cap
UHF	-	Ultra High Frequency

UNSAT	-	Unsatisfactory
VASI	-	Visual Approach Slope Indicator
VFQ	-	Visual Forward-Quarter
VFR	-	Visual Flight Rules
VHF	-	Very High Frequency
VMC	-	Visual Meteorological Conditions
VOR	-	VHF Omnidirectional Range
WEZ	-	Weapons Engagement Zone
WKBK	-	Workbook
WU	-	Warmup
Wx	-	Weather

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 student performance for all categories of training regardless of media, phase, or stage.

3. Aviation Training Jacket. The ATJ is the student's training record. It contains ATFs, calendar cards, grade reports, and all other associated training information. It is filed in student control and follows the student 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 second number in the lesson designator identifies a block.

6. Blue ATF. A standard or supplemental ATF that is printed on blue paper. The blue ATF is used to denote a Marginal event and the blue supplemental ATF is used to track students on SMS.

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

8. Class Advisor Program. An Instructor Pilot assigned to provide counseling and guidance to a specific student pilot or pilots throughout the applicable syllabus.

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

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

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

12. 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.

13. Deliverables. A CNATRA 1542/1827 TRB Summary Form, generated by the TRB, which summarizes a specific student's progress in a given syllabus and provides detailed information on the application of MPTS training for that student. Deliverables indicate whether the quality and continuity of training provided was IAW CNATRAINST 1542.167A and IAW CNATRAINST 1500.4H.

14. End of Block. Last event in block. In order to progress past EOB, the SNA 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. If the EOB flight is a Safe-for-Solo flight, the IP must be designated as an "X" on the FIST.

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

16. Extra Training (SXX87). Additional student training flights ordered by the Commanding Officer or higher, in order to make up for documented instructional deficiencies.

17. Final Progress Check (SXX89). Any progress check given following an IPC in phase, for poor performance or as directed by the CO.

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, rounded to the nearest tenth of an hour.

20. Initial Progress Check (SXX88). First progress check given in phase. Only one IPC is allowed per phase of training.

21. Lesson Designator. All syllabus events have a lesson designator consisting of a stage identifier of up to three letters and an event code of four numbers in the following format:

Char	Meaning	Remarks
1st -3rd	Stage	AER—Aerodynamics AN—Airways Navigation ASI—Aviation Student Indoctrination BFM—Basic Fighter Maneuvering BI—Basic Instruments CO—Cockpit Orientation CR—Course Rules CRM—Crew Resource Management CQL—Carrier Qualification Landing DIV—Division Formation ENG—Engineering EP—Emergency Procedures FAM—Familiarization FCL—Field Carrier Landing FRM—Formation IR—Instrument Rating MET—Meteorology NA—NATOPS NAV—Instrument Navigation NFM—Night Familiarization NFR—Night Formation OCF—Out-of-Control Flight ON—Operational Navigation ORM—Operational Resource Management RI—Radio Instruments RR—Road Recce SEA—Seat SEM—Section Engaged Maneuvering STK—Strike/Air-to-Ground Weapons TAC—Tactical Formation
4th	Media	0—Ground Training 1—Flight Support 2—Emergency Procedures Simulator 3—Simulator 4—Aircraft
5th	Block	Sequential, indicating block within stage.
6th & 7th	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

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

23. Master Syllabus. Chapters I-VIII list all training syllabus activities, prerequisites, and desired training flow for T-45 Combined MPTS.

24. Off-Wing Flight. A Day Familiarization flight not flown with the student's on-wing.

25. On-Wing. One of two primary instructors assigned to prepare a student in the Familiarization stage IAW CNATRAINST 1500.4H.

26. Outcomes. Potential courses of action following a Progress Check.

a. Pass - Return to training.

b. Fail (IPC) – Results in FPC.

c. Fail (FPC) - Proceed with the attrition process/attrite.

27. Phase of Training. A phase consists of a major division in the course of training. T-45 Combined MPTS training consists of two phases: Intermediate Jet and Advanced Strike. Upon completion of the Advanced Strike phase, students will be assigned to the appropriate Fleet Replacement Squadron.

28. 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.

29. Progress Check Pilot. An instructor pilot authorized to administer Initial or Final Progress Checks.

30. Ready Room UNSAT (RRU). An UNSAT grade given for inadequate knowledge of flight procedures, systems, discuss items, emergency procedures, deficient preflight planning, or failure of a non-academic examination (e.g., NATOPS quiz/exam). Missing a brief does not constitute an RRU and shall be documented on a supplemental ATF (also, see paragraph 714, CNATRAINST 1500.4H).

31. Regression. Performance of a graded item, maneuver, or procedure determined to be below the MIF proficiency level of that same item, maneuver, or procedure in a previously completed block of training.

32. Shotgunned. Solo flights flown with an IP Safety Observer for weather requirements.

33. Special Syllabus Requirement. A one-time, ungraded demonstration item(s) or other special requirement requiring documentation.

34. Stage of Training. A stage consists of all training of a particular type (Engineering, Familiarization, Operational Navigation, Carrier Qualification Landing, etc.) within a phase. The first three letters in the lesson designator identify the stage of each lesson (example: FRM4101 is in the Formation Stage). Refer to the Lesson Designator Table on page xxv for a complete listing of all stages in the T-45 Combined MPTS curriculum.

35. Student Monitoring Status. Squadron-initiated, focused supervisory attention on an SNA's progress in training to address performance deficiencies and assess the SNA's potential to complete the program. It may also be applied to SNAs who require supervisory attention while attempting to resolve personal issues.

36. Supplemental ATF. A form inserted into a student's ATJ that contains nonsyllabus information. Also referred to as a "writeup" in TIMS.

37. Training Media. T-45 Combined MPTS media include aircraft, simulators, emergency procedures simulators, flight support lectures and ground training instruction. The first number in the lesson identifier designates the training media. Ground training and flight support lectures may consist of MILs, off-line lectures (LECT), CAI lessons, and exams.

38. Training Review Board. A fact-finding board appointed to conduct an administrative review of training following a failed FPC.

a. The TRB shall consider the quality of training provided, continuity of training provided, outside influences, and extenuating circumstances.

b. The TRB shall not make recommendations based on perceived NFS potential or aspects unrelated to the administrative application of the NFS's training.

39. Warmup Event (SXX86). Additional event(s) given to allow a student to regain a level of proficiency previously demonstrated which has diminished due to a nonsysllabus 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.

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 a specific course of action appears to conflict with other directives, consult CNATRA (N71).

c. Deviations. Document all deviations on the event's ATF or a supplemental ATF if found after the event.

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

e. Execution

(1) Students will execute all the events listed in the Intermediate Jet phase of this curriculum. Following completion of the Intermediate Jet phase, students will begin the Advanced Strike phase of training.

(2) All flights shall be flown from the front cockpit unless otherwise delineated.

(3) All multiplane flights shall have a dedicated IP Lead unless otherwise noted.

f. Syllabus Description. The T-45 Combined MPTS consists of Intermediate Jet and Advanced Strike undergraduate flight training for USN, USMC, and IMS students. These two phases of training are flown in the T-45C aircraft. Each phase is divided into stages. 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 (PAS). An SNA's PAS is a comparative ranking based on the previous population of completers for a specific phase of aviation training. PAS indicates only SNA performance relative to a normative population of other recent SNAs. Under the MPTS system, PAS is not by itself an indication of whether an SNA has met the criteria necessary for winging or continuation in aviation training.

(2) MPTS SNA Calculations. See CNATRAINST 1500.4H.

(3) NSS calculation. The following blocks/events will not count toward NSS calculation unless overall grade is UNSAT:

OCF31XX OCF41XX FCL31XX FCL43XX CO31XX CO32XX
CQL21XX CQL31XX CQL42XX BFM4101

2. Training Management

a. Syllabus Progression

(1) Other than noted exceptions, syllabus events shall be flown sequentially within each stage. Blocks shall not be started without all prerequisites completed. Students must complete all events in their assigned phases.

(2) Where clearly identified, students may be in different stages or blocks simultaneously. Where applicable, students will be eligible for, and shall be prepared for, more than one syllabus event. The flowcharts on pages I-4, I-5, I-7, and I-9, delineate the sequence of events and their ground training prerequisites except as listed in paragraph 1e and 2b. System training management is designed to facilitate up to two graded events (flight, simulator, exam, or combination thereof) per student per day.

(3) First event in stage must be completed within two weeks of the associated flight support lecture.

(4) First event in stage cannot be completed the same day as the associated flight support lecture.

b. Training Acceleration Program (TAP). Under exceptional circumstances, a student's previous flight experience may warrant accelerated progression. The Squadron CO may advance the student to the next block of instruction when all EOB MIF requirements are met for the current block of instruction. If Accelerated Progression is utilized, affected students shall fly a minimum of one of each of the critical items within block and must meet EOB MIF for all critical items and optional items attempted. This policy shall not be used to meet squadron production goals; it is strictly for the rare instances where the student's demonstrated proficiency makes completion of all events within a block of instruction unnecessary. Pipeline reassignment of fleet aviators from other communities may warrant acceleration through instrument stages based on previous instrument training. All records for the accelerated student, including the 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 1500.4H." If the SNA's performance suffers due to participation in TAP, the SNA shall join a regular class.

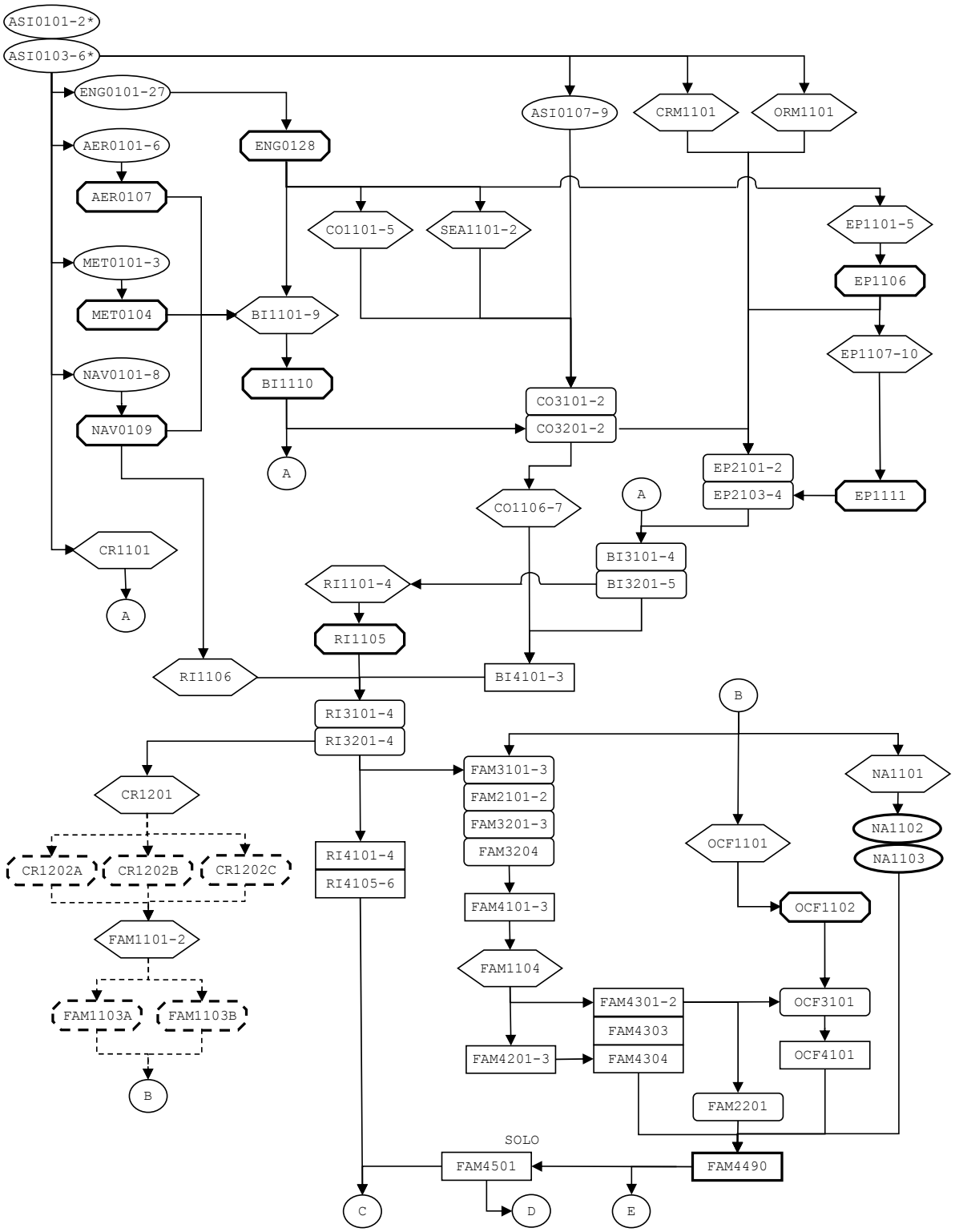
c. Maneuver Continuity. Students must accomplish previously introduced maneuvers frequently enough to ensure required proficiency is maintained.

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 the programmed H/X by more than 0.3 hours, annotate reason(s) in the ATF's general comments section.

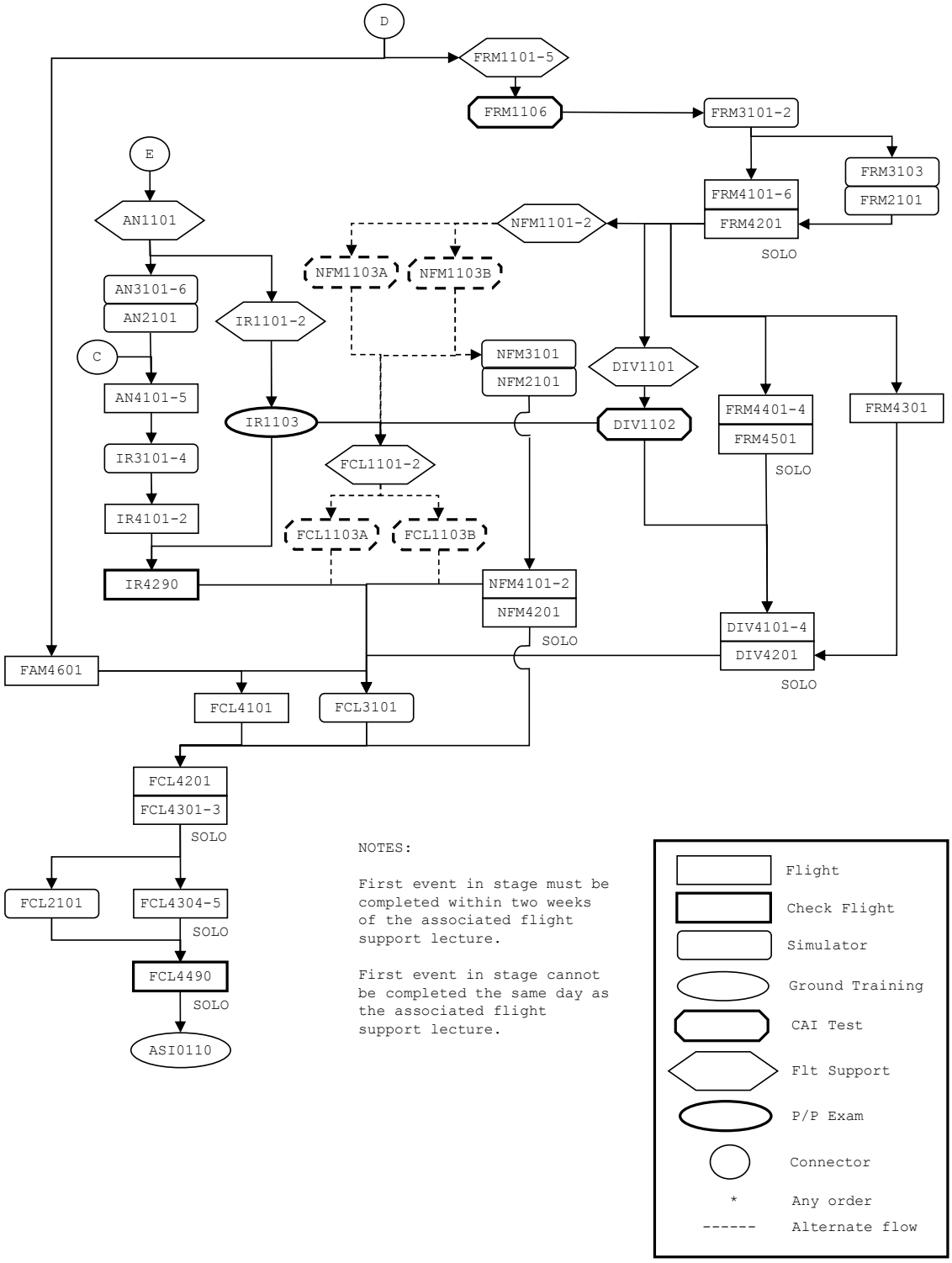
e. Special Syllabus Requirements. The SSRs are allocated to blocks. Unless noted otherwise, IPs may accomplish SSRs on any flight within the block. The SSRs shall be completed in the specified block. Document date of exposure for each SSR via the SSR button on the ATF menu bar. Assign NG/1 as the SSR maneuver grade and write a comment noting which SSR was completed on the event.

f. Aviation Training Jacket Reviews. The Class Advisor (CA) or other qualified flight instructor shall conduct jacket reviews at least weekly. Additionally, SMS students require weekly ATJ reviews from the Student Control Officer.

INTERMEDIATE JET COMPLETE COURSE FLOW (PART 1)

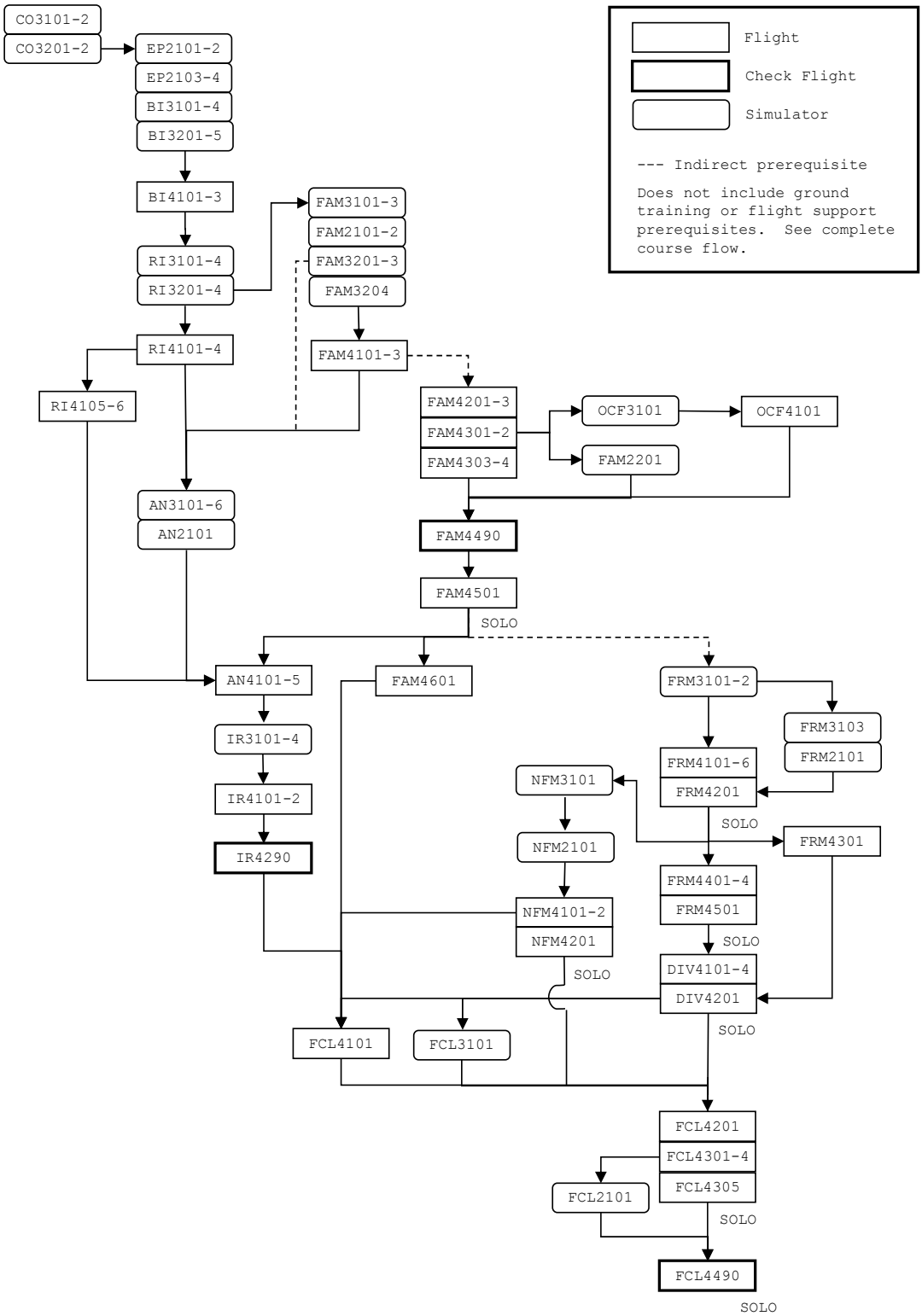


INTERMEDIATE JET COMPLETE COURSE FLOW (PART 2)



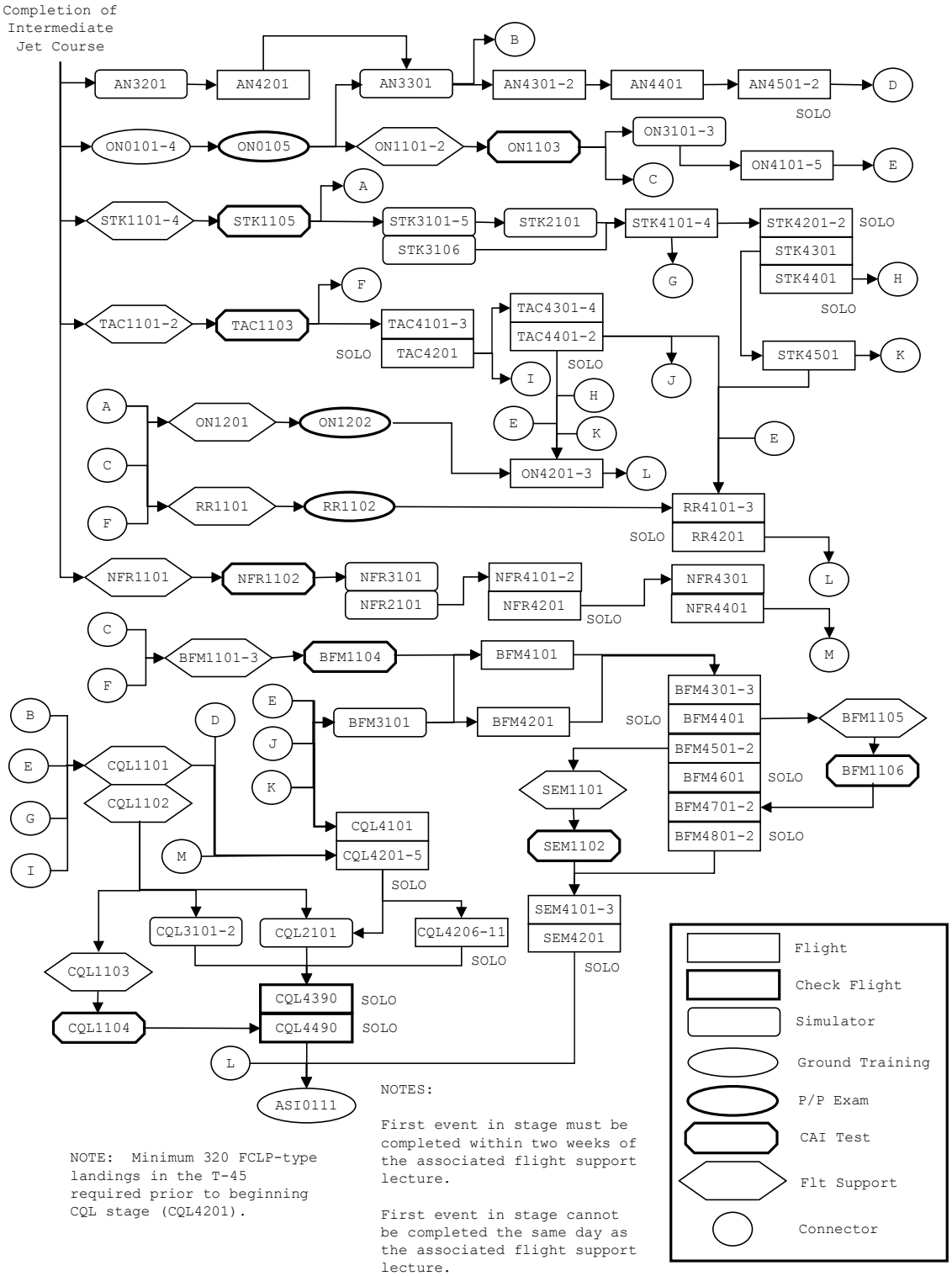
BLANK PAGE

INTERMEDIATE JET FLIGHT/DEVICE FLOW



BLANK PAGE

ADVANCED STRIKE COMPLETE COURSE FLOW



NOTE: Minimum 320 FCLP-type landings in the T-45 required prior to beginning CQL stage (CQL4201).

NOTES:

First event in stage must be completed within two weeks of the associated flight support lecture.

First event in stage cannot be completed the same day as the associated flight support lecture.

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

a. Flight/Simulator

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

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

(3) An UNSAT check flight (SXX90), two consecutive UNSATs in block, three cumulative UNSATs (in the same block), four total UNSATs in phase, or RRU result in a Progress Check. Document the failed check flight or second consecutive/third (in block) cumulative UNSAT on a pink ATF for that syllabus event.

(4) UNSAT performance in the FCL and CQL stages of training will normally result in class rollback and repetition of the entire stage of training for the first occurrence. A third attempt at CQL4490 requires a waiver from CNATRA (see CNATRAINST 3740.9E). Continuation of training in other stages of the Advanced Strike Curriculum following the first UNSAT in the CQL stage is at the discretion of the Commanding Officer.

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

(1) An SNA is inadequately prepared for the scheduled event. The RRU shall be documented on a pink version of the event's ATF. The event will be marked as incomplete with a U/2 grade for "General Knowledge/Procedures." Upon completion of the progress check, the event shall be flown to completion and general knowledge and emergency procedures shall be incorporated into the overall grading solution.

(2) The SNA fails a nonacademic examination (e.g., NATOPS quiz).

(3) For purposes of determining when IPCs or FPCs are required, RRUs and UNSAT flight/simulator events all contribute to the same IPC/FPC process; each SNA may only have one IPC per phase of training.

c. Academic. Two academic examination failures in a phase trigger an FPC. The FPC shall be completed prior to retake.

d. Remediation. A ground evaluation emphasizing the deficient areas may clear an UNSAT check flight or EOB syllabus event caused solely by ground operations.

e. Restrictions. Until remediation events are completed:

(1) The student shall not fly solo, except in the case of FCL/CQL stages with LSO and CO approval.

(2) The student will not accomplish training in any other stage. In the case of CQL: upon completion of the progress check, training may be continued in other stages until the next workup cycle begins for the CQL remediation flights. The progress check may not require an actual flight to gather the information needed to make a fully informed return-to-training decision.

(a) Example: if an Advanced Strike student triggers an IPC by disqualifying at the aircraft carrier (UNSAT CQL4490), the IPC Instructor may not require a flight in the landing pattern to determine if the student has the potential to complete; he/she may be able to gather much of the required information through an ATJ review and discussion with the Landing Signal Officer, focusing on landing performance and the shortcomings demonstrated on the CQL4490.

(b) If an IPC is conducted in this manner, the IPC Instructor shall not make his/her determination until they have completed a thorough interview with the student. An IPC conducted in this manner shall be fully documented on a Supplementary ATF, including all required IPC counseling.

(3) Academic classes, examinations, and ground training missions may be accomplished provided the UNSAT mission was not a prerequisite.

4. Training Review Board. The TRAWING shall conduct a TRB on all NFSs recommended for attrition.

a. The TRB shall consider the quality of training provided, continuity of training provided, outside influences, and extenuating circumstances.

b. The TRB shall not make recommendations based on perceived NFS potential or aspects unrelated to the administrative application of the NFS's training.

c. For more information, refer to CNATRAINST 1500.4H.

5. Instructor Continuity

a. Students may be assigned up to two on-wing instructors. Familiarization blocks FAM41 and FAM43 shall be flown with an on-wing. A FAM "S" IP may be substituted for one FAM41 or FAM43 flight as an off-wing. FAM42 block does not require on-wing instructors. Familiarization check flight FAM4490 shall not be flown with an on-wing instructor.

b. There are no other instructor continuity requirements unless specified by the Operations Officer for SMS students.

6. Break in Training Warmup Events (SXX86). Warmup events (simulator or aircraft) compensate for breaks in training that result in a reduction of student proficiency. Eligibility for warmup events is based on the number of days since the last flight or simulator in the same stage as defined in CNATRAINST 1500.4H. All warmup simulators shall be instructional and warmup aircraft events shall be dual (with the exception of FCL and CQL stage warmups as determined by the LSO, as long as they fall within the currency criteria for student solo flight) (see paragraph 11.b.(3)(c)). If more than seven days have elapsed between a simulator event and a subsequent flight event, a mandatory warmup simulator(s) shall be awarded. Per CNATRAINST 1500.4H, the TRAWING Commander may authorize the warmup to be performed in the aircraft, but event must still be coded as a WU and is not an advancing X. Otherwise, the warmup event shall be conducted in the aircraft if the next syllabus event is an aircraft event or in the simulator if the next syllabus event is a simulator event. Warmup events will be coded SXX86, e.g., FAM4186. Warmup grades do not satisfy block or MIF requirements and shall not be included in the cumulative totals. Instructors retain the ability to award a "count" UNSAT on a WU or ET event for flagrant safety or flight rule violations, unsatisfactory procedural knowledge, or grossly unsafe performance that is not delay-related. Refer to paragraph 608.b of CNATRAINST 1500.4H for further guidance. The following specific guidelines govern the administration of warmup events:

a. Warmup Flights for Extended Breaks in Training. For administration of warmup events for breaks in training of more than 30 days, the CO shall determine an appropriate warmup plan per CNATRAINST 1500.4H.

b. Warmup Events Between Stages. Warmup events shall not be given prior to the first event in stage unless more than 14 days have elapsed since any syllabus event has been conducted (refer to CNATRAINST 1500.4H for warmup event guidelines).

CRITERIA FOR AWARDING WARMUP EVENTS IN STAGE		
Break* (Days)	**Warmup Events**	**Remarks**
1-6	None	• Except the first solo flight, FAM4501 (see paragraph 6.e.(1). • Special rules apply to FCL and CQL stages (see paragraph 6.c.).
7-13 Sim to A/C	1 Mandatory Simulator	• Mandatory WU is not an advancing event. • WU event may be flown in aircraft with the TRAWING Commander's approval (see paragraph 6).
7-13 All Others	1 Optional	• Optional WU based on performance and is required if overall grade is Marginal or UNSAT. • WU is prohibited if performance meets MIF or is sufficient to meet MIF by EOB.
14-30 Sim to A/C	2 Mandatory Simulators	• Mandatory WUs are not advancing events. • For blocks with a single simulator event, only one mandatory WU event is required.
14-30 All Others	1 Mandatory 1 Optional	• Mandatory WU is not an advancing event. • Optional WU based on performance and is required if overall grade is Marginal or UNSAT. • Optional WU is prohibited if performance meets MIF or is sufficient to meet MIF by EOB.

*Break = (Current Julian Date) – (Julian Date of last simulator or flight event in stage).

c. Warmup events are separate from front-seat landing currency events. See paragraph 11.b.(3)(a)-(c) for landing currency requirements.

d. Stage-specific Emergency Procedure simulators satisfy currency requirements for that stage, i.e., the FAM2101 counts as a FAM stage simulator.

e. Warmup Events in FCL and CQL Stages. A warmup FCLP period shall be awarded if three days have elapsed since the last FCLP period. FCLP warmup is required if more than two days have elapsed between successful field qualification (CQL4490) and the first carrier landing. FCLP currency (for CQL) is subsequently required every two days thereafter. A touch-and-go or trap at the ship satisfies this requirement.

f. Optional Warmup Criteria. Optional warmup criteria are defined in CNATRAINST 1500.4H. Optional warmup events are based on the student's performance. If the student is in the optional warmup window and their performance meets MIF or is sufficient to meet MIF by the end of block, the event shall count as the next syllabus event. If the student's performance is Marginal or UNSAT, the event will be ***graded as such and*** coded as a warmup.

g. Intermediate Jet and Advanced Strike are separate phases of training. Mandatory stage warmup criteria do not apply between phases.

h. Advanced Phase instrument events do not require warmups as long as the student has logged First Pilot flight time within the preceding 14 days.

i. Additional Safe-for-Solo Warmup Events

(1) Award an additional safe-for-solo flight if more than three calendar days have elapsed since last safe-for-solo check flight prior to FAM4501.

(2) Not Safe-for-Solo. If the student is not safe-for-solo:

(a) Count the flight as a warmup due to the student's loss of proficiency.

(b) The next flight shall be another safe-for-solo check and should be flown within the next six calendar days.

(c) An IPC/FPC shall follow failure of the second safe-for-solo if the flight is flown within the six-day window described above. If more than six days elapse between failed safe-for-solo checks, the flights shall be treated as mandatory warmup flights.

7. Additional Flights and Simulators

a. Extra Training Events (SXX87). All ETs shall be dual (exceptions: FCL or CQL as determined by the LSO or events awarded to address a solo-specific training deficiency, such as minimum syllabus solo time) and coded as SXX87, e.g., FAM4187.

(1) IPC/FPC ET Events. IPC/FPC ET events are awarded to compensate for training inadequacies, (e.g., poor event/maneuver continuity or improper instruction), not to compensate for a lack of ability, aptitude, or effort on the part of the SNA.

(a) The CO may authorize one ET prior to an IPC and up to two ETs prior to an FPC.

(b) Authorization for IPC and FPC ET events shall be documented on a supplementary ATF and shall clearly state the training deficiency that warrants the ETs.

(c) IPC/FPC XX87 events ***shall not*** be awarded to remediate UNSAT student performance unrelated to unit/instructional training inadequacies.

(2) Minimum Flight Time ET Events. TRAWING Commanders shall ensure that all minimum curriculum flight time requirements are met.

(a) The minimum night flight hour requirements shall not be waived. Events to meet these requirements shall be flown as ET events (SXX87).

(b) Minimum solo flight time may be waived by the TRAWING Commander. This shall be documented in the ATJ with a waiver letter. If the TRAWING Commander chooses not to waive minimum solo time, additional solo events shall be flown as ET events (SXX87).

(c) Squadron COs are responsible for ensuring that ETs flown to meet curriculum minimums provide the SNA with worthwhile training.

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

c. Practice Simulators (SXX85). Students may receive practice simulator events as availability permits. These practice events are not part of the syllabus and shall not be mentored by CSIs.

d. BFM/SEM Currency

BFM/SEM CURRENCY		
Break* (Days)	**Warmup Events**	**Remarks**
1-6	• None.	• Student is still current per OPNAVINST 3710.7U.
7-13	• BFM4186	• This will allow student to regain OPNAV currency.
14-Greater	• BFM4186 • BFM4286 or similar flight in which the student will receive front cockpit, first-pilot time.	• Students must meet OPNAV currency (1 in 6, 2 in 14). They must have first-pilot time and the flight must be a syllabus event as delineated by CNATRAINST 1500.4H.

*Break = Current Julian Date – Julian Date of last simulator or flight event.

Note: BFM4101 updates OCF and Dynamic Flight currency.

8. Student Monitoring Status (SMS)

a. The objective of SMS is to focus supervisory attention on an SNA's progress in training, address performance deficiencies, and assess the SNA's potential to complete the program. It may also be applied to SNAs who require supervisory attention while trying to resolve personal issues. The intent of SMS is to focus on struggling students to help them overcome their problems and provide an expedited route to attrition if this focused attention is unsuccessful.

b. SMS is intended as a short-term program to address specific performance deficiencies within a block or stage of training. Completion of a phase of training or a syllabus is not an acceptable timeline for SMS. SMS requires that specific performance goals be met by the SNA within a specific time period. The time period may reference syllabus events. Specific performance goals shall be related to training standards rather than relative performance against an SNA's peers.

c. An SMS training plan should include, but is not limited to, training tailored to correct specific deficiencies or to address personal issues.

d. An SNA who receives two UNSATs in a block of training or three UNSATs within a phase of training shall be placed on SMS.

e. The Squadron CO is not constrained to the UNSAT-related SMS trigger; the CO, OPSO, or Student Control Officer may place an SNA on SMS anytime that the CO perceives a need for focused attention to resolve SNA difficulties.

f. An SNA's Class Advisor shall document placement on and removal from SMS in the SNA's ATJ via a supplementary ATF. All SMS-related documentation shall be completed on blue paper. Documentation placing an SNA on SMS shall include:

(1) The reason the SNA is being placed on SMS,

(2) The specific goals to be met for successful removal from SMS,

(3) The period of time the SNA is to be on SMS in order to achieve the specified goals,

(4) Consequences for not meeting the goals (SNAs shall proceed to FPC),

(5) Specific additional training or extra instruction (if any), not to be confused with Extra Training (ET) events,

(6) Specific scheduling restrictions (if any), and

(7) Any other applicable requirements or restrictions.

g. Documentation of SMS failure shall include the specific goal(s) not achieved. For SMS that is triggered by a syllabus event, file the initiating blue SMS supplementary ATF on the right side of the ATJ and directly above said event's grade sheet. Upon successful completion of SMS, file the closeout blue SMS supplementary ATF on the right side of the ATJ and directly above the closeout-event grade sheet. If SMS is not related to a syllabus event (i.e., personal issues, academic failure, etc.), then file the initiating and closeout blue SMS supplementary ATFs on the left side of the ATJ, below the DOR and TTO policy statements.

h. If an SNA achieves their SMS goals within the designated period or when personal issues have been resolved, then the SNA is returned to the normal syllabus flow. If the SNA is unable to meet the specific goals of SMS or performance does not improve, the SNA shall be referred to a command-directed FPC.

9. Ground Training And Briefing Requirements

a. Mission Preparation, Briefings, and Debriefings

(1) EOB Events. The IP shall carefully review the ATFs 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. Students shall arrive for each flight with:

(a) Thorough knowledge of:

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

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

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

(3) Briefing

(a) The instructor shall review the SNA's previous block ATFs before each event. Thoroughly cover the current mission's:

1. Discuss Items, as listed in Chapters III-VIII.

2. Specific objectives.

3. Techniques and required procedures for accomplishing those objectives.

4. Planned profile and contingencies.

(b) Duty officers shall provide a safety of flight brief to each solo SNA. In the case of multiplane events or Field Carrier Landing Practice (FCLP), this brief shall be given by the flight lead or LSO as appropriate.

(4) Debriefing

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

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

(c) Debriefing must be detailed and comprehensive. The ATF shall be completed prior to the SNA's next event. Exceptions may be made for out-and-ins, cross-country flights, and during FCL and CQL. In such instances, the SNA will be provided feedback on performance as soon as possible following the event.

b. Emergency Procedures Briefing and Training

(1) EP training builds the student'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 non-EP simulator events when practical; however, instructional block objectives take precedence.

(3) Grade the student'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 MPTS are minimum stage/phase completion standards per maneuver. Students who consistently perform at the absolute minimum standard through multiple stages/phases may not possess the skills required to complete follow-on training. MIF is designed to allow for minimum performance in a specific area with the understanding that performance above the minimum MIF will offset the weak area.

b. Grading Procedures (Aircraft and Training Devices)

(1) Absolute Maneuver Grading. The following scale shall be used to document SNA performance on maneuvers attempted during each event. This is an absolute grading scale. It shall be interpreted and used by instructors the same way for all items on all events. SNA performance as referred to in the scale below should be judged only against the CTS provided for a given item in the MCG.

(a) Demonstrated (NG/1 Level)

1. When the IP demonstrates the maneuver and the student 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 block or event. Also specify completed SSRs in the ATF's maneuver item content line and document date of exposure via the SSR button on the ATF menu bar.

(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 meets or exceeds CTS. Deviations outside CTS are allowed, provided they are brief, minor, and do not affect safety of flight. Corrections are appropriate and timely.

