

NAVAL AIR TRAINING COMMAND



NAS CORPUS CHRISTI, TEXAS
CIN O-2A-0072

CNATRAINST 1542.53F

CHIEF OF NAVAL AIR TRAINING



AEROSPACE MEDICINE SPECIALIST INDOCTRINATION CURRICULUM

1998



DEPARTMENT OF THE NAVY

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

CNATRAINST 1542.53F

N3

9 October 1998

CNATRA INSTRUCTION 1542.53F

Subj: AEROSPACE MEDICINE SPECIALIST INDOCTRINATION CURRICULUM

Ref: (a) CNETINST 1550.10B
(b) NAVEDTRA 130

1. Purpose. To promulgate the curriculum for qualifying student aviation medicine specialist in fixed wing and rotary aircraft in accordance with reference (a) and (b).

2. Cancellation. CNATRAINST 1542.53E, CNATRA P-364 (Rev. 2-96) and P-453 (Rev. 1-94); CNATRA 1542/1280, 1542/1288 through 1295, CNATRA 1542/1297, 1542/1298, 1542/1300, 1542/1301, and CNATRA 1542/1310.

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

4. Forms. The CNATRA-GEN forms required by this directive, listed in appendix A and B, may be procured by submitting a DD Form 1348 to Commanding Officer, Naval Air Station Pensacola, Supply Department, Pensacola, Fl 32508-5217, or through local servmarts. CNATRA forms are procured by submitting a request to CNATRA (N1221).

R. L. MCCOLLUM
Chief of Staff
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COURSE DATA

1. Course Title. Aerospace Medicine Specialist Indoctrination (TH-57B/C /T-34C).
2. Course ID Number. Q-2A-0072.
3. Training Site/Course Data Processing (CDP) Code. Naval Air Station (NAS) Pensacola, FL/Training Squadrons (TRARONS) FOUR, 3217, TEN, 3219. NAS Whiting Field, Milton FL/ TRARON TWO, 426D, THREE, 426E, SIX, 426F, HELTRARON EIGHT, 425W and EIGHTEEN, 425X.
4. Course Status. Implement upon receipt.
5. Course Mission. The mission of the Aerospace Medicine Specialist (AMS) Training Curriculum is to provide exposure to the various flight regimes and associated phenomenon of aeromedical concern. The term Aerospace Medical Specialist includes all Bureau of Medicine and Surgery specialist that support the Naval Aviation fleet, including Residents in Aerospace Medicine, Flight Surgeon short course students, student Naval Aerospace Physiologist and student Naval Aerospace Experimental Psychologist, and Student Naval Aerospace Optometrists. Each module of the instruction provides an introduction to the basic flight experiences encountered in daily training and fleet aircraft operations. Particular emphasis is placed on basic motor flight skills and familiarization with the physiological stressors associated with aviation specific evolutions. (R)
6. Prerequisite Training. Basic flight and academic training for Aerospace Medicine Specialist Course C-6A-4005/ physiology/ water survival/HABDS. The two phases (TH-57B/C/T-34C) may be completed in any order.
7. Personnel and ratings eligible. Officers assigned by NOMI as recommended by Chief of Naval Air Training.
8. Physical requirements. As specified in Chapter 15 of the Manual of the Medical Department.
9. Security Clearance Required. None.
10. Obligated Service. Refer to BUPERSMAN.
11. NOBC/NEC Earned. None.
12. Follow on Training. As dictated by Manual of the Medical Department.
13. Course Length (optimum). Fixed Wing: 29.0 training days, 5 .7 weeks. Rotary Wing: 19.1 training days, 4.0 weeks.

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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 FIVE.
17. Quota Management Authority. Chief of Naval Air Training.
18. Quota Control. Chief of Naval Operations.
19. Primary Instructional Methods. Building block approach to developing and reinforcing prerequisite airmanship skills through a steady increase in mission task loading. Central to the approach is an optimum mix of classroom (systems, aerodynamics, etcetera), simulator and flight instruction. Classroom instruction combines lecture and question/answer while simulator and flight instruction rely more heavily on a mentor relationship between instructor and student.
20. Preceding Curriculum Data. None.
21. Student Performance Measurement. As published in CNATRAINST 1500.4E.
22. Application of Standards. Procedural knowledge and application must be in accordance with applicable manuals and 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.

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CURRICULUM GUIDELINES

1. Sequencing

a. ROTARY WING PHASE

(1) The helicopter curriculum is comprised of three modules including Familiarization (FAM), Basic Instruments/Radio Instrument (BI/RI), and Tactics (HTAC). After check-in, academics and flight support periods may be completed any time prior to the flight they support.

(2) Modules must be completed in order.

(3) Module three flights may be done in order.

(4) No student shall be scheduled out of module without the prior approval of the Chief of Naval Air Training.

b. FIXED WING PHASE

(1) The fixed wing curriculum consists of three modules which integrate academic periods, flight support periods, light instrument trainer periods and flights.

(2) Academic periods will be scheduled during MOD-1.

(3) Modules must be completed in order.

(4) Module three flights may be done in any order.

(5) No student shall be scheduled out of module without the prior approval of the Chief of Naval Air Training.

2. Briefing Time. Adequate briefing time shall be taken to provide sufficient explanation of all scheduled maneuvers before flight, and to provide a postflight critique.

3. Scheduling Limitations

a. The provisions of OPNAVINST 3710.7Q, para 11.2.1 shall be followed.

b. Adequate briefing time shall be taken to provide sufficient explanation of all scheduled maneuvers before the flight, and to provide for a post flight critique.

c. Students shall be limited to one (1) aircraft flight per day through the FFAM stages.

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d. The working day shall be limited to twelve hours commencing with the first training period, including brief, and ending with the completion of the last training event.

4. Flight Standardization. All maneuvers outlined within this curriculum shall be conducted in accordance with the current Flight Training Instruction, OPNAV 3710.7Q, applicable NATOPS manual, current RWOP/FWOP and appropriate current squadron SOP.

5. Solo Restrictions. Aerospace Medicine Specialist shall not solo.

6. Administration

a. Assignment of an instructor as an on-wing is at the discretion of the command. It is desirable that each student proceed through the FFAM flights with the same instructor.

b. Successful completion of all curriculum events by meeting each event objective is the minimum required for completion of this course. A CNATRA ATF will be completed for each curriculum flight or simulator event.

c. All items graded unsatisfactory, below average, or above average shall have accompanying comments in the remarks section. ATFs will be completed the same day the event was conducted.

d. The student shall sit in the right seat of all rotary wing syllabus flights, and in the front seat of the T-34C for all fixed wing flights.

e. Warm-up flights shall be given to allow the student to regain flight proficiency after delays in training. The warm-up policy is outlined in CNATRAINST 1500.4E. Specific criteria for warm-up flights are:

(1) All warm-up flights shall be dual.

(2) If six calendar days have elapsed since the previous flight, the student is authorized a warm-up flight to regain proficiency. If the student's performance is satisfactory and he/she earns a net grade of average or better, the flight can be counted as a curriculum flight.

(3) If 15 calendar days have elapsed since the previous flight a warm-up flight will be awarded. The warm-up flight will consist of a review of the last completed syllabus event.

(4) At no time will the number of warm-up flights exceed the number of FFAM stage flights the student has already completed.

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(5) Module three flights do not require warm-up flights.

f. Aviation Training Jacket Reviews. Aviation Training Jackets will be reviewed at the following times:

(1) Rotary Wing: FFAM-3/ Completion

(2) Fixed Wing: FFAM-4/ Completion

7. Waivers for Flights or Simulators. These flights and simulators listed are the **minimum** to be completed by all students. No provisions of this curriculum shall be waived without authorization from the Chief of Naval Air Training. Exception: Training Air Wing Commanders are authorized to waive events based solely upon finite training time limitations imposed by the Naval Operational Medicine Institute due to follow on training requirements. COMTRAWINGS will provide info copy of all syllabus waivers to CNATRA (N31). (R

8. Incomplete Flights. Refer to CNATRAINST 1500.4E for guidance.

9. Emergency Procedures. Emergency procedures and malfunctions are taught to build the student's confidence in himself and the aircraft. These procedures will be discussed during ground briefings and practiced during the flight.

10. Performance Criteria. Aerospace Medicine Specialists are expected to conduct themselves in a professional manner. Failure to maintain required standards will be administered in accordance with CNATRAINST 1500.4E.

11. Course Objectives. Upon completion of this syllabus, the prospective Aerospace Medicine Specialist will demonstrate:

a. A working knowledge of the fundamental concepts of aerodynamics, aircraft systems, emergency procedures and G-induced loss of consciousness.

b. Proficiency in basic aviation ground operations.

c. The ability to execute straight and level as well as turning flight.

d. An understanding of standard operating guidelines associated with landing patterns, and instrument flight.

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e. Familiarity with various flight profiles associated with unusual physiologic phenomenon such as spatial disorientation, vertigo, and visual illusions. These flight environments shall include night, rapidly changing 3-dimensional, relative motion and changing closure rates flights.

f. An appreciation for high G-force flight environments.

g. A working knowledge of the stressors associated with multiple simultaneous pilot tasking commonly encountered during in-flight emergencies and instrument flight.

h. An appreciation for operational flight environments such as nape-of-the-earth and tactical flying.

12. Definitions The following terms in the flight curriculum description are defined as follows:

a. Discuss

Instructor: Quiz the student on the applicable procedure, systems or maneuvers.

Student: Responsible for the knowledge of the procedure prior to the brief.

Item: Graded with an "X" by the instructor in the grade columns on the Aviation Training Form (ATF), labeled "DI" In the "ID" column. If it is not available on the ATF, the item should be graded in the most appropriate area (e.g., HW, PROC or EP).

b. Demonstrate

Instructor: Perform the maneuver with precision and accompanying description.

Student: Responsible for knowledge of the procedure prior to the event brief and observes the maneuver.

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

c. Introduce

Instructor: Coaches the student through the maneuver.

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

Item: Graded with an "X" by the instructor in the grade column on the ATF, labeled "I" in the "ID" column.

d. Practice

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

Student: Must perform the maneuver with minimal coaching.

Item: Graded with an "X" by the instructor in the grade columns on the ATF, labeled "P" in the "ID" column.

e. Review

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

Student: 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: Graded with an "X" by the instructor in the grade columns on the ATF, labeled "R" in the "ID" column.

f. Did Not Do

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

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

Item: Not graded, but marked with "DND" by the instructor in the grade columns on the ATF. If the event is incomplete an

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associated remark is required. One incomplete item constitutes an incomplete event.

g. Non-graded

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

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

Item: Not graded, but marked with "NG" by the instructor in the grade columns on the ATF, labeled "NG" in the "ID" column, if the student's performance is average. Graded with an "X" in the appropriate grade column if the student's performance for that maneuver was other than average.

h. Not Applicable

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 two different cases:

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

(2) On authorized compressed/ waived set of flights/events compressed into one flight/event.

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

i. Previously Graded

Instructor: A maneuver previously graded on an "Graded Item" incomplete event. The item may be flown on the next attempt at that event if fuel/time permits or if required in order to accomplish the previously "DND"

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item(s). If the student's performance is anything other than average on any previously graded item it shall be graded again.

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

Item: Not graded, but marked with "PGI" by the instructor on the ATF in the appropriated grade column if the student's performance for that item was average or if it was not performed again. Graded with an "X" by the instructor on the ATF in the appropriate grade column if the student's performance for that item was other than average.

j. "S" Coded Flights

Student instructional flight designated by the "S" (e.g. BI-1S) are flown in the flight simulator.

13. Drop on Request (DOR) Policy. All NATRACOM courses are voluntary. Accordingly, students have the option to individually request termination of training. Any time the student makes a statement such as, "I quit" or "I DOR", the student shall be immediately removed from the training environment and referred to the training officer for administrative action.

14. Training Time-Out Policy. Any time a student or instructor has apprehension concerning his or her personal safety or that another, he or she shall signal for a "Training Time-Out" to clarify the situation and receive additional instruction. "Training Time-Out" signals other than verbal shall be appropriate to the training environment and clearly briefed.

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SECTION I - T-34C TRAINING SUMMARY1. Training Hour SummaryFLIGHT TRAINING

STAGE	SYMBOL	TOTAL FLTS	DUAL FLTS	DUAL HOURS	SOLO HOURS	TOTAL HOURS
FAMILIARIZATION	FFAM	4	4	6.1	0.0	6.1
PRECISION LAND- INGS & AEROBATICS	FPA	1	1	2.0	0.0	2.0
NIGHT FAM	FNF	1	1	2.0	0.0	2.0
FORMATION	FFORM	1	1	2.0	0.0	2.0
TOTALS		7	7	12.1	0.0	12.1

FLIGHT INSTRUMENT TRAINING

STAGE	SYMBOL	PERIODS	HOURS
PROCEDURES TRAINER	PT	5	6.5
BASIC INSTRUMENTS	FBI-1S	1	1.3
TOTALS		6	7.8

FLIGHT SUPPORT

SUBJECT	SYMBOL	HOURS
SAFETY	SAF	1.0
BAILOUT TRAINER	BT	2.0
EMERGENCY PROCEDURES	EP	3.0
EMERGENCY PROCEDURES EXAM	EPX	1.5
FLIGHT PROCEDURES FAM	FFP	4.0
G-LOC LECTURE	GLOC	1.0
TOTALS		12.5

ACADEMICS

SUBJECT	SYMBOL	(1) HOURS	(2) HOURS	(3) HOURS
T-34C AIRCRAFT SYSTEMS	SYS	24.5	9.5	34.0
TOTALS		24.5	9.5	34.0

NOTE: (1) Exam/lecture hours
(2) Self-study hours
(3) Total hours

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2. Training Allocation by Module

MODULE	FLIGHT		SIMULATORS		FLIGHT	ACADEMIC	CURR	TRNG
	HOURS	EVENTS	HOURS	EVENTS	SUPPORT			
	HOURS	EVENTS	HOURS	EVENTS	HOURS	HOURS	DAY	DAYS
1	0.0	0	6.5	5	10.5	24.5	11.2	15
2	6.1	4	0	0	2.0	0	3.3	4
3	6.0	3	1.3	1	0	0	2.9	4
TOTALS	12.1	7	7.8	6	12.5	24.5	17.4*	23*

* Administration and academic self-study time not included. Training days rounded to the nearest whole day.

3. Training Time Analysis

a. Training Contact Time. The following table shows the additional training contact time required for each programmed curriculum hour, flight or simulator event. The calculations represent the minimum average time a student is involved in the direct learning process, either in preparation or utilizing equipment.

