



## DEPARTMENT OF THE NAVY

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

CNATRAINST 1542.109B  
N3144  
2 December 1998

### CNATRA INSTRUCTION 1542.109B

Subj: T-45A STRIKE FLIGHT INSTRUCTOR TRAINING CURRICULUM OUTLINE

1. Purpose. To promulgate the curriculum for training Instructor Pilots in the T-45A Strike phase of training.
2. Cancellation. CNATRAINST 1542.109A
3. Background. Significant differences include the restructuring of Engineering, addition of Navy Aircrew Common Ejection Seat lecture, and improvements to Carrier Qualification training requirements. Additionally, a new Module 08 has been added to support Student Naval Flight Officer (SNFO) training in Advanced Tactical Maneuvering (ATM). This module will be limited to selected IUTs and only used when Advanced SNFO training is required to be performed at Training Air Wing TWO. Numerous adjustments to individual ATFs were completed in consonance with 1998 Curriculum Conference decisions.
4. Action. This instruction is effective upon receipt. No changes will be made without written authorization of the Chief of Naval Air Training (CNATRA).
5. Forms. 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 T-45TS Training Integration System and will not be stocked in hard copy.

A handwritten signature in black ink, appearing to read "R. L. McCollum", is positioned above the typed name and title.

R. L. MCCOLLUM  
Chief of Staff  
Acting

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Page Number.....Issue

Letter - 2 .....	0	87.....	1
3/(4 blank).....	4	88 - 90.....	0
i/(ii blank).....	4	91.....	1
iii/(iv blank).....	4	92 - 93.....	0
v-viii.....	0	94.....	1
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10 - 18.....	4	101.....	0
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22.....	2	103 - 104.....	0
23 - 26.....	0	105 - (106 blank).....	1
27.....	2	107 - 120.....	3
28 - 32.....	0	121 - 126.....	4
33.....	1	A-1 - A-4.....	0
34 - 36.....	0	A-5/(A-6 blank).....	0
37.....	2		
38 - 39.....	0		
40 .....	1		
41 .....	0		
42.....	1		
43 - 44.....	0		
45 - 46.....	0		
47.....	1		
48 - 49.....	0		
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51 - 52.....	0		
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59 - 60.....	0		
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62.....	0		
63.....	1		
64 - 67.....	0		
68 - 69.....	1		
70 - 79.....	0		
80.....	1		
81.....	0		
82.....	1		
83 - 86.....	0		

CNATRAINST 1542.109B CH-4

6 August 2004

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6 August 2004

TABLE OF CONTENTS

	<u>PAGE</u>	
<u>SUMMARY OF CHANGES</u> .....	iii	(R)
<u>COURSE DATA</u> .....	v	
<u>GLOSSARY</u> .....	vii	
<u>CURRICULUM GUIDELINES</u> .....	1	
 <u>SECTION I - TRAINING SUMMARY</u>		
1. TRAINING HOUR SUMMARY.....	10	(R)
2. TRAINING ALLOCATION BY MODULE.....	12	(R)
3. MODULE SUMMARY .....	12	(R)
4. TRAINING TIME ANALYSIS.....	15	(R)
5. OUTLINE OF TRAINING.....	18	(R)
 MODULE 00 (ASI, Academics, CR, CO, NATOPS).....	 19	
MODULE 01 (Familiarization, Instruments).....	39	
MODULE 02 (Formation, Night Familiarization, Night Formation).....	51	
MODULE 03 (Operational Navigation, Weapons).....	59	
MODULE 04 (Air-to-Air Gunnery TOW).....	70	
MODULE 05 (Tactical Formation, Air Combat Maneuvering...)	83	
MODULE 06 (Carrier Qualification).....	95	
MODULE 07 (Out-of-Control Flight).....	101	
MODULE 08 (T-45A SNFO Instructor Training) .....	103	
MODULE 09 (T-45A to T-45C Transition).....	107	
MODULE 10 (WEAPON AND OPERATIONAL NAVIGATION STAGES UPGRADE).....	121	(A)
 <u>SECTION II - APPENDIX A</u>		
IUT TRAINING OBJECTIVES.....	A-1	
IUT STAGE OBJECTIVES.....	A-2	
MASTER PUBLICATIONS LIST		
1. INDIVIDUALLY ISSUED MATERIALS.....	A-4	
2. SUPPORT MATERIALS.....	A-5	
3. AIRCRAFT AND MAJOR TRAINING DEVICES.....	A-5	

CNATRAINST 1542.109B CH-4

6 August 2004

BLANK PAGE



CNATRAINST 1542.109B CH-4  
6 August 2004

BLANK PAGE

2 December 1998

COURSE DATA

1. Course Title. T-45A Strike Flight Instructor Training Curriculum.
2. Course Identification Number. Q-2A-0045.
3. Training Site/Course Data Processing (CDP) Code. NAS Kingsville, Texas.
4. Course Status. Revision, implement upon receipt.
5. Course Mission. T-45A Strike Flight Instructor Training is designed to provide designated aviators with the necessary instructional methodology and techniques to instruct undergraduate flight students in the strike phase 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 Required. None.
10. NOBC or NEC earned. None.
11. Obligated Service. Not applicable.
12. Follow On Training. None.
13. Course Length (Initial Qualification). 57 training days, 11.31 training weeks.
14. Class Capacity. Variable.
15. Instructor Requirements. As established by Chief of Naval Operations (CNO) planning factors.
16. Course Curriculum Manager. Commander, Training Air Wing (COMTRAWING) TWO.
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.

2 December 1998

20. Preceding Curriculum Data. 24 October 1997.

21. Instructor Under Training (IUT) Performance Measurement. In accordance with CNATRAINST 1500.4E.

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-45A Strike Flight Instructor Training course is divided into stages and categories:

<u>NATOPS</u>	-	NATOPS Qualification Stage
<u>CAT I</u>	-	Familiarization and Instrument Stages
<u>CAT II</u>	-	Formation, Night Familiarization and Night Formation Stages
<u>CAT III</u>	-	Operational Navigation Stage, Weapons Stage
<u>CAT IV</u>	-	Air-to-Air Gunnery and TOW Stage
<u>CAT V</u>	-	Tactical Formation and Air Combat Maneuvering Stages
<u>CQ</u>	-	Carrier Qualification Stage
<u>OCF</u>	-	Out-of-Control Flight Stage
<u>SNFO</u>	-	T-45A SNFO Advanced Tactical Maneuvering (ATM)

GLOSSARY

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

- a. ACP - Armament Control Panel
- b. AOA - Angle of Attack
- c. ASR - Airport Surveillance Radar
- d. CAI - Computer Assisted Instruction
- e. CARQUAL - Carrier Qualification
- f. CNI - Communication, Navigation, and Indicator
- g. CV - Carrier
- h. DME - Distance Measuring Equipment
- i. DR - Dead Reckoning
- j. ECA - Engine Control Amplifier
- k. ECS - Environment Control System
- l. FC - Front Cockpit - Fly in front cockpit with a qualified flight instructor on board providing instruction, assistance, or supervision.
- m. FCLP - Field Carrier Landing Practice
- n. FP - Flight Procedures
- o. FTI - Flight Training Instruction
- p. GCA - Ground Controlled Approach
- q. GTS - Gas Turbine Starter
- r. H - Hooded
- s. HUD - Heads-up Display
- t. HYD - Hydraulics
- u. IFR - Instrument Flight Rules

2 December 1998

v.	IFT	-	Instrument Flight Trainer (2F137 - instrument)
x.	ILS	-	Instrument Landing System
y.	IMC	-	Instrument Meteorological Conditions
z.	IP	-	Instructor Pilot
aa.	ITO	-	Instrument Takeoff
bb.	LECT	-	Squadron Lecture
cc.	MIL	-	Mediated Interactive Lecture
dd.	NACES	-	Navy Aircrew Common Ejection Seat
ee.	NATOPS	-	Naval Air Training and Operating Procedures Standardization
ff.	NORDO	-	No Radio
gg.	NWS	-	Nose Wheel Steering
hh.	OBOGS	-	On-board Oxygen Generating System
ii.	OFT	-	Operational Flight Trainer (2F138 - visual)
kk.	OPAREA	-	Operations Area
ll.	OPLAN	-	Operations Plan
mm.	OPS	-	Operations
nn.	PA	-	Precautionary Approach
oo.	PAR	-	Precision Approach Radar
pp.	PENCIL	-	Non-CAI administered examination
qq.	P/P	-	Partial Panel
rr.	RAT	-	RAM Air Turbine
ss.	RC	-	Rear Cockpit - Fly in rear cockpit with a qualified flight instructor on board providing instruction, assistance, or supervision.
tt.	SID	-	Standard Instrument Departure

2 December 1998

uu.	SIMO	-	Simultaneous Tracking
vv.	SNA	-	Student Naval Aviator
ww.	SNFO	-	Student Naval Flight Officer
xx.	SOLO	-	Fly without a qualified flight instructor.
yy.	SRT	-	Standard Rate Turn
zz.	TACAN	-	Tactical Air Navigation
aaa.	VFR	-	Visual Flight rules
bbb.	VHF	-	Very High Frequency
ccc.	VOR	-	VHF Omnidirectional Range
ddd.	Wx	-	Weather
eee.	X	-	Check flight, simulator check event, or examination lesson.

CNATRAINST 1542.109B

2 December 1998

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2 December 1998

CURRICULUM GUIDELINES1. Sequencing

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

b. Guidelines. The Instructor Under Training (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 multi-plane ON flights (ON-04 and ON-05X), the IUT must complete the TACF and WEP stages.

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 multi-plane events, all flight members (i.e., instructors, observers, students, passengers, etc.) shall be briefed by the flight leader 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. The debriefer shall debrief in accordance with established convention. The minimum items that shall be covered in the debrief are:

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

(2) Attainment/non-attainment of aircraft control and mission performance standards.

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

2 December 1998

3. Schedule Limitations and Constraints

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 6 days followed by 2 days off, except as waived in writing by the training air wing (TRAWING) commander.

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

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

(6) 1.5 hours of night time 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 in accordance with local procedures.

4. Standardization. All simulator and flight events outlined herein shall be conducted in accordance with the current CNATRA flight training instructions (FTIs) and the T-45A NATOPS manual. Standardization Evaluation (StanEval) of IUTs shall be executed by the Instructor Training Unit. IUTs will normally be trained in TRAWING TWO in the following order: ASI, NATOPS, Category I, and Category II. Follow-on training may be sequenced in any order. 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 01): BI, RI, FAM, AN

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

2 December 1998

Category III (MOD 03): WEP, ON

Category IV (MOD 04): GUN, TOW

Category V (MOD 05): TACF, ACM

NOTE: Carrier Qualification (CQ) Stage, Out-of-Control and SNFO Instructor Training Flight Stages 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. Landing signal officers (LSOs) may complete CQ Stage any time after completing NATOPS Stage at the discretion of the TRAWING commander.

5. Solo Maneuver Restrictions. IUTs are prohibited from performing solo flight until they have successfully completed NATOPS Stage and possess a current instrument rating.

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 TWO Instructor Training Unit (ITU) for review prior to the IUT's training in subsequent categories.

7. Waiving Flight or Simulator Events. The flights and simulator events listed are the optimum to be completed. Training events may be waived or combined at the discretion of the TRAWING commander.

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

2 December 1998

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 acrobatic maneuvers, clear of clouds.
OCF	ACM weather requirements.
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 en route flight altitude and not less than 5 miles visibility on navigation route.
NFORM	OPNAV minimums.
ON	3000/5 en route.
WEP	8500/5 30 degree pattern, 6500/5 20 degree pattern, 3000/5 10 degree pattern.
TACF	OPNAV minimums.
GUN	OPNAV minimums. Usable weather in gunnery range.
ACM	OPNAV minimums. Wx in OPAREA in accordance with CNATRA training rules.
CQ(FCLP)	Local weather minimums for FCLP.
CQ(SHIP)	As directed by TRAWING commander and as outlined in CNATRA CARQUAL OPLAN.

11. Instrument Rating. IUTs in need of instrument rating refresher training will receive the necessary training to renew the instrument rating in accordance with OPNAVINST 3710.7Q prior to solo flight and prior to becoming a designated flight instructor.

2 December 1998

12. Instructor Assignment. IUTs will be instructed by the TRAWING TWO ITU or training squadron instructors qualified to instruct IUTs in the stage.

13. Designated Flight Leader. For all multi-plane flights involving two or more flight instructors, the designated flight leader will be responsible for compliance with OPNAVINST 3710.7Q and the provisions of paragraph 6 above. In all appropriate cases, the designated instructor shall retain the formation leader status as defined by OPNAVINST 3710.7Q paragraphs 3.5.2 and 3.5.4.

14. Acrobatic Maneuvers. Acrobatic maneuvers shall be conducted in accordance with OPNAVINST 3710.7Q.

15. Night Solo Flights. Night solo flights require an operating radar altimeter.

16. Warm-up Flights. Warm-up flights shall be given as necessary to regain flight proficiency after prolonged delays in training at the discretion of the COMTRAWING TWO/commanding officer.

17. Extra Time Events. Extra time flight and simulator instruction shall be given at the discretion of the COMTRAWING TWO/commanding officer.

18. Modifying Instructor Training Curriculum. The T-45A 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.

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

a. Discuss

<u>Instructor:</u>	Quiz the IUT on the applicable procedures, systems, or maneuvers.
<u>IUT:</u>	Responsible for knowledge of the procedures prior to briefing.
<u>Item:</u>	Graded and labeled "E" in the ID column on the ITF.

2 December 1998

b. Brief

Instructor: Brief the IUT on the applicable procedures.

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

Item: Not graded and labeled "BRF" by 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 demonstration.

Item: Not graded and labeled "DEMO" by instructor in the grade columns on the ITF, labeled "D" in the "ID" column.

d. Introduce

Instructor: Coach the IUT through the maneuver, and/or may demonstrate the maneuver.

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

Item: Graded and labeled "I" in the "ID" column on the ITF.

e. Practice

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

IUT: Must perform maneuver or exercise with minimal assistance.

2 December 1998

Item: Graded and labeled "P" in the "ID" column on the ITF.

## 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 on ITF and labeled "R" in the "ID" column of the ITF.

## g. Non Graded

Instructor: Observed maneuver; item will be graded only if performed above average, below average, or unsatisfactory. Also used for "optional" items on ITFs that were not performed.