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

(2) Solo Events

(a) Assign NG/1 for performed maneuvers that were unobserved.

(b) Any IP (or qualified RDO/WDO at the TRAWING Commander's discretion) may grade an exceptional observed maneuver as E/5 or an unsafe observed maneuver as U/2 on the solo ATF. These grades shall count toward overall PAS.

(3) Overall Event Grades. Overall event grades represent the student'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 MIF by EOB.

2. EOB: the student's performance meets or exceeds block MIF.

(b) Marginal. Ability to meet MIF by EOB is questionable. IPs may not award a Marginal on an EOB event, check flight, IPC, or FPC.

(c) UNSAT. Student exhibits dangerous tendencies, or progress towards meeting EOB standards is insufficient. Overall UNSAT is at IP's discretion (does not require a MIF of 2).

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

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

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

1. FAM43 MIF requires an F/3 for No-Flap Landings. FAM44 MIF requires a G/4.

2. The student must meet or exceed F/3 to progress out of FAM43.

3. The student must maintain or exceed F/3 until the last FAM44 event, by which time the student must attain G/4. Performance at any time in FAM44 at U/2 would be considered "regression" and trigger an UNSAT.

(c) Exception. 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 address uneven progress through training. Regression is defined as performance below the previous block MIF. Regression rules do not apply to the first block in each stage or between media within stage, i.e., from simulator events to flight events. The following specifies allowable regression.

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

1. The maneuver is not a check flight/ safe-for-solo critical (+) item, and

2. The IP is satisfied the student is ready to progress to the next event.

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

1. Regression was to a U/2 where F/3 or G/4 was 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 was 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 student 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 student meets EOB MIF.

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

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

1. Unnumbered items.

2. Items not in the stage.

3. Exceptions:

a. Weather-driven instrument approaches.

b. Prebriefed maneuvers for IP proficiency.

c. ATC direction.

(7) Event Status. 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 a student has had ample opportunity to learn a task, and subsequently flies a short mission, the event should not be considered incomplete for the sole purpose of providing unwarranted extra training.

(a) Assessment. Assess the event complete if:

1. Seventy-five percent of the event's H/X was used for training (Note: this 75-percent flight-time requirement does not apply to OCF, FCL41, FCL42, and CQL41 blocks), and

2. There are sufficient events remaining in block to allow for completion of all remaining required maneuvers.

3. Otherwise, assess the event incomplete.

(b) Completion Events

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

2. For events flown exclusively to clear an incomplete, grades on maneuvers repeated from the incomplete event do not count toward the SNA's score, except where the grade assigned for the repeated item is lower than the lowest grade previously assigned on that item from all previous attempts on that item.

(c) Simulator Event Completion. Assess a simulator event complete if the student has received the full training period as prescribed in this instruction.

c. Policies for Evaluation Flights and Ground Evaluations

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

(2) Check Flights (SXX90)

(a) Check Flight Progression. Check flights are single-event training blocks. Therefore, all rules regarding progressing out of a block apply, except:

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. The SNA should be able to demonstrate required levels of proficiency without instructor assistance; however, instruction is allowed on check events and SNAs may reattempt maneuvers at the instructor's discretion.

4. The entire event should be devoted to assessing the SNA's skill attainment, ability, and readiness to progress to the next block of training. All maneuvers indicated with a plus (+) are critical and must be accomplished to MIF. Regression rules do not apply.

(b) Incomplete Check Flight. The check flight shall be incomplete when:

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

2. The check pilot was unable to observe sufficient examples of a given maneuver to assess the SNA's overall performance. If the flight profile is incomplete because too much time was dedicated to reattempting maneuvers or additional training, it should be graded UNSAT/Incomplete.

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 noncritical items were graded F/3 where G/4 is required, or

c. Any maneuver is graded U/2.

(3) Progress Check Procedures

(a) Progress Checks flown in the aircraft or simulator are holistic reviews of an NFS's proficiency, judgment, air sense, and overall ability to maneuver the aircraft safely and confidently. The student must also demonstrate the potential to successfully complete follow-on training. Progress checks should focus on the student's weak areas and will normally be comprised of 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/simulator events and Ready Room UNSAT events all contribute to the same IPC/FPC process; each SNA may only have one IPC per phase of training.

(b) Nonfamiliarization Pattern/Landing Failure. If a student triggers an IPC or FPC in a stage other than Familiarization because of an UNSAT pattern/landing, any subsequent refly events shall be flown in the same stage. If multiplane event, lead is not required and only items related to landing pattern shall be graded. IP need not be qualified in stage and shall add a comment to General Comments (ATF) with above information included. Example: BFM4502 may be flown with a non-BFM qualified LSO. BFM4588 would be flown with designated IPC Check Pilot, but need not be BFM-qualified.

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

1. Criteria for an IPC are:

a. Failed check flight.

b. Two consecutive or three cumulative UNSAT events in the same block.

Note: For the purposes of determining IPC triggers, UNSATs on events coded XX84, XX85, XX86, and XX87 shall not be used. Any events graded Marginal shall not be used in determining IPC triggers.

c. Following a single RRU event.

d. Operations Officer or above may direct an IPC when the student's potential to complete MPTS is in doubt.

2. Outcomes:

a. Passing the IPC returns the student to normal syllabus flow.

b. Failing results in an FPC.

c. Marginal is not a possible outcome of an IPC.

3. IPC IPs. IPC IPs shall be senior O-3 or above, and shall be designated in writing by the CO. The IPC is the SNA's first step in the attrition process, and IPCs should only be performed by experienced instructors who carry the CO's confidence that they have a complete understanding of standards-based grading, MPTS, MIF/CTS requirements of the syllabus, and the IPC/FPC process.

a. An SNA's on-wing (FAM stage) or the instructor that awarded the UNSAT resulting in the IPC is ineligible to perform the IPC.

b. An IPC IP who awards an UNSAT on an IPC shall not fly with that SNA again during that stage of training.

c. An IPC conducted in a simulator shall be evaluated and graded by a qualified squadron IPC IP. A qualified CSI shall be assigned to assist.

(d) FPC. The following defines when to conduct an FPC, FPC outcomes, and FPC IPs.

1. Criteria for an FPC are:

a. Failure of an IPC.

b. In any case where an SNA has undergone an IPC in phase and subsequently meets any of the IPC triggers listed previously.

c. Two academic examination failures in a phase.

d. Four cumulative UNSATs in a phase, including academic failures.

e. Failure to meet SMS goals.

f. At the discretion of the CO when there is doubt regarding the SNA's potential to successfully complete a phase of training.

g. Note: SNAs who trigger an FPC due to subparagraphs c-f above may trigger an FPC without having undergone an IPC in phase. This is intentional, because of the concern generated by these triggers.

h. Note: For the purposes of determining FPC triggers, UNSATs on events coded XX84, XX85, XX86, and XX87 shall not be used. (Any events graded Marginal shall not be used in determining FPC triggers.)

i. Note: CQL4490 disqualification, like all UNSAT check flights, will result in an IPC or FPC. Whether an IPC or FPC, this may be conducted under the rules of a CO-directed FPC (interview, board, ATJ review, etc.) and must be completed prior to any other training.

2. Outcomes are:

a. Passing the FPC returns the student to normal syllabus flow.

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

c. Marginal is not a possible outcome for an FPC.

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 instructor (O-4 or above) to conduct the FPC.

a. An SNA's on-wing (during FAM only) or the instructor that awarded the UNSAT resulting in the FPC is ineligible to perform the FPC.

b. An FPC conducted in a simulator shall be evaluated and graded by a qualified squadron FPC instructor. A qualified CSI shall be assigned to assist.

d. Progress Check Counseling

(1) Prior to an IPC and FPC. The student's Class Advisor, Student Control Officer, or the Operations Officer shall counsel the student on the Progress Check training review process and document counseling on a supplemental ATF or the IPC ATF (if the IPC is given by one of the above IPs).

(2) Upon Completion of an IPC. The IPC IP, Student Control Officer, or Operations Officer shall counsel the student on the Progress Check process, his/her retention/attrition recommendations, and future courses of action. The IPC Instructor should also strive to ensure the NFS is coping with the Progress Check process appropriately, and notify appropriate squadron leadership immediately if there are any concerns. Post-IPC counseling shall be documented on the IPC ATF.

(3) Upon Completion of an FPC. The CO or the FPC IP will counsel the student. Counseling should consist of, at a minimum, the Progress Check process, attrition/retention recommendation, and future courses of action. The CO shall document counseling on the FPC ATF or on a supplemental ATF (if the CO was not the FPC instructor).

11. Special Instructions and Restrictions

a. Flight Hour/Event Requirements and Restrictions for 1542.167A

(1) Programmed Hours and Events. Programmed syllabus flight hours are listed on page xii-xiii. Event lengths, SXX86, SXX87, SXX88, and SXX89 events will cause variation. Accomplish all syllabus events.

(2) Minimum Night Hours. Minimum of 12.0 hours in Intermediate Jet, and 24.0 hours total, required prior to completion of Advanced Strike. See Chapter 1, paragraph 7.a.(2).

(3) Minimum Solo Hours. 40 hours required during Intermediate Jet and Advanced Strike; at least 80 percent of the H/X for each solo event must be logged to count the event complete (exception: FCL43, CQL42, CQL43, and CQL44 blocks).

(4) Maximum Daily Student Activities (Aircraft, Simulator, or Academic)

(a) Students shall not be scheduled for, or participate in, more than two aircraft or simulator events during one duty day with the following exceptions:

1. Three dual cross-country legs (except RI).

2. Three CQL events.

3. Up to four additional hours of academic training (MCG duration).

(b) Academic and flight support training must be kept within the 12-hour crew day (maximum of eight hours of academic training). Students are also limited to three aircraft manups per day (four for cross-country and CQL41-43 events). A manup is defined as entering the cockpit. Scheduling in excess of the above limitations shall be by exception only, requires specific approval of the TRAWING Commander, and must be documented on the ATF.

Note: See CNATRAINST 3740.9E for CQ detachment restrictions.

(c) Only one event per day shall be flown for the following events or blocks (excluding lectures):

CO31 block	FAM4101	RR4101
BI31 block	FRM4102	ON4201
BI41 Block	TAC4101	

(d) Student shall not be enrolled in more than two stages in Intermediate Jet (excluding lectures).

(e) Student shall not be enrolled in more than two stages in Advanced Strike (excluding AN and excluding lectures).

(5) Minimum Student Turn-Times. One hour is required between the end of a scheduled debrief and the beginning of a scheduled brief for a follow-on flight, simulator event, or lecture. In the event that the student becomes delayed due to maintenance, weather, or other unplanned factors, the IP shall ensure the SNA receives adequate time to rest and prepare for the next event. This does not apply to out-and-in, cross-country, FCL, CQL, or safe-for-solo to solo profiles (provided one of the IPs is from the safe-for-solo flight, if a multiplane event). In all circumstances, the instructor shall ensure adequate debrief and brief time is allocated.

(6) Crew Day. The period from the beginning of the student'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 students. After six consecutive scheduled days, students shall receive one day off.

(8) All lectures/exams that have online courseware shall utilize online courseware except during detachments. The detachment coordinator must contact the Course Curriculum Coordinator (CCC) and request the exams for detachment. The CCC must inform the Wing Stan Officer and Strike Pipeline Training Officer any time paper exams are requested.

(9) Students shall receive one complete nonscheduled working day following the completion of Intermediate Jet (duty excluded).

(a) Jacket review and all Intermediate Jet requirements shall be completed before students are scheduled for ON0101.

(b) Students shall be closed out of Intermediate Jet prior to any scheduled event in Advanced Strike, with the exception of ON0101-3.

b. Solo Restrictions

(1) Safe for Solo or Unsafe for Solo. Upon completion of a curriculum dual flight preceding an SNA solo, the instructor shall check either "Safe for Solo" or "Unsafe for Solo" on the ATF.

(2) Briefing. The Wing Duty Officer shall brief the student for Familiarization and Airways Navigation solos. The flight briefing must cover weather, mission profile, objectives, and contingencies.

(3) Front-Seat Landing Requirements

(a) A day front-seat landing is required within the previous two days for the first solo flight (FAM4501).

(b) A day/night front-seat landing is required within the previous 24 hours of the first night solo flight (NFM4201).

(c) Thereafter, a day/night front-seat landing is required within five days for a day solo flight and three days for a night solo flight.

(d) Front-seat landing flights shall be coded as SXX86 events. FSL flights may be flown as the event deemed most appropriate to complete mission requirements (i.e., a FAM4X86 front-seat landing flight may be substituted for a Formation lead event provided that both the formation and the landing requirements can be accomplished).

NOTE: Front-seat landing currency flights shall not be considered warmup events for anything other than landing currency (i.e., a FAM4X86 front-seat landing flight four days after FRM4106 does not change the fact that the Formation solo must be completed within the original six days following the safe-for-solo check flight. A FRM4186 warmup event must be conducted if more than six days elapse after FRM4106 regardless of landing currency). Events shall be flown/documented in the same stage. If multiplane event, lead is not required and only items related to front-seat landing currency shall be graded. The instructor need not be qualified in stage, and shall add a comment to General Comments with above information included.

c. Weather Requirements. Forecast weather shall be used for solo minimums.

STAGE	FLIGHT	DUAL	SOLO	REMARKS
FAM	ALL	VFR	1500/3	Minimum of three flights with visual ground reference are required prior to FAM4490. Notes (1), (3) and (6).
NFM	ALL	VFR	1500/3	Notes (2) and (4).
OCF	4101	OPNAV minima	------	BFM weather requirements (Max cloud tops 5000-ft AGL).
BI/RI/ IR	ALL	OPNAV minima	-------	
AN	ALL	OPNAV minima	1000/3	
FRM	ALL	OPNAV minima	1000/3	Note (1) and (3).
NFR	ALL	OPNAV minima	1500/3	Note (2).
FCL	4101 4201 4301-5 4490	Local VFR	 1000/3 1000/3	Notes (1), (2), and (3) all FCLs.
ON	4101-05 4201-03	OPNAV minima	------- -------	3000/5 on route. 3000/5 on route.
RR	4101 4102-03 4201	OPNAV minima	------- ------- 1000/3	5000/5 on route. 8000/5 on route. 8000/5 on route.
STK	ALL	OPNAV minima	1000/3	10500/5 30-degree pattern. 8500/5 20-degree pattern. 5000/5 10-degree pattern. Notes (1) and (5).

STAGE	FLIGHT	DUAL	SOLO	REMARKS
TAC	ALL	OPNAV minima	1000/3	OPNAVINST 3710.7U Wx mins for high work. Notes (1) and (5).
BFM/ SEM	ALL	OPNAV minima	1000/3	Engagement Wx directed by CNATRA Training Rules (Max cloud tops 5000-feet AGL for BFM4101). Notes (1) and (5).
CQL	4101	Local VFR	------	Notes (2) and (5).
	4201-11		1000/3	Notes (2) and (5).
	4390		1000/3	Notes (2) and (5).
	4490	------		Wx as outlined in CNATRAINST 3740.9E.

NOTES:

(1) All day student solo flights shall take off no earlier than 30 minutes after official sunrise and land no later than 30 minutes prior to official sunset.

(2) All night syllabus flights and student night solo flights shall take off no earlier than 30 minutes after official sunset and land no later than 30 minutes prior to official sunrise.

(3) Student solo flights shall maintain VFR at all times prior to receiving an instrument rating.

(4) NFM route requires visual contact with the ground, at least five miles visibility, and shall be flown below any existing ceiling.

(5) Advanced Strike student solo flights may be launched with weather between 500/2 and 1000/3 with the expressed consent of the Squadron CO on a case-by-case basis (no blanket waivers authorized) and must be delineated on the ATF. This authority cannot be delegated.

(6) FAM4490 shall be flown with visual reference to the ground.

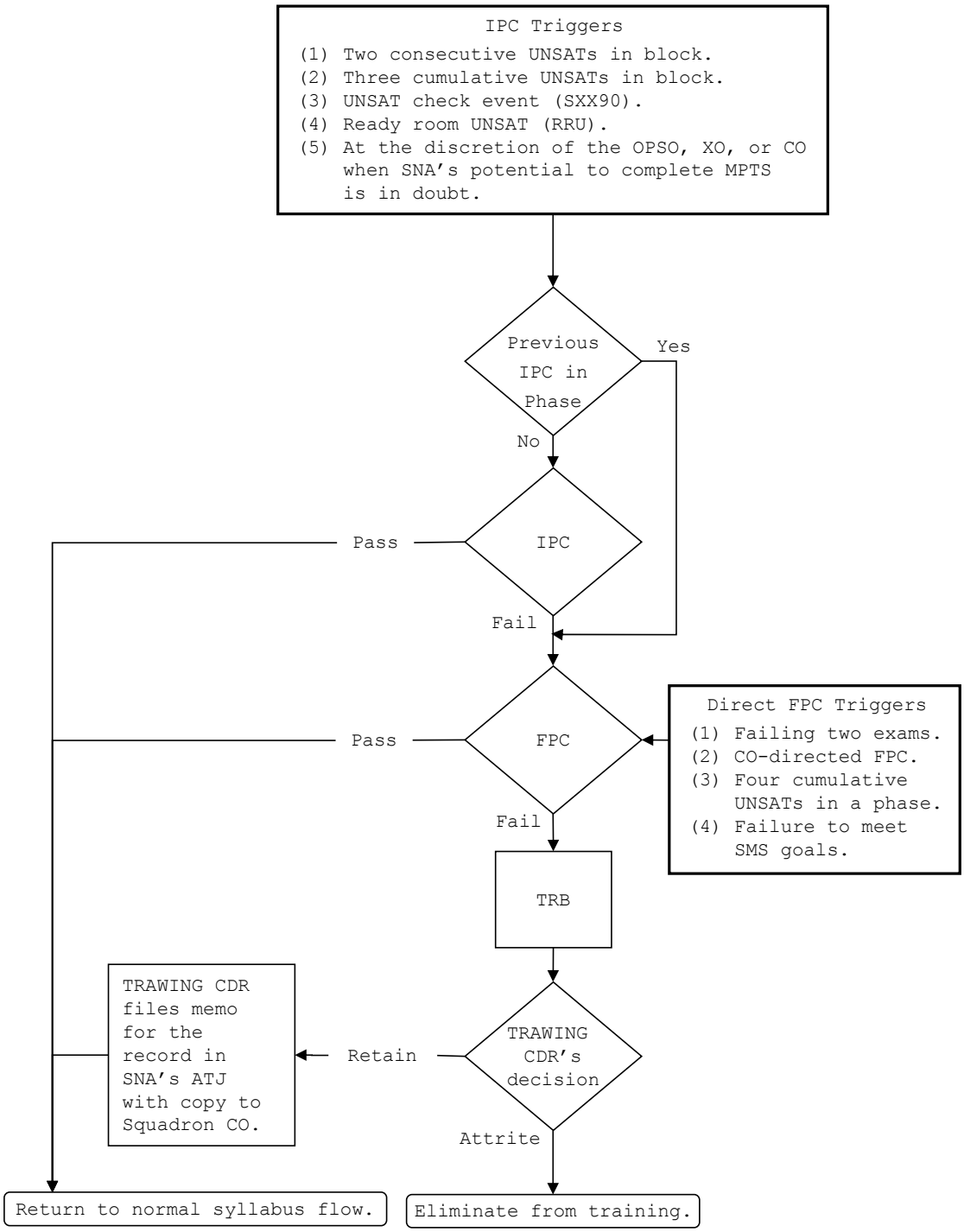
d. Aircraft/Simulator Interchangeability. Simulator events may be conducted in the aircraft when the simulator is unavailable for extended periods of time (excluding 2XXX (EP) events).

e. Gradesheets/ATF. FCLP-type landing comments shall be included on ATFs (using TIMS) for every FCLP-type pass flown on an IFLOLS lens.

Example:

	180	90	45	X	IM	IC	AR
B	650 ft TWA	450 ft	-200	TMP.HX	HIM	OC.NEP.CDIC	LOBAR

MPTS PROGRESS CHECK TRAINING REVIEW PROCESS



BLANK PAGE

Chapter II

Ground Training

Blk #	Media	Title	Events	Hrs	Blk Name
ASI01	Lect/MIL	Aviation Student Indoctrination	11	7.8	ASI

1. Prerequisites

   a. ASI0101-2 (any order) prior to ASI0103-6.

   b. ASI0103-6 (any order) prior to ASI0107.

   c. ASI0107-8 (in order) prior to ASI0109.

   d. FCL4490 prior to ASI0110 (Intermediate Jet only).

   e. ON4203, RR4201, SEM4201 and CQL4490 prior to ASI0111 (Advanced Strike only).

2. Events

ASI0101	Lect	Commanding Officer's Welcome Aboard	1.3
ASI0102	Lect	Squadron Check-in	1.5
ASI0103	MIL	Introduction to Safety Procedures	1.0
ASI0104	Lect	Ground Rules	0.3
ASI0105	Lect	Introduction to TIMS I	0.5
ASI0106	Lect	Introduction to CAI	0.5
ASI0107	MIL	Introduction to IFT/OFT	1.5
ASI0108	Lect	Introduction to Part Task Trainer	0.5
ASI0109	Lect	Introduction to TIMS II	0.5

2. Events (Cont)

ASI0110	Admin	Squadron Checkout – Intermediate Jet	0.1
ASI0111	Admin	Squadron Checkout – Advanced Strike	0.1

3. Syllabus Notes

a. ASI0107 must be complete prior to any syllabus or practice simulator event.

b. Intermediate Jet – complete ASI0101-10.

c. Advanced Strike – complete ASI0111.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
ENG01	MIL/CAI	Engineering	28	33.2	ENG

1. Prerequisites. ASI0103-6.

2. Events

ENG0101	MIL	Introduction to T-45C Configuration	1.3
ENG0102	MIL	Electrical System	1.3
ENG0103	CAI	Electrical System Malfunctions	0.7
ENG0104	MIL	Engine and Related Systems	2.0
ENG0105	CAI	Engine and Related Systems Malfunctions	1.4
ENG0106	CAI	Engine System Malfunctions	0.7
ENG0107	MIL	Aircraft Fuel System	0.9
ENG0108	CAI	Fuel System Malfunctions	0.5
ENG0109	MIL	Hydraulic System	1.5
ENG0110	CAI	Hydraulic System Malfunctions	1.0
ENG0111	MIL	Hydraulic Subsystems	1.8
ENG0112	CAI	Hydraulic Subsystem Malfunctions	1.0
ENG0113	MIL	Flight Control System	1.3
ENG0114	CAI	Flight Control System Malfunctions	0.7
ENG0115	MIL	Egress System	1.0
ENG0116	CAI	Egress System Malfunctions	0.5
ENG0117	MIL	ECS/Pressurization and OBOGS	0.9
ENG0118	CAI	ECS/Pressurization and OBOGS Malfunctions	0.5

2. Events (Cont)

ENG0119	MIL	Flight Instruments	1.7
ENG0120	CAI	Flight Instrument Malfunctions	0.8
ENG0121	MIL	CNI System	1.7
ENG0122	CAI	CNI System Malfunctions	1.0
ENG0123	MIL	Other T-45C Systems	1.0
ENG0124	MIL	INS/GPS Operation and Concepts	1.0
ENG0125	CAI	Display System and Malfunctions	1.5
ENG0126	MIL	Engine Start Procedures	1.0
ENG0127	MIL	Engineering Review	2.5
ENG0128	CAI Test	Engineering Block Exam	2.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
AER01	CAI/MIL	Aerodynamics	7	6.0	Aero

1. Prerequisites. ASI0103-6.

2. Events

AER0101	CAI	General Aeronautics Review	0.5
AER0102	MIL	High Speed Flight	1.0
AER0103	MIL	Slow Speed Flight, Stall and Spin, and AOA System	1.5
AER0104	MIL	Stability	0.5
AER0105	CAI	Engine Thrust and Thrust Curve Review	0.5
AER0106	MIL	NATOPS Performance Charts	1.0
AER0107	CAI Test	Aeronautics Block Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
MET01	CAI/MIL	Meteorology	4	4.0	Metro

1. Prerequisites. ASI0103-6.

2. Events

MET0101	CAI	Review of Basic Meteorological Principles	1.0
MET0102	MIL	Meteorology and Flight Planning	1.5
MET0103	MIL	Meteorology Review	0.5
MET0104	CAI Test	Meteorology Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
NAV01	Lab/MIL/ CAI	Instrument Navigation	9	10.1	INAV

1. Prerequisites. ASI0103-6.

2. Events

NAV0101	LAB	Review of FLIP and FAA Publications	1.8
NAV0102	MIL	Introduction to INAV and Voice Procedures	1.0
NAV0103	MIL	Departure and Terminal Procedures	1.0
NAV0104	CAI	Interpretation of High Altitude Instrument Approach Plates	0.8
NAV0105	LAB	Fuel, Weather, and Alternate Airfield Planning Lab	1.2
NAV0106	LAB	Flight Planning - Departure	0.8
NAV0107	LAB	Flight Planning - Enroute	1.0
NAV0108	LAB	Practical Problems	1.0
NAV0109	CAI Test	Instrument Navigation Exam	1.5

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
ON01	Class	ONAV Ground School	5	20.5	ONAV

1. Prerequisite. Intermediate Jet (ASI0110).

2. Events

ON0101	Lect	Introduction to ONAV	3.0
ON0102	Lab	Computer Route Construction I	5.5
ON0103	Lab	Computer Route Construction II	7.0
ON0104	Lect	ONAV Review	1.0
ON0105	P/P Exam	ONAV Exam (includes lab)	4.0

3. Syllabus Notes

a. Students ***shall not*** be scheduled for other events while in ONAV Ground School.

b. ON0105 shall not be scheduled the same day as ON1101-3.

4. Discuss Items. None.

Chapter III

NATOPS Training

This chapter does not apply to Intermediate Jet or Advanced Strike students.

BLANK PAGE

Chapter IV

Contact Training

1. Matrices. The following matrix is an overview of the entire Contact training category. The category includes Familiarization, Out-of-Control Flight, Night Familiarization, and FCL stages. The purpose of these matrices is to provide the SNA and IP the easiest way to track progress, regression, and overall status in relation to MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. On-Wings. Students may be assigned up to two on-wing instructors. Familiarization blocks FAM41 and FAM43 shall be flown with an on-wing. A FAM "S" IP may be substituted for one FAM41 or FAM43 flight as an off-wing. FAM42 block does not require on-wing instructors. Familiarization check flight FAM4490 shall ***not*** be flown with an on-wing instructor.

3. FCL Note. Upon beginning FCL4201, students shall not participate in any other stage while training in FCL.

4. FAM Notes

a. FAM4101 shall not be scheduled with any other events (excluding lectures) on the same day.

b. Student shall perform a full-stop landing with roll-out to the end of the runway on two separate events within FAM41, FAM42, and FAM43 blocks prior to FAM4490.

c. Students shall complete the NATOPS open- and closed-book exams prior to the FAM4490. Students shall present the graded open- and closed-book exams to their instructor prior to the brief.

5. Familiarization Stage MIF

Simulator/Device Event
Check Flight Event

FAMILIARIZATION STAGE MANEUVER ITEM FILE													
CTS REF	**MANEUVER**	**FAM3103**	**FAM2102**	**FAM3204**	**FAM4103**	**FAM4203**	**FAM4304**	**FAM2201**	**OCF3101**	**OCF4101**	**FAM4490**	**FAM4501**	**FAM4601**
1	General Knowledge/ Procedures	3+	4+	4+	3+	4+	4+	4+	3+	4+	4+	4+	4+
2	Emergency Procedures	3+	3+	3+	3+	3+	4+	4+	3+	4+	4+	4	4+
3	Headwork/ Situational Awareness	2+	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+
4	Basic Airwork	3+	3+	3+	3+	3+	4+	3+	3+	3+	4+	1	4+
5	Mission Planning/ Briefing/ Debriefing	3+	4+	4+	4+	4+	4+	3+	3+	4+	4+	4+	4+
6	Communications	3+	3+	3+	3+	3+	4+	3+	4+	3+	4+	1	4+
7	Ground Operations	3+	3+	3+	3+	3+	4+	3+	4+	4+	4+	1	4+
8	Flight Admin	2+	3+	3+	2+	3+	4+	3+	3+	2+	4+	1	4+
2	Start Malfunctions	3+	3+	3+				4+					
2	Ground Emergencies	3+	3+	3+				4+					
2	Aborted Takeoff	3+	3+	3+				4+					
2	Takeoff EPs		3+	3+				4+					
2	Engine EPs	3+	3+	3+				4+					
2	Flight Control EPs		3+					4+					

MIF continued on next page.

FAMILIARIZATION STAGE MANEUVER ITEM FILE													
CTS REF	**MANEUVER**	**FAM3103**	**FAM2102**	**FAM3204**	**FAM4103**	**FAM4203**	**FAM4304**	**FAM2201**	**OCF3101**	**OCF4101**	**FAM4490**	**FAM4501**	**FAM4601**
2	Gear EPs		3+					4+					
2	Electrical EPs	3+	3+	3+				4+					
2	Hydraulic EPs		3+	3+				4+					
2	ECS EPs		3+					4+					
2	Fuel System EPs		3+					4+					
2	Ejection		3+					4+					
2	Swerve/Blown Tire on Landing		3+	3+				4+					
2	Short-field Arrestment	3+	3+	3+				4+					
2	Rejected Landing/ Go-Around		3+	3+									
2	Lost Communications	3+		3+									
10	Takeoff	3+	3+	3+	3+	3+	4+	3+	4+	4+	4+	1	4+
11	Departure Procedure	3+	3+	3+	3+	3+	4+	3+	4+	4+	4+	1	4+
8	Course Rules	3+		3+	2+	3+	4+		3	3	4+	1	
25	Turn Pattern	3+			4+								
29	Accelerated Stall	3+			3+								
29	Break Turn Stall	3+			3+								
29	Power Off Stall	3+			3+								
29	Landing Attitude Maneuver	3+			4+								

MIF continued on next page.

FAMILIARIZATION STAGE MANEUVER ITEM FILE													
CTS REF	**MANEUVER**	**FAM3103**	**FAM2102**	**FAM3204**	**FAM4103**	**FAM4203**	**FAM4304**	**FAM2201**	**OCF3101**	**OCF4101**	**FAM4490**	**FAM4501**	**FAM4601**
29	Landing Attitude Stall	2+			3+								
29	Approach Turn Stall	2+			3+								
29	Stall Series			3+			4+				4+		
29	Pattern Stall and Recovery			3+					3+				
26	Vertical Recovery			3+	3+		4+				4+		
26	Min Radius Turn			3+	3+		3+				3+		
27	Aileron Roll	3+			3+								
27	Wingover	3+			3+								
27	Barrel Roll	3+			3+								
27	Aerobatics			3+			3+				3+	1	
27	Squirrel Cage			3+			3+				3+	1	
28	Unusual Attitude Recovery			3+	3+		4+				4+		
29	High AOA/ Deep Stall Investigation/ Rudder-induced Departure								3+	3+			
29	70-Degree Nose-High Departure								3+	3+			
29	90-Degree Nose-High Departure								3+				

MIF continued on next page.

FAMILIARIZATION STAGE MANEUVER ITEM FILE													
CTS REF	**MANEUVER**	**FAM3103**	**FAM2102**	**FAM3204**	**FAM4103**	**FAM4203**	**FAM4304**	**FAM2201**	**OCF3101**	**OCF4101**	**FAM4490**	**FAM4501**	**FAM4601**
29	110-Degree Nose-High Departure								3+	3+			
29	Lateral Stick Adverse Yaw Departure								3+	3+			
29	Spin/Spin Recovery								3+				
2	Stuck Throttle Approach								3+				
13	Descent/Field Entry	3+	3+	3+	3+	3+	4+	3+			4+	1	4+
22	Straight-in Approach		3+	3+			3+	3					
22	Downwind Entry		3+	3+			3+	3					
17 18	IFR Recovery to VFR Pattern			3+				3					
21	Precautionary Approach(es)		2+	3+	2+	3+	4+	4+	3+	3+	4+	1	4
22	VFR Landing Pattern	3+	3+	3+	2+	3+	3+	3+	3+	3	3+	1	3+
23	Field Carrier Landing	2+		2+	2+	2+	3+		2+	3	3+	1	3+
23	NF Touch-and-Go			3+		3+	3+		3+		3+		
23	FF Roll-and-Go	3+		3+	3+	3+	3+				3+		3
23	Half-Flap Roll-and-Go	3+				3+							
23	NF Roll-and-Go			3+		3+							
23	Crosswind Landings			2+	2	3	3			3	3	1	3

MIF continued on next page.

FAMILIARIZATION STAGE MANEUVER ITEM FILE													
CTS REF	**MANEUVER**	**FAM3103**	**FAM2102**	**FAM3204**	**FAM4103**	**FAM4203**	**FAM4304**	**FAM2201**	**OCF3101**	**OCF4101**	**FAM4490**	**FAM4501**	**FAM4601**
24	Waveoff	3+		3+	3+	3	3		3		3+	1	3
23	Full-Stop Landing	3+		3+	3+	3+	4+		4+	3+	4+	1	4+
23	No-HUD Landings	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+		3+
21	Bird Strike/ Dirty PA		3+				3+						
21 23	PA to Full Stop			3+		3+	3+						
23	Full Stop with Blown Tire Non-arrested		3+										
23	No Flap Landings		3+										
23	Long Field Arrestment		3+										
23	Half-Flap Arrestment	3+											
	Special Syllabus Requirements				1								

6. Night Familiarization Stage MIF

Simulator/Device Event
Check Flight Event

NIGHT FAMILIARIZATION STAGE MANEUVER ITEM FILE					
CTS REF	**MANEUVER**	**NFM3101**	**NFM2101**	**NFM4102**	**NFM4201**
1	General Knowledge/Procedures	3+	3+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+
3	Headwork/Situational Awareness	3+	3+	3+	3+
4	Basic Airwork	3+	3+	4+	4+
5	Mission Planning/Briefing/ Debriefing	3+	4+	4+	4+
6	Communications	3+	3+	4+	4+
7	Ground Operations	3+	4+	4+	4+
8	Flight Admin	3+	3+	4+	4+
2	Takeoff Emergencies		3+		
2	Aborted Takeoff		3+		
2	Electrical Emergencies		3+		
2	In-Flight Emergencies		3+		
2	App/Landing Emergencies		3+		
2	Landing Emergencies		3+		
2	Lost Communications		3+		
10	Takeoff	3+	3+	3+	4+
11	Departure	3+	3	3+	4+
8	Course Rules	3+	3+	4+	4+
14	Visual Navigation	3+		4+	4+
14	Dead Reckoning	3+		4+	4+
13	Descent/Field Entry	3+		4+	4+
22	VFR Landing Pattern	3+		3+	1
23	Field Carrier Landing	2+		3+	1

MIF continued on next page.

NIGHT FAMILIARIZATION STAGE MANEUVER ITEM FILE					
CTS REF	**MANEUVER**	**NFM3101**	**NFM2101**	**NFM4102**	**NFM4201**
23	NF Touch-and-Go		3+	3+	
23	FF Roll-and-Go	3+		3+	
23	Crosswind Landings	3		3	1
52 24	Waveoff	3+		4+	1
23	Full-Stop Landing	3+		4+	1
17 18	Instrument Approach (Low Oil)		3		
23	No-Flap Landings		3+		
29	Pattern Stall/Recovery		4+		
23	Landing/Touch-and-Go		2+		
2	Field Arrestment		4+		

7. FCL Stage MIF

Simulator/Device Event
Check Flight Event

FCL STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**FCL3101**	**FCL4101**	**FCL4201**	**FCL2101**	**FCL4305**	**FCL4490**
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+
3	Headwork/Situational Awareness	4+	4+	4+	4+	4+	4+
4	Basic Airwork	3+	4+	4+	4+	4+	4+

MIF continued on next page.

FCL STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**FCL3101**	**FCL4101**	**FCL4201**	**FCL2101**	**FCL4305**	**FCL4490**
5	Mission Planning/ Briefing/Debriefing	4+	4+	3+	4+	4+	4+
6	Communications	3+	4+	3+	4+	4+	4+
7	Ground Operations	3+	4+	4+	4+	1	1
8	Flight Admin	3+	4+	3+	4+	1	1
2	Ground Emergencies				3+		
2	Aborted Takeoff				3		
2	Takeoff EPs				3		
2	Engine EPs				3		
2	Flight Control EPs				3		
2	Gear EPs				3+		
2	Electrical EPs				3		
2	Hydraulic EPs				3		
2	ECS EPs				3		
2	Fuel System EPs				3		
2	Ejection				3+		
2	Swerve/Blown Tire on Landing	3+			3+		
2	Short-field Arrestment	3+			3+		
2	Divert	3+			3+		
10	Takeoff	3+	4+	3+	4+	4+	4+
11	Departure	3+	4+	3+	4+	4+	4+
12	Enroute Navigation	3+	4	3+	4+	1	1
13	Descent/Field Entry	3+	4+	3+	4+	4+	4+
29	Pattern Stall/Recovery	3+					
52 23	FCLP Pattern	2+	3+	3+	3+	4+	4+

MIF continued on next page.

FCL STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**FCL3101**	**FCL4101**	**FCL4201**	**FCL2101**	**FCL4305**	**FCL4490**
52 23	Start Position	2+	3+	2+	2+	4+	4+
52 23	AOA Control	2+	3+	2+		3+	3+
52 23	Glideslope Control	2+	3+	2+		3+	3+
52 23	Power Control	2+	3+	2+		3+	3+
52 23	Lineup Control	2+	3+	2+		3+	3+
52 23	Error Detection/Correction	2+	3+	2+		3+	3+
52	Response to LSO Calls	2+		2+		4+	4+
52 23	Bolter/Touch-and-Go Technique	2+	3+	2+	3+	4+	4+
52 23	Field Carrier Landing	2+	3+	2+	2+	3+	3+
23	NF Touch-and-Go		3				
23	FF Roll-and-Go		3+				
52 24	Waveoff	3+	3	3+	3+	4+	4+
23	Full-Stop Landing	3+	4+	3+	4	4+	4+
2	Rejected Landing/Go-around Scenario	3+					

Blk #	Media	Title	Events	Hrs	Blk Name
CR12	MIL/CAI	Course Rules	2	3.0	CR2

1. Prerequisite. RI3204.

2. Events

CR1201	Lect	Course Rules	2.0
CR1202A	CAI Test	NQI Course Rules Exam	1.0
CR1202B	CAI Test	VT-7 Course Rules Exam	1.0
CR1202C	CAI Test	VT-9 Course Rules Exam	1.0

3. Syllabus Notes. Exam content is different for each location. Students shall complete applicable exam.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
FAM11	MIL/CAI	Familiarization Flight Procedures	4	8.5	FAM1

1. Prerequisites

a. CR1202A, CR1202B, or CR1202C (applicable Course Rules Exam).

b. FAM4103 prior to FAM1104.

2. Events

FAM1101	MIL	Familiarization Flight Procedures I	3.3
FAM1102	MIL	Familiarization Flight Procedures II	3.2
FAM1103A	CAI Test	Kingsville Familiarization Flight Procedures Exam	1.0
FAM1103B	CAI Test	Meridian Familiarization Flight Procedures Exam	1.0
FAM1104	Lect	LSO Ball Flying Brief	1.0

3. Syllabus Notes

a. Squadron LSO will give FAM1104.

b. Exam content is different for each location. Students shall complete applicable exam.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
OCF11	MIL/CAI	OCF Flight Procedures	2	2.0	OCF1

1. Prerequisite. FAM1103A or FAM1103B (applicable Familiarization Flight Procedures Exam).

2. Events

OCF1101	MIL	Out-of-Control Flight	1.0
OCF1102	CAI Test	OCF Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
NA11	Lect/Exam	NATOPS	3	6.0	NATOPS

1. Prerequisite. FAM1103A or FAM1103B (applicable Familiarization Flight Procedures Exam).

2. Events

NA1101	MIL	NATOPS Review	2.0
NA1102	P/P Exam	NATOPS Open-Book Exam	2.0
NA1103	P/P Exam	NATOPS Closed-Book Exam and SOP Exam	2.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
NFM11	MIL/CAI	Night Familiarization Flight Procedures	3	3.5	NFM1

1. Prerequisite. FRM4201.

2. Events

NFM1101	MIL	Night FAM Flight Procedures	1.3
NFM1102	MIL	Night Emergency Procedures	1.2
NFM1103A	CAI Test	Kingsville Night FAM Procedures Exam	1.0
NFM1103B	CAI Test	Meridian Night FAM Procedures Exam	1.0

3. Syllabus Notes. Exam content is different for each location. Students shall complete applicable exam.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
FCL11	MIL/CAI	FCLP Flight Procedures	3	2.5	FCLP

1. Prerequisites

a. IR1103 (Instrument Rating Open-Book Exam).

b. DIV1102 (Formation Exam II).

c. NFM1103A or NFM1103B (applicable Night FAM Procedures Exam).