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

Training Area	Preparation and Study	Brief and Debrief	Preflight Taxi	Total (k)
Flight	1.0	1.0	0.7	2.7*
Simulator PT	1.0	0.7		1.7*
IFT	1.0	0.7		1.7*
Academic and Flight Support		0.5***		0.5**

*Training time per event

**Training time per curriculum hour

***Self-preparation and study time for academic and flight support (includes audio-visual training aids).

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 six hours of training per day, five days a week (30 hours). Computation of student training is based on the following formula:

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ch = curriculum hours
 e = events
 k = additional training time per curriculum hour or event
 Tc = curriculum time

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

The Tc calculated is the total contact time required to complete this phase of training.

b. Time to Train (Tt) Calculations. The following factors are considered in computing Time to Train: weather, unsatisfactory events and associated delays, medical groundings and flights or simulator events canceled due to lack of instructor or equipment availability. The combination of these factors constitutes additional time required to train and is expressed as a percentage (Δt) of the curriculum time (Tc). The Δt for Aerospace Medicine Specialist fixed wing training is 33%. The formula for computing Time to Train (Tt) is:

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

c. Student Naval Flight Surgeon/Naval Aerospace Physiologist Training Time

Training Area		Curriculum Days	Weeks
Flight:	12.1 hours 7 events	7.5	1.5
Simulator: PT	6.5 hours 5 events	2.9	0.6
IFT	1.3 hours 1 event	0.7	0.1
Academics:	24.5 hours	6.1	1.2
Flight Support:	12.1 hours	3.1	0.6
Subtotal		20.3	4.0
Administrative:	9.0 hours	1.5	0.3
Curriculum Time (Tc)		21.8	4.3

Time to Train

Curriculum Time (Tc)	21.8	4.3
Δt (33%)	<u>7.2</u>	<u>1.4</u>
Time to Train (Tt)	29	5.7

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4. Module Summary

MODULE	FLIGHTS	ACADEMICS/ FLIGHT SUPPORT	SIMULATOR	ADMINISTRATION
1		BT, EP, SAF, FFP-1, T-34C SYSTEMS EPX, GLOC	PT 1-5	WING CHECK-IN WELCOME ABOARD PUB ISSUE CURRICULUM INTRO SQUADRON CHECK-IN
2	FFAM 1-4	FFP-2		
3	FPA FFORM FNF		FBI-1S	CHECK OUT

NOTES: All items in a module (MOD) shall be completed prior to a subsequent module except as noted below.

1. FBI-1S may be flown anytime after completion of FFAM-4.

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SEQUENCE OF INSTRUCTION SUMMARY

MOD	UNIT	DESCRIPTION	HRS	PAGE
1-1		Training Wing Check In	2.0	20
1-2		Ground School Welcome Aboard	2.0	20
1-3		NATOP Pub Issue and Curriculum Intro	1.0	20
1-4		Squadron Check In	1.0	20
1-5		Academic Training T-34C Aircraft Systems	24.5	20
1-6	PT-1	Procedure Trainer One	1.3	20
1-7	BT	Bailout Trainer	2.0	21
1-8	PT-2	Procedure Trainer Two	1.3	21
1-9	PT-3	Procedure Trainer Three	1.3	22
1-10	EP	Emergency Procedures	3.0	22
1-11	EPX	Emergency Procedures Exam	1.5	23
1-12	PT-4	Procedure Trainer Four	1.3	23
1-13	SAF	Aviation Safety Program	1.0	23
1-14	FFP-1	Familiarization Flight Procedures one	2.0	24
1-15	PT-5	Procedure Trainer Five	1.3	24
1-16	GLOC	"G" Induced Loss of Consciousness	1.0	24
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2-1	FFP-2	Familiarization Flight Procedures Two	2.0	25
2-2	FFAM-1	Familiarization Flight One	1.3	26
2-3	FFAM-2	Familiarization Flight Two	1.4	27
2-4	FFAM-3	Familiarization Flight Three	1.7	28
2-5	FFAM-4	Familiarization Flight Four	1.7	29
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3-1	FBI-1S	Basic Instruments One (Simulator)	1.3	30
3-2	FPA	Precision Landings and Aerobatic Flight	2.0	31
3-3	FFORM	Formation Flight	2.0	32
3-4	FNF	Night Familiarization Flight/ RI	2.0	33
3-5		Check Out	3.0	33

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5. Outline of Training

PERIOD	REQUIREMENTS	DESCRIPTION	DURATION
<u>MODULE 1</u>			
MOD 1-1		Training Wing Check In	2.0
MOD 1-2		Ground School Welcome Aboard	2.0
MOD 1-3		NATOPS publications issue, introduction, and curriculum introduction	1.09
MOD 1-4		Squadron Check In	1.0
MOD 1-5		Academic Training	
AI		1. T-34 Aircraft Systems	24.5
MOD 1-6	PT-1	Procedures Trainer ONE	1.3
2C42/B37			
CI			

Discuss

- a. CPT curriculum
- b. Student responsibilities for future CPT events
- c. Filling out the ATF
- d. Grading procedures
- e. Student responsibilities for "i" and "p" items
- f. conduct of event

Introduce

- a. Cockpit familiarization to include strapping in, rudder pedal and seat adjustment, location of cockpit gauges, switches and engine controls
- b. Prestart check
- c. Start checklist (include 1 GPU start)
- d. Pretaxi checklist
- e. Ground runup checklist
- f. Takeoff checklist
- g. Landing checklist
- h. Post landing checklist
- i. Engine shutdown checklist
- j. Voice reports
- k. Procedures

Demonstrate

2C42 console operation

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PERIOD

REQUIREMENTS		DESCRIPTION	DURATION
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MOD 1-7 KIWI Trainer Front Cockpit (F/C)	BT.	Practice Bailout 1. Lecture on bailout procedures 2. Practice bailout on Kiwi trainer	2.0
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MOD 1-8 2C42/2B37 CI	PT-2	Procedures Trainer TWO	1.3
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Discuss

- a. All introduced items
- b. Conduct of event

Introduce

- a. Abnormal start
- b. Other start malfunctions
(low starter RPM, zero oil pressure, fuel pump failure)
- c. Engine fire on the ground (before starter off)
- d. Engine fire on the ground (after starter off)
- e. Emergency engine shutdown
- f. Abnormal engine shutdown
- g. Aborted takeoff

Practice

- a. Blindfold cockpit check
- b. Prestart checklist
- c. Start checklist
- d. Pretaxi checklist
- e. Ground runup
- f. Takeoff checklist
- g. Landing checklist
- h. Post-landing checklist
- i. Engine shutdown checklist
- j. Voice reports
- k. Procedures

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<u>PERIOD</u>		<u>DESCRIPTION</u>	<u>DURATION</u>
<u>REQUIREMENTS</u>			
MOD 1-9 2C42/2B37 CI	PT-3	Procedures Trainer THREE	1.3
		<u>Discuss</u>	
		<ul style="list-style-type: none"> a. All introduced items b. Conduct of event 	
		<u>Introduce</u>	
		<ul style="list-style-type: none"> a. Prop feather (unknown cause) b. High altitude power loss (HAPL) c. Low altitude power loss (LAPL) d. Engine fire (in flight) e. Engine failure over water/ditching f. Fuel control rollback 	
		<u>Practice</u>	
		<ul style="list-style-type: none"> a. Prestart checklist b. Start checklist c. Abnormal starts d. Engine fire on the ground (before starter off) e. Engine fire on the ground (after starter off) f. Pretaxi checklist g. Ground runup h. Takeoff checklist i. Aborted takeoff j. Emergency engine shutdown k. Landing checklist l. Post-landing checklist m. Engine shutdown checklist n. Abnormal ITT during shutdown o. Voice reports p. Procedures 	
MOD 1-10 Lecture FI	EP	Emergency Procedures	3.0
		A comprehensive review of all T-34 emergency procedures in accordance with Section V of the T-34C NATOPS Flight Manual.	

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PERIOD

REQUIREMENTS		DESCRIPTION	DURATION
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MOD 1-11 Exam	EPX	Emergency Procedures Examination	1.5
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FI		To cover all emergency procedures in Section V of the T-34C NATOPS flight manual.	
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MOD 1-12 2C42/2B37	PT-4	Procedures Trainer FOUR	1.3
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CI			
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Discuss

- a. All introduced items
- b. Conduct of event

Introduce

- a. Electrical/unknown origin fire
- b. Restoring electrical power
- c. Smoke or fumes elimination
- d. Fluctuating oil pressure; low/high oil pressure or high oil temperature
- e. Engine driven or electric (standby) fuel boost pump failure
- f. Primary governor failure
- g. Unsafe gear indications
- h. Chip light
- i. Practice precautionary emergency landing (PPEL)

Practice

- a. Checklists
- b. Abnormal starts
- c. Engine fire on the ground (before and after starter off)
- d. Emergency engine shutdown
- e. Abnormal ITT during shutdown
- f. HAPL
- g. LAPL
- h. In-flight engine fire
- i. Engine failure over water/ditching
- j. Fuel control rollback
- k. Voice reports
- l. Procedures

MOD 1-13 Lecture	SAF	Objectives of the Aviation Safety Program (The CNATRA DOR and training time out policies shall be discussed)	1.0
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FI			
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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
MOD 1-14 Lecture FI	FFP-1	Familiarization Flight Procedures ONE 1. Scan 2. Takeoff 3. Departure 4. turn pattern 5. Use and effect of controls 6. Level speed changes 7. Basic transitions 8. Balanced flight 9. Slow flight/minimum control	2.0
MOD 1-15 2C42/2B37 CI	PT-5	Procedures Trainer FIVE <u>Discuss</u> a. All introduced items b. Conduct of event <u>Introduce</u> a. Generator failure b. Inverter failure c. Torque sensing system failure d. Bleed air warning light <u>Practice</u> all previously introduced normal and emergency procedures as required	1.3
MOD 1-16 Lecture FI	GLOC	G-induced loss of consciousness lecture. A review of the physiology of, precipitating factors for and prevention of G-induced loss of consciousness.	1.0

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PERIOD

REQUIREMENTS

DESCRIPTION

DURATION

MODULE 2

MOD 2-1	FFP-2	Familiarization Flight	2.0
Lecture		Procedures TWO	
FI			
		1. Landing pattern	
		2. Crosswind landing technique	
		3. Waveoff, low approach, go-around	
		4. HAPL/LAPL	
		5. Practice precautionary emergency landing (PPEL)	
		6. ATS	
		7. Spin	
		8. OCF	

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
MOD 2-2 T-34C DUAL F/C FI	FFAM-1	Familiarization Flight ONE Terminal Objective: Following this event the AMS will be familiar with basic ground operations and level/turning flight.	1.3

Discuss

- a. Abnormal starts
- b. Residual engine fire on shutdown
- c. Brake failure
- d. Strike of ground object
- e. See and avoid principle
- f. Cloud clearances
- g. Bailout
- h. I'M SAFE checklist

Demonstrate

- a. Takeoff/departure
- b. Course rules/COMM/IFF
- c. Use and effect of controls, flaps and gear
- d. Aircraft stability
- e. Basic transitions
- f. Level speed change (LSC)
- g. NACWS operation

Introduce

- a. Checklists
- b. Start
- c. Taxi
- d. Runup
- e. Visual scan patterns
- f. Use and effect of trim tabs
- g. Straight and level flight
- h. Constant angle of bank turns (CABT)
- i. Emergency extension of the landing gear

Practice

Preflight

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PERIOD

REQUIREMENTS		DESCRIPTION	DURATION
MOD 2-3 T-34C DUAL F/C FI	FFAM-2	Familiarization Flight TWO Terminal Objective: Following this event the AMS should be able to conduct ground operations and maintain aircraft in straight and level flight with coaching/assistance.	1.4

Discuss

- a. Tire failures
- b. Aborted takeoff
- c. Instrument, gas, position reports (IGP)
- d. Sandbag Syndrome/ Copilot-pilot responsibilities
- e. Ground Power Unit (GPU) start

Demonstrate

- a. Turn pattern (TP)
- b. Slow flight/ minimum control maneuver (SFMCM)
- c. Homefield entry (HFE)

Introduce

- a. Takeoff/departure
- b. course rules/COMM/IFF
- c. Basic transitions
- d. LSC

Practice

- a. Preflight
- b. Checklists
- c. Start
- d. Taxi
- e. Runup
- f. Use and effect of trim tabs
- g. Straight and level
- h. CABT

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
MOD 2-4 T-34C DUAL	FFAM-3	Familiarization Flight THREE Terminal Objective: Following this event the AMS should be familiar with the landing pattern and be able to maintain the aircraft in straight/turning flight with minimal coaching/assistance.	

Discuss

- a. Lost communications procedures
- b. Aldis lamp signals
- c. Electrical system malfunctions

Demonstrate

- a. Aldis lamp signals
- b. Power-off stall (POS)
- c. Outlying field entry (OFE)
- d. Full flap approaches/ landings
- e. Waveoff
- f. Outlying field departures (OFD)
- g. Aborted takeoff
- h. GPU start

Introduce

- a. TP
- b. SFMCM
- c. Full flap approaches/ landings (two
touch-and-go's minimum)
- d. HFE

Practice

- a. Checklists
- b. Start
- c. Taxi
- d. Runup
- e. Takeoff/ departure
- f. Basic transitions
- g. Course rules/COMM/IFF

Review

Preflight

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PERIOD

REQUIREMENTS		DESCRIPTION	DURATION
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MOD 2-5 T-34C DUAL	FFAM-4	Familiarization Flight FOUR	1.7
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Terminal Objective: Following this event the AMS should be able to control the aircraft in the landing pattern as well as in straight/turning flight with coaching/assistance.

