NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS
CIN Q-2A-0116, Q-2A-0216

CNATRAINST 1542.160
8 MAY 2009

CHIEF OF NAVAL AIR TRAINING

T-45 COMBINED STRIKE FLIGHT INSTRUCTOR TRAINING CURRICULUM

2009

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

CNATRAINST 1542.160
N715
08 MAY 09

CNATRA INSTRUCTION 1542.160

Subj: T-45 COMBINED STRIKE FLIGHT INSTRUCTOR TRAINING CURRICULUM

1. Purpose. To promulgate the curriculum for training Instructor Pilots in the T-45A and T-45C Intermediate and Advanced phases of training.

2. Cancellation. CNATRAINST 1542.127A and 1542.109B: Coordinated with Chief of Naval Air Training (CNATRA) Strike Pipeline Training Officer (PTO) for cancellation timing.

3. Background. The purpose of this instruction is to align Training Air Wing (TRAWING) ONE and TRAWING TWO instructor training and include the best elements from both T-45A and T-45C Instructor Under Training (IUT) Master Curriculum Guides. This combined IUT curriculum provides all ground training events required to train instructors in either the T-45A or T-45C aircraft. Simulator and aircraft events may be flown in either type of device or aircraft. This will allow instructors to obtain dual qualification at the discretion of the TRAWING Commander. Minimum requirements for Naval Air Training and Operating Procedures Standardization (NATOPS) qualification are listed in the applicable NATOPS Flight Manual. Requirements for qualification as an instructor in each aircraft are at the discretion of the TRAWING Commander. To the maximum extent possible, lectures and simulators for all stages were moved to the beginning of the stage/module. Changes include the addition of Operational Risk Management (ORM), Crew Resource Management (CRM), CNATRAINST 1500.4G and CNATRAINST 3710.13F lectures, a T-45A transition module, one Air Combat Maneuvering (ACM) flight, two weapons simulators, and one weapons flight. A Night Familiarization flight and Carrier Qualification Simulator were removed from the syllabus. The NATOPS check flight was moved to the end of Module 01.

4. Action. This instruction is effective on receipt. No changes will be made without written authorization by CNATRA.

5. Forms

a. The CNATRA-GEN forms may be obtained by submitting a DD Form 1348 to Commanding Officer, Naval Air Station (NAS), Pensacola Supply Department (Code 19560), Pensacola, Florida 32508, or through local SERVMARTs. Instructor Training Forms (ITFs) for this curriculum are computer generated by the Training

Integration Management System (TIMS) and will not be stocked in hard copy.

b. This system has been assigned a system form number of CNATRA 1542/2022. The CNATRA POC is CDR Tedd N. Muery, N715, DSN 861-3895 and fax DSN 861-3398.

JAMES A. CRABBE
Chief of Staff

LARGE FORMAT (8.5 X 11)
Distribution:
CNATRAINST 5215.1S
List I (A, B (5); O, R, T, U, (10))

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TRARON TWENTY-TWO (30)

LIST OF EFFECTIVE PAGES

Original 08 May 2009

Total number of pages is 164 consisting of the following:

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v – vi	0
vii/(viii blank)	0
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1	0
2 - 3	2
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SUMMARY OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	CHANGE DESCRIPTION	PAGES AFFECTED/ INITIALS
1	2/1/2010	Incorporated	3-4, iii-iv, 33, A-6
2	9/9/2010	Incorporated	3, iii, ix-xii, 2, 3, 5, 33, 36, 47, 49, 78, 88, A-6
3	1/12/2011	Incorporated	3, iii, 34-36, 38-41, 44, 46, 66

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COURSE DATA

1. Course Title. T-45 Combined Strike Flight Instructor Training Curriculum.

2. Course Identification Number. T-45C, Q-2A-0116, and T-45A Transition, Q-2A-0216.

3. Training Site/Course Data Processing (CDP) Code.

Naval Air Station (NAS) Meridian, Mississippi:

	TW-1	VT-7	VT-9
T-45C	06LE	06LF	06LG

Naval Air Station (NAS) Kingsville, Texas:

	TW-2	VT-21	VT-22
T-45C	06LH	06LJ	06LK
T-45A Transition	06LL	06LM	06LN

4. Course Status. Revision, implement upon receipt.

5. Course Mission. T-45 Combined Strike Flight Instructor Training is designed to provide designated aviators with the necessary instructional methodology and techniques to instruct undergraduate flight students in the Intermediate Jet, Advanced Strike, and Intermediate E-2/C-2 phases of flight training.

6. Prerequisite Training. Flight Instructor Training Course (FITC), Q-2B-0010.

7. Personnel and Ratings Eligible. Designated U.S. Navy, Marine, Coast Guard, Air Force, and foreign military aviators.

8. Physical Requirements. As specified in Chapter 15 of the Manual of the Medical Department.

9. Security Clearance Requirements. None.

10. NOBC/NEC Earned. None.

11. Obligated Service. Not applicable.

12. Follow-on Training. None.

13. Course Length (Initial Qualification)

	TW-1	TW-2
Training Days:	45.37	43.84
Calendar Days:	70.47	68.09
Calendar Weeks:	10.07	9.73

14. Class Capacity. Variable.

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

16. Course Curriculum Manager. Commander, TRAWING TWO, is overall T45TS Model Manager.

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

18. Quota Control. Chief of Naval Operations.

19. Primary Instructional Methods. Lecture, computer-assisted training, flight simulation, and airborne flight instruction.

20. Preceding Curriculum Data. This curriculum replaces 1542.109B and 1542.127A.

21. IUT Performance Measurement. In accordance with CNATRAINST 1500.4G.

22. Application of Standards to the Measurement of IUT Performance. Procedural knowledge and application must be in accordance with applicable directives and manuals. Final judgment regarding the satisfactory performance of any item or maneuver rests with the instructor pilot who is capable of assessing the environmental and systems factors affecting the condition under which the performance is measured.

23. Structure. The T-45 Combined Strike Flight Instructor Training Curriculum is divided into stages and categories:

NATOPS - NATOPS Stage

CAT I - Familiarization and Instrument Stages

CAT II - Formation, Night Familiarization, Night Formation, and NATOPS Qualification Stages

CAT III - Operational Navigation and Weapons Stages

CAT IV	-	Tactical Formation and Air Combat Maneuvering Stages
CQ	-	Carrier Qualification Stage
OCF	-	Out-of-Control Flight Stage
Transition	-	T-45A Transition

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ABBREVIATIONS

Definitions. The following is a list of abbreviations and acronyms used in the curriculum:

ACP	-	Armament Control Panel
ADC	-	Airborne Data Computer
ADI	-	Attitude Director Indicator
AGL	-	Above Ground Level
AOA	-	Angle of Attack
ASR	-	Airport Surveillance Radar
ATC	-	Air Traffic Control
ATF	-	Aviation Training Form
ATJ	-	Aviation Training Jacket
BIT	-	Built-in Test
BVR	-	Beyond Visual Range
CAI	-	Computer-Assisted Instruction
CCIP	-	Continuously Computed Impact Point
CDI	-	Course Deviation Indicator
CEP	-	Circular Error Probability
CNI	-	Communication, Navigation, Identification
CONTR AUG	-	Control Augmentation
CRM	-	Crew Resource Management
CQ	-	Carrier Qualification
CVN	-	Carrier
CWS	-	Centralized Warning System

DME	-	Distance Measuring Equipment
DP	-	Departure Procedure
DR	-	Dead Reckoning
ECA	-	Engine Control Amplifier
ECS	-	Environment Control System
EDP	-	Engine-Driven Pump
FC	-	Front Cockpit - Fly in front cockpit with a qualified flight instructor onboard providing instruction, assistance, or supervision.
FCLP	-	Field Carrier Landing Practice
FP	-	Flight Procedures
FTI	-	Flight Training Instruction
GCA	-	Ground-Controlled Approach
GINA	-	GPS/Inertial Navigation Assembly
GPS	-	Global Positioning System
GTS	-	Gas Turbine Starter
H	-	Hooded
HSI	-	Horizontal Situation Indicator
HUD	-	Head-Up Display
HYD	-	Hydraulic
IFF	-	Identification Friend or Foe
IFLOLS	-	Improved Fresnel Lens Optical Landing System
IFR	-	Instrument Flight Rules
IFT	-	Instrument Flight Trainer (2F137 - nonvisual)
ILS	-	Instrument Landing System

IMC	-	Instrument Meteorological Conditions
IP	-	Instructor Pilot
IROK	-	Inspect/Inflate, Release, Options, Koch Fittings
ITJ	-	Instructor Training Jacket
ITO	-	Instrument Takeoff
LAB	-	Laboratory/Practical Problem
LECT	-	Squadron Lecture
LOC	-	Localizer
LSO	-	Landing Signal Officer
MFD	-	Multi-Function Display
MIL	-	Mediated Interactive Lecture
NACES	-	Navy Aircrew Common Ejection Seat
NATOPS	-	Naval Air Training and Operating Procedures Standardization
NORDO	-	No Radio
NWS	-	Nose Wheel Steering
OBOGS	-	On-Board Oxygen Generating System
OFT	-	Operational Flight Trainer (2F138 - visual)
OLS	-	Optical Landing System
OPAREA	-	Operations Area
OPLAN	-	Operations Plan
OPS	-	Operations
PA	-	Precautionary Approach
PAR	-	Precision Approach Radar

PENCIL	-	Non-CAI Administered Examination
P/P	-	Partial Panel
QOD	-	Question of the Day
RAT	-	Ram Air Turbine
RC	-	Rear Cockpit - Fly in rear cockpit with a qualified flight instructor on board providing instruction, assistance, or supervision.
RECCE	-	Reconnaissance
RTB	-	Return to Base
SAR	-	Search and Rescue
S/B	-	Speed Brakes
Simo	-	Simultaneous Tracking
SNA	-	Student Naval Aviator
Solo	-	Fly without a qualified flight instructor.
SRT	-	Standard Rate Turn
TACAN	-	Tactical Air Navigation
UHF	-	Ultra High Frequency
VFR	-	Visual Flight Rules
VHF	-	Very High Frequency
VFQ	-	Visual Forward Quarter
VMC	-	Visual Meteorological Conditions
VOR	-	VHF Omnidirectional Range
WKBK	-	Workbook
WX	-	Weather
X	-	Check flight, simulator check event, or examination lesson

CURRICULUM GUIDELINES

1. Sequencing

a. General. The T-45 Combined Strike Flight Instructor Training Curriculum is comprised of categories and training stages which integrate academic instruction, flight support lessons, and simulator and aircraft instruction.

b. Guidelines. The IUT Course Map incorporates numerous branching, or sequencing alternatives, as well as hard prerequisites. Specific guidelines are as follows:

(1) NA-07S and NA-08 are not required for NATOPS qualification but are prerequisites for becoming a qualified instructor.

(2) Prior to the multiplane ON flights (ON-04 through ON-06X), the IUT must complete the TACF and WEP stages.

(3) Prior to the ACM stage (ACM-01 through ACM-11X), the IUT must complete the TACF stage.

2. Briefing and Debriefing. Adequate briefing time shall be provided and utilized.

a. Briefing. All briefs will be in accordance with the appropriate briefing guide. For multiplane events, the flight leader shall brief all flight members (i.e., instructors, observers, students, passengers, etcetera) in the briefing area. Although IUTs may be briefed early on techniques by their individual flight instructors, all members of the flight will be in attendance for the final “Conduct of flight” portion of the brief.

b. Debriefing. Timely debriefing of each simulator and flight event is an essential part of the learning process. All flight members will be present for the debrief. The minimum items that shall be covered in the debrief are:

(1) Overall review of the event plan in chronological order, citing completions, omissions, and deletions of prerequisite exercises.

(2) Attainment/nonattainment of aircraft control and mission performance standards.

(3) Specific comments on the IUT's teaching techniques when appropriate.

c. Designated Flight Leader. For all multiplane flights involving two or more flight instructors, the designated flight leader will be responsible for compliance with OPNAVINST 3710.7U and the provisions of paragraph 2a above. In all appropriate cases, the designated instructor shall retain the formation leader status as defined by OPNAVINST 3710.7U, paragraphs 3.5.2 and 3.5.4.

d. Aerobatic Maneuvers. Aerobatic maneuvers shall be conducted per OPNAVINST 3710.7U.

3. Schedule Limitations

a. NATOPS and Category I

(1) The IUT’s working day from first scheduled event to last on deck time should not exceed 12 hours.

(2) A minimum of 12 hours after landing shall elapse between the IUT’s last scheduled event and his first scheduled event the following day.

(3) The maximum workweek is six days followed by one day off, except as waived in writing by the TRAWING Commander.

(4) A maximum of two flights or three cross-country legs may be scheduled in one day.

(5) All night flights shall take off no earlier than 30 minutes after official sunset.

(6) 1.5 hours of nighttime and three night instrument approaches shall be accumulated prior to the IUT AN-03X. (These requirements must be met during aircraft flights.)

b. Subsequent Training. Schedule limitations of the workday and workweek shall be per local procedures.

4. Standardization. All simulator and flight events outlined herein shall be conducted per current CNATRA FTIs and applicable NATOPS manual. Standardization Evaluation (STANEVAL) of IUTs shall be executed at the direction of the TRAWING Commander. IUTs will normally be trained in the following order: ASI, NATOPS, and Category I. Follow-on training may be sequenced in any order after Category II. It is impractical to have all

flight instructors qualified in all stages of the curriculum. The curriculum is subdivided into categories to ensure flight instructor currency and proficiency. Instructors will normally be authorized to instruct in no more than two mission-oriented categories. This restriction of the instructor qualification will ensure an adequate instructional repetition rate. The squadron Commanding Officer may authorize more than two mission-oriented categories for those instructors who demonstrate exceptional proficiency and judgment as flight instructors.

The categories are as follows:

Category I (MOD 00/01): NA, BI, RI, FAM, AN

Category II (MOD 02): FORM, NFAM, NFORM

Category III (MOD 03): WEP, ON

Category IV (MOD 04): TACF, ACM

Carrier Qualification (CQ) Stage and the Out-of-Control Flight Stage are not considered part of a category and only designated, highly qualified, and experienced flight instructors will instruct in these stages.

Currency after initial qualification in the CQ stage shall be in accordance with the LSO NATOPS Manual. LSOs may complete CQ Stage any time after completing NATOPS Stage at the discretion of the TRAWING commander.

NOTE: Minimum requirements for Lead Safe CQ eligibility are 50 hours of instructional time, not to include hours from any previous Instructor tours, and a Division Lead qualification.

Additionally, for selectively retained graduates (SERGRADs), a shortened syllabus is provided due to recent flight experience in the T-45. The minimum events required are:

ENG-27 through ENG-30X
INAV-06 and INAV-07X
EMFP-01 through EMFP-11X
OCFFP-01 and -02X
NA-05, NA-07S, NA-08, NA-11, and NA-13SX
NATOPS-01X and NATOPS-02X
NA-14X
FAMFP-03X

FAM-03 through FAM-05X
BIFP-07X
BI-02 and BI-03X
RIFP-05X
RI-03 and RI-04X
ANFP-02X
IRFP-01 through IRFP-03X
AN-01 and AN-02X
NFAMFP-03X
NFAM-01X
FFP-06X and FFP-08X
FORM-01 through FORM-04X
NFFP-02X
NFORM-01 through NFORM-03X

5. Solo Restrictions. IUTs are prohibited from performing solo flights until they have successfully completed NATOPS Stage and possess a current instrument rating. Night solo flights require an operating radar altimeter.

6. Administration

a. Instructor Training Forms (ITFs)

(1) CNATRA ITF will be completed for each curriculum flight/simulator event.

(2) Instructors omitting items from a flight called for in the curriculum shall note the omission in the remarks section.

(3) Check flights will be noted as such on the ITF.

b. Instructor Training Jacket (ITJ)

(1) ITJs will include ITFs of all qualified stages, standardization checks, and individual qualifications, such as section and division leader qualifications.

(2) ITJs will be submitted to the TRAWING Commander for review prior to the IUT’s training in subsequent categories.

c. Warmup Flights. Warmup flights shall be given as necessary to regain flight proficiency after prolonged delays in training at the discretion of the TRAWING Commander.

d. Extra Time Events. Extra time flight and simulator instruction shall be given at the discretion of the TRAWING Commander.

e. Instructor Assignment. Squadron/Wing standardization instructors for that stage will instruct IUTs.

f. Instrument Rating. IUTs in need of instrument rating refresher training will receive the necessary training per OPNAVINST 3710.7U prior to solo flight and prior to becoming a designated flight instructor.

7. Waiving Flight or Simulator Events. The flight and simulator events listed are the optimum to be completed. Training events may be waived or combined at the discretion of the TRAWING Commander. No portion of NATOPS (NA) stage may be waived.

8. Incomplete Flight Events. Incomplete events may be completed during the following event if time and fuel are available.

9. Emergency Procedures. Knowledge and response to emergency procedures will be evaluated through simulated emergencies conducted during individual stage simulator flights.