2. Events

FCL1101	MIL	Carrier Qualification Landing (FCLP) Procedures	1.0
FCL1102	MIL	Night FCLP Procedures	0.5
FCL1103A	CAI Test	Kingsville FCLP Exam	1.0
FCL1103B	CAI Test	Meridian FCLP Exam	1.0

3. Syllabus Notes

a. Student ***shall*** not participate in any other stage while training in FCL; however, FCL1101 and FCL4101 can be concurrent with another stage.

b. Exam content is different for each location. Students shall complete applicable exam.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
FAM31	OFT	Familiarization Simulators	3	4.5	1.5

1. Prerequisites

a. RI3204.

b. FAM1103A or FAM1103B (applicable Familiarization Flight Procedures Exam).

2. Syllabus Notes

a. Instructor shall demonstrate area familiarization.

b. The student will perform the following maneuvers IAW FTI, NATOPS, and SOP on the indicated event:

FAM3101
Area familiarization, level flight accelerate/decelerate, overhead pattern entry (break), waveoff, taxi-to-line, and shutdown.

FAM3102
NWS failure, wheel brake failure, generator malfunction/ emergencies, overhead pattern entry (break), one-half flap arrested landing (roll-in, fly in), taxi-to-line, and shutdown.

FAM3103
Engine fire during takeoff, abort, lost communications situation, electrical emergencies, overhead pattern entry (break), taxi-to-line, and shutdown.

3. Special Syllabus Requirement. None.

4. Discuss Items

FAM3101
QOD, parking brake failure, lost aircraft, lost communications, loss of ECS temperature control, and OBOGS malfunction.

FAM3102
QOD, flap indicator failure, landing gear indicator failure, trim indicator failure, and swerve on touchdown.

FAM3103
QOD, fuel flow indicator failure, IFF failure, and long-field arrestment.

5. Block MIF

CTS REF	MANEUVER	FAM3103
1	General Knowledge/Procedures	3+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	2+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	2+
2	Start Malfunctions	3+
2	Ground Emergencies	3+
2	Aborted Takeoff	3+
2	Engine EPs	3+
2	Electrical EPs	3+
2	Short-field Arrestment	3+
2	Lost Communications	3+
10	Takeoff	3+
11	Departure Procedure	3+
8	Course Rules	3+
25	Turn Pattern	3+
29	Accelerated Stall	3+
29	Break Turn Stall	3+
29	Power Off Stall	3+

MIF continued on next page.

CTS REF	MANEUVER	FAM3103
29	Landing Attitude Maneuver	3+
29	Landing Attitude Stall	2+
29	Approach Turn Stall	2+
27	Aileron Roll	3+
27	Wingover	3+
27	Barrel Roll	3+
13	Descent/Field Entry	3+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	2+
23	FF Roll-and-Go	3+
23	Half-Flap Roll-and-Go	3+
24	Waveoff	3+
23	Full-Stop Landing	3+
23	No-HUD Landings	3+
23	Half-Flap Arrestment	3+

Blk #	Media	Title	Events	Hrs	H/X
FAM21	OFT	Familiarization Emergency Procedures	2	3.0	1.5

1. Prerequisite. FAM3103.

2. Syllabus Notes. The student will perform the following procedures IAW FTI, NATOPS, and SOP on the indicated event:

FAM2101
Takeoff with direct entry into landing pattern, pattern depart and reenter (break), downwind entry, VFR straight-in approach (FF, NF), VFR landing pattern, field carrier landings, no-flap touch-and-go, precautionary approaches (straight-in, abeam, overhead, pattern), rejected landing/go-around, short field arrestment (roll-in, fly-in), long field arrestment, full stop with blown tire (non-arrested), lost communications, taxi-to-line, and shutdown.

FAM2102
Start malfunction/emergency (any), failure to reach line speed, abort situation (any), takeoff emergency (any), one gear unsafe down, NWS caution light illumination airborne, tailpipe overheat, cabin pressurization failure, trim malfunctions, tail hook malfunctions, anti-skid failure, blown tire during field landing, locked-in low-altitude compressor stall, bird strike/dirty precautionary approach, ejection (low altitude), fuel system emergencies (any), electrical emergencies (any), hydraulic malfunction/ emergencies (any), flight control emergencies (any), one-half flap field-arrested landing (roll-in, fly-in), and landing with NWS failure.

3. Special Syllabus Requirements. None.

4. Discuss Items

FAM2101
QOD, brake pressure caution light illuminated airborne, weight-on-wheels proximity switch failure (AOA indexers with aircraft on landing rollout), and arrested landing.

FAM2102
QOD and OBOGS malfunctions.

5. Block MIF

CTS REF	MANEUVER	FAM2102
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
2	Start Malfunctions	3+
2	Ground Emergencies	3+
2	Aborted Takeoff	3+
2	Takeoff EPs	3+
2	Engine EPs	3+
2	Flight Control EPs	3+
2	Gear EPs	3+
2	Electrical EPs	3+
2	Hydraulic EPs	3+
2	ECS EPs	3+
2	Fuel System EPs	3+
2	Ejection	3+
2	Swerve/Blown Tire on Landing	3+
2	Short-Field Arrestment	3+
2	Rejected Landing/Go-Around	3+
10	Takeoff	3+
11	Departure Procedure	3+
13	Descent/Field Entry	3+

MIF continued on next page.

CTS REF	MANEUVER	FAM2102
22	Straight-In Approach	3+
22	Downwind Entry	3+
21	Precautionary Approach(es)	2+
22	VFR Landing Pattern	3+
23	No-HUD Landings	3+
21	Bird Strike/Dirty PA	3+
23	Full Stop with Blown Tire Non-Arrested	3+
23	No Flap Landings	3+
23	Long Field Arrestment	3+

Blk #	Media	Title	Events	Hrs	H/X
FAM32	OFT	Familiarization Simulators	4	6.0	1.5

1. Prerequisite. FAM2102.

2. Syllabus Notes. The student will perform the following maneuvers IAW FTI, NATOPS, and SOP on the indicated event:

FAM3201
OLF operations, blown tire on takeoff, abort, waypoint navigation, and swerve on landing rollout.

FAM3202
Failure to reach line speed, abort, crosswind takeoff, engine emergencies, CNI failure, inadvertent IMC, blown tire during field landing, and short-field arrested landing with blown tire.

FAM3203
IFR recovery to visual pattern and engine surge/compressor stall.

FAM3204
Suspend GINA alignment on powerup, and rejected landing/ go-around.

3. Special Syllabus Requirements. None.

4. Discuss Items

FAM3201
QOD and warning/caution tones.

FAM3202
QOD, lost canopy, and aircraft configurations for field arrestments.

FAM3203
QOD.

FAM3204
QOD and aircraft systems.

5. Block MIF

CTS REF	MANEUVER	FAM3204
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
2	Start Malfunctions	3+
2	Ground Emergencies	3+
2	Aborted Takeoff	3+
2	Takeoff EPs	3+
2	Engine EPs	3+
2	Electrical EPs	3+
2	Hydraulic EPs	3+
2	Swerve/Blown Tire on Landing	3+
2	Short-Field Arrestment	3+
2	Rejected Landing/Go-Around	3+
2	Lost Communications	3+
10	Takeoff	3+
11	Departure Procedure	3+
8	Course Rules	3+
29	Stall Series	3+
29	Pattern Stall and Recovery	3+
26	Vertical Recovery	3+
26	Min Radius Turn	3+
27	Aerobatics	3+
27	Squirrel Cage	3+
28	Unusual Attitude Recovery	3+

MIF continued on next page.

CTS REF	MANEUVER	FAM3204
13	Descent/Field Entry	3+
22	Straight-in Approach	3+
22	Downwind Entry	3+
17 18	IFR Recovery to VFR Pattern	3+
21	Precautionary Approach(es)	3+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	2+
23	NF Touch-and-Go	3+
23	FF Roll-and-Go	3+
23	NF Roll-and-Go	3+
23	Crosswind Landings	2+
24	Waveoff	3+
23	Full-Stop Landing	3+
23	No-HUD Landings	3+
21 23	PA to Full Stop	3+

Blk #	Media	Title	Events	Hrs	H/X
FAM41	T-45	Familiarization	3	3.7	See Syl Note

1. Prerequisite. FAM3204.

2. Syllabus Notes

a. Allow 1.3 H/X for FAM4101 and 1.2 H/X for FAM4102-3.

b. Brief 2+00 hours prior to takeoff for FAM4101.

c. Walk 45 minutes prior to takeoff for all flights in FAM41 block.

d. FAM4101 shall be the only event flown that day.

e. Student shall perform two full-stop landings with roll-out to the end of the runway on separate FAM flights prior to FAM4490.

f. The student will perform the following maneuvers IAW FTI, NATOPS, and SOP on the indicated event:

FAM4102
Overhead recovery (break), and abeam PA.

FAM4103
Precautionary approach (straight-in, overhead, or abeam), and simulated short-field arrestment (directional control in question) in full-flap configuration to avoid overstress.

3. Special Syllabus Requirements

a. During FAM41 block, IP shall demonstrate area familiarization, abeam PA, and simulated short-field arrestment (directional control in question) in full-flap configuration to avoid aircraft overstress.

b. During FAM4101, IP shall demonstrate aircraft exterior preflight and postflight aircraft inspection.

4. Discuss Items

FAM4101
QOD, engine surge/compressor stall, crosswind landing technique, and inadvertent engine shutdown (finger lifts).

FAM4102
QOD, engine surge/compressor stall, and PA configuration management.

FAM4103
QOD and short-field arrestment procedures.

5. Block MIF

CTS REF	MANEUVER	FAM4103
1	General Knowledge/Procedures	3+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	2+
10	Takeoff	3+
11	Departure Procedure	3+
8	Course Rules	2+
25	Turn Pattern	4+
29	Accelerated Stall	3+
29	Break Turn Stall	3+
29	Power Off Stall	3+
29	Landing Attitude Maneuver	4+
29	Landing Attitude Stall	3+
29	Approach Turn Stall	3+

MIF continued on next page.

CTS REF	MANEUVER	FAM4103
26	Vertical Recovery	3+
26	Min Radius Turn	3+
27	Aileron Roll	3+
27	Wingover	3+
27	Barrel Roll	3+
28	Unusual Attitude Recovery	3+
13	Descent/Field Entry	3+
21	Precautionary Approach(es)	2+
22	VFR Landing Pattern	2+
23	Field Carrier Landing	2+
23	FF Roll-and-Go	3+
23	Crosswind Landings	2
24	Waveoff	3+
23	Full-Stop Landing	3+
23	No-HUD Landings	3+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
FAM42	T-45	Familiarization Landing Pattern	3	3.0	1.0

1. Prerequisite. FAM1104 (LSO Ball Flying Brief).

2. Syllabus Notes

a. On-wing instructor not required for FAM42 block.

b. Student shall have a minimum of 60 FCLP-type landings prior to FAM4490. If this requirement is not met, FAM4287 (ET) flights shall be awarded as necessary.

c. Two of the three following maneuvers are desired on each flight in FAM42 block (Wx permitting): straight-in PA, overhead PA, or abeam PA.

d. The student shall perform the following maneuvers IAW FTI, NATOPS, and SOP on FAM4201-3: simulated short-field arrestment landing (with and without directional control) one time each in block.

3. Special Syllabus Requirement. None.

4. Discuss Items

FAM4201-3
QOD, swerve on touchdown, go-around procedure, ground ejection, and ejection envelope.

5. Block MIF

CTS REF	MANEUVER	FAM4203
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
10	Takeoff	3+
11	Departure Procedure	3+
8	Course Rules	3+
13	Descent/Field Entry	3+
21	Precautionary Approach(es)	3+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	2+
23	NF Touch-and-Go	3+
23	FF Roll-and-Go	3+
23	Half-Flap Roll-and-Go	3+
23	NF Roll-and-Go	3+
23	Crosswind Landings	3
24	Waveoff	3
23	Full-Stop Landing	3+
23	No-HUD Landings	3+
21 23	PA to Full Stop	3+

Blk #	Media	Title	Events	Hrs	H/X
FAM43	T-45	Familiarization	4	4.8	1.2

1. Prerequisites

a. FAM1104 (LSO Ball Flying Brief).

b. FAM4203 prior to FAM4304.

2. Syllabus Notes

a. The student shall fly the following maneuvers on every flight: break turn stall, landing attitude stall, and approach turn stall.

b. Student shall have a minimum of 60 FCLP-type landings prior to FAM4490. If this requirement is not met, FAM4287 (ET) flights shall be awarded as necessary.

c. The student will perform the following maneuvers IAW FTI, NATOPS, and SOP on the indicated event:

FAM4301
Two of the three following maneuvers desired (Wx permitting): straight-in PA, overhead PA, or abeam PA.

FAM4302
SNA must have flown at least one straight-in PA, one overhead PA, and one abeam PA in this block, prior to completion of FAM4302.

FAM4303
Precautionary approach to a full-stop (practice PAs to a full-stop shall only be performed when dual).

FAM4304
RTB without TACAN or waypoint (Wx permitting), two of the three following maneuvers desired (Wx permitting): straight-in precautionary approach, overhead precautionary approach, or abeam precautionary approach.

d. By EOB, IP demonstrate and SNA perform bird strike/ dirty PA.

3. Special Syllabus Requirements. None.

4. Discuss Items

FAM4301
QOD, electrical system, and bird strike/dirty PA.

FAM4302
QOD and hydraulic system.

FAM4303
QOD, engine/accessory gear box, PA to full-stop (approach versus ground idle on rollout).

FAM4304
QOD and fuel system.

5. Block MIF

CTS REF	MANEUVER	FAM4304
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure Procedure	4+
8	Course Rules	4+
29	Stall Series	4+
26	Vertical Recovery	4+
26	Min Radius Turn	3+
27	Aerobatics	3+
27	Squirrel Cage	3+

MIF continued on next page.

CTS REF	MANEUVER	FAM4304
28	Unusual Attitude Recovery	4+
13	Descent/Field Entry	4+
22	Straight-in Approach	3+
22	Downwind Entry	3+
21	Precautionary Approach(es)	4+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	3+
23	NF Touch-and-go	3+
23	FF Roll-and-Go	3+
23	Crosswind Landings	3
24	Waveoff	3
23	Full-Stop Landing	4+
23	No-HUD Landings	3+
21	Bird Strike/Dirty PA	3+
21 23	PA to Full Stop	3+

Blk #	Media	Title	Events	Hrs	H/X
FAM22	OFT	Familiarization Emergency Procedures	1	1.5	1.5

1. Prerequisite. FAM4302.

2. Syllabus Note. The student will perform the following procedures IAW FTI, NATOPS, and SOP on this event: start malfunction/emergency (any), taxi emergencies, takeoff emergency (any), engine emergencies, fuel system emergencies (any), electrical emergencies (any), ECS malfunction/emergency, hydraulic system malfunction/emergencies (any), flight control emergencies (any), GINA malfunction, ejection (low altitude), approach/landing emergencies, and postlanding malfunctions/ emergencies.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, lost aircraft situations, and start sequence.

5. Block MIF

CTS REF	MANEUVER	FAM2201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
2	Start Malfunctions	4+
2	Ground Emergencies	4+
2	Aborted Takeoff	4+
2	Takeoff EPs	4+

MIF continued on next page.

CTS REF	MANEUVER	FAM2201
2	Engine EPs	4+
2	Flight Control EPs	4+
2	Gear EPs	4+
2	Electrical EPs	4+
2	Hydraulic EPs	4+
2	ECS EPs	4+
2	Fuel System EPs	4+
2	Ejection	4+
2	Swerve/Blown Tire on Landing	4+
2	Short-Field Arrestment	4+
10	Takeoff	3+
11	Departure Procedure	3+
13	Descent/Field Entry	3+
22	Straight-in Approach	3
22	Downwind Entry	3
17 18	IFR Recovery to VFR Pattern	3
21	Precautionary Approach(es)	4+
22	VFR Landing Pattern	3+
23	No-HUD Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
OCF31	OFT	Out-of-Control Flight Simulator	1	1.5	1.5

1. Prerequisites

   a. OCF1102 (OCF Exam).

   b. FAM4302.

2. Syllabus Notes. The student will perform the following procedures IAW FTI, NATOPS, and SOP on this event: airstart, blown tire during field landing, and field-arrested landing with blown tire. Two stuck throttle approaches are required (high, middle, or low).

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, runaway trim, engine flameout, ejection situations, locked-in compressor stall, airstart, and NATOPS Chapter 11.

5. Block MIF

CTS REF	MANEUVER	OCF3101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	3+
10	Takeoff	4+
11	Departure Procedure	4+
8	Course Rules	3
29	Pattern Stall and Recovery	3+
29	High AOA/Deep Stall Investigation/Rudder-induced Departure	3+
29	70-Degree Nose-High Departure	3+
29	90-Degree Nose-High Departure	3+
29	110-Degree Nose-High Departure	3+
29	Lateral Stick Adverse Yaw Departure	3+
29	Spin/Spin Recovery	3+
2	Stuck Throttle Approach	3+
21	Precautionary Approach(es)	3+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	2+
23	NF Touch-and-Go	3+
24	Waveoff	3
23	Full-Stop Landing	4+
23	No-HUD Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
OCF41	T-45	Out-of-Control Flight	1	0.5	0.5

1. Prerequisite. OCF3101.

2. Syllabus Notes None.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and NATOPS, Chapter 11.

5. Block MIF

CTS REF	MANEUVER	OCF4101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	2+
10	Takeoff	4+
11	Departure Procedure	4+
8	Course Rules	3
29	High AOA/Deep Stall Investigation/Rudder-induced Departure	3+
29	70-Degree Nose-High Departure	3+
29	110-Degree Nose-High Departure	3+
29	Lateral Stick Adverse Yaw Departure	3+
21	Precautionary Approach(es)	3+
22	VFR Landing Pattern	3

MIF continued on next page.

CTS REF	MANEUVER	OCF4101
23	Field Carrier Landing	3
23	Crosswind Landings	3
23	Full-Stop Landing	3+
23	No-HUD Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
FAM44	T-45	Familiarization Safe-for-Solo Check Flight	1	1.2	1.2

1. Prerequisites

a. FAM4304.

b. FAM2201.

c. OCF4101.

d. NA1103 (NATOPS Closed-Book Exam and SOP Exam).

2. Syllabus Notes

a. Bring FAM QA card to brief.

b. Event shall be flown with visual reference to the ground.

c. The student shall, at a minimum, fly the following maneuvers in the stall series: break turn stall, landing attitude stall, and approach turn stall.

d. Event shall ***not*** be flown with an on-wing instructor.

e. Student shall have a minimum of 60 FCLP-type landings prior to FAM4490. If this requirement is not met, FAM4287 (ET) flights shall be awarded as necessary.

f. Students shall complete the NATOPS open- and closed-book exams prior to FAM4490. Students shall present the graded open- and closed-book exams to their instructor prior to the brief.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and aircraft systems.

5. Block MIF

CTS REF	MANEUVER	FAM4490
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure Procedure	4+
8	Course Rules	4+
29	Stall Series	4+
26	Vertical Recovery	4+
26	Min Radius Turn	3+
27	Aerobatics	3+
27	Squirrel Cage	3+
28	Unusual Attitude Recovery	4+
13	Descent/Field Entry	4+
21	Precautionary Approach(es)	4+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	3+
23	NF Touch-and-Go	3+
23	FF Roll-and-Go	3+
23	Crosswind Landings	3
24	Waveoff	3+
23	Full-Stop Landing	4+
23	No-HUD Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
FAM45	T-45	Familiarization Solo	1	1.2	1.2

1. Prerequisite. FAM4490.

2. Syllabus Notes

a. At a minimum, General Knowledge/Procedures, Headwork/ Situational Awareness, and Mission Planning/Briefing/Debriefing shall be graded by a qualified instructor.

b. Intentional spins, stalls, unusual attitudes, and vertical recoveries are prohibited maneuvers for solo students.

c. Event shall be flown with visual reference to the ground.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, solo brief, and lost aircraft situations.

5. Block MIF

CTS REF	MANEUVER	FAM4501
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4
3	Headwork/Situational Awareness	3+
4	Basic Airwork	1
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	1
7	Ground Operations	1
8	Flight Admin	1
10	Takeoff	1
11	Departure Procedure	1
8	Course Rules	1
27	Aerobatics	1
27	Squirrel Cage	1
13	Descent/Field Entry	1
21	Precautionary Approach(es)	1
22	VFR Landing Pattern	1
23	Field Carrier Landing	1
23	Crosswind Landings	1
24	Waveoff	1
23	Full-Stop Landing	1

Blk #	Media	Title	Events	Hrs	H/X
FAM46	T-45	Day Familiarization Landing Pattern	1	0.7	0.7

1. Prerequisite. FAM4501.

2. Syllabus Notes

a. May be flown anytime after FAM4501.

b. Two of the three following maneuvers desired (Wx permitting): straight-in PA, overhead PA, or abeam PA.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, ECS, NWS/launch bar, and canopy/fog condensation.

5. Block MIF

CTS REF	MANEUVER	FAM4601
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure Procedure	4+
13	Descent/Field Entry	4+
21	Precautionary Approach(es)	4
22	VFR Landing Pattern	3+
23	Field Carrier Landing	3+
23	FF Roll-and-Go	3
23	Crosswind Landings	3
24	Waveoff	3
23	Full-Stop Landing	4+
23	No-HUD Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
NFM31	OFT	Night Familiarization	1	1.5	1.5

1. Prerequisite. NFM1103A or NFM1103B (applicable Night FAM Procedures Exam).

2. Syllabus Notes

a. The student will perform the following maneuvers IAW FTI, NATOPS, and SOP on this event: inadvertent IMC.

b. Perform a touch-and-go landing without IFLOLS/FLOLS.

c. Entire route is not required to be flown.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and lost aircraft situations.

5. Block MIF

CTS REF	MANEUVER	NFM3101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
10	Takeoff	3+
11	Departure	3+
8	Course Rules	3+
14	Visual Navigation	3+
14	Dead Reckoning	3+
13	Descent/Field Entry	3+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	2+
23	FF Roll-and-Go	3+
23	Crosswind Landings	3
52 24	Waveoff	3+
23	Full-Stop Landing	3+

Blk #	Media	Title	Events	Hrs	H/X
NFM21	OFT	Night Familiarization Emergency Procedures	1	0.9	0.9

1. Prerequisite. NFM3101.

2. Syllabus Note. The student will perform the following maneuvers IAW FTI, NATOPS, and SOP on this event: total electrical failure, trim malfunction in landing pattern, swerve on touchdown, night abort, pattern stall and recovery, and lost comm.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, NORDO light signals, night Bingo considerations, airfield lighting, and cockpit fogging.

5. Block MIF

CTS REF	MANEUVER	NFM2101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	3+
2	Takeoff Emergencies	3+
2	Aborted Takeoff	3+
2	Electrical Emergencies	3+
2	In-Flight Emergencies	3+
2	App/Landing Emergencies	3+
2	Landing Emergencies	3+
2	Lost Communications	3+
10	Takeoff	3+
11	Departure	3
8	Course Rules	3+
23	NF Touch-and-Go	3+
17 18	Instrument Approach (Low Oil)	3
23	No-Flap Landings	3+
29	Pattern Stall/Recovery	4+
23	Landing/Touch-and-Go	2+
2	Field Arrestment	4+

Blk #	Media	Title	Events	Hrs	H/X
NFM41	T-45	Night Familiarization	2	2.8	1.4

1. Prerequisite. NFM2101.

2. Syllabus Notes

a. Events shall take off no earlier than 30 minutes after official sunset.

b. Student shall perform at least one night break at the field in block.

c. A minimum of 12 night field carrier landings are required in block.

3. Special Syllabus Requirements. None.

4. Discuss Items

NFM4101-2
QOD.

5. Block MIF

CTS REF	MANEUVER	NFM4102
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	3+
11	Departure	3+
8	Course Rules	4+
14	Visual Navigation	4+
14	Dead Reckoning	4+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	3+
23	Field Carrier Landing	3+
23	NF Touch-and-Go	3+
23	FF Roll-and-Go	3+
23	Crosswind Landings	3
52 24	Waveoff	4+
23	Full-Stop Landing	4+

Blk #	Media	Title	Events	Hrs	H/X
NFM42	T-45	Night Familiarization Solo	1	1.4	1.4

1. Prerequisite. NFM4102.

2. Syllabus Notes

a. Event shall take off no earlier than 30 minutes after official sunset.

b. All maneuvers except landings will be graded by the chase pilot.

c. A minimum of six landings are required for completion.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, solo brief, and waypoint navigation.

5. Block MIF

CTS REF	MANEUVER	NFM4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
8	Course Rules	4+
14	Visual Navigation	4+
14	Dead Reckoning	4+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	1
23	Field Carrier Landing	1
23	Crosswind Landings	1
52 24	Waveoff	1
23	Full-Stop Landing	1

Blk #	Media	Title	Events	Hrs	H/X
FCL31	OFT	Field Carrier Landing Practice	1	1.3	1.3

1. Prerequisites

a. FCL1103A or FCL1103B (applicable FCLP Exam).

b. IR4290.

c. NFM4102.

d. DIV4201.

e. FAM4601.

2. Syllabus Notes

a. Minimum of 180 front-seat FCLP-type landings, on the IFLOLS, are required to begin stage.

b. FCL3101 shall be flown prior to FCL4201.

c. Up to two FCL events may be flown per day.

d. Student shall not participate in any other stage while training in FCL; however, FCL1101 and FCL4101 can be concurrent with another stage.

e. Demonstrate CVN flight operations.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, scan technique, field Delta pattern, and "Dirty Bingo."

5. Block MIF

CTS REF	MANEUVER	FCL3101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
2	Swerve/Blown Tire on Landing	3+
2	Short-Field Arrestment	3+
2	Divert	3+
10	Takeoff	3+
11	Departure	3+
12	Enroute Navigation	3+
13	Descent/Field Entry	3+
29	Pattern Stall/Recovery	3+
52 23	FCLP Pattern	2+
52 23	Start Position	2+
52 23	AOA Control	2+
52 23	Glideslope Control	2+
52 23	Power Control	2+
52 23	Lineup Control	2+
52 23	Error Detection/Correction	2+

MIF continued on next page.

CTS REF	MANEUVER	FCL3101
52	Response to LSO Calls	2+
52 23	Bolter/Touch and Go Technique	2+
52 23	Field Carrier Landing	2+
52 24	Waveoff	3+
23	Full-Stop Landing	3+
2	Rejected Landing/Go-Around Scenario	3+

Blk #	Media	Title	Events	Hrs	H/X
FCL41	T-45	Night Landing Pattern	1	0.7	0.7

1. Prerequisites

   a. FCL1103A or FCL1103B (applicable FCLP Exam).

   b. IR4290.

   c. NFM4102.

   d. DIV4201.

   e. FAM4601.

2. Syllabus Notes

   a. FCL4101 shall be flown within two weeks of FCL4201.

   b. LSO not required on station.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD.

5. Block MIF

CTS REF	MANEUVER	FCL4101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+

MIF continued on next page.

CTS REF	MANEUVER	FCL4101
11	Departure	4+
12	Enroute Navigation	4
13	Descent/Field Entry	4+
52 23	FCLP Pattern	3+
52 23	Start Position	3+
52 23	AOA Control	3+
52 23	Glideslope Control	3+
52 23	Power Control	3+
52 23	Lineup Control	3+
52 23	Error Detection/Correction	3+
52 23	Bolter/Touch-and-Go Technique	3+
52 23	Field Carrier Landing	3+
23	NF Touch-and-Go	3
23	FF Roll-and-Go	3+
52 24	Waveoff	3
23	Full-Stop Landing	4+

Blk #	Media	Title	Events	Hrs	H/X
FCL42	T-45	FCLP Safe-for-Solo	1	0.7	0.7

1. Prerequisites

a. FCL3101.

b. FCL4101.

c. NFM4201.

2. Syllabus Notes

a. Flight will be an evaluation of the safety of the student to solo in the day landing pattern.

b. IP shall demonstrate proper waveoff technique and lineup adjustments.

c. No more than two FCL events shall be flown per day.

d. Student shall not participate in any other stage while training in FCL; however, FCL1101 and FCL4101 can be concurrent with another stage.

e. An SOP Exam is required to be completed prior to beginning FCL42.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, communications, preflight/ground operations, and pattern entry.

5. Block MIF

CTS REF	MANEUVER	FCL4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	3+

MIF continued on next page.

CTS REF	MANEUVER	FCL4201
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	3+
10	Takeoff	3+
11	Departure	3+
12	Enroute Navigation	3+
13	Descent/Field Entry	3+
52 23	FCLP Pattern	3+
52 23	Start Position	2+
52 23	AOA Control	2+
52 23	Glideslope Control	2+
52 23	Power Control	2+
52 23	Lineup Control	2+
52 23	Error Detection/Correction	2+
52	Response to LSO Calls	2+
52 23	Bolter/Touch-and-Go Technique	2+
52 23	Field Carrier Landing	2+
52 24	Waveoff	3+
23	Full-Stop Landing	3+

Blk #	Media	Title	Events	Hrs	H/X
FCL43	T-45	Field Carrier Landing Practice Solo	5	3.0	0.6

1. Prerequisite. FCL4201.

2. Syllabus Notes

a. LSOs will evaluate and critique each individual pass as well as landing trends; landing grades are at the sole discretion of the LSOs. A maximum of two LSOs will instruct during the FCL stage.

b. For warmup requirements, see Chapter I, para 6.f.

c. For front-seat landing requirements, see Chapter I, para 11.b.(3).

d. Two night periods are desired in order to have a minimum of three night FCLP periods by the completion of CQL4390.

e. FCL4303 is the first period that may be flown at night.

f. A minimum of six FCLP-type passes are required on each flight; eight are desired.

g. Student shall not participate in any other stage while training in FCL43.

h. These events shall not be shotgunned for any reason.

3. Special Syllabus Requirements. None.

4. Discuss Items

FCL4301
QOD, pattern procedures, and arrestment procedures.

FCL4302
QOD and scan techniques, Case I/II procedures.

FCL4303
QOD, glideslope corrections, and trend analysis.

FCL4304
QOD and lineup correction.

FCL4305
QOD and trend analysis.

5. Block MIF

CTS REF	MANEUVER	FCL4305
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	1
8	Flight Admin	1
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	1
13	Descent/Field Entry	4+
52 23	FCLP Pattern	4+
52 23	Start Position	4+
52 23	AOA Control	3+
52 23	Glideslope Control	3+
52 23	Power Control	3+
52 23	Lineup Control	3+
52 23	Error Detection/Correction	3+

MIF continued on next page.

CTS REF	MANEUVER	FCL4305
52	Response to LSO Calls	4+
52 23	Bolter/Touch-and-Go Technique	4+
52 23	Field Carrier Landing	3+
52 24	Waveoff	4+
23	Full-Stop Landing	4+

Blk #	Media	Title	Events	Hrs	H/X
FCL21	OFT	Emergency Procedures (FCLP)	1	1.5	1.5

1. Prerequisite. FCL4303.

2. Syllabus Notes

a. FCL2101 shall be flown after FCL4303.

b. The student will perform the following procedures IAW FTI, NATOPS, and SOP on this event: in-flight emergencies (any), lost communications in pattern, NWS failure on deck, brake failure on deck, GINA failures, Bingo profile, swerve after touchdown, blown tire on landing, short-field arrestment with blown tire, and ejection.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and ditching situations, BINGO profile.

5. Block MIF

CTS REF	MANEUVER	FCL2101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
2	Ground Emergencies	3+
2	Aborted Takeoff	3
2	Takeoff EPs	3
2	Engine EPs	3
2	Flight Control EPs	3

MIF continued on next page.

CTS REF	MANEUVER	FCL2101
2	Gear EPs	3+
2	Electrical EPs	3
2	Hydraulic EPs	3
2	ECS EPs	3
2	Fuel System EPs	3
2	Ejection	3+
2	Swerve/Blown Tire on Landing	3+
2	Short-Field Arrestment	3+
2	Divert	3+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
13	Descent/Field Entry	4+
52 23	FCLP Pattern	3+
52 23	Start Position	2+
52 23	Bolter/Touch-and-Go Technique	3+
52 23	Field Carrier Landing	2+
52 24	Waveoff	3+
23	Full-Stop Landing	4

Blk #	Media	Title	Events	Hrs	H/X
FCL44	T-45	Field Carrier Landing Practice Check Flight Solo	1	0.6	0.6

1. Prerequisites

a. FCL4305.

b. FCL2101.

2. Syllabus Notes

a. LSOs will evaluate and critique each individual pass as well as landing trends; landing grades are at the sole discretion of the LSO.

b. For warmup requirements, see Chapter I, para 6.f.

c. For front-seat landing requirements, see Chapter I, para 11.b.(3).

d. FCL4490 shall not be shotgunned for any reason.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD.

5. Block MIF

CTS REF	MANEUVER	FCL4490
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	1

MIF continued on next page.

CTS REF	MANEUVER	FCL4490
8	Flight Admin	1
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	1
13	Descent/Field Entry	4+
52 23	FCLP Pattern	4+
52 23	Start Position	4+
52 23	AOA Control	3+
52 23	Glideslope Control	3+
52 23	Power Control	3+
52 23	Lineup Control	3+
52 23	Error Detection/Correction	3+
52	Response to LSO Calls	4+
52 23	Bolter/Touch-and-Go Technique	4+
52 23	Field Carrier Landing	3+
52 24	Waveoff	4+
23	Full-Stop Landing	4+

BLANK PAGE

Chapter V

Instrument Training

1. Matrices. The following matrices are an overview of the entire Instrument training category. The category includes Cockpit Orientation/Emergency Procedures, Basic Instruments, Radio Instruments, Airways Navigation, and Instrument Rating stages. The purpose of these matrices is to provide the SNA and IP the easiest way to track progress, regression, and overall status in relation to MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Scheduling. Only one event per day shall be flown for the following blocks (lectures may be executed in addition to the specified events):

CO31 block
BI31 block
BI41 block

3. IR Notes

a. No more than 60 days shall elapse between completion of the IR1103 exam and successful completion of IR4290 or IR1101-3 shall be retaken.

b. Successful completion of IR4290 shall warrant issuance of a USN standard NATOPS instrument rating. If this NATOPS instrument rating will expire within 180 days of completion of the T-45 Combined Multi-Service Pilot Training System, the instrument rating process shall be updated prior to detaching. If flown to update an instrument rating, this may be flown in the OFT.

c. Two out-and-in flights (outside the local area) are required in the AN/IR syllabus prior to IR4290. A cross-country with at least four legs may be substituted for this requirement.

4. Advanced AN Note. AN4501-2 must be completed within the three weeks prior to CQL4201. If not, then last event shall be reflown as AN4587.

5. Cockpit Orientation/Emergency Procedures Stage MIF

Simulator/Device Event

COCKPIT ORIENTATION/EMERGENCY PROCEDURES STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**CO3102**	**CO3202**	**EP2104**
1	General Knowledge/Procedures	3+	3+	3+
2	Emergency Procedures			3+
3	Headwork/Situational Awareness	3+	3+	3+
4	Basic Airwork		2+	2
5	Mission Planning/Briefing/Debriefing	3+	3+	3+
6	Communications	2+	2+	2+
7	Ground Operations	2+	3+	3+
8	Flight Admin	3+	3+	3+
2	Start Malfunctions			3+
2	Ground Emergencies			3+
2	Aborted Takeoff			3+
2	Takeoff EPs			3+
2	Engine EPs			3+
2	Flight Control EPs			3+
2	Gear EPs			3+
2	Electrical EPs			3+
2	Hydraulic EPs			3+
2	ECS EPs			3+
2	Fuel System EPs			3+
2	Ejection			3+
11	Departure	2+		
13	Descent/Field Entry	2+		
25	Turn Pattern		2+	
25	One-Half Standard Rate Turn (SRT)		2+	

MIF continued on next page.

COCKPIT ORIENTATION/EMERGENCY PROCEDURES STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**CO3102**	**CO3202**	**EP2104**
25	Level Speed Change		2+	
25	Slow Flight Maneuver		2+	
25	S-1 Pattern		2+	
16	Penetration		2+	
18	TACAN Approach		2+	
17	PAR Approach		2+	

6. Basic Instruments Stage MIF

Simulator/Device Event

BASIC INSTRUMENTS STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**BI3104**	**BI3205**	**BI4103**
1	General Knowledge/Procedures	4+	4+	4+
2	Emergency Procedures	3+	3+	3+
3	Headwork/Situational Awareness	3+	3+	3+
4	Basic Airwork	3+	3+	3+
4	Partial Panel Airwork	2+	3+	3+
5	Mission Planning/Briefing/Debriefing	4+	4+	4+
6	Communications	3+	3+	3+
7	Ground Operations	3+	3+	3+
10	Takeoff	3+	3+	1
11	Departure	3+	3+	3+
12 25	Climbs/Descents	3+	3+	3+
12	Enroute Navigation	3+	3+	3+

MIF continued on next page.

BASIC INSTRUMENTS STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**BI3104**	**BI3205**	**BI4103**
12	Intercept/Maintain Course	3+	3+	3+
12	Nonsystem Point-to-Point Navigation	2	2	2
12	Arcing	3+	3+	3+
25	Turn Pattern	3+	4+	4+
25	One-Half Standard Rate Turn	3+	4+	
25	Standard Rate Turn	3+	4+	
25	Level Speed Change	3+	4+	
25	Level Speed Change in One-Half SRT	3+	4+	
25	Slow Flight Maneuver	3+		
25	S-1 Pattern	3+	4+	
25	S-3 Pattern	3+	4+	4+
29	Stall Series		4+	3+
27	Wingover		3+	
27	Barrel Roll		3+	
28	Unusual Attitudes		4+	4+
28	Partial Panel Unusual Attitudes		4+	
16	High Altitude Penetration		3+	3+
18	TACAN/VOR DME Approach	3+	3+	3+
18 4	Partial Panel TACAN/VOR DME Approach		3+	
18	VOR Approach		3+	
18	ASR Approach		3+	3+
17	ILS Approach		3+	3
17 4	Partial Panel ILS Approach		3+	
17	PAR Approach	3+	3+	3
17 18 4	Partial Panel PAR Approach		3+	3+

MIF continued on next page.

BASIC INSTRUMENTS STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**BI3104**	**BI3205**	**BI4103**
17	No-Gyro GCA		3+	3+
20	Missed Approach	3+	3+	3+
20 4	Partial Panel Missed Approach		3+	3+
	Special Syllabus Requirements			1

7. Radio Instruments Stage MIF

Simulator/Device Event

RADIO INSTRUMENTS STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**RI3104**	**RI3204**	**RI4106**
1	General Knowledge/Procedures	4+	4+	4+
2	Emergency Procedures	3+	3+	3+
3	Headwork/Situational Awareness	3+	3+	3+
4	Basic Airwork	3+	4+	4+
4	Partial Panel Airwork	3+	3+	3+
5	Mission Planning/Briefing/Debriefing	4+	4+	4+
6	Communications	3+	3+	3+
7	Ground Operations	3+	3+	4+
8	Flight Admin	3+	3+	3+
10	Takeoff	3+	4+	1
11	Departure	3+	4+	4+
12 25	Climbs/Descents	3+		
12	Enroute Navigation		4+	3+
12	Intercept/Maintain Course	3+		

MIF continued on next page.