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: Labeled "NG" in the "ID" column on the ITF. Additionally, instructor must mark either "NG" or "X" in the grade columns. An "X" shall be marked only if maneuver performed above average, below average, or unsatisfactorily.

## 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, etc.).

IUT: A required item, which was not completed regardless of whether it

2 December 1998

was Discuss, Brief, Demonstrate, Introduce, etc.

Item: Labeled, by instructor, "DND" in the grade columns on the ITF. An associated remark is required, stating reason for incompleteness. One incomplete item constitutes an incomplete event. Not to be used for "Operational" items not performed, instead use "NG"

i. Not Applicable

Item: Not graded, but, marked with "NA" by the instructor in the grade columns on the ATF. This is used ONLY for items in the following categories: Those LABELED on the ATF "Optional", "Fuel permitting", "If done", "Weather permitting", or its equivalent.

j. Previously Graded Item

Instructor: A maneuver previously graded on an incomplete event. Item may be flown if fuel/time permit, and if performed above average, below average, or unsatisfactorily, may be appropriately graded, otherwise marked "PGI" in grade columns.

IUT: Expected to perform the maneuver as briefed to the skill level stipulated by this instruction.

Item: Labeled, by instructor, "PGI" in the grade columns of the ITF. Instructor must ensure every item graded on previous incomplete event is marked either "PGI" or "X" in the grade columns. Every item previously marked "DND" shall be either graded appropriately, or marked "DND" if incomplete again. An "X" shall be marked, in a previously marked "PGI" item, only if maneuver performed above average, below average, or unsatisfactorily.

2 December 1998

## k. Not Observed

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

IUT: Expected to perform the maneuver as briefed to the skill level stipulated (see previous definitions).

Item: Marked, by instructor, "NOB" in grade columns on items completed, but not observed. May be graded by instructor if observed by qualified instructor (i.e., flight lead, LSO, etc.).

## l. "S" Coded

IUT instructional flights designated by Flights the letter "S" are flown in a synthetic trainer (IFT or OFT as appropriate).

IUT: Instructor shall adhere to guidelines described above.

Item: The previous definitions apply to all items in "S" designated events.

## m. Other definitions Refer to CNATRINST 1500.4E.

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

6 August 2004

## SECTION I

## TRAINING SUMMARY

R) 1. Training Hour SummaryFLIGHT TRAINING HOURS

<u>STAGE</u>	<u>TOTAL FLIGHTS</u>	<u>TOTAL HOURS</u>	<u>DUAL FLIGHTS</u>	<u>DUAL HOURS</u>	<u>SOLO FLIGHTS</u>	<u>SOLO HOURS</u>
NA	16	23.3	16	23.3	0	0.0
FAM	3	4.5	3	4.5	0	0.0
BI	1	1.5	1	1.5	0	0.0
RI	2	3.0	2	3.0	0	0.0
AN	3	4.5	3	4.5	0	0.0
FORM	4	6.0	4	6.0	0	0.0
NFAM	2	2.8	2	2.8	0	0.0
NFORM	3	4.5	3	4.5	0	0.0
ON	6	7.8	6	7.8	0	0.0
WEP	6	7.8	6	7.8	0	0.0
GUN	10	12.0	9	10.8	1	1.2
TOW	5	5.8	5	5.8	0	0.0
TACF	4	5.6	4	5.6	0	0.0
ACM	10	11.7	9	10.5	1	1.2
CQ	8	10.7	2	4.8	6	5.9
OCF	1	1.0	1	1.0	0	0.0
TLL	1	1.5	1	1.5	0	0.0
TOTAL	85	114.0	77	105.7	8	8.3

## R)

SIMULATOR TRAINING HOURS

<u>STAGE</u>	<u>TOTAL EVENTS</u>	<u>TOTAL HOURS</u>	<u>OFT EVENTS</u>	<u>OFT HOURS</u>	<u>IFT EVENTS</u>	<u>IFT HOURS</u>
CO	3	4.5	3	4.5	0	0.0
NA	8	12.0	6	7.5	3	4.5
FAM	0	0.0	0	0.0	0	0.0
BI	1	1.5	0	0.0	1	1.5
RI	1	1.5	0	0.0	1	1.5
FORM	0	0.0	0	0.0	0	0.0
NFORM	0	0.0	0	0.0	0	0.0
ON	1	1.5	1	1.5	0	0.0
WEP	3	3.3	3	3.3	0	0.0

6 August 2004

GUN	1	1.0	1	1.0	0	0.0
CQ	1	1.5	1	1.5	0	0.0
OCF	1	1.0	1	1.0	0	0.0
TOTAL	20	27.8	15	20.3	5	7.5

FLIGHT SUPPORT HOURS

(R)

STAGE	SYMBOL	PERIOD	HOURS
Instrument Rating	IRFP	3	4.0
Course Rules	CR	3	5.0
Aircrew Coordination Training	ACT	1	3.0
NACES	SEAT	1	2.0
Cockpit Orientation	CO	3	2.5
Emergency Procedures	EMFP	8	10.0
Basic Instruments	BIFP	6	6.3
Radio Instruments	RIFP	5	7.2
Familiarization	FAMFP	3	7.7
Out-of-Control Flight	OCFFP	2	2.0
Formation	FFP	8	9.4
Night Familiarization	NFAMFP	4	4.0
NATOPS	NATOPS	5	9.0
Night Formation	NFFP	2	2.2
Operational Navigation	ONFP	6	5.8
Weapons	WEPFP	5	4.7
Air-to-Air Gunnery	GUNFP	2	4.0
Tactical Formation	TFFP	4	4.5
Air Combat Maneuvering	ACMFP	7	7.5
Carrier Qualification	CQFP	4	6.5
SNFO Familiarization (Formation)	FAM/FORMFP	2	3.0
SNFO Tactical Low Level	TLLFP	2	4.0
SNFO Advanced Tactical Maneuvering	ATMFP	2	2.5
TOTAL		88	116.8

6 August 2004

## ACADEMIC INSTRUCTION HOURS

STAGE	SYMBOL	PERIOD	HOURS
Aviation Student Introduction	ASI	8	11.8
Engineering	ENG	29	32.1
Aerodynamics	AERO	6	4.9
Instrument Navigation	INAV	2	1.6
TOTAL		45	50.4

NOTE: IUTs without previous ONAV training will also attend ONAV academics in accordance with CNATRINST 1542.108E to qualify for ON stage.

R) 2. Training Allocation by Module

MOD	FLIGHT		SIMULATOR		FLIGHT	ACADEMICS
	HOURS	EVENTS	HOURS	EVENTS	SUPPORT HOURS	HOURS
00	12.0	8	10.5	7	64.8	42.9
01	13.5	9	3.0	2	2.0	0.0
02	11.9	8	0.0	0	0.0	0.0
03	11.8	9	3.8	3	11.0	6.0
04	17.8	15	1.0	1	4.0	0.0
05	17.3	14	0.0	0	12.0	0.0
06	10.7	8	1.5	1	6.5	0.0
07	1.0	1	1.0	1	0.0	0.0
08	1.5	1	0.0	0	9.5	0.0
09	11.3	8	6.0	4	7.0	1.5
10	5.2	4	1.0	1	0.0	0.0
TOTAL	114.0	85	27.8	20	116.8	50.4

3. Module Summary. The IUT will be required to complete Modules 00 and 01 prior to being designated as a flight instructor. BIFP, RIFP, ANFP, FAMFP, OCFFP, and FFP lessons will be sequenced into NATOPS to support performance events. Normally, the IUT's initial training will be conducted at the TRAWING TWO ITU in the following order:

6 August 2004

MODULE	FLIGHTS	SIMULATORS	FLIGHT SUPPORT	ACADEMICS
00 (ASI, Academics, CR, ACT, CO, NATOPS)				
	NA-04-	CO-02S	IRFP-01-	ASI-01-
	NA-06	NA-01S-	IRFP-03X	ASI-06
	NA-08	NA-03S	CR-01-	ENG-01-
	NA-09	NA-07S	CR-03X	ENG-28X
	NA-11	NA-10S	ACT-01	AERO-01-
	NA-12	NA-13SX	SEAT-01	AERO-06
	NA-14X		CO-01	INAV-01
			EMFP-01-	INAV-02
			EMFP-08X	
			BIFP-01-	
			BIFP-06X	
			FAMFP-01-	
			FAMFP-03X	
			RIFP-01-	
			RIFP-05X	
			OCFFP-01	
			OCFFP-02X	
			NFAMFP-01-	
			NFAMFP-03X	
			FFP-01-	
			FFP-08X	
			NFFP-01	
			NFFP-02X	
			NATOPS-01X	
			NATOPS-02X	

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 01 (Familiarization, Instruments)

FAM-01-	BI-01S
FAM-03X	RI-01S
BI-02	
RI-02	
RI-03X	
AN-01	

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 02 (Formation, Night Familiarization, Night Formation)

FORM-01-
FORM-04X
NFAM-01X
NFORM-01-
NFORM-03X

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All subsequent modules can be sequenced in any order. However, TACF and WEP stages must be accomplished prior to ON-04 and ON-05X.

6 August 2004

MODULE	FLIGHTS	SIMULATORS	FLIGHT SUPPORT	ACADEMICS
03 (Night Familiarization, Operational Navigation, Weapons)				
	NFAM-02X	ON-01S	NFAMFP-04	ASI-07
	ON-02	WEP-01S	ONFP-01-	ASI-08
	ON-03X	WEP-03S	ONFP-06X	
	WEP-02		WEPFP-01-	
	WEP-04-		WEPFP-05X	
	WEP-06X			
	ON-04			
	ON-05X			
04 (Air-to-Air Gunnery, TOW)				
	GUN-02-	GUN-01S	GUNFP-01	
	GUN-11X		GUNFP-02X	
	TOW-01-			
	TOW-05X			
05 (Tactical Formation, Air Combat Maneuvering)				
	TACF-01-		TFFP-01-	
	TACF-04X		TFFP-04X	
	ACM-01-		ACMFP-01-	
	ACM-10X		ACMFP-07X	
06 (Carrier Qualification)				
	CQ-02-	CQ-01S	CQFP-01-	
	CQ-09X		CQFP-06X	
07 (Out-of-Control Flight)				
	OCF-02X	OCF-01S		
08 (T-45A Student Naval Flight Officer Instructor Training)				
	TLL-01X		FAM/FORMFP-01	
			FAM/FORMFP-02X	
			TLLFP-01	
			TLLFP-02X	
			ATMFP-01	
			ATMFP-02X	
R)	09 (T-45A to T-45C Transition)			
	NA-16-	CO-05S		
	NA-22	CO-06S	NATOPS-03X-	
	NA-24X	NA-15S	NATOPS-05X	ENG-29
		NA-23SX		

<u>MODULE</u>	<u>FLIGHTS</u>	<u>SIMULATORS</u>	<u>FLIGHT SUPPORT</u>	<u>ACADEMICS</u>
10 (T-45A to T-45C Transition)	WEP-08 WEP-09X ON-06 ON-07X	WEP-07S		

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#### 4. 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 a student is involved in the direct learning process. Training time is expressed in curriculum time, not calendar days or calendar weeks.

6 August 2004

R) 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	1.5	0.5	3.0
Simulator	1.0	1.0		2.0*
Academic and Flight Support**	0.5	0.5***		

\* 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 student training week is based on 6 hours of training per day, 5 days a week (30 hours). Computation of curriculum time is based on the following formula:

ch = Curriculum hours

e = Events

k = Additional training time per curriculum hour or event

Tc = Total curriculum time

$$\frac{ch + (ch \times k) \text{ or } (e \times k)}{6 \text{ (hrs per day) or } 30 \text{ (hrs per week)}} = Tc \text{ (days) or (weeks)}$$

c. Time To Train (Tt). The following factors are considered in computing time to train: weather, unsatisfactory events, associated delays, medical groundings, and flight or simulator events canceled due to lack of instructor or equipment availability. The combination of these factors constitutes additional time required to train expressed as a percentage ( $\Delta t$ ) of the curriculum time (Tc). The  $\Delta t$  for the T-45A Strike Flight Instructor Training is 10.0 percent. The formula for computing time to train (Tt) is as follows:

$$Tc + (Tc \times \Delta t) = Tt$$

6 August 2004

MODULES 00 THROUGH 02 TIME-TO-TRAIN

Training Area		Training Days	Training Weeks	Calendar Weeks
Flight:	37.4 hours 25 events	18.73	3.75	4.12
Simulator:				
OFT	6.0 hours 4 events	2.33	0.47	0.51
IFT	7.5 hours 5 events	2.92	0.58	0.64
Academic:	42.9 hours	10.73	2.15	2.36
Flight Support:	66.8 hours	16.70	3.34	3.65
Curriculum Time (Tc)		51.41	10.29	11.28
$\Delta t (10\% \times Tc)$		5.14	1.02	1.12
Time-to-Train (Tt)		56.55	11.31	12.40

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

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

$$\frac{57}{237/365} = 87 \text{ Calendar days} \quad \frac{87 \text{ Days}}{7} = 12.4 \text{ Calendar weeks}$$

6 August 2004

5. Outline of Training

CONTENTS

PAGE

MOD 00.....	19
MOD 01.....	39
MOD 02.....	51
MOD 03.....	59
MOD 04.....	70
MOD 05.....	83
MOD 06.....	95
MOD 07.....	101
MOD 08.....	103
MOD 09.....	107
A) MOD 10.....	121

2 December 1998

MODULE 00ACADEMICS AND NATOPS QUALIFICATION STAGES

OBJECTIVE: To provide the IUT with Aviation Instructor Indoctrination, Engineering, T-45A specific Aerodynamics, Instrument Navigation, local area Course Rules, Navy Aircrew Common Ejection Seat (SEAT-01), Aircrew Coordination Training, Cockpit Orientation, Emergency Flight Procedures, Instrument Flight Procedures, Familiarization Flight Procedures, Formation Flight Procedures and a complete NATOPS qualification simulator/flight syllabus, and examinations, concluding with a Standardization check flight.

NOTE 1: Academic instruction provided: Aviation Student Indoctrination (ASI-01 through ASI-06), Engineering (ENG-01 through 28X), Aerodynamics (AERO-01 through 06), Instrument Navigation (INAV-01 through 02).