10. Weather Minimums and Requirements

STAGE WEATHER REQUIREMENTS

FAM	Local weather minimums for touch-and-go landings and adequate reference for aerobatic maneuvers, clear of clouds.
OCF	ACM weather requirements. Max cloud tops 5000 feet AGL.
BI/RI/AN	OPNAV minimums.
FORM	OPNAV minimums. A maximum of two events may utilize TACAN circling minimums with suitable alternate and VFR on top. At least two events shall utilize local weather adequate for running rendezvous and VFR formation recovery.
NFAM	Local minimums for touch-and-go landings. No ceiling below enroute flight altitude and not less than five miles visibility on navigation route.

NFORM	OPNAV minimums.
ON	3000/5 on the route.
ON-04/05	8000/5 on the route.
WEP	10,500/5, 30-degree pattern; 8500/5, 20-degree pattern; 5000/5, 10-degree pattern.
TACF	OPNAV minimums.
ACM	OPNAV minimums. WX in OPAREA in accordance with CNATRA training rules.
CQ (FCLP)	Local weather minimums for FCLP.
CQ (SHIP)	As directed by the TRAWING Commander and as outlined in CNATRA CARQUAL OPLAN.

11. Flight/Simulator Interchangeability. Flight and simulator events may not be interchanged without approval of CNATRA. Flight and simulator events may be conducted in either T-45A or T-45C aircraft or devices at the discretion of the TRAWING Commander.

12. Definitions. The following terms and symbols found in the curriculum will be applied to flight instruction as defined below:

a. Discuss

Instructor:	Quiz the IUT on the applicable procedures, systems, or maneuvers.
IUT:	Responsible for knowledge of the procedures prior to the event brief.
Item:	Graded with an “X” by the instructor in the grade columns on the ITF, labeled “E” in the “ID” column. If this is not available on the ITF, they should be graded in the most appropriate area (e.g., HW, PROC, or BAW).

b. Brief

Instructor: Brief the IUT on the applicable procedures.

IUT: Responsible for knowledge of the procedures prior to the event brief.

Item: Not graded, but marked with “BRF” by the instructor in the grade columns on the ITF, labeled “B” in the “ID” column.

c. Demonstrate

Instructor: Perform maneuver with precision and accompanying description.

IUT: Responsible for knowledge of the procedures prior to the event brief and observes the maneuver.

Item: Not graded, but marked with “DEMO” by instructor in the grade columns on the ITF, labeled “D” in the “ID” column.

d. Introduce

Instructor: Coaches the IUT through the maneuver as necessary, and/or may demonstrate the maneuver.

IUT: Responsible for knowledge of the procedures prior to event brief and performs the maneuver with coaching as necessary.

Item: Graded with an “X” by the instructor in the grade columns on the ITF, labeled “I” in the “ID” column.

e. Practice

Instructor: Observe the IUT with minimal coaching; may also demonstrate the maneuver if necessary.

IUT: Must perform maneuver with minimal assistance.

Item: Graded with an “X” by the instructor in the grade columns on the ITF, labeled “P” in the “ID” column.

f. Review

Instructor: Observe and grade the maneuver without coaching; airborne critique is encouraged.

IUT: Expected to perform without coaching and devoid of procedural errors. The level of performance must warrant progression to the next stage or phase of training.

Item: Graded with an “X” by the instructor in the grade columns on ITF, labeled “R” in the “ID” column.

g. Nongraded

Instructor: Observe maneuver; item will be graded only if performed above average, below average, or unsatisfactory.

IUT: Expected to perform the maneuver without coaching and devoid of procedural errors. The level of performance must warrant progression to the next stage or phase of training.

Item: Not graded, but marked with “NG” by the instructor in the grade columns on the ITF, labeled “NG” in the “ID” column, if the IUT’s performance is average. Graded with an “X” in the appropriate grade column if the IUT’s performance for the maneuver was other than average.

h. Did Not Do

Instructor: A required item on the ITF, which was not done or completed for various reasons (i.e., weather, aircraft malfunctions, etcetera).

IUT: Maintain and present a copy of the ITF to the instructor of the next like event so the next instructor is clear about all PGI/DND item(s).

Item: Not graded, but marked with "DND" by the instructor in the grade columns on the ITF. If the event is incomplete, an associated remark is required. One incomplete item constitutes an incomplete event. Every item previously marked "DND" shall be either graded appropriately, or marked "DND" if incomplete again.

i. Not Applicable

Item: Not graded, but marked with "NA" by the instructor in the grade columns on the ITF. This is used ONLY for items in the following two different cases:

(1) Labeled "Optional" on the ITF or its equivalent.

(2) On authorized compressed/waived set of flight events compressed into one flight/ event (e.g., IUT Curriculum, etc.).

In both of these two cases, the event shall be considered complete. If not within these two categories, it is considered incomplete; refer to and use "DND" instead.

j. Previously Graded Item

Instructor: A maneuver previously graded on an incomplete event. The item may be flown if fuel/time permit or if required to accomplish the previously "DND" item(s) (e.g., Ground Procedures, Taxi, Takeoff, etcetera). If the IUT's performance is anything other than average on any previously graded item, it shall be graded again.

IUT: If required, performs the maneuver again, expected to do so at the level shown in the "ID" column.

Item: Not graded, but marked with "PGI" by the instructor on the ITF in the appropriate grade column if the IUT's performance for that item was average or if it was not performed again.

Graded with an "X" by the instructor on the ITF in the appropriate grade column if the IUT's performance for that item was other than average.

k. Not Observed

Instructor: Normally used for student solo events. Instructor shall brief IUT thoroughly to ensure preparedness.

IUT: Expected to perform the maneuver as briefed to the skill level stipulated in the review description above.

Item: Not graded, but marked with "NOB" by the ODO/FDO/RDO/SODO on the ITF.

Graded with an "X" in the appropriate grade column as observed by a qualified instructor (i.e., ODO, FDO, RDO, SODO, Section/Division Leader, etcetera), if the IUT's performance for the maneuver was other than average.

l. "S"-Coded Flights

Student instructional flights designated by the "S" (e.g., BI-01S) are flown in the flight simulator.

13. Modifying Instructor Training Curriculum. The T-45 Combined Strike Flight Instructor Training Curriculum was developed to provide the average fleet tactical aviator with the skills necessary to become an effective flight instructor. Modifications to this curriculum may be necessary to individualize the training needs of non-tactical aviators, aviators returning from non-flying billets, or others lacking the skills required to successfully complete an IUT stage.

14. Training Time Out. Anytime an IUT or instructor has apprehensions concerning his or her personal safety or that of another, he or she shall signal for a “Training Time Out” to clarify the situation and receive or provide additional instruction. “Training Time Out” signals, other than verbal, shall be appropriate to the training environment and clearly briefed.

15. Quality Assurance. Prior to stage completion and subsequent designation, each IUT shall successfully pass a Standardization Examination (StanExam) covering that stage.

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SECTION I

TRAINING SUMMARY

1. Training Hour Summary

FLIGHT TRAINING HOURS

STAGE	TOTAL FLIGHTS	TOTAL HOURS	DUAL FLIGHTS	DUAL HOURS	SOLO FLIGHTS	SOLO HOURS
NA	8	12.0	8	12.0	0	0.0
FAM	3	4.5	3	4.5	0	0.0
BI	2	3.0	2	3.0	0	0.0
RI	2	3.0	2	3.0	0	0.0
AN	3	4.0	3	4.0	0	0.0
Mod 00→01 subtotals	18	26.5	18	26.5	0	0.0
FORM	4	6.0	4	6.0	0	0.0
NFAM	1	1.4	1	1.4	0	0.0
NFORM	3	4.5	3	4.5	0	0.0
ON	5	6.4	5	6.4	0	0.0
WEP	6	7.7	6	7.7	0	0.0
TACF	4	5.6	4	5.6	0	0.0
ACM	11	12.1	10	11.0	1	1.1
CQ	8	10.7	2	4.8	6	5.9
OCF	1	1.0	1	1.0	0	0.0
TOTALS	61	81.9	54	74.9	7	7.0

T-45A TRANSITION
FLIGHT TRAINING HOURS

STAGE	TOTAL FLIGHTS	TOTAL HOURS	DUAL FLIGHTS	DUAL HOURS	SOLO FLIGHTS	SOLO HOURS
NA	8	11.3	8	11.3	0	0.0
TOTALS	8	11.3	8	11.3	0	0.0

SIMULATOR TRAINING HOURS

STAGE	TOTAL EVENTS	TOTAL HOURS	OFT EVENTS	OFT HOURS	IFT EVENTS	IFT HOURS
CO	2	3.0	2	3.0	0	0.0
NA	6	9.0	6	9.0	0	0.0
FAM	2	3.0	2	3.0	0	0.0
BI	1	1.5	1	1.5	0	0.0
RI	2	3.0	2	3.0	0	0.0
Mod 00→01 subtotals	13	19.5	13	19.5	0	0.0
ON	1	1.5	1	1.5	0	0.0
WEP	3	3.5	3	3.5	0	0.0
CQ	2	3.0	2	3.0	0	0.0
OCF	1	1.0	1	1.0	0	0.0
TOTALS	20	28.5	20	28.5	0	0.0

T-45A TRANSITION
SIMULATOR TRAINING HOURS

STAGE	TOTAL EVENTS	TOTAL HOURS	OFT EVENTS	OFT HOURS	IFT EVENTS	IFT HOURS
NA	3	4.5	3	4.5	0	0.0
TOTALS	3	4.5	3	4.5	0	0.0

FLIGHT SUPPORT HOURS

STAGE	SYMBOL	T-45C PERIOD	T-45C HOURS
Crew Resource Management	CRM	1	3.0
Course Rules	CR	2	3.0
NACES Flight Physiology	SEAT	1	2.0
Cockpit Orientation	CO	7	6.8
Emergency Procedures	EMFP	11	14.7
Operational Risk Management	ORM	1	1.0
Out-of-Control Flight	OCFFP	2	2.0
NATOPS Examination	NATOPS	2	4.0
Familiarization	FAMFP	3	4.5
Basic Instruments	BIFP	7	7.6
Radio Instruments	RIFP	5	5.5
Airways Navigation	ANFP	2	3.5
Instrument Rating	IRFP	3	4.0
Formation	FFP	6	5.5
Night Familiarization	NFAMFP	3	3.5
Subtotals (MOD 00 through 01)		56	70.6
Formation	FFP	2	2.5
Night Formation	NFFP	2	2.2
Night Familiarization	NFAMFP	1	0.5
Operational Navigation	ONFP	6	7.1
Weapons	WEPFP	5	4.7
Tactical Formation	TFFP	4	4.7
Air Combat Maneuvering	ACMFP	7	8.3
Carrier Qualification	CQFP	6	8.7
TOTALS		89	109.3

T-45A TRANSITION
FLIGHT SUPPORT HOURS

STAGE	SYMBOL	T-45A PERIOD	T-45A HOURS
NATOPS Examination	NATOPS	3	5.0
TOTALS		3	5.0

ACADEMIC INSTRUCTION HOURS

STAGE	SYMBOL	T-45C PERIOD	T-45C HOURS
Aviation Student Indoctrination	ASI	9	10.5
Engineering	ENG	31*	35.8*
Aerodynamics	AERO	6	6.5
Instrument Navigation	INAV	7	7.4
TOTALS		53*	60.2*

* Academic hours include optional Engineering event.

T-45A TRANSITION
ACADEMIC INSTRUCTION HOURS

STAGE	SYMBOL	T-45A PERIOD	T-45A HOURS
Engineering	ENG	1	3.0
TOTALS		1	3.0

NOTE: IUTs without previous ONAV training will also attend ONAV academics IAW CNATRAINST 1542.159 to qualify for ON stage.

2. Training Allocation by Module

MOD	FLIGHT HOURS	FLIGHT EVENTS	SIMULATOR HOURS	SIMULATOR EVENTS	FLIGHT SUPPORT HOURS T-45C	ACADEMICS HOURS T-45C
00	10.5	7	12.0	8	63.1	58.7*
01	16.0	11	7.5	5	7.5	0.0
02	11.9	8	0.0	0	4.7	0.0
03	14.1	11	5.0	4	12.3	1.5
04	17.7	15	0.0	0	13.0	0.0
05	10.7	8	3.0	2	8.7	0.0
06	1.0	1	1.0	1	0.0	0.0
TOTALS	81.9	61	28.5	20	109.3	60.2*

*Academic hours include optional event.

T-45A TRANSITION

MOD	FLIGHT HOURS	FLIGHT EVENTS	SIMULATOR HOURS	SIMULATOR EVENTS	FLIGHT SUPPORT HOURS T-45A	ACADEMICS HOURS T-45A
07	11.3	8	4.5	3	5.0	3.0
TOTALS	11.3	8	4.5	3	5.0	3.0

3. Training Time Analysis

a. Additional Curriculum Time. The following table shows the additional training time involved for each programmed curriculum hour, flight or simulator event. The figures represent the average additional time an IUT is involved in the direct learning process. Training time is expressed in curriculum time, not calendar days or calendar weeks.

ADDITIONAL TRAINING TIME
PER PROGRAM CURRICULUM HOUR (ch) or EVENT (e)

Training Area	Preparation and Study	Brief and Debrief	Preflight Start/Taxi	Total(k)
Flight	1.0	1.75	0.5	3.25*
Simulator	1.0	1.00		2.00*
Academic and Flight Support**	0.5			0.50***

* Additional training time per event
** Self-preparation and study time for academic and flight support may include audio-visual training aids.
*** Additional training time per curriculum hour

b. Administrative Time. Transit time from activity to activity, meals, scheduling delays, and military watchstanding duties are not considered. The IUT training week is based on 6 hours of training per day, 5 days a week (30 hours).

c. TW-1 Modules 00 Through 01 Time-to-Train

Training Area		Training Days
Flight:	18 events	22.68
Simulator:		
OFT	13 events	6.89
Academic:	55.7 hours	6.96
Flight Support:	70.6 hours	8.82
IP Designation Time	11 calendar days	7.08
Time-to-Train (Tt)		45.37 Training Days

The conversion of time-to-train to an approximation of calendar days can be calculated using the following formula:

$$\frac{\text{Tt}}{\text{working days/days per year}} = \text{Approximate calendar days}$$

$$\frac{45^*}{235/365} = 70.47 \text{ calendar days}^* \quad \frac{70.47}{7} \text{ Days} = 10.07 \text{ calendar weeks}$$

*Days rounded to next whole day.

d. TW-2 Modules 00 Through 01 Time-To-Train

Training Area		Training Days
Flight:	18 events	20.76
Simulator:		
OFT	13 events	6.91
Academic:	58.7 hours	7.33
Flight Support:	70.6 hours	8.82
IP Designation Time	11 calendar days	7.08
Time-to-Train (Tt)		43.84 Training Days

The conversion of time-to-train to an approximation of calendar days can be calculated using the following formula:

$$\frac{\text{Tt}}{\text{working days/days per year}} = \text{Approximate calendar days}$$

T–45C:

$$\frac{44^*}{235/365} = 68.09 \text{ calendar days}^* \quad \frac{68.09}{7} \text{ Days} = 9.73 \text{ calendar weeks}$$

*Days rounded to next whole day.

4. Module Summary. The IUT will be required to complete Modules 00 and 01 and NA-14X prior to being designated as a flight instructor. Eng-31, Module 00, is for TRAWING TWO only.

MODULE	FLIGHTS	SIMULATORS	FLIGHT SUPPORT	ACADEMIC
00 (NATOPS)				
	NA-04 - NA-06 NA-08 NA-10 - NA-12	CO-07S - CO-08S NA-01S - NA-03S NA-07S NA-09S NA-13SX	CR-01 - CR-02X SEAT-01 CRM-01 ORM-01 CO-01 - CO-06 CO-09 EMFP-01 - EMFP-11X BIFP-01 - BIFP-07X FAMFP-01 - FAMFP-03X RIFP-01 - RIFP-05X OCFFP-01 - OCFFP-02X FFP-01 - FFP-06X NFAMFP-01 - NFAMFP-03X NATOPS-01X - NATOPS-02X	ASI-01 - ASI-04 ENG-01 - ENG-31 AERO-01 - AERO-06 INAV-01 - INAV-07X ASI-05 - ASI-08
01 (Familiarization, Instruments)				
	FAM-03 - FAM-05X BI-02 - BI-03X RI-03 - RI-04X AN-01 - AN-03X NA-14X	FAM-01S - FAM-02S BI-01S RI-01S - RI-02S	ANFP-01 - ANFP-02X IRFP-01 - IRFP-03X	

MODULE	FLIGHTS	SIMULATORS	FLIGHT SUPPORT	ACADEMIC
02 (Formation, Night Familiarization, Night Formation, NATOPS)				
	FORM-01 - FORM-04X NFAM-01X NFORM-01 - NFORM-03X		FFP-07 - FFP-08X NFFP-01 - NFFP-02X	
03 (Operational Navigation, Weapons)				
	ON-02 - ON-03X WEP-04 - WEP-09X ON-04 - ON-06X	ON-01S WEP-01S - WEP-03S	NFAMFP-04 ONFP-01 - ONFP-06 WEPFP-01 - WEPFP-05X	ASI-09
04 (Tactical Formation, Air Combat Maneuvering)				
	TACF-01 - TACF-04X ACM-01 - ACM-11X		TFFP-01 - TFFP-04X ACMFP-01 - ACMFP-07X	
05 (Carrier Qualification)				
	CQ-03 - CQ-10X	CQ-01S - CQ-02S	CQFP-01 – CQFP-06X	
06 (Out-of-Control Flight)				
	OCF-02X	OCF-01S		
07 (T-45A Transition)				
	NA-17 – NA-23 NA-25X	NA-15S – NA-16S NA-24SX	NATOPS-03X NATOPS-04X NATOPS-05X	ENG-32

5. Curriculum Outline

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MODULE 00

ACADEMICS AND NATOPS QUALIFICATION STAGES

OBJECTIVE. Provide the IUT with a comprehensive academic base of knowledge in T-45C Systems (Engineering), T-45C specific Aerodynamics, Meteorology, Instrument Navigation, Course Rules, NACES Flight Physiology, Crew Resource Management, Operational Risk Management, and a complete NATOPS simulator/flight training syllabus.