RADIO INSTRUMENTS STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**RI3104**	**RI3204**	**RI4106**
12	Nonsystem Point-to-Point Navigation	3+	3+	3+
12	System Point-to-Point Navigation	3+	3+	3+
12	Arcing	3+		
15	Holding	3+	4+	4+
16	High Altitude Penetration	3+	4+	4+
18	TACAN/VOR DME Approach	3+	4+	3+
18 4	Partial Panel TACAN/VOR DME Approach	3+	3+	3+
18	VOR Approach		4	
18	ASR Approach	3+	4+	
18 4	Partial Panel ASR Approach			3+
17	ILS Approach	3+	4+	3+
17 4	Partial Panel ILS Approach	3+	3+	3+
17 4	PAR Approach	3+	4+	3+
17 4	Partial Panel PAR Approach	3+	3+	3+
18	Localizer Approach	3+		
18 4	Partial Panel Localizer Approach		3+	
18	Localizer Back Course Approach		3	
21	Low Oil Approach		3+	3+
21	Min/Emergency Fuel Approach	3+		3+
17	No-Gyro GCA	3+	3+	3+
19	Circling Approach		3+	1
19	Instrument-to-Visual Scan		3+	
20	Missed Approach	3+	4+	4+
20 4	Partial Panel Missed Approach	3+	3+	3+

8. Airways Navigation Stage MIF

Simulator/Device Event

AIRWAYS NAVIGATION STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**AN3106**	**AN2101**	**AN4105**
1	General Knowledge/Procedures	4+	4+	4+
2	Emergency Procedures	4+	4+	4+
3	Headwork/Situational Awareness	3+	3+	3+
4	Basic Airwork	4+	4+	4+
4	Partial Panel Airwork	4+	3+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+	4+
6	Communications	3+	3+	3+
7	Ground Operations	4+	4+	4+
8	Flight Admin	4+	4+	4+
2	Start Malfunctions		3+	
2	Ground Emergencies		3+	
2	Aborted Takeoff		3+	
2	Takeoff EPs		3+	
2	Engine EPs		3+	
2	Flight Control EPs		3+	
2	Gear EPs		3+	
2	Electrical EPs		3+	
2	Hydraulic EPs		3+	
2	Lost Communications	4+	4+	
10	Takeoff	4+	4+	4+
11	Departure	4+	4+	4+
12	Enroute Navigation	4+		4+
12	Nonsystem Point-to-Point Navigation	3+		3+
12	System Point-to-Point Navigation	3+		3+

MIF continued on next page.

AIRWAYS NAVIGATION STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**AN3106**	**AN2101**	**AN4105**
18	Route/Destination Change	3+		3
15	Holding	4+		
13	Descent/Field Entry	4+	4+	4+
12	STAR	3+		3
17	Precision Approach	4+	4	4+
18	Non-Precision Approach	4+	4	4+
17 18 4	Partial Panel Approach	4+		4+
21	Min/Emergency Fuel Approach	4+		4+
21	Low Oil Approach	4+		4+
17	No-Gyro GCA	4+		4+
19	Circling Approach	3+		3+
19	Instrument-to-Visual Scan	3+		3+
20	Missed Approach	4+		4+
20 4	Partial Panel Missed Approach	4+		4+
23	Landing(s)	3		3+

9. Instrument Rating Stage MIF

Simulator/Device Event
Check Flight Event

INSTRUMENT RATING STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**IR3104**	**IR4102**	**IR4290**
1	General Knowledge/Procedures	4+	4+	4+
2	Emergency Procedures	4+	4+	4+
3	Headwork/Situational Awareness	4+	4+	4+
4	Basic Airwork	4+	4+	4+
4	Partial Panel Airwork	4+	4+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+	4+
6	Communications	4+	4+	4+
7	Ground Operations	4+	4+	4+
8	Flight Admin	4+	4+	4+
2	Lost Communications	4+		
10	Takeoff	4+	1	1
11	Departure	4+	4+	4+
12	Enroute Navigation	4+	4+	4+
12	Nonsystem Point-to-Point Navigation	4+	4+	4
12	System Point-to-Point Navigation	4+	4+	4
18	Route/Destination Change	4+	4	4
15	Holding	4+	4	4
13	Descent/Field Entry	4+	4+	4+
12	STAR	4+	4	4
17	Precision Approach	4+	4+	4+
18	Non-Precision Approach	4+	4+	4+
17 18 4	Partial Panel Approach	4+	4+	4+

MIF continued on next page.

INSTRUMENT RATING STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**IR3104**	**IR4102**	**IR4290**
21	Min/Emergency Fuel Approach	4+		
21	Emergency Instrument Approach		4+	4+
21	Emergency Oil Approach	4+		
17	No-Gyro GCA	4+	4+	4
19	Circling Approach	4+		
20	Missed Approach	4+	4+	4+
204	Partial Panel Missed Approach	4+	4+	4+
19	Instrument-to-Visual Scan	4+		
23	Landing(s)	3		

10. Advanced Airways Navigation Stage MIF

Simulator/Device Event

ADVANCED AIRWAYS NAVIGATION STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**AN3201**	**AN4201**	**AN3301**	**AN4302**	**AN4401**	**AN4502**
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+
3	Headwork/Situational Awareness	3+	4+	4+	4+	4+	4+
4	Basic Airwork	4+	4+	4+	4+	4+	1
4	Partial Panel Airwork	4+	4+	4+	4+	4+	
5	Mission Planning/ Briefing/Debriefing	4+	4+	4+	4+	4+	4+
6	Communications	4+	4+	4+	4+	4+	1

MIF continued on next page.

ADVANCED AIRWAYS NAVIGATION STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**AN3201**	**AN4201**	**AN3301**	**AN4302**	**AN4401**	**AN4502**
7	Ground Operations	4+	4+	4+	4+	4+	1
2	Start Malfunctions			4+			
8	Flight Admin	4+	4+	4+	4+	4+	1
10	Takeoff	4+	4+	4+	4+	4+	1
11	Departure	4+	4+	4+	4+	4+	1
12	Enroute Navigation	3+	4+	4+	4+	4+	1
2	In-Flight EPs	3+		3+			
2	Lost Communications	3+		3+			
18	Route/Destination Change	3+		4+	4	4	
15	Holding			4	4	4	
16	High Altitude Penetration					4+	
12	STAR			4+			
13	Descent/Field Entry	3+	3+	4+	4+	4+	1
17	Precision Approach	3+	4+	4+	4+	4+	1
18	Non-precision Approach	3+	4+	4+	4+	4+	1
17 18 4	Partial Panel Approach	3+		4+	4+		
21	Emergency Instrument Approach				4+	4+	
20	Missed Approach	3+	4+		4+	4+	
17 18	Transition to Full-Flap off Inst Approach		3+				
23	Night Landing at Field without a Lens		3				
19	Circling Approach-to-Land	3+					
23	Landings	3+	3+	3+	3+	3+	1

Blk #	Media	Title	Events	Hrs	Blk Name
CR11	MIL	BI/RI Course Rules	1	1.0	CR1

1. Prerequisites. ASI0103-6.

2. Events

CR1101	MIL	BI/RI Course Rules	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
CRM11	MIL	Crew Resource Management	1	3.0	CRM

1. Prerequisites. ASI0103-6.

2. Events

CRM1101	MIL	Crew Resource Management	3.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
ORM11	MIL	Operational Risk Management	1	1.0	ORM

1. Prerequisites. ASI0103-6.

2. Events

ORM1101	MIL	Operational Risk Management		1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
SEA11	MIL/Lect	NACES Flight Physiology	2	3.0	SEAT

1. Prerequisite. ENG0128 (Engineering Block Exam).

2. Events

SEA1101	MIL	NACES Flight Physiology	2.0
SEA1102	Lect	Ejection Seat Lecture/NACES Preflight	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
CO11	CAI/MIL/ Lab	Cockpit Orientation	7	7.3	CO1

1. Prerequisites

   a. ENG0128 (Engineering Block Exam).

   b. CO3202 prior to CO1106-7.

2. Events

CO1101	CAI	Engine Start and Poststart	1.0
CO1102	CAI	Multifunction Display and Navigation System Operation	1.2
CO1103	CAI	Display System (HUD)	0.8
CO1104	CAI	Waypoint Navigation Procedures	1.2
CO1105	MIL	Velocity Vector	1.0
CO1106	CAI	Exterior Preflight Checks	0.6
CO1107	LAB	Aircraft Preflight/Strap-in Procedures	1.5

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
EP11	MIL/CAI	Emergency Procedures	11	14.5	EP1

1. Prerequisite. ENG0128 (Engineering Block Exam).

2. Events

EP1101	MIL	Start, Ground, and Takeoff Emergency Procedures I	1.5
EP1102	MIL	Start, Ground, and Takeoff Emergency Procedures II	1.5
EP1103	MIL	Operational and Ejection Emergency Procedures	1.0
EP1104	MIL	Engine and Hydraulic Emergency Procedures I	1.5
EP1105	MIL	Engine and Hydraulic Emergency Procedures II	1.5
EP1106	CAI Test	Emergency Flight Procedures Exam I	1.0
EP1107	MIL	Canopy and Flight Control Emergency Procedures	1.0
EP1108	MIL	Electrical and Indicator Emergency Procedures I	1.5
EP1109	MIL	Electrical and Indicator Emergency Procedures II	1.5
EP1110	MIL	Operational and Landing Emergency Procedures	1.5
EP1111	CAI Test	Emergency Flight Procedures Exam II	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
BI11	MIL/CAI	Basic Instrument Flight Procedures	10	10.5	BIFP

1. Prerequisites

   a. AER0107 (Aeronautics Block Exam).

   b. MET0104 (Meteorology Exam).

   c. NAV0109 (Instrument Navigation Exam).

   d. ENG0128 (Engineering Block Exam).

2. Events

BI1101	MIL	Instrument Takeoff and Climb with DP	1.3
BI1102	CAI	Introduction to Basic Instruments	0.7
BI1103	CAI	Instrument Turns	0.8
BI1104	CAI	Basic Flight Maneuvers and Transitions	0.8
BI1105	CAI	"S" Patterns	0.8
BI1106	MIL	Stalls, Unusual Attitudes, and Aerobatics	1.1
BI1107	MIL	TACAN/VOR Procedures	1.5
BI1108	MIL	GCA/ILS Procedures	1.5
BI1109	MIL	Instrument Failures and GPS/INS Failures	1.0
BI1110	CAI Test	Basic Instrument Stage Exam	1.0

3. Syllabus Note. No more than one BI simulator per day shall be scheduled during BI31.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
RI11	MIL/CAI/ Lect	Radio Instrument Flight Procedures	6	8.5	RIFP

1. Prerequisites

   a. BI3205.

   b. NAV0109 (Instrument Navigation Exam) prior to RI1106.

2. Events

RI1101	MIL	Introduction to Radio Instruments	2.5
RI1102	CAI	TACAN and VOR Procedures	0.5
RI1103	CAI	TACAN and VOR Holding Procedures	0.5
RI1104	CAI	TACAN/VOR/ILS/PAR/ASR Approach Procedures	1.0
RI1105	CAI Test	Radio Instrument Stage Exam	1.0
RI1106	Lect	JMPS Enroute Flight Planning	3.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
AN11	MIL	Airways Navigation Flight Procedures	1	2.0	ANFP

1. Prerequisite. FAM4490.

2. Events

AN1101	MIL	Airways Navigation Flight Procedures	2.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
IR11	CAI/MIL/ Exam	Instrument Rating Flight Procedures	3	4.0	IRFP

1. Prerequisite. AN1101 (Airways Navigation Flight Procedures).

2. Events

IR1101	CAI	Meteorology Review	1.0
IR1102	MIL	Instrument Rules (IR) Review	2.0
IR1103	P/P Exam	Instrument Rating Open-Book Exam (Pencil)	1.0

3. Syllabus Note. No more than 60 days shall elapse between completion of the IR1103 exam and successful completion of IR4290 or IR1101-3 shall be retaken.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
CO31	IFT/OFT	Cockpit Orientation Simulators	2	3.0	1.5

1. Prerequisites

a. ASI0109 (Introduction to TIMS II).

b. SEA1102 (Ejection Seat Lecture/NACES Preflight).

c. CO1105 (Velocity Vector).

2. Syllabus Notes

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

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

c. Only one event per day shall be flown in block.

d. The student will perform the following procedures IAW FTI, NATOPS, and SOP on the indicated event:

(1) CO3101. Inventory flight equipment, don flight equipment, canopy/ejection seat preflight, strap-in procedures, cockpit preflight checklist, prestart checklist, aircraft start, poststart checklist, pretaxi checklist, ground communications, taxi checklist, flight instrument checks, takeoff clearance, takeoff checklist, engine checks, takeoff, departure communications, 10,000-feet checks/15-minute report, descent/penetration checklist, landing checklist, after landing checklist, shutdown checklist, and normal egress procedures. Enter mission data into display system.

(2) CO3102. Don flight equipment, canopy/ejection seat preflight, strap-in procedures, blindfold cockpit check, cockpit preflight checklist, prestart checklist, aircraft start, poststart checklist, ground communications, taxi checklist, aircraft taxi, flight instrument checks, takeoff clearance, takeoff checklist, engine checks, takeoff, departure communications, 10,000-feet checks/15-minute report, enroute communications, approach control communications, descent/ penetration checklist, VFR approach-to-pattern initial, communications to tower, landing checklist, after landing checklist, after landing communications, shutdown checklist, and normal egress procedures.

3. Special Syllabus Requirements. None.

4. Discuss Items

CO3101
QOD, IFT operation (if applicable), ground signals, final checker, and shutdown signals.

CO3102
QOD, OFT operation, ground signals, and final checker.

5. Block MIF

CTS REF	MANEUVER	CO3102
1	General Knowledge/Procedures	3+
3	Headwork/Situational Awareness	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	2+
7	Ground Operations	2+
8	Flight Admin	3+
11	Departure	2+
13	Descent/Field Entry	2+

Blk #	Media	Title	Events	Hrs	H/X
CO32	IFT/OFT	Cockpit Orientation Simulators	2	3.0	1.5

1. Prerequisites

a. CO3102.

b. BI1110 (Basic Instrument Stage Exam).

2. Syllabus Notes

a. CO3201 and CO3202 should be flown with different instructors.

b. CO32 block will meet currency requirements for the BI stage of training (lecture and simulators).

3. Special Syllabus Requirements. None.

4. Discuss Items

CO3201-2
QOD, control instruments, performance instruments, position instruments, instrument scan, and scan technique.

5. Block MIF

CTS REF	MANEUVER	CO3202
1	General Knowledge/Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	2+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	2+
7	Ground Operations	3+
8	Flight Admin	3+
25	Turn Pattern	2+
25	One-Half Standard Rate Turn (SRT)	2+
25	Level Speed Change	2+
25	Slow Flight Maneuver	2+
25	S-1 Pattern	2+
16	Penetration	2+
18	TACAN Approach	2+
17	PAR Approach	2+

Blk #	Media	Title	Events	Hrs	H/X
EP21	IFT/OFT	Emergency Procedures	4	5.2	1.3

1. Prerequisites

a. CO3202.

b. ORM1101 (Operational Risk Management).

c. CRM1101 (Crew Resource Management).

d. EP1106 (Emergency Flight Procedures Exam I).

e. EP1111 (Emergency Flight Procedures Exam II) prior to EP2103.

2. Syllabus Notes. The student will perform the following procedures IAW FTI, NATOPS, and SOP on the indicated event:

a. EP2101. No READY light, wet start, low oil pressure on start, hot start, ground emergency communications, unsafe gear (up), fuel leak, LP fuel pump failure, boost pump failure, initial shot failure, engine fire no secondary indications, GINA failure, engine fire on shutdown, and emergency egress.

b. EP2102. Engine fire on start, hung start, GTS fire, trim malfunctions, engine fire with secondary indications, engine overspeed, engine flameout, airstart (high altitude), ECA failure (full trim), engine vibration, engine stalls, engine failure (seizure), oil pressure failure, ejection, and ground emergency communications.

c. EP2103. Hot start, bleed valve failure, engine failure on takeoff, generator failure, inverter failure, total electrical failure, uncommanded RAT extension, HYD 1 EDP failure, HYD 2 EDP failure, HYD 1 and 2 failure RAT OK, total HYD failure, accumulator failure, CONTR AUG failure, emergency communications, and MFD failure.

d. EP2104. Blown tire during takeoff, runaway rudder trim, rudder hard-over, runaway stabilator trim, runaway aileron trim, aileron trim failure, speedbrake fails to retract, split flaps, pitot static malfunctions, main/nose gear unsafe down, gear emergency extend failure, brake accumulator failure, brake failure after touchdown, ECS failure, GINA failure, emergency communications, and ejection.

3. Special Syllabus Requirements. None.

4. Discuss Items

EP2101
QOD, canopy malfunctions, engine fire on deck, and airstart.

EP2102
QOD, ground ejection situations, engine stalls, short-field arrested landing, and go-around.

EP2103
QOD, gear door malfunctions, and long-field arrested landing.

EP2104
QOD, smoke/fumes in cockpit, rudder trim failure, stabilator trim failure, flaps fail to retract, slats fail to retract, flaps fail to extend, slats fail to extend, split slats, gear unsafe after extension, gear door malfunctions after extension, and go-around.

5. Block MIF

CTS REF	MANEUVER	EP2104
1	General Knowledge/Procedures	3+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	2
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	2+
7	Ground Operations	3+
8	Flight Admin	3+
2	Start Malfunctions	3+
2	Ground Emergencies	3+
2	Aborted Takeoff	3+
2	Takeoff EPs	3+
2	Engine EPs	3+
2	Flight Control EPs	3+
2	Gear EPs	3+
2	Electrical EPs	3+
2	Hydraulic EPs	3+
2	ECS EPs	3+
2	Fuel System EPs	3+
2	Ejection	3+

Blk #	Media	Title	Events	Hrs	H/X
BI31	IFT/OFT	Basic Instrument Simulators	4	6.0	1.5

1. Prerequisites

a. BI1110 (Basic Instrument Stage Exam).

b. CR1101 (BI/RI Course Rules).

c. EP2104.

2. Syllabus Notes

a. S-3 pattern will not be flown until BI3103.

b. Introduce partial panel during BI3104.

c. During this block, students must fly at least two PAR approaches and two TACAN/VOR/DME approaches.

d. CO32 block will meet currency requirements for the BI stage of training (lecture and simulators).

e. HUD/HUD Repeater shall not be used.

f. Only nonsystem point-to-points will be practiced in this block.

g. Only one event per day shall be flown in block.

3. Special Syllabus Requirements. None.

4. Discuss Items

BI3101-2
QOD, instrument scan, control instruments, performance instruments, and position instruments.

BI3103
QOD, main ADI failure, GINA malfunctions, turn-and-slip failure, HSI failure, and MFD failure.

BI3104
QOD and partial panel.

5. Block MIF

CTS REF	MANEUVER	BI3104
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
4	Partial Panel Airwork	2+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
10	Takeoff	3+
11	Departure	3+
12 25	Climbs/Descents	3+
12	Enroute Navigation	3+
12	Intercept/Maintain Course	3+
12	Nonsystem Point-to-Point Navigation	2
12	Arcing	3+
25	Turn Pattern	3+
25	One-Half Standard Rate Turn	3+
25	Standard Rate Turn	3+
25	Level Speed Change	3+
25	Level Speed Change in One-Half SRT	3+
25	Slow Flight Maneuver	3+
25	S-1 Pattern	3+
25	S-3 Pattern	3+
18	TACAN/VOR/DME Approach	3+
17	PAR Approach	3+
20	Missed Approach	3+

Blk #	Media	Title	Events	Hrs	H/X
BI32	IFT/OFT	Basic Instrument Simulators	5	7.5	1.5

1. Prerequisite. BI3104.

2. Syllabus Notes

a. During this block, students must fly at least the approaches listed below (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

High Altitude Penetration	3
TACAN/VOR DME	3 full panel
	1 partial panel
VOR	1
ASR	2
ILS	3 full panel
	1 partial panel
PAR	3 full panel
	1 partial panel
No-Gyro GCA	1

b. Only nonsystem point-to-points will be practiced in this block.

c. HUD/HUD Repeater shall not be used.

3. Special Syllabus Requirements. None.

4. Discuss Items

BI3201-5
QOD.

5. Block MIF

CTS REF	MANEUVER	BI3205
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
4	Partial Panel Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
10	Takeoff	3+
11	Departure	3+
12 25	Climbs/Descents	3+
12	Enroute Navigation	3+
12	Intercept/Maintain Course	3+
12	Nonsystem Point-to-Point Navigation	2
12	Arcing	3+
25	Turn Pattern	4+
25	One-Half Standard Rate Turn	4+
25	Standard Rate Turn	4+
25	Level Speed Change	4+
25	Level Speed Change in One-Half SRT	4+
25	S-1 Pattern	4+
25	S-3 Pattern	4+
29	Stall Series	4+
27	Wingover	3+
27	Barrel Roll	3+
28	Unusual Attitudes	4+

MIF continued on next page.

CTS REF	MANEUVER	BI3205
28	Partial Panel Unusual Attitudes	4+
16	High Altitude Penetration	3+
18	TACAN/VOR DME Approach	3+
18 4	Partial Panel TACAN/VOR DME Approach	3+
18	VOR Approach	3+
18	ASR Approach	3+
17	ILS Approach	3+
17 4	Partial Panel ILS Approach	3+
17	PAR Approach	3+
17 18 4	Partial Panel PAR Approach	3+
17	No-Gyro GCA	3+
20	Missed Approach	3+
20 4	Partial Panel Missed Approach	3+

Blk #	Media	Title	Events	Hrs	H/X
BI41	T-45	Basic Instruments	3	4.5	1.5

1. Prerequisites

a. BI3205.

b. CO1107 (Aircraft Preflight/Strap-in Procedures).

2. Syllabus Notes

a. Fly events from the rear cockpit with hood.

b. BI4101 brief shall be 2+00 prior to scheduled takeoff.

c. BI4101 and BI4103 shall be conducted within the local working area and include S-3 pattern, timed turns, stalls, unusual attitudes and partial panel.

d. Only one event per day shall be flown in block.

e. BI4102 shall fly only the following maneuvers:

Departure/SID	
TACAN/VOR DME Approach	1 full panel
ASR	1
ILS/PAR	1
PAR	1 partial panel
No-Gyro GCA	1

f. Only nonsystem point-to-points will be practiced in this block.

g. During this block, students must fly at least the maneuvers listed below (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

High Altitude Penetration	1
TACAN/VOR DME	1 full panel
ASR	1 full panel
Precision Approaches (ILS, PAR)	4 full panel
PAR	1 partial panel
No-Gyro GCA	1

3. Special Syllabus Requirement. Instructor must demonstrate manup and seat preflight on BI4101.

4. Discuss Items

BI4101
QOD, RADALT usage, approach configurations, and compressor stall.

BI4102-3
QOD.

5. Block MIF

CTS REF	MANEUVER	BI4103
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
4	Partial Panel Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
10	Takeoff	1
11	Departure	3+
12 25	Climbs/Descents	3+
12	Enroute Navigation	3+
12	Intercept/Maintain Course	3+
12	Nonsystem Point-to-Point Navigation	2
12	Arcing	3+
25	Turn Pattern	4+
25	S-3 Pattern	4+
29	Stall Series	3+

MIF continued on next page.

CTS REF	MANEUVER	BI4103
28	Unusual Attitudes	4+
16	High Altitude Penetration	3+
18	TACAN/VOR DME Approach	3+
18	ASR Approach	3+
17	ILS Approach	3
17	PAR Approach	3
17 18 4	Partial Panel PAR Approach	3+
17	No-Gyro GCA	3+
20	Missed Approach	3+
20 4	Partial Panel Missed Approach	3+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
RI31	IFT/OFT	Radio Instruments	4	6.0	1.5

1. Prerequisites

a. BI4103.

b. RI1105 (Radio Instrument Stage Exam).

c. RI1106 (JMPS Enroute Flight Planning).

2. Syllabus Notes

a. Handouts listing the route of flight to plan and study for each simulator event shall be obtained by SNAs from book issue at the ground training building.

b. SNAs shall bring a ***copy*** of their DD-175 and single-engine jet log to all simulator events for instructor use.

c. RI3101 and RI3102 may be flown in either the IFT or the OFT.

d. RI3103 and RI3104 shall be flown in the OFT.

e. HUD/HUD Repeater shall not be used.

f. During this block, students must fly at least the approaches listed below (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

High Altitude Penetration Approach	1
TACAN/VOR DME	1 full panel
	1 partial panel
ASR	1
ILS	2 full panel
	1 partial panel
PAR	1 full panel
	1 partial panel
Localizer Approach	1
Min/Emergency Fuel Approach	1
No-Gyro GCA	1

3. Special Syllabus Requirements. None.

4. Discuss Items

RI3101
QOD, radial intercepts, and point-to-point navigation.

RI3102
QOD and MFD failure.

RI3103
QOD and minimum/emergency fuel GCA.

RI3104
QOD, lost communication, and enroute descent.

5. Block MIF

CTS REF	MANEUVER	RI3104
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
4	Partial Panel Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
10	Takeoff	3+
11	Departure	3+
12 25	Climbs/Descents	3+
12	Intercept/Maintain Course	3+
12	Nonsystem Point-to-Point Navigation	3+
12	System Point-to-Point Navigation	3+

MIF continued on next page.

CTS REF	MANEUVER	RI3104
12	Arcing	3+
15	Holding	3+
16	High Altitude Penetration	3+
18	TACAN/VOR DME Approach	3+
18 4	Partial Panel TACAN/VOR DME Approach	3+
18	ASR Approach	3+
17	ILS Approach	3+
17 4	Partial Panel ILS Approach	3+
17 4	PAR Approach	3+
17 4	Partial Panel PAR Approach	3+
18	Localizer Approach	3+
21	Min/Emergency Fuel Approach	3+
17	No-Gyro GCA	3+
20	Missed Approach	3+
20 4	Partial Panel Missed Approach	3+

Blk #	Media	Title	Events	Hrs	H/X
RI32	IFT/OFT	Radio Instruments	4	6.0	1.5

1. Prerequisite. RI3104.

2. Syllabus Notes

a. RI3201 may be flown in either the IFT or the OFT; RI3202-4 shall be flown in the OFT.

b. RI3201 will introduce radar altimeter failure, VOR holding, localizer approach partial panel, and emergency oil instrument approach.

c. RI3202 will introduce visual takeoff, low ceiling ITO, localizer back course approach (if able), and instrument-to-visual scan.

d. RI3203 will introduce direct routing and circling approach-to-land.

e. HUD shall not be used except on RI3203-4, where HUD usage will be introduced by flying one precision and one non-precision approach.

f. RI3204 will introduce circle-to-land with HUD.

g. During this block, students must fly at least the approaches listed below (approaches may be combined, e.g., a low oil PAR may be logged as a PAR and Low Oil Approach):

High Altitude Penetration	1 full panel
	1 partial panel
TACAN/VOR DME	1 full panel
	1 partial panel
ILS	2 full panel
	1 partial panel
PAR	1 full panel
	1 partial panel
ASR	2 full panel
Localizer	1 partial panel
Low Oil Approach	2
Circle-to-land approach	1
No-gyro GCA	1

h. Student will perform the following:

RI3203-4
HUD usage.

RI3204
Circle-to-land with HUD.

3. Special Syllabus Requirements. None.

4. Discuss Items

RI3201
QOD, marker beacon failure, and oil pressure warning.

RI3202-4
QOD.

5. Block MIF

CTS REF	MANEUVER	RI3204
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
4	Partial Panel Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
12	Nonsystem Point-to-Point Navigation	3+

MIF continued on next page.

CTS REF	MANEUVER	RI3204
12	System Point-to-Point Navigation	3+
15	Holding	4+
16	High Altitude Penetration	4+
18	TACAN/VOR DME Approach	4+
18 4	Partial Panel TACAN/VOR DME Approach	3+
18	VOR Approach	4
18	ASR Approach	4+
17	ILS Approach	4+
17 4	Partial Panel ILS Approach	3+
17 4	PAR Approach	4+
17 4	Partial Panel PAR Approach	3+
18 4	Partial Panel Localizer Approach	3+
18	Localizer Back Course Approach	3
21	Low Oil Approach	3+
17	No-Gyro GCA	3+
19	Circling Approach	3+
19	Instrument-to-Visual Scan	3+
20	Missed Approach	4+
20 4	Partial Panel Missed Approach	3+

Blk #	Media	Title	Events	Hrs	H/X
RI41	T-45	Radio Instruments	6	9.6	1.6

1. Prerequisite. RI3204.

2. Syllabus Notes

a. Fly events from the rear cockpit with hood.

b. Students shall contact their instructor the day prior to brief to determine the route of flight to plan.

c. Students shall bring a ***copy*** of a completed DD-175 and jet log to the brief for instructor use during the flight.

d. During this block, students must fly at least the approaches listed below (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

High Altitude Penetration	3
TACAN/VOR DME	2 full panel
	2 partial panel
ASR	2 partial panel
ILS	2 full panel
	2 partial panel
PAR	2 full panel
	1 partial panel
Low Oil Approach	2
Min Fuel/Emer Fuel Approach	2
No-Gyro GCA	2

e. Discuss and introduce a circle-to-land approach, if able, on one flight in this block. Emphasis shall be placed on instrument-to-visual scan procedures.

3. Special Syllabus Requirements. None.

4. Discuss Items

RI4101-6
QOD, circle-to-land, and instrument-to-visual scan.

5. Block MIF

CTS REF	MANEUVER	RI4106
1	General Knowledge/Procedures	4+
2	Emergency Procedures	3+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
4	Partial Panel Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	3+
10	Takeoff	1
11	Departure	4+
12	Enroute Navigation	3+
12	Nonsystem Point-to-Point Navigation	3+
12	System Point-to-Point Navigation	3+
15	Holding	4+
16	High Altitude Penetration	4+
18	TACAN/VOR DME Approach	3+
18 4	Partial Panel TACAN/VOR DME Approach	3+
18 4	Partial Panel ASR Approach	3+
17	ILS Approach	3+
17 4	Partial Panel ILS Approach	3+
17 4	PAR Approach	3+
17 4	Partial Panel PAR Approach	3+
21	Low Oil Approach	3+

MIF continued on next page.

CTS REF	MANEUVER	RI4106
21	Min/Emergency Fuel Approach	3+
17	No-Gyro GCA	3+
19	Circling Approach	1
20	Missed Approach	4+
204	Partial Panel Missed Approach	3+

Blk #	Media	Title	Events	Hrs	H/X
AN31	OFT	Airways Navigation	6	9.0	1.5

1. Prerequisite. AN1101 (Airways Navigation Flight Procedures).

2. Syllabus Notes

a. Handouts listing the route of flight to plan and study for each simulator event shall be obtained by students from book issue at the ground training building.

b. Students shall bring a ***copy*** of their DD-175 and single-engine jet log to all simulator events for instructor use.

c. The HUD will be available for use on all AN stage simulators.

d. AN3104 will introduce unfamiliar field ground operations and erroneous GINA data.

e. AN3105 will introduce a STAR.

f. During this block, students shall fly at least the approaches listed below (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

TACAN/VOR DME	2 full panel
	1 partial panel
VOR	1 full panel
	1 partial panel
ASR	2 full panel
ILS	4 full panel
	1 partial panel
PAR	1 full panel
	1 partial panel
No-Gyro GCA	2
STAR	1
Low Oil Approach	1
Min Fuel/Emergency Fuel Approach	1
Circle-to-Land	1

3. Special Syllabus Requirements. None.

4. Discuss Items

AN3101
QOD, weather criteria, lost communications, and enroute descent.

AN3102-6
QOD, enroute weather updates, and in-flight fuel calculations.

5. Block MIF

CTS REF	MANEUVER	AN3106
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	4+
2	Lost Communications	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
12	Nonsystem Point-to-Point Navigation	3+
12	System Point-to-Point Navigation	3+
18	Route/Destination Change	3+
15	Holding	4+
13	Descent/Field Entry	4+
12	STAR	3+
17	Precision Approach	4+

MIF continued on next page.

CTS REF	MANEUVER	AN3106
18	Non-Precision Approach	4+
17 18 4	Partial Panel Approach	4+
21	Min/Emergency Fuel Approach	4+
21	Low Oil Approach	4+
17	No-Gyro GCA	4+
19	Circling Approach	3+
19	Instrument-to-Visual Scan	3+
20	Missed Approach	4+
20 4	Partial Panel Missed Approach	4+
23	Landing(s)	3

Blk #	Media	Title	Events	Hrs	H/X
AN21	OFT	Airways Navigation EP	1	1.3	1.3

1. Prerequisite. AN3106.

2. Syllabus Notes

a. The HUD will be available for use.

b. The student will perform the following procedures IAW FTI, NATOPS, and SOP on this event: start malfunction/emergency (any), takeoff emergency (any), engine flameout, electrical emergencies (any), HYD 2 EDP failure, CONTR AUG failure, runaway stabilator trim, engine fire (secondary indications), lost communications, ejection, main/nose gear unsafe down, brake accumulator failure, and postlanding emergencies.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD.

5. Block MIF

CTS REF	MANEUVER	AN2101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
4	Partial Panel Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	4+
2	Start Malfunctions	3+
2	Ground Emergencies	3+
2	Aborted Takeoff	3+
2	Takeoff EPs	3+
2	Engine EPs	3+
2	Flight Control EPs	3+
2	Gear EPs	3+
2	Electrical EPs	3+
2	Hydraulic EPs	3+
2	Lost Communications	4+
10	Takeoff	4+
11	Departure	4+
13	Descent/Field Entry	4+
17	Precision Approach	4
18	Non-Precision Approach	4

Blk #	Media	Title	Events	Hrs	H/X
AN41	T-45	Airways Navigation	5	7.4	See Syl Note

1. Prerequisites

a. AN2101.

b. FAM4501.

c. RI4106.

2. Syllabus Notes

a. Allow 1.5 H/X for AN4101-4 and 1.4 H/X for AN4105.

b. It is highly recommended that Navigation flights be conducted outside the local flying areas to the maximum extent possible.

c. Two out-and-in flights (outside the local area) are required in the AN/IR stages prior to IR4290. A cross-country with at least four legs may be substituted for this requirement.

d. Students shall contact their instructor the day prior to determine the route of flight to plan.

e. Students shall bring a ***copy*** of a completed DD-175 and jet log to the brief for instructor use during the flight.

f. A minimum of two flights, but no more than three, in block shall be flown from the front cockpit. ***Instructors should note that front-cockpit night flights may be the student's first front-seat night landing in the T-45.*** All other flights within block shall be flown from the rear cockpit with the instrument hood installed.

g. The HUD will be available for use on all front-seat AN stage flights.

h. During this block, students shall fly at least the approaches listed below (approaches may be combined where appropriate, e.g., a Low Oil PAR may be logged as a Low Oil and a Precision Approach):

Precision Approach	4 full panel 2 partial panel
Non-Precision Approach	4 full panel 2 partial panel
Low Oil Approach	1
Min/Emer Fuel Approach	1
No-Gyro GCA	1
Circle-to-Land	1 required

3. Special Syllabus Requirements. None.

4. Discuss Items

AN4101, AN4103, AN4104
QOD, in-flight emergencies, instrument-to-visual scan, night landings, and enroute descents.

AN4102, AN4105
QOD, in-flight emergencies, fuel planning, lost communications, and route/destination change.

5. Block MIF

CTS REF	MANEUVER	AN4105
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+

MIF continued on next page.

CTS REF	MANEUVER	AN4105
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
12	Nonsystem Point-to-Point Navigation	3+
12	System Point-to-Point Navigation	3+
18	Route/Destination Change	3
13	Descent/Field Entry	4+
12	STAR	3
17	Precision Approach	4+
18	Non-Precision Approach	4+
17 18 4	Partial Panel Approach	4+
21	Min/Emergency Fuel Approach	4+
21	Low Oil Approach	4+
17	No-Gyro GCA	4+
19	Circling Approach	3+
19	Instrument-to-Visual Scan	3+
20	Missed Approach	4+
20 4	Partial Panel Missed Approach	4+
23	Landing(s)	3+

Blk #	Media	Title	Events	Hrs	H/X
IR31	IFT/OFT	Instrument Rating	4	6.0	1.5

1. Prerequisite. AN4105.

2. Syllabus Notes

a. Handouts listing the route of flight to plan and study for each simulator event shall be obtained by students from book issue at the ground training building.

b. Students shall bring a ***copy*** of their DD-175 and single-engine jet log to all simulator events for instructor use.

c. IR3101 may be flown in either the IFT or OFT. IR3102-4 shall be flown in the OFT.

d. The HUD/HUD Repeater shall not be utilized.

e. During this block, students must fly at least the approaches and maneuvers listed below (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

TACAN/VOR DME	2 full panel
	2 partial panel
VOR	1 full panel
ASR	1 partial panel
ILS	2 full panel
	1 partial panel
PAR	1 full panel
Min Fuel/Emergency Fuel Approach	1
Route/Destination Change	3
STAR	1
Low Oil Approach	1
No-Gyro GCA	1

3. Special Syllabus Requirements. None.

4. Discuss Items

IR3101
QOD and weather minimums required per OPNAVINST 3710.7.

IR3102
QOD and PIREP.

IR3103
QOD and enroute descent.

IR3104
QOD.

5. Block MIF

CTS REF	MANEUVER	IR3104
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
2	Lost Communications	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
12	Nonsystem Point-to-Point Navigation	4+
12	System Point-to-Point Navigation	4+
18	Route/Destination Change	4+
15	Holding	4+
13	Descent/Field Entry	4+
12	STAR	4+

MIF continued on next page.

CTS REF	MANEUVER	IR3104
17	Precision Approach	4+
18	Non-Precision Approach	4+
17 18 4	Partial Panel Approach	4+
21	Min/Emergency Fuel Approach	4+
21	Emergency Oil Approach	4+
17	No-Gyro GCA	4+
19	Circling Approach	4+
20	Missed Approach	4+
20 4	Partial Panel Missed Approach	4+
19	Instrument-to-Visual Scan	4+
23	Landing(s)	3

Blk #	Media	Title	Events	Hrs	H/X
IR41	T-45	Instrument Rating	2	3.1	See Syl Note

1. Prerequisite. IR3104.

2. Syllabus Notes

a. Allow 1.6 H/X for IR4101 and 1.5 H/X for IR4102.

b. It is highly recommended that these flights be conducted outside the local flying area to the maximum extent possible.

c. Two out-and-in flights (outside the local area) are required in the AN/IR syllabus prior to IR4290. A cross-country with at least four legs may be substituted for this requirement.

d. Students shall contact their instructor the day prior to determine the route of flight to plan.

e. Students shall bring a ***copy*** of a completed DD-175 and jet log to the brief for instructor use during the flight.

f. These events shall be flown from the rear cockpit with hood installed.

g. During this block, students must fly at least the approaches listed below (approaches may be combined where appropriate, e.g., a Low Oil PAR may be logged as a Low Oil and a Precision Approach):

TACAN/VOR DME	1 full panel
	1 partial panel
ILS	1 partial panel
GCA	1 full panel
	1 partial panel
No-Gyro GCA	1
Emergency Instrument Approach	1

3. Special Syllabus Requirements. None.

4. Discuss Items

IR4101-2
QOD, lost communications, and in-flight emergencies.

5. Block MIF

CTS REF	MANEUVER	IR4102
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	1
11	Departure	4+
12	Enroute Navigation	4+
12	Nonsystem Point-to-Point Navigation	4+
12	System Point-to-Point Navigation	4+
18	Route/Destination Change	4
15	Holding	4
13	Descent/Field Entry	4+
12	STAR	4
17	Precision Approach	4+
18	Non-Precision Approach	4+

MIF continued on next page.

CTS REF	MANEUVER	IR4102
17 18 4	Partial Panel Approach	4+
21	Emergency Instrument Approach	4+
17	No-Gyro GCA	4+
20	Missed Approach	4+
20 4	Partial Panel Missed Approach	4+

Blk #	Media	Title	Events	Hrs	H/X
IR42	T-45	NATOPS Instrument Rating Check Flight	1	1.6	1.6

1. Prerequisites

a. IR1103 (Instrument Rating Open-Book Exam).

b. IR4102.

2. Syllabus Notes

a. Event will be flown from the rear cockpit with hood installed.

b. Event shall be flown in the local area, but must have at least one approach not at home field.

c. No more than 60 days shall elapse between completion of the IR1103 exam and successful completion of IR4290 or IR1101-3 shall be retaken.

d. Successful completion of this block shall warrant issuance of a USN standard NATOPS instrument rating. If this NATOPS instrument rating will expire within 180 days of completion of the T-45 Combined Multi-Service Pilot Training System, the instrument rating process shall be updated prior to detaching. If flown to update an instrument rating, this may be flown in the OFT.

e. Two out-and-in flights (outside the local area) are required in the AN/IR syllabus prior to IR4290. A cross-country with at least four legs may be substituted for this requirement.

f. Students shall contact their instructor the day prior to determine the route of flight to plan.

g. Students shall bring a ***copy*** of a completed DD-175 and jet log to the brief for instructor use during the flight.

h. Students shall be prepared to discuss in detail any and all aspects of instrument flight in the brief. These include (but are not limited to): procedures; rules governing instrument flight from FARs, NATOPS, or the AIM; information contained in DOD FLIP publications; and emergency procedures.

i. During this block, students must fly at least the approaches listed below:

Precision approach	1 full panel
	1 partial panel
Non-precision approach	1

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, lost communications, in-flight emergencies, and general instrument procedures and knowledge.

