

NAVAL AIR TRAINING COMMAND



**NAS CORPUS CHRISTI, TEXAS
CIN Q-2D-3396, Q-2D-4496, Q-2D-5596**

**CNATRAINST 1542.158F
25 AUG 11**

CHIEF OF NAVAL AIR TRAINING



ADVANCED MULTI-SERVICE NAVIGATOR TRAINING SYSTEM (MNTS) CURRICULUM

2011



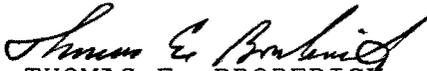
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CNATRA INSTRUCTION 1542.158F

Subj: ADVANCED MULTI-SERVICE NAVIGATOR TRAINING SYSTEM (MNTS)
CURRICULUM

1. Purpose. To publish the curriculum for training Student Military Aviators (SMA) in the Advanced Naval Flight Officer (NFO) phase of Naval Air Training Command (NATRACOM) flight training.
2. Cancellation. CNATRAINST 1542.158E will be canceled when the last student enrolled completes the curriculum.
3. Action. This instruction is effective on receipt. No changes will be made without written authorization by the Chief of Naval Air Training (CNATRA).
4. Forms. The CNATRA forms required by this instruction are automated in the Training Integration Management System (TIMS) computer program. Additional CNATRA forms are available on the CNATRA website <https://www.cnatra.navy.mil/pubs/forms.htm>.


THOMAS E. BRODERICK
Chief of Staff

Distribution:
CNATRA Website

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SUMMARY OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	CHANGE DESCRIPTION	PAGES AFFECTED/ INITIALS
1	9/21/12	Incorporated	3, ii-iii, v, ix-xii, xiv, xviii-xxi, I-5, I-9, I-10, II-10, IV-1 through IV-5, IV-7 through IV-14, VI-2, VIII-9 through VIII-12, VIII-22, VIII-48, VIII-53 through VIII-56, VIII-58 through VIII-66

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COURSE DATA

1. Course Title. Advanced Multi-Service Navigator Training System (MNTS) Curriculum.
2. Course ID Number (CIN). Advanced NFO Strike (Q-2D-3396), Advanced NFO Fighter (Q-2D-4496), and Advanced NFO ATM (Q-2D-5596).
3. Location. NAS Pensacola.
4. Course Status. Active.
5. Course Mission. The mission of the Advanced NFO program is to further enhance navigation, communication, and aircraft systems management skills. Crew coordination and mission priorities are stressed in this curriculum. Skill and performance levels required for completion are outlined in the Course Training Standards (CTSs). Different services and platforms require completion of different training blocks/segments. Successful completion of the applicable curricula qualifies student NFOs as Military Flight Officers. This requires:
 - a. Flight training to teach the principles and techniques used in operating high-performance aircraft.
 - b. Flight and synthetic training to teach the principles and techniques used in low-level navigation, radar navigation, and radar intercept consummation.
 - c. Ground training to supplement and reinforce flight training.
6. Prerequisite Training. Successful completion of Intermediate Jet Multi-Service Navigator Training System (Q-2D-0157).
7. Security Clearance Requirements. None.
8. Follow-on Training. Assigned by the graduate's parent service.

9. Course Length. Overall time to train (TTT) is calculated per CNATRAINST 1550.6E. Training Days account for factors including weather, personnel and equipment availability, briefing and preparation time, and historical delays. Calendar weeks further account for weekends, holidays, safety stand-downs, and other expected nonworking days.

	<u>Training Days</u>	<u>Calendar Weeks</u>
a. Advanced NFO Strike:	66.7*	14.8*
b. Advanced NFO Fighter:	80.9**	18.0
c. Advanced NFO ATM:	45.9	10.2

*Includes CFET (centrifuge) training now required prior to completion of Advanced Strike Core Training. **Advanced NFO Fighter TTT includes Q-2D-5596 Advanced NFO ATM.

10. Class Capacity. Class size is variable, but optimum class sizes are:

Advanced NFO Strike: 13 students
Advanced NFO Fighter: 6 students
Advanced NFO ATM: 12 students

11. Instructor/Requirements. As established by Chief of Naval Air Training planning factors.

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

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

14. Quota Control. Chief of Naval Operations.

15. Course Training Subjects

a. Ground Training

STRIKE GROUND TRAINING		
Stage	Symbol	Hours
Welcome Aboard	G0101	1.0
Class Check-in	G0102	6.0
Low-Level/Radar Planning	G1101	3.0
Joint Mission Planning System Lab	G1102	8.0
Low-Level/Radar Navigation Lecture	G1103	5.0
Ground Mapping Radar Trainer	G1104	0.5
Familiarization		
Radar Principles/Operations	G1105	3.0
Basic Radar Predictions	G1106	2.0
Turnpoint Procedures	G1107	2.5
NATOPS 1-9	G1108-16	9.0
IGS Lecture	G1117	3.0
IGS Open/Closed Book Exam	G1118-19	3.5
Carrier Operations Lecture (USN, USMC)	G1120	3.0
Conventional Weapons	G1121	1.5
Flight Prep/CRM	G1122	6.0
NATOPS Exam	G1123	2.0
EP/Limits Exam I	G1124	2.0
Midphase Review Lecture/Exam	G1125-26	4.0
T-39 Cockpit Familiarization/Refresher	G1127	1.0
Low Altitude Awareness Training	G1128	2.0
Strike Seminar	G1129	3.0
Chart Prep I	G1130	8.0
Composite Ground School	G1131	3.0
Chart Prep II	G1132	8.0
Introduction to Strike Fighter and Air-to-Air	G1135	0.5
Air Intercept Radar	G1133-34, 36	4.5
Fighter Purpose	G1137	0.5
Air Intercept Control	G1138	1.0
Basic Intercept Procedures	G1139-48 G1150-64, 66	25.8
EP/Limits Exam II	G1149	0.5
Reattack Sim Introduction	G1165	1.0
Flight Preparation Lecture	G1167	2.0
Brief Introduction	G1168	1.0
Reattack Self-Study	G1169	6.5
Total		133.3

FIGHTER GROUND TRAINING		
Stage	Symbol	Hours
Check-in and Administration Time	G0201	0.25
Conversion Self-Study	G0202	6.50
Advanced Self-Study	G0203	6.50
2 V X Self-Study	G0204	6.50
Total		19.75

T-45C ATM ADMINISTRATION GROUND TRAINING		
Stage	Symbol	Hours
Check-in	G0301	4.0
Delayed Jet Water Survival Lecture	G0302	6.0
Final Phase Review	G0303	3.0
Critique and Graduation (Checkout)	G0304	4.5
Total		17.5

T-45C ATM GROUND TRAINING		
Stage	Symbol	Hours
Aircraft Systems	G1201-7	11.8
Ejection Seat Lecture/Egress	G1208	1.5
Emergency Flight Procedures 1	G1209-13	7.0
Emergency Flight Procedures Exam One	G1214	1.0
Emergency Flight Procedures 2	G1215-18	5.7
Emergency Flight Procedures Exam Two	G1219	1.0
NATOPS Open-Book Examination	G1220	2.0
NATOPS Closed-Book Examination	G1221	2.0
Out-of-Control Flight Procedures	G1222	1.0
Out-of-Control Flight Exam	G1223	1.0
Instruments	G1224-25	1.6
Ejection Seat Preflight	G1226	1.1
Crew Resource Management	G1227	1.0
Total		37.7

b. Flight Support

FIGHTER FLIGHT SUPPORT		
Stage	Symbol	Hours
Air Intelligence	F1101	1.5
Fighter Missions	F1102	0.5
Conversion Procedures	F1103-4	7.5
Advanced Intercepts Procedures	F1105-6	8.0
Introduction to 2 V X	F1107	4.5
Self-Escort Strike Route	F1108	2.0
Total		24.0

T-45C ATM FLIGHT SUPPORT		
Stage	Symbol	Hours
Contact Flight Procedures/Course Rules	C1101-2	3.0
Weapons Flight Procedures	A1101-4	5.4
Basic Fighter Maneuvers Flight Procedures	A1201-3	6.7
Total		15.1

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

STRIKE FLIGHT TRAINING						
Flight/Events	2B49		T-39N Dual		T-39G/N Dual	
	Flts	Hrs	Flts	Hrs	Flts	Hrs
Emergency Procedures/Approach Trainer	1	2.0				
GMRT	3	6.0				
Airways Navigation					2	4.6
Radar Navigation					3	3.3
Strike Training	2	4.0	5	8.0		
Composite Strike Training	3	6.0	4	8.8		
Composite Strike Check Ride			1	2.2		
Reattacks Training	4	6.0	1	1.1		
Reattacks Check Ride			1	1.1		
Totals	13	24.0	12	21.2	5	7.9

FIGHTER FLIGHT TRAINING				
Flight/Events	2B49 SIM		T-39N Dual	
	Flts	Hrs	Flts	Hrs
Multiple Approach Flight Training			2	3.6
Fighter Conversions Training	5	7.5	2	2.6
Fighter Advanced 1 V 1 Intercepts Training	3	4.5	2	2.6
Fighter Advanced Multibogey Intercepts Training	5	7.5		
Fighter Advanced Strike Route Intercepts Training			1	1.3
Fighter Advanced Strike Route Intercepts Check Ride			1	1.3
Totals	13	19.5	8	11.4

T-45C ATM FLIGHT TRAINING				
Flight/Events	2F205 SIM		T-45C Dual	
	Flts	Hrs	Flts	Hrs
Contact Simulator Training	8	12.0		
Contact Flight Training			3	4.5
Contact Check Ride			1	1.5
Section Weapons Flight Training			2	2.4
Section Weapons Check Ride			1	1.2
Basic Fighter Maneuvers Flight Training			4	4.4
Basic Fighter Maneuvers Check Ride			1	1.1
T-45C ATM Division Weapons High-/ Medium-Threat, PGM CAS	1	1.5		
T-45C ATM Division Weapons High-/Medium-/ Low-Threat CAS			2	2.3
T-45C ATM Division Weapons Check Ride Precision-Guided Munitions CAS			1	1.2
Totals	9	13.5	15	18.6

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 needs, and may be up to several hours per event. For simulator and flight events, specific brief and taxi 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/ Taxi	Taxi/ Debrief	Total
Strike Sim (2B49)	1.00	1.00	2.00
Strike Flight	2.00	1.50	3.50
Fighter Sim	1.00	1.00	2.00
Fighter Flight	1.75	1.50	3.25
T-45C Sim	0.50	0.50	1.00
T-45C Flight	2.00	1.50	3.50

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

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

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

20. Preceding Curriculum Data. This curriculum replaces CNATRAINST 1542.158E.

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

22. Summary of Lead/Chase Overhead. The summary of the Instructor Lead/Chase planning factor hours for the T-45 Advanced Multi-Service Navigator Training System are tabulated below. The table is a compilation of the events requiring Instructor Chase that can be found in Chapter VIII of this publication.

ADVANCED NFO				
Flight/Event	# Events	Lead/Chase Hrs/Event	# of Students per Chase	Hrs/Student
A4501	1	1.2	2	0.6
A4502	1	1.2	2	0.6
A4590	1	1.2	2	0.6
Totals	3	3.6	6	1.8

ABBREVIATIONS

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

AC	- Alternating Current
ACAD	- Academic
ADB	- Aircraft Discrepancy Book
AGL	- Above Ground Level
AIM	- Aeronautical Information Manual or Air Intercept Missile
AIC	- Airborne Intercept Control
AMRAAM	- Advanced Medium Range Air-to-Air Missile
AO	- Angle Off
AOB	- Angle of Bank
APU	- Auxiliary Power Unit
AREO	- Angle-off, Range, Elevation, Overtake
ASI	- Aviation Student Indoctrination
ASR	- Airport Surveillance Radar
ATC	- Air Traffic Controller
ATF	- Aviation Training Form
ATJ	- Aviation Training Jacket
ATM	- Air Tactical Maneuvering
ATS	- Aviation Training Summary
AUG	- Augmentation
BAR	- Basic Air Work Recognition
BAW	- Basic Air Work
BDA	- Battle Damage Assessment
BFM	- Basic Fighter Maneuver

BFMFP - Basic Fighter Maneuver Flight Procedures
CAI - Computer-Assisted Instruction
CAS - Close Air Support
CCC - Collision Course Corrections
CNATRA - Chief of Naval Air Training
CNO - Chief of Naval Operations
CO - Commanding Officer
COMTRAWING - Commander, Training Air Wing
CP - Contact Point
CPT - Cockpit Procedures Trainer
CRM - Crew Resource Management
CT - Counterturn
CTS - Course Training Standard
CVP - Aircraft Carrier Procedures
DASC - Direct Air Support Center
DCONFP - Day Contact Flight Procedures
DEU - Display Electronics Unit
DJET - Delayed Jet Water Survival
DME - Distance Measuring Equipment
DOD - Department of Defense
DTG - Degrees to Go
EGT - Exhaust Gas Temperature
EOB - End of Block
EP - Emergency Procedure
ET - Extra Training
ETA - Estimated Time of Arrival

FAA	- Federal Aviation Administration
FAC	- Forward Air Controller
FAR	- Federal Aviation Regulation
FLIP	- Flight Information Publication
FOD	- Foreign Object Damage
FPC	- Final Progress Check
FPM	- Feet per Minute
FQ	- Forward Quarter
FTI	- Flight Training Instruction
GINA	- GPS/Inertial Navigation Assembly
GMRT	- Ground Mapping Radar Trainer
GPS	- Global Positioning Satellite
GTS	- Gas Turbine Starter
H/X	- Hours per X
IAW	- In Accordance With
ICS	- Intercom System
IFR	- Instrument Flight Rules
IGS	- Instrument Ground School
ILS	- Instrument Landing System
IMC	- Instrument Meteorological Conditions
IMS	- International Military Student
IMSO	- International Military Student Officer
IP	- Instructor Pilot, Intercept Procedures, or Initial Point
IPC	- Initial Progress Check
JCAS	- Joint Close Air Support

- JOG - Joint Operations Graphic (1:250,000 Chart)
- JTAR - Joint Tactical Air Request
- KIAS - Knots Indicated Airspeed
- LLNAVFP - Low-Level Navigation Flight Procedures
- LOX - Liquid Oxygen
- LS - Lateral Separation
- LSC - Level Speed Change
- MAF - Maintenance Action Form
- MCG - Master Curriculum Guide
- MFD - Multi-Function Display
- MIF - Maneuver Item File
- MIL - Mediated Interactive Lecture
- MNPOTTA - (Check-in Format) Mission #, Number/Type Aircraft, Position and Altitude, Ordnance, Time on Station, Type of Sensors and Capabilities, Abort Code
- MNTS - Multi-service Navigator Training System
- MOA - Military Operating Area
- MTR - Military Training Route
- NATOPS - Naval Air Training Operating Procedures and Standards
- NFO - Naval Flight Officer
- NFS - Naval Flight Student
- NM - Nautical Mile(s)
- NORDO - No Radio (Lost Communications)
- NOTAMs - Notices to Airmen
- NSS - Navy Standard Score
- NWS - Nose Wheel Steering

OBOGS	- On-Board Oxygen Generating System
OLQ	- Officer-Like Qualities
ORM	- Operational Risk Management
PAR	- Precision Approach Radar
PAS	- Phase Aggregate Score
PGM	- Precision-Guided Munitions
RDR	- Radar
RPM	- Revolutions per Minute
RQ	- Rear Quarter
RRU	- Ready Room Unsatisfactory
RSI	- Radarscope Interpretation
RTB	- Return-to-Base
RVSM	- Reduced Vertical Separation Minimum
SA	- Situational Awareness
SADS	- Stability Augmentation Data Sensor
SITREP	- Situation Report
SMS	- Student Monitoring Status
SNFO	- Student Naval Flight Officer
SOP	- Standard Operating Procedures
SSR	- Special Syllabus Requirement
STAN	- Standardization
STAR	- Standard Terminal Arrival Route
SUA	- Special Use Airspace
T39EP	- T-39 Emergency Procedures
T39SYS	- T-39 Systems

T45BFMFP - T-45C Basic Fighter Maneuvers Flight Procedures

T45CONFP - T-45C Contact Flight Procedures

T45CRM - T-45C Crew Resource Management

T45EMFP - T-45C Emergency Flight Procedures

T45INST - T-45C Instruments

T45OCFFP - T-45C Out-of-Control Flight Flight Procedures

T45SYS - T-45C Systems

T45WEPFP - T-45C Weapons Flight Procedures

TA - Target Aspect

TACAN - Tactical Air Navigation

TGI - Total Graded Items

TGT - Target

TOT - Time on Target

TRB - Training Review Board

TTFACOR - (Intel Format) Target, Threat, Friendlies, Artillery, Clearance Authority, Ordnance, Restrictions

UHF - Ultra High Frequency

UNSAT - Unsatisfactory

USAF - United States Air Force

USMC - United States Marine Corps

USN - United States Navy

VFR - Visual Flight Rules

VHF - Very High Frequency

VID - Visual Identification

VMC - Visual Meteorological Conditions

VNAVFP - Visual Navigation Flight Procedures
VOR - VHF Omnidirectional Range
VR - Visual Reconnaissance
WEPFP - Weapons Flight Procedures
WINFLIR - Windows Flight Information Record
WX - Weather
XO - Executive Officer

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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 card, 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 third character in the lesson designator identifies a block.
6. Check Ride (SXX90). A flight check in any stage of training.
7. Class Advisor. An instructor assigned by the Flight Leader to provide counseling and guidance to a specific class throughout the applicable syllabus.
8. Contact. The stage of training that includes familiarization, emergency procedures, and basic copilot skills.
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. A description of required behaviors and standards of performance for a specific maneuver. These standards are in Chapter IX.
11. Courseware. The technical data, flight training instructions, audio, video, film, CAI, instructor guides, student study guides, and other training material developed to support and implement the syllabus of instruction.

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 (Rev. 4-04) Training Review Board (TRB) Summary Form, generated by the TRB, that summarizes a specific student's progress in a given syllabus and provides detailed information on the application of MNTS training for that student. Deliverables indicate whether the quality and continuity of training provided was IAW CNATRINIST 1542.158F, indicate the degree of influence that "human factors" had on the student's performance, and make a recommendation on elimination/retention based on those items.
14. Emergency Procedure. Any degradation of aircraft systems or flight conditions requiring pilot action or intervention.
15. End of Block. Last event in block. In order to progress past EOB, the student must meet or exceed MIF on all critical items and all optional items attempted in the block.
16. Extra Training (SXX87). Additional student training flights ordered by the Operations Officer or higher, in order to compensate for documented instructional deficiencies.
17. Final Progress Check (SXX89). A special check normally given by the Commanding Officer (CO) or Executive Officer (XO). The CO may designate, in writing, FPC duty to a qualified O-4 or above. This is only done if the CO or XO is unqualified or unavailable to instruct in the required stage. A satisfactory FPC returns the student to normal syllabus flow. An unsatisfactory FPC results in a TRB.
18. Flight Training Instruction. A CNATRA-approved manual describing flight procedures and techniques for each training stage.
19. Hours per X. The average length for each event in a block, rounded to the nearest tenth of an hour.
20. Initial Progress Check (SXX88). A special check, given by the Operations Officer or his representative. A satisfactory IPC returns the student to normal syllabus flow. An unsatisfactory IPC results in an FPC.

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

Char	Meaning	Remarks
1 st	Stage	A-ATM C-Contact F-Fighter G-Ground I-Instrument N-Navigation R-Radar S-Strike T-Composite
2 nd	Media	0-Ground Training 1-Academics 2-2B49 Trainer 3-2F205 Trainer 4-Aircraft
3 rd	Block	Sequential, indicating block within stage.
4 th & 5 th	Event/Check & Identifier	Sequential, indicating event within block, or other event types as shown below: 84-Adaptation 85-Practice Trainer 86-Warmup 87-Extra Training 88-Initial Progress Check 89-Final Progress Check 90-Check Ride

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 training flow for MNTS.

24. Outcomes. Potential courses of action following a progress check (SXX88/89). There are only two basic outcomes:

- a. Pass - Return to training.
- b. Fail - Proceed with the elimination process/eliminate.

25. Phase of Training. A major division in the course of training. Advanced MNTS is one phase of training divided into three segments: Strike/Fighter/ATM.

26. Pink ATF. An ATF that is pink in color, but otherwise identical to the standard ATF. The pink ATF is used to denote an unsatisfactory event generating a progress check.

27. Progress Check Instructor. An instructor authorized to administer initial or final progress checks.

28. Ready Room Unsatisfactory. An unsatisfactory grade given for inadequate knowledge of flight procedures, systems, discuss items, emergency procedures, deficient preflight planning, or unofficer-like qualities.
29. Segment of Training. Defined by student's service and aircraft assignment. There are three segments in the Advanced Phase: Strike/Fighter/ATM. Each student will complete at least one segment of training.
30. Special Syllabus Requirement (SSR). One time, ungraded demonstration item.
31. Stage of Training. All training of a particular type (Ground, Contact, Instruments, Navigation, Formation, Tactical, ATM, Strike, and Radar) within a phase. The first letter in the lesson designator identifies the stage of each lesson (Example: C5001 is in the Contact stage).
32. Student Monitoring Status. Squadron-initiated status to address substandard student performance.
33. Training Media. MNTS media include aircraft, 2B49 trainer, 2F205, ground training, and CAI. The second character in the lesson identifier designates the training media (Example: N4201 is a T-39 flight).
34. Training Review Board (TRB). A fact-finding board appointed to conduct an administrative review of circumstances and procedures relative to an FPC recommendation for a student's elimination.
35. Warmup Event (SXX86). Additional events given to allow a student to regain a level of proficiency previously demonstrated which has diminished due to an extended break in training.