Includes: Aviation Student Indoctrination (ASI-01 through ASI-08); Engineering (ENG-01 through ENG-31); Aerodynamics (AERO-01 through AERO-06); Instrument Navigation (INAV-01 through INAV-07X); Course Rules (CR-01 and CR-02X); NACES Flight Physiology (SEAT-01); Crew Resource Management (CRM-01); Operational Risk Management (ORM-01); Cockpit Orientation lessons and simulators (CO-01 through CO-09); Emergency Flight Procedures (EMFP-01 through EMFP-11X); Basic Instrument Flight Procedures (BIFP-01 through BIFP-07X); Radio Instrument Flight Procedures (RIFP-01 through RIFP-05X); Familiarization Flight Procedures (FAMFP-01 through FAMFP-03X); Night Familiarization Flight Procedures (NFAMFP-01 through NFAMFP-03X); Formation Flight Procedures (FFP-01 through FFP-06X); Out-of-Control Flight Procedures (OCFFP-01 and OCFFP-02X); NATOPS simulators and flights (NA-01S through NA-13SX); and NATOPS exams (NATOPS-01X and NATOPS-02X).

NOTE: ASI can be completed in any sequence. ASI-02 must be completed prior to ENG-03.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-01	LECT	ASI-01	GROUND RULES	0.3
00-02	LECT	ASI-02	INTRODUCTION TO TIMS (LOG ON/OFF; SCHEDULES; SNIVELS; MESSAGES)	1.0
00-03	LECT	ASI-03	INTRODUCTION TO CAI	0.5
00-04	MIL	ASI-04	INTRODUCTION TO IFT/OFT	1.5
00-05	MIL	ENG-01	INTRODUCTION TO T-45 CONFIGURATION	1.3
00-06	MIL	ENG-02	ELECTRICAL SYSTEM	1.3

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-07	CAI	ENG-03	ELECTRICAL SYSTEM MALFUNCTIONS	0.7
00-08	MIL	ENG-04	ENGINE AND RELATED SYSTEMS	1.5
00-09	CAI	ENG-05	ENGINE AND RELATED SYSTEMS MALFUNCTIONS	1.4
00-10	CAI	ENG-06	ENGINE SYSTEM MALFUNCTIONS	0.7
00-11	MIL	ENG-07	AIRCRAFT FUEL SYSTEM	0.9
00-12	CAI	ENG-08	FUEL SYSTEM MALFUNCTIONS	0.5
00-13	MIL	ENG-09	HYDRAULIC SYSTEM	1.0
00-14	CAI	ENG-10	HYDRAULIC SYSTEM MALFUNCTIONS	1.0
00-15	MIL	ENG-11	HYDRAULIC SUBSYSTEMS	1.8
00-16	CAI	ENG-12	HYDRAULIC SUBSYSTEMS MALFUNCTIONS	1.0
00-17	MIL	ENG-13	FLIGHT CONTROL SYSTEM	1.3
00-18	CAI	ENG-14	FLIGHT CONTROL SYSTEM MALFUNCTIONS	0.7
00-19	MIL	ENG-15	EGRESS SYSTEM	1.0
00-20	CAI	ENG-16	EGRESS SYSTEM MALFUNCTIONS	0.5
00-21	MIL	ENG-17	OBOGS AND ECS/PRESSURIZATION SYSTEMS	0.9
00-22	CAI	ENG-18	OBOGS AND ECS/PRESSURIZATION SYSTEM MALFUNCTIONS	0.5
00-23	MIL	ENG-19	FLIGHT INSTRUMENTS	1.3
00-24	CAI	ENG-20	FLIGHT INSTRUMENTS MALFUNCTIONS	0.8
00-25	MIL	ENG-21	CNI SYSTEM	1.7
00-26	CAI	ENG-22	CNI SYSTEM MALFUNCTIONS	1.0
00-27	MIL	ENG-23	OTHER T-45 SYSTEMS	1.0

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-28	MIL	ENG-24	INS/GPS OPERATIONS AND CONCEPTS	1.5
00-29	CAI	ENG-25	DISPLAY SYSTEM AND MALFUNCTIONS	1.5
00-30	MIL	ENG-26	ENGINE START PROCEDURES	1.0
00-31	CAI	ENG-27	ENGINEERING REVIEW	2.0
00-32	MIL	ENG-28	ENGINEERING REVIEW	1.0
00-33	CAI	ENG-29X	ENGINEERING BLOCK EXAMINATION	1.0
00-34	CAI	ENG-30X	ENGINEERING BLOCK EXAMINATION	1.0
00-35	LECT	ENG-31	T-45A/C DIFFERENCES BRIEF (TW-2 only)	3.0
00-36	CAI	AERO-01	GENERAL AERODYNAMICS REVIEW	0.5
00-37	MIL	AERO-02	HIGH-SPEED FLIGHT	1.0
00-38	MIL	AERO-03	SLOW-SPEED FLIGHT, STALL AND SPIN, AND AOA SYSTEM	1.5
00-39	MIL	AERO-04	STABILITY	0.5
00-40	CAI	AERO-05	THRUST AND THRUST CURVE REVIEW	0.5
00-41	MIL	AERO-06	PERFORMANCE CHARTS	2.5
00-42	MIL	INAV-01	INTRODUCTION TO INAV	1.0
00-43	MIL	INAV-02	DEPARTURE AND TERMINAL PROCEDURES	0.8
00-44	CAI	INAV-03	INTERPRETATION OF HIGH ALTITUDE INSTRUMENT APPROACH PLATES	0.8
00-45	MIL	INAV-04	FLIGHT PLANNING (DEPARTURE AND ENROUTE)	1.5
00-46	LAB	INAV-05	PRACTICAL PROBLEMS	1.5
00-47	MIL	INAV-06	INAV REVIEW	0.8

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-48	CAI	INAV-07X	INSTRUMENT NAVIGATION BLOCK EXAMINATION	1.0
00-49	MIL	CR-01	COURSE RULES	2.0
00-50	CAI	CR-02X	COURSE RULES STAGE EXAMINATION	1.0
00-51	MIL	SEAT-01	NACES FLIGHT PHYSIOLOGY	2.0
00-52	MIL	CRM-01	CREW RESOURCE MANAGEMENT	3.0
00-53	LECT	ORM-01	OPERATIONAL RISK MANAGEMENT	1.0
00-54	LECT	CO-01	EJECTION SEAT LECTURE/NACES PREFLIGHT	1.0
00-55	CAI	CO-02	ENGINE START AND POSTSTART	1.0
00-56	CAI	CO-03	MULTI-FUNCTION DISPLAY AND NAVIGATION SYSTEM OPERATION	1.2
00-57	CAI	CO-04	DISPLAY SYSTEM (HUD)	0.8
00-58	CAI	CO-05	WAYPOINT NAVIGATION PROCEDURES	1.2
00-59	MIL	CO-06	VELOCITY VECTOR	1.0
00-60	LECT	ASI-05	INTRODUCTION TO TIMS, PART 2 (CURRICULUM; YELLOW SHEETS; ATFs; COURSEMAPS)	1.0
00-61	OFT	CO-07S	COCKPIT ORIENTATION SEVEN SIMULATOR	1.5
00-62	OFT	CO-08S	COCKPIT ORIENTATION EIGHT SIMULATOR	1.5
00-63	CAI	CO-09	EXTERIOR PREFLIGHT CHECKS	0.6
00-64	MIL	EMFP-01	START, GROUND, AND TAKEOFF EMERGENCY PROCEDURES	1.5
00-65	CAI	EMFP-02	START, GROUND, AND TAKEOFF EMERGENCY PROCEDURES	1.5

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-66	MIL	EMFP-03	OPERATIONAL AND EJECTION EMERGENCY PROCEDURES (INCLUDES WORKBOOK)	1.0
00-67	MIL	EMFP-04	ENGINE AND HYDRAULIC EMERGENCY PROCEDURES	1.5
00-68	CAI	EMFP-05	ENGINE AND HYDRAULIC EMERGENCY PROCEDURES	1.5
00-69	CAI	EMFP-06X	EMERGENCY FLIGHT PROCEDURES EXAMINATION ONE	1.0
00-70	MIL	EMFP-07	CANOPY AND FLIGHT CONTROL EMERGENCY PROCEDURES (INCLUDES WORKBOOK)	1.0
00-71	MIL	EMFP-08	ELECTRICAL AND INDICATOR EMERGENCY PROCEDURES	1.7
00-72	CAI	EMFP-09	ELECTRICAL AND INDICATOR EMERGENCY PROCEDURES	1.5
00-73	MIL	EMFP-10	OPERATIONAL AND LANDING EMERGENCY PROCEDURES (INCLUDES WORKBOOK)	1.5
00-74	CAI	EMFP-11X	EMERGENCY FLIGHT PROCEDURES EXAMINATION TWO	1.0
00-75	LECT	ASI-06	INTRODUCTION TO TIMS, PART 3 (UNSATISFACTORY/DELINQUENT/ INCIDENT SUMMARY; REPORTS)	1.5
00-76	MIL	BIFP-01	INSTRUMENT TAKEOFF AND CLIMB WITH DP	1.3
00-77	MIL	BIFP-02	TACAN AND VOR PROCEDURES	1.5
00-78	MIL	BIFP-03	GCA PROCEDURES	1.2
00-79	MIL	BIFP-04	STALLS, UNUSUAL ATTITUDES, AND AEROBATICS	1.1
00-80	MIL	BIFP-05	INSTRUMENT FAILURES	1.0
00-81	MIL	BIFP-06	ILS PROCEDURES	0.5

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-82	CAI	BIFP-07X	BASIC INSTRUMENT STAGE EXAMINATION	1.0
00-83	MIL	FAMFP-01	FAMILIARIZATION FLIGHT PROCEDURES	1.8
00-84	MIL	FAMFP-02	FAMILIARIZATION FLIGHT PROCEDURES	1.7
00-85	CAI	FAMFP-03X	FAMILIARIZATION STAGE EXAMINATION	1.0
00-86	OFT	NA-01S	NATOPS ONE SIMULATOR	1.5
00-87	OFT	NA-02S	NATOPS TWO SIMULATOR	1.5
00-88	OFT	NA-03S	NATOPS THREE SIMULATOR	1.5
00-89	T-45/RC HOOD	NA-04	NATOPS FOUR	1.5
00-90	T-45/FC	NA-05	NATOPS FIVE	1.5
00-91	MIL	RIFP-01	INTRODUCTION TO RADIO INSTRUMENTS	2.5
00-92	CAI	RIFP-02	TACAN AND VOR PROCEDURES	0.5
00-93	CAI	RIFP-03	TACAN AND VOR HOLDING PROCEDURES	0.5
00-94	CAI	RIFP-04	TACAN/VOR/ILS/PAR/ASR APPROACH PROCEDURES	1.0
00-95	CAI	RIFP-05X	RADIO INSTRUMENTS STAGE EXAMINATION	1.0
00-96	T-45/RC HOOD	NA-06	NATOPS SIX	1.5
00-97	MIL	OCFFP-01	OUT-OF-CONTROL FLIGHT PROCEDURES	1.0
00-98	CAI	OCFFP-02X	OUT-OF-CONTROL FLIGHT STAGE EXAMINATION	1.0
00-99	OFT	NA-07S	NATOPS SEVEN SIMULATOR	1.5

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-100	T-45/FC	NA-08	NATOPS EIGHT	1.5
00-101	MIL	FFP-01	FORMATION MARSHAL, TAKEOFF, RENDEZVOUS, DEPARTURE/ CLIMBOUT	1.0
00-102	MIL	FFP-02	SECTION PARADE FORMATION	1.0
00-103	MIL	FFP-03	SECTION FORMATION RECOVERY, APPROACHES, LANDING CONFIGURATION	0.7
00-104	MIL	FFP-04	FORMATION EMERGENCIES	1.0
00-105	MIL	FFP-05	FORMATION SECTION CRUISE/ COLUMN	0.8
00-106	CAI	FFP-06X	FORMATION STAGE EXAMINATION	1.0
00-107	OFT	NA-09S	NATOPS NINE SIMULATOR	1.5
00-108	T-45/FC	NA-10	NATOPS TEN	1.5
00-109	T-45/FC	NA-11	NATOPS ELEVEN	1.5
00-110	MIL	NFAMFP-01	NIGHT FAMILIARIZATION FLIGHT PROCEDURES	1.3
00-111	MIL	NFAMFP-02	NIGHT EMERGENCY PROCEDURES	1.2
00-112	CAI	NFAMFP-03X	NIGHT FAMILIARIZATION STAGE EXAMINATION	1.0
00-113	T-45/FC	NA-12	NATOPS TWELVE	1.5
00-114	OFT	NA-13SX	NATOPS THIRTEEN SIMULATOR CHECK	1.5
00-115	PENCIL	NATOPS-01X	NATOPS OPEN-BOOK EXAMINATION	2.0
00-116	PENCIL	NATOPS-02X	NATOPS CLOSED-BOOK EXAMINATION	2.0
00-117	LECT	ASI-07	CNATRAINST 1500.4 (TA MANUAL)	1.6
00-118	LECT	ASI-08	CNATRAINST 3710.13 (FIST)	1.6

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-61	OFT	CO-07S	COCKPIT ORIENTATION SEVEN SIMULATOR	1.5

Brief:

a. QOD
b. Ground signals
c. Final checker
d. Shutdown signals

Demonstrate:

a. Enter mission data (T-45C only)
b. Takeoff

Introduce:

a. Canopy/ejection seat preflight
b. Strap-in procedures
c. Cockpit/display orientation
d. Cockpit preflight checklist
e. Prestart checklist
f. Aircraft start
g. Poststart checklist
h. Cockpit/Display management
i. Ground communications
j. Taxi checklist
k. Aircraft taxi
l. Flight instrument checks
m. Takeoff clearance
n. Takeoff checklist
o. Engine checks
p. Departure communications
q. 10,000-ft checklist/15-minute report
r. Enroute communications
s. Descent/penetration checklist
t. Approach control communications
u. VFR approach to pattern initial
v. Communication to tower
w. Landing checklist
x. Visual landing pattern
y. Touch-and-go, full flaps/slats
z. After landing communications
aa. After landing checklist
ab. Aircraft shutdown
ac. Shutdown checklist
ad. Normal egress procedures

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-62	OFT	CO-08S	COCKPIT ORIENTATION EIGHT SIMULATOR (EMERGENCY PROCEDURES)	1.5

Brief:

QOD

Introduce:

a. Full system utilization
b. Fuel system emergency
c. Electrical system emergency
d. Pattern engine emergencies
e. Hydraulic emergencies
f. Lost communications
g. Start emergencies
h. Swerve after touchdown
i. Arrested landing (field) with blown tire
j. Engine flameout
k. Low altitude compressor stall
l. Airstart
m. Brake failure
n. Fire/GTS fire
o. Runaway trim
p. Stuck throttle
q. Abort
r. Unsafe gear indications
s. Precautionary approach(es)
t. Half-Flap fly-in arrestment
u. Half-Flap roll-in arrestment

Practice:

a. Normal takeoff
b. Touch-and-go, full flaps/slats

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-86	OFT	NA-01S	NATOPS ONE SIMULATOR (CO/FAM/INST)	1.5

Brief:

a. QOD
b. Clear engine procedure

Introduce:

a. Inspect aircraft interior
b. Check/test OBOGS
c. BIT procedures
d. Normal takeoff
e. TACAN/VOR/VOR DME operations
f. Slow flight maneuver
g. Stall series
h. PAR approach
i. Swerve after touchdown
j. Landing rollout (field) with blown tire

Practice:

a. Cockpit preflight checklist
b. Prestart checklist
c. Aircraft start
d. Poststart checklist
e. Ground communications
f. Takeoff clearance
g. Engine checks
h. 10,000-ft checklist/15-minute report
i. Descent/penetration checklist
j. Touch-and-go, full flaps/slats
k. Visual landing pattern
l. Arrested landing (field) with blown tire
m. After landing checklist
n. After landing communications
o. Shutdown checklist
p. Normal egress procedures