5. Block MIF

CTS REF	MANEUVER	IR4290
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	1
11	Departure	4+
12	Enroute Navigation	4+
12	Nonsystem Point-to-Point Navigation	4
12	System Point-to-Point Navigation	4
18	Route/Destination Change	4
15	Holding	4
13	Descent/Field Entry	4+
12	STAR	4
17	Precision Approach	4+
18	Non-Precision Approach	4+
17 18 4	Partial Panel Approach	4+
21	Emergency Instrument Approach	4+
17	No-Gyro GCA	4
20	Missed Approach	4+
20 4	Partial Panel Missed Approach	4+

Blk #	Media	Title	Events	Hrs	H/X
AN32	OFT	Advanced Airways Navigation	1	1.5	1.5

1. Prerequisite. Intermediate Jet.

2. Syllabus Notes

a. Handouts listing the route of flight to plan and study for each simulator event shall be obtained by students from book issue at the ground training building.

b. Students shall bring a ***copy*** of their DD-175 and single-engine jet log to all simulator events for instructor use.

c. The HUD will be available for use on all simulator and front seat AN stage flights.

d. This event shall be flown in night conditions.

e. Students shall fly the following approaches at a minimum (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

Precision Approach	2
Non-precision Approach	1
Partial Panel Approach	1

3. Special Syllabus Requirements. None.

4. Discuss Item. QOD.

5. Block MIF

CTS REF	MANEUVER	AN3201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	3+
2	In-Flight EPs	3+
2	Lost Communications	3+
1 8	Route/Destination Change	3+
13	Descent/Field Entry	3+
17	Precision Approach	3+
18	Non-precision Approach	3+
17 18 4	Partial Panel Approach	3+
20	Missed Approach	3+
19	Circling Approach-to-Land	3+
23	Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
AN42	T-45	Advanced Airways Navigation	1	1.4	1.4

1. Prerequisite. AN3201.

2. Syllabus Notes

a. Should be flown at night.

b. During this block, students must fly at least one precision approach and one non-precision approach at a field without an IFLOLS or FLOLS.

c. The HUD will be available for use on all simulator and front seat AN stage flights.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, night landing at a field without an IFLOLS or FLOLS, transition from one-half to full flaps for full-stop landing, circle-to-land procedures, uncontrolled airport procedures, and UNICOM voice procedures.

5. Block MIF

CTS REF	MANEUVER	AN4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
13	Descent/Field Entry	3+
17	Precision Approach	4+
18	Non-precision Approach	4+
20	Missed Approach	4+
17 18	Transition to Full-Flap off Inst Approach	3+
23	Night Landing at Field without a Lens	3
23	Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
AN33	OFT	Advanced Airways Navigation	1	1.5	1.5

1. Prerequisites

a. AN4201.

b. ON0105 (ONAV Exam).

2. Syllabus Notes

a. Handouts listing the route of flight to plan and study for each simulator event shall be obtained by students from book issue at the ground training building.

b. Students shall bring a ***copy*** of their DD-175 and single-engine jet log to all simulator events for instructor use.

c. The HUD will be available for use on all simulator and front seat AN stage flights.

d. Students must fly at least one partial panel approach.

e. Lost communications procedures will be conducted at some point during the flight.

3. Special Syllabus Requirements. None.

4. Discuss Item. QOD.

5. Block MIF

CTS REF	MANEUVER	AN3301
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
2	Start Malfunctions	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
2	In-Flight EPs	3+
2	Lost Communications	3+
18	Route/Destination Change	4+
15	Holding	4
12	STAR	4+
13	Descent/Field Entry	4+
17	Precision Approach	4+
18	Non-precision Approach	4+
17 18 4	Partial Panel Approach	4+
23	Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
AN43	T-45	Advanced Airways Navigation	2	3.0	1.5

1. Prerequisite. AN3301.

2. Syllabus Notes

a. Students shall contact their instructor prior to brief to determine the route of flight to plan.

b. Students shall bring a ***copy*** of a completed DD-175 and jet log to the brief for instructor use during the flight.

c. Should be flown outside local area, if able.

d. During this block, students must fly a minimum of four total approaches, to include the items listed below (approaches may be combined, e.g., a Low Oil PAR may be logged as a PAR and a Low Oil Approach):

High Altitude Penetration	1
TACAN/VOR DME	1 full panel
ILS	1 full panel
PAR	1
Partial Panel Approach	1
Emergency Instrument Approach	1

3. Special Syllabus Requirements. None.

4. Discuss Items

AN4301-2
QOD and in-flight emergencies.

5. Block MIF

CTS REF	MANEUVER	AN4302
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
18	Route/Destination Change	4
15	Holding	4
13	Descent/Field Entry	4+
17	Precision Approach	4+
18	Non-precision Approach	4+
17 18 4	Partial Panel Approach	4+
21	Emergency Instrument Approach	4+
20	Missed Approach	4+
23	Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
AN44	T-45	Advanced Airways Navigation	1	1.5	1.5

1. Prerequisite. AN4302.

2. Syllabus Notes

a. Students shall contact their instructor the day prior to determine the route of flight to plan.

b. Students shall bring a ***copy*** of a completed DD-175 and jet log to the brief for instructor use during the flight.

c. During this block, students must fly a minimum of three total approaches, to include the items listed below:

Precision	1
Non-Precision	1
Low Oil Approach	1

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, in-flight emergencies, and lost communications.

5. Block MIF

CTS REF	MANEUVER	AN4401
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
4	Partial Panel Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
18	Route/Destination Change	4
15	Holding	4
16	High Altitude Penetration	4+
13	Descent/Field Entry	4+
17	Precision Approach	4+
18	Non-precision Approach	4+
21	Emergency Instrument Approach	4+
20	Missed Approach	4+
23	Landings	3+

Blk #	Media	Title	Events	Hrs	H/X
AN45	T-45	Advanced Airways Navigation Solo	2	2.4	1.2

1. Prerequisite. AN4401.

2. Syllabus Notes

a. AN45 block is a two-leg cross-country or out-and-in solo flight to build confidence in unfamiliar field operations. AN4501 and AN4502 shall be scheduled consecutively.

b. Students will brief with the Wing/Squadron Duty Officer (WDO/SDO) and will have a completed DD-175 and jet log for the route of flight as well as all pertinent weather and NOTAM information.

c. During this block, students must fly at least one precision approach and one non-precision approach; however, additional approaches are desired if able.

d. Events must be completed within the three weeks prior to CQL4201. If not, then last event shall be reflown as AN4587.

3. Special Syllabus Requirements. None.

4. Discuss Items

AN4501-2
QOD and in-flight emergencies.

5. Block MIF

CTS REF	MANEUVER	AN4502
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	1
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	1
7	Ground Operations	1
8	Flight Admin	1
10	Takeoff	1
11	Departure	1
12	Enroute Navigation	1
13	Descent/Field Entry	1
17	Precision Approach	1
18	Non-precision Approach	1
23	Landings	1

Chapter VI

Navigation Training

This chapter does not apply to Intermediate Jet or Advanced Strike students.

BLANK PAGE

Chapter VII

Formation Training

1. Matrices. The following matrices are an overview of the Formation category. The category includes Formation, Night Formation, and Division Formation stages. The purpose of these matrices is to provide the SNA and IP the easiest way to track progress, regression, and overall status in relation to MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Scheduling. FRM4102 shall not be flown with any other events (excluding lectures) on the same day.

3. Formation Stage MIF

Simulator/Device Event

FORMATION STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**FRM3103**	**FRM2101**	**FRM4106**	**FRM4201**	**FRM4301**	**FRM4404**	**FRM4501**
1	General Knowledge/ Procedures	3+	3+	4+	4+	3+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+	4+
3	Headwork/Situational Awareness	3+	3+	3+	3+	3+	4+	4+
4	Basic Airwork	3+	3+	4+	4+	3+	4+	4+
5	Mission Planning/ Briefing/Debriefing	3+	3+	4+	4+	3+	4+	4+
6	Communications	3+	3+	3+	3+	3+	4+	4+
7	Ground Operations	3+	3+	4+	4+	4+	4+	4+
8	Flight Admin	3+	3+	3+	1	3+	4+	1
2	Start Malfunctions		4+					
2	Ground Emergencies		4+					

MIF continued on next page.

FORMATION STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**FRM3103**	**FRM2101**	**FRM4106**	**FRM4201**	**FRM4301**	**FRM4404**	**FRM4501**
2	Aborted Takeoff		4+					
2	Takeoff Emergencies		4+					
2	Engine EPs		3+					
2	Flight Control EPs		3+					
2	Electrical EPs		3+					
2	ECS EPs		3+					
2	Fuel System EPs		3+					
30 10	Individual/Interval Takeoff	3+	3+	4+	4+	4+	4	4
30	Section Takeoff	3+					3+	3
11	Departure			4		4+	4	4+
13	Descent/Field Entry		3	4	4	3+	4	4
32	Parade	3+	3+	3+	3+		4+	4+
32	Turns/Echelon	3+	3+	3+	3+		4+	4+
32	Crossunder	3+		3+	3+		4+	4+
32	Lead Change			3+	3+	3+	4+	4+
32	TACAN Rendezvous	3+		3+	3+		4+	4
32	Breakup and Rendezvous	3+		3+	3+	3+	4+	4+
32	Underrun	3		3+	3		4+	4
32	Running Rendezvous	3+		3+	3+		4+	4
32	Cruise	3+					4+	4+
37	Tail Chase						3+	3
31	Formation Lead					3+	3+	
33	Lead Section Approach/Missed Approach					3	3+	
33	Section Approach/Missed Approach as Wing	3+	3	3+	3		4+	4

MIF continued on next page.

FORMATION STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**FRM3103**	**FRM2101**	**FRM4106**	**FRM4201**	**FRM4301**	**FRM4404**	**FRM4501**
33	Section Approach/ Touch-and-Go/Rejoin as Wing						3+	
32	Section Break	3+		3+	3		4+	4
32	Section Break (Lead)					3		
21	Precautionary Approach	3+	3+	4+	1	3	4+	1
22	VFR Landing Pattern	3+	3	3+	1	3+	4+	1
23	Landing/Touch-and-Go	3+	2	3+	1	3+	3+	1

4. Division Formation Stage MIF

Simulator/Device Event

DIVISION FORMATION STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**DIV4104**	**DIV4201**
1	General Knowledge/Procedures	4+	4+
2	Emergency Procedures	4+	4+
3	Headwork/Situational Awareness	4+	4+
4	Basic Airwork	4+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+
6	Communications	4+	4+
7	Ground Operations	4+	4+
8	Flight Admin	4+	4+
30 10	Individual/Interval Takeoff	4	4
30	Section Takeoff	4	4

MIF continued on next page.

DIVISION FORMATION STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**DIV4104**	**DIV4201**
32	Division Rendezvous	3+	3+
32	Parade	3+	3+
32	Turns/Echelon	3+	3+
32	Crossunder	4+	4+
32	Section Crossunder	4+	4+
32	TACAN Rendezvous	4	4
32	Breakup and Rendezvous	4+	4+
32	Underrun	4	4
32	Running Rendezvous	4	4
32	Cruise	4+	4+
32	Shuffle Division	4+	4+
31	Formation Lead	3	
33	Lead Section Approach/Missed Approach	3	
33	Section Approach/Missed Approach as Wing	4	4
32	Section Break	4	4
32	Division Break	4+	4
21	Precautionary Approach	4+	1
22	VFR Landing Pattern	4+	1
23	Landing/Touch-and-Go	3+	1

5. Night Formation Stage MIF

Simulator/Device Event

NIGHT FORMATION STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**NFR3101**	**NFR2101**	**NFR4102**	**NFR4201**	**NFR4301**	**NFR4401**
1	General Knowledge/Procedures	3+	4+	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+
3	Headwork/Situational Awareness	3+	4+	4+	4+	4+	4+
4	Basic Airwork	3+	3+	4+	4+	4+	4+
5	Mission Planning/Briefing/ Debriefing	4+	4+	4+	4+	4+	4+
6	Communications	3+	4+	4+	4+	4+	4+
7	Ground Operations	4+	4+	4+	4+	4+	4+
8	Flight Admin	3+	3+	4+	4+	4+	4+
2	Takeoff Emergencies		4+				
2	Aborted Takeoff		4+				
2	Electrical EPs		3+				
2	In-Flight Emergencies		3+				
2	Landing Emergencies		4+				
2	Lost Communications		4+				
10	Takeoff	4+	4+	4+	1	4+	1
11	Departure	4+		4+	1	4+	1
12	Enroute Navigation			4+	4+	4+	4+
32	Night TACAN Rendezvous	3+		3+	3+	3+	3+
32	Parade	2+		3+	3+	3+	3+
32	Crossunder	2+		3+	3+	3+	3+
32	Night Lead Change			3+	3+	3	3
32	Night Breakup and Rendezvous	2+		3+	3+	3+	3+
32	Night Underrun	2		3	3	3	3
32	Night Running Rendezvous	2+		3+	3+	3	3

MIF continued on next page.

NIGHT FORMATION STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**NFR3101**	**NFR2101**	**NFR4102**	**NFR4201**	**NFR4301**	**NFR4401**
17 18	Instrument Approach		4	4	4	4	4
33	Section Approach	2+		4+	4+	4	4
33	Section Missed Approach	2+		4+	4+	4	4
33	Touch-and-Go/Rejoin			3+		3	3
13	Descent/Field Entry	3	3+	4+	4+	4+	4+
32	Section Break	2+		4+	4	4	4
2	Field Arrestment		4+				
29	Pattern Stall/Recovery		4+				
22	VFR Landing Pattern	3+		4+	1	4+	1
23	Landing/Touch-and-Go	2+	2+	3+	1	3+	1

Blk #	Media	Title	Events	Hrs	Blk Name
FRM11	MIL/CAI	Section Formation Flight Procedures	6	5.5	FRM1

1. Prerequisite. FAM4501.

2. Events

FRM1101	MIL	Formation Marshal, Takeoff, Rendezvous, Departure/ Climbout	1.0
FRM1102	MIL	Section Parade Formation	1.0
FRM1103	MIL	Section Formation Recovery, Approaches, Landing Configuration	0.7
FRM1104	MIL	Formation Section Cruise	0.8
FRM1105	MIL	Formation Emergencies	1.0
FRM1106	CAI Test	Formation Exam I	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
DIV11	MIL/CAI	Division Formation Flight Procedures	2	2.5	FRM2

1. Prerequisite. FRM4201.

2. Events

DIV1101	MIL	Division Parade Formation	1.5
DIV1102	CAI Test	Formation Exam II	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
NFR11	MIL/CAI	Night Formation Flight Procedures	2	2.2	NFR1

1. Prerequisite. Intermediate Jet.

2. Events

NFR1101	MIL	Night Formation Flight Procedures	1.2
NFR1102	CAI Test	Night Formation Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
FRM31	OFT	Formation Simulators	3	4.5	1.5

1. Prerequisite. FRM1106 (Formation Exam I).

2. Syllabus Notes

a. FRM3101 will introduce interval takeoff, parade, echelon (VFR parade turns away), crossunders, breakup and rendezvous, and section break.

b. FRM3102 will introduce interval takeoff abort, TACAN rendezvous, section approach, and section missed approach.

c. FRM3103 will introduce section takeoff, cruise position, and section touch-and-go/rejoin.

d. FRM3103 shall be flown after FRM4106 (exception: may be done prior to FRM4101 if doing FRM41 and FRM44 on a detachment).

3. Special Syllabus Requirements. None.

4. Discuss Items

FRM3101
QOD, lost sight, and underrun.

FRM3102
QOD and section approach minima.

FRM3103
QOD and midair collision.

5. Block MIF

CTS REF	MANEUVER	FRM3103
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
30 10	Individual/Interval Takeoff	3+
30	Section Takeoff	3+
32	Parade	3+
32	Turns/Echelon	3+
32	Crossunder	3+
32	TACAN Rendezvous	3+
32	Breakup and Rendezvous	3+
32	Underrun	3
32	Running Rendezvous	3+
32	Cruise	3+
33	Section Approach/Missed Approach as Wing	3+
32	Section Break	3+
21	Precautionary Approach	3+
22	VFR Landing Pattern	3+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
FRM21	OFT	Formation Emergency Procedures	1	1.3	1.3

1. Prerequisite. FRM3103.

2. Syllabus Note. The student will perform the following maneuvers IAW FTI, NATOPS, and SOP on this event: formation abort, ECS emergencies, structural failure/damage, NWS failure, anti-skid failure, pattern stall/recovery, and ejection.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and SAR situations.

5. Block MIF

CTS REF	MANEUVER	FRM2101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	3+
7	Ground Operations	3+
8	Flight Admin	3+
2	Start Malfunctions	4+
2	Ground Emergencies	4+
2	Aborted Takeoff	4+
2	Takeoff Emergencies	4+
2	Engine EPs	3+
2	Flight Control EPs	3+
2	Electrical EPs	3+
2	ECS EPs	3+
2	Fuel System EPs	3+
30 10	Individual/Interval Takeoff	3+
13	Descent/Field Entry	3
32	Parade	3+
32	Turns/Echelon	3+
33	Section Approach/Missed Approach as Wing	3
21	Precautionary Approach	3+
22	VFR Landing Pattern	3
23	Landing/Touch-and-Go	2

Blk #	Media	Title	Events	Hrs	H/X
FRM41	T-45	Basic Formation	6	8.4	1.4

1. Prerequisite. FRM3102.

2. Syllabus Notes

a. Brief 2+00 prior to takeoff for FRM4101.

b. FRM4102 shall not be flown with any other events (excluding lectures) on the same day.

c. FRM4101 will be an IP demonstration, then student will accomplish flight.

d. During FRM4101, at a minimum, IP shall demonstrate the following maneuvers:

Marshal
Running rendezvous (SNA may accomplish at altitude)
Parade position with turns
2 box crossunders
1 breakup and rendezvous
Underrun
1 TACAN rendezvous
Lead change

e. On FRM4101, items demonstrated by the instructor shall not be graded. All other items may be graded, if maneuver performed.

f. Students shall fly at least 24 field-carrier landings within block. If requirement not met, fly FRM4187 to meet minimum (FRM4187 pattern work only). Lead is not required and only items related to field-carrier landings shall be graded. Add a comment to General Comments with above information included.

g. Section approach and section missed approach shall not be flown by the student until FRM4104. The approach may be simulated at altitude.

h. Student must have two interval takeoffs, two running rendezvous, and two formation breaks by the completion of FRM4105.

i. Students shall fly the following maneuvers on every flight (except FRM4101):

VFR parade position and turns
Box crossunders
TACAN rendezvous
Breakup and rendezvous (250)
(5 required, in addition to TACAN rendezvous)
Lead change
Underrun

j. Students must fly at a minimum the following maneuvers during the block:

Running rendezvous (may be done at altitude)	2
Section break	2
Section approach to missed approach	3
Precautionary approach	1
	(2 desired)

3. Special Syllabus Requirements. None.

4. Discuss Items

FRM4101-6
QOD.

5. Block MIF

CTS REF	MANEUVER	FRM4106
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	3+
30 10	Individual/Interval Takeoff	4+
11	Departure	4
13	Descent/Field Entry	4
32	Parade	3+
32	Turns/Echelon	3+
32	Crossunder	3+
32	Lead Change	3+
32	TACAN Rendezvous	3+
32	Breakup and Rendezvous	3+
32	Underrun	3+
32	Running Rendezvous	3+
33	Section Approach/Missed Approach as Wing	3+
32	Section Break	3+
21	Precautionary Approach	4+
22	VFR Landing Pattern	3+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
FRM42	T-45	Basic Formation Solo	1	1.3	1.3

1. Prerequisites

a. FRM4106.

b. FRM2101.

2. Syllabus Notes

a. All maneuvers except landings will be graded by the flight lead.

b. Running rendezvous may be performed at altitude.

c. Breakup and rendezvous (250) – 5 required, in addition to TACAN rendezvous.

d. TACAN rendezvous – 1.

e. Must RTB as a section.

3. Special Syllabus Requirements. None.

4. Discuss Item. QOD.

5. Block MIF

CTS REF	MANEUVER	FRM4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	1
30 10	Individual/Interval Takeoff	4+
13	Descent/Field Entry	4
32	Parade	3+
32	Turns/Echelon	3+
32	Crossunder	3+
32	Lead Change	3+
32	TACAN Rendezvous	3+
32	Breakup and Rendezvous	3+
32	Underrun	3
32	Running Rendezvous	3+
33	Section Approach/Missed Approach as Wing	3
32	Section Break	3
21	Precautionary Approach	1
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
FRM43	T-45	Basic Formation Lead	1	1.4	1.4

1. Prerequisite. FRM4201.

2. Syllabus Notes

a. The intent of this block is for students to gain exposure to flight lead responsibilities and to provide additional landing practice.

b. Students may lead any dual 2-plane formation flight, except:

(1) If flown as lead for a FRM44, IP must be a qualified section lead and fly the cruise portion of the event.

(2) Shall not be flown with a FRM42 or FRM45.

(3) Shall not lead section takeoff. (It is not recommended that students lead FRM4404 because of this.)

c. Students may fly FRM4301 anytime after FRM4201.

d. The student shall brief conduct on FRM4301.

e. At a minimum, the student must fly four FCLP-type landings.

f. One precautionary approach is desired, but not required.

g. Must RTB as a section.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and flight lead responsibilities.

5. Block MIF

CTS REF	MANEUVER	FRM4301
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	3+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	3+
30 10	Individual/Interval Takeoff	4+
11	Departure	4+
13	Descent/Field Entry	3+
32	Lead Change	3+
32	Breakup and Rendezvous	3+
31	Formation Lead	3+
33	Lead Section Approach/Missed Approach	3
32	Section Break (Lead)	3
21	Precautionary Approach	3
22	VFR Landing Pattern	3+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
FRM44	T-45	Cruise Formation	4	5.5	See Syl Note

1. Prerequisite. FRM4201.

2. Syllabus Notes

a. Allow 1.4 H/X for FRM4401-3 and 1.3 H/X for FRM4404.

b. Initial join-up may be accomplished via section takeoff, interval takeoff, or TACAN rendezvous.

c. The following maneuvers will be performed on every flight:

Parade position with turns
V crossunders
Breakup and rendezvous - 2 x 250 and 2 x 300
Tail chase
Cruise position and maneuvering
Lead change

d. Students must fly the following maneuvers at a minimum during the block:

Section takeoff	2
Running rendezvous (may be done at altitude)	1
TACAN rendezvous	2
Underrun	2
Lead section approach/missed approach	1
Section approach/touch-and-go/rejoin (as Wing)	1
Section break (as Lead)	1
Precautionary approach	1 (2 desired)

e. Section takeoff must be performed on FRM4404 in order to perform a section takeoff on FRM4501 solo.

3. Special Syllabus Requirements. None.

4. Discuss Items

FRM4401-4
QOD.

5. Block MIF

CTS REF	MANEUVER	FRM4404
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Individual/Interval Takeoff	4
30	Section Takeoff	3+
11	Departure	4
13	Descent/Field Entry	4
32	Parade	4+
32	Turns/Echelon	4+
32	Crossunder	4+
32	Lead Change	4+
32	TACAN Rendezvous	4+
32	Breakup and Rendezvous	4+
32	Underrun	4+
32	Running Rendezvous	4+
32	Cruise	4+
37	Tail Chase	3+
31	Formation Lead	3+
33	Lead Section Approach/Missed Approach	3+

MIF continued on next page.

CTS REF	MANEUVER	FRM4404
33	Section Approach/Missed Approach as Wing	4+
33	Section Approach/Touch-and-Go/ Rejoin as Wing	3+
32	Section Break	4+
21	Precautionary Approach	4+
22	VFR Landing Pattern	4+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
FRM45	T-45	Cruise Formation Solo	1	1.3	1.3

1. Prerequisite. FRM4404.

2. Syllabus Notes

a. All maneuvers except landings will be graded by the flight lead.

b. Students must fly at least four breakup and rendezvous, 2 x 250 and 2 x 300.

c. Must RTB as a section.

3. Special Syllabus Requirements. None.

4. Discuss Item. QOD.

5. Block MIF

CTS REF	MANEUVER	FRM4501
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	1
30 10	Individual/Interval Takeoff	4
30	Section Takeoff	3
11	Departure	4+
13	Descent/Field Entry	4
32	Parade	4+
32	Turns/Echelon	4+
32	Crossunder	4+
32	Lead Change	4+
32	TACAN Rendezvous	4
32	Breakup and Rendezvous	4+
32	Underrun	4
32	Running Rendezvous	4
32	Cruise	4+
37	Tail Chase	3
33	Section Approach/Missed Approach as Wing	4
32	Section Break	4
21	Precautionary Approach	1
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
DIV41	T-45	Division Formation	4	6.0	1.5

1. Prerequisites

a. DIV1102 (Formation Exam II).

b. FRM4501.

2. Syllabus Notes

a. A maximum of two flights in this block may be completed as three-plane flights. Either DIV4103 or DIV4104 must be flown as a four-plane.

b. Student must have one division takeoff running/CV rendezvous and one division break ***prior*** to DIV4104 (a three-plane rendezvous and break will meet this requirement).

c. The following maneuvers shall be flown on every flight:

Section crossunder
Balanced parade and turns
Breakup and rendezvous – 6 required
(2 per position in a 4-plane,
3 per position in a 3-plane)
Division cruise
Shuffle division
Landings
Precautionary approaches – 1 in block (2 desired)

3. Special Syllabus Requirements. None.

4. Discuss Items

DIV4101-4
QOD.

5. Block MIF

CTS REF	MANEUVER	DIV4104
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Individual/Interval Takeoff	4
30	Section Takeoff	4
32	Division Rendezvous	3+
32	Parade	3+
32	Turns/Echelon	3+
32	Crossunder	4+
32	Section Crossunder	4+
32	TACAN Rendezvous	4
32	Breakup and Rendezvous	4+
32	Underrun	4
32	Running Rendezvous	4
32	Cruise	4+
32	Shuffle Division	4+
31	Formation Lead	3
33	Lead Section Approach/Missed Approach	3
33	Section Approach/Missed Approach as Wing	4
32	Section Break	4
32	Division Break	4+
21	Precautionary Approach	4+
22	VFR Landing Pattern	4+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
DIV42	T-45	Division Formation Solo	1	1.4	1.4

1. Prerequisites

a. DIV4104.

b. FRM4301.

2. Syllabus Notes

a. All maneuvers except landings will be graded by the flight lead.

b. Students must fly six breakup and rendezvous, two per position in a four-plane or three per position in a three-plane.

3. Special Syllabus Requirements. None.

4. Discuss Item. QOD.

5. Block MIF

CTS REF	MANEUVER	DIV4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Individual/Interval Takeoff	4
30	Section Takeoff	4
32	Division Rendezvous	3+
32	Parade	3+
32	Turns/Echelon	3+
32	Crossunder	4+
32	Section Crossunder	4+
32	TACAN Rendezvous	4
32	Breakup and Rendezvous	4+
32	Underrun	4
32	Running Rendezvous	4
32	Cruise	4+
32	Shuffle Division	4+
33	Section Approach/Missed Approach as Wing	4
32	Section Break	4
32	Division Break	4
21	Precautionary Approach	1
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
NFR31	OFT	Night Formation	1	1.5	1.5

1. Prerequisite. NFR1102 (Night Formation Exam).

2. Syllabus Note. Conduct "blind" cockpit switch check.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and NORDO light signals.

5. Block MIF

CTS REF	MANEUVER	NFR3101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	3+
10	Takeoff	4+
11	Departure	4+
32	Night TACAN Rendezvous	3+
32	Parade	2+
32	Crossunder	2+
32	Night Breakup and Rendezvous	2+
32	Night Underrun	2
32	Night Running Rendezvous	2+
33	Section Approach	2+
33	Section Missed Approach	2+
13	Descent/Field Entry	3
32	Section Break	2+
22	VFR Landing Pattern	3+
23	Landing/Touch-and-Go	2+

Blk #	Media	Title	Events	Hrs	H/X
NFR21	OFT	Night Formation Emergency Procedures	1	0.9	0.9

1. Prerequisite. NFR3101.

2. Syllabus Notes. None.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, NORDO light signals, night Bingo considerations, airfield lighting, cockpit fogging, and pattern stall.

5. Block MIF

CTS REF	MANEUVER	NFR2101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	3+
2	Takeoff Emergencies	4+
2	Aborted Takeoff	4+
2	Electrical EPs	3+
2	In-Flight Emergencies	3+
2	Landing Emergencies	4+
2	Lost Communications	4+
10	Takeoff	4+
17 18	Instrument Approach	4
13	Descent/Field Entry	3+

MIF continued on next page.

CTS REF	MANEUVER	NFR2101
2	Field Arrestment	4+
29	Pattern Stall/Recovery	4+
23	Landing/Touch-and-Go	2+

Blk #	Media	Title	Events	Hrs	H/X
NFR41	T-45	Night Formation	2	2.8	1.4

1. Prerequisite. NFR2101.

2. Syllabus Notes

a. These flights shall take off no earlier than 30 minutes after official sunset.

b. One section approach to a touch-and-go/rejoin shall be flown in this block.

c. At least one section break must be flown in this block.

d. The following maneuvers will be flown on each flight:

TACAN rendezvous – 2
Breakup and rendezvous – 4 on NFR4101, 3 on NFR4102
Running rendezvous at altitude
Crossunders
Parade
Night lead change
Section approach (may be simulated at altitude)
Touch-and-go rejoin or section missed approach
Section break (wx permitting)
Field carrier landing(s) - 4

3. Special Syllabus Requirements. None.

4. Discuss Items

NFR4101
QOD, landing pattern, formation safety, emergencies, and night lead.

NFR4102
QOD, NORDO lead change, and total electrical failure.

5. Block MIF

CTS REF	MANEUVER	NFR4102
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
32	Night TACAN Rendezvous	3+
32	Parade	3+
32	Crossunder	3+
32	Night Lead Change	3+
32	Night Breakup and Rendezvous	3+
32	Night Underrun	3
32	Night Running Rendezvous	3+
17 18	Instrument Approach	4
33	Section Approach	4+
33	Section Missed Approach	4+
33	Touch-and-Go/Rejoin	3+
13	Descent/Field Entry	4+
32	Section Break	4+
22	VFR Landing Pattern	4+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
NFR42	T-45	Night Formation Solo	1	1.3	1.3

1. Prerequisites

a. NFR4102.

b. A day or night front-seat landing within the previous three days is a prerequisite for a night solo flight.

2. Syllabus Notes

a. This flight shall take off no earlier than 30 minutes after official sunset.

b. All maneuvers except landings shall be graded by the flight lead.

c. Running rendezvous will be done at altitude.

d. Section approach may be simulated at altitude.

e. Section break is desired (weather permitting), but is not required.

f. Minimum of four FCLP-type landings.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and night Bingo procedures.

5. Block MIF

CTS REF	MANEUVER	NFR4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	1
11	Departure	1
12	Enroute Navigation	4+
32	Night TACAN Rendezvous	3+
32	Parade	3+
32	Crossunder	3+
32	Night Lead Change	3+
32	Night Breakup/CV Rendezvous	3+
32	Night Underrun	3
32	Night Running Rendezvous	3+
17 18	Instrument Approach	4
33	Section Approach	4+
33	Section Missed Approach	4+
13	Descent/Field Entry	4+
32	Section Break	4
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
NFR43	T-45	Advanced Night Formation	1	1.5	1.5

1. Prerequisite. NFR4201.

2. Syllabus Notes

a. This flight shall take off no earlier than 30 minutes after official sunset.

b. The following maneuvers will be flown:

TACAN rendezvous – 2
Breakup and rendezvous – 4
FCLP landings - 6

c. Rendezvous shall be flown with 5 knots of closure. Student will not increase closure rate until established on bearing line and, during TACAN rendezvous, elevated to lead altitude.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, increased airspeed rendezvous, and night landing pattern.

5. Block MIF

CTS REF	MANEUVER	NFR4301
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
32	Night TACAN Rendezvous	3+
32	Parade	3+
32	Crossunder	3+
32	Night Lead Change	3
32	Night Breakup and Rendezvous	3+
32	Night Underrun	3
32	Night Running Rendezvous	3
17 18	Instrument Approach	4
33	Section Approach	4
33	Section Missed Approach	4
33	Touch-and-Go/Rejoin	3
13	Descent/Field Entry	4+
32	Section Break	4
22	VFR Landing Pattern	4+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
NFR44	T-45	Advanced Night Formation Solo	1	1.3	1.3

1. Prerequisite. NFR4301.

2. Syllabus Notes

a. This flight shall take off no earlier than 30 minutes after official sunset.

b. The following maneuvers will be flown:

TACAN rendezvous – 2
Breakup and rendezvous – 4
FCLP landings - 6

c. Rendezvous shall be flown with 5 knots of closure. Student will not increase closure rate until established on bearing line and, during TACAN rendezvous, elevated to lead altitude.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, increased airspeed rendezvous, and night landing pattern.

5. Block MIF

CTS REF	MANEUVER	NFR4401
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
10	Takeoff	1
11	Departure	1
12	Enroute Navigation	4+
32	Night TACAN Rendezvous	3+
32	Parade	3+
32	Crossunder	3+
32	Night Lead Change	3
32	Night Breakup and Rendezvous	3+
32	Night Underrun	3
32	Night Running Rendezvous	3
17 18	Instrument Approach	4
33	Section Approach	4
33	Section Missed Approach	4
33	Touch-and-Go/Rejoin	3
13	Descent/Field Entry	4+
32	Section Break	4
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

BLANK PAGE

Chapter VIII

Tactical Training

1. Matrices. The following matrices are an overview of the Tactical category. The category includes Operational Navigation, Strike, Tactical Formation, Road Recce, BFM, SEM, and Carrier Qualification Landing stages. The purpose of these matrices is to provide the SNA and IP the easiest way to track progress, regression, and overall status in relation to MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Strike Notes. A Strike "E" may be awarded when the Circular Error Probability (CEP) is 75 feet or less with at least four bombs dropped.

3. Only one flight per day shall be flown for the following events (simulator/ground training events may be executed in addition to the specified events):

TAC4101
RR4101
ON4201

4. BFM/SEM Notes

a. Students shall not participate in any other stage of training while in BFM (exception: may also participate in either AN ***or*** NFR in conjunction with BFM).

b. BFM4101 updates OCF and BFM currency.

5. CQL Notes

a. Student shall not be scheduled in any other stage once they begin CQL4201.

b. Students must have a total of 320 FCLP-type landings utilizing the IFLOLS in the T-45 prior to beginning Carrier Qualification Landing Stage (CQL4201).

6. ON Note. ON1101-3 cannot be scheduled on the same day as ON0105.

7. Operational Navigation Stage MIF

Simulator/Device Event

OPERATIONAL NAVIGATION STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**ON3103**	**ON4105**	**ON4203**
1	General Knowledge/Procedures	4+	4+	4+
2	Emergency Procedures	4+	4+	4+
3	Headwork/Situational Awareness	3+	4+	4+
4	Basic Airwork	4+	4+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+	4+
6	Communications	3+	4+	4+
7	Ground Operations	4+	4+	4+
8	Flight Admin	3+	4+	4+
9	Tactical Admin			4+
30 10	Takeoff	4+	4+	4+
11	Departure	4+	4+	4+
31	Formation Lead			3+
32	Formation Wing			4+
12	Enroute Navigation	4+	4+	4+
40	Low-Level Navigation/Procedures		4+	4+
40	Route Entry	3+	4+	4+
14 40	Dead Reckoning	3+	3+	
40	Low-Level Waypoint Navigation	3+	4+	3+
40	Altitude Control	3+	4+	
40	Time Control	3+	4+	
40	Course Control	3+	4+	
40	In-flight Computation	3+	4+	
40	Chart Interpretation	3+	4+	4+
40	Turns	3+	4+	4+

MIF continued on next page.

OPERATIONAL NAVIGATION STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**ON3103**	**ON4105**	**ON4203**
40	Ridge Crossing	1	3	3
40	Weather Response	3	3	3
40	Route Abort/Exit	3+	4+	4+
34	Tactical Lead			3+
35	Tactical Wing			4+
46	Sight/Lookout Doctrine			4+
49	Strike Maneuvering		1	4+
36	Tactical Rejoin			4+
2	HUD Failure	3+		
2	Bingo	3+	3	
13	Descent/Field Entry	3+	4+	4+
21	Minimum/Emergency Fuel Approach	3+		
21	Precautionary Approach(es)		4	4
22	VFR Landing Pattern		4	4
23	FF Roll-and-Go	3+	4+	4
23	Landing/Touch-and-Go	3+	4+	4+

8. Road Recce Stage MIF

ROAD RECCE STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**RR4103**	**RR4201**
1	General Knowledge/Procedures	4+	4+
2	Emergency Procedures	4+	4+
3	Headwork/Situational Awareness	4+	4+
4	Basic Airwork	4+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+

MIF continued on next page.

ROAD RECCE STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**RR4103**	**RR4201**
6	Communications	4+	4+
7	Ground Operations	4+	4+
8	Flight Admin	4+	4+
9	Tactical Admin	4+	4+
30 10	Takeoff	4+	4+
11	Departure	4+	4+
31	Formation Lead	3+	3+
32	Formation Wing	4+	4+
12	Enroute Navigation	4+	4+
40	Low-Level Navigation/Procedures	4+	4+
40	Route Entry	4+	4+
40	Chart Interpretation	4+	4+
40	Turns	4+	4+
40	Weather Response	3	3
40	Route Abort/Exit	4+	4+
34	Tactical Lead	4+	4+
35	Tactical Wing	4+	4+
46	Sight/Lookout Doctrine	4+	4+
6	Target Description	4+	4+
49	Strike Maneuvering	4+	4+
36	Tactical Rejoin	4+	4+
13	Descent/Field Entry	4+	4+
21	Precautionary Approach	4	
22	VFR Landing Pattern	4	1
23	FF Roll-and-Go	4	
23	Landing/Touch-and-Go	4+	1

9. Strike Stage MIF

Simulator/Device Event

STRIKE STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**STK3106**	**STK2101**	**STK4104**	**STK4202**	**STK4301**	**STK4401**	**STK4501**
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+	4+
3	Headwork/Situational Awareness	4+	3+	4+	4+	4+	4+	4+
4	Basic Airwork	4+	4+	4+	4+	4+	4+	4+
5	Mission Planning/Briefing/ Debriefing	4+	4+	4+	4+	4+	4+	4+
6	Communications	4+	4+	4+	4+	4+	4+	4+
7	Ground Operations	4+	4+	4+	4+	4+	4+	4+
8	Flight Admin	3+	3+	4+	4+	4+	4+	4+
9	Tactical Admin	3+	3+	4+	4+	4+	4+	4+
2	Ground Emergencies		3+					
2	Takeoff EPs		4+					
2	In-Flight EPs		3+					
2	Landing EPs		3+					
2	Lost Communications		3+					
2	Abort Run	4+	4+					
2	HUD failure	3+	3+					
2	Pitot Static Malfunction		3+					
2	Simo Run		3+					
2	Emergency Jettison		3+					
50	Hung Ordnance Approach		3+	4+				
2	Blown Tire during Takeoff/ Landing		3+					

MIF continued on next page.