Chapter I

General Instructions

1. Syllabus Management

- a. Distribution. Participating squadron personnel.
- b. Interpretation. The syllabus is directive. Should circumstances create situations not covered within the scope of this syllabus, or specific course of action appears to conflict with other directives, consult CNATRA (N71).
- c. Deviations. Document all deviations on the event's ATF.
- d. Changes. Recommended changes shall be submitted in accordance with CNATRAINST 1550.6E.
- e. Execution. All students will execute all the Strike ground training, flight, and simulator events except G1129 (Carrier Operations), which is for USN and USMC only. After selection at the end of Strike Training, students will complete the applicable portions of Chapters II-VIII, depending on their service and platform assignment on graduation from Strike. USN/USMC Strike students first complete Strike and then complete ATM Training. USN/USMC Fighter students first complete Strike, then Fighter, and lastly, ATM.
- f. Syllabus Description. Advanced MNTS training consists of three segments named Strike Training, Fighter Training, and ATM Training. The particular segments needed to complete the syllabus will differ based on the student's service and platform assignment at selection as described in the previous paragraph. This training is flown primarily in the 2B49 trainer and the T-39G/N aircraft. USN/USMC Strike and Fighter students will also use the 2F205/2F205A trainers and the T-45C aircraft. Each segment is divided into stages, such as Contact, Instrument, Navigation, and Tactical, as applicable. Each stage is subdivided into training blocks. The training blocks consist of a specified number of flights/simulator events. 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 NFS's PAS is a comparative ranking based on the previous population of completers for a specific phase or portion of a phase of aviation training. PAS indicates only NFS performance relative to a normative population of other recent NFSs. Under the MNTS system, PAS is not by itself an indication of whether an NFS has met the criteria necessary for winging or continuation in aviation training. PAS is calculated for each block within a curriculum, for the subset of blocks completed by an NFS still in training (Interim PAS), and for the entire phase.

MNTS SNFO Calculations. From a population of previous SNFOs, an SNFO's PAS is calculated using equation (1), below:

$$SNFO_PAS = 50 + 10 * \left(0.81 * \frac{S - M1}{S1} + 0.1 * \frac{M2 - NMU}{S2} + 0.09 * \frac{Acad - M3}{S3} \right) \quad (1)$$

Where

S - SNFO Score

NMU - SNFO Number of Marginals and Unsats (NMU)

Acad - SNFO Academic Grades

M1 - Squadron Average Score

M2 - Squadron Average NMU

M3 - Squadron Average Academic Grades

S1 - Standard Deviation of Squadron Score

S2 - Standard Deviation of Squadron NMU

S3 - Standard Deviation of Squadron Academic Grades

(2) NSS. NSS is calculated to correct for potential non-normality in the distribution of PAS. NSS is calculated for each block within a curriculum, for the subset of blocks completed by an NFS still in training (Interim NSS), and for the entire phase. NSS is calculated from PAS by using equation (2), below:

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

Where

PAS - NFS PAS

MPAS - Squadron Average PAS

SDPAS - Standard Deviation of Squadron PAS

2. Training Management

a. Syllabus Progression. Fly syllabus events within each stage sequentially. Do not start a block without all prerequisites. Students may be in different stages simultaneously. The course flowcharts on pages I-5, I-7, and I-9 delineate the sequence of flying events and their ground training prerequisites. System training management is designed to facilitate two graded events (flight, simulator, or exam) per student per day.

b. Maneuver Continuity. Students must accomplish previously graded procedures frequently enough to ensure maintaining required proficiency.

c. Hours per X (H/X). Mission Commanders shall plan and execute missions to meet H/X as closely as practical. If actual event length varies from H/X by more than 0.3 hours, annotate reason(s) in ATF's general comments section.

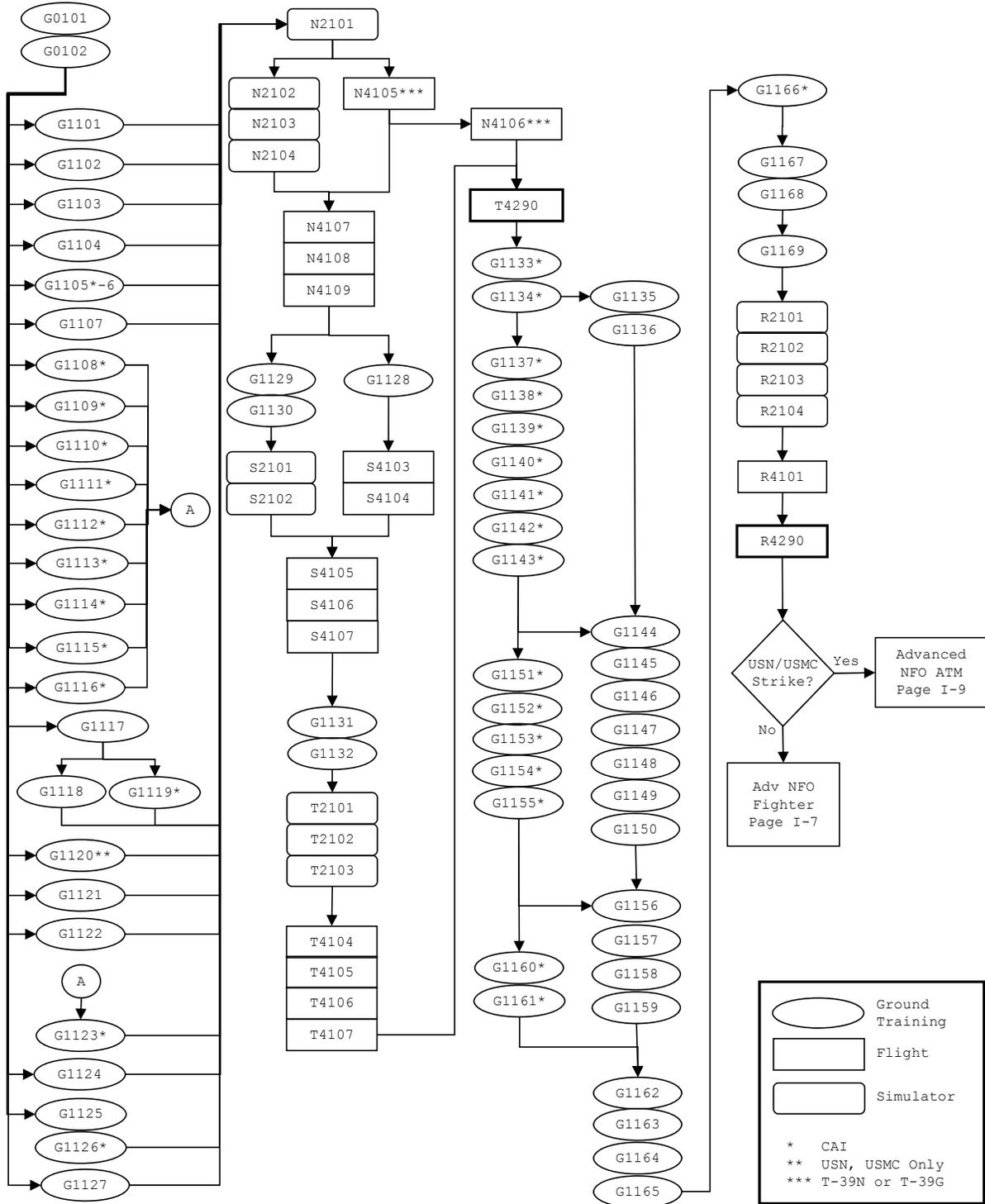
d. Location of Training. Student events may be accomplished at home station or on cross-country/detachments where applicable.

e. Special Syllabus Requirements. SSRs may be allocated to flights. Unless noted otherwise, instructors may accomplish SSRs on any flight within the block. The SSRs shall be completed in the specified block. Annotate completed SSRs in the ATF's SSR Comments section. Assign NG/1 as the SSR maneuver grade.

f. Aviation Training Jacket Reviews. Flight Leaders will conduct jacket reviews at least monthly. The SMS students require weekly ATJ reviews.

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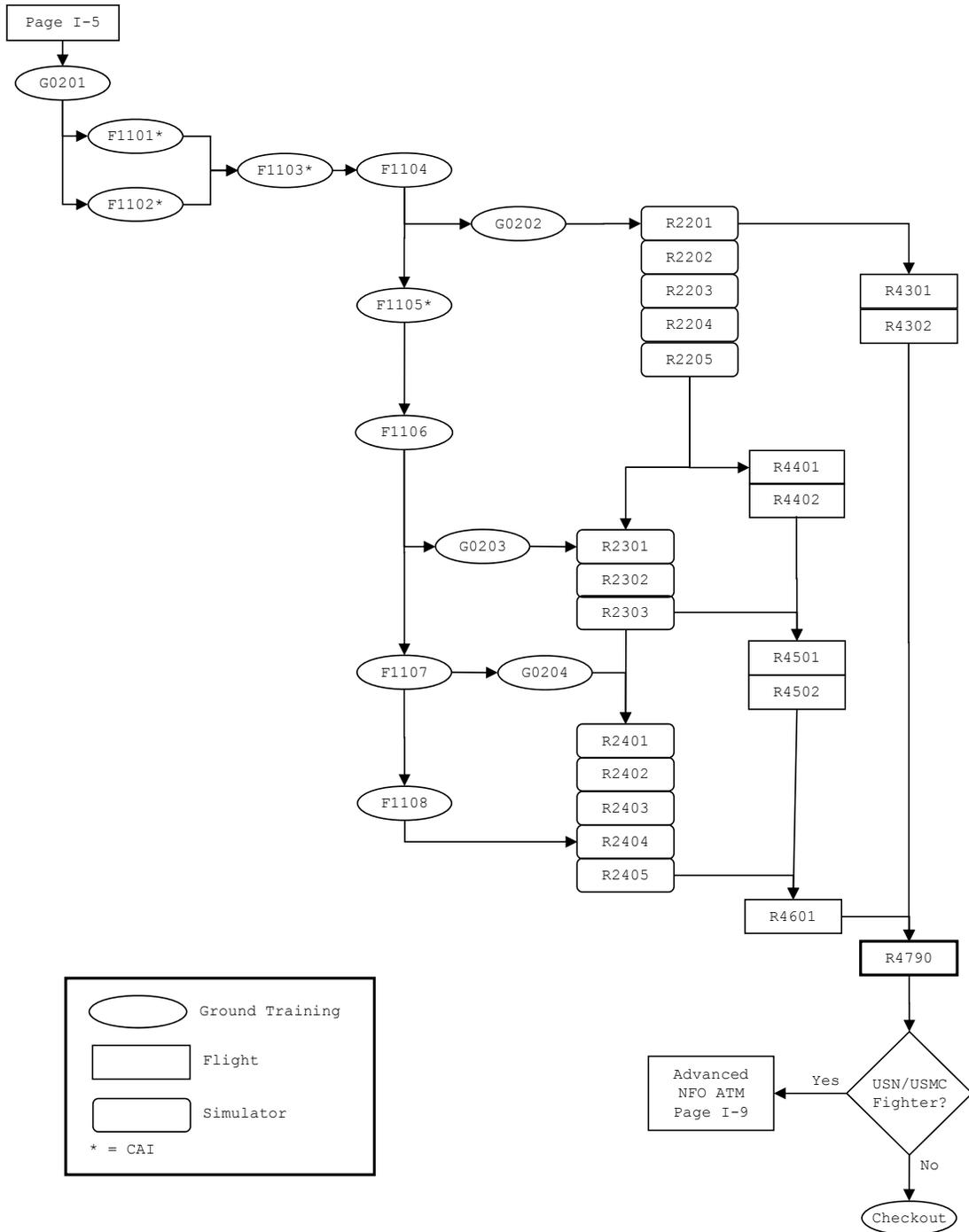
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**ADVANCED NFO (T-39) STRIKE
TRAINING COURSE FLOW**

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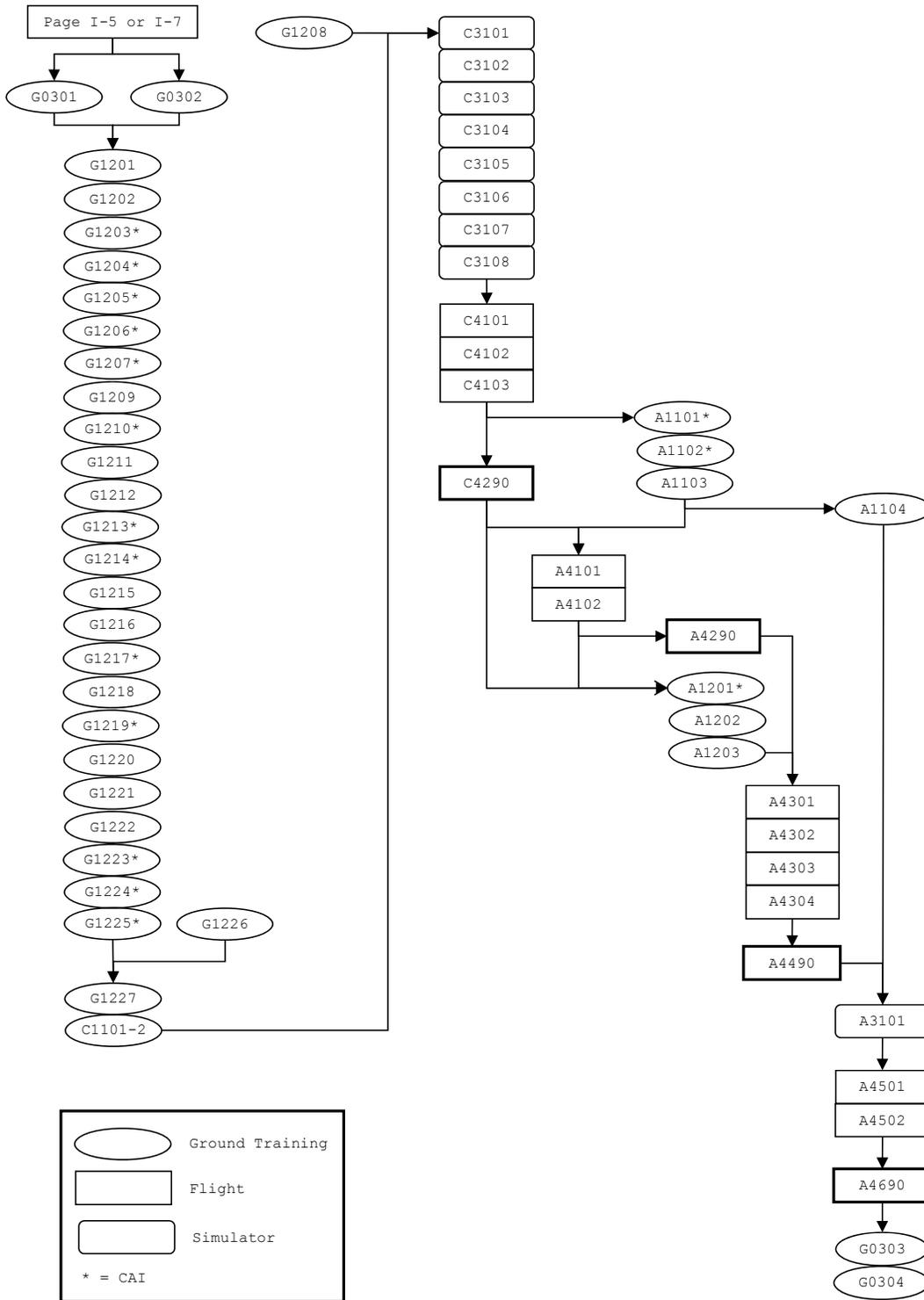
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ADVANCED NFO (T-39) FIGHTER TRAINING COURSE FLOW

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ADVANCED NFO (T-45C) ATM TRAINING COURSE FLOW

3. Unsatisfactory Performance. (See also **Progress Check Procedures**, Chapter I, paragraph 9c(3).)

a. Flight

(1) If syllabus events remain in the block, the student shall progress to the next syllabus event, until the second consecutive unsatisfactory.

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

(3) An unsatisfactory check ride (SXX90) or two consecutive unsatisfactory syllabus events result in an IPC. Document the failed check ride or second consecutive unsatisfactory event on a pink version of the ATF for that syllabus event.

(4) A subsequent check ride failure, two further consecutive unsatisfactory syllabus events, or an RRU result in an FPC. Document the failed check ride or second consecutive unsatisfactory event on a pink version of the ATF generating the progress check.

(5) Failing an FPC results in a TRB.

b. Ready Room Unsatisfactory

(1) An RRU on any syllabus event will result in an IPC. Document the RRU on a pink version of the ATF for that event. The event will be marked as incomplete with an unsatisfactory grade in the procedures column. On remediation of unsatisfactory performance, the event will be flown to completion and general knowledge and emergency procedures will be incorporated into the overall grading solution.

(2) A second or subsequent RRU, OLQ, failed IPC, or two consecutive unsatisfactory flight events will result in an FPC. Document the failed FPC on a pink version of the ATF generating the progress check.

(3) Failing an FPC will result in a TRB.

c. Academic. Failing the same exam twice or failing more than one exam triggers an IPC or FPC as appropriate. The FPC is a Commanding Officer's assessment.

d. Remediation

(1) A dual CPT or ground evaluation emphasizing the deficient areas may clear an unsatisfactory check ride or EOB syllabus event caused solely by ground operations.

(2) Unsatisfactory performance in one area of training may be cleared by dual instruction in another area of training directly applicable to the deficient area. (Example: A navigation event graded unsatisfactory due to departure may be cleared by a dual instrument syllabus event.)

(3) EOB unsatisfactory syllabus events in the instrument stage may be cleared in the simulator if these conditions are met:

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

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

e. Restrictions. Until remediating the unsatisfactory:

(1) The student shall not accomplish training in any other stage.

(2) The student may accomplish academic classes, examinations, and ground training missions provided the unsatisfactory mission was not a prerequisite.

4. Training Review Board

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

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

(2) Continuity of training provided.

(3) Outside influences/extenuating circumstances.

(4) The TRB **shall not** make recommendations based on perceived student potential or aspects unrelated to the administrative application of training IAW this directive.

b. Composition

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

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

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

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

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

(b) Any instructor who has awarded an unsatisfactory to the student in the relevant training stage.

(c) The IMSO, in the case of an international student.

c. Deliverables

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

(2) A majority vote elimination/retention recommendation.

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

5. Break in Training Warmup Events (SXX86). Nonsyllabus warmup events compensate for breaks in training. Eligibility is based on the number of days since the last flight or trainer in the same stage. All warmups shall be coded as an SXX86, e.g., N4286. Warmup grades do not satisfy block or MIF requirements and shall not be included in the cumulative totals.

a. Warmups Between Stages. Warmup events shall not be given prior to the first flight in stage unless 30 days have elapsed since any syllabus flight or trainer event.

b. Warmup Event Criteria. Optional warmup events are based on the student's performance. If the student's performance meets MIF, the event shall count as the next syllabus event. If a student's performance is marginal or unsatisfactory, the flight is a warmup.

c. Additional Warmup Events. The Operations Officer may direct additional warmup aircraft or simulator/CPT events for extended breaks in training.

CRITERIA FOR AWARDING WARMUP EVENTS		
Break* (Days)	Warmup Events	Remarks
1-6	None	
7-13	1 Optional	<ul style="list-style-type: none"> ● Based on performance. ● Required if overall event grade is Marginal or Unsatisfactory. ● Prohibited if: <ul style="list-style-type: none"> ▶ Performance meets MIF. ▶ First event in stage.
14	1 Optional 1 Mandatory	<ul style="list-style-type: none"> ● Optional warmup based on performance. ● Required if overall event grade is Marginal or Unsatisfactory.

*Break = Julian Date - Julian Date last flown.

6. Additional Flights/Trainers

a. Extra Training Events (SXX87). All ETs shall be coded as SXX87, e.g., C3587.

(1) ET events include, but are not limited to:

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

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

(c) Preceding an FPC. The CO may authorize as many as two ETs prior to an FPC.

(2) IPC/FPC 87 events **shall not** be awarded to remediate unsatisfactory student performance unrelated to unit/instructional training inadequacies.

(3) Document the awarding of IPC/FPC 87 events on supplemental ATF.

(4) International Students. The Operations Officer may authorize additional events to international students IAW CNATRAINST 1500.4G.

b. Additional Events to Meet Minimum Syllabus Time

(1) Events flown to meet minimum night or instrument time will meet MIF for the block in which the ET is flown.