Discuss

- a. Fuel system malfunctions/ fuel balancing
- b. Crosswind takeoff/approach/landings
- c. Ballooning and porpoise landings

Demonstrate

- a. Crosswind approach/ landing
- b. Approach turn stall (ATS)

Introduce

- a. POS
- b. OFE
- c. Landing pattern
- d. Full flap landings
- e. Waveoff
- f. OFD
- g. GPU start

Practice

- a. Ground procedures
- b. Takeoff/departure
- c. Course rules/COMM/IFF
- d. TP
- e. HFE

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
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MODULE 3

MOD 3-1 2B37 CI	FBI-1S	Basic Instrument Flight ONE Simulator Terminal Objective: Following this event the AMS should be familiar with the concept of instrument scan and flight simulator operations.	1.3
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Discuss

- a. 2B37 checkout
- b. Attitude gyro
- c. Instrument lag
- d. Instrument scan/attitude crosschecks
- e. Cockpit lighting
- f. Instrument checklist
- g. Radios tuned (peculiar to 2B37)
- h. Partial panel

Introduce

- a. Straight and level flight
- b. Trim
- c. CABT
- d. Constant airspeed climbs and descents
- e. Direct to VOR/TACAN
- f. Partial panel level/turning flight

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PERIOD

REQUIREMENTS

DESCRIPTION

DURATION

MOD 3-2 T-34C DUAL F/C FI	FPA	Precision Landings and Aerobatics Flight Terminal Objective: Following this event, the AMS should be familiar with the physiological effects of dynamic three-dimensional flight and g-loading.	2.0
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Discuss

- a. Aerobatics
- b. Anti-G straining maneuver
- c. OCF recovery procedures
- d. VFR unusual attitudes (IAW NATOPS)
- e. Precision landings
- f. Angle-of-attack approaches
- g. Inverted flight
- h. Spin
- i. HAPL/LAPL/PPEL
- j. ATS

Demonstrate/introduce

- a. Securing restraint harness for
aerobatic flight
- b. Aerobatic checklist/aerobatic cruise
- c. VFR unusual attitudes
- d. Inverted flight (demo only)
- e. Spin
- f. Landings (optional)
- g. HAPL/LAPL/PPEL

(Minimum of three maneuvers):

- h. Loop
- I. Wingover
- j. Barrel roll
- k. 1/2 Cuban eight
- l. Immelman
- m. Split-S
- n. VFR unusual attitudes

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
MOD 3-3 T-34C DUAL F/C FI	FFORM	Formation Flight Terminal Objective: Following this event the F/C AMS should be familiar with the concept of FI relative motion/closure control as well as the crew coordination required to conduct formation operations.	2.0

Discuss

- a. Hand signal/ HEFOE
- b. Aborted take-off
- c. Airborne/ damaged aircraft

Demonstrate/ Introduce

- a. Ground procedures
- b. Takeoff/ running rendezvous
- c. Parade position/error corrections
- d. Parade turns
- e. Crossunder
- f. Breakup and Rendezvous
- g. Underrun
- h. Lead change
- i. Lead
- j. HFE/course rules
- k. Turns (non-graded)

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PERIOD

REQUIREMENTS		DESCRIPTION	DURATION
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MOD 3-4 T-34C DUAL F/C FI	FNF (N)	Night Familiarization Flight Terminal Objective: Following this event the AMS should be familiar with the night environment (VFR and IFR regimes) and the associated loss of visual cue.	2.0
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Discuss

- a. Night flying physiology
- b. Lost Aircraft procedures
- c. Night emergency procedures
- d. Night preflight
- e. Instrument approach
- f. Loss of visual cues
- g. Instrument scan
- h. Vertigo

Demonstrate

Instrument approach

Introduce

- a. Ground procedures
- b. Night takeoff/departure
- c. Night visual flight techniques (TP, LSC)
- d. Night course rules (area, HFE)
- e. Night landing patten
- f. Night landings (five minimum)
- g. Night PPEL

MOD 3-5	Check Out		3.0
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SECTION I - TH-57 TRAINING SUMMARY1. Training Hour SummaryFLIGHT TRAINING

STAGE	SYMBOL	TOTAL FLTS	DUAL FLTS	DUAL HOURS	SOLO HOURS	TOTAL HOURS
FAMILIARIZATION NIGHT	FFAM	3	3	4.2	0.0	4.2
FAMILIARIZATION	FNFAM	1	1	2.0	0.0	2.0
HELICOPTER	FHTAC	1	1	2.0	0.0	2.0
TACTICS						
TOTALS		5	5	8.2	0.0	8.2

FLIGHT INSTRUMENT TRAINING

STAGE	SYMBOL	PERIODS	HRS
COCKPIT PROCEDURES TRAINER	FCPT	4	5.2
BASIC/RADIO	FBI/RI-1S	1	1.3
TOTALS		5	6.5

FLIGHT SUPPORT

SUBJECT	SYMBOL	HRS
PREFLIGHT & COCKPIT PROCEDURES	PRF	2.0
NATOPS OPEN BOOK EXAM	NATOP SX	2.0
FLIGHT GEAR FITTING/CHECKOUT	PF	1.0
AIRCREW COORDINATION TRAINING	ACT	6.0
EMERGENCY PROCEDURES	EPFP	2.0
TOTALS		13.0

ACADEMICS

SUBJECT	SYMBOL	(1) HOURS	(2) HOURS	(3) HOURS
AERODYNAMICS	AERO	5.0	6.0	11.0
ENGINEERING	ENG	3.5	5.0	8.5
TOTALS		8.5	11.0	19.5

NOTE: (1) Exam/lecture hours
(2) Self-study hours
(3) Total hours

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2. Training Allocation by Module

MOD	FLIGHT		SIMULATOR		FLT SUP	ACAD	CURR	TRNG
	HRS	EVENTS	HRS	EVENTS	HRS	HRS	DAYS	DAYS
1	0.0	0	5.2	4	11.0	8.5	6.9	8
2	4.2	3	0	0	2.0	0	2.5	4
3	6.0	3	1.3	1	2.0	0	4.6	5
TOTALS	10.2	6	6.5	5	15.0	8.5	14.0*	17*

* Administration and academic self-study time not included. Training days rounded to the nearest whole day.

3. Training Time Analysis. The following table shows the additional training contact time required for each programmed curriculum hour, flight or simulator event. The calculations represent the minimum average time a student is involved in the direct learning process, either in preparation or utilizing equipment.

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

Training Area	Preparation and Study	Brief and Debrief	Preflight Taxi	Total (k)___
Flight:	1.0	1.0	0.5	2.5*__
Simulator:	1.0	0.7		1.7*
Academic and Flight Support:		0.5***		0.5**

*Training time per event

**Training time per curriculum hour

***Self-preparation and study time for academic and flight support (includes audio-visual training aids).

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a. 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 six hours of training per day, five days a week (30 hours). Computation of student training is based on the following formula:

ch = curriculum hours
 e = events
 k = additional training time per curriculum hour or event
 Tc = curriculum time

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

The Tc calculated is the total contact time required to complete this phase of training.

b. Time to Train (Tt) Calculations. The following factors are considered in computing Time to Train: weather, unsatisfactory events and associated delays, medical groundings and flights or simulator events canceled due to lack of instructor or equipment availability. The combination of these factors constitutes additional time required to train and is expressed as a percentage (Δt) of the curriculum time (Tc). The Δt for AMS helicopter training is 23%. The formula for computing Time to Train (Tt) is:

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

c. Aerospace Medicine Specialist Training Time (Tc)

Training Area		Curriculum Days	Weeks
Flight:	8.2 hours 6 events	4.8	1.0
Simulator:	6.5 hours 5 events	2.9	0.6
Academics:	8.5 hours	2.1	0.4
Flight Support:	17.0 hours	3.8	0.8
Subtotal		13.6	2.8
Administrative:	11.5 hours	1.9	0.4
Curriculum Time (Tc)		15.5	3.2
Δt (23%)		<u>3.6</u>	<u>0.8</u>
Time to Train (Tt)		<u>19.1</u>	<u>4.0</u>

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4. Module Summary

MOD	FLIGHTS	ACADEMICS/ FLIGHT SUPPORT	SIM/PT	ADMINISTRATION
1		ENG-1, AERO-1, AERO-2, EPFP, PF, AEROX, PRF, ACT	FCPT 1-4	WING CHECK-IN PUB ISSUE MEDICAL DEPT BRIEF CO WELCOME ABOARD SQUADRON CHECK-IN COORDINATOR BRIEF FLIGHT LEADER BRIEF
2	FFAM 1-3	NATOP SX		JACKET REVIEW
3	FNFAM FHTAC		FBI/RI-1S	CHECK OUT

NOTES: All items in a module (MOD) shall be completed prior to a subsequent module except as noted below.

(1) FBI/RI-1S may be flown anytime after completion of FFAM-3.

(2) The Training Jacket review may occur during any point in MOD.

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SEQUENCE OF INSTRUCTION SUMMARY

MOD	UNIT	DESCRIPTION	HRS	PAGE
1-1	FLY-1	Training Wing Check In	2.0	41
1-2	FLY-2	NATOPS & Pubs Issue	2.0	41
1-3	FLY-3	Medical Department Brief	1.0	41
1-4	FLY-4	Commanding Officer Welcome Aboard Squadron Check In	2.0	41
1-5	FSB	Flight Surgeon Coordinator Brief	1.5	41
1-6	ENG-S	Engineering Self-Study, chapters 1-4	5.0	41
1-7	AERO-S	Aerodynamics Self-Study	6.0	41
1-8	ENG-1	Engineering Lecture, chapters 1-4	3.5	41
1-9	AERO-1	Aerodynamics Lecture One, chapters 1-3	2.0	41
1-10	AERO-2	Aerodynamics Lecture Two, chapters 3-5	2.0	41
1-11	EPFP	Emergency Procedures/Flight Procedures Lecture	2.0	41
1-12	FCPT-1	Cockpit Procedures Trainer One	1.3	42
1-13	FLY-5	Flight Leader Check In Brief	1.0	42
1-14	PF	Flight Gear Fitting/Check Out	1.0	42
1-15	FCPT-2	Cockpit Procedures Trainer Two	1.3	43
1-16	FCPT-3	Cockpit Procedures Trainer Three	1.3	44
1-17	FCPT-4	Cockpit Procedures Trainer Four	1.3	45
1-18	AEROX	Aerodynamics Exam	1.0	45
1-19	PRF	Preflight and Cockpit Procedures	2.0	45
1-20	ACT	Aircrew Coordination Training	6.0	45
2-1	FFAM-1	Familiarization Flight One	1.2	46
2-2	FFAM-2	Familiarization Flight Two	1.5	48
2-3	FFAM-3	Familiarization Flight Three	1.5	49
2-4	JR	Jacket Review	0.5	49
2-5	NATOPSX	NATOPS open book exam	2.0	49
3-1	FBI/RI-1S	Basic Instrument/Radio Instrument (Simulator)	1.3	50
3-2	VFRFP (H)	VFR Navigation Flight Procedures (Helo)	2.0	51
3-3	FNFAM	Night Familiarization Flight	2.0(N)	48
3-4	FHTAC	Tactical Operational Flight	2.0	53
3-5		Check Out	3.0	54

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5. Outline of Training

PERIOD		DESCRIPTION	DURATION
REQUIREMENTS			
MODULE 1			
MOD 1-1		Training Wing Check-in	2.0
MOD 1-2		NATOPS & Publication Issue	0.5
MOD 1-3		Medical Department Brief	1.0
MOD 1-4		Commanding Officer Welcome Aboard and Squadron Check in	2.0
MOD 1-5		Flight Surgeon Coordinator Brief	2.0
MOD 1-6	ENG-S	Engineering Self Study, chapters 1-4	5.0
MOD 1-7	AERO-S	Aerodynamics Self Study	6.0
MOD 1-8 Lecture	ENG-1	Engineering, chapters 1-4	3.5
MOD 1-9 Lecture	AERO-1	Aerodynamics Lecture One, chapters 1-3	2.0
MOD 1-10 Lecture	AERO-2	Aerodynamics Lecture Two, chapters 3-5	
MOD 1-11 Lecture	EPFP	Emergency procedures & Flight Procedures	2.0

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
MOD 1-12 2C67 CI	FCTP-1	Cockpit Procedures Trainer ONE Terminal Objective: Following this event the AMS will be familiar with basic ground operations.	1.3
		<u>Discuss</u>	
		<ul style="list-style-type: none"> a. 2C67 scheduling b. SNFS responsibilities for CPT period c. Curriculum introduction and general information d. Starter limitations e. Engine fire on ground (external) f. Emergency engine shutdown g. Post shutdown fire (internal) 	
		<u>Demonstrate/Introduce</u>	
		<ul style="list-style-type: none"> a. Location, function, and operation of Cockpit gauges, radio switches, flight controls and twist grip b. Prestart, start, pre-take-off, take-off, landing and shutdown checklists c. On ground voice reports d. Normal start e. Engine fire on ground f. Post shutdown fire 	
MOD 1-13		Flight Leader check in brief	1.0
MOD 1-14		Flight Gear Fitting/Check-out	1.0

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PERIOD

REQUIREMENTS DESCRIPTION DURATION

MOD 1-15 FCPT-2 Cockpit Procedures Trainer TWO 1.3
2C67

CI Terminal Objective: Following this event the AMS will be familiar with basic ground operations.

Discuss

- a. Engine limitations
 - 1) Nf RPM
 - 2) Ng RPM
 - 3) Engine oil temp and pressure
 - 4) Turbine outlet temperature (TOT)
- b. Battery malfunctions
 - 1) Battery temp and illuminates
 - 2) Battery hot temp and illuminates
- c. Abnormal starts
 - 1) Hot start
 - 2) Hung start
 - 3) No start
 - a) Starter failure
 - b) Igniter failure

Demonstrate/Introduce

- a. Blindfold cockpit checks
- b. Abnormal starts
 - 1) Hot start
 - 2) Hung start
 - 3) No start
 - a) Starter failure
 - b) Igniter failure
- c. Engine fire on ground (external)
- d. Emergency engine shutdown
- e. Anti-ice operation
- f. Post shutdown fire (internal)

Practice

- a. All FAM stage checklist and voice reports
- b. Normal starting/shutdown procedures

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
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MOD 1-16 2C67 CI	FCPT-3	Cockpit Procedures Trainer THREE Terminal Objective: Following this event the AMS will be familiar with ground and inflight emergencies.	1.3
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Discuss

- a. Inflight malfunction
- b. Single instrument indication
- c. Pan/Mayday reports
- d. Fail-safe hydraulic system

Demonstrate/Introduce

- a. Engine/transmission pressure:
 - 1) High
 - 2) Low
 - 3) Fluctuation
- b. Engine/transmission temperature
 - 1) High
 - 2) Low
 - 3) Fluctuation
- c. Nf malfunction
- d. Ng malfunction
- e. Overtorque/overtemp/overspeed
- f. Torque malfunction
- g. DC loadmeter or voltmeter malfunction
- h. Generator failure
- i. Fuel system malfunctions:
 - 1) Boost pump(s)
 - 2) Filters
 - 3) Quantity
 - 4) Fuel control
- j. Hydraulic system malfunctions:
 - 1) Hydraulic system failure
 - 2) Hydraulic power cylinder malfunction

Practice

- a. All FAM stage checklists and voice reports
- b. Normal starting/shutdown procedures

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PERIOD

REQUIREMENTS	DESCRIPTION	DURATION
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MOD 1-17 2C67	FCPT-4	Cockpit Procedures Trainer FOUR	1.3
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CI

Terminal Objectives: Following this event the AMS will be familiar with in-flight emergencies.