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-87	OFT	NA-02S	NATOPS TWO SIMULATOR (FAM)	1.5

Brief:

a. QOD
b. Clear engine procedure

Introduce:

a. Start emergencies
b. Taxi emergencies
c. Wheel brake failure
d. Standard departure
e. Turn pattern
f. Level flight accel/decels
g. Prestall/aerobatic checklist
h. Stall series
i. Slow flight maneuver
j. Nose-high recovery
k. Nose-low recovery
l. Minimum radius turns
m. Aileron roll
n. Wingover
o. Barrel roll
p. Squirrel cage
q. Area familiarization
r. Straight-in PA
s. Abeam PA
t. Overhead PA
u. Break to downwind
v. Touch-and-go, no flaps/slats
w. Roll-and-go, full flaps/slats
x. Waveoff
y. Crosswind landings
z. Fuel system emergencies

Practice:

a. Ground communications
b. Normal takeoff
c. Departure communications
d. 10,000-ft checklist/15-minute report
e. VFR landing pattern
f. Touch-and-go, full flaps/slats

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-88	OFT	NA-03S	NATOPS THREE SIMULATOR (INST - BI)	1.5

Brief:

a. QOD
b. SAHRS/GINA failure
c. Erroneous GINA data (T-45C only)
d. MFD failures (T-45C only)
e. Clear engine procedure

Introduce:

a. Communications for ground emergencies
b. ITO
c. DP
d. Turn pattern
e. Level speed change 1/2 SRT
f. S-1 pattern
g. S-3 pattern
h. Stall series
i. Partial panel
j. TACAN/VOR tracking
k. TACAN/VOR DME approach
l. Missed approach
m. ILS approach
n. Abort
o. GTS fire
p. Canopy malfunctions
q. Unsafe gear conditions
r. Gear door malfunctions
s. Engine overtemp
t. Engine surges and chugs
u. FUEL low light
v. CWP light failure
w. Lost communications
x. Engine fire on shutdown
y. Full-flap arrested landing

Practice:

a. Prestart checklist
b. Aircraft start
c. Nose-high recovery
d. Nose-low recovery
e. PAR approach

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-89	T-45/RC HOOD	NA-04	NATOPS FOUR (INST - BI)	1.5

Brief:

QOD

Demonstrate:

Observe preflight inspection

Introduce:

a. Inspect area around aircraft
b. Inspect canopy and seats
c. Aft cockpit checks
d. Verify hood installation
e. Full-stop landing with no NWS
f. Observe postflight
g. Maintenance control activities

Practice:

a. Inspect aircraft interior
b. Checklists
c. ITO
d. DP
e. Turn pattern
f. Partial panel
g. Level speed change 1/2 SRT
h. S-1 pattern
i. S-3 pattern
j. Stall series
k. Nose-high recovery
l. Nose-low recovery
m. TACAN/VOR tracking
n. TACAN/VOR DME approach
o. ILS approach
p. Missed approach
q. PAR approach

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-90	T-45/FC	NA-05	NATOPS FIVE (FAM)	1.5

Brief:

a. QOD
b. Clear engine procedure

Introduce:

a. Simulated emergencies (airborne)
b. Postflight inspection

Practice:

a. Preflight
b. Communications
c. Normal takeoff
d. Standard departure
e. Stall series
f. Nose-high recovery
g. Nose-low recovery
h. Minimum radius turns
i. Aileron roll
j. Wingover
k. Barrel roll
l. Squirrel cage
m. Straight-in PA
n. Abeam PA
o. Overhead PA
p. VFR landing pattern
q. Touch-and-go, full flaps/slats
r. Roll-and-go, full flaps/slats
s. Waveoff
t. Touch-and-go, no flaps/slats
u. Crosswind landings (conditions permitting)

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-96	T-45/RC HOOD	NA-06	NATOPS SIX (INST - RI)	1.5

Brief:

QOD

Introduce:

a. Station passage
b. Waypoint navigation (T-45C only)
c. Point-to-point
d. TACAN/VOR DME holding
e. Partial panel approach(es)
f. Perform engine shutdown from aft cockpit

Practice:

a. ITO
b. DP
c. TACAN/VOR tracking
d. TACAN/VOR DME approach
e. ILS approach
f. Missed approach
g. PAR approach

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-99	OFT	NA-07S	NATOPS SEVEN SIMULATOR (OCF)	1.5

Brief:

a. QOD
b. Departure/spin procedures
c. Clear engine procedure

Introduce:

a. High AOA/deep stall investigation/ rudder-induced departure
b. Low airspeed recovery (70 degrees)
c. Low airspeed recovery (110 degrees)
d. Lateral stick adverse yaw departure
e. Engine stalls
f. Engine vibration
g. Engine seizure
h. Engine flameout
i. Engine fire at altitude with secondary indications
j. FIRE light, no secondary indications
k. FIRE light, light out with power reduced
l. Engine overspeed
m. ECA failure
n. ECA failure, full trim
o. ECA failure, no trim condition
p. Oil pressure failure
q. Ground ejection situations
r. Stuck throttle, high and low RPM

Practice:

a. Swerve after touchdown
b. Arrested landing (field) with blown tire

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-100	T-45/FC	NA-08	NATOPS EIGHT (OCF)	1.5

Brief:

a. QOD
b. Departure/spin procedures
c. NATOPS chapter II
d. Clear engine procedure

Practice:

a. Normal takeoff
b. High AOA/deep stall investigation/ rudder-induced departure
c. Low airspeed recovery (70 degrees)
d. Low airspeed recovery (110 degrees)
e. Lateral stick adverse yaw departure
f. Recovery to pattern
g. Precautionary approach(es)
h. Field landing activities
i. VFR landing pattern
j. Crosswind landings (conditions permitting)

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-107	OFT	NA-09S	NATOPS NINE SIMULATOR (2-PLANE FORMATION)	1.5

Brief:

a. QOD
b. ECS emergencies

Introduce:

a. Interval takeoff position
b. Formation abort
c. Interval takeoff
d. Section takeoff (wing)
e. Section climbout
f. Running rendezvous
g. Crossunder
h. Parade turns into
i. Parade turns away
j. Breakup and rendezvous
k. IFR parade
l. Cruise formation (if done)
m. Column (if done)
n. Section approach (wing)
o. Section missed approach
p. Communications for emergency situations
q. Engine emergencies

Practice:

a. Precautionary approach(es)
b. Touch-and-go, full flaps/slats

NOTE: Conduct as day and night formation event.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-108	T-45/FC	NA-10	NATOPS TEN (2-PLANE FORMATION)	1.5

Brief:

QOD

Introduce:

a. Marshal
b. Lead change
c. Visual communications
d. Cruise formation (if done)
e. Column (if done)
f. Tail-chase exercise (if done)
g. Section break
h. Formation recovery
i. Roll-and-go landing with no NWS

Practice:

a. Interval takeoff
b. Running rendezvous
c. Crossunder
d. IFR parade
e. Breakup and rendezvous (250 KIAS; 300 KIAS)
f. Section approach
g. Section missed approach
h. Crosswind landings (conditions permitting)

NOTE: Shall be flown as wing.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-109	T-45/FC	NA-11	NATOPS ELEVEN (FAM/INST)	1.5

Brief:

a. QOD
b. Clear engine procedure

Demonstrate:

Minimum rollout landing (conditions permitting)

Introduce:

a. Emergency gear actuation
b. Simulated low oil GCA (conditions permitting)

Practice:

a. ITO
b. DP
c. Turn pattern
d. S-3 pattern
e. Stall series
f. TACAN/VOR tracking
g. TACAN/VOR DME approach
h. PAR approach
i. Touch-and-go, full flaps/slats
j. Touch-and-go, no flaps/slats
k. Roll-and-go, full flaps/slats
l. Full-stop, full flaps/slats

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-113	T-45/FC	NA-12	NATOPS TWELVE (NFAM)	1.5

Brief:

a. QOD
b. Local NFAM route

Introduce:

a. Filing stereo flight plan
b. Normal takeoff
c. Area familiarization
d. ILS approach (not at home field)
e. PAR approach (not at home field)
f. Missed approach
g. Overhead pattern (break)
h. Touch-and-go, no flaps/slats
i. Touch-and-go, full flaps/slats
j. Crosswind landings (conditions permitting)

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-114	OFT	NA-13SX	NATOPS THIRTEEN SIMULATOR CHECK (INST/EP)	1.5

Brief:

a. QOD
b. Clear engine procedure

Review:

a. Takeoff emergencies
b. Departure communications
c. ITO
d. DP
e. S-1 pattern
f. S-3 pattern
g. TACAN/VOR tracking
h. Point-to-point
i. Partial panel approach(es)
j. TACAN/VOR DME approach
k. PAR approach
l. Missed approach
m. ILS approach
n. Fuel system emergencies
o. Electrical emergencies
p. ECS emergencies
q. Hydraulic emergencies
r. Flight control system malf/emer
s. Lost communications
t. Swerve after touchdown
u. Arrested landing (field) with blown tire

MODULE 01

FAMILIARIZATION, BASIC INSTRUMENTS, RADIO INSTRUMENTS, AIRWAYS NAVIGATION, AND NATOPS QUALIFICATION

OBJECTIVE. Provide the IUT with training in Familiarization and Instrument flight procedures. The module will provide the IUT with phase goals and training techniques for instructing these stages and a NATOPS qualification in the T-45C.

Includes: Familiarization simulators and flights (FAM-01S through FAM-05X), Basic Instruments simulator and flights (BI-01S through BI-03X), Radio Instruments simulators and flights (RI-01S through RI-04X), Airways Navigation Flight Procedures (ANFP-01 and ANFP-02X), Instrument Rating Flight Procedures (IRFP-01 through IRFP-03X), Airways Navigation flights (AN-01 and AN-03X), and NATOPS Check Flight (NA-14X).

NOTE: IRFP-01 and IRFP-03X, Instrument Rating Open-Book Examination, can be used to satisfy part of the annual instrument rating requirements, if within the prescribed time established by OPNAVINST 3710.7U.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-01	OFT	FAM-01S	FAMILIARIZATION ONE SIMULATOR	1.5
01-02	OFT	FAM-02S	FAMILIARIZATION TWO SIMULATOR	1.5
01-03	OFT	BI-01S	BASIC INSTRUMENTS ONE SIMULATOR	1.5
01-04	OFT	RI-01S	RADIO INSTRUMENTS ONE SIMULATOR	1.5
01-05	OFT	RI-02S	RADIO INSTRUMENTS TWO SIMULATOR	1.5
01-06	MIL	ANFP-01	AIRWAYS NAVIGATION FLIGHT PROCEDURES	2.5
01-07	CAI	ANFP-02X	AIRWAYS NAVIGATION STAGE EXAMINATION	1.0
01-08	CAI	IRFP-01	METRO REVIEW	1.0
01-09	MIL	IRFP-02	IR REVIEW	2.0
01-10	PENCIL	IRFP-03X	INSTRUMENT RATING OPEN-BOOK EXAMINATION	1.0
01-11	T-45/RC	FAM-03	FAMILIARIZATION THREE	1.5

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-12	T-45/RC	FAM-04	FAMILIARIZATION FOUR	1.5
01-13	T-45/RC	FAM-05X	FAMILIARIZATION FIVE CHECK	1.5
01-14	T-45/RC HOOD	BI-02	BASIC INSTRUMENTS TWO	1.5
01-15	T-45/FC	BI-03X	BASIC INSTRUMENTS THREE CHECK	1.5
01-16	T-45/RC HOOD	RI-03	RADIO INSTRUMENTS THREE	1.5
01-17	T-45/FC	RI-04X	RADIO INSTRUMENTS FOUR CHECK	1.5
01-18	T-45/FC	AN-01	AIRWAYS NAVIGATION ONE	1.3
01-19	T-45/FC	AN-02	AIRWAYS NAVIGATION TWO	1.3
01-20	T-45/FC	AN-03X	AIRWAYS NAVIGATION THREE CHECK	1.4
01-21	T-45/FC	NA-14X	NATOPS FOURTEEN CHECK	1.5

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-01	OFT	FAM-01S	FAMILIARIZATION ONE SIMULATOR	1.5

Brief:

a. QOD
b. Inadvertent IMC
c. Instrument to visual approach

Practice:

a. Ground communications
b. Takeoff emergencies – locked-in stall below 1,500 feet AGL, 180 knots
c. Departure/climbout
d. Level flight accel/decel
e. Prestall/aerobatic checklist
f. Slow flight maneuver
g. Stall series
h. Minimum radius turns
i. Aileron roll
j. Wingover
k. Barrel roll
l. VFR landing pattern
m. Touch-and-go, full flaps/slats
n. Touch-and-go, no flaps/slats
o. Straight-in PA
p. Overhead PA
q. Abeam PA
r. Roll-and-go, full flaps/slats
s. Engine emergencies

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-02	OFT	FAM-02S	FAMILIARIZATION TWO SIMULATOR	1.5

Brief:

QOD

Introduce:

a. VFR waypoint navigation
b. Unusual attitude recoveries
c. Vertical recoveries
d. Loop
e. Half-Cuban eight
f. Immelmann
g. Split-S
h. Squirrel cage
i. Local waypoint sequence (T-45C only)

Practice:

a. Crosswind takeoff
b. Departure/climbout
c. Stall series
d. Accelerated stall and recovery
e. Straight-in approach
f. Touch-and-go, full flaps/slats
g. Touch-and-go, no flaps/slats
h. Straight-in PA
i. Overhead PA
j. Abeam PA
k. Roll-and-go, full flaps/slats
l. Flight control system malf/emer
m. VFR landing pattern

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-03	OFT	BI-01S	BASIC INSTRUMENTS ONE SIMULATOR	1.5

Brief:

QOD

Introduce:

a. ITO
b. DP
c. TACAN/VOR tracking
d. Turn pattern
e. Level speed changes
f. 1/2 standard rate turn
g. Level speed change 1/2 SRT
h. Standard rate turn
i. Stall series
j. Slow flight maneuver
k. S-1 pattern
l. S-3 pattern
m. Instrument transitions
n. Partial panel
o. Partial panel timed turns
p. VOR penetration/approach
q. Missed approach
r. PAR approach
s. ASR approach
t. Partial panel approach(es)

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-04	OFT	RI-01S	RADIO INSTRUMENTS ONE SIMULATOR	1.5

Brief:

QOD

Introduce:

a. ITO
b. DP
c. Point-to-point
d. ILS approach
e. Backcourse localizer approach
f. ASR approach partial panel
g. Instrument to visual scan

Practice:

a. TACAN/VOR tracking
b. TACAN/VOR DME approach
c. PAR approach
d. Missed approach

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-05	OFT	RI-02S	RADIO INSTRUMENTS TWO SIMULATOR	1.5

Brief:

QOD

Introduce:

a. Ground communications
b. Visual takeoff low ceiling
c. Total electrical failure
d. SAHRS/GINA failure
e. Radial intercepts
f. TACAN/VOR DME holding
g. ILS glideslope failure
h. Emergency fuel GCA
i. No gyro GCA
j. Low oil GCA
k. Circling approach to land

Practice:

a. ITO
b. DP
c. Point-to-point
d. TACAN/VOR DME approach
e. ILS approach
f. Missed approach
g. Instrument to visual scan

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-11	T-45/RC	FAM-03	FAMILIARIZATION THREE	1.5

Brief:

a. QOD
b. Field-arrested landing

Practice:

a. Checklists
b. Ground communications
c. Local waypoint sequence (T-45C only)
d. Stall series
e. Accelerated stall and recovery
f. Minimum radius turns
g. Unusual attitude recoveries
h. Vertical recoveries
i. Aileron roll
j. Wingover
k. Barrel roll
l. Squirrel cage
m. Straight-in PA
n. Overhead PA
o. Overhead pattern (break)
p. Touch-and-go, full flaps/slats
q. Touch-and-go, no flaps/slats
r. Roll-and-go, full flaps/slats
s. Simulated emergencies (airborne)

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-12	T-45/RC	FAM-04	FAMILIARIZATION FOUR	1.5

Brief:

a. QOD
b. Ground communications
c. Takeoff
d. Local waypoint sequence (T-45C only)
e. Stall series
f. Accelerated stall and recovery
g. Minimum radius turns
h. Unusual attitude recoveries
i. Vertical recoveries
j. Aileron roll
k. Wingover
l. Barrel roll
m. Squirrel cage
n. Recovery to pattern
o. Overhead pattern (break)
p. Touch-and-go, full flaps/slats
q. Touch-and-go, no flaps/slats
r. Abeam PA
s. Overhead PA
t. Roll-and-go, full flaps/slats
u. Crosswind landings (conditions permitting)
v. Simulated emergencies (airborne)

Introduce:

a. Prepare for instruction
b. Review student records
c. Event requirements
d. Brief
e. Presentation techniques
f. Performance evaluation
g. Guidance/feedback
h. Debrief
i. SNA performance standards

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-13	T-45/RC	FAM-05X	FAMILIARIZATION FIVE CHECK	1.5

Perform:

Flight briefed by IUT. Major emphasis will be on verbal skills and IUT's ability to fly the aircraft proficiently. This flight will approximate a typical student training mission. IP should demonstrate deficiency areas and discuss student performance evaluation/grading standards.