(2) If the ET does not meet the objectives, the Operations Officer or above will decide if an additional event is warranted.

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

d. Practice Trainers (SXX85). Students may receive practice 2B49/2F205 events as availability permits. These practice events are not part of the syllabus. If a practice trainer is authorized, the student shall only perform previously introduced maneuvers.

7. Student Monitoring Status

a. The objective is to focus supervisory attention on a student's progress in training, specific deficiencies, and/or potential to complete the program. A "marginal" student **shall** be placed on SMS. "Marginal" students are defined as students who receive two UNSATS in a block of training or three UNSATS within a single stage of training. SMS may also be applied to students who require supervisory attention while trying to resolve personal issues.

b. The Flight Leader will place the student on SMS to address substandard performance in a specific area.

c. SMS is intended as a short-term program. SMS requires the setting of specific goals for removal from SMS or proceeding with the elimination process. SMS goals should be tailored to correct deficiencies as the Flight Leader and/or Operations Officer determine or to address personal issues as the Class Advisor or Flight Leader determines. The goals and the required period in SMS must be annotated in a supplemental ATF in the student's ATJ.

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

e. An SMS student is limited to one flight or simulator event per day.

8. Ground Training and Briefing Requirements

a. Mission Preparation, Briefings, and Debriefings

(1) EOB Events. The Mission Commander shall carefully review the ATS 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 the critical items for the events's training block.

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

(c) The latest ATS for the stage.

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

(a) Event discuss items, as listed in Chapters III-VIII.

(b) Specific objectives.

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

(d) Planned profile and contingencies.

(4) Debriefing

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

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

(c) The instructor shall provide the student with a new ATS and may provide a copy of the event's ATF.

b. Emergency Procedures Briefing and Training

(1) EP training builds the student's confidence in the aircraft. Correct procedural deficiencies through additional instruction and study assignments.

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

(3) Grade the student's overall EP knowledge and performance under EPs.

9. Mission Grading Procedures and Evaluation Policies

a. General Grading and Evaluation Policy. Maneuver Item Files listed in the MCG are minimum stage/phase completion standards per maneuver. Students who consistently perform at the absolute minimum standard through multiple blocks of training may not possess the skills required to complete follow-on training, which may lead to SMS and/or Command-directed IPC/FPC. The 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. Use the following grading scale to document the student's characteristic performance on maneuvers attempted during each event. This is an absolute grading scale. Judge the student's proficiency **only** against the item's CTS. (See Course Data, Student Performance Measurement/Application of Standards, paragraph 21, page xiii.)

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

1. When the instructor demonstrates the maneuver and the student does not subsequently perform it during the event.

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

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

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

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

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

(2) Overall Event Grades. Overall event grades represent the student's progression through the syllabus. Grade events "Pass," "Marginal," or "Unsatisfactory." Use the following definitions to characterize event grades.

(a) Pass

1. Prior to EOB. Progress is adequate to meet standards by EOB.

2. EOB. The student's performance meets or exceeds standards.

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

(c) Unsatisfactory. Student exhibits dangerous tendencies, or progress toward meeting EOB standards is insufficient.

(3) Awarding Overall Event Grades. The student's overall grade is based on the student's performance against the 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 must still meet MIF in the EOB flight if the maneuver is reattempted.

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

1. C41XX MIF requires a G/4 for ICS Procedures. C42XX MIF requires a G/4.

2. The student must meet or exceed G/4 to progress out of C42XX.

3. Students shall maintain or exceed MIF performance from one block to the next within stage or between media within stage. The exception is when MIF on a subsequent block is below the preceding block MIF or when the student is beginning a new segment. In these cases, the lower MIF applies.

(4) Regression Rules. Regression rules allow for uneven progress through training. Regression applies to MIF maintenance between blocks within a stage or between media within a stage. Regression does not apply within a block. There is no regression between segments. The following specifies allowable regression.

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

1. The student has previously demonstrated G/4 proficiency.

2. The maneuver was not a check ride critical (+) item.

3. The instructor is satisfied the student is ready to progress to the next event.

(b) The instructor must award an overall unsatisfactory due to regression rules if:

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

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

3. There was regression on more than two items.

(5) 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.

(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 instructor 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 instructor proficiency.

(6) Incomplete Events. In general, instructors should consider an event complete if the student is able to accomplish a sufficient amount of the planned profile. This is particularly true when weather precludes finishing all maneuver items, and the instructor is able to emphasize training where weather permits. 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, do not incomplete the mission solely to provide unwarranted extra training.

(a) Assessment. Assess the event complete if:

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

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

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

4. Otherwise, assess the event incomplete.

(b) Completion Events

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

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

(c) Trainer Event Completion. Assess a trainer event complete if the student has received the full syllabus-mandated training period.

c. Policies for Evaluation Flights and Ground Evaluations

(1) Authorized Evaluators. The Commanding Officer will designate check flight instructors for each stage.

(2) Check Rides (SXX90)

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

1. 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 unsatisfactory.

3. The entire event should be devoted to assessing the student's ability and readiness to progress to the next stage of training. All maneuvers indicated with a plus (+) are check ride critical and must be accomplished to MIF.

Regression rules do not apply.

4. The student should be able to demonstrate required levels of proficiency without instructor assistance. However, instruction is allowed on check rides and students may reaccomplish procedures at the check ride instructor's discretion.

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

1. Any (+) item was not flown, or
2. The check instructor was unable to sample sufficient examples of a given maneuver to assess the student's overall performance.

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

3. EXCEPTIONS. The check is complete and the overall grade is unsatisfactory 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 U/2.

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

(3) Progress Check Procedures

(a) The progress check instructor shall consider the student's proficiency, judgment, situational awareness, and overall ability to complete the mission. The student must also demonstrate the potential to successfully complete Advanced MNTS and follow-on training. All progress checks must meet MIF for the most recently completed block of training. Progress checks shall be full mission profiles emphasizing the student's weak areas and a representative cross section of optional maneuvers. All critical items do not need to be accomplished. Document failed progress checks on a pink-colored version of the respective ATF for the failed event generating the progress check. Flight and Ready Room Unsatisfactories proceed as follows:

1. A student's first flight progress check is an IPC (CXX88) event. Any subsequent flight progress check is an FPC (CXX89).

2. Similarly, the first RRU generates an IPC. A subsequent RRU generates an FPC.

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

1. Criteria for an IPC are:
 - a. Failed check ride.
 - b. Two consecutive unsatisfactory events in the same stage, not including XX87 events.
 - c. Receiving an RRU.
 - d. Failing two academic tests.
 - e. Receiving an OLQ UNSAT.
2. Operations Officer or above directed when the student's:
 - a. Potential to complete MNTS is in doubt.

b. Officer-like qualities are inadequate.

3. IPC outcomes are:

a. Passing returns the student to normal syllabus flow.

b. Failing results in an FPC.

4. IPC instructors. The Operations Officer or his representative designated in writing, usually a designated standardization instructor, will administer the IPC. The instructor that generated the UNSAT grade resulting in the IPC shall not administer the IPC. The Squadron IPC instructor is responsible for making a "return to training" or "continue the elimination process" recommendation to the Squadron CO.

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

1. Criteria for an FPC are:

a. Following a failed IPC.

b. If the conditions requiring an IPC exist and the student has already accomplished an IPC.

c. Following the third academic test failure.

2. CO can direct an FPC when the student's potential to complete the syllabus is in doubt.

3. Outcomes are:

a. Passing returns the student to normal syllabus flow.

b. Failing results in a TRB.

4. FPC Instructors. The CO, XO, or a CO-designated representative administers the FPC. It is the intent of CNATRA that wherever possible, the CO, or in his absence, the XO, shall conduct FPCs. In the event that neither the CO nor XO are qualified or available to instruct in the required stage, the CO may designate, in writing, a senior officer (O-4 or above) to conduct the FPC by direction. The instructor that generated the UNSAT grade resulting in the FPC shall not administer the FPC. The FPC instructor is responsible for the elimination/retention recommendation to the COMTRAWING.

d. Progress Check Counseling

(1) Prior to an IPC. The student's Flight Leader or the Operations Officer shall counsel the student on the Progress Check Training Review Process and document counseling on a supplemental ATF.

(2) On Completion of an IPC. The IPC instructor or Operations Officer shall counsel the student on the Progress Check Training Review Process. When conducted by the IPC instructor, document counseling on the IPC ATF. When conducted by the Operations Officer (and the Operations Officer was not the IPC instructor), document counseling on a supplemental ATF.

(3) On Satisfactory Completion of an FPC. The CO or his designated representative will counsel the student. Counseling should consist of, at a minimum, the Progress Check Training Review Process, elimination/retention recommendations, and future courses of action. The CO shall document counseling on the FPC ATF. If conducted by a designated representative, document counseling on a supplemental ATF.

10. Special Instructions and Restrictions

a. Flight Hour/Event Requirements and Restrictions

(1) Programmed Hours and Events. The student has a specified number of syllabus-programmed flight hours. Event lengths, SXX86, 87, 88, and 89 events will cause variation. Accomplish all syllabus events.

(2) Minimum Night Hours. N/A.

(3) Minimum Solo Hours. N/A.

(4) Minimum Instrument Hours (Actual or Simulated).
N/A.

(5) Maximum Daily Student Activities (Aircraft or Simulator). Students shall not exceed two activities during one duty day.

(6) Minimum Student Turn-Times. One hour is required between debriefing of an event and the brief for a follow-on event or trainer event. This does not apply to out-and-in or cross-country profiles. However, the instructor shall ensure adequate debrief and brief time is allocated.

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

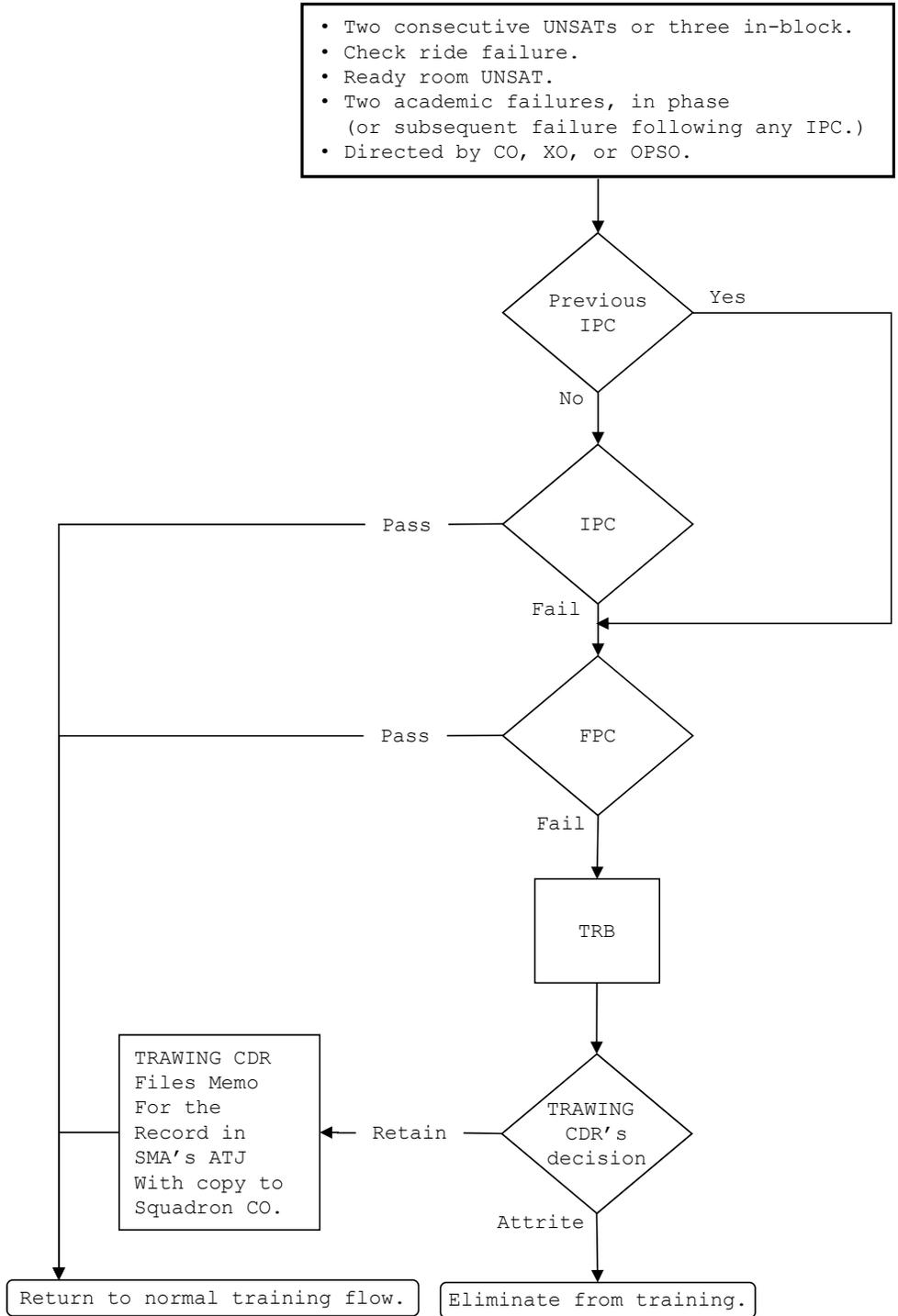
(8) Crew Rest. A minimum of 12 hours shall elapse between the conclusion of the student's last scheduled event of the day (including associated debrief) and his first scheduled instructional event of the following day. After six consecutive scheduled days, students shall receive two consecutive days off.

b. Maneuver Demonstrations. Maneuver demonstrations will be accomplished as required.

c. Airspace Utilization. Conduct contact events in designated areas. These events may be out-and-ins with Operations Officer approval.

d. Aircraft/Simulator Interchangeability. Simulator events may not be substituted for the flight events. Simulator events may be substituted in the applicable aircraft when the simulator is unavailable for extended periods of time.

MNTS PROGRESS CHECK TRAINING REVIEW PROCESS



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Chapter II

Ground Training

1. T-39 Strike Training Philosophy. Advanced NFO Strike training enhances navigation, communication, and aircraft systems management skills developed in the Intermediate Phase. The primary focus will be on improving professional development by emphasizing strike planning, real-world timing, radar theory and operation, crew coordination, and mission commander responsibilities.

2. T-39 Fighter Flight Support Training Philosophy. Fighter (F) training enhances briefing, navigation, communication, and aircraft systems management skills developed in the Advanced Strike syllabus. The primary focus is learning how to effectively use the air-to-air radar and intercept procedures to maneuver the aircraft into a position to employ weapons.

3. T-45C ATM Ground Training Philosophy. Advanced ATM training bridges the gap between your T-39 flights and fleet tactical aircraft. The primary focus will be on building situational awareness and improving systems management skills.

Blk #	Media	Title	Events	Hrs	Blk Name
G01	Sqdn	T-39 Strike Training Administration/ Check-in	2	7.0	ASI

1. Prerequisite. G0101 prior to G0102.

2. Events

G0101 Sqdn Welcome Aboard 1.0

G0102 Sqdn Class Check-in 6.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G11	Class/ CAI/ Sqdn	T-39 Strike Training Ground Training	69	126.3	See Below

1. Prerequisites

- a. G0102 prior to G1101-05, G1107-G1117, G1120-22, G1124-25, and G1127 (in any order).
- b. G1105 prior to G1106.
- c. G1108-G1116 prior to G1123 (NATOPS exam).
- d. G1117 prior to G1118-19 in any order.
- e. G1125 prior to G1126.
- f. N4109 prior to G1128 and G1129-30 (in order).
- g. S4107 prior to G1131-32 (in order).
- h. T4290 prior to G1133-34 (in order).
- i. G1134 prior to G1135-36 (in order) and G1137-43 (in order).
- j. G1136 and G1143 prior G1144-50 (in order).
- k. G1143 prior to G1151-55 (in order).
- l. G1150 and G1155 prior to G1156-59 (in order).
- m. G1155 prior to G1160-61 (in order).
- n. G1159 and G1161 prior to G1162-69 (in order).

2. Events

G1101	MIL	Low-Level/Radar Planning		3.00	LLNAVFP
G1102	MIL/ Lab	Joint Mission Planning System Lab		8.00	LLNAVFP

2. Events (Cont)

G1103	MIL	Low-Level/Radar Navigation Lecture	5.00	LLNAVFP
G1104	Sqdn	Ground Mapping Radar Trainer Familiarization	0.50	ASI
G1105	CAI	Radar Principles/ Operations	3.00	RDR
G1106	MIL	Basic Radar Predictions	2.00	RDR
G1107	MIL	Turnpoint Procedures	2.50	DCONFP
G1108	CAI	NATOPS 1 - Engines	1.00	T39SYS
G1109	CAI	NATOPS 2 - Fuel	1.00	T39SYS
G1110	CAI	NATOPS 3 - Electrical	1.00	T39SYS
G1111	CAI	NATOPS 4 - Hydraulics	1.00	T39SYS
G1112	CAI	NATOPS 5 - Flight Controls	1.00	T39SYS
G1113	CAI	NATOPS 6 - Anti-Ice	1.00	T39SYS
G1114	CAI	NATOPS 7 - Environmental	1.00	T39SYS
G1115	CAI	NATOPS 8 - Avionics	1.00	T39SYS
G1116	CAI	NATOPS 9 - Emergency Procedures	1.00	T39EP
G1117	MIL	IGS Lecture	3.00	IGS
G1118	P/P	IGS Open Book Exam	2.00	IGS
G1119	CAI	IGS Closed Book Exam Test	1.50	IGS
G1120	MIL	Carrier Operations Lecture (USN, USMC only)	3.00	CVP
G1121	MIL	Conventional Weapons	1.50	WEFPF
G1122	MIL	Flight Prep/CRM	6.00	ASI
G1123	CAI	NATOPS Exam Test	2.00	T39SYS

2. Events (Cont)

G1124	P/P	EP/Limits Exam I	2.00	T39EP
G1125	MIL	Midphase Review Lecture	2.00	ASI
G1126	CAI	Midphase Exam Test	2.00	ASI
G1127	Sqdn	T-39 Cockpit Familiarization/Refresher	1.00	DCONFP
G1128	MIL	Low Altitude Awareness Training	2.00	DCONFP
G1129	MIL	Strike Seminar	3.00	DCONFP
G1130	Lab	Chart Prep I	8.00	VNAVFP
G1131	MIL	Composite Ground School	3.00	DCONFP
G1132	Lab	Chart Prep II	8.00	VNAVFP
G1133	CAI	Introduction to Air-to- Air Radar	1.00	RDR
G1134	CAI	Advanced Radar Modes	2.00	RDR
G1135	MIL	Introduction to Strike Fighter and Air-to-Air	0.50	ASI
G1136	MIL	Advanced Radar Modes Lecture	1.50	RDR
G1137	CAI	Fighter Purpose	0.50	IP
G1138	CAI	Air Intercept Control	1.00	IP
G1139	CAI	Descriptive and Directive Commentary	0.50	IP
G1140	CAI	Intercept Displays and Flight Path Visualization	1.00	IP
G1141	CAI	Fundamentals of Intercept Geometry I	0.50	IP
G1142	CAI	Fundamentals of Intercept Geometry II	0.50	IP

2. Events (Cont)

G1143	CAI	Target Aspect Formula and Collision Course Corrections	1.50	IP
G1144	MIL	Intercept Displays and Flight Path Visualization Lecture	1.00	IP
G1145	MIL	Fundamentals of Intercept Geometry I Lecture	0.75	IP
G1146	MIL	Fundamentals of Intercept Geometry II Lecture	0.75	IP
G1147	MIL	Target Aspect Formula and Collision Course Corrections Lecture	1.50	IP
G1148	MIL	Reattack Setups and CCC Lecture	1.00	IP
G1149	P/P	EP/Limits Exam II	0.50	T39EP
G1150	SS	Speed Disc Exercise I	0.30	IP
G1151	CAI	AIM-9 Sidewinder Introduction	1.00	IP
G1152	CAI	AIM-7 Sparrow and AIM-120 AMRAAM Introduction	1.00	IP
G1153	CAI	Forward Quarter Attacks	1.00	IP
G1154	CAI	Displacement Turn Fundamentals	1.00	IP
G1155	CAI	Counterturn Fundamentals	0.50	IP
G1156	MIL	Forward Quarter Attacks Lecture	1.50	IP
G1157	MIL	Displacement Turn Fundamentals Lecture	1.00	IP
G1158	MIL	Counterturn Fundamentals Lecture	1.00	IP

2. Events (Cont)

G1159	MIL	Speed Variations Lecture	1.50	IP
G1160	CAI	Intercept Progression I	1.00	IP
G1161	CAI	Intercept Progression II	1.00	IP
G1162	MIL	Intercept Progression I Lecture	1.00	IP
G1163	MIL	Intercept Progression II Lecture	1.00	IP
G1164	Lect	End of Basic Intercept Review Lecture	1.00	IP
G1165	Lect	Reattack Sim Introduction	1.00	IP
G1166	CAI Test	End of Basic Intercept Examination	2.00	IP
G1167	MIL	Flight Preparation Lecture	2.00	IP
G1168	MIL	Brief Introduction	1.00	IP
G1169	SS	Reattack Self-Study	6.50	IP

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G02	Class	T-39 Fighter Check-in/Administration	4	19.75	See Below

1. Prerequisites

- a. Complete Strike Training Course prior to G0201.
- b. Complete F1104 prior to G0202.
- c. Complete F1106 prior to G0203.
- d. Complete F1107 prior to G0204.