NOTE 2: Flight Support lesson provided: Course Rules (CR-01 through 03X), NACES lecture (SEAT-01), Aircrew Coordination Training (ACT-01), Cockpit Orientation (CO-01), Emergency Flight Procedures (EMFP-01 through 08X), Instrument Rating Flight Procedures (IRFP-01 through 03X), Basic Instruments (BIFP-01 through 06X), Radio Instruments (RIFP-01 through 05X), Familiarization (FAMFP-01 through 03X), Formation Flight Procedures (FFP-01 through 08X), Night Familiarization Flight Procedures (NFAMFP-01 through 03X), Night Formation Flight Procedures (NFFP-01 and 02X), and NATOPS examinations (NATOPS-01X and 02X).

NOTE 3: Simulators and flight training provided: NATOPS (NA-01S through 14X)

NOTE 4: ASI can be completed in any sequence. ASI-06 must be completed prior to ENG-03.

NOTE 5: IRFP-01 through IRFP-03X Instrument Rating examination (open book) can be used to satisfy annual requirements, if within prescribed time established by OPNAVINST 3710.7Q.

NOTE 6: NATOPS Open and Closed Book examinations must be completed prior to NA-14X.

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-01	LECT	ASI-01	GROUND RULES	0.3
00-02	LECT	ASI-02	INTRODUCTION TO TRAINING INTEGRATION SYSTEM (TIS)	1.0
00-03	CAI	ASI-03	INTRODUCTION TO CAI	0.5
00-04	LECT	ASI-04	INTRODUCTION TO OFT	1.5
00-05	MIL	ENG-01	INTRODUCTION TO NATOPS MANUAL AND T-45A CONFIGURATION	1.4
00-06	MIL	ENG-02	ENGINE	1.5
00-07	CAI	ENG-03	ENGINE MALFUNCTIONS	1.4
00-08	CAI	ENG-04	ENGINE MALFUNCTIONS II	0.7
00-09	MIL	ENG-05	FUEL SYSTEM	1.0
00-10	CAI	ENG-06	FUEL MALFUNCTIONS	0.5
00-11	MIL	ENG-07	ELECTRICAL	1.2
00-12	CAI	ENG-08	ELECTRICAL MALFUNCTIONS	0.7
00-13	MIL	ENG-09	HYDRAULIC SYSTEM	1.5
00-14	CAI	ENG-10	HYDRAULIC SYSTEM MALFUNCTIONS	1.0
00-15	MIL	ENG-11	FLIGHT CONTROL	1.4
00-16	CAI	ENG-12	FLIGHT CONTROL MALFUNCTIONS	0.7
00-17	MIL	ENG-13	HYDRAULIC SUBSYSTEMS	1.9
00-18	CAI	ENG-14	HYDRAULIC SUBSYSTEM MALFUNCTIONS	1.2
00-19	MIL	ENG-15	EGRESS SYSTEM	1.2
00-20	CAI	ENG-16	EGRESS SYSTEM MALFUNCTIONS	0.5

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-21	MIL	ENG-17	ECS/PRESSURIZATION OBOGS SYSTEM	1.0
00-22	CAI	ENG-18	ECS/PRESSURIZATION OBOGS 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	1.5
00-26	CAI	ENG-22	CNI SYSTEM MALFUNCTIONS	1.0
00-27	MIL	ENG-23	OTHER T-45A SYSTEMS	0.7
00-28	MIL	ENG-24	ENGINE START PROCEDURES	1.0
00-29	CAI	ENG-25	ENGINE START MALFUNCTIONS	0.7
00-30	MIL	ENG-26	ENGINEERING REVIEW	2.3
00-31	CAI	ENG-27X	ENGINEERING BLOCK EXAMINATION	1.0
00-32	CAI	ENG-28X	ENGINEERING BLOCK EXAMINATION	1.0
00-33	CAI	AERO-01	GENERAL AERODYNAMICS REVIEW	0.5
00-34	MIL	AERO-02	HIGH-SPEED FLIGHT	1.0
00-35	MIL	AERO-03	HIGH AOA/STALL/SPIN	1.2
00-36	MIL	AERO-04	T-45A FLIGHT CHARACTERISTICS	0.5
00-37	CAI	AERO-05	THRUST CURVE	0.2
00-38	MIL	AERO-06	PERFORMANCE CHARTS	1.5
00-39	CAI	INAV-01	USE AND OPERATION OF TACAN/VOR DME	0.8
00-40	CAI	INAV-02	COMPONENTS AND CHARACTERISTICS OF THE INSTRUMENT LANDING SYSTEMS (ILS)	0.8
00-41	CAI	IRFP-01	METRO REVIEW	1.0

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-42	MIL	IRFP-02	INSTRUMENT RATING PROCEDURES	2.0
00-43	PENCIL	IRFP-03X	INSTRUMENT RATING OPEN-BOOK EXAMINATION	1.0
00-44	MIL	CR-01	COURSE RULES	2.0
00-45	LECT	CR-02	AIR OPERATIONS TOUR	2.0
00-46	CAI	CR-03X	COURSE RULES STAGE EXAMINATION	1.0
(R 00-47	MIL	SEAT-01	NACES	2.0
00-48	MIL	ACT-01	AIRCREW COORDINATION TRAINING	3.0
00-49	CAI	CO-01	EXTERIOR PREFLIGHT CHECKS	0.5
(R 00-50	MIL	ASI-05	INTRODUCTION TO THE TRAINING INTEGRATION SYSTEM, PART 2	1.0
00-51	OFT	CO-02S	COCKPIT ORIENTATION TWO - SIMULATOR	1.5
00-52	MIL	EMFP-01	START, GROUND, AND TAKEOFF EMERGENCY PROCEDURES	1.5
00-53	MIL	EMFP-02	OPERATIONAL AND EJECTION EMERGENCY PROCEDURES	1.0
00-54	MIL	EMFP-03	ENGINE AND HYDRAULIC EMERGENCY PROCEDURES	1.5
00-55	CAI	EMFP-04X	EMERGENCY FLIGHT PROCEDURES EXAMINATION 1	1.0
00-56	MIL	EMFP-05	CANOPY AND FLIGHT CONTROL EMERGENCY PROCEDURES	1.0
00-57	MIL	EMFP-06	ELECTRICAL AND INDICATOR EMERGENCY PROCEDURES	1.5
00-58	MIL	EMFP-07	OPERATIONAL AND LANDING EMERGENCY PROCEDURES	1.5
00-59	CAI	EMFP-08X	EMERGENCY FLIGHT PROCEDURES EXAMINATION 2	1.0

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-60	LECT	ASI-06	TIS-III (ATF, UDI, REPORTS)	1.5
00-61	MIL	BIFP-01	INSTRUMENT TAKEOFF AND CLIMB WITH SID	1.3
00-62	MIL	BIFP-02	TACAN AND VOR PROCEDURES	1.5
00-63	MIL	BIFP-03	GCA PROCEDURES	1.2
00-64	MIL	BIFP-04	STALLS AND UNUSUAL ATTITUDES	0.8
00-65	MIL	BIFP-05	ILS PROCEDURES	0.5
00-66	CAI	BIFP-06X	BASIC INSTRUMENT STAGE EXAMINATION	1.0
00-67	IFT/OFT	NA-01S	NATOPS ONE - SIMULATOR (CO/FAM/INST)	1.5
00-68	MIL	FAMFP-01	FAMILIARIZATION FLIGHT PROCEDURES	3.4
00-69	MIL	FAMFP-02	FAMILIARIZATION FLIGHT PROCEDURES	3.3
00-70	CAI	FAMFP-03X	FAMILIARIZATION STAGE EXAMINATION	1.0
00-71	OFT	NA-02S	NATOPS TWO - SIMULATOR (FAM)	1.5
00-72	IFT/OFT	NA-03S	NATOPS THREE - SIMULATOR (INST-BI)	1.5
00-73	T-45/RC	NA-04	NATOPS FOUR (INST-BI)	1.5
00-74	T-45/FC	NA-05	NATOPS FIVE (FAM)	1.5
00-75	MIL	RIFP-01	INTRODUCTION TO RADIO INSTRUMENTS	2.0
00-76	CAI	RIFP-02	TACAN, VOR, HOLDING PROCEDURES	0.5
00-77	CAI	RIFP-03	TACAN/VOR/ILS/PAR/ASR APPROACH PROCEDURES	1.0

CNATRAINST 1542.109B

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-78	MIL	RIFP-04	AIRWAYS NAVIGATION FLIGHT PROCEDURES	2.7
00-79	CAI	RIFP-05X	RADIO INSTRUMENT STAGE EXAMINATION	1.0
00-80	T-45/RC	NA-06	NATOPS SIX (INST-RI)	1.5
00-81	MIL	OCFFP-01	OUT-OF-CONTROL FLIGHT	1.0
00-82	CAI	OCFFP-02X	OUT-OF-CONTROL FLIGHT STAGE EXAMINATION	1.0
00-83	OFT	NA-07S	NATOPS SEVEN - SIMULATOR (OCF)	1.5
00-84	T-45/FC	NA-08	NATOPS EIGHT (OCF-FAM)	1.5
00-85	MIL	NFAMFP-01	NIGHT FAMILIARIZATION FLIGHT PROCEDURES	1.3
00-86	MIL	NFAMFP-02	NIGHT EMERGENCY PROCEDURES	1.2
00-87	CAI	NFAMFP-3X	NIGHT FAMILIARIZATION STAGE EXAMINATION	1.0
00-88	T-45/FC	NA-09	NATOPS NINE (NFAM)	1.5
00-89	MIL	FFP-01	FORMATION, MARSHAL, TAKEOFF, RENDEZVOUS, DEPARTURE/CLIMBOUT	1.5
00-90	MIL	FFP-02	SECTION PARADE FORMATION	1.3
00-91	MIL	FFP-03	SECTION FORMATION RECOVERY, APPROACHES, LANDING CONFIGURATION	0.8
00-92	MIL	FFP-04	FORMATION EMERGENCIES	1.5
00-93	MIL	FFP-05	FORMATION SECTION CRUISE/ COLUMN	0.8
00-94	CAI	FFP-06X	FORMATION STAGE EXAMINATION	1.0
00-95	MIL	FFP-07	DIVISION PARADE FORMATION	1.5

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-96	CAI	FFP-08X	FORMATION STAGE EXAMINATION	1.0
00-97	MIL	NFFP-01	NIGHT FORMATION FLIGHT PROCEDURES	1.2
00-98	CAI	NFFP-02X	NIGHT FORMATION STAGE EXAMINATION	1.0
00-99	OFT	NA-10S	NATOPS TEN - SIMULATOR (2 PLANE FORM/DAY/NIGHT)	1.5
00-100	T-45/FC	NA-11	NATOPS ELEVEN (2 PLANE FORMATION)	1.5
00-101	T-45/FC	NA-12	NATOPS TWELVE (FAM/INST)	1.5
00-102	IFT/OFT	NA-13SX	NATOPS THIRTEEN SIMULATOR CHECK (INST-BI/RI)	1.5
00-103	PENCIL	NATOPS-01X	NATOPS OPEN-BOOK EXAMINATION	2.0
00-104	PENCIL	NATOPS-02X	NATOPS CLOSED-BOOK EXAMINATION	2.0
00-105	T-45/FC	NA-14X	NATOPS FOURTEEN CHECK (NATOPS CHECK)	1.5

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-51	OFT	CO-02S	COCKPIT ORIENTATION TWO - SIMULATOR	1.5

Brief:

- a. Operate OFT
- b. Ground signals
- c. Final checker
- d. Shutdown signals

Demonstrate:

Takeoff

Introduce:

- a. Canopy/ejection seat preflight
- b. Strap-in procedures
- c. Cockpit preflight checklist
- d. Prestart checklist
- e. Aircraft start
- f. Post-start checklist
- g. Ground communications
- h. Taxi checklist
- i. Aircraft taxi
- j. Flight instrument checks
- k. Takeoff clearance
- l. Takeoff checklist
- m. Engine checks
- n. Departure communications
- o. 10,000-ft checks/15-min report
- p. En route communications
- q. Descent/penetration checklist
- r. Approach control communications
- s. VFR approach to pattern initial
- t. Communication to tower
- u. Landing checklist
- v. After-landing communications
- w. After-landing checklist
- x. Aircraft shutdown
- y. Shutdown checklist
- z. Normal egress procedures

26 June 2001

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION	
00-67	OFT	NA-01S	NATOPS ONE - SIMULATOR (CO/FAM/INST)	1.5	(D

Introduce:

- a. Inspect aircraft interior
- b. Check/test OBOGS
- c. Check/test fuel system
- d. Check/test engine system
- e. Check/test hydraulic system
- f. Check/test CNI system
- g. Check/test ECS
- h. Check/test electrical system
- i. Normal takeoff
- j. TACAN/VOR/VOR DME OPS
- k. Slow flight maneuvers
- l. Stall series
- m. PAR approach
- n. Landing with emergency gear extended
- o. Swerve after touchdown
- p. Landing rollout (field) with blown tire

Practice:

- a. Cockpit preflight checklist
- b. Prestart checklist
- c. Post-start checklist
- d. Aircraft start
- e. Ground communications
- f. Takeoff clearance
- g. Engine checks
- h. 10,000-ft checks/15-min report
- i. Descent/penetration check
- j. After-landing checklist
- k. Shutdown checklist
- l. After-landing communications
- m. Normal egress procedures

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-71	OFT	NA-02S	NATOPS TWO - SIMULATOR (FAM)	1.5

Introduce:

- a. Start emergencies
- b. Taxi emergencies
- c. Wheel brake failure
- d. Standard departure
- e. Turn pattern
- f. Level flight accelerate/decelerate
- g. Prestall/aerobatic checklist
- h. Stall series
- i. Slow flight maneuvers
- 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 FAM
- r. Straight-in PA
- s. Abeam PA
- t. Overhead PA
- u. Break to downwind
- v. VFR landing pattern
- w. Touch/go full flaps/slats
- x. Roll/go full flaps/slats
- y. Waveoff
- z. Touch/go no flaps/slats
- aa. Crosswind landings
- bb. Landing with gear emergency extended
- cc. Fuel system emergencies

Practice:

- a. Ground communications
- b. Normal takeoff
- c. 10,000-ft checks/15-min report
- d. Departure communications

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-72	IFT/OFT	NA-03S	NATOPS THREE - SIMULATOR (INST - BI)	1.5

Introduce:

- a. Communications for ground emergencies
- b. ITO
- c. SID
- 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. Initial shot/solenoid failure
- v. FUEL LOW light
- w. Respond to Centralized Warning System
- x. Lost communications
- y. Engine fire on shutdown

Practice:

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

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-73	T-45/RC	NA-04	NATOPS FOUR (INST - BI)	1.5

Demonstrate:

Observe preflight inspection

Introduce:

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

Practice:

- a. Inspect aircraft interior
- b. Checklists
- c. ITO
- d. SID
- 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

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-74	T-45/FC	NA-05	NATOPS FIVE (FAM)	1.5

Introduce:

- a. Simulated emergency (airborne)
- b. Postflight

Practice:

- a. Preflight
- b. Communications
- c. 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/go full flaps/slats
- r. Roll/go full flaps/slats
- s. Waveoff
- t. Touch/go no flaps/slats
- u. Crosswind landings (conditions permitting)

CNATRAINST 1542.109B

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-80	T-45/RC	NA-06	NATOPS SIX (INST - RI)	1.5

Introduce:

- a. Station passage
- b. Point-to-point
- c. TACAN/VOR DME holding
- d. Partial panel approach

Practice:

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

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-83	OFT	NA-07S	NATOPS SEVEN - SIMULATOR (OCF)	1.5

Introduce:

- a. High AOA/deep stall investigation/rudder induced departure
- b. Low airspeed recovery
- c. Lateral stick adverse yaw departure
- d. Engine stalls
- e. Engine vibration
- f. Engine seizure
- g. Engine flameout
- h. Engine fire at altitude with secondary indication
- i. FIRE light no secondary indication
- j. FIRE light, light out with power reduced
- k. Engine overspeed
- l. ECA failure
- m. ECA failure full trim
- n. ECA fail, no trim condition
- o. Oil pressure failure
- q. Arrested landing (field) with blown tire

(A)

Practice:

Swerve after touchdown

(A)

00-84	T-45/FC	NA-08	NATOPS EIGHT (OCF)	1.5
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Practice:

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

CNATRAINST 1542.109B

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-88	T-45/FC	NA-09	NATOPS NINE (NFAM)	1.5

Introduce:

- a. Takeoff
- b. Area FAM
- c. ILS approach (not at home field)
- d. PAR approach (not at home field)
- e. Filing stereo flight plan
- f. Missed approach
- g. Break
- h. Touch/go no flaps/slats
- i. Touch/go full flaps/slats
- j. Crosswind landings (conditions permitting)

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-99	OFT	NA-10S	NATOPS TEN - SIMULATOR (2 PLANE FORM/DAY/NIGHT)	1.5

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/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. Double inverter failure
- r. Total electrical failure
- s. Essential bus failure
- t. ECS emergencies
- u. Uncommanded RAT extension
- v. Total hydraulic failure
- w. Slow loss pressure (HYD 1)
- x. Slow loss pressure (HYD 2)
- y. Hydraulic failure (RAT operating)

Practice:

- a. Straight-in PA
- b. Abeam PA
- c. Overhead PA
- d. Touch/go full flaps/slats

NOTE: Conduct as day and night formation event

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-100	T-45/FC	NA-11	NATOPS ELEVEN (2 PLANE FORMATION)	1.5

Introduce:

- a. Marshal/hold short
- b. Lead change
- c. Visual communications
- d. Section break
- e. Formation recovery
- f. Cruise formation (if done)
- g. Column formation (if done)
- h. Tail-chase (if done)

Practice:

- a. Section takeoff
- b. Running rendezvous
- c. Crossunder
- d. IFR parade
- e. Breakup/rendezvous (200 KIAS; 250 KIAS; 300 KIAS)
- f. Section approach
- g. Section missed approach
- h. Crosswind landings (conditions permitting)

00-101	T-45/FC	NA-12	NATOPS TWELVE (FAM/INST)	1.5
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Demonstrate:

Minimum rollout landing (conditions permitting)

Practice:

- a. ITO
- b. SID
- c. Turn pattern
- d. S-3 pattern
- e. Stall series
- f. TACAN/VOR tracking
- g. TACAN/VOR DME approach
- h. PAR approach
- i. Touch/go full flaps/slats
- j. Touch/go no flaps/slats
- k. Roll/go full flaps/slats
- l. Full-stop full flaps/slats
- m. Crosswind landings (conditions permitting)

26 June 2001

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION	
00-102	OFT	NA-13SX	NATOPS THIRTEEN - SIMULATOR CHECK (INST - BI/RI)	1.5	(D)

Review:

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

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
00-105	T-45/FC	NA-14X	NATOPS FOURTEEN CHECK	1.5

Review:

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

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

2 December 1998

## MODULE 01

FAMILIARIZATION AND INSTRUMENTS STAGES

OBJECTIVE: To prepare the IUT for instructing SNAs in Familiarization and Instrument stages. This module will provide the IUT with instructional phase goals and training techniques required to perform as a flight instructor.

NOTE 1: Familiarization, Basic Instruments, Radio Instruments, Airways Navigation, and Instrument Rating flight procedures, including examinations were provided for in Module 00.

NOTE 2: IUT stages can be completed in any order.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-01	T-45/RC	FAM-01	FAMILIARIZATION ONE	1.5
01-02	T-45/RC	FAM-02	FAMILIARIZATION TWO	1.5
01-03	T-45/RC	FAM-03X	FAMILIARIZATION THREE CHECK	1.5
01-04	IFT/OFT	BI-01S	BASIC INSTRUMENTS ONE - SIMULATOR	1.5
01-05	T-45/RC/H	BI-02X	BASIC INSTRUMENTS TWO CHECK	1.5
01-06	IFT/OFT	RI-01S	RADIO INSTRUMENTS ONE - SIMULATOR	1.5
01-07	T-45/FC	RI-02	RADIO INSTRUMENTS TWO	1.5
01-08	T-45/FC	RI-03X	RADIO INSTRUMENTS THREE CHECK	1.5
01-09	T-45/FC	AN-01	AIRWAYS NAVIGATION ONE	1.5
01-10	T-45/FC	AN-02	AIRWAYS NAVIGATION TWO	1.5
01-11	T-45/FC	AN-03X	AIRWAYS NAVIGATION THREE CHECK	1.5

27 April 1999

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
01-01	T-45/RC	FAM-01	FAMILIARIZATION ONE	1.5

R)

Brief:

Field arrested landing

Practice:

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

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
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01-02	T-45/RC	FAM-02	FAMILIARIZATION TWO	1.5
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Perform:

Perform the following maneuvers and procedures stressing verbal presentation and instructional techniques. The IUT will demonstrate competency to perform all required maneuvers in a satisfactory manner from the rear cockpit prior to FAM-03X.

Brief:

- a. Ground communications
- b. Normal takeoff
- c. After takeoff activities
- 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. Recovery to VFR landing pattern
- n. Overhead pattern (break)
- o. Touch/go full flaps/slats
- p. Touch/go no flaps/slats
- q. Abeam PA
- r. Overhead PA
- s. Roll/go full flaps/slats
- t. Crosswind landings (condition permitting)
- u. Simulated emergency (airborne)

Introduce:

- a. Prepare for instruction
- b. Performance evaluation

Practice:

- a. Review student records
- b. Event requirements
- c. Brief
- d. Presentation techniques
- e. Guidance/feedback
- f. Debrief
- g. Grades assignment

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-03	T-45/RC	FAM-03X	FAMILIARIZATION THREE 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 most approximate a typical student training mission, i.e., demonstrate deficiency areas by IP. Discussion should emphasize student performance evaluation/grading standards.

R)

Review:

- a. Ground communications
- b. Normal takeoff
- c. After takeoff activities
- 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. Recovery to VFR landing pattern
- n. Overhead pattern (break)
- o. Touch/go full flaps/slats
- p. Touch/go no flaps/slats
- q. Straight-in PA
- r. Abeam PA
- s. Overhead PA
- t. Roll/go full flaps/slats
- u. Crosswind landings (conditions permitting)
- v. Simulated emergency (airborne)
- w. Prepare for instruction
- x. Brief
- y. Flight Instruction
- z. Performance evaluation
- aa. Guidance/feedback
- bb. Debrief

R)

NOTE: Jacket review required.

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-04	IFT/OFT	BI-01S	BASIC INSTRUMENTS ONE - SIMULATOR	1.5

Introduce:

- a. ITO
- b. SID
- 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
- 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)

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-05	T-45/RC/H	BI-02X	BASIC INSTRUMENTS TWO 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 most approximate a typical student training mission. IP should demonstrate student deficiency areas and discuss grading standards.

R) Review:

- a. Instrument Communications
- b. ITO
- c. SID
- d. TACAN/VOR tracking
- e. Turn Pattern
- f. 1/2 standard rate turn
- g. Standard rate turn
- h. Partial panel timed turns
- i. Stall series
- j. S-3 pattern
- k. Nose-high recovery
- l. None-low recovery
- m. Partial panel
- n. Unusual attitude P/P
- o. TACAN/VOR DME appr
- p. ASR approach
- q. Missed approach
- r. PAR approach P/P
- s. Missed Approach P/P
- t. Prepare for instruction
- u. Brief
- v. Flight instruction
- w. Performance evaluation
- x. Guidance/feedback
- y. Debrief
- z. Grades assignment

R)

Demonstrate:

Instrument failure switches

Introduce:

Verify hood installation

NOTE: Jacket review required. Stan IP will take

2 December 1998

controls and familiarize IUT with all instrument failure indications activated by front cockpit fail switches.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-06	IFT/OFT	RI-01S	RADIO INSTRUMENTS ONE - SIMULATOR	1.5

Introduce:

- a. Communication
- b. ITO
- c. SID
- d. Visual takeoff low ceiling
- e. Point-to-point
- f. Ground speed check
- g. Radial intercepts
- h. Electrical emergencies
- i. CNI failure
- j. ILS approach
- k. Localizer approach
- l. ASR approach P/P
- m. ILS glideslope failure
- n. Emergency fuel approach
- o. No gyro GCA
- p. Low oil GCA
- q. Instrument to visual scan
- r. Circling approach to land

Practice:

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

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
01-07	T-45/FC	RI-02	RADIO INSTRUMENTS TWO	1.5

Introduce:

- a. TACAN/VOR approach P/P
- b. ILS approach P/P

Practice:

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

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-08	T-45/FC	RI-03X	RADIO INSTRUMENTS THREE CHECK	1.5

Perform:

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

Review:

(R)

- a. Communications
- b. SID
- c. TACAN/VOR tracking
- d. Point-to-point
- e. TACAN/VOR DME holding
- f. Radial intercepts
- g. TACAN/VOR DME approach
- h. PAR approach P/P
- i. ILS approach
- j. Missed approach
- k. Prepare for instruction
- l. Brief
- m. Flight instruction
- n. Performance evaluation
- o. Guidance/feedback
- p. Debrief

(R)

NOTE: Jacket review required.

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
01-09	T-45/FC	AN-01	AIRWAYS NAVIGATION ONE	1.5

Brief:

In-flight emergencies

Introduce:

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

Practice:

- a. Brief flight event
- b. Introduce/demonstrate techniques
- c. Performance assessment
- d. Guidance/feedback
- e. Debrief
- f. Complete DD-175
- g. SID
- h. Point-to-point
- i. En route descent (if done)
- j. TACAN/VOR DME approach
- k. Missed approach
- l. PAR approach

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
01-10	T-45/FC	AN-02	AIRWAYS NAVIGATION TWO	1.5

Brief:

- a. Complete DD-175
- b. Single-engine jet log
- c. SID
- d. Route/destination change (if done)
- e. En route delay (if done)
- f. En route descent
- g. Missed approach
- h. ILS approach P/P
- i. In-flight emergencies

Practice:

- a. Prepare for instruction
- b. Brief
- c. Flight instruction
- d. Performance evaluation
- e. Guidance/feedback
- f. Debrief
- g. Grades assignment

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
01-11	T-45/FC	AN-03X	AIRWAYS NAVIGATION THREE 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 most approximate a typical student training mission, i.e., demonstrate deficiency areas by evaluating/grading students.

R)

Review:

- a. Complete DD-175
- b. Single-engine jet log
- c. SID
- d. Route/destination change (if done)
- e. En route delay (if done)
- f. En route descent (if done)
- g. TACAN/VOR DME approach
- h. Missed approach
- i. PAR approach
- j. ILS approach P/P
- k. In-flight emergencies
- l. Prepare for instruction
- m. Brief
- n. Flight instruction
- o. Performance evaluation
- p. Guidance/feedback
- q. Debrief

NOTE: Jacket review required.

2 December 1998

MODULE 02FORMATION, NIGHT FAMILIARIZATION AND NIGHT FORMATION STAGES

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

NOTE 1: Formation Flight Procedures lessons (FFP-01 through 08X), Night Familiarization Flight Procedures (NFAMFP-01 through 03X), and Night Formation Flight Procedures lessons (NFFP-01 through 02X) were provided during Module 00.

NOTE 2: Formation includes instruction in 2 and 4 plane formation, Night Familiarization, and Night Formation Flight procedures.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-01	T-45/RC	FORM-01	FORMATION ONE	1.5
02-02	T-45/RC	FORM-02X	FORMATION TWO CHECK	1.5
02-03	T-45/RC	FORM-03	FORMATION THREE	1.5
02-04	T-45/RC	FORM-04X	FORMATION FOUR CHECK	1.5
02-05	T-45/RC	NFAM-01X	NIGHT FAMILIARIZATION CHECK	1.4
02-06	T-45/FC	NFORM-01	NIGHT FORMATION ONE	1.5
02-07	T-45/RC	NFORM-02	NIGHT FORMATION TWO	1.5
02-08	T-45/FC	NFORM-03X	NIGHT FORMATION THREE CHECK	1.5

2 December 1998

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

Introduce:

- a. Visual communications
- b. Marshal
- c. Underrun
- d. Cruise position
- e. Cruise maneuvering
- f. Column
- g. Tail-chase
- h. Lead change

Practice:

- a. Section takeoff
- b. Parade position
- c. Parade turns into
- d. Parade turns away
- e. Crossunder
- f. Breakup/rendezvous (250 KIAS and 300 KIAS)
- g. Running rendezvous (altitude)
- h. TACAN rendezvous
- i. IFR parade
- j. Section approach
- k. Section missed approach
- l. Section break

27 April 1999

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

Review:

(R)

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

(R)

NOTE: Jacket review required.