Discuss

- a. Sprague clutch malfunctions
- b. Main drive shaft failure
- c. Autorotations (power recovery/full)
- d. Ditching
- e. Lights for night landing
- f. Engine restart in flight:
 - 1) Immediate
 - 2) Delayed

Demonstrate/Introduce

- a. Engine overspeed (Nf), rotor RPM (Nr)
- b. Engine underspeed - gas producer (Ng)
- c. Compressor stall
- d. Engine failure in flight
- e. Engine fire in flight
- f. Electrical fire in flight
- g. Smoke and fume elimination
- h. Fuel fumes/suspected fuel leakage
- i. Main drive shaft failure
- j. Engine restart in flight:
 - 1) Immediate
 - 2) Delayed

Practice

- a. All FAM stage checklists
- b. Normal starting/shutdown procedures

MOD 1-18	AEROX	Aerodynamics exam	1.0
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MOD 1-19 Lecture	PRF	Preflight and Cockpit Procedures	2.0
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MOD 1-20 Lecture	ACT	Aircrew Coordination Training	6.0
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PERIOD REQUIREMENTS	DESCRIPTION	DURATION
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MODULE 2

MOD 2-1 TH-57B DUAL	FFAM-1 Familiarization Flight ONE	1.2
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Terminal Objective: Following this event the AMS right seat will be familiar with ground operations and basic IF rotary wing aviation, straight and level flight, climbs, descents and turns.

Discuss

- a. Flight line operations (to include taxi signals)
- b. Course rules/local training area
- c. NATO's Manual/NATO'S charts/Aircraft Discrepancy Book
- d. Squadron SOP
- e. VFR Scan (integrated)
- f. Trim techniques
- g. Crew coordination (clearing aircraft/dual concurrence)
- h. Use of Pensacola area training chart/SAR grid
- i. Ground effect (demonstrated)

Demonstrate

- a. NATOPS brief
- b. Engine start
- c. Operation of engine anti-ice
- d. Vertical takeoff and landing
- e. Air taxi procedures and signals
- f. Turn on the spot/clearing turns
- g. Transition to forward flight
- h. Use and effect of controls, ground effect, and translational lift
- i. Autorotation power recovery
- j. Normal Approach
- k. Engine shutdown procedures
- l. RPM and beep control

Introduce

- a. Preflight/postflight
- b. Checklist

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PERIOD

<u>REQUIREMENTS</u>	<u>DESCRIPTION</u>	<u>DURATION</u>
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MOD 2-1, cont FFAM-1	Familiarization Flight ONE, continued	1.2
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Introduce

- c. Basic air work to include: forward flight at altitude, straight and level flight, turns, climbs, descents, use and effect of force trim and controls
- d. Level speed change
- e. Hovering
- f. Air taxiing
- g. Course rules

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
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MOD 2-2 TH-57B DUAL	FFAM-2	Familiarization Flight TWO	1.5
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Terminal Objective: Following this event the AMS RIGHT SEAT will be familiar with basic flight maneuvers and FI landing patterns.

Discuss

- a. Flight control system
- b. Jammed flight controls
- c. Hot start
- d. Hung start
- e. Engine fire on start (external)
- f. Emergency shutdown
- g. Post shutdown fire (internal)
- h. Dynamic rollover
- i. Blowback (normal approach/transition to forward flight)
- j. Crew coordination (mission analysis, adaptability/flexibility)

Demonstrate/Introduce

- a. Engine start procedure.
- b. Vertical takeoff and landing.
- c. Turn on the spot clearing turn.
- d. Transition to forward flight.
- e. Normal Approach
- f. Shutdown procedures
- g. NATOPS brief

Practice

- a. Preflight/postflight inspection
- b. Checklist
- c. Basic air work
- d. Level speed change
- e. Hovering
- f. Air taxiing
- g. Course rules

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PERIOD

REQUIREMENTS	DESCRIPTION	DURATION
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MOD 2-3 TH-57B DUAL	FFAM-3 Familiarization Flight THREE Terminal Objective: Following this event the AMS RIGHT SEAT will be familiar with inflight emergencies and recovery techniques.	1.5
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Discuss

- a. Generator failure
- b. DC loadmeter and voltmeter
- c. Overheated battery
- d. Electrical fire
- e. Smoke and fume elimination
- f. Fuselage fire
- g. Crew coordination (leadership/ decision making)

Demonstrate/Introduce

- a. Simulated engine failure hover/air taxi
- b. Square patterns
- c. Waveoff (power on)
- d. Auto power recovery

Practice

- a. Checklist
- b. Basic air work
- c. Hovering
- d. Air taxiing
- e. Course rules
- f. Vertical takeoff and landing
- g. Turn on the spot/clearing turns
- h. Transition to forward flight
- i. Normal approach

MOD 2-4	JR	Training Jacket Review	0.5
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MOD 2-5	NATOPsx	NATOPs Open Book Exam EXAM	2.0
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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
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MODULE 3

MOD 3-1 2B42 CI	FBI/ RI-1S	Basic Instrument/Radio Instrument Simulator	1.3
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Terminal Objectives: Following this event, the AMS will be familiar with the instrument flight environment, scan, trim, and physiological phenomena associated with instrument flight.

Discuss

- a. Basic instrument scan
- b. Instrument takeoff checklist
- c. Level off checklist
- d. Trim techniques
- e. TACAN/VOR/GCA procedures and approach plates
- f. Use of HSI
- g. Vertigo and unusual attitude recovery

Demonstrate/Introduce

- a. Instrument takeoff
- b. Straight and level flight
- c. Standard rate turns
- d. Climbs and descents
- e. Vertigo demonstration and unusual attitude recovery
- f. Operation of navigation equipment
- g. Tacan/VOR orientation
- h. Tacan/VOR tracking
- i. Tacan/VOR approach

*Note: If simulators are not available, the FBI/RI-1S simulator events will be waived and the FBI/RI-1S will be flown in the aircraft.

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PERIOD

REQUIREMENTS		DESCRIPTION	DURATION
MOD 3-2 TH-57B/C RIGHT SEAT DUAL	FNFAM	Night Familiarization Flight Terminal Objective: Following this event the AMS DUAL will be familiar with the night flying environment FI including vertigo and disorientation often associated with night flight	2.0

Discuss

- a. Dark adaptation
- b. Emergency procedures and landing site evaluation at night
- c. Use of lights
- d. Helicopter preparation for night operations
- e. Night hover scan
- f. Vertigo
- g. Night course rules, Whiting Field/Duke
- h. Engine failure at night
- i. Crew coordination
- j. Night visual flight techniques

Demonstrate

- a. Autorotation - night power recovery
- b. No-hover landings
- c. Night area FAM

Introduce

- a. Night ground procedures
- b. Night taxi, hovering, vertical takeoff/landing, turn on spot/clearing turn
- c. Night transition to forward flight
- d. Night course rules
- e. Normal approach at night
- f. Simulated emergencies

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PERIOD REQUIREMENTS		DESCRIPTION	DURATION
MOD 3-3 TH-57B/C RIGHT SEAT DUAL FI	FHTAC	Tactical Operations Flight Terminal Objective: Following this the AMS will be familiar with low level/tactical flying and associated stressors such as aircrew coordination and cockpit resource management. The student will prepare the orange route on the 1: 50,000 MUNSON and HAROLD maps)	2.0

Discuss

- a. Mast bumping
- b. Course rules at Harold
- c. Engine failure at high speed low level
- d. Low level lookout doctrine
- e. Crew coordination
- f. Low level navigation, orientation and visual cues
- g. Map interpretation and navigational orientation cues
- h. Effects of wind
- i. Power checks, HIGE/HOGE
- j. Use of radar altimeter

Demonstrate/Introduce

- a. Normal approach
- b. Precision approach
- c. Quick stop
- d. High speed approach
- e. Tactical approach
- f. Low level navigation of 1: 50,000 chart at an altitude between 200-500 AGL

MOD 3-8		Check out	3.0
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CNATRAINST 1542.53F

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SECTION II

APPENDIX A TH-57

TERMINAL OBJECTIVES

This Aerospace Medicine Specialist curriculum is designed to satisfy seven terminal objectives which are derived from the current undergraduate pilot training (UPT) task analysis. The stated objectives, disciplines and flying skills achieved by the Aerospace Medicine Specialist are common throughout the UPT program. Students will prepare themselves for training under increasingly complex conditions of rotary-wing aviation. Therefore, the objective of the helicopter phase is to teach the skills necessary and physiological demands for flying rotary-wing aircraft. In addition, standards of conduct and military decorum expected of all naval officers, defined in prerequisite training directives, will be observed on a daily basis. The goal of all students is to meet the following terminal objectives within the specified flight hours and calendar day limitations. Upon satisfactory completion of these stages of training, the student will be able to:

1. Control the aircraft, in the execution of basic helicopter flight maneuvers during day and night visual meteorological conditions for shore based operations.
2. Analyze meteorological, physiological and life support factors and apply aerodynamic principles to accurately interpret the limiting environmental factors affecting flight, under all conditions.
3. Navigate a rotary-wing aircraft, given the installed electronic instrument navigation equipment and visual reference charts in compliance with standard operating directives.
4. Communicate with controlling agencies, other aircraft and within the aircraft using visual and electronic means, following standard Navy and Federal Aviation Administration (FAA) signals and terminology.
5. Manage existing normal and malfunctioning aircraft systems utilizing the procedures and limitations set forth in the TH-57 Naval Air Training Operating Procedures Standardization (NATOPS) Flight Manual, and standard operating directives.
6. Control a rotary-wing aircraft in the execution of instrument maneuvers for Instrument Meteorological Conditions (IMC) in accordance with standard operating directives.
7. Control a rotary-wing aircraft in the execution of basic tactical helicopter maneuvers in accordance with standard operating directives.

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LEARNING OBJECTIVES

Unless a specific standard is specified in the Learning Objectives (LO), standards for all LOs are to an accuracy of 80 percent, to be determined by a written test. Critical items require a higher accuracy, usually 100 percent and are specified. The standards for objectives which require the student to fly the aircraft are established "to the satisfaction of the assigned rated instructor pilot."

Upon satisfactory completion of the FAM, NF and Tactical Navigation (TACNAV) stages of the Aerospace Medicine Specialist Flight Training Curriculum, the student will be able to perform the following Learning Objectives:

1. Control the aircraft in the execution of basic and precision maneuvers for day and night, Visual Meteorological Conditions (VMC) shore based operations in accordance with standard operating directives.
 - 1.1 Describe the procedures required to control the aircraft for day VMC flight, during a brief with instructor assistance in accordance with the Flight Training Instruction (FTI) and TH-57 NATOPS Flight Manual, without error.
 - 1.2 Describe the scan patterns needed to control the aircraft for day VMC flight, during a brief with instructor assistance in accordance with the FTI and TH-57 NATOPS Flight Manual, without error.
 - 1.3 Recall published minima for the aircraft for day VMC flight.
 - 1.4 Control the aircraft to maintain that aircraft, within published minima with instructor assistance during day VMC shore based operations, in accordance with standard operating directives.
 - 1.5 Recognize sensory cues through the maintenance of an adequate internal and external scan, with instructor assistance for day VMC shore based operations, so as to rapidly elicit accurate, timely, and precise information relative to aircraft performance.
 - 1.6 Determine the control responses required, from in-flight visual cues with instructor assistance for day VMC shore based operations, so as to select correct control inputs.
 - 1.7 Perform basic maneuvers, with instructor direction for day VMC shore based operations, in accordance with the FTI and TH-57 NATOPS Flight Manual.

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- 1.8 Describe the procedures, required to control the aircraft for night VMC flight, during a brief with instructor assistance in accordance with the FTI and TH-57 NATOPS Flight Manual.
 - 1.9 Describe scan patterns needed to control the aircraft for night VMC flights, during a brief with instructor assistance in accordance with the FTI and TH-57 NATOPS Flight Manual.
 - 1.10 Recall published minima for a rotary-wing aircraft for night VMC flight.
 - 1.11 Control a rotary-wing aircraft to maintain that aircraft, within published minima with instructor assistance during night VMC shore based operations, in accordance with standard operating directives.
 - 1.12 Recognize sensory cues through the maintenance of an adequate internal and external scan, with instructor assistance for night shore based operations, so as to rapidly elicit accurate, timely and precise information relative to aircraft performance.
 - 1.13 Determine specific control responses required from in-flight visual cues, with instructor assistance for night VMC shore based operations, so as to select correct control inputs.
 - 1.14 Perform basic and precision maneuvers, with instructor direction for night VMC shore based operations, in accordance with the FTI and TH-57 NATOPS Flight Manual.
2. Analyze meteorological and physiological factors and apply Aerodynamic principles to accurately interpret the limiting environmental factors affecting flight; standards are prescribed in each LO.
- 2.1 Evaluate the observed or forecast meteorological conditions to avoid hazards to flight and arrive at destination or alternate above OPNAV weather minima, given en route or terminal forecasts in-flight, without error.
 - 2.2 Determine appropriate course deviation in the presence of significant weather, given a decision to deviate.
 - 2.3 Participate in a ditching or forced landing drill, on deck with a TH-57 aircraft, without error.
 - 2.4 Demonstrate a knowledge of various aerodynamic principles and considerations affecting flight on a written test to an accuracy of 80 percent.

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3. Navigate a rotary-wing aircraft, given the installed electronic instrument navigation equipment and visual reference charts in flight, in compliance with standard operating directives during day VMC for shore based operations.

- 3.1 Prepare a local area chart using a visual reference chart, without error.
- 3.2 Maintain the appropriate altitudes during Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) flight as depicted in appropriate publications, or as assigned by air traffic control facilities +100 feet.
- 3.3 Describe the appropriate VFR entry and traffic pattern procedures during a VFR arrival, in accordance with FLIP and local directives.
- 3.4 Monitor other pilots' navigation in-flight so as to maintain desired track.
- 3.5 Determine wind direction and velocity from a visual reference.

4. Navigate a rotary-wing aircraft, given the installed electronic instrument navigation equipment and visual reference charts, in compliance with standard operating directives.

- 4.1 Locate, interpret and apply approach phase information, given appropriate approach plates.
- 4.2 Prepare a local area chart using a visual reference chart, without error.
- 4.3 Demonstrate the ability to use all functions of a CR-2 computer.
- 4.4 Recall the theory and operation of radio aids-to-navigation.
- 4.5 Identify the aircraft geographic location during visual meteorological conditions (low-level excluded), using visual reference.
- 4.6 Identify aircraft position relative to a tactical air navigation (TACAN), very high frequency (VHF) omnidirectional range (VOR), or automatic direction finder (ADF) station, given an operable TACAN, VOR, or ADF and FLIP, without error.
- 4.7 Maintain a course during the departure, en route, and approach phases within eight degrees or three miles, whichever is less.