2. Events

G0201	Lect	Check-in and Administration Time		0.25	ASI
G0202	SS	Conversion Self-Study		6.5	IP
G0203	SS	Advanced Self-Study		6.5	IP
G0204	SS	2 V X Self-Study		6.5	IP

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
G03	Sqdn	T-45C ATM Administrative Ground Training	4	17.5	See Below

1. Prerequisites

a. If USN/USMC Fighter, complete R4790 prior to G0301 and G0302.

b. Complete A4690 prior to G0303.

c. Complete G0303 prior to G0304.

2. Events

G0301	Sqdn	Check-in. Students will check in to begin Advanced Tactical Maneuvering (ATM) stage of training. This block includes publications issue, flight gear fitting, and curriculum introduction with standardization officer.		4.0	ASI
G0302	Lect	Delayed Jet Water Survival (DJET) Lecture		6.0	DJET
G0303	Sqdn	Final Phase Review		3.0	ASI
G0304	Sqdn	Critique and Graduation (Checkout)		4.5	ASI

3. Syllabus Notes. None.

4. Discuss Items

G0301

Advanced tactical maneuvering syllabus flow, scheduling/snivels, class advisor program, standardization program, WINFLIR, philosophy of training, and cross-country request policy.

Blk #	Media	Title	Events	Hrs	Blk Name
G12	Class	T-45C ATM Preflight Academics	27	37.7	See Below

1. Prerequisites

a. Complete G0301 and G0302 prior to G1201.

b. Complete events sequentially, except G1208 and G1226 have no prerequisites.

2. Events

G1201	Lect	Introduction to T-45C ATM/Simulator Stage/IFT		1.0	T45SYS
G1202	MIL	Introduction to T-45C Configuration		6.0	T45SYS
G1203	CAI	Exterior Preflight Checks		0.6	T45SYS
G1204	CAI	Engine Start & Poststart Procedures		1.0	T45SYS
G1205	CAI	Multi-Function Display and Navigation System Operation		1.2	T45SYS
G1206	CAI	Display System (HUD)		0.8	T45SYS
G1207	CAI	Waypoint Navigation Procedures		1.2	T45SYS
G1208	Lect	Ejection Seat Lecture/Egress		1.5	T45EJECT
G1209	MIL	Start, Ground, and Takeoff Emergency Procedures		1.5	T45EMFP
G1210	CAI	Start, Ground, and Takeoff Emergency Procedures		1.5	T45EMFP
G1211	MIL	Operational and Ejection Emergency Procedures (Includes Workbook)		1.0	T45EMFP
G1212	MIL	Engine and Hydraulic Emergency Procedures		1.5	T45EMFP
G1213	CAI	Engine and Hydraulic Emergency Procedures		1.5	T45EMFP
G1214	CAI Test	Emergency Flight Procedures Examination One		1.0	T45EMFP

2. Events (Cont)

G1215	MIL	Canopy and Flight Control Emergency Procedures (Includes Workbook)	1.0	T45EMFP
G1216	MIL	Electrical and Indicator Emergency Procedures	1.7	T45EMFP
G1217	CAI	Electrical and Indicator Emergency Procedures	1.5	T45EMFP
G1218	MIL	Operational and Landing Emergency Procedures (Includes Workbook)	1.5	T45EMFP
G1219	CAI Test	Emergency Flight Procedures Examination Two	1.0	T45EMFP
G1220	P/P	NATOPS Open-Book Examination	2.0	NTPS
G1221	P/P	NATOPS Closed-Book Examination	2.0	NTPS
G1222	MIL	Out-of-Control Flight Procedures	1.0	T45OCFFP
G1223	CAI Test	Out-of-Control Flight Exam	1.0	T45OCFFP
G1224	CAI	Use and Operation of TACAN, VOR, and VOR/DME	0.8	T45INST
G1225	CAI	Components and Characteristics of the ILS	0.8	T45INST
G1226	Lect	Ejection Seat Preflight	1.1	T45EJECT
G1227	MIL	CRM	1.0	T45CRM

3. Syllabus Notes

a. Accomplish the following during G1208: SJU-17 brief, survival gear inspection and review, egress review, and ejection seat weigh-in and documentation.

b. Complete G12 block and C1101 prior to C3101.

4. Discuss Items

G1208

Survival gear and emergency ground egress.

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Chapter III

NATOPS Training

This chapter does not apply to Strike, Fighter, or T-45C ATM training.

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Chapter IV

Contact Training

1. T-45C ATM Contact Stage Training Objectives. The ATM Student NFO curriculum is designed to develop and prepare the SNFO for service in tactical fleet aircraft. The SNFO will accomplish the following objectives during the contact phase:
 - a. Be familiar with the T-45C to conduct flight training operations IAW local and unit directives.
 - b. Be able to conduct T-45C emergency procedures.
2. Seat Positions. The student shall occupy the rear cockpit for all events in the C41 and C42 blocks.
3. Matrices. The following matrices are an overview of the Contact Stage for the T-45C. The purpose of these matrices is to provide the SNFO and IP the easiest way to track progress, regression, and overall status in relation to the MIF. A single matrix follows each block description throughout this chapter.

4. T-45C ATM Contact Stage MIF

Simulator/Device Event
 Check Ride Event

T-45C ATM CONTACT STAGE MANEUVER ITEM FILE				
CTS REF	MANEUVER	C3108	C4103	C4290
1	General Knowledge/Procedures	4+	4+	4+
2	Emergency Procedures	4+	4+	4+
3	Headwork/Situational Awareness	4+	4+	4+
4	BAR	4+	4+	4+
5	Brief/Debrief	4+	4+	4+
6	Mission Planning	4+	4+	4+
7	In-Flight Planning	4+	4+	4+
8	In-Flight Checks	4+	4+	4+
9	Radio/ICS Procedures	4+	4+	4+
10	Crew Coordination	4+	4+	4+
13	Ground Operations	4+	4+	4+
14	Engine Start	4+	4+	4+
15	Takeoff/Departure	4+	4+	4+
16	Publications and Chart Use	3+		
25	Enroute Procedures	4+	4+	4+
30	Normal Cruise	3+		
31	Unusual Attitudes	3+	3	3
32	Penetration Descent	3+		
34	Radial Intercepts	3+		
35	Holding	3+	4	4
42	Fuel Management	4+	4+	4+
43	Change of Flight Plan/Divert	3+	4	4
60	Approach	4+	4+	4+

MIF continued on next page.

T-45C ATM CONTACT STAGE MANEUVER ITEM FILE				
CTS REF	MANEUVER	C3108	C4103	C4290
61	Missed Approach	4+	4	4
62	Landing	4+	4+	4+
63	Engine Shutdown/Postflight	4+	4+	4+
72	SUA/MTR Entry/Exit Procedures	3+	3	3

Blk #	Media	Title	Events	Hrs	Blk Name
C11	Class	T-45C ATM Contact Flight Procedures	2	3.0	T45CONFP

1. Prerequisite. G1227 (CRM).

2. Events

C1101 MIL Contact Flight Procedures/
Course Rules 2.0

C1102 Sqdn T-45C Cockpit Familiarization 1.0

3. Syllabus Notes

a. Accomplish the following: flight gear check, FOD inspection, ADB review, aircraft manup and pre/postflight.

b. Complete G12 block, C1101, and C1102 prior to C3101.

4. Discuss Items. FOD prevention, flight gear inspection, aircraft manup techniques, ADB, MAF, briefing room setup, WINFLIR, pre/postflight inspection, aircraft discrepancies, and flightline hazards.

Blk #	Media	Title	Events	Hrs	H/X
C31	2F205	T-45C ATM Contact Procedures Simulator Training	8	12.0	1.5

1. Prerequisite. C1102 (T-45C Cockpit Familiarization).

2. Syllabus Notes

a. All EPs shall be completed in the simulator prior to end of block.

b. For C3105-8, students shall simulate rear cockpit occupation to the maximum extent possible.

C3101

Accomplish the following procedures and EPs on this event: mission planning, ground operations, engine start, radio procedures, instrument takeoff, takeoff/departure, in-flight checks, normal cruise, instrument scan, unusual attitudes, penetration descent, TACAN or VOR-DME approach, abnormal start, Tailpipe Hot caution, GTS fire, and brake failure-taxi.

C3102

Accomplish the following procedures and EPs on this event: mission planning, ground operations, engine start, radio procedures, instrument takeoff, takeoff/departure, in-flight checks, normal cruise, instrument scan, unusual attitudes, penetration descent, ASR/PAR approach, engine fire-ground, and emergency egress.

C3103

Accomplish the following procedures and EPs on this event: mission planning, ground operations, engine start, radio procedures, instrument takeoff, takeoff/departure, in-flight checks, normal cruise, instrument scan, constant rate climbs and descents, unusual attitudes, penetration descent, ILS approach, abort, blown tire during takeoff, landing gear unsafe/fail to retract, smoke or fumes in cockpit, OBOGS contamination, and total electrical failure.

C3104

Accomplish the following procedures and EPs on this event: mission planning, ground operations, engine start, radio procedures, instrument takeoff, takeoff/departure, in-flight checks, normal cruise, instrument scan, constant rate climbs and descents, unusual attitudes, penetration descent, instrument approach(es) (TACAN/ILS/PAR-ASR/VOR-DME), engine failure, airstart procedures, EGT/RPM warning light or compressor stall, incorrect or uncommanded engine response, excessive fuel flow, vibrations, and precautionary approach(es).

C3105

Accomplish the following procedures and EPs on this event: mission planning, ground operations, radio/ICS procedures, instrument takeoff, takeoff/departure, in-flight checks, in-flight planning, enroute procedures, radial intercepts, TACAN or VOR-DME arcing, point-to-point, holding, groundspeed checks, fuel management, change of flight plan/divert, instrument approach, missed approach, landing, engine shutdown/postflight, publications and chart use, pitot static malfunction, uncommanded roll/yaw, jammed or binding flight controls, controllability check, departure/spin procedure, and GINA failure.

C3106

Accomplish the following procedures and EPs on this event: mission planning, ground operations, radio/ICS procedures, instrument takeoff, takeoff/departure, in-flight checks, in-flight planning, enroute procedures, radial intercepts, TACAN or VOR-DME arcing, point-to-point, holding, groundspeed checks, fuel management, change of flight plan/divert, instrument approach, missed approach, landing, engine shutdown/postflight, publications and chart use, electrical fire, loss of canopy, trim failure or runaway, rudder trim hardover, MFD malfunction, DEU degrade or overheat, DEU failure, and SADS degrade/failure.

C3107

Accomplish the following procedures and EPs on this event: mission planning, ground operations, radio/ICS procedures, instrument takeoff, takeoff/departure, in-flight checks, in-flight planning, enroute procedures, radial intercepts, TACAN or VOR-DME arcing, point-to-point, holding, groundspeed checks, fuel management, change of flight

plan/divert, instrument approach, missed approach, landing, engine shutdown/postflight, publications and chart use, flaps failure, landing gear unsafe/fail to extend, brake failure-landing, landing with NWS AUG failure, swerve on touchdown, landing with blown tire(s) with NWS inoperative, landing with blown tire(s) with NWS operative, stuck throttle approach, and field arrestment.

C3108

Accomplish the following procedures and EPs on this event: mission planning, ground operations, radio/ICS procedures, instrument takeoff, takeoff/departure, in-flight checks, in-flight planning, enroute procedures, radial intercepts, TACAN or VOR-DME arcing, point-to-point, holding, groundspeed checks, fuel management, change of flight plan/divert, instrument approach, missed approach, SUA/MOA entry/exit procedures, landing, engine shutdown/postflight, publications and chart use, and miscellaneous emergency procedures.

3. Special Syllabus Requirements. None.
4. Discuss Items

C3101

Conduct of flight, checklists, cockpit setup, ground operations, engine start, radio procedures, instrument takeoff, takeoff/departure, in-flight checks, normal cruise, instrument scan, unusual attitudes, penetration descent, TACAN or VOR-DME approach, abnormal start, Tailpipe Hot caution, GTS fire, and brake failure-taxi.

C3102

Conduct of flight, checklists, cockpit setup, ground operations, engine start, radio procedures, instrument takeoff, takeoff/departure, in-flight checks, normal cruise, instrument scan, unusual attitudes, penetration descent, ASR/PAR approach, engine fire-ground, and emergency egress.

C3103

Conduct of flight, checklists, cockpit setup, selected previously introduced items, ILS approach, abort, blown tire during takeoff, landing gear unsafe/fail to retract, smoke or fumes in cockpit, OBOGS contamination, and total electrical failure.

C3104

Conduct of flight, checklists, cockpit setup, selected previously introduced items, instrument approach(es) (TACAN/ILS/PAR-ASR/VOR-DME), engine failure, airstart procedures, EGT/RPM warning light or compressor stall, incorrect or uncommanded engine response, excessive fuel flow, vibrations, and precautionary approach(es).

C3105

Conduct of flight, checklists, cockpit setup, selected previously introduced items, in-flight planning, enroute procedures, radial intercepts, TACAN or VOR-DME arcing, point-to-point, holding, groundspeed checks, fuel management, change of flight plan/divert, instrument approach, missed approach, landing, engine shutdown/postflight, publications and chart use, pitot static malfunction, uncommanded roll/yaw, jammed or binding flight controls, controllability check, departure/spin procedure, and GINA failure.

C3106

Conduct of flight, checklists, cockpit setup, selected previously introduced items, electrical fire, loss of canopy, trim failure or runaway, rudder trim hardover, MFD malfunction, DEU degrade or overheat, DEU failure, and SADS degrade/failure.

C3107

Conduct of flight, checklists, cockpit setup, selected previously introduced items, flaps failure, landing gear unsafe/fail to extend, brake failure-landing, landing with NWS AUG failure, swerve on touchdown, landing with blown tire(s) with NWS inoperative, landing with blown tire(s) with NWS operative, stuck throttle approach, and field arrestment.

C3108

Conduct of flight, checklists, cockpit setup, selected previously introduced items, SUA/MOA entry/exit procedures, and previously introduced emergency procedures.

5. Block MIF

CTS REF	MANEUVER	C3108
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
14	Engine Start	4+
15	Takeoff/Departure	4+
16	Publications and Chart Use	3+
25	Enroute Procedures	4+
30	Normal Cruise	3+
31	Unusual Attitudes	3+
32	Penetration Descent	3+
34	Radial Intercepts	3+
35	Holding	3+
42	Fuel Management	4+
43	Change of Flight Plan/Divert	3+
60	Approach	4+
61	Missed Approach	4+
62	Landing	4+
63	Engine Shutdown/Postflight	4+
72	SUA/MTR Entry/Exit Procedures	3+

Blk #	Media	Title	Events	Hrs	H/X
C41	T-45C	T-45C ATM Contact Flight Training	3	4.5	1.5

1. Prerequisite. C3108.
2. Syllabus Notes

C4101

Student will be prepared to brief/debrief the flight IAW FTI and squadron directives. Instructor will observe student's preflight inspection and manup procedures on this event.

C4102-3

Event(s) may be flown at night. Student will brief/debrief the flight.

3. Special Syllabus Requirements. None.
4. Discuss Items

C4101

Basic T-45C single-ship flight procedures and flight conduct, unusual attitudes, crew coordination, mission commander responsibilities, alternate planning, ORM review, and single-ship emergency procedures.

C4102

Previously introduced maneuvers, night operations, and communication brevity.

C4103

Previously introduced maneuvers, selected emergency procedures, and crew coordination.

5. Block MIF

CTS REF	MANEUVER	C4103
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
14	Engine Start	4+
15	Takeoff/Departure	4+
25	Enroute Procedures	4+
31	Unusual Attitudes	3
35	Holding	4
42	Fuel Management	4+
43	Change of Flight Plan/Divert	4
60	Approach	4+
61	Missed Approach	4
62	Landing	4+
63	Engine Shutdown/Postflight	4+
72	SUA/MTR Entry/Exit Procedures	3

Blk #	Media	Title	Events	Hrs	H/X
C42	T-45C	T-45C ATM Contact Flight Training Check Ride	1	1.5	1.5

1. Prerequisite. C4103.
2. Syllabus Note. Student will assume role of mission commander in the complete execution of the flight from preflight planning to postflight debrief IAW FTI, squadron directives, and instructor recommendations.
3. Special Syllabus Requirements. None.
4. Discuss Items. Selected emergency procedures, previously introduced maneuvers, crew coordination, and mission commander responsibilities.

5. Block MIF

CTS REF	MANEUVER	C4290
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
14	Engine Start	4+
15	Takeoff/Departure	4+
25	Enroute Procedures	4+
31	Unusual Attitudes	3
35	Holding	4
42	Fuel Management	4+
43	Change of Flight Plan/Divert	4
60	Approach	4+
61	Missed Approach	4
62	Landing	4+
63	Engine Shutdown/Postflight	4+
72	SUA/MTR Entry/Exit Procedures	3

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Chapter V

Instrument Training

This chapter does not apply to Strike, Fighter, or T-45C ATM training.

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Chapter VI

Navigation Training

1. Seat Positions. Students shall occupy the copilot seat for all events in the block.
2. Matrices. There is a single matrix following the block description in this chapter.
3. Low Altitude Training Rules. All flights considered in the low-level (LL) regime, 500-1500 feet AGL, will brief low altitude training rules.
4. T-39 Strike Training Navigation Stage MIF. See the N21/41 EOB MIF.

Blk #	Media	Title	Events	Hrs	H/X
N21/41	2B49/ T-39G/N	Medium Altitude Navigation Training	9	15.9	See Syl Note

1. Prerequisites

a. Prior to N2101. G1101-04, G1106-07, G1118-24, and G1126-27.

b. Prior to N2102 and N4105-6. N2101.

c. Prior to N4107. N4105 and N2104.

2. Syllabus Notes. Allow 2.0 hrs each for N2101-4, 2.3 hrs each for N4105-6, and 1.1 hrs each for N4107-9.

N2101 (Emergency Procedures/Approach Trainer)

Event will emphasize instrument work and T-39 checklists and procedures. The student can expect to navigate using jet routes, two approaches, and emergencies. Radar power up will also be covered. The following items will not be graded on this event: Radar controls and operation, RSI, checkpoint utilization/correlation, course corrections, course analysis, speed corrections, timing, entry point acquisition, and target acquisition.

N2102-4 (Ground Mapping Radar Trainer)

Students will practice radar procedures and gain experience in radar operation. USN and USMC students should expect carrier procedures during these events.

N4105-6 (Airways Navigation Flight Training)

Conduct flights in these two events as T-39 introduction flights. Emphasize cockpit and checklists familiarization. Discuss oxygen mask procedures, NATOPS, and systems. **Use SBR-1/A for aircraft type and code on DD-175s.** Cross-country flights are highly encouraged for these two events.

N4107-9 (Radar Navigation Flight Training)

Real-world application of procedures learned in the trainer.

3. Special Syllabus Requirements. None.

4. Discuss Items

N2101

Review emergency procedures and aircraft systems, lost comm (NORDO) procedures, and checklist usage.

N2102

Review radar operation and techniques, EPs and aircraft systems, and conduct of flight.

N2103

Review weather (WX) and WX avoidance techniques and conduct of flight.

N2104

All introduce items and conduct of flight.

N4105

Review lost comm (NORDO) procedures, EPs and aircraft systems, and conduct of flight.

N4106

All introduce items, reduced vertical separation minimum (RVSM), and conduct of flight.

N4107-8

Review radar operation and techniques, EPs and aircraft systems, and conduct of flight. Discuss differences between radar returns in the trainer and in real-world flights.

N4109

All introduce items and conduct of flight.

5. Block MIF

CTS REF	MANEUVER	N4109
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	3+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	3+
10	Crew Coordination	4+
13	Ground Operations	4+
15	Takeoff/Departure	4
16	Publications and Chart Use	4+
18	Radar Controls and Operation	4+
20	RSI	4+
21	Instrument Scan and Lookout Doctrine	4+
24	Checkpoint Utilization/Correlation	4+
26	Course Corrections	4+
27	Course Analysis	4+
28	Speed Corrections	4+
29	Timing	3+
36	Entry Point Acquisition	3+
37	Turnpoint Procedures	4+
40	Wind Analysis	4+
44	Target Acquisition	4+
60	Approach	4

Chapter VII

Formation Training

This chapter does not apply to Strike, Fighter, or T-45C ATM training.