Brief:

QOD

Review:

a. Prepare for instruction
b. Brief
c. Ground communications
d. Normal takeoff
e. After takeoff activities
f. Stall series
g. Accelerated stall and recovery
h. Minimum radius turns
i. Unusual attitude recoveries
j. Vertical recoveries
k. Aileron roll
l. Wingover
m. Barrel roll
n. Squirrel cage
o. Recovery to pattern
p. Overhead pattern (break)
q. Touch-and-go, full flaps/slats
r. Touch-and-go, no flaps/slats
s. Straight-in PA
t. Overhead PA
u. Abeam PA
v. Roll-and-go, full flaps/slats
w. Crosswind landings (conditions permitting)
x. Simulated emergencies (airborne)
y. Flight instruction
z. Performance evaluation

aa. Guidance/feedback
ab. Debrief

NOTE: Jacket review required.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-14	T-45/RC HOOD	BI-02	BASIC INSTRUMENTS TWO	1.5

Brief:

QOD

Introduce:

Verify hood installation

Practice:

a. Prepare for instruction
b. Brief
c. ITO
d. DP
e. Turn pattern
f. Level speed change 1/2 SRT
g. S-3 pattern
h. Stall series
i. Nose-high recovery
j. Nose-low recovery
k. Unusual attitudes partial panel
l. Partial panel approach(es)
m. Missed approach partial panel
n. PAR approach
o. Missed approach
p. ASR approach
q. Flight instruction
r. Performance evaluation
s. Guidance/feedback
t. Debrief
u. SNA performance standards

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-15	T-45/FC	BI-03X	BASIC INSTRUMENTS THREE CHECK	1.5

Perform:

Flight briefed by IUT. Major emphasis is on verbal skills and knowledge of FTI. IUT should be able to perform all maneuvers and discuss them in-flight. This flight will approximate a typical student training mission. IP should demonstrate student deficiency areas and discuss grading standards.

Brief:

QOD

Demonstrate:

Instrument failures/Training displays

Review:

a. Prepare for instruction
b. Brief
c. Communications
d. DP
e. TACAN/VOR tracking
f. Turn pattern
g. 1/2 standard rate turn
h. Standard rate turn
i. Partial panel timed turns
j. Stall series
k. S-3 pattern
l. Nose-high recovery
m. Nose-low recovery
n. Partial panel
o. Unusual attitudes partial panel
p. TACAN/VOR DME approach
q. ASR approach
r. Missed approach
s. PAR approach partial panel
t. Missed approach partial panel
u. Flight instruction
v. Performance evaluation
w. Guidance/feedback
x. Debrief
y. SNA performance standards

NOTES:

(1) Jacket review required.

(2) Stan IP will take controls and familiarize IUT with all failure indications activated by navigation training panel/training page.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-16	T-45/RC HOOD	RI-03	RADIO INSTRUMENTS THREE	1.5

Brief:

QOD

Introduce:

a. Waypoint navigation (T-45C only)
b. TACAN/VOR approach partial panel
c. ILS approach partial panel

Practice:

a. Prepare for instruction
b. Brief
c. Communications
d. DP
e. Simulated emergencies (airborne)
f. Radial intercepts
g. Point-to-point
h. TACAN/VOR DME holding
i. ASR approach
j. Missed approach
k. Presentation techniques
l. Introduce/demonstrate techniques
m. Performance assessment
n. Guidance/feedback
o. Debrief

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-17	T-45/FC	RI-04X	RADIO INSTRUMENTS FOUR CHECK	1.5

Perform:

Flight briefed by IUT. This flight will approximate a typical student training mission. IP should demonstrate student deficiency areas and discuss grading standards.

Brief:

QOD

Review:

a. Prepare for instruction
b. Brief
c. Communications
d. DP
e. TACAN/VOR tracking
f. Radial intercepts
g. Point-to-point
h. TACAN/VOR DME holding
i. TACAN/VOR DME approach
j. PAR approach partial panel
k. ILS approach
l. Missed approach
m. Waypoint navigation (T-45C only)
n. Flight instruction
o. Performance evaluation
p. Guidance/feedback
q. Debrief

NOTE: Jacket review required.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-18	T-45/FC	AN-01	AIRWAYS NAVIGATION ONE	1.3

Brief:

a. QOD
b. In-flight emergencies

Introduce:

a. Prepare for instruction
b. Single-engine jet log
c. Route/destination change (if done)
d. Enroute delay (if done)
e. Flight instruction
f. Performance evaluation

Practice:

a. Brief
b. Complete DD-175
c. DP
d. Point-to-point
e. Navigation system management
f. Enroute descent (if done)
g. TACAN/VOR DME approach
h. Missed approach
i. PAR approach
j. ILS approach partial panel
k. Introduce/demonstrate techniques
l. Performance assessment
m. Guidance/feedback
n. Debrief

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-19	T-45/FC	AN-02	AIRWAYS NAVIGATION TWO	1.3

Brief:

a. QOD
b. In-flight emergencies

Practice:

a. Prepare for instruction
b. Brief
c. Complete DD-175
d. Single-engine jet log
e. DP
f. Navigation system management
g. Point-to-point
h. Route/destination change (if done)
i. Enroute delay (if done)
j. Enroute descent (if done)
k. TACAN/VOR DME approach
l. Missed approach
m. PAR approach partial panel
n. ILS approach
o. Introduce/demonstrate techniques
p. Flight instruction
q. Performance evaluation
r. Guidance/feedback
s. Debrief

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-20	T-45/FC	AN-03X	AIRWAYS NAVIGATION THREE CHECK	1.4

Perform:

Flight briefed by IUT. Major emphasis will be on verbal skills and IUT's ability to fly the aircraft proficiently. This flight will approximate a typical student training mission.

Brief:

QOD

Review:

a. Prepare for instruction
b. Brief
c. Complete DD-175
d. Single-engine jet log
e. DP
f. Navigation system management
g. Route/destination change (if done)
h. Enroute delay (if done)
i. Enroute descent (if done)
j. TACAN/VOR DME approach
k. Missed approach
l. PAR approach
m. ILS approach partial panel
n. In-flight emergencies
o. Flight instruction
p. Performance evaluation
q. Guidance/feedback
r. Debrief
s. SNA performance standards

NOTES:

(1) Jacket review required.

(2) This is the initial Instrument check flight.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-21	T-45/FC	NA-14X	NATOPS FOURTEEN CHECK	1.5

Brief:

a. QOD
b. Clear engine procedure

Review:

a. Inspect area around aircraft
b. Preflight
c. Communications
d. Normal takeoff
e. Standard departure
f. Vertical recovery
g. Minimum radius turns
h. Stall series
i. Aileron roll
j. Wingover
k. Barrel roll
l. Squirrel cage
m. Unusual attitude recoveries
n. Simulated emergencies (airborne)
o. Precautionary approach(es)
p. Overhead pattern (break)
q. VFR landing pattern
r. Roll-and-go, full flaps/slats
s. Touch-and-go, no flaps/slats
t. Touch-and-go, full flaps/slats
u. Roll-and-go, no NWS (optional)
v. Crosswind landings (conditions permitting)
w. Full-stop, full flaps/slats
x. Postflight inspection

NOTE: Open- and Closed-Book NATOPS examinations shall be complete prior to NA-14X.

MODULE 02

FORMATION, NIGHT FAMILIARIZATION, AND NIGHT FORMATION

OBJECTIVE. Provide the IUT with training in Formation, Night Familiarization, and Night Formation. The module will provide the IUT with phase goals and training techniques for instructing these stages.

Includes: Formation Flight Procedures (FFP-07 and FFP-08X), Night Formation Flight Procedures (NFFP-01 and NFFP-02X), Section Formation flights (FORM-01 and FORM-02X), Division Formation flights (FORM-03 and FORM-04X), Night Familiarization flight (NFAM-01X), and Night Formation flights (NFORM-01 through NFORM-03X.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-01	T-45/RC	FORM-01	FORMATION ONE	1.5
02-02	T-45/FC	FORM-02X	FORMATION TWO CHECK	1.5
02-03	MIL	FFP-07	DIVISION PARADE FORMATION	1.5
02-04	CAI	FFP-08X	FORMATION STAGE EXAMINATION	1.0
02-05	T-45/RC	FORM-03	FORMATION THREE	1.5
02-06	T-45/RC	FORM-04X	FORMATION FOUR CHECK	1.5
02-07	T-45/RC	NFAM-01X	NIGHT FAMILIARIZATION ONE CHECK	1.4
02-08	MIL	NFFP-01	NIGHT FORMATION FLIGHT PROCEDURES	1.2
02-09	CAI	NFFP-02X	NIGHT FORMATION FLIGHT PROCEDURES EXAMINATION	1.0
02-10	T-45/FC	NFORM-01	NIGHT FORMATION ONE	1.5
02-11	T-45/RC	NFORM-02	NIGHT FORMATION TWO	1.5
02-12	T-45/FC	NFORM-03X	NIGHT FORMATION THREE CHECK	1.5

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-01	T-45/RC	FORM-01	FORMATION ONE	1.5

Brief:

a. QOD
b. Student deficiency areas

Introduce:

a. Marshal
b. Visual communications
c. Section takeoff
d. Parade position
e. Parade turns into
f. Parade turns away
g. Crossunder
h. Breakup and rendezvous (250 and 300 KIAS)
i. Underrun
j. Running rendezvous (altitude)
k. TACAN rendezvous
l. Cruise position
m. Cruise formation
n. Column
o. Tail-chase exercise
p. Lead change
q. IFR parade
r. Section approach
s. Section missed approach
t. Section break

NOTES:

(1) During brief, discuss student deficiency areas (late recognition, uncontrollable closure, poor angles, etc.) when executing an underrun.

(2) This event shall be flown as wing.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-02	T-45/FC	FORM-02X	FORMATION TWO CHECK (Brief/Lead)	1.5

Brief:

QOD

Review:

a. Prepare for instruction
b. Review student records
c. Event requirements
d. Brief
e. Event overview
f. Presentation techniques
g. Marshal
h. Visual communications
i. Section takeoff
j. Section climbout
k. Parade position
l. Parade turns into
m. Parade turns away
n. Crossunder
o. Breakup and rendezvous (250 and 300 KIAS)
p. Running rendezvous (altitude)
q. TACAN rendezvous
r. Cruise position
s. Column
t. Tail-chase exercise
u. Lead change
v. IFR parade
w. Section approach
x. Section missed approach
y. Section break
z. Full-stop landing
aa. Flight instruction
ab. Introduce/demonstrate techniques
ac. Guidance/feedback
ad. Debrief
ae. SNA performance standards

NOTES:

(1) Jacket review required.

(2) May be flown as wing.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-05	T-45/RC	FORM-03	FORMATION THREE	1.5

Brief:

a. QOD
b. Student deficiency areas

Introduce:

a. Division rendezvous
b. Section crossunder
c. Balanced parade turns into
d. Balanced parade turns away
e. Breakup and rendezvous
f. Division cruise
g. Tail-chase exercise
h. Shuffle division
i. Division break

Practice:

a. Marshal
b. Visual communications
c. Interval takeoff
d. Touch-and-go landings

NOTE: During brief, discuss student deficiency areas (late recognition, uncontrollable closure, poor angles, etc.) when executing an underrun.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-06	T-45/RC	FORM-04X	FORMATION FOUR CHECK	1.5

Brief:

QOD

Review:

a. Prepare for instruction
b. Review student records
c. Event requirements
d. Brief
e. Event overview
f. Presentation techniques
g. Marshal
h. Visual communications
i. Interval takeoff
j. Division rendezvous
k. Echelon
l. Section crossunder
m. Balanced parade
n. Balanced parade turns into
o. Balanced parade turns away
p. Breakup and rendezvous
q. Division cruise
r. Shuffle division
s. Division VFR recovery
t. Division break
u. Touch-and-go landings
v. Flight instruction
w. Introduce/demonstrate techniques
x. Guidance/feedback
y. Debrief
z. SNA performance standards

NOTE: Jacket review required.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-07	T-45/RC	NFAM-01X	NIGHT FAMILIARIZATION ONE CHECK	1.4

Brief:

a. QOD
b. Identify human factor concerns of night flying
c. Lost communications
d. Inadvertent IMC
e. Lost aircraft
f. Electrical emergencies

Review:

a. Brief
b. Ground operations
c. Normal takeoff
d. Departure/climbout
e. Visual navigation
f. DR navigation
g. Recovery to pattern
h. Overhead pattern (break)
i. VFR landing pattern
j. Touch-and-go, full flaps/slats
k. Touch-and-go, no flaps/slats
l. Roll-and-go, full flaps/slats
m. Full-stop landing
n. Postflight inspection

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-10	T-45/FC	NFORM-01	NIGHT FORMATION ONE	1.5

Brief:

a. QOD
b. Night formation NORDO procedures

Introduce:

a. Marshal
b. Taxi/hold-short
c. Individual takeoff
d. TACAN rendezvous
e. IFR parade
f. Crossunder
g. Breakup and rendezvous
h. Running rendezvous
i. Lead change
j. Section approach
k. Section missed approach
l. Section break
m. Touch-and-go landings

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-11	T-45/RC	NFORM-02	NIGHT FORMATION TWO	1.5

Brief:

QOD

Introduce:

a. Prepare for instruction
b. Flight instruction

Practice:

a. Review student records
b. Event requirements
c. Brief
d. Event overview
e. Presentation techniques
f. Marshal
g. Taxi/hold-short
h. Individual takeoff
i. TACAN rendezvous
j. Section climbout
k. IFR parade
l. Crossunder
m. Breakup and rendezvous
n. Running rendezvous (at altitude)
o. Lead change
p. Section approach (may be simulated at altitude)
q. Touch-and-go/rejoin (desired)
r. Section missed approach (if done)
s. Section break (WX permitting)
t. Touch-and-go landings
u. Introduce/demonstrate techniques
v. Guidance/feedback
w. Debrief
x. SNA performance standards

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-12	T-45/FC	NFORM-03X	NIGHT FORMATION THREE CHECK (Brief/Lead)	1.5

Perform:

Flight briefed and debriefed by IUT. This flight will be a typical formation lead of a student solo flight and the IP will note common student errors to the IUT and discuss instructional techniques. IUT will fill out the grade sheet on student. IP will ensure IUT conforms to proper grading standards and uses standard NATOPS hand signals. Rendezvous safety will be discussed. After satisfactory completion of this flight, IUT is qualified to instruct two-plane Formation. Further flights may be required prior to designation as a section leader at the CO's discretion.

Brief:

QOD

Review:

a. Prepare for instruction
b. Brief
c. Marshal
d. Taxi/hold-short
e. Individual takeoff
f. TACAN rendezvous
g. Section climbout
h. IFR parade
i. Crossunder
j. Breakup and rendezvous
k. Running rendezvous (at altitude)
l. Lead change
m. Section approach (may be flown at altitude)
n. Touch-and-go/rejoin (desired)
o. Section missed approach (if done)
p. Section break (WX permitting)
q. Touch-and-go landings
r. Flight instruction
s. Performance evaluation
t. Guidance/feedback
u. Debrief

NOTES:

(1) Jacket review required.

(2) May be flown as wing.

MODULE 03

OPERATIONAL NAVIGATION AND WEAPONS STAGES

OBJECTIVE. Provide the IUT with training in conducting effective instruction in Operational Navigation and Weapons delivery. The module will also provide the IUT with instruction in completing ATFs, classroom presentations, phase goals, and training techniques for instructing these stages.

Includes: Operational Navigation Flight Procedures (ONFP-01 through ONFP-06), Operational Navigation simulator and flights (ON-01S through ON-06X), Weapons Flight Procedures (WEPFP-01 through WEPFP-05X), Weapons simulator and flights (WEP-01S through WEP-09X), Night Familiarization Flight Procedures (NFAMFP-04), and Aviation Student Indoctrination (ASI-09).

NOTE 1: ONAV and Weapons events should be flown in the sequence shown in the module.

NOTE 2: IUTs without previous ONAV training will also attend ONAV academics, IAW CNATRAINST 1542.159, to qualify for ON stage.

NOTE 3: ON-04 through ON-06X shall be flown after WEP-09X.

NOTE 4: IUT shall fly all weapons patterns and delivery modes, except the pop-up, prior to designation as a weapons instructor.