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- 4.8 Execute a TACAN point-to-point during the departure, en route, and approach phases within four nautical miles.
 - 4.9 Describe the appropriate VFR entry and traffic pattern procedures during a VFR arrival, in accordance with FLIP and local directives.
 - 4.10 Update fuel and time estimate during instrument flight.
 - 4.11 Evaluate observed and forecast meteorological conditions to avoid hazards to flight.
 - 4.12 Monitor other pilots' navigation in flight so as to maintain desired track.
 - 4.13 Determine wind direction and velocity from a visual reference without error.
5. Communicate with controlling agencies, other aircraft and within the aircraft using visual and electronic means, following standard Navy and FAA signals and terminology. 5.1
- 5.1 Communicate with the following agencies: clearance delivery, ground control, tower, departure control, Air Traffic Control (ATC), approach control, squadron base radio, Automatic Terminal Information Service (ATIS) during the flight evolution given a ultra-high frequency (UHF) radio and appropriate publication so that 95 percent of the transmissions are initiated or responded to; utilizing proper format, phraseology, terminology, and brevity.
 - 5.2 Communicate with the other pilot as required during the flight evolution using proper format to the accuracy of: Format, 95 percent without error; required calls, 95 percent not initiated by the instructor; altitude warnings, 100 percent initiated by the student.
 - 5.3 Communicate with ground crew personnel during ground operations so as to comply with standard operating procedures.
 - 5.4 Communicate with tactical controlling units using standard brevity code and tactical phraseology without error.
 - 5.5 Direct the other pilot and crewmen in performing emergency procedures using the intercommunication system (ICS) during actual or simulated emergencies without error.
 - 5.6 Operate Identification Friend or Foe (IFF) system in flight without error.

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6. Manage existing and malfunctioning rotary wing aircraft systems utilizing the procedures and limitations set forth in the NATOPS Flight Manual and standard operating directives; standards are 80 percent or as prescribed in each LO.6.1 Recall the scope of the NATOPS Program.

- 6.1 Recall the scope of the NATOPS Program.
- 6.2 Recall the sections of the TH-57 NATOPS Flight Manual.
- 6.3 Recall the sections of the TH-57 NATOPS Pocket Checklist.
- 6.4 Recall the organization of the Naval Aviation Safety Program as defined in OPNAVINST 3750.6Q.
- 6.5 Recall potential safety hazards and avoidance procedures associated with squadron flight operations.
- 6.6 Execute a TH-57 aircraft inspection during preflight and post-flight in accordance with NATOPS without error.
- 6.7 Complete Visual Information and Display System (VIDS)/Maintenance Action Forms (MAFs) as necessary during preflight and postflight without error.
- 6.8 Extract data from the TH-57 NATOPS Pocket Checklist in flight without error.
- 6.9 Recall specified aircraft operating limitations in flight when asked by the instructor without error.
- 6.10 Recall TH-57 "immediate action" emergency procedures in flight when asked by the instructor without error.
- 6.11 Perform all applicable TH-57 aircraft checklists in flight in accordance with the TH-57 NATOPS with no items omitted.
- 6.12 Recall the theory and operation of the TH-57 aircraft as defined in NATOPS.
- 6.13 Activate, operate and secure aircraft systems in flight in accordance with the TH-57 NATOPS Flight Manual.
- 6.14 Brief the responsibilities and duties of a copilot-pilot and pilot-at-the-controls in accordance with the TH-57 NATOPS Flight Manual.
- 6.15 Perform the duties of a copilot-pilot in flight in accordance with standard operating directives.

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- 6.16 Perform the duties of a pilot-in-command in flight in accordance with standard operating directives.
 - 6.17 Assess aircraft systems for proper operation during engine start, engine runup and takeoff, in accordance with the TH-57 NATOPS Flight Manual.
 - 6.18 Assess aircraft systems for proper in-flight operation in flight, reporting malfunctions to the instructor in accordance with the TH-57 Flight Manual.
 - 6.19 Confirm a system malfunction in flight by cross-checking with other indications in accordance with the TH-57 NATOPS Flight Manual.
 - 6.20 Evaluate the impact of a degraded system or sub-system on aircraft performance and mission capability in flight so as to successfully recover the aircraft.
 - 6.21 Perform proper fuel management techniques in flight in accordance with standard operating directives.
 - 6.22 Determine proper troubleshooting for corrective action to eliminate aircraft system malfunction in flight in accordance with TH-57 NATOPS Flight Manual.
 - 6.23 Recall the TH-57 aircraft general description, systems, and operating limitations, on an open book test. Accuracy requirements based on a 4.0 scale are: open book, 3.5.
 - 6.24 Recall the normal operating procedures and flight characteristics of the TH-57 aircraft on an open book test.
 - 6.25 Recall TH-57 emergency procedures on an open book test.
 - 6.26 Recall the TH-57 aircraft servicing procedures and all weather operating procedures on an open book test.
 - 6.27 Extract TH-57 aircraft performance data from charts of the TH-57 NATOPS Flight Manual on an open book test.
7. Control a rotary wing aircraft in the execution of instrument maneuvers for Instrument Meteorological Conditions (IMC) shore based operations in accordance with standard operating directives.
- 7.1 Describe the procedures required to control a rotary-wing aircraft for day and night IMC flight, during a

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brief with instructor assistance in accordance with the FTI, TH-57 NATOPS Flight Manual and NATOPS Instrument Flight Manual, without error.

- 7.2 Describe scan patterns needed to control a rotary-wing aircraft for day and night IMC flight, during a brief with instructor assistance in accordance with the FTI, TH-57 NATOPS Flight Manual and NATOPS Instrument Flight Manual, without error.
 - 7.3 Recall published minima for a rotary-wing aircraft for day and night IMC flight, on a written test.
 - 7.4 Control a rotary-wing aircraft to maintain that aircraft, within published minima with instructor assistance during day and night IMC shore based operations; in accordance with standard operating directives.
 - 7.5 Recognize sensory cues through the maintenance of an adequate instrument attitude scan, with instructor assistance for day and night IMC shore based operations; so as to rapidly elicit accurate, timely, and precise information relative to aircraft performance.
 - 7.6 Determine specific control responses required, from in-flight visual cues with instructor assistance for day and night IMC shore based operations; so as to select correct control inputs.
 - 7.7 Perform instrument maneuvers, with minimal instructor direction for day and night shore based operations in accordance with the FTI, TH-57 NATOPS Flight Manual, NATOPS Instrument Flight Manual and standard operating directives. Acceptable aircraft parameters are as follows: Heading control (± 5 degrees), Altitude (± 50 ft), Airspeed (± 5 kts).
8. Control a rotary-wing aircraft in the execution of basic tactical helicopter maneuvers in accordance with standard operating directives.
- 8.1 Describe the procedures required to control a rotary-wing aircraft for tactical maneuvers, during a brief with minimal instructor assistance in accordance with the FTI, TH-57 NATOPS Flight Manual and standard operating directives.
 - 8.2 Describe scan patterns needed to control a rotary-wing aircraft for tactical maneuvers, during a brief with

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instructor assistance, in accordance with the FTI, TH-57 NATOPS Flight Manual and standard operating directives.

- 8.3 Control a rotary-wing aircraft to maintain that aircraft, within published minima with minimal instructor assistance for tactical maneuvers, in accordance with standard operating directives.
- 8.4 Recognize sensory cues through the maintenance of an adequate internal and external scan, with instructor assistance for tactical maneuvers; so as to rapidly elicit accurate, timely and precise information relative to aircraft performance.
- 8.5 Determine specific control responses required, from in-flight visual cues with minimal instructor assistance for tactical maneuvers; so as to select correct control inputs.
- 8.6 Perform tactical maneuvers, with minimal instructor direction for tactical operations; in accordance with the FTI, TH-57 NATOPS Flight Manual and standard operating directives.

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ENABLING OBJECTIVES

ACTION	CONDITION	STANDARD
1.1 Describe the procedures required to control a rotary-wing aircraft for day VMC flight for the following maneuvers:	during a brief, with instructor assistance, in accordance with the FTI and TH-57 NATOPS Flight Manual.	with minimal error
<ul style="list-style-type: none"> a. Vertical takeoff b. Hovering c. Turns on a spot d. Air Taxi e. Transition to forward flight f. Climbs, descents and level-offs g. In-flight constant rate of turns h. Level speed change i. Square patterns j. Normal approaches to a hover k. Precision approach to a hover l. Vertical landing from a hover m. No hover landings n. Waveoff o. Entry, maintenance and departure of the touch-and-go pattern p. Autorotative entry q. Autorotative flight r. Power recovery autorotation s. Actual or simulated emergencies while trouble shooting and coping with the situation t. Aircraft systems within the NATOPS operating limitations 		

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ACTION	CONDITION	STANDARD
u.	Hover in a crosswind or downwind	
v.	Maximum load takeoff	
w.	Running landing	
x.	Recovery from power setting	
y.	Quick stop from a hover	
z.	Quick stop	
aa.	High speed approach to a spot	
bb.	Actual or simulated engine failure from altitude	
cc.	Actual or simulated engine failure in a hover	
dd.	Actual or simulated engine failure in an air taxi	
ee.	Full autorotation landing. Low level flight.	
ff.	Boost-off flight	
gg.	Simulated engine failure on takeoff (demo only)	
hh.	Simulated stuck tail rotor control (demo only)	

1.1.1 Read the FTI.

1.1.2 Read the TH-57 NATOPS Flight Manual in conjunction with the FTI.

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ACTION	CONDITION	STANDARD
1.1.3 Attend the TFP-1.		
1.2 Describe scan patterns needed to control rotary wing aircraft for day VMC flight for the maneuvers listed in 1.1	Same as 1.1.	same as 1.1.
1.2.1 Read the FTI.		
1.2.2 Read the TH-57 NATOPS Flight Manual in conjunction with the FTI.		
1.3 Recall published minima for a rotary-wing aircraft for VMC flight.	Same as 1.1.	Same as 1.1.
1.3.1 Recall the OPNAVINST 3710.7P minima.		.
1.3.2 Recall the COMTRAWINGFIVEINST 3710.8H, South Field SOP		
1.3.3 Take CR Examination.		
1.4 Control a rotary-wing aircraft to maintain that aircraft for the maneuvers listed in 1.1.	within published minima without instructor direction during day VMC shore based operations	in accordance with standard operating directives.
1.4.1 Demonstrate the ability to apply published minima while flying a rotary-wing aircraft.		

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ACTION	CONDITION	STANDARD
1.5 Recognize sensory cues through the maintenance of an adequate internal and external scan for the maneuvers listed in 1.1	without instructor direction for day VMC shore based	So as to rapidly elicit accurate, timely operations and precise information relative to aircraft performance.
1.5.1 Observe the instructor demonstrate the maneuver.		
1.5.2 Do the maneuver during introduction of the maneuver.		
1.5.3 Review the maneuver.		
1.6 Determine specific control responses required for the maneuvers in 1.1.	from in-flight visual cues without instructor direction for day VMC shore operations.	so as to select correct control listed inputs.
1.6.1 Observe the instructor demonstrate the maneuver.		
1.6.2 Do the maneuver during introduction of the maneuver.		
1.6.3 Review the maneuver.		
1.7 Perform the maneuvers listed in 1.1.	with instructor direction for day VMC shore based operations	in accordance with the FTI and TH-57 NATOPS Flight Manual.
1.7.1 Observe the instructor demonstrate the maneuver.		
1.7.2 Perform the maneuver during introduction of the maneuver.		
1.7.3 Practice the maneuver.		

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ACTION	CONDITION	STANDARD
<p>1.8 Describe the procedures required to control a rotary-wing aircraft for night VMC flight for the following maneuvers:</p> <ul style="list-style-type: none"> a. Vertical takeoff b. Hovering c. Turns on a spot d. Air taxi e. Transition to forward flight f. Climbs, descents and level-offs g. In-flight turns h. Level speed change i. Normal approach to a hover j. Vertical landing from a hover k. No hover landings l. Waveoff m. Entry, maintenance and departure of the touch-and-go pattern n. Autorotative entry o. Autorotative flight p. Power recovery autorotation 	<p>during a brief, with instructor assistance, in accordance with the FTI and TH-57 NATOPS Flight Manual</p>	
<p>1.8.1 Read the FTI</p>		
<p>1.8.2 Read the TH-57 NATOPS Flight Manual in conjunction with the FTI.</p>		
<p>1.8.3 Attend the TFP-1.</p>		
<p>1.9 Describe scan patterns needed to control a rotary-wing aircraft for night VMC flight for the maneuvers listed in 1.8.</p>	<p>Same as 1.8</p>	<p>Same as 1.8.</p>

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ACTION	CONDITION	STANDARD
1.9.1 Read the FTI.		
1.9.2 Read the TH-57 NATOPS Flight Manual in conjunction with the FTI.		
1.9.3 Attend the TFP-1.		
1.10 Recall published minima for a rotary-wing aircraft for night VCM flight for the maneuvers listed in 1.8	when asked by instructor	without error.
1.10.1 Recall the OPNAVINST 3710.7Q minima.		
1.10.2 Recall the COMTRAWINGFIVEINST 3710.8H, South Field SOP minima.		
1.10.3 Attend the FFP-2.		
1.11 Control a rotary-wing aircraft to maintain that aircraft for the maneuvers listed in 1.8	within published minima with instructor direction during night VMC shore based operations	in accordance with standard operating directives.
1.11.1 Demonstrate the ability to apply published minima while flying a rotary-wing aircraft.		
1.12 Recognize sensory cues through the maintenance of an adequate internal and external scan for the maneuvers listed in 1.8	with instructor direction for day VMC shore based operations	so as to rapidly elicit accurate, timely and precise information relative to aircraft performance.

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ACTION	CONDITION	STANDARD
1.12.1 Observe the instructor demonstrate the maneuver.		
1.12.2 Do the maneuver during introduction of the maneuver.		
1.12.3 Review the maneuver.		
1.13 Determine specific control responses required for the maneuvers listed in 1.8	from in-flight visual cues with instructor direction for VMC shore based operations	so as to select correct control inputs.
1.13.1 Observe the instructor demonstrate the maneuver		
1.13.2 Do the maneuver during introduction of the maneuver.		
1.13.3 Review the maneuver.		
1.14 Perform the maneuvers listed in 1.8	Same as 1.12	in accordance with FTI and TH-57 NATOPS Flight Manual
1.14.1 Observe the instructor demonstrate the maneuver.		
1.14.2 Do the maneuver during introduction of the maneuver.		
1.14.3 Review the maneuver.		