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Chapter VIII

Tactical Training

1. Seat Positions. Students shall occupy the copilot seat for all T-39 flight events. Students shall occupy the rear cockpit for all T-45C flight events.
2. Matrices. The following matrices are an overview of the entire Tactical Stage, separated into T-39 Strike Training, T-39 Strike Radar Training, and T-45C ATM Training. The purpose of these matrices is to provide the SNFO, Instructor NFO, or IP the easiest way to track progress, regression, and overall status in relation to the MIF. In addition, there is a single matrix following each block description throughout this chapter.
3. Low Altitude Training Rules. All flights considered in the LL regime, 500-1500 feet AGL, will brief low altitude training rules.
4. T-39 Strike Training MIF. See the S21/41 EOB MIF.
5. T-39 Composite Training MIF

Check Ride

T-39 COMPOSITE TRAINING MANEUVER ITEM FILE			
CTS REF	MANEUVER	T4107	T4290
1	General Knowledge/Procedures	4+	4+
2	Emergency Procedures	4+	4+
4	BAR	4+	4+
5	Brief/Debrief	4+	4+
6	Mission Planning	4+	4+
7	In-Flight Planning	4+	4+
8	In-Flight Checks	4+	4+
9	Radio/ICS Procedures	4+	4+

MIF continued on next page.

T-39 COMPOSITE TRAINING MANEUVER ITEM FILE			
CTS REF	MANEUVER	T4107	T4290
10	Crew Coordination	4+	4+
11	Composite Headwork/Situational Awareness	4+	4+
12	Mission Commander Responsibilities	4+	4+
13	Ground Operations	4+	4+
15	Takeoff/Departure	4+	4+
16	Publications and Chart Use	4+	4+
18	Radar Controls and Operation	4+	4+
19	Terrain Consideration/ Integration	4+	4+
20	RSI	4+	4+
21	Instrument Scan and Lookout Doctrine	4+	4+
22	Visual Scan	4+	4+
23	Descriptive Commentary	4+	4+
24	Checkpoint Utilization/Correlation	4+	4+
26	Course Corrections	4+	4+
27	Course Analysis	4+	4+
28	Speed Corrections	4+	4+
29	Timing	4+	4+
36	Entry Point Acquisition	4+	4+
39	Composite Turnpoint Procedures	4+	4+
41	Wind Consideration	4+	4+
44	Target Acquisition	4+	4+
60	Approach	4+	4+

6. T-39 Strike Radar Training MIF

Simulator Event
 Check Ride Event

T-39 STRIKE RADAR TRAINING MANEUVER ITEM FILE				
CTS REF	MANEUVER	R2104	R4101	R4290
1	General Knowledge/Procedures	3+	3+	3+
2	Emergency Procedures	4+	4+	4+
3	Headwork/Situational Awareness	3+	3+	3+
4	BAR	4+	3+	3+
5	Brief/Debrief	3+	3+	3+
6	Mission Planning	4+	3+	3+
7	In-Flight Planning	3+	3+	3+
8	In-Flight Checks	4+	3+	3+
9	Radio/ICS Procedures	3+	3+	3+
10	Crew Coordination	3+	3+	3+
13	Ground Operations		4+	4+
15	Takeoff/Departure	4	4	4
17	Radar Work	3+	3+	3+
45	Target Aspect Control (R)	4+	4+	4+
46	Target Altitude Analysis/Correction	3+	3+	3+
47	Lead Control	4+	4+	4+
48	Displacement Turn	4+	4+	4+
49	RQ Drift Control/Fox-2	4+	4+	4+
50	Speed Control	3	3	3
51	Descriptive Comm	4+	4+	4+
52	Directive Comm	4+	4+	4+
53	AIC-Only Intercept	3	3	3
54	Area Control		3+	3+
55	Counterturn Fundamentals	4+	4+	4+
57	Tactical Situational Awareness	3+	3+	3+
60	Approach	4+	4	4

7. T-39 Fighter Training MIF

Simulator Event
 Check Ride Event

T-39 FIGHTER TRAINING MANEUVER ITEM FILE									
CTS REF	MANEUVER	R2205	R4302	R4402	R2303	R4502	R2405	R4601	R4790
1	General Knowledge/ Procedures	4+	4+	4+	4+	4+	4+	4+	4+
2	Emergency Procedures	4+	4+	4+	4+	4+	4+	4+	4+
3	Headwork/ Situational Awareness	3+	4+	3+	4+	4+	4+	4+	4+
4	BAR	4+	4+	4+	4+	4+	4+	4+	4+
5	Brief/Debrief	4+	4+	4+	4+	4+	4+	4+	4+
6	Mission Planning	3+	4+	3+	4+	4+	4+	4+	4+
7	In-Flight Planning	3+	4+	3+	4+	4+	4+	4+	4+
8	In-Flight Checks	4+	4+	4+	4+	4+	4+	4+	4+
9	Radio/ICS Procedures	4+	4+	4+	4+	4+	4+	4+	4+
10	Crew Coordination	3+	4+	3+	3+	3+	3+	3+	3+
13	Ground Operations		4+	4+		4+		4+	4+
15	Takeoff/ Departure		4+	4		4		4	4
16	Publications and Chart Use		4+						
17	Radar Work	4+		4+	4+	4+	4+	4+	4+

MIF continued on next page.

T-39 FIGHTER TRAINING MANEUVER ITEM FILE									
CTS REF	MANEUVER	R2205	R4302	R4402	R2303	R4502	R2405	R4601	R4790
21	Instrument Scan and Lookout Doctrine		4+						
26	Course Corrections		4+				3	3	3
27	Course Analysis		4+				3	3	3
28	Speed Corrections						3	3	3
29	Timing						3	3	3
41	Wind Consideration		4+						
42	Fuel Management		4+						
45	Target Aspect Control (C)	4+		4+					
45	Target Aspect Control (A)				4+	4+	4+	4+	4+
46	Target Altitude Analysis/Correction	4+		4+	4+	4+	4+	4+	4+
47	Lead Control	4+		4+	4+	4+	4+	4+	4+
48	Displacement Turn	4+		4+	4+	4+	4+	4+	4+
49	RQ Drift Control/Fox-2	4+		4+	4	4	4	4	4
50	Speed Control	3+		4+	3	4	3	4	4
51	Descriptive Comm	4+		4+	4+	4+	4+	4+	4+
52	Directive Comm	4+		4+	4+	4+	4+	4+	4+
53	AIC-Only Intercept	3		3	3	3	3	3	3
54	Area Control			4+		4+		4+	4+

MIF continued on next page.

T-39 FIGHTER TRAINING MANEUVER ITEM FILE									
CTS REF	MANEUVER	R2205	R4302	R4402	R2303	R4502	R2405	R4601	R4790
55	Counterturn Fundamentals	4+		4+	4	4	4	4	4
56	Merge/FQ Fox-2				4	4	4	4	4
57	Tactical Situational Awareness	3+		3+	3+	3+	3+	3+	3+
58	Conversion Counterturns	4+		4+					
59	Advanced Counterturns				4	4	4	4	4
60	Approach		4+	4		4		4	4

8. Reattacks Training (2B49) Overview. Students become proficient at consummating a simple intercept in the 2B49 trainer. Students will place bogeys on collision and maneuver the fighter in order to take forward- and rear-quarter missile shots.

9. Reattacks Training (T-39N) Overview. Students become proficient at consummating simple intercepts in the T-39N, utilizing AIC information from a ground-based controller. Students will place a bogey (T-39N) on collision and maneuver the fighter in order to take forward- and rear-quarter missile shots.

10. Fighter Conversions Training (2B49) Overview. Students refine their spatial picture of intercept geometry by converting target aspect and lateral separation at the beginning of the intercept to different values by Fox-1 range. Students learn to compensate counterturn mechanics for changes of bogey heading.

11. Fighter Conversions Training (T-39N) Overview. Students become proficient at changing target aspect and lateral separation in the T-39N, utilizing AIC information from a ground-based controller. Students learn to compensate counterturn mechanics for changes of bogey (T-39N) heading.

12. Fighter Advanced 1 V 1 Intercepts Training (2B49) Overview. Students become proficient at recognizing and countering bogey jinks in heading, airspeed, and altitude in the 2B49 trainer. Students will counter jinking bogeys in order to take forward- and rear-quarter missile shots.

13. Fighter Advanced 1 V 1 Intercepts Training (T-39N) Overview. Students become proficient at airspeed and altitude. Students will counter jinking bogeys in order to take forward- and rear-quarter missile shots.

14. Fighter Advanced Multibogey Intercepts Training (2B49) Overview. Students are introduced to section/2-ship radar employment and communications in a multibogey environment. Additionally, students combine advanced intercept skills with tactical navigation routes to complete simplified self-escort strikes.

15. Fighter Advanced Strike Route Intercepts Training (T-39N) Overview. Students become proficient at tactical decision-making and multitasking by completing simplified self-escort strike routes with an ingress and egress presentation.

16. Multiple Approach Flight Training (T-39N) Overview. Students practice approaches at different airfields in order to gain experience operating out of the local area. R4301 and R4302 are generally administered any time after completion of Fighter Conversions Simulator Training (R2201). Stage Manager may approve deviations.

17. Air Tactical Maneuvering (T-45C) Overview. These final blocks of training serve to indoctrinate student aviators into the dynamic and challenging world of high performance tactical aviation. Students learn section flight procedures and coordination, section low-level procedures, division flight procedures, basic section and division air-to-ground attack profiles, and basic fighter maneuvering (1 V 1). Most importantly, students learn how to operate effectively as a crewmember in high stress situations during physically and mentally demanding flight.

18. T-45C ATM Weapons Training MIF



Check Ride Event

T-45C ATM WEAPONS TRAINING MANEUVER ITEM FILE			
CTS REF	MANEUVER	A4102	A4290
1	General Knowledge/Procedures	3+	3+
2	Emergency Procedures	4+	4+
3	Headwork/Situational Awareness	3+	3+
4	BAR	3+	3+
5	Brief/Debrief	3+	3+
6	Mission Planning	4+	4+
7	In-Flight Planning	3+	3+
8	In-Flight Checks	3+	3+
9	Radio/ICS Procedures	3+	3+
10	Crew Coordination	3+	3+
13	Ground Operations	3+	3+
15	Takeoff/Departure	3+	3+
25	Enroute Procedures	3+	3+
26	Course Corrections	3+	3+
28	Speed Corrections	3+	3+
38	Low-Level Turnpoint Procedures	3+	3+
42	Fuel Management	4+	4+
60	Approach	3+	3+
62	Landing	4+	4+
64	Visual Lookout	3+	3+
65	Formation Communication and Hand Signals	3+	3+
66	Formation Coordination	3+	3+
68	Chart/Terrain Correlation	3+	3+
69	Section Target Attack	3+	3+
70	Rendezvous	3+	3+

MIF continued on next page.

T-45C ATM WEAPONS TRAINING MANEUVER ITEM FILE			
CTS REF	MANEUVER	A4102	A4290
71	Section Approach	3+	3
72	SUA/MTR Entry/Exit Procedures	3+	3+
	Special Syllabus Requirements	1	

19. T-45C ATM BFM Training MIF

Check Ride Event

T-45C ATM BFM TRAINING MANEUVER ITEM FILE			
CTS REF	MANEUVER	A4304	A4490
1	General Knowledge/Procedures	4+	4+
2	Emergency Procedures	4+	4+
3	Headwork/Situational Awareness	4+	4+
4	BAR	4+	4+
5	Brief/Debrief	4+	4+
6	Mission Planning	4+	4+
7	In-Flight Planning	4+	4+
8	In-Flight Checks	4+	4+
9	Radio/ICS Procedures	4+	4+
10	Crew Coordination	4+	4+
13	Ground Operations	4+	4+
15	Takeoff/Departure	4+	4+
25	Enroute Procedures	4+	4+
42	Fuel Management	4+	4+
51	Descriptive Comm	3+	3+
52	Directive Comm	3+	3+

MIF continued on next page.

T-45C ATM BFM TRAINING MANEUVER ITEM FILE			
CTS REF	MANEUVER	A4304	A4490
60	Approach	4+	4+
62	Landing	4+	4+
64	Visual Lookout	4+	4+
65	Formation Communication and Hand Signals	4+	4+
66	Formation Coordination	4+	4+
67	Engaging Turns	4+	4+
70	Rendezvous	4+	4+
71	Section Approach	4	4
72	SUA Entry/Exit Procedures	4+	4+
75	Deck and Performance Awareness	4+	4+
76	Pursuit Curves (Lag, Pure, Lead)	3+	3+
77	Offensive Maneuvering	3+	3+
78	Defensive Maneuvering	3+	3+
79	1 V 1 Neutral Engagements	3+	3+
	Special Syllabus Requirements	1	

20. T-45C ATM Division Weapons Training MIF

Simulator/Device Event
 Check Ride Event

T-45C ATM DIVISION WEAPONS TRAINING MANEUVER ITEM FILE				
CTS REF	MANEUVER	A3101	A4502	A4690
1	General Knowledge/Procedures	4+	4+	4+
2	Emergency Procedures	4+	4+	4+
3	Headwork/Situational Awareness	4+	4+	4+
4	BAR	4+	4+	4+
5	Brief/Debrief	4+	4+	4+
6	Mission Planning	4+	4+	4+
7	In-Flight Planning	4+	4+	4+
8	In-Flight Checks	4+	4+	4+
9	Radio/ICS Procedures	4+	4+	4+
10	Crew Coordination	4+	4+	4+
13	Ground Operations	4+	4+	4+
15	Takeoff/Departure	4+	4+	4+
25	Enroute Procedures	4+	4+	4+
26	Course Corrections	3+	3+	3+
28	Speed Corrections	3+	3+	3+
29	Timing	3+	3+	3+
42	Fuel Management	4+	4+	4+
44	Target Acquisition	3+	3+	3+
60	Approach		3	3
62	Landing		4+	4+
64	Visual Lookout		3+	3+
65	Formation Communication and Hand Signals	3+	3+	3+

MIF continued on next page.

T-45C ATM DIVISION WEAPONS TRAINING MANEUVER ITEM FILE				
CTS REF	MANEUVER	A3101	A4502	A4690
66	Formation Coordination	3+	3+	3+
68	Chart/Terrain Correlation	3+	3+	3+
70	Rendezvous		3+	3+
72	SUA Entry/Exit Procedures	3+	3+	3+
73	Weapons Pattern Attacks	3+	3+	3+
74	Division Recovery		3	3
	Special Syllabus Requirements		1	

Blk #	Media	Title	Events	Hrs	Blk Name
F11	Class/ CAI	T-39 Fighter Ground Training	8	24.0	FTR

1. Prerequisites

- a. Complete G0201 prior to F1101 and F1102.
- b. Complete F1101-2 in any order prior to F1103.
- c. Complete F1103-8 in order.

2. Events

F1101	CAI	Air Intelligence		1.5
F1102	CAI	Fighter Missions		0.5
F1103	CAI	Conversion Procedures		3.0
F1104	MIL	Conversion Procedures Lecture		4.5
F1105	CAI	Advanced Intercepts Procedures		3.5
F1106	MIL	Advanced Intercepts Procedures Lecture		4.5
F1107	MIL	Introduction to 2 V X		4.5
F1108	MIL	Self-Escort Strike Route		2.0

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
A11	Class	T-45C ATM Weapons Flight Procedures	4	5.4	T45WEPFP

1. Prerequisites

- a. Complete C4103 prior to A1101.
- b. Complete A1101-4 in order.

2. Events

A1101	CAI	Low-Level Waypoint Navigation One		0.7	
A1102	CAI	Weapons Data Entry Procedures		0.7	
A1103	MIL	Section Weapons Flight Procedures		2.0	
A1104	MIL	Division Weapons Flight Procedures		2.0	

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	Blk Name
A12	Class	T-45C ATM Basic Fighter Maneuvers Flight Procedures	3	6.7	T45BFMFP

1. Prerequisites

- a. Complete C4290 prior to this block.
- b. Complete A4102 prior to this block.
- c. Complete events in sequential order.

2. Events

A1201	CAI	HUD/Data Entry Procedures		0.7	T45BFMFP
A1202	MIL	Basic Fighter Maneuvers Theory		3.0	T45BFMFP
A1203	MIL	Basic Fighter Maneuvers Flight Procedures		3.0	T45BFMFP

3. Syllabus Notes. None.

4. Discuss Items. None.

Blk #	Media	Title	Events	Hrs	H/X
S21/41	2B49/ T-39N	Strike Training	7	12.0	See Syl Note

1. Prerequisites

- a. Prior to S2101. G1130 (Chart Prep I).
- b. Prior to S4103. G1128 (Low Altitude Awareness Training).
- c. Prior to S4105
 - (1) S2102.
 - (2) S4104.

2. Syllabus Notes. Allow 2 H/X for S2101-2, 1 H/X for S4103-4, and 2 H/X for S4105-7.

S2101-2 (Strike Trainer)

Introduce air navigation enroute timing procedures to entry points of three VR routes. Plan IAW Strike Planning Guide. S2101 will have multiple ungraded maneuvers that will be covered in S2102.

S4103-4 (Low-Level Navigation Flight Training)

Routes will be flown using visual navigation procedures on VR routes flying at 500 feet AGL.

S4105-7 (Strike Flight Training)

Flight will combine airways, low-level, and radar navigation at low altitudes (500-1500 feet).

3. Special Syllabus Requirements. None.

4. Discuss Items

S2101

Air navigation timing procedures and techniques, any EP or aircraft system, and conduct of flight.

S2102

Air navigation and low-level timing procedures and techniques, low-level radar navigation, integrating low-level and radar procedures, and conduct of flight.

S4103

Visual scan techniques, bird avoidance, bird strike/damaged aircraft procedures, descriptive commentary, and conduct of flight.

S4104

Conduct of flight.

S4105

Air navigation timing, visual and radar procedures and techniques, radar return variations at lower altitudes, and conduct of flight.

S4106

All items and conduct of flight.

S4107

Conduct of flight.

5. Block MIF

CTS REF	MANEUVER	S4107
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
12	Mission Commander Responsibilities	3+
13	Ground Operations	4+
15	Takeoff/Departure	4+
16	Publications and Chart Use	4+
18	Radar Controls and Operation	4+
20	RSI	4+
21	Instrument Scan and Lookout Doctrine	4+
22	Visual Scan	4+
23	Descriptive Commentary	4+
24	Checkpoint Utilization/Correlation	4+
26	Course Corrections	4+
27	Course Analysis	4+
28	Speed Corrections	4+
29	Timing	4+
33	Descent Control	4+
36	Entry Point Acquisition	4+
37	Turnpoint Procedures	4+
41	Wind Consideration	4+
44	Target Acquisition	4+
60	Approach	4+

Blk #	Media	Title	Events	Hrs	H/X
T21/41	2B49/ T-39N	Composite Strike Training	7	14.8	See Syl Note

1. Prerequisites

- a. Prior to T2101. G1132 (Chart Prep II).
- b. Prior to T4104. T2103.

2. Syllabus Notes. Allow 2.0 H/X for T2101-3 and 2.2 H/X for T4104-7.

T2101-3 (Composite Strike Trainers)

Trainers will introduce mountainous terrain interpretation. Timing will involve real-world times on target.

T2103 (Composite Strike Trainer)

This is an exercise that will walk the student from strike tasking and planning through execution of the mission. During T2103, instructors will maximize exposure to real-world strike flow and communications.

T4104-7 (Composite Strike Flights)

Flights will emphasize crew coordination, mission commander responsibilities, and the integration of radar and visual navigation procedures. Timing will involve real-world times to the target. Route information is available from the Strike Segment Planning Guide.

3. Special Syllabus Requirements. None.

4. Discuss Items

T2101

Timing control using real-world time, use of radar in mountainous terrain, integration of radar and visual cues for navigation, crew coordination, mission commander responsibilities, and conduct of flight.

T2102

Using the radar in mountainous terrain at lower altitudes, all introduce items, and conduct of flight.

T2103

Real-world strike planning and execution, all introduce items, and conduct of flight.

T4104

Timing control using real-world time, use of radar in mountainous terrain, integration of radar and visual cues for navigation, crew coordination, mission commander responsibilities, and conduct of flight.

T4105

Conduct of flight.

T4106

Conduct of flight.

T4107

Conduct of flight.

5. Block MIF

CTS REF	MANEUVER	T4107
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
11	Composite Headwork/Situational Awareness	4+
12	Mission Commander Responsibilities	4+
13	Ground Operations	4+
15	Takeoff/Departure	4+
16	Publications and Chart Use	4+
18	Radar Controls and Operation	4+
19	Terrain Consideration/Integration	4+
20	RSI	4+
21	Instrument Scan and Lookout Doctrine	4+
22	Visual Scan	4+
23	Descriptive Commentary	4+
24	Checkpoint Utilization/Correlation	4+
26	Course Corrections	4+
27	Course Analysis	4+
28	Speed Corrections	4+
29	Timing	4+
36	Entry Point Acquisition	4+
39	Composite Turnpoint Procedures	4+
41	Wind Consideration	4+
44	Target Acquisition	4+
60	Approach	4+

Blk #	Media	Title	Events	Hrs	H/X
T42	T-39N	Composite Strike Check Ride	1	2.2	2.2

1. Prerequisites

- a. N4106.
- b. T4107.