2 December 1998

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

Introduce:

- a. Division rendezvous
- b. Crossunder
- c. Balanced parade turns into
- d. Balanced parade turns away
- e. Breakup/rendezvous
- f. Division cruise
- g. Shuffle division
- h. Division break

Practice:

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

27 April 1999

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

Review:

(R)

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

(R)

NOTE: Jacket review required.

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
02-05	T-45/RC	NFAM-01X	NIGHT FAMILIARIZATION CHECK	1.4

- R) Review:
- a. Identify human factor concerns of night flying
  - b. Lost communications
  - c. Inadvertent IMC
  - d. Lost aircraft
  - e. Electrical emergencies
  - R) f. Brief
  - g. Perform taxi/marshal/takeoff/ activities
  - h. Normal takeoff
  - i. Departure/climbout
  - j. Visual navigation
  - k. DR navigation
  - l. Recovery to VFR pattern
  - m. Overhead pattern (break)
  - n. VFR landing pattern
  - o. Touch/go full flaps/slats
  - p. Full-stop landing
  - q. Postflight inspection

02-06	T-45/FC	NFORM-01	NIGHT FORMATION ONE	1.5
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Practice:

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

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
02-07	T-45/RC	NFORM-02	NIGHT FORMATION TWO	1.5

Brief:

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

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. Introduce/demonstrate techniques
- g. Guidance/feedback
- h. Debrief
- i. Grades assignment

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
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02-08	T-45/FC	NFORM-03X	NIGHT FORMATION THREE CHECK	1.5
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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 2-plane Formation. Further flights may be required prior to designation as a section leader at the CO's discretion.

R) Review:

- a. Marshal
- b. Taxi
- c. Interval takeoff
- d. TACAN rendezvous
- e. Section climbout
- f. IFR parade
- g. Crossunder
- h. Breakup/rendezvous
- i. Running rendezvous
- j. Lead change
- k. Section approach
- l. Configuration change
- m. Section missed approach
- n. Section break
- o. Touch-and-go landings
- R) p. Prepare for instruction
- q. Brief
- r. Flight instruction
- s. Performance evaluation
- t. Guidance/feedback
- u. Debrief

NOTE: Jacket review required.

2 December 1998

MODULE 03OPERATIONAL NAVIGATION AND WEAPONS STAGES

OBJECTIVE: To 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 presentation, stage manager training and phase goals, and training techniques for instructing these stages.

NOTE 1: Instructor indoctrination includes instruction in making classroom presentations (ASI-07) and training to function as stage managers consistent with CNATRINST 1550.6D (ASI-08).

NOTE 2: Night Familiarization Flight Procedures (NFAMFP-04) covering night chase procedures and Operational Navigation Flight Procedures (ONFP-01 through 06X), ON simulators and flights (ON-01S through 05X); Weapons includes flight procedures lessons (WEPFP-01 and 05X) and simulators and flights (WEP-01S through 06X). Includes heads-up display (HUD) set-up and management techniques.

NOTE 3: ONAV and Weapons events should be flown in the sequence shown in the module.

NOTE 4: ON-04 and ON-05X may be flown after WEP-06X.

NOTE 5: IUTs without previous ONAV training will also attend ONAV academics in accordance with CNATRINST 1542.108C to qualify for ON stage.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-01	MIL	NFAMFP-04	NIGHT FAMILIARIZATION CHASE PROCEDURES	0.5
03-02	T-45/FC	NFAM-02X	NIGHT FAMILIARIZATION CHASE CHECK	1.4
03-03	MIL	ASI-07	INTRODUCTION TO MIL (HOW TO USE ELECTRONIC CLASSROOM)	2.0
03-04	LECT	ASI-08	STAGE MANAGER TRAINING	4.0
03-05	CAI	ONFP-01	HUD I	0.7
03-06	CAI	ONFP-02	HUD II	0.7

CNATRAINST 1542.109B

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-07	MIL	ONFP-03	OPERATIONAL NAVIGATION FLIGHT AND SAFETY PROCEDURES	2.0
03-08	CAI	ONFP-04X	ONAV STAGE EXAMINATION	1.0
03-09	MIL	ONFP-05	TWO PLANE ONAV ROAD RECCE	1.0
03-10	CAI	ONFP-06X	TWO PLANE ONAV EXAMINATION	0.4
03-11	OFT	ON-01S	OPERATIONAL NAVIGATION ONE - SIMULATOR	1.5
03-12	T-45/FC	ON-02	OPERATIONAL NAVIGATION TWO	1.0
03-13	CAI	WEPFP-01	HUD	0.7
03-14	T-45/RC	ON-03X	OPERATIONAL NAVIGATION THREE CHECK	1.4
03-15	MIL	WEPFP-02	WEAPONS DELIVERY	0.8
03-16	MIL	WEPFP-03	WEAPONS DELIVERY	0.7
03-17	MIL	WEPFP-04	WEAPONS DELIVERY	1.5
03-18	CAI	WEPFP-05X	WEAPONS STAGE EXAMINATION	1.0
03-19	OFT	WEP-01S	WEAPONS ONE - SIMULATOR	1.3
03-20	T-45/FC	WEP-02	WEAPONS TWO	1.3
03-21	OFT	WEP-03S	WEAPONS THREE - SIMULATOR	1.0
03-22	T-45/FC	WEP-04	WEAPONS FOUR	1.3
03-23	T-45/RC	WEP-05	WEAPONS FIVE	1.3
03-24	T-45/RC	WEP-06X	WEAPONS SIX CHECK	1.3
03-25	T-45/FC	ON-04	OPERATIONAL NAVIGATION FOUR	1.4
03-26	T-45/RC	ON-05X	OPERATIONAL NAVIGATION FIVE CHECK	1.4

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-02	T-45/FC	NFAM-02X	NIGHT FAMILIARIZATION CHASE CHECK	1.4

Review:

(R)

- a. Ground OPS
- b. Normal takeoff
- c. Departure/climbout
- d. Night chase procedures
- e. Recovery to VFR pattern
- f. Overhead pattern (break)
- g. VFR landing pattern
- h. Touch/go full flaps/slats
- i. Touch/go no flaps/slats
- j. Roll/go full flaps/slats
- k. Full-stop landing
- l. Postflight
- m. Review student records
- n. Brief
- o. Professional atmosphere
- p. In-flight instruction
- q. Evaluate NFAM performance
- r. Guidance/feedback
- s. Debrief
- t. Grades assignment

(R)

NOTE: Jacket review required.

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-11	OFT	ON-01S	OPERATIONAL NAVIGATION ONE - SIMULATOR	1.5

Brief:

Weather response

Introduce:

- a. Check/test HUD
- b. Enter HUD data
- c. Route entry
- d. Interpret charts
- e. Recognize checkpoints
- f. Fuel/time calculations
- g. Course/time corrections
- h. Communications
- i. HUD failure
- j. Bingo
- k. Low altitude hazards

Practice:

ONAV planning

03-12	T-45/FC	ON-02	OPERATIONAL NAVIGATION TWO	1.0
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Brief:

Weather response

Practice:

- a. ONAV planning
- b. Route entry
- c. Interpret charts
- d. Recognize checkpoints
- e. Monitor flight log
- f. Fuel/time calculations
- g. Course/time corrections
- h. Communications
- i. Bingo

27 April 1999

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
03-14	T-45/RC	ON-03X	OPERATIONAL NAVIGATION THREE CHECK	1.4

Review:

(R)

- a. Weather response
- b. Chart
- c. Jet log
- d. Check/test HUD
- e. Enter HUD data
- f. Interpret charts
- g. Low-level basic airwork
- h. Low-level flight log
- i. Fuel/time calculations
- j. Course/time corrections
- k. Communications
- l. HUD failure
- m. Bingo
- n. Low altitude hazards
- o. Prepare for instruction
- p. Brief
- q. Flight instruction
- r. Performance evaluation
- s. Guidance/feedback
- t. Debrief

(R)

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
03-19	OFT	WEP-01S	WEAPONS ONE - SIMULATOR	1.3

Brief:

Maintain proper interval in weapons pattern

Introduce:

- a. Set HUD
- b. Target procedures
- c. Set armament switches
- d. 30-degree bombs
- e. Weapons pattern
- f. Roll-in maneuver
- g. Tracking/dive angle
- h. Error corrections
- i. Weapons release
- j. Dive recovery
- k. 30-degree rockets
- l. 10-degree bombs
- m. 10-degree strafing
- n. Firing altitude
- o. Strafe recovery
- p. Abort run
- q. Communications
- r. Safe switches
- s. Rendezvous
- t. HUD failure
- u. Weapons emergencies

Practice:

Compute offset aim point

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
03-20	T-45/FC	WEP-02	WEAPONS TWO	1.3

Introduce:

- a. Weapons preflight
- b. Arming
- c. Hung ordnance checks
- d. Dearming

Practice:

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

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-21	OFT	WEP-03S	WEAPONS THREE - SIMULATOR	1.0

Brief:

Pattern interval

Introduce:

- a. 20-degree bombs
- b. 20-degree rockets
- c. Hung ordnance approach

Practice:

- a. Compute offset aim point
- b. Target procedures
- c. Set armament switches
- d. 30-degree bombs
- e. Roll-in maneuver
- f. Tracking/dive angle
- g. Error corrections
- h. Release parameters
- i. Dive recovery
- j. 30-degree rockets
- k. Abort
- l. Communications
- m. Safe switches
- n. Rendezvous
- o. Weapons emergencies

03-22	T-45/FC	WEP-04	WEAPONS FOUR	1.3
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Practice:

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

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-23	T-45/RC	WEP-05	WEAPONS FIVE	1.3

Brief:

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

Introduce:

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

Practice:

- a. Review student records
- b. Event requirements
- c. Brief
- d. Event overview
- e. Professional atmosphere
- f. Presentation techniques
- g. Introduce/demonstrate techniques
- h. Assess performance
- i. Assess skills
- j. Assess knowledge
- k. Assess confidence
- l. Guidance/feedback
- m. Safety
- n. Debrief
- o. Grades assignment

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-24	T-45/RC	WEP-06X	WEAPONS SIX CHECK	1.3

R)

Review:

- a. Compute offset aim point
- b. Weapons preflight
- c. Check/test HUD
- d. Set HUD
- e. Arming
- f. Target procedures
- g. Set armament switches
- h. 30-degree bombs
- i. Weapons pattern
- j. Roll-in
- k. Tracking/dive angle
- l. Error corrections
- m. Release parameters
- n. Dive recovery
- o. Pattern interval
- p. 30-degree rockets
- q. 10-degree bombs
- r. Strafe
- s. Firing altitude
- t. Strafe offset recovery
- u. 20-degree bombs
- v. 20-degree rockets
- w. Abort
- x. Communications
- y. Safe switches
- z. Rendezvous
- aa. Hung ordnance checks
- bb. Hung ordnance approach
- cc. Landing rollout
- dd. Dearming
- ee. HUD failure
- ff. Weapons emergencies
- gg. Prepare for instruction
- hh. Brief
- ii. Flight instruction
- jj. Performance evaluation
- kk. Guidance/feedback
- ll. Debrief

R)

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
03-25	T-45/FC	ON-04	OPERATIONAL NAVIGATION FOUR	1.4

Brief:

Weather response

Introduce:

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

Practice:

- a. ONAV planning
- b. Interpret charts
- c. Fuel/time calculations
- d. Course/time corrections
- e. Communications
- f. Bingo

03-26	T-45/RC	ON-05X	OPERATIONAL NAVIGATION FIVE CHECK	1.4
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Review:

(R)

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

(R)

2 December 1998

MODULE 04AIR-TO-AIR GUNNERY STAGE

OBJECTIVE: To provide the IUT with training in Air-to-Air Gunnery procedures and techniques used in NATRACOM for instructing SNAs in gunnery. The module will provide the IUT with phase goals and training techniques for instructing the stages.

NOTE: Gunnery flight procedures (GUNFP-01 through 02X) and Gunnery event (GUN-01S) and flights (GUN-02 through 11X), including a flight in which the IUT observes the Gunnery pattern. Tow flights (TOW-01 through 05X) are included for tow training.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-01	MIL	GUNFP-01	GUNNERY FLIGHT PROCEDURES	3.0
04-02	CAI	GUNFP-02X	GUNNERY STAGE EXAMINATION	1.0
04-03	OFT	GUN-01S	GUNNERY ONE - SIMULATOR	1.0
04-04	T-45/RC	GUN-02	GUNNERY TWO	1.2
04-05	T-45/FC	GUN-03	GUNNERY THREE	1.2
04-06	T-45/FC	GUN-04	GUNNERY FOUR	1.2
04-07	T-45/FC	GUN-05X	GUNNERY FIVE CHECK	1.2
04-08	T-45/ SOLO	GUN-06	GUNNERY SIX	1.2
04-09	T-45/RC	GUN-07	GUNNERY SEVEN	1.2
04-10	T-45/RC	GUN-08	GUNNERY EIGHT	1.2
04-11	T-45/RC	GUN-09	GUNNERY NINE	1.2
04-12	T-45/RC	GUN-10	GUNNERY TEN	1.2
04-13	T-45/RC	GUN-11X	GUNNERY ELEVEN CHECK	1.2
04-14	T-45/RC	TOW-01	TOW ONE	1.0
04-15	T-45/FC	TOW-02	TOW TWO	1.2

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
04-16	T-45/RC	TOW-03	TOW THREE	1.2
04-17	T-45/FC	TOW-04	TOW FOUR	1.2
04-18	T-45/FC	TOW-05X	TOW FIVE CHECK	1.2
04-03	OFT	GUN-01S	GUNNERY ONE - SIMULATOR	1.0

Brief:

- a. Turn to high reversal
- b. Maneuver to perch
- c. Simo run

Introduce:

- a. Spacer pass
- b. Turn from perch
- c. Maneuver to low reversal
- d. Tracking run
- e. Recovery
- f. Pattern error corrections
- g. Gunnery communications
- h. NORDO

Practice:

- a. HUD air-to-air mode set
- b. Set/check ACP

CNATRAINST 1542.109B

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
04-04	T-45/FC	GUN-02	GUNNERY TWO	1.2

Brief:

Simo run

Demonstrate/Introduce:

- a. NORDO rendezvous
- b. Banner escort duties
- c. Trail
- d. Come off early
- e. Turn to high reversal
- f. Maneuver to perch
- g. Tractor/IP commands
- h. Perch rendezvous
- i. Spacer pass
- j. Turn from perch
- k. Low reversal
- l. Tracking run
- m. Recovery
- n. Pattern error corrections
- o. High waveoff
- p. CV rendezvous
- q. Gunnery communications