STRIKE STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**STK3106**	**STK2101**	**STK4104**	**STK4202**	**STK4301**	**STK4401**	**STK4501**
30 10	Takeoff	4+	4+	4+	4+	4+	4+	4+
11	Departure			4+	4+	4+	4+	4+
11	Rendezvous			4+	4+	4+	4+	4+
32	Formation Wing			4+	4+	4+	4+	4+
12	Enroute Navigation			4+	4+	4+	4+	4+
50	Spacer Pass	3+	3+	3+	3+	4+	4+	4+
54	Roll-In	3+		3+				4+
54	Tracking/Dive Angle	3+		3+				4+
54	CCIP Target Tracking					4+	1	
54	Error Corrections	3+		3+	3	4+	4	4+
56	Release/Firing Parameters	3+		3+	3	4+	4	4+
53 56	Dive Recovery	3+		3+	3	4+	4	4+
54	Weapons Pattern	3+	3+	3+	3+	4+	4+	4+
55	Accuracy	3+		3+	3+	4+	4+	4+
50	Off-Target Rendezvous	3+		3+	3+	4+	4+	4+
29	Pattern Stall/Recovery		4+					
13	Descent/Field Entry			4	4	4	4	4
21	Precautionary Approach			4+		4	1	4
22	VFR Landing Pattern			4	1	4	1	4
23	Landing/Touch-and-Go			4+	1	4+	1	4+

10. Tactical Formation Stage MIF

Simulator/Device Event

TACTICAL FORMATION STAGE MANEUVER ITEM FILE					
CTS REF	**MANEUVER**	**TAC4103**	**TAC4201**	**TAC4304**	**TAC4402**
1	General Knowledge/Procedures	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+
3	Headwork/Situational Awareness	4+	4+	4+	4+
4	Basic Airwork	4+	4+	4+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+	4+	4+
6	Communications	4+	4+	4+	4+
7	Ground Operations	4+	4+	4+	4+
8	Flight Admin	4+	4+	4+	4+
9	Tactical Admin	3+	3+	4+	4+
30 10	Takeoff	4+	4+	4+	4+
11	Departure	4+	4+	4+	4+
11	Rendezvous	4+	4+	4+	4+
31	Formation Lead	3+		3+	3
34	TACFORM Lead			2+	
32	Formation Wing	4+	4+	4+	4+
12	Enroute Navigation	4+	4+	4+	4+
35	Defensive Combat Spread	3+	3+	4+	4+
35	Cruise Turns	3+	3		
35	Offensive Combat Spread			3+	3+
35	Check Turns	3+	3+	4+	4+
35	Shackles	3+	3+	4+	4+
35	Off-Heading Shackles	3+	3+	4+	4+
35	Tac Turns	3+	3+	4+	4+
35	In-Place Turns	3+	3+	4+	4+

MIF continued on next page.

TACTICAL FORMATION STAGE MANEUVER ITEM FILE					
CTS REF	**MANEUVER**	**TAC4103**	**TAC4201**	**TAC4304**	**TAC4402**
35	Cross Turns	3+	3+	4+	4+
35	Advanced Tacform Maneuvering			3+	3+
35	Forced Cockpit Loading			3+	3
38	Loose Deuce Exercise	3+	3		
39	Gunsight Tracking Exercise			4+	4+
36	Tactical Rejoin	3+	3+	4+	4+
13	Descent/Field Entry	3+	3	3+	3+
21	Precautionary Approach	4+		4+	
22	VFR Landing Pattern	4	1	4	1
23	Landing/Touch-and-Go	4+	1	4+	1

11. Basic Fighter Maneuvering Stage MIF

Simulator/Device Event

BASIC FIGHTER MANEUVERING STAGE MANEUVER ITEM FILE										
CTS REF	**MANEUVER**	**BFM3101**	**BFM4101**	**BFM4201**	**BFM4303**	**BFM4401**	**BFM4502**	**BFM4601**	**BFM4702**	**BFM4802**
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+	4+	4+	4+
3	Headwork/Situational Awareness	3+	3+	3+	3+	3+	3+	3+	4+	4+
4	Basic Airwork	4+	4+	3+	3+	4+	4+	4+	4+	4+
5	Mission Planning/ Briefing/Debriefing	4+	4+	4+	4+	4+	4+	4+	4+	4+
6	Communications	4+	4+	3+	4+	4+	4+	4+	4+	4+

MIF continued on next page.

BASIC FIGHTER MANEUVERING STAGE MANEUVER ITEM FILE										
CTS REF	**MANEUVER**	**BFM3101**	**BFM4101**	**BFM4201**	**BFM4303**	**BFM4401**	**BFM4502**	**BFM4601**	**BFM4702**	**BFM4802**
7	Ground Operations	4+	4+	4+	4+	4+	4+	4+	4+	4+
53	Training Rules			3+	4+	4+	4+	4+	4+	4+
8	Flight Admin	4+	4+	4+	4+	4+	4+	4+	4+	4+
9	Tactical Admin		4+	4+	4+	4+	4+	4+	4+	4+
10	Takeoff		4+	4+	4+	4+	4+	4+	4+	4+
11	Departure		4+	4+	4+	4+	4+	4+	4+	4+
31	Formation Lead			3	3+	3	3	3	3	3
12	Enroute Navigation		4+	4+	4+	4+	4+	4+	4+	4+
35	Defensive Combat Spread			3+						
35	Shackles			3+						
35	Off-Heading Shackles			3						
35	Tac Turns			3+						
35	In-Place Turns			3+						
35	Cross Turns			3						
35	Advanced Tacform Maneuvering			3+						
41	Snap-Shot Drill			1	3+	3+	3+	3+	4+	4+
41 42	Horizontal Scissors			1	3+	3+	3+	3+		
41 42	Rolling Scissors			1	3+	3+	3+	3+		
41 42	6,000-foot Perch Set				3+	3+	3+	3+		
41 42	9,000-foot Perch Set			1	3+	3+	3+	3+		
42	LAR Recognition				3+	3+	3	3	3	3

MIF continued on next page.

BASIC FIGHTER MANEUVERING STAGE MANEUVER ITEM FILE										
CTS REF	**MANEUVER**	**BFM3101**	**BFM4101**	**BFM4201**	**BFM4303**	**BFM4401**	**BFM4502**	**BFM4601**	**BFM4702**	**BFM4802**
43	WEZ Recognition				3	3	3+	3+	3	3
43	Separation (Bugout)						3	3		
44	Butterfly Set								3+	3+
44	Abeam Set								3+	3+
42	Offensive BFM						3	3	3	3
43	Defensive BFM								3	3
36	Tactical Rejoin			4+	4+	4+	4+	4+	4+	4+
46	Sight/Lookout Doctrine				3+	3+	3+	3+	3+	3+
29	High AOA/Deep Stall Investigation/ Rudder-Induced Departure	3+	3+							
29	70-Degree Nose-High Departure	3+	3+							
29	90-Degree Nose-High Departure	3+								
29	110-Degree Nose-High Departure	3+	3+							
29	Adverse Yaw Departure	3+	3+							
2	Stuck Throttle Approach	3+								
2	Blown Tire During Field Landing	4+								
2	Field Arrestment with Blown Tire	4+								
2	Airstart	4+								
29	Spin/Spin Recovery	3+								

MIF continued on next page.

BASIC FIGHTER MANEUVERING STAGE MANEUVER ITEM FILE										
CTS REF	**MANEUVER**	**BFM3101**	**BFM4101**	**BFM4201**	**BFM4303**	**BFM4401**	**BFM4502**	**BFM4601**	**BFM4702**	**BFM4802**
41	Pedal Turns	3								
13	Descent/Field Entry		4+	4+	4+	4+	4+	4+	4+	4+
21	Low Oil GCA/ILS		3+							
21	Precautionary Approach	4+	4		4+		4+		4	
22	VFR Landing Pattern		4	4	4	1	4	1	4	1
23	Landing/Touch-and-Go	4+	4+	4+	4+	1	4+	1	4+	1
41	1 V 0		3+							

12. Section Engaged Maneuvering Stage MIF

SECTION ENGAGED MANEUVERING STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**SEM4103**	**SEM4201**
1	General Knowledge/Procedures	4+	4+
2	Emergency Procedures	4+	4+
3	Headwork/Situational Awareness	4+	4+
4	Basic Airwork	4+	4+
5	Mission Planning/Briefing/Debriefing	4+	4+
6	Communications	4+	4+
7	Ground Operations	4+	4+
8	Flight Admin	4+	4+
9	Tactical Admin	4+	4+
10	Takeoff	4+	4+
11	Departure	4+	4+
32	Formation Wing	4+	4+

MIF continued on next page.

SECTION ENGAGED MANEUVERING STAGE MANEUVER ITEM FILE			
CTS REF	**MANEUVER**	**SEM4103**	**SEM4201**
12	Enroute Navigation	4+	4+
34	Tactical Lead	3+	3
35	Tactical Wing	3+	3+
35	Defensive Combat Spread	4+	4+
45	Engaged Communications	3+	3+
53	Training Rules	4+	4+
45	Mutual Support	3+	3+
42	Offensive BFM	3+	3+
43	Defensive BFM	3+	3+
42	LAR Recognition	3	3
43	WEZ Recognition	3	3
44	High-Aspect BFM	3	3
45	Forward Quarter Set	3+	3+
45	Beam Quarter Set	3+	3+
45	Rear Quarter Set	3+	3+
45	Advanced Set	3+	3+
45	Tap-the-Cap	3+	3
36	Tactical Rejoin	4+	4+
46	Sight/Lookout Doctrine	3+	3+
13	Descent/Field Entry	4+	4+
21	Precautionary Approach	4+	
22	VFR Landing Pattern	4	1
23	Landing/Touch-and-Go	4+	1

13. Carrier Qualification Landing Stage MIF

Simulator/Device Event
Check Flight Event

CARRIER QUALIFICATION LANDING STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**CQL4101**	**CQL4211**	**CQL3102**	**CQL2101**	**CQL4390**	**CQL4490**
1	General Knowledge/Procedures	4+	4+	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+
3	Headwork/Situational Awareness	4+	4+	4+	4+	4+	4+
4	Basic Airwork	4+	4+	4+	4+	4+	4+
5	Mission Planning/Briefing/ Debriefing	4+	4+	4+	4+	4+	4+
6	Communications	4+	4+	4+	4+	4+	4+
7	Ground Operations	4+	4+	4+	4+	4+	4+
8	Flight Admin	4+	4+	4+	4+	4+	4+
2	Ground Emergencies			4	4+		
2	CV Emergencies			3+	4+		
2	Suspend Procedures				4+		
2	Brake Failure on Deck				4+		
2	Lost Communications at CVN				4+		
2	NWS Failure				4+		
2	Launch Bar Malfunction				4+		
2	Catapult Malfunctions				4+		
2	GINA Failure				4+		
2	Swerve on Touchdown				4+		
2	Ejection				4+		
2	CV Arrestment w/Blown Tire(s)			2+	4+		
2	Bolter w/Blown Tire(s)			3+	4+		
2	Field Arrestment w/Blown Tire(s)			3+	4+		

MIF continued on next page.

CARRIER QUALIFICATION LANDING STAGE MANEUVER ITEM FILE							
CTS REF	**MANEUVER**	**CQL4101**	**CQL4211**	**CQL3102**	**CQL2101**	**CQL4390**	**CQL4490**
2	Bingo			4+	4+		
30 10	Takeoff	4+	4+	4+	4+	4+	4+
11	Departure	4+	4+	4+	4+	4+	4+
12	Enroute Navigation	4+	4+			4+	4+
13	Descent/Field Entry	4+	4+	4+	4+	4+	4+
52	FCLP Pattern	4+	4+			4+	
51	CV Arrival (Case I/II)			3+	4+		4+
52	CV Pattern			3+	4+		4+
52	Start Position		4+	3+	3+	4+	4+
52	AOA Control		4+	2+	2+	4+	4+
52	Glideslope Control		4+	2+	2+	4+	4+
52	Power Control		4+	2+	2+	4+	4+
52	Lineup Control		4+	2+	2+	4+	4+
52	Error Detection/Correction		4+	2+	2+	4+	4+
52	Response to LSO Calls		4+	4+	4+	4+	4+
52	Bolter/Touch-and-Go Technique		4+	4+	4+	4+	4+
52	Waveoff Technique		4+	4+	4+	4+	4
51	CVN Flight Deck Procedures			3+	4+		4+
51	Catapult Launch Procedures			3+	4+		4+
51	CVN Arrestment Procedures			3+	4+		4+
17	ILS to Visual Approach and Landing	3					
23	FF Roll-and-Go	4+					
23	FF Touch-and-Go	4+					
23	Full-Stop Landing	4+	4+			4+	1

Blk #	Media	Title	Events	Hrs	Blk Name
TAC11	MIL/CAI	Tactical Formation Flight Procedures	3	4.0	TAC

1. Prerequisite. Intermediate Jet (ASI0110).

2. Events

TAC1101	CAI	TAC HUD/MFD Data Entry Procedures	0.5
TAC1102	MIL	Introduction to Tactical Formation Procedures	2.5
TAC1103	CAI Test	Tactical Formation Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
ON11	MIL/CAI	Operational Navigation Flight Procedures	3	3.7	ONAV1

1. Prerequisite. ON0105 (ONAV Exam).

2. Events

ON1101	CAI	Low-Level Waypoint Navigation	0.7
ON1102	MIL	ONAV Flight Procedures	2.0
ON1103	CAI Test	ONFP Exam	1.0

3. Syllabus Note. ON1101-3 shall not be scheduled the same day as ON0105.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
ON12	MIL/CAI	Section Low-Level Flight Procedures	2	2.5	ONAV2

1. Prerequisites

   a. ON1103 (ONFP Exam).

   b. STK1105 (Weapons Exam).

   c. TAC1103 (Tactical Formation Exam).

2. Events

ON1201	Lect	Section Low-Level	2.0
ON1202	P/P Exam	Section Low-Level Exam	0.5

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
RR11	MIL/CAI	Road Recce Flight Procedures	2	2.5	RR

1. Prerequisites

   a. ON1103 (ONFP Exam).

   b. STK1105 (Weapons Exam).

   c. TAC1103 (Tactical Formation Exam).

2. Events

RR1101	Lect	Road Recce Flight Procedures	2.0
RR1102	P/P Exam	Road Recce Exam	0.5

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
STK11	MIL/CAI	Strike Flight Procedures	5	5.0	STK1

1. Prerequisite. Intermediate Jet (ASI0110).

2. Events

STK1101	CAI	Weapons Data Entry	0.7
STK1102	MIL	Weapons Delivery I	0.9
STK1103	MIL	Weapons Delivery II	0.9
STK1104	MIL	Weapons Delivery III	1.5
STK1105	CAI Test	Weapons Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
BFM11	MIL/CAI	1 V 1 Basic Fighter Maneuvering Flight Procedures	6	5.8	BFM1

1. Prerequisites

   a. ON1103 (ONFP Exam)

   b. TAC1103 (Tactical Formation Exam).

   c. BFM4401 prior to BFM1105.

2. Events

BFM1101	MIL	Introduction to BFM/OCF Refresher	0.8
BFM1102	MIL	BFM 1 V 1 Offensive Maneuvering	1.0
BFM1103	MIL	BFM 1 V 1 Defensive Maneuvering	1.0
BFM1104	CAI Test	BFM 1 V 1 Offensive/ Defensive Exam	1.0
BFM1105	MIL	BFM 1 V 1 High Aspect	1.0
BFM1106	CAI Test	BFM 1 V 1 High-Aspect Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
SEM11	MIL/CAI	2 V 1 Section Engaged Maneuvering Flight Procedures	2	3.7	BFM2

1. Prerequisite. BFM4502.

2. Events

SEM1101	MIL	SEM 2 V 1 Flight Procedures	2.7
SEM1102	CAI Test	SEM 2 V 1 Exam	1.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
CQL11	MIL/CAI	Carrier Qualification Landing Flight Procedures	4	6.0	CQL1

1. Prerequisites

   a. STK4104.

   b. TAC4201.

   c. ON4105.

   d. AN3301.

2. Events

CQL1101	MIL	Day/Night FCLP Refresher	1.0
CQL1102	MIL	CQL Shipboard Procedures	1.0
CQL1103	MIL	Ship's Brief	3.0
CQL1104	CAI Test	Ship's Brief Exam	1.0

3. Syllabus Notes. Students must have a total of 320 FCLP-type landings utilizing the IFLOLS in the T-45 prior to beginning Carrier Qualification Landing Stage (CQL4201).

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
ON31	OFT	Operational Navigation	3	3.9	1.3

1. Prerequisite. ON1103 (ONFP Exam).

2. Syllabus Notes

a. SNA is required to complete four original JMPS-generated ONAV charts, simulator and aircraft combined, during single-plane ONAVs. The SNA is authorized to copy the original chart for the IP on those flights.

b. Students must have a minimum 24-hour notice prior to each previously unplanned ONAV event for preflight planning.

c. All ONAV routes should be flown at 360 knots.

d. ON3101. Demonstrate declutter mode.

e. ON3102. Introduce response to weather on route and execute Bingo profile.

f. ON3103. Introduce low-level waypoint navigation.

3. Special Syllabus Requirements. None.

4. Discuss Items

ON3101
QOD and low altitude hazards.

ON3102
QOD, MFD failure, and low altitude hazards.

ON3103
QOD.

5. Block MIF

CTS REF	MANEUVER	ON3103
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
8	Flight Admin	3+
30 10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
40	Route Entry	3+
14 40	Dead Reckoning	3+
40	Low-Level Waypoint Navigation	3+
40	Altitude Control	3+
40	Time Control	3+
40	Course Control	3+
40	In-flight Computation	3+
40	Chart Interpretation	3+
40	Turns	3+
40	Ridge Crossing	1
40	Weather Response	3
40	Route Abort/Exit	3+
2	HUD Failure	3+
2	Bingo	3+
13	Descent/Field Entry	3+
21	Minimum/Emergency Fuel Approach	3+
23	FF Roll-and-Go	3+
23	Landing/Touch-and-Go	3+

Blk #	Media	Title	Events	Hrs	H/X
ON41	T-45	Operational Navigation	5	6.3	See Syl Note

1. Prerequisite. ON3103.

2. Syllabus Notes

a. Allow 1.3 H/X for ON4101-2 and ON4104; allow 1.2 H/X for ON4103 and ON4105.

b. Brief 2+00 prior to takeoff for ON4101.

c. SNA is required to complete four original JMPS-generated ONAV charts, simulator and aircraft combined, during single-plane ONAVs. The SNA is authorized to copy the original chart for the IP on those flights.

d. Students must have a minimum 24-hour notice prior to each previously unplanned ONAV event for preflight planning.

e. All ONAV routes should be flown at 360 knots.

f. Students must fly four different routes in this block of training. Students may not fly the same route twice using the same method of navigation (dead reckoning/waypoint navigation).

g. All ONAV routes may be flown as legs of a cross-country.

h. ON4101 and ON4102 are DR navigation flights. ON4103-5 are system navigation flights. This does not eliminate the requirement for chart preparation.

3. Special Syllabus Requirements. None.

4. Discuss Items

ON4101
QOD, emergency Bingo, maximum range profile, inadvertent low altitude IMC, and low altitude emergencies.

ON4102
QOD, low altitude flight safety, sun angles, and shadows.

ON4103
QOD, low altitude flight safety, ridgeline crossing, and waypoint data entry.

ON4104
QOD, low altitude flight safety, mission task management, and autosequential steering.

ON4105
QOD, low altitude flight safety, tactical implications of timing, and go/no-go criteria.

5. Block MIF

CTS REF	MANEUVER	ON4105
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
40	Low-Level Navigation/Procedures	4+
40	Route Entry	4+
14 40	Dead Reckoning	3+
40	Low-Level Waypoint Navigation	4+
40	Altitude Control	4+
40	Time Control	4+

MIF continued on next page.

CTS REF	MANEUVER	ON4105
40	Course Control	4+
40	In-flight Computation	4+
40	Chart Interpretation	4+
40	Turns	4+
40	Ridge Crossing	3
40	Weather Response	3
40	Route Abort/Exit	4+
49	Strike Maneuvering	1
2	Bingo	3
13	Descent/Field Entry	4+
21	Precautionary Approach(es)	4
22	VFR Landing Pattern	4
23	FF Roll-and-Go	4+
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
ON42	T-45	Operational Navigation (Section Low-Level)	3	3.3	1.1

1. Prerequisites

a. ON1202 (Section Low-Level Exam).

b. ON4105.

c. TAC4402.

d. STK4401.

e. STK4501.

2. Syllabus Notes

a. Weather must be at or above 5,000/5 to perform pop-up attacks on ON4201 and ON4202; otherwise, level laydown tactics shall be conducted.

b. ON4201:

(1) Shall be the only event flown that day.

(2) Shall be flown as wing.

(3) Shall not be flown with another student as lead.

c. ON4202-3 may be flown with another student as lead.

3. Special Syllabus Requirements. None.

4. Discuss Items

ON4201
QOD, wingman deconfliction responsibilities, and target area deconfliction.

ON4202-3
QOD and lead responsibilities.

5. Block MIF

CTS REF	MANEUVER	ON4203
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3+
32	Formation Wing	4+
12	Enroute Navigation	4+
40	Low-Level Navigation/Procedures	4+
40	Route Entry	4+
40	Low-Level Waypoint Navigation	3+
40	Chart Interpretation	4+
40	Turns	4+
40	Ridge Crossing	3
40	Weather Response	3
40	Route Abort/Exit	4+
34	Tactical Lead	3+
35	Tactical Wing	4+
46	Sight/Lookout Doctrine	4+
49	Strike Maneuvering	4+
36	Tactical Rejoin	4+

MIF continued on next page.

CTS REF	MANEUVER	ON4203
13	Descent/Field Entry	4+
21	Precautionary Approach(es)	4
22	VFR Landing Pattern	4
23	FF Roll-and-Go	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
RR41	T-45	Road Recce	3	3.8	See Syl Note

1. Prerequisites

   a. ON4105.

   b. TAC4402.

   c. STK4501.

   d. RR1102.

2. Syllabus Notes

   a. Allow 1.3 H/X for RR4101-2 and 1.2 H/X for RR4103.

   b. Brief 2+00 prior to takeoff for RR4101.

   c. Jacket review required prior to check flights.

   d. RR4101 shall be the only event flown that day; IP demonstrate section target attack on this event.

3. Special Syllabus Requirements. None.

4. Discuss Items

   RR4101
   QOD, low-altitude hazards, low-altitude emergencies, low-altitude section maneuvering, low-altitude section deconfliction, low-altitude flight safety, NORDO procedures, and display management.

   RR4102
   QOD, slow speed and low-altitude roll-ins, two-plane armed reconnaissance, attacks on approved targets of opportunity with simulated ordnance, and target area deconfliction.

   RR4103
   QOD, visual reconnaissance, lookout doctrine, and response to bandit.

5. Block MIF

CTS REF	MANEUVER	RR4103
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3+
32	Formation Wing	4+
12	Enroute Navigation	4+
40	Low-Level Navigation/Procedures	4+
40	Route Entry	4+
40	Chart Interpretation	4+
40	Turns	4+
40	Weather Response	3
40	Route Abort/Exit	4+
34	Tactical Lead	4+
35	Tactical Wing	4+
46	Sight/Lookout Doctrine	4+
6	Target Description	4+
49	Strike Maneuvering	4+
36	Tactical Rejoin	4+
13	Descent/Field Entry	4+
21	Precautionary Approach	4

MIF continued on next page.

CTS REF	MANEUVER	RR4103
22	VFR Landing Pattern	4
23	FF Roll-and-Go	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
RR42	T-45	Section Road Recce Solo	1	1.1	1.1

1. Prerequisite. RR4103.

2. Syllabus Notes

a. RR4201 may be shotgunned with prior Wing Commander approval only when necessary on a mini-detachment without maintenance support.

b. Shotgunning will not reduce Minimum Solo Hour requirements of ***Special Instructions and Restrictions***.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, look-out doctrine, and response to bandit.

5. Block MIF

CTS REF	MANEUVER	RR4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3+

MIF continued on next page.

CTS REF	MANEUVER	RR4201
32	Formation Wing	4+
12	Enroute Navigation	4+
40	Low-Level Navigation/Procedures	4+
40	Route Entry	4+
40	Chart Interpretation	4+
40	Turns	4+
40	Weather Response	3
40	Route Abort/Exit	4+
34	Tactical Lead	4+
35	Tactical Wing	4+
46	Sight/Lookout Doctrine	4+
6	Target Description	4+
49	Strike Maneuvering	4+
36	Tactical Rejoin	4+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
STK31	OFT	Strike	6	6.6	1.1

1. Prerequisite. STK1105 (Weapons Exam).

2. Syllabus Notes

a. Student shall see a minimum of four passes in each pattern.

b. STK3101 shall introduce and concentrate on the 30-degree pattern. Student is required to practice aborting a bombing run and dealing with HUD failure. Manual deliveries only.

c. STK3102 shall concentrate on the 30-degree pattern and introduce the 20-degree pattern, manual deliveries only.

d. STK3103 shall introduce the 10-degree pattern, then concentrate on 30-degree pattern, manual deliveries only with wind corrections (time permitting).

e. STK3104 shall concentrate on the 30-/10-degree pattern, manual deliveries with wind corrections.

f. STK3105 shall introduce 30-/10-degree pattern, CCIP deliveries.

g. STK3106 shall introduce the 30-30 and offset pop pattern, concentrate on 30-degree pattern with heavy winds (30-knot crosswind).

h. With student proficiency, winds may be introduced earlier than the STK3104.

i. Winds should be between 10-30 knots with a variant of crosswinds and be consistent for at least four passes.

3. Special Syllabus Requirements. None.

4. Discuss Items

STK3101
QOD, compute offset aimpoint, and weapons pattern.

STK3102
QOD, abort criteria, and weapons pattern.

STK3103
QOD, hung ordnance approach, weapons pattern, wind corrections, compute CEP, weapons emergencies, and emergency jettison.

STK3104
QOD, delivery validation criteria, heavy wind corrections, and weapons pattern.

STK3105
QOD and CCIP target tracking.

STK3106
QOD and pop pattern.

5. Block MIF

CTS REF	MANEUVER	STK3106
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	3+
9	Tactical Admin	3+
2	Abort Run	4+
2	HUD failure	3+
30 10	Takeoff	4+
50	Spacer Pass	3+

MIF continued on next page.

CTS REF	MANEUVER	STK3106
54	Roll-In	3+
54	Tracking/Dive Angle	3+
54	Error Corrections	3+
56	Release/Firing Parameters	3+
53 56	Dive Recovery	3+
54	Weapons Pattern	3+
55	Accuracy	3+
50	Off-Target Rendezvous	3+

Blk #	Media	Title	Events	Hrs	H/X
STK21	OFT	Strike Emergency Procedures	1	1.3	1.3

1. Prerequisite. STK3105.

2. Syllabus Note. The student will perform the following procedures IAW FTI, NATOPS, and SOP on this event: in-flight emergencies (any), introduce hung ordnance approach, pitot static malfunction, simo run, emergency jettison, HUD failure, lost communications procedures, lost interval procedures, and ejection situations.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and lost interval.

5. Block MIF

CTS REF	MANEUVER	STK2101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	3+
9	Tactical Admin	3+
2	Ground Emergencies	3+
2	Takeoff EPs	4+
2	In-Flight EPs	3+
2	Landing EPs	3+
2	Lost Communications	3+
2	Abort Run	4+

MIF continued on next page.

CTS REF	MANEUVER	STK2101
2	HUD failure	3+
2	Pitot Static Malfunction	3+
2	Simo Run	3+
2	Emergency Jettison	3+
50	Hung Ordnance Approach	3+
2	Blown Tire during Takeoff/Landing	3+
30 10	Takeoff	4+
50	Spacer Pass	3+
54	Weapons Pattern	3+
29	Pattern Stall/Recovery	4+

Blk #	Media	Title	Events	Hrs	H/X
STK41	T-45	Strike	4	4.0	1.0

1. Prerequisites

a. STK2101.

b. STK3106.

2. Syllabus Notes

a. STK4101 shall be flown without ordnance loaded. Students will be exposed to 30-/20-/10-degree patterns. Students shall complete two off-target rendezvous and a hung ordnance straight-in.

b. For STK4102-4, student must deliver 4xMK-76 to complete each event.

c. Students must complete three off-target rendezvous within block. At least one event shall be a four-plane; all events must be a three-plane minimum.

d. STK4102

(1) Flight brief shall be 2+00 prior to takeoff.

(2) Shall introduce weapons preflight and hung ordnance checks.

(3) Concentrate on the 30-degree pattern.

e. STK4103 will concentrate on the 30-degree pattern.

f. STK4104 shall concentrate on the 30-/10-degree pattern.

3. Special Syllabus Requirements. None.

4. Discuss Items

STK4101
QOD, high-angle-off-tail rendezvous,and noncritical mission tasks.

STK4102
QOD, formation safety, mil settings, master arm safety, and inadvertent weapons release.

STK4103
QOD, wind corrections, offset aimpoint, and delivery validation.

STK4104
QOD, wind corrections, armament system management errors, and ordnance release troubleshooting.

5. Block MIF

CTS REF	MANEUVER	STK4104
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
50	Hung Ordnance Approach	4+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
50	Spacer Pass	3+
54	Roll-In	3+
54	Tracking/Dive Angle	3+
54	Error Corrections	3+

MIF continued on next page.

CTS REF	MANEUVER	STK4104
56	Release/Firing Parameters	3+
53 56	Dive Recovery	3+
54	Weapons Pattern	3+
55	Accuracy	3+
50	Off-Target Rendezvous	3+
13	Descent/Field Entry	4
21	Precautionary Approach	4+
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
STK42	T-45	Strike Solo	2	2.0	1.0

1. Prerequisite. STK4104.

2. Syllabus Notes

a. Shall be flown in whichever weapons pattern is available in the target area, weather-dependent.

b. A minimum of four bombs delivered is required to complete each event.

c. Manual deliveries only.

3. Special Syllabus Requirements. None.

4. Discuss Items

STK4201-2
QOD and FTI safety procedures.

5. Block MIF

CTS REF	MANEUVER	STK4202
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
50	Spacer Pass	3+
54	Error Corrections	3
56	Release/Firing Parameters	3
53 56	Dive Recovery	3
54	Weapons Pattern	3+
55	Accuracy	3+
50	Off-Target Rendezvous	3+
13	Descent/Field Entry	4
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
STK43	T-45	Strike	1	1.0	1.0

1. Prerequisite. STK4202.

2. Syllabus Notes

a. STK4301 shall emphasize the 30-/10-degree pattern.

b. A minimum of four bombs delivered is required to complete this event.

c. CCIP deliveries only.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, safety requirements, frag avoidance, and emergencies.

5. Block MIF

CTS REF	MANEUVER	STK4301
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
50	Spacer Pass	4+
54	CCIP Target Tracking	4+
54	Error Corrections	4+
56	Release/Firing Parameters	4+
53 56	Dive Recovery	4+
54	Weapons Pattern	4+
55	Accuracy	4+
50	Off-Target Rendezvous	4+
13	Descent/Field Entry	4
21	Precautionary Approach	4
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
STK44	T-45	Strike Solo	1	1.0	1.0

1. Prerequisite. STK4301.

2. Syllabus Notes

a. Shall be flown in whichever weapons pattern is available in the target area, weather-dependent.

b. A minimum of four bombs delivered is required to complete this event.

c. CCIP deliveries only.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and FTI safety precautions.

5. Block MIF

CTS REF	MANEUVER	STK4401
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
50	Spacer Pass	4+
54	CCIP Target Tracking	1
54	Error Corrections	4
56	Release/Firing Parameters	4
53 56	Dive Recovery	4
54	Weapons Pattern	4+
55	Accuracy	4+
50	Off-Target Rendezvous	4+
13	Descent/Field Entry	4
21	Precautionary Approach	1
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
STK45	T-45	Strike	1	1.0	1.0

1. Prerequisite. STK4301.

2. Syllabus Notes

a. Shall be flown as a pop event, introducing pop procedures and an extended pop pattern as detailed in the Weapons FTI; CCIP target tracking shall be used.

b. A minimum of four bombs delivered is required to complete this event.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, racetrack pattern, 30-30 pop, and abort criteria.

5. Block MIF

CTS REF	MANEUVER	STK4501
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
50	Spacer Pass	4+
54	Roll-In	4+
54	Tracking/Dive Angle	4+
54	Error Corrections	4+
56	Release/Firing Parameters	4+
53 56	Dive Recovery	4+
54	Weapons Pattern	4+
55	Accuracy	4+
50	Off-Target Rendezvous	4+
13	Descent/Field Entry	4
21	Precautionary Approach	4
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
TAC41	T-45	Tactical Formation	3	3.6	1.2

1. Prerequisite. TAC1103 (Tactical Formation Exam).

2. Syllabus Notes

a. Brief 2+00 prior to takeoff for TAC4101.

b. TAC4101 shall be the only flight flown that day.

c. Off-heading shackles will not be performed on TAC4101, but may be introduced on TAC4102.

d. Student will lead at least one flight back to the field.

3. Special Syllabus Requirements. None.

4. Discuss Items

TAC4101
QOD, lost sight game plan, VCR management, G-warm maneuver, and 500-ft safety bubble.

TAC4102-3
QOD, lost sight game plan, and VCR management.

5. Block MIF

CTS REF	MANEUVER	TAC4103
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	3+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
31	Formation Lead	3+
32	Formation Wing	4+
12	Enroute Navigation	4+
35	Defensive Combat Spread	3+
35	Cruise Turns	3+
35	Check Turns	3+
35	Shackles	3+
35	Off-Heading Shackles	3+
35	Tac Turns	3+
35	In-Place Turns	3+
35	Cross Turns	3+
38	Loose Deuce Exercise	3+
36	Tactical Rejoin	3+
13	Descent/Field Entry	3+
21	Precautionary Approach	4+
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
TAC42	T-45	Tactical Formation Solo	1	1.1	1.1

1. Prerequisite. TAC4103.

2. Syllabus Notes. None.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, lost sight game plan, VCR management, G-warm maneuver, and 500-ft safety bubble.

5. Block MIF

CTS REF	MANEUVER	TAC4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	3+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
35	Defensive Combat Spread	3+
35	Cruise Turns	3
35	Check Turns	3+
35	Shackles	3+
35	Off-Heading Shackles	3+
35	Tac Turns	3+
35	In-Place Turns	3+
35	Cross Turns	3+
38	Loose Deuce Exercise	3
36	Tactical Rejoin	3+
13	Descent/Field Entry	3
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
TAC43	T-45	Advanced Tactical Formation	4	4.6	See Syl Note

1. Prerequisite. TAC4201.

2. Syllabus Notes

a. Allow 1.1 H/X for TAC4301-2 and 1.2 H/X for TAC4303-4.

b. Student shall brief and lead TAC4303. Wingman shall be dedicated IP.

3. Special Syllabus Requirements. None.

4. Discuss Items

TAC4301
QOD and advanced tactical formation procedures.

TAC4302
QOD, position corrections after random maneuvers, comm-out tactical formation signals, and wingman deconfliction responsibilities.

TAC4303
QOD, lead responsibilities and area management.

TAC4304
QOD.

5. Block MIF

CTS REF	MANEUVER	TAC4304
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+

MIF continued on next page.

CTS REF	MANEUVER	TAC4304
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
31	Formation Lead	3+
34	TACFORM Lead	2+
32	Formation Wing	4+
12	Enroute Navigation	4+
35	Defensive Combat Spread	4+
35	Offensive Combat Spread	3+
35	Check Turns	4+
35	Shackles	4+
35	Off-Heading Shackles	4+
35	Tac Turns	4+
35	In-Place Turns	4+
35	Cross Turns	4+
35	Advanced Tacform Maneuvering	3+
35	Forced Cockpit Loading	3+
39	Gunsight Tracking Exercise	4+
36	Tactical Rejoin	4+
13	Descent/Field Entry	3+
21	Precautionary Approach	4+
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
TAC44	T-45	Advanced Tactical Formation Solo	2	2.2	1.1

1. Prerequisite. TAC4304.

2. Syllabus Notes. None.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD and wingman deconfliction responsibilities.

5. Block MIF

CTS REF	MANEUVER	TAC4402
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
30 10	Takeoff	4+
11	Departure	4+
11	Rendezvous	4+
31	Formation Lead	3
32	Formation Wing	4+
12	Enroute Navigation	4+
35	Defensive Combat Spread	4+
35	Offensive Combat Spread	3+
35	Check Turns	4+

MIF continued on next page.

CTS REF	MANEUVER	TAC4402
35	Shackles	4+
35	Off-Heading Shackles	4+
35	Tac Turns	4+
35	In-Place Turns	4+
35	Cross Turns	4+
35	Advanced Tacform Maneuvering	3+
35	Forced Cockpit Loading	3
39	Gunsight Tracking Exercise	4+
36	Tactical Rejoin	4+
13	Descent/Field Entry	3+
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
BFM31	OFT	Out-of-Control Simulator	1	1.0	1.0

1. Prerequisites

a. STK4501.

b. TAC4402.

c. ON4105.

2. Syllabus Notes

a. BFM3101 must be flown within 14 days of BFM41 block.

b. Student shall not participate in any other stage of training while in BFM (exception: may also participate in either AN ***or*** NFR in conjunction with BFM).

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, runaway trim, engine flameout, ejection situations, locked-in compressor stall, airstart, and NATOPS Chapter 11.

5. Block MIF

CTS REF	MANEUVER	BFM3101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
29	High AOA/Deep Stall Investigation/Rudder-Induced Departure	3+
29	70-Degree Nose-High Departure	3+
29	90-Degree Nose-High Departure	3+
29	110-Degree Nose-High Departure	3+
29	Adverse Yaw Departure	3+
2	Stuck Throttle Approach	3+
2	Blown Tire During Field Landing	4+
2	Field Arrestment with Blown Tire	4+
2	Airstart	4+
29	Spin/Spin Recovery	3+
41	Pedal Turns	3
21	Precautionary Approach	4+
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
BFM41	T-45	Basic Fighter Maneuvering (OCF/1 V 0)	1	1.0	1.0

1. Prerequisites

a. BFM1104 (BFM 1 V 1 Offensive/Defensive Exam).

b. BFM3101 (within the previous 14 days).

2. Syllabus Notes

a. BFM3101 must be flown within 14 days of BFM41 block.

b. Demonstrate flat scissors maneuvering, roller mechanics, break turn, deck transition, and miscellaneous 1 V 0 maneuvers.

c. Student shall not participate in any other stage of training while in BFM (exception: may also participate in either AN ***or*** NFR in conjunction with BFM).

d. BFM4101 updates OCF and BFM currency.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, HUD air-to-air mode setup, departure recovery procedures, spin recovery procedures, departure recovery indications, unusual attitude recovery, and training rules.

5. Block MIF

CTS REF	MANEUVER	BFM4101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
29	High AOA/Deep Stall Investigation/Rudder-Induced Departure	3+
29	70-Degree Nose-High Departure	3+
29	110-Degree Nose-High Departure	3+
29	Adverse Yaw Departure	3+
13	Descent/Field Entry	4+
21	Low Oil GCA/ILS/PA	4+
21	Precautionary Approach	4
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+
41	1 V 0	3+

Blk #	Media	Title	Events	Hrs	H/X
BFM42	T-45	Basic Fighter Maneuvering (TACFORM Refresher)	1	1.0	1.0

1. Prerequisites

a. BFM3101 (within the previous 14 days).

b. BFM1104 (BFM 1 V 1 Offensive/Defensive Exam).

2. Syllabus Note. This flight shall introduce BFM PADS setups for the horizontal scissors, rolling scissors, 6,000 and 9,000 sets, and one defensive perch set, preferably demonstrated by the instructor pilot.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, deck awareness, departure recovery procedures, and training rules.

5. Block MIF

CTS REF	MANEUVER	BFM4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	3+
7	Ground Operations	4+
53	Training Rules	3+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+

MIF continued on next page.

CTS REF	MANEUVER	BFM4201
31	Formation Lead	3
12	Enroute Navigation	4+
35	Defensive Combat Spread	3+
35	Shackles	3+
35	Off-Heading Shackles	3
35	Tac Turns	3+
35	In-Place Turns	3+
35	Cross Turns	3
35	Advanced Tacform Maneuvering	3+
41	Snap-Shot Drill	1
41 42	Horizontal Scissors	1
41 42	Rolling Scissors	1
41 42	9,000-Foot Perch Set	1
36	Tactical Rejoin	4+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
BFM43	T-45	Basic Fighter Maneuvering (Offensive 1 V 1)	3	3.0	1.0

1. Prerequisites

a. BFM4101 (within the previous 14 days).

b. BFM4201.

2. Syllabus Notes

a. BFM4301 shall be flown within 14 days of BFM4101.

b. Brief for BFM4301 shall be 2+00 hours prior to takeoff.

c. Students shall lead the recovery portion of the flight at least once in the block.

d. Students shall execute at least six total perch sets in block.

e. The snap-shot drill shall be performed as the shooter.

3. Special Syllabus Requirements. None.

4. Discuss Items

BFM4301
QOD, BFM concepts and definitions, departure recovery indications/procedures, training rules, deck awareness, and KIO procedures.

BFM4302-3
QOD, BFM concepts and definitions, deck transition timing, deck transition mechanics, on-deck maneuvering, and training rules.

5. Block MIF

CTS REF	MANEUVER	BFM4303
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	3+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
53	Training Rules	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3+
12	Enroute Navigation	4+
41	Snap-Shot Drill	3+
41 42	Horizontal Scissors	3+
41 42	Rolling Scissors	3+
41 42	6,000-foot Perch Set	3+
41 42	9,000-foot Perch Set	3+
42	LAR Recognition	3+
43	WEZ Recognition	3
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
21	Precautionary Approach	4+
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
BFM44	T-45	Basic Fighter Maneuvering Solo (Offensive 1 V 1)	1	1.0	1.0

1. Prerequisite. BFM4303.

2. Syllabus Note. The snap-shot drill shall be performed as the shooter.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, BFM concepts and definitions, deck awareness, KIO procedures, unusual attitude recovery, and training rules.