2. Syllabus Notes

- a. Timing will involve real-world times to the target.
- b. Route information is available from the Composite Ground School FTI.
- c. After completion of T4290, all charts used in the syllabus shall be turned in to the Mission Commander.

3. Special Syllabus Requirements. None.

4. Discuss Items. Real-world strike planning and execution, all introduce items, and conduct of flight.

5. Block MIF

CTS REF	MANEUVER	T4290
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
11	Composite Headwork/Situational Awareness	4+
12	Mission Commander Responsibilities	4+
13	Ground Operations	4+
15	Takeoff/Departure	4+
16	Publications and Chart Use	4+
18	Radar Controls and Operation	4+
19	Terrain Consideration/Integration	4+
20	RSI	4+
21	Instrument Scan and Lookout Doctrine	4+
22	Visual Scan	4+
23	Descriptive Commentary	4+
24	Checkpoint Utilization/Correlation	4+
26	Course Corrections	4+
27	Course Analysis	4+
28	Speed Corrections	4+
29	Timing	4+
36	Entry Point Acquisition	4+
39	Composite Turnpoint Procedures	4+
41	Wind Consideration	4+
44	Target Acquisition	4+
60	Approach	4+

Blk #	Media	Title	Events	Hrs	H/X
R21	2B49	Reattacks Simulator Training	4	6.0	1.5

1. Prerequisite. G1169 (Reattack Self-Study).
2. Syllabus Notes. The student should perform the following procedures on the indicated event.

R2101

Radar work, target aspect control (R), target altitude analysis/correction, lead control, displacement turn, RQ drift control/Fox-2, speed control, descriptive comm, directive comm, and counterturn (R).

R2102

Conduct of event.

R2103

Conduct of event and instrument departure.

R2104

Conduct of event, instrument approach.

3. Special Syllabus Requirements. None.
4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R2104
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	BAR	4+
5	Brief/Debrief	3+
6	Mission Planning	4+
7	In-Flight Planning	3+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	3+
10	Crew Coordination	3+
15	Takeoff/Departure	4
17	Radar Work	3+
45	Target Aspect Control (R)	4+
46	Target Altitude Analysis/ Correction	3+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4+
50	Speed Control	3
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
55	Counterturn Fundamentals	4+
57	Tactical Situational Awareness	3+
60	Approach	4+

Blk #	Media	Title	Events	Hrs	H/X
R41	T-39N	Reattacks Training	1	1.1	1.1

1. Prerequisite. R2104.
2. Syllabus Notes. None.
3. Special Syllabus Requirements. None.
4. Discuss Items. Area check-in and checkout procedures, intercept setup/termination procedures, and visual lookout.

5. Block MIF

CTS REF	MANEUVER	R4101
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	BAR	3+
5	Brief/Debrief	3+
6	Mission Planning	3+
7	In-Flight Planning	3+
8	In-Flight Checks	3+
9	Radio/ICS Procedures	3+
10	Crew Coordination	3+
13	Ground Operations	4+
15	Takeoff/Departure	4
17	Radar Work	3+
45	Target Aspect Control (R)	4+
46	Target Altitude Analysis/ Correction	3+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4+
50	Speed Control	3
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
54	Area Control	3+
55	Counterturn Fundamentals	4+
57	Tactical Situational Awareness	3+
60	Approach	4

Blk #	Media	Title	Events	Hrs	H/X
R42	T-39N	Reattacks Check Ride	1	1.1	1.1

1. Prerequisite. R4101.
2. Syllabus Note. The student should perform the following procedure on this event: Conduct of flight.
3. Special Syllabus Requirements. None.
4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R4290
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	BAR	3+
5	Brief/Debrief	3+
6	Mission Planning	3+
7	In-Flight Planning	3+
8	In-Flight Checks	3+
9	Radio/ICS Procedures	3+
10	Crew Coordination	3+
13	Ground Operations	4+
15	Takeoff/Departure	4
17	Radar Work	3+
45	Target Aspect Control (R)	4+
46	Target Altitude Analysis/ Correction	3+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4+
50	Speed Control	3
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
54	Area Control	3+
55	Counterturn Fundamentals	4+
57	Tactical Situational Awareness	3+
60	Approach	4

Blk #	Media	Title	Events	Hrs	H/X
R22	2B49	Fighter Conversions Simulator Training	5	7.5	1.5

1. Prerequisite. G0202 (Conversion Self-Study) prior to R2201.

2. Syllabus Notes. The student will perform the following procedures on the indicated event.

R2201

Conduct of event.

R2202

Conduct of event.

R2203

Conduct of event.

R2204

Conduct of event.

R2205

Conduct of event.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R2205
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	3+
7	In-Flight Planning	3+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	3+
17	Radar Work	4+
45	Target Aspect Control (C)	4+
46	Target Altitude Analysis/ Correction	4+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4+
50	Speed Control	3+
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
55	Counterturn Fundamentals	4+
57	Tactical Situational Awareness	3+
58	Conversion Counterturns	4+

Blk #	Media	Title	Events	Hrs	H/X
R43	T-39N	Fighter Multiple Approach Flight Training	2	3.6	1.8

1. Prerequisite. R2201.
2. Syllabus Notes. The student should perform the following procedure:

R4301

Conduct of event, two instrument approaches at an unfamiliar airfield.

3. Special Syllabus Requirements. None.

4. Discuss Items

R4301

GPS navigation, EP (in flight), and CNO's GPS policy.

R4302

GPS navigation (practiced) and minimum fuel scenario (discussed or practiced in flight).

5. Block MIF

CTS REF	MANEUVER	R4302
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
15	Takeoff/Departure	4+
16	Publications and Chart Use	4+
21	Instrument Scan and Lookout Doctrine	4+
26	Course Corrections	4+
27	Course Analysis	4+
41	Wind Consideration	4+
42	Fuel Management	4+
60	Approach	4+

Blk #	Media	Title	Events	Hrs	H/X
R44	T-39N	Fighter Conversions Training	2	2.6	1.3

1. Prerequisite. R2205.
2. Syllabus Notes. The student should perform the following procedure on the indicated event:

 R4401
 Conduct of event.

 R4402
 Conduct of event.
3. Special Syllabus Requirements. None.
4. Discuss Items. Radar and visual counterturns with jinking bogeys.

5. Block MIF

CTS REF	MANEUVER	R4402
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	3+
7	In-Flight Planning	3+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	3+
13	Ground Operations	4+
15	Takeoff/Departure	4
17	Radar Work	4+
45	Target Aspect Control (C)	4+
46	Target Altitude Analysis/ Correction	4+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4+
50	Speed Control	4+
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
54	Area Control	4+
55	Counterturn Fundamentals	4+
57	Tactical Situational Awareness	3+
58	Conversion Counterturns	4+
60	Approach	4

Blk #	Media	Title	Events	Hrs	H/X
R23	2B49	Fighter Advanced 1 V 1 Intercepts Simulator Training	3	4.5	1.5

1. Prerequisites

a. R2205.

b. G0203 (Advanced Self-Study) prior to R2301.

2. Syllabus Notes. The student will perform the following procedures on the indicated event.

R2301

Conduct of event, broadcast control in bulls-eye format, target aspect gameplan execution, Data Block on, AIM-120 employment, merge, and forward-quarter Fox-2 employment.

R2302

Conduct of event.

R2303

Conduct of event.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R2303
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	3+
17	Radar Work	4+
45	Target Aspect Control (A)	4+
46	Target Altitude Analysis/ Correction	4+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4
50	Speed Control	3
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
55	Counterturn Fundamentals	4
56	Merge/FQ Fox-2	4
57	Tactical Situational Awareness	3+
59	Advanced Counterturns	4

Blk #	Media	Title	Events	Hrs	H/X
R45	T-39N	Fighter Advanced 1 V 1 Intercepts Training	2	2.6	1.3

1. Prerequisites

a. R4402.

b. R2303.

2. Syllabus Notes

R4501

Conduct of event.

R4502

Conduct of event.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R4502
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	3+
13	Ground Operations	4+
15	Takeoff/Departure	4
17	Radar Work	4+
45	Target Aspect Control (A)	4+
46	Target Altitude Analysis/ Correction	4+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4
50	Speed Control	4
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
54	Area Control	4+
55	Counterturn Fundamentals	4
56	Merge/FQ Fox-2	4
57	Tactical Situational Awareness	3+
59	Advanced Counterturns	4
60	Approach	4

Blk #	Media	Title	Events	Hrs	H/X
R24	2B49	Fighter Advanced Multibogey Intercepts Simulator Training	5	7.5	1.5

1. Prerequisites

- a. R2303 prior to R2401.
- b. G0204 (2 V X Self-Study) prior to R2401.
- c. F1108 prior to R2404.

2. Syllabus Notes. The student should perform the following procedures on the indicated event.

R2401

Conduct of event, 2 V 2.

R2402

Conduct of event, 2 V X.

R2403

Conduct of event.

R2404

Conduct of event and self-escort strike.

R2405

Conduct of event.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R2405
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	3+
17	Radar Work	4+
26	Course Corrections	3
27	Course Analysis	3
28	Speed Corrections	3
29	Timing	3
45	Target Aspect Control (A)	4+
46	Target Altitude Analysis/ Correction	4+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4
50	Speed Control	3
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
55	Counterturn Fundamentals	4
56	Merge/FQ Fox-2	4
57	Tactical Situational Awareness	3+
59	Advanced Counterturns	4

Blk #	Media	Title	Events	Hrs	H/X
R46	T-39N	Fighter Advanced Strike Route Intercepts Training	1	1.3	1.3

1. Prerequisites

a. R4502.

b. R2405.

2. Syllabus Notes. None.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R4601
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	3+
13	Ground Operations	4+
15	Takeoff/Departure	4
17	Radar Work	4+
26	Course Corrections	3
27	Course Analysis	3
28	Speed Corrections	3
29	Timing	3
45	Target Aspect Control (A)	4+
46	Target Altitude Analysis/ Correction	4+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4
50	Speed Control	4
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC-Only Intercept	3
54	Area Control	4+

MIF continued on next page.

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CTS REF	MANEUVER	R4601
55	Counterturn Fundamentals	4
56	Merge/FQ Fox-2	4
57	Tactical Situational Awareness	3+
59	Advanced Counterturns	4
60	Approach	4

Blk #	Media	Title	Events	Hrs	H/X
R47	T-39N	Fighter Advanced Strike Route Intercepts Check Ride	1	1.3	1.3

1. Prerequisites

a. R4601.

b. R4302.

2. Syllabus Note. The student will perform the following procedure on this event: Conduct of event.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	R4790
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	3+
13	Ground Operations	4+
15	Takeoff/Departure	4
17	Radar Work	4+
26	Course Corrections	3
27	Course Analysis	3
28	Speed Corrections	3
29	Timing	3
45	Target Aspect Control (A)	4+
46	Target Altitude Analysis/ Correction	4+
47	Lead Control	4+
48	Displacement Turn	4+
49	RQ Drift Control/Fox-2	4
50	Speed Control	4
51	Descriptive Comm	4+
52	Directive Comm	4+
53	AIC -Only Intercept	3
54	Area Control	4+

MIF continued on next page.

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CTS REF	MANEUVER	R4790
55	Counterturn Fundamentals	4
56	Merge/FQ Fox-2	4
57	Tactical Situational Awareness	3+
59	Advanced Counterturns	4
60	Approach	4

Blk #	Media	Title	Events	Hrs	H/X
A41	T-45C	T-45C ATM Section Weapons Flight Training	2	2.4	1.2

1. Prerequisites

- a. C4290.
- b. A1103 (ATM Weapons Flight Procedures).

2. Syllabus Notes

a. Students will lead at least one event in this block of training prior to A4290.

b. Students must fly at least one section instrument approach in this block of training.

c. Students shall fly a low-level route on A4102.

d. Real-world time-on-target will be used to the maximum extent possible.

e. Lead student will brief/debrief flight admin, section emergency procedures, flight safety, and flight conduct to include sequence of events and tactical administration. Lead student will utilize student wingman for flight planning and brief preparation.

3. Special Syllabus Requirements

A4101

Demonstrate 250-knot and 300-knot breakup and rendezvous IAW FTI.

Demonstrate an underrun IAW FTI.

Demonstrate tail chase IAW FTI.

Demonstrate lead change IAW FTI.

Demonstrate engaging turns IAW FTI.

4. Discuss Items

A4101

Formation flight, section emergencies, section crew coordination, and section dynamic maneuvering.

A4102

Basic section low-altitude target attacks, low-altitude safety, crew coordination for low-altitude operations, dive recovery rules, and attack abort parameters.

5. Block MIF

CTS REF	MANEUVER	A4102
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	BAR	3+
5	Brief/Debrief	3+
6	Mission Planning	4+
7	In-Flight Planning	3+
8	In-Flight Checks	3+
9	Radio/ICS Procedures	3+
10	Crew Coordination	3+
13	Ground Operations	3+
15	Takeoff/Departure	3+
25	Enroute Procedures	3+
26	Course Corrections	3+
28	Speed Corrections	3+
38	Low-Level Turnpoint Procedures	3+
42	Fuel Management	4+
60	Approach	3+
62	Landing	4+
64	Visual Lookout	3+
65	Formation Communication and Hand Signals	3+
66	Formation Coordination	3+
68	Chart/Terrain Correlation	3+
69	Section Target Attack	3+
70	Rendezvous	3+
71	Section Approach	3+
72	SUA/MTR Entry/Exit Procedures	3+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
A42	T-45C	T-45C ATM Section Weapons Flight Check Ride	1	1.2	1.2

1. Prerequisite. A4102.

2. Syllabus Notes

a. Lead student will brief/debrief flight admin, section emergency procedures, flight safety, and flight conduct to include sequence of events and tactical administration.

b. Lead student will utilize student wingman for flight planning and brief preparation.

c. Flight will utilize a low-level route as part of the conduct.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	A4290
1	General Knowledge/Procedures	3+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	3+
4	BAR	3+
5	Brief/Debrief	3+
6	Mission Planning	4+
7	In-Flight Planning	3+
8	In-Flight Checks	3+
9	Radio/ICS Procedures	3+
10	Crew Coordination	3+
13	Ground Operations	3+
15	Takeoff/Departure	3+
25	Enroute Procedures	3+
26	Course Corrections	3+
28	Speed Corrections	3+
38	Low-Level Turnpoint Procedures	3+
42	Fuel Management	4+
60	Approach	3+
62	Landing	4+
64	Visual Lookout	3+
65	Formation Communication and Hand Signals	3+
66	Formation Coordination	3+
68	Chart/Terrain Correlation	3+
69	Section Target Attack	3+
70	Rendezvous	3+
71	Section Approach	3
72	SUA/MTR Entry/Exit Procedures	3+

Blk #	Media	Title	Events	Hrs	H/X
A43	T-45C	T-45C ATM Basic Fighter Maneuvers Flight Training	4	4.4	1.1

1. Prerequisites

- a. A4290.
- b. A1203 (ATM BFM Flight Procedures).

2. Syllabus Notes. This block of training is designed to introduce and practice BFM against a single bandit.

A4301-4

Lead student will brief/debrief flight admin, section emergency procedures, flight safety, and flight conduct to include sequence of events and tactical administration for each planned engagement. Lead student will utilize student wingman for flight planning and brief preparation.

A4302-3

Flights will be conducted as dedicated Perch BFM, introducing the students to offensive and defensive sight pictures and maneuvering. Students will conduct one offensive and one defensive flight, in either order.

A4304

Flight will be conducted as high-aspect BFM, concentrating on the concept of gameplan development and execution versus a specific threat.

3. Special Syllabus Requirements

A4301

Demonstrate snapshot drill IAW FTI.

Demonstrate offensive maneuvering to solve for valid gun attack using high/low yo-yos, displacement rolls, and lag/lead/pure pursuit.

Demonstrate aircraft flight characteristics as they relate to the aircraft's E-M Diagram, including energy addition, G available, and turn rate versus airspeed/AOA.

Demonstrate scissors maneuvering, concentrating on proper lift vector placement and airspeed management.

Demonstrate one-circle and two-circle flow with radius/rate performance errors. Demonstrate the execution of high-aspect BFM engagements.

4. Discuss Items

A4301

E-M Diagram. Weapons engagement zones, concentration on gun employment, and recognition of the concept of sensor nose.

Scissors maneuvering, both flat and rolling; types of flow; and basic flow execution.

A4302-3

Offensive and defensive concepts and definitions, focusing on visual sight cues and basic execution, deck transition, and disengagement/bug.

A4304

Gameplan development and desired flow based on the threat, out-of-plane maneuvering, and crew coordination techniques.

5. Block MIF

CTS REF	MANEUVER	A4304
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+

MIF continued on next page.

CTS REF	MANEUVER	A4304
13	Ground Operations	4+
15	Takeoff/Departure	4+
25	Enroute Procedures	4+
42	Fuel Management	4+
51	Descriptive Comm	3+
52	Directive Comm	3+
60	Approach	4+
62	Landing	4+
64	Visual Lookout	4+
65	Formation Communication and Hand Signals	4+
66	Formation Coordination	4+
67	Engaging Turns	4+
70	Rendezvous	4+
71	Section Approach	4
72	SUA Entry/Exit Procedures	4+
75	Deck and Performance Awareness	4+
76	Pursuit Curves (Lag, Pure, Lead)	3+
77	Offensive Maneuvering	3+
78	Defensive Maneuvering	3+
79	1 V 1 Neutral Engagements	3+
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
A44	T-45C	T-45C ATM Basic Fighter Maneuvers Flight Check Ride	1	1.1	1.1

1. Prerequisite. A4304.

2. Syllabus Notes.

a. This block of training is designed to evaluate the student's proficiency in section administration and tactical administration while practicing BFM against a single bandit.

b. Flight will be conducted as a high-aspect BFM, concentrating on the concept of gameplan development and execution versus a specific threat.

3. Special Syllabus Requirements. None.

4. Discuss Items. None.

5. Block MIF

CTS REF	MANEUVER	A4490
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
15	Takeoff/Departure	4+
25	Enroute Procedures	4+
42	Fuel Management	4+
51	Descriptive Comm	3+
52	Directive Comm	3+
60	Approach	4+
62	Landing	4+
64	Visual Lookout	4+
65	Formation Communication and Hand Signals	4+
66	Formation Coordination	4+
67	Engaging Turns	4+
70	Rendezvous	4+
71	Section Approach	4
72	SUA Entry/Exit Procedures	4+
75	Deck and Performance Awareness	4+
76	Pursuit Curves (Lag, Pure, Lead)	3+
77	Offensive Maneuvering	3+
78	Defensive Maneuvering	3+
79	1 V 1 Neutral Engagements	3+

Blk #	Media	Title	Events	Hrs	H/X
A31	2F205	T-45C ATM Division Weapons High-/Medium-Threat, PGM CAS	1	1.5	1.5

1. Prerequisites

- a. A1104 (Division Weapon Flight Procedures).
- b. A4490.

2. Syllabus Notes. This block of training is designed to introduce and practice the Close Air Support mission, in a high-, medium-, and low-threat environment.

a. An instructor with FAC(A) or FAC experience will perform FAC-to-striker brief.

b. Students will prepare JOG/1:50,000 charts for the CAS area. The JOG shall depict the appropriate CPs and IPs and the 1:50,000 shall depict the anticipated target area as well as fire support coordination measures.

c. Two CP-IP-TGT runs to a level, 10-, 20-, or 30-degree dive delivery and one precision-guided munitions delivery using the keyhole template are required for event completion.

d. Demonstrate and execute appropriate communications with the DASC and FAC using standard JCAS formats.

e. Demonstrate and execute JCAS standard JTAR mission provided by FAC during brief.

f. Demonstrate and execute JCAS standard 9-Line.

g. NFS will practice target acquisition by noting target on prepared charts.

3. Special Syllabus Requirements. None.

4. Discuss Items

a. DASC/FAC procedures: discuss the functions of the DASC, its procedural control nature, and relationship to the FAC.

b. CAS communications: discuss standard JCAS procedures including MNPOTTA format check-in, authentication procedures, SITREP TTFACOR format, target talk-on procedures and techniques, joint laser communication procedures, and BDA reports.

5. Block MIF

CTS REF	MANEUVER	A3101
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
15	Takeoff/Departure	4+
25	Enroute Procedures	4+
26	Course Corrections	3+
28	Speed Corrections	3+
29	Timing	3+
42	Fuel Management	4+
44	Target Acquisition	3+
65	Formation Communication and Hand Signals	3+
66	Formation Coordination	3+
68	Chart/Terrain Correlation	3+
72	SUA Entry/Exit Procedures	3+
73	Weapons Pattern Attacks	3+

Blk #	Media	Title	Events	Hrs	H/X
A45	T-45C	T-45C ATM Division Weapons High-/Medium-/Low-Threat CAS	2	2.3	1.15

1. Prerequisite. A3101.

2. Syllabus Notes. This block of training is designed to introduce and practice the Close Air Support mission, in a high-, medium-, and low-threat environment.

a. A minimum of three aircraft is required.

b. An instructor with FAC(A) or FAC experience will perform FAC-to-striker brief.

c. Lead student will perform striker element brief and will utilize student wingmen for mission planning and brief preparation IAW FTI.

d. Students will prepare JOG/1:50,000 charts for the CAS area. The JOG shall depict the appropriate CPs and IPs and the 1:50,000 shall depict the anticipated target area as well as fire support coordination measures.

e. Two CP-IP-TGT runs to a level, 10-, 20-, or 30-degree dive delivery are required for event completion.

f. Demonstrate and execute appropriate communications with the DASC and FAC using standard JCAS formats.

g. Demonstrate and execute JCAS standard JTAR mission provided by FAC during brief.

h. Demonstrate and execute JCAS standard 9-Line.

i. NFS will practice target acquisition by noting target on prepared charts.