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
04-05	T-45/FC	GUN-03	GUNNERY THREE	1.2

Brief:

Simo run

Demonstrate:

NORDO rendezvous

Introduce:

- a. Banner escort duties
- b. Trail
- c. Come off early
- d. Turn to high reversal
- e. Maneuver to perch
- f. Tractor/IP commands
- g. Perch rendezvous

Practice:

- a. Spacer pass
- b. Turn from perch
- c. Low reversal
- d. Tracking run
- e. Recovery
- f. Pattern error corrections
- g. High waveoff
- h. CV rendezvous
- i. Gunnery communications

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-06	T-45/FC	GUN-04	GUNNERY FOUR	1.2

Brief:

Simo run

Demonstrate:

NORDO rendezvous

Practice:

- a. Banner escort duties
- b. Trail
- c. Spacer pass
- d. Come off early
- e. Turn to high reversal
- f. Maneuver to perch
- g. Turn from perch
- h. Low reversal
- i. Tracking run
- j. Recovery
- k. Pattern error corrections
- l. High waveoff
- m. Tractor/IP commands
- n. Perch rendezvous
- o. CV rendezvous

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-07	T-45/FC	GUN-05X	GUNNERY FIVE CHECK	1.2

Demonstrate:

NORDO rendezvous

Review:

- a. Trail
- b. Spacer pass
- c. Turn to high reversal
- d. Maneuver to perch
- e. Turn from perch
- f. Low reversal
- g. Tracking run
- h. Recovery
- i. Pattern error corrections
- j. High waveoff
- k. Tractor/IP commands
- l. Perch rendezvous
- m. CV rendezvous
- n. Gunnery communications

04-08	T-45/ SOLO	GUN-06	GUNNERY SIX	1.2
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Demonstrate:

NORDO rendezvous

Practice:

- a. Trail
- b. Spacer pass
- c. Turn to high reversal
- d. Maneuver to perch
- e. Turn from perch
- f. Low reversal
- g. Tracking run
- h. Recovery
- i. Pattern error corrections
- j. High waveoff
- k. Tractor/IP commands
- l. Perch rendezvous
- m. CV rendezvous

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-09	T-45/RC	GUN-07	GUNNERY SEVEN	1.2

Brief:

- a. Set/check ACS
- b. Taxi/marshal/takeoff
- c. Departure activities
- d. Trail
- e. Spacer pass
- f. Turn to high reversal
- g. Maneuver to perch
- h. Turn from perch
- i. Low reversal
- j. Tracking run
- k. Recovery
- l. Pattern error corrections
- m. High waveoff
- n. Tractor/IP commands
- o. Simo run
- p. Perch rendezvous
- q. CV rendezvous
- r. Recovery and landing
- s. NORDO rendezvous

Introduce:

- a. Prepare for instruction
- b. Flight instruction

Practice:

- a. Review student records
- b. Event requirements
- c. Brief
- d. Event overview
- e. Professional atmosphere
- f. Presentation techniques
- g. Introduce/demonstrate techniques
- h. Assess performance
- i. Assess skills
- j. Assess knowledge
- k. Assess confidence
- l. Guidance/feedback
- m. Safety
- n. Debrief
- o. Grades assignment

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-10	T-45/RC	GUN-08	GUNNERY EIGHT	1.2

Brief:

- a. Set/check ACS
- b. Taxi/marshal/takeoff
- c. Departure activities
- d. Trail
- e. Spacer pass
- f. Turn to high reversal
- g. Maneuver to perch
- h. Turn from perch
- i. Low reversal
- j. Tracking run
- k. Recovery
- l. Pattern error corrections
- m. High waveoff
- n. Tractor/IP commands
- o. Simo run
- p. Perch rendezvous
- q. CV rendezvous
- r. Gunnery communications
- s. Recovery and landing
- t. NORDO rendezvous

Practice:

- a. Prepare for instruction
- b. Review student records
- c. Event requirements
- d. Brief
- e. Event overview
- f. Professional atmosphere
- g. Presentation techniques
- h. Flight instruction
- i. Introduce/demonstrate techniques
- j. Assess performance
- k. Assess skills
- l. Assess knowledge
- m. Assess confidence
- n. Guidance/feedback
- o. Safety
- p. Debrief
- q. Grades assignment

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-11	T-45/RC	GUN-09	GUNNERY NINE	1.2

Brief:

- a. Set/check ACS
- b. Taxi/marshal/takeoff
- c. Departure activities
- d. Trail
- e. Spacer pass
- f. Turn to high reversal
- g. Maneuver to perch
- h. Turn from perch
- i. Low reversal
- j. Tracking run
- k. Recovery
- l. Pattern error corrections
- m. High waveoff
- n. Tractor/IP commands
- o. Perch rendezvous
- p. Simo run
- q. CV rendezvous
- r. Gunnery communications
- s. Recovery and landing
- t. NORDO rendezvous

Practice:

- a. Prepare for instruction
- b. Brief
- c. Event overview
- d. Professional atmosphere
- e. Flight instruction
- f. Introduce/demonstrate techniques
- g. Performance assessment
- h. Guidance/feedback
- i. Safety
- j. Debrief

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
04-12	T-45/RC	GUN-10	GUNNERY TEN	1.2

Brief:

- a. Set/check ACS
- b. Taxi/marshal/takeoff
- c. Departure activities
- d. Trail
- e. Spacer pass
- f. Turn to high reversal
- g. Maneuver to perch
- h. Turn from perch
- i. Low reversal
- j. Tracking run
- k. Recovery
- l. Pattern error corrections
- m. High waveoff
- n. Tractor/IP commands
- o. Perch rendezvous
- p. Simo run
- q. CV rendezvous
- r. Gunnery communications
- s. Recovery and landing
- t. NORDO rendezvous

Practice:

- a. Prepare for instruction
- b. Brief
- c. Event overview
- d. Professional atmosphere
- e. Flight instruction
- f. Introduce/demonstrate techniques
- g. Performance assessment
- h. Guidance/feedback
- i. Safety
- j. Debrief

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-13	T-45/RC	GUN-11X	GUNNERY ELEVEN CHECK	1.2

R)

Review:

- a. Set/check ACS
- b. Taxi/marshal/takeoff
- c. Departure activities
- d. Banner escort duties
- e. Trail
- f. Spacer pass
- g. Turn to high reversal
- h. Maneuver to perch
- i. Turn from perch
- j. Low reversal
- k. Tracking run
- l. Recovery
- m. Pattern error corrections
- n. High waveoff
- o. Tractor/IP commands
- p. Perch rendezvous
- q. Simo run
- r. CV rendezvous
- s. Gunnery communications
- t. Recovery and landing
- u. NORDO rendezvous
- v. Prepare for instruction
- w. Brief
- x. Flight instruction
- y. Guidance/feedback
- z. Debrief

R)

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-14	T-45/RC	TOW-01	TOW ONE	1.0

Demonstrate:

- a. Tow apparatus inspection
- b. Banner hookup procedures
- c. Takeoff with banner
- d. Transit with banner
- e. Safety pilot/observer
- f. Banner drop
- g. Debrief

04-15	T-45/FC	TOW-02	TOW TWO	1.2
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Introduce:

- a. Banner hookup procedure
- b. Takeoff with banner
- c. Transit with banner
- d. Safety pilot/observer
- e. Banner drop
- f. Debrief

04-16	T-45/RC	TOW-03	TOW THREE	1.2
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Practice:

- a. Flight instruction
- b. Performance assessment
- c. Guidance/feedback
- d. Safety
- e. Debrief
- f. Banner hookup procedure
- g. Takeoff with banner
- h. Transit with banner
- i. Safety pilot/observer
- j. Banner drop

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
04-17	T-45/FC	TOW-04	TOW FOUR	1.2

Brief:

- a. Banner hookup procedure
- b. Takeoff with banner
- c. Transit with banner
- d. Safety pilot/observer
- e. Banner drop

Practice:

- a. Flight instruction
- b. Performance assessment
- c. Guidance/feedback
- d. Safety
- e. Debrief

04-18	T-45/FC	TOW-05X	TOW FIVE CHECK	1.2
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R)

Review:

- a. Banner hookup procedure
- b. Takeoff with banner
- c. Transit with banner
- d. Safety pilot/observer
- e. Banner drop
- f. Flight instruction
- g. Performance assessment
- h. Guidance/feedback
- i. Safety
- j. Debrief

R)

2 December 1998

MODULE 05TACTICAL FORMATION AND AIR COMBAT MANEUVERING STAGES

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

NOTE: Tactical Formation includes flight procedures (TFFP-01 through 04X) lessons and TACF-01 through TACF-04X; Air Combat Maneuvering includes flight procedures instruction in 1 V 1 and 2 V 1 with flights (ACM-01 through 10X).

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

CNATRAINST 1542.109B

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-15	T-45/FC	ACM-02	AIR COMBAT MANEUVERING TWO	1.1
05-16	T-45/FC	ACM-03	AIR COMBAT MANEUVERING THREE	1.1
05-17	T-45/RC	ACM-04	AIR COMBAT MANEUVERING FOUR	1.2
05-18	T-45/ SOLO	ACM-05	AIR COMBAT MANEUVERING FIVE	1.2
05-19	T-45/FC	ACM-06X	AIR COMBAT MANEUVERING SIX CHECK	1.2
05-20	T-45/FC	ACM-07	AIR COMBAT MANEUVERING SEVEN	1.2
05-21	T-45/RC	ACM-08	AIR COMBAT MANEUVERING EIGHT	1.2
05-22	MIL	ACMFP-06	AIR COMBAT MANEUVERING 2 V 1 FLIGHT PROCEDURES	1.9
05-23	CAI	ACMFP-07X	AIR COMBAT MANEUVERING STAGE EXAMINATION (2 V 1)	1.0
05-24	T-45/FC	ACM-09	AIR COMBAT MANEUVERING NINE	1.2
05-25	T-45/FC	ACM-10X	AIR COMBAT MANEUVERING TEN CHECK	1.2

2 December 1998

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

Brief:

Lost sight

Introduce:

- a. Voice communications
- b. Combat spread
- c. Cruise turns
- d. Tactical turns
- e. In-place turns
- f. Cross turns
- g. Loose deuce exercise
- h. Gunsight tracking exercise
- i. High yo-yo
- j. Low yo-yo
- k. Displacement roll

Practice:

- a. HUD management
- b. Formation

05-06	T-45/RC	TACF-02	TACTICAL FORMATION TWO	1.4
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Brief:

Lost sight

Practice:

- a. HUD management
- b. Voice communications
- c. Formation
- d. Combat spread
- e. Cruise turns
- f. Tactical turns
- g. In-place turns
- h. Cross turns
- i. Loose deuce exercise
- j. Gunsight tracking exercise
- k. High yo-yo
- l. Low yo-yo
- m. Displacement roll
- n. Precautionary approach

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
05-07	T-45/RC	TACF-03	TACTICAL FORMATION THREE	1.4

Brief:

- a. HUD management
- b. Voice communications
- c. Formation
- d. Combat spread
- e. Cruise turns
- f. Tactical turns
- g. In-place turns
- h. Cross turns
- i. Loose deuce exercise
- j. Gunsight tracking exercise
- k. High yo-yo
- l. Low yo-yo
- m. Displacement roll
- n. Lost sight

Introduce:

- a. Flight instruction
- b. Performance evaluation

Practice:

- a. Brief
- b. Event overview
- c. Introduce/demonstrate techniques
- d. Guidance/feedback
- e. Debrief
- f. Grades assignment

27 April 1999

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
05-08	T-45/FC	TACF-04X	TACTICAL FORMATION FOUR CHECK	1.4

Review:

(R)

- a. HUD management
- b. Voice communications
- c. Formation
- d. Combat spread
- e. Cruise turns
- f. Tactical turns
- g. In-place turns
- h. Cross turns
- i. Loose deuce exercise
- j. Gunsight tracking exercise
- k. High yo-yo
- l. Low yo-yo
- m. Displacement roll
- n. Lost sight
- o. Brief
- p. Flight instruction
- q. Performance evaluation
- r. Guidance/feedback
- s. Debrief

(R)

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
05-14	T-45/FC	ACM-01	AIR COMBAT MANEUVERING ONE	1.1

Demonstrate:

Diving spiral

Introduce:

- a. Snap guns
- b. Break turn exercise
- c. Acceleration check
- d. Time/sustain/hard/break turn
- e. Low airspeed recovery
- f. Pitchback
- g. Horizontal scissors
- h. Rolling scissors

Practice:

- a. Low yo-yo
- b. High yo-yo

05-15	T-45/FC	ACM-02	AIR COMBAT MANEUVERING TWO	1.1
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Introduce:

- a. Displacement roll
- b. Counter defensive pitchback
- c. Barrel roll attack
- d. Aggressiveness
- e. Situational awareness

Practice:

- a. Snap guns
- b. Break turn exercise
- c. Low yo-yo
- d. High yo-yo
- e. Gunsight tracking
- f. Horizontal scissors
- g. Rolling scissors

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
05-16	T-45/FC	ACM-03	AIR COMBAT MANEUVERING THREE	1.1

Introduce:

- a. Counter yo-yo attack
- b. Defensive pitchback
- c. Bugout
- d. Counter barrel roll attack
- e. Last ditch maneuvers

Practice:

- a. Snap guns
- b. Break turn exercise
- c. Horizontal scissors
- d. Extension maneuver
- e. Rolling scissors
- f. Aggressiveness
- g. Situational awareness

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-17	T-45/RC	ACM-04	AIR COMBAT MANEUVERING FOUR	1.2

Brief:

- a. Combat spread/cruise turns
- b. Engaging turns
- c. Snap guns
- d. Break turn exercise
- e. Offensive 1 V 1
- f. Defensive 1 V 1
- g. 1 V 1 neutral start
- h. Energy management
- i. Aggressiveness
- j. Situational awareness

Introduce:

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

Practice:

- a. Review student records
- b. Event requirements
- c. Brief
- d. Professional atmosphere
- e. Introduce/demonstrate techniques
- f. Guidance/feedback
- g. Safety
- h. Debrief
- i. Grades assignment

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-18	T-45/ SOLO	ACM-05	AIR COMBAT MANEUVERING FIVE	1.2