5. Block MIF

CTS REF	MANEUVER	BFM4401
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
53	Training Rules	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3
12	Enroute Navigation	4+
41	Snap-Shot Drill	3+
41 42	Horizontal Scissors	3+
41 42	Rolling Scissors	3+
41 42	6,000-foot Perch Set	3+
41 42	9,000-foot Perch Set	3+
42	LAR Recognition	3+
43	WEZ Recognition	3
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
BFM45	T-45	Basic Fighter Maneuvering (Defensive 1 V 1)	2	2.0	1.0

1. Prerequisite. BFM4401.

2. Syllabus Notes

a. The snap-shot drill shall be performed as the target.

b. Students shall perform a minimum of four perch sets in block (six desired).

3. Special Syllabus Requirements. None.

4. Discuss Items

BFM4501
QOD, BFM concepts and definitions, energy management, deck awareness, separation procedures/assessment, KIO procedures, unusual attitude recovery procedures, ballistic flight recognition, and training rules.

BFM4502
QOD, BFM concepts and definitions, and training rules.

5. Block MIF

CTS REF	MANEUVER	BFM4502
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
53	Training Rules	4+

MIF continued on next page.

CTS REF	MANEUVER	BFM4502
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3
12	Enroute Navigation	4+
41	Snap-Shot Drill	3+
41 42	Horizontal Scissors	3+
41 42	Rolling Scissors	3+
41 42	6,000-foot Perch Set	3+
41 42	9,000-foot Perch Set	3+
42	LAR Recognition	3
43	WEZ Recognition	3+
43	Separation (Bugout)	3
41	Offensive BFM	3
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
21	Precautionary Approach	4+
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
BFM46	T-45	Basic Fighter Maneuvering Solo (Defensive 1 V 1)	1	1.1	1.1

1. Prerequisite. BFM4502.

2. Syllabus Notes

a. The snap-shot drill shall be performed as the target.

b. The student shall perform a minimum of two perch sets.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, training rules, deck transition/ mechanics, separation assessment/mechanics, ballistic profile recognition, and in-flight emergencies.

5. Block MIF

CTS REF	MANEUVER	BFM4601
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
53	Training Rules	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3

MIF continued on next page.

CTS REF	MANEUVER	BFM4601
12	Enroute Navigation	4+
41	Snap-Shot Drill	3+
41 42	Horizontal Scissors	3+
41 42	Rolling Scissors	3+
41 42	6,000-foot Perch Set	3+
41 42	9,000-foot Perch Set	3+
42	LAR Recognition	3
43	WEZ Recognition	3+
43	Separation (Bugout)	3
42	Offensive BFM	3
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
BFM47	T-45	Basic Fighter Maneuvering (High-Aspect 1 V 1)	2	2.0	1.0

1. Prerequisites

   a. BFM1106 (BFM 1 V 1 High-Aspect Exam).

   b. BFM4601.

2. Syllabus Notes. None.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, concepts and definitions, training rules, high-aspect BFM, one-circle engagement, two-circle engagement, energy management, controlling the merge, lost sight procedures, game-plan development, unique merges, and maintaining/regaining sight.

5. Block MIF

CTS REF	MANEUVER	BFM4702
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
53	Training Rules	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3
12	Enroute Navigation	4+
41	Snap-Shot Drill	4+
42	LAR Recognition	3
43	WEZ Recognition	3
44	Butterfly Set	3+
44	Abeam Set	3+
42	Offensive BFM	3
43	Defensive BFM	3
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
21	Precautionary Approach	4
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
BFM48	T-45	Basic Fighter Maneuvering Solo (High-Aspect 1 V 1)	2	2.0	1.0

1. Prerequisite. BFM4702.

2. Syllabus Notes. None.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, BFM concepts and definitions, lost-sight game plan, maintaining/regaining sight, training rules, and in-flight emergencies.

5. Block MIF

CTS REF	MANEUVER	BFM4802
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
53	Training Rules	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
31	Formation Lead	3
12	Enroute Navigation	4+
41	Snap-Shot Drill	4+
42	LAR Recognition	3
43	WEZ Recognition	3
44	Butterfly Set	3+
44	Abeam Set	3+
42	Offensive BFM	3
43	Defensive BFM	3
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blk #	Media	Title	Events	Hrs	H/X
SEM41	T-45	Section Engaged Maneuvering (2 V 1)	3	3.0	1.0

1. Prerequisites

a. SEM1102 (SEM 2 V 1 Exam).

b. BFM4802 (BFM4786 flown if outside of 14 days).

2. Syllabus Notes

a. If more than 14 days have elapsed since BFM4802, BFM4786 shall be flown prior to SEM4101.

b. Brief 2+00 prior to takeoff for SEM4101.

3. Special Syllabus Requirements. None.

4. Discuss Items

SEM4101
QOD, SEM concepts and definitions, training rules, engaged comm, situational awareness, and KIO procedures.

SEM4102-3
QOD, SEM concepts and definitions, training rules, engaged comm, lost-sight game plan, and nonscripted game plans (TTC).

5. Block MIF

CTS REF	MANEUVER	SEM4103
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+

MIF continued on next page.

CTS REF	MANEUVER	SEM4103
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
34	Tactical Lead	3+
35	Tactical Wing	3+
35	Defensive Combat Spread	4+
45	Engaged Communications	3+
53	Training Rules	4+
45	Mutual Support	3+
42	Offensive BFM	3+
43	Defensive BFM	3+
42	LAR Recognition	3
43	WEZ Recognition	3
44	High-Aspect BFM	3
45	Forward Quarter Set	3+
45	Beam Quarter Set	3+
45	Rear Quarter Set	3+
45	Advanced Set	3+
45	Tap-the-Cap	3+
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
21	Precautionary Approach	4+
22	VFR Landing Pattern	4
23	Landing/Touch-and-Go	4+

Blk #	Media	Title	Events	Hrs	H/X
SEM42	T-45	Section Engaged Maneuvering Solo (2 V 1)	1	1.0	1.0

1. Prerequisite. SEM4103.

2. Syllabus Notes. None.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, SEM concepts and definitions, role definition/responsibilities, lost-sight game plan, training rules, in-flight emergencies, and BVR game plans.

5. Block MIF

CTS REF	MANEUVER	SEM4201
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
9	Tactical Admin	4+
10	Takeoff	4+
11	Departure	4+
32	Formation Wing	4+
12	Enroute Navigation	4+
34	Tactical Lead	3
35	Tactical Wing	3+
35	Defensive Combat Spread	4+
45	Engaged Communications	3+

MIF continued on next page.

CTS REF	MANEUVER	SEM4201
53	Training Rules	4+
45	Mutual Support	3+
42	Offensive BFM	3+
43	Defensive BFM	3+
42	LAR Recognition	3
43	WEZ Recognition	3
44	High-Aspect BFM	3
45	Forward Quarter Set	3+
45	Beam Quarter Set	3+
45	Rear Quarter Set	3+
45	Advanced Set	3+
45	Tap-the-Cap	3
36	Tactical Rejoin	4+
46	Sight/Lookout Doctrine	3+
13	Descent/Field Entry	4+
22	VFR Landing Pattern	1
23	Landing/Touch-and-Go	1

Blkk #	Media	Title	Events	Hrs	H/X
CQL41	T-45	Night CQL Safe-for-Solo	1	0.7	0.7

1. Prerequisites

   a. ON4105.

   b. TAC4402.

   c. STK4501.

2. Syllabus Notes

   a. Shall be flown at night. LSO not required on station.

   b. Shall be flown within two weeks of CQL4201.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, Delta pattern, preflight/ground operations, pattern entry, and communications.

5. Block MIF

CTS REF	MANEUVER	CQL4101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
13	Descent/Field Entry	4+
52	FCLP Pattern	4+
17	ILS to Visual Approach and Landing	3
23	FF Roll-and-Go	4+
23	FF Touch-and-go	4+
23	Full-Stop Landing	4+

Blk #	Media	Title	Events	Hrs	H/X
CQL42	T-45	Carrier Qualification Landing Solo	11	6.6	0.6

1. Prerequisites

a. Students must have a minimum of 320 FCLP-type landings on the IFLOLS in the T-45 prior to beginning Carrier Qualification Landing Stage (CQL4201).

b. CQL4101 (within two weeks).

c. CQL1101 (Day/Night FCLP Refresher).

d. NFR4401.

e. AN4502 (within three weeks prior to CQL4201).

2. Syllabus Notes

a. CQL4201 shall be flown within three weeks of AN4502 and within two weeks of CQL4101.

b. Students shall not be scheduled in any other stage once they begin CQL4201.

c. One night FCL period under LSO control is required during CQL. A total of three night solo FCL periods (FCL and CQL) under LSO control must be flown prior to CQL43.

d. A minimum of six FCLP-type passes are required on each event (eight are desired).

e. All night CQL flights shall take off no earlier than 30 minutes after official sunset.

f. Up to three CQL events may be flown per day.

g. Landing grades are at the sole discretion of the LSOs.

h. Night CQL shall not be flown prior to CQL4203.

i. Only CQL events shall be scheduled from CQL4201 through the completion of CQL4490.

j. Blown Tire Exercise (BTX) shall be flown at half flaps between CQL4209-11.

k. These events shall not be shotgunned for any reason.

3. Special Syllabus Requirements. None.

4. Discuss Items

CQL4201
QOD, Delta pattern, preflight/ground operations, pattern entry, and communications.

CQL4202
QOD, pattern procedures, arrestment procedures, Case I procedures, and trend analysis.

CQL4203
QOD and deck procedures.

CQL4204
QOD, Bingo/divert procedures, and GINA failure.

CQL4205
QOD, departure procedures, and return-to-base procedures.

CQL4206
QOD, carrier-related emergencies, and Case II arrival procedures.

CQL4207
QOD and carrier pattern.

CQL4208
QOD and carrier procedures.

CQL4209
QOD, carrier pattern, and BTX.

CQL4210-11
QOD.

5. Block MIF

CTS REF	MANEUVER	CQL4211
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
13	Descent/Field Entry	4+
52	FCLP Pattern	4+
52	Start Position	4+
52	AOA Control	4+
52	Glideslope Control	4+
52	Power Control	4+
52	Lineup Control	4+
52	Error Detection/Correction	4+
52	Response to LSO Calls	4+
52	Bolter/Touch-and-Go Technique	4+
52	Waveoff Technique	4+
23	Full-Stop Landing	4+

Blk #	Media	Title	Events	Hrs	H/X
CQL31	OFT	Carrier Qualification Landing Simulators	2	2.8	1.4

1. Prerequisite. CQL1102 (CQL Shipboard Procedures).

2. Syllabus Notes

a. Up to three CQL events may be flown per day.

b. During CQL3101, demonstrate CVN flight operations with emphasis on field departure to shipboard recovery.

c. CQL3102 will continue shipboard procedures with emphasis on emergencies.

3. Special Syllabus Requirements. None.

4. Discuss Items

CQL3101
QOD, ship-to-shore checklist, Delta pattern (CV versus field), Case I arrival, shipboard alignment, Case I departure, use of IFLOLS in NORDO, Bingo, and waveoff situations.

CQL3102
QOD, preflight/ground operations, communications, CV terms and comm brevity, pattern entry, Case II arrival and Case II departure, ship-to-shore checklist, and Bingo card data.

5. Block MIF

CTS REF	MANEUVER	CQL3102
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+

MIF continued on next page.

CTS REF	MANEUVER	CQL3102
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
2	Ground Emergencies	4
2	CV Emergencies	3+
2	CV Arrestment w/Blown Tire(s)	2+
2	Bolter w/Blown Tire(s)	3+
2	Field Arrestment w/Blown Tire(s)	3+
2	Bingo	4+
30 10	Takeoff	4+
11	Departure	4+
13	Descent/Field Entry	4+
51	CV Arrival (Case I/II)	3+
52	CV Pattern	3+
52	Start Position	3+
52	AOA Control	2+
52	Glideslope Control	2+
52	Power Control	2+
52	Lineup Control	2+
52	Error Detection/Correction	2+
52	Response to LSO Calls	4+
52	Bolter/Touch-and-Go Technique	4+
52	Waveoff Technique	4+
51	CVN Flight Deck Procedures	3+
51	Catapult Launch Procedures	3+
51	CVN Arrestment Procedures	3+

Blk #	Media	Title	Events	Hrs	H/X
CQL21	OFT	Emergency Procedures (CQL)	1	1.5	1.5

1. Prerequisites

a. CQL4205.

b. CQL1102 (CQL Shipboard Procedures).

2. Syllabus Note. Up to three CQL events may be flown per day.

3. Special Syllabus Requirements. None.

4. Discuss Items. QOD, carrier-related emergencies, ditching situations, and short-field arrestments.

5. Block MIF

CTS REF	MANEUVER	CQL2101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
2	Ground Emergencies	4+
2	CV Emergencies	4+
2	Suspend Procedures	4+
2	Brake Failure on Deck	4+
2	Lost Communications at CVN	4+
2	NWS Failure	4+

MIF continued on next page.

CTS REF	MANEUVER	CQL2101
2	Launch Bar Malfunction	4+
2	Catapult Malfunctions	4+
2	GINA Failure	4+
2	Swerve on Touchdown	4+
2	Ejection	4+
2	CV Arrestment w/Blown Tire(s)	4+
2	Bolter w/Blown Tire(s)	4+
2	Field Arrestment w/Blown Tire(s)	4+
2	Bingo	4+
30 10	Takeoff	4+
11	Departure	4+
13	Descent/Field Entry	4+
51	CV Arrival (Case I/II)	4+
52	CV Pattern	4+
52	Start Position	3+
52	AOA Control	2+
52	Glideslope Control	2+
52	Power Control	2+
52	Lineup Control	2+
52	Error Detection/Correction	2+
52	Response to LSO Calls	4+
52	Bolter/Touch-and-Go Technique	4+
52	Waveoff Technique	4+
51	CVN Flight Deck Procedures	4+
51	Catapult Launch Procedures	4+
51	CVN Arrestment Procedures	4+

Blk #	Media	Title	Events	Hrs	H/X
CQL43	T-45	Carrier Qualification Landing Solo Check Flight (Field)	1	0.6	0.6

1. Prerequisites

   a. CQL4211.

   b. CQL3102.

   c. CQL2101.

2. Syllabus Notes

   a. Up to three CQL events may be flown per day.

   b. CQL4390 shall not be shotgunned for any reason.

   c. Landing grades are at the sole discretion of the LSOs.

3. Special Syllabus Requirements. None.

4. Discuss Item. QOD.

5. Block MIF

CTS REF	MANEUVER	CQL4390
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
13	Descent/Field Entry	4+
52	FCLP Pattern	4+
52	Start Position	4+
52	AOA Control	4+
52	Glideslope Control	4+
52	Power Control	4+
52	Lineup Control	4+
52	Error Detection/Correction	4+
52	Response to LSO Calls	4+
52	Bolter/Touch-and-Go Technique	4+
52	Waveoff Technique	4+
23	Full-Stop Landing	4+

Blk #	Media	Title	Events	Hrs	H/X
CQL44	T-45	Carrier Qualification Landing Solo Check Flight (Ship)	1	4.2	4.2

1. Prerequisites

a. CQL4390.

b. CQL1104 (Ship's Brief Exam).

2. Syllabus Notes

a. CQL4490 shall not be shotgunned for any reason.

b. Four carrier touch-and-go landings and ten carrier-arrested landings required for completion.

c. A student shall have a warmup CQL4386 if more than two days have elapsed since CQL4390 or a day touch-and-go/arrestment at the ship.

d. A maximum of six carrier arrestments is permitted for CNATRA students per day. This is waiverable by the CNATRA LSO.

e. Students are limited to two CQL flights with a maximum of three manups per day.

f. A maximum of 3.5 flight hours is permitted per one Carrier Qualification Landing flight for students, to commence at takeoff and terminate with engine shutdown.

g. A maximum of 5 total flight hours per day is permitted for students.

h. Students shall be designated as qualified with a GPA of 2.50 or better and a 60-percent boarding rate or better, provided MIF for the block has been met. Additionally, the TRAWING LSO, with CNATRA LSO approval, may qualify students with less than a 2.50 GPA based on improving trends. Conversely, LSO may disqualify a student with a GPA above 2.5 due to a decreasing trend or unsafe tendencies. Grading criteria is provided in Landing Signal Officer NATOPS Manual (NAVAIR 00-80T-104) and Carrier Qualification Flight Training Instruction (CNATRA P-1211).

i. Landing grades are at the sole discretion of the LSOs.

j. Student solo flights may be launched with departure field weather between 500/2 and 1000/3 with the expressed consent of the Squadron CO or designated authority and CNATRA OIC.

3. Special Syllabus Requirements. None

4. Discuss Items. QOD and Carrier Qualification Landing procedures.

5. Block MIF

CTS REF	MANEUVER	CQL4490
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	Basic Airwork	4+
5	Mission Planning/Briefing/ Debriefing	4+
6	Communications	4+
7	Ground Operations	4+
8	Flight Admin	4+
30 10	Takeoff	4+
11	Departure	4+
12	Enroute Navigation	4+
13	Descent/Field Entry	4+
51	CV Arrival (Case I/II)	4+
52	CV Pattern	4+
52	Start Position	4+
52	AOA Control	4+
52	Glideslope Control	4+
52	Power Control	4+
52	Lineup Control	4+

MIF continued on next page.

CTS REF	MANEUVER	CQL4490
52	Error Detection/Correction	4+
52	Response to LSO Calls	4+
52	Bolter/Touch-and-Go Technique	4+
52	Waveoff Technique	4
51	CVN Flight Deck Procedures	4+
51	Catapult Launch Procedures	4+
51	CVN Arrestment Procedures	4+
23	Full-Stop Landing	1

BLANK PAGE

Chapter IX

Course Training Standards (CTS)

1. Purpose. These standards outline the tasks and proficiency required to graduate from 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 Standards

a. Achieve training standards for Visual Meteorological Condition (VMC) maneuvers in conjunction with visual clearing.

b. Unless otherwise specified, use ***Basic Airwork (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 Maneuver Item File (MIF) regulates student progression to meet required standards prior to phase completion. Instructor Pilots shall evaluate student 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 student aviator..."

6. Graded Items. The Maneuver Item File (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	
• Demonstrate knowledge of aircraft systems, procedures, and associated directives and instructions.	• Demonstrates a thorough understanding of aircraft systems capabilities, aircraft directives, and local procedures. • Knowledgeable of local working area WRT boundaries, altitudes, and significant landmarks without reference to in-flight guide or charts. • Demonstrates ability to apply procedures from all applicable source guidance.

BEHAVIOR STATEMENT	STANDARDS
2. Emergency Procedures	
• Recognize system malfunction and/or emergency situation.	• Expeditiously analyzes situation and systems and recognizes malfunction or emergency situation. • Maintains control of aircraft while responding appropriately to malfunction/emergency. • Maneuvers aircraft smartly to prevent degradation of situation with respect to external factors such as weather, traffic, etc.
• Perform NATOPS immediate action emergency procedures.	• Verbally states emergency NATOPS immediate action items in sequence, from memory, without error. • Performs proper steps of emergency NATOPS immediate action items in sequence, from memory, without error.
• Perform NATOPS noncritical action emergency procedures to include: ▶ Analysis of hypothetical aircraft malfunctions. ▶ Simulated precautionary approaches and actual no-flap landings performed in the aircraft. ▶ Life support training, survival, and physiological training IAW NATOPS.	• Performs proper steps to a satisfactory conclusion, effectively using NATOPS PCL to troubleshoot or complete NATOPS procedures. • Incorporates effective CRM to secure additional assistance where applicable. • Maintains situational awareness WRT local area and airfields while troubleshooting systems/ responding appropriately to situation. • Successfully recovers aircraft to suitable airfield or recognizes extremis situation and initiates ejection within safe parameters.
• Lost communications	• Performs proper steps to a satisfactory conclusion, effectively using FIH to troubleshoot or complete lost communication procedures.

BEHAVIOR STATEMENT	STANDARDS
3. Headwork/Situational Awareness	
• Assess self and aircraft in relation to the dynamic environment of flight, threats, and mission forecast; then execute tasks based on this assessment.	• Understands instructions, demonstrations, and explanations. • Remains alert and spatially oriented. • Correctly interprets in-flight events and applies strategies to proactively address them. • Recognizes and avoids channelized attention.
• Utilize CRM.	• Effectively utilizes seven key skills of CRM throughout all portions of flight training.
4. Basic Airwork	
• Perform general aircraft control and composite/instrument cross-check as appropriate.	• Maintains smooth positive aircraft control at all times. • Ensures momentary deviations, ±5 seconds, do not exceed: ▶ Airspeed: ±5 percent. ▶ Altitude: ±100 feet. ▶ Heading: ±5 degrees. ▶ Course: ±1 dot/½ scale. ▶ AOA: ±1 unit. • Avoids hazards (ground obstructions, terrain, other aircraft, and severe weather).
• Perform general aircraft control and composite/instrument cross-check in a partial panel situation.	• Smoothly transitions to/from partial panel instrument scan as situation dictates. • Maintains course, altitude, and glideslope with minor deviations and appropriate error corrections for entirety of approach. • Deviations do not jeopardize safety of flight.

BEHAVIOR STATEMENT	STANDARDS
4. Basic Airwork (continued)	
► Partial Panel Airwork	● Maintains positive control of the aircraft at all times with a smooth transition from full panel to partial panel scan. ● Ensures momentary deviations ±5 seconds, do not exceed: ► Airspeed: ±15 knots. ► Altitude: ±150 feet. ► Heading: ±10 degrees. ► Course: ±2 NM. ► AOA: ±1 unit. ● Deviations do not jeopardize safety of flight.
5. Mission Planning/Briefing/Debriefing	
● Perform appropriate mission planning to include route selection, weather, NOTAMS, fuel optimization, computing takeoff, climb, enroute, descent, approach, and landing data: planning mission profile and alternate course of action where appropriate.	● Plans mission in a timely manner to meet training objectives, complete all applicable Navy and command forms correctly, and complies with all directives. ● Applies OPNAVINST 3710.7U filing and approach criterion to planning and execution of flight. ● Aware of alternatives available, if flight cannot be completed as planned.

BEHAVIOR STATEMENT	STANDARDS
5. Mission Planning/Briefing/Debriefing (continued)	
• Attend/conduct pre- and postmission briefing/ debriefing for simulator or aircraft event.	• Briefs IAW NATOPS and command directives. • Asks questions, if necessary, to fully understand the mission overview and mission objectives, including ORM. • Clearly presents all information requested during briefing/ debriefing. • Understands all CRM objectives and expectations for the mission. • Understands contingencies and plans to contend with them. • Effectively compares mission results with briefed objectives. • Displays professional attitude and ability to accept instruction.
6. Communications	
• Verbal	• Makes concise, timely transmissions and responses, using proper radio discipline with standard terminology. • Makes required radio calls IAW FLIP requirements. • Understands and prioritizes transmissions in a multiple communications (UHF/VHF/ICS) environment. • Asks for and provides clarification when necessary. • Maintains effective 2-way communication with other crew members.
• Visual	• Ensures visual signals are clearly visible to lead/wingman and IAW NATOPS, FTI, or flight briefing.

BEHAVIOR STATEMENT	STANDARDS
7. Ground Operations	
• Inspect and wear appropriate flight equipment.	• Complies with NATOPS and command directives.
• Perform exterior inspection, prestart and pretaxi checks to adhere to takeoff times within published tolerances.	• Determines aircraft status and accepts or rejects aircraft based on NATOPS/command directives. • Completes required checks correctly. • Complies with NATOPS procedures and standardization tolerances. • Ensures clearance of line personnel, ground equipment, and other aircraft using appropriate signals prior to activation of aircraft systems.
• Coordinate checks with other aircrew for formation flight.	• Performs all checks, to include formation flight procedures IAW applicable directives.
• Perform taxi to/from runway.	• Taxies at speeds commensurate with traffic and surface conditions, following prescribed route and giving way to other aircraft as appropriate. • Avoids hazards and ground obstructions.
• Complete "Instrument," "Before Takeoff," and "After Landing" checklists.	• Completes IAW NATOPS procedures.
• Perform the engine shutdown checklist.	• Completes IAW NATOPS procedures.
• Perform postflight inspection and administrative duties.	• Completes all postflight checks and administrative duties IAW NATOPS and applicable directives. • Thoroughly debriefs Maintenance Control on any aircraft discrepancies and ensures appropriate MAF filed.

BEHAVIOR STATEMENT	STANDARDS
8. Flight Admin	
• Perform in-flight planning and administrative functions, to include:	
► General.	• Adjusts mission profile to comply with time/fuel limitations, as well as weather and area limits.
► Local course rules.	• Complies with established routes, altitudes, and procedures for operating in local airspace environment.
► Area management.	• Uses assigned airspace in an efficient manner with minimum delay between maneuvers. • Remains within area boundaries with or without ground references.
► Task management.	• Prioritizes and accomplishes tasks in order of importance as it pertains to flight and mission accomplishment. • Properly utilizes mission cross-check time based on terrain/task load/personal performance.
► Fuel management.	• Actively monitors fuel state throughout the mission. • Complies with all established fuel requirements. • Recognizes Joker or Bingo fuel within ±100 pounds of briefed quantity and makes timely call to IP/lead. • Regulates flight profile, throttle, and configuration to optimize fuel consumption as appropriate for the mission profile and training objectives.

BEHAVIOR STATEMENT	STANDARDS
8. Flight Admin (continued)	
► Weather planning.	• Recognizes and applies OPNAV/FLIP weather minima required for selected type of approach to field.
► In-flight checks.	• Completes all checklist items correctly and at proper point in mission, to include checking over other aircraft in the flight, IAW applicable directives.
► Route/destination change.	• Properly coordinates flight plan change through appropriate FSS or ATC facility using a DRAFT report or the IFR Supplement Change of Flight Plan formatting. • If necessary, obtains new weather report along route of flight and at destination field. • Calculates new fuel requirements along with time of flight.
9. Tactical Admin	
• Perform tactical flight maneuvering and administrative items to include:	
► G-warm.	• Performs G-awareness turns IAW OPNAVINST 3710.7U and TACFORM FTI. • Ensures proper anti-G straining technique and proper anti-G suit operation. • Maintains G-loading within NATOPS limits.
► Armament system management.	• Manages armament system to ensure proper program for current mission. • Ensures proper system management after exercise has been terminated.

BEHAVIOR STATEMENT	STANDARDS
9. Tactical Admin (continued)	
► Combat (FENCE) checks.	• Completes combat checks per FTI, and expeditiously reports FENCE check completion.
► Knock-It-Offs (KIO).	• Makes and responds to KIO calls IAW training rules. • Safely maneuvers aircraft to deconflict with other aircraft while returning to prebriefed position.
► G/Fuel checks.	• Knows and expeditiously maneuvers aircraft to proper position, altitude, and distance for next expected syllabus maneuver.
► PADS.	• Correctly reports postmaneuvering maximum "g" attained and current fuel state prior to arriving at PADS and without prompting from IP/Lead. • Attains briefed engagement start parameters within the following standards: airspeed ±10 KIAS, range ±0.1 NM, altitude ±200 feet, position ±10 degrees from bearing line or prescribed AOT.
► Battle damage checks.	• Completes battle damage checks per FTI and expeditiously reports completion.
► Deck Awareness	• Maneuvering does not result in flight below the hard deck.
* NOTE: Tactical Wing is always a separately graded item.	

BEHAVIOR STATEMENT	STANDARDS
10. Takeoff	
• Perform individual takeoff to include: ► Runup check. ► Linespeed check. ► Retracting gear/ flaps. ► Accelerating to climb airspeed.	• Maintains position during engine runup for static takeoff. • Maintains runway centerline ±5 feet during takeoff. • Rotates within -0 to +10 knots of computed rotation speed and maintains desired pitch attitude ±2 degrees. • Establishes and maintains proper takeoff attitude at appropriate airspeed for existing conditions. • Initiates gear and flap retraction when safely airborne and ensures fully retracted prior to exceeding 200 KIAS.
• Transition to instruments as required.	• Properly transitions to flight instruments as required for actual or simulated weather conditions.
11. Departure/Rendezvous	
• Safely maneuver aircraft out of airfield environment. ► IFR. ► VFR.	• Performs departure as published or directed. • Complies with all restrictions. • Achieves and maintains target climb schedule airspeeds ±10 KIAS or 0.02 Mach at target altitudes ±1,000 feet. • Initiates level-off at desired altitude using the 10-percent rule. • Promptly establishes cruise airspeed.
• Interval departure/ rendezvous.	• Accomplishes using proper procedures and techniques per Formation FTI.

BEHAVIOR STATEMENT	STANDARDS
12. Enroute Navigation	
• Perform enroute navigation to include:	• Complies with basic airwork standards. • Compensates for known wind drift as required.
► Climbs/Descents	• Maintains target airspeed ±10 knots. • Levels off at desired altitude ±100 feet using 10-percent rule. • Complies with all restrictions.
► Intercept/maintain course - perform VOR or TACAN course intercepts inbound, outbound, or immediately after station passage, and maintain VOR or TACAN course.	• Establishes a valid intercept. • Maintains course ±5 degrees/ 1 dot/½ scale.
► Arcing - Perform VOR/DME and TACAN radial-to-arc intercepts and maintain arcs.	• Establishes valid arc intercept, utilizing appropriate lead turn as needed. • Maintains arc ±0.2 mile. • Establishes valid arc-to-radial intercept.
► Nonsystem point-to-point.	• Complies with basic airwork standards. • Compensates for known wind drift as required. • Maintains target airspeed ±10 knots. • Makes initial turn in the proper direction. • Performs steps to TACAN or VOR/DME point-to-point IAW Instrument NATOPS. • Corrects initial turn and maintains heading +10 degrees to arrive at the desired point ±0.5 NM.

BEHAVIOR STATEMENT	STANDARDS
12. Enroute Navigation (continued)	
► System point-to-point.	● Complies with basic airwork standards. ● Compensates for known wind drift as required. ● Maintains target airspeed ±10 knots. ● Makes initial turn in the proper direction. ● Enters proper fix and all required navigational information into GINA and proceeds direct using RNAV/TACAN waypoint offset procedures. ● Arrives at the desired point ±0.2 NM.
► STAR - Perform standard arrival (STAR) procedure IAW FLIP publication.	● Establishes valid course intercepts and maintains courses 1 dot/½ scale/±5 degrees. ● Establishes valid arc/radial intercepts and maintains arcs ±0.5 mile. ● Meets all altitude/airspeed restrictions.

BEHAVIOR STATEMENT	STANDARDS
13. Descent/Field Entry	
• Perform a descent and traffic entry, to include: ► Climbs/descents enroute descent. ► Climbs/descents max range descent. ► Climbs/descents field break.	• Executes as published or directed. • Complies with all restrictions and directives. • Analyzes internal and external factors to select most effective method of descent (enroute or max range). • Utilizes RADALT effectively to observe platform and subsequent altitude restrictions. • Observes "minute to live" rule (unless scenario or circumstances specifically dictate otherwise). • Establishes proper interval for pattern entry. • Maintains break altitude ±100 feet until established on downwind. • Configures in adequate time to perform landing and AOA/airspeed checks prior to approach turn 90-degree position.
14. Dead Reckoning Navigation	
• Perform visual navigation procedures, to include chart interpretation.	• Identifies chart symbols with prominent landmarks along route. Navigates via dead reckoning or waypoint navigation, as applicable.
15. Holding	
• Perform high- and low-altitude VOR/TACAN holding as described by controller or IAW FLIP document.	• Performs published/standard entry procedures and maintains designated pattern IAW Instrument NATOPS and FTI. • Complies with holding pattern limits: ► Uses proper voice procedures. ► Maintains holding airspeed ±5 KIAS.

BEHAVIOR STATEMENT	STANDARDS
16. High Altitude Penetration	
• Perform a VOR, VOR/DME, or TACAN penetration (arc/radial intercept) from IAF to FAF, as published in FLIP document or local procedures.	• Complies with published penetration course, arc, and altitudes. • Complies with basic airwork standards. • Establishes valid intercepts. • Maintains course ±5 degrees/ 1 dot/½ scale. • Establishes valid arc/radial intercepts. • Maintains arcs ±0.5 NM.
17. Precision Approach	
• Perform precision approaches as published in FLIP document or local procedures, to include:	• Complies with published approach and NATOPS procedures. • Maintains target AOA or final approach airspeed ±1 unit AOA or ±5 KIAS during final descent. • Arrives at DA in position to maintain a normal visual glidepath to the runway and land safely.
► ILS approach.	• Maintains CDI and GSI within 1 dot/½ scale deflection.
► PAR approach. ▪ Normal PAR. ▪ No-Gyro PAR. ▪ Partial panel.	• Maintains ±3 degrees of assigned heading (except gyro out) and does not achieve multiple "well above" or "well below" glidepath calls.
► Transition from one-half flap approach setting to full flaps for landing.	• Prior to DA, configures to full flaps and reviews landing checks complete to confirm the configuration change. • Recalculates and slows to the new full-flap target AOA or airspeed ±1 unit AOA or ±5 KIAS while maintaining appropriate glideslope to touchdown.

BEHAVIOR STATEMENT	STANDARDS
18. Non-Precision Approach	
• Perform non-precision, full panel, partial panel, or no-gyro approaches as published in FLIP document or local procedures, to include:	• Complies with published approach and NATOPS procedures. • Arrives at and maintains MDA -0/+100 feet at or prior to VDP. • Arrives in position to maintain a normal visual glidepath to the runway and land safely.
► Localizer approach or BC localizer.	• Begins timing within 5 seconds, if appropriate. • Maintains target AOA or final approach airspeed ±1 unit AOA or ±5 KIAS after FAF. • Maintains CDI within 1 dot/ ½ scale deflection.
► TACAN or VOR/DME approach.	• Maintains target AOA or final approach airspeed ±1 unit AOA or ±5 KIAS after FAF. • Maintains final approach course ±1 dot/½ scale/5 degrees.
► ASR approach.	• Maintains target AOA or final approach airspeed ±1 unit AOA or ±5 KIAS during and after descent to MDA. • Maintains ±3 degrees of assigned heading (except No-Gyro). • Does not exceed 1 call of "well left/right of course" and complies with controller's instructions in a timely manner. • Observes "minute to live" rule during descent to MDA.

BEHAVIOR STATEMENT	STANDARDS
18. Non-Precision Approach (continued)	
► Transition from one-half flap approach setting to full flaps for landing.	● Prior to VDP or arriving in position to maintain a normal visual glide path to the runway, configures to full flaps and reviews landing checks complete to confirm the configuration change. ● Recalculates and slows to the new full-flap target AOA or airspeed ±1 unit AOA or ±5 KIAS and then maintains appropriate glideslope to touchdown.
19. Circling Approach/Maneuver	
● Perform a circling approach and maneuver as published in FLIP document or local procedures.	● Accomplishes IAW Instrument FTI and Instrument NATOPS. ● Prior to circling maneuver, maintains course and altitude IAW non-precision approach standards. ● During maneuver, maintains circling MDA –0 feet, and maintains visual reference to the airport until acquiring visual glidepath. ● Positions aircraft for a safe landing. ● Once visual reference with the runway environment is acquired, appropriately transitions from an instrument scan to a visual scan while beginning the circling maneuver as published, as instructed by ATC, or in an appropriate manner to safely and efficiently execute the maneuver. ● Remains within the clear zone for the approach category. ● If required, executes appropriate missed approach instructions for the approach flown. ● Executes circling maneuver on the appropriate side of the airfield.

BEHAVIOR STATEMENT	STANDARDS
20. Missed Approach	
• Perform a missed approach and partial panel missed approach. • Perform climbout for additional approaches.	• Complies with FLIP document and ATC instructions for missed approach or climbout instructions. • Completes IAW Instrument FTI and Instrument NATOPS.
21. Precautionary Approach	
• Perform precautionary approach IAW NATOPS, FTI and local SOP/ course rules, to include: ► Overhead. ► Abeam. ► Straight-In.	• Properly coordinates maneuver with ATC. • Effectively manages airspace for entry, including appropriate voice reports. • Effectively manages energy state via configuration and maintains profile without manipulation of throttle. • Utilizes target airspeed and altitude checkpoints (±15 knots, +300/-200 feet) to effectively maintain profile. • Manages flare adequately to touch down in first third of runway or prior to A-gear if required. • Safely achieves flight with flying airspeed, mil power, and speedbrakes retracted during touch-and-go.
• Performs precautionary instrument approach IAW NATOPS, FTI and local SOP/course rules, to include: ► Low oil approach. ► Min/emer fuel approach.	• Properly coordinates maneuver with ATC. • Effectively manages energy state via configuration to maintain adequate approach profile.

BEHAVIOR STATEMENT	STANDARDS
22. VFR Landing Pattern	
• Perform entry into visual landing pattern (pattern entry to the start) to include:	• Configures in adequate time to perform landing and AOA/airspeed checks prior to glideslope acquisition and/or final descent.
► Visual straight-in.	• Makes timely corrections for glideslope, AOA, and lineup deviations. • Applies crosswind corrections adequately to maintain centerline both on final and during/after touchdown.
► Downwind entry.	• Configures in adequate time to perform landing and AOA/airspeed checks prior to 180 position. • Makes timely corrections for glideslope, AOA, and lineup deviations. • Applies crosswind corrections adequately to maintain centerline both on final and during/after touchdown.
► Overhead pattern (left-hand FCLP type).	• Maintains pattern altitude ±50 feet on downwind. • Makes appropriate crosswind corrections on downwind to arrive at proper abeam distance. • Initiates approach turn with appropriate extension off of abeam to achieve proper groove length (15-18 seconds). • Manages energy state and AOB while making timely corrections to deviations throughout approach turn to arrive at the start within ±5 degrees of centerline, on-speed, with appropriate VSI, and with the ball centered to mid-high (3-4 balls) on the lens.

BEHAVIOR STATEMENT	STANDARDS
23. Landing/Touch-and-Go	
● (Start to touchdown) Perform touch-and-go or full-stop landing to include the following: ► Touch-and-go. ▪ Full-flap. ▪ Half-flap. ▪ No-flap. ▪ Crosswind.	● References optical landing system, if available, to achieve safe approach glideslope. ● Touches down at proper pitch attitude, maintains proper ground track, uses crosswind controls as required. ● Touches down in prescribed landing zone IAW NATOPS and local procedures. ● Touches down with no greater than -600 fpm rate of descent for flap configurations other than full.
► FCLP-type landing (FLOLS/IFLOLS).	● Performs graded touch-and-go or full-stop landing utilizing FLOLS/IFLOLS lens. ● Adequately manages energy state during wings-level transition to maintain reasonable VSI, AOA, and lineup control. ● Makes timely and appropriate corrections to maintain or correct back to optimum glideslope, AOA, and lineup. ● Applies crosswind corrections adequately to maintain centerline both on final and during/after touchdown. ● Consistently touches down with a stable, centered-to-high ball, on-speed, and on centerline.
► Roll-and-go. ▪ Full-flap. ▪ Half-flap (simulated short-field arrestment). ▪ No-flap.	● Maintains runway alignment using aileron, rudder, and nosewheel steering to track down runway. ● Recognizes groundspeed checkpoints and executes go-around at target airspeed ±5 KIAS/±200 feet of target runway remaining.

BEHAVIOR STATEMENT	STANDARDS
23. Landing/Touch-and-Go (continued)	
► Night landing at field without a lens.	● If required, performs instrument-to-visual scan while maintaining glideslope and centerline. ● Applies crosswind corrections adequately to maintain centerline both on final and during/after touchdown. ● Adequately manages energy state during approach to landing with proper AOA and VSI control. ● Touches down in prescribed landing zone IAW NATOPS and local procedures.
► Full-stop.	● Applies appropriate crosswind corrections and maintains runway alignment using aileron, rudder, and nosewheel steering. ● Applies braking smoothly and effectively to meet deceleration schedule. ● Adjusts braking to achieve appropriate line speeds.
24. Waveoff	
● Perform waveoff procedures.	● Immediately executes waveoff procedures when required or directed, maintaining landing attitude/AOA until safe climb established. ● Maintains safe lateral separation from interval aircraft in VFR pattern.