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ACTION	CONDITION	STANDARD
2.1 Evaluate the observed and forecast meteorological conditions for preflight planning to avoid hazards to flight and arrive at destination or alternate above OPNAV weather minima	given meteorological charts and teletype	without error.
2.1.1 Determine the meaning of the various symbols, notations and codes used on meteorological charts and teletype reports.		
2.1.2 Evaluate existing or forecast weather to determine acceptability for the proposed flight.		
2.2 Interpret flight weather advisories.		
2.3 Determine appropriate course deviation in the presence of significant weather	given a decision to deviate in flight	without error.
2.3.1 Recall observed and forecasted weather reports		
2.3.2 Complete fuel requirements.		
2.4 Conduct a ditching or forced landing drill	on deck with a TH-57	without error.
2.4.1 Read the Aviation Survival Equipment, Familiarization and Water Survival Techniques.		
2.4.2 Attend the SAF-1.		

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ACTION	CONDITION	STANDARD
2.5 Demonstrate a knowledge of the various aerodynamic principles and considerations affecting flight	on a written test	to an accuracy of 80%.
2.5.1 Read the Aerodynamics workbook.		
2.5.2 Take the test.		
3.1 Locate, interpret and apply en route phase information	Given high altitude, low altitude and are charts on a written test	to the accuracy of 80%.
3.1.1 Extract altitude procedures.		
3.2 Prepare a local area chart	using a visual reference chart	without error.
3.2.1 Become familiar with available visual reference charts.		
3.2.2 Select appropriate local area chart.		
3.2.3 Locate NAS Whiting Field, VFR entry points.		
3.2.4 Identify local area aids to navigation.		
3.2.5 Define squadron operating areas on local area chart.		
3.3 Prepare a low level chart	using a chart, divider, plotter, and local directives	to the accuracy of Fuel, ± 100 lbs; Time, ± 30 Seconds; Course, 10 degrees; Plotting, without error.
3.3.1 Identify the route.		

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ACTION	CONDITION	STANDARD
3.3.2	Select the appropriate chart.	
3.3.3	Interpret the legend.	
3.3.4	Plot specified points.	
3.3.5	Plot radius of turn at each point.	
3.3.6	Plot the course lines.	
3.3.7	Determine each course.	
3.3.8	Select appropriate altitude	
3.3.9	Measure the distance.	
3.3.10	Compute the time.	
3.3.11	Plot the time ticks.	
3.3.12	Compute the fuel remaining.	
3.3.13	Compute mission completion fuel.	
3.3.14	Select appropriate divert fields.	
3.3.15	Determine the bingo heading, distance, fuel, and altitude.	
3.3.16	Note and identify hazards.	
3.3.17	Display leg data.	

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ACTION	CONDITION	STANDARD
3.3.18 Attend the TFP-2 and VFRP.		
3.4 Apply standard time and course corrections	on a low-level flight, given distance off course and seconds off time	without error.
3.4.1 Recall the standard time correction formula.		
3.4.2 Recall the standard course correction formula.		
3.4.3 Attend the VFRP.		
3.5 Maintain the appropriate altitudes.	during VFR flight	as depicted in the appropriate publication or as assigned by air traffic control facilities \pm 200'.
3.5.1 Select the appropriate altitudes from FLIP, local directives and OPNAV.		
3.5.2 Comply with altitude instructions from air traffic control facilities.		
3.6 Describe the appropriate VFR entry pattern procedures.	during a VFR arrival	in accordance with FLIP and traffic local directives.
3.6.1 Recall the standard VFR traffic pattern.		
3.6.2 Recall the NAS Whiting Field VFR entry procedures.		
3.7 Monitor other pilots' navigation	in flight	so as to maintain desired track.

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ACTION	CONDITION	STANDARD
3.7.1 Determine the aircraft position relative to desired courses.		
3.7.2 Notify the other pilot of any course deviations.		
3.8 Determine wind direction and velocity	from a visual reference	without error
3.8.1 Identify the best wind indications.		
4.1 Locate, interpret and apply preflight planning information.	given a FLIP GP, AP-1, AP-1A, AP-1B., and an IFR en route supplement.	
4.1.1 Extract aeronautical information.		
4.1.2 Extract terms, abbreviations and codes		
4.1.3 Extract division of airspace information		
4.1.4 Extract pilot procedure information		
4.1.5 Extract meteorological data.		
4.1.6 Extract special use airspace information.		
4.1.7 Extract parachute jumping area information.		

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ACTION	CONDITION	STANDARD
4.1.8 Extract aerodrome/facility directory information		
4.1.9 Extract special notices procedures.		
4.1.10 Extract weather and NOTAM procedures.		
4.2 Extract departure information, given the plan view of NAS Whiting Field standard instrument departures (SIDs).		
4.2.1 Extract departure information, given the written route description of NAS Whiting Field SIDs.		
4.3 Locate, interpret and apply approach phase information	given appropriate approach plates	
4.3.1 Extract low altitude approach procedures.		
4.3.2 Extract radar approach procedures.		
4.4 Prepare a local area chart	using a visual reference chart.	without error.
4.4.1 Become familiar with available visual reference charts.		
4.4.2 Select appropriate local area chart.		

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ACTION	CONDITION	STANDARD
4.4.3 Locate NAS Whiting Field, VFR entry points.		
4.4.4 Identify local area aids to navigation.		
4.4.5 Define squadron operating areas on local area chart.		
4.4.6 Interpret the chart legend.		
4.5 Recognize NOTAMS affecting flight		
4.5.1 Ensure that ceiling and visibility comply with OPNAVINST 3710.7Q.		
4.6 Recall the theory of TACAN operation.		
4.6.1 Recall the theory of VOR operation		
4.7 Apply standard time and course corrections	on a low-level flight, given distance off course and seconds off time	without error.
4.7.1 Recall the standard time correction formula.		
4.7.2 Recall the standard course correction formula.		
4.8 Identify the aircraft geographic location	during visual meteorological conditions (low-level excluded), using visual reference and Tactical Pilotage Chart	within five nautical miles.

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ACTION	CONDITION	STANDARD
4.8.1 Locate recognizable landmarks outside aircraft.		
4.8.2 Determine aircraft range and bearing to a landmark.		
4.8.3 Locate the landmark on chart.		
4.8.4 Plot the aircraft range and bearing from the landmark.		
4.9 Identify aircraft position relative to a TACAN station.	given a TACAN and FLIP	without error.
4.10 Intercept, maintain and exit an arc	during departure and approach phases	within two nautical miles and five radials.
4.10.1 Intercept, an arc	Same as 4.10	Same as 4.10.
4.10.2 Maintain on the arc		within .2 NM
4.10.3 Exit the arc.		
4.11 Maintain a course en route and approach	during the departure, degrees or three phases	within eight miles, whichever is less.
4.11.1 Determine the aircraft position relative to a course.		
4.11.2 Turn aircraft toward the course.		
4.11.3 Intercept the course.		
4.11.4 Observe drift.		
4.11.5 Return to course		
4.11.6 Adjust aircraft heading to compensate for the drift.		

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ACTION	CONDITION	STANDARD
4.12 Execute a TACAN point-to-point approach phases	during the departure, en route and	within four nautical miles.
4.12.1 Determine the aircraft position.		
4.12.2 Determine course and distance to the fix.		
4.12.3 Turn the aircraft to desired heading.		
4.13 Maintain the appropriate altitudes	during VFR and IFR	as depicted in the appropriate flight publications as assigned by air traffic control facilities \pm 200'.
4.13.1 Select the appropriate altitudes from FLIP, local directives and OPNAV.		
4.13.2 Comply with altitude instructions from air traffic control facilities.		
4.14 Describe the appropriate VFR entry and traffic pattern procedures	during a VFR arrival	in accordance with FLIP and local directives.
4.14.1 Recall the standard VFR traffic pattern.		
4.14.2 Recall the NAS Whiting Field VFR entry procedures.		
4.15 Determine the aircraft glide slope position	on a VFR final approach.	without error.
4.15.1 Ensure that ceiling & visibility comply with OPNAVINST 3710.7Q		

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ACTION	CONDITION	STANDARD
4.15.2 Monitor other pilots' navigation	in-flight	so as to maintain desired track.
4.15.3 Determine the aircraft position relative to desired course.		
4.15.4 Notify the other pilot of any course deviations.		
4.16 Determine wind direction and velocity	from a visual reference	without error
4.16.1 Identify the best wind indications.		
5.1 Communicate with the following agencies: clearance delivery, ground control tower, departure control, ATC, approach control, squadron base radio, ATIS	during the flight evolutions, given appropriate publications and a UHF radio	so that 95% of the transmissions are initiated or responded to, utilizing proper format, phraseology, terminology and brevity.
5.1.1 Extract or acknowledge the appropriate frequency.		
5.1.2 Receive and transmit communications using proper radio communication phraseology and techniques.		
5.1.3 Comply with instructions.		
5.2 Direct the other pilot and crewmen in performing emergency procedures	using the ICS during actual or simulated emergencies	without error.
5.3 Operate IFF	in-flight	without error.
6.1 Recall the scope of the NATOPS Program	when asked by instructor	without error.

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ACTION	CONDITION	STANDARD
6.1.1 Recall the scope of the NATOPS Flight Manual including classified supplements.		
6.1.2 Recall the scope of the NATOPS Pocket Checklist.		
6.1.3 Recall the scope of the OPNAVINST 3710.7Q.		
6.2 Recall the sections of the TH-57 NATOPS Flight Manual	when asked by instructor	without error.
6.2.1 Recall the scope of the Section One (Aircraft)		
6.2.2 Recall the scope of the Section Two (Indoctrination).		
6.2.3 Recall the scope of the Section Three (Normal Procedures).		
6.2.4 Recall the scope of the Section Four (Flight Procedures).		
6.2.5 Recall the scope of the Section Five (Emergency Procedures).		
6.2.6 Recall the scope of the Section Six (All Weather Operations).		
6.2.7 Recall the scope of the Section Seven (Communication Procedures)		
6.2.8 Recall the scope of Section Nine (Flight Crew Coordination)		

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ACTION	CONDITION	STANDARD
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6.3 Recall the sections of the TH-57 NATOPS Pocket Checklist

6.3.1 Recall the scope of the Emergency Procedures Section.

6.3.2 Recall the scope of the Normal Procedures Section.

6.3.3 Recall the scope of the Special Procedures Section.

6.3.4 Recall the scope of the Reference Data Section.

6.4 Recall the organization of the squadron safety department.

6.4.1 Attend the SAF.

6.5 Recall potential safety hazards and avoidance procedures associated with squadron flight operations

6.5.1 Recall flight line hazards of GSE and maintenance vehicle movement.

6.5.2 Recall hazards of foreign object damage (FOD).

6.5.3 Recall inherent hazards of crew egress.

6.5.4 Recall hazards of wearing jewelry in flight environment.

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ACTION	CONDITION	STANDARD
6.6 Execute a TH-57 aircraft inspection	during preflight and postflight	in accordance with the TH-57 NATOPS
6.6.1 Perform exterior inspection.		
6.6.2 Perform interior inspection.		
6.7 Extract data from the TH-57 NATOPS Pocket Checklist	during the flight evolution when asked by instructor	without error.
6.7.1 Extract data from, and be familiar with, the emergency procedures tabs.		
6.7.2 Extract data from, and be familiar with, the special procedures tabs.		
6.7.3 Extract data from, and be familiar with, the normal procedures tabs.		
6.7.4 Extract data from, and be familiar with, the performance data index.		
6.8 Recall specified TH-57 aircraft operating limitations	in flight when asked by the instructor	without error.
6.9 Recall TH-57 "immediate action" emergency procedures	in flight when asked by the instructor	without error.
6.9.1 Recall ground emergency procedures.		

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ACTION	CONDITION	STANDARD
6.9.2 Recall takeoff emergency procedures.		
6.9.3 Recall in-flight emergency procedures.		
6.10 Perform all applicable TH-57 aircraft checklists	in flight	in accordance with NATOPS with no items omitted.
6.11 Recall the theory and operations of the TH-57 aircraft	as defined in NATOPS	
6.12 Activate, operate secure aircraft systems	in flight	in accordance with TH-57 NATOPS Flight Manual.
6.13 Brief the responsibilities and duties of a copilot-pilot and pilot-in-command	during a brief	in accordance with TH-57 NATOPS Flight Manual.
6.14 Perform the duties of a copilot-pilot	in flight	in accordance with standard operating directives.
6.15 Perform the duties of a pilot-in-command	in flight	in accordance with standard operating directives.
6.16 Assess aircraft systems for proper operation with TH-57	during engine start,	in accordance with engine runup and takeoff NATOPS Flight Manual.
6.17 Assess aircraft systems for proper operation	in flight, reporting, malfunctions to the instructor	in accordance with TH-57 NATOPS Flight Manual.
6.18 Confirm a system malfunction	in flight by cross-checking with other indications	in accordance with TH-57 NATOPS Flight Manual.
6.19 Evaluate the impact of a degraded system or sub-system on aircraft performance and mission capability	in flight	to successfully recover the aircraft.

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ACTION	CONDITION	STANDARD
6.20 Perform proper fuel management techniques	in flight	in accordance with standard operating directives.
6.21 Determine proper trouble-shooting for corrective action to eliminate air-system malfunctions	in flight	in accordance with standard operating craft directives.
6.22 Recall the TH-57 NATOPS general description systems and operating limitations	on an open book and a closed book test	to the accuracy of: Open, 3.5; Closed, 3.5 (4.0 scale).
6.23 Recall the normal operating procedures and flight characteristics of the TH-57 aircraft	on an open and closed book test	to the accuracy of: Open, 3.5; Closed, 3.5 (4.0 scale).
6.24. Recall the normal operating procedures: briefing and debriefing, mission planning, shorebased procedures.		
6.24.1 Recall the flight characteristics of: blade stalls, tail rotor failures, engine compressor stalls, and autorotations.		
6.25 Recall the TH-57 emergency procedures	on an open and closed book test	to the accuracy of: Open 3.5; Closed 3.5 (4.0 scale).
6.25.1 Recall the ground emergency procedures.		
6.25.2 Recall the takeoff emergency procedures.		
6.25.3 Recall the in-flight emergency procedures.		

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ACTION	CONDITION	STANDARD
6.25.4 Recall the landing emergency procedures.		
6.26 Recall the TH-57 aircraft performance servicing procedures and all weather operating procedures	on an open and closed book test	to the accuracy of: Open, 3.5; Closed, 3.5 (4.0 scale).
6.26.1 Recall the aircraft servicing procedures.		
6.26.2 Recall all weather operations.		
6.27 Extract TH-57 aircraft performance data from charts of the TH-57 NATOPS Flight Manual	on an open book test	to the accuracy of: 3.5 (4.0 scale).
6.27.1 Extract data from the standard data charts.		
6.27.2 Extract data from the takeoff charts.		
6.27.3 Extract data from the climb charts.		
6.27.4 Extract data from the range charts.		
6.27.5 Extract data from the endurance charts.		
6.27.6 Extract data from the airstart charts.		
7.1 Describe the procedures required to control a rotary-wing aircraft for the following maneuvers:		

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ACTION	CONDITION	STANDARD
a.	Instrument takeoff	
b.	Instrument departure using radio navigation aids	
c.	Instrument departure using radar vector	
d.	Level speed change	
e.	Stabilized climb and descent	
f.	Level constant rate of turn	
g.	Constant rate climbing and descending turn	
h.	Straight and level flight	
i.	Unusual attitude recovery	
j.	PAR approach	
k.	ASR approach	
l.	ILS approach	
m.	Instrument missed approach	
n.	Transition from instrument to contact conditions for landing	
o.	Transition to instrument attitude reference when confronted with IMC	
p.	Transition to visual attitude reference when confronted with VMC	
q.	Non-precision approach (TACAN and VOR)	

7.1.1 Read the FTI

7.1.2 Read the TH-57
NATOPS Flight Manual and
NATOPS Instrument Flight
Manual

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ACTION	CONDITION	STANDARD
7.1.3 Attend the BIFP and RIFP		
7.2 Describe scan patterns needed to control a rotary-wing aircraft for day and night IMC flight for the maneuvers listed in 7.1	Same as 7.1	Same as 7.1
7.2.1 Read the FTI		
7.2.2 Read the TH-57 NATOPS manual and NATOPS Instrument Flight Manual		
7.2.3 Attend the BIFP or RIFP as appropriate		
7.3. Attend the BIFP or RIFP as appropriate		
7.3.1 Recall the OPNAVINST 37.10.7Q minima		
7.3.2 Recall the COMTRAWINGFIVEINST 3710.8H South Field SOP minima		
7.4 Control a rotary-wing aircraft to maintain that aircraft for the maneuvers listed in 7.1	within published minima without instructor direction during day and night IMC shore based operations	in accordance with standard operating directives
7.4.1 Demonstrate the ability to apply published minima while flying a rotary-wing aircraft		
7.5 Recognize sensory cues through the maintenance of adequate instrument scan for the maneuvers listed in 7.1	without instructor direction for day and night IMC shore based operations	so as to rapidly elicit accurate, timely and precise information relative to aircraft performance

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ACTION	CONDITION	STANDARD
7.5.1 Observe the instructor demonstrate the maneuver		
7.5.2 Do the maneuver during introduction of the maneuver		
7.5.3 Review the maneuver		
7.6 Determine specific control responses required for the maneuvers listed in 7.1	from in-flight visual cues without instructor direction for day and night IMC shore based operations	so as to select correct control inputs
7.6.1 Observe the instructor demonstrate the maneuver		
7.6.2 Do the maneuver during introduction of the maneuver		
7.6.3 Review the maneuver		
7.7 Perform the maneuvers listed in 7.1	with instructor direction for day IMC shore based operations	in accordance with the FTI, TH-57 NATOPS Flight Manual, NATOPS Instrument Flight Manual and standard operating directives. Heading: $\pm 5^\circ$ Airspeed: ± 5 knots Altitude: 50 feet
7.7.1 Observe the instructor demonstrate the maneuver		

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7.7.2 Perform the maneuver during introduction of the maneuver

7.7.3 Practice the maneuver

8.1 Describe the procedures required to control a rotary-wing aircraft for tactical operations during a brief, with instructor assistance, in accordance with the FTI and NATOPS Manual

8.2 Describe scan patterns needed to control a rotary-wing aircraft for tactical operations same as 8.1 same as 8.1

8.2.1 Read the FTI

8.2.2 Read the NATOPS Manual in conjunction with the FTI

8.3 Recall published minima for a rotary wing aircraft for tactical operations

8.3.1 Recall the OPNAVINST 3710.7Q minima

8.3.2 Recall the COMTRAWINGFIVEINST 3710.8H South Field SOP minima

9.1 Control a rotary-wing aircraft to maintain that aircraft within published minima with instructor assistance for tactical operations in accordance with standard operating directives

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ACTION	CONDITION	STANDARD
9.1.1 Demonstrate the ability to apply published minima while flying a rotary-wing aircraft		
9.2 Recognize sensory cues through the maintenance of an adequate internal and external scan	with instructor assistance for tactical operations	so as to rapidly elicit accurate, timely, and precise information relative to aircraft performance
9.2.1 Observe the instructor demonstrate the maneuver		
9.2.2 Do the maneuver during introduction of the maneuver		
9.2.3 Review the maneuver		
9.3 Determine specific control responses required	from in-flight visual cues with instructor assistance for tactical operations	so as to select correct control inputs
9.3.1 Observe the instructor demonstrate the maneuver		
9.3.2 Do the maneuver during introduction of the maneuver		
9.3.3 Review the maneuver		
9.4 Manipulate the controls of a rotary-wing aircraft while performing the following maneuvers:	with instructor direction for tactical flight operations	in accordance with FTI, NATOPS Manual and NWP-42.
<ul style="list-style-type: none"> a. Tactical approaches (360 overhead, 180 offset, 90 turn-in) 		

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ACTION	CONDITION	STANDARD
b. Autorotations c. Night operations (normal approach, autorotation d. Night VFR navigation e. Terrain flying f. Terrain flight (TERF) navigation		
9.4.1 Observe the instructor demonstrate the maneuver		
9.4.2 Do the maneuver during introduction of the maneuver		
9.7.3 Review the maneuver		

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MASTER MATERIALS LIST

1. Individually Issued Materials

TITLE	IDENTIFICATIONS	QTY PER STUDENT	COST EACH
1 . Academic Workbooks	CNAT P-401 CNAT P-402 CNAT P-403 CNAT P-404	4	\$ 1.03
2. Flight Support Workbooks	CNAT P-461	1	\$ 1.31
3. Flight Training	CNAT P-457	1	\$10.37
4. Student Radio Instrument Approach and Departure Plates	CNAT P-460	1	\$ 1.03
5. NATOPS General Flight	OPNAVINST 3710.7Q	1	\$ 2.50
6. DOD FLIP Publications			
a. Low Altitude En Route Charts		6	\$ 1.74
b. Low Altitude Instrument Approach Procedures		5	\$ 0.62
c. VFR Sectional		1	\$ 0.75
d. IFR Supplement		1	\$ 0.75
e. VFR Supplement		1	\$ 0.75
7. Rotary-Wing Operating Procedures Manual	COMTRAWINGFIVEINST 3710.8H	1	
8. Aviation Training Forms (ATFs)			
a. ATF/Cockpit Procedures, FCPT-1	CNATRA 1542/1281 6-98	1	\$ 0.03
b. ATF/Cockpit Procedures, FCPT-2	CNATRA 1542/1282 6-98	1	\$ 0.03
c. ATF/Cockpit Procedures, FCPT-3	CNATRA 1542/1283 6-98	1	\$ 0.03

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TITLE	IDENTIFICATIONS	QTY PER STUDENT	COST EACH
d. ATF/Cockpit Procedures, FCPT-4	CNATRA 1542/1284	6-98 1	\$ 0.03
e. ATF/Familiarization, FFAM-1	CNATRA 1542/1285	6-98 1	\$ 0.03
f. ATF/Familiarization, FFAM-2	CNATRA 1542/1286	6-98 1	\$ 0.03
g. AFT/Familiarization, FFAM-3	CNATRA 1542/1287	6-98 1	\$ 0.03
h. ATF/Basic/Radio Instrument Flight-1, FBI/RI-1S	CNATRA 1542/1296	6-98 1	\$ 0.03
i. ATF/Familiarization, Flight-1, NFAM-1	CNATRA 1542/1299	6-98 1	\$ 0.03
j. ATF/Helicopter Tactics, FTAC	CNATRA 1542/1302	6-98 1	\$ 0.03

2. Aircraft and Major Training Devices

Aircraft	TH-57B/C
Simulator	2B42
Cockpit Procedures Trainer	2C67

3. Cost Data Sources

CNAT 1542._ Publications	Defense Printing Service Detachment Branch Office, NAS Corpus Christi, TX
Flight Planning Publications	DOD Mapping Service, ST. Louis, MO
NATOPS Publication	Navy Tactical Support Activity (NAVTACSUPPACAT WNY), Washington, DC
OPNAV Forms	NAVSUP #2002
Training Panels	Naval Air Warfare Center Training Systems Division, Orlando, Florida
Training Films	U.S. Navy Photographic Center N.S., Washington, DC

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SECTION IIAPPENDIX B T-34C TERMINAL OBJECTIVES

The Aerospace Medicine Specialist curriculum is designed to teach the fundamental skills of flying in a lightweight, single-engine aircraft. Flying skills learned by the student aviator in this training phase are common throughout the undergraduate pilot training program. Upon satisfactory completion of this primary phase, the student will be able to perform the following task objectives:

1. Control the aircraft in visual and instrument meteorological conditions with instructor assistance, during day and night shore-based operations; solo in visual meteorological conditions during day shore-based operations. The student will demonstrate the ability to perform flight maneuvers with the proficiency required to satisfactorily meet the entrance standards of the next phase of training.
2. Analyze the meteorological, physiological, life support factors, aerodynamic principles and interpret the limiting environmental factors affecting flight, prior to and during flight. Standards are further defined in the learning objectives.
3. Communicate with air traffic control facilities assisted by the instructor. The degree of proficiency attained will enable the student to use standard Navy terminology and standard terminology of the Federal Aviation Administration in airborne communications; standards as prescribed in learning objectives.
4. Manage aircraft systems, while operating under the conditions stated in paragraph A. The student will be able to assess the material condition of the aircraft and relate aircraft readiness to the procedures and limitations set forth in the Naval Air Training Operating Procedures Standardization (NATOPS) Manual, tactical doctrine and command directives.
5. Control the aircraft in formation flight, with instructor assistance, during day visual meteorological conditions. The student will demonstrate the ability to recognize relative motion and perform the fundamental maneuvers required for two-plane formation flight.
6. Adopt a course of conduct and behavior which reflects, by action and word, the highest standards of the Naval Service.

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SUMMARY OF ENABLING OBJECTIVES - T-34C

The enabling objectives (EOs) listed below are grouped into seven areas which, when completed, will satisfy the corresponding terminal objectives. The enabling objectives which the student must complete to satisfy each LO are cross referenced by listing the module event and stage during which the student's performance in meeting the LO is tested. All enabling objectives listed in the outline of training must have been satisfactorily met. Given one T-34C aircraft, a thorough briefing, approved in-flight checklists and publications, the student will be able to:

NOTE 1. Dual: Flight with a qualified flight instructor on board providing instruction, assistance, or supervision.

NOTE 2. Solo: Flight without a qualified flight instructor on board providing instruction, assistance, or supervision.

A. Aircraft Control

ACTION	CONDITION	STANDARD
A.1 Taxi and perform ground operations.	Dual with ground crew assistance, given prescribed route	Clear of obstructions in compliance with NATOPS and air operations manuals
A-2. Takeoff and transition to flight	Visual meteorological conditions (VMC), dual, various wind conditions, dry runway, aircraft systems ready while accelerating to climb speed establishing proper aircraft configuration	Maintain aircraft alignment; maintain positive rate of climb, in compliance with NATOPS and operations manuals
A-3. Abort takeoff, assess aircraft systems and energy level	Dual and solo, as required by actual emergency	In compliance with NATOPS procedures
A-4. Transition to and from: Climb Descent Level Flight	Dual, VMC, within approved geographical limits	Smooth, balanced flight; +5 knots indicated airspeed ±50 ft assigned altitude ±5° heading

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ACTION	CONDITION	STANDARD
A-4.1. Measure and stabilize the aircraft attitude and power setting required for desired aircraft performance	Same as A-4	Same as A-4
A-5. Maintain internal and external visual scan patterns	Dual, VMC, while evaluating aircraft systems performance and geographical position	In compliance with NATOPS and local directives
A-5.1. Detect, identify and avoid all aircraft in visual range	Same as A-5	Same as A-5
A-6. Perform aircraft stall and stall recovery	Dual, VMC, cruise configuration	In accordance with flight training instruction, minimum altitude loss.
A-6.1 Identify conditions creating stall and the stall warnings	Same as A-6	Same as A-6
A-6.2. Apply recovery controls and power settings	Same as A-6	Same as A-6
A-7. Perform stall and stall recovery	Dual, VMC, landing configuration	In accordance with flight training instruction, with minimum altitude loss
A-7.1. Identify conditions creating stall and the stall warnings	Same as A-7	Same as A-7
A-7.2. Apply recovery controls and power settings	Same as A-7	Same as A-7

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ACTION	CONDITION	STANDARD
A-8. Perform upright spin	Dual, VMC, cruise configuration	In accordance with flight training instructions
A-8.1 Identify upright spin conditions	Same as A-8	Same as A-8
A-8.2 Apply controls to recover from spin	Same as A-8	Same as A-8
A-9. Perform aerobatic maneuvers	Dual and solo, VMC, day within aircraft operating limits	Correctly fly the maneuver described in flight training instruction while maintaining smooth balanced flight
A-10. Locate the landing field and enter the landing pattern	Day solo and dual, night dual, VMC, given course rules and defined pattern	Correctly fly to designated field and enter active runway pattern. Position correct distance abeam intended point of landing, on pattern altitude \pm 50 ft, \pm 5 knots indicated airspeed, stabilized in landing configuration
A-11. Approach turn to the glide slope	Day solo and dual, night dual, VMC, various wind conditions within crosswind limits. Normal and emergency patterns while detecting and correcting any unsafe flight conditions	Control aircraft flight path so as to arrive on final \pm 50 ft of pattern altitude, \pm 5 knots of indicated airspeed, $\pm 5^\circ$ of heading

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ACTION	CONDITION	STANDARD
A-12. Intercept the glide slope until runway contact	Day solo and dual, night dual, VMC, various wind conditions within crosswind limit. Normal and emergency conditions while detecting and correcting any unsafe flight conditions	Control aircraft and flight path to land in the designated landing zone with the desired sink rate ± 200 FPM, ± 5 knots indicated airspeed; angle of attack ± 1 unit and A/C alignment ± 10 ft of centerline with correct attitude
A-13. Detect and correct glide slope errors	Day solo and dual, night dual, with visual and audio cues. Limit scan to touchdown area, runway alignment and angle of attack indexer lights; various wind conditions within limits	Control airborne flight path to land in the designated landing zone with the desired sink rate ± 200 FPM, ± 5 knots indicated airspeed; angle of attack ± 1 unit and A/C alignment ± 10 ft of centerline with correct attitude
A-13.1. Assess attitude and power requirements for desired A/C performances	Same as A-13	Same as A-13
A-14. Initiate or accept a waveoff from the approach	Day solo and dual, night dual, VMC, without instructor assistance, in response to the flight conditions which require a waveoff	In compliance with NATOPS procedures for waveoff
A-15. Conduct multiple landings	Day, solo and dual, night dual, VMC in a touch-and-go pattern	Same as 10, 11, 12, 13, and 14

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ACTION	CONDITION	STANDARD
A-16. Complete landing rollout and deceleration	Solo, day, VMC, dry runway. Dual, day or night, VMC, wet or dry runway, various winds up to crosswind limits	Maintain alignment ± 10 ft, while stopping aircraft, avoiding porpoise or bounce
A-17. Resolve in-flight emergencies	All flight conditions during actual or simulated emergency or multiple systems failure	in accordance with NATOPS procedures. Maintain positive aircraft control
A-18. Perform operations A-4, 13, and 17	Without reference to visual horizon, dual, instrument meteorological conditions (IMC), or hooded	See specific operation. Safely control aircraft
A-19. Control aircraft and fly specified instrument patterns	Given maneuver as described in the flight training instructions and perform without reference to visual horizon, dual, IMC or hooded	Coordinate turn to $\pm 5^\circ$ of heading and bank angle $\pm 5^\circ$, ± 10 knots indicated airspeed, altitude ± 50 ft or ± 500 FPM; timed patterns ± 10 seconds
A-20. Maintain straight and level flight	Given assigned altitude and course without reference to visual horizon, dual, IMC or hooded	Altitude ± 50 , ± 10 knots indicated airspeed; $\pm 5^\circ$ heading
A-21. Recognize and correct unusual aircraft attitudes	given aircraft attitude error induced by instructor, without reference to visual horizon, dual, IMC, or hooded	Accurately determine aircraft attitude, correctly modify the attitude and power for a controlled transition to the original flight path.

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ACTION	CONDITION	STANDARD
A-22. Perform penetration and approach pattern	Dual, IMC or hooded, without radar assistance, given printed approach criteria	Fly patterns in accordance with published procedures.
A-23. Perform IFR letdown and make: a. Precision approach b. Non-precision approach	Dual, IMC or hooded under radar control	Same as A-22
A-24. Perform IFR operations A-4, 20, and 21	Dual, IMC or hooded without reference to primary attitude or directional indicator	See specific operation. Safely control the aircraft
A-25. Perform missed approach procedures	Dual, IMC or hooded with or without radar assistance while observing published approach minimums	Fly required flight path during missed approach. Apply standards for Operations 19 and 20
<u>B. Environmental Analysis</u>		
B-1. Describe the physiological effects of proper nutrition, physical condition, tobacco, coffee, alcohol, drugs and self-medication	Preflight	By examination - 80%
B-2. Maintain qualifications pertaining to pressure chamber, night vision and physical examination requirements	Preflight	Comply with current requirements
B-3. Demonstrate use of life support systems and initiate appropriate action in case of malfunction	Solo or dual, VMC, IMC, various flight regimes	In accordance with NATOPS.

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ACTION	CONDITION	STANDARD
B-4. Describe the causes of vertigo, disorientation, hypoxia, hyperventilation and aeroembolism	Preflight	By examination - 80%
B-5. Recall symptoms and initiate corrective action: vertigo, disorientation, hypoxia, hyperventilation, and aeroembolism	Solo, dual, VMC, IMC, various flight regimes	In accordance with NATOPS
B-6. Demonstrate knowledge of procedures and judgment	Solo, dual, VMC, or IMC during emergency situations	In compliance with NATOPS.
B-7. Demonstrate proper instrument scan technique	Dual, IMC, or hooded	Correctly interpret aircraft instruments.
B-8. Describe the vision problems associated with: night flying, tobacco, altitude, sunglare, motion, and apparent motion	Dual, VMC, or IMC	By examination - 80%
B-9. Interpret and evaluate meteorological charts and reports	Preflight; with assistance of qualified forecaster	In accordance with NAVOCEANIST 3143.1
B-10. Monitor and evaluate meteorological conditions	Solo or dual, IMC, or VMC	In accordance with NAVOCEANINST 3143.1
B-11. Recall the methods employed in water and land survival situations	Preflight	By examination - 80%
B-12. Describe procedures to employ and identify serviceable survival equipment	Preflight	By examination - 80%
B-13. Demonstrate emergency egress procedures	Preflight	Correctly exit bailout trainer

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ACTION	CONDITION	STANDARD
B-14. Recall the various aerodynamic principles and considerations affecting flight and maneuvering	Preflight	By examination - 80%
C. <u>Navigation</u>		
C-1. Identify rules, procedures, regulations and operational constraints pertaining to instrument flight	Dual, IMC or hooded. Given publications for preflight and in-flight use such as: a. OPNAV and NATOPS instructions b. Local directives c. FLIP documents d. Aircraft performance data	Correctly resolve in-flight problems or recommended deviations using recommended procedures and the correct in-flight chart or publications.
C-2. Measure in-flight aircraft performance and flight data relative to planned action	Dual, IMC or hooded given en route charts and pubs, as well as time, distance, rate and fuel logs	Correctly evaluate course and planning data
C-2.1. Modify flight profile or change destination to safely land at or above planned fuel reserve; destination weather at or above established minima	Same as C-2	Same as C-2
C-3. Verify geographical position throughout departure, en route and terminal phase using correctly identified stations	Dual, IMC, or hooded; given en route charts, departure description; penetration and approach description, without radar assistance. Given holding instructions or requirements to deviate	1) Intercept and track course $\pm 5^\circ$ 2) PT to PT $\pm 2\text{NM}$ accuracy 3) ARC $\pm 1\text{NM}$ specified distance 4) Standards for level-flight, climbs and descents apply

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ACTION	CONDITION	STANDARD
<u>D. Communications</u>		
D-1. Communicate with controlling agency during:	Dual, solo, VMC, IMC, day, night: given assigned mission and preplanned route of flight, in normal and emergency conditions	In compliance with OPNAV, FAA and local directives as well as tactical doctrine so that transmission need not be repeated
a. Ground operation b. Clearance receipt and read back c. Departure d. En route e. Tactical flight f. Terminal phase g. Destination		
D-2. Communicate with embarked crew member:	Dual, IMC, day, night, in normal or emergency conditions	Clearly state transmission so that it need not be repeated
a. Condition of aircraft systems b. Aircraft performance or other pertinent data such as check-lists		
<u>E. Systems Management</u>		
E-1. Recall NATOPS flight procedures and overall NATOPS program	Preflight	Examination - 80% accuracy
E-2. Use NATOPS Inflight Guide and NATOPS checklists during flight	Dual and solo, IMC or VMC	No error
E-3. Activate, operate and secure A/C systems	Dual and solo, IMC or VMC	In accordance with NATOPS
E-4. Know responsibilities and command duties	Dual and solo	In accordance with NATOPS
E-5. Determine maintenance status of A/C from appropriate maintenance forms and determine aircraft's suitability for flight	Preflight	No error
E-6. Complete flight records and reports	Postflight	In accordance with OPNAVINST 3710.7Q

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ACTION	CONDITION	STANDARD
E-7. Record appropriate entries on maintenance forms and records	Utilitze A/C servicing forms, Postflight, Preflight, Dual, and Solo	No error
E-8. Know operation limitations of aircraft systems	IMC or VMC, dual and solo, utilizing flight instruments without instructor assistance	No error; in accordance with NATOPS
E-9. Demonstrate knowledge of operational limitations of the following A/C systems: a. Hydraulic b. Electrical c. Fuel d. Navigation e. Communications	IMC or VMC, dual and solo, utilizing flight instruments without instructor assistance	No error; in accordance with NATOPS
E-10. Know theory and operation of turbojet and turboprop engines	IMC or VMC< dual or solo without instructor assistance, under normal and emergency conditions	In accordance with NATOPS
E-11. Know theory and operation of flight control and trim systems	IMC or VMC, dual or solo	In accordance with NATOPS
E-12. Know radio communications theory	IMC or VMC, dual or solo without assistance	In accordance with NATOPS
E-13. Calculate A/C takeoff, in-flight, and landing performance data	Using NATOPS Flight Manual without assistance	In accordance with NATOPS
E-14. Continually assess A/C systems during operation of A/C	IMC or VMC, on the ground or in-flight, normal and emergency situations, dual and solo	In accordance with NATOPS

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ACTION	CONDITION	STANDARD
E-15. Know proper fuel management techniques	IMC or VMC, dual or solo, without assistance	In accordance with NATOPS
E-16. Confirm system malfunction by cross checking with other indications	IMC or VMC, dual or solo, without assistance	In accordance with NATOPS
E-17. Evaluate impact of degraded system or sub-system on A/C operation and mission capability	IMC or VMC< dual or solo	Determine degraded A/C mission capability.
F. <u>Tactics</u>		
F-1. Rendezvous a. Running b. Circular	Dual, VMC; given two T-34C aircraft	Safely measure magnitude of relative motion; recognize radial acceleration and rate of closure
F-2. Maintain formation integrity	Dual, VMC, turning into and away as straight and level flight path, parade position	Safely demonstrate specified relative bearing and separation parameters with A/C performance
F-3. Change A/C of position abrupt in the flight	Dual, VMC, straight and level; given visual command from flight lead for: cross under, lead change, parade position	Safely control motion aircraft with no movements; specified separation + 10 Ft

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ACTION	CONDITION	STANDARD
<u>G. Officer Development</u>		
G-1. Recall personal responsibilities, of action for:	Give programmed and instructor guidance procedures and course	comply with intent, appropriate directives and guidance
a. Shipment of personal effects		
b. Legal documents, the beneficiary and personal affairs		
c. Leave and shore leave		
d. Financial responsibilities and management		

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MASTER MATERIALS LIST

1. INDIVIDUALLY ISSUED MATERIALS T-34C

<u>TITLE</u>	<u>IDENTIFICATION</u>	<u>DATE</u>	<u>QTY PER STUDENT</u>	<u>COST EACH</u>
1. Flight Support Programmed Instructional Units	CNAT P--			\$0.31
2. Flight Training Instruction	CNAT P--		2	3.00
3. T-34C NATOPS Flight Manual	NAVAIR 01-T-34AAC-1		1	3.50
4. T-34C NATOPS Pocket Checklist	NAVAIR 01-T-34AAC-1B		1	2.00
5. NATOPS General Flight and Operating Instructions	OPNAVINST 3710.7Q		1	2.50
6. Local Directives Standard Operating Procedures			1	1.80
7. Aviator's Flight Log Book	OPNAV 3760/31		1	1.80
8. Aviation Training Jacket 1542/10A	CNATRA-GEN		4	.84
9. Pilot Training Summary	CNATRA 1542/95		1	.005
10. Jacket Review Divider	CNATRA-GEN 1542/66		4	.005
11. Academic Training Summary	CNATRA 1542/97		1	.005
12. Aviation Training Forms				
a. ATF/Familiarization, FAM-1	CNATRA 1542/1725	6-98	1	.03
b. ATF/Familiarization, FAM-2	CNATRA 1542/1726	6-98	1	.03
c. ATF/Familiarization, FAM-3	CNATRA 1542/1727	6-98	1	.03
d. ATF/Familiarization, FAM-4 FAM-12	CNATRA 1542/1728	6-98	1	.03
e. ATF/Basic Instruments, FBI-1S	CNATRA 1542/1729	6-98	1	.03
f. ATF/Precision Aerobatics, FPA-1	CNATRA 1542/1730	6-98	1	.03
g. ATF/Procedures Trainer, PT-1	CNATRA 1542/1720	6-98	1	.03

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<u>TITLE</u>	<u>IDENTIFICATION</u>	<u>DATE</u>	<u>QTY PER STUDENT</u>	<u>COST EACH</u>
h. ATF/Procedures Trainer, PT-2	CNATRA 1542/1721	6-98	1	.03
i. ATF/Procedures Trainer, PT-3	CNATRA 1542/1722	6-98	1	.03
j. ATF/Procedures Trainer, PT-4	CNATRA 1542/1723	6-98	1	.03
k. ATF/Procedures Trainer, PT-5	CNATRA 1542/1724	6-98	1	.03
l. ATF/Night Familiarization,	FNF 1542/1732	6-98	1	
m. ATF/Formation, FORM	FForm 1542/1731	6-98		
13. Flight Crew Checklist			1	2.56

14. Flight Clothing. Identification and quantity listed in CNATRAINST 10126.1C. Cost listed in NAVSUP PUB.4100.

SUPPORTING MATERIALS

<u>TITLE</u>	<u>IDENTIFICATION</u>	<u>QTY PER STATION</u>	<u>COST EACH</u>
1. T-34C Electrical System	Training Panel	2	23,905
2. T-34C Environmental System	Training Panel	2	27,186
3. T-34C Avionics and AOA System	Training Panel	2	29,745
<u>TITLE</u>	<u>IDENTIFICATION</u>	<u>QTY PER STATION</u>	<u>COST EACH</u>
4. T-34C Preflight, Engine Start and Run	Training Panel	2	32,990
5. Computer Control Console	Training Panel	2	30,000
6. Classroom TACAN Demonstrator		6	4,620
7. Navigation/Landing Aid (2B4) Instrument Training		6	5,930
8. T-34C Aircraft Cockpit Familiarization Training (12BK15 Modified)		6	4,160

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AIRCRAFT AND MAJOR TRAINING DEVICES

- | | |
|-------------------------------|-------|
| 1. Aircraft | T-34C |
| 2. Cockpit Procedures Trainer | 2C42 |
| 3. Cockpit Procedures Trainer | 2B37 |

Quantity controlled by Naval Air Warfare Center Training Systems Division (NAVAIRWARCENTRASYS DIV), Training Material Management Division, Inventory Control Branch (Code 5204). Cost listed in NAVAIRWARCENTRASYS DIV Directory of Naval Training Devices Cognizance Symbol 2"0."

COST DATA SOURCES

Flight Planning Publications MO.	DOD Mapping Service, St. Louis, MO.
NATOPS Publication	Navy Tactical Support Activity (NAVTACSUPPACAT WNY), Washington D.C.
OPNAV Forms	NAVSUP #2002
Training Panels	Naval Air Warfare Center Training Systems Division, Orlando, FL