NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS
CIN Q-2C-9298

CNATRAINST 1542.161

CHIEF OF NAVAL AIR TRAINING

INTERMEDIATE TILTROTOR HELICOPTER MPTS CURRICULUM

2009

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

CNATRAINST 1542.161
N714

16 NOV 09

CNATRA INSTRUCTION 1542.161

Subj: INTERMEDIATE TILTROTOR HELICOPTER MULTI-SERVICE PILOT TRAINING SYSTEM

1. Purpose. To publish the curriculum for training student military aviators in the Undergraduate Intermediate Tiltrotor Helicopter phase of training.

2. Cancellation. CNATRAINST 1542.156A CH-1 will cancel when the last student completes the curriculum.

3. Action. This curriculum is effective on receipt. No changes will be made without written authorization by the Chief of Naval Air Training (CNATRA).

4. Forms

a. The Aviation Training Forms required by this directive are computer generated in the Training Integration Management System (TIMS) at Training Air Wing (TRAWING) FIVE. This system has been assigned a system form number of CNATRA 1542/2022. CNATRA point of contact is the current Pipeline Training Officer, CNATRA (N714), DSN 861-3894. An update of these forms shall be accomplished no later than the issuance of this curriculum.

b. The CNATRA-GEN forms are available on the CNATRA website https://www.cnatra.navy.mil/pubs/forms.htm. These forms may be saved to your computer and filled out prior to printing or printed blank. The forms shall not be altered or modified. If changes are desired, a change request shall be submitted to CNATRA. TRAWING specific computer system products are the responsibility of the individual TRAWINGS.

JAMES A. CRABBE
Chief of Staff

LARGE FORMAT (8.5 X 11)
Distribution:
CNATRAINST 5215.1S
List I (D, P, Q)

Copy to:
CNO (N00T)
CMC
NETC
NAVAIRWARCENTRASYSDIV
Orlando
CNATRA (N7)
CNATRA (N73)
CNATRA (N734)
NETSAFA
DLIELC/LEACS
19th AF/DON
COMTRAWING TWO (COOP File)

SMALL FORMAT 5.5 X 8.5
CNATRA Distribution:
CNATRA (N714)(3)
FTSC (3)
TRAWING FIVE (500)

LIST OF EFFECTIVE PAGES

Original 16 November 2009

Total number of pages is 126 consisting of the following:

Page Number	Issue	Page Number	Issue
Letter – 2	0	VII-4	2
3	2	VII-5/(VII-6 blank)	0
4 blank	0	VIII-1 – VIII-3	0
i – ii	0	VIII-4	1
iii/(iv blank)	0	VIII-5 – VIII-8	0
v	2	VIII-9	1
vi blank	0	VIII-10 – VIII-20	0
vii	1	IX-1/(IX-2 blank)	0
viii – xvi	0		
xvii/(xviii blank)	0		
xix – xxii	0		
xxiii/(xxiv blank)	0		
I-1 – I-3	0		
I-4	2		
I-5 – I-18	0		
I-19/(I-20 blank)	0		
II-1 – II-17	0		
II-18	1		
III-1 – III-8	0		
III-9	1		
III-10 – III-15	0		
III-16 – III-17	2		
III-18	0		
III-19	1		
III-20	0		
IV-1	1		
IV-2	0		
IV-3	1		
IV-4	0		
IV-5 - IV-6	1		
V-1/(V-2 blank)	0		
VI-1	0		
VI-2	2		
VI-3	1		
VI-4 blank	0		
VII-1 – VII-3	0		

BLANK PAGE

TABLE OF CONTENTS

PAGE

SUMMARY OF CHANGES.....v
COURSE DATA.....vii
ABBREVIATIONS.....xi
GLOSSARY.....xix

CHAPTER I. GENERAL INSTRUCTIONS

SYLLABUS MANAGEMENT I-1
TRAINING MANAGEMENT I-2
INTERMEDIATE TILTROTOR HELICOPTER COURSE FLOW I-4
UNSATISFACTORY PERFORMANCE I-5
TRAINING REVIEW BOARD I-6
INSTRUCTOR CONTINUITY I-6
BREAK IN TRAINING WARMUP EVENTS (SXX86) I-6
ADDITIONAL FLIGHTS AND SIMULATORS I-8
STUDENT MONITORING STATUS I-8
GROUND TRAINING AND BRIEFING REQUIREMENTS I-9
MISSION GRADING PROCEDURES AND EVALUATION POLICIES ..I-10
MPTS PROGRESS CHECK TRAINING REVIEW PROCESS I-18
SPECIAL INSTRUCTIONS AND RESTRICTIONS I-19

CHAPTER II. GROUND TRAINING

INDOCTRINATION (G01) II-1
HELICOPTER AIRCREW BREATHING DEVICE (G02) II-2
SAFETY (G03) II-3
SYSTEMS 'B' (C01) II-4
HELICOPTER AERODYNAMICS (C02) II-5
PREFLIGHT PROCEDURES 'B' (C03) II-7
CREW RESOURCE MANAGEMENT - CONTACT (C04) II-8
COURSE RULES FLIGHT PROCEDURES (C05) II-9
NATOPS EXAMINATIONS (C06) II-10
TACTICS FLIGHT PROCEDURES (T01) II-11
GLOBAL POSITIONING SYSTEM (G04) II-12
SYSTEMS 'C' (C07) II-13
BASIC INSTRUMENT FLIGHT PROCEDURES (I01) II-14
FORMATION PROCEDURES (F01) II-15
EMERGENCY PROCEDURES (C08) II-16
CREW RESOURCE MANAGEMENT - INSTRUMENT (I02) II-17
NIGHT VISION DEVICE TRAINING (V01) II-18

CHAPTER III. CONTACT TRAINING

MATRICES III-1
STAGE MIF III-1
COCKPIT PROCEDURES TRAINER (C20) III-4
CONTACT 'B' (C40) III-8
CONTACT 'B' (C41) III-11
CONTACT 'B' (C42) III-13
CONTACT SIMULATOR 'C' MODEL TRANSITION (C30) III-16
CONTACT 'C' (C43) III-17
NIGHT CONTACT 'C' (C44) III-19

CHAPTER IV. INSTRUMENT TRAINING

MATRICES IV-1
STAGE MIF IV-1
BASIC INSTRUMENTS (I30) IV-3
EMERGENCY PROCEDURES (I31) IV-5

CHAPTER V. NAVIGATION TRAINING

DOES NOT APPLY V-1

CHAPTER VI. FORMATION TRAINING

MATRICES VI-1
STAGE MIF VI-1
FORMATION (F40) VI-2

CHAPTER VII. TACTICAL TRAINING

MATRICES VII-1
TACTICS STAGE MIF VII-1
NIGHT VISION DEVICE STAGE MIF VII-1
TACTICS (T40) VII-2
NIGHT VISION DEVICE SIMULATOR (V30) VII-4

CHAPTER VIII. COURSE TRAINING STANDARDS

PURPOSE VIII-1
STUDENT DUTIES AND RESPONSIBILITIES VIII-1
GENERAL STANDARDS VIII-1
EXECUTION VIII-2
JOB TASKS VIII-2

GRADED ITEMS VIII-2
COURSE TRAINING STANDARDS VIII-3

CHAPTER IX. MASTER MATERIALS LIST

FLIGHT TRAINING INSTRUCTIONS IX-1
GROUND TRAINING PUBLICATIONS IX-1

BLANK PAGE

SUMMARY OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	CHANGE DESCRIPTION	PAGES AFFECTED/ INITIALS
1	5/05/11	Incorporated	3, v, vii, I-4, II-18, III-9, III-16, III-17, III-19, IV-1, IV-3, IV-5, IV-6, VI-2, VI-3, VII-4, VIII-4, VIII-9
2	9/06/13	Incorporated	3, v, I-4, III-16, III-17, VI-2, VII-4

BLANK PAGE

COURSE DATA

1. Course Title. Intermediate Tiltrotor Helicopter Multi-Service Pilot Training System (MPTS).

2. Course ID Number (CIN). Q-2C-9298.

3. Location. Naval Air Station, Whiting Field, Milton, Florida 32570.

4. Course Status. Active.

5. Course Mission. To teach the skills necessary for flying rotary-wing aircraft and provide helicopter exposure for the qualified student naval aviator in the tiltrotor pipeline.

6. Prerequisite Training. Successful completion of MPTS Primary Curriculum (Q-2A-0108), T-6B JPPT (Q-2A-0217), or USN T6 Joint Primary Pilot Training (Q-2B-0181).

7. Security Clearance Requirements. None.

8. Follow-on Training. Successful completion of Advanced Multi-Engine MPTS Curriculum (Tiltrotor).

9. Course Length. Overall time to train calculated in accordance with CNATRAINST 1550.6E.

Calendar Weeks	Calendar Days	Training Days
10.3	72	46.3

10. Class Capacity. Variable.

11. Instructor Requirements. As established by Chief of Naval Operations (CNO) planning factors.

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

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

14. Quota Control. Chief of Naval Operations.

15. Course Training Subjects

a. Ground Training

TILTROTOR		
Stage	**Symbol**	**Hours**
Indoctrination	G01	8.5
Helicopter Aircrew Breathing Device	G02	4.0
Safety	G03	1.0
Global Positioning System	G04	1.0
Total		**14.5**

b. Flight Support

TILTROTOR		
Stage	**Symbol**	**Hours**
Systems 'B'	C01	9.5
Helicopter Aerodynamics	C02	25.0
Preflight Procedures 'B'	C03	2.0
Crew Resource Management - Contact	C04	1.0
Course Rules Flight Procedures	C05	3.0
NATOPS Examinations	C06	6.0
Tactics Flight Procedures	T01	1.5
Systems 'C'	C07	3.0
Basic Instrument Flight Procedures	I01	1.5
Formation Procedures	F01	3.5
Emergency Procedures	C08	1.5
Crew Resource Management - Instrument	I02	2.0
Night Vision Device Training	V01	8.5
Total		**68.0**

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

TILTROTOR						
	CPT		SIM		TH-57B/C Dual	
Flight Events	**Flts**	**Hrs**	**Flts**	**Hrs**	**Flts**	**Hrs**
Procedures Trainer	5	6.5				
Contact 'B'					10	18.0
Contact 'C'			1	1.3	2	3.0
Night Contact 'C'					2	3.0
Basic Instruments			5	6.5		
Emergency Procedures			2	2.6		
Formation					3	6.0
Tactics					3	4.5
Night Vision Device			1	1.3		
Totals	**5**	**6.5**	**9**	**11.7**	**20**	**34.5**

16. Training Time Analysis

ADDITIONAL TRAINING TIME PER CURRICULUM HOUR/EVENT				
Training Area	**Brief/Preflight/ Taxi**	**Prep Study**	**Taxi/ Debrief**	**Total**
Flight	2.25	2.0	0.5	4.75
Simulator/CPT	0.50	2.0	0.5	3.00

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

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

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

20. Preceding Curriculum Data. This curriculum replaces CNATRAINST 1542.156A Change 1 (Tiltrotor).

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

ABBREVIATIONS

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

ADF	-	Automatic Direction Finder
AERO	-	Aerodynamics
AFCS	-	Automatic Flight Control System
AGL	-	Above Ground Level
AIM	-	Aeronautical Information Manual
AIRMET	-	Airman's Meteorological Information (In-Flight Weather Advisory)
AOB	-	Angle-of-Bank
APU	-	Auxiliary Power Unit
ASI	-	Aviation Student Indoctrination
ASR	-	Airport Surveillance Radar
ATC	-	Air Traffic Control
ATF	-	Aviation Training Form
ATIS	-	Automatic Terminal Information Service
ATJ	-	Aviation Training Jacket
ATS	-	Aviation Training Summary
BAW	-	Basic Air Work
BI	-	Basic Instruments
BIFP	-	Basic Instrument Flight Procedures
CA	-	Class Advisor
CAI	-	Computer-Assisted Instruction
CAL	-	Confined Area Landing
CDO	-	Command Duty Officer
CO	-	Commanding Officer

COMM/NAV - Communications/Navigation

CPT - Cockpit Procedures Trainer

CR - Course Rules

CRM - Crew Resource Management

CTS - Course Training Standard

CTW - Commander, Training Air Wing

DCONFP - Day Contact Flight Procedures

DH - Decision Height

DME - Distance Measuring Equipment

DP - Departure Procedures

ECS - Environmental Control System

ELVA - Emergency Low Visibility Approach

EMFP - Emergency Flight Procedures

EOB - End of Block

EP - Emergency Procedure

ET - Extra Training

FAA - Federal Aviation Administration

FAC - Final Approach Course

FAF - Final Approach Fix

FAR - Federal Aviation Regulation

FIH - Flight Information Handbook

FLIP - Flight Information Publication

FORMFP - Formation Flight Procedures

FP - Full Panel

FPC - Final Progress Check

FPM	-	Feet Per Minute
FSS	-	Flight Service Station
FTI	-	Flight Training Instruction
GCA	-	Ground-Controlled Approach
GPS	-	Global Positioning System
GPSFP	-	Global Positioning System Flight Procedures
HABD	-	Helicopter Aircrew Breathing Device
HIGE	-	Hover In-Ground Effect
HOGE	-	Hover Out-of-Ground Effect
HOSTAC	-	Helicopter Operations from Ships Other Than Aircraft Carriers
HSI	-	Horizontal Situation Indicator
IAF	-	Initial Approach Fix
IAW	-	In Accordance With
ICAO	-	International Civil Aviation Organization
IFM	-	Instrument Flight Manual
IFR	-	Instrument Flight Rules
IIMC	-	Inadvertent IMC
ILS	-	Instrument Landing System
IMC	-	Instrument Meteorological Conditions
IMS	-	International Military Student
INAV	-	Instrument Navigation
IP	-	Instructor Pilot
IPC	-	Initial Progress Check
ITO	-	Instrument Takeoff
JOG	-	Joint Operations Graphic (Chart)

KIAS	-	Knots Indicated Airspeed
KNDZ	-	NAS South Whiting Field
LHD/CV	-	Amphibious Assault Ship (General Purpose)/Multi-Purpose Aircraft Carrier
LLBI	-	Low-level Basic Instrument
LOA	-	Letter of Agreement
LOC	-	Localizer
LSC	-	Level Speed Change
LSE	-	Landing Signalman Enlisted
MAF	-	Maintenance Action Form
MAP	-	Missed Approach Point
MCA	-	Minimum Crossing Altitude
MDA	-	Minimum Descent Altitude
MIF	-	Maneuver Item File
MIL	-	Mediated Interactive Lecture
MOCA	-	Minimum Obstruction Clearance Altitude
MPS	-	Mission Planning System
MPTS	-	Multi-service Pilot Training System
MRA	-	Minimum Reception Altitude
NATOPS	-	Naval Air Training and Operating Procedures Standardization
NAVAID	-	Navigational Aid
NDB	-	Non-Directional Beacon
NG	-	No Grade
NOTAMS	-	Notices to Airmen
NVD	-	Night Vision Device

NVG	-	Night Vision Goggles
ODO	-	Operations Duty Officer
OLF	-	Outlying Field
OLQ	-	Officer-Like Quality
OPNAV	-	Office of the Chief of Naval Operations
OPSO	-	Operations Officer
ORM	-	Operational Risk Management
OSC	-	On-Scene Commander
PAC	-	Pilot-at-Controls
PAN	-	Word to signify urgent condition
PAPI	-	Precision Approach Path Indicator
PAR	-	Precision Approach Radar
PAS	-	Phase Aggregate Score
PMSV	-	Pilot Meteorological Information Service (Pilot-to-Metro Service)
PNAC	-	Pilot Not at the Controls
PP	-	Partial Panel
PT	-	Procedure Turn
RI	-	Radio Instruments
RIFP	-	Radio Instruments Flight Procedures
RNAV	-	Area Navigation System
RON	-	Remain Overnight
RPM	-	Revolutions Per Minute
RRU	-	Ready Room Unsatisfactory
RV	-	Radar Vectors
RWOP	-	Rotary Wing Operating Procedures

SAR - Search and Rescue

SIGMET - Significant Meteorological Information

SLAP - Solar/Lunar Almanac Prediction (software)

SMS - Student Monitoring Status

SNA - Student Naval Aviator

SOP - Standard Operating Procedure

SRT - Standard-rate Turn

SS - Self-Study

SSR - Special Syllabus Requirement

STARS - Standard Terminal Arrivals

SYS - Systems

TACAID - Tactical Aid

TACAN - Tactical Air Navigation

TERF - Terrain Flight

TFP - Tactics Flight Procedures

TIMS - Training Integration Management System

TOT - Turbine Outlet Temperature

TRB - Training Review Board

UNSAT - Unsatisfactory

VASI - Visual Approach Slope Indicator

VFR - Visual Flight Rules

VFRNAV - Visual Flight Rules Navigation

VMC - Visual Meteorological Conditions

VNAVFP - Visual Navigation Flight Procedures

VOR - Very High Frequency (VHF) Omnidirectional Range

VSI - Vertical Speed Indicator

XO - Executive Officer

BLANK PAGE

GLOSSARY

1. Advancing X. Completed event within the normal syllabus flow. Excludes events with last characters in the range 84-89.

2. Aviation Training Form. A grade sheet documenting student performance for all categories of training regardless of media, phase, or stage.

3. Aviation Training Jacket. The ATJ is the student's training record. It contains ATFs, calendar card, grade reports, and all other associated training information. It is filed in Student Control and follows the student through all phases of training.

4. Aviation Training Summary. A tabular sheet listing the MIF and maneuver grades within a training stage.

5. Block of Training. A sequential series of lessons within a training stage sharing an identical MIF. The third character in the lesson designator identifies a block.

6. Check Ride (SXX90). A flight check in any stage of training, which is conducted by a standardization instructor qualified in that stage.

7. Class Advisor. An instructor pilot assigned by Student Control to provide counseling and guidance to a specific student pilot throughout the applicable syllabus.

8. Contact. The stage of training that combines both day and night familiarization.

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

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

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

12. Critical Item. Any maneuver coded with a plus sign (+). This symbol indicates the maneuver is required and must be accomplished to the specified standard in that block of training.

13. Deliverables. A CNATRA 1542/1827 (Rev 4-04) TRB Summary Form, generated by the TRB that summarizes a specific student's progress in a given syllabus and provides detailed information on the application of MPTS training for that student. Deliverables indicate whether the quality and continuity of training provided was IAW CNATRAINST 1542.161 and indicate the degree of influence by "human factors" on the student's performance.

14. End of Block. Last event in block. In order to progress past EOB, the student must meet or exceed MIF on all critical items, and all optional items attempted, by the end of the block. Flight shall consist of a cross-section of critical items; however, all critical items do not have to be accomplished on the last flight in block as long as MIF had been previously met.

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

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

17. Final Progress Check (SXX89). A special check normally given by the Commanding Officer (CO) or Executive Officer (XO). The CO may designate, in writing, FPC duty to a qualified 0-4 or above. This is only done if the CO or XO is unqualified or unavailable to instruct in the required stage. A satisfactory FPC returns the student to normal syllabus flow. An unsatisfactory FPC results in a TRB.

18. Flight Training Instruction. A CNATRA-approved manual describing flight procedures and techniques for each training stage.

19. Hours per X (H/X). The average length for each event in a block, rounded to the nearest tenth of an hour.

20. Initial Progress Check (SXX88). A special check given by the Operations Officer or his representative. A satisfactory IPC returns the student to normal syllabus flow. An unsatisfactory IPC results in an FPC.

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

Char	Meaning	Remarks
1st	Stage	G—Ground C—Contact I—Instrument V—Night Vision Device F—Formation T—Tactical
2nd	Media	0 or 1—Ground Training 2—CPT 3—Simulator 4—Aircraft
3rd	Block	Sequential, indicating block within stage.
4th & 5th	Event/Check Identifier	Sequential, indicating event within block, or other event types as shown below: 84—Adaptation Flight 85—Practice Simulator 86—Warmup 87—Extra Training 88—Initial Progress Check 89—Final Progress Check 90—Check Ride/Exam

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

23. Master Syllabus. Chapters I-VII list all training syllabus activities, prerequisites, and desired training flow for MPTS.

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

25. On-Wing. The student's assigned instructor in the Contact 40 through 42 blocks of training and IAW CNATRAINST 1500.4G.

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

a. Pass - Return to training.

b. Fail - Proceed with the elimination process/eliminate.

27. Phase of Training. A major division in the course of training. MPTS consists of three phases: Primary, Intermediate, and Advanced.

28. Pink ATF. A standard ATF that is printed on pink paper. The pink ATF is used to denote an unsatisfactory event generating a progress check.

29. Progress Check Pilot. An instructor pilot authorized to administer initial or final progress checks.

30. Ready Room Unsatisfactory. An unsatisfactory grade given for inadequate knowledge of flight procedures, systems, discuss items, emergency procedures, deficient preflight planning, or unofficer-like qualities.

31. Special Syllabus Requirement. One-time, ungraded demonstration items.

32. Stage of Training. All training of a particular type (Ground, Contact, Instrument, Navigation, Formation, Tactical) within a phase. The first letter in the lesson designator identifies the stage of each lesson (Example: F4001 is in the Formation stage).

33. Student Monitoring Status. Squadron-initiated status to address substandard student performance.

34. Supplemental ATF. A form inserted into a student's ATJ that contains non-syllabus information. Also referred to as a "writeup" in TIMS.

35. Training Media. MPTS media include aircraft, simulator, CPTs, ground training, and CAI. The second character in the lesson identifier designates the training media.

36. Training Review Board. A fact-finding board appointed to conduct an administrative review of circumstances and procedures relative to a failed FPC.

37. Warmup Event (SXX86). Additional events given to allow a student to regain a level of proficiency previously demonstrated which has diminished due to an extended break in training.

38. Yellow ATF. A standard ATF that is printed on yellow paper. The yellow ATF is used to denote an unsatisfactory event that does not generate a progress check.

BLANK PAGE

Chapter I

General Instructions

1. Syllabus Management

a. Distribution. Participating squadron personnel.

b. Interpretation. The syllabus is directive. Should circumstances create situations not covered within the scope of this syllabus, or specific course of action appears to conflict with other directives, consult CNATRA (N71).

c. Deviations. Document all deviations on the event's ATF.

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

e. Execution. Students will execute all the curriculum events.

f. Syllabus Description. Intermediate Tiltrotor Helicopter MPTS consists of undergraduate helicopter training for USMC students who will go to multi-engine and MV-22 pipeline training. This intermediate phase of training is flown in both the TH-57B and the TH-57C aircraft. This syllabus is divided into stages. Stages are grouped by like-flight training regimes: Contact, Instrument, Formation, Tactical, and Night Vision Device. Each stage is subdivided into training blocks. The training blocks consist of a specified number of flights. Maneuver item files identify the acceptable level of performance that must be achieved at the completion of each training block.

g. Grade Calculation

(1) Phase Aggregate Score (PAS). An NFS's PAS is a comparative ranking based on the previous population of completers for a specific phase or portion of a phase of aviation training. PAS indicates only NFS performance relative to a normative population of other recent NFSs. Under the MPTS system, PAS is not by itself an indication of whether an NFS has met the criteria necessary for winging or continuation in aviation training. PAS is calculated for each block within a curriculum, for the subset of blocks completed by an NFS still in training (Interim PAS), and for the entire phase.

MPTS SNA Calculations. From a population of previous SNAs, an SNA's PAS is calculated using equation (1), below:

$$SNA\_PAS = 50 + 10 * \left(0.9 * \frac{S - M1}{S1} + 0.1 * \frac{M2 - NMU}{S2} \right) \quad (1)$$

Where

S – SNA Score
NMU – SNA NMU
M1 – Squadron Average Score
M2 – Squadron Average Number of Marginals and Unsats (NMU)
S1 – Standard Deviation of Squadron Score
S2 – Standard Deviation of Squadron NMU

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

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

Where

PAS – NFS PAS
MPAS – Squadron Average PAS
SDPAS – Standard Deviation of Squadron PAS

2. Training Management

a. Syllabus Progression. Fly syllabus events within each stage sequentially. Do not start a block without all prerequisites. Students may be in different stages or blocks simultaneously. Where applicable, students will be eligible for, and shall be prepared for, more than one syllabus event. Students must complete all events. Simulator copilot events may be waived by OPSO on a case-by-case basis. Document reasons for waived events on a supplemental ATF. The flowchart on page I-4 delineates the sequence of events. Any block of training may be interrupted to facilitate continued progress during inclement weather or to facilitate cross-country training. System training management is designed to facilitate two graded events (flight, simulator, or exam) per student per day.

b. Accelerated Progression. N/A.

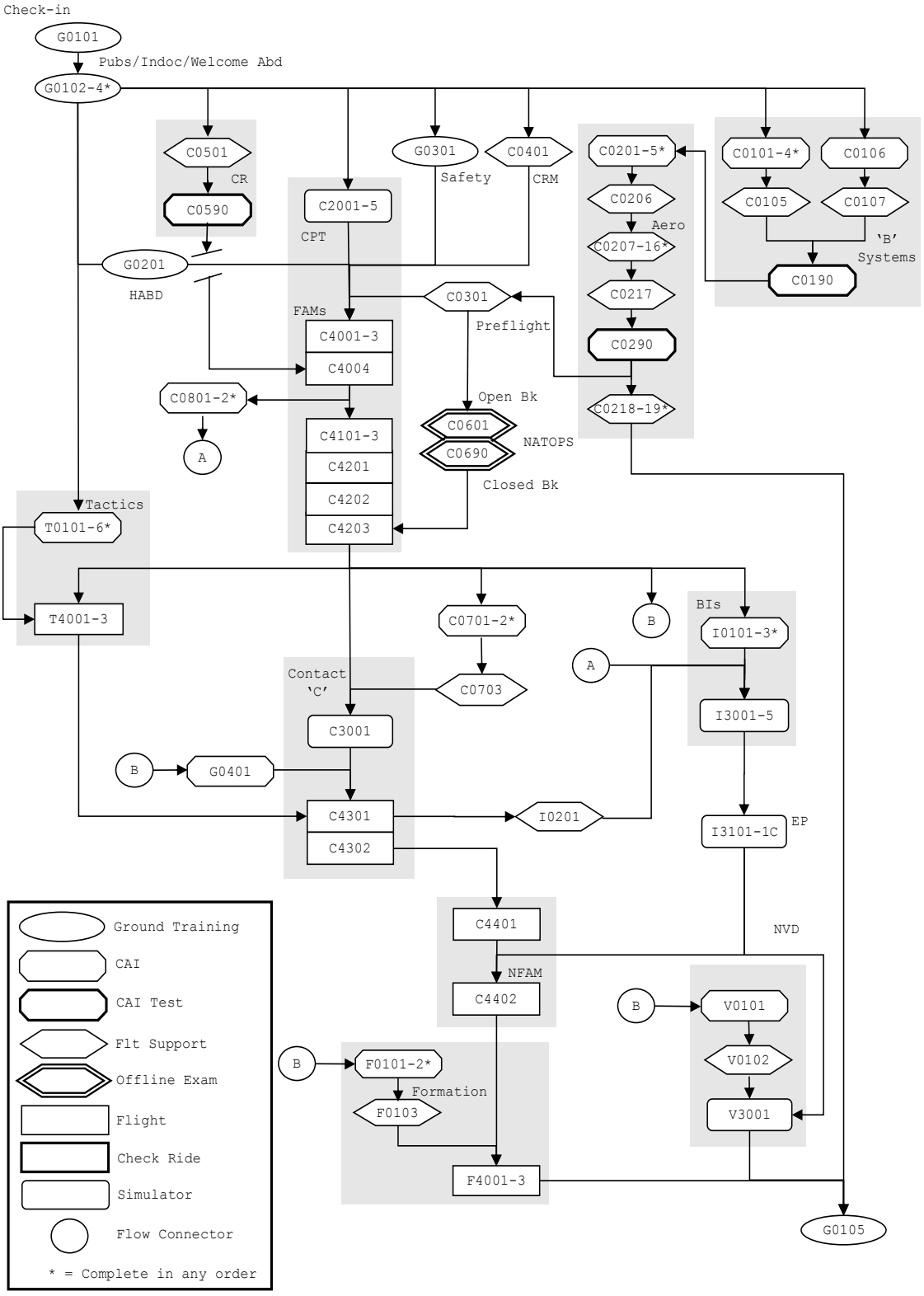
c. Maneuver Continuity. Students must accomplish previously introduced maneuvers frequently enough to ensure maintaining required proficiency.

d. Hours/X. Instructor pilots shall plan and execute missions to meet H/X as closely as practical. If actual event length varies from H/X by more than 0.3 hours, annotate reason(s) in ATF's general comments section. A student's deficiency is not an acceptable reason to exceed H/X by more than 0.3 hours.

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

f. Aviation Training Jacket Reviews. Class Advisors will conduct jacket reviews at least weekly. SMS students require weekly ATJ reviews with Student Control Officer or representative.

INTERMEDIATE TILTROTOR COURSE FLOW



3. Unsatisfactory Performance. (See **Progress Check Training Review Process**, page I-18.)

a. Flight/Simulator

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

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

(3) An unsatisfactory check ride (SXX90), two consecutive unsats, or three cumulative unsats (in the same block) result in an IPC. Document the failed check ride or second consecutive/third (in block) cumulative unsat on a pink ATF for that syllabus event.

(4) A subsequent check ride failure, two further consecutive unsats, or three more cumulative unsats (in block) result in an FPC. Document the subsequent failed check ride, second consecutive/third (in block) cumulative unsat on a pink ATF generating the progress check.

(5) Failing an FPC results in a TRB.

b. Ready Room Unsatisfactory

(1) An RRU on any syllabus event will result in an IPC. Document the RRU on a pink ATF for that event. The event will be marked as incomplete with an unsatisfactory grade in the procedures column. On remediation of unsatisfactory performance, the event will be flown to completion, and general knowledge and emergency procedures will be incorporated into the overall grading solution. A missed brief does not necessarily constitute a "Ready Room Unsat" and will be handled by SNA's squadron. Use a supplemental ATF (writeup) to document a missed brief.

(2) A second or subsequent RRU or failed IPC will result in an FPC. Document the failed IPC on a pink ATF generating the Progress Check.

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

c. Academic. Failing any two exams triggers an IPC or FPC as appropriate. All subsequent exam failures will trigger an FPC. The IPC or FPC shall be completed prior to retake.

d. Remediation. A ground evaluation emphasizing the deficient areas may clear an unsatisfactory check ride or end of block syllabus event caused solely by ground operations.

e. Restrictions. Until remediation of the unsatisfactory:

(1) The student shall not fly solo.

(2) The student shall not accomplish any training except academic classes, examinations, and ground training events, provided the unsatisfactory event was not a prerequisite.

4. Training Review Board. Refer to CNATRAINST 1500.4G.

5. Instructor Continuity. Students shall fly Contact stage events C4001-C4203 with their on-wing. Exceptions:

a. Students shall fly at least one, but not more than two, of the C4102-C4203 events as an off-wing flight.

b. Any Contact 'B' Stan IP may substitute as on-wing in the event the student's on-wing is not available and an on-wing change is not prudent.

6. Break in Training Warmup Events (SXX86). Non-syllabus warmup events compensate for breaks in training. Eligibility is based on the number of days since the last flight or simulator in the same stage. All warmups shall be dual and coded as an SXX86, e.g., C4186. Warmup grades do not satisfy block or MIF requirements and shall not be included in the cumulative totals. For all "break in stage" flights, refer to the chart on page I-7, with the following exceptions. A "break in stage" warmup is not warranted on the following events: C3001, C4301, F4001, I3001, and C4401. If an SNA has not flown any syllabus event by the 14th day, then they rate a mandatory warmup.

a. Warmups Between Stages. Warmup events shall not be given prior to the first flight in stage unless 14 days have elapsed since any syllabus flight or simulator event.

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

c. Additional Warmup Events. The Operations Officer may direct additional warmup aircraft or simulator/CPT events for extended breaks in training. The Commanding Officer shall determine a training plan if the SNA exceeds 30 days out of the cockpit.

CRITERIA FOR AWARDING WARMUP EVENTS IN A STAGE OR BLOCK		
Break* (Days)	**Warmup Events**	**Remarks**
7-13 Sim to A/C	1 Mandatory Simulator	• Mandatory warmup is not an advancing "X."
7-13 All others	1 Optional	• Based on performance. • Required if overall event grade is Below Average, Marginal or Unsatisfactory. • Prohibited if: ► Performance meets MIF/standard. ► Break occurs between stages (see paragraph 6).
14-30 Sim to A/C	2 Mandatory Simulators	• Mandatory warmups are not advancing "X's."
14-30 All others	1 Mandatory 1 Optional	• Mandatory warmup is not an advancing "X." • Optional warmup based on performance. • Required if overall event grade is Below Average, Marginal, or Unsatisfactory.

*Break = (Current Julian Date) – (Julian Date of last event, regardless of stage).

7. Additional Flights and Simulators.

a. Extra Training Events (SXX87). All ETs shall be dual and coded as SXX87, e.g., C4187. ET events include, but are not limited to IPC/FPC ET events. Only award these events to compensate for training inadequacies, e.g., poor event/maneuver continuity, or improper instruction.

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

(2) Preceding an FPC. The Commanding Officer may authorize as many as two ETs prior to an FPC.

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

(4) Document the awarding of IPC/FPC 87 events on supplemental ATFs.

b. Copilot Events. The copilot events shall be documented on separate ATFs that have the event number followed by a "C." For example, the student will fly an I3101 and I3101C, etc. The copilot events shall not count toward the SNA's total number of graded items; however, unsatisfactory performance shall trigger the IPC/FPC process. Copilot events may be waived by the OPSO on a case-by-case basis.

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

8. Student Monitoring Status

a. The objective is to focus supervisory attention on a student's progress in training, specific deficiencies, and/or potential to complete the program. It may also be applied to students who require supervisory attention while trying to resolve personal issues.

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

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

d. An SNA who receives two UNSATs in a block of training, or three UNSATs within a single stage of training, shall be considered "Marginal" and placed on SMS.

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

9. Ground Training and Briefing Requirements

a. Mission Preparation, Briefings, and Debriefings

(1) EOB Events. The IP shall carefully review the ATS in planning the EOB event to ensure the profile includes opportunities to reach MIF on all critical items and optional items attempted in the block.

(2) Preparation. Students shall arrive for each flight with:

(a) Thorough knowledge of:

1. The flight's discuss items, as listed in Chapters III-VII.

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

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

(c) The latest ATS for the stage.

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

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

(b) Specific objectives.

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

(d) Planned profile and contingencies.

(4) Debriefing

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

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

b. Emergency Procedures Briefing and Training

(1) EP training builds the student's confidence in the aircraft. The IP shall conduct emergency procedures training on all dual aircraft events, either on the ground or in the aircraft. Correct procedural deficiencies through additional instruction and study assignments.

(2) Incorporate emergency procedures training into simulator events when practical; however, instructional block objectives take precedence.

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

10. Mission Grading Procedures and Evaluation Policies

a. General Grading and Evaluation Policy. Maneuver Item Files listed in the MPTS are minimum stage/phase completion standards per maneuver.

b. Grading Procedures (Aircraft and Training Devices)

(1) Absolute Maneuver Grading. Use the following grading scale to document the student's characteristic performance on maneuvers attempted during each dual event. This is an absolute grading scale. Judge the student's proficiency **only** against the item's course training standard.

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

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

2. For solo flights, where an IP cannot observe individual graded items.

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

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

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

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

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

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

(a) Pass

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

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

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

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

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

(a) EOB. Performance must meet MIF by EOB. If the student has previously met MIF in the block, he must still meet MIF on all attempted maneuvers in the EOB flight.

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

1. C41 MIF requires an F/3 for Hover. C42 MIF requires a G/4.

2. The student must meet or exceed F/3 to progress out of C41.

3. The student must maintain or exceed F/3 until the last C42 event, by which time the student must attain G/4.

(c) Exception. Students shall maintain or exceed MIF performance from one block to the next within stage or between media within stage. The exception is when MIF on a subsequent block is below the preceding block MIF. In this case, the lower MIF applies.

(4) Regression Rules. Regression rules allow for uneven progress through training. Regression rules do not apply to the first simulator or flight block in each stage. The following specifies allowable regression.

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

1. The student has previously demonstrated G/4 proficiency when a G/4 was required on previous block MIF,

2. The maneuver was not a check ride/safe-for-solo critical (+) item,

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

(b) The IP must award an overall unsatisfactory if:

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

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

3. There was regression on more than two items during an event.

(5) Maneuver Requirements. For each block:

(a) Mandatory Items. Items with a number and a plus (+) are mandatory and the student must meet the required proficiency by EOB. When a maneuver is performed multiple times in a block of training, the last grade assigned for the maneuver will determine if the student meets EOB MIF.

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

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

1. Unnumbered items.

2. Items not in the stage.

3. Exceptions:

a. Weather-driven instrument approaches.

b. Prebriefed maneuvers for IP proficiency.

(6) Incomplete Events. If a student has had ample opportunity to learn a task and subsequently flies a short event, do not incomplete the event solely to provide unwarranted extra training.

(a) Assessment. Assess the event complete if:

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

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

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

4. Otherwise, assess the event incomplete.

(b) Completion Events

1. A single flight can complete a previous event and count as an advancing X.

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

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

c. Policies for Evaluation Flights and Ground Evaluations

(1) Authorized Evaluators. The squadron commander will designate check pilots for each stage.

(2) Progress Check Procedures

(a) The Progress Check Pilot shall consider the student's proficiency, judgment, situational awareness, and overall ability to maneuver the aircraft safely and confidently. The student must also demonstrate the potential to successfully complete MPTS and advanced training. Progress checks shall be full mission profiles emphasizing the student's weak areas and a representative cross section of area and pattern maneuvers. All critical items do not need to be accomplished. Document failed progress checks on the respective pink ATF for the failed event generating the progress check. A student's first flight progress check (in the advanced phase) is an IPC (SXX88) event. Any subsequent progress check is an FPC (SXX89).

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

1. Criteria for an IPC are:

a. Failed check ride (SXX90).

b. Two consecutive or three unsatisfactory events in a block, not including ET (SXX87) or warmup (SXX86) events.

c. A single Ready-Room Unsatisfactory (RRU) event.

d. Failing two exams.

2. Operations Officer or above may direct an IPC when the student's:

a. Potential to complete MPTS is in doubt. (See paragraph 8e, failure to meet specific goals of SMS.)

b. Officer-like qualities are inadequate.

3. Outcomes are:

a. Passing returns the student to normal syllabus flow.

b. Failing results in an FPC.

4. IPC IPs. The Operations Officer or his representative designated in writing, usually a STAN pilot, will administer the IPC. Neither the student's on-wing nor the IP that generated the UNSAT grade resulting in the IPC shall administer the IPC. A qualified IPC IP shall monitor an IPC conducted in a simulator. The Squadron IPC IP is required to make a "return to training" or "continue the elimination process" recommendation to the Squadron CO.

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

1. Criteria for FPC:

a. Following a failed IPC.

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

2. Commanding Officer-directed FPC when the student's potential to complete MPTS is in doubt. (See paragraph 8e, failure to meet specific goals of SMS.)

3. Outcomes are:

a. Passing returns the student to normal syllabus flow.

b. Failing results in a TRB.

4. FPC IPs. The CO, XO, or a CO-designated representative administers the FPC. It is the intent of CNATRA that, wherever possible, the CO, or in his absence, the XO, shall conduct FPCs. In the event that neither the CO nor XO is qualified or available to instruct in the required stage, the CO

may designate, in writing, a senior officer (0-4 or above) to conduct the FPC by direction. Neither the student's on-wing nor the IP that generated the UNSAT grade resulting in the FPC shall administer the FPC. A qualified FPC IP shall monitor an FPC conducted in the simulator. The FPC IP is responsible for the elimination/retention decision to the COMTRAWING.

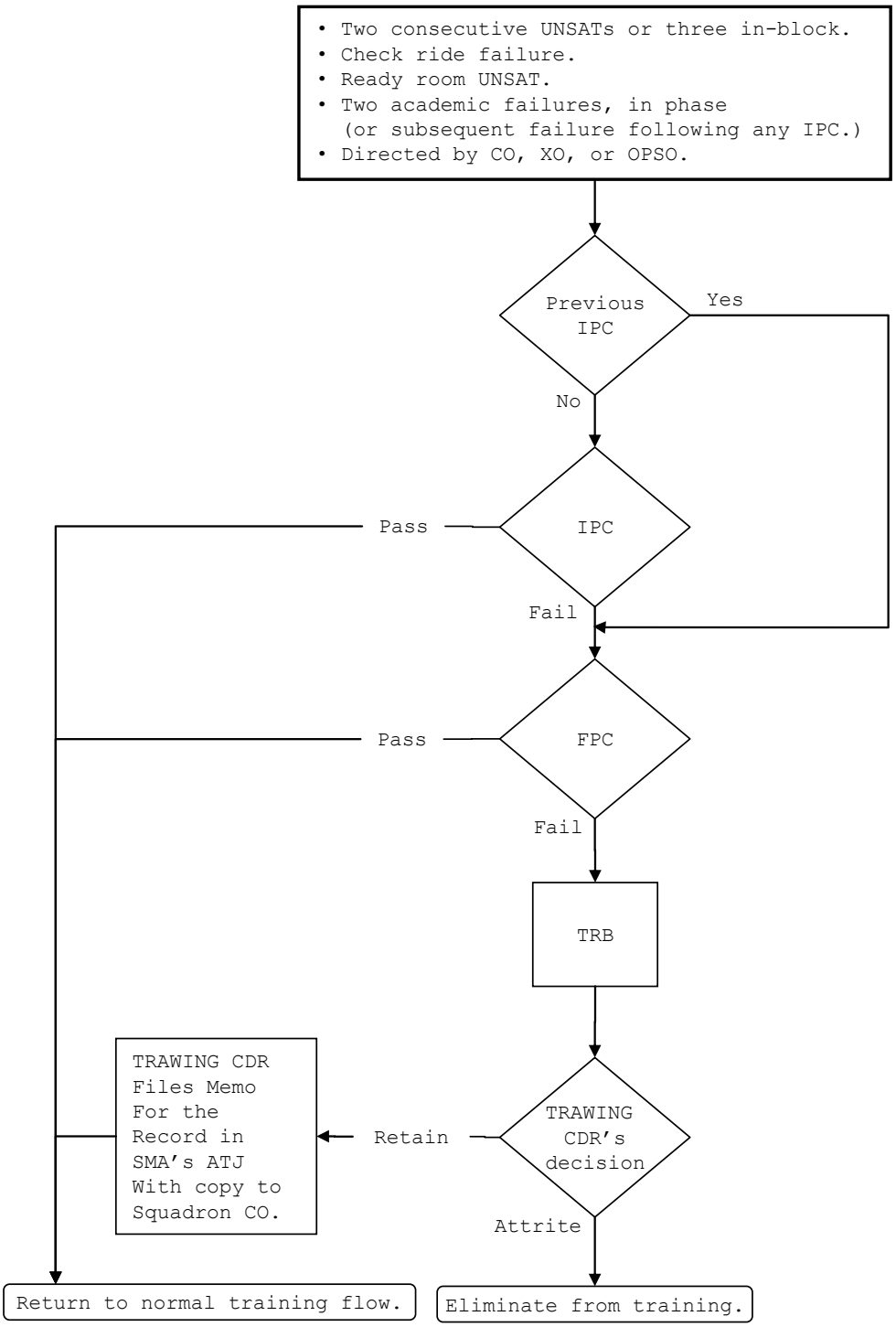
d. Progress Check Counseling

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

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

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

MPTS PROGRESS CHECK TRAINING REVIEW PROCESS



11. Special Instructions and Restrictions

a. Flight Hour/Event Requirements and Restrictions

(1) Programmed Hours and Events. Syllabus-programmed flight hours are listed on page ix. Event lengths, SXX86, 87, 88, and 89 events will cause variation. Accomplish all syllabus events.

(2) Minimum Night Hours. 3.0 hours.

(3) Minimum Solo Hours. N/A.

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

(5) Minimum Student Turn-Times. One hour is required between debriefing of a dual event and the brief for a follow-on dual event or simulator event. However, the instructor shall ensure adequate debrief and brief time is allocated. Minimum turn-time does not apply to flights that are allowed to be double-scheduled or where SNAs are scheduled as pilot and copilot.

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

(7) Crew Rest. The period from the end of one crew day until the start of the next shall be no less than 12 hours for students. After six consecutive scheduled days, students shall receive one day off. Students shall not be scheduled for a graded event within 12 hours after debrief.

b. Solo Restrictions. N/A.

c. Aircraft/Simulator Interchangeability. Simulator events may be substituted in the aircraft when the simulator is unavailable for extended periods of time.

BLANK PAGE

Chapter II

Ground Training

Block	Media	Title	Events	Hrs	Category
G01	Sqdn/ Issue	Indoctrination	5	8.5	ASI

1. Events

G0101	Sqdn	Check-In	2.0
G0102	Issue	Training Publications Issue	0.5
G0103	Sqdn	Curriculum Indoctrination and Flight Leader's Brief	2.0
G0104	Sqdn	Welcome Aboard	3.0
G0105	Sqdn	Checkout	1.0

2. Syllabus Notes

   a. Complete G0101 prior to G0102-4.

   b. Complete G0102-4 in any order.

   c. Complete all events prior to G0105.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
G02	Lect/ Pool	Helicopter Aircrew Breathing Device	1	4.0	ASI

1. Events

G0201	Lect/ Pool	HABD Training	4.0

2. Syllabus Notes

a. Conducted at NAS Pensacola, Aviation Water Survival, BLDG 3944.

b. Complete G0102-4 prior to this event.

c. Complete prior to ANY flight in a helicopter.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
G03	MIL	Safety	1	1.0	ASI

1. Events

G0301	MIL	Aviation Safety	1.0

2. Syllabus Note. Complete G0102-4 prior to this event.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
C01	CAI/MIL/ Test	Systems 'B'	8	9.5	SYS

1. Events

C0101	CAI	Power Plant	0.5
C0102	CAI	Fuel Supply System	0.5
C0103	CAI	Transmission and Drive Train	0.5
C0104	CAI	Rotor and Flight Control Systems	0.5
C0105	MIL	Allison 250 Turboshaft Engine Fuel Supply System Power Train System	3.0
C0106	CAI	Hydraulic System	0.5
C0107	MIL	Rotor System Hydraulic System 'B' Electrical System	3.0
C0190	CAI Test	Systems Exam	1.0

2. Syllabus Notes

a. Complete G0102-4 prior to C0101-4 and C0106.

b. Complete C0101-4 in any order prior to C0105.

c. Complete C0106 prior to C0107.

d. Complete C0105 and C0107 prior to C0190.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
C02	CAI/MIL/ Test	Helicopter Aerodynamics	20	25.0	AERO

1. Events

C0201	CAI	The Atmosphere	1.0
C0202	CAI	Rotor Blade Aerodynamics	1.0
C0203	CAI	Powered Flight Analysis	1.0
C0204	CAI	Autorotation	1.0
C0205	CAI	Flight Phenomena	1.0
C0206	MIL	Atmospherics/Overview	1.5
C0207	MIL	Aerodynamic Theories	1.0
C0208	MIL	Rotor System Dynamics	1.0
C0209	MIL	Rotor System Design	0.5
C0210	MIL	Tail Rotor Design and Performance	1.0
C0211	MIL	Stability and Control	1.5
C0212	MIL	Power and Performance	1.5
C0213	MIL	Hovering Flight	1.0
C0214	MIL	Forward and Climbing Flight	1.5
C0215	MIL	Descending Flight and Autorotations	1.5
C0216	MIL	Hazards	2.0
C0217	MIL	Aerodynamics Review	2.0
C0290	CAI Test	Aerodynamics Exam	1.0
C0218	MIL	Special Mission Considerations I	2.0
C0219	MIL	Special Mission Considerations II	1.0

2. Syllabus Notes

a. Complete C0190 prior to this block.

b. Complete C0201-5 in any order prior to C0206.

c. Complete C0206 prior to C0207-16; C0207-16 can be done in any order prior to C0217.

d. Complete C0217 prior to C0290.

e. Complete C0290 prior to C0218-19; C0218-19 can be done in any order.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
C03	MIL	Preflight Procedures 'B'	1	2.0	DCONFP

1. Events

C0301	MIL	Preflight and Cockpit Procedures 'B'	2.0

2. Syllabus Note. Complete C0290 prior to this event.

3. Discuss Items. Weight and balance computation, aircraft issue, MAFs, aircraft interior/exterior inspection and emergency egress procedures, FTI/NATOPS manual use (verify changes posted), local operations, flight schedule, safety/ standardization programs, fuel requirements, performance charts, go/no-go criteria, training time out policy, personal and emergency equipment, egress procedures, carbon lock/frozen turbine, NOTAMs, weather briefing.

Block	Media	Title	Events	Hrs	Category
C04	MIL	Crew Resource Management – Contact	1	1.0	CRM

1. Events

C0401	MIL	Crew Resource Management	1.0

2. Syllabus Note. Complete G0102-4 prior to this event.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
C05	MIL/ Test	Course Rules Flight Procedures	2	3.0	CR

1. Events

C0501	MIL	Course Rules Flight Procedures	2.0
C0590	CAI Test	Course Rules Exam	1.0

2. Syllabus Notes

a. Complete G0102-4 prior to C0501.

b. Complete C0501 prior to C0590.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
C06	Exam	NATOPS Examinations	2	6.0	NATOPS

1. Events

C0601	P/P Exam	NATOPS Open-Book Exam	3.0
C0690	P/P Exam	NATOPS Closed-Book Exam	3.0

2. Syllabus Notes

a. Complete C0301 prior to C0601.

b. Obtain C0601 from squadron NATOPS office and complete in five working days prior to C0690.

c. Take C0690 in squadron spaces prior to C4203.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
T01	CAI	Tactics Flight Procedures	6	1.5	See Below

1. Events

T0101	CAI	Site 8 Course Rules	0.25	CR
T0102	CAI	Santa Rosa Course Rules	0.25	CR
T0103	CAI	Harold Course Rules	0.25	CR
T0104	CAI	Duke Night Course Rules	0.25	CR
T0105	CAI	Confined Area Landing (CAL) and External Load Operations	0.25	TFP
T0106	CAI	Tactical Maneuvers	0.25	TFP

2. Syllabus Notes

   a. Complete G0102-4 prior to T0101-6.

   b. Complete T0101-6 in any order.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
G04	CAI	Global Positioning System	1	1.0	GPSFP

1. Events

G0401	CAI	Global Positioning System	1.0

2. Syllabus Note. Complete C4203 prior to G0401.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
C07	CAI/MIL	Systems 'C'	3	3.0	SYS

1. Events

C0701	CAI	TH-57C Electrical System	0.5
C0702	CAI	TH-57C Ministab System	0.5
C0703	MIL	TH-57C Helicopter Systems TH-57C Electrical System TH-57C Ministab System TH-57C Avionics	2.0

2. Syllabus Notes

   a. Complete C4203 prior to C0701-2.

   b. Complete C0701-2 in any order prior to C0703.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
I01	CAI	Basic Instrument Flight Procedures	3	1.5	BIFP

1. Events

I0101	CAI	Departure and Arrival Procedures	0.5
I0102	CAI	Basic Instrument Flight Maneuvers	0.5
I0103	CAI	Advanced Instrument Flight Procedures	0.5

2. Syllabus Notes

   a. Complete C4203 prior to this block.

   b. Complete I0101-3 in any order.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
F01	CAI/MIL	Formation Procedures	3	3.5	FORMFP

1. Events

F0101	CAI	Formation Flying	0.5
F0102	CAI	NATOPS and Mission Brief	0.5
F0103	MIL	Formation	2.5

2. Syllabus Notes

a. Complete C4203 prior to F0101 and F0102.

b. Complete F0101-2 in any order prior to F0103.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
C08	CAI	Emergency Procedures	2	1.5	EMFP

1. Events

C0801	CAI	In-Flight Emergencies	0.75
C0802	CAI	Tail Rotor Emergencies	0.75

2. Syllabus Notes

   a. Complete C4004 prior to these events.

   b. Complete C0801-2 in any order.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
I02	MIL	Crew Resource Management – Instrument	1	2.0	CRM

1. Events

I0201	MIL	Crew Resource Management	2.0

2. Syllabus Note. Complete C4301 prior to this event.

3. Discuss Items. None.

Block	Media	Title	Events	Hrs	Category
V01	CAI/Lab	Night Vision Device Training	2	8.5	NVD

1. Events

V0101	CAI	Night Vision Device Training	0.5
V0102	LAB	Night Vision Device Training	8.0

2. Syllabus Notes

a. Complete C4203 prior to V0101.

b. Complete V0101 prior to V0102.

c. SNAs shall bring their NVG modified helmet, one set of NVGs, and their NATOPS jacket to the NVD lab.

d. NVGs will be checked out from the paraloft.

3. Discuss Items. None.

Chapter III

Contact Training

1. Matrices. The following matrix is an overview of the entire Contact Stage. The purpose of this matrix is to provide the SNA and IP the easiest way to track progress, regression, and overall status in relation to the MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Stage MIF

Simulator Event

CONTACT STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**C2005**	**C4004**	**C4103**	**C4203**	**C3001**	**C4302**	**C4402**
1	General Knowledge/Procedures	3+	3+	4+	4+	4+	4+	4+
2	Emergency Procedures/System Failures		2+	3+	4+	4+	4+	4+
2	Contact Stage Checklists	3+						
2	RPM Beep Control	3+						
2	Normal Start Procedures	3+						
2	Abnormal Starts	3+						
2	Anti-Ice Operation	3+						
2	Postshutdown Fire/Internal	3+						
2	Emergency Engine Shutdown	3+						
2	Engine Oil System	3+						
2	Transmission Oil System	3+						
2	Tac/Gen Malfunction	3+						
2	TOT Malfunction	3+						
2	Overtorque/Overtemp/Overspeed	3+						
2	Torque Malfunction	3+						
2	Smoke and Fume Elimination	3+						

MIF continued on next page.

CONTACT STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**C2005**	**C4004**	**C4103**	**C4203**	**C3001**	**C4302**	**C4402**
2	Suspected Fuel Leakage	3+						
2	Generator/Electrical	3+						
2	Hydraulic System	3+						
2	Chip Lights	3+						
2	Fuel System Malfunctions	3+						
2	Engine Fire in Flight	3+						
2	Battery System Malfunctions	3+						
2	Normal Shutdown Procedures	3+						
2	Engine Overspeed	3+						
2	Engine Underspeed	3+						
2	Compressor Stall	3+						
2	Engine Failure	3+						
2	Engine Restart	3+						
2	Electrical Fire	3+						
2	Main Drive Shaft Failure	3+						
3	Headwork/Situational Awareness	2+	2+	3+	4+	4+	4+	4+
4	Basic Air Work		3+	3+	4+		4+	3+
6	Ground Operations		3+	3+	4+		4+	3+
6	Preflight Inspection						4+	
7	CRM	3+	3	3+	4+	4+	3+	3+
8	Cockpit Management	3+	3	3+	4+		3+	3
8	COMM/NAV Checklist					3+	4+	
9	Blindfold Cockpit Check	3+				3+		
10	Radio Procedures	3+	3+	3+	4+	3+	4+	4+
11	Vertical Takeoff		3+	3+	4+			
13	No-Hover Takeoff				3+			
15	Transition to Forward Flight		3+	3+	4+		4+	4+

MIF continued on next page.

CONTACT STAGE MANEUVER ITEM FILE								
CTS REF	**MANEUVER**	**C2005**	**C4004**	**C4103**	**C4203**	**C3001**	**C4302**	**C4402**
17	Course Rules		3+	3+	4+		4+	3+
18	Hover		3+	3+	4+			
19	Turn on the Spot/Clearing Turn		3+	3+	4+			
20	Low Work						4+	3+
22	Hover Taxi		3+	3+	4+			
23	Max Load Takeoff		2	2+	3+		3+	
26	Normal Approach		2+	3+	4+		4+	3+
26 30	Normal Approach/Stab-off Flight						3+	
27	Steep Approach				2		3+	3+
28	Hydraulic Boost Off Approach			3+	4+		3+	
29	No-Hover Landing		2	2+	3+		3+	3+
31	Waveoff (Power On)		2	3+	4+		4+	4
32	Power Recovery Autorotations		2	3+	3+		3+	3+
34	Square Patterns		3+					
35	Simulated Engine Failure at Altitude		2+	3+	4+		4+	
36	Simulated Engine Failure in a Hover		2+	3+	4+		4+	
37	Simulated Engine Failure in a Hover Taxi		2+	3+	4+		4+	
38	Quick Stop From a Hover		2	3+	4+			
40	LSC/Contact		4+					
43	Turn Pattern/Contact		4+				4	
59	Vertical Landing		3+	3+	4+			
	Special Syllabus Requirements	1	1	1	1			

Block	Media	Title	Events	Hrs	H/X
C20	2C67	Cockpit Procedures Trainer	5	6.5	1.3

1. Prerequisites

a. G0102 (Training Publications Issue).

b. G0103 (Curriculum Indoctrination and Flight Leader's Brief).

c. G0104 (Welcome Aboard).

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

C2001
Contact stage checklists and voice reports, RPM beep control, normal start procedures, abnormal starts, anti-ice operation, postshutdown fire/internal.

C2002
Blindfold cockpit check, Contact stage checklists and voice reports, normal start procedures, abnormal starts, emergency engine shutdown, anti-ice operation, engine oil system malfunctions, transmission oil system malfunctions, imminent transmission failure, tach/gen malfunction, TOT malfunction, overtorque/overtemp/overspeed, torque malfunction, smoke and fume elimination, suspected fuel leakage, postshutdown fire/internal.

C2003
Contact stage checklists and voice reports, normal start procedures, abnormal starts, engine oil system malfunctions, transmission oil system malfunctions, tach/gen malfunction, TOT malfunction, overtorque/overtemp/overspeed, torque malfunction, generator/electrical malfunctions, hydraulic system malfunctions, chip lights, fuel system malfunctions, engine fire in flight, battery system malfunctions, normal shutdown procedures.

C2004
Contact stage checklists and voice reports, normal start procedures, abnormal starts, generator/electrical malfunctions, hydraulic system malfunctions, chip lights, engine overspeed, engine underspeed, compressor stall, engine failure, engine restart, electrical fire, main drive shaft failure, postshutdown fire/internal.

C2005
Contact stage checklists and voice reports, normal start procedures, abnormal starts, engine overspeed, engine underspeed, compressor stall, engine failure, engine restart, engine fire, electrical fire, smoke and fume elimination, suspected fuel leakage, main drive shaft failure, fuel system malfunctions, postshutdown fire/internal.

3. Special Syllabus Requirements

C2001
Location, function, and operation of cockpit gauges, radios, switches, and engine/rotor controls. Demonstrate CPT console operation.

4. Discuss Items

C2001
Student responsibilities for block C20; 2C67 scheduling; curriculum introduction and general information; use of limits; starter limits; use of checklists/voice reports; location, function, and operation of cockpit gauges, radios, switches, and engine/rotor controls; APU start; RPM beep control; abnormal starts; postshutdown fire (internal); CRM (aircraft start and shutdown, flight control check, ground emergencies).

C2002
Limitations, cold weather limitations, power source for cockpit gauges, single instrument indications, in-flight emergencies and procedures, CRM (in-flight emergencies).

C2003
Caution system, hydraulic system, PAN/Mayday reports, autorotation into the trees.

C2004
Main drive shaft failure, engine restart in flight, vibration identification, mast bumping, ditching.

C2005
Dynamic rollover, rotor blade stall, vortex ring state, power required exceeds power available, sprag clutch malfunctions.

5. Block MIF

CTS REF	MANEUVER	C2005
1	General Knowledge/Procedures	3+
2	Contact Stage Checklists	3+
2	RPM Beep Control	3+
2	Normal Start Procedures	3+
2	Abnormal Starts	3+
2	Anti-Ice Operation	3+
2	Postshutdown Fire/Internal	3+
2	Emergency Engine Shutdown	3+
2	Engine Oil System	3+
2	Transmission Oil System	3+
2	Tac/Gen Malfunction	3+
2	TOT Malfunction	3+
2	Overtorque/Overtemp/Overspeed	3+
2	Torque Malfunction	3+
2	Smoke and Fume Elimination	3+
2	Suspected Fuel Leakage	3+
2	Generator/Electrical	3+
2	Hydraulic System	3+
2	Chip Lights	3+
2	Fuel System Malfunctions	3+
2	Engine Fire in Flight	3+
2	Battery System Malfunctions	3+

MIF continued on next page.

CTS REF	MANEUVER	C2005
2	Normal Shutdown Procedures	3+
2	Engine Overspeed	3+
2	Engine Underspeed	3+
2	Compressor Stall	3+
2	Engine Failure	3+
2	Engine Restart	3+
2	Electrical Fire	3+
2	Main Drive Shaft Failure	3+
3	Headwork/Situational Awareness	2+
7	CRM	3+
8	Cockpit Management	3+
9	Blindfold Cockpit Check	3+
10	Radio Procedures	3+
	Special Syllabus Requirements	1

Block	Media	Title	Events	Hrs	H/X
C40	TH-57B	Contact 'B'	4	6.0	1.5

1. Prerequisites

a. C2005.

b. G0201 (HABD).

c. G0301 (Aviation Safety).

d. C0301 (Preflight and Cockpit Procedures 'B').

e. C0401 (CRM).

f. C0590 (Course Rules Exam) must be completed prior to C4004.

2. Syllabus Notes

a. This block should concentrate on BAW, low work maneuvers, landing patterns, and checklist management.

b. All C40 flights will be flown with on-wing pilot.

c. C40XX block does not factor into PAS.

3. Special Syllabus Requirements

C4001

a. Egress drill shall be conducted.

b. 5-foot hover trainer shall be utilized.

4. Discuss Items

C4001
Student responsibilities, ORM checklist, CRM, NATOPS brief, passing flight controls, takeoff, landing, hover, hover taxi, flight line operations, taxi signals, course rules, local training area, OPNAVINST 3710.7U, NATOPS, TW-5 SOP (RWOP), squadron SOP, aircraft discrepancy book, VFR integrated scan, ground effect, entering and exiting the rotor arc, trim techniques.

C4002
Flight control system, jammed flight controls, abort start for abnormal starts (hot start, hung start, igniter failure), engine fire (external), emergency shutdown, postshutdown fire (internal), dynamic rollover, CRM, decision making, special VFR course rules.

C4003
Electrical system, generator failure, DC load meter and voltmeter, overheated battery, electrical fire, smoke and fume elimination, fuselage fire, blowback, trim techniques, CRM, assertiveness.

C4004
Landing criteria for emergencies, definitions, aircraft limitations (NATOPS chapter 4), caution system and associated responses, single instrument indications, autorotation into the trees, blade element diagram, autorotative aerodynamics.

5. Block MIF

CTS REF	MANEUVER	C4004
1	General Knowledge/Procedures	3+
2	Emergency Procedures/System Failures	2+
3	Headwork/Situational Awareness	2+
4	Basic Air Work	3+

MIF continued on next page.

CTS REF	MANEUVER	C4004
6	Ground Operations	3+
7	CRM	3
8	Cockpit Management	3
10	Radio Procedures	3+
11	Vertical Takeoff	3+
15	Transition to Forward Flight	3+
17	Course Rules	3+
18	Hover	3+
19	Turn on the Spot/Clearing Turn	3+
22	Hover Taxi	3+
23	Max Load Takeoff	2
26	Normal Approach	2+
29	No-Hover Landing	2
31	Waveoff (Power On)	2
32	Power Recovery Autorotations	2
34	Square Patterns	3+
35	Simulated Engine Failure at Altitude	2+
36	Simulated Engine Failure in a Hover	2+
37	Simulated Engine Failure in a Hover Taxi	2+
38	Quick Stop From a Hover	2
40	LSC/Contact	4+
43	Turn Pattern/Contact	4+
59	Vertical Landing	3+
	Special Syllabus Requirements	1

Block	Media	Title	Events	Hrs	H/X
C41	TH-57B	Contact 'B'	3	6.0	2.0

1. Prerequisite. C4004.

2. Syllabus Notes

a. The purpose of this block is to continue BAW while introducing additional basic maneuvers, emergency procedures, and autorotation skills.

b. Emphasize CRM during all flights, especially during simulated emergency procedures.

c. SNA shall fly off-wing for at least one, but no more than two flights between C4102-C4203.

3. Special Syllabus Requirements

C4102
Demonstrate maximum glide autorotation.

C4103
Demonstrate simulated engine failure on takeoff.

4. Discuss Items

C4101
Engine system, engine failures (NATOPS, FTI), engine restart in flight, engine chip clearing procedures, compressor stall, rotor droop, CRM, communications, mission analysis.

C4102
Hydraulic system, hydraulic system failure, hydraulic power system malfunction, mast bumping, CRM, situational awareness.

C4103
Transmission system, sprag clutch slippage, sprag clutch seizure, main drive shaft failure, imminent transmission failure, overtorque, icing, ground vortex, simulated engine failure on takeoff, CRM, adaptability/flexibility.

5. Block MIF

CTS REF	MANEUVER	C4103
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	3+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	3+
6	Ground Operations	3+
7	CRM	3+
8	Cockpit Management	3+
10	Radio Procedures	3+
11	Vertical Takeoff	3+
15	Transition to Forward Flight	3+
17	Course Rules	3+
18	Hover	3+
19	Turn on the Spot/Clearing Turn	3+
22	Hover Taxi	3+
23	Max Load Takeoff	2+
26	Normal Approach	3+
28	Hydraulic Boost Off Approach	3+
29	No-Hover Landing	2+
31	Waveoff (Power On)	3+
32	Power Recovery Autorotations	3+
35	Simulated Engine Failure at Altitude	3+
36	Simulated Engine Failure in a Hover	3+
37	Simulated Engine Failure in a Hover Taxi	3+
38	Quick Stop From a Hover	3+
59	Vertical Landing	3+
	Special Syllabus Requirements	1

Block	Media	Title	Events	Hrs	H/X
C42	TH-57B	Contact 'B'	3	6.0	2.0

1. Prerequisites

a. C4103.

b. C0690 (NATOPS Closed Book Exam) prior to C4203.

2. Syllabus Notes

a. The purpose of this block is to continue developing air work skills during basic maneuvers, emergency procedures, and autorotations.

b. Emphasize CRM during all flights, especially during simulated emergency procedures.

c. SNA shall fly off-wing for at least one, but no more than two flights between C4102-C4203.

d. C4203 shall be flown with a Contact Standardization Instructor.

3. Special Syllabus Requirements

C4201
Demonstrate full autorotation.

4. Discuss Items

C4201
Fuel system, fuel boost pump failure, airframe fuel filter, fuel contamination, fuel control failure, suspected fuel leakage, engine fire in flight, engine overspeed (N_f), rotor RPM (N_r), underspeeding N_f/N_r, CRM, leadership.

C4202
Performance data from NATOPS, $P_r>P_a$, mechanical versus virtual axis, dissymmetry of lift, and blowback.

C4203
Vortex ring state, control feedback, any previously briefed emergency procedure or aircraft limitation, RWOP/SOP, retreating blade stall, vibrations, and rotor RPM droop.

5. Block MIF

CTS REF	MANEUVER	C4203
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
6	Ground Operations	4+
7	CRM	4+
8	Cockpit Management	4+
10	Radio Procedures	4+
11	Vertical Takeoff	4+
13	No Hover Takeoff	3+
15	Transition to Forward Flight	4+
17	Course Rules	4+
18	Hover	4+
19	Turn on the Spot/Clearing Turn	4+
22	Hover Taxi	4+
23	Max Load Takeoff	3+
26	Normal Approach	4+
27	Steep Approach	2
28	Hydraulic Boost Off Approach	4+
29	No-Hover Landing	3+
31	Waveoff (Power On)	4+
32	Power Recovery Autorotations	3+
35	Simulated Engine Failure at Altitude	4+
36	Simulated Engine Failure in a Hover	4+

MIF continued on next page.

CTS REF	MANEUVER	C4203
37	Simulated Engine Failure in a Hover Taxi	4+
38	Quick Stop From a Hover	4+
59	Vertical Landing	4+
	Special Syllabus Requirements	1

Block	Media	Title	Events	Hrs	H/X
C30	2B42A	Contact Simulator 'C' Model Transition	1	1.3	1.3

1. Prerequisites

a. C4203.

b. C0703 (Systems 'C' MIL).

2. Syllabus Notes

a. The purpose of this block is to introduce the student aviator to the 'C' model aircraft and the differences in cockpit configuration.

b. All TH-57C ground checklists and voice reports will be accomplished with special emphasis on the COMM/NAV checklist. Student shall execute a blindfold cockpit check.

3. Special Syllabus Requirements. None.

4. Discuss Items. Basic Instrument syllabus, pubs carried on BI flights, checklists (prestart, start, ITO, shutdown, hot refuel, hot seat), COMM/NAV checklist, cockpit crew coordination brief, angle of bank for SRTs.

5. Block MIF

CTS REF	MANEUVER	C3001
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	4+
3	Headwork/Situational Awareness	4+
7	CRM	4+
8	COMM/NAV Checklist	3+
9	Blindfold Cockpit Check	3+
10	Radio Procedures	3+

Block	Media	Title	Events	Hrs	H/X
C43	TH-57C	Contact 'C'	2	3.0	1.5

1. Prerequisites

a. C3001.

b. G0401 (Global Positioning System).

c. T4003.

2. Syllabus Notes

a. The purpose of this block is to transition air work skills and leadership into the TH-57C model aircraft.

b. Emphasis should be placed on checklists and new requirements during start, operation, emergencies, and shutdown.

3. Special Syllabus Requirements. None.

4. Discuss Items

C4301
TH-57C electrical system, flight maneuvers in the TH-57C, weather brief requirements, course rules (Site 8 and Santa Rosa), torque limitations, preflight differences between 'C' and 'B' model aircraft, abnormal starts (igniter failure, hot start, hung start), fire on start, emergency shutdown, and engine failure in flight.

C4302
AFCS failure, hydraulic system failure, hydraulic power cylinder malfunction, transmission chip light, sprag clutch slippage, post-refuel/hot seat checklist, and helicopter/tiltrotor operations (OPNAVINST 3710.7U).

5. Block MIF

CTS REF	MANEUVER	C4302
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
6	Ground Operations	4+
6	Preflight Inspection	4+
7	CRM	3+
8	Cockpit Management	3+
8	COMM/NAV Checklist	4+
10	Radio Procedures	4+
15	Transition to Forward Flight	4+
17	Course Rules	4+
20	Low Work	4+
23	Max Load Takeoff	3+
26	Normal Approach	4+
26 30	Normal Approach/Stab-Off Flight	3+
27	Steep Approach	3+
28	Hydraulic Boost Off Approach	3+
29	No-Hover Landing	3+
31	Waveoff (Power On)	4+
32	Power Recovery Autorotations	3+
35	Simulated Engine Failure at Altitude	4+
36	Simulated Engine Failure in a Hover	4+
37	Simulated Engine Failure in a Hover Taxi	4+
43	Turn Pattern/Contact	4

Block	Media	Title	Events	Hrs	H/X
C44	TH-57C	Night Contact 'C'	2	3.0	1.5

1. Prerequisites

a. C4302 prior to C4401.

b. I3101 and I3101C prior to C4402.

2. Syllabus Notes

a. The purpose of this block is to develop air work skills during basic maneuvers and autorotation in the TH-57C model aircraft at night.

b. Emphasize basic skills and night operations.

c. Perform only 90-degree or straight-in power recovery autorotations in this block.

3. Special Syllabus Requirements. None.

4. Discuss Items

C4401
Dark adaptation, night hover scan, night visual scan techniques, vertigo, use of lights, VASI/PAPI, helicopter procedures at night, night course rules (Whiting, Santa Rosa, Duke, Choctaw), emergency procedures, landing site evaluation at night, engine failures at night.

C4402
Landing zone lighting, use of lights, aircraft emergencies at night, night vision.

5. Block MIF

CTS REF	MANEUVER	C4402
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	3+
6	Ground Operations	3+
7	CRM	3+
8	Cockpit Management	3
10	Radio Procedures	4+
15	Transition to Forward Flight	4+
17	Course Rules	3+
20	Low Work	3+
26	Normal Approach	3+
27	Steep Approach	3+
29	No-Hover Landing	3+
31	Waveoff (Power On)	4
32	Power Recovery Autorotations	3+

Chapter IV

Instrument Training

1. Matrices. The following matrix is an overview of the entire Instrument Stage. The purpose of this matrix is to provide the SNA and IP the easiest way to track progress, regression, and overall status in relation to the MIF. In addition, there is a single matrix following each block description throughout this chapter.

2. Stage MIF

Simulator/Device Event

INSTRUMENT STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**I3005**	**I3101**	**I3101C**
1	General Knowledge/Procedures	4+	4+	3
2	Emergency Procedures/System Failures	3+		
2	Abnormal Starts		4+	
2	Engine Overspeed		3+	
2	Sprag Clutch Slippage		3+	
2	Main Driveshaft Failure		3+	
2	Hydraulic System Failure		4+	
2	Hydraulic Power Cylinder Malfunction		3+	
2	Engine Failure		3+	
2	Engine Restart		3+	
2	Compressor Stall		3+	
2	Torquemeter Malfunction		4+	
2	Loss of Tail Rotor Thrust		3+	
2	Vibration Analysis		3+	
3	Headwork/Situational Awareness	3+	3+	3

MIF continued on next page.

INSTRUMENT STAGE MANEUVER ITEM FILE				
CTS REF	**MANEUVER**	**I3005**	**I3101**	**I3101C**
4	Basic Air Work	3+	3+	
4	Straight and Level	3+		
4	Level Standard-Rate Turns	3+		
4	Standard-Rate Climbs and Descents	3+		
7	CRM	3+	3+	3
8	Cockpit Management	3+	4+	
10	Radio Procedures	3		
12	Instrument Takeoff	3+	3+	
16	Departure Procedures	3+		
39	LSC	3+		
41	Vertical S-1 Pattern	3+		
42	Turn Pattern	3+		
44	Oscar Pattern	3+		
45	Unusual Attitude Recovery (Full Panel)	3+		
46	Instrument Autorotation	3+	3+	
47	Magnetic Compass Turns	3+		
48	Partial Panel Air Work	3+		
49	TACAN/VOR/NDB Approach	3+		

Block	Media	Title	Events	Hrs	H/X
I30	2B42A	Basic Instruments	5	6.5	1.3

1. Prerequisites

a. C0801-2 (Emergency Procedures).

b. I0101-3 (Basic Instrument Flight Procedures).

c. I0201 (CRM - Instrument).

2. Syllabus Notes

a. Students shall fly a minimum of three instrument takeoffs, two departures, and one approach by end of block.

b. COMM/NAV checklist items shall be practiced on I3001, I3002, and I3003.

3. Special Syllabus Requirements. None.

4. Discuss Items

I3001
Attitude instrument flight/trim/scan, approximate power settings, communication procedures, level-off checklist, maneuver completion report, straight-and-level flight, level speed changes, SRTs, standard-rate climbs and descents, turn pattern, magnetic compass turns.

I3002
Vertical S-1 pattern, instrument auto, main generator failure, standby generator failure.

I3003
Instrument takeoff, departure, preparing for an instrument approach, approach, missed approach, Oscar pattern, battery temp light, battery hot light, emergency descent.

I3004
Full panel unusual attitude recovery, pitot-static instrument failure, ECS malfunctions, heater malfunction.

I3005
Partial panel straight-and-level, partial panel turns, partial panel climbs and descents, full panel unusual attitude recovery, electrical fire during IMC flight, engine fire during IMC, fuselage fire during IMC.

5. Block MIF

CTS REF	MANEUVER	I3005
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	3+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	3+
4	Straight and Level	3+
4	Level Standard-Rate Turns	3+
4	Standard-Rate Climbs and Descents	3+
7	CRM	3+
8	Cockpit Management	3+
10	Radio Procedures	3
12	Instrument Takeoff	3+
16	Departure Procedures	3+
39	LSC	3+
41	Vertical S-1 Pattern	3+
42	Turn Pattern	3+
44	Oscar Pattern	3+
45	Unusual Attitude Recovery (Full Panel)	3+
46	Instrument Autorotation	3+
47	Magnetic Compass Turns	3+
48	Partial Panel Air Work	3+
49	TACAN/VOR/NDB Approach	3+

Block	Media	Title	Events	Hrs	H/X
I31	2B42A	Emergency Procedures	2	2.6	1.3

1. Prerequisite. I3005.

2. Syllabus Note. Requires execution of the following emergency procedures: abnormal starts, engine overspeed, sprag clutch slippage, main driveshaft failure, hydraulic system failure, hydraulic power cylinder malfunction, engine failure, engine restart, compressor stall, torquemeter malfunction, loss of tail rotor thrust, vibration analysis.

3. Special Syllabus Requirements. None.

4. Discuss Items

I3101
Land as soon as possible, land as soon as practicable, MAYDAY/PAN report, single instrument indications, in-flight malfunctions when IMC, crew coordination during emergencies, RI syllabus.

5. Block MIF (Pilot)

CTS REF	MANEUVER	I3101
1	General Knowledge/Procedures	4+
2	Abnormal Starts	4+
2	Engine Overspeed	3+
2	Sprag Clutch Slippage	3+
2	Main Driveshaft Failure	3+
2	Hydraulic System Failure	4+
2	Hydraulic Power Cylinder Malfunction	3+
2	Engine Failure	3+
2	Engine Restart	3+
2	Compressor Stall	3+
2	Torquemeter Malfunction	4+
2	Loss of Tail Rotor Thrust	3+
2	Vibration Analysis	3+
3	Headwork/Situational Awareness	3+
4	Basic Air Work	3+
7	CRM	3+
8	Cockpit Management	4+
12	Instrument Takeoff	3+
46	Instrument Autorotation	3+

6. Block MIF (Copilot)

CTS REF	MANEUVER	I3101C
1	General Knowledge/Procedures	3
3	Headwork/Situational Awareness	3
7	CRM	3

Chapter V

Navigation Training

This chapter does not apply to Intermediate Tiltrotor training.

BLANK PAGE

Chapter VI

Formation Training

1. Matrices. There is a single matrix following the single block description in this chapter.

2. Stage MIF. None.

Block	Media	Title	Events	Hrs	H/X
F40	TH-57C	Formation	3	6.0	2.0

1. Prerequisites

a. F0103 (Formation).

b. C4402.

2. Syllabus Notes

a. Emphasize CRM during all flights.

b. Complete section waveoffs on F4002.

c. During formation maneuvers IP shall be at the controls to provide a stable platform in the lead aircraft.

3. Special Syllabus Requirements

F4001
Demonstrate section parade and home-field break.

4. Discuss Items

F4001
CRM and inter-aircraft communication, relative motion and radius of turn relationships, Lead and Wing aircraft responsibilities and considerations, cruise position/cruise maneuvers/brevity codes, overtorque, formation course rules.

F4002
Wing awareness/lookout doctrine, IIMC, lost communications, high-speed approach, down plane procedures.

F4003
Any emergency procedure or aircraft limitation.

5. Block MIF

CTS REF	MANEUVER	F4003
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	3+
5	Formation NATOPS/Mission Brief	3+
7	CRM	4+
8	Cockpit Management	4+
14	Section Takeoffs	3+
50	Crossover	3+
51	Cruise Turns	3+
52	Cruise Climbs and Descents	3+
53	Breakup and Rendezvous	3+
54	Overrun	3+
55	Lead Change	3+
56	Section Cruise	3+
57	Section Landings	3+
58	Section Waveoff	3+
	Special Syllabus Requirements	1

BLANK PAGE

Chapter VII

Tactical Training

1. Matrices. Both stages included in this chapter each contain only a single block. There is a single matrix following each block description in this chapter. Regression does not apply to these blocks.

2. Tactics Stage MIF. None.

3. Night Vision Device Stage MIF. None.

Block	Media	Title	Events	Hrs	H/X
T40	TH-57B	Tactics	3	4.5	1.5

1. Prerequisites

   a. T0101-6 (Tactics Flight Procedures).

   b. C4203.

2. Syllabus Notes

   a. Emphasize CRM during all flights.

   b. Fly all block flights in TH-57B model aircraft.

   c. On T4001, emphasize normal and steep approaches.

3. Special Syllabus Requirements

   T4001
   Demonstrate the high-speed, low-level autorotation.

4. Discuss Items

   T4001
   Dynamic rollover, mast bumping, course rules to Site 8 and Harold, low-level lookout doctrine, engine failure at high-speed and low-level.

   T4002
   CRM, power checks, HIGE/HOGE, vortex ring state, waveoff during CALs.

   T4003
   Power checks, crew coordination, aircrew brief, power required exceeds power available, engine failure with external load, weight and balance, waveoff during CALs/externals, course rules Harold OLF.

5. Block MIF

CTS REF	MANEUVER	T4003
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	4+
7	CRM	4+
8	Cockpit Management	4+
13	No-Hover Takeoff	3+
21	Power Checks	3+
24	Confined Area Operations	3+
25	Pinnacle Operations	3+
26	Normal Approach	4+
27	Steep Approach	3+
29	No-Hover Landing	3+
33	External Load Operations	3+
	Special Syllabus Requirements	1

Block	Media	Title	Events	Hrs	H/X
V30	2B42A	Night Vision Device Simulator	1	1.3	1.3

1. Prerequisites

a. V0102 (Night Vision Device Training).

b. I3101-1C.

2. Syllabus Notes

a. Focus should be on goggle/de-goggle procedures and familiarization with basic scan and BAW while on night vision devices.

b. Due to lack of visual cues in the simulator, low work will not be graded.

c. Student shall check out a pair of NVGs from the paraloft and bring them to the brief, along with an NVG-configured helmet.

3. Special Syllabus Requirements. None.

4. Discuss Items. NVG preflight, NVG adjustment and assessment procedures, goggle/de-goggle procedures, NVG failures, NVG scan pattern.

5. Block MIF

CTS REF	MANEUVER	V3001
1	General Knowledge/Procedures	4+
2	Emergency Procedures/System Failures	4+
3	Headwork/Situational Awareness	4+
4	Basic Air Work	3+
6	Ground Operations	3+
7	CRM	4+
8	Cockpit Management	4+
10	Radio Procedures	3+
15	Transition to Forward Flight	3+
16	Departure Procedures	3+
26	Normal Approach	3+
31	Waveoff (Power On)	3
60	NVD Knowledge	3+
61	Goggle/De-goggle Procedures	3+
62	NVD Emergency Procedures	3+

BLANK PAGE

Chapter VIII

Course Training Standards

1. Purpose. These standards outline the tasks and proficiency required of graduates of this syllabus.

2. Student Duties and Responsibilities

a. Plan the mission.

b. Ensure the aircraft is preflighted, inspected, and equipped for the assigned mission.

c. Operate the aircraft to accomplish the mission using sound judgment and airmanship.

3. General Standards

a. Achieve training standards for visual meteorological condition maneuvers in conjunction with visual clearing.

b. Unless otherwise specified, use **Basic Air Work (BAW)** standards for all items with altitude, airspeed, or heading parameters.

c. "Standard" equates to **good** (G/4).

d. Aircraft control must be smooth and positive. Performance may be within CTS and still not warrant a grade of ***good*** if control inputs are delayed, erratic, imprecise, or inappropriate. Slight deviations in establishing or maintaining the proper or desired aircraft attitude or position may occur during the maneuver being performed.

e. Momentary deviations outside CTS that do not compromise flight safety are acceptable if subsequent corrections are timely.

f. Procedural knowledge and application must comply with applicable directives and allow efficient mission accomplishment. If individual tasks require pre-mission planning, the standards from **Mission Planning** apply.

4. Execution. The maneuver item file regulates student progression to meet required standards prior to phase completion. Instructor pilots shall evaluate student performance against these standards.

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

BEHAVIOR STATEMENT	STANDARDS
GRADED ITEM	
• A brief description of the behavior, required action, and/or conditions.	• The specific standards for the action. May be read as "The student aviator…"

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

7. Course Training Standards

BEHAVIOR STATEMENT	STANDARDS
1. General Knowledge/Procedures	
• Maintain working knowledge of all appropriate flight training instructions and directives.	• Recites, discusses, and/or performs all applicable items essential to the operation of the aircraft.
2. Emergency Procedures/System Failures	
• Maintain in-depth knowledge of NATOPS and appropriate directives. • Begin with the introduction of the emergency by the IP. • End when IP announces simulation complete.	• Maintains positive control of the aircraft. • Properly identifies the simulated emergency or system failure, and calls for the appropriate procedure. • Executes/directs MEMORY items in proper order and in a timely manner. • Calls for appropriate checklist following execution of MEMORY items or when no MEMORY items apply. • Applies appropriate landing criteria for simulation.
3. Headwork/Situational Awareness	
• Comply with the FTI and NATOPS while maintaining situational awareness sufficient for flight safety.	• Understands instructions, demonstrations, and explanations. • Foresees and avoids possible difficulties. • Remains alert and spatially oriented.

4. Basic Air Work	
• Establish and maintain desired altitude, airspeed, and heading during flight.	• Maintains aircraft in balanced flight and within 100 feet, 10 KIAS, 10° of heading. • Appropriately uses power, attitude, and trim. • Levels off within 100 feet of desired altitude. • Accomplishes within ±10 seconds of correct time as applicable.
5. Formation NATOPS/Mission Brief	
• Present modified NATOPS/mission brief concerning multiplane operations.	• Executes procedures IAW current FTI with minimal errors.
6. Ground Operations	
• Begin when departing flight planning room or base operations for the aircraft. • End when transitioning to forward flight. • Begin again when aircraft clears the runway and continue until transitioning to forward flight for a subsequent takeoff or when the aircrew is clear of the aircraft and postflight duties are complete.	• Complies with OPNAVINST 3710.7U, NATOPS, FTI, RWOP, squadron SOP, and training directives. • Determines aircraft status. • Properly preflights and starts the aircraft. • Properly operates aircraft systems on ground. • Ensures clearance of line personnel, ground equipment, and other aircraft using appropriate signals. • Taxies aircraft at speeds commensurate with safety based on location, weather conditions, and pilot skills. • Maintains taxiway boundaries (including hold short) and gives way to other aircraft as appropriate. • Properly shuts down the aircraft, postflights and secures the aircraft.

7. Crew Resource Management	
• Decision Making. • Assertiveness. • Mission Analysis. • Communications. • Leadership. • Adaptability. • Situational Awareness.	• Gathers available data before arriving at final decision; clearly states decisions to the crew; and provides rationale for decisions. • Displays assertive behavior when necessary and accepts assertive behavior from other crewmembers. • Assesses requirements, risks, and makes decisions; identifies probable contingencies and alternatives. • Ensures effective communication. • Recognizes and eliminates hazardous attitudes in self and other crewmembers; resolves conflict in a positive manner. • Provides positive leadership to the crew; encourages crew participation in the decision making process. • Adapts to meet new situational demands. • Demonstrates the ability to maintain awareness of what is happening on the ground, in the air, and with other crewmembers; copes with any subsequent mission impact as a result of these happenings. • As a copilot, performs duties IAW NATOPS, FTI, and checklist. • Performs all duties in a timely manner.

8. Cockpit Management	
• Prioritizes and manages crew tasks during mission profile. • Ensures complete checklist discipline and the following of all standard operating procedures.	• Correctly prioritizes multiple tasks; uses all available resources to manage workload. • Accomplishes all required normal and emergency checklists for each phase of flight; completes checklists in a timely manner with all items addressed.
9. Blindfold Cockpit Check	
• Conducted in CPTs and the simulator as a cockpit orientation drill.	• Without aid of visual cues, SNA is expected to positively identify all items in the cockpit requested by the IP.
10. Radio Procedures	
• Performs verbal communications during mission profile.	• Uses precise, properly formatted radio calls with standard terminology. • Acknowledges all communications. • Understands and prioritizes transmissions in a multiple communications environment. • Asks for and provides clarification when necessary.
11. Vertical Takeoff	
• Begins when adding power for takeoff. • Ends when aircraft is safely established in a hover.	• Executes maneuver IAW NATOPS and FTI. • Ascends at a rate commensurate with conditions and skill.

12. Instrument Takeoff	
• Begins when increasing power for takeoff. • Ends when aircraft is safely airborne, and climb power and airspeed are established.	• Checks aircraft performance and executes procedures IAW NATOPS and FTI. • Maintains takeoff torque ±5 percent. • Smoothly accelerates to appropriate climb speed. • Climbs at 70 KIAS ±5 knots.
13. No-Hover Takeoff	
• Transitions to forward flight while avoiding environmental hazards.	• Executes procedures IAW FTI.
14. Section Takeoffs	
• Begin from takeoff. • End on arrival at initial cruising altitude or commencement of next maneuver.	• Executes procedures IAW current FTI. • Wing maintains step-up +10/-5 feet through initial climb. • Lead maintains normal takeoff parameters.
15. Transition to Forward Flight	
• Begins with forward cyclic input. • Ends when established on desired altitude and airspeed.	• Checks aircraft performance prior to commencing transition. • Clears aircraft prior to commencing transition. • Considers wind direction and speed prior to transition. • Executes maneuver IAW NATOPS and FTI.

16. Departure Procedures	
• Begin when climb is established. • End when established on desired altitude with desired heading and airspeed or instrument departure is complete.	• Complies with ATC/DP/flight plan clearance or VFR course rules, as appropriate.
17. Course Rules	
• Begin from takeoff. • End when flight event is complete.	• Executes procedures IAW RWOP.
18. Hover	
• Begins when established over desired spot.	• Checks power required IAW NATOPS. • Maintains 5 feet ±1 foot of skid height. • Maintains heading ±10°. • Maintains aircraft position directly over desired location. • Maintains situational awareness.
19. Turn on the Spot/Clearing Turn	
• Begins with pedal application to affect rate of turn. • Ends when stabilized on desired heading.	• Considers wind direction and speed prior to commencing turn. • Executes maneuver IAW NATOPS and FTI. • Maintains constant rate of turn. • Maintains skid height ±2 feet.

20. Low Work	
• Governs the handling of the aircraft under conditions in close proximity to the ground when not specifically covered by another course training standard.	• Operates the aircraft IAW OPNAVINST 3710.7U, NATOPS, CTW-5 and squadron SOP, FTI, FLIP, and NOTAMS. • Aircraft control is smooth and positive. • Hover and hover taxi at altitude of 5 feet ±2 feet, heading ±10°, alignment ±3 feet of aircraft centerline and speed commensurate with safety and skills. • Vertical takeoff and landing: Ascends and descends at rate commensurate with safety and skills. • Turns/clearing turns/turns on the spot: Rates of turn are consistent and commensurate with safety, skills, and ambient conditions.
21. Power Checks	
• Begin in a hover. • End in a hover or in transition-to-forward flight.	• Calculates expected power requirements prior to flight. • Rechecks power expectation for current observed ambient conditions and load. • Checks actual power requirement. • Utilizes aircrew for greater situational awareness.

22. Hover Taxi	
• Begins from a hover with cyclic displacement • Ends when established in a hover or transition-to-forward flight.	• Considers wind direction and speed prior to commencing taxi. • Executes maneuver IAW NATOPS and FTI. • Maintains skid height ±2 feet, heading ±10°, alignment ±3 feet of aircraft centerline and safe speed. • Smoothly stops in a hover over desired spot or accelerates into a transition-to-forward flight.
23. Maximum Load Takeoff	
• Begins in a hover when checking N_g for simulated maximum allowable power. • Ends when established in transition-to-forward flight after obtaining 40 KIAS at or below 20 feet.	• Clears area before takeoff. • Considers wind direction and speed prior to transition. • Executes maneuver IAW NATOPS and FTI. • After completion of FTI procedures, intercepts normal transition-to-forward flight profile and parameters.
24. Confined Area Operations	
• Takeoff begins from a hover in the confined area. • Takeoff ends when established in a normal climb. • Landing begins when aircraft is in position for a safe landing in the landing area. • Landing ends when established in a hover.	• Executes maneuver IAW NATOPS and FTI. • Utilizes aircrew for greater situational awareness.

25. Pinnacle Operations	
• Takeoff begins from a hover on the pinnacle area. • Takeoff ends when established in a normal climb. • Approach begins when aircraft is in position for a safe landing in the landing area. • Approach ends transitioning to a hover or no hover landing.	• Executes maneuver IAW NATOPS and FTI. • Utilizes aircrew for greater situational awareness.
26. Normal Approach	
• Begins with initial power reduction at 500 feet AGL at 70 KIAS. • Ends when stable in a hover or transitioning to affect a no hover or sliding landing.	• Executes maneuver IAW NATOPS and FTI. • Maintains desired profile ±50 feet, ±10 KIAS, and 10-20° glideslope. • Executes profile with minimal corrections to power and near constant angle of bank.
27. Steep Approach	
• Begins with initial power reduction at 500 feet AGL at 70 KIAS. • Ends when stable in a hover or transitioning to affect a landing.	• Executes maneuver IAW NATOPS and FTI. • Maintains desired profile ±50 feet, ±10 KIAS, and 25-45° glideslope. • Executes profile with minimal corrections to power and near constant angle of bank in turns and glideslope on final.
28. Hydraulic Boost Off Approach	
• Begins when initiated by IP. • Ends when IP assumes controls.	• Executes maneuver IAW NATOPS and FTI. • Identifies safe landing speed and stabilizes in a hover taxi.

29. No-Hover Landing	
• Begins when on final approach. • Ends when stopped and collective is fully down.	• Executes maneuver IAW NATOPS and FTI. • Lands aircraft with little to no forward movement and not vertically from a hover. • Touches down with skids in a level attitude.
30. Stab-Off Flight	
• Begins when AFCS is secured. • Ends at landing or when AFCS is engaged.	• Complies with NATOPS and FTI procedures. • Maintains ±15° from assigned heading while partial panel in simulated instrument conditions.
31. Waveoff (Power On)	
• Begins when called for by tower or instructor, or announced by PAC. • Ends when stable at desired altitude, heading, and airspeed.	• Executes maneuver IAW NATOPS, RWOP, and FTI. • Adds power smoothly without exceeding continuous operation limitations.
32. Power Recovery Autorotations	
• Begin at 600 feet AGL and in position for a safe landing on the runway or otherwise suitable landing site. • End in a hover taxi.	• Clears intended point of landing, checks wind speed and direction, and ensures crew is set prior to initiating maneuver. • Executes maneuver IAW NATOPS and FTI.
33. External Load Operations	
• Begin with the attachment of an external load. • End when load is placed and released on intended point of delivery.	• Executes maneuver IAW NATOPS and FTI. • Utilizes aircrew for greater situational awareness.

34. Square Patterns	
• Begin with aircraft in a hover at the starting point. • End after one full transition around the square.	• Considers wind direction and speed prior to commencing. • Executes maneuver IAW FTI. • Maintains skid height ±2 feet, heading ±10°, and alignment ±3 feet of centerline of the aircraft.
35. Simulated Engine Failure at Altitude	
• Begins with the introduction of the engine failure by the IP. • Ends when the IP takes the controls for waveoff or with a power recovery autorotation (at the site).	• Maintains positive control of the aircraft. • Executes maneuver IAW NATOPS and FTI.
36. Simulated Engine Failure in a Hover (Hover Cut Gun)	
• Begins when the instructor rotates the twist grip to flight idle. • Ends when the aircraft is safely on deck and collective is full down.	• Instructor ensures aircraft is in a stable 5-foot hover into the wind and over suitable landing surface. • Executes maneuver IAW NATOPS and FTI. • Lands with minimal drift and skids level.
37. Simulated Engine Failure in a Hover Taxi (Taxi Cut Gun)	
• Begins when instructor rotates the twist grip to flight idle. • Ends when the aircraft is safely on deck and collective is full down.	• Instructor ensures aircraft is in a stable 5-foot/5-knot forward hover taxi into the wind and over a suitable landing surface. • Executes maneuver IAW NATOPS and FTI. • Lands with minimal lateral drift and skids aligned with direction of travel.

38. Quick Stop From a Hover	
• Begins when transitioning from a hover. • Ends when reestablished on normal climb parameters.	• Executes maneuver IAW NATOPS and FTI. • Maintains altitude –10/+15 feet. • Maintains desired ground track.
39. Level Speed Change (LSC)	
• Begins with initial power change or turn. • Ends when aircraft is stabilized in straight-and-level flight in position for the next maneuver.	• Executes all maneuvers IAW NATOPS and FTI. • Maintains ±75 feet. • Maintains ±5°.
40. Level Speed Change (LSC)/Contact	
• Begins when established at assigned altitude, heading, and airspeed. • Ends with return to that airspeed and heading.	• Clears area before commencing. • Executes maneuver IAW FTI. • Maintains ±50 feet and ±10° of heading.
41. Vertical S-1 Pattern	
• Begins with initial power change or turn. • Ends when aircraft is stabilized in straight-and-level flight in position for the next maneuver.	• Executes all maneuvers IAW NATOPS and FTI. • Maintains VSI at 500 FPM, ±200 FPM. • Completes maneuver ±5 KIAS, ±75 feet and ±5°.

42. Turn Pattern	
• Begins with initial power change or turn. • Ends when aircraft is stabilized in straight-and-level flight in position for the next maneuver.	• Executes all maneuvers IAW NATOPS and FTI. • Maintains ±5° angle of bank, ±75 feet, and rolls out ±5° from desired heading.
43. Turn Pattern/Contact	
• Begins when established at assigned altitude, heading, and airspeed. • Ends with return to that heading.	• Clears area before commencing. • Executes maneuver IAW FTI.
44. Oscar Pattern	
• Begins with initial power change or turn. • Ends when aircraft is stabilized in straight-and-level flight in position for the next maneuver.	• Executes all maneuvers IAW NATOPS and FTI. • Maintains VSI at 500 FPM, ±200 FPM. • Makes smooth inputs and timely corrections in relation to standard-rate turns. • Completes maneuver ±10 KIAS, ±75 feet, and ±15° heading.
45. Unusual Attitude Recovery	
• Begins when unusual attitude is recognized. • Ends when aircraft is stable on recovery airspeed, altitude, and heading.	• Recovers aircraft IAW FTI. • Recognizes deviations from normal parameters. • Maintains smooth and positive aircraft control.

46. Instrument Autorotation	
• Begins when twist grip is reduced to flight idle. • Ends when at recovery altitude at maneuvering airspeed.	• Completes maneuver IAW FTI and NATOPS. • Maintains airspeed IAW FTI ±10 knots. • Recovers at ±50 feet of FTI requirements.
47. Magnetic Compass Turns	
• Apply during all failed directional gyro scenarios.	• Executes procedures IAW current FTI. • Constantly updates headings and air work.
48. Partial Panel Air Work	
• Governs the handling of the aircraft under partial panel conditions.	• Operates the aircraft IAW NATOPS Manual and FTI. • Maintains: ► Smooth and positive aircraft control. ► ±15° of assigned heading. ► ±150 feet of assigned altitude. ► ±15 knots of assigned/briefed airspeed. • Does not exceed standard-rate turns.

49. Non-Precision Approach	
• Begins when established on a published portion of approach or cleared for the approach, or on radar vectors to final. • Ends at transition to landing environment or applying power to execute a missed approach/climbout.	• Performs IAW the FTI/INAV procedures and the applicable FAR/AIM. • FAF to MAP: Begins timing within ±5 seconds if appropriate, ±5 KIAS of approach airspeed, FAC ±5° and/or ±¾ deflection (±3 dot width). • Arrives at the MDA prior to MAP in a safe position to make a normal visual descent to land. • Maintains MDA +50/-0 feet. • Executes the missed approach procedure when applicable for the intended runway. • NDB final approach: Maintains ±10° bearing. • ASR approach: Does not exceed "well left/right of course" and complies with the controller's instructions in a timely manner. • GPS approach: Executes IAW current FTI.
50. Crossover	
• Begins when Wing moves from the normal cruise position on one side of Lead to the normal cruise position on the other side.	• Executes procedures IAW current FTI and NATOPS. • Lead maintains stable platform. • Wing maintains step-up +10/-5 feet.

51. Cruise Turns	
• Begin when Wing maneuvers about Lead using radius of turn to maintain cruise position in a turn without adjusting power.	• Executes procedures IAW current FTI. • Lead maintains AOB ±5°. • Wing: 3-6 rotor diameters, +10 feet step-up and ±10° of bearing.
52. Cruise Climbs and Descents	
• Begin when flight climbs and descends in cruise formation.	• Executes procedures IAW current FTI. • Lead maintains 500 FPM climb/ descent ±100 FPM and ±5 KIAS. • Wing maintains step-up +10 feet and ±10° of bearing.
53. Breakup and Rendezvous	
• Begins when flight separates. • Ends when flight returns to section cruise formation.	• Executes procedures IAW current FTI. • Maintains ±5° AOB. • Wing maintains step-up and avoids ±10° of bearing.
54. Overrun	
• Begins when Wing maneuvers to discontinue join-up due to excessive closure rate. • Ends with Wing stabilized in section cruise.	• Wing recognizes requirement for overrun in time to safely execute procedures IAW the current FTI.
55. Lead Change	
• Transfers control of the formation from Lead to Wing.	• Executes procedures IAW current FTI and NATOPS.
56. Section Cruise	
• Allows aircraft to fly in close proximity to one another safely.	• Executes procedures IAW current FTI. • Lead maintains altitude ±50 feet. • Wing maintains ±10° of bearing.

57. Section Landings	
• Perform landing in close formation.	• Executes procedures IAW current FTI. • Lead maintains normal approach profile IAW CTS. • Wing maintains ±10° of bearing.
58. Section Waveoff	
• Begins with either aircraft, individually or collectively, discontinuing an approach.	• Executes procedures IAW current FTI. • Lead/Wing makes appropriate waveoff transmission(s).
59. Vertical Landing	
• Begins when established over desired landing spot. • Ends when aircraft is safely on deck and collective is full down.	• Executes maneuver IAW NATOPS and FTI. • Continues descent without intermediate stops.
60. NVD Knowledge	
• The specific knowledge required for safe, efficient flight operations and mission effectiveness as it relates to the use of night vision devices.	• Conducts proper NVG preflight. • Demonstrates full knowledge of NVG light effects and phenomenon. • Demonstrates proper use of aircraft interior and exterior lighting. • Understands proper NVG scan pattern. • Understands capabilities and limitations of NVGs. • Demonstrates knowledge of the use of sun/moon charts in mission planning.

61. Goggle/De-goggle Procedures	
• Begin when the need to goggle or de-goggle arises in the aircraft, whether in-flight or on the deck.	• Demonstrates full knowledge of goggle/de-goggle procedures. • Able to goggle/de-goggle in a timely fashion, with regard to safety for phase of flight. • Sets proper aircraft lighting regime, both interior and exterior.
62. NVD Emergency Procedures	
• The specific application of NATOPS procedures to resolve an aircraft emergency whether airborne or on the ground as it relates to night vision devices.	• Handles the emergency IAW NATOPS and FTI. • Demonstrates sound judgment when no specific guidance exists. • Resolves the emergency and carries to a logical conclusion. • Maneuvers the aircraft in a safe manner, descending no lower than specified in local procedures and no slower than 40 KIAS. • Demonstrates thorough knowledge of NVG battery failure, and NVG tube failure, including recognition of each condition and the subsequent emergency procedures.

Chapter IX

Master Materials List

Individually Issued Materials

NOMENCLATURE	IDENTIFICATION	QTY PER STUDENT
1. Flight Training Instructions		
a. Contact FTI	CNATRA P-457	1
b. Instrument/Navigation FTI	CNATRA P-458	1
c. Tactical/Formation/NVD FTI	CNATRA P-459	1
2. Ground Training Publications		
a. Aerodynamics Workbook	CNATRA P-401	1
b. Systems Workbook	CNATRA P-402	1
c. Instrument Navigation Workbook	CNATRA P-403	1
d. Flight Planning Workbook	CNATRA P-404	1

BLANK PAGE