BEHAVIOR STATEMENT	STANDARDS
25. Basic Instrument Maneuvers	
● Perform instrument training maneuvers as described in Instrument FTI or as directed, full or partial panel, to include:	
► Climbs/descents.	● Effectively utilizes power to maintain airspeed ±10 knots. ● Maintains target VSI ±200 fpm. ● Levels off at desired altitude ±100 feet using 10-percent rule.
► Level speed changes.	● Maintains altitude ±100 feet. ● Achieves and maintains target airspeed ±5 knots.
► Timed turns.	● Maintains standard or one-half standard turn rate to achieve desired heading change in appropriate time period, ±5 seconds. ● Uses indicated airspeed to appropriately determine AOB. ● Monitors turn needle and adjusts AOB as required to maintain standard or one-half standard turn rate.
► Turn pattern.	● Effectively utilizes power to maintain airspeed ±5 knots. ● Maintains altitude ±100 feet. ● Performs turn reversals at target heading ±5 degrees.
► Vertical S maneuvers: ▪ S-1 pattern. ▪ S-3 pattern.	● Maintains VSI ±200 fpm. ● Maintains ±5 KIAS of desired airspeed. ● Maintains AOB ±5 degrees. ● Reverses direction or level off ±100 feet of desired altitude. ● Maintains timing ±5 seconds. ● Makes timely and appropriate corrections for deviations.

BEHAVIOR STATEMENT	STANDARDS
25. Basic Instrument Maneuvers (continued)	
► Slow flight maneuver.	● Reconfigures aircraft at appropriate airspeed, maintaining ±100 feet of target altitude. ● Maintains target airspeed ±5 knots or on-speed AOA ±2 units once established. ● Establishes target ROD ±200 fpm.
26. Familiarization Maneuvers	
● Perform familiarization maneuvers as described in the FTI or as directed, to include: ► Vertical recovery.	● Executes IAW FAM FTI descriptions, to include: ► Attains stabilized target entry airspeed ±5 knots. ► Smoothly applies back stick to achieve 17 units without entering pitch-buck. ► Elevates nose to and maintains attitude at 60 degrees (±3 degrees) until recovery. ► Initiates recovery at target airspeed ±5 knots. ► Begins maneuver with sufficient altitude excess to complete maneuver.

BEHAVIOR STATEMENT	STANDARDS
26. Familiarization Maneuvers (continued)	
► Minimum radius turn.	● Executes IAW FAM FTI descriptions, to include: ► Attains stabilized target entry airspeed ±5 knots. ► Smoothly applies back stick to achieve 17 ±1 unit. ► Maintains ±5 knots throughout maneuver. ► Prevents excessive nose "ballooning" during reversals (100-feet maximum). ► Completes reversal and final rollout ±5 degrees of target heading. ► Begins maneuver with sufficient altitude excess to complete maneuver.
27. Aerobatics	
● Perform instrument aerobatic maneuvers IAW Instrument FTI, to include: ► Aileron roll. ► Wingover. ► Barrel roll. ► Loop. ► One-half Cuban eight. ► Immelmann. ► Split-S.	● Verbalizes and attains target entry parameters (±5 knots, ±100 feet) prior to beginning the maneuver. ● Flies in a smooth, positive, and coordinated manner. ● Achieves and maintains target g load ±1 g and AOA ±2 units during overhead maneuvers. ● Executes rolling maneuvers at target attitude ±5 degrees. ● Exits maneuver at original entry parameters ±200 feet, ±10 knots, ±10 degrees.
● Perform maneuvers listed above in visual environment IAW Familiarization FTI. In addition, perform squirrel cage.	● Plans maneuver entries to remain within area boundaries. ● Ensures primary emphasis during aerobatic maneuvers is on use of outside references. ● Efficiently links series of maneuvers.

BEHAVIOR STATEMENT	STANDARDS
28. Unusual Attitude Recoveries	
• Perform recoveries IAW appropriate FTI for: ► Nose-high recovery. ► Nose-low recovery.	• Uses correct instrument flight references throughout recoveries. • Recovers to level flight expeditiously without stalling or exceeding aircraft limitations. • Recovers to level flight without excessive altitude loss, stall, or exceeding aircraft limitations. • Recovery is complete when the descent is stopped.
29. Stall/OCF Recognition and Recovery	
• Perform approaches to stall, full stalls, and recoveries IAW FTI, to include the following: ► Power-off stall. ► Break turn stall. ► Landing attitude maneuver. ► Landing attitude stall. ► Approach turn stall. ► Accelerated stall.	• Effectively trims aircraft for level flight/on-speed prior to commencing maneuver. • Maintains altitude ±100 feet and VSI 0±200 fpm prior to stall. • Recognizes approach-to-stall indications and recovers IAW NATOPS and FTI procedures, with no loss of altitude (recovery complete when two positive rates of climb established). • Recognizes full-stall indications and recovers IAW NATOPS and FTI procedures with minimum loss of altitude ≤500 feet (recovery complete when two positive rates of climb established). • Prevents entry into secondary stall; recognizes secondary stall, if entered, and recovers properly. • Does not exceed gear/flap limitation airspeeds.

BEHAVIOR STATEMENT	STANDARDS
29. Stall/OCF Recognition and Recovery (continued)	
• Performs OCF maneuvers IAW FTI, to include: ► High AOA/deep stall investigation. ► 70-/90-/110-degree departures. ► Lateral stick adverse yaw departure.	• Demonstrates in-depth knowledge of NATOPS OCF procedures and prohibited maneuvers. • Correctly enters prescribed syllabus maneuvers per OCF FTI. • Correctly applies recovery control inputs and procedures per OCF FTI.
30. Formation Takeoff	
• Perform two- and four-ship takeoffs as Wing IAW Formation FTI, to include:	• Positions aircraft in appropriate lane of runway ±3 feet, on appropriate bearing line or "banana echelon." • Achieves target interval ±1 second for brake release. • Maintains appropriate lane of runway ±5 feet during takeoff roll.
► Section takeoff.	• Lifts off no earlier than lead and maintains ±15 degrees of parade bearing. • Configures on lead's signal, making smooth, positive control inputs; signals clean at appropriate time.
► Interval takeoff.	• Smoothly and expeditiously accelerates to appropriate rendezvous speed. • Initiates cross to inside of expected turn within 5 seconds of aircraft clean, but not before interval. • Upon reaching target airspeed, expeditiously puts lead/interval on the horizon. • Accomplishes timely rendezvous maintaining lead on horizon, IAW CV or running rendezvous standards.

BEHAVIOR STATEMENT	STANDARDS
31. Formation Lead	
● Perform two-ship formation as Lead IAW Formation FTI, to include:	● Complies with Formation FTI and course rules, considering airspace and weather to plan maneuvers. ● Completes profile in a smooth manner without exceeding wingman's capabilities and without degrading flight safety. ● Maintains a smooth, stable platform, avoiding abrupt power changes and maintaining >80 percent rpm while monitoring -2. ● Utilizes proper communications and signals as lead. ● Maintains visual awareness of wingman.
► Departure.	● Monitors wingman during initial joinup. ● Communicates with ATC to effect joinup as necessary.
► Parade.	● Accomplishes parade maneuvering up to 2 Gs and 45 degrees of bank.
► Lead change.	● Passes lead utilizing appropriate visual/voice/light signals. ● Positively maneuvers aircraft to establish wingtip separation -0/+10 feet and step-down ±5 feet, and no further aft than cruise bearing line IAW FTI.
► Breakup and rendezvous.	● Provides stable platform within BAW tolerances.
32. Formation Wing	
● Perform two- and four-ship formation as the Wingman IAW Formation FTI, to include:	● Complies with Formation FTI. ● Effectively passes signals to successive wingmen while smoothly maintaining position.

BEHAVIOR STATEMENT	STANDARDS
32. Formation Wing (continued)	
► Parade/fingertip.	● Maintains parade position IAW FTI: wingtip separation -0/+5 feet, step-down ±5 feet, and bearing line ±10 degrees, using smooth, positive control inputs. ● Smoothly and positively corrects back to position within 5 seconds without prompting from IP. ● Stacks level with lead ±5 feet and maintains fore/aft references during roll-in, rollout, and VFR turn-away position.
► Turns.	● Stacks level with lead/interval ±5 feet. ● Maintains fore/aft references during roll-in, turn, and rollout.
► Crossunder/division shuffle.	● Crosses below lead/interval's jet wash (+0 to –20 feet) with constant track crossing rate, achieving target nose/tail clearance no farther aft than one aircraft length.
► Cruise.	● Initially establishes the aircraft on the lead's 45-degree bearing line with appropriate nose-to-tail separation and step down as per FTI. ● Rotates around lead's axis prior to crossing inside lead's turn. ● Safely and expeditiously stabilizes inside of lead's turn while maintaining situational awareness to all aircraft in flight. ● Maintains appropriate lane during reversals. ● Smoothly and positively corrects back to position within 5 seconds without prompting from IP.

BEHAVIOR STATEMENT	STANDARDS
32. Formation Wing (continued)	
► Cruise over-the-top.	• Smoothly enters over-the-top maneuver from a standard cruise position and maintains a relatively steady position throughout. • Makes appropriate corrections with throttle, AOB, and pitch attitude as required.
► Breakup for rendezvous.	• Maintains target airspeed ±5 knots during breakup turn and while in trail. • Rolls out 1,000 ±200 feet in trail of lead/interval.
► CV rendezvous.	• Maintains visual situational awareness to all aircraft ahead, with safe separation from interval. • Expeditiously maneuvers to bearing line. • Maintains a stable plane-of-motion, co-altitude with lead/interval. • Recognizes and makes corrections without prompting to deviations in bearing line, fuselage alignment, and airspeed control while maintaining positive closure. • Controls closure at the in-close position to effect smooth crossunder to echelon.
► Running rendezvous.	• Maintains situational awareness to all aircraft ahead with safe separation and closure to lead/interval.
► TACAN rendezvous.	• Maintains proper step-down ±150 feet below lead's altitude until on bearing line. • Properly utilizes communication to control lead's lighting at night.

BEHAVIOR STATEMENT	STANDARDS
32. Formation Wing (continued)	
► Division rendezvous.	• Expeditiously establishes aircraft on lead's altitude. • Positively corrects to bearing line and maintains a consistent controlled rate of closure throughout. • During breakup and rendezvous, does not exceed maximum AOB for position per the FTI. • Executes crossunder per the FTI at a speed that the aircraft could safely join into an open slot between two aircraft.
► Section break.	• Establishes aircraft in FTI parade position prior to the numbers or as briefed. • Sets the briefed interval. • Keeps lead on horizon. • Arrives in trail of lead while configuring aircraft for landing.
► Division break.	• Established in FTI parade prior to the numbers or as briefed. • Dash 2 sets the briefed interval. • Dash 3 and 4 match break interval. • Keeps lead on the horizon throughout break. • Arrives in trail of preceding aircraft while configuring aircraft for landing.
► Underrun.	• Recognizes unsafe or excessive parameters and expeditiously initiates maneuver. • Immediately responds to underrun command given by lead or IP. • Day: Expeditiously arrives at perch position as defined in FTI ±50 feet. • Night: Arrives outside lead's turn at 500 feet (±100 feet) below lead's altitude.

BEHAVIOR STATEMENT	STANDARDS
32. Formation Wing (continued)	
► Lead change.	● Refuses or assumes lead within two seconds of initiation, using appropriate visual/voice/light signals. ● Maintains target altitude ±100 feet and airspeed ±5 knots while acting as lead. ● Passes lead utilizing appropriate visual/voice/light signals. ● Positively maneuvers aircraft to establish wingtip separation -0/+10 feet and step-down ±5 feet, and no further aft than cruise bearing line IAW FTI.
33. Formation Approach/Missed Approach/Touch-and-Go Rejoin	
● Perform two-ship approach procedures while at altitude or under controlling agency as: ► Section lead.	● Complies with approach procedures and standards being flown. ● Lands in center of appropriate side of the runway. ● Maintains runway alignment after landing. ● Detaches wingman at appropriate time in a safe position for landing.

BEHAVIOR STATEMENT	STANDARDS
33. Formation Approach/Missed Approach/Touch-and-Go Rejoin (continued)	
► Section wing.	• Performs landing checklist prior to signaling lead, and signals lead at appropriate time. • Properly manages configuration and energy state to effect safe landing when detached. • Rejoins safely and expeditiously within two miles during touch-and-go/rejoin. • Maintains parade position parameters IAW Formation FTI during missed approach, matching lead's configuration changes via hand or radio signals.
34. Tactical Lead	
• Perform two-ship lead tactical maneuvering.	• Ensures formation remains within assigned airspace. • Executes turns IAW FTI, maintaining or regaining visual contact and mutual support with wingman. • Performs target attacks IAW FTI. • Maintains appropriate flight deconfliction.

BEHAVIOR STATEMENT	STANDARDS
34. Tactical Lead (continued)	
► TACFORM lead.	• Complies with TACFORM FTI or as briefed. • Considers airspace and weather to plan/execute all maneuvers. • Executes turns/maneuvers IAW FTI. • Utilizes proper communications and signals as tactical lead. • Maintains visual awareness of wingman: ► Uses visual signals as briefed/published. ► Maintains or quickly regains visual contact and mutual support. • Utilizes appropriate altitude/ airspeed excursions as lead. • Maintains target AOA ±1 unit AOA, airspeed ±10 knots in turns, and altitude ±100 feet, utilizing appropriate deviations to correct for known airwork errors.
35. Tactical Wing	
• Perform two-ship tactical maneuvering, to include the following:	• Maintains position IAW FTI or as briefed. • Accomplishes responsibilities, including clearing, as briefed. • Recognizes and complies with visual signals as briefed/published. • Executes turns IAW FTI to roll out in combat spread; if not in proper position, make timely positive corrections. • Maintains or quickly regains visual contact and mutual support.

BEHAVIOR STATEMENT	STANDARDS
35. Tactical Wing (continued)	
► Defensive combat spread.	● Utilizes appropriate altitude/ airspeed excursions to maintain/ regain bearing line ±10 degrees, abeam distance 0.8 to 1.0 NM, with 1,000 feet of step-up from lead. ● Regains position within 20 seconds out of turns.
► Offensive combat spread.	● Utilizes appropriate altitude/ airspeed excursions to maintain/ regain bearing line ±10 degrees, abeam distance 1.2 to 1.5 NM, 3,000 feet above or below lead. ● Regains position within 20 seconds out of turns.
► Tactical maneuvering to include: ▪ Check turns. ▪ Cruise turns. ▪ Tac turns. ▪ In-place turns. ▪ Cross turns. ▪ Comm-out turns. ▪ Advanced tacform maneuvering. ▪ Forced cockpit loading ▪ Shackles. ▪ Off-heading shackles.	● Maintains target AOA ±1 unit AOA and airspeed ±10 knots in turns, utilizing appropriate deviations to correct for known position errors. ● Rolls out ±10 degrees of bearing line, 0.8-1.0 abeam. Makes smooth corrections throughout the turn to arrive within those parameters.
36. Tactical Rejoin	
● Perform tactical rejoins.	● Expeditiously maneuvers to an appropriate rejoin. ● Maintains positive separation from other flight members throughout the rejoin.

BEHAVIOR STATEMENT	STANDARDS
37. Tail Chase Exercise	
• Perform tail chase exercise per FTI.	• Utilizes proper lead, pure, and lag pursuit to maintain 2,000-4,000 feet in trail of lead. • Maintains a 500-foot bubble from lead at all times.
38. Loose Deuce Exercise	
• Perform loose deuce exercise per TACFORM FTI.	• Executes canned communication drill while maneuvering aircraft IAW TACFORM FTI. • Utilizes high yo-yo, low yo-yo, and displacement roll maneuvering to position aircraft in high and low cover. • Maintains a 500-foot bubble from lead at all times.
39. Gunsight Tracking Exercise	
• Perform gunsight tracking exercise per TACFORM FTI.	• Executes comm IAW TACFORM FTI. • Recognizes attack window and executes offensive break turn to arrive in control zone with angles and closure under control. • Maneuvers aircraft IAW FTI to achieve valid gun employment opportunity.
40. Low-Level Navigation/Procedures	
• Perform low-level procedures, to include: ► Route entry.	• Accomplishes required ATC coordination; visually identifies route entry; complies with all entry time requirements; effectively maneuvers into route structure.

BEHAVIOR STATEMENT	STANDARDS
40. Low-Level Navigation/Procedures (Continued)	
► Altitude control.	● Maintains target altitude -0/+200 feet AGL per FLIP AP/1B, unless obstacles or safety dictate otherwise. Avoids abrupt altitude changes. Ensures altitude and obstacle clearance IAW regulatory guidance.
► Time control.	● Maintains awareness of time, using appropriate adjustments to arrive at final checkpoint ±10 seconds of preplanned or amended ETA computed at route entry.
► Course control.	● Maintains planned course ±2 NM. Reaches each checkpoint within a ±2 NM radius. Ensures flight remains within route borders.
► In-flight computation.	● Computes appropriate adjustments to ensure course, time, and altitude standards are achieved.
► Chart interpretation.	● Identifies chart symbols with prominent landmarks along route. Navigates via dead reckoning or waypoint navigation, as applicable.
► Turns.	● Turns to maintain or achieve course control standards; maintains level to slightly climbing; turns IAW briefing/ contract, ensures deconfliction with wingman/lead.
► Ridge crossing.	● Executes ridge crossing IAW with briefing and regulations. Maintains briefed altitude (-0 to +300 feet) and above minimum airspeed. Does not exceed maximum bank. ● Maintains safe, positive control.
► Route abort/exit.	● IAW FLIP and regulatory guidance; coordinates with ATC; monitors wingman.

BEHAVIOR STATEMENT	STANDARDS
40. Low-Level Navigation/Procedures (Continued)	
► Weather response.	● Recognizes degrading weather on the route and aborts the low altitude environment to stay VFR. ● If unable to remain VFR and IFR conditions imminent, safely climbs avoiding terrain per route study, and coordinates with appropriate controlling agency.
41. BFM/SEM – General	
● BFM/SEM – General.	
► PADS.	● Attains briefed engagement start parameters within the following tolerances: ► Airspeed: ±10 KIAS ► Range: ±0.1 NM ► Altitude: ±100 feet
► Demonstrates CNATRA training rules knowledge and adherence.	● Recognizes and acknowledges pending and current deviations from training rules.
► Reversal mechanics.	● Properly recognizes reversal criteria. ● Reverses utilizing proper mechanics and maximizes positional advantage.
► Unload (extension) maneuver.	● Throttle at MRT, unloads to 0 to 0.5 G's.
► Separation maneuver (bug).	● Recognizes meeting separation criteria. ● Applies separation mechanics to deny valid WEZ. ● Maintains sight initially to ensure valid separation.
● Horizontal Scissors.	
► Flats entry.	● Initially applies a lift limit pull, then turns in with flight deconfliction established to achieve scissor maneuvering.

BEHAVIOR STATEMENT	STANDARDS
41. BFM/SEM – General (continued)	
• Horizontal Scissors (continued).	
► Recovery maneuver.	• Applies appropriate recovery maneuver to achieve a slow-speed, high-AOA, steady maneuver attitude.
► AOA/AS control.	• Applies appropriate lateral/ longitudinal stick and rudder to achieve controlled high-AOA, slow-speed maneuvering.
► Recognition of offensive/defensive position.	• Recognizes offensive or defensive position and applies appropriate reversal timing.
► Reversal mechanics.	• Applies appropriate lateral/ longitudinal stick and rudder to achieve a controlled reversal at appropriate time.
► Shot opportunity/ mechanics.	• Recognizes the ability to take a shot and applies appropriate maneuver according to position to achieve a valid shot.
► Guns D recognition/ mechanics.	• Recognizes impending gunshot and performs appropriate guns D.
► Fight redefinition.	• Recognizes the requirement to redefine fight and selects appropriate redefinition maneuver.
• Rolling Scissors.	
► Lift vector placement.	• Places lift vector appropriately to maintain position.
► AOA/airspeed control.	• Applies longitudinal stick and throttle to achieve appropriate AOA/airspeed control.
► Flight path projection.	• Recognizes flight path projection to aid in lift vector placement and airspeed selection.
► Fight redefinition.	• Recognizes the requirement to redefine fight and selects appropriated redefinition maneuver.

BEHAVIOR STATEMENT	STANDARDS
41. BFM/SEM – General (continued)	
• Pedal Turns	• Applies longitudinal stick to achieve AOA control at 21 units. • Applies appropriate lateral stick and rudder to achieve a controlled reversal. • Arrives on PADS ±10 degrees, ±10 KIAS, and ±100 feet.
• Training Rules	• Complies with CNATRA training rules.
• TAC Wing	• Maintains proper positioning before and after a set. Quickly and efficiently captures PADS without help from instructor.
• TAC Admin	• Quickly and efficiently arrives in proper position for all desired PADS. Able to maintain ±10-degree position, ±100-foot altitude, ±0.1 NM distance, and ±10 knots for PADS.
42. BFM – Offensive	
• AWE recognition/ timing.	• Recognizes AW and performs OBT upon AW entry.
• Offensive break turn.	• OBT mechanics: ► Rolls to place lift vector on or slightly below bandit. ► Performs maximum performance pull.
• Energy management.	• Utilizes G to maintain airspeed. • Performs energy excursion when appropriate.
• Fight redefinition recognition and follow.	• Recognizes that the fight has been redefined. • Flies to bandit's point of departure. • Timely rolls to align fuselages and performs appropriate performance pull to deny bandit angles.

BEHAVIOR STATEMENT	STANDARDS
42. BFM – Offensive (continued)	
• LAR/shot opportunity recognition. • Valid shots. • SSD.	• Recognizes LAR and performs energy excursion to take a shot. • Performs valid shots according to criteria. • ***Offensive***: Begins on PADS, adheres to training rules, quickly and smoothly solves for POM, range, and lead with valid shots, executes timely reversals, and maintains proper geometry. • Utilizes clear and concise communications during shots and able to recognize and solve for maneuvers. • ***Defensive***: Begins on PADS, adheres to training rules, and provides a stable, predictable platform during the non-maneuvering runs to allow shooter to maximize training. • Executes timely reversals, maintains proper geometry, and performs timely maneuvers to defeat impending shots from wingman.

BEHAVIOR STATEMENT	STANDARDS
42. BFM – Offensive (continued)	
• Horizontal scissors.	• ***Offensive***: Begins on PADS, executes proper throttle mechanics on countdown, and aggressively maneuvers nose up and LV aft. • Quickly and efficiently stabilizes at target airspeed of 130-150 knots. • Executes timely reversals and LV placement to remain offensive and maneuver to employ weapons. • Recognizes shot opportunities and if bandit bugs, aggressively follows and executes proper deck transition. • ***Defensive***: Begins on PADS, executes proper throttle mechanics on countdown, and aggressively maneuvers nose up and LV aft. • Quickly and efficiently stabilizes at target airspeed of 130-150 knots. • Executes timely reversals and LV placement to either neutralize the fight or gain an offensive advantage. • Recognizes impending WEZs and defends appropriately and bugs/ redefines when the opportunity presents itself using the proper deck transition.

BEHAVIOR STATEMENT	STANDARDS
42. BFM – Offensive (continued)	
• Rolling scissors.	• ***Offensive***: Begins on PADS, executes proper throttle mechanics on start, and aggressively maneuvers to gain proper pirouette altitude. • Executes timely pirouette with proper mechanics, minimal altitude loss, and maximum airspeed gain. • Recognizes winning or losing and employs weapons in LAR. • Applies constant pressure to adversary, recognizes the bug, aggressively follows, and transitions appropriately. • ***Defensive***: Begins on PADS, executes proper throttle mechanics on start, and aggressively maneuvers to defend and force the overshoot. • Executes proper and timely pirouette mechanics and recognizes winning or losing. • Recognizes impending WEZs and defends appropriately. • Bugs/redefines and utilizes appropriate deck transition.

BEHAVIOR STATEMENT	STANDARDS
42. BFM – Offensive (continued)	
• 6,000-/9,000-foot perch.	• ***Offensive***: Proper start and entry per FTI, timely communications, and Fox-2 taken to begin set. • Recognizes attack window, and executes proper offensive break turn. • Captures proper airspeed and works to employ weapons without sacrificing positional advantage. • Recognizes employment opportunities and continues to apply pressure to adversary throughout set, remaining offensive. • ***Defensive***: Proper start and entry per FTI, timely reversal to set up impending shot, and executes proper defensive break turn mechanics. • Captures appropriate airspeed and keeps sight of adversary throughout engagement. • Recognizes impending WEZs and defends appropriately. • Recognizes redefinition opportunities and denies threat employment opportunities.
• LAR recognition.	• Knows and is able to execute valid shots from the CNATRA Sidewinder and Gun envelopes.
• Deck awareness.	• References the 10-degree rule to execute a proper deck transition and arrives slightly above the hard deck with appropriate energy. • Recognizes a deck bust and calls "KIO deck" over tactical frequency.

BEHAVIOR STATEMENT	STANDARDS
42. BFM – Offensive (continued)	
• KIO.	• Follows CNATRA training rules and communications. Calls KIO if any unsafe situation develops. • Maintains SA during the KIO and maneuvers to the PADS.
• Tactical rejoin.	• Maneuvers the jet to achieve an expeditious, yet controlled, rejoin without overshoots or major deviations.
• Sight/lookout doctrine.	• Able to keep sight of the bandit with minimal "blind" calls.
43. BFM – Defensive	
• Defensive break turn.	• DBT mechanics: ► Rolls to place lift vector on or slightly below bandit. ► Performs maximum performance break turn.
• AWE timing recognition.	• Recognizes AW entry timing and performs appropriate countermaneuver for early, late, or timely bandit entry.
• Energy management.	• Utilizes G to maintain airspeed. • Performs energy excursion when appropriate.
• Fight redefinition recognition and selection.	• Recognizes the requirement to redefine fight. • Selects appropriate redefinition maneuver for the situation. • Performs redefinition applying appropriate mechanics.
• WEZ recognition.	• Recognizes a pending WEZ and applies appropriate DBFM mechanics to deny shot. • Able to assess the bandit's nose or range. Makes a timely "C/F" call and executes a defensive break turn into the bandit.

BEHAVIOR STATEMENT	STANDARDS
43. BFM – Defensive (continued)	
• Deck awareness.	• References the 10-degree rule to execute a proper deck transition and arrives slightly above the hard deck with appropriate energy and sight of the bandit. • Recognizes a deck bust and calls "KIO deck" over tactical frequency.
• Separation/bug.	• Meets the criteria for a bug, executes proper bug mechanics-MRT, 40-50 degrees nose low, unload, keeps sight, 30-degree check turn away from the bandit's nose, and properly assesses the bug via the "Rules of 2." • If bug unsuccessful, performs break turn into bandit and calls "C/F" with little delay.
44. BFM – Neutral/High-Aspect	
• Recognizes flow.	• Recognizes type of flow: ► 1-circle. ► 2-circle. ► Roller. ► Flats.
• Fights appropriate fight.	• Applies HA BFM basics (tools) to achieve HA BFM objectives.

BEHAVIOR STATEMENT	STANDARDS
44. BFM – Neutral/High-Aspect (continued)	
• Butterfly set/abeam set.	• Performs proper start and entry per FTI and utilizes appropriate communications. • Denies enemy weapons employment. • Achieves first shot. • Gains positional advantage. • Employs follow-on shots. • Transitions to OBFM/DBFM at the appropriate time and is able to separate/bug prior to becoming defensive. • Demonstrates proper LV placement, energy management, timely airspeed excursions, controls merges, and initiates the flow in an aggressive fashion.
45. Section Engaged Maneuvering	
• SEM Setups, to include: ► FWD QTR. ► Rear QTR. ► Beam QTR. ► Tap-the-CAP.	• Attains briefed engagement start parameters. • Obtains turning room as bandit maneuvering permits. • Maintains visual/tally/ situational awareness. Quickly regains tally on the bandit, visual on lead.
• Mutual support/engaged communication.	• Uses correct, concise, directive, descriptive, and effective comms to the maximum extent possible to increase situational awareness, communicate tally/visual status, aid low SA fighters, and expedite rejoins.

BEHAVIOR STATEMENT	STANDARDS
45. Section Engaged Maneuvering (continued)	
• Engaged maneuvering.	• Recognition of threat and own aircraft weapons parameters. • Correctly applies out-of-plane and out-of-phase maneuvering appropriately as the free fighter. • Detects adversary by the merge, maintains visual and tally, and maintains required role responsibilities for visual deconfliction throughout the fight. • Proper threat reaction in a timely manner if defensive, employing IRCM. If not immediately defensive, performs actions in an engaged or supporting role. Ensures deconfliction responsibilities at all times when appropriate. • Adheres to FTI separation of aircraft. • Maintains briefed altitude deconfliction block.
• Weapons employment.	• Properly IDs adversary and employs weapons with appropriate weapons deconfliction. • Recognizes a LAR and selects the correct weapon to employ a valid shot attempt.

BEHAVIOR STATEMENT	STANDARDS
45. Section Engaged Maneuvering (continued)	
• SEM set.	• Achieves SEM fundamentals per FTI. Properly calls and executes break turn at "fight's on." • Achieves out-of-plane and out-of-phase flow. • Establishes free or engaged role, and executes proper mechanics for each role. • Uses clear and concise communications and visual lookout to maintain/regain tally-visual throughout fight. • Employs weapons with ROE solved and a clear lane of fire for the entire missile time of flight. • Uses all available SA to regain DCS in a timely manner following the kill or knock-it-off.
46. Sight/Lookout Doctrine	
• Maintain an effective visual lookout doctrine in a single-ship environment.	• Demonstrates awareness of potential ground or airborne hazards. • Positively responds to and maneuvers to avoid observed flight hazards.
• Maintain an effective lookout doctrine in a multiplane environment.	• Maintains or expeditiously gains/regains visual contact of lead/adversary/wing through lookout or communications.
• Offensive BFM.	• Applies the fundamentals of offensive BFM per the FTI. • Maintains the offensive position, fights appropriate one-circle or two-circle mechanics to achieve a valid shot.

BEHAVIOR STATEMENT	STANDARDS
47. Aggressiveness	
• Demonstrate a safe but aggressive posture in a tactical environment.	• Understands particular situation and applies appropriate aggressiveness to achieve/deny shots while demonstrating the capability to instantly respond to safety of flight situations.
• Defensive BFM.	• Applies the fundamentals of defensive BFM per the FTI. Maneuvers to defeat bandit WEZ, uses expendables or defeats plane of motion to deny bandit WEZ. • Applies appropriate defensive mechanics to neutralize the bandit and survive until wingman can kill the bandit.
48. Energy Management	
• Attain or maintain proper aircraft energy state for a given tactical situation.	• Demonstrates knowledge and understanding of T-45 EM diagram. • Effectively utilizes control and throttle movements to gain/ sustain best performance available for a given tactical situation. • Correctly maneuvers to maintain or change energy state based on one-circle or two-circle engagements.
• High-aspect BFM.	• Applies the fundamentals of high-aspect BFM per the FTI. • Uses aggressive out-of-plane maneuvering and lift vector placement to become offensive or maintain neutral position with the bandit. • Applies the proper one-circle or two-circle mechanics. • Recognizes the transition to offensive or defensive and engages appropriately.

BEHAVIOR STATEMENT	STANDARDS
49. Strike Maneuvering	
• Maneuver own ship within a section or division in an air-to-ground environment into a position from where ordnance or sim ordnance can be safety delivered.	• Flies all maneuvers IAW FTI or applicable stage lecture. • Pop attacks ±100 feet of pull-down altitude and apex altitude.
50. Strike Admin	
• Airborne tacadmin.	• Makes all radio calls per FTI/TACSOP/Brief and on the correct radio. • If required, autobalances or moves to appropriate briefed side of formation in timely manner and not to interfere with lead's ability to safely maneuver the division.
• Rendezvous.	• Maintains appropriate closure. • Once on bearing line, maintains ±10 degrees of bearing line and +100 feet of lead's aircraft.
• Spacer pass.	• Maintains FTI double-interval cruise position. • Makes proper trim inputs to maintain balanced flight prior to pattern entry.
• System management.	• Properly sets up stores page for loaded weapons and patterns to be flown. • Selects appropriate target waypoint with run-in line setup.

BEHAVIOR STATEMENT	STANDARDS
50. Strike Admin (continued)	
● Off-target rendezvous.	● Expeditiously climbs and turns to sanctuary altitude. Maintains sanctuary altitude ±100 feet. ● Gains and maintains sight of all preceding aircraft. ● Once on sanctuary altitude, expeditiously maneuvers aircraft to bearing line. ● Once on bearing line, maintains ±10 degrees of bearing line and +100 feet of lead's aircraft.
► Hung ordnance checks.	● Executes visual inspection for unexpended ordnance as well as an integrity check of other flight members.
► Hung ordnance approach.	● Executes proper hung ordnance procedures IAW FTI or flight brief.
51. CVN Operations	
● Safely operate T-45 in and around aircraft carrier.	● Properly controls and maneuvers aircraft IAW T-45 NATOPS, CV NATOPS, and FTI procedures.
52. LSO-Controlled Landing	
● Perform graded carrier landing under LSO control to field carrier box or CV landing area, to include following:	
► CV pattern.	● Executes FCLP or CV pattern entry from takeoff or catapult launch IAW CV NATOPS and FTI. ● Maintains pattern altitude on downwind ±50 feet. ● Makes appropriate crosswind correction on downwind to arrive at proper abeam distance.

BEHAVIOR STATEMENT	STANDARDS
52. LSO-Controlled Landing (continued)	
► CV pattern (continued).	• Initiates approach turn with appropriate extension off abeam to achieve proper groove length. • Manages energy state and makes timely corrections to deviations around approach turn without assistance.
► Start position.	• Intercepts acceptable glideslope, centerline and groove length without LSO assistance.
► AOA control.	• Maintains on speed with only minor deviations (±1 unit).
► Glideslope control.	• Maintains glidepath with average deviations and corrections without LSO assistance.
► Power control.	• Controls throttle movements for proper correction of glidepath deviations without LSO assistance.
► Lineup control.	• Intercepts and tracks centerline with average deviations and corrections without LSO assistance.
► Error detection/ correction.	• Detects and corrects in a timely manner deviations in glidepath, lineup, and AOA without assistance.
► Response to LSO calls.	• Responds in a safe and timely manner to glidepath, power, attitude, lineup, and waveoff calls from LSO.
► Bolter/touch-and-go technique.	• Simultaneously moves throttle to MRT, while retracting speed brakes and rotates to optimum AOA immediately upon touchdown and without LSO assistance.
► Waveoff technique.	• Immediately executes waveoff procedures when required or directed.

BEHAVIOR STATEMENT	STANDARDS
53. Training Rules	
● All environments. ► BFM and A/G.	● Demonstrates a thorough knowledge of training rules. ● Correctly applies training rules to varying scenarios.
► Minimum Altitude Awareness.	● Maintains briefed altitude deconfliction game plan. ● Initiates/responds to knock-it-off procedures correctly and when appropriate. ● Following a knock-it-off transmission, ceases maneuvering and properly maneuvers the aircraft to maintain safety of flight and SA. ● Maintains proper separation from aircraft. ● Recognizes flight below the hard deck/floor/minimum altitude and responds correctly IAW training rules.
● BFM training rules.	● Adheres to BFM training rules. ● Recognizes soft deck parameters and responds IAW training rules. ● Responds to deconfliction radio calls in a timely and appropriate manner. ● Deconflicts correctly when radio transmissions are not made.

BEHAVIOR STATEMENT	STANDARDS
54. Weapons Patterns (30-, 20-, 10-Degree Bombs, Pop)	
• Interval.	• Maintains pattern altitude and visual contact with interval or remains at sanctuary pattern altitude until visual contact is regained. • Maintains proper position in pattern and elevates to target pattern altitude once sight is regained. If required, maintains interval and rejoins at the prebriefed position.
• Pattern.	• Airspeed: ±10 KCAS. • Abeam distance: ±0.2 DME. • Pattern altitude: ±100 feet.
• Roll-in.	• Utilizes appropriate AOB, application of G, and AOA to arrive at preplanned dive angle for a specified delivery pattern, ±0.1 DME, adjusted for wind if necessary.
• Tracking/error corrections.	• Maintains within ±15 degrees of planned run-in heading. • Maintains within ±5 degrees of target dive angle. • Executes error sensitivity techniques for deviations from the planned release parameters.
• Dive recovery.	• Executes proper off-target procedures IAW FTI to arrive within parameters of the abeam position following a delivery profile. • Promptly recognizes recovery altitude and smoothly maneuvers to avoid low/rolling pullout or overstress.
• Communications.	• Makes the appropriate pattern calls in a timely manner without being told by IP.

BEHAVIOR STATEMENT	STANDARDS
55. Accuracy	
• Depending on CEP accuracy, achieve the MIF standard.	• Calculations for CEP require a minimum of four bombs dropped. • If CEP is ≤75 feet, grade as a 5. • If CEP is 76-125 feet, grade as a 4. • If CEP is 126-200 feet, grade as a 3. • If CEP is ≥201 feet, grade as a 2.
56. Air-to-Ground Delivery Validation	
• System.	• Basic A/G switchology to include: A/G mode selected, proper weapon selected, delivery mode, and master arm.
• Acquisition.	• Locates the proper target.
• Aimpoint.	• At release, the target is under one-half of the CCIP cross or the OAP is less than half the distance to the 25 mil ring from the pipper.
• Parameters.	• Dive angle ±5 degrees (<20 degrees planned) or ±10 degrees (≥20 degrees planned). • Planned airspeed ±50 knots. • NLT release: from -0 to +200 feet of planned release. • G at release: 0.8-1.0.
• Safety.	• Applies 4 G within 2-3 seconds and maintains until velocity vector is above the horizon.

BLANK PAGE

Chapter X

Master Materials List

1. Individually Issued Materials

	TITLE	IDENTIFICATION	QTY PER STUDENT
a.	T-45 Combined MPTS Flight Training Curriculum	CNATRAINST 1542.167A	1
b.	Flight Training Instructions (FTI)	CNATRA PAT PUB P-1204 through P-1289 as applicable	9
c.	DOD FLIP Publications		
	(1) Enroute IFR Supplement U.S.		3
	(2) Enroute High Altitude Chart (H1, H2)		6
	(3) Terminal High Altitude Instrument Approach Procedures (NW, SW, E)		6
d.	TRAWING In-Flight Guide	Locally produced/issued	
e.	Aviation Training Jacket	CNATRA-GEN 1542/10A	1
f.	Pilot Training Summary	CNATRA 1542/95	1
g.	Jacket Review	CNATRA-GEN 1542/66	1

	TITLE	IDENTIFICATION	QTY PER STUDENT
j.	Academic Lesson Guides		
	(1) Aviation Student Indoc (ASI)	CNATRA P-1277	1
	(2) Aerodynamics AERO)	CNATRA P-1279	1
	(3) Engineering (ENG) Book 1 and 2	CNATRA P-1278	1
	(4) Instrument Navigation (INAV)	CNATRA P-1282	1
	(5) Meteorology (METRO)	CNATRA P-1280	1
	(6) Operational Navigation (ONAV)	CNATRA P-1224	1
	(7) Instrument Rating Flight Procedures	CNATRA P-1245	1

2. Support Materials

	TITLE	IDENTIFICATION	QUANTITY
a.	T-45C NATOPS Flight Manual	NAVAIR A1-T45AC-NFM-000	255
b.	T-45C Pocket Checklist	NAVAIR A1-T45AC-NFM-500	255
c.	T-45C NATOPS Flight Manual (performance charts)	NAVAIR A1-T45AC-NFM-300	255
d.	NATOPS Instrument Flight Manual	Stock No. 0437LP9001019	50
e.	NATOPS General Operating Instruction	OPNAVINST 3710.7U	25
f.	Aeronautical Information Manual (AIM)	FAA Publication	100
g.	Flight Clothing	(Identification and quantity listed in CNATRAINST 10126.1; cost listed in NAVSUP PUB. 4100.)	

h. Aviation Training Forms are generated by the Training Integration Management System (TIMS).

i.	T-45C Standard Operating Procedures (SOP)	COMTRAWINGONEINST 3710.7T/ COMTRAWINGTWOINST 3710.7R (Locally produced/issued)	1
j.	Lecture Guides	CNATRA PAT PUBS	18

3. Aircraft and Major Training Devices

	TITLE	IDENTIFICATION
a.	Aircraft	T-45C
b.	Instrument Flight Trainer (IFT) Nonvisual Simulator	Device 2F137 or 2F137C
c.	Operational Flight Trainer (OFT) Visual Simulator	Device 2F138C, D, or E

BLANK PAGE