3. Special Syllabus Requirements. FAC and IPs will demonstrate low-threat overhead talk-on procedures.

4. Discuss Items

a. Discuss battlespace management to include friendly order of battle and fire support coordination measures as they relate to the CAS mission.

b. Threat: Discuss enemy order of battle that would require medium-/high-threat tactics. Discuss those contingencies that would result in de-escalation to low-threat tactics.

c. DASC/FAC procedures: Discuss the functions of the DASC, its procedural control nature, and relationship to the FAC.

d. CAS communications: Discuss standard JCAS procedures including MNPOTTA format check-in, authentication procedures, SITREP TTFACOR format, and BDA reports.

5. Block MIF

CTS REF	MANEUVER	A4502
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
15	Takeoff/Departure	4+
25	Enroute Procedures	4+
26	Course Corrections	3+
28	Speed Corrections	3+
29	Timing	3+
42	Fuel Management	4+
44	Target Acquisition	3+
60	Approach	3
62	Landing	4+
64	Visual Lookout	3+
65	Formation Communication and Hand Signals	3+
66	Formation Coordination	3+
68	Chart/Terrain Correlation	3+
70	Rendezvous	3+
72	SUA Entry/Exit Procedures	3+
73	Weapons Pattern Attacks	3+
74	Division Recovery	3
	Special Syllabus Requirements	1

Blk #	Media	Title	Events	Hrs	H/X
A46	T-45C	T-45C ATM Division Weapons Check Ride Precision-Guided Munitions CAS	1	1.2	1.2

1. Prerequisite. A4502.
2. Syllabus Notes. This block of training is designed to introduce and practice the Close Air Support mission, using precision-guided munitions. The conduct of flight will provide for evaluation of the student's proficiency in all aspects of the advanced tactical syllabus.
 - a. A minimum of three aircraft is required.
 - b. An instructor with FAC(A) or FAC experience will perform FAC-to-striker brief.
 - c. Lead student will perform striker element brief and will utilize student wingmen for mission planning and brief preparation IAW FTI.
 - d. Students will prepare JOG/1:50,000 charts for the CAS area. The JOG shall depict the appropriate CPs and IPs and the 1:50,000 shall depict the anticipated target area.
 - e. Two runs using keyhole CAS template to level PGM deliveries are required for event completion.
 - f. Demonstrate and execute appropriate communications with the DASC and FAC using standard JCAS formats.
 - g. Demonstrate and execute JCAS standard JTAR mission provided by FAC(A) during brief.
 - h. Demonstrate and execute JCAS standard 9-Line.
 - i. NFS will practice target acquisition by noting target on prepared charts.
3. Special Syllabus Requirements. None.

4. Discuss Items

a. Discuss battlespace management to include friendly order of battle and fire support coordination measures as they relate to the CAS mission.

b. Threat: Discuss enemy order of battle that would require use of precision-guided munitions and tactics. Discuss those contingencies that would result in de-escalation to low-threat tactics.

c. DASC/FAC procedures: Discuss the functions of the DASC, its procedural control nature, and relationship to the FAC.

d. CAS communications: Discuss standard JCAS procedures including MNPOTTA format check-in, authentication procedures, SITREP TTFACOR format, target talk-on procedures and techniques, joint laser communication procedures, and BDA reports.

5. Block MIF

CTS REF	MANEUVER	A4690
1	General Knowledge/Procedures	4+
2	Emergency Procedures	4+
3	Headwork/Situational Awareness	4+
4	BAR	4+
5	Brief/Debrief	4+
6	Mission Planning	4+
7	In-Flight Planning	4+
8	In-Flight Checks	4+
9	Radio/ICS Procedures	4+
10	Crew Coordination	4+
13	Ground Operations	4+
15	Takeoff/Departure	4+
25	Enroute Procedures	4+
26	Course Corrections	3+
28	Speed Corrections	3+

MIF continued on next page.

CTS REF	MANEUVER	A4690
29	Timing	3+
42	Fuel Management	4+
44	Target Acquisition	3+
60	Approach	3
62	Landing	4+
64	Visual Lookout	3+
65	Formation Communication and Hand Signals	3+
66	Formation Coordination	3+
68	Chart/Terrain Correlation	3+
70	Rendezvous	3+
72	SUA Entry/Exit Procedures	3+
73	Weapons Pattern Attacks	3+
74	Division Recovery	3

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Chapter IX

Course Training Standards

1. Purpose. These standards outline the tasks and proficiency required of student NFOs during the appropriate stages. This training prepares an officer to perform the duties of an NFO in a dynamic tactical environment.

2. Student Duties and Responsibilities

- a. Plan or manage the overall mission as appropriate.
- b. Ensure the aircraft is preflighted, inspected, and equipped for the assigned mission.
- c. Help the pilot operate the aircraft to accomplish the mission using sound judgment and airmanship.

3. General Standards

- a. Achieve training standards to be qualified as a Naval Flight Officer.
- b. Unless otherwise specified, use **BASIC AIR WORK RECOGNITION** standards for all items with altitude, airspeed, or heading parameters.
- c. "Standard" equates to *good* (G/4).
- d. Momentary deviations outside CTS that do not compromise flight safety are acceptable if subsequent corrections are timely.
- e. Procedural knowledge and application must comply with applicable directives and allow efficient mission accomplishment. If individual tasks require pre-mission planning, the standards from **Mission Planning** apply.

4. Execution. The MIF regulates student progression to meet required standards prior to phase completion. Mission Commanders shall evaluate student performance against these standards.

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

BEHAVIOR STATEMENT	STANDARDS
GRADED ITEM	
<ul style="list-style-type: none"> • A brief description of the behavior, required action, and/or conditions. 	<ul style="list-style-type: none"> • The specific standards for the action. May be read as "The student NFO..."

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

7. Course Training Standards

UNIVERSALLY GRADED ITEMS

BEHAVIOR STATEMENT	STANDARDS
1. General Knowledge/Procedures	
<ul style="list-style-type: none"> • Maintain working knowledge of all appropriate flight training instructions and directives. 	<ul style="list-style-type: none"> • Recites, discusses, and/or performs all applicable items essential to the operation of the aircraft and the completion of the mission to an accuracy of 85 percent.
2. Emergency Procedures	
<ul style="list-style-type: none"> • Maintain an in-depth knowledge of NATOPS, SOP, and appropriate directives. • Emergency procedures and handling of aircraft malfunctions must be learned to build the student's confidence in the aircraft and develop applicable crew coordination skills. 	<ul style="list-style-type: none"> • Correctly analyzes situation. • Uses checklist when appropriate and conditions permit. • Completes procedures in a timely manner. • Must perform/recite critical action steps from memory, 100 percent, safety of flight necessity. • Correctly prioritizes tasks to include checklists, navigation, and communication.

BEHAVIOR STATEMENT	STANDARDS
3. Headwork/Situational Awareness	
<ul style="list-style-type: none"> ● Comply with the FTI, SOP, and NATOPS while maintaining SA sufficient for safety-of-flight and mission accomplishment. 	<ul style="list-style-type: none"> ● Understands instructions, demonstrations, and explanations. ● Foresees and avoids possible difficulties. ● Remains alert and spatially oriented.
4. Basic Air Work Recognition (BAR)	
<ul style="list-style-type: none"> ● Establish and maintain desired altitude, airspeed, and heading during flight. ● Intercept and fly a specified course on an airway or to a navigation point. ● Maintain course as assigned by air traffic control (ATC). 	<ul style="list-style-type: none"> ● Performs IAW FAR, OPNAVINST 3710.7U, and TRAWING SIX SOP. ● Coordinates with the pilot to keep the aircraft within 100 feet of desired altitude, 10 kts of desired KIAS, and 10° desired heading/course. ● Appropriately directs use of power and attitude. ● Maintains 2-NM TACAN point-to-point accuracy. ● Maintains ±2 NM or ±3° (whichever is less).
5. Brief/Debrief	
<ul style="list-style-type: none"> ● Brief the flight in preparation for the mission. ● Recall the events of the flight and provide learning points. 	<ul style="list-style-type: none"> ● Adequately briefs the flight for all members including specific mission objectives, flight conduct, and contingency planning. ● Adequately recalls the events of the flight and provides learning points relevant to the mission.

GENERAL

BEHAVIOR STATEMENT	STANDARDS
6. Mission Planning	
<ul style="list-style-type: none"> ● Perform mission planning to include takeoff, climb, enroute, descent, approach, and landing data. ● Plan alternate course of action. ● Prepare flight log/DD-175. ● Accomplish appropriate planning for particular mission. ● Adjust mission's tactical admin based on real-world/ weather concerns. 	<ul style="list-style-type: none"> ● Uses required directives and forms. ● Plans mission in a timely manner to meet requirements. ● Accurately completes DD-175. ● Maintains mission planning accuracy: <ul style="list-style-type: none"> ▶ Fuels ±100 pounds. ▶ Time ±1 minute. ▶ Course within 2°. ● Ensures compliance with directives with regard to weather and NOTAMs. ● Adjusts tactical admin based on weather forecast and appropriate controlling documents. <p><u>Fighter</u></p> <ul style="list-style-type: none"> ● Provides Mission Data Card, weather brief, Bull's-eye Card, and strike route (when applicable). ● Ensures warning area scheduled.
7. In-Flight Planning	
<ul style="list-style-type: none"> ● Plan and execute a sequence of maneuvers or actions. ● Understand current and required position. ● Direct flight course and destination deviation as appropriate for weather, fuel, or emergencies. 	<ul style="list-style-type: none"> ● Adjusts mission profile for external factors (WX, traffic, diverts, etc.). ● Maintains positional awareness using ground references, navigational aids, VFR charts, or FLIPs. ● Contacts appropriate controller and requests deviations in a timely manner IAW OPNAVINST 3710.7U.

BEHAVIOR STATEMENT	STANDARDS
8. In-Flight Checks	
<ul style="list-style-type: none">● Complete checks as required.	<p><u>Strike</u></p> <ul style="list-style-type: none">● Performs without error or omission:<ul style="list-style-type: none">▶ After takeoff, climb, descent, approach, and landing checklists.▶ Cruise Checklist.▶ Before Entry Checklist prior to applicable routes. <p><u>Fighter</u></p> <ul style="list-style-type: none">● Performs:<ul style="list-style-type: none">▶ Strike standards.▶ Fence and farm checks. <p><u>T-45C</u></p> <ul style="list-style-type: none">● Performs:<ul style="list-style-type: none">▶ Instrument, fuel, position reports as required.▶ Landing Checklist at required configuration points.▶ Stall/Pre-aerobatic Checklist when required.▶ Other aircraft specific checks as required.

BEHAVIOR STATEMENT	STANDARDS
9. Radio/ICS Procedures	
<ul style="list-style-type: none"> ● The effective use of UHF/VHF radios and ICS, as required. 	<ul style="list-style-type: none"> ● Communicates clearly and concisely with appropriate agencies using standard military and FAA terminology. ● Familiar with NORDO procedures. ● Makes all calls when required to an accuracy of 90 percent. ● Does not step on others' transmissions. ● Uses nonstandard communication brevity when appropriate. ● Uses correct terminology to an accuracy of 90 percent. ● Uses standard terminology and communication brevity to an accuracy of 90 percent. ● Maintains appropriate level of communication with other crewmembers. ● Uses proper switching for effective use of the ICS.
10. Crew Coordination	
<ul style="list-style-type: none"> ● The use of crew and cockpit resources to minimize workload and enhance SA. ● Communication and interaction between crewmembers. 	<ul style="list-style-type: none"> ● Incorporates all aspects of CRM. ● Delegates cockpit tasks as appropriate. ● Makes timely recommendations to maintain aircraft flight parameters through all regimes of flight. ● Uses appropriate interaction between crewmembers with regard to normal aircraft procedures. ● Uses SA-building communications.

BEHAVIOR STATEMENT	STANDARDS
11. Composite Headwork/Situational Awareness	
<ul style="list-style-type: none"> ● Comply with the FTI, SOP, and NATOPS while maintaining SA sufficient for safety-of-flight and mission accomplishment. 	<ul style="list-style-type: none"> ● Understands instructions, demonstrations, and explanations. ● Foresees and avoids possible difficulties. ● Remains alert and spatially oriented.
12. Mission Commander Responsibilities	
<ul style="list-style-type: none"> ● Take charge of the mission in all aspects of planning and execution. 	<ul style="list-style-type: none"> ● Leads planning, briefing, and execution of the mission. ● Identifies contingencies and offers solutions to the crew. ● Obtains a groundspeed by calculating distance over time. ● Uses groundspeed to update estimated fuel at entry point or IAF as appropriate. ● Monitors fuel and directs deviations if needed to accomplish mission goals and land with adequate fuel reserve. <p><u>Composite</u></p> <ul style="list-style-type: none"> ● Prioritizes and delegates as necessary to direct all aspects of the mission from brief to debrief.

BEHAVIOR STATEMENT	STANDARDS
13. Ground Operations	
<ul style="list-style-type: none"> ● Prepare aircraft for flight. ● Provide backup for pilot between parking area and runway. <p><u>T-45C ATM</u></p> <ul style="list-style-type: none"> ● Perform formation ground procedures. 	<ul style="list-style-type: none"> ● Correctly and expeditiously performs exterior inspection and appropriate on-deck checklists without error or omission. ● Maintains an adequate lookout for ground traffic and other hazards. ● Directs taxi via cleared routing. <p><u>T-45C ATM</u></p> <ul style="list-style-type: none"> ● Performs appropriate section or division ground procedures as lead or wingman. ● Properly executes formation line and taxi procedures IAW FTI and local standards.
14. Engine Start	
<ul style="list-style-type: none"> ● Successfully complete NATOPS-directed procedures for each start sequence. 	<ul style="list-style-type: none"> ● Executes start procedures IAW NATOPS and local standardization.
15. Takeoff/Departure	
<ul style="list-style-type: none"> ● Safely navigate the aircraft during departure stage of flight. <p><u>T-45C ATM</u></p> <ul style="list-style-type: none"> ● Perform takeoff in parade formation. 	<ul style="list-style-type: none"> ● Ensures all ground checklists are complete prior to takeoff without error or omission. ● Correctly analyzes indications for runup checks. ● Directs compliance with departure procedures and ATC instructions. ● Safely navigates the aircraft during the departure stage of flight. ● Monitors aircraft airspeed, altitude, rate of climb, and fuel during the departure. <p><u>T-45C ATM</u></p> <ul style="list-style-type: none"> ● Determines whether conditions permit a section-go IAW FTI. ● Performs responsibilities based on formation position IAW FTI and SOP.

BEHAVIOR STATEMENT	STANDARDS
16. Publications and Chart Use	
<ul style="list-style-type: none"> ● Effectively utilize in-flight publications and charts. 	<ul style="list-style-type: none"> ● Accurately locates and utilizes flight information from appropriate flight publications. ● Navigates using appropriate high/low charts and approach plates.
17. Radar Work	
<ul style="list-style-type: none"> ● Select appropriate radar mode and antenna sector scan to enhance earliest target detection. 	<ul style="list-style-type: none"> ● Uses appropriate search increments IAW FTI and STAN. ● Correlates AIC target information with displayed radar information. ● Achieves and maintains best radar display (spotlight) when required or until radar track initiation. ● Troubleshoots radar effectively. ● Uses mode agility to achieve and maintain best radar display.
18. Radar Controls and Operation	
<ul style="list-style-type: none"> ● Manipulate the APG-66 radar to obtain a usable radar scope for navigation. 	<ul style="list-style-type: none"> ● Correctly executes ground mapping radar initialization. ● Adjusts range, antenna tilt, brightness, and gain to acquire the best navigation display and information 80 percent of the time.
19. Terrain Consideration/Integration	
<ul style="list-style-type: none"> ● Use radar or visually distinct terrain features as navigation aids. 	<ul style="list-style-type: none"> ● Uses terrain and selected cultural and noncultural features for radar/visual navigation to maintain position accuracy within 1 NM.
20. Radarscope Interpretation (RSI)	
<ul style="list-style-type: none"> ● Identify returns on a ground mapping radar scope. 	<ul style="list-style-type: none"> ● Differentiates between terrain features, cultural returns, far shore brightening, and lines of communications.

BEHAVIOR STATEMENT	STANDARDS
21. Instrument Scan and Lookout Doctrine	
<ul style="list-style-type: none"> ● Maintain instrument and visual scan, essential for safe operation and navigation. 	<ul style="list-style-type: none"> ● Monitors aircraft airspeed, altitude, and rate of climb/descent during all regimes of flight. ● Maintains a good scan for traffic, birds, and hazardous weather.
22. Visual Scan	
<ul style="list-style-type: none"> ● Keep visual scan mostly outside the cockpit for proper terrain, traffic, and hazard avoidance. 	<ul style="list-style-type: none"> ● Maintains an effective visual scan 90 percent outside the cockpit. ● Locates and notifies crew of checkpoints and hazards in a timely manner.
23. Descriptive Commentary	
<ul style="list-style-type: none"> ● Concise description to enhance crew situational awareness on a low-level route. 	<ul style="list-style-type: none"> ● Communicates to the crew the location of upcoming checkpoints (towers, roads, etc.). ● Provides a brief description of upcoming checkpoints and turnpoints/target. ● Alerts crew of the location and elevation of upcoming terrain in a timely manner IAW the FTI, SOP, and sound judgment.
24. Checkpoint Utilization/Correlation	
<ul style="list-style-type: none"> ● Use radar/visual checkpoints to determine aircraft position. 	<ul style="list-style-type: none"> ● Identifies radar checkpoints and uses angular math and range correlations to find turnpoints and the target. ● Determines geographic position from appropriate visual or radar references.
25. Enroute Procedures	
<ul style="list-style-type: none"> ● Perform procedures while flying between departure point and destination. 	<ul style="list-style-type: none"> ● Complies with applicable aircraft procedures enroute. ● Directs compliance with ATC instructions while enroute.

BEHAVIOR STATEMENT	STANDARDS
26. Course Corrections	
<ul style="list-style-type: none"> ● Use standard course corrections IAW FTI to maintain the specified course line. 	<ul style="list-style-type: none"> ● Timely and accurately applies procedures IAW FTI for course corrections. ● Directs course corrections using radar scope interpretations or visual references to an accuracy of 1 NM. ● Updates ETA to next turnpoint as appropriate.
27. Course Analysis	
<ul style="list-style-type: none"> ● Determine aircraft position in relation to intended course. 	<ul style="list-style-type: none"> ● Uses visual and radar checkpoints to determine position within 1 NM. ● If needed, determines amount of heading change to return to course.
28. Speed Corrections	
<ul style="list-style-type: none"> ● Use standard speed corrections IAW FTI. 	<ul style="list-style-type: none"> ● Timely and accurately applies procedures IAW FTI for speed corrections to an accuracy of 80 percent. ● Updates ETA to next turnpoint as appropriate. <p><u>T-45C ATM</u></p> <ul style="list-style-type: none"> ● Timely and accurately applies procedures IAW FTI for speed corrections. ● As lead, makes appropriate airspeed adjustments based on timing, ground references, and chart correlation. ● As wing, backs up lead to the same standard. ● Hits briefed or "rolexed" TOT within 15 seconds.

BEHAVIOR STATEMENT	STANDARDS
29. Timing	
<ul style="list-style-type: none"> ● Plan and execute the mission to hit the route entry point on briefed real-world time. ● Culmination of course and speed corrections to arrive at the target on time. 	<ul style="list-style-type: none"> ● Arrives at the target within ±30 seconds from preflight elapsed times or arrives at the target within ±30 seconds from preflight real-world time on target. ● Gives a time hack during brief. ● Analyzes total distance and total time left to formulate desired groundspeed to an accuracy of 80 percent.
30. Normal Cruise	
<ul style="list-style-type: none"> ● Perform normal cruise per BAW and BAR standards. 	<ul style="list-style-type: none"> ● Maintains aircraft within 100 feet, 10 KIAS, and 10° of planned, directed, or required altitude, airspeed, or heading. ● Appropriately directs use of power and attitude. ● Levels off within 100 feet of desired altitude. ● Maintains ±10 seconds of correct time as applicable.
31. Unusual Attitudes	
<ul style="list-style-type: none"> ● Perform unusual attitude recovery. 	<ul style="list-style-type: none"> ● Performs applicable procedures in the FTI. ● Nose high - recovery minimizes airspeed loss. ● Nose low - recovery minimizes altitude loss and airspeed buildup. ● Does not overstress or stall aircraft. ● Does not enter subsequent unusual attitude.