Practice:

- a. Combat spread/cruise turns
- b. Engaging turns
- c. Snap guns
- d. Offensive 1 V 1
- e. Defensive 1 V 1
- f. 1 V 1 neutral start
- g. Energy management
- h. Aggressiveness
- i. Situational awareness

05-19	T-45/FC	ACM-06X	AIR COMBAT MANEUVERING SIX CHECK	1.2
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Review:

- a. Combat spread/cruise turns
- b. Engaging turns
- c. Snap guns
- d. Offensive 1 V 1
- e. Defensive 1 V 1
- f. 1 V 1 neutral start
- g. Bugout
- h. Sight/lookout doctrine
- i. Aggressiveness
- j. Situational awareness
- k. Prepare for instruction
- l. Brief
- m. Flight instruction
- n. Conduct 1 V 1 as bandit
- o. Performance evaluation
- p. Guidance/feedback
- q. Debrief

(R)

(R)

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-20	T-45/FC	ACM-07	AIR COMBAT MANEUVERING SEVEN	1.2

Introduce:

- a. Call bandit exercise
- b. 2 V 1 combat
- c. Counterflow
- d. No switch
- e. Single switch
- f. Multi switch
- g. Section bugout

Practice:

- a. Combat spread
- b. Mutual support
- c. Aggressiveness
- d. Situational awareness

05-21	T-45/RC	ACM-08	AIR COMBAT MANEUVERING EIGHT	1.2
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Introduce:

Forward quarter attack

Practice:

- a. Combat spread
- b. Call bandit exercise
- c. 2 V 1 combat
- d. Mutual support
- e. Counterflow
- f. Single switch
- g. Multi switch
- h. Section bugout
- i. Aggressiveness
- j. Situational awareness

2 December 1998

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
05-24	T-45/FC	ACM-09	AIR COMBAT MANEUVERING NINE	1.2

Brief:

- a. Call bandit exercise
- b. Counterflow
- c. Single switch
- d. Multi switch
- e. Forward quarter attack
- f. Section bugout
- g. Aggressiveness
- h. Situational awareness

Introduce:

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

Practice:

- a. Review student records
- b. Event requirements
- c. Brief
- d. Professional atmosphere
- e. Conduct 2 V 1 as bandit
- f. Introduce/demonstrate techniques
- g. Guidance/feedback
- h. Safety
- i. Debrief
- j. Grades assignment

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
05-25	T-45/FC	ACM-10X	AIR COMBAT MANEUVERING TEN CHECK	1.2

R)

Review:

- a. Call bandit exercise
- b. Counterflow
- c. Multi switch
- d. Forward quarter attack
- e. Section bugout
- f. Sight/lookout doctrine
- g. Aggressiveness
- h. Situational awareness
- R) i. Prepare for instruction
- j. Brief
- k. Flight instruction
- l. Conduct 2 V 1 as bandit
- m. Performance evaluation
- n. Guidance/feedback
- o. Debrief

2 December 1998

MODULE 06CARRIER QUALIFICATION STAGE

OBJECTIVE: To provide selected IUTs with training in Carrier Qualification and CQ Safe procedures and instructional techniques. The module will provide the IUT with phase goals and training techniques for instructing the stages.

NOTE 1: Carrier qualification procedures includes flight procedures lessons (CQFP-01 through CQFP-04X), simulator (CQ-01S) in FLCF, and ship procedures followed by flights (CQ-02 through 09X).

NOTE 2: CQ-07X is the ship qualification flight. CNATRAINST 3740.9B applies.

NOTE 3: CQ-09X is the check flight for CQ Safe.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-01	MIL	CQFP-01	FIELD CARRIER LANDING PRACTICE (FCLP)	1.0
06-02	MIL	CQFP-02	CAR QUAL/LEAD SAFE PROCEDURES	1.5
06-03	OFT	CQ-01S	CARRIER QUALIFICATION ONE - SIMULATOR	1.5
06-04	T-45/ SOLO	CQ-02	CARRIER QUALIFICATION TWO	0.7
06-05	MIL	CQFP-03	SHIP'S BRIEF	3.0
06-06	T-45/ SOLO	CQ-03	CARRIER QUALIFICATION THREE	0.7
06-07	T-45/ SOLO	CQ-04	CARRIER QUALIFICATION FOUR	0.7
06-08	T-45/ SOLO	CQ-05	CARRIER QUALIFICATION FIVE	0.7
06-09	T-45/ SOLO	CQ-06X	CARRIER QUALIFICATION SIX CHECK	0.7
06-10	CAI	CQFP-04X	SHIP'S BRIEF EXAMINATION	1.0

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-11	T-45/ SOLO	CQ-07X	CARRIER QUALIFICATION SEVEN CHECK	2.4
06-12	T-45/RC	CQ-08	CARRIER QUALIFICATION EIGHT	2.4
06-13	T-45/FC	CQ-09X	CARRIER QUALIFICATION NINE CHECK	2.4
06-03	OFT	CQ-01S	CARRIER QUALIFICATION ONE - SIMULATOR	1.5

Brief:

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

R) Introduce:

- A)
  - a. Case I/II recovery
  - b. Pattern
  - c. Start position
  - d. Bolter/touch-and-go technique
  - e. Respond to waveoff and techniques
  - f. Carrier arrestment
  - g. Post-arrestment procedures
  - h. Catapult hookup
  - i. Catapult launch procedures
  - j. Pattern entry from cat 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

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
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06-04	T-45/ SOLO	CQ-02	CARRIER QUALIFICATION TWO	0.7
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Brief:

Delta pattern

Practice:

- a. Communications
- b. Course rules/pattern entry procedure
- 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 techniques
- l. Response to waveoff and techniques

06-06	T-45/ SOLO	CQ-03	CARRIER QUALIFICATION THREE	0.7
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Brief:

Delta pattern

Practice:

- a. Communications
- b. Course rules/pattern entry procedure
- 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 techniques
- l. Response to waveoff and techniques

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-07	T-45/ SOLO	CQ-04	CARRIER QUALIFICATION FOUR	0.7

Brief:

Delta pattern

Introduce:

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

Practice:

- a. Communications
- b. Response to LSO calls

06-08	T-45/ SOLO	CQ-05	CARRIER QUALIFICATION FIVE	0.7
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Brief: Delta pattern

Practice:

- a. Communications
- b. Course rules/pattern entry procedure
- 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 techniques
- l. Response to waveoff and techniques

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

A) Note: LSO talkdown passes may be conducted anytime  
after CQ-02, but prior to CQ-06X.

2 December 1998

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-09	T-45/ SOLO	CQ-06X	CARRIER QUALIFICATION SIX CHECK	0.7

Brief:

Delta pattern

Review:

- a. Communications
- b. Course rules/pattern entry procedure
- 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 techniques
- l. Response to waveoff and technique

06-11	T-45/ SOLO	CQ-07X	CARRIER QUALIFICATION SEVEN CHECK	2.4
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Brief:

- a. Delta pattern
- b. 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 techniques
- k. Response to waveoff and techniques
- l. Carrier flight deck procedures
- m. Communications
- n. Catapult launch procedures

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
06-12	T-45/RC	CQ-08	CARRIER QUALIFICATION EIGHT	2.4

Demonstrate:

- a. Brief
- b. Introduce/demonstrate techniques
- c. Safety
- d. Debrief
- e. Grades assignment
- f. CQ safety pilot

06-13	T-45/FC	CQ-09X	CARRIER QUALIFICATION NINE CHECK	2.4
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R) 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 techniques
- k. Response to waveoff and techniques
- l. Delta pattern
- m. Carrier flight deck procedures
- n. Communications
- o. Hot seat
- p. Catapult launch procedures
- q. Prepare for instruction
- r. Brief
- s. Flight instruction
- t. Performance evaluation
- u. Guidance/feedback
- v. Debrief
- w. CQ safety pilot

R)

2 December 1998

MODULE 07OUT-OF-CONTROL FLIGHT STAGE

OBJECTIVE: To provide the IUT with training in Out-of-Control Flight instructional techniques. The module will provide the IUT with phase goals and training techniques for instructing the stages.

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

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-01	OFT/RC	OCF-01S	OUT-OF-CONTROL FLIGHT ONE - SIMULATOR	1.0
07-02	T-45/RC	OCF-02X	OUT-OF-CONTROL FLIGHT TWO CHECK	1.0
07-01	OFT/RC	OCF-01S	OUT-OF-CONTROL FLIGHT ONE - SIMULATOR	1.0

Introduce:

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

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
07-02	T-45/RC	OCF-02X	OUT-OF-CONTROL FLIGHT TWO CHECK	1.0

R) Review:

- a. Runaway trim
- b. Engine flameout
- c. Ejection situations
- R) d. Prepare for instruction
- e. Brief
- f. Flight instruction
- g. Performance evaluation
- h. Guidance/feedback
- i. Debrief
- j. High AOA/deep stall investigation/rudder induced departure
- k. Low airspeed recovery (70 degrees nose up)
- l. Low airspeed recovery (110 degrees nose up)
- m. Lateral stick adverse yaw departure

2 December 1998

MODULE 08T-45A STUDENT NAVAL FLIGHT OFFICER INSTRUCTOR TRAINING

OBJECTIVE: To provide squadron designated T-45A instructor pilots with the necessary instructional methodology, techniques, and information to instruct in the T-45A Student Naval Flight Officer (SNFO) Advanced Tactical Maneuvering (ATM) Curriculum.

NOTE 1: This syllabus consists of three "substages": Familiarization and Formation (FAM/FORMFP); Tactical Low-Level (TLL) and Advanced Tactical Maneuvering (ATM). It is not a requirement that an IP be qualified in all substages, only in those stages in which instruction will be given.

NOTE 2: IUT lectures will be given by "S" qualified instructors.

NOTE 3: Examinations are pencil/paper examinations. Examinations may require materials such as: examination booklets, video materials, NATOPS, etc. Check the examination booklet to ensure that all required materials are available prior to beginning the examination. Read the examination instructions carefully. If you have problems contact the instructor.

MODULE 08-A

Student Naval Flight Office (SNFO)  
FAMILIARIZATION and FORMATION

NOTE 1: IUTs will be Section Lead qualified.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
08-01	MIL	FAM/ FORMFP- 01	SNFO FAMILIARIZATION AND FORMATION FLIGHT PROCEDURES	2.0
08-02	PENCIL	FAM/ FORMFP- 02X	SNFO FAMILIARIZATION AND FORMATION STAN EXAM	1.0

2 December 1998

MODULE 08-B

## SNFO TACTICAL LOW-LEVEL FLIGHT

- NOTE 1: IUTs will be "X" qualified in ONAV.
- NOTE 2: IUTs will be "L or X" qualified in TACFORM.
- NOTE 3: TLL-01X will have a lead change.
- NOTE 4: TLL-01X will have an "S" qualified IP acting as SNFO for the IUT.
- NOTE 5: All dedicated flights for SNFO training (which includes TLL flights) will be identified by a type code (TY) or non-pipeline (NP) on the daily flight schedule.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
08-03	MIL	TLLFP-01	TACTICAL LOW LEVEL FLIGHT PROCEDURES	3.0
08-04	PENCIL	TLLFP-02X	TACTICAL LOW-LEVEL STAN EXAMINATION	1.0
08-05	T-45/FC	TLL-01X	TACTICAL LOW-LEVEL ONE (SECTION LOW-LEVEL) CHECK	1.5

MODULE 08-C

## (SNFO ADVANCED TACTICAL MANEUVERING)

- NOTE 1: IUTs will be "L" qualified in ACM.
- NOTE 2: SNFO ATM flights will update 2 ACM/TACF for FIST for currency purposes.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
08-06	MIL	ATMFP-01	ADVANCED TACTICAL MANEUVERING FP FOR IUT	1.5
08-07	PENCIL	ATMFP-02X	ADVANCED TACTICAL MANEUVERING STAN EXAMINATION	1.0

27 April 1999

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
08-05	T-45/FC	TLL-01X	TACTICAL LOW LEVEL ONE (SECTION LOW LEVEL) CHECK	1.5

Review:

(R)

- a. Weather response
- b. Chart
- c. Jet log
- d. Interpret charts
- e. Fuel time calculations
- f. Course/time corrections
- g. Communications
- h. HUD failure
- i. Bingo
- j. Low altitude hazards
- k. Prepare for instruction
- l. Brief
- m. Flight instruction
- n. Performance evaluation
- o. Guidance/feedback
- p. Debrief

(R)

Introduce:

- a. Crew coordination
- b. SNFO responsibilities

NOTE: Jacket review required.

CNATRAINST 1542.109B

2 December 1998

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2 March 2004

MODULE 9

T-45A TO T-45C TRANSITION

OBJECTIVE: To provide a NATOPS qualification in the T-45C for designated T-45A Instructor Pilots.

Note 1: Required reading:

- a. T-45C Instrument FTI (P-1204)
- b/ T-45 FAM FTI (P-1212) for T-45C specifics  
Required reading from T-45C 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: Completion of Module 00 and Module 01 (Basic IUT) in the T-45A are required prior to transition to the T-45C for IP's with previous fleet glass cockpit experience.

Note 3: Completion of Module 00 and Module 01 (Basic IUT) and a total of 150 hours in the T-45A are required prior to transition to the T-45C for IP's with no previous fleet glass cockpit experience.

Note 4: T-45A designated IP's with previous fleet glass cockpit experience shall complete NA-16 in lieu of CO-5S, CO-6S, and NA-15S. NA-23SX is only required if a T-45C OFT is available on site.

Note 5: T-45C qualified pilots can perform all syllabus overhead flights (FORM, NFORM, WEPS, GUNS, ONAV, TACF/ACM, and CQ LEAD SAFE).

Note 6: All pilots require 10 hours of First Pilot (FP) time, including 1 hour of night time, prior to completion of NA-24X.

Note 7: Prior to initial T-45C carrier qualification, pilots must complete a minimum of 1 CQ simulator and 4 FCLP periods.