NOTE 5: A minimum of two weapons flights must be flown from wingman position.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-01	MIL	ASI-09	STAGE MANAGER TRAINING	1.5
03-02	MIL	NFAMFP-04	NIGHT FAM CHASE PROCEDURES	0.5
03-03	CAI	ONFP-01	LOW-LEVEL WAYPOINT NAVIGATION	0.7
03-04	MIL	ONFP-02	ONAV PROCEDURES	2.0
03-05	CAI	ONFP-03X	OPERATIONAL NAVIGATION STAGE EXAMINATION	1.0
03-06	MIL	ONFP-04	TWO-PLANE ONAV ROAD RECCE	1.0
03-07	CAI	ONFP-05X	TWO-PLANE ONAV EXAMINATION	0.4

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-08	LECT	ONFP-06	JOINT MISSION PLANNING SYSTEM	2.0
03-09	OFT	ON-01S	OPERATIONAL NAVIGATION ONE SIMULATOR	1.5
03-10	T-45/FC	ON-02	OPERATIONAL NAVIGATION TWO	1.0
03-11	T-45/RC	ON-03X	OPERATIONAL NAVIGATION THREE CHECK	1.4
03-12	CAI	WEPFP-01	WEAPONS DATA ENTRY PROCEDURES/ HUD	0.7
03-13	MIL	WEPFP-02	WEAPONS DELIVERY	0.8
03-14	MIL	WEPFP-03	WEAPONS DELIVERY	0.7
03-15	MIL	WEPFP-04	WEAPONS DELIVERY	1.5
03-16	CAI	WEPFP-05X	WEAPONS STAGE EXAMINATION	1.0
03-17	OFT	WEP-01S	WEAPONS ONE SIMULATOR	1.5
03-18	OFT	WEP-02S	WEAPONS TWO SIMULATOR	1.0
03-19	OFT	WEP-03S	WEAPONS THREE SIMULATOR	1.0
03-20	T-45/FC	WEP-04	WEAPONS FOUR	1.2
03-21	T-45/FC	WEP-05	WEAPONS FIVE	1.3
03-22	T-45/RC	WEP-06	WEAPONS SIX	1.3
03-23	T-45/RC	WEP-07X	WEAPONS SEVEN CHECK	1.3
03-24	T-45/FC	WEP-08X	WEAPONS EIGHT CHECK (LEAD)	1.3
03-25	T-45/RC	WEP-09X	WEAPONS NINE CHECK (POP-UP)	1.3
03-26	T-45/FC	ON-04	OPERATIONAL NAVIGATION FOUR	1.4
03-27	T-45/RC	ON-05X	OPERATIONAL NAVIGATION FIVE CHECK	1.4
03-28	T-45/RC	ON-06X	OPERATIONAL NAVIGATION SIX CHECK (SLL)	1.2

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-09	OFT	ON-01S	OPERATIONAL NAVIGATION ONE SIMULATOR	1.5

Brief:

a. QOD
b. GINA failure (T-45C only)
c. Low-level weather considerations

Introduce:

a. Check/test HUD
b. Enter waypoint data (T-45C only)
c. Autosequential steering (T-45C only)
d. Route entry
e. Interpret charts
f. Recognize checkpoints
g. Fuel/time calculations
h. Course/time corrections
i. Communications
j. HUD failure
k. BINGO
l. Low altitude hazards

Practice:

a. ONAV planning
b. VFR waypoint navigation

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-10	T-45/FC	ON-02	OPERATIONAL NAVIGATION TWO	1.0

Brief:

a. QOD
b. Weather response

Practice:

a. ONAV planning
b. Navigation programming (T-45C only)
c. Route entry
d. VFR waypoint navigation
e. Interpret charts
f. Recognize checkpoints
g. Monitor flight log
h. Fuel/time calculations
i. Course/time corrections
j. Communications
k. BINGO

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-11	T-45/RC	ON-03X	OPERATIONAL NAVIGATION THREE CHECK	1.4

Brief:

a. QOD
b. Weather response

Review:

a. Prepare for instruction
b. Brief
c. ONAV planning
d. Stores page (T-45C only)
e. Interpret charts
f. Low-level basic airwork
g. Fuel/time calculations
h. Course/time corrections
i. Communications
j. HUD failure
k. BINGO
l. Low altitude hazards
m. Flight instruction
n. Performance evaluation
o. Guidance/feedback
p. Debrief

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-17	OFT	WEP-01S	WEAPONS ONE SIMULATOR	1.5

Brief:

a. QOD
b. Weapons pattern
c. Stores page (T-45C only)
d. VCR management
e. Weapons mode
f. HUD usage
g. Armament system management

Introduce:

a. Enter weapons data
b. Target procedures
c. 30-degree bombs
d. Weapons pattern
e. Roll-in maneuver
f. Tracking/dive angle
g. Error corrections
h. Release parameters
i. Dive recovery
j. 30-degree rockets
k. 20-degree bombs
l. 10-degree bombs
m. CCIP target tracking
n. Strafe
o. Firing altitude
p. Strafe recovery
q. Abort run
r. Communications
s. Safe switches
t. Rendezvous
u. HUD failure
v. Weapons emergencies
w. Hung ordnance approach

Practice:

Compute offset aimpoint

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-18	OFT	WEP-02S	WEAPONS TWO SIMULATOR	1.0

Brief:

QOD

Introduce:

20-degree rockets

Practice:

a. Enter weapons data
b. Compute offset aimpoint
c. Target procedures
d. Weapons pattern
e. Set armament switches
f. 30-degree bombs
g. Roll-in maneuver
h. Tracking/dive angle
i. Error corrections
j. Release parameters
k. Dive recovery
l. 30-degree rockets
m. 20-degree bombs
n. Abort
o. Communications
p. Safe switches
q. Rendezvous
r. Weapons emergencies
s. Hung ordnance approach

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-19	OFT	WEP-03S	WEAPONS THREE SIMULATOR	1.0

Brief:

a. Racetrack pattern
b. 30-30 pop
c. Abort criteria

Introduce:

a. 30-30 pop
b. Pattern procedures
c. Pattern communications

Practice:

a. Target procedures
b. Armament system management
c. 10-degree bombs
d. Tracking/dive angle
e. CCIP target tracking
f. Error corrections
g. Release parameters
h. Dive recovery
i. Safe switches
j. Weapons emergencies

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-20	T-45/FC	WEP-04	WEAPONS FOUR (Wingman)	1.2

Brief:

QOD

Introduce:

a. Weapons preflight
b. Arming
c. VCR management
d. Armament system management
e. Hung ordnance checks
f. Dearming

Practice:

a. Target procedures
b. 30-degree bombs
c. Weapons pattern
d. Roll-in
e. Tracking/dive angle
f. CCIP target tracking
g. Error corrections
h. Release parameters
i. Dive recovery
j. Pattern interval
k. 10-degree bombs
l. Strafe (if done)
m. Firing altitude (if done)
n. Strafe recovery (if done)
o. Communications
p. Rendezvous

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-21	T-45/FC	WEP-05	WEAPONS FIVE	1.3

Brief:

QOD

Introduce:

a. Weapons preflight
b. Arming
c. VCR management
d. Armament system management
e. Hung ordnance checks
f. Dearming

Practice:

a. Target procedures
b. 30-degree bombs
c. Weapons pattern
d. Roll-in
e. Tracking/dive angle
f. CCIP target tracking
g. Error corrections
h. Release parameters
i. Dive recovery
j. Pattern interval
k. 10-degree bombs
l. Strafe (if done)
m. Firing altitude (if done)
n. Strafe recovery (if done)
o. Communications
p. Rendezvous

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-22	T-45/RC	WEP-06	WEAPONS SIX	1.3

Brief:

QOD

Practice:

a. Weapons preflight
b. Arming
c. Target procedures
d. Armament system management
e. 30/20/10-degree pattern
f. Weapons pattern
g. Roll-in
h. Tracking/dive angle
i. Error corrections
j. Release parameters
k. Dive recovery
l. Pattern interval
m. Strafe
n. Communications
o. Rendezvous
p. Hung ordnance checks
q. Dearming

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-23	T-45/RC	WEP-07X	WEAPONS SEVEN CHECK	1.3

Brief:

QOD

Introduce:

a. Prepare for instruction
b. Flight instruction
c. Performance evaluation

Review:

a. Review student records
b. Event requirements
c. Brief
d. Event overview
e. Presentation techniques
f. Weapons preflight
g. Arming
h. Target procedures
i. 30/20/10-degree bombs
j. Weapons pattern
k. Roll-in
l. Tracking/dive angle
m. CCIP target tracking
n. Error corrections
o. Release parameters
p. Dive recovery
q. Pattern interval
r. Strafe (if done)
s. Firing altitude (if done)
t. Strafe recovery (if done)
u. Communications
v. Rendezvous
w. Hung ordnance checks
x. Dearming
y. Introduce/demonstrate techniques
z. Performance assessment
aa. Skills assessment
ab. Knowledge assessment
ac. Confidence assessment
ad. Guidance/feedback
ae. Safety

af. Debrief
ag. SNA performance standards

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-24	T-45/FC	WEP-08X	WEAPONS EIGHT CHECK (Brief/Lead)	1.3

Brief:

a. QOD
b. HUD failure
c. Weapons emergencies

Review:

a. Prepare for instruction
b. Brief
c. Compute offset aimpoint
d. Weapons preflight
e. Check/test HUD
f. Set HUD
g. Arming
h. Target procedures
i. Armament system management
j. 30/20/10-degree bombs
k. Weapons pattern
l. Roll-in
m. Tracking/dive angle
n. Error corrections
o. Release parameters
p. Dive recovery
q. Pattern interval
r. Strafe (if done)
s. Firing altitude (if done)
t. Strafe recovery (if done)
u. Abort run
v. Communications
w. Rendezvous
x. Hung ordnance checks
y. Hung ordnance approach
z Dearming
aa. Flight instruction
ab. Performance evaluation
ac. Guidance/feedback
ad. Debrief

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-25	T-45/RC	WEP-09X	WEAPONS NINE CHECK (POP-UP)	1.3

Brief:

a. QOD
b. Target fixation

Review:

a. 30-30 pop
b. Pattern procedures
c. Pattern communications
d. Abort criteria
e. Target fixation
f. Weapons preflight
g. Target procedures
h. Armament system management
i. 10-degree bombs
j. Tracking/dive angle
k. CCIP target tracking
l. Error corrections
m. Release parameters
n. Dive recovery
o. Rendezvous
p. Hung ordnance checks
q. Accuracy
r. Introduce/demonstrate techniques
s. Student safety concerns

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-26	T-45/FC	ON-04	OPERATIONAL NAVIGATION FOUR	1.4

Brief:

a. QOD
b. Weather response

Introduce:

a. Tactical wing
b. Tactical lead
c. Target description

Practice:

a. ONAV planning
b. VFR waypoint navigation
c. Interpret charts
d. Fuel/time calculations
e. Course/time corrections
f. Communications
g. BINGO

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-27	T-45/RC	ON-05X	OPERATIONAL NAVIGATION FIVE CHECK	1.4

Brief:

a. QOD
b. Weather response

Review:

a. Prepare for instruction
b. Brief
c. ONAV planning
d. Interpret charts
e. Fuel/time calculations
f. Course/time corrections
g. Tactical wing
h. Tactical lead
i. Target description
j. Communications
k. BINGO
l. Flight instruction
m. Performance evaluation
n. Guidance/feedback
o. Debrief

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-28	T-45/RC	ON-06X	OPERATIONAL NAVIGATION SIX CHECK (SLL)	1.2

Brief:

a. QOD
b. Wingman deconfliction responsibilities
c. Target area deconfliction

Introduce:

a. Low-level tactical formation
b. Low-level target attacks

Review:

a. Prepare for instruction
b. Brief
c. ONAV planning
d. Route entry
e. Interpret charts
f. Recognize checkpoints
g. Knowledge of route
h. Tactical wing
i. Mutual support
j. Tactical lead
k. Timing corrections
l. Target description
m. Communications
n. Recovery to pattern
o. Landing(s)
p. Flight instruction
q. Performance evaluation
r. Guidance/feedback
s. Debrief

NOTE: This event shall be flown as wing.

MODULE 04

TACTICAL FORMATION AND AIR COMBAT MANEUVERING STAGES

OBJECTIVE. Provide the IUT with training in Tactical Formation as a precursor to Air Combat Maneuvering. The module will provide the IUT with phase goals, training techniques, and rules of engagement for instructing these stages.

Includes: Tactical Formation Flight Procedures (TFFP-01 through TFFP-04X), Tactical Formation flights (TACF-01 through TACF-04X), Air Combat Maneuvering Flight Procedures instruction in 1 V 1 and 2 V 1 (ACMFP-01 through ACMFP-07X), and Air Combat Maneuvering flights (ACM-01 through ACM-11X).

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-01	CAI	TFFP-01	HUD/DATA ENTRY PROCEDURES	0.7
04-02	MIL	TFFP-02	INTRODUCTION TO TACTICAL FORMATION PROCEDURES	1.5
04-03	MIL	TFFP-03	TACTICAL FORMATION	1.5
04-04	CAI	TFFP-04X	TACTICAL FORMATION STAGE EXAMINATION	1.0
04-05	T-45/FC	TACF-01	TACTICAL FORMATION ONE	1.4
04-06	T-45/RC	TACF-02	TACTICAL FORMATION TWO	1.4
04-07	T-45/RC	TACF-03	TACTICAL FORMATION THREE	1.4
04-08	T-45/FC	TACF-04X	TACTICAL FORMATION FOUR CHECK	1.4
04-09	MIL	ACMFP-01	INTRODUCTION TO ACM	0.8
04-10	MIL	ACMFP-02	ACM 1 V 1 OFFENSIVE MANEUVERING	1.0
04-11	MIL	ACMFP-03	ACM 1 V 1 DEFENSIVE MANEUVERING	1.0
04-12	MIL	ACMFP-04	ACM 1 V 1 NEUTRAL STARTS	0.8
04-13	CAI	ACMFP-05X	ACM 1 V 1 STAGE EXAMINATION	1.0
04-14	T-45/FC	ACM-01	AIR COMBAT MANEUVERING ONE	1.1

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-15	T-45/FC	ACM-02	AIR COMBAT MANEUVERING TWO	1.1
04-16	T-45/FC	ACM-03	AIR COMBAT MANEUVERING THREE	1.1
04-17	T-45/RC	ACM-04	AIR COMBAT MANEUVERING FOUR	1.1
04-18	T-45/ SOLO	ACM-05	AIR COMBAT MANEUVERING FIVE	1.1
04-19	MIL	ACMFP-06	AIR COMBAT MANEUVERING 2 V 1 FLIGHT PROCEDURES	2.7
04-20	CAI	ACMFP-07X	AIR COMBAT MANEUVERING 2 V 1 STAGE EXAMINATION	1.0
04-21	T-45/FC	ACM-06X	AIR COMBAT MANEUVERING SIX CHECK	1.1
04-22	T-45/FC	ACM-07	AIR COMBAT MANEUVERING SEVEN	1.1
04-23	T-45/RC	ACM-08	AIR COMBAT MANEUVERING EIGHT	1.1
04-24	T-45/FC	ACM-09	AIR COMBAT MANEUVERING NINE	1.1
04-25	T-45/FC	ACM-10X	AIR COMBAT MANEUVERING TEN CHECK	1.1
04-26	T-45/FC	ACM-11X	AIR COMBAT MANEUVERING ELEVEN CHECK	1.1

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-05	T-45/FC	TACF-01	TACTICAL FORMATION ONE	1.4

Brief:

a. QOD
b. Lost sight
c. VCR management
d. G-warm maneuver
e. Combat checks

Introduce:

a. Combat checks
b. Voice communications
c. Combat spread
d. Cruise turns
e. Tactical turns
f. In-place turns
g. Shackle turns
h. Off-heading shackle turns
i. Cross turns
j. Loose deuce exercise
k. Gunsight tracking exercise
l. High yo-yo
m. Low yo-yo
n. Displacement roll
o. Unknown airspeed rendezvous
p. Lost sight

Practice:

a. HUD management
b. Formation

NOTE: This event shall be flown as wing.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-06	T-45/RC	TACF-02	TACTICAL FORMATION TWO	1.4

Brief:

a. QOD
b. Forced cockpit loading
c. Random/comm-out tactical maneuvering
d. Offensive combat spread

Introduce:

a. Random tactical formation maneuvering
b. Comm-out tactical formation maneuvering
c. Offensive combat spread

Practice:

a. Combat checks
b. HUD management
c. Voice communications
d. Formation
e. Combat spread
f. Cruise turns
g. Tactical turns
h. In-place turns
i. Shackle turns
j. Off-heading shackle turns
k. Cross turns
l. Loose deuce exercise
m. Gunsight tracking exercise
n. High yo-yo
o. Low yo-yo
p. Displacement roll
q. Lost sight
r. Unknown airspeed rendezvous
s. Precautionary approach(es)

NOTE: This event shall be flown as wing.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-07	T-45/RC	TACF-03	TACTICAL FORMATION THREE	1.4

Brief:

QOD

Practice:

a. Combat checks
b. HUD management
c. Voice communications
d. Formation
e. Combat spread
f. Cruise turns
g. Tactical turns
h. In-place turns
i. Shackle turns
j. Off-heading shackle turns
k. Cross turns
l. Random tactical formation maneuvering
m. Comm-out tactical formation maneuvering
n. Offensive combat spread
o. Loose deuce exercise
p. Gunsight tracking exercise
q. High yo-yo
r. Low yo-yo
s. Displacement roll
t. Lost sight
u. Unknown airspeed rendezvous

NOTE: This event shall be flown as wing.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-08	T-45/FC	TACF-04X	TACTICAL FORMATION FOUR CHECK	1.4

Perform: Flight briefed by IUT. Major emphasis will be on verbal skills and IUT's ability to fly the aircraft proficiently. This flight will approximate a typical student training mission. IP should demonstrate deficiency areas and discuss student performance evaluation/grading standards.

Brief:

a. QOD
b. HUD management
c. Voice communications
d. Formation
e. Combat spread
f. Cruise turns
g. Tactical turns
h. In-place turns
i. Shackle turns
j. Cross turns
k. Random tactical formation maneuvering
l. Comm-out tactical formation maneuvering
m. Offensive combat spread
n. Loose deuce exercise
o. Gunsight tracking exercise
p. High yo-yo
q. Low yo-yo
r. Displacement roll
s. Lost sight
t. Unknown airspeed rendezvous
u. Flight instruction
v. Performance evaluation
w. Guidance/feedback
x. Debrief

Introduce:

a. Flight instruction
b. Performance evaluation

Review:

a. Brief
b. Event overview
c. Introduce/demonstrate techniques
d. Guidance/feedback
e. Debrief
f. SNA performance standards

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-14	T-45/FC	ACM-01	AIR COMBAT MANEUVERING ONE (Offensive ACM)	1.1

Brief:

a. QOD
b. HUD air-to-air mode setup
c. Departure/spin recovery
d. Offensive bubble entry
e. Attack window recognition
f. CNATRA weapons envelope
g. Training rules

Demonstrate:

a. Snapshot drill
b. Horizontal scissors
c. Rolling scissors

Introduce (Offensive maneuvering):

a. Snapshot drill
b. Rolling scissors
c. Horizontal scissors
d. 6000-ft perch
e. Break turn exercise (horizontal and vertical)
f. Training rules

Practice:

a. Formation
b. Tactical formation
c. Communications
d. Landing pattern

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-15	T-45/FC	ACM-02	AIR COMBAT MANEUVERING TWO (Defensive ACM)	1.1

Brief:

a. QOD energy management
b Deck awareness
c. Deck transitions
d. Bugout criteria
e. Training rules

Introduce (defensive maneuvering):

a. Sight/lookout doctrine
b. Aggressiveness
c. Situational awareness
d. Snapshot drill (defensive)
e. Horizontal scissors (defensive)
f. Rolling scissors (defensive)
g. 6000-ft perch (defensive)
h. Break turn exercise (defensive)

Practice:

a. Formation
b. Tactical formation
c. Communications
d. Training rules
e. Landing pattern

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-16	T-45/FC	ACM-03	AIR COMBAT MANEUVERING THREE (Offensive and Defensive ACM)	1.1

Brief:

a. QOD
b. Training rules

Introduce:

a. Sight/lookout doctrine
b. Snapshot drill (offensive and defensive)
c. Offensive ACM
d. Defensive ACM
e. Bugout
f. Diving spiral

Practice:

a. Formation
b. Communications
c. Field entry/lead (if done)
d. Landing pattern
e. Aggressiveness
f. Situational awareness
g. Training rules

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-17	T-45/RC	ACM-04	AIR COMBAT MANEUVERING FOUR (High-Aspect ACM)	1.1

Brief:

a. QOD
b. Training rules
c. One-circle engagement
d. Two-circle engagement
e. Controlling the merge
f. Out-of-plane maneuvering
g. Energy management
h. Energy excursions

Introduce:

a. High-aspect one-circle engagement
b. High-aspect two-circle engagement
c. Neutral abeam start
d. Neutral butterfly start
e. Neutral unknown start (BVR)

Practice:

a. Snapshot drill (offensive and defensive)
b. Sight/lookout doctrine
c. Energy management
d. Aggressiveness
e. Situational awareness
f. Flight lead (if done)
g. Landing pattern
h. Training rules

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-18	T-45/ SOLO	ACM-05	AIR COMBAT MANEUVERING FIVE	1.1

Brief:

a. QOD
b. High-aspect ACM
c. Controlling the merge
d. Out-of-plane maneuvering
e. Energy management
f. Training rules

Practice:

a. Formation
b. Communications
c. Snapshot drill (offensive and defensive)
d. Offensive ACM
e. Defensive ACM
f. Neutral abeam start
g. Neutral butterfly start
h. Neutral unknown start (BVR)
i. Energy management
j. Aggressiveness
k. Situational awareness
l. Flight lead (if done)
m. Landing pattern
n. Training rules

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-21	T-45/FC	ACM-06X	AIR COMBAT MANEUVERING SIX CHECK	1.1

Brief:

a. QOD
b. In-flight emergencies
c. Training rules

Review:

a. Prepare for instruction
b. Brief
c. Formation
d. Communications
e. Snapshot drill (offensive and defensive)
f. Offensive ACM
g. Defensive ACM
h. Bugout
i. Neutral abeam start
j. Neutral butterfly start
k. Neutral unknown start
l. Precautionary approach(es)
m. Sight/lookout doctrine
n. Aggressiveness
o. Situational awareness
p. Training rules
q. Flight instruction
r. Performance evaluation
s. Guidance/feedback
t. Debrief

NOTE: This event shall be flown as flight lead.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-22	T-45/FC	ACM-07	AIR COMBAT MANEUVERING SEVEN	1.1

Brief:

a. QOD
b. Multiplane environment
c. Situational awareness
d. Training rules

Demonstrate:

a. Counterflow X 2
b. Multi-switch X 2

Introduce (2 V 1)

a. Engagement voice calls
b. Call bandit exercise
c. No switch X 2
d. Counterflow X 2
e. Multi-switch X 2 (fuel permitting)
f. Section bugout

Practice:

a. Formation
b. Engagement voice calls
c. Mutual support
d. Call bandit exercise (if done)
e. No switch X 2
f. Counterflow X 2
g. Multi-switch X 2
h. Abeam VID X 2
i. BVR engagement
j. Sight/lookout doctrine
k. Aggressiveness
l. Situational awareness
m. Training rules
n. Flight lead (if done)

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-23	T-45/RC	ACM-08	AIR COMBAT MANEUVERING EIGHT	1.1

Brief:

a. QOD
b. Training rules
c. In-flight emergencies
d. Nonscripted game plan

Demonstrate:

a. Abeam VID X 2
b. BVR engagement

Introduce:

a. Abeam VID X 2
b. BVR engagement (fuel permitting)

Practice (2 V 1):

a. Combat spread
b. Formation
c. Engagement voice calls
d. Mutual support
e. Call bandit exercise
f. No switch X 2
g. Counterflow X 2
h. Multi-switch
i. Engaged maneuvering
j. Sight/lookout doctrine
k. Aggressiveness
l. Situational awareness
m. Training rules

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-24	T-45/FC	ACM-09	AIR COMBAT MANEUVERING NINE	1.1

Brief:

a. QOD
b. Training rules
c. BVR admin
d. BVR game plans

Introduce:

BVR engagement (if not previously done)

Practice (2 V 1):

a. Formation
b. Engagement voice calls
c. Mutual support
d. Call bandit exercise (if done)
e. No switch X 2
f. Counterflow X 2
g. Multi-switch X 2
h. Abeam VID X 2
i. BVR engagement
j. Sight/lookout doctrine
k. Aggressiveness
l. Situational awareness
m. Training rules
n. Flight lead (if done)

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-25	T-45/FC	ACM-10X	AIR COMBAT MANEUVERING TEN CHECK	1.1

Brief:

a. QOD
b. BVR admin
c. BVR game plans
d. Training rules

Review (2 V 1):

a. Prepare for instruction
b. Brief
c. Formation
d. Engagement voice calls
e. Mutual support
f. Call bandit exercise
g. Counterflow
h. Multi-switch
i. Engaged maneuvering
j. BVR engagement
k. Sight/lookout doctrine
l. Aggressiveness
m. Situational awareness
n. Training rules
o. Flight instruction
p. Performance evaluation
q. Guidance/feedback
r. Debrief

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-26	T-45/FC	ACM-11X	AIR COMBAT MANEUVERING ELEVEN CHECK (Bandit Lead)	1.1

Brief:

a. QOD
b. Training rules

Review:

a. Prepare for instruction
b. Brief
c. Call bandit exercise
d. No switch
e. Counterflow
f. Multi-switch
g. Section bugout
h. Abeam VID
i. BVR engagement
j. Conduct 2 V 1 as bandit
k. Sight/lookout doctrine
l. Aggressiveness
m. Situational awareness
n. Training rules
o. Flight instruction
p. Performance evaluation
q. Guidance/feedback
r. Debrief

MODULE 05

CARRIER QUALIFICATION STAGE

OBJECTIVE. Provide selected IUTs with training in Carrier Qualification and CQ Lead/Safe procedures and instructional techniques.

Includes: Carrier Qualification Flight Procedures (CQFP-01 through CQFP-06X), Carrier Qualification simulators (CQ-01S through CQ-02S), covering FCLP and ship procedures followed by Carrier Qualification flights (CQ-03 through CQ-10X).

NOTE 1: CQ-08X is the ship qualification flight. CNATRAINST 3740.9D with change 4 applies.

NOTE 2: CQ-10X is the check flight for CQ Lead/Safe.

NOTE 3: LSO talkdown passes may be conducted anytime after CQ-03, but prior to CQ-07X.

NOTE 4: CQ-01S and CQ-02S may be flown anytime prior to CQ-07X.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-01	MIL	CQFP-01	FIELD CARRIER LANDING PRACTICE (FCLP)	1.0
05-02	MIL	CQFP-02	CARRIER QUAL/LEAD SAFE PROCEDURES	1.7
05-03	OFT	CQ-01S	CARRIER QUALIFICATION ONE SIMULATOR	1.5
05-04	OFT	CQ-02S	CARRIER QUALIFICATION TWO SIMULATOR	1.5
05-05	T-45/ SOLO	CQ-03	CARRIER QUALIFICATION THREE	0.7
05-06	MIL	CQFP-03	CQ SHIPBOARD PROCEDURES	1.0
05-07	MIL	CQFP-04	CARRIER EMERGENCY PROCEDURES	1.0
05-08	MIL	CQFP-05	SHIP’S BRIEF	3.0
05-09	T-45/ SOLO	CQ-04	CARRIER QUALIFICATION FOUR	0.7

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-10	T-45/ SOLO	CQ-05	CARRIER QUALIFICATION FIVE	0.7
05-11	T-45/ SOLO	CQ-06	CARRIER QUALIFICATION SIX	0.7
05-12	T-45/ SOLO	CQ-07X	CARRIER QUALIFICATION SEVEN CHECK	0.7
05-13	CAI	CQFP-06X	SHIP’S BRIEF EXAMINATION	1.0
05-14	T-45/ SOLO	CQ-08X	CARRIER QUALIFICATION EIGHT CHECK	2.4
05-15	T-45/RC	CQ-09	CARRIER QUALIFICATION NINE	2.4
05-16	T-45/FC	CQ-10X	CARRIER QUALIFICATION TEN CHECK	2.4

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-03	OFT	CQ-01S	CARRIER QUALIFICATION ONE SIMULATOR	1.5

Brief:

a. QOD
b. Ground procedures
c. Shore-to-ship checklist
d. Carrier-related EPs
e. Preflight

Introduce:

a. Case I/II recovery
b. Pattern
c. Start position
d. Bolter/touch-and-go technique
e. Response to waveoff and technique
f. Carrier arrestment
g. Postarrestment procedures
h. Catapult hookup
i. Catapult launch procedures
j. Pattern entry from catapult launch
k. Case I/II departure
l. Communications
m. CQ-related emergencies
n. Bolter with blown tire
o. Carrier-arrested landing with blown tire
p. Ejection

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-04	OFT	CQ-02S	CARRIER QUALIFICATION TWO SIMULATOR	1.5

Brief:

a. QOD
b. Delta pattern
c. Shipboard GINA alignment/DGRO MODE (T-45C only)

Introduce:

a. Case I/II recovery
b. Pattern
c. Start position
d. Bolter/touch-and-go technique
e. Response to waveoff and technique
f. Carrier arrestment
g. Postarrestment procedures
h. Catapult hookup
i. Catapult launch procedures
j. Suspend procedures
k. Pattern entry from catapult launch
l. Case I/II departure
m. Communications
n. Brake failure on deck
o. NWS failure on deck
p. Communications failure on deck
q. Launch bar malfunction
r. Catapult malfunctions--cold/soft
s. Communications failure in pattern
t. CQ-related emergencies
u. Ejection
v. BINGO situations

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-05	T-45/ SOLO	CQ-03	CARRIER QUALIFICATION THREE	0.7

Brief:

a. QOD
b. Delta pattern

Practice:

a. Communications
b. Course rules/pattern entry procedures
c. Pattern
d. Start position
e. AOA control
f. Glideslope control
g. Power control
h. Lineup control
i. Error detection/correction
j. Response to LSO calls
k. Bolter/touch-and-go technique
l. Response to waveoff and technique

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-09	T-45/ SOLO	CQ-04	CARRIER QUALIFICATION FOUR	0.7

Brief:

a. QOD
b. Delta pattern

Practice:

a. Communications
b. Course rules/pattern entry procedures
c. Pattern
d. Start position
e. AOA control
f. Glideslope control
g. Power control
h. Lineup control
i. Error detection/correction
j. Response to LSO calls
k. Bolter/touch-and-go technique
l. Response to waveoff and technique

NOTE: LSO talkdown passes may be conducted anytime after CQ-03, but prior to CQ-07X.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-10	T-45/ SOLO	CQ-05	CARRIER QUALIFICATION FIVE	0.7

Brief:

a. QOD
b. Delta pattern

Practice:

a. Communications
b. Course rules/pattern entry procedures
c. Pattern
d. Start position
e. AOA control
f. Glideslope control
g. Power control
h. Lineup control
i. Error detection/correction
j. Response to LSO calls
k. Bolter/touch-and-go technique
l. Response to waveoff and technique

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-11	T-45/ SOLO	CQ-06	CARRIER QUALIFICATION SIX	0.7

Brief:

a. QOD
b. Delta pattern

Introduce:

LSO talkdown to simulated fly-in arrestment (half and full flaps)

Practice:

a. Communications
b. Course rules/pattern entry procedures
c. Pattern
d. Start position
e. AOA control
f. Glideslope control
g. Power control
h. Lineup control
i. Error detection/correction
j. Response to LSO calls
k. Bolter/touch-and-go technique
l. Response to waveoff and technique

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-12	T-45/ SOLO	CQ-07X	CARRIER QUALIFICATION SEVEN CHECK	0.7

Brief:

a. QOD
b. Delta pattern

Review:

a. Communications
b. Course rules/pattern entry procedures
c. Pattern
d. Start position
e. AOA control
f. Glideslope control
g. Power control
h. Lineup control
i. Error detection/correction
j. Response to LSO calls
k. Bolter/touch-and-go technique
l. Response to waveoff and technique

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-14	T-45/ SOLO	CQ-08X	CARRIER QUALIFICATION EIGHT CHECK	2.4

Brief:

a. QOD
b. Delta pattern
c. Hot seat

Review:

a. Formation procedures
b. Pattern
c. Start position
d. AOA control
e. Glideslope control
f. Power control
g. Lineup control
h. Error detection/correction
i. Response to LSO calls
j. Bolter/touch-and-go technique
k. Response to waveoff and technique
l. Carrier flight deck procedures
m. Communications
n. Catapult launch procedures

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-15	T-45/RC	CQ-09	CARRIER QUALIFICATION NINE (Observe)	2.4

Brief:

QOD

Demonstrate:

a. Brief
b. Introduce/demonstrate techniques
c. Safety
d. Debrief
e. SNA performance standards
f. CQ safety pilot

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-16	T-45/FC	CQ-10X	CARRIER QUALIFICATION TEN CHECK (Brief/Lead)	2.4

Brief:

QOD

Review:

a. Prepare for instruction
b. Brief
c. Formation procedures
d. Pattern
e. Start position
f. AOA control
g. Glideslope control
h. Power control
i Lineup control
j. Error detection/correction
k. Response to LSO calls
l. Bolter/touch-and-go technique
m. Response to waveoff and technique
n. Delta pattern
o. Carrier flight deck procedures
p. Communications
q. Hot seat
r. Catapult launch procedures
s. CQ safety pilot
t. Flight instruction
u. Performance evaluation
v. Guidance/feedback
w. Debrief

MODULE 06

OUT-OF-CONTROL FLIGHT STAGE

OBJECTIVE. Provide the IUT with training in Out-of-Control Flight (OCF) procedures. The module will provide the IUT with phase goals and training techniques for instructing the stage.

Includes: OCF simulator (OCF-01S) and OCF flight (OCF-02X). OCFFP-01 and OCFFP-02X were provided in Module 00.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-01	OFT	OCF-01S	OUT-OF-CONTROL FLIGHT ONE SIMULATOR	1.0
06-02	T-45/RC	OCF-02X	OUT-OF-CONTROL FLIGHT TWO CHECK	1.0

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-01	OFT	OCF-01S	OUT-OF-CONTROL FLIGHT ONE SIMULATOR	1.0

Brief:

a. QOD
b. Departure/Spin procedures

Introduce:

a. High AOA/deep stall investigation/ rudder-induced departure
b. Low airspeed recovery (70 degrees noseup)
c. Low airspeed recovery (110 degrees noseup)
d. Lateral stick adverse yaw departure

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-02	T-45/RC	OCF-02X	OUT-OF-CONTROL FLIGHT TWO CHECK	1.0

Brief:

a. QOD
b. Runaway trim
c. Engine flameout
d. Ejection situations
e. Departure/spin procedures
f. NATOPS chapter II

Introduce:

a. Acceleration checks:
   1 g straight/level
   Unloaded acceleration (check AOA)
b. Extension/pitchback maneuver
c. Timed turns (min radius):
   14 units AOA
   17 units AOA
   18-21 units AOA
d. Other 1 V 0 maneuvers as briefed

Review:

a. Prepare for instruction
b. Brief
c. High AOA/deep stall investigation/ rudder-induced departure
d. Low airspeed recovery (70 degrees noseup)
e. Low airspeed recovery (110 degrees noseup)
f. Lateral stick adverse yaw departure
g. Flight instruction
h. Performance evaluation
i. Guidance/feedback
j. Debrief

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MODULE 07

T-45A TRANSITION

OBJECTIVE: To provide a NATOPS qualification in the T-45A for Instructor Pilots currently qualified in the opposite TMS aircraft.

Includes: T-45A/C Differences Brief (ENG-32), NATOPS flights and simulators (NA-15S through NA-25X), and NATOPS examinations (NATOPS-03X through NATOPS-05X).

Note 1: Required reading:

a. T-45A/C Instrument FTI (P-1204)
b. T-45 FAM FTI (P-1212)

Required reading from T-45A NATOPS:

c. Part I, Chapter 2, Systems
d. Part I, Chapter 4, Limitations
e. Part III, Chapter 7, Shore-Based Procedures
f. Part III, Chapter 8, Carrier-Based Procedures
g. Part III, Chapter 9, Special Procedures
h. Part V, Chapter 12, Emergency Procedures
i. Part VII, All, Communications-Navigation Equipment and Procedures
j. Part VIII, All, Weapons System

Note 2: All pilots require 10 hours of First Pilot (FP) time, including 1 hour of nighttime, prior to completion of NA-25X.

Note 3: Prior to initial T-45A carrier qualifications, pilots must complete a minimum of one CQ simulator and four FCLP periods.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-01	LECT	ENG-32	T-45A/C DIFFERENCES BRIEF	3.0
07-02	OFT	NA-15S	NATOPS FIFTEEN SIMULATOR (CO/FAM/INST)	1.5
07-03	OFT	NA-16S	NATOPS SIXTEEN SIMULATOR (EP)	1.5
07-04	T-45/FC	NA-17	NATOPS SEVENTEEN (CO)	1.5
07-05	T-45/FC	NA-18	NATOPS EIGHTEEN (FAM)	1.3
07-06	T-45/RC	NA-19	NATOPS NINETEEN (FAM)	1.3
07-07	T-45/FC	NA-20	NATOPS TWENTY (INST)	1.6
07-08	T-45/RC (HOOD)	NA-21	NATOPS TWENTY-ONE (INST)	1.6
07-09	T-45/FC	NA-22	NATOPS TWENTY-TWO (INST)	1.6
07-10	T-45/FC	NA-23	NATOPS TWENTY-THREE (LEAD)	1.1
07-11	PENCIL	NATOPS-03X	T-45 NATOPS OPEN-BOOK EXAMINATION	2.0
07-12	PENCIL	NATOPS-04X	T-45 NATOPS CLOSED-BOOK EXAMINATION	2.0
07-13	PENCIL	NATOPS-05X	T-45 NATOPS BOLD FACE EXAMINATION	1.0
07-14	OFT	NA-24SX	NATOPS TWENTY-FOUR SIMULATOR CHECK (INST – BI/RI)	1.5
07-15	T-45/FC	NA-25X	NATOPS TWENTY-FIVE CHECK (NATOPS CHECK)	1.3

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-02	OFT	NA-15S	NATOPS FIFTEEN SIMULATOR (CO/FAM/INST)	1.5

Brief:

QOD

Introduce:

a. Inspect aircraft interior
b. Check/test OBOGS
c. Cockpit/display orientation
d. BIT procedures
e. Normal takeoff
f. TACAN/VOR/VOR DME operations
g. Slow flight maneuver
h. Stall series
i. PAR approach
j. Squirrel cage
k. ILS approach

Practice:

a. Cockpit preflight checklist
b. Prestart checklist
c. Aircraft start
d. Poststart checklist
e. Shutdown checklist

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-03	OFT	NA-16S	NATOPS SIXTEEN SIMULATOR (EMERG PROCEDURES)	1.5

Brief:

QOD

Introduce:

a. Full system utilization
b. Fuel system emergencies
c. Electrical system emergencies
d. Pattern engine emergencies
e. Hydraulic emergencies
f. Lost communications
g. Start emergencies
h. Swerve after touchdown
i. Arrested landing (field) with blown tire
j. Engine flameout
k. Airstart procedures
l. Brake failure
m. Fire/GTS fire
n. Runaway trim
o. Stuck throttle
p. Abort
q. Unsafe gear conditions

Practice:

a. Normal takeoff
b. Touch-and-go, full flaps/slats

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-04	T-45/FC	NA-17	NATOPS SEVENTEEN (CO)	1.5

Brief:

a. QOD
b. Generator failure
c. Start emergencies

Introduce:

a. A/A mode
b. A/G mode

Practice

a. Prestart checklist
b. Aircraft start
c. Poststart checklist
d. BIT procedures
e. Cockpit/display orientation
f. Flight instrument checks
g. Engine checks
h. TACAN/VOR/ILS operations
i. DP
j. Stall series
k. Squirrel cage
l. TACAN/VOR DME approach
m. GCA
n. Break
o. VFR landing pattern
p. Touch-and-go, full flaps/slats
q. After landing checklist

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-05	T-45/FC	NA-18	NATOPS EIGHTEEN (FAM)	1.3

Introduce:

a. Simulated emergencies airborne
b. Postflight

Practice:

a. Preflight
b. Checklists
c. BIT procedures
d. Communications
e. Takeoff
f. Standard departure
g. Minimum radius turns
h. Stall series
i. Unusual attitudes
j. Aerobatics
k. Straight-in PA
l. Abeam PA
m. Overhead PA
n. VFR landing pattern
o. Touch-and-go, full flaps/slats

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-06	T-45/RC	NA-19	NATOPS NINETEEN (FAM)	1.3

Practice:

a. Preflight
b. Checklists
c. BIT procedures
d. Communications
e. Takeoff
f. Standard departure
g. Minimum radius turns
h. Stall series
i. Unusual attitudes
j. Aerobatics
k. Simulated emergencies (airborne)
l. Precautionary approach(es)
m. VFR landing pattern
n. Touch-and-go full flaps/slats
o. Postflight

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-07	T-45/FC	NA-20	NATOPS TWENTY (INST)	1.6

Introduce:

a. Full system utilization
b. Station passage
c. PAR approach
d. ILS approach
e. Missed approach
f. Landing pattern

Practice:

a. Checklists
b. Ground operations
c. Takeoff
d. TACAN/VOR DME operations
e. TACAN/VOR DME approach
f. After landing checklist
g. Shutdown checklist

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-08	T-45/RC (HOOD)	NA-21	NATOPS TWENTY-ONE (INST)	1.6

Practice:

a. Ground operations
b. Partial system utilization
c. Simulated emergencies (airborne)
d. Partial panel
e. Non-precision approach (partial panel)
f. Precision approach (partial panel)
g. Missed approach
h. Landing pattern
i. Postflight operations

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-09	T-45/FC	NA-22	NATOPS TWENTY-TWO (INST)	1.6

Brief:

Aircraft lighting controls

Practice:

a. Ground operations
b. Full system utilization
c. Non-precision approaches
d. Precision approaches
e. Missed approach
f. Landing pattern
g. Postflight operations

NOTE: This flight should be flown at night.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-10	T-45/FC	NA-23	NATOPS TWENTY-THREE (LEAD)	1.1

Practice:

a. Flight lead brief
b. Preflight
c. System management
d. Communications
e. Ground procedures
f. Normal takeoff
g. Departure
h. Rendezvous
i. Area management
j. Flight conduct
k. Recovery procedures
l. Section approach (fuel permitting)
m. Overhead break
n. Landing pattern

NOTES:

(1) Flight should be briefed and flown as a Module 3, 4 or 5 lead with emphasis on flight area and system management.

(2) Event can be flown anytime after NA-20.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-14	OFT	NA-24SX	NATOPS TWENTY-FOUR SIMULATOR CHECK (INST - BI/RI)	1.5

Brief:

QOD

Review:

a. Takeoff emergencies
b. Departure communications
c. ITO
d. DP
e. S-1 pattern
f. S-3 pattern
g. TACAN/VOR tracking/holding
h. Point-to-point
i. Partial panel approach(es)
j. TACAN/VOR DME approach
k. PAR approach
l. Missed approach
m. ILS approach
n. Aircraft emergencies

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-15	T-45/FC	NA-25X	NATOPS TWENTY-FIVE CHECK (NATOPS CHECK)	1.3

Review:

a. Preflight
b. Communications
c. Normal takeoff
d. Standard departure
e. Minimum radius turns
f. Stall series
g. Unusual attitudes
h. Aerobatics
i. Simulated emergencies (airborne)
j. Recovery to pattern
k. Precautionary approach(es)
l. Overhead pattern
m. Roll-and-go, full flap/slats
n. Touch-and-go, full flaps/slats
o. Full stop from precautionary approach
p. Postflight

NOTE: Open- and closed-book NATOPS examinations and boldface examination shall be complete prior to NA-25X.

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SECTION II

APPENDIX A

A. IUT TRAINING OBJECTIVES. The T-45 Combined Strike Flight Instructor Training curriculum is designed to satisfy eight training objectives, which result in the transition of the IUT into a jet aircraft instructor capable of teaching Navy tactical flying skills. Standards of military decorum expected of all naval officers, as defined in prior training directives, will be observed on a daily basis. The goal of all T-45 flight instructors under training is to meet the appropriate terminal learning objectives within the specified flight hour and calendar day limitations. Upon satisfactory completion of the curriculum, the IUT will be able to fulfill the following task objectives:

1. Aviation. Instruct student naval aviators (SNAs) in controlling the aircraft, dual or solo, day and night in various meteorological conditions and stages of flight as required. Aircraft control must be maintained while meeting all other objectives.

2. Navigation. Instruct SNAs in maintaining aircraft position within a desired geographical area or along a desired ground track using visually acquired landmarks, aircraft-installed electronic equipment, aeronautical charts, voice communications with controlling agencies, and dead reckoning techniques while complying with Federal Aviation Regulations and standard operating procedures.

3. Communications. Instruct SNAs in communicating clearly with ground facilities and with other aircraft using approved radio procedures and light, hand, or aircraft maneuvering signals as appropriate.

4. Systems Management. Instruct SNAs in the management of aircraft flight, communications, navigation, and weapons delivery systems as required for successful mission completion.

5. Flight Planning. Instruct SNAs in planning the safe conduct of each flight from preflight to mission completion, considering pilot, aircraft, and weather limitations.

6. Headwork. Ensure SNAs demonstrate an understanding of aerodynamics, navigation, communications, systems management, and planning principles by exercising sound judgment while accomplishing all training objectives. Compliance with all conditions and standards shall be subordinated to the safety of the aircrew, other personnel, and the aircraft.

7. Instructional Technique. Convey procedural information and associated flying techniques to SNAs utilizing standardized instructional methods. Analyze and critique student performance and direct future progress toward achievement of the strike student curriculum objectives.

8. Crew Resource Management. Ensure an understanding of the concept of crew resource management (CRM), including the seven critical skills associated with CRM. Demonstrate proficiency in CRM behavioral skills.

B. IUT STAGE OBJECTIVES

1. Aircrew Familiarization. After this stage, the IUT will demonstrate competency to instruct SNAs in controlling the aircraft utilizing normal and emergency systems in rudimentary flight maneuvers in the T-45 aircraft.

2. Basic Instruments. After this stage, the IUT will demonstrate competency to instruct SNAs in controlling the aircraft without visual references utilizing the characteristics, theory, and operations of flight instrumentation and its applicability to aircraft control.

3. Radio Instruments. After this stage, the IUT will demonstrate competency to instruct SNAs in operating the aircraft in the high and low IFR environments utilizing instruments, navigation, and communication equipment.

4. Airways Navigation. After this stage, the IUT will demonstrate competency to instruct SNAs in planning a flight terminating away from home base utilizing the high altitude jet structure.

5. Formation Flight. After this stage, the IUT will demonstrate competency to instruct SNAs in controlling the aircraft in multiplane formation flight, rendezvous, maintaining wing position, and flight integrity as leader.

6. Night Familiarization. After this stage, the IUT will demonstrate competency to instruct SNAs in operating the aircraft in normal and emergency modes at night in the following evolutions: start, taxi, takeoff, enroute navigation, formation, and landing.

7. Operational Navigation. After this stage, the IUT will demonstrate competency to instruct SNAs in flying the aircraft in day visual conditions along a low-level, high-speed training route.

8. Air-to-Ground Weapons. After this stage, the IUT will demonstrate competency to instruct SNAs in the conduct of air-to-ground weapons delivery, during visual daylight conditions, during which the student will fly prescribed target patterns. The IUT will instruct the SNA in determining relationships of dive angle, airspeed, and release altitude-to-weapon trajectory as used in error analysis and successful operation of the armament system.

9. Tactical Formation. After this stage, the IUT will demonstrate competency to instruct SNAs in controlling the aircraft in tactical formation flights under visual conditions.

10. Air Combat Maneuvering. After this stage, the IUT will demonstrate competency to instruct SNAs in flying ACM maneuvers performing offensively and defensively in the multiplane tactical environment, while maintaining flight integrity in accordance with the NATOPS manual, tactical doctrine, and command directives.

11. Carrier Qualification. After this stage, the IUT will demonstrate competency to act as a lead/safety pilot for shipboard operations and to instruct SNAs in field carrier landing practice.

12. Out-of-Control Flight. After this stage, the IUT will demonstrate competency to instruct SNAs in recognizing the various phases of out-of-control flight, the indications of OCF utilizing instrument references, and applying the proper recovery controls for an uncontrolled flight situation.

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MASTER PUBLICATIONS LIST

1. Individually Issued Materials

	TITLE	IDENTIFICATION	DATE	QTY PER IUT	COST EACH
a.	T-45 Combined Flight Training Curriculum	CNATRAINST 1542.159	3/17/08	1	
b.	T-45 Combined Flight Instructor Training Curriculum	CNATRAINST 1542.160		1	
c.	Flight Training Instructions (FTI)	CNAT P-1204 through 1289		12	
d.	DOD FLIP Publications				
	(1) Enroute IFR Supplement U.S.			3	$1.25
	(2) Enroute High Altitude Chart, U.S. (H1, H2)			6	.60
	(3) Terminal High Altitude Instrument Approach Procedures (NW NE SW SE)			8	$1.25
e.	Single-engine Jet Log	CNATRA-GEN 3760/1		25	.78
f.	TRAWING In-Flight Guide	Locally produced/issued			
g.	Aviation Training Jacket (ATJ)	CNATRA-GEN 1542/10A		1	.11
h.	Pilot Training Summary	CNATRA 1542/95		1	.005
i.	Jacket Review Divider	CNATRA-GEN 1542/66		1	.005
j.	Aviation Training Forms are generated by TIMS.				
k.	Military Flight Plan	DD-175		20	.005

2. Support Materials

	TITLE	IDENTIFICATION	QUANTITY	COST EACH
a.	T-45 NATOPS Flight Manual	NAVAIR A1-T45AB/AC-NFM-000	255	$17.50
b.	T-45 NATOPS Flight Manual (performance charts)	NAVAIR A1-T45AC-NFM-300	255	$17.50
c.	T-45 NATOPS Pocket Checklist	NAVAIR A1-T-45AC-NFM-500	255	$2.65
d.	NATOPS Instrument Flight Manual	Stock No. 0437LP900109	50	$11.50
e.	NATOPS General Operating Inst	OPNAVINST 3710.7U	50	$11.50
			TOTAL	$10,787.57
f.	Flight clothing	(Identification and quantity listed in CNATRAINST 10126.1C; cost listed in NAVSUP PUB. 4100)		

3. Aircraft and Major Training Devices

	TITLE	IDENTIFICATION
a.	Aircraft	T-45A/T-45C
b.	Instrument Flight Trainer Instrument Simulator	2F137/137C
c.	Operational Flight Trainer Visual Simulator	2F138/138C/138D/138E
d.	TIMS Curriculum Database/Electronic ATF/ Yellowsheets/Data Collection	
e.	Academic Subsystem Electronic Classroom/ Learning Center/Authorware Course Materials	