BEHAVIOR STATEMENT	STANDARDS
32. Penetration Descent	
<ul style="list-style-type: none"> ● Perform a penetration descent IAW NATOPS. 	<ul style="list-style-type: none"> ● Uses power of 75-80 percent RPM. ● Maintains speed of 250 KIAS ±10 KIAS. ● Sets speed brakes OUT.
33. Descent Control	
<ul style="list-style-type: none"> ● Use descent procedures (planned or unplanned) to control timing to the entry point. 	<ul style="list-style-type: none"> ● Uses the descent portion of flight to arrive at the entry point ±2 minutes of briefed time.
34. Radial Intercepts	
<ul style="list-style-type: none"> ● Intercept a radial and track inbound or outbound from a TACAN station. 	<ul style="list-style-type: none"> ● Calculates and performs a lead turn to intercept an inbound or outbound radial. ● Intercept tolerance is within 2°.
35. Holding	
<ul style="list-style-type: none"> ● Perform holding procedures. 	<ul style="list-style-type: none"> ● Correctly calculates initial heading on entry into the holding pattern. ● Maintains BAR standards throughout the holding pattern. ● Correctly uses timing or distances to determine lengths of holding legs. ● Correctly executes holding procedures IAW OPNAVINST 3710.7U.
36. Entry Point Acquisition	
<ul style="list-style-type: none"> ● Properly use radar, visual cues, and navigational aids to identify the route entry point. 	<ul style="list-style-type: none"> ● Acquires and flies to the entry point, using offsets as necessary to start the route on the desired outbound heading.

BEHAVIOR STATEMENT	STANDARDS
37. Turnpoint Procedures	
<ul style="list-style-type: none"> ● Procedures that help the student aviate, navigate, and communicate effectively during a mission. 	<p><u>Airways Navigation</u></p> <ul style="list-style-type: none"> ● Gives 2-minute-prior, on-top, and wings-level calls IAW FTI to an accuracy of 80 percent. ● Gives a wind-corrected outbound heading for a course. ● Updates navigation aids appropriately. <p><u>Radar/Visual Navigation</u></p> <ul style="list-style-type: none"> ● Gives 2-minute-prior, on-top, and wings-level calls IAW FTI to an accuracy of 80 percent. ● Gives a wind-corrected outbound heading for a course. ● Updates navigation aids appropriately. ● Abbreviated wings-level, checks heading, airspeed, and altitude, analyzes fuel, and dead reckons cursor as appropriate.
38. Low-Level Turnpoint Procedures	
<ul style="list-style-type: none"> ● Procedures that help the student aviate, navigate, and communicate effectively during a mission. 	<ul style="list-style-type: none"> ● Gives 2-minute-prior, on-top, and wings-level calls IAW FTI to an accuracy of 80 percent. ● 2-minute prior gives a wind-corrected outbound heading for a course. ● Updates navigation aids appropriately. ● Abbreviated wings-level, checks heading, airspeed, and altitude, and analyzes fuel when appropriate.

BEHAVIOR STATEMENT	STANDARDS
39. Composite Turnpoint Procedures	
<ul style="list-style-type: none"> ● Procedures that help the student aviate, navigate, and communicate effectively during a mission. 	<ul style="list-style-type: none"> ● When wings level after passing each preplanned turnpoint, analyzes fuel and updates ETA to next preplanned turnpoint to an accuracy of 80 percent.
40. Wind Analysis	
<ul style="list-style-type: none"> ● Acquire wind direction and speed using course trend and time analysis. 	<ul style="list-style-type: none"> ● Determines navigation course winds within 15° and ±10 knots by mathematical trend analysis. ● Adjusts and applies headings and speed to compensate for wind effects within 1° desired course and 5 knots desired groundspeed.
41. Wind Consideration	
<ul style="list-style-type: none"> ● Take winds in consideration using course/timing trend and ground reference consideration. 	<ul style="list-style-type: none"> ● Determines navigational course winds within 20° and ±10 knots using visual references or trend analysis. ● Applies crab and airspeed for headwinds and crosswinds correctly.
42. Fuel Management	
<ul style="list-style-type: none"> ● Maintain fuel awareness throughout flight. ● Keep track of fuel for all formation members. 	<ul style="list-style-type: none"> ● Monitors fuel status on deck at intended point of landing. ● Adjusts course or destination in order to satisfy applicable directives. ● As lead, keeps track of wingman's fuel state with appropriate fuel checks performed IAW FTI and local standards. ● As wing, ensures lead is aware of fuel state through compliance with fuel checks performed IAW FTI and local standards.

BEHAVIOR STATEMENT	STANDARDS
43. Change of Flight Plan/Divert	
<ul style="list-style-type: none"> ● Direct flight course and destination deviation as appropriate for weather, fuel, or emergencies. 	<ul style="list-style-type: none"> ● Contacts appropriate controller and requests deviations IAW OPNAVINST 3710.7U without error.
44. Target Acquisition	
<ul style="list-style-type: none"> ● Effective radarscope interpretation/visual scan, and correlation to identify the target and fly to it. 	<ul style="list-style-type: none"> ● Marks on top the target to an accuracy of $\pm 1/2$ NM. <u>Composite Strike Trainer or Flight</u> ● Marks on top the target. <u>Fighter</u> ● Marks on top the target to an accuracy of $\pm 1/2$ NM.
45. Target Aspect Control	
<p><u>Fighter Reattacks (R)</u></p> <ul style="list-style-type: none"> ● Perform attack/reattack intercepts using AIC information and airborne radar information in search and track modes. <p><u>Fighter Conversions (C)</u></p> <ul style="list-style-type: none"> ● Perform conversions' intercepts using AIC information and airborne radar information in search and track modes. <p><u>Fighter Advanced (A)</u></p> <ul style="list-style-type: none"> ● Perform advanced intercepts using AIC information and airborne radar information in search and track modes. 	<p><u>Fighter (R)</u></p> <ul style="list-style-type: none"> ● Determines cut, AO, and TA to establish collision course. ● Makes collision course corrections when required, based on TA analysis derived from AIC or radar information. <p><u>Fighter (C)</u></p> <ul style="list-style-type: none"> ● Determines necessary change in TA and LS based on TA/LS goal. ● Establishes proper heading and buster status IAW with briefed game plan. ● Reconverts as appropriate to influence proper change in TA/LS. <p><u>Fighter (C), (A)</u></p> <ul style="list-style-type: none"> ● Satisfies timeline/rules requirements IAW brief and FTI. <p><u>Fighter (A)</u></p> <ul style="list-style-type: none"> ● Determines TA and establishes proper heading and buster status IAW with briefed game plan. ● Manages weapons engagement zone to remain offensive.

BEHAVIOR STATEMENT	STANDARDS
46. Target Altitude Analysis/Correction	
<ul style="list-style-type: none"> ● Determine bogey altitude using radar and AIC information. 	<ul style="list-style-type: none"> ● Determines bogey altitude ±1000 feet from radar elevation information. ● Orders fighter climb or descent IAW briefed timeline.
47. Lead Control	
<ul style="list-style-type: none"> ● Establish proper lead point for FQ missile. 	<ul style="list-style-type: none"> ● Places bogey within 3° of proper lead point. ● Passes the dot IAW timeline. ● Determines and retains kill/VID status.
48. Displacement Turn	
<ul style="list-style-type: none"> ● Direct displacement turns in order to manage lateral separation for counterturn. 	<ul style="list-style-type: none"> ● Displaces bogey to proper AO IAW FTI. ● Displaces bogey at appropriate range or compensates for displacement behind timeline.
49. Rear Quarter Drift Control/Fox-2	
<ul style="list-style-type: none"> ● Establish AIM-9 missile firing position. 	<ul style="list-style-type: none"> ● Adjusts AOB and speed to arrive at timely F-2 solution. ● Passes the dot with 100 percent F-2 parameters met. ● Determines and retains kill/VID status.
50. Speed Control	
<ul style="list-style-type: none"> ● Maintain awareness of fighter speed and its tactical use. 	<ul style="list-style-type: none"> ● Applies timely buster IAW FTI. ● Maintains buster awareness, throttles back IAW FTI.

BEHAVIOR STATEMENT	STANDARDS
51. Descriptive Comm	
<ul style="list-style-type: none"> ● Build crew SA with timely and effective descriptive comm. 	<ul style="list-style-type: none"> ● Prioritizes directive over descriptive comm. <p><u>Fighter</u></p> <ul style="list-style-type: none"> ● Gives accurate angle-off, range, elevation, overtake (AREO) and other descriptive comm when appropriate. <p><u>T-45C ATM</u></p> <ul style="list-style-type: none"> ● Accurately describes flow and bogey maneuver to build tactical situational awareness.
52. Directive Comm	
<ul style="list-style-type: none"> ● Maneuver the jet as required with timely and effective directive comm. 	<ul style="list-style-type: none"> ● Effectively maneuvers aircraft utilizing directive comm. ● Prioritizes directive over descriptive comm.
53. AIC-Only Intercept	
<ul style="list-style-type: none"> ● Use AIC information to consummate successful intercept, in lieu of radar SA. 	<ul style="list-style-type: none"> ● Maintains intercept integrity by using AIC bearing information to effect proper collision course, TA control, displacement, and counterturns. ● Recognizes need to initiate supplemental information from AIC when appropriate.
54. Area Control	
<ul style="list-style-type: none"> ● Remain in confines of designated MOA or working area. 	<ul style="list-style-type: none"> ● Remains aware of aircraft position in designated working area. <p><u>Fighter</u></p> <ul style="list-style-type: none"> ● Orders appropriate separation vectors to accommodate area borders. <p><u>T-45C ATM</u></p> <ul style="list-style-type: none"> ● Directs headings and plans maneuvers to keep aircraft/section in the confines of the designated working area.

BEHAVIOR STATEMENT	STANDARDS
55. Counterturn Fundamentals	
<u>Fighter Counterturn (R), (C), (A)</u> <ul style="list-style-type: none"> ● Direct counterturn to arrive in bogey's RQ. 	<u>Fighter Counterturn (R), (C), (A)</u> <ul style="list-style-type: none"> ● Initiates counterturn at appropriate range IAW timeline. ● Compensates "cold" bogeys by appropriate use of buster. ● Anticipates 90-DTG position in order to expedite Fox-2 solution. ● Manages all aspects of the CT appropriately while spending the necessary time looking outside to gain tally. ● Maneuvers appropriately with the tally. ● Directs appropriate AOB to maintain required drift curve.
56. Merge/Forward Quarter Fox-2	
<ul style="list-style-type: none"> ● Maintain positional and tactical advantage by recognizing and reacting to extremely hot bogeys. 	<ul style="list-style-type: none"> ● Recognizes extremely hot bogeys and brings to fighter nose for FQ Fox-2. ● Determines and influences fighter's positional advantage at the merge. ● Makes appropriate decision to bug out or continue to prosecute bogey. ● Gains/maintains tally and maneuvers appropriately. ● Reacquires bogey on radar in timely fashion when required.

BEHAVIOR STATEMENT	STANDARDS
57. Tactical Situational Awareness	
<ul style="list-style-type: none"> ● Visualize fighter's position relative to the bogey. ● Properly assess the situation, prioritize, and take the proper course of action. ● Use all available information to recognize and direct the jet to a point of advantage. 	<ul style="list-style-type: none"> ● Manages geometry, speed, and altitude to gain and keep tactical advantage. ● Exercises missile constraint IAW bogey declaration. ● Uses intercockpit comm to enhance pilot/crew SA.
58. Conversion Counterturns	
<ul style="list-style-type: none"> ● Recognize and compensate bogey jinks in heading. 	<ul style="list-style-type: none"> ● Recognizes jinks in heading by bogey and directs appropriate AOB to maintain rate of closure gates.
59. Advanced Counterturns	
<ul style="list-style-type: none"> ● Recognize and compensate bogey jinks in heading. 	<ul style="list-style-type: none"> ● Appropriately compensates counterturn rate of closure gates for high/fast or low/slow bogeys.

BEHAVIOR STATEMENT	STANDARDS
60. Approach	
<ul style="list-style-type: none"> ● Navigate a published instrument approach, course rules, or other visual approach. ● Perform appropriate maneuvers to comply with radar vectors to TACAN final. ● Perform instrument approach IAW FTI, briefing, and local standards. 	<ul style="list-style-type: none"> ● Performs IAW FAR, OPNAVINST 3710.7U and TRAWING SIX SOP. ● Maintains ±1 NM on DME arcs. ● Complies with ATC instructions. ● Slows and configures aircraft for landing within 30° of final approach course and/or within 10 DME of runway threshold. ● Makes required altitude calls and safety checks. ● Maintains approach course within 2 radials. ● Maintains desired airspeed within 10 KIAS. ● Maintains assigned headings within 2°. ● Commences turns, roll-outs, and descents as directed without delay. ● Adheres to all altitude restrictions without deviation. "At or above" tolerance is 100 feet above and 0 feet below. ● Directs missed approach procedures IAW OPNAVINST 3710.7U.
61. Missed Approach	
<ul style="list-style-type: none"> ● Perform missed approach procedures. 	<ul style="list-style-type: none"> ● Executes missed approach instructions on reaching the missed approach point or determining that conditions exist that warrant a missed approach. ● Executes missed approach procedures IAW OPNAVINST 3710.7U.
62. Landing	
<ul style="list-style-type: none"> ● Perform responsibilities associated with landing. 	<ul style="list-style-type: none"> ● Directs safe landing aircraft IAW NATOPS and local procedures. ● Completes applicable aircraft checklists.

BEHAVIOR STATEMENT	STANDARDS
63. Engine Shutdown/Postflight	
<ul style="list-style-type: none"> ● Perform engine shutdown and postflight. 	<ul style="list-style-type: none"> ● Shuts down engines and performs postflight checks IAW NATOPS and local standardization.

T-45C ATM

BEHAVIOR STATEMENT	STANDARDS
64. Visual Lookout	
<ul style="list-style-type: none"> ● Keep visual on all formation members. ● Keep tally on all bandits in the engagement. ● Keep visual scan for any traffic/obstacles that are potential conflicts. 	<ul style="list-style-type: none"> ● Maintains visual and/or SA on all members of the formation. ● Maintains tally and/or SA on all bandits in the engagement. ● Understands and appropriately executes lost sight procedures. ● Keeps an active visual scan for any traffic/obstacles that are potential conflicts. ● Uses standard terminology and communication brevity.
65. Formation Communication and Hand Signals	
<ul style="list-style-type: none"> ● Use radio in multijet formation. ● Communicate using hand signals. 	<ul style="list-style-type: none"> ● Demonstrates proper use of hand signals. ● Demonstrates proper frequency change procedures.
66. Formation Coordination	
<ul style="list-style-type: none"> ● Perform appropriate coordination items within the section or division. 	<ul style="list-style-type: none"> ● Maintains SA on appropriate coordination requirements for the formation. ● Executes timely and accurate radio calls, formation changes, or other briefed items as required.

BEHAVIOR STATEMENT	STANDARDS
67. Engaging Turns	
<ul style="list-style-type: none"> ● Execute engaging turns IAW FTI procedures. 	<ul style="list-style-type: none"> ● Executes one of each required turn. ● Uses the turns properly to maneuver the section to the center of the working area. ● Makes all radio/ICS calls when required. ● Executes lookout IAW FTI.
68. Chart/Terrain Correlation	
<ul style="list-style-type: none"> ● Maintain SA and position on flight planned route as required. 	<ul style="list-style-type: none"> ● Maintains positional awareness during route of flight using clock, chart, and ground correlation.
69. Section Target Attack	
<ul style="list-style-type: none"> ● Perform section target attack IAW FTI, briefing, and local standards. 	<ul style="list-style-type: none"> ● Executes section target attack communications and crew coordination responsibilities IAW FTI, briefing, and local standards.
70. Rendezvous	
<ul style="list-style-type: none"> ● Safely effect formation join-up. 	<ul style="list-style-type: none"> ● Performs rendezvous responsibilities IAW FTI, briefing, and local standards. ● Monitors closure. ● Makes required airspeed calls.

BEHAVIOR STATEMENT	STANDARDS
71. Section Approach	
<ul style="list-style-type: none"> ● Perform a section approach. 	<ul style="list-style-type: none"> ● Performs maneuver safely from a lead or wing position IAW FTI, briefing, and local standards. ● Slows and configures section for landing within 30° of final approach course and/or within 10 DME of runway threshold. ● Performs missed approach procedures IAW OPNAVINST 3710.7U.
72. SUA/MTR Entry/Exit Procedures	
<ul style="list-style-type: none"> ● Perform entry/exit procedures for SUA or MTR IAW FTI, briefing, and local standards. 	<ul style="list-style-type: none"> ● Performs assigned duties during entry and exit from SUA or MTR. ● Contacts airspace control authority and uses appropriate comms to gain clearance to enter/exit controlled airspace. ● For MTR, contacts Flight Service Station and uses standard comms to enter and exit the route. ● For restricted area operations, contacts Range Authority for entry/exit clearance and uses appropriate comms IAW FTI and local standards. ● Directs adherence to published or directed entry/exit restrictions with respect to altitude, heading, airspeed, position, squawk, etc.
73. Weapons Pattern Attacks	
<ul style="list-style-type: none"> ● Perform division weapons pattern attack procedures IAW FTI, briefing, and local standards. 	<ul style="list-style-type: none"> ● Performs division weapons pattern attack procedures IAW FTI, briefing, and local standards.
74. Division Recovery	
<ul style="list-style-type: none"> ● Execute RTB procedures in a division. 	<ul style="list-style-type: none"> ● Appropriately executes applicable recovery procedures based on formation position.

BEHAVIOR STATEMENT	STANDARDS
75. Deck and Performance Awareness	
<ul style="list-style-type: none"> ● Maintain aircraft performance with respect to airspeed altitude and angle of attack. ● Prevent aircraft maneuvers below the established hard deck. 	<ul style="list-style-type: none"> ● Maintains awareness of the established hard deck during BFM engagements. ● Makes effective deck calls to pilot to direct deck avoidance. ● Maintains spatial orientation to prevent directing maneuvers that would cause aircraft flight below the established hard deck. ● Effectively directs and communicates aircraft performance state with respect to airspeed, altitude, and angle of attack. ● Maintains awareness of aircraft maneuvering envelope and directs maneuvers within maneuvering limitations.
76. Pursuit Curves (Lag, Pure, Lead)	
<ul style="list-style-type: none"> ● Display knowledge and performance of pursuit curves. 	<ul style="list-style-type: none"> ● Displays knowledge and effective use of lead, lag, and pure pursuit.
77. Offensive Maneuvering	
<ul style="list-style-type: none"> ● Demonstrate ability to fight the jet, beginning from a position of advantage. 	<ul style="list-style-type: none"> ● Begins each setup IAW FTI, briefing, and local standards. ● Uses standard terminology and communication brevity. ● Complies with training rules IAW OPNAVINST 3710.7U. ● Accomplishes timely execution of each maneuver to produce the desired effect. ● Records adequate notes for use in debrief. ● Executes appropriate knock-it-off/terminate procedures to ensure safe separation at the completion of the engagement.

BEHAVIOR STATEMENT	STANDARDS
78. Defensive Maneuvering	
<ul style="list-style-type: none"> ● Demonstrate ability to fight the jet, beginning from a position of disadvantage. 	<ul style="list-style-type: none"> ● Begins each setup IAW FTI, briefing, and local standards. ● Uses standard terminology and communication brevity. ● Complies with training rules IAW OPNAVINST 3710.7U. ● Accomplishes timely execution of each maneuver to produce the desired effect. ● Records adequate notes for use in debrief. ● Executes appropriate knock-it-off/terminate procedures to ensure safe separation at the completion of the engagement. ● Correctly analyzes and takes advantage of reversal opportunities on bandit overshoots.

BEHAVIOR STATEMENT	STANDARDS
79. 1 V 1 Neutral Engagements	
<ul style="list-style-type: none"> ● Demonstrate ability to fight the jet, beginning from a neutral position. 	<ul style="list-style-type: none"> ● Begins each setup IAW FTI, briefing, and local standards. ● Uses standard terminology and communication brevity. ● Complies with training rules IAW OPNAVINST 3710.7U. ● Executes sound BFM in relation to the bandit. ● Accomplishes timely execution of each maneuver to produce the desired effect. ● Recognizes and transitions to offensive/defensive BFM as appropriate, directing appropriate maneuvers with appropriate communication brevity. ● Records adequate notes for use in debrief. ● Executes appropriate knock-it-off/terminate procedures to ensure safe separation at the completion of the engagement.

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Chapter X

Master Materials List

Individually Issued Materials

<u>NOMENCLATURE</u>	<u>IDENTIFICATION</u>	<u>QTY PER STUDENT</u>
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Flight Training Instructions

- | | | |
|---|--------------|---|
| 1. All applicable T-39
Flight Training
Instructions | CNATRA P-XXX | 1 |
| 2. Advanced Naval
Flight Officer
(T-45C) FTI | CNATRA P-821 | 1 |

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