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-01	CAI	ENG-29	T-45C DISPLAY SYSTEM AND MALFUNCTIONS	1.5
09-02	CAI	CO-3	T-45C DISPLAY SYSTEM (HUD)	0.8
09-03	CAI	CO-4	T-45C WAYPOINT NAVIGATION PROCEDURES	1.2
09-04	OFT	CO-05S	T-45C COCKPIT ORIENTATION FIVE SIMULATOR	1.5
09-05	OFT	CO-06S	T-45C COCKPIT ORIENTATION SIX SIMULATOR	1.5
09-06	OFT	NA-15S	NATOPS FIFTEEN SIMULATOR	1.5
09-07	T-45C/FC or OFT	NA-16	NATOPS SIXTEEN (CO)	1.5
09-08	T-45C/FC	NA-17	NATOPS SEVENTEEN (FAM)	1.3
09-09	T-45C/FC	NA-18	NATOPS EIGHTEEN (FAM)	1.3
09-10	T-45C/FC	NA-19	NATOPS NINETEEN (INST)	1.6
09-11	T-45C/FC	NA-20	NATOPS TWENTY (INST)	1.6
09-12	T-45C/RC (HOOD)	NA-21	NATOPS TWENTY-ONE (INST)	1.6
09-13	T-45C/FC	NA-22	NATOPS TWENTY-TWO (LEAD)	1.1
09-14	PENCIL	NATOPS-03X	T-45C NATOPS OPEN-BOOK EXAM	2.0

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-15	PENCIL	NATOPS-04X	T-45C NATOPS CLOSED-BOOK EXAM	2.0
09-16	PENCIL	NATOPS-05X	T-45C NATOPS BOLD FACE EXAM	1.0
09-17	OFT	NA-23SX	NATOPS TWENTY-THREE SIMULATOR CHECK	1.5
09-18	T-45C/FC	NA-24X	NATOPS TWENTY-FOUR CHECK (NATOPS CHECK)	1.3

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-04	OFT	CO-05S	COCKPIT ORIENTATION FIVE SIMULATOR	1.5

Brief:

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

Demonstrate:

- a. Enter mission data
- 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. Post-start checklist
- h. 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. En route communications
- s. Descent/penetration checklist
- t. Approach control communications
- u. VFR approach to pattern initial
- v. Communication to tower
- w. Landing checklist
- x. After landing communications
- y. After landing checklist
- z. Aircraft shutdown
- aa. Shutdown checklist
- bb. Normal egress procedures

2 March 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
09-05	OFT	CO-06S	COCKPIT ORIENTATION SIX SIMULATOR (SYSTEM MANAGEMENT)	1.5

Brief:

- a. QOD
- b. Abnormal alignment procedures

Introduce:

- a. Full system utilization
- b. GINA failure
- c. In-flight alignment
- d. Pattern engine emergencies

Practice:

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

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-06	OFT	NA-15S	NATOPS FIFTEEN SIMULATOR (CO/FAM/INST)	1.5

Brief:

QOD

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. Post-start checklist
- e. Ground communications
- f. Takeoff clearance
- g. Engine checks
- h. 10,000-ft checklist/15-minute report
- i. Descent/penetration check
- j. After landing checklist
- k. After landing communications
- l. Shutdown checklist
- m. Normal egress procedures

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-07	T-45C/FC* or OFT	NA-16	NATOPS SIXTEEN (CO/FAM/INST)	1.5

Brief:

- a. Start emergencies
- b. GINA failure
- c. Erroneous GINA data
- d. Generator failure
- e. MFD failure
- f. Abnormal alignment procedures
- g. In-flight alignment

Demonstrate:

- a. Observe preflight inspection

Introduce:

- a. Inspect aircraft interior
- b. Cockpit preflight checklist
- c. Pre-start checklist
- d. Aircraft start (simulated)
- e. Post start checklist
- f. BIT procedures
- g. Cockpit/display orientation
- h. Enter mission data
- i. Flight instrument checks
- j. Engine checks
- k. Display management
- l. TACAN/VOR/ILS ops
- m. Waypoint operations
- n. Degraded displays
- o. Instrument redundancy
- p. A/A mode
- q. A/G mode
- r. After landing checklist
- s. Aircraft shut down
- t. Shut down checklist

\*Aircraft only needs external power in order to power displays.  
Event may be completed in T-45C OFT.

2 March 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
09-08	T-45C/FC	NA-17	NATOPS SEVENTEEN (FAM)	1.3

Introduce:

- a. Simulated emergency airborne
- b. Post flight

Practice:

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

2 March 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
09-09	T-45C/FC	NA-18	NATOPS EIGHTEEN (FAM)	1.3

Practice:

- a. Preflight
- b. Checklists
- c. BIT procedures
- d. Enter mission data
- e. Communications
- f. Takeoff
- g. Standard departure
- h. Minimum radius turn
- i. Stall Series
- j. Unusual attitudes
- k. Aerobatics
- l. Simulated emergency (airborne)
- m. Precautionary approach
- n. VFR landing pattern
- o. Tough/go full flaps/slats
- p. Post flight

2 March 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
09-10	T-45C/FC	NA-19	NATOPS NINETEEN (INST)	1.6

Introduce:

- a. Full system utilization
- b. Station passage
- c. Waypoint navigation
- d. MFD failures
- e. Partial panel
- f. TACAN/VOR DME ops
- g. TACAN/VOR DME approach
- h. Precision approach
- i. Missed approach
- j. Landing pattern

Practice:

- a. Checklists
- b. Ground ops
- c. Takeoff
- d. After landing checklist
- e. Shut down checklist

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-11	T-45C/RC (HOOD)	NA-20	NATOPS TWENTY	1.6

Practice:

- a. Ground ops
- b. Partial system utilization
- c. Waypoint navigation
- d. HUD failure
- e. MFD failures
- f. Partial panel
- g. Non-precision approach (P/P)
- h. Precision approach (P/P)
- i. Missed approach (P/P)
- j. Landing pattern
- k. Post flight ops

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-12	T-45C/FC	NA-21	NATOPS TWENTY-ONE (INST)	1.6

Practice:

- a. Ground ops
- b. Full system utilization
- c. Waypoint navigation
- d. MFD failures
- e. Partial panel
- f. Non-precision approach
- g. Precision approach
- h. Missed approach
- i. Landing pattern
- j. Post flight ops

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-13	T-45C/FC	NA-22	NATOPS TWENTY-TWO (LEAD)	1.1

Review:

- a. Flight lead brief
- b. Preflight
- c. System management
- d. Communication
- 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

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

Note 2: Event can be flown anytime after NA-20.

2 March 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
09-17	OFT	NA-23SX	NATOPS TWENTY-THREE 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
- 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/emerg
- s. Lost communications
- t. Swerve after touchdown
- u. Arrested landing (field) with blown tire

2 March 2004

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
09-18	T-45C/FC	NA-24X	NATOPS TWENTY-FOUR CHECK	1.3

Review:

- a. Preflight
- b. Communication
- c. Normal takeoff
- d. Standard departure
- e. Minimum radius turn
- f. Stall series
- g. Unusual attitudes
- h. Aerobatics
- i. Simulated emergency (airborne)
- j. Recovery to pattern
- k. Precautionary approach(es)
- l. Overhead pattern
- m. Roll/go full flap/slats
- n. Touch/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-24X.

6 August 2004

MODULE 10WEAPONS AND OPERATIONAL NAVIGATION STAGES UPGRADE

OBJECTIVE: To provide training to qualify T-45A strike instructor pilots to instruct in the areas of low altitude pop attacks and section low level tactics.

NOTE 1: IUTs will be ON-05X complete prior to flying WEP-07S.

NOTE 2: IUTs will be WEP-09X complete prior to flying ON-06.

NOTE 3: Weapons and ONAV events should be flown in the sequence Shown in the module.

NOTE 4: Weapons flight procedures lecture, WEPFP-04 and Operational Navigation flight procedures lecture, ONFP-05. Cover low level pop attacks and section low level tactics, respectively.

MODULE	MEDIA	SYMBOL	DESCRIPTION	DURATION
10-01	OFT	WEP-07S	WEAPONS SEVEN SIMULATOR	1.0
10-02	T-45/FC	WEP-08	WEAPONS EIGHT	1.3
10-03	T-45/RC	WEP-09X	WEAPONS NINE CHECK	1.3
10-04	T-45/FC	ON-06	OPERATIONAL NAVIGATION SIX	1.3
10-05	T-45/RC	ON-07X	OPERATIONAL NAVIGATION SEVEN CHECK	1.3

6 August 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
10-01	OFT	WEP-07S	WEAPONS-SEVEN - 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. Error corrections
- f. Release parameters
- g. Dive recovery
- h. Safe switches
- i. Weapons emergencies

6 August 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
10-02	T-45/FC	WEP-08	WEAPONS EIGHT	1.3

Brief:

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

Introduce:

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

Practice:

- a. Weapons preflight
- b. Target procedures
- c. Armament system management
- d. 10-degree bombs
- e. Tracking dive angle
- f. Error corrections
- g. Release parameters
- h. Dive recovery
- i. Rendezvous
- j. Hung ordnance checks
- k. Accuracy
- l. Introduce/demonstration techniques

6 August 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
10-03	T-45/RC	WEP-09X	WEAPONS NINE CHECK	1.3

Brief:

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 systems management
- i. 10-degree bombs
- j. Tracking/dive angle
- k. Error corrections
- l. Release parameters
- m. Dive recovery
- n. Rendezvous
- o. Hung ordnance checks
- p. Accuracy
- q. Introduce/demonstrate techniques
- r. Student safety concerns

6 August 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
10-04	T-45/FC	ON-06	OPERATIONAL NAVIGATION SIX	1.3

Brief:

- a. Wingman deconfliction responsibilities
- b. Target area deconfliction

Introduce:

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

Practice:

- a. ONAV planning
- b. Route entry
- c. Interpret charts
- d. Recognize checkpoints
- e. Knowledge of route
- f. Tactical lead
- g. Tactical wing
- h. Mutual support
- i. Timing corrections
- j. Target descriptions
- k. Communications
- l. Weather response
- m. Guidance/feedback

6 August 2004

<u>MODULE</u>	<u>MEDIA</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
10-05	T-45/RC	ON-07X	OPERATIONAL NAVIGATION SEVEN CHECK	1.3

Brief:

- a. Wingman deconfliction responsibilities
- b. Target area deconfliction
- c. Low level emergencies

Practice:

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

Review:

- a. ONAV planning
- b. Route entry
- c. Interpret charts
- d. Recognize checkpoints
- e. Knowledge of route
- f. Tactical lead
- g. Tactical wing
- h. Mutual support
- i. Timing corrections
- j. Target descriptions
- k. Communications
- l. Weather response
- m. Prepare for instruction
- n. Performance evaluation
- o. Guidance/feedback

2 December 1998

## SECTION II

APPENDIX A

A. IUT TRAINING OBJECTIVES. The T-45A Strike Flight Instructor Training curriculum, is designed to satisfy eight training objectives, which results 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-45A 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 controls 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 understanding of aerodynamics, navigation, communications, systems management, and planning principles by the exercise of 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.

2 December 1998

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. Aircrew Coordination Training. Ensure an understanding of the concept of aircrew coordination training (ACT), including the seven critical skills associated with ACT. Demonstrate proficiency in ACT 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-45A 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 equipment, 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 multi-plane 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 evolution: start, taxi, takeoff, en route 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,

2 December 1998

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-to-Air Gunnery. After this stage, the IUT will demonstrate competency to instruct SNAs in maneuvering the aircraft through all parameters of the air-to-air gunnery pattern.

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

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

13. 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 from instrument references, applying the proper recovery controls for an uncontrolled flight situation, and indications of OCF.

14. T-45A Student Naval Flight Officer Instructor Training. After this stage, the IUT will demonstrate competency to instruct SNFOs in Tactical Low Level flight (TLL) and Advanced Tactical Maneuvering (ATM).

2 December 1998

MASTER PUBLICATIONS LIST1. Individually Issued Materials

NOMENCLATURE	IDENTIFICATION	DATE	QTY PER IUT	COST EACH
a. T-45A Strike Flight Training Curriculum	CNATRAINST 1542.108C	TBD	1	
b. T-45A Strike Flight Instructor Training Curriculum Outline	CNATRAINST 1542.109B	TBD	1	
c. T-45A Advanced Strike Flight Training Curriculum	CNATRAINST 1542.120B	TBD	1	
d. T-45A E-2/C-2 Advanced Flight Training Curriculum	CNATRAINST 1542.135A	TBD	1	
e. Flight Training Instructions (FTI)	CNAT P-1210 through 1219		9	
f. DOD FLIP Publications				
(1) En Route IFR Supplement U.S.			3	1.25
(2) En Route High Altitude Chart U.S. (H1, H2)			6	.60
(3) Terminal High Altitude Instrument Approach Procedures (NW, NE, SW, SE)			8	1.25
g. Single Engine Jet Log	CNATRA-GEN 3760/1		25	.78
h. TRAWING In-Flight Guide	Locally produced/issued			
i. Aviation Training Jacket (ATJ)	CNATRA-GEN 1542/10A		1	.11
j. Pilot Training Summary	CNATRA 1542/95		1	.005
k. Jacket Review Divider	CNATRA-GEN 1542/66		1	.005
l. Military Flight Plan	DD-175		20	.005
m. T-45A Operating Standard Procedures (SOP)	COMTRAWINGTWOINST 3710.7D		1	

2 December 1998

2. Support Materials

<u>NOMENCLATURE</u>	<u>IDENTIFICATION</u>	<u>QUANTITY</u>	<u>COST EACH</u>
a. T-45A NATOPS Flight Manual	NAVAIR A1-T45AB-NFM-000	255	\$17.50
b. T-45A NATOPS Pocket Checklist	NAVAIR A1-T-45AB-NFM-500	255	2.65
c. NATOPS Instrument Flight Manual	Stock No. 0437LP900109	50	11.50
d. NATOPS General Operating Instructions	OPNAVINST 3710.7Q	50	11.50
TOTAL			\$5,253.25

e. Flight clothing (Identification and quantity listed in CNATRAINST 10126.1C; cost listed in NAVSUP PUB. 4100.)

f. Aviation Training Forms (ATF) are generated by the Training Integration System (TIS).

3. Aircraft and Major Training Devices

<u>NOMENCLATURE</u>	<u>IDENTIFICATION</u>
a. Aircraft	T-45A
b. Instrument Flight Trainer Instrument Simulator	2F137
c. Operational Flight Trainer Visual Simulator	2F138
d. Training Integration System Curriculum Database/Electronic ATF/ Yellow Sheets/Data Collection	4E9
e. T-45TS Academic Subsystem Electronic Classroom/Learning Center/ Mandarin Course Materials	4E10

CNATRAINST 1542.109B

2 December 